



North  
Atlantic

**SEABROOK STATION UNIT 1**

Facility Operating License NPF-86

Docket No. 50-443

License Amendment Request No. 95-04

Revisions to Main Steam Safety Valve Setpoints and  
Maximum Allowable Power Range Neutron Flux High  
Setpoints with Inoperable Main Steam Safety Valves

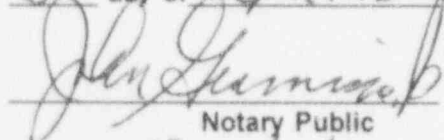
This License Amendment Request is submitted by North Atlantic Energy Service Corporation pursuant to 10CFR50.90. The following information is enclosed in support of this License Amendment Request:

- Section I - Introduction and Safety Evaluation for the Proposed Changes
- Section II - Markup of Proposed Changes
- Section III - Retype of Proposed Changes
- Section IV - Determination of Significant Hazards for Proposed Changes
- Section V - Proposed Schedule for License Amendment Issuance and Effectiveness
- Section VI - Environmental Impact Assessment


Sworn and Subscribed

to before me this

5 day of September, 1995

  
Notary Public

*expires 6/29/2001*

  
Ted C. Feigenbaum  
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## **I. INTRODUCTION AND SAFETY EVALUATION OF PROPOSED CHANGES**

### **A. Introduction**

The purpose of License Amendment Request (LAR) 95-04 is to propose changes to the Seabrook Station Technical Specifications to reduce the opening setpoints of the Main Steam Safety Valves (MSSVs) and to reduce the maximum allowable Power Range Neutron Flux - High setpoints with inoperable MSSVs. These changes are proposed in response to notification<sup>(1)</sup> from Westinghouse which states that the Power Range Neutron Flux - High setpoints with inoperable MSSVs provided in Technical Specification Table 3.7-1 may be non-conservative. The proposed Power Range Neutron Flux - High setpoints with inoperable MSSVs were determined in Reference 3 using the proposed MSSV setpoints in combination with the analysis algorithm provided in Reference 1.

Each steam generator has 5 MSSVs with staggered setpoints currently ranging from 1185 psig to 1255 psig. The proposed lift setpoints range from 1185 psig to 1225 psig. The proposed changes to the MSSV setpoints assure that all MSSVs will participate in mitigating postulated overpressure conditions within the Main Steam System (Secondary System).

The combination of proposed changes to the MSSV setpoints and the maximum allowable Power Range Neutron Flux - High setpoints with inoperable MSSVs assures that the consequences of postulated overpressure events will remain in compliance with the Basis to Technical Specification 3.7.1.1. Specifically, the Secondary System pressure will be limited to within 110% (1320 psia) of its design pressure of 1200 psia during the most severe anticipated system operational transient.

### **B. Safety Evaluation of Proposed Changes**

This section describes the safety evaluation of the proposed changes to the Technical Specifications to assure that the consequences of postulated overpressure events in the Secondary System will remain in compliance with the requirements of the ASME Boiler & Pressure Vessel Code (1974 Edition, including the Summer 1975 Addenda). In summary, the proposed changes are to:

- a) Technical Specification Table 3.7-1, Maximum Allowable Power Range Neutron Flux High Setpoint with Inoperable Steam Line Safety Valves During Four-Loop Operation;
- b) Technical Specification Table 3.7-2, Steam Line Safety Valves per Loop; and,
- c) Technical Specification Bases 3/4.7.1.1, Safety Valves

A safety evaluation of each proposed change is provided below. Markups of the proposed changes to the Technical Specifications and Bases are provided in Section II of this LAR.

#### **1. Technical Specification Table 3.7-1, Maximum Allowable Power Range Neutron Flux High Setpoint with Inoperable Steam Line Safety Valves During Four-Loop Operation**

Technical Specification Table 3.7-1 specifies maximum allowable Power Range Neutron Flux - High reactor trip setpoints to assure that the Secondary System pressure will be limited to within

110% (1320 psia) of its design pressure of 1200 psia during the most severe anticipated system operational transient. Westinghouse has notified<sup>(1)</sup> North Atlantic that the reactor trip setpoint values in Table 3.7-1 may be non-conservative. The linear function currently identified in the Technical Specification Bases 3/4.7.1.1 for calculating the maximum allowable Power Range Neutron Flux - High reactor trip setpoints may not assure compliance with the overpressure limit required by the ASME Boiler & Pressure Vessel Code. The proposed Power Range Neutron Flux - High reactor trip setpoints for Table 3.7-1 are calculated using Seabrook Station specific input parameters (including the proposed MSSV opening setpoints for Technical Specification Table 3.7-2) with a revised analysis algorithm recommended by Reference 1. The revised analysis algorithm was reviewed for applicability to Seabrook Station by North Atlantic. In conclusion, the revised analysis algorithm is applicable, and with minor changes to completely explain its application, it replaces the linear function currently described in Technical Specification Bases 3/4.7.1.1. The revised maximum allowable Power Range Neutron Flux - High reactor trip setpoints for use in Table 3.7-1 are lower than the current values. The specific revisions to Table 3.7-1 are presented in Section II of this License Amendment Request.

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2. Technical Specification Table 3.7-2, Steam Line Safety Valves per Loop

Technical Specification Table 3.7-2 identifies the required lift settings for MSSVs on each loop. Each loop has 5 MSSVs with lift settings in a range from 1185 psig to 1255 psig. As part of assuring compliance with the ASME Boiler & Pressure Vessel Code requirement for overpressure protection of the Secondary System, North Atlantic concluded that a reduction in the range of MSSV lift settings would assure that all MSSVs would be capable of participating in the mitigation of postulated overpressure events. The proposed lift setpoints range from 1185 psig to 1225 psig with equal spacing of 10 psi between setpoints. These setpoints are identical to those currently required by the Millstone Unit 3 Technical Specifications. The proposed MSSV setpoints were used in the input to the calculation of the maximum allowable Power Range Neutron Flux - High reactor trip setpoints for use in Table 3.7-1 as described above.

For postulated events which result in overpressurization of the Secondary System, with challenges to one or more MSSVs in a loop, the effect of the revised MSSV setpoints is to reduce the peak transient Secondary System pressure. Since the actual flow capacities of the MSSVs are not being changed and the revised MSSV lift setpoints will cause the MSSVs to open earlier in a loss of load event, the analysis of the limiting Loss of Load Accident at full power in YAEC-1871<sup>(2)</sup> with the current MSSV setpoints remains bounding for all power levels. For postulated events where excessive RCS cooldown via MSSV blowdown could be a concern, there is no effect since the lift setpoint of the lowest set MSSV in each loop is not changed by this License Amendment Request. The LOCA analysis for Seabrook Station is not affected for the same reason.

Implementation of the new MSSV setpoints may occur while the unit is on-line. The new power range neutron flux trip setpoint values will become effective after all of the affected MSSV setpoints have been reset. During the transition from the current lift setpoints to the new lift setpoints, the safety analysis remains conservative for interim configurations since the setpoints are being reduced. Each MSSV to be reset will be declared OPERABLE after its setpoint has been reset to the new value and verified. The power range neutron flux trip setpoints currently approved by Technical Clarification will be in effect until all of the affected MSSV setpoints have

been reset. At that time, the higher power range neutron flux trip setpoints addressed in this evaluation will become effective in the event that a MSSV becomes inoperable.

Affects: Technical Specifications page 3/4 7-2

3. Technical Specification Bases 3/4.7.1.1, Safety Valves

Technical Specification Bases 3/4.7.1.1 currently states "...The total relieving capacity for all valves on all of the steam lines is  $1.839 \times 10^7$  lbs/hr which is 121% of the total secondary steam flow of  $1.514 \times 10^7$  lbs/hr at 100% RATED THERMAL POWER." The total relieving capacity is determined by summing the rated capacity of each valve assuming full disc lift at 103% of their lift setpoints required by Technical Specification Table 3.7-2. Since the lift setpoints in Table 3.7-2 are being revised, and rated flow varies in proportion to pressure, the above statement is revised to read "...The total relieving capacity for all valves on all of the steam lines is  $1.816 \times 10^7$  lbs/hr which is 120% of the total secondary steam flow of  $1.514 \times 10^7$  lbs/hr at 100% RATED THERMAL POWER." The relieving capacity of each MSSV assuming full disc lift at 103% of the revised lift setpoints for Table 3.7-2 are shown in the proposed change to Technical Specification Bases 3/4.7.1.1.

The proposed Power Range Neutron Flux - High reactor trip setpoints for Table 3.7-1 are calculated using Seabrook Station specific input parameters (including the proposed MSSV opening setpoints for Technical Specification Table 3.7-2) with a revised analysis algorithm recommended by Reference 1. The revised analysis algorithm was reviewed for applicability to Seabrook Station by North Atlantic. In conclusion, the revised analysis algorithm is applicable, and, with minor changes to completely explain its application, it replaces the linear function currently described in Technical Specification Bases 3/4.7.1.1.

Affects: Technical Specifications Bases page B 3/4 7-1

The combination of proposed changes to the MSSV setpoints and the maximum allowable Power Range Neutron Flux - High setpoints with inoperable MSSVs assures that the consequences of postulated overpressure events will remain in compliance with the Basis to Technical Specification 3.7.1.1. Specifically, the Secondary System pressure will be limited to within 110% (1320 psia) of its design pressure of 1200 psia during the most severe anticipated system operational transient. The most severe anticipated transient remains a Turbine Trip from 100% RATED THERMAL POWER coincident with an assumed loss of condenser heat sink.

C. References

1. NSAL-94-001, Operation at Reduced Power Levels with Inoperable MSSVs, Westinghouse, 1/20/94.
2. YAEC-1871, Safety Analysis in Support of Wide-Band Operation and Core Design Enhancements for Seabrook Station, September, 1993.
3. SBC-698, Maximum Allowable Power Range Neutron Flux High Setpoint with Inoperable MSSVs, Yankee Atomic Electric Co., Revision 1, 8/25/95

**II. MARKUP OF LAR 95-04 PROPOSED CHANGES**

The enclosed markup pages reflect the currently issued version of Technical Specifications and Bases and the proposed changes.