PSE&G Public Service Electric and Gas Company

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Robert L. Mittl General Manager
Nuclear Assurance and Regulation

September 25, 1984

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20814

Attention: Mr. Albert Schwencer, Chief
Licensing Branch 2
Division of Licensing

Gentlemen:

HOPE CREEK GENERATING STATION
DOCKET NO. 50-354
POWER SYSTEM BRANCH

Pursuant to discussions with the Power System Branch (PSB), the responses to the FSAR Questions listed in Attachment 1 have been revised and are enclosed for your review and approval (See Attachment 2).

The revised FSAR question responses are scheduled to be incorporated into Amendment 8 of the HCGS FSAR.

Should you have any questions or require any additional information on these responses, please contact us.

Very truly yours,

R Mittl

Attachments

C D. H. Wagner
USNRC Licensing Project Manager

W. H. Bateman
USNRC Senior Resident Inspector

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Date: 9/25/84

Attachment 1

QUESTION NO.	FSAR SECTION
430.62 (Rev. 2)	8.3
430.65 (Rev. 2)	9.5.2
430.73 (Rev. 2)	9.5.3
430.75 (Rev. 2)	9.5.3
430.83 (Rev. 2)	3.2
430.115 (Rev. 2)	9.5.6
430.120 (Rev. 2)	9.5.6
430.135 (Rev. 2)	9.5.7
430.143 (Rev. 2)	9.5.8

ATTACHMENT 2

#16
9-25-84
Rev 2

QUESTION 430.62 (SECTION 8.3)

Periodic testing and test loading of an emergency diesel generator in a nuclear power plant is a necessary function to demonstrate the operability, capability and availability of the unit on demand. Periodic testing coupled with good preventive maintenance practices will assure optimum equipment readiness and availability on demand. This is the desired goal.

To achieve this optimum equipment readiness status the following requirements should be met:

1. The equipment should be tested with a minimum loading of 25 percent of rated load. No load or light load operation will cause incomplete combustion of fuel resulting in the formation of gum and varnish deposits on the cylinder walls, intake and exhaust valves, pistons and piston rings, etc. and accumulation of unburned fuel in the turbocharger and exhaust system. The consequences of no load or light load operation are potential equipment failure due to the gum and varnish deposits and fire in the engine exhaust system.

2. Periodic surveillance testing should be performed in accordance with the applicable NRC guidelines (R.G. 1.108), and with the recommendations of the engine manufacturer. Conflicts between any such recommendations and the NRC guidelines, particularly with respect to test frequency, loading and duration, should be identified and justified.

3. Preventive maintenance should go beyond the normal routine adjustments, servicing and repair of components when a malfunction occurs. Preventive maintenance should encompass investigative testing of components which have a history of repeated malfunctioning and require constant attention and repair. In such cases consideration should be given to replacement of those components with other products which have a record of demonstrated reliability, rather than repetitive repair and maintenance of the existing components. Testing of the unit after adjustments or repairs have been made only confirms that the equipment is operable and does not necessarily mean that the root cause of the problem has been eliminated or alleviated.

4. Upon completion of repairs or maintenance and prior to an actual start, run, and load test a final equipment check should be made to assure that all electrical circuits are functional, i.e., fuses are in place, switches and circuit breakers are in their proper position, no loose wires, all test leads have been removed, and all valves are in the proper position to permit a manual start of the equipment. After the unit has been satisfactorily started and load

tested, return the unit to ready automatic standby service and under the control of the control room operator.

Provide a discussion of how the above requirements have been implemented in the emergency diesel generator system design and how they will be considered when the plant is in commercial operation, i.e., buy what means will the above requirements be enforced. (SRP 8.3.1, Parts II & III).

RESPONSE

1. Minimum load requirements for SDG testing will be identified in OP-SO.KJ-001, Diesel Generator Operation. Add insert 1

2. See response to Question 430.15.

3. A comprehensive preventive maintenance (PM) program for the SDG incorporates ~~is currently being developed and this program will consist of~~ the latest vendor recommendations and the requirements of Chapter 16. One SDG can be taken out of service, in accordance with 8.3.1.1.3, enabling periodic maintenance and/or rework to be performed, ~~in a timely manner. Additionally, a reliability monitoring program will be implemented to monitor and trend repetivive equipment and/or component failures.~~ insert B → In this manner, the root causes of system or component malfunctions can be more readily identified and corrective actions taken as necessary.

4. The supervisor in charge of the work will verify for completeness, and administrative controls will be implemented to ensure the system is restored to its operable condition prior to any start, run, or load test on the SDG.

The following procedures will reference this topic:

MD-PM.KJ-001(Q)	Diesel Engine PM
MD-PM.KJ-002(Q)	Starting Air System PM
MD-PM.KJ-003(Q)	Generator PM
MD-CM.KJ-001(Q)	Diesel Engine Overhaul and Repair
MD-CM.KJ-002(Q)	Starting Air Compressor Overhaul, Repair and Replacement
MD-CM.KJ-003(Q)	Generator Overhaul and Repair

Station Administrative Procedures 17, 21, 22, 23, and 26, as discussed in Section 13.5.

Add insert A.

Insert 1

Loading requirements will incorporate the diesel engine manufacturers' recommendations to preclude gum and varnish deposits on engine components or the engine exhaust system. See also the response to Question 430.22 for further information on no load and light load operation of the HCGS diesel generators.

Insert B 430.62

Additionally, a reliability monitoring program will be implemented at HCGS. The HCGS reliability program enhances SDG reliability by:

1. Analyzing machinery history record for recurring problems or failures of the SDG or supporting auxiliary systems or components.

2. Tracking operating experience reports, circulars, letters and notices of failure or problems given to all diesel generators.

3. Use of the NPRDS data base system.

4. Analyzing surveilliance testing results.

These functions are an ongoing and continuous responsibility of the Technical Department. Items which may adversely impact the safety function of the diesel engines at the station will receive immediate attention to determine a plan of action. Routine feedback issues are reviewed as received. All material reviewed as part of the feedback program is tracked on a computerized tracking system to ensure material is reviewed and dispositioned.

INSERT A 430.62

These maintenance procedures will require that after a cumulative four hours of operation at light load, i.e., less than 20% of rated, on any diesel, that diesel will be operated for one hour at a minimum of 50% rated load as per the diesel manufacturer's recommendations.

QUESTION 430.65 (SECTION 9.5.2)

The information regarding the onsite communications system (Section 9.5.2) does not adequately cover the system capabilities during transients and accidents. Provide the following information:

a. Identify all working stations on the plant site where it may be necessary for plant personnel to communicate with the control room or the emergency shutdown panel during and/or following transients and/or accidents (including fires) in order to mitigate the consequences of the event and to attain a safe cold plant shutdown.

b. Indicate the maximum sound levels that could exist at each of the above identified working stations for all transients and accident conditions.

c. Indicate the types of communication systems available at each of the above identified working stations.

d. Indicate the maximum background noise level that could exist at each working station and yet reliably expect effective communication with the control room using:

   1. the page party communiations systems, and

   2. any other additional communication system provided that working station.

e. Describe the performance requirements and tests that the above onsite working stations communication system will be required to pass in order to be assured that effective communication with the control room or emergency shutdown panel is possible under all conditions.

f. Identify and describe the power source(s) provided for each of the communications systems. (SRP 9.5.2; Parts II & III).

RESPONSE

Insert A

a. ~~The identification of all working stations where it may be necessary for plant personnel to communicate with the control room during and/or following transients and/or accidents is not provided because all necessary plant shutdown controls and indications are located within the control room which precludes necessity of having plant personnel located at any particular station. If, however, plant shutdown is controlled~~

Insert A

from the emergency shutdown panel, then it may be necessary to have plant personnel able to communicate from three working stations which have backup controls and indications. These three stations are at the diesel generator remote control panels rooms (4 total), the Class 1E switchgear rooms (4 total), and at the reactor protection system (RPS) motor generator set area. In the event of fires, the fire brigade reports to the affected area(s) and the areas are listed in Section 9.5.1.2.15.

b. Maximum sound levels have not been defined for the above working stations. The effectiveness of the communication system(s) will be demonstrated during the preoperational and power ascension test programs of Chapter 14. Insert B

c. The page party communication system is available at or nearby the above working stations. In addition, a two-way radio communication system is available as a backup system. Insert C

d. ~~The maximum background noise level that could exist at the stations for communicating with the control room has not been established.~~ The communications systems provided on HCGS are of proven design as used in previously approved plants. In addition, the communication system will be tested as described in Part (e) of this response. Insert D

e. See response to Question 430.68, communication systems performance requirements and tests. In-plant communication tests are also described in Section 14.2.12.1.38. The test method states that communication is checked between the control room and the remote shutdown panel. Insert E

f. The power source to the page party communication system is from an uninterruptible power supply feeding the public address system distribution panel 10D496 which in turn supplies the public address system cabinet 10C685, as shown on Sheet 2 of Figure 8.3-11. Insert F

Q430.65

Insert A

Table 9.5-17 identifies all necessary working stations where it may be necessary for plant personnel to communicate with the control room or the emergency shutdown panel during and/or following transients and/or accidents (including fires) in order to mitigate the consequences of the event and to attain a safe cold plant shutdown. The identified working stations or areas in this table are selected from the Fire Hazard Analysis presented in Appendix 9A wherein all areas containing safe shutdown equipment and cables are evaluated for effect of fire on the ability to achieve and maintain cold shutdown. The areas shown on Table 9.5-17 are those which contain equipment required for shutdown, areas containing only raceways and cables are not shown.

Insert B

The locations of public address loudspeakers and handset/speaker amplifier are selected to provide effective communications and to accommodate areas with high noise levels during normal plant operation and accident condition, including fire. The design of these public address components includes provisions for volume control of the loudspeakers, adjustment in loudspeaker mounting to provide maximum coverage, and special noise-cancelling handset which are effective in high ambient noise areas without use of acoustic booths. As indicated in Section 14.2.12.1.38, the public address system will be tested with area equipment running. Any relocation and adjustment of the public address components will be provided as necessary as result a of the testing. Estimates of maximum sound levels are provided as indicated on Table 9.5-17. These estimates are based on equipment being energized or running and based on no sound level attenuation which would result from accounting for room constant and distance and location of the noise source(s).

Insert C

Table 9.5-17 also shows for each of the safety-related rooms the types of communication system components available with the associated maximum sound levels within the room. All of the communication components have the capability to function in the sound environments that are listed in the Table 9.5-17. The table 9.5-17 defines the maximum sound level capability for each communication component.

Insert D

As part of Table 9.5-17, the maximum noise levels are estimated for the areas where personnel will be communicating with the control room or remote shutdown panel room. Generally, PA handsets and telephones are not located in areas with high noise levels. The maximum noise levels are estimated based on the type of operating equipment in the area with the sound defined by industry standards, such as NEMA Publication MG I and IEEE standards. If several types of equipment are in the same area, then the noise level associated with the noisiest equipment is shown on this table.

Q430.5

Insert E

The communication systems are preoperationally tested to demonstrate that the public address system is effective in areas with high noise levels and that other communication systems are effective between the control room or emergency shutdown panel and working stations as indicated in Table 9.5-17.

Insert F

This uninterruptible power supply (UPS) is fed from Class 1E, Channel A, distribution buses. The UHF radio system is also supplied with a non-class 1E uninterruptible power supply. The design of each UPS, as shown on Figure 8.3-11, is such that there are three input power feeders - two from 480V ac motor control centers and one from a 125V dc switchgear. In the case of the UHF radio system, the non-class 1E 480V ac motor control centers, which are connected to Class 1E 480V load centers, are tripped on a LOCA signal. The radio system will be powered from the non-class 1E batteries (4 hour rated) through the UPS under all accident cases. After a LOCA the operator can manually reconnect the non class 1E UPS to the Class 1E load center that is powered from the stand-by diesel generator. The UHF radio system will be powered at all times during any power distribution transfers. The non-class 1E UPS, batteries, and associated electrical distribution equipment that supply power to the radio system were purchased under the same technical specifications as the Class 1E equipment and are located in Seismic Category I structures.

Question 430.65 Table

Notes for Table 9.5-17

1. These lighting levels are at the panel or equipment surface.

2. The following are the maximum sound levels (db) that the communication components are capable of producing or operating in.

Component	Sound Level
PA speaker (driven by 30w amplifier)	120
PA headset	110
UHF radio portable set	80
Telephone	70

3. In these rooms the UHF radio sets' sound capability is below the maximum sound level that could be experienced in the room. In these rooms the adjacent hallway can be utilized for communication with the UHF radio set.

4. The work stations identified on the table are areas that may be required to be manned during design basis accidents or during the improbable event of a loss of all ac power.

5. These rooms have a PA handset for two way communication in the adjacent hallway, corridor or room (within approximately 50 ft of these rooms).

6. All Class 1E batteries are passive electrical components and do not require any inspection during a station blackout per the HCGS station blackout procedures. The electrical status of the Class 1E batteries is available in the control room.

7. All Class 1E dc switchgear (HPCI, RCIC, etc), inverters and battery chargers can be monitored at the control room and require no local control per the HCGS station blackout procedures.

8. These rooms and equipment are not required to be locally monitored or are not required during the station blackout condition per the HCGS procedures.

9. The 2 ft candle lighting level is a design intent which will cover a sufficient area of the corridor to provide safe ingress and egress routes. Any hazards within the corridor will be lighted to provide safe passage.

10. In addition to areas of the plant which have at least 10 ft candles of emergency lighting, trouble shooting during a station blackout may be required in the diesel fuel oil storage tank and pump rooms and the diesel generator battery rooms. Sufficient portable lighting will be stored in the corridors near each of these areas.

TABLE 9.5-17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA/EQUIPMENT	COMMUNICATIONS FEATURES: COMMUNICATIONS AVAILABLE AT AREA (See NOTE 2) LEGEND: 1 = PA HANDSET; 2 = PA SPEAKER; 3 = TELEPHONE; 4 = RADIO	COMMUNICATIONS FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA LEGEND: dBA = DECIBEL, A-WEIGHTED; < = LESS THAN	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- ESSENTIAL AC	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- 8-HOUR BATTERY PACK
AUXILIARY BUILDING				
Room 3576, EL. 137 REMOTE SHUTDOWN PANEL	1, 2, 3, 4	<60	Yes 30	10 (see note 1)
Room 5104 EL 54 HPCI BATTERIES	2, 4 (See NOTE 5)	<30	NOTE 6, 8 3	1
Room 5105, EL. 54 RPS MG SET	1, 2, 4	<85	NOTE 8 3	1
Room 5106, EL. 54 CORRIDOR	1, 4, 1	<55	NOTE 8 5	3 (See NOTE 9)
Room 5107, EL. 54 DIESEL FUEL OIL STORAGE TANKS AND PUMPS	2, 4 (See NOTE 5)	<80	NOTE 10 3	1 (See NOTE 10)
Room 5108, EL. 54 DIESEL FUEL OIL STORAGE TANKS AND PUMPS	2, 4 (See NOTE 5)	<80	NOTE 10 3	1 (See NOTE 10)
Room 3504, EL. 137 CORRIDOR	2, 4, 1	<50	NOTE 8 3	3 (See NOTE 9)

TABLE 9.5-17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM ESSENTIAL AC — WORK STATION	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM 8-HOUR BATTERY PACK
AUXILIARY BUILDING - CONTINUED	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN		
ROOM 5109, EL. 54 DIESEL FUEL OIL STORAGE TANKS AND PUMPS	2, 4 (See NOTE 5)	<80	— NOTE 10 — 3	1 (See NOTE 10)
ROOM 5110, EL. 54 DIESEL FUEL OIL STORAGE TANKS AND PUMPS	2, 4 (See NOTE 5)	<80	— NOTE 10 — 3	1 (See NOTE 10)
ROOM 5111, EL. 54 CORRIDOR	4, 2 (See NOTE 5)	<50	— NOTE 8 — 3	×2 (See NOTE 9)
ROOM 5112, EL. 54 CORRIDOR	1 (IN AIRLOCK VESTIBULE), 2, 4	<50	— NOTE 8 — 5	×2 (See NOTE 9)
ROOM 5128, EL. 54 RCIC BATTERIES	2, 4 (See NOTE 5)	<50	— NOTE 6, 8 — 3	1
ROOM 5129, EL. 54 HPCI BATTERY CHARGER AND DC SWITCHGEAR	4, 2 (See NOTE 5)	<70	— NOTE 7 — 10	1
ROOM 5101, EL. 137 STAIRWAY	2, 4	<50	— NOTE 8 — 3	3 (See NOTE 9)

TABLE 9.5 - 17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT LOCATION - ESSENTIAL AC	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT LOCATION - 8-HOUR BATTERY PACK
AUXILIARY BUILDING CONTINUED	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN	WORK STATION	
ROOM 5130, EL. 54 RCIC BATTERY CHARGER AND DC SWITCHGEAR	2, 4 (see NOTE 5)	< 70	NOTE 7 3	1
ROOM 5208, EL. 77 D/G ROOM HVAC COOLER AND RECIRCULATION FAN	2, 4 (see NOTE 3) AND 5	< 100	NOTE 8 3	1
ROOM 5209, EL. 77 D/G ROOM HVAC COOLER AND RECIRCULATION FAN	2, 4 (see NOTE 3) AND 5	< 100	NOTE 8 3	1
ROOM 5210, EL. 77 D/G ROOM HVAC COOLER AND RECIRCULATION FAN	2, 4 (see NOTE 3) AND 5	< 100	NOTE 8 3	1
ROOM 5211, EL. 77 D/G ROOM HVAC COOLER AND RECIRCULATION FAN	2, 4 (see NOTE 3) AND 5	< 100	NOTE 8 3	1
ROOM 5217 EL. 77 CORRIDOR	1 (IN ANNUNCIATOR VESTIBULE), 2, 4	< 50	NOTE 8 5	x2 (see Note 9)

TABLE 9.5-17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- ESSENTIAL AC		8-HOUR BATTERY PACK
AUXILIARY BUILDING - CONTINUED	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN	WORK STATION		
ROOM 5301, EL. 102 CORRIDOR	2, 4, 1	<50	NOTE 8	5	≠2
ROOM 5302, EL. 102 CONTROL PANELS	2, 4 (See NOTE 5)	<65	NOTE 8	3	1
ROOM 5304, EL. 102 D/G AND CONTROL PANELS	2, 4 (see Note 3) and 5	<110	Yes	3	≥10
ROOM 5305, EL. 102 D/G AND CONTROL PANELS	2, 4 (see Note 3) and 5	<110	Yes	3	≥10
ROOM 5306, EL. 102 D/G AND CONTROL PANELS	2, 4 (see Note 3) and 5	<110	Yes	3	≥10
ROOM 5307 EL. 102 D/G AND CONTROL PANELS	2, 4 (see Note 3) and 5	<110	Yes	3	≥10
ROOM 5313, EL. 102 CORRIDOR	1 (IN ADJACENT VESTIBULE), 2, 4	<50	NOTE 8	1	≠2 (See NOTE 9)

TABLE 9.5-17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT INCLUDING WORK STATION — ESSENTIAL AC	8-HOUR BATTERY PACK	
AUXILIARY BUILDING CONTINUED	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN			
ROOM 5401, EL. 124 CORRIDOR/ACCESS AREA	2, 4 (See NOTE 5)	<50	NOTE 8	3	2
ROOM 5403, EL. 117-6 CABLE SPREAD ROOM	1, 2, 1	<65	NOTE 7	3	2
ROOM 5404, EL. 124 CORRIDOR	1, 2, 4	<50	NOTE 8	3	2
ROOM 5409, EL. 124 CORRIDOR	1, 2, 1	<50	NOTE 8	3	2
ROOM 5410, EL. 130 D/G REMOTE CONTROL PANELS AND SEQUENCER	1, 2, 4	<65	YES	~~3~~ 10	~~2~~ 10 (see NOTE 1)
ROOM 5411, EL. 130 SWITCHGEAR, LOAD CENTERS, MCCs AND DIST. PANELS	1, 2, 4	<70	YES	~~3~~ 10	~~2~~ 10 (see NOTE 1)
ROOM 5412, EL. 130 D/G REMOTE CONTROL PANELS AND SEQUENCER	1, 2, 4	<65	YES	~~3~~ 10	~~2~~ 10 (see NOTE 1)
ROOM 5413, EL. 130 SWITCHGEAR, LOAD CENTERS, MCCs AND DIST. PANELS	1, 2, 4	<70	YES	~~3~~ 10	~~2~~ 10 (see NOTE 1)

TABLE 9.5-17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT LOCATION - ESSENTIAL AC	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT LOCATION - 8-HOUR BATTERY PACK	
AUXILIARY BUILDING - CONTINUED	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN	WORK STATION		
ROOM 5414, EL. 130 D/G REMOTE CONTROL PANELS AND SEQUENCER	1, 2, 4	<65	YES	3	10 (see NOTE 1)
ROOM 5415, EL. 130 SWITCHGEAR, LOAD CENTERS, MCC & AND DIST. PANELS	1, 2, 4	<70	YES	3	10 (see NOTE 1)
ROOM 5416, EL. 130 D/G REMOTE CONTROL PANELS AND SEQUENCER	1, 2, 4	<65	YES	3	10 (see NOTE 1)
ROOM 5417, EL. 130 SWITCHGEAR, LOAD CENTERS, MCC & AND DIST. PANELS	1, 2, 4	<70	YES	3	10 (see Note 1)
ROOM 5442, EL. 124 FANS CONTROL PANELS	2, 4 (See NOTE 5)	<65	NOTE 8	3	1
ROOM 5448, EL. 124 INVERTERS AND DIST. PANELS	1 (IN ADJACENT VESTIBULE), 2, 4	<70	NOTE 7	3	1
ROOM 5501 EL. 137 INVERTERS AND DIST. PANELS	2, 3 (IN ADJACENT ROOM), 4	<70	NOTE 7	3	2

TABLE 9.5 - 17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT LOCATION - ESSENTIAL AC	WORK STATION	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT LOCATION - 8-HOUR BATTERY PACK	
AUXILIARY BUILDING - CONTINUED	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN				
ROOM 5502, EL. 137 CORRIDOR	2, 3 (IN ADJACENT ROOM), 4	<50	NOTE 8	8	2	(See NOTE 9)
ROOM 5510, EL. 137 CONTROL ROOM PANELS AND CONSOLES	1, 2, 3, 4	<60	YES	30	15	
ROOM 5537, EL. 137 CORRIDOR	1 (IN ADJACENT VESTIBULE), 2, 4	<50	NOTE 8	3	2	(See Note 9)
ROOM 5538, EL. 137 BATTERY CHARGERS, FUSE BOX AND BATT. MONITOR	4 (See NOTE 5)	<65	NOTE 6	3	2	(See note 10)
ROOM 5539, EL. 137 BATTERIES	2, 4 (See NOTE 5)	<50	NOTE 6, 10	3	2	(See NOTE 10)
ROOM 5540, EL. 137 BATTERY CHARGERS, FUSE BOX AND BATT. MONITOR	4 (See NOTE 5)	<65	NOTE 6	3	2	~~(See note 10)~~
ROOM 5541, EL. 137 BATTERIES	4 (See NOTE 5)	<50	NOTE 6, 10	3	2	(See NOTE 10)
ROOM 5542, EL. 137 BATTERY CHARGERS FUSE BOX AND BATT. MONITOR	2, 4 (See NOTE 5)	<65	NOTE 6	3	2	~~(See note 10)~~

TABLE 9.5-17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- ESSENTIAL AC	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- 8-HOUR BATTERY PACK
AUXILIARY BUILDING - CONTINUED	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN	WORK STATION	
ROOM 5513, EL. 137 BATTERIES	2, 4 (see NOTE 5)	< 50	NOTE 3, 10	2 (see NOTE 10)
ROOM 5511, EL. 137 BATTERY CHARGERS, FUSE BOX AND BATT. MONITOR	2, 4 (see NOTE 5)	< 65	NOTE 3, 6	2 ~~(see NOTE 10)~~
ROOM 5515, EL. 137 BATTERIES	4 (see NOTE 5)	< 50	NOTE 3, 10	2 (see NOTE 10)
ROOM 5602, EL. 155-3 CONTROL AREA WATER CHILLER, CONTROL ROOM AIR HANDLING UNIT AND PENTHOUSE AIR FAN, AND HVAC CONTROL PANEL	1 (LOCATED AWAY FROM LARGEST NOISE SOURCE), 2, 4 (see NOTE 3) AND 5	< 110	NOTE 3, 8	2
ROOM 5601, EL. 163-6 CORRIDOR	1, 2, 4	< 50	NOTE 3, 8	2 (see NOTE 9)
ROOM 5605, EL. 163-6 CONTROL PANELS	1, 2 (see NOTE 5)	< 65	NOTE 3, 8	2
ROOM 5611, EL 163-6 CORRIDOR	2, 1 (see NOTE 5)	< 50	NOTE 3, 8	2 (see NOTE 9)

TABLE 9.5-17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- ESSENTIAL AC		EMERGENCY LIGHTING SYSTEM FEATURES: 8-HOUR BATTERY PACK	
AUXILIARY BUILDING CONTINUED -	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN	WORK STATION			
ROOM 5606, EL. 163'-6 SWITCHGEAR ROOM COOLERS AND D/G BATTERY ROOM EXHAUST FANS	2, 4 (see NOTE 5)	<90	NOTE 7	5	2	
ROOM 5607, EL. 163'-6 INVERTER, DC SWITCHGEAR, BATTERY CHARGER AND FUSE BOX	4 (see NOTE 5)	<70	NOTE 7	3	1	
ROOM 5608, EL. 163'-6 CORRIDOR	1, 2 (IN ANCIENT CARRIER), 4	<50	NOTE 8	5	2	(see NOTE 9)
ROOM 5609, EL. 163'-6 BATTERIES	4 (see NOTE 5)	<50	NOTE 6	4	2	
ROOM 5610, EL. 163'-6 CORRIDOR	4, 1	<50	NOTE 8	9	2	(see Note 9)
ROOM 5612, EL. 163'-6 CORRIDOR	4, 1	<50		8	2	(see Note 9)
ROOM 5629, EL 163'-6 SWITCHGEAR ROOM COOLERS AND D/G BATTERY ROOM EXHAUST FANS	1, 2, 4 (see NOTE 3)	<90	NOTE 7	5	2	
ROOM 5630 EL 163'-6 CONTROL AREA CHILLER, CONTROL ROOM AIR HANDLING UNIT AND TOILET EXH FAN, AUX. BLDG. CENTRAL AREA	2, 4 (see NOTE 3) AND 5	<110	NOTE 8	3	2	

TABLE 9.5 - 17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT LOCATION - ESSENTIAL AC	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT LOCATION - 8-HOUR BATTERY PACK	
AUXILIARY BUILDING - CONTINUED	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN	WORK STATION		
ROOM 5702, EL. 172 CORRIDOR	1, 2 (IN ADJACENT ROOM), 4	<70	NOTE 8	5	2 (SEE NOTE 9)
ROOM 5704, EL. 178 CONTAINS ANN. DIESEL AREA H/AC EQUIPMENT	1 (LOCATED AWAY FROM NOISEST EQUIPMENT), 2, 4 (SEE NOTE 3)	<105	NOTE 7	3	2
REACTOR BUILDING					
ROOM 4104, EL. 54 CORE SPRAY PUMP AND UNIT COOLERS	1 (IN ADJACENT VESTIBULE), 2, 4 (SEE NOTE 3)	<106	NOTE 8	15	2
ROOM 4102, EL. 54 TO 101 VALVES	2, 4 (SEE NOTE 5)	<70	NOTE 8	3	1
ROOM 4105, EL. 54 CORE SPRAY PUMP AND UNIT COOLERS	1 (IN ADJACENT VESTIBULE), 2, 4 (SEE NOTE 3)	<106	NOTE 8	15	2
ROOM 4107, EL. 54 RHR PUMP, SERVICE PUMP, UNIT COOLER AND INSIDE VALVE ROOM	1 (IN ADJACENT ELECTRICAL ROOM), 2, 4 (SEE NOTE 3)	<108	NOTE 8	3	1

TABLE 9.5-17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- ESSENTIAL AC	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- 8-HOUR BATTERY PACK
REACTOR BUILDING - CONTINUED	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN	WORK STATION	
ROOM 4108, EL. 54 RCIC - MCC AND INSTRUMENT RACKS	1, 2, 4	< 65	NOTE 7 — 10	2
ROOM 4109, EL. 54 RHR PUMP, HX AND UNIT COOLER	1 (IN ADJACENT ELECTRICAL ROOM), 2, 4 (See NOTE 3)	< 108	NOTE 8 — 3	2
ROOM 4110, EL. 54 RCIC PUMP, TURBINE, GLAND STEAM CONDENSER, VACUUM PUMP, CONDENSATE PUMP, LUBE OIL PUMP AND UNIT COOLERS	2, 4 (See NOTE 1) AND 5	< 110	NOTE 7 — 3	2
ROOM 4111, EL. 54 HPCI PUMP, TURBINE, GLAND STEAM CONDENSER, VACUUM PUMP, LUBE OIL PUMP, VALVES AND UNIT COOLERS	2, 4 (See NOTE 1) AND 5	< 110	NOTE 7 — 3	1
ROOM 4112, EL. 54 HPCI - MCC AND INSTR. RACKS	1, 2, 4	< 65	NOTE 7 — 3	2

TABLE 9.5-17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- ESSENTIAL AC	8-HOUR BATTERY PACK
REACTOR BUILDING - CONTINUED	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN	WORK STATION	
ROOM 4113, EL. 54 RHR PUMP, HX AND UNIT COOLER	1 (IN ADJACENT ELECTRICAL ROOM), 2, 4 (SEE NOTE 3)	<108	NOTE 8 — 3	2
ROOM 4114, EL. 54 RHR PUMP, JOCKEY PUMP, INSTRUMENT RACK, UNIT COOLERS	1 (IN ADJACENT ELECTRICAL ROOM), 2, 4 (SEE NOTE 3)	<108	NOTE 8 — 5	2
ROOM 4116, EL. 54 CORE SPRAY PUMP AND UNIT COOLERS	1 (IN ADJACENT VESTIBULE), 2, 4 (SEE NOTE 3)	<106	NOTE 8 — 25	2
ROOM 4118, EL. 54 CORE SPRAY PUMP AND UNIT COOLERS	1 (IN ADJACENT VESTIBULE), 2, 4 (SEE NOTE 3)	<106	NOTE 8 — 5	2
ROOM 4201, EL. 77 MCC	1 (IN ADJACENT ROOM), 2, 4	<65	NOTE 8 — 3	2
ROOM 4202, EL. 77 INSTRUMENT RACKS	1, 2, 4 (SEE NOTE 3)	<100	NOTE 8 — 3	2
ROOM 4203, EL. 77 INSTRUMENT RACK	2, 4 (SEE NOTE 5)	<65	NOTE 8 — 3	2

TABLE 9.5-17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- ESSENTIAL AC	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- 8-HOUR BATTERY PACK
REACTOR BUILDING - CONTINUED	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN	WORK STATION	
ROOM 4208, EL. 77 RHR HX AND UNIT COOLER	2, 4 (See NOTE 5)	<85	NOTE 8 [3]	2
ROOM 4209, EL. 77 VALVES AND INSTRUMENTS	1 (IN ADJACENT VESTIBULE), 2, 4 (See NOTE 5)	<100	NOTE 8 [3]	1
ROOM 4210, EL. 77 INSTRUMENTS	2, 4 (See NOTE 5)	<65	NOTE 8 [3]	2
ROOM 4214, EL. 77 RHR HX	2, 4 (See NOTE 5)	<85	NOTE 8 [3]	2
ROOM 4215, EL. 77 INSTRUMENT RACK	2, 4 (See NOTE 5)	<65	NOTE 8 [3]	2
ROOM 4216, EL. 77 CORRIDOR	2, 4 (See NOTE 5)	<50	NOTE 8 [3]	✗2
ROOM 4218, EL. 77 INSTRUMENT RACK	1, 2, 4	<65	NOTE 8 [3]	2
ROOM 4219, EL. 77 INSTRUMENTS	2, 4 (See NOTE 5)	<65	NOTE 8 [3]	2

TABLE 9.5-17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- ESSENTIAL AC	WORK STATION	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- 8-HOUR BATTERY PACK
REACTOR BUILDING - CONTINUED	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN			
ROOM 4301, EL. 102 CORRIDOR	1, 2, 4	<65	NOTE 8	3	2 (see note 9)
ROOM 4303, EL. 102 MCC	1, 2, 4	<65	NOTE 8	3	2
ROOM 4307, EL. 102 SACS PUMPS AND HXs, CONTROL PANELS, VALVES AND UNIT COOLERS	2, 4 (See NOTE 3) AND 5	<106	NOTE 7	3	2
ROOM 4309, EL. 102 SACS PUMPS AND HXs, CONTROL PANELS, VALVES AND UNIT COOLERS	LOCATED AWAY FROM NOISIEST EQUIPMENT), 2, 4 (See NOTE 3)	<106	NOTE 7	3	1
ROOM 4315, EL. 102 CORRIDOR	2 (NEARBY), 4	<65	NOTE 8	3	2 (see note 9)
ROOM 4327, EL. 102 HPCI VALVES	2, 4 (See NOTE 5)	<80	NOTE 7	3	2
ROOM 4329, EL. 102 RHR VALVES	2, 4 (See NOTE 5)	<80	NOTE 8	3	2
ROOM 4319, EL. 102 RCIC VALVE	2, 4 (See NOTE 5)	<80	NOTE 7	3	2
ROOM 4321, EL. 102 RHR VALVES	2, 4 (See NOTE 5)	<80	NOTE 8	3	2

TABLE 9.5-17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- ESSENTIAL AC	8-HOUR BATTERY PACK
INTAKE STRUCTURE	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN	WORK STATION	
ROOM 107, EL. 79-8 VALVES	2, 4 (See NOTE 5)	< 80	NOTE 8 3	2
ROOM 118, EL. 79-8 VALVES	2, 4 (See NOTE 5)	< 80	NOTE 8 3	2
ROOM 203, EL. 93 MCCs	1 (IN ADJACENT ROOM), 2, 4	< 65	NOTE 8 10	2
ROOM 204, EL. 93 PUMPS, VALVES AND CONTROL PANELS	1 (IN ADJACENT ROOM), 2, 4 (See NOTE 3)	< 108	NOTE 8 5	2
ROOM 207, EL. 93 MCCs	1, 2 (IN ADJACENT ROOM), 3, 4	< 65	NOTE 8 10	2
ROOM 208, EL. 93 PUMPS, VALVES AND CONTROL PANELS	1, 2 (IN ADJACENT ROOM), 4 (See NOTE 3)	< 108	NOTE 8 5	2
EL. 107 TRAVELING SCREEN CONTROL PANELS	2, 4 (See NOTE 5)	< 80	NOTE 8 10	1
EL. 114 TRAVELING SCREEN MOTOR POWER PANELS	2, 4 (See NOTE 5)	< 70	NOTE 8 10	2

TABLE 9.5 - 17

COMMUNICATIONS AND EMERGENCY LIGHTING SYSTEMS FOR SAFE SHUTDOWN AREAS

AREA / EQUIPMENT	COMMUNICATION FEATURES: COMPONENTS AVAILABLE AT AREA	COMMUNICATION FEATURES: ESTIMATED MAXIMUM NOISE LEVEL AT AREA, dBA	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- ESSENTIAL AC	EMERGENCY LIGHTING SYSTEM FEATURES: APPROXIMATE FOOTCANDLES AT EQUIPMENT FROM- 8-HOUR BATTERY PACK
INTAKE STRUCTURE - CONTINUED	LEGEND 1 = PA HANDSET 2 = PA SPEAKER 3 = TELEPHONE 4 = RADIO	LEGEND dBA = DECIBEL, A-WEIGHTED < = LESS THAN	WORK STATION	
ROOM 305, 306, EL. 122 FANS	1, 2, 4 (See Note 3)	< 90	NOTE 8 10	1
ROOM 311, 312, EL. 122 FANS	1, 2, 4 (See Note 3)	< 90	NOTE 8 10	1
STAIRWELLS IN Control, Diesel, Reactor Bldgs	2 (See Note 5)	< 50	NOTE 8 5	10

QUESTION 430.73 (SECTION 9.5.3)

You state in Sections 9.5.3.1 and 9.5.3.3 of the FSAR that illumination levels provided in the various areas of the plant either conform to or exceed that required in the Illumination Engineering Society Handbook. This statement is too general particularly for emergency lighting. The staff has determined that a minimum of 10 foot candles at the work station is required to adequately control, monitor and/or maintain safety related equipoment during accident and transient conditions and a minimum of 5 foot candles in the corridors which provide access to and egress from these areas. For those safety related areas listed in requests 430.65 and 430.70 above and illuminated by the dc lighting systems only verify that the minimum of 10 foot candles at the work station is being met. Also verify that the 10 foot candles minimum at the work station is being met by those safety related areas illuminated by the ac emergency system. Verify that the access and egress corridors are illuminated by a minimum of 5 foot candles. Modify your design as necessary. (SRP 9.5.3, Part I & II).

RESPONSE

Revised Table 9.5-17 identifies areas that are manned work stations during design basis accidents or during a loss of all ac power at the plant. At these particular locations (control room, remote shutdown panel room, and each diesel generator switchgear room) the lighting levels will be 10 ft candles from either the essential ac lighting system or the emergency 8-hour battery pack system. These particular work stations are areas where specific equipment require manual operation or monitoring of instrumentation meters.

The other safety-related areas that contain safety-related equipment have lighting levels less than 10 ft candles as identified on Table 9.5-17. If safety-related equipment in areas that have less than 10 ft candles of emergency ac lighting require repair or maintenance during or after an accident, portable lighting will be utilized to accommodate the repair to be the equipment. The portable lighting will be stored onsite for such emergencies and will be maintained and tested in accordance with the manufacturers recommended procedures and frequencies. This portable lighting will provide a minimum of 10 ft candles to the safety-related area.

The Hope Creek ingress and egress routes are listed in the Table 9.5-17. These ingress and egress routes have a lighting level of from 2 to 5 ft candles when the lighting is powered from the essential ac lighting system. During a station blackout, all station ac power is not available. In this condition, the HCGS ingress and egress routes have lighting from the 8-hour battery pack units and emergency lighting in the stairwells powered from the standby dc lighting system. The minimum illumination levels in the ingress and egress areas will be approximately 2 ft candles. This level of lighting within the ingress and egress areas is the design intent. The preoperational testing of the lighting system will determine whether the lighting is sufficient.

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9-25-84

Rev 2

QUESTION 430.75 (SECTION 9.5.3)

In Section 9.5.2.4 of the FSAR you state that inservice inspection tests, preventative maintenance, and operability checks are performed periodically to prove the availability of the communication systems. However no description is provided for the inservice inspection tests, preventative maintenance and operability checks to prove the availability of the emergency lighting systems. Describe the tests and checks that will be performed on the emergency lighting systems and their frequency. (SRP 9.5.3, Parts I & II).

RESPONSE

The emergency lighting systems will be demonstrated operable by energizing the lighting systems. Visual inspections will be performed: (1) Semiannually for those areas of the plant that are accessible; and (2) Within 72 hours of achieving cold shutdown for those areas of the plant that are not accessible during plant operation, unless emergency lighting operability has been demonstrated in those areas within the past six months.

Testing of ıe Class 1E feed will be performed in conjunction with the standby diesel generator load testing.

Additionally the dc emergency battery pack lighting units, as well as stored onsite portable dc lighting packs, will be tested on an 18 month interval in accordance with manufacturers recommendations to insure that rated illumination is available. As a minimum this will include the following:

a. Check of battery voltmeter.
b. Functional test of the unit by an installed push button to verify lamp operation, power transfer, and battery operability.

The lighting pack consists of two sealed, 6 volt, lead acid, rechargeable batteries with automatic, continuous float charge operation. There is no need for a battery discharge test because the inplace voltmeter indicates the battery voltage. If the voltage drops below the manufacturers requirements, the batteries will be replaced. The batteries have a 5 year warranteed life and will be replaced in accordance with manufacturers recommendations or after four and one-half years of service.

Rev 2

QUESTION 430.83 (SECTION 3.2)

The FSAR text and Table 3.2-1 indicates that the components and piping systems for the diesel generator auxiliaries (fuel oil system, cooling water, lubrication, air starting, and intake and combustion system) that are mounted on the auxiliary skids are designed seismic Category I and are ASME Section III, Class 3. The engine mounted components and piping and certain other components listed in the various Sections of 9.5 and Table 3.2-1 are designed and manufactured to DEMA standards and/or manufacturer's standards and are seismic Category I. This is not in accordance with Regulatory Guide 1.26 which requires the entire diesel generator auxiliary systems be designed to ASME Section III Class 3 or Quality Group C. You also state that the figures in Section 9.5 show where quality group classification changes are. The figures do not provide this information. Provide the following: (a) the industry standards that were used in the design, manufacture, and inspection of the engine mounted piping and components, (b) show on the appropriate P&ID's where the Quality Group Classification changes from Quality Group C, and where the Seismic Category I portions of the system are located. Sections 9.5.4 through 9.5.8 and Table 3.2-1 define certain pumps, filters, strainers, valves, and subsystems in the diesel generator auxiliary systems as Quality Group D or not applicable with regards to Quality Group Classification. It is our position that all components and piping in the diesel generator auxiliary systems be designed to Seismic Category I ASME Section III Class 3 requirements. Comply with this position or justify noncompliance. (SRPs 9.5.4 - 9.5.8, Part III)

RESPONSE

a. The engine mounted piping systems (such as the lube oil headers, water headers, cylinder heads, etc) are manufactured to the manufacturer's proprietary design requirements which do not necessarily meet the requirements of ASME Section III or ANSI B.31. The components used are pressure tested and the manufacturing processes are monitored as part of the supplier's approved QA program. The major components are included in the seismic analysis.

   The diesel engine and piping integral to the engine (mounted on the engine and provided with the engine) are designed to Seismic Category I requirements and proven designs based on the manufacturer's knowledge and experience. Regulatory guide 1.26 states that "other systems not covered by this guide, such as... diesel engine and its generators and auxiliary support systems, fuel oil... should be designed, fabricated, erected and tested to quality standards commensurate with the safety function to be performed." The desel generator engine piping is highly reliable and of proven quality and design and therefore meets the requirements of the regulatory guide. The Standard Review Plans (SRP) (Sections 9.5.4, 9.5.5, 9.5.6, 9.5.7, and 9.5.8) require review for quality group application and other features for piping, valves, and other components only up to

the "engine interface". This is further clarified as being the interface "as defined by the engine manufacturer". The manufacturer for the Hope Creek Generation Station diesel generators has defined these boundaries; the piping up to this interface is designed to Qualify Group C requirements as discussed in part b below. The applicant considers that the design for the engine, including the portions of pipe that are integral to the engine as the most prudent and the safest available. The design is proven and tested and is based on the years of experience of the engine manufacturer.

Furthermore, as requested, the applicant has made a comparison of those portions of piping and tubing that are integral to the engine with the design requirements of ANSI B.31.1 and ASME Section III, Class 3, requirements for allowable design pressures. Because the allowables for materials under the ASME Section III Class 3 code are the same or greater than the allowables under the rules of ANSI B.31.1 for the same material, the more conservative (that comparison that resulted in the lower allowable design pressure) is provided in Table 430.83-1 along with the piping description. Piping integral to the engine is moderate energy pipe.

Comparing the working pressure with the maximum design pressure in the table, it is evident that the manufacturer's standards are conservative when examining the pressure retaining capability of the pipe and tube.

(It should be noted that the DEMA standard is not a design specification, but gives guidance as to what should be included in a performance type specification.)

b. The figures in Section 9.5 can be used to determine quality group classification and seismic boundaries. The diesel engine auxiliary system P&IDs (Figures 9.5-22, 25, and 28) indicate the piping line classes and the piping specification changes as defined on Figure 1.13-1, sheet 1 (P&ID legend). The third letter of the three-letter piping line class code indicates the code to which the piping and components are built. Tables 3.2-2 and 3.2-3 can then be used to determine the quality group classification based on the applicable code. The Seismic Category I boundaries are indicated by the Q-flags as indicated in Section 3.2.1.

   Section 1.8.1.26 has been revised to include a clarification of Regulatory Guide 1.26, Revision 3, position C.2.b with regard to engine mounted components and piping.

The diesel generator auxiliary systems were designed for the most part during the period from 1974 to 1977. Careful consideration was given to classifying essential system piping as ASME Section III, Class 3. This intent was reviewed at the construction permit stage and is reflected in Table 15.4-2 of the PSAR which specifies that the "diesel fuel oil pumps, piping, and valves" are Quality

Group D. In addition, paragraph 15.4.3.3 of the PSAR further clarifies that the "diesel generator fuel supply piping from seven day storage tank to engines" is to be classified as Qualify Group C. It should be noted that it does not include other piping such as the diesel generator fill line. The guidance of Regulatory Guide 1.26 stated that systems not covered by this guide [include] diesel engine and its generators and auxiliary support systems, diesel fuel,..." and that these systems should be designed to quality standards "commensurate with the safety function to be performed."

The position with respect to the diesel generator storage tank fill lines was that they were not essential in that lengths of hoses would be available to be positioned such that fuel oil could be transferred directly to the tank through the manhole or the spare flange connection (see the response to Question 430.93).

During the construction of the station, and following procurement of the piping for the fill lines (in early 1977), an evaluation was made regarding the design of the fill lines. In light of the NRC's interest in this particular fill line on other dockets, a decision was made to upgrade the emergency fill piping down to the tanks to withstand the effects of an SSE. This piping was subsequently reanalyzed and supported similar to other Seismic Category I piping. In addition, the piping support installation has been inspected by the construction quality control organization under a 10 CFR 50, Appendix B, quality assurance inspection program.

The diesel fuel oil fill line, although not designed to the requirements of ASME Section III, Class 3, is designed, fabricated, and inspected commensurate with its safety function and provides an adequate level of safety based on the following:

1. The piping is designed to the standards of ANSI B.31.1. The material specified is ASTM A106, GrB which is identical to the comparable ASME SA-106.

2. The piping is designed to withstand the effects of an SSE without loss of function.

3. Installation of the supports for the piping are inspected under an 10 CFR 50, Appendix B, quality assurance program.

4. The fill line will experience little pressure during filling operations and is not pressurized when not in use.

5. The line is not critical in the early stages of an emergency and in the unlikely event it becomes unusable, sufficient time will likely be available to effect repairs. This is justified in that a normal seven day supply of fuel will be on site and available for use for each diesel generator.

6. The capability exists to fill the tanks with hoses that can be positioned to fill the tanks directly. Procedures shall be written to detail this emergency operation which will include the requirement for a dedicated fire watch who shall periodically patrol among the spaces containing the fill hoses when in use.

7. The piping shall be visually inspected on an inspection interval equal to the requirements of ASME Section XI for ASME III, Class 3, piping.

8. The piping shall be placed under the operational QA program for the station.

Table 430.83-1

LUBE OIL SYSTEM

Working Pressure 120 PSI

Pipe & Fittings Material

OD	Wall Thickness	Material Spec.	Max. Design Pressure (PSI) (1)
3.5	.120	MT1018	681
1.625	.25	MT1018	3060
1.5	.120	MT1010	1224
1.25	.25	MT1018	3978
1.1875	.156	MT1018	2605
1	.095	MT1020	1816
.75	.065	MT1010	1326
.625	.065	MT1010	1591
.375	.065	MT1010	2652
.5	.065	MT1010	1989
.25	.049	MT1010	2998

TURBOCHARGER WATER PIPES

Working Pressure 60 PSI

Pipe & Fittings Material

OD	Wall Thickness	Material Spec.	Max. Design Pressure (PSI) (1)
4	.188	MT1018	989
2.375	.154	A120-S	862
1.646	.140	A120-S	1134
1.375	.133	A120-S	1292
1	.188	MT1018	3955

INJECTOR COOLING SYSTEM

Working Pressure 50 PSI

Pipe & Fittings Material

OD	Wall Thickness	Material Spec.	Max. Design Pressure (PSI) (1)
1.316	.179	A120-S	1816
1.125	.065	MT1010	384
.375	.065	MT1010	2652

Table 430.83-1

AIR STARTING SYSTEM

Working Pressure 250 PSI

Pipe & Fittings Material

OD	Wall Thickness	Material Spec.	Max. Design Pressure (PSI) (1)
2.375	.218	A53	1632
1.9	.145	A120XS	1015
1.875	.188	MT1020	2028
1.75	.156	A513	1360
.625	.049	A254C1	657
.375	.049	MT1010	1994

JACKET WATER SYSTEM

Working Pressure 60 PSI

Pipe & Fittings Material

OD	Wall Thickness	Material Spec.	Max. Design Pressure (PSI) (1)
4	.188	MT1018	989
.375	.095	MT1010	3876

FUEL OIL SYSTEM

Working Pressure 35 PSI

Pipe & Fittings Material

OD	Wall Thickness	Material Spec.	Max. Design Pressuire (PSI) (1)
1.5	.120	MT1018	1591
1	.065	MT304	1551
.75	.095	MT1010	1938
.5	.049	MT304	2333
.25	.035	MT304	3341

Table 430.83-1

(1) Assumptions:

a. Normalized tubing

b. Allowables are assumed to be 1/4 ultimate stress valves.

c. Weld factor = 0.85 ERW

d. Because the fluids are not capable of causing any loss of strength by corrosion, no allowance is required.

e. A 10% manufacturer's tolerance on wall thickness except as noted otherwise.

f. For metal tube products, the allowables are derived from 1/4 ultimates:

MT 1010	=	10,000 psi
MT 1020	=	12,500 psi
MT 1018	=	13,000 psi
MT 304	=	15,600 psi

g. Allowables for other materials are:

A120-S	=	9,000 psi
(mfg. tolerance = 12.5%)		
A254C1	=	5,500 psi
A53	=	13,000 psi
A513	=	10,000 psi

h. Piping temperatures are less than 200 F.

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Rev 2

HCGS FSAR

QUESTION 430.115 (SECTION 9.5.6)

Describe the instrumentation, controls, sensors and alarms provided for monitoring the diesel engine air starting system, and describe their function. Describe the testing necessary to maintain a highly reliable instrumentation, control, sensors and alarm system and where the alarms are annunciated. Identify the temperature, pressure and level sensors which alert the operator when these parameters exceed the ranges recommended by the engine manufacturer and describe any operator actions required during alarm conditions to prevent harmful effects to the diesel engine. Discuss system interlocks provided. Revise your FSAR accordingly. (SRP 9.5.6, Part III)

RESPONSE

The instrumentation, controls, sensors and alarms are described in Sections 9.5.6.3 and 9.5.6.5.

For the testing frequency and where the alarms are annunciated see response to Question 430.104.

Only pressure controls and instrumentation are supplied air by the starting air system; temperature and level sensors are not applicable. A summary of the equipment and surveillance frequency is provided on Table 430.115-1.

As described in Section 9.5.6.3 a low pressure alarm on each of the air trains alerts the operator of system trouble in the control room. Operator response to diesel engine starting air system alarms is summarized in Table 430.115-2. Safety relief valves on the receivers/air trains protect the system from overpressure.

A high pressure alarm is not provided because the relief valves are oversized, 450 scfm, compared to the compressor output of 25 scfm, and if a compressor fails to shut off at its high pressure setpoint, the plant operations personnel would easily hear the relief valves operating to relieve the overpressure condition.

The diesel engine air starting system air compressor starts automatically when air accumulator pressure decreases to 280 psi, and shuts off the compressor at 425 psi. The system is disabled by the barring gear interlock which is used to prevent diesel engine operation during maintenance.

TABLE 430.115-1

Diesel Engine
STARTING & CONTROL AIR SYSTEM

NT

System ID	INST. NO		FUNCTION		Surveillance Frequency *	
KJ	PI-7539	A-H	AIR START RECEIVER TANKS		P	P
KJ	PIC-7543	A-D	CONT AIR PRESS		P	P
KJ	PSHL-6825	A-H	START AIR COMP. CONTROL		P	P
KJ	PI-7554	A1-D2	START AIR PRESS	(R.L.C.P.)	P	P
KJ	PSL-7555	A1-D2	START AIR PRESS		F	F

* All above instrumentation will be calibrated on an 18 month schedule.

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TABLE 430.115-#2 (Sheet 1 of 3)

Summary of Operator Actions in Response to Diesel Engine Air Starting System Alarms.

High Priority

a) STARTING AIR PRESSURE LOW

Check	Action
Air header pressure	If normal: Check valve lineup to receiver Attempt to clear alarm
	If low: Proceed to next step
Receiver pressure	If normal: Check valve lineup to air start distributor
	If low: Proceed to next step
Valve lineup to receivers	Open valves if closed
Compressor running	If stopped: Confirm valve lineup to start motor Ensure power to compressor
Piping and fittings	If leaks or obstructions exist: Isolate leak if possible Notify Shift Supervisor

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b) START FAILURE CRANKSHAFT NOT ROTATING

Check	Action
Barring device	If engaged: Check reason for engagement Disengage when possible
Engine trouble shutdown	Ensure shutdown has been reset
Control power available	Ensure circuit #3 is energized Notify Maintenance if repairs are required
Maintenance switch position	If 43 switch is not in REMOTE: Check reason for position Return to REMOTE when possible
Hand control position	If HSS switch is not in NORMAL: Check reason for position Return to NORMAL when possible
If the diesel still fails to start, manually start at:	
	Control room panel
	remote engine panel
	local engine panel
	Air start solenoid valve

a) START FAILURE CRANKSHAFT ROTATING

Check	Action
Fuel system	If fuel system problems exist, respond in accordance with applicable alarm response
Air intake system	Check condition of air intake filters, piping, flex connectors, and intake manifolds.

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Low Priority.

a) ENGINE LOCKED OUT FOR MAINTENANCE

Check	Action
Position of maintenance switch (HS)	If switch is in MAINTENANCE position: Check reason for switch position Return to REMOTE when possible If switch is in REMOTE position: Attempt to clear alarm

b) DIESEL ENGINE IN LOCAL CONTROL

Check	Action
Position of maintenance switch (HS)	If switch is in LOCAL position: Check reason for switch position Return to REMOTE when possible If switch is in REMOTE position: Attempt to clear alarm

c) REMOTE EMERGENCY TAKEOVER

Check	Action
Position of control switch (HSS)	If switch is in EMERGENCY TAKEOVER Check reason for switch position Return to NORMAL when possible If switch is in NORMAL: Attempt to clear alarm

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QUESTION 430.120 (SECTION 9.5.6)

Section 9.5.6.2 of the FSAR defines the air starting system for your plant as a high energy system. A high energy line pipe break in the air starting system of one diesel generator, plus any single active failure in any auxiliary system of any other diesel generator will result in loss of sufficient onsite AC power so that the plant cannot safely shutdown. This is unacceptable. Provide the following information:

a. Assuming a pipe break at any location in the high energy portion of the air start system, demonstrate that no damage from the resulting pipe whip, jet impingement, or missiles (air receivers, or engine mounted air tanks) will occur on any of the four diesel generators or their auxiliary systems.

b. Section 9.5.6.2 states that the air receivers, valves, and piping to the engine are designed in accordance with ASME Section III Class 3 (Quality Group C) requirements. This is partially acceptable. We require the entire air starting system from the compressor discharge up to and including all engine mounted air start piping, valves and components be designed to Seismic Category I, ASME Section III Class 3 (Quality Group C) requirements. Show that you comply with this position. (SRP 9.5.6, Part II and III)

RESPONSE

a. For the purposes of pipe break and jet impingement analysis the emergency diesel generator and its associated auxiliaries are considered a single system. As a single system a single failure is only required to be postulated in one system. Separation of the diesel generator rooms by 18 inch reinforced concrete walls protects other diesel generator units and auxiliaries from damage due to a pipe break in adjacent diesel generator rooms. Therefore, a pipe break in any one of the diesel generator rooms will not affect the remaining diesel generator units and their associated auxiliaries.

b. All of the air start piping, valves and receivers from the check valve on the air receiver inlet (including the check valve) to the air start solenoid valve on the engine are designed to Seismic Category I, ASME Section III, Class 3, requirements. Refer to Figure 9.5-26 for component descriptions.

The compressor, air dryer, and piping up to the air receiver inlet check valve are not built to meet ASME code requirements because they do not serve a safety-related function. The air start valves, air distributors, and the diesel engine cylinders are all pressure retaining parts downstream of the air start solenoid valves which do serve a safety-related function and are non ASME code items built to Seismic

Category I requirements. The air start solenoid pilot valves reduce the starting air pressure to approximately 250 psi, therefore these components, which are downstream of the air start solinoid pilot valves, are actually located in a moderate energy portion of the system (See the response to Question 430.83). The non-ASME III pipe in the air-start system is designed to Seismic Category 1 requirements. These are specialty items that are not available as ASME components but which are built to the SDG manufacturers own critical specifications (see Table 3.2-1, Tem XII.b.) Refer to the response to Question 430.82 for further discussion of the air start piping and the applicable design requirements.

A postulated break in the starting air system is not considered to occur concurrently with, nor to cause, a loss of offsite power. Therefore a single failure in another of the standby diesel generators is not of consequence. In addition, the effects of postulated breaks in the non-safety related compressor air dryer piping up to the ASME Section III, Class 3, air inlet check valve have been examined. The postulated failures will not effect the function of any safety related component. Also, the effect of any postulated pipe break from any of the normally pressurized safety related air start piping will not damage any component that would cause its associated engine, if running, to shutdown.

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QUESTION 430.135 (SECTION 9.5.7)

You state in Section 9.5.7.2 of the FSAR and shown in Figure 9.5-27 that lube oil is added to the diesel generator lubricating oil system from a 250 gallon lube oil make-up tank. Provide a discussion on the measures that have been taken to prevent entry of deleterious materials in the lube oil make-up tank. Also discuss what measures have been taken to prevent entry of deleterious materials into the lube oil make-up tank due to operator error during filling operation.

In addition address the following:

a. Discuss the means for detecting or preventing growth of algae in the lube oil make-up tank. If it were detected, describe the methods to be provided for cleaning the affected storage tank.

b. Provide an explicit description of proposed corrosion protection for the lube oil make-up tank. Where corrosion protective coatings are being considered for the piping and tanks (both external and internal) include the industry standards which will be used in their application.

c. Figure 9.5-27 of the FSAR shows that the diesel generator lube oil make-up tank is provided with an individual fill, vent, and emergency pressure relief vent lines. Indicate where these lines are located (indoor or outdoor) and the height these lines are terminated above finished ground grade. If these lines are located outdoors discuss the provisions made in your design to prevent entrance of water into the make-up tank during adverse environmental conditions, and the tornado missile protection provided.

d. Assume an unlikely event has occurred requiring operation of a diesel generator for a prolonged period that would require replenishment of lube oil in the sump without interruping operation of the diesel generator. What provisions have been made in the lube oil transfer system design from the lube oil make-up tank to the engine sump to prevent carryover of sediment, water, and scale that may accumulate in the clean lube oil storage tank. What provisions have been made for the removal of accumulated sediment, water, and other deleterious material that may collect at the bottom of the storage tank. (SRP 9.5.7, Parts II & III)

RESPONSE

Deleterious material is prevented from entering the diesel engine lube oil make-up tank by:

a. Procuring high quality, high purity lube oil with lubricating properties in accordance with the manufacturers' recommendations.

b. Insuring that filling operations to increase make-up tank level are performed through the installed basket strainer in the fill line.

The lube oil make-up tank conservation vent permits tank venting when required and prohibits airborne impurities from continuously entering the tank.

Make-up tank filling will be accomplished in accordance with a written procedure. A controlled copy of the procedure will be posted in the vicinity of the lube oil fill line. The lube oil fill line will be labeled to identify the fill line connection purpose and a reference to the applicable procedure.

a. Algae formation may occur due to condensate accumulation in the make-up lube oil tank. Prior to diesel engine monthly operability testing, and in accordance with plant technical specifications, the lube oil make-up tank drain will be opened to remove any water, sediment, algae or other deleterious material. If lube oil purity is degraded any of the following methods can be implemented to restore lube oil purity in the make-up tank:

    1. All deleterious material may be removed by draining lube oil through the drain line.

    2. The lube oil make-up tank can be drained, cleaned and refilled with fresh lube oil.

    3. A chemical additive can be added to remove algae or other biological growth if advised by a tribology specialist.

b. The standby diesel generator lube oil make-up tank material is carbon steel, SA 515 GR. 70. The exterior of the tank is coated using Colt Industries standard protection system. The system consists of a primer of Gordon Bartells 13409, yellow, and a finish coat of Gordon Bartells 14-811, suede grey, both applied according to the paint manufacturers recommendations. The interior of the tank is not coated because the lube oil is non-corrosive. Corrosion of the SDG lube oil make-up tank in the unfilled areas is prevented by lube oil vapor coating, normally found on unflooded sections of lube oil tanks.

Prevention of corrosion of the lower head of the SDG lube oil makeup tank due to moisture accumulation is addressed in the second paragraph to part d of this response.

c. The vent and emergency pressure relief vent are terminated indoors, directly above the tank. The fill line is routed to the outside (west) of the auxiliary building at elevation 105 feet 0 inches, 3 feet above grade. The line is capped and has a normally closed isolation valve located in the building to prevent water from entering the line. It is not protected from missiles and tornadoes because it is not safety-related.

d. In accordance with technical specifications, twenty 55-gallon drums of diesel engine lubricating oil are stored and available for use if diesel operation is required for a prolonged period. Additional information on lube oil make up requirements is provided in the response to Question 430.131.

The lube oil makeup tank bottom is hemispherical. The line to the diesel generator sump is approximately 1.75 inches above the bottom of the dish and is located ten inches off the centerline of the tank, reference figure 430.135-1. Should there be any carry over into the transfer line, it would be trapped in the strainer and/or filter after entering the engine sump.

A normally closed drain valve is provided at the low point of the tank, reference Figures 9.5-27 and 430.135-1. The drain valve will be opened in accordance with plant operating procedures to remove any deleterious sediment, water or other material that may accumulate in the bottom of the tank.

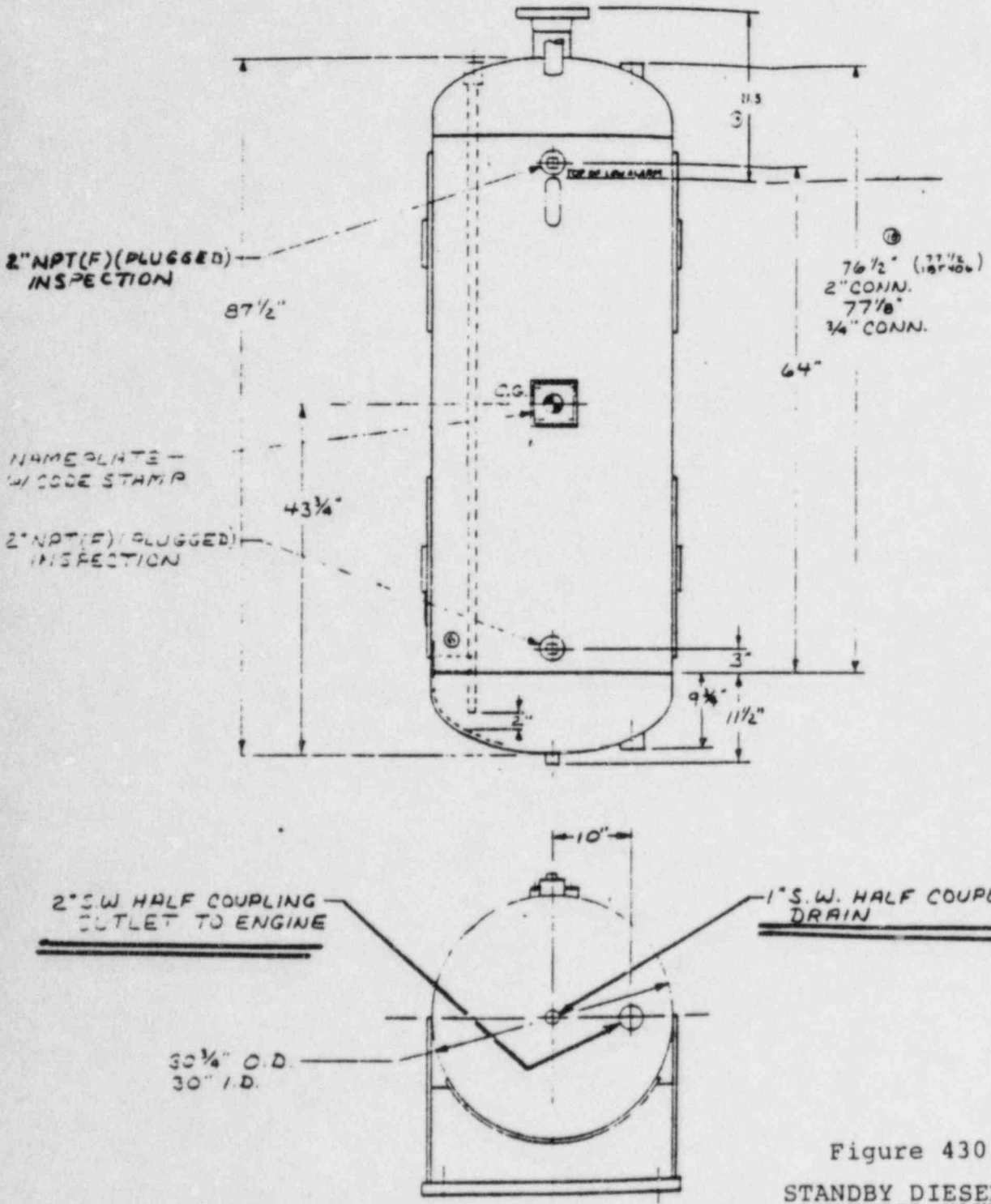

Figure 430.135-1

STANDBY DIESEL GENERATOR
LUBE OIL MAKE-UP TANK

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QUESTION 430.143 (SECTION 9.5.8) Rev 2

Show by analysis that a potential fire in the diesel generator building or any of the other surrounding buildings (reactor building, control building, etc.) together with a single failure of the fire protection system for that area will not degrade the quality of the diesel combustion air so that the remaining diesels will be able to provide full rated power. (SRP 9.5.8, Parts II & III)

RESPONSE

A 3-hour-fire-barrier has been added to separate the diesel combustion air intakes by safe shutdown division. Since the divisionalized intakes are in separate rooms, a fire in one zone, and an automatic closure of the fire door will not affect the remaining diesels' combustion air. Therefore, the remaining two diesels will be able to provide full rated power. This analysis was performed as part of the Appendix R fire hazard analysis (see revised Appendix 9A).

The Appendix R analysis shows that a fire in any one fire area of the control, diesel or reactor buildings will affect no more than one division of the diesel generator intakes. Ths Appendix R analysis assumes a failure of any automatic fire protection system for that area.

The SDG HVAC systems exhaust from missile protected areas located at elevation 198'-0". The possibility of significant quantities of smoke or other combustion by-products bypassing dampers or failed dampers from any of the areas and exiting at the 198 ft elevation and consequently being drawn down to other diesel generator intakes at the 130 ft elevation is not credible.

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With a postulated failure of the automatic fire suppression system in one diesel area, the fire damper would close to contain the fire. Failure of the damper, since it is a UL listed device and uses only the physical properties of the fusible link to operate, is not considered credible. However, failure would release smoke into the large volume common corridor, but the HVAC system design would prevent any smoke from affecting more than one diesel. Section 9.4.6 describes how the system consists of 100% recirculating fan coil units with only a minimal of air exchange from the common corridor during diesel generator operation. Thus, cooling of the diesels would not be significantly affected.

During normal plant operations, thus no diesels operating, the diesel area ventilation will exhaust air from each diesel compartment and out of the roof vent. Smoke from one compartment would have to exit to the large volume common corridor through the fire damper. It could then enter the other diesel generator compartments through that compartment's fire damper. The manufacturer has stated that the diesel generator itself is insensitive to smoke in the compartment. Should the temperature rise the recirculation coil units would automatically start (9.4.6.2.g).

The diesel control panels are NEMA 12, dust tight, panels. The protective relays inside the panel are further encased. The panels do not contain sensitive integrated circuits. The room temperature, even if smoke filled, is maintained by the recirculation coil units as stated above. Therefore, the diesel generator panels will not be affected by smoke (either temperature or particulates) in the diesel generator room.