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TENDER SPECIFICATION OF MARINE (AIR COOLED) AC DIESEL GENERATOR (415V, 3PHASE, 50HZ, 85-95 KW (105-120 KVA)) WITH ASSOCIATED ACCESSORIES – COMSWADS/DIVING BOAT

1. **Name of the Equipment.** Marine (Air Cooled) AC Diesel Generator (415V, 3Phase, 50Hz, 85-95 KW (105-120 KVA)) With Associated Accessories
2. **Purpose.** The Generator sets will be used in diving boats (01 each) as "Emergency Generator" of the boat. It should provide power in case the main Generator or distribution system of the boat fails.
3. **Type** : Marine Type (Air cooled).
4. **Brand** : To be mentioned.
5. **Model** : To be mentioned.
6. **Year of Manufacturing** : 2022 or later.
7. **Country of Origin.**
 - a. For Prime Mover : USA, France, Germany and UK.
 - b. For Alternator : France and UK.
 - c. Control / Monitoring : To be mentioned.
 - d. Other parts/ accessories: To be mentioned.
8. **Manufacturer.**
 - a. For Prime Mover : USA, France, Germany and UK.
 - b. For Alternator : France and UK.
 - c. Control / Monitoring : To be mentioned.
 - d. Other parts/accessories: To be mentioned
9. **Manufacturer** : Name and full address with e-mail of Manufacturer is to be mentioned.
10. **Supplier/ Local Agent** : Name and full address with e-mail of Supplier/ Local agent is to be mentioned.
11. **Quantity** : 03 (Three) complete sets with standard accessories.
12. **Standard.** The offered Generator under the scope of supply is to fulfill the requirement of ISO (Grade-2) recognized standards. The classification standard(s) of offered items are to be mentioned and should be well supported by the certificates/OEM brochures. Type approval certificates in English are to be provided by the supplier with the offer.
13. **Qualification of Bidder.** The bidder is to be authorized by OEM/ OEM authorized agent/dealer of Prime Mover or Alternator for the supply of the items as per this tender. Authorization certificate in this respect is to be submitted with the offer. In case of offer from OEM authorized agent/dealer, certification of documents regarding such authorization/ agencyship/ dealership of OEM to the authorized agent/dealer is also to be provided.

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14. **Scope of Supply.** The Generator sets are to be supplied as per the specifications enumerated in the subsequent paragraphs. The Generator sets with associated accessories should be complete with all standard accessories and attachments, ready in all respect for operation after installation. The scope of supply include the followings but not limited to:

- a. 03 x Complete Marine AC Diesel Generator Sets (Prime mover & Alternator) with Control & Monitoring Panel and associated accessories (As per para 15 to 17).
- b. 03 x Emergency Switchboard (As per para 18).
- c. 03 x 250 Amps (Motorized Circuit Breaker) (As per para 18d).
- d. Supply Breaker of Emergency Switchboard with Appropriate Capacity (As per para 18e).
- e. Documentation/Certification (As per para 26).

15. **Operating Environment of Generator Set.** The Generating sets are to be designed to operate in the following ambient condition:

- a. Ambient air temperature : 5° C to 45° C.
- b. Relative humidity : Up to 98% (non condensing).

16. **Technical Parameters.**

a. **General Particulars of Complete Generator Set:**

- (1) Manufacturer : To be mentioned
- (2) Type : Marine
- (3) Brand : To be mentioned
- (4) Model : To be mentioned
- (5) Classification Standard : To be mentioned
- (6) Type of operations : Standby
required
- (7) Maximum Continuous Rating (MCR) : To be mentioned
- (8) Power factor : 0.8 Lagging.
- (9) Output : 415V, 105-120 KVA, 50Hz, 3 Phase, 4 wires.
- (10) RPM : To be Mentioned.
- (11) Overall dry weight of Generator set (Prime Mover and Alternator combined) : To be mentioned.
- (12) Overall dimensions of the Generator set. : To be mentioned.
- (13) Coupling (Prime Mover and Alternator) : To be mentioned.
- (14) Voltage Regulation : To be mentioned.
- (15) Combined Base Frame : The Prime Mover and the Alternator are to be mounted on a combined base frame to be rigidly fixed to the Generator seating. Lifting eyes are to be provided for lifting the complete Generator Set.



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- (16) Mounting : The Generator set is to be elastically mounted on the common base frame.
- (17) Loading Condition. The AC Generator sets will be subjected to sudden high inductive loads like LARS not less than 65 KW where starting transient current will be very high. Under such circumstances, the output voltage should remain sufficiently stable. The Governor and AVR system must be highly responsive and should meet the following conditions:
- (a) Voltage.
- (i) Voltage transient tolerance : Within $\pm 25\%$ (To be mentioned).
- (ii) Voltage transient recovery time: Max 6 Sec (To be mentioned).
- (iii) Voltage regulation: Within $\pm 5\%$ (To be mentioned).
- (b) Frequency.
- (i) Frequency transient tolerance: Within 12% (To be mentioned).
- (ii) Frequency transient recovery time: Max 5 Sec (To be mentioned).
- (c) Other Features. The above transient conditions must be maintained under following load change:
- (i) Load Changes from 0 to 50%.
- (ii) Load Changes from 50% to 100%.
- (iii) Load Changes from 100% to 0.

(Note: Graphs showing various characteristics and response of transient voltage and frequency variation are to be submitted with the FAT report).

b. Specification of Prime Mover (Engine):

- (1) Manufacturer : Manufacturer of Prime Mover should be as following:
- (a) Caterpillar, USA/ UK.
- (b) SEMT Pielstic, France.
- (c) MAN Diesel, Germany.
- (d) MTU, Germany.
- (e) Moteurs Baudouin, France.
- (2) Type : Marine.
- (3) Brand/ Model : To be mentioned.
- (4) Number of stroke : To be mentioned.
- (5) Number of cylinder : To be mentioned.



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- (6) RPM : To be Mentioned.
- (7) Combustion System : To be mentioned.
- (8) Bore and Stroke : To be mentioned.
- (9) Shut down system : To be mentioned (Including emergency shutdown).
- (10) Cooling System : Air cooled.
- (11) Lub Oil to be used : To be mentioned.
- (12) Starting System. (Starting Battery to be included) : Details of Battery (like Brand, Model, Capacity etc.) to be mentioned.
- (13) Time between Major.
 - (a) Major Overhauls : To be mentioned.
 - (b) Top Overhauls : To be mentioned.
 - (c) Other Maintenance routine : To be mentioned.
- (14) Safety Devices : Following safety protections are to be incorporated:
 - a. Engine over speed.
 - b. High Engine lub oil temperature.
 - c. Low Engine oil pressure.
 - d. Others to be mentioned (if any)

c. Specification of Alternator:

- (1) Cross section : Manufacturer of Alternator should be as follows:
 - (a) Leroy Somer, France.
 - (b) Stamford, UK.
- (2) Type : Air cooled.
- (3) Brand/ Model : To be mentioned.
- (4) Excitation : To be mentioned.
- (5) Power factor : 0.8 lagging.
- (6) Rated voltage : 415 V AC.
- (7) Frequency : 50Hz.
- (8) No. of phases : 3 Phases, 4 Wires.
- (9) Voltage Regulation % : To be mentioned.
- (10) Overload Acceptance : To be mentioned.
- (11) Speed : To be mentioned.
- (12) AVR : Electronic Type (To be mentioned). Details of AVR like brand/model/manufacturer to be mentioned.
- (13) Insulation : To be mentioned.
- (14) Protection Class : IP 23.
- (15) Number of Bearing : To be mentioned.



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(16) Safety Devices : Following safety protections are to be incorporated:

- a. Over load protection device.
- b. Short circuit condition indication.
- c. Excitation loss indicator.

17. Control Panel. Followings are to be incorporated:

- a. Display panel (to show various parameter of the Genset as voltage, current, frequency etc).
- b. Stop/Manual/Auto start option.
- c. Others (if any) to be mentioned.

18. Emergency Switchboard. Each switch board should have ampere meter, volt meter, insulation meter and frequency meter.

- a. Name of the Item. Emergency Switchboard.
- b. Quantity. 03 (Three).
- c. Type. Marine type (Dead front type will be made by steel plate of 16 AWG thicknesses/ others).
- d. Motorized Circuit Breaker: 01 x 250 Amps (Motorized Circuit Breaker) or appropriate rating to be provided for each switchboard.
- e. Supply Breaker and Magnetic Contactor. To be provided as per enclosure-1 for each ship ship.
- f. Cable Entries. All the cable of switchboard will be through the bottom and the terminal of the cables will be in the lower section.
- g. Measuring Instrument. Each switch board should have ampere meter, volt meter insulation meter and frequency meter.
- h. Interlock Arrangement. Necessary interlocking arrangements with the main switchboard to be provided.
- j. Auto Manual Operation: Emergency generator must start automatically and take over the emergency loads within 27s after the failure of the main generators. Emergency switchboard can be operated in both emergency & harbor mode.

(1) Emergency mode= auto mode

(2) Harbor mode= manual mode

In emergency mode, only the emergency loads can be operated from the emergency switchboard and the power cannot be transferred from emergency switch board to main switchboard. In harbor mode the power can be transferred from emergency switchboard to main switchboard.

19. Switchgear & Electrical Component. Generator supply breaker, measuring instrument & electrical component must be marine type approved & the type approval certificate are to be provided. The following safety device will be incorporated in the generator supply breaker:

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- a. Under and over voltage release.
 - b. Over Load/ Short circuit release.
20. **Cable.** All Necessary cable will be provided by BN (Khulna Shipyard Limited).
21. **Standard Accessories.** Standard accessories must include every item and accessories, which are essential to install and operate the Generator sets whether those are mentioned in the specification or not. A list of such items/ accessories are to be provided with the offer. Price of standard accessories is to be included with the main offer.
22. **Special Tools.** One set of special tools with each Generator sets (if required) for operation and maintenance is to be included within the scope of supply. List of special tools is to be provided with quotation indicating price of each item.
23. **Certificate and Reports.** Following certificates and reports are to be provided for the Generating sets and associated equipment/ accessories during delivery:
- a. Marine type approval certificates for both mechanical and electrical items.
 - b. Necessary certificates in support of the standards.
 - c. Guarantee and warranty certificates.
 - d. Factory Acceptance Test (FAT) (mentioning serial number) report.
24. **Technical Support.** Technical support is to be provided to solve any maintenance and operational problem arising within the warranty period. An assurance by the Bidder stating agreement in this respect is to be submitted with the offer.
25. **Documents.** 03 (three) sets of following documents and manuals in English are to be provided with Generator set at the time of delivery:
- a. Operating Manual.
 - b. Technical Manual with Circuit Diagram and Parts Catalogue.
 - c. Installation Manual with Installation Drawing.
26. **Brochure/Booklet.** 01 (one) set of brochure/ booklet in English having details of the offered Generator set (the prime mover, alternator, AVR, Governor, etc) must be provided with the quotation for evaluation and assessment. The brochure should contain in addition to other behaviors of the Generator sets including characteristics/ performance curves, behavior when various loads are added or taken-off.
27. **Installation, Supervision & STW (Setting to Work).**
- a. Technical documents (Installation drawings, Installation instruction, specifications etc) required for installation of the generator sets with switchboard are to be supplied by the manufacturer/ supplier.
 - b. Installation of the item will be done by the supplier following standard practice. BN will provide welding-cutting, drilling and lifting assistance (if necessary).
 - c. A qualified manufacturer's/ supplier engineer is to supervise the installation works and setting to work.

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28. **Test, Trial & Acceptance.**

- a. Test, trials and commissioning of generator sets in accordance with the instructions provided by the supplier. The supplier is to provide necessary test equipment for measurement/ recording of transient variations, recovery time, loading condition etc.
- b. After satisfactory test trials an acceptance certificate will be provided by the purchaser.
- c. Cost of test and trials and commissioning of generator sets are to be quoted separately.

29. **Source of supply.** To be mentioned. Source of supply is to be from the country of manufacturer or country of origin.

30. **Price.** If the item is imported against this tender in Local Currency, price to be quoted without import duties.

31. **Warranty.**

- a. Warranty for repair/replacement at supplier's cost for the supplied Prime Mover, alternator and other accessories, for a period of minimum 12 months after final acceptance by BN on completion of installation and necessary test/ trial is to be provided. The warranty shall cover all parts and service costs/ charges throughout the warranty period.
- b. If for defect of any unit or sub unit of the supplied items, the Generator set or any supplied items remain non-operational for a certain period within warranty, the warranty will be extended by the same period.
- c. For warranty repair/ replacement, the supplier will collect the defective item (portable) from NSD, Chittagong/ NSSD, Dhaka (as applicable) and re-supply the same to collecting place after warranty repair or for replacement within 90 (ninety) days from the date of defect at no cost to the purchaser.

32. **Guarantee.** The supplier is to give guarantee of continued supply of spares for at least 05 (five) years at a reasonable price.

33. **Shipment and Delivery.**

- a. The supplied items are to be delivered within **03 (three) months** after signing the contract to the following consignee:

The Commanding Officer
Naval Stores Depot
New Mooring, Chittagong,
Bangladesh

or Officer In Charge
Naval Stores Sub Depot Dhaka
Naval Unit Khilkhet
Namapara, Dhaka-1229, Bangladesh

- b. In case of CFR the supplier will carry the items from sea port/ air port (as applicable) to NSSD Dhaka at the cost and risk of supplier.

c. **Port of Shipment:** To be mentioned. Port of Shipment is to be from the country of manufacturer or country of origin.

34. **Validity.** The offer shall remain valid till 30 September 2022.

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35. **Terms of Payment.** 100% payment will be made in local currency after final acceptance by BN.
36. **Other Information.** The bidder should provide any other information deemed necessary for evaluation of the tender apart from the information asked in the tender specification.
37. **Compliance Statement.** A compliance statement fulfilling all the requirement of the tender is to be submitted for evaluation of the quotations. Stating mere 'Yes or No' will not suffice and detailed evidences with description/ information, brochures/ booklet, drawing and diagram as required is to be given. An incomplete compliance statement may attribute to cancellation of the offer. If any clause of this specification does not commensurate with offered Gensets, the deviation has to be spelt out clearly.


Enclosure:


1. List of Supply Breaker.
2. List of Preliminary Electrical Load Calculation.

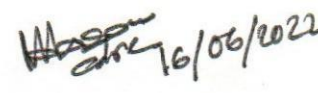

MAREFIN IDNE NAZIM
Lt Commander BN
Staff Officer (Electrical)
Director of Operations
and Electrical Engineering
NHQ, Dhaka-1213
Member Secy
Date 15/06/2022

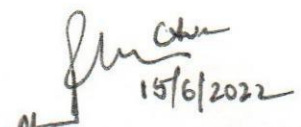

MEHRAB HASSAN
Lt Commander BN
Staff Officer (NS-2)
Naval Headquarters
Banani, Dhaka-1213
DNS (Rep)
Member
Date 16/06/22


MD. ASIB RAIHAN
Lt Commander BN
Staff Officer (Plans-II)
Naval Headquarters
Banani, Dhaka-1213
DNP (Rep)
Member
Date 15.06.22


ADNAIS ULLAH
Captain BN
Director of Naval Armament
Inspection and Supply
NHQ, Banani, Dhaka-1213
DNAS
Member
Date


M. NESBAH UDDIN
Captain BN
Director of Naval Information & Technology
Naval Headquarters
Banani, Dhaka-1213
DNI
Member
Date 15/06/22


M. MOHIBUL HASAN
Commodore BN
Director of Naval Engineering
Naval Headquarters
Banani, Dhaka-1213
DNE
Member
Date 16/06/2022


M. RUHUL MINHAZ
Commodore BN
Director of Naval Weapons
and Electrical Engineering
NHQ, Banani, Dhaka-1213
DNW&EE
President
Date 15/6/2022

LIST OF SUPPLY BREAKER For Each Switch Board

Ser	Equipment Name	Capacity in Kw	Circuit Breaker Specification	Quantity/ Switchboard
1.	Fire Pump	8.2	Miniature Circuit Breaker (MCB) Rating: 25 Amp Number of pole: 03	01 Pc
2.	Capstan	7.5	Miniature Circuit Breaker (MCB) Rating: 20 Amp Number of pole: 03	01 Pc
3.	LARS	65.0	Molded cage circuit breaker (MCCB) Rating: 150 Amp Number of pole: 03	01 Pc
4.	Dive Decompression Chamber	5.0	DDC and its compressors will be operated by battery at emergency situation. So, no need to supply any kind of breaker for DDC and its compressor with emergency switchboard.	
5.	Air Compressor	2.2		
6.	HP Compressor	18.5		
7.	Steering Gear System	3.0	Miniature Circuit Breaker (MCB) Rating: 20 Amp Number of pole: 03	01 Pc
8.	CO ₂ System	1.0	Miniature Circuit Breaker (MCB) Rating: 10 Amp Number of pole: 03	01 Pc
9.	Engine Room Supply Fan	4.5	Miniature Circuit Breaker (MCB) Rating: 20 Amp Number of pole: 03	01 Pc
10.	Engine Room Exhaust Fan	4.5	Miniature Circuit Breaker (MCB) Rating: 20 Amp Number of pole: 03	01 Pc
11.	Emergency DG Room Exhaust Fan	1.1	Miniature Circuit Breaker (MCB) Rating: 10 Amp Number of pole: 03	01 Pc
12.	Emergency Lighting System	2.0	Miniature Circuit Breaker (MCB) Rating: 10 Amp Number of pole: 02	01 Pc
13.	Emergency Switch Board to Main Switch Board	-	Magnetic Contactor Rating: 120 Amp Start stop push switch will be incorporated and the switch will be fit on the door of panel board	01 Pc
14.	Wheel house AC DB	-	Miniature Circuit Breaker (MCB) Rating: 63 Amp Number of pole: 03 Start stop push switch will be incorporated and the switch will be fit on the door of panel board.	01 Pc
15.	Navigation and Communication	7.2	Miniature Circuit Breaker (MCB) Rating: 20 Amp Number of pole: 02/03	01 Pc
16.	Spare Breaker	As required	Spare breaker will be installed in the emergency switch board for future use	04 Pcs

SL	Name of Equipment	Maximum Load					Maneuvering Load			Cruising Load			Load at Anchor			Shore Load			Emergency Load		
		Rated Power	Load Factor	Consumption	Qty/Set	Total Consumption	Operation Factor	Simultaneous Operation	Consumption	Operation Factor	Simultaneous Operation	Consumption	Operation Factor	Simultaneous Operation	Consumption	Operation Factor	Simultaneous Operation	Consumption	Operation Factor	Simultaneous Operation	Consumption
		(kW)	(%)	(kW)	(Pc)	(kW)	(%)	-	(kW)	(%)	-	(kW)	(%)	-	(kW)	(%)	-	(kW)	(%)	-	(kW)
A Pump																					
1	General Service/Bilge Pump	8.2	100%	8.2	1	8.2	50%	1.0	4.1	75%	1.0	6.2	75%	1.0	6.2	50%	1.0	4.1	0%	1.0	0.0
2	General Service/Fire Pump (used as emergency fire)	8.2	100%	8.2	1	8.2	75%	1.0	6.2	50%	1.0	4.1	50%	1.0	4.1	0%	1.0	0.0	50%	1.0	0.0
3	Ballast Pump	8.2	100%	8.2	1	8.2	0%	1.0	0.0	0%	1.0	0.0	75%	1.0	6.2	75%	1.0	6.2	0%	1.0	0.0
4	Fresh Water Hydrophore	1.1	100%	1.1	1	1.1	100%	1.0	1.1	100%	1.0	1.1	100%	1.0	1.1	75%	1.0	0.8	50%	1.0	0.6
5	Sea Water Hydrophore	1.1	100%	1.1	1	1.1	100%	1.0	1.1	100%	1.0	1.1	100%	1.0	1.1	75%	1.0	0.8	50%	1.0	0.6
6	Fuel Oil Transfer Pump	2.5	100%	2.5	2	5.0	100%	1.0	5.0	100%	1.0	5.0	75%	1.0	3.8	50%	1.0	2.5	100%	0.5	0.0
Subtotal		29.3				31.8			17.5			17.5			22.4			14.4			1.1
B Machinery																					
1	Capstan	7.5	100%	7.5	2	15.0	50%	0.5	3.8	0%	0.5	0.0	0%	0.5	0.0	50%	0.5	3.8	0%	0.5	0.0
2	Dive Decompression Chamber	5.0	100%	5.0	1	5.0	50%	1.0	2.5	50%	1.0	2.5	75%	1.0	3.8	75%	1.0	3.8	0%	1.0	0.0
3	LARS	65.0	100%	65.0	1	65.0	0%	1.0	0.0	0%	1.0	0.0	50%	1.0	32.5	75%	1.0	48.8	100%	1.0	65.0
4	Air Compressor	2.2	100%	2.2	1	2.2	50%	1.0	1.1	50%	1.0	1.1	50%	1.0	1.1	50%	1.0	1.1	0%	1.0	0.0
5	Sewage Treatment Plant (STP)	5.1	100%	5.1	1	5.1	100%	1.0	5.1	100%	1.0	5.1	100%	1.0	5.1	0%	1.0	0.0	0%	1.0	0.0
6	LP Compressor	0.0	100%	0.0	1	0.0	50%	1.0	0.0	0%	1.0	0.0	0%	1.0	0.0	0%	1.0	0.0	0%	1.0	0.0
7	HP compressor	18.5	100%	18.5	2	37.0	50%	1.0	18.5	50%	1.0	18.5	75%	1.0	27.8	75%	1.0	27.8	0%	1.0	0.0
8	Deck Crane	30.0	100%	30.0	1	30.0	0%	1.0	0.0	0%	1.0	0.0	50%	1.0	15.0	50%	1.0	15.0	0%	1.0	0.0
9	HVAC System	60.0	100%	60.0	1	60.0	75%	1.0	45.0	100%	1.0	60.0	75%	1.0	45.0	50%	1.0	30.0	0%	1.0	0.0
10	Steering Gear System	3.0	100%	3.0	1	3.0	100%	1.0	3.0	100%	1.0	3.0	0%	1.0	0.0	0%	1.0	0.0	0%	1.0	0.0
11	CO ₂ System	1.0	100%	1.0	1	1.0	0%	1.0	0.0	0%	1.0	0.0	0%	1.0	0.0	0%	1.0	0.0	0%	1.0	0.0
Subtotal		197.3				223.3			78.9			90.2			130.2			130.1			65.3
C Ventilation Fan & Air Condition System																					
1	Engine Room Ventilation Fan Supply	4.5	100%	4.5	1	4.5	100%	1.0	4.5	100%	1.0	4.5	100%	1.0	4.5	50%	1.0	2.3	0%	1.0	0.0
2	Engine Room Ventilation Fan Exhaust	4.5	100%	4.5	1	4.5	100%	1.0	4.5	100%	1.0	4.5	100%	1.0	4.5	50%	1.0	2.3	0%	1.0	0.0
3	Emergency Generator Room Ventilation Fan	1.1	100%	1.1	1	1.1	0%	1.0	0.0	0%	1.0	0.0	0%	1.0	0.0	75%	1.0	0.8	100%	1.0	1.1
4	Galley Ventilation Fan Supply & Exhaust	0.75	100%	0.8	2	1.5	50%	0.5	0.4	75%	0.5	0.6	75%	0.5	0.6	50%	0.5	0.4	0%	0.5	0.0
5	CO ₂ Room Ventilation Fan	0.25	100%	0.25	1	0.3	100%	1.0	0.3	100%	1.0	0.3	100%	1.0	0.3	100%	1.0	0.3	25%	1.0	0.1
6	AVC Unit Room Ventilation Fan	0.25	100%	0.25	1	0.3	75%	1.0	0.2	100%	1.0	0.3	75%	1.0	0.2	50%	1.0	0.1	0%	1.0	0.0
Subtotal		11.4				12.1			9.8			10.1			10.0			6.1			1.2
D Lighting																					
1	Interior Light	5.0	100%	5.0	1	5.0	100%	1.0	5.0	100%	1.0	5.0	100%	1.0	5.0	50%	1.0	2.5	0%	1.0	0.0
2	Emergency Light	2.0	100%	2.0	1	2.0	0%	1.0	0.0	0%	1.0	0.0	0%	1.0	0.0	0%	1.0	0.0	100%	1.0	1.0
3	Exterior Light	2.0	100%	2.0	1	2.0	50%	1.0	1.0	50%	1.0	1.0	50%	1.0	1.0	50%	1.0	1.0	0%	1.0	0.0
4	Navigation & Signal Light	1.5	100%	1.5	1	1.5	50%	1.0	0.8	50%	1.0	0.8	50%	1.0	0.8	50%	1.0	0.8	100%	1.0	1.0
5	Portable Light	1.0	100%	1.0	1	1.0	0%	1.0	0.0	0%	1.0	0.0	0%	1.0	0.0	0%	1.0	0.0	50%	1.0	0.5
6	Search Light (Navigation System)	0.5	100%	0.5	2	1.0	50%	0.5	0.3	50%	0.5	0.3	50%	0.5	0.3	0%	0.5	0.0	50%	0.5	0.3
Subtotal		12.0				12.5			7.0			7.0			7.0			4.3			2.8
E Navigation & Communication																					
1	Navigation Radar	1.0	100%	1.0	1	1.0	100%	1.0	1.0	100%	1.0	1.0	50%	1.0	0.5	50%	1.0	0.5	0%	1.0	0.0
2	Navigation Aid Gyro Compass, Magnetic Compass Etc.	1.0	100%	1.0	1	1.0	100%	1.0	1.0	100%	1.0	1.0	50%	1.0	0.5	50%	1.0	0.5	0%	1.0	0.0
3	Echo Sounder, GPS, AIS, & Other System	1.5	100%	1.5	1	1.5	100%	1.0	1.5	100%	1.0	1.5	50%	1.0	0.8	50%	1.0	0.8	0%	1.0	0.0
4	PA, GA, Fire Detection Communication System	1.2	100%	1.2	1	1.2	100%	1.0	1.2	100%	1.0	1.2	100%	1.0	1.2	100%	1.0	1.2	0%	1.0	0.0
5	Radio, HF/SSB, VHF, GMDSS, & Other System	1.0	100%	1.0	1	1.0	100%	1.0	1.0	100%	1.0	1.0	50%	1.0	0.5	50%	1.0	0.5	100%	1.0	0.5
6	Fog & Electric Horn/Siren	1.0	100%	1.0	1	1.0	50%	1.0	0.5	50%	1.0	0.5	50%	1.0	0.5	50%	1.0	0.5	50%	1.0	0.5
7	CVS & Window Wiper	0.5	100%	0.5	1	0.5	50%	1.0	0.3	50%	1.0	0.3	0%	1.0	0.0	0%	1.0	0.0	0%	1.0	0.0
Subtotal		7.2				7.2			6.5			6.5			4.0			4.0			2.0
F Miscellaneous																					
1	Galley Equipment	10.0	100%	10.0	1	10.0	50%	1.0	5.0	75%	1.0	7.5	75%	1.0	7.5	50%	1.0	5.0	0%	1.0	0.0
2	RO Plant	3.0	100%	3.0	1	3.0	75%	1.0	2.3	75%	1.0	2.3	75%	1.0	2.3	50%	1.0	1.5	50%	1.0	1.5
3	Wall Mounting Fan	1.20	100%	1.2	1	1.2	50%	1.0	0.6	50%	1.0	0.6	50%	1.0	0.6	50%	1.0	0.6	0%	1.0	0.0
4	Refrigerator	0.30	100%	0.3	1	0.3	100%	1.0	0.3	100%	1.0	0.3	100%	1.0	0.3	100%	1.0	0.3	0%	1.0	0.0
5	Television & Other Equipment	1.2	100%	1.2	1	1.2	50%	1.0	0.6	75%	1.0	0.9	75%	1.0	0.9	50%	1.0	0.6	0%	1.0	0.0
6	Battery Charger (50 Amp)	1.0	100%	1.0	1	1.0	50%	1.0	0.5	50%	1.0	0.5	50%	1.0	0.5	50%	1.0	0.5	0%	1.0	0.0
7	Others	2.0	100%	2.0	1	2.0	50%	1.0	1.0	50%	1.0	1.0	50%	1.0	1.0	50%	1.0	1.0	0%	1.0	0.0
Subtotal		18.7				18.7			10.3			13.1			13.1			9.5			1.5
Total		275.8				305.6			129.9			144.2			186.5			168.3			73.8
Considering 85% Load Factor						359.5			152.8			169.6			219.4			198.0			86.8

Main Generators

Maximum Consumption during Load at Anchor condition

Considering 85% Load Factor

Considering 10% Load For Future Use

Recommended Main Generators

= 186.5 kW
= 219.4 kW
= 241.4 kW
= 2 x 250.0 kW

Notes:

1. The final power requirement might vary depending on manufacturer design. However, total capacity of the main gensets will remain same.

Emergency Generator

Maximum Consumption during Emergency Condition

Considering 85% Load Factor

Recommended Emergency Generator

= 73.8
= 86.78
= 1 x 87 KW

Peerless Venture Ltd.

Project Diving Support Boat

Title Preliminary Electrical Load Analysis

Paper A3 (420 x 297) Document No.

E01

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