CP&L

Carolina Power & Light Company
PO Box 10429
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Roy A. Anderson
Vice President
Brunswick Nuclear Plant
910 457-2496

January 13, 1995

SERIAL: BSEP 95-0011
10 CFR 50.90
TSC 86TSB02

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

BRUNSWICK NUCLEAR PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 & 50-324/LICENSE NOS. DPR-71 & DPR-62
REQUEST FOR LICENSE AMENDMENTS
CONTROL ROD DRIVE AND CONTROL ROD DRIVE SCRAM ACCUMULATORS
(NRC TAC NOS. 85736 AND 85737)

Gentlemen:

On November 17, 1994, Carolina Power & Light Company (CP&L), General Electric Company (GE), and members of the NRC staff met to discuss a proposed amendment request for CP&L's Brunswick Steam Electric Plant, Units 1 and 2. The proposed amendment request would add an exemption statement to the requirements of Technical Specification 3.0.4 in Specification 3.1.3.1, Action b, and revises Technical Specification 3.1.3.5 to address operation with more than one inoperable control rod drive (CRD) scram accumulator.

At the November 17, 1994 meeting, CP&L and GE provided information to the NRC staff regarding 1) control rod insertion time capability with and without scram accumulator assistance, and 2) justification that the scram reactivity insertion rates assumed in licensing analyses accommodates up to 8 inoperable control rods. Enclosure 1 provides a summary of the information provided in the November 17 meeting. Enclosure 2 provides a proprietary version, along with an affidavit, of a GE letter with enclosure dated December 13, 1994 that includes the details for the basis of the determination that the proposed amendment to the control rod drive scram accumulator Technical Specification is acceptable. The enclosure to that GE letter contains information which GE considers proprietary and, in accordance with 10 CFR 2.790, should be withheld from public disclosure. Enclosure 3 provides a non-proprietary version of the GE enclosure to the December 13, 1994 letter.

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change: NRR PDR Ltr. Encl. 1 INP

Carolina Power & Light Company is providing, in accordance with 10 CFR 50.91(b), Mr. Dayne H. Brown of the State of North Carolina with a copy of this letter. Please refer any questions regarding this submittal to Mr. R. P. Lopriore at (910) 457-2212.

Sincerely,

Roy A. Anderson

KAH/

Enclosures:

1. Summary of Information Presented at CP&L/NRC Staff November 17, 1994 Meeting
2. GE Letter, With Proprietary Enclosure, Dated December 13, 1994
3. Non-Proprietary Version of Enclosure to December 13, 1994 GE Letter

Roy A. Anderson, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief; and the sources of his information are officers, employees, and agents of Carolina Power & Light Company.

Gwendolyn R. Midyette
Notary (Seal)

My commission expires: August 12, 1996

cc: Mr. D. H. Brown, State of North Carolina
Mr. S. D. Ebneter, Regional Administrator, Region II
Mr. P. D. Milano, NRR Senior Project Manager - Brunswick Units 1 and 2
Mr. C. A. Patterson, Brunswick NRC Senior Resident Inspector
The Honorable H. Wells, Chairman - North Carolina Utilities Commission

## General Electric Company

## AFFIDAVIT

**I, James F. Klapproth,** being duly sworn, depose and state as follows:

(1) I am Fuel and Facilities Licensing Manager, General Electric Company ("GE") and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.

(2) The information sought to be withheld is the attached letter entitled "Inoperable Scram Accumulator Technical Specification Request" dated December 13, 1994. Proprietary information is designated by bars in the right hand margin.

(3) In making this application for withholding of proprietary information of which it is the owner, GE relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), 2.790(a)(4), and 2.790(d)(1) for "trade secrets and commercial or financial information obtained from a person and privileged or confidential" (Exemption 4). The material for which exemption from disclosure is here sought is all "confidential commercial information", and some portions also qualify under the narrower definition of "trade secret", within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).

(4) Some examples of categories of information which fit into the definition of proprietary information are:

a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by General Electric's competitors without license from General Electric constitutes a competitive economic advantage over other companies;

b. Information which, if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;

c. Information which reveals cost or price information, production capacities, budget levels, or commercial strategies of General Electric, its customers, or its suppliers;

d. Information which reveals aspects of past, present, or future General Electric customer-funded development plans and programs, of potential commercial value to General Electric;

e. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in both paragraphs 4.a and 4.b, above.

(5) The information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GE, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GE, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs (6) and (7) following.

(6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge. Access to such documents within GE is limited on a "need to know" basis.

(7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist or other equivalent authority, by the manager of the cognizant marketing function (or his delegate), and by the Legal Operation, for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GE are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.

(8) The information identified in paragraph (2), above, is classified as proprietary because it would provide other parties, including competitors, with information related to General Electric control rod tests and analysis results which were developed at a considerable expense to General Electric.

(9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GE's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GE's comprehensive BWR technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process.

The research, development, engineering, and analytical costs comprise a substantial investment of time and money by GE.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GE's competitive advantage will be lost if its competitors are able to use the results of the GE experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GE would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GE of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing these very valuable analytical tools.

STATE OF NORTH CAROLINA )
)
COUNTY OF NEW HANOVER )

ss:

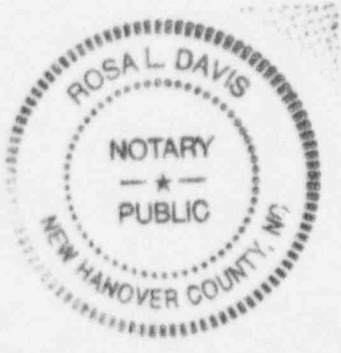
James F. Klapproth, being duly sworn, deposes and says:

That he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Executed at Wilmington, North Carolina, this 13th day of December 1994.

James F Klapproth
James F. Klapproth
General Electric Company

Subscribed and sworn before me this 13th day of December 1994.




Rosa L. Davis
Notary Public, State of North Carolina

My Commission expired 12-15-97

ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1 AND 2
NRC DOCKETS 50-325 & 50-324
OPERATING LICENSES DPR-71 & DPR-62
CONTROL ROD DRIVE AND CONTROL ROD DRIVE SCRAM ACCUMULATORS

SUMMARY OF INFORMATION PRESENTED AT
NOVEMBER 17, 1994 NRC/CP&L MEETING

## BACKGROUND

On January 25, 1993, CP&L submitted a request for amendment of the Brunswick Unit 1 and Unit 2 Technical Specifications. The proposed amendment request adds an exemption statement to the requirements of Technical Specification 3.0.4 in Specification 3.1.3.1, Action b, and revises Technical Specification 3.1.3.5 to address operation with more than one inoperable control rod drive (CRD) scram accumulator.

At a November 17, 1994 meeting, CP&L and GE provided information to the NRC staff regarding the proposed change to Technical Specification 3.1.3.5. The specific information presented included: 1) control rod insertion time capability with and without scram accumulator assistance, and 2) justification that the scram reactivity insertion rates assumed in licensing analyses accommodates up to 8 inoperable control rods. This enclosure provides a summary of the information provided to the NRC staff in the November 17 meeting. Enclosure 2 provides a GE letter, with enclosure, dated December 13, 1994 that includes the detailed information provided to the NRC staff at the November 17 meeting. The enclosure to that GE letter contains information which GE considers proprietary and, in accordance with 10 CFR 2.790, should be withheld from public disclosure. Enclosure 3 provides a non-proprietary version of the GE enclosure to the December 13, 1994 letter.

## DISCUSSION

### Scram Times of Control Rods With Inoperable Scram Accumulators

The proposed Technical Specification amendment would permit continued operation with up to eight inoperable scram accumulators with the associated control rods withdrawn from the reactor core provided reactor pressure is 950 psig or greater. The Brunswick Updated FSAR, Section 3.9.4.1.3.3, states:

> The water pressure in each drive accumulator is adequate to complete a scram in the required time at low reactor vessel pressure. At higher reactor pressures, the accumulator is assisted on the upper end of the stroke by reactor vessel pressure acting on the drive via the ball check (shuttle) valve. As water is forced from the accumulator, the accumulator discharge pressure falls below reactor vessel pressure. This causes the check valve to shift its position to admit reactor pressure under the drive piston. Thus, reactor vessel pressure furnished the force needed to complete the scram stroke at higher reactor vessel pressures. When the reactor vessel reaches full operating pressure, the accumulator is actually not needed to meet

scram time requirements. With the reactor at 1000 psig and the scram discharge volume at atmospheric pressure, the scram force without an accumulator exceeds 1000 pounds.

Consistent with the Updated FSAR, and as described in the enclosure to the December 13, 1994 GE letter, scram accumulators are not necessary to ensure control rod insertion times meet the times listed in the Technical Specifications with reactor pressure at and above 950 psig. Actual control rod insertion times to a nominal 90% insertion are typically significantly better than Technical Specifications values (about 2.5 seconds versus 3.5 seconds). Even though the scram time performance of a control rod with an inoperable scram accumulator is not expected to be degraded such that Technical Specification average scram insertion times are exceeded, the proposed amendment conservatively requires the control rod to be declared inoperable, and the actions of Specification 3.1.3.1 taken. Technical Specification 3.1.3.1 allows up to eight inoperable control rods to remain withdrawn.

The original Brunswick Plant "custom" Technical Specifications, issued as appendices to the operating licenses in December, 1974 for Unit 2 and September, 1976 for Unit 1, required that control rods with unavailable accumulators be considered inoperable only when reactor pressure was below 950 psig (Specification 3.3.D). The specifications also allowed operation to continue with up to eight inoperable controls rods. The bases for Specification 3.3.d stated:

> At reactor pressures in excess of 950 psig, even those control rods with inoperable accumulators will be able to meet the required scram insertion times due to the action of reactor pressure. Thus, above this pressure, a control rod drive is not designated as inoperable when the associated accumulator is unavailable. It should also be noted that control rods can be driven in under all operating conditions without the use of the accumulator. Because of the negative reactivity effects of temperature and xenon, it is not required that all control rods should be rapidly inserted (scram) in order to meet shutdown margin needs. It is thus conservative to designate as inoperable those drives for which an accumulator is unavailable, when the prime concern is that of providing adequate shutdown margin. XY few group diffusion theory calculations have previously indicated that one inoperable accumulator in a nine rod square array could be tolerated for shutdown margin purposes with a cold, clean core. Thus the criterion requiring a separation of two control cells between inoperable (inclusive of inoperable accumulators) is more conservative.

As discussed in CP&L's August 26, 1993 response to an NRC staff request for additional information, during the most limiting depressurization event (the design basis loss of coolant accident), reactor pressure remains above 600 psig for more than 12 seconds. During other depressurization events, such as a steam line break inside containment, a more rapid initial depressurization rate may occur; however, pressures on the order of 600 psig are present more than 36 seconds after the accident is initiated. As discussed in the December 13, 1994 GE letter, control rod scram times for control rods with inoperable scram accumulators are expected to be less than 7 seconds at pressures greater than 600 psig.

Assurance that withdrawn control rods with inoperable scram accumulators will insert

during rapid depressurization events (such as the design basis loss of coolant accident) is maintained since the proposed amendment requires reactor pressure to be equal to or greater than 950 psig in order to allow control rods with an inoperable accumulator to remain withdrawn. The proposed amendment, therefore, does not create the possibility that control rods with inoperable scram accumulators would fail to scram during rapid depressurization events.

Scram Reactivity Insertion Rates

The scram reactivity rate is determined by the scram insertion times of control rods. Control rods with excessively slow scram insertion times have the most potential for affecting scram reactivity rate. The expected impact on the scram reactivity rate due to a control rod with an inoperable scram accumulator when the reactor pressure is at or above 950 psig is minimal since the scram insertion time of such a control rod is not expected to exceed the core average insertion times required by Technical Specifications. Current specifications allow operation with withdrawn control rods that are inoperable due to excessively slow scram insertion times (greater than seven seconds). The impact of excessively slow control rods on the scram reactivity rate bounds the impact on scram reactivity rate that may result from the proposed amendment (allowing up to eight control rods with inoperable accumulators to remain withdrawn).

The effect of eight inoperable control rods on scram reactivity insertion rates is more thoroughly explained in Section 2 of the enclosure to the December 13, 1994 GE letter. GE has conservatively evaluated the scram reactivity insertion rate obtained when as many as nine fully withdrawn control rods completely failed to insert during a scram. The GE analyses assumed there were eight inoperable control rods which failed to scram and a ninth fully withdrawn control rod, representing the most limiting single failure, which also failed to scram. Complete failure of eight fully withdrawn inoperable control rods to insert during a scram conservatively bounds the current and proposed specifications. As indicated in the December 13, 1994 GE letter, for control rods declared "inoperable" due to inoperable scram accumulators, no significant degradation in scram time performance would be expected; therefore, the conservatism of the scram reactivity insertion rate assumed in the safety analyses is not impacted.

CONCLUSION

The proposed amendment would allow operation with withdrawn inoperable control rods due to inoperable scram accumulators at reactor pressures at or above 950 psig. The proposed amendment does not create the possibility that control rods would fail to insert during the most limiting depressurization events and does not impact the conservatism of the scram reactivity insertion rate assumed in the safety analyses.

ENCLOSURE 3

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1 AND 2
NRC DOCKETS 50-325 & 50-324
OPERATING LICENSES DPR-71 & DPR-62
REQUEST FOR LICENSE AMENDMENTS
CONTROL ROD DRIVE AND CONTROL ROD DRIVE SCRAM ACCUMULATORS

LETTER FROM KLAPPROTH (GE) TO CLEMENTS (CP&L) DATED DECEMBER 13, 1994:

"Inoperable Scram Accumulator Technical Specification Request"

**NON-PROPRIETARY VERSION**

ENCLOSURE

## INOPERABLE SCRAM ACCUMULATOR TECHNICAL SPECIFICATION REQUEST

1. Control Rod Insertion Times:

For over 25 years, GE has performed extensive scram insertion time tests on control rod drives similar to those installed at Brunswick. The control rod drives were subjected to operational testing at reactor pressure and temperature conditions and at various abnormal conditions (such as reactor vessel overpressure). The test vessel configuration consisted of a simulated core plate and upper grid as well as a production guide tube, CRD housing, thermal sleeve, orifice fuel support and four fuel channels. The test program was run with a hydraulic system simulating that of operating plants.

During a reactor scram, the scram accumulator provides the initial force for control rod insertion. As pressurized water is forced from the accumulator, the accumulator pressure falls below reactor vessel pressure. This causes the ball check valve located on the control rod drive flange to shift position to admit reactor pressure under the control rod drive piston. With an inoperable accumulator, the ball check valve is positioned such that reactor vessel pressure will immediately be directed under the control rod drive piston on a scram signal.

Scram tests were performed with and without scram accumulator pressure. The typical results of these tests are shown in Figure 1. The dotted line shows the typical scram performance to 90% insertion as a function of reactor vessel pressure with an operable scram accumulator. The solid line shows the typical scram performance to 90% insertion as a function of reactor vessel pressure when the scram accumulator was fully discharged or isolated prior to scram. In other words, the solid line represents control rod scrams with reactor vessel pressure alone.

For normal control rod performance, the following can be concluded from the tests:

a. At reactor pressures of approximately 800 psig and no assist from the scram accumulators, control rod scram insertion times are expected to be consistent with average scram time Technical Specification requirements (i.e., 3.5 seconds to 90% insertion).

b. As reactor vessel pressure increases above 800 psig, control rod scram insertion times will decrease. At approximately 950 psig and no assist from the scram accumulators, control rods are expected to scram in less than 3.0 seconds to 90% insertion.

c. At reactor vessel pressures above 600 psig and no assist from the scram accumulators, control rods would be expected to fully insert in less than 7.0 seconds. As discussed in the CP&L response to the NRC's August 26, 1993 request for additional information, reactor vessel pressure will remain above 600 psig for more than 12 seconds which ensures that all moveable control rods will insert following rapid depressurization events.

Figure 1 also shows the affect of the scram accumulator pressure on insertion times at operating reactor pressures. The initial pressure of the scram accumulator, which exceeds normal reactor vessel operating pressure, results in a slightly faster insertion time. However, the insertion time differences are small and in both cases are faster than the average scram insertion time Technical Specification requirements. In other words, at full operating reactor vessel pressure the scram accumulator is not required to meet scram time requirements.

2. Scram Reactivity:

The control rod scram insertion times assumed in licensing basis transient analyses are typically referred to as the "67B Tech Spec" curve. The conservatisms in these times relative to expected control rod drive performance are documented in Section 3.1 of Reference 1. Furthermore, the conservatism in the Critical Power Ratio (CPR) response of the core during a transient using the 67B Tech Spec curve is documented on pages Q1-1 through Q1-15 of Reference 1. NRC acceptance of the one-dimensional transient model for BWRs (ODYN), which includes the 67B Tech Spec curve as part of the "licensing basis" for BWR/4 units like Brunswick, is documented in Reference 2.

The average scram times in the Brunswick Technical Specifications are consistent with the 67B Tech Spec curve. Compliance with this curve ensures that the control rod insertion times assumed in the ODYN qualification and the plant's licensing basis are maintained.

The proposed Technical Specification amendment would allow up to 8 control rods with inoperable scram accumulators to remain withdrawn from the core. As noted in Section 1 above, control rods with inoperable scram accumulators will typically insert within the average scram time Technical Specification requirements when the reactor vessel pressure is above 950 psig. Consequently, with inoperable scram accumulators, there is no impact on the control rod insertion times assumed in the transient licensing basis with reactor vessel pressures above 950 psig.

To conservatively assess the impact of inoperable control rods on scram reactivity, an analysis was performed in the late 1970s using the 3-D BWR Simulator Code. "Design basis" calculations for scram reactivity were performed assuming that every control rod scrams at the core average values in the Brunswick Technical Specifications (i.e., 67B Tech Spec scram times) except for the highest worth control rod. The highest worth control rod was fully withdrawn and, consistent with the single failure criterion, was assumed not to scram. Analyses were performed at end-of-cycle (EOC), all-rods-out (ARO) conditions which result in the most limiting case for scram reactivity. The resulting scram reactivity curve is shown in Figure 2.

With respect to the impact of scram reactivity on accident analyses, it should be noted that the acceptance criteria for transients and accidents differ. The primary acceptance criterion for transients is MCPR which is sensitive to the scram reactivity insertion rate. The primary acceptance criterion for accidents such as depressurization events (i.e., loss of coolant accident) is the peak cladding temperature (PCT). The assumed scram reactivity insertion rate has only a second order effect on the predicted accident consequences. For postulated accidents, the key is to ensure that control rods will insert to maintain the core in a shutdown condition. Concluding that there is a negligible impact on the scram reactivity insertion rate for transient analyses ensures that the consequences of accident analyses remain valid.

It is concluded that the scram reactivity insertion rates assumed in licensing basis transient and accident safety analyses accommodates up to 8 inoperable control rods.

3. Summary:

The concept of allowing inoperable control rods to remain withdrawn during normal operation is an accepted practice. BWRs with the Standard Technical Specification format (NUREG-0123) are allowed continued full power operation with 8 inoperable control rods which are not inserted. Also, the Improved Standard Technical Specifications (NUREG-1433) allows continued full power operation with up to 10 inoperable scram accumulators with no requirement to insert and disarm the associated control rods.

The requested modification to the control rod scram accumulator Technical Specification is acceptable for the following reasons:

a. The design of the control rod drive system ensures that moveable control rods will fully insert at pressures above 600 psig with no assistance from the scram accumulators.

b. With reactor vessel pressures above 950 psig, moveable control rods are expected to insert in less than 3.0 seconds to 90% insertion without assistance from the scram accumulators.

c. Bounding analyses with 8 inoperable control rods which are fully withdrawn and assumed not to scram demonstrate that the scram reactivity assumed in licensing basis analyses (both transients and accidents) is maintained.

d. As discussed in the CP&L response to the NRC's August 26, 1993 request for additional information, the reactor vessel pressure following the most limiting depressurization event will remain high enough for a sufficient period of time to ensure all moveable control rods will insert and maintain the core in a shutdown condition.

It is concluded that licensing basis transient and accident analyses are not impacted by the proposed scram accumulator Technical Specification amendment request.

4. References:


1. "Qualification of the One-Dimensional Core Transient Model for Boiling Water Reactors, Version 3", NEDO-24154-P-A, August 1986.

2. Letter, R.L. Tedesco to G.G. Sherwood, "Acceptance for Referencing General Electric Licensing Topical Report NEDO-24154/NEDE-24154P", February 4, 1986.

FIGURE 1

TYPICAL BWR/2-5 SCRAM PERFORMANCE

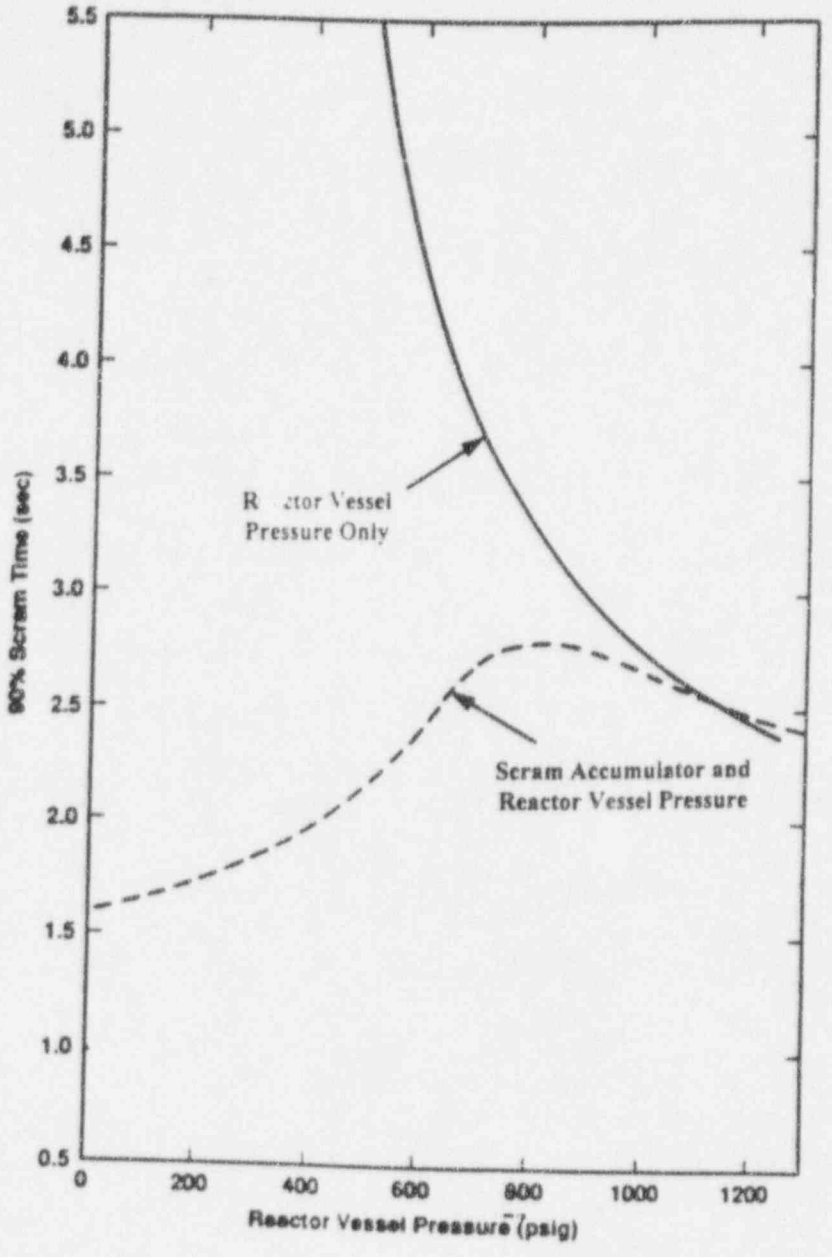


FIGURE 2

**SCRAM REACTIVITY CURVE COMPARISON**

FIGURE 3

**ASSUMED SCRAM SPEED DISTRIBUTION**

ENCLOSURE 2

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1 AND 2
NRC DOCKETS 50-325 & 50-324
OPERATING LICENSES DPR-71 & DPR-62
REQUEST FOR LICENSE AMENDMENTS
CONTROL ROD DRIVE AND CONTROL ROD DRIVE SCRAM ACCUMULATORS

LETTER FROM KLAPPROTH (GE) TO CLEMENTS (CP&L) DATED DECEMBER 13, 1994:

"Inoperable Scram Accumulator Technical Specification Request"

**PROPRIETARY VERSION**

**WITHHOLD FROM PUBLIC DISCLOSURE PER 10 CFR 2.790**

GE Nuclear Energy

General Electric Company
P.O. Box 780, Wilmington, NC 28402
910 675-5000

December 13, 1994

When Separated From Enclosures,
Handle This Document As
Decontrolled

Mr. Talmage Clements
Carolina Power & Light Company
411 Fayetteville Street Mall
P.O. Box 1551
Raleigh, NC 27602

Dear Talmage:

Subject: **Inoperable Scram Accumulator Technical Specification Request**

At the November 17, 1994 CP&L/NRC meeting to discuss CP&L's license amendment request to modify the Technical Specifications for inoperable scram accumulators, GE committed to provide (1) the basis for the control rod insertion times with and without an operable scram accumulator, and (2) justification that the scram reactivity insertion rates assumed in licensing analyses accommodates up to 8 inoperable control rods. This information is provided in the enclosure. It is concluded that there is an adequate technical basis to support the proposed change to the control rod scram accumulator Technical Specification.

Please note that portions of the enclosure are proprietary to GE. This information has been identified with bars in the right-hand margin. An affidavit is provided for your use if this information is submitted to the NRC.

Please call if you have any questions on the enclosed information.

Sincerely,

J.F. Klapproth

J.F. Klapproth, Manager
Fuel and Facility Licensing
(910) 675-5608

cc: R.P. Lopriore (CP&L)
S.J. Ganthner (CP&L)
K.A. Harris (CP&L)
L.L. Aiello (GE)
E.Y. Gibo (GE)
N. Sadeghi (GE)
J.S. Post (GE)
T.M. Hauser (GE)