

|         |             |          |          |            |
|---------|-------------|----------|----------|------------|
| DATE    | 11/2/76     | 11/5/76  | 11/11/76 | 11/15/76   |
| SURNAME | CMT ramme11 | Rsnatder | Mitchel  | Aschwencer |
| OFFICE  | ORB#1       | ORB#2    | ORB#1/2  | ORB#1      |

- Enclosures:
1. Amendment No. 22 to DPR-62
  2. Safety Evaluation
  3. Federal Register Notice
- cc w/enclosures:  
See next page

*Coush*

A. Schwencer, Chief  
Operating Reactors Branch #1  
Division of Operating Reactors

Original signed by

Sincerely,

The Commission has issued the enclosed Amendment No. 22 to Facility Operating License No. DPR-62 for the Brunswick Steam Electric Plant, Unit No. 2. The amendment consists of changes to the Technical Specifications in response to your request dated October 5, 1975. This amendment revises the limiting conditions for operation and surveillance requirements for safety related shock suppressors (snubbers). Copies of the Safety Evaluation and the Federal Register Notice are also enclosed.

Gentlemen:

Carolina Power & Light Company  
ATTN: Mr. J. A. Jones, Executive  
Vice President  
Engineering, Construction  
and Operations  
336 Fayetteville Street  
Raleigh, North Carolina 27602

- DRoss
- OPA(CM1tes)
- ACRS(16)
- Rsnatder
- DEisenhut
- McGough
- Aschwencer
- BScharf(15)
- Bjones(4)
- OI&E(5)
- OELD
- CMT ramme11
- SMSheppard
- KRGoller/TJCarter
- VStello
- ORB#1 Reading
- Local PDR
- NRC PDR
- TBabernathy
- JRBuchanan

NOV 15 1976

50-324

cc: Richard E. Jones, Esquire  
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

CAROLINA POWER & LIGHT COMPANY

DOCKET NO. 50-324

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 22  
License No. DPR-62

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Carolina Power & Light Company (the licensee) dated October 5, 1976, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment.
3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief  
Operating Reactors Branch #1  
Division of Operating Reactors

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: November 15, 1976

ATTACHMENT TO LICENSE AMENDMENT NO. 22

FACILITY OPERATING LICENSE NO. DPR-62

DOCKET NO. 50-324

Revise Appendix A as follows:

1. Remove the following pages:

3.5-11b/3.5-12  
3.5-16a  
3.5-17b

2. Insert the following revised pages:

3.5-11b  
3.5-11c  
3.5-12  
3.5-16a  
3.5-17b

3. Insert the following new pages:

3.5-18 through 3.5-37

| LIMITING CONDITION FOR OPERATION  | SURVEILLANCE REQUIREMENTS   |   |                                   |   |                       |   |                       |   |                      |     |                      |       |                     |    |                     |
|---|---|---|-----------------------------------|---|-----------------------|---|-----------------------|---|----------------------|-----|----------------------|-------|---------------------|----|---------------------|
| <p>3.5.J Shock Suppressors (Snubbers) on Safety Related Systems</p> <ol style="list-style-type: none"> <li>During all modes of operation except cold shutdown and refueling, all snubbers specified in Table 3.5-1 shall be capable of performing their intended function in the required manner (operable) except as described below:</li> <li>With the reactor in any mode of operation other than cold shutdown or refueling, maintenance of such a mode is permissible only during the succeeding 72 hours after the time a snubber is determined to be inoperable unless the snubber is sooner made operable (or replaced) or the system or subsystem containing the snubber is isolated and declared inoperable. If the snubber is not made operable (or replaced) or if its associated system or subsystem is not isolated and declared inoperable within 72 hours, the reactor shall be in cold shutdown within the next 36 hours. Permissible periods of operation with an isolated and inoperable system or subsystem shall be as governed elsewhere in these Technical Specifications for individual systems or subsystems.</li> <li>If a snubber is determined to be inoperable while the reactor is in cold shutdown, the snubber shall be made operable or replaced prior to reactor startup.</li> <li>Snubbers may be added to safety related systems without prior License Amendment to Table 3.5-1 provided that a revision to Table 3.5-1 is in-</li> </ol> | <p>4.5.J Shock Suppressors (Snubbers) on Safety Related Systems</p> <ol style="list-style-type: none"> <li>All hydraulic snubbers specified in Table 3.5-1 whose seal material has been demonstrated by operating experience, lab testing or analysis to be compatible with the operating environment shall be visually inspected. This inspection shall include, but not necessarily be limited to, inspection of the hydraulic fluid reservoir, fluid connections, and linkage connection to the piping and anchor to verify snubber operability in accordance with the following schedule:</li> </ol> <table border="1" data-bbox="893 840 1477 1239"> <thead> <tr> <th>Number of Snubbers Found Inoperable During Inspection or During Inspection Interval</th> <th>Next Required Inspection Interval</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>18 months <u>+25%</u></td> </tr> <tr> <td>1</td> <td>12 months <u>+25%</u></td> </tr> <tr> <td>2</td> <td>6 months <u>+25%</u></td> </tr> <tr> <td>3,4</td> <td>124 days <u>+25%</u></td> </tr> <tr> <td>5,6,7</td> <td>62 days <u>+25%</u></td> </tr> <tr> <td>&gt;8</td> <td>31 days <u>+25%</u></td> </tr> </tbody> </table> <p>The required inspection interval shall not be lengthened more than one step at a time.</p> <ol style="list-style-type: none"> <li>Snubbers may be categorized in two groups, "accessible" or "inaccessible" based on their accessibility for inspection during reactor operation. These two groups may be inspected independently according to the above schedule.</li> <li>All hydraulic snubbers whose seal materials are other than ethylene</li> </ol> | Number of Snubbers Found Inoperable During Inspection or During Inspection Interval | Next Required Inspection Interval | 0 | 18 months <u>+25%</u> | 1 | 12 months <u>+25%</u> | 2 | 6 months <u>+25%</u> | 3,4 | 124 days <u>+25%</u> | 5,6,7 | 62 days <u>+25%</u> | >8 | 31 days <u>+25%</u> |
| Number of Snubbers Found Inoperable During Inspection or During Inspection Interval   | Next Required Inspection Interval   |   |                                   |   |                       |   |                       |   |                      |     |                      |       |                     |    |                     |
| 0   | 18 months <u>+25%</u>   |   |                                   |   |                       |   |                       |   |                      |     |                      |       |                     |    |                     |
| 1   | 12 months <u>+25%</u>   |   |                                   |   |                       |   |                       |   |                      |     |                      |       |                     |    |                     |
| 2   | 6 months <u>+25%</u>  |   |                                   |   |                       |   |                       |   |                      |     |                      |       |                     |    |                     |
| 3,4   | 124 days <u>+25%</u>  |   |                                   |   |                       |   |                       |   |                      |     |                      |       |                     |    |                     |
| 5,6,7   | 62 days <u>+25%</u>   |   |                                   |   |                       |   |                       |   |                      |     |                      |       |                     |    |                     |
| >8  | 31 days <u>+25%</u>   |   |                                   |   |                       |   |                       |   |                      |     |                      |       |                     |    |                     |

| LIMITING CONDITION FOR OPERATION   | SURVEILLANCE REQUIREMENTS  |
|--|--|
| <p>3.5.J Shock Suppressors (Snubbers) on Safety Related Systems</p> <p>cluded with the next License Amendment request.</p> <p>5. Modifications to Table 3.5-1 due to changes in high radiation areas (plant shutdown) may be made and shall be submitted to NRC as part of the next License Amendment request.</p> | <p>4.5.J Shock Suppressors (Snubbers) on Safety Related Systems</p> <p>propylene or other material that has been demonstrated to be compatible with the operating environment shall be visually inspected for operability every 31 days.</p> <p>4. The initial inspection shall be performed within 6 months from the date of issuance of these specifications. For the purpose of entering the schedule in Specification 4.5.J.1 it shall be assumed that the facility had been on a 6 month inspection interval.</p> <p>5. Once each refueling cycle, a representative sample of 10 hydraulic snubbers or approximately 10% of the hydraulic snubbers, whichever is less, shall be functionally tested for operability including verification of proper piston movement, lock up and bleed. For each unit and subsequent unit found inoperable, an additional 10% or ten hydraulic snubbers whichever is less shall be so tested until no more failures are found or all units have been tested. Snubbers of rated capacity greater than 50,000 lb. need not be functionally tested.</p> |

BASES:3.5 Core and Containment Cooling SystemsA. Core Spray and LPCI

This specification assures that adequate emergency cooling capability is available.

Based on the loss of coolant analyses, the core spray and LPCI systems provide sufficient cooling to the core to dissipate the energy associated with the loss of coolant accident and to limit the accident caused core conditions as specified in 10CFR50, Appendix K. The analyses consider appropriate combinations of the two core spray subsystems and the two LPCI subsystems associated with various break location and equipment availability in accordance with required single failure assumptions. (An LPCI subsystem consists of the LPCI pumps, recirculation pump discharge valve, recirculation valve bypass valves, and the LPCI injection valve powered from the same electrical source.)

The allowable repair times are established so that the average risk rate for repair would be no greater than the basic risk rate. The method and concept are described in Reference 2. Using the results developed in this reference, the repair period is found to be less than one-half the test interval. The test interval specified in Specification K.4.5 was one month. Therefore, an allowable repair period which maintains the basic risk considering single failures should be less than 15 days and this specification is within this period. For multiple failures, a shorter interval is specified and to improve the assurance that the remaining systems will function, a daily test is called for. Although it is recognized that the information given in Reference 2 provides a quantitative method to estimate allowable repair times, the lack of operating data to support the analytical approach prevents complete acceptance of this method at this time. Therefore, the times stated in the specific items were established with due regard to judgement.

- (2) Jacobs, I.M., "Guidelines for Determining Safe Test Intervals and Repair Times for Engineered Safeguards", General Electric Co., April, 1969 (APED 5736).

BASES:

3.5.I Control Room Air Treatment System (Cont'd)

Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers.

If the system is found to be inoperable, there is not immediate threat to the control room and reactor operation or refueling operation may continue for a limited period of time while repairs are being made. If the system cannot be repaired within seven days, the reactor is shutdown and brought to cold shutdown within 24 hours or refueling operations are terminated.

3.5.J Shock Suppressors (Snubbers) on Safety Related Systems

Snubbers are designed to prevent unrestrained pipe motion under dynamic loads such as might occur during an earthquake or severe transient, while allowing normal thermal motion during startup and shutdown. The consequence of an inoperable snubber is an increase in the probability of structural damage to piping as a result of a seismic or other event initiating dynamic loads. It is, therefore, required that all snubbers required to protect the primary coolant system or any other safety system or component be operable during reactor operation or other periods when severe transients might cause damaging dynamic loads.

Because the snubber protection is required only during low probability events, a period of 72 hours is allowed for repairs or replacements. In case a shutdown is required, the allowance of 36 hours to reach a cold shutdown condition will permit an orderly shutdown consistent with standard operating procedures. Since plant startup should not commence with knowingly defective safety-related equipment, the specification prohibits startup with inoperable snubbers.

BASES:4.5.I Control Room Air Treatment System (Cont'd)

materials, the same tests and sample analysis shall be performed as required for operational use. The determination of significant shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

Demonstration of the automatic initiation capability is necessary to assure system performance capability.

4.5.J Shock Suppressors (Snubbers) on Safety Related Systems

All safety-related hydraulic snubbers are visually inspected for overall integrity and operability. The inspection will include verification of proper orientation, adequate hydraulic fluid level, and proper attachment of snubber to piping and structures.

The inspection frequency is based upon maintaining a constant level of snubber protection. Thus the required inspection interval varies inversely with the observed snubber failures. The number of inoperable snubbers found during a required inspection determines the time interval for the next required inspection. Inspections performed before that interval has elapsed may be used as a new reference point to determine the next inspection. However, the results of such early inspections performed before the original required time interval has elapsed (nominal time less 25%) may not be used to lengthen the required inspection interval. Any inspection whose results require a shorter inspection interval will override the previous schedule.

Experience at operating facilities has shown that the required surveillance program should assure an acceptable level of snubber performance provided that the seal materials are compatible with the operating environment.

Snubbers containing seal material which has not been demonstrated by operating experience, lab tests or analysis to be compatible with the operating environment should be inspected more frequently (every month) until material compatibility is confirmed or an appropriate changeout is completed.

BASES:4.5.J Seismic Hydraulic Snubber on Safety Related Systems (Cont'd)

Examination of defective snubbers at reactor facilities and material tests performed at several laboratories (Reference 1) has shown that millable gum polyurethane deteriorates rapidly under the temperature and moisture conditions present in many snubber locations. Although molded polyurethane exhibits greater resistance to these conditions, it also may be unsuitable for application in the higher temperature environments. Data are not currently available to precisely define an upper temperature limit for the molded polyurethane. Lab tests and in-plant experience indicate that seal materials are available, primarily ethylene propylene compounds, which should give satisfactory performance under the most severe conditions expected in reactor installations.

To further increase the assurance of snubber reliability, functional tests should be performed once each refueling cycle. These tests will include stroking of the snubbers to verify proper piston movement, lock-up, and bleed. Ten percent or ten snubbers, whichever is less, represents an adequate sample for such tests. Observed failures on these samples should require testing of additional units. Those snubbers designated in Table 3.5-1 as being in high radiation areas during shutdown or especially difficult to remove need not be selected for functional tests provided operability was previously verified.

Snubbers of rated capacity greater than 50,000 lb. are exempt from the functional testing requirements because of the impracticality of testing such large units.

TABLE 3.5-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

| <u>SNUBBER NO.</u>       | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |
|--------------------------|--|-----------------------------------|----------------------------|---------------------------------------|
| <b>Core Spray System</b> |  |                                   |                            |                                       |
| 2E21-2SS32               | Reactor Building   | 66'                               | A                          | No                                    |
| 26SS91                   |  | -6'                               | A                          | No                                    |
| 2SS16                    |  | 0'                                | A                          | No                                    |
| 2SS17                    |  | 13'                               | A                          | No                                    |
| 15SS19                   |  | -3'                               | A                          | No                                    |
| 15SS20                   |  | -3'                               | A                          | No                                    |
| 6SS21                    |  | 13'                               | A                          | No                                    |
| 6SS22 A & B              |  | 14'                               | A                          | No                                    |
| 28SS23                   |  | -4'                               | A                          | No                                    |
| 25SS96                   |  | -6'                               | A                          | No                                    |
| 40SS106                  |  | -12'                              | A                          | No                                    |
| 40SS107                  |  | -12'                              | A                          | No                                    |
| 39SS108                  |  | -12'                              | A                          | No                                    |
| 39SS109                  |  | -12'                              | A                          | No                                    |
| 2SS31                    |  | 68'                               | A                          | No                                    |
| 6SS41                    |  | 70'                               | A                          | No                                    |
| 6SS42                    |  | 69'                               | A                          | No                                    |
| 2SS18                    |  | 14'                               | A                          | No                                    |
| 2E21-3SS46               | Drywell  | 63'                               | I                          | No                                    |
| 3SS47                    |  | 63'                               | I                          | No                                    |
| 3SS48                    |  | 65'                               | I                          | No                                    |
| 3SS49                    |  | 66'                               | I                          | No                                    |
| 7SS53                    |  | 63'                               | I                          | No                                    |
| 7SS54                    |  | 63'                               | I                          | No                                    |
| 7SS55                    |  | 65'                               | I                          | No                                    |
| 7SS56                    |  | 66'                               | I                          | No                                    |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u>                  | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |
|-------------------------------------|--|-----------------------------------|----------------------------|---------------------------------------|
| <b>Reactor Water Cleanup System</b> |  |                                   |                            |                                       |
| 2G31-1SS3                           | Drywell  | 54'                               | I                          | No                                    |
| 50SS8                               |  | 40'                               | I                          | No                                    |
| 50SS9                               |  | 40'                               | I                          | No                                    |
| 69SS79                              |  | 86'                               | I                          | No                                    |
| 67SS84                              |  | 88'                               | I                          | No                                    |
| 13SS95                              |  | 85'                               | I                          | No                                    |
| 2SS98                               |  | 86'                               | I                          | No                                    |
| 3SS100                              |  | 84'                               | I                          | No                                    |
| 8SS155                              |  | 60'                               | I                          | No                                    |
| 8SS156                              |  | 89'                               | I                          | No                                    |
| 44SS168                             |  | 77'                               | I                          | No                                    |
| 65SS170                             |  | 81'                               | I                          | No                                    |
| 4SS176                              |  | 77'                               | I                          | No                                    |
| 51SS186                             |  | 65'                               | I                          | No                                    |
| 51SS187                             |  | 67'                               | I                          | No                                    |
| 51SS194                             |  | 2'                                | I                          | No                                    |
| 51SS196                             |  | 9'                                | I                          | No                                    |
| <b>Condensate Drains System</b>     |  |                                   |                            |                                       |
| 2B21-51SS103                        | Drywell  | 29'                               | I                          | No                                    |
| 51SS105                             |  | 26'                               | I                          | No                                    |
| 51SS106                             |  | 18'                               | I                          | No                                    |
| 51SS109                             |  | 31'                               | I                          | No                                    |
| 51SS111                             |  | 28'                               | I                          | No                                    |
| 51SS113                             |  | 23'                               | I                          | No                                    |
| 51SS115                             |  | 24'                               | I                          | No                                    |
| 51SS118                             |  | 24'                               | I                          | No                                    |
| <b>Control Rod Drive System</b>     |  |                                   |                            |                                       |
| 2C12-16SS1                          | Drywell  | 69'                               | I                          | No                                    |
| 16SS6                               |  | 68'                               | I                          | No                                    |
| 16SS7                               |  | 69'                               | I                          | No                                    |
| 16SS8                               |  | 70'                               | I                          | No                                    |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u>                            | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |
|---|--|-----------------------------------|----------------------------|---------------------------------------|
| 16SS10  |  | I                                 | No                         | No                                    |
| 16SS11  |  | I                                 | No                         | No                                    |
| 16SS12  |  | I                                 | No                         | No                                    |
| <b>High Pressure Coolant Injection System</b> |  |                                   |                            |                                       |
| 2E41-4SS44                                    | Drywell  | I                                 | No                         | No                                    |
| 4SS45   |  | I                                 | No                         | No                                    |
| 4SS47   |  | I                                 | No                         | No                                    |
| 4SS49   |  | I                                 | No                         | No                                    |
| 4SS50   |  | I                                 | No                         | No                                    |
| 4SS51   |  | I                                 | No                         | No                                    |
| 2E41-2SS5                                     | Reactor Building   | A                                 | No                         | No                                    |
| 61SS73  |  | A                                 | No                         | No                                    |
| 60SS9   |  | A                                 | No                         | No                                    |
| 20SS15  |  | A                                 | No                         | No                                    |
| 44SS84  |  | A                                 | No                         | No                                    |
| 44SS86  |  | A                                 | No                         | No                                    |
| 44SS98  |  | A                                 | No                         | No                                    |
| 19SS103                                       |  | A                                 | No                         | No                                    |
| 2SS104  |  | A                                 | No                         | No                                    |
| 2SS105  |  | A                                 | No                         | No                                    |
| 2SS106  |  | A                                 | No                         | No                                    |
| 60SS52  |  | A                                 | No                         | No                                    |
| 21SS76  |  | A                                 | No                         | No                                    |
| 21SS77  |  | A                                 | No                         | No                                    |
| 61SS99  |  | A                                 | No                         | No                                    |
| 61SS100                                       |  | A                                 | No                         | No                                    |
| 60SS101                                       |  | A                                 | No                         | No                                    |
| 60SS102                                       |  | A                                 | No                         | No                                    |
| 22SS178                                       |  | A                                 | No                         | No                                    |
| 6SS27   |  | A                                 | No                         | No                                    |
| 6SS28   |  | A                                 | No                         | No                                    |
| 6SS30   |  | A                                 | No                         | No                                    |
| 6SS32   |  | A                                 | No                         | No                                    |
| 6SS33   |  | A                                 | No                         | No                                    |
| 6SS35   |  | A                                 | No                         | No                                    |
| 6SS36   |  | A                                 | No                         | No                                    |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u>                                  | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |
|---|--|-----------------------------------|----------------------------|---------------------------------------|
| 6SS37   | 0  | A                                 | No                         | No                                    |
| 6SS38   | 1'   | A                                 | No                         | No                                    |
| 6SS40   | 2'   | A                                 | No                         | No                                    |
| 6SS42   | -4'  | A                                 | No                         | No                                    |
| 6SS64   | -1'  | A                                 | No                         | No                                    |
| 61SS71  | -4'  | A                                 | No                         | No                                    |
| 61SS72  | -1'  | A                                 | No                         | No                                    |
| <b>Standby Gas Treatment System</b>                 |  |                                   |                            |                                       |
| 2-SGT8SS17  | Reactor Building 69'                                       | A                                 | No                         | No                                    |
| <b>Instrument Sensing System</b>                    |  |                                   |                            |                                       |
| 2B21-701SS164                                       | Drywell 104'   | I                                 | No                         | No                                    |
| 701SS167  | 104'   | I                                 | No                         | No                                    |
| 701SS169  | 100'   | I                                 | No                         | No                                    |
| 701SS170  | 103'   | I                                 | No                         | No                                    |
| 701SS171  | 99'  | I                                 | No                         | No                                    |
| 701SS172  | 101'   | I                                 | No                         | No                                    |
| 701SS175  | 100'   | I                                 | No                         | No                                    |
| 701SS177  | 94'  | I                                 | No                         | No                                    |
| 701SS178  | 97'  | I                                 | No                         | No                                    |
| 701SS179  | 96'  | I                                 | No                         | No                                    |
| 701SS184  | 88'  | I                                 | No                         | No                                    |
| <b>Reactor Building Closed Cooling Water System</b> |  |                                   |                            |                                       |
| 2RCC-58SS11   | Reactor Building 39'                                       | A                                 | No                         | No                                    |
| 50SS33  | 48'  | A                                 | No                         | No                                    |
| 50SS34  | 48'  | A                                 | No                         | No                                    |
| 10SS56  | 48'  | A                                 | No                         | No                                    |
| 17SS74  | 38'  | A                                 | No                         | No                                    |
| 17SS75  | 48'  | A                                 | No                         | No                                    |
| 17SS76  | 39'  | A                                 | No                         | No                                    |
| 32SS30  | 55'  | A                                 | No                         | No                                    |
| 32SS52  | 64'  | A                                 | No                         | No                                    |
| 36SS78  | 54'  | A                                 | No                         | No                                    |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u>          | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |    |
|-----------------------------|--|-----------------------------------|----------------------------|---------------------------------------|----|
| 37SS79                      |  | 54'                               | A                          | No                                    | No |
| 39SS80                      |  | 59'                               | A                          | No                                    | No |
| 38SS81                      |  | 54'                               | A                          | No                                    | No |
| 34SS82                      |  | 57'                               | A                          | No                                    | No |
| 35SS83                      |  | 57'                               | A                          | No                                    | No |
| 6SS107                      |  | 60'                               | A                          | No                                    | No |
| 7SS112                      |  | 57'                               | A                          | No                                    | No |
| 47SS168                     |  | 58'                               | A                          | No                                    | No |
| 48SS169                     |  | 60'                               | A                          | No                                    | No |
| 32SS45                      |  | 60'                               | A                          | No                                    | No |
| 51SS58                      |  | 88'                               | A                          | No                                    | No |
| 47SS167                     |  | 59'                               | A                          | No                                    | No |
| 2RCC-60SS121                | Drywell  | 17'                               | I                          | No                                    | No |
| 60SS122                     |  | 16'                               | I                          | No                                    | No |
| 65SS128                     |  | 7'                                | I                          | No                                    | No |
| 65SS129                     |  | 7'                                | I                          | No                                    | No |
| 71SS139                     |  | 9'                                | I                          | No                                    | No |
| 73SS145                     |  | 5'                                | I                          | No                                    | No |
| 19SS157                     |  | 21'                               | I                          | No                                    | No |
| 19SS160                     |  | 29'                               | I                          | No                                    | No |
| <b>Primary Steam System</b> |  |                                   |                            |                                       |    |
| 2PSN-A2SS30                 | Drywell  | 65'                               | I                          | No                                    | No |
| A2SS31                      |  | 64'                               | I                          | No                                    | No |
| A3SS32                      |  | 40'                               | I                          | No                                    | No |
| A3SS33                      |  | 35'                               | I                          | No                                    | No |
| A3SS34                      |  | 35'                               | I                          | No                                    | No |
| A3SS38                      |  | 22'                               | I                          | No                                    | No |
| B2SS40                      |  | 63'                               | I                          | No                                    | No |
| B2SS41                      |  | 64'                               | I                          | No                                    | No |
| B3SS43                      |  | 35'                               | I                          | No                                    | No |
| B3SS44                      |  | 40'                               | I                          | No                                    | No |
| B3SS46                      |  | 38'                               | I                          | No                                    | No |
| B3SS47                      |  | 35'                               | I                          | No                                    | No |
| B3SS48                      |  | 40'                               | I                          | No                                    | No |
| B5SS50                      |  | 18'                               | I                          | No                                    | No |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u>          | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |    |
|-----------------------------|--|-----------------------------------|----------------------------|---------------------------------------|----|
| 37SS79                      |  | 54'                               | A                          | No                                    | No |
| 39SS80                      |  | 59'                               | A                          | No                                    | No |
| 38SS81                      |  | 54'                               | A                          | No                                    | No |
| 34SS82                      |  | 57'                               | A                          | No                                    | No |
| 35SS83                      |  | 57'                               | A                          | No                                    | No |
| 6SS107                      |  | 60'                               | A                          | No                                    | No |
| 7SS112                      |  | 57'                               | A                          | No                                    | No |
| 47SS168                     |  | 58'                               | A                          | No                                    | No |
| 48SS169                     |  | 60'                               | A                          | No                                    | No |
| 32SS45                      |  | 60'                               | A                          | No                                    | No |
| 51SS58                      |  | 88'                               | A                          | No                                    | No |
| 47SS167                     |  | 59'                               | A                          | No                                    | No |
| 2RCC-60SS121                | Drywell  | 17'                               | I                          | No                                    | No |
| 60SS122                     |  | 16'                               | I                          | No                                    | No |
| 65SS128                     |  | 7'                                | I                          | No                                    | No |
| 65SS129                     |  | 7'                                | I                          | No                                    | No |
| 71SS139                     |  | 9'                                | I                          | No                                    | No |
| 73SS145                     |  | 5'                                | I                          | No                                    | No |
| 19SS157                     |  | 21'                               | I                          | No                                    | No |
| 19SS160                     |  | 29'                               | I                          | No                                    | No |
| <b>Primary Steam System</b> |  |                                   |                            |                                       |    |
| 2PSN-A2SS30                 | Drywell  | 65'                               | I                          | No                                    | No |
| A2SS31                      |  | 64'                               | I                          | No                                    | No |
| A3SS32                      |  | 40'                               | I                          | No                                    | No |
| A3SS33                      |  | 35'                               | I                          | No                                    | No |
| A3SS34                      |  | 35'                               | I                          | No                                    | No |
| A3SS38                      |  | 22'                               | I                          | No                                    | No |
| B2SS40                      |  | 63'                               | I                          | No                                    | No |
| B2SS41                      |  | 64'                               | I                          | No                                    | No |
| B3SS43                      |  | 35'                               | I                          | No                                    | No |
| B3SS44                      |  | 40'                               | I                          | No                                    | No |
| B3SS46                      |  | 38'                               | I                          | No                                    | No |
| B3SS47                      |  | 35'                               | I                          | No                                    | No |
| B3SS48                      |  | 40'                               | I                          | No                                    | No |
| B5SS50                      |  | 18'                               | I                          | No                                    | No |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u>                           | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |
|--|--|-----------------------------------|----------------------------|---------------------------------------|
| B5SS51                                       | 22'  | I                                 | No                         | No                                    |
| C2SS54                                       | 63'  | I                                 | No                         | No                                    |
| C2SS55                                       | 64'  | I                                 | No                         | No                                    |
| C3SS56                                       | 40'  | I                                 | No                         | No                                    |
| C3SS57                                       | 35'  | I                                 | No                         | No                                    |
| C3SS58                                       | 40'  | I                                 | No                         | No                                    |
| C3SS60                                       | 38'  | I                                 | No                         | No                                    |
| C3SS61                                       | 35'  | I                                 | No                         | No                                    |
| C3SS62                                       | 39'  | I                                 | No                         | No                                    |
| C5SS64                                       | 18'  | I                                 | No                         | No                                    |
| C5SS65                                       | 22'  | I                                 | No                         | No                                    |
| D2SS68                                       | 65'  | I                                 | No                         | No                                    |
| D2SS69                                       | 65'  | I                                 | No                         | No                                    |
| D3SS70                                       | 40'  | I                                 | No                         | No                                    |
| D3SS71                                       | 35'  | I                                 | No                         | No                                    |
| D3SS72                                       | 35'  | I                                 | No                         | No                                    |
| D3SS73                                       | 41'  | I                                 | No                         | No                                    |
| D5SS76                                       | 22'  | I                                 | No                         | No                                    |
| A3SS35                                       | 41'  | I                                 | No                         | No                                    |
| B3SS42                                       | 40'  | I                                 | No                         | No                                    |
| <b>Reactor Core Isolation Cooling System</b> |  |                                   |                            |                                       |
| <b>2E51-4SS45</b>                            | <b>Drywell</b>   | <b>31'</b>                        | <b>I</b>                   | <b>No</b>                             |
| 3SS46  |  | 39'                               | I                          | No                                    |
| 3SS47  |  | 39'                               | I                          | No                                    |
| 4SS66  |  | 39'                               | I                          | No                                    |
| 4SS100                                       |  | 40'                               | I                          | No                                    |
| 4SS101                                       |  | 40'                               | I                          | No                                    |
| 4SS102                                       |  | 39'                               | I                          | No                                    |
| 4SS103                                       |  | 36'                               | I                          | No                                    |
| 4SS104                                       |  | 31'                               | I                          | No                                    |
| 4SS105                                       |  | 30'                               | I                          | No                                    |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u>                    | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |
|---------------------------------------|--|-----------------------------------|----------------------------|---------------------------------------|
| <b>Reactor Core Isolation Cooling</b> |  |                                   |                            |                                       |
| 2E51-42SS76                           | 18'  | A                                 | No                         | No                                    |
| 42SS77                                | 5'   | A                                 | No                         | No                                    |
| 42SS79                                | 4'   | A                                 | No                         | No                                    |
| 42SS80                                | -13'   | A                                 | No                         | No                                    |
| 42SS81                                | -16'   | A                                 | No                         | No                                    |
| 42SS82                                | -9'  | A                                 | No                         | No                                    |
| 40SS83                                | -9'  | A                                 | No                         | No                                    |
| 40SS84                                | -9'  | A                                 | No                         | No                                    |
| 40SS85                                | -12'   | A                                 | No                         | No                                    |
| 40SS86                                | -9'  | A                                 | No                         | No                                    |
| 40SS87                                | -15'   | A                                 | No                         | No                                    |
| 40SS88                                | -13'   | A                                 | No                         | No                                    |
| 41SS51                                | 40'  | A                                 | No                         | No                                    |
| 42SS74                                | 20'  | A                                 | No                         | No                                    |
| 42SS75                                | 20'  | A                                 | No                         | No                                    |
| 41SS89                                | 41'  | A                                 | No                         | No                                    |
| 41SS95                                | 41'  | A                                 | No                         | No                                    |
| 19SS113                               | -17'   | A                                 | No                         | No                                    |
| 19SS114                               | -16'   | A                                 | No                         | No                                    |
| 16SS91                                | -6'  | A                                 | No                         | No                                    |
| 17SS94                                | -6'  | A                                 | No                         | No                                    |
| 3SS46                                 | 39'  | A                                 | No                         | No                                    |
| 3SS47                                 | 39'  | A                                 | No                         | No                                    |
| 42SS78                                | 0  | A                                 | No                         | No                                    |
| 49SS129                               | 0  | A                                 | No                         | No                                    |
| <b>Nuclear Steam Vent System</b>      |  |                                   |                            |                                       |
| 2B21-44SS129                          | Drywell  | 104'                              | I                          | No                                    |
| 44SS131                               |  | 93'                               | I                          | No                                    |
| 44SS134                               |  | 99'                               | I                          | No                                    |
| 44SS136                               |  | 97'                               | I                          | No                                    |
| 44SS137                               |  | 96'                               | I                          | No                                    |
| 44SS138                               |  | 95'                               | I                          | No                                    |
| 44SS141                               |  | 87'                               | I                          | No                                    |
| 44SS142                               |  | 87'                               | I                          | No                                    |
| 44SS143                               |  | 87'                               | I                          | No                                    |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u>                   | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |    |
|--------------------------------------|--|-----------------------------------|----------------------------|---------------------------------------|----|
| 44SS146                              | 87'  | I                                 | No                         | No                                    |    |
| 44SS147                              | 82'  | I                                 | No                         | No                                    |    |
| 44SS149                              | 85'  | I                                 | No                         | No                                    |    |
| 44SS150                              | 83'  | I                                 | No                         | No                                    |    |
| 44SS155                              | 75'  | I                                 | No                         | No                                    |    |
| 44SS156                              | 78'  | I                                 | No                         | No                                    |    |
| 44SS157                              | 75'  | I                                 | No                         | No                                    |    |
| <b>Standby Liquid Control System</b> |  |                                   |                            |                                       |    |
| <b>2C41-9SS4</b>                     | <b>Drywell</b>   | 63'                               | I                          | No                                    | No |
| 9SS5                                 |  | 47'                               | I                          | No                                    | No |
| 9SS8                                 |  | 42'                               | I                          | No                                    | No |
| 9SS10                                |  | 38'                               | I                          | No                                    | No |
| 9SS11                                |  | 39'                               | I                          | No                                    | No |
| 9SS12                                |  | 69'                               | I                          | No                                    | No |
| 9SS13                                |  | 52'                               | I                          | No                                    | No |
| <b>2C41-9SS26</b>                    | <b>Reactor Building</b>                                    | 72'                               | A                          | No                                    | No |
| 9SS27                                |  | 72'                               | A                          | No                                    | No |
| 6SS34                                |  | 84'                               | A                          | No                                    | No |
| <b>Fuel Pool Cooling System</b>      |  |                                   |                            |                                       |    |
| <b>2G41-1SS22</b>                    | <b>Reactor Building</b>                                    | 12'                               | A                          | No                                    | No |
| 12SS32                               |  | 9'                                | A                          | No                                    | No |
| 12SS33                               |  | 9'                                | A                          | No                                    | No |
| 1SS24                                |  | 38'                               | A                          | No                                    | No |
| 1SS30                                |  | 38'                               | A                          | No                                    | No |
| 15SS37                               |  | 111'                              | A                          | No                                    | No |
| 11SS54                               |  | 88'                               | A                          | No                                    | No |
| 10SS67                               |  | 89'                               | A                          | No                                    | No |
| 20SS76                               |  | 108'                              | A                          | No                                    | No |
| 11SS79                               |  | 89'                               | A                          | No                                    | No |
| 22SS85                               |  | 108'                              | A                          | No                                    | No |
| 12SS98                               |  | 88'                               | A                          | No                                    | No |
| 6SS111                               |  | 88'                               | A                          | No                                    | No |
| 7SS121                               |  | 87'                               | A                          | No                                    | No |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u>                  | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |
|-------------------------------------|--|-----------------------------------|----------------------------|---------------------------------------|
| 5SS152                              | 82'  | A                                 | No                         | No                                    |
| 59SS159                             | 84'  | A                                 | No                         | No                                    |
| <b>Reactor Recirculation System</b> |  |                                   |                            |                                       |
| 2B32-SSA1                           | Drywell  | 8'                                | I                          | No                                    |
| SSB1                                |  | 8'                                | I                          | No                                    |
| SSA2                                |  | 11'                               | I                          | No                                    |
| SSB2                                |  | 11'                               | I                          | No                                    |
| SSA3                                |  | 11'                               | I                          | No                                    |
| SSB3                                |  | 11'                               | I                          | No                                    |
| SSA4                                |  | 21'                               | I                          | No                                    |
| SSB4                                |  | 21'                               | I                          | No                                    |
| SSA5                                |  | 21'                               | I                          | No                                    |
| SSB5                                |  | 21'                               | I                          | No                                    |
| SSA6                                |  | 27'                               | I                          | No                                    |
| SSB6                                |  | 27'                               | I                          | No                                    |
| SSB9                                |  | 30'                               | I                          | No                                    |
| SSA10                               |  | 24'                               | I                          | No                                    |
| SSA11                               |  | 11'                               | I                          | No                                    |
| SSA12                               |  | 30'                               | I                          | No                                    |
| SSB12                               |  | 30'                               | I                          | No                                    |
| <b>Reactor Feedwater System</b>     |  |                                   |                            |                                       |
| 2B21-2SS3                           | Drywell  | 38'                               | I                          | No                                    |
| 2SS4                                |  | 56'                               | I                          | No                                    |
| 3SS6                                |  | 41'                               | I                          | No                                    |
| 3SS9                                |  | 39'                               | I                          | No                                    |
| 3SS11                               |  | 41'                               | I                          | No                                    |
| 3SS12                               |  | 40'                               | I                          | No                                    |
| 3SS13                               |  | 61'                               | I                          | No                                    |
| 5SS17                               |  | 38'                               | I                          | No                                    |
| 5SS18                               |  | 56'                               | I                          | No                                    |
| 6SS20                               |  | 41'                               | I                          | No                                    |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u>                  | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |
|-------------------------------------|--|-----------------------------------|----------------------------|---------------------------------------|
| 6SS23                               | 39'  | I                                 | No                         | No                                    |
| 6SS25                               | 41'  | I                                 | No                         | No                                    |
| 6SS26                               | 40'  | I                                 | No                         | No                                    |
| 6SS27                               | 63'  | I                                 | No                         | No                                    |
| 1SS227                              | 34'  | I                                 | No                         | No                                    |
| 1SS228                              | 38'  | I                                 | No                         | No                                    |
| 2SS229                              | 53'  | I                                 | No                         | No                                    |
| 2SS230                              | 62'  | I                                 | No                         | No                                    |
| 3SS231                              | 40'  | I                                 | No                         | No                                    |
| 3SS232                              | 36'  | I                                 | No                         | No                                    |
| 3SS233                              | 40'  | I                                 | No                         | No                                    |
| 3SS234                              | 48'  | I                                 | No                         | No                                    |
| 3SS235                              | 63'  | I                                 | No                         | No                                    |
| 4SS236                              | 34'  | I                                 | No                         | No                                    |
| 4SS237                              | 38'  | I                                 | No                         | No                                    |
| 5SS238                              | 53'  | I                                 | No                         | No                                    |
| 5SS239                              | 61'  | I                                 | No                         | No                                    |
| 6SS240                              | 41'  | I                                 | No                         | No                                    |
| 6SS241                              | 36'  | I                                 | No                         | No                                    |
| 6SS242                              | 39'  | I                                 | No                         | No                                    |
| 6SS243                              | 48'  | I                                 | No                         | No                                    |
| 6SS244                              | 61'  | I                                 | No                         | No                                    |
| <b>Residual Heat Removal System</b> |  |                                   |                            |                                       |
| 2E11-90SS267                        | 79'  | I                                 | No                         | No                                    |
| 90SS268                             | 86'  | I                                 | No                         | No                                    |
| 90SS271                             | 86'  | I                                 | No                         | No                                    |
| 90SS274                             | 93'  | I                                 | No                         | No                                    |
| 90SS275                             | 93'  | I                                 | No                         | No                                    |
| 90SS277                             | 96'  | I                                 | No                         | No                                    |
| 90SS278                             | 96'  | I                                 | No                         | No                                    |
| 90SS280                             | 101'   | I                                 | No                         | No                                    |
| 90SS281                             | 93'  | I                                 | No                         | No                                    |
| 90SS282                             | 101'   | I                                 | No                         | No                                    |
| 90SS283                             | 93'  | I                                 | No                         | No                                    |
| 90SS284                             | 101'   | I                                 | No                         | No                                    |
| 90SS285                             | 100'   | I                                 | No                         | No                                    |
| 1SS302                              | 35'  | I                                 | No                         | No                                    |
| 1SS303                              | 34'  | I                                 | No                         | No                                    |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u> | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |    |
|--------------------|--|-----------------------------------|----------------------------|---------------------------------------|----|
| 2E11-1SS305        | Drywell  | 20'                               | I                          | No                                    | No |
| 1SS306             |  | 19'                               | I                          | No                                    | No |
| 84SS308            |  | 34'                               | I                          | No                                    | No |
| 84SS309            |  | 33'                               | I                          | No                                    | No |
| 84SS311            |  | 35'                               | I                          | No                                    | No |
| 84SS312            |  | 35'                               | I                          | No                                    | No |
| 87SS314            |  | 34'                               | I                          | No                                    | No |
| 87SS315            |  | 33'                               | I                          | No                                    | No |
| 87SS317            |  | 35'                               | I                          | No                                    | No |
| 87SS318            |  | 35'                               | I                          | No                                    | No |
| 90SS388            |  | 79'                               | I                          | No                                    | No |
| 90SS389            |  | 96'                               | I                          | No                                    | No |
| 90SS390            |  | 96'                               | I                          | No                                    | No |
| 90SS391            |  | 93'                               | I                          | No                                    | No |
| 90SS392            |  | 99'                               | I                          | No                                    | No |
| 2E11-131SS255      | Reactor Building   | 42'                               | A                          | No                                    | No |
| 131SS257           |  | 22'                               | A                          | No                                    | No |
| 132SS263           |  | 30'                               | A                          | No                                    | No |
| 132SS264           |  | 31'                               | A                          | No                                    | No |
| 128SS355           |  | 42'                               | A                          | No                                    | No |
| 128SS387           |  | 43'                               | A                          | No                                    | No |
| 132SS414           |  | 43'                               | A                          | No                                    | No |
| 127SS426           |  | 43'                               | A                          | No                                    | No |
| 128SS427           |  | 21'                               | A                          | No                                    | No |
| 128SS428           |  | 28'                               | A                          | No                                    | No |
| 128SS429           |  | 39'                               | A                          | No                                    | No |
| 128SS430           |  | 31'                               | A                          | No                                    | No |
| 128SS431           |  | 23'                               | A                          | No                                    | No |
| 127SS376           |  | 59'                               | A                          | No                                    | No |
| 107SS573           |  | 15'                               | A                          | No                                    | No |
| 127SS433           |  | 14'                               | A                          | No                                    | No |
| 127SS435           |  | 15'                               | A                          | No                                    | No |
| 17SS3              |  | -3'                               | A                          | No                                    | No |
| 17SS4              |  | -1'                               | A                          | No                                    | No |
| 20SS19             |  | -3'                               | A                          | No                                    | No |
| 95SS20             |  | -3'                               | A                          | No                                    | No |
| 95SS22             |  | 9'                                | A                          | No                                    | No |
| 95SS23             |  | 9'                                | A                          | No                                    | No |
| 20SS28             |  | -3'                               | A                          | No                                    | No |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u> | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |
|--------------------|--|-----------------------------------|----------------------------|---------------------------------------|
| 37SS95             | -3'  | A                                 | No                         | No                                    |
| 35SS360            | -8'  | A                                 | No                         | No                                    |
| 35SS361            | -16'   | A                                 | No                         | No                                    |
| 2SS397             | -3'  | A                                 | No                         | No                                    |
| 5SS398             | -4'  | A                                 | No                         | No                                    |
| 2SS399             | -3'  | A                                 | No                         | No                                    |
| 5SS400             | -3'  | A                                 | No                         | No                                    |
| 4SS401             | -12'   | A                                 | No                         | No                                    |
| 5SS402             | -12'   | A                                 | No                         | No                                    |
| 3SS403             | -11'   | A                                 | No                         | No                                    |
| 6SS404             | -12'   | A                                 | No                         | No                                    |
| 8SS405             | -14'   | A                                 | No                         | No                                    |
| 6SS406             | -14'   | A                                 | No                         | No                                    |
| 8SS407             | -15'   | A                                 | No                         | No                                    |
| 12SS408            | -14'   | A                                 | No                         | No                                    |
| 9SS411             | -14'   | A                                 | No                         | No                                    |
| 109SS412           | -14'   | A                                 | No                         | No                                    |
| 20SS415            | -4'  | A                                 | No                         | No                                    |
| 20SS416            | -4'  | A                                 | No                         | No                                    |
| 95SS417            | 0'   | A                                 | No                         | No                                    |
| 95SS418            | -4'  | A                                 | No                         | No                                    |
| 45SS422            | -2'  | A                                 | No                         | No                                    |
| 56SS517            | -5'  | A                                 | No                         | No                                    |
| 91SS575            | 53'  | A                                 | No                         | No                                    |
| 91SS500            | 57'  | A                                 | No                         | No                                    |
| 91SS499            | 69'  | A                                 | No                         | No                                    |
| 89SS491            | 67'  | A                                 | No                         | No                                    |
| 89SS489            | 67'  | A                                 | No                         | No                                    |
| 89SS487            | 67'  | A                                 | No                         | No                                    |
| 89SS480            | 67'  | A                                 | No                         | No                                    |
| 18SS469            | 53'  | A                                 | No                         | No                                    |
| 46SS216            | 28'  | A                                 | No                         | No                                    |
| 46SS217            | 31'  | A                                 | No                         | No                                    |
| 46SS218            | 30'  | A                                 | No                         | No                                    |
| 47SS223            | 33'  | A                                 | No                         | No                                    |
| 47SS224            | 36'  | A                                 | No                         | No                                    |
| 47SS225            | 36'  | A                                 | No                         | No                                    |
| 47SS227            | 39'  | A                                 | No                         | No                                    |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u> | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |
|--------------------|--|-----------------------------------|----------------------------|---------------------------------------|
| 47SS228            | 39'  | A                                 | No                         | No                                    |
| 95SS233            | 20'  | A                                 | No                         | No                                    |
| 95SS234            | 24'  | A                                 | No                         | No                                    |
| 95SS235            | 31'  | A                                 | No                         | No                                    |
| 21SS296            | 39'  | A                                 | No                         | No                                    |
| 21SS297            | 39'  | A                                 | No                         | No                                    |
| 47SS326            | 42'  | A                                 | No                         | No                                    |
| 47SS328            | 42'  | A                                 | No                         | No                                    |
| 49SS330            | 42'  | A                                 | No                         | No                                    |
| 49SS331            | 42'  | A                                 | No                         | No                                    |
| 49SS333            | 42'  | A                                 | No                         | No                                    |
| 49SS334            | 43'  | A                                 | No                         | No                                    |
| 49SS336            | 40'  | A                                 | No                         | No                                    |
| 49SS359            | 42'  | A                                 | No                         | No                                    |
| 18SS470            | 43'  | A                                 | No                         | No                                    |
| 58SS514            | 14'  | A                                 | No                         | No                                    |
| 49SS515            | 37'  | A                                 | No                         | No                                    |
| 49SS516            | 37'  | A                                 | No                         | No                                    |
| 50SS597            | 20'  | A                                 | No                         | No                                    |
| 46SS7              | 12'  | A                                 | No                         | No                                    |
| 46SS9              | 12'  | A                                 | No                         | No                                    |
| 56SS13             | 5'   | A                                 | No                         | No                                    |
| 56SS15             | 4'   | A                                 | No                         | No                                    |
| 58SS32             | 3'   | A                                 | No                         | No                                    |
| 58SS33             | -4'  | A                                 | No                         | No                                    |
| 58SS35             | 8'   | A                                 | No                         | No                                    |
| 58SS36             | 8'   | A                                 | No                         | No                                    |
| 18SS40             | 8'   | A                                 | No                         | No                                    |
| 18SS48             | 13'  | A                                 | No                         | No                                    |
| 68SS59             | 15'  | A                                 | No                         | No                                    |
| 21SS63             | 8'   | A                                 | No                         | No                                    |
| 21SS70             | 13'  | A                                 | No                         | No                                    |
| 21SS71             | 10'  | A                                 | No                         | No                                    |
| 61SS110            | 6'   | A                                 | No                         | No                                    |
| 53SS192            | 18'  | A                                 | No                         | No                                    |
| 53SS195            | 14'  | A                                 | No                         | No                                    |
| 53SS197            | 14'  | A                                 | No                         | No                                    |
| 53SS200            | 14'  | A                                 | No                         | No                                    |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u> | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |
|--------------------|--|-----------------------------------|----------------------------|---------------------------------------|
| 50SS201            | 14'  | A                                 | No                         | No                                    |
| 89SS208            | 5'   | A                                 | No                         | No                                    |
| 60SS438            | 12'  | A                                 | No                         | No                                    |
| 60SS440            | 13'  | A                                 | No                         | No                                    |
| 65SS441            | 3'   | A                                 | No                         | No                                    |
| 65SS442            | 3'   | A                                 | No                         | No                                    |
| 60SS443            | 11'  | A                                 | No                         | No                                    |
| 73SS444            | 2'   | A                                 | No                         | No                                    |
| 21SS445            | 5'   | A                                 | No                         | No                                    |
| 68SS448            | 13'  | A                                 | No                         | No                                    |
| 75SS449            | 2'   | A                                 | No                         | No                                    |
| 61SS450            | 7'   | A                                 | No                         | No                                    |
| 60SS451            | 13'  | A                                 | No                         | No                                    |
| 60SS452            | 13'  | A                                 | No                         | No                                    |
| 60SS453            | 10'  | A                                 | No                         | No                                    |
| 60SS454            | 10'  | A                                 | No                         | No                                    |
| 89SS459            | 11'  | A                                 | No                         | No                                    |
| 89SS460            | 10'  | A                                 | No                         | No                                    |
| 89SS461            | 6'   | A                                 | No                         | No                                    |
| 53SS462            | 15'  | A                                 | No                         | No                                    |
| 53SS463            | 14'  | A                                 | No                         | No                                    |
| 53SS464            | 14'  | A                                 | No                         | No                                    |
| 53SS465            | 14'  | A                                 | No                         | No                                    |
| 53SS466            | 14'  | A                                 | No                         | No                                    |
| 53SS467            | 14'  | A                                 | No                         | No                                    |
| 50SS468            | 17'  | A                                 | No                         | No                                    |
| 56SS504            | 14'  | A                                 | No                         | No                                    |
| 56SS505            | 7'   | A                                 | No                         | No                                    |
| 56SS506            | 3'   | A                                 | No                         | No                                    |
| 56SS507            | 3'   | A                                 | No                         | No                                    |
| 56SS508            | 4'   | A                                 | No                         | No                                    |
| 46SS509            | 8'   | A                                 | No                         | No                                    |
| 46SS510            | 11'  | A                                 | No                         | No                                    |

Table 3.5-1 (Cont'd)

| <u>SNUBBER<br/>NO.</u> | <u>SYSTEM SNUBBER INSTALLED<br/>ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR<br/>INACCESSIBLE</u> | <u>HIGH RADIATION<br/>ZONE</u> | <u>ESPECIALLY DIFFICULT<br/>TO REMOVE</u> |
|------------------------|--|---------------------------------------|--------------------------------|---|
| 46SS511                | 10'  | A                                     | No                             | No  |
| 46SS512                | -1'  | A                                     | No                             | No  |
| 68SS577                | 8'   | A                                     | No                             | No  |
| 53SS596                | 14'  | A                                     | No                             | No  |
| 116SS143               | -11'   | A                                     | No                             | No  |
| 113SS157               | -11'   | A                                     | No                             | No  |
| 37SS184                | 9'   | A                                     | No                             | No  |
| 2SS396                 | 5'   | A                                     | No                             | No  |
| 116SS409               | -9'  | A                                     | No                             | No  |
| 113SS410               | -9'  | A                                     | No                             | No  |
| 2SS413                 | 0'   | A                                     | No                             | No  |
| 60SS423                | -4'  | A                                     | No                             | No  |
| 60SS425                | -2'  | A                                     | No                             | No  |
| 47SS323                | 42'  | A                                     | No                             | No  |
| 71SS393                | 9'   | A                                     | No                             | No  |
| 127SS434               | 37'  | A                                     | No                             | No  |
| 60SS437                | 13'  | A                                     | No                             | No  |
| 83SS446                | 10'  | A                                     | No                             | No  |
| 18SS447                | 5'   | A                                     | No                             | No  |
| 51SS546                | 32'  | A                                     | No                             | No  |
| 51SS547                | 28'  | A                                     | No                             | No  |
| 115SS549               | 31'  | A                                     | No                             | No  |
| 18SS47                 | 12'  | A                                     | No                             | No  |
| 71SS176                | 9'   | A                                     | No                             | No  |
| 54SS551                | 31'  | A                                     | No                             | No  |
| 54SS552                | 28'  | A                                     | No                             | No  |
| 98SS554                | 32'  | A                                     | No                             | No  |
| 58SS563                | 7'   | A                                     | No                             | No  |
| 58SS565                | 13'  | A                                     | No                             | No  |
| 58SS566                | 6'   | A                                     | No                             | No  |
| 69SS574                | 6'   | A                                     | No                             | No  |

Table 3.5-1 (Cont'd)

| <u>SNUBBER<br/>NO.</u> | <u>SYSTEM SNUBBER INSTALLED<br/>ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR<br/>INACCESSIBLE</u> | <u>HIGH RADIATION<br/>ZONE</u> | <u>ESPECIALLY DIFFICULT<br/>TO REMOVE</u> |
|------------------------|--|---------------------------------------|--------------------------------|---|
| Service Water System   |  |                                       |                                |   |
| 2SW-133SS22            | Reactor Building   | -6'                                   | A                              | No  |
| 110SS35                |  | -5'                                   | A                              | No  |
| 173SS72                |  | 14'                                   | A                              | No  |
| 142SS164               |  | 8'                                    | A                              | No  |
| 142SS165               |  | 8'                                    | A                              | No  |
| 133SS176               |  | 14'                                   | A                              | No  |
| 133SS177               |  | -5'                                   | A                              | No  |
| 142SS74                |  | 40'                                   | A                              | No  |
| 142SS75                |  | 40'                                   | A                              | No  |
| 140SS80                |  | 40'                                   | A                              | No  |
| 140SS86                |  | 45'                                   | A                              | No  |
| 153SS102               |  | 44'                                   | A                              | No  |
| 153SS109               |  | 44'                                   | A                              | No  |
| 173SS110               |  | 48'                                   | A                              | No  |
| 153SS115               |  | 44'                                   | A                              | No  |
| 103SS121               |  | 38'                                   | A                              | No  |
| 140SS167               |  | 42'                                   | A                              | No  |
| 173SS175               |  | 30'                                   | A                              | No  |
| 142SS82                |  | 70'                                   | A                              | No  |
| 173SS114               |  | 70'                                   | A                              | No  |
| 103SS123               |  | 51'                                   | A                              | No  |
| 103SS126               |  | 60'                                   | A                              | No  |
| 103SS127               |  | 57'                                   | A                              | No  |
| 106SS131               |  | 60'                                   | A                              | No  |
| 100SS145               |  | 59'                                   | A                              | No  |
| 100SS149               |  | 60'                                   | A                              | No  |
| 106SS151               |  | 59'                                   | A                              | No  |
| 174SS70                |  | 42'                                   | A                              | No  |
| 106SS156               |  | 60'                                   | A                              | No  |
| 142SS168               |  | 58'                                   | A                              | No  |
| 142SS169               |  | 71'                                   | A                              | No  |
| 138SS170               |  | 55'                                   | A                              | No  |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u>                   | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |    |
|--------------------------------------|--|-----------------------------------|----------------------------|---------------------------------------|----|
| 140SS171                             |  | 58'                               | A                          | No                                    | No |
| 100SS193                             |  | 62'                               | A                          | No                                    | No |
| 106SS211                             |  | 60'                               | A                          | No                                    | No |
| 106SS212                             |  | 60'                               | A                          | No                                    | No |
| 106SS213                             |  | 59'                               | A                          | No                                    | No |
| 106SS214                             |  | 60'                               | A                          | No                                    | No |
| 103SS117                             |  | 41'                               | A                          | No                                    | No |
| 142SS163                             |  | 0'                                | A                          | No                                    | No |
| 175SS166                             |  | 42'                               | A                          | No                                    | No |
| 139SS172                             |  | 58'                               | A                          | No                                    | No |
| 109SS173                             |  | 14'                               | A                          | No                                    | No |
| 174SS174                             |  | 43'                               | A                          | No                                    | No |
| 139SS209                             |  | 56'                               | A                          | No                                    | No |
| 138SS210                             |  | 56'                               | A                          | No                                    | No |
| <b>Steam Relief Discharge System</b> |  |                                   |                            |                                       |    |
| 2B21-19SS190                         | Drywell  | 42'                               | I                          | No                                    | No |
| 19SS192                              |  | 43'                               | I                          | No                                    | No |
| 19SS193                              |  | 44'                               | I                          | No                                    | No |
| 19SS194                              |  | 37'                               | I                          | No                                    | No |
| 19SS195                              |  | 37'                               | I                          | No                                    | No |
| 19SS196                              |  | 32'                               | I                          | No                                    | No |
| 19SS198                              |  | 18'                               | I                          | No                                    | No |
| 19SS199                              |  | 18'                               | I                          | No                                    | No |
| 26SS201                              |  | 42'                               | I                          | No                                    | No |
| 26SS203                              |  | 36'                               | I                          | No                                    | No |
| 26SS204                              |  | 36'                               | I                          | No                                    | No |
| 26SS206                              |  | 18'                               | I                          | No                                    | No |
| 26SS207                              |  | 18'                               | I                          | No                                    | No |
| 26SS208                              |  | 11'                               | I                          | No                                    | No |
| 18SS211                              |  | 42'                               | I                          | No                                    | No |
| 18SS212                              |  | 37'                               | I                          | No                                    | No |
| 18SS213                              |  | 37'                               | I                          | No                                    | No |
| 18SS215                              |  | 18'                               | I                          | No                                    | No |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u> | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |
|--------------------|--|-----------------------------------|----------------------------|---------------------------------------|
| 18SS216            | 17'  | I                                 | No                         | No                                    |
| 18SS218            | 5'   | I                                 | No                         | No                                    |
| 11SS220            | 38'  | I                                 | No                         | No                                    |
| 11SS221            | 37'  | I                                 | No                         | No                                    |
| 11SS222            | 36'  | I                                 | No                         | No                                    |
| 11SS223            | 34'  | I                                 | No                         | No                                    |
| 11SS224            | 34'  | I                                 | No                         | No                                    |
| 33SS245            | 43'  | I                                 | No                         | No                                    |
| 33SS246            | 43'  | I                                 | No                         | No                                    |
| 33SS248            | 45'  | I                                 | No                         | No                                    |
| 33SS249            | 36'  | I                                 | No                         | No                                    |
| 33SS250            | 36'  | I                                 | No                         | No                                    |
| 33SS251            | 32'  | I                                 | No                         | No                                    |
| 33SS256            | 44'  | I                                 | No                         | No                                    |
| 20SS257            | 37'  | I                                 | No                         | No                                    |
| 20SS258            | 36'  | I                                 | No                         | No                                    |
| 20SS260            | 18'  | I                                 | No                         | No                                    |
| 20SS261            | 20'  | I                                 | No                         | No                                    |
| 20SS262            | 15'  | I                                 | No                         | No                                    |
| 27SS264            | 10'  | I                                 | No                         | No                                    |
| 27SS266            | 17'  | I                                 | No                         | No                                    |
| 27SS267            | 18'  | I                                 | No                         | No                                    |
| 27SS269            | 36'  | I                                 | No                         | No                                    |
| 27SS270            | 44'  | I                                 | No                         | No                                    |
| 27SS272            | 42'  | I                                 | No                         | No                                    |
| 58SS275            | 18'  | I                                 | No                         | No                                    |
| 58SS276            | 30'  | I                                 | No                         | No                                    |
| 58SS277            | 31'  | I                                 | No                         | No                                    |
| 58SS279            | 36'  | I                                 | No                         | No                                    |
| 58SS280            | 37'  | I                                 | No                         | No                                    |
| 58SS281            | 38'  | I                                 | No                         | No                                    |
| 12SS286            | 39'  | I                                 | No                         | No                                    |
| 12SS287            | 39'  | I                                 | No                         | No                                    |
| 12SS288            | 44'  | I                                 | No                         | No                                    |
| 12SS289            | 39'  | I                                 | No                         | No                                    |
| 12SS290            | 43'  | I                                 | No                         | No                                    |
| 12SS292            | 42'  | I                                 | No                         | No                                    |

Table 3.5-1 (Cont'd)

| <u>SNUBBER NO.</u> | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> |
|--------------------|--|-----------------------------------|----------------------------|---------------------------------------|
| 34SS296            |  | I                                 | No                         | No                                    |
| 34SS297            |  | I                                 | No                         | No                                    |
| 34SS298            |  | I                                 | No                         | No                                    |
| 34SS299            |  | I                                 | No                         | No                                    |
| 34SS300            |  | I                                 | No                         | No                                    |
| 2B21-26SS302       | Drywell  | I                                 | No                         | No                                    |
| 26SS303            |  | I                                 | No                         | No                                    |
| 58SS304            |  | I                                 | No                         | No                                    |
| 58SS305            |  | I                                 | No                         | No                                    |
| 58SS306            |  | I                                 | No                         | No                                    |
| 58SS307            |  | I                                 | No                         | No                                    |
| 12SS308            |  | I                                 | No                         | No                                    |
| 12SS309            |  | I                                 | No                         | No                                    |
| 12SS310            |  | I                                 | No                         | No                                    |
| 12SS311            |  | I                                 | No                         | No                                    |
| 12SS312            |  | I                                 | No                         | No                                    |
| 11SS313            |  | I                                 | No                         | No                                    |
| 11SS314            |  | I                                 | No                         | No                                    |
| 11SS315            |  | I                                 | No                         | No                                    |
| 19SS316            |  | I                                 | No                         | No                                    |
| 19SS317            |  | I                                 | No                         | No                                    |
| 18SS318            |  | I                                 | No                         | No                                    |
| 20SS319            |  | I                                 | No                         | No                                    |
| 59SS320            |  | I                                 | No                         | No                                    |
| 59SS325            |  | I                                 | No                         | No                                    |
| 59SS326            |  | I                                 | No                         | No                                    |
| 59SS327            |  | I                                 | No                         | No                                    |
| 59SS329            |  | I                                 | No                         | No                                    |
| 59SS330            |  | I                                 | No                         | No                                    |
| 33SS332            |  | I                                 | No                         | No                                    |
| 33SS333            |  | I                                 | No                         | No                                    |
| 33SS334            |  | I                                 | No                         | No                                    |
| 33SS335            |  | I                                 | No                         | No                                    |
| 34SS337            |  | I                                 | No                         | No                                    |
| 34SS336            |  | I                                 | No                         | No                                    |
| 34SS338            |  | I                                 | No                         | No                                    |
| 34SS339            |  | I                                 | No                         | No                                    |
| 34SS340            |  | I                                 | No                         | No                                    |



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 22 TO LICENSE NO. DPR-62

CAROLINA POWER & LIGHT COMPANY

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2

DOCKET NO. 50-324

INTRODUCTION

During the summer of 1973, inspections at two reactor facilities revealed a high incidence of inoperable hydraulic shock suppressors (snubbers) manufactured by Bergen Paterson Pipesupport Corporation. As a result of those findings, the Office of Inspection and Enforcement required each operating reactor licensee to immediately inspect all Bergen Paterson snubbers utilized on safety systems and to reinspect them 45 to 90 days after the initial inspection. Snubbers supplied by other manufacturers were to be inspected on a lower priority basis.

Our review of snubber operating experience indicated a need for Technical Specifications governing their operability and surveillance. Accordingly, when the operating license for Brunswick Steam Electric Plant, Unit No. 2 (BSEP-2) was issued in December 1974, requirements for snubber operability and testing were included.

Since that time the NRC staff has developed improved model Technical Specifications for snubbers. These were transmitted to Carolina Power and Light Company (the licensee) by letter dated December 10, 1975, with a request that the model Technical Specifications be adopted for Brunswick Unit No. 2. By letter dated October 5, 1976, the licensee proposed revised Technical Specifications for snubbers at BSEP-2. During our review of the proposed change, we found that certain modifications were necessary. These modifications were discussed with the licensee and have been incorporated into the proposed Technical Specifications.

## EVALUATION

Snubbers are designed to prevent unrestrained pipe motion under dynamic loads as might occur during an earthquake or severe transient while allowing normal thermal movement during startup and shutdown.

The consequence of an inoperable snubber is an increase in the probability of structural damage to piping resulting from a seismic or other postulated event which initiates dynamic loads. It is, therefore, necessary that snubbers installed to protect safety system piping be operable during reactor operation and be inspected at appropriate intervals to assure their operability.

Examination of defective snubbers at reactor facilities has shown that the high incidence of failures observed in the summer of 1973 was caused by severe degradation of seal materials and subsequent leakage of the hydraulic fluid. The basic seal materials used in Bergen Paterson snubbers were two types of polyurethane; a millable gum polyester type containing plasticizers and an unadulterated molded type. Material tests performed at several laboratories (Reference 1) established that the millable gum polyurethane deteriorated rapidly under the temperature and moisture conditions present in many snubber locations. Although the molded polyurethane exhibited greater resistance to these conditions, it also may be unsuitable for application in the higher temperature environments. Data are not currently available to precisely define an upper temperature limit for the molded polyurethane. The investigation indicated that seal materials are available, primarily ethylene propylene compounds, which should give satisfactory performance under the most severe conditions expected in reactor installation.

An extensive seal replacement program has been carried out at many reactor facilities. Experience with ethylene propylene seals has been very good with no serious degradation reported thus far. Although the seal replacement program has significantly reduced the incidence of snubber failures, some failures continue to occur. These failures have generally been attributed to faulty snubber assembly and installation, loose fittings and connections and excessive pipe vibrations. The failures have been observed in both PWRs and BWRs and have not been limited to units manufactured by Bergen Paterson. Because of the continued incidence of snubber failures, we have concluded that improved snubber operability and surveillance requirements should be incorporated into the Technical Specifications. We have further concluded that these requirements should be applied to all safety related snubbers, regardless of manufacturer, in all light water cooled reactor facilities.

(1) Report H. R. Erickson, Bergen Paterson to K. R. Goller, NRC, October 7, 1974, Subject: Hydraulic Shock Sway Arrestors

We have developed the attached Technical Specifications and Bases to provide additional assurance of satisfactory snubber performance and reliability. The specifications require that snubbers be operable during reactor operation and prior to startup. Because snubber protection is required only during low probability events, a period of 72 hours is allowed for repair or replacement of defective units before the reactor must be shut down. The licensee will be expected to commence repair or replacement of a failed snubber expeditiously. However, the allowance of 72 hours is consistent with that provided for other safety-related equipment and provides for remedial action to be taken in accordance with 10 CFR 50.36(c)(2). Failure of a pipe, piping system, or major component would not necessarily result from the failure of a single snubber to operate as designed, and even a snubber devoid of hydraulic fluid would provide support for the pipe or component and reduce pipe motion. The likelihood of a seismic event or other initiating event occurring during the time allowed for repair or replacement is very small. Considering the large size and difficult access of some snubber units, repair or replacement in a shorter time period is not practical. Therefore, the 72 hour period provides a reasonable and realistic period for remedial action to be taken.

If a system or subsystem containing a defective snubber is isolated by valve closure and declared inoperable, operation with a defective snubber in such a system or subsystem would not pose a safety problem provided that the loss of such a system or subsystem is acceptable. Therefore, operation with a defective snubber beyond 72 hours is permissible and acceptable in those cases where system or subsystem unavailability has been specifically addressed elsewhere in the Technical Specifications.

An improved inspection program is specified to provide additional assurance that the snubbers remain operable. The inspection frequency is based upon maintaining a constant level of snubber protection. Thus the required inspection interval varies inversely with the observed snubber failures. The longest inspection interval allowed in the Technical Specifications after a record of no snubber failures has been established is nominally 18 months. Experience at operating facilities has shown that the required surveillance program should provide an acceptable level of snubber performance provided that the seal materials are compatible with the operating environment. Snubbers containing seal material which has not been demonstrated to be compatible with the operating environment are required to be inspected every 31 days until the compatibility is established or an appropriate seal change is completed.

To further increase the level of snubber reliability, the Technical Specifications require functional tests once each refueling cycle. The tests will verify proper piston movement, lock up and bleed.

We have concluded that the proposed additions to the Technical Specifications, as modified, increase the probability of successful snubber performance, increase reactor safety and we therefore find them acceptable.

#### ENVIRONMENTAL CONSIDERATION

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR §51.5(d)(4) that an environmental impact statement, or negative declaration and environmental appraisal need not be prepared in connection with the issuance of this amendment.

#### CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: November 15, 1976

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-324

CAROLINA POWER & LIGHT COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY  
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 22 to Facility Operating License No. DPR-62, issued to Carolina Power & Light Company (the licensee), which revised Technical Specifications for operation of the Brunswick Steam Electric Plant, Unit No. 2 (the facility) located in Brunswick County, North Carolina. The amendment is effective as of its date of issuance.

The amendment revises the limiting conditions for operation and surveillance requirements for safety related shock suppressors (snubbers).

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated October 5, 1976, (2) Amendment No. 22 to License No. DPR-62, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D.C. and at the Southport Brunswick County Library, 109 W. Moore Street, Southport, North Carolina 28461. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 15th day of November 1976.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief  
Operating Reactors Branch #1  
Division of Operating Reactors