



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-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.

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