

Carolina Power & Light Company

P. O. Box 1551 • Raleigh, N. C. 27602

MAY 27 1988

LYNN W. EURY
Senior Vice President
Operations Support

SERIAL: NLS-88-091
10CFR50.90
87TSB20

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 1
DOCKET NO. 50-325/LICENSE NO. DPR-71
REQUEST FOR LICENSE AMENDMENT
MSIV WATER LEVEL SETPOINT CHANGE

Gentlemen:

In accordance with the Code of Federal Regulations, Title 10, Parts 50.90 and 2.101, Carolina Power & Light Company (CP&L) hereby requests a revision to the Technical Specifications for the Brunswick Steam Electric Plant (BSEP), Unit 1.

The proposed changes to Section 3/4.3.2 revise the reactor water level setpoint for the isolation of the Group 1 primary containment isolation valves from low level 2 to low level 3. A similar change was submitted for BSEP-2 on September 29, 1987 and approved via Amendment 146 on April 1, 1988. General Electric Report, NEDC-30601-P, entitled "Safety Review of Water Level Setpoint Change for Brunswick Steam Electric Plant, Units 1 and 2," is also provided in support of these changes. Please note that the GE document includes justification for changing the setpoints associated with the main steam isolation valves (MSIVs), main steam line drain valves (MSLDVs), reactor water sample valves (RWSVs), reactor water cleanup system, standby gas treatment and reactor building HVAC. The proposed change for BSEP-1 applies only to the setpoint changes associated with the MSIVs, the MSLDVs, and the RWSVs, which are addressed in Sections 4 and 5 of the GE report. Changes associated with information provided Sections 6 and 7 of the GE report are not addressed in this amendment request.

Enclosure 1 provides a detailed description of the proposed changes and the basis for the changes.

Enclosure 2 details the basis for the Company's determination that the proposed changes do not involve a significant hazards consideration.

Enclosure 3 provides instructions for incorporation of the proposed changes into the Technical Specifications for BSEP-1.

Enclosure 4 provides a summary of the proposed Technical Specification changes for BSEP-1 on a page by page basis.

8806010253 880527
PDR ADOCK 05000325
P DCD

Aug 1
w/ check #150
#976967

Enclosure 5 provides the proposed Technical Specification pages for BSEP-1.


In accordance with the requirements of 10CFR170.12, a check for \$150 is also enclosed.

To support the BSEP-1 Refueling Outage 6, currently scheduled to begin on November 12, 1988 and end in late January 1989, CP&L requests that this amendment be issued no later than December 30, 1988.

In order to allow time for procedure revision and orderly incorporation into copies of the Technical Specifications, CP&L requests that the proposed amendments, once approved by the NRC, be issued with an effective date to be no later than 60 days from the issuance of the amendment.

Please refer any questions regarding this submittal to Mr. Stephen D. Floyd at (919) 836-6901.

Yours very truly,


L. W. Eury

EAB/bab(\cor\87tsb20)

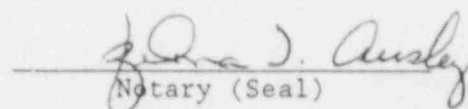
Enclosures:

1. Basis for Change Request
2. 10CFR50.92 Evaluation
3. Instructions for Incorporation
4. Summary List of Revisions
5. Technical Specification Pages

cc: Mr. Dayne H. Brown
Dr. J. Nelson Grace
Mr. W. H. Ruland
Mr. E. D. Sylvester

L. W. Eury, 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, contractors, and agents of Carolina Power & Light




Notary (Seal)

ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1
NRC DOCKET 50-325
OPERATING LICENSE DPR-71
REQUEST FOR LICENSE AMENDMENT

BASIS FOR CHANGE REQUEST

General Basis

Lowering the main steam isolation valve (MSIV) setpoint from low level 2 (LL2) to low level 3 (LL3) is an NRC Staff recommendation to meet NUREG-0737, Item II.K.3.16 requirements relating to safety/relief valve (S/RV) challenges. This change has also been recommended by the General Electric BWR Owners' Group and has been implemented at other BWRs to which it applies, including BSEP-2.

The following benefits will be realized as a result of the MSIV water level setpoint change:

- (1) Reduction in the probability of MSIV closure, or reactor isolation. Reactor isolation leads to a loss of feedwater flow to the vessel, thereby making the feedwater system unavailable for level control and the main condenser unavailable as a heat sink. Instead, high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) would be required for level control, with the suppression pool serving as the heat sink. By reducing the probability of MSIV closure, use of HPCI and RCIC for level control and the suppression pool as a heat sink could be reduced.
- (2) Reduction in S/RV challenges. When the MSIVs close, the main condenser is not available as a heat sink and the pressure rises in the vessel causing the S/RVs to open and discharge steam to the suppression pool. Changing the setpoint, and thereby reducing the likelihood of MSIV closure, will reduce containment duty caused by steam discharge to the suppression pool. In addition, S/RV maintenance and the possibility of a S/RV becoming stuck open would also be reduced since S/RV challenges would be reduced.
- (3) Prevention of unnecessary use of the suppression pool as a heat sink. As stated above, the suppression pool is used as the heat sink for core decay heat in the event that the main condenser is unavailable. If the MSIVs close and an anticipated transient without scram (ATWS) event takes place, there could be excessive suppression pool heatup. Lowering the MSIV setpoint would reduce the possibility of such an event, thereby limiting use of the suppression pool as a heat sink.

- (4) Possible increase in the life expectancy of the feedwater sparger. Use of HPCI, without the benefit of feedwater, may result in cold water injection into the vessel, causing thermal cycles at the feedwater sparger. This could contribute to feedwater sparger fatigue. Lowering the MSIV water level setpoint would reduce the probability of HPCI use without feedwater and, thereby, reduce the probability of sparger fatigue.

The level setpoints for the main steam line drain valves (B21-F016 and B21-F019) and the reactor water sample line valves (B32-F019 and B32-F020) are also being lowered from LL2 to LL3. These valves, together with the MSIVs, are the current Group 1 primary containment isolation valves. Lowering the water level setpoint for these valves will maintain the present Group 1 structure and functions, thereby eliminating possible operator confusion and training problems.

The modification being performed to implement the setpoint change involves adding a slave unit to each master trip unit that currently provides the setpoint for the Group 1 and Group 3 primary containment isolation valves. The master trip unit logic cards are being replaced with upgraded models of the same type to be compatible with the slave units. The new master trip unit is functionally identical to the previous version. The slave trip unit will provide low level 3 setpoint information for the Group 1 isolation valves while the master trip unit will continue to provide the low level 2 setpoint information for the Group 3 isolation valves.

Proposed Change Number 1

Delete Valve Group 1 from Items 1.a.2, 2.c, and 3.e "Reactor Vessel Water Level - Low, Level 2."

Basis

Valve Group 1 includes the main steam isolation valves (MSIVs), the main steam line drain valves, and the reactor water sample valves. GE Report NEDC-30601-P provides justification in Sections 4 and 5 for lowering the existing low level 2 setpoint for these valves to low level 3.

Two events are affected by MSIV isolation on water level trip; loss of feedwater flow and feedwater controller failure - maximum demand. The evaluation provided in NEDC-30601-P shows that the setpoint change will not induce any adverse effects for either event. The report also shows that the setpoint change has no impact on loss-of-coolant accident or anticipated transient without scram (ATWS) events.

Isolation of the main steam line drain valves and the reactor water sample valves is also discussed in NEDC-30601-P. These valves are on small lines (3 inches for the main steam line drain valves and 3/4 inches for the reactor water sample valves) and currently isolate on the same signals as the MSIVs. Postponing isolation from low level 2 to low level 3 is inconsequential because loss of inventory from these lines is insignificant, especially compared to that associated with a main steam line break.

References

General Electric Report NEDC-30601-P, "Safety Review of Water Level Setpoint Change for Brunswick Steam Electric Plant, Units 1 and 2"

Proposed Change Number 2

Replace Instrument Numbers B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1 with Instrument Numbers B21-LTM-N024A-1-1,B-1-1 and B21-LTM-N025A-1-1,B-1-1, respectively, in Items 1.a.2, 2.c, and 3.e "Reactor Vessel Water Level - Low, Level 2."

Basis

Instruments B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1 are master trip units that provide isolation signals for Valve Groups 1 and 3. The isolation instrumentation for Valve Group 1 is being moved from low level 2 to low level 3, while the isolation instrumentation for Valve Group 3 will remain at low level 2. To accommodate this change, slave units B21-LTS-N024A-1-2,B-1-2 and B21-LTS-N025A-1-2,B-1-2 are being added for the low level 3 instrumentation, and the designation of the master trip units associated with low level 2 have been modified to show that they receive indication from a slave unit. The master trip units are being replaced with upgraded models of the same type to be compatible with the new slave trip units. The same level transmitters (B21-LT-N024A-1,B-1 and B21-LT-N025A-1,B-1) will be used for both trip units.

References

General Electric Report NEDC-30601-P, "Safety Review of Water Level Setpoint Change for Brunswick Steam Electric Plant, Units 1 and 2"

Proposed Change Number 3

Add new Item 1.a.3, "Reactor Vessel Water Level - Low, Level 3."

Basis

Currently, low level 3 does not directly initiate primary containment isolation and therefore is not included in Table 3.3.2-1. Since the Valve Group 1 isolation signal is being changed from low level 2 to low level 3 and the valves included in Group 1 directly isolate the primary containment, low level 3 must be added to Table 3.3.2-1. The same level transmitters will be used for the low level 3 indication as were used for the low level 2 indication (B21-LT-N024A-1,B-1 and B21-LT-N025A-1,B-1) along with slave units (B21-LTS-N024A-1-2,B-1-2 and B21-LTS-N025A-1-2,B-1-2) which feed the master units and are listed with low level 2.

References

General Electric Report NEDC-30601-P, "Safety Review of Water Level Setpoint Change for Brunswick Steam Electric Plant, Units 1 and 2"

ENCLOSURE 2

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1
NRC DOCKET 50-325
OPERATING LICENSE DPR-71
REQUEST FOR LICENSE AMENDMENT

10CFR50.92 EVALUATION

The Commission has provided standards in 10CFR50.92(c) for determining whether a significant hazards consideration exists. A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety. Carolina Power & Light Company has reviewed this proposed license amendment request and determined that its adoption would not involve a significant hazards consideration. The bases for this determination are as follows:

1. The setpoint change has been evaluated with respect to several operating parameters, including the minimum critical power ratio (MCPR), peak vessel pressure, radiation release, and shutdown capability during abnormal operating transients. Fuel cladding integrity during a loss-of-coolant accident (LOCA) and the reactor response during an anticipated transient without scram (ATWS) event were also evaluated. Results of this evaluation are provided in the GE Topical Report NEDC-30601-P, "Safety Review of Water Level Setpoint Change for Brunswick Steam Electric Plant, Units 1 and 2." As stated in Section 4.2.3 and 4.2.4 of that report, the change will not cause a reduction in MCPR, an increase in the peak pressure, an increase in radiation release, a cause of equipment damage, a reduction in plant shutdown capability, or a decrease in core cooling capability. The main steam isolation valve (MSIV) water level setpoint change has no impact on LOCA events previously evaluated, nor does it cause consequences of accidents previously evaluated to be increased.
2. Several operating parameters have been evaluated to support the setpoint change, including the MCPR, peak vessel pressure, radiation release, and shutdown capability during abnormal operating transients. Fuel cladding integrity during a LOCA and the reactor response during an ATWS event were also evaluated. Results of this evaluation are provided in the GE Topical Report NEDC-30601-P, "Safety Review of Water Level Setpoint Change for Brunswick Steam Electric Plant, Units 1 and 2." None of these evaluations indicated that any

new or different type of accident would be created by the change. In addition, the present function and structure of the Group 1 isolation valves remain unchanged, thereby eliminating possible operator confusion and training problems that could lead to a new or different type of accident. Therefore, the proposed change does not create the possibility of a new or different kind of accident.

3. The effects of the setpoint change for LOCA events have been reviewed, and it has been determined that the change has no impact. As stated in NEDC-30601-P, large and intermediate LOCA events will not be affected because the rapid depressurization and rapid inventory loss will cause the MSIVs to close almost immediately after the accident, before any fuel failure could occur. Thus, the lower MSIV trip will not increase inventory loss from the reactor core or radiation release to the environment. For a small break LOCA, the highest peak cladding temperature for the worst case single failure (i.e., failure of the high pressure coolant injection (HPCI) system) is considerably less than the 2200° F peak clad temperature limit. Therefore, the setpoint change will have no effect on the limiting maximum average planar linear heat generation rate (MAPLHGR).

For a loss of feedwater flow event under the proposed amendment, the reactor would not be isolated while HPCI and reactor core isolation (RCIC) are operating. Reactor core isolation cooling system flow would compensate for steam flow through the turbine control valves to the main condenser, thereby maintaining water level above low level 3, keeping the MSIVs open, and preventing the S/RVs from opening. Thus, the MSIV water level setpoint change will not compromise core cooling capability for the loss of feedwater flow event. Furthermore, it reduces suppression pool heatup for this event because the main condenser is available for a longer time.

The low level 3 reactor water level setpoint for the Group 1 primary containment isolation system valves still "ensures the effectiveness of the instrumentation used to mitigate the consequences of accidents" as demonstrated by the evaluation in Sections 4 and 5 of NEDC-30601-P. Thus, for the reasons described above, the margin of safety is not reduced and may actually be increased.