PSNH PUBLIC SERVICE
Company of New Hampshire

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T.F. B7.1.2

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) USNRC Letter, dated February 12, 1982, "Request for Additional Information," F. J. Miraglia to W. C. Tallman
(c) PSNH Letter, dated March 12, 1982, "Response to 430 Series RAIs; (Power Systems Branch)," J. DeVincentis to F. J. Miraglia

Subject: Revised Responses to 430 Series RAIs; (Power Systems Branch)

Dear Sir:

We have enclosed revised responses to the following 430 Series Requests for Additional Information (RAIs) which were forwarded in Reference (b):

430.65, 430.81, 430.99, 430.123, 430.124

The original responses to the above RAIs were submitted in Reference (c).

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

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

John R. DeVincentis

J. DeVincentis
Project Manager

BOO!

ALL/fsf

430.65 The availability on demand of an emergency diesel generator is dependent upon, among other things, the proper functioning of its control and monitoring instrumentation. This equipment is generally panel mounted and in some instances, the panels are mounted directly on the diesel generator skid. Major diesel engine damage has occurred at some operating plants from vibration-induced wear on skid-mounted control and monitoring instrumentation. This sensitive instrumentation is not made to withstand and function accurately for prolonged periods under continuous vibrational stresses normally encountered with internal combustion engines. Operation of sensitive instrumentation under this environment rapidly deteriorates calibration, accuracy and control signal output.

Therefore, except for sensors and other equipment that must be directly mounted on the engine or associated piping, the controls and monitoring instrumentation should be installed on a free-standing, floor-mounted panel separate from the engine skids, and located on a vibration-free floor area. If the floor is not vibration free, the panel shall be equipped with vibration mounts.

Confirm your compliance with the above requirement or provide justification for noncompliance.

RESPONSE: Instrumentation and controls not specifically mounted on the engine or associated piping are located in the "engine gauge panel", "relay and terminal box", and the "diesel generator control panel".

The "engine gauge panel" is mounted on the engine end of the skid, using vibration isolating mounts, and contains gauges and switches. Failure of any instrument located in this panel does not affect operation of the diesel generator.

The "relay and terminal box" mounted on the generator end of the skid contains control relays and the solid state speed switch. These devices are not considered sensitive instrumentation subject to setpoint drift due to vibration. However, the "relay and terminal box" will be modified in order to provide vibration isolation for the devices mounted inside the box.

The "diesel generator control panel" is a free-standing, floor-mounted panel separated from the engine skid. This control panel contains the balance of diesel generator controls and monitoring instrumentation.

430.81 Discuss the precautionary measures that will be taken to assure the quality and reliability of the fuel oil for emergency diesel generator operation. Include the type of fuel oil, impurity and quality limitations as well as diesel index number or its equivalent, cloud point, entrained moisture, sulfur, particulates and other deleterious insoluble substances; procedure for testing newly delivered fuel, periodic sampling and testing of on-site fuel oil (including interval between tests), interval of time between periodic removal of condensate from fuel tanks and periodic system inspection. In your discussion include reference to industry (or other) standards which will be followed to assure a reliable fuel oil supply to the emergency generators.

RESPONSE: Fuel oil will be purchased to Federal Fuel Oil Specification VV-F-8006 (April 2, 1975) as per Regulatory Guide 1.137. Tankers arriving at the site will be sampled and analyzed, as a minimum, for specific gravity, water, sediment, and viscosity prior to transfer to a storage tank. Within 7 days the insoluables test specified by ASTM-D2274-1974 will be performed. Within fourteen days of a transfer to a storage tank, the analysis required by ASTM D975-1978 will be completed.

The diesel day tank will be sampled for water monthly and daily when engine operating period exceeds one hour.

Every 92 days the storage tanks will be sampled and tested as indicated above.

All sampling will be in accordance with ASTM D270-1975.

Reliability of diesel oil supply is discussed in the response to RAI 430.83.

RAI 430.99 (9.5.5)

In Section 9.5.5 of the FSAR you state that the diesel generator component cooling water heat exchanger is not located in the diesel generator building but in the primary auxiliary building, Figure 9.5-6 confirms this arrangement and it also shows that the diesel generator cooling water lines are routed from the diesel generator building through the plant yard before entering the primary auxiliary building. No mention is made about the exact routing of the piping or tornado missile protection for these lines. Provide the following:

a. Indicate where these lines are located (above or below ground) and the tornado missile protection provided for these lines. If none is provided, it is our position that tornado missile protection be provided. Comply with this position.

b. Provide a discussion of the external corrosion protection provided for this piping. Where corrosion protective coatings are being considered, include the industry standards which will be used in their application. If this piping is buried, discuss what provisions will be made in the design of this piping in the use of an impressed current type cathodic protection system in addition to waterproof protective coatings to minimize corrosion of buried piping. If cathodic protection is not being considered, provide your justification supplements by adequate drawings.

c. It is our position that if the cooling water piping for diesel generator room 1A passes through diesel generator room 1B or if the piping for both diesel generators are in close proximity to each other such that a single accident, such as a tornado missile or high energy line pipe break, could damage both the trains, then this is unacceptable and your design will have to be revised. Provide a description supplemented by adequate drawings of the routing of the cooling water piping for both trains. Include in the description sufficient information to show that the piping is adequately separated or protected and that any single accident will not degrade both trains.

RESPONSE:

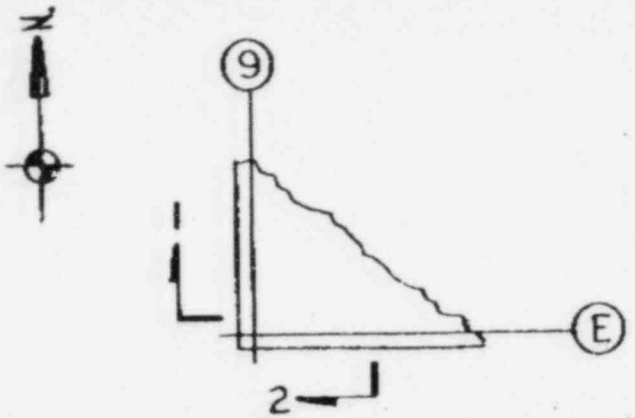
a. The D-G cooling water lines exit the D-G building below grade through the west wall and enter the PAB below grade. Both buildings are seismic Category I and provide tornado missile protection for equipment and piping inside the buildings. The underground portions of the cooling water lines are a minimum of seven feet below grade, to provide protection against freezing and tornado missiles.

b. The buried piping has been coated and wrapped prior to installation with Tapecoat-20, applied in accordance with the manufacturer's recommendations and standard industry practice. An impressed current system for cathodic protection has been provided.

(430.99)

c. The cooling water piping for one D-G does not pass through any areas associated with the other D-G. The piping exits to the yard through the west wall of the storage tank rooms, which are separated by a division wall. There are no high energy lines in the PAB or DGB whose failure could affect the cooling water piping. Adequate drainage is provided in the PAB and DGB to prevent flooding caused by a crack in the cooling water piping, or other adjacent moderate energy piping.

The buried portions of these lines are physically separated from each other so that a MELB in one line will not affect the integrity of the others. There are other moderate energy lines adjacent to the buried D-G cooling water lines. The attached figures indicate the physical locations of these buried lines. The location and separation of these lines precludes any affect on the D-G cooling water lines. In the unlikely event of a leak or break, all of Service Water (SW) lines adjacent to and below the D-G lines can be isolated (see Figure 9.2-1), to prevent severe erosion and undermining.



KEY PLAN

DIESEL GENERATOR BLD'G.

▲ NOTES: (REF. FIG. 9.2.1 FOR NOTES A—D)

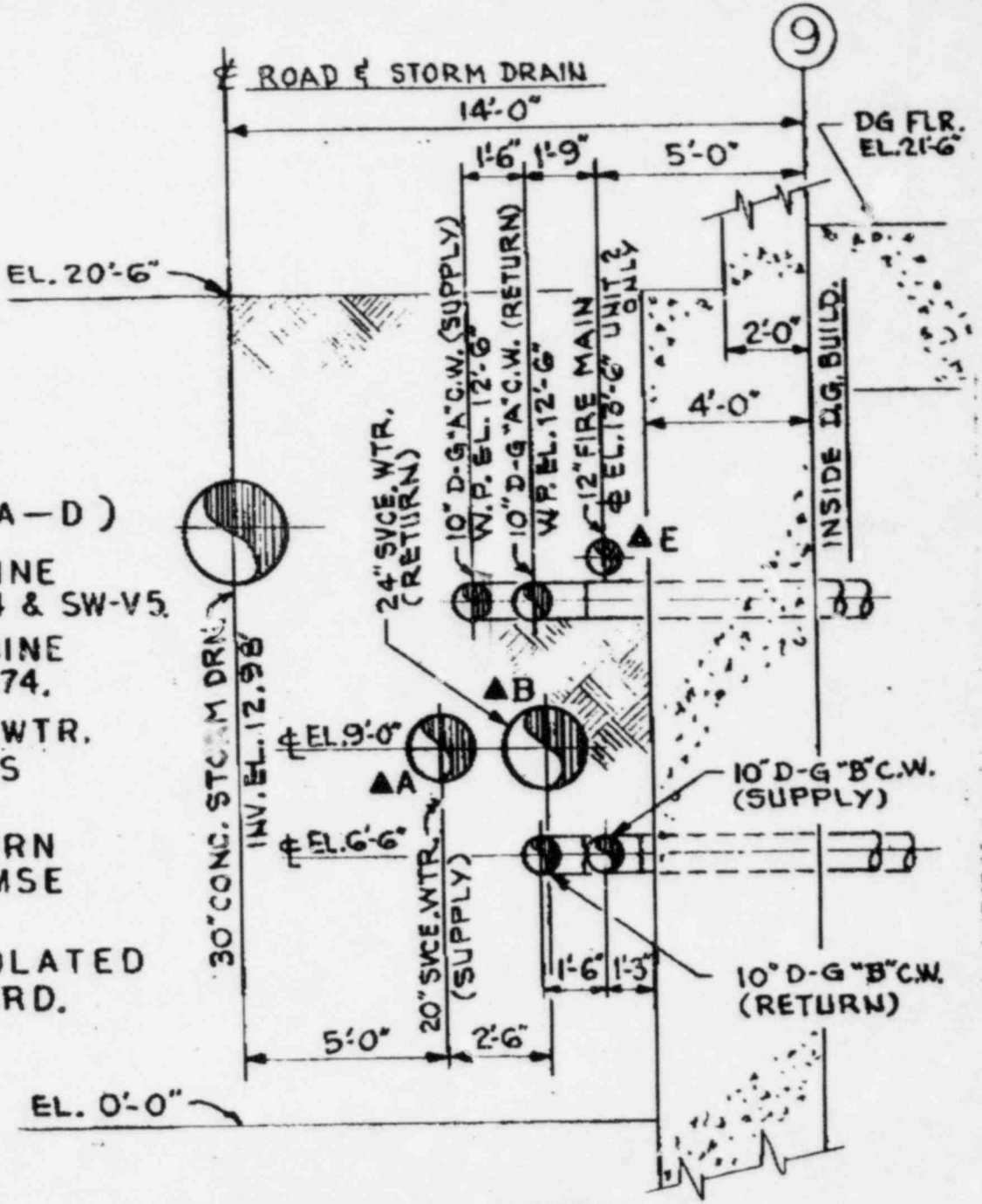
A-20" SERVICE WTR. SUPPLY TO TURBINE BLD'G. IS ISOLATED BY VALVES SW-V4 & SW-V5.

B-24" SERVICE WTR. RETURN FR. TURBINE BLD'G. IS ISOLATED BY VALVE SW-V74.

C-32" SERVICE WTR. RETURN TO CIRC. WTR. DISCHARGE IS ISOLATED BY VALVES SW-V19 & SW-V20

D-24" SERVICE WTR. SUPPLY & RETURN LINES TO COOLING TOWER ARE AMSE CLASS 3, SEISMIC CATEGORY I.

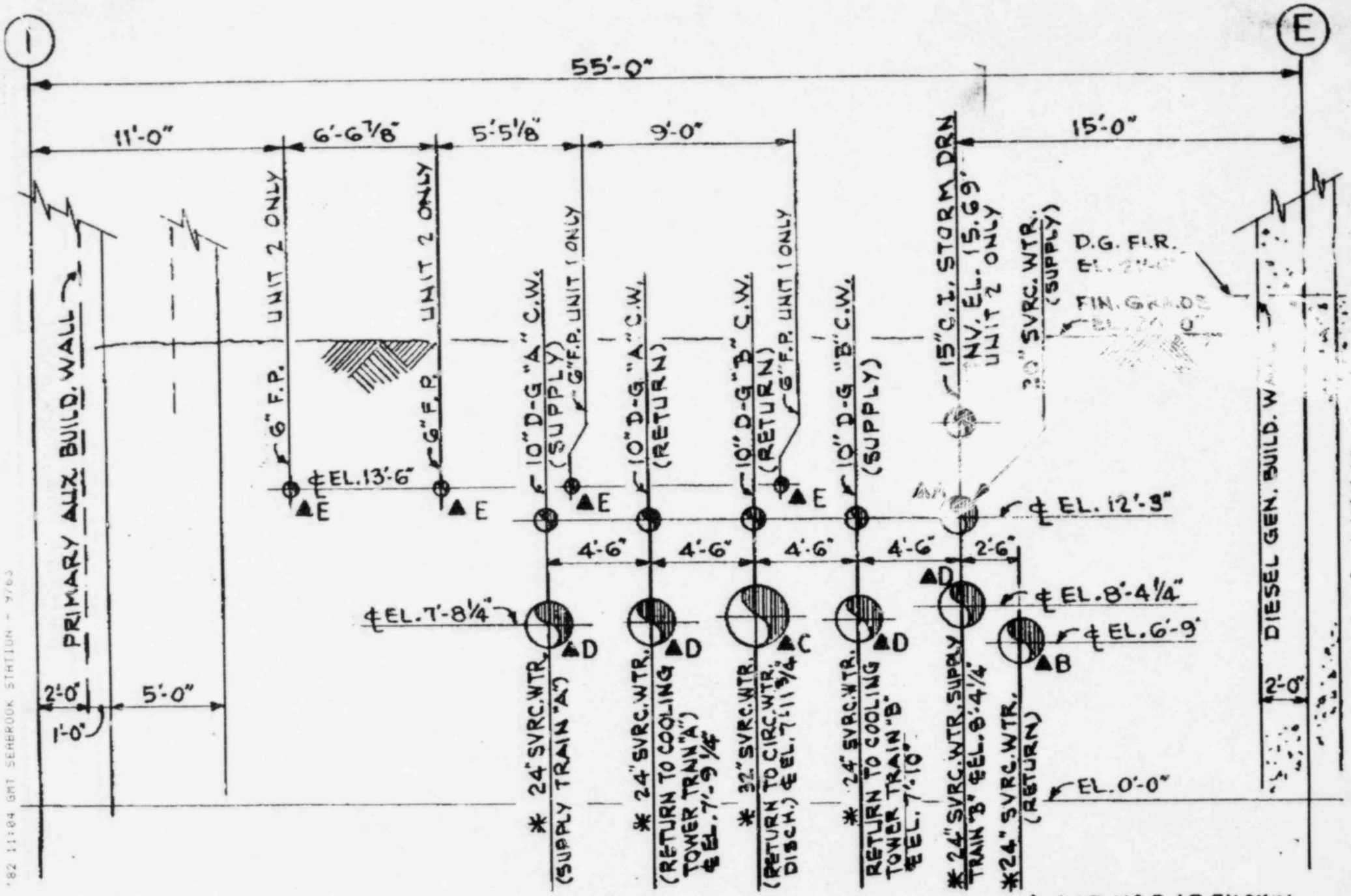
E-12" & 6" FIRE MAINS CAN BE ISOLATED BY APPROPRIATE VALVES IN YARD. (REF. FIG. 9.5-1)



ELEV. LOOKING NORTH

SCALE 1/4" = 1'-0"

SK 430.99-1



* UNIT NO. 2 AS SHOWN
UNIT NO. 1 SIMILAR

ELEV. LOOKING WEST

SCALE 3/16" = 1'-0"

SK 430.99-2

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430.123 (9.5.8) Provide the results of an analysis that demonstrates that the function of your diesel engine air intake and exhaust system design will not be degraded to an extent which prevents developing full engine rated power or cause engine shutdown as a consequence of any meteorological or accident condition. Include in your discussion the potential and effect of fire extinguishing (gaseous) medium, recirculation of diesel combustion products, or other gases that may intentionally or accidently be released on-site, on the performance of the diesel generator.

RESPONSE: The engine is designed to operate under adverse meterological conditions as noted in FSAR Subsection 9.5.8.2 (see Response to RAI 430.130). The location and physical separation of air intakes, exhaust discharges, and building vents precludes recirculation of gases which could prevent the diesel generators from performing their safety function.

There is no CO_2 system in the DG area. There are no gases stored in the DG rooms. Due to the excess combustion air normally supplied by design to the engine, the recirculation of over 10% of exhaust gases from a leak in the exhaust system will not affect engine performance.

The following gases for laboratory use are stored in a fire-proof (2 hour min. rating) enclosure over 30 feet north of the Unit 1 DG Building:

a) propane, 6 cyl.
b) hydrogen, 6 cyl.
c) argon-methane, 4 cyl.

An accidental release of these gases will not adversely affect engine performance due to the small quantity, physical separation, and natural dispersion into the atmosphere.

The fire protection equipment located in the diesel generator rooms, the DG fuel oil day tank rooms and the DG fuel oil storage rooms all consist of dry-piped, open-head deluge system. The piping is all seismically supported. Additionally, the deluge valves for all these areas are seismically qualified to prevent inadvertent actuation and remain operable both during and following a seismic event.

RAI 430.124 (9.5.8)

Discuss the provisions made in your design of the diesel engine combustion air intake and exhaust system to prevent possible clogging, during standby and in operation, from abnormal climatic conditions (heavy rains, freezing rain, dust storms, ice and snow) that could prevent operation of the diesel generator on demand.

RESPONSE:

The diesel engine combustion air is drawn through screened openings located in the north and south walls of the diesel generator building. The openings are covered by a canopy for missile protection. This canopy also protects against any precipitation entering this system. The air intake piping guards against dust entering this system from the D-G rooms. For the Seabrook plant location, dust storms are not a significant consideration. Anticipated accumulations of dust and airborne debris will not affect the engine exhaust system.

The diesel engine exhaust stack has a drip leg, of 12" nominal diameter pipe approximately 2'-9" long, to capture precipitation. This leg is located in the horizontal piping between the vertical exhaust stack and the exhaust silencer. A deflector plate will be mounted on the exhaust stack to minimize the amount of precipitation that could enter and accumulate in the exhaust stack. Gate valves located at the bottom of this leg and also in the bottom of the exhaust silencer will be periodically opened to drain the exhaust system. Also note that high exhaust temperatures of 900°F-1000°F will quickly evaporate any captured precipitation when diesel engine is running.

The portion of the exhaust stack above the roof is not protected against tornado missiles. If the exhaust stack is penetrated or severed by a tornado missile, the operation of the D-G unit would not be affected. A pressure relief device will be provided to insure D-G operation in the event that the exhaust stack is dented or deformed such that the reduced flow area results in an increased backpressure on the engine exhaust system.