PSE&G Public Service Electric and Gas Company

80 Park Plaza, Newark, NJ 07101 / 201 430-8217 MAILING ADDRESS / P.O. Box 570, Newark, NJ 07101

Robert L. Mittl General Manager
Nuclear Assurance and Regulation

November 2, 1984

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

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

Gentlemen:

HOPE CREEK GENERATING STATION
DOCKET NO. 50-354
REVISED FSAR QUESTION RESPONSES

Attachment I contains the revised responses to FSAR Question 410.69 and 430.88. In addition, attached to 430.88 is one copy of "Summary of Reduced Standby Diesel Generator Loading to accommodate a standing hurricane after a Loss of Offsite Power." These question responses were revised per discussions held with the auxiliary system and power system branches respectively.

A signed original of the required affidavit is provided to document the submittal of these items.

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

Attachment II contains a copy of revised FSAR question 430.81 originally submitted on October 18, 1984.

Very truly yours,

Attachments/Enclosure

C D. H. Wagner
USNRC Licensing Project Manager (w/attach.)

W. E. Bateman
USNRC Senior Resident Inspector (w/attach.)

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ADD: A. UNGARO, PSB

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
DOCKET NO. 50-354

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

Public Service Electric and Gas Company hereby submits the enclosed responses to FSAR Questions for the Hope Creek Generating Station.

The matters set forth in this submittal are true to the best of my knowledge, information, and belief.

Respectfully submitted,

Public Service Electric
and Gas Company

By: Thomas J. Martin
Thomas J. Martin
Vice President -
Engineering and Construction

Sworn to and subscribed
before me, a Notary Public
of New Jersey, this 2nd day
of November 1984.

David K. Burd

DAVID K. BURD
NOTARY PUBLIC OF NEW JERSEY
My Comm. Expires 10-23-85

MC 28 02

ATTACHMENT I

QUESTION 410.69 (SECTION 9.2.1)

Provide a figure(s) in the FSAR which shows the protection of the station service water system from the flood water (including wave effects) of the design basis flood.

RESPONSE

The general arrangement of the intake structure is provided in Figures 1.2-40 and 1.2-41. Section AA of Figure 1.2-41 is reproduced here as Figure 410.69-1 which identifies the watertight areas and the walls and slabs designed to accommodate flood loads. As described in Sections 2.4.2 and 2.4.5, the south and west exterior walls of the intake structure are subject to a maximum wave run-up elevation of 134.4 feet due to the probable maximum hurricane (PMH). Such waves could overtop the roof of the western portion of the structure at elevation 128 feet. However, a rigorous analysis has been performed to determine the depth of water in the low area (elevation 122.0 feet) after wave impact and to confirm that water does not enter the building through the air intake control dampers (bottom elevation 128.5 feet). Therefore, flood water will not enter into the dry area of the intake structure. On the north side of the intake structure, the maximum water level will be only slightly higher than the still water elevation (113.8 feet) during the PMH. According to Table 2.4.6, the maximum wave elevation for the north side of the intake structure is 26.3 feet MSL (elevation 115.3 feet) due to a postulated multiple dam break. Therefore, flood protection of the north exterior wall to elevation 121.0 feet is adequate.

On the east side of the intake structure, the maximum wave run-up elevation due to the PMH equals 121.97 feet. This elevation is due to a 1% wave traveling in the direction of Fetch "A". Fetch A, which is rotated about 15 degrees from Fetch 1 (as shown in Figures 410.69-2 and 410.69-3), is chosen to maximize the wave run-up elevation. Since this elevation is lower than the bottom of the HVAC exhaust opening, flood water will not enter the intake structure from the east side of the building.

In addition the following assessments have been made to confirm the adequacy of the structure and interior components for the overtopping wave:

a. The exterior walls are designed to withstand the flood loads including the dynamic wave action effects.

b. The roof hatches at both elevations 122.0 and 128.0 feet have been sealed (caulking, gaskets, etc.) to prevent any intrusion of water. The hatch covers are

keyed into the openings to prevent any adverse slippage due to wave induced loadings.

c. All Seismic Category I components except for the traveling water screens are located within the dry areas of the structure.

INSERT →

e d. The traveling water-screens, located in the "wet" area between column lines B and C have electric motors which are fully protected against the flood water level.

f e. A condition was postulated where suspended moisture enters the dry areas of the structure through the air intake control dampers. It has been assessed that all of the Seismic Category I components subjected to this environment will continue to function as required.

Section 3.4.1 and Table 3.4-1 have been revised for clarification.

Insert

d. The foundation for the service water pumps are designed to accommodate the wave forces acting on the structure. Therefore no leakage will occur through the pump foundations.

Rev. 4

QUESTION 430.88 (SECTION 9.5.4)

Provide additional justification to support your statement in Section 9.5.4.3 that sufficient additional fuel can be delivered to the plant site by truck, or barge. In your discussion include sources where diesel quality fuel oil is available and distances travelled from the source to the plant. Also discuss how fuel oil will be delivered onsite under extremely unfavorable environmental conditions. (SRP 9.5.4, Part I)

RESPONSE

~~Standby diesel generator fuel oil storage tank fill connections are discussed in Section 9.5.4.2.6. The total capacity of the SDG fuel oil storage tanks and day tanks is sufficient for seven days of SDG operation at the rated full load indicated in Section 8.3 for a DBA and LOP. Within this period, additional fuel can be delivered to the plant site by truck or barge. The supply depot is located about 44 miles from the plant in Pensauken, N.J. Under extremely unfavorable environmental conditions, deliveries would be made by truck.~~

(INSERT "A")

INSERT "A" TO 430.6F

¶ Site flooding (i.e. flooding above plant grade elevation) is a highly unlikely event. The highest historical high water was 97.5 feet (PS Datum), recorded November 1950, 4 feet below plant grade. As an estuarine, site flooding is primarily a result of the effects of tide combined with severe storms. The tidal cycle being approximately 12 hours in duration would reasonably be expected to contribute to site or local flooding for only a few hours. This would afford the opportunity to refuel the fuel oil storage tanks within a few hours of any scheduled refueling.

Severe site flooding to the design flood level is due to the PMH as defined in Regulatory Guide 1.59. Precise track position and forward speed (27 knots) as well as other assumptions are necessary to develop the flood levels calculated for the design basis event. A description of the analysis is presented in Section 2.4.5. A forward speed of 27 knots would cause the hurricane to move over 300 miles past the site in 10 hours. The maximum winds are assumed to extend 39 nautical miles. The forward travel speed is a critical parameter in the calculation, as this is what causes the large volume of water to be first forced into the Delaware and then carried up the estuary past the site. Even in the event that the storm should stall, flood water will tend to drain out the bay as the forcing function is no longer available to push water into the bay. There would also be a further reduction of flood waters due to the tidal change. It would be unrealistic as to expect site flooding to persist for more than 24 hours. ~~Upon continuous operation of the diesel generators for any 7 day period, a new fuel oil shipment will be delivered.~~

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Question 430.88 con't

While extremely adverse wind, weather and tidal conditions at the Hope Creek Site could interfere with diesel oil delivery for approximately 24-36 hours, it would be a very improbable situation that would preclude delivery by ~~all of the possible avenues (truck, barge or helicopter)~~ truck or barge for as long as 60 hours.

There are three key factors which support this conclusion. First, while any storm can remain stationary for an extended period, one in an adverse position (onshore) will lose its energy source and be eroded by surface friction. Secondly, any storm remaining offshore where it can retain all or some of its energy source will be in a position either to cause unusually low tides following the initial surge, or at least to provide shelter from the maximum winds because of the long fetch over the lower Jersey peninsula. Thirdly, the storm surge capable of seriously flooding the area is an enormous wave and it will not maintain site area flooding condition for prolonged periods (24-36 hours) even if the driving force continues.

The following is a brief description of three storm variations:

A. Hurricane stationary in the least favorable position (see Figure 430.88-1)
A hurricane in this position is largely cut off from oceanic moisture and it is subject to frictional erosion of its wind speeds. It will decay into a wet, showery situation with modest wind speeds within 12-24 hours.

B. Hurricane stationary off the coast (see Figure 430.88-2)
A hurricane anywhere off the coast would continue to receive a substantial portion of its energy and it would not be affected by friction of the land surface. However, its location would preclude the fetch necessary to drive water directly into the bay, and the flow over the peninsula would moderate the winds at the site. The initial surge should drop within 12 hours and would probably be followed by an abnormally low tide. The clouds and showers associated with the storm might last 24-36 hours.

If the PMH were to stall directly south of the Delaware Bay Inlet, westerly winds could cause high water build-up at the entrance to the bay. It would require a continuous wall of water approximately 12 feet high to maintain flooding conditions at the site. A prolonged event (24-36 hours) of this type would be highly improbable.

Question 430.88 cont'd

C. Extra-tropical storms

These storms are much larger than hurricanes, and at times they do remain stationary for very long periods. However, much of the above reasoning remains valid for them also. A stationary storm in the unfavorable position needed to generate strong southeasterly winds would be subject to surface friction, and it would lose much of its energy, although in a different way. The sharp contrast between the cold polar air and the tropical maritime air from which such storms are generated would gradually disappear and the air would become homogenous around the circumference of the low pressure area. Such storms weaken slowly over a period of 24-36 hours.

Storms off the coast can maintain their energy source very well, and they may remain vigorous for three or four days. However, if the storm produced a major surge while reaching the vicintiy of the site, it would then generate a period of very low water. Adverse weather could last for several days, in the sense that the winds might be high and precipitation could continue, but transportation of fuel or lube oil should not be a problem.

delete ~~Based upon previous discussions, the probable maximum flood would conservatively pass after one day. This would leave 3.5 days of fuel supply in the tanks after providing for a conservative half day to permit settlement of postulated sediment in the tanks.~~

The normal method of fuel transport would be by tank truck. Should any event preclude delivery by truck, ~~the 3.5 days of remaining fuel will provide~~ ample time to arrange ~~an alternate~~ a barge delivery ~~method~~. ~~Those could include barge, helicopter deliveries,~~ The refill line extends to the station barge slip. There are sufficient refineries ~~and military installations~~ within a reasonable distance of the station to assure the credibility ~~of these methods of~~ delivery. ~~Among the available privately owned helicopters, a Sikorski 561 has a minimum lift capacity of 7580 pounds. This equates to 918 gallons of diesel fuel in drums. This quantity of fuel would permit two fully loaded diesels to operate for approximately 89 minutes. Military helicopters with greater lifting capacity would also be available.~~

would be available

barge or truck

Similarly, the commitment to refuel ~~with~~ within a ~~remaining time~~ seven day period fuel supply provides ample time to clear roads of any credible snowfall or ~~to arrange an alternate delivery method~~. Getty, Texaco and the Sun Oil Company have refineries within a 75 mile radius of the site.

Comprehensive emergency plans are required by federal agencies ie FEMA and NRC. These plans require documentation in the form of letters of agreement and memornadum of understanding between the

other debris that may have accumulated as a result of the storm.

Question 430.88 cont'd

nuclear utility and state and federal governments which provide the use of resources of the various agencies involved. The availability of these resources provides additional assurance that accidents and acts of nature beyond design basis can be addressed.

The SDG fuel oil storage tanks are sized in accordance with the requirements of SRP 9.5.4 and Regulatory Guide 1.137 for a seven day supply of fuel oil to each redundant SDG following a LOCA or LOP.

Each pair of SDG fuel oil storage tanks contains sufficient fuel to operate a diesel engine for approximately seven days, six hours, based on the time dependent generator loading shown in FSAR Table 8.3-3.

During an actual shutdown under these conditions, i.e. LOP and flood, all four diesels would not be required to achieve and maintain cold shutdown. Thus, for a realistic shutdown scenario there in fact would be approximately 14 days fuel oil available for required diesel operation. See attached graph and summary table.

A procedure will be implemented which requires PSE&G to order a fuel shipment to top off all the diesel fuel oil tanks once the National Weather Service issues a hurricane, tornado, or tropical storm alert for the Artifical Island area. Lube oil would also be ordered to bring the onsite supply to an amount required for FOURTEEN ~~SEVEN~~ days operation of the diesels.

FIGURE 430.88-1

HOPE CREEK

GENERATING STATION

Onshore Hurricane - Wind Flows

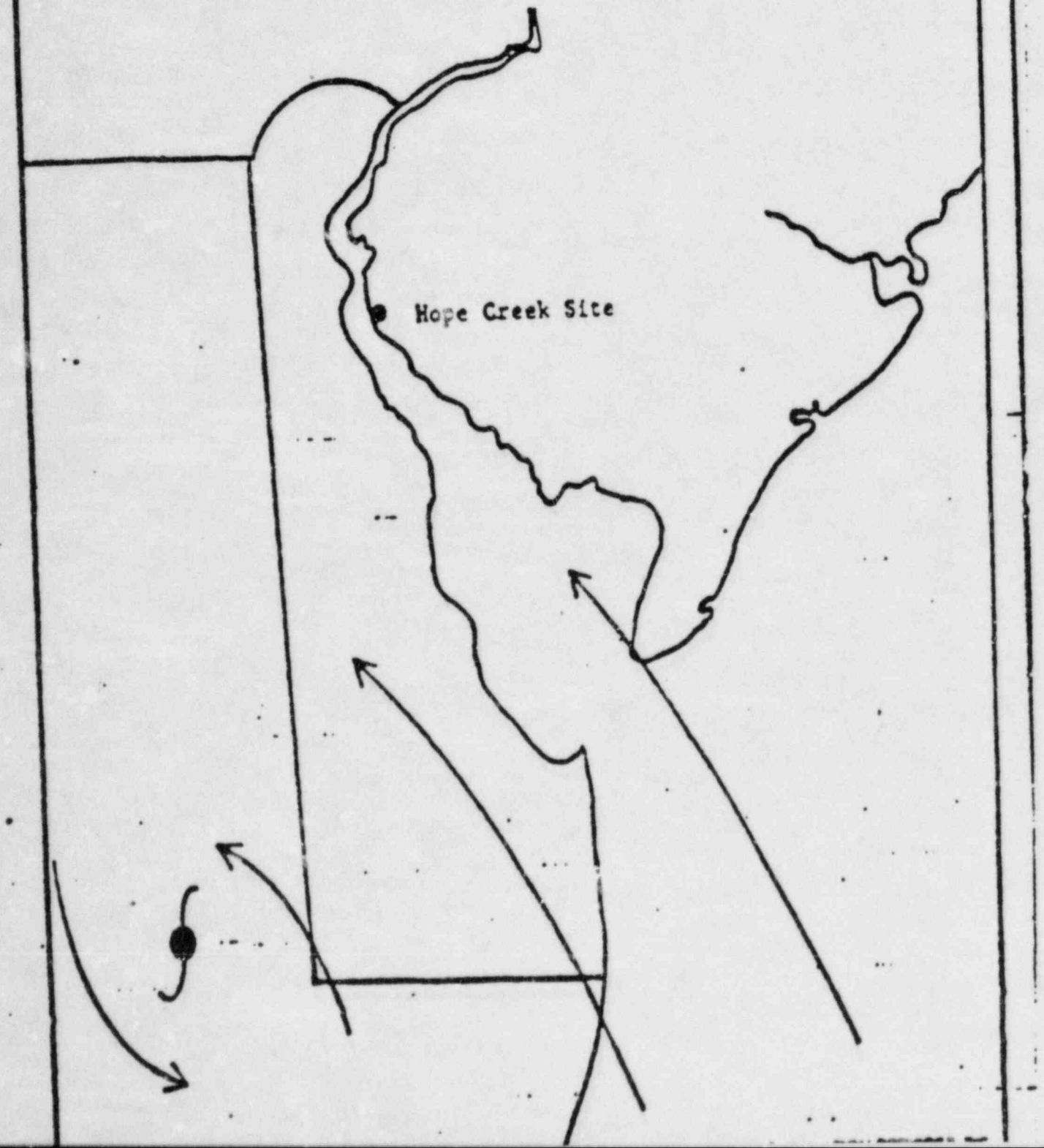
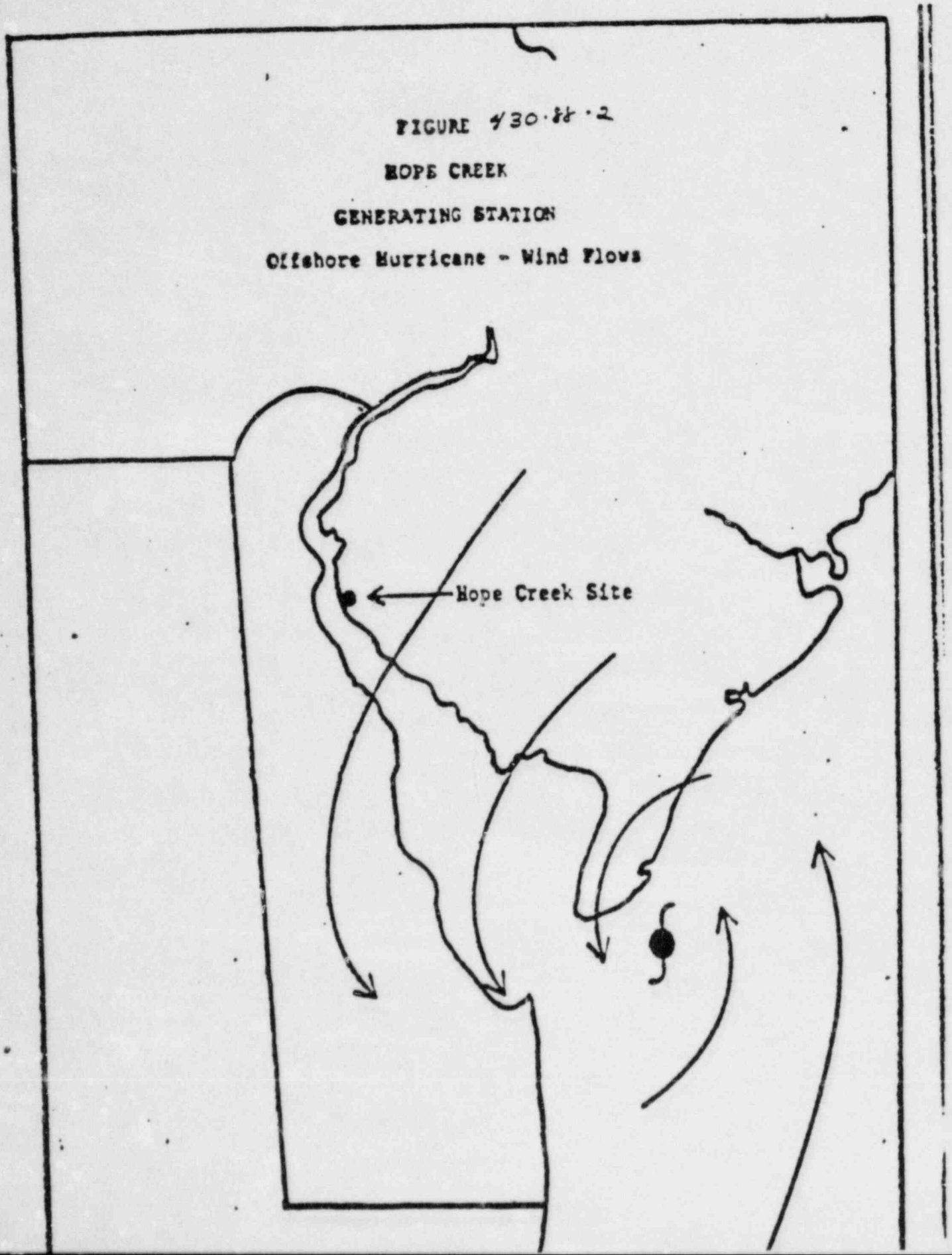


FIGURE 430.88-2

HOPE CREEK

GENERATING STATION

Offshore Hurricane - Wind Flows



SUMMARY OF REDUCED STANDBY
DIESEL GENERATOR LOADING TO
ACCOMMODATE A STANDING HURRICANE
AFTER A LOSS OF OFFSITE POWER

On the loss of offsite power, the four standby diesel engines are started. During the period from 13 seconds after the engines start to 10 minutes, the total loading of the engines will be 8006 KW with a total fuel consumption rate of approximately 581 GPH. During the loss of offsite power, the loss of coolant loads are not actuated, such as the RHR pumps, reactor core spray pumps, RB FRVS recirculating fans, heating coils, which are major load contributors.

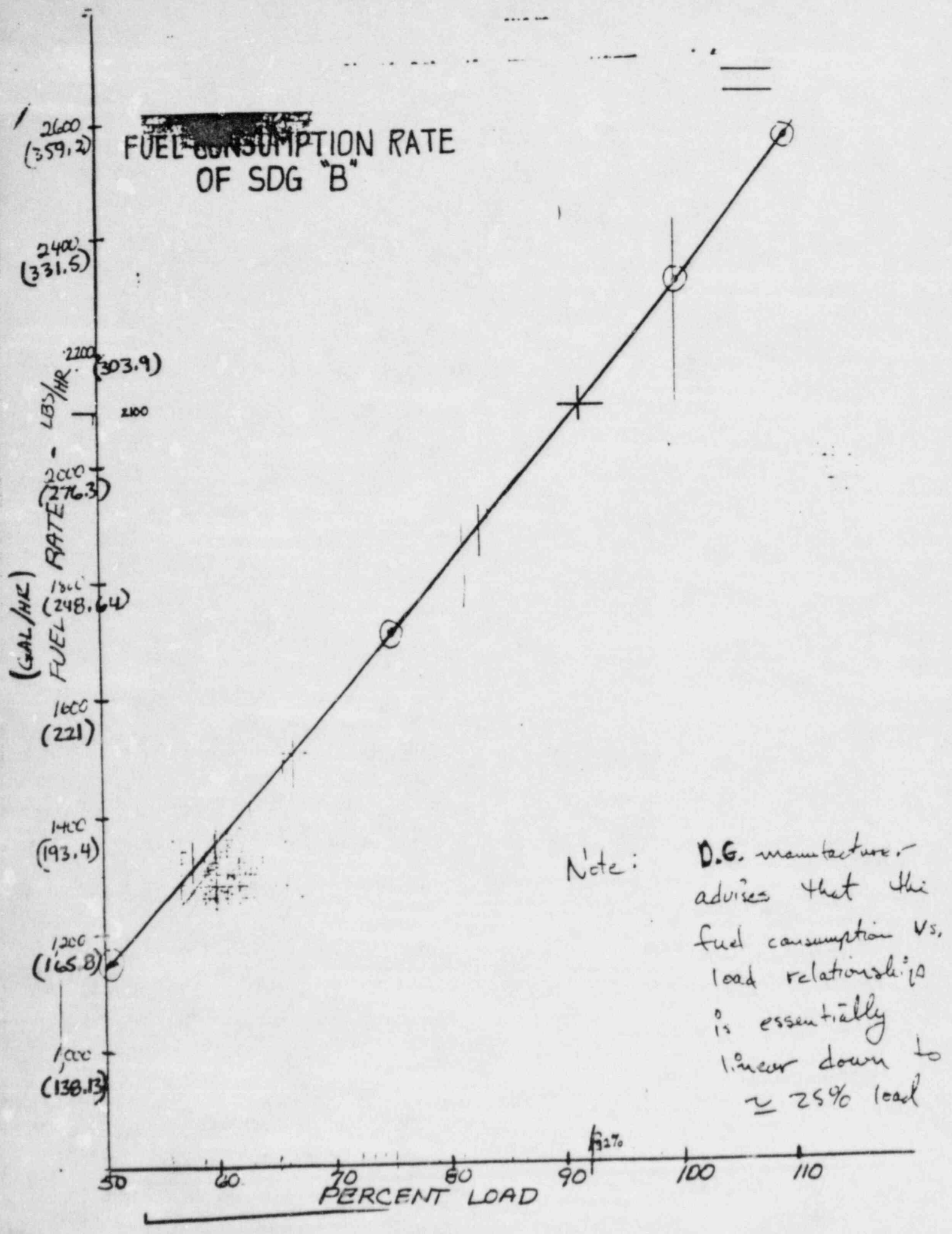
After 10 minutes to one hour, loads are adjusted to 11001 KW with a fuel consumption rate of 773 GPH.

At the end of one hour to 24 hours, the load is adjusted to 10969 KW with a fuel consumption rate of 769 GPH.

After 24 hours, non essential loads will be dropped reducing the load to 7741 KW with a fuel consumption rate of 576 GPH. Additionally after 24 hours, the "D" standby diesel generator will be secured (shutdown) with its share of the load being taken up by the three operating standby diesel generators.

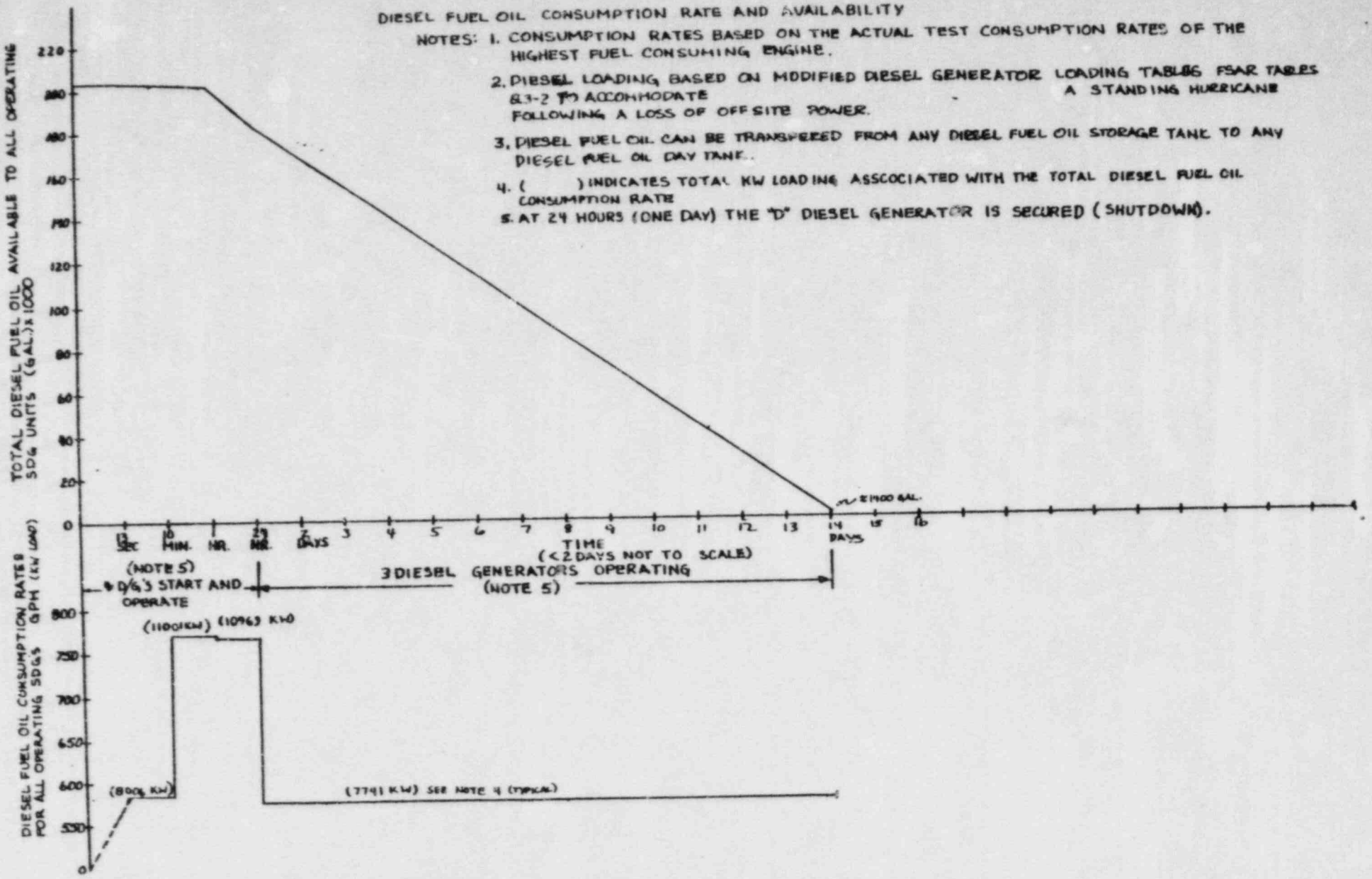
With the loading described above, the standby diesel generators would operate for 14 days without refueling and have a margin of 1400 gallons of fuel left in the storage tanks. This is based on the fuel oil storage tanks being filled to 100% capacity upon receipt of a hurricane, tornado, or tropical storm alert for the Artificial Island area, and the fuel oil consumption rates shown on the attached test data curve of fuel rate versus percent load for standby diesel generator "B".

Attachment


FUEL CONSUMPTION RATE
OF SDG "B"
2600
(359.2)
2400
(331.5)
2200
(303.9)
2100
2000
(276.3)
1800
(248.64)
1600
(221)
1400
(193.4)
1200
(165.8)
1,000
(138.13)
FUEL RATE - LBS/HR.
(GAL/HR.)
50
60
70
80
90
92%
100
110
PERCENT LOAD
Note: D.G. manufacturer advises that the fuel consumption Vs. load relationship is essentially linear down to ≈ 25% load

DIESEL FUEL OIL CONSUMPTION RATE AND AVAILABILITY

NOTES:
1. CONSUMPTION RATES BASED ON THE ACTUAL TEST CONSUMPTION RATES OF THE HIGHEST FUEL CONSUMING ENGINE.
2. DIESEL LOADING BASED ON MODIFIED DIESEL GENERATOR LOADING TABLES FSAR TABLES 8.3-2 TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.
3. DIESEL FUEL OIL CAN BE TRANSFERRED FROM ANY DIESEL FUEL OIL STORAGE TANK TO ANY DIESEL FUEL OIL DAY TANK.
4. ( ) INDICATES TOTAL KW LOADING ASSOCIATED WITH THE TOTAL DIESEL FUEL OIL CONSUMPTION RATE
5. AT 24 HOURS (ONE DAY) THE "D" DIESEL GENERATOR IS SECURED (SHUTDOWN).



MODIFIED LOADING TABLE TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.

TABLE 8.3-2

STANDBY DIESEL GENERATOR LOADING
4 STANDBY DIESEL-GENERATORS IN SERVICE
DESIGN BASIS ACCIDENT

Item	Description	Standby Diesel Generator A Demand kW					6	Standby Diesel Generator B Demand kW					3	
		No. Connected	13 s	13 s - 10 min	10 min - 60 min	60 min ~~Beyond 24 HR~~	24 HRS TO 7 DAYS	No. Connected	13 s	13 s - 10 min	10 min 60 min	60 min ~~Beyond 24 HR~~		24 HRS TO 7 DAYS
	Class 1E Loads													
1.	Reactor core spray pumps	1	-	~~530~~	-	-	—	1	-	~~530~~	~~530~~	~~530~~		—
2.	RHR pumps	1	~~881~~	~~881~~	991	991	991	1	~~881~~	~~881~~	991	991		—
3.	Safety aux cooling system pumps	1	-	476	476	476	476	1	-	476	476	476		—
4.	Core spray pump room unit coolers	2	-	~~12~~	-	-	—	2	-	~~12~~	~~12~~	~~12~~		—
5.	Motor-operated valves	1	-	-	-	-	—	1	-	-	-	-		—
6.	Swgr rm unit cooler fans	1	-	20	20	20	20	1	-	20	20	20		20
7.	Intake structure supply fans	1	-	32	32	32	22	1	-	32	32	32		22
8.	Intake structure traveling screens area fans	1	-	1.6	1.6	1.6	1.6	1	-	-	-	-		—
9.	RHR pump rm unit coolers fans	2	-	16	16	16	16	2	-	16	16	16		—
10.	RCIC pump rm unit coolers	-	-	-	-	-		2	-	4	4	4		—
11.	HPCI pump rm unit coolers	2	-	12	~~13~~	~~13~~		-	-	-	-	-		—
12.	125-V dc battery chargers	2	62	62	62	62	62	2	62	62	62	62		62
13.	Diesel area battery room exhaust fans	1	1	1	1	1	1	1	1	1	1	1		1
14.	Diesel fuel oil transfer pumps	2	-	-	-	4	4	2	-	-	-	4		4
15.	Station service water pumps	1	-	634	634	634	634	1	-	634	-	-		—
16.	RB FRVS recirculation system fans	2	-	~~240~~	~~120~~	~~120~~	—	2	-	~~240~~	~~120~~	~~120~~		—
17.	Control rm supply fans	-	-	-	-	-		-	-	-	-	-		

MODIFIED LOADING TABLE TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.

TABLE 8.3-2 (cont)

Item	Description	Standby Diesel Generator A Demand kW						Standby Diesel Generator B Demand kW						
		No. Connected	13 s	13 s - 10 min	10 min - 60 min	60 min ~~Beyond 24 HR~~	24 HRS TO 7 DAYS	No. Connected	13 s	13 s - 10 min	10 min 60 min	60 min ~~Beyond 24 HR~~	24 HRS TO 7 DAYS
18.	208Y/120-V ac XFMRS to power dist panels	4	60	60	60	60	60	4	60	60	60	60	60
19.	120-V ac Class 1E instrumentation power supply	4	41	41	41	41	41	4	41	41	41	41	41
20.	Intake structure exhaust fans	1	-	32	32	32	32	1	-	32	32	32	32
21.	Control room chilled water circulating pumps	-	-	-	-	-	—	-	-	-	-	-	—
22.	Control room supply unit heating coils	-	-	-	-	-	—	-	-	-	-	-	—
23.	Control room water chillers	-	-	-	-	-	—	-	-	-	-	-	—
24.	Diesel generator room recirc systems fans	2	-	100	100	100	100	2	-	100	100	100	100
25.	Primary containment instrument gas compressor	-	-	-	-	-	—	-	-	-	-	-	—
26.	Battery chargers, 250-V dc	1	15	15	15	15	15	1	15	15	15	15	15
27.	Control area battery room exhaust fans	-	-	-	-	-	—	-	-	-	-	-	—
28.	RB FRVS recirculation unit heating coils	2	-	~~200~~	~~100~~	~~100~~	—	2	-	~~200~~	~~100~~	~~100~~	—
29.	Traveling screen spray water booster pumps	1	-	16	16	16	16	1	-	16	16	16	—
30.	RB FRVS vent unit heating coil	1	-	~~32~~	~~32~~	~~32~~	—	1	-	-	-	-	—
31.	Control room supply system return fans	-	-	-	-	-	—	-	-	-	-	-	—
32.	Control room emergency filter fans	-	-	-	-	-	—	-	-	-	-	-	—
33.	Safety aux cooling system unit coolers	-	-	-	-	-	—	-	-	-	-	-	—
34.	Fuel pool cooling pumps	1	-	-	-	60	60	1	-	-	-	-	—

MODIFIED LOADING TABLE TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.

TABLE 8.3-2 (cont)

Item	Description	Standby Diesel Generator A Demand kW						Standby Diesel Generator B Demand kW					
		No. Connected	13 s	13 s - 10 min	10 min - 60 min	60 min ~~Beyond~~ 24HR	24HRS TO 7 DAYS	No. Connected	13 s	13 s - 10 min	10 min 60 min	60 min ~~Beyond~~ 24HR	24HRS TO 7 DAYS
35.	Control room emergency filter unit electric heating coils	-	-	-	-	-	—	-	-	-	-	-	—
36.	Control equipment room air supply fan	-	-	-	-	-	—	-	-	-	-	-	—
37.	RB FRVS vent sys fans	1	-	~~20~~	~~20~~	~~20~~	—	1	-	-	-	-	—
38.	Containment hydrogen recombiner system	1	-	-	-	-	—	-	-	-	-	-	—
39.	Control equip room supply unit heating coils	-	-	-	-	-	—	-	-	-	-	-	—
40.	Service water self-cleaning strainers	1	-	1	1	1	1	1	-	1	1	1	—
41.	Standby liquid control pumps	1	-	~~32~~	~~32~~	~~32~~	—	1	-	~~32~~	~~32~~	~~32~~	—
42.	Public address system 120-V ac power supply	1	20.5	20.5	20.5	20.5	20.5	-	-	-	-	-	—
43.	Security system 120-V ac power supply	-	-	-	-	-	—	-	-	-	-	-	—
44.	NSSS computer 120-V ac power supply	-	-	-	-	-	—	-	-	-	-	-	—
45.	BOP computer 120-V ac power supply	-	-	-	-	-	—	1	20.5	20.5	20.5	20.5	20.5
46.	480-V power supply to class 1E chiller panels	-	-	-	-	-	—	-	-	-	-	-	—
47.	Traveling screens	1	-	4	4	4	4	1	-	4	4	4	—
48.	ECCS jockey pump	1	8	8	8	8	—	1	8	8	8	8	—
49.	Motor-driven diesel generator fuel oil standby pumps	1	1.5	1.5	1.5	1.5	1.5	1	1.5	1.5	1.5	1.5	1.5
50.	Standby liquid control pump room duct heaters	1	-	-	~~45~~	~~45~~	—	-	-	-	-	-	—

MODIFIED LOADING TABLE TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.

TABLE 8.3-2 (cont)

Item	Description	Standby Diesel Generator A Demand kW						Standby Diesel Generator B Demand kW					
		No. Connected	13 s	13 s - 10 min	10 min - 60 min	60 min ~~Beyond~~ 24 HR	24 HRS TO 7 DAYS	No. Connected	13 s	13 s - 10 min	10 min 60 min	60 min ~~Beyond~~ 24 HR	24 HRS TO 7 DAYS
51.	480-V power supply to hydrogen and oxygen analyzer panels	1	1	1	1	1	1	1	1	1	1	1	1
52.	250-V dc battery room duct heaters	1	~~0~~	~~0~~	~~0~~	~~0~~	—	-	-	-	-	-	—
53.	125-V dc diesel area battery room duct heaters	1	~~31~~	~~31~~	~~31~~	~~31~~	—	1	~~24~~	~~24~~	~~24~~	~~24~~	—
54.	HPCI pump room duct heater	1	~~11~~	~~11~~	~~11~~	~~11~~	—	-	-	-	-	-	—
55.	RCIC pump room duct heaters	-	-	-	-	-		1	~~7~~	~~7~~	~~7~~	~~7~~	—
56.	250-V dc battery room duct heater	-	-	-	-	-		1	~~6~~	~~6~~	~~6~~	~~6~~	—
57.	Class 1E panel room water chillers	1	-	198	198	198	198	1	-	-	-	-	—
58.	Class 1E panel room chilled water pumps	1	-	32	32	32	32	1	-	-	-	-	—
59.	Class 1E panel room supply & return air fans	1	-	60	60	60	60	1	-	-	-	-	—
60.	Class 1E panel room electric heaters	1	-	~~100~~	~~100~~	~~100~~	—	1	-	-	-	-	—
61.	Battery room exhaust fan	1	-	1	1	1	1	1	-	-	-	-	—
62.	Battery room duct heater	-	-	-	-	-	—	-	-	-	-	-	—

MODIFIED LOADING TABLE TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.

TABLE 8.3-2 (cont)

Item	Description	Standby Diesel Generator A Demand kW						Standby Diesel Generator B Demand kW					
		No. Connected	13 s	13 s - 10 min	10 min - 60 min	60 min ~~Beyond~~ 24HR	24 HRS TO 7 DAYS	No. Connected	13 s	13 s - 10 min	10 min 60 min	60 min ~~Beyond~~ 24HR	24 HRS TO 7 DAYS
	Non-Class 1E Loads												
71.	Turbine-generator turning gear oil pump	-	-	-	-	-	—	1	-	-	32	32	22
72.	Standby liquid control solution operating heater	1	-	-	~~10~~	~~10~~		-	-	-	-	-	—
73.	Drywell cooling unit fans	8	32	32	32	32	32	8	32	32	32	32	32
74.	Radwaste exhaust fans	1	-	-	80	80	80	1	-	80	80	80	80
75.	Essential plant lighting	1	-	-	61	61	61	1	-	-	76	76	76
76.	CRD water pumps	-	-	-	-	-	—	-	-	-	-	-	—
77.	Turbine building battery room exhaust fans	1	-	-	~~3.8~~	~~3.8~~	—	1	-	-	-	-	—
78.	Turbine generator aux Bearing lift pump Total 9 - 5 hp each Turning gear - 60 hp	-	-	-	-	-	—	1	-	-	84	84	84
79.	Emergency instrument air compressor	1	-	-	-	-	—	-	-	-	-	-	—
80.	Radwaste supply fans	-	-	-	-	-	—	-	-	-	-	-	—
81.	Reactor building supply air handling units	1	-	-	120	120	120	-	-	-	-	-	—
82.	Reactor building exhaust fans	1	-	-	160	160	160	1	-	160	160	160	160
83.	Radwaste tank vent filter fans	1	-	-	6	6	6	1	-	-	-	-	—
84.	Turbine building battery room supply fans	1	-	-	~~3.2~~	~~3.2~~	—	1	-	-	-	-	—
85.	Radwaste tank vent filter heating coils	1	-	-	-	~~3.6~~	—	1	-	-	-	-	—
86.	Chemical lab exhaust fans	1	-	-	-	12	12	1	-	-	-	-	—

MODIFIED LOADING TABLE TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.

TABLE 8.3-2 (cont)

Item	Description	Standby Diesel Generator A Demand kW						Standby Diesel Generator B Demand kW					
		No. Connected	13 s	13 s - 10 min	10 min - 60 min	60 min ~~& Beyond~~ 24 HR	24 HRS TO 7 DAYS	No. Connected	13 s	13 s - 10 min	10 min 60 min	60 min ~~& Beyond~~ 24 HR	24 HRS TO 7 DAYS
87.	Diesel generator starting air compressors	1	-	-	~~42~~	~~42~~	—	1	-	-	~~42~~	~~42~~	—
88.	Reactor aux cooling system pumps	1	-	120	120	120	120	1	-	120	120	—	—
89.	125-V dc battery chargers	2	-	-	102	102	102	2	-	-	102	102	102
90.	125-V dc battery chargers	1	-	-	31	31	31	1	-	-	31	31	31
91.	250-V dc battery chargers	-	-	-	-	-	-	1	-	-	51	51	51
92.	Standby liquid control sol mixing heater	-	-	-	-	-	—	-	-	-	-	-	—
93.	RFPT auxiliaries Lube oil pump	1	-	-	21.2	21.2	21.2	1	-	-	21.2	21.2	21.2
	Turning gear motor												
94.	Miscellaneous instrumentation 120-V ac power supply	4	-	-	41	41	41	4	-	-	41	41	41
95.	208-V/240-V ac XFMRS to dist panels	2	-	-	24	24	24	1	-	-	12	12	12
96.	Reactor building floor drain sump pumps	-	-	-	-	-	—	-	-	-	-	-	—
97.	Drywell equip drain sump pumps	1	-	-	-	-	—	1	-	-	-	-	—
98.	Drywell floor drain sump pump	1	-	-	-	-	—	1	-	-	-	-	—
99.	Power supply for unit vent radiation monitoring systems	1	-	-	3.5	3.5	3.5	1	-	-	3.5	3.5	3.5
100.	Power supply for DLD - radiation monitoring systems	-	-	-	-	-	—	-	-	-	-	-	—
101.	Turbine-generator main seal oil pump	-	-	-	-	-	—	1	-	-	16	16	16
102.	Turbine-generator recirc seal oil pump	-	-	-	-	-	—	1	-	-	6	6	6

MODIFIED LOADING TABLE TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.

TABLE 8.3-2 (cont)

Item	Description	Standby Diesel Generator A Demand kW						Standby Diesel Generator B Demand kW					
		No. Connected	13 s	13 s - 10 min	10 min - 60 min	60 min & ~~Beyond~~ 24HR	24 HRS TO 7 DAYS	No. Connected	13 s	13 s - 10 min	10 min 60 min	60 min & ~~Beyond~~ 24 HR	24 HRS TO 7 DAYS
103.	Turbine-generator seal oil vacuum pump	-	-	-	-	-	—	1	-	-	1.5	1.5	1.5
104.	Radwaste ±24-V dc battery room duct heater	1	-	-	-	-	—	-	-	-	-	-	—
105.	Condensate storage tank heat tracing	1	-	-	~~3~~	~~3~~	—	-	-	-	-	-	—
106.	TSC supply system fan	-	-	-	-	-	—	-	-	-	-	-	—
107.	TSC supply system heating coil	-	-	-	-	-	—	-	-	-	-	-	—
108.	TSC emergency filter fan	-	-	-	-	-	—	-	-	-	-	-	—
109.	TSC emergency filter htg coil	-	-	-	-	-	—	-	-	-	-	-	—
110.	Steam tunnel unit cooler	-	-	-	-	-	—	1	-	-	-	-	—
111.	Turbine building battery room supply fan & htg coil	1	-	-	~~90~~	~~90~~	—	-	-	-	-	-	—
112.	Turbine building compartment exhaust fan	1	-	-	-	-	—	1	-	-	-	-	—
113.	Control area 125-V dc battery room duct heater	1	-	-	~~18~~	~~18~~	—	-	-	-	-	-	—
114.	Remote shutdown panel room supply fan	1	-	-	-	-	—	-	-	-	-	-	—
115.	Remote shutdown panel room heating coil	1	-	-	-	-	—	-	-	-	-	-	—
Total		1241	-	~~4042~~	~~3748~~	~~3834~~		-	~~4235~~	~~3508~~	~~4737~~	~~4701~~	
			242	1997.6	3626.3	3702.3	3694.3		242	1937	2771.2	2655.2	1139.2

MODIFIED LOADING TABLE TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.

TABLE 8.3-2 (cont)

Item	Description	Standby Diesel Generator C Demand kW: No. Connected	13 s	13 s - 10 min	10 min - 60 min	60 min & ~~Beyond~~ 24 HR	24 HRS TO 7 DAYS	Standby Diesel Generator D Demand kW: No. Connected	13 s	13 s - 10 min	10 min 60 min	60 min & ~~Beyond~~ 24 HR	24 HRS TO 7 DAYS
	Class 1E Loads												
1.	Reactor core spray pumps	1	-	~~530~~	-	-	—	1	-	~~530~~	~~530~~	~~530~~	—
2.	RHR pumps	-	~~991~~	~~991~~	-	-	—	1	~~994~~	~~991~~	-	-	—
3.	Safety aux cooling system pumps	1	-	476	476	476	476	1	-	476	476	476	—
4.	Core spray pump room unit coolers	2	-	~~42~~	-	-	—	2	-	~~42~~	~~42~~	~~42~~	—
5.	Motor-operated valves	1	-	-	-	-	—	1	-	-	-	-	—
6.	Swgr rm unit cooler fans	1	-	20	20	20	20	1	-	20	20	20	—
7.	Intake structure supply fans	1	-	-	-	-	—	1	-	-	-	-	-
8.	Intake structure traveling screens area fans	-	-	-	-	-	—	-	-	-	-	-	-
9.	RHR pump rm unit coolers fans	2	-	~~46~~	-	-	—	2	-	~~46~~	-	-	—
10.	RCIC pump rm unit coolers	-	-	-	-	-	—	-	-	-	-	-	—
11.	HPCI pump rm unit coolers	-	-	-	-	-		-	-	-	-	-	—
12.	125-V dc battery chargers	3	93	93	93	93	93	3	93	93	93	93	—
13.	Diesel area battery room exhaust fans	1	1	1	1	1	1		1	1	1	1	—
14.	Diesel fuel oil transfer pumps	2	-	-	-	4	4	2	-	-	-	4	—
15.	Station service water pumps	1	-	634	634	634	634	1	-	634	634	634	—
16.	RB FRVS recirculation system fans	1	-	~~120~~	~~120~~	~~120~~	—	1	-	~~120~~	~~120~~	~~120~~	—
17.	Control rm supply fans	1	-	32	32	32	32	1	-	-	-	-	—
18.	208Y/120-V ac XFMRS to power dist panels	4	60	60	60	60	60	4	60	60	60	60	—

MODIFIED LOADING TABLE TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.

TABLE 8.3-2 (cont)

Item	Description	Standby Diesel Generator C Demand kW						Standby Diesel Generator D Demand kW					
		No. Connected	13 s	13 s - 10 min	10 min - 60 min	60 min ~~Beyond~~ 24 HRS	24 HRS TO 7 DAYS	No. Connected	13 s	13 s - 10 min	10 min 60 min	60 min ~~Beyond~~ 24 HRS	24 HRS TO 7 DAYS
19.	120-V ac Class 1E instrumentation power supply	4	41	41	41	41	41	4	41	41	41	41	—
20.	Intake structure exhaust fans	1	-	-	-	-	—	1	-	-	-	-	—
21.	Control room chilled water circulating pumps	1	-	48	48	48	48	1	-	-	-	-	—
22.	Control room supply unit heating coils	1	-	90	90	90	90	1	-	-	-	-	—
23.	Control room water chillers	1	-	506	506	506	506	1	-	-	-	-	—
24.	Diesel generator room recirc system fans	2	-	100	100	100	100	2	-	100	100	100	—
25.	Primary containment instrument gas compressor	1	-	-	12	12	12	1	-	-	-	-	—
26.	Battery chargers, 250-V dc	-	-	-	-	-	—	-	-	-	-	-	—
27.	Control area battery room exhaust fans	1	-	4	4	4	4	1	-	-	-	-	—
28.	RB FRVS recirculation unit heating coils	1	-	~~100~~	~~100~~	~~100~~	—	1	-	~~100~~	~~100~~	~~100~~	—
29.	Traveling screen spray water booster pumps	1	-	16	16	16	16	1	-	16	16	16	—
30.	RB FRVS vent unit heating coil	-	-	-	-	-	—	-	-	-	-	-	—
31.	Control room supply system return fans	1	-	16	16	16	16	1	-	-	-	-	—
32.	Control room emergency filter fans	1	-	~~20~~	~~20~~	~~20~~	—	1	-	-	-	-	—
33.	Safety aux cooling system unit coolers	2	-	12	12	12	12	2	-	-	-	-	—
34.	Fuel pool cooling pumps	-	-	-	-	-	—	-	-	-	-	-	—
35.	Control room emergency filter unit electric heating coils	1	-	~~43~~	~~43~~	~~43~~	—	1	-	-	-	-	—

MODIFIED LOADING TABLE TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.

TABLE 8.3-2 (cont)

Item	Description	Standby Diesel Generator C Demand kW						Standby Diesel Generator D Demand kW					
		No. Connected	13 s	13 s - 10 min	10 min - 60 min	60 min ~~Beyond~~ 24 HRS	24 HRS TO 7 DAYS	No. Connected	13 s	13 s - 10 min	10 min 60 min	60 min ~~Beyond~~ 24 HRS	24 HRS TO 7 DAYS
36.	Control equipment room air supply fan	1	-	200	200	200	200	1	-	-	-	-	—
37.	RB FRVS vent sys fans	-	-	-	-	-	—	-	-	-	-	-	—
38.	Containment hydrogen recombiner system	-	-	-	-	-	—	1	-	-	-	~~100~~	—
39.	Control equip room supply unit heating coils	1	-	~~100~~	~~100~~	~~100~~	—	1	-	-	-	-	—
40.	Service water self-cleaning strainers	1	-	1	1	1	1	1	-	1	1	1	—
41.	Standby liquid control pumps	-	-	-	-	-	—	1	-	-	-	-	—
42.	Public address system 120-V ac power supply	-	-	-	-	-	—	-	-	-	-	-	—
43.	Security system 120-V ac power supply	1	20.5	20.5	20.5	20.5	20.5	-	-	-	-	-	—
44.	NSSS computer 120-V ac power supply	-	-	-	-	-	—	1	20.5	20.5	20.5	20.5	—
45.	BOP computer 120-V ac power supply	-	-	-	-	-	—	1	20.5	20.5	20.5	20.5	—
46.	480-V power supply to Class 1E chiller panels	1	4	4	4	4	4	1	4	4	4	4	—
47.	Traveling screens	1	-	4	4	4	4	1	-	4	4	4	—
48.	ECCS jockey pump	1	8	8	8	8	8	1	8	8	8	8	—
49.	Motor-driven diesel generator fuel oil standby pumps	1	1.5	1.5	1.5	1.5	1.5	1	1.5	1.5	1.5	1.5	—
50.	Standby liquid control pump room duct heaters	-	-	-	-	-	—	1	-	-	-	-	—
51.	480-V power supply to hydrogen and oxygen analyzer panels	-	-	-	-	-	—	-	-	-	-	-	—

MODIFIED LOADING TABLE TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.

TABLE 8.3-2 (cont)

Item	Description	Standby Diesel Generator C Demand kW						Standby Diesel Generator D Demand kW					
		No. Connected	13 s	13 s - 10 min	10 min - 60 min	60 min & ~~Beyond~~ 24HRS	24 HRS TO 7 DAYS	No. Connected	13 s	13 s - 10 min	10 min 60 min	60 min & ~~Beyond~~ 24HRS	24 HRS TO 7 DAYS
52.	250-V dc battery room duct heaters	-	-	-	-	-	—	-	-	-	-	-	—
53.	125-V dc diesel area battery room duct heaters	1	~~-31-~~	~~-31-~~	~~-31-~~	~~-31-~~	—	1	~~-31-~~	~~-31-~~	~~-31-~~	~~-31-~~	—
54.	HPCI pump ro m duct heater	-	-	-	-	-	—	-	-	-	-	-	—
55.	RCIC pump room duct heaters	-	-	-	-	-	—	-	-	-	-	-	—
56.	250-V dc battery room duct heater	-	-	-	-	-	—	-	-	-	-	-	—
57.	Class 1E panel room water chillers	-	-	-	-	-	—	-	-	-	-	-	—
58.	Class 1E panel room chilled water pumps	-	-	-	-	-	—	-	-	-	-	-	—
59.	Class 1E panel room supply & return air fans	-	-	-	-	-	—	-	-	-	-	-	—
60.	Class 1E panel room electric heaters	-	-	-	-	-	—	-	-	-	-	-	—
61.	Battery room exhaust fan	-	-	-	-	-	—	-	-	-	-	-	—
62.	Battery room duct heater	1	~~-11-~~	~~-11-~~	~~-11-~~	~~-11-~~	—	1	~~-11-~~	~~-11-~~	~~-11-~~	~~-11-~~	—

MODIFIED LOADING TABLE TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.

TABLE 8.3-2 (cont)

Item	Description	Standby Diesel Generator C Demand kW						Standby Diesel Generator D Demand kW					
		No. Connected	13 s	13 s - 10 min	10 min - 60 min	60 min & ~~Beyond~~ 24HRS	24HRS TO 7 DAYS	No. Connected	13 s	13 s - 10 min	10 min 60 min	60 min & ~~Beyond~~ 24HRS	24HRS TO 7 DAYS
	Non-Class 1E Loads												
71.	Turbine-generator turning gear oil pump	-	-	-	-	-	—	-	-	-	-	-	—
72.	Standby liquid control solution operating heater	-	-	-	-	-	—	-	-	-	-	-	—
73.	Drywell cooling unit fans	-	22	32	32	32	32	-	32	32	22	22	—
74.	Radwaste exhaust fans	1	-	-	80	80	80	-	-	-	-	-	—
75.	Essential plant lighting	1	-	-	-	-	—	1	-	-	-	-	—
76.	CRD water pumps	1	-	-	~~203~~	~~203~~	—	1	-	-	-	-	—
77.	Turbine building battery room exhaust fans	-	-	-	-	-	—	-	-	-	-	-	—
78.	Turbine-generator aux Bearing lift pump Total 9 - 5 hp each Turning gear - 60 hp	-	-	-	-	-	—	-	-	-	-	-	—
79.	Emergency instrument air compressor	-	-	-	-	-	—	-	-	-	-	-	—
80.	Radwaste supply fans	1	-	-	80	80	80	1	-	-	80	80	—
81.	Reactor building supply air handling units	1	-	120	120	120	120	1	-	-	-	-	—
82.	Reactor building exhaust fans	-	-	-	-	-	—	1	-	-	-	-	—
83.	Radwaste tank vent filter fans	-	-	-	-	-	—	-	-	-	-	-	—
84.	Turbine building battery room supply fans	-	-	-	-	-	—	-	-	-	-	-	—
85.	Radwaste tank vent filter heating coils	-	-	-	-	-	—	-	-	-	-	-	—
86.	Chemical lab exhaust fans	-	-	-	-	-	—	-	-	-	-	-	—

MODIFIED LOADING TABLE TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.

TABLE 8.3-2 (cont)

Item	Description	Standby Diesel Generator C Demand kW					24 HRS TO 7 DAYS	Standby Diesel Generator D Demand kW					24 HRS TO 7 DAYS
		No. Connected	13 s	13 s - 10 min	10 min - 60 min	60 min & ~~Beyond~~ 24 HRS		No. Connected	13 s	13 s - 10 min	10 min 60 min	60 min & ~~Beyond~~ 24 HRS	
87.	Diesel generator starting air compressors	1	-	-	~~12~~	~~12~~	—	1	-	-	~~12~~	~~12~~	—
88.	Reactor aux cooling system pumps	-	-	-	-	-	—	-	-	-	-	-	—
89.	125-V dc battery chargers	-	-	-	-	-	—	-	-	-	-	-	—
90.	125-V dc battery chargers	1	-	-	31	31	31	1	-	-	31	31	—
91.	250-V dc battery chargers	-	-	-	-	-	—	-	-	-	-	-	—
92.	Standby liquid control sol mixing heater	-	-	-	-	-	—	1	-	-	~~40~~	~~40~~	—
93.	RFPT auxiliaries Lube oil pump	1	-	-	21.2	21.2	21.2	-	-	-	-	-	—
	Turning gear motor												—
94.	Miscellaneous instrumentation 120 V ac power supply	4	-	-	41	41	41	4	-	-	41	41	
95.	208-V/120-V ac XFMRS to dist panels	1	-	-	12	12	12	1	-	-	12	12	—
96.	Reactor building floor drain sump pumps	2	-	-	~~4~~	~~4~~	—	2	-	-	~~4~~	~~4~~	—
97.	Drywell equip drain sump pumps	-	-	-	-	-	—	-	-	-	-	-	—
98.	Drywell floor drain sump pump	-	-	-	-	-	—	-	-	-	-	-	—
99.	Power supply for unit vent radiation monitoring systems	-	-	-	-	-	—	-	-	-	-	-	—
100.	Power supply for DLD - radiation monitoring systems	1	-	-	3.5	3.5	3.5	1	-	-	3.5	3.5	—
101.	Turbine-generator mean seal oil pump	-	-	-	-	-	—	-	-	-	-	-	—
102.	Turbine-generator recirc seal oil pump	-	-	-	-	-	—	-	-	-	-	-	—

MODIFIED LOADING TABLE TO ACCOMMODATE A STANDING HURRICANE FOLLOWING A LOSS OF OFFSITE POWER.

TABLE 8.3-2 (cont)

Item	Description	Standby Diesel Generator C Demand kW						Standby Diesel Generator D Demand kW						
		No. Connected	13 s	13 s - 10 min	10 min - 60 min	60 min & ~~Beyond~~ 24HRS	24 HR TO 7 DAYS	No. Connected	13 s	13 s - 10 min	10 min 60 min	60 min & ~~Beyond~~ 24 HRS	24 HR TO 7 DAYS
103.	Turbine-generator seal oil vacuum pump	-	-	-	-	-	-	-	-	-	-	-	-
104.	Radwaste ±24-V dc battery room duct heater	-	-	-	-	-	-	-	-	-	-	-	-
105.	Condensate storage tank heat tracing	-	-	-	-	-	-	-	-	-	-	-	-
106.	TSC supply system fan	1	-	-	20	20	20	-	-	-	-	-	-
107.	TSC supply system heating coil	1	-	-	30	30	30	-	-	-	-	-	-
108.	TSC emergency filter fans	1	-	-	20	20	20	-	-	-	-	-	-
109.	TSC emergency filter htg coil	1	-	-	13	13	13	-	-	-	-	-	-
110.	Steam tunnel unit cooler	-	-	-	-	-	-	1	-	-	-	-	-
111.	Turbine building battery room supply fan & htg coil	-	-	-	-	-	-	-	-	-	-	-	-
112.	Turbine building compartment exhaust fan	-	-	-	-	-	-	-	-	-	-	-	-
113.	Control area 125-V dc battery room duct heater	-	-	-	-	-	-	-	-	-	-	-	-
114.	Remote shutdown panel room supply fan	-	-	-	-	-	-	-	-	-	-	-	-
115.	Remote shutdown panel room heating coil	-	-	-	-	-	-	-	-	-	-	-	-
			~~4255~~ 261	~~4225~~ 2940	~~3499~~ 2903.7	~~3207~~ 2907.7	2907.7		~~3276~~ 281.5	~~2388~~ 1531.5	~~2841~~ 1700	~~2585~~ 1704	0

ATTACHMENT II

QUESTION 430.81 (SECTION 9.5.4)

In Section 9.5.4.2.1 of the FSAR you state that "The interior and exterior surfaces of the [fuel oil storage] tank are corrosion protected by carboline carbo zinc 11 coatings. I&E circular 77-15 discusses the incompatibility between diesel fuel oil and zinc. The reaction results in a substance resembling soap which when heated becomes insoluble and this substance could render diesel generators inoperable due to blocked fuel lines, injectors, etc. This is not acceptable. It is our position that fuel oil storage tanks be provided with internal corrosion protection. Therefore provide the results of tests which show that over the lifetime of the plant that the carboline carbo zinc 11 coating used is compatible with the type of diesel fuel oil that will be used at your plant and that the condition described in the circular will not occur or replace the internal coating with a non-zinc base type that is compatible with diesel fuel oil. (SRP 9.5.4, Part II)

RESPONSE

HCGS will remove the existing inorganic zinc coating from the diesel generator fuel oil tanks. The tanks will be blasted to the white metal interior of SSPC-SP5. Two coats of Amercoat No. 90 or equivalent will be applied to the tank interior.