

February 14, 1983

SBN-467
T.F. B 7.1.2

United States Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. George W. Knighton, Chief
Licensing Branch 3
Division of Licensing

References: (a) Construction Permits CPPR-135 and CPPR-136, Docket Nos.
50-443 and 50-444

(b) PSNH Letter, dated February 1, 1983, "Open Item Responses:
(SRP 9.5.4, 9.5.5, 9.5.6; Power Systems Branch)",
J. DeVincentis to G. W. Knighton

Subject: Revised Open Item Response: (SRP 9.5.4, Power Systems Branch)

Dear Sir:

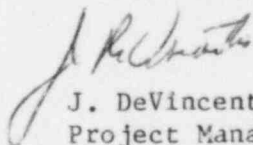
We have enclosed a revised response to the open item regarding preheating of the diesel engine combustion air in low ambient air temperature and no load conditions.

The enclosed revised response addresses the qualification of the diesel air preheating system and corrects typographical errors in the Reference (b) response.

The enclosed response will be included in OL Application Amendment 48.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY


J. DeVincentis
Project Manager

ALL/fb

cc: Atomic Safety and Licensing Board Service List

Boo!

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In Section 9.5.8.2 of the FSAR you state that the diesel generators are "capable of operating at its maximum rated output for the following service conditions and for the durations indicated during the following weather disturbances:

- a. Service Conditions:
 - 1. Ambient Air Intake: -10 to 95°F
 - 2. Humidity: 20 to 80%
- b. Weather Disturbances:
 - 1. A tornado pressure transient causing an atmospheric pressure reduction of 3 PSL in 3 seconds followed by a rise to normal pressure in 3 seconds.
 - 2. A hurricane pressure of 26 inches Hg for a duration of one (1) hour."

We find these service conditions unacceptable. The following environmental services have been determined to be more appropriate for Seabrook:

- a. Service Conditions:
 - 1. Humidity: 20 to 100%
- b. Weather Disturbances:
 - 1. A tornado pressure transient causing an atmospheric pressure reduction of 3 PSI in 1.5 seconds followed by a rise to normal pressure in 1.5 seconds.
 - 2. A hurricane or northeastern storm pressure of 26 inches Hg for a minimum duration of two (2) hours followed by a pressure of approximately 26 to 27 inches Hg for an extended period of time (approximately 12 hours).

Provide the following:

- a. In light of recent weather conditions in the northeast (subzero temperatures) justify the lower limit of -10°F for the ambient air intake temperature. If the temperature has to be revised downward, discuss the effects this will have on engine operation and output, and will air preheating be required to maintain engine performance.
- b. Using the revised conditions stated above, discuss the effects they will have on engine operation and output.

RESPONSE: a. A low ambient air intake temperature will have no affect on engine operation under load, and output. Combustion air is preheated in the turbocharger and is supplied to the engine at a temperature of 100^A minimum and 200^A maximum.

°F

°F

The diesel engine manufacturer has advised that an air temperature of 50°F or greater at the turbocharger inlet will result in sufficient engine air temperature preheating to allow continuous no-load operation. Ambient air preheating to at least 50°F will be provided by the installation of electric heaters in the air intake plenum. The heaters will be capable of raising the air temperature from the extreme low ambient temperature to at least 50°F, based on no-load combustion air flow. Heating elements will be powered by train-associated 1E busses. Consistent with the design of the Combustion Air Intake System, the heaters will be seismically supported such that following a seismic event the operation of the diesel engine will not be degraded. Automatic controls, cable and circuit breakers for electric heaters will be Class 1E. The heating elements will be automatically energized following engine start as a result of an "S" signal without loss of off-site power,

Upon loss of off-site power the electric heaters will be automatically tripped from the Class 1E buses as preheating is not required when the diesel generators are carrying load. The automatic tripping of the combustion air preheaters will be periodically tested. An air temperature less than 50°F at the turbocharger inlet will be alarmed.

- b. A tornado pressure transient of 1.5 seconds is less severe and will not affect engine operation and output. A storm pressure of 26 inches Hg for a period of 14 hours may result in a reduction in mass flow of combustion air to the engine. However, since the Combustion Air System is designed for approximately 50% excess air flow, this transient will not affect engine operation and output. The engine may tend to smoke more than normal, but it will be capable of carrying rated load. A storm pressure of 26 inches Hg corresponds to an altitude of less than 4,000 feet. The engine manufacturer's derating tables indicate that no derating is required for an altitude up to 4,600 feet.
- c. FSAR Subsection 9.5.8.2 will be revised to reflect the environmental conditions stated in the RAI.