



**North
Atlantic**
Energy Service Corporation

SEABROOK STATION UNIT 1

Facility Operating License NPF-86
Docket No. 50-443

License Amendment Request No. 93-11
Emergency Diesel Generator Surveillance Requirements

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

Sworn and Subscribed
to before me this
4th day of October, 1993

Tracy A. DeCredico
Notary Public

TRACY A. DeCREDICO, Notary Public
My Commission Expires October 3, 1995

Ted C. Feigenbaum
Ted C. Feigenbaum

Senior Vice President and Chief Nuclear Officer

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I. Introduction and Description of Proposed Changes

A. Introduction

The purpose of the proposed Technical Specification Change is to revise Technical Specification 3.8.1.1, "AC Sources - Operating to delete the requirement to verify that the diesel starts from standby conditions and accelerates to at least 514 rpm in less than or equal to 10 seconds.

The emergency generators at Seabrook Station are three-phase, 4.16 kV synchronous machines with a stationary armature and 14 pole rotating field. The prime mover for each of the two emergency generators is a diesel engine directly coupled to the generator. The function of the Emergency Diesel Generators (EDGs) is to provide a sufficient on-site power to ensure shutdown of the reactor and to maintain it in a safe shutdown condition. The EDGs are normally used only in situations where offsite power is unavailable.

Surveillance Requirement 4.8.1.1.2a.5 states in part:

Verifying the diesel starts from standby conditions and accelerates to at least 514 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be 4160 +/- 420 volts and 60 +/- 1.2 Hz within 10 seconds after the start signal.

Engine speed is related to generator frequency by the equation:

$$n = \frac{120 \times f}{p}$$

where n = engine speed in revolutions/minute (rpm),
 f = generator frequency in cycles/second (Hz) and,
 p = number of generator poles.

The EDGs at Seabrook Station have 14 poles. Since the number of poles is fixed, engine speed is proportional to generator frequency. Thus, the requirement to verify both parameters, i.e. frequency and speed, is redundant.

Currently, Surveillance Requirement 4.8.1.1.2a.5) requires verification that engine speed is at least 514 rpm and generator frequency is 60 +/-1.2 Hz (58.8 to 61.2 Hz) within 10 seconds of an engine start. An engine speed of 514 rpm corresponds to a generator frequency of 60 Hz, thus within the Surveillance Requirement there are conflicting requirements. One requirement being a minimum frequency of 58.8 Hz, and the other requirement being a minimum engine speed corresponding to a frequency of 60 Hz. North Atlantic believes that the requirement to verify an engine speed of 514 rpm is in error and that the correct value should be 504 rpm which corresponds to a generator frequency of 58.8 Hz. However, to be consistent with NUREG 1431, Standard Technical Specifications Westinghouse Plants, and since engine speed and generator frequency are synonymous, North Atlantic is proposing to delete the engine speed requirement and only require verification of generator frequency.

The requirement to verify generator frequency is consistent with the testing methodology described in Regulatory Guide 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants". Regulatory Guide 1.108 has been withdrawn by the NRC with the

stipulation that the withdrawal does not alter any prior or existing licensing commitments based on its use. In the Bases for Technical Specification 3/4.8.1, North Atlantic stated that the Surveillance Requirements for demonstrating the OPERABILITY of the EDGs were in accordance with Revision 1 to Regulatory Guide 1.108.

North Atlantic believes that the requirement to verify that generator frequency is 60 +/- 1.2 Hz is adequate to assure that the EDGs are capable of fulfilling their intended safety function, that the deletion of the requirement to verify engine speed does not detract from this capability, and that there is no significant safety impact associated with the proposed License Amendment Request. The basis for this determination is discussed in Section V.

B. Description of Proposed Changes

1. Surveillance Requirement 4.8.1.1.2a.5) is revised by deleting the requirement to verify that the engine starts from standby conditions and accelerates to at least 514 rpm in less than or equal to 10 seconds. The proposed revision will continue to verify that generator voltage and frequency are 4160 +/- 420 volts and 60 +/- 1.2 Hz within 10 seconds after the start signal.
2. Surveillance Requirement 4.8.1.1.2g is revised by replacing the requirement to verify that both diesel generators accelerate to at least 514 rpm in less than or equal to 10 seconds, with the requirement to verify that the generator attains a frequency of 60 +/-1.2 Hz in less than or equal to 10 seconds.