



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

*Docket  
file*

March 7, 1994

Docket No. 50-443  
Serial No. SEA-94-003

Mr. Ted C. Feigenbaum  
Senior Vice President  
and Chief Nuclear Officer  
North Atlantic Energy Service Corporation  
Post Office Box 300  
Seabrook, New Hampshire 03874

Dear Mr. Feigenbaum:

SUBJECT: AMENDMENT NO. <sup>29</sup> TO FACILITY OPERATING LICENSE NPF-86: CONTAINMENT  
PURGE AND EXHAUST VALVES - LICENSE AMENDMENT REQUEST 93-05  
(TAC M86274)

The Commission has issued the enclosed Amendment No. <sup>29</sup> to Facility Operating License No. NPF-86 for the Seabrook Station, Unit No. 1, in response to your application dated May 7, 1993.

The amendment revises the Appendix A Technical Specifications (TSs) relating to primary containment integrity. Specifically, the amendment modifies Limiting Condition for Operation (LCO) of TS 3.6.1.7 by deleting the requirements applicable to the 36-inch containment shutdown purge supply and exhaust isolation valves in the containment air purge (CAP) system. Surveillance Requirement (SR) 4.6.1.7.1 and associated footnote and SR 4.6.1.7.2, which were applicable only to the 36-inch valves are deleted. Additionally, editorial changes have been made to Actions b and c (redesignated as a and b), to SR 4.6.1.7.3. and 4.6.1.7.4 (which are redesignated 4.6.1.7.1 and 4.6.1.7.2), and to SR 4.6.1.2 f to maintain document consistency.

These changes support a planned design modification to the CAP system that will replace the 36-inch containment shutdown purge supply and exhaust isolation valves located outside of containment with testable blind flanges. The blind flanges will be part of the containment pressure boundary for the penetration when in Modes 1, 2, 3, and 4. This modification, scheduled to be implemented during the third refueling outage, renders operability requirements for the 36-inch valves unnecessary.

The amendment is not effective until operational MODE 5 is entered when commencing the third refueling outage. North Atlantic is requested to inform the Commission, in writing, of any significant change to the planned schedule. Also, North Atlantic is requested to inform the Commission, in writing, when the modifications have been completed.

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A copy of the related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by:

Albert W. De Agazio, Sr. Project Manager  
Project Directorate I-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No. 29 to NPF-86
- 2. Safety Evaluation

cc w/enclosures:  
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Mr. Ted C. Feigenbaum

- 2 -

March 7, 1994

A copy of the related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,



Albert W. De Agazio, Sr. Project Manager  
Project Directorate I-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 29 to NPF-86
2. Safety Evaluation

cc w/enclosures:  
See next page

Mr. Ted C. Feigenbaum

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

NORTH ATLANTIC ENERGY SERVICE CORPORATION, ET AL\*

DOCKET NO. 50-443

SEABROOK STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 29  
License No. NPF-86

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by North Atlantic Energy Service Corporation, et al. (the licensee), dated May 7, 1993, 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.

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\*North Atlantic Energy Service Company (NAESCO) is authorized to act as agent for the: North Atlantic Energy Corporation, Canal Electric Company, The Connecticut Light and Power Company, Great Bay Power Corporation, Hudson Light and Power Department, Massachusetts Municipal Wholesale Electric Company, Montaup Electric Company, New England Power Company, New Hampshire Electric Cooperative, Inc., Taunton Municipal Light Plant, and The United Illuminating Company, and has exclusive responsibility and control over the physical construction, operation, and maintenance of the facility.

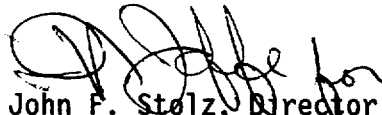
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-86 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 29, and the Environmental Protection Plan contained in Appendix B are incorporated into Facility License No. NPF-86. NAESCO shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is not effective until operational MODE 5 is entered when commencing the third refueling outage, and is to be implemented prior to reentering operational MODE 4.

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stolz, Director  
Project Directorate I-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: March 7, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 29

FACILITY OPERATING LICENSE NO. NPF-86

DOCKET NO. 50-443

Replace the following pages of Appendix A, Technical Specifications, with the attached pages as indicated. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change. Overleaf pages have been provided.\*

<u>Remove</u>	<u>Insert</u>
3/4 6-3*	3/4 6.3*
3/4 6-4	3/4 6-4
3/4 6-11*	3/4 6.11*
3/4 6-12	3/4 6-12
3/4 6-13	3/4 6.13
3/4 6-14*	3/4 6-14*
B 3/4 6-1*	B 3/4 6-1*
B 3/4 6-2	B 3/4 6-2

## CONTAINMENT SYSTEMS

### PRIMARY CONTAINMENT

#### CONTAINMENT LEAKAGE

#### SURVEILLANCE REQUIREMENTS

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4.6.1.2 The containment leakage rates shall be demonstrated at the following test schedule and shall be determined in conformance with the criteria specified in Appendix J of 10 CFR Part 50:

- a. Three Type A tests (Overall Integrated Containment Leakage Rate) shall be conducted at  $40 \pm 10$  month intervals during shutdown at a pressure not less than  $P_a$ , 49.6 psig, during each 10-year service period. The third test of each set shall be conducted during the shutdown for the 10-year plant inservice inspection;
- b. If any periodic Type A test fails to meet  $0.75 L_a$ , the test schedule for subsequent Type A tests shall be reviewed and approved by the Commission. If two consecutive Type A tests fail to meet  $0.75 L_a$ , a Type A test shall be performed at least every 18 months until two consecutive Type A tests meet  $0.75 L_a$  at which time the above test schedule may be resumed;
- c. The accuracy of each Type A test shall be verified by a supplemental test which:
  - 1) Confirms the accuracy of the test by verifying that the supplemental test result,  $L_c$ , is in accordance with the following equation:

$$|L_c - (L_{am} + L_o)| \leq 0.25 L_a$$

where  $L_{am}$  is the measured Type A test leakage and  $L_o$  is the superimposed leak;

- 2) Has a duration sufficient to establish accurately the change in leakage rate between the Type A test and the supplemental test; and
- 3) Requires that the rate at which gas is injected into the containment or bled from the containment during the supplemental test is between  $0.75 L_a$  and  $1.25 L_a$ .

CONTAINMENT SYSTEMS

PRIMARY CONTAINMENT

CONTAINMENT LEAKAGE

SURVEILLANCE REQUIREMENTS

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4.6.1.2 (Continued)

- d. Type B and C tests shall be conducted with gas at a pressure not less than  $P_a$ , 49.6 psig, at intervals no greater than 24 months except for tests involving:
  - 1) Air locks, and
  - 2) Purge supply and exhaust isolation valves with resilient material seals.
- e. The combined bypass leakage rate shall be determined to be less than or equal to  $0.60 L_a$  by applicable Type B and C tests at least once per 24 months.
- f. Purge supply and exhaust isolation valves with resilient material seals shall be tested and demonstrated OPERABLE by the requirements of Specification 4.6.1.7.1.
- g. Air locks shall be tested and demonstrated OPERABLE by the requirements of Specification 4.6.1.3; and
- h. The provisions of Specifications 4.0.2 are not applicable.

## CONTAINMENT SYSTEMS

### PRIMARY CONTAINMENT

#### CONTAINMENT VESSEL STRUCTURAL INTEGRITY

#### LIMITING CONDITION FOR OPERATION

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3.6.1.6 The structural integrity of the containment vessel shall be maintained at a level consistent with the acceptance criteria in Specification 4.6.1.6.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With the structural integrity of the containment vessel not conforming to the above requirements, restore the structural integrity to within the limits prior to increasing the Reactor Coolant System temperature above 200°F.

#### SURVEILLANCE REQUIREMENTS

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4.6.1.6 The structural integrity of the containment vessel shall be determined during the shutdown for each Type A containment leakage rate test (reference Specification 4.6.1.2) by a visual inspection of the exposed accessible interior and exterior surfaces of the vessel. This inspection shall be performed prior to the Type A containment leakage rate test to verify no apparent changes in appearance of the surfaces or other abnormal degradation. Any abnormal degradation of the containment vessel detected during the above required inspections shall be reported to the Commission in a Special Report pursuant to Specification 6.8.2 within 15 days.

CONTAINMENT SYSTEMS

PRIMARY CONTAINMENT

CONTAINMENT VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

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3.6.1.7 Each 8-inch containment purge supply and exhaust isolation valve shall be OPERABLE and sealed closed except when open for purge system operation for pressure control; for ALARA, respirable, and air quality considerations to facilitate personnel entry; and for surveillance tests that require the valve(s) to be open.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

- a. With one or more of the 8-inch containment purge supply or exhaust isolation valves open for reasons other than given in Specification 3.6.1.7 above, close the open 8-inch valve(s) or isolate the penetration(s) within 4 hours, otherwise be in at least HOT STANDBY within the next 6 hours, and in COLD SHUTDOWN within the following 30 hours.
- b. With one or more containment purge supply or exhaust isolation valves having a measured leakage rate in excess of the limits of Specification 4.6.1.7.1, restore the inoperable valve(s) to OPERABLE status or isolate the affected penetration(s) so that the measured leakage rate does not exceed the limits of Specification 4.6.1.7.1 within 24 hours and close the purge supply if the affected penetration is the exhaust penetration, otherwise be in at least HOT STANDBY within the next 6 hours, and in COLD SHUTDOWN within the following 30 hours.

CONTAINMENT SYSTEMS

PRIMARY CONTAINMENT

CONTAINMENT VENTILATION SYSTEM

SURVEILLANCE REQUIREMENTS

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4.6.1.7.1 At least once per 92 days each 8-inch containment purge supply and exhaust isolation valve with resilient material seals shall be demonstrated OPERABLE by verifying that the measured leakage rate is less than or equal to  $0.01 L_a$  when pressurized to  $P_a$ .

4.6.1.7.2 Each 8-inch containment purge supply and exhaust isolation valve shall be verified to be sealed closed or open in accordance with Specification 3.6.1.7 at least once per 31 days.

## CONTAINMENT SYSTEMS

### 3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

#### CONTAINMENT SPRAY SYSTEM

#### LIMITING CONDITION FOR OPERATION

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3.6.2.1 Two independent Containment Spray Systems shall be OPERABLE with each Spray System capable of taking suction from the RWST\* and automatically transferring suction to the containment sump.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With one Containment Spray System inoperable, restore the inoperable Spray System to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the inoperable Spray System to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours.

#### SURVEILLANCE REQUIREMENTS

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4.6.2.1 Each Containment Spray System shall be demonstrated OPERABLE:

- a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position is in its correct position;
- b. By verifying, that on recirculation flow, each pump develops a differential pressure of greater than or equal to 262 psi when tested pursuant to Specification 4.0.5;
- c. At least once per 18 months during shutdown, by:
  - 1) Verifying that each automatic valve in the flow path actuates to its correct position on a Containment Pressure-Hi-3 test signal, and
  - 2) Verifying that each spray pump starts automatically on a Containment Pressure-Hi-3 test signal.
- d. At least once per 5 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

\*In MODE 4, when the Residual Heat Removal System is in operation, an OPERABLE flow path is one that is capable of taking suction from the refueling water storage tank upon being manually realigned.

## 3/4.6 CONTAINMENT SYSTEMS

### BASES

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#### 3/4.6.1 PRIMARY CONTAINMENT

##### 3/4.6.1.1 CONTAINMENT INTEGRITY

Primary CONTAINMENT INTEGRITY ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leak rates assumed in the safety analyses. This restriction, in conjunction with the leakage rate limitation, will limit the SITE BOUNDARY radiation doses to within the dose guidelines of 10 CFR Part 100 during accident conditions.

##### 3/4.6.1.2 CONTAINMENT LEAKAGE

The limitations on containment leakage rates ensure that the total containment leakage volume will not exceed the value assumed in the safety analyses at the peak accident pressure,  $P_a$ . As an added conservatism, the measured overall integrated leakage rate is further limited to less than or equal to  $0.75 L_a$  during performance of the periodic tests to account for possible degradation of the containment leakage barriers between leakage tests.

The surveillance testing for measuring leakage rates is consistent with the requirements of Appendix J of 10 CFR Part 50.

##### 3/4.6.1.3 CONTAINMENT AIR LOCKS

The limitations on closure and leak rate for the containment air locks are required to meet the restrictions on CONTAINMENT INTEGRITY and containment leak rate. Surveillance testing of the air lock seals provides assurance that the overall air lock leakage will not become excessive due to seal damage during the intervals between air lock leakage tests.

##### 3/4.6.1.4 INTERNAL PRESSURE

The limitations on containment internal pressure ensure that: (1) the containment structure is prevented from exceeding its design negative pressure differential with respect to the annulus atmosphere of 3.5 psi and (2) the containment peak pressure does not exceed the design pressure of 52 psig during LOCA conditions.

The maximum peak pressure expected to be obtained from a LOCA event is 49.6 psig. The limit of 16.2 psia for initial positive containment pressure will limit the total pressure to 49.6 psia which is less than the design pressure and is consistent with the safety analyses.

## CONTAINMENT SYSTEMS

### BASES

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#### 3/4.6.1 PRIMARY CONTAINMENT (Continued)

##### 3/4.6.1.5 AIR TEMPERATURE

The limitation in containment average air temperature ensures that the containment average air temperature does not exceed the initial temperature condition assumed in the overall safety analysis for a steam line break accident. Measurements shall be made at all listed locations, whether by fixed or portable instruments, prior to determining the average air temperature.

##### 3/4.6.1.6 CONTAINMENT VESSEL STRUCTURAL INTEGRITY

This limitation ensures that the structural integrity of the containment steel vessel will be maintained comparable to the original design standards for the life of the facility. Structural integrity is required to ensure that the vessel will withstand the maximum pressure of 52 psig in the event of a LOCA. A visual inspection in conjunction with Type A leakage tests is sufficient to demonstrate this capability.

##### 3/4.6.1.7 CONTAINMENT VENTILATION SYSTEM

The 36-inch containment purge supply and exhaust isolation valves are required to be sealed closed during plant operation since these valves have not been demonstrated capable of closing during a LOCA or steam line break accident. Maintaining these valves closed during plant operations ensures that excessive quantities of radioactive materials will not be released via the Containment Purge System. To provide assurance that these containment valves cannot be inadvertently opened, the 36-inch containment shutdown purge supply and exhaust isolation valves are not utilized during operation on MODES 1-4, and a blind flange is installed establishing a Type "B" penetration. The penetration is surveilled in accordance with Surveillance Requirement 4.6.1.1a in MODES 1, 2, 3, and 4. Surveillance Requirement 4.6.1.2d is also applicable to this penetration.

The use of the containment purge lines is restricted to the 8-inch purge supply and exhaust isolation valves since, unlike the 36-inch valves, the 8-inch valves are capable of closing during a LOCA or steam line break accident. Therefore, the SITE BOUNDARY dose guideline values of 10 CFR Part 100 would not be exceeded in the event of an accident during containment PURGING operation. The total time the containment purge (vent) system isolation valves may be open during MODES 1, 2, 3, and 4 in a calendar year is determined by the actual need for opening the valves for safety-related reasons; e.g., containment pressure control or the reduction of airborne radioactivity to facilitate personnel access for surveillance and maintenance activities.

Leakage integrity tests with a maximum allowable leakage rate for containment purge supply and exhaust supply valves will provide early indication of resilient material seal degradation and will allow opportunity for repair before gross leakage failures could develop. The 0.60 L<sub>a</sub> leakage limit of Specification 3.6.1.2b. shall not be exceeded when the leakage rates determined by the leakage integrity tests of these valves are added to the previously determined total for all valves and penetrations subject to Type B and C tests.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 29 TO FACILITY OPERATING LICENSE NO. NPF-86

NORTH ATLANTIC ENERGY SERVICE CORPORATION

SEABROOK STATION, UNIT NO. 1

DOCKET NO. 50-443

1.0 INTRODUCTION

By application dated May 7, 1993, North Atlantic Energy Service Corporation (North Atlantic/the licensee) proposed an amendment to the Appendix A Technical Specifications (TSs) for the Seabrook Station, Unit 1 (Seabrook). The proposed changes would modify the Technical Specifications Limiting Conditions for Operation, Surveillance Requirements and Bases applicable to the 36-inch containment ventilation purge and exhaust valves. The Technical Specifications changes would reflect the forthcoming implementation of a plant design modification that will provide a more reliable means of containment isolation for the two 36-inch containment ventilation purge and exhaust penetrations.

2.0 DISCUSSION AND EVALUATION

Ventilation of the containment is necessary prior to and during personnel entry into containment following reactor shutdowns to reduce the airborne radioactivity level and to control containment temperature control. The Seabrook containment ventilation system has a pair of 36-inch containment penetrations for high flow-rate purging and heating and a pair of 8-inch containment penetrations for reactor online purging. The four containment penetrations each contain two resiliently-seated butterfly-type isolation valves, one inside the primary containment and the other located outside the primary in the secondary containment annulus. The 8-inch valves are qualified as capable of closure under the dynamic conditions of a Design Basis Accident-Loss of Coolant Accident or Main Steam Line Break, but the 36-inch valves are not. The valves are provided with fail-close, solenoid pilot-valve-actuated air cylinder operators and automatic isolation actuation instrumentation. The 36-inch valves are susceptible to seal degradation when the valves are periodically stroked for surveillance tests and for normal operation. Leakage past these valves during an accident would bypass secondary containment and result in fission product release into the Primary Auxiliary Building.

The modification planned by the North Atlantic will replace the two outboard 36-inch containment isolation valves with testable blind flanges during plant Operational Modes 1, 2, 3 and 4. The outboard isolation valves will be relocated further outboard. The blind flanges will form the containment pressure boundary for the penetrations during these modes of operation. The blind flanges to be installed have a double, concentric, O-Ring surface with provisions for testing. Testing would be performed by pressurizing the annular

volume formed between the double O-Rings, the blind flange and the weld neck mating flange attached to the containment penetration sleeve. The resilient O-Ring seals in the blind flanges would not be subject to the mechanical forces which degrade the resilient seals of the 36-inch valves. With the blind flanges installed and tested, the isolation valves will no longer be required for containment isolation. The only credible leakage path for the affected penetration would be past the O-Rings into the secondary containment which has a filtered discharge to the plant vent. The blind flanges would be tested in accordance with the 10 CFR 50, Appendix J testing requirements for Type B penetrations incorporating resilient seals.

During Modes 5 (cold shutdown) and 6 (refueling), the licensee would replace the blind flanges with transition spool pieces to permit ventilation system operation using the 36-inch lines. Although accidents are postulated for Modes 5 and 6, minimal containment pressure is available as driving force for containment leakage. Therefore, Technical Specifications containment integrity and piping penetration leaktightness are not applicable during those modes.

The current Technical Specifications require that the 36-inch containment butterfly isolation valves be kept locked-closed during Modes 1, 2, 3 and 4, and leak tested at least once per 6 months to verify that leakage is  $\leq 0.05 L_a$  when pressurized to  $P_a$ . In addition, the valves are required to be verified periodically as locked and closed. The proposed amendment would delete these requirements.

The staff has reviewed the safety analysis provided by the licensee as part of the amendment application. Based on the information presented in the analysis, the staff has concluded that the use of blind flanges for isolation of the penetrations provides a greater degree of assurance of containment integrity in the event of an accident. The inability to operate the containment purge system using the 36-inch penetrations due to installation of the blind flanges has no adverse safety consequences as the system has no safety function, and as noted previously, containment purge system operation during Modes 1, 2, 3 and 4 using the affected penetrations is already prohibited.

The staff has reviewed the proposed Technical Specifications changes. With the leaktight integrity of the 36-inch lines assured by the blind flanges during Modes 1, 2, 3 and 4, requirements applicable to the 36-inch butterfly containment isolation valves are no longer necessary.

The staff has reviewed North Atlantic's safety analysis and the proposed Technical Specifications changes and concludes that they are acceptable. The configuration of the new penetration design conforms to the Standard Review Plan Section 6.2.4 criteria for seal closed containment barriers. The barriers will be testable in accordance with the requirements of 10 CFR 50, Appendix J. The proposed Technical Specifications would assure that the containment penetrations are adequately sealed during the appropriate modes of facility operation.

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New Hampshire and Massachusetts State officials were notified of the proposed issuance of the amendment. The State officials had no comments.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes a surveillance requirement. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (58 FR 34083). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

### 5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: W. Long

Date: March 7, 1994