



SEE LETTER E-125694-180936

NOTED FOR INFORMATION



PLAN ENDORSED FOR IN-PRINCIPLE APPROVAL

13-SEP-2021

COCHIN SHIPYARD - CT3370
70 T BOLLARD PULL ASD TUG -
ELECTRICAL LOAD CALCULATION
(Preliminary)

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| Revision | Date | Description | Prepared | Checked | Approved |
|----------|-----------|-------------------------------|----------|---------|----------|
| Rev.I | 01-Sep-21 | For Publishing on IPA website | ANJ | NFC | NFC |

COCHIN SHIPYARD LTD
ASTDS
PROJECT NO; - CT3370
ELECTRICAL LOAD CALCULATION



Drawing no.: CT3370-850-001
Revision: Rev-I/01-09-2021

| SFI.NO | CONSUMERS | LOAD DETAILS | | | | L.F | D.F | SAILING | | TUG OPERATION | | FIRE FIGHTING MODE | | HARBOUR (SHORE SUPPLY) | |
|------------|--------------------------------|--------------|------|------------|------------------|-----|-----|---------|-----|---------------|-----|--------------------|-----|------------------------|--|
| | | QUANTITY | VOLT | POWER (KW) | TOTAL POWER (KW) | | | KW | D.F | KW | D.F | KW | D.F | KW | |
| | PUMP(WATER) | | | | | | | | | | | | | | |
| 803.101.01 | Fire/Bilge Pump | 1 | 415 | 8.0 | 8.0 | 0.8 | 0.2 | 1.3 | 0.2 | 1.3 | 0.2 | 1.3 | 0.2 | 1.3 | |
| 813.101.01 | Fire pump | 1 | 415 | 10.0 | 10.0 | 0.8 | 0.2 | 1.6 | 0.2 | 1.6 | 0.2 | 1.6 | 0.2 | 1.6 | |
| 581.103.01 | F.W Hydrophore Pump - Working | 1 | 415 | 2.0 | 2.0 | 0.8 | 0.5 | 0.8 | 0.3 | 0.5 | 0.3 | 0.5 | 0.3 | 0.5 | |
| 581.103.02 | F.W Hydrophore Pump - Stand by | 1 | 415 | 2.0 | 2.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 581.101.01 | S.W Hydrophore Pump - Working | 1 | 415 | 2.0 | 2.0 | 0.8 | 0.5 | 0.8 | 0.3 | 0.5 | 0.3 | 0.5 | 0.5 | 0.8 | |
| 581.101.02 | S.W Hydrophore Pump - Stand by | 1 | 415 | 2.0 | 2.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 581.101.01 | Hot Water Circulation Pump | 1 | 415 | 1.5 | 1.5 | 0.8 | 0.6 | 0.7 | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | 0.5 | |
| TBD | S.W Cooling Pump 1 - Working | 1 | 415 | 5.0 | 5.0 | 0.8 | 1.0 | 4.0 | 1.0 | 4.0 | 1.0 | 4.0 | 1.0 | 4.0 | |
| TBD | S.W Cooling Pump 1 - Stand by | 1 | 415 | 5.0 | 5.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | PUMPS (OIL) | | | | | | | | | | | | | | |
| 585.101.01 | Sewage Transfer Pump | 1 | 415 | 2.2 | 2.2 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.4 | |
| 489.101.01 | Oil Dispersant Pump | 1 | 415 | 4.0 | 4.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |

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COCHIN SHIPYARD LTD
ASTDS
PROJECT NO; - CT3370
ELECTRICAL LOAD CALCULATION



Drawing no.: CT3370-850-001
Revision: Rev-I/01-09-2021

| SFI.NO | CONSUMERS | LOAD DETAILS | | | | | | SAILING | | TUG OPERATION | | FIRE FIGHTING MODE | | HARBOUR (SHORE SUPPLY) | |
|------------|---|--------------|------|------------|------------------|-----|-----|---------|-----|---------------|-----|--------------------|-----|------------------------|--|
| | | QUANTITY | VOLT | POWER (KW) | TOTAL POWER (KW) | L.F | D.F | KW | D.F | KW | D.F | KW | D.F | KW | |
| 701.101.01 | FO Transfer Pump | 1 | 415 | 2.5 | 2.5 | 0.8 | 0.2 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.4 | |
| 701.102.01 | Sludge Pump | 1 | 415 | 2.2 | 2.2 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.4 | |
| | AUXILIARY EQUIPMENT | | | | | | | | | | | | | | |
| 571.01 | Air Conditioning System for Accom | 1 | 415 | 15.0 | 15.0 | 0.8 | 0.7 | 8.4 | 0.7 | 8.4 | 0.7 | 8.4 | 0.5 | 6.0 | |
| 571.02 | Air Conditioning System for W/H(Air Cooled) | 1 | 230 | 2.7 | 2.7 | 0.9 | 0.6 | 1.5 | 0.6 | 1.5 | 0.6 | 1.5 | 0.6 | 1.5 | |
| 571.03 | Air Conditioning System for MSB(water Cooled) | 1 | 415 | 3.0 | 3.0 | 0.9 | 0.7 | 1.9 | 0.7 | 1.9 | 0.7 | 1.9 | 0.7 | 1.9 | |
| 581 | Fresh Water Calorifier | 1 | 415 | 3.0 | 3.0 | 0.8 | 0.4 | 1.0 | 0.4 | 1.0 | 0.4 | 1.0 | 0.4 | 1.0 | |
| 803.101.01 | Oily Bilge Separator | 1 | 415 | 2.5 | 2.5 | 0.8 | 0.2 | 0.4 | 0.2 | 0.4 | 0.2 | 0.4 | 0.0 | 0.0 | |
| 585.101.01 | Sewage Treatment Plant | 1 | 415 | 2.0 | 2.0 | 0.8 | 0.5 | 0.8 | 0.5 | 0.8 | 0.4 | 0.6 | 0.4 | 0.6 | |
| | COMPRESSORS & RESERVOIRS | | | | | | | | | | | | | | |
| 73.101.01 | Air Compressor - 1 | 1 | 415 | 8.0 | 8.0 | 0.8 | 0.3 | 1.9 | 0.3 | 1.9 | 0.0 | 0.0 | 0.2 | 1.3 | |
| 73.101.02 | Air Compressor - 2 | 1 | 415 | 8.0 | 8.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | VENTILATION FANS | | | | | | | | | | | | | | |
| 574.101.01 | Engine Room Ventilation Fan - 1 | 1 | 415 | 20.0 | 20.0 | 0.9 | 1.0 | 18.0 | 1.0 | 18.0 | 1.0 | 18.0 | 0.6 | 10.8 | |
| 574.101.02 | Engine Room Ventilation Fan - 2 | 1 | 415 | 20.0 | 20.0 | 0.9 | 1.0 | 18.0 | 1.0 | 18.0 | 1.0 | 18.0 | 0.0 | 0.0 | |

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| SFI.NO | CONSUMERS | LOAD DETAILS | | | | L.F | D.F | SAILING | | TUG OPERATION | | FIRE FIGHTING MODE | | HARBOUR (SHORE SUPPLY) | |
|------------|---|--------------|------|------------|------------------|-----|-----|---------|-----|---------------|-----|--------------------|-----|------------------------|--|
| | | QUANTITY | VOLT | POWER (KW) | TOTAL POWER (KW) | | | KW | D.F | KW | D.F | KW | D.F | KW | |
| 571.101.01 | Galley Supply fan | 1 | 415 | 0.4 | 0.4 | 0.9 | 1.0 | 0.4 | 1.0 | 0.4 | 1.0 | 0.4 | 0.6 | 0.2 | |
| 571.101.02 | Galley Exhaust fan | 1 | 415 | 0.4 | 0.4 | 0.9 | 1.0 | 0.4 | 1.0 | 0.4 | 1.0 | 0.4 | 0.6 | 0.2 | |
| 571.101.03 | Sanitary space Exhaust fan - Main Deck | 1 | 415 | 0.2 | 0.2 | 0.8 | 1.0 | 0.1 | 1.0 | 0.1 | 1.0 | 0.1 | 1.0 | 0.1 | |
| 574.101.03 | Battery room fan | 1 | 415 | 0.7 | 0.7 | 0.9 | 1.0 | 0.6 | 1.0 | 0.6 | 1.0 | 0.6 | 0.0 | 0.0 | |
| 574.101.04 | Thruster Room Vent Fan | 1 | 415 | 0.8 | 0.8 | 0.9 | 0.8 | 0.5 | 0.8 | 0.5 | 0.2 | 0.1 | 0.2 | 0.1 | |
| 574.101.05 | Workshop Vent Fan | 1 | 415 | 0.8 | 0.8 | 0.9 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | |
| 574.102.06 | CO2 Room Supply Fan | 1 | 230 | 0.2 | 0.2 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 574.102.06 | Bosun Store Supply Fan | 1 | 230 | 0.4 | 0.4 | 0.9 | 0.0 | 0.0 | 0.5 | 0.2 | 0.5 | 0.2 | 0.3 | 0.1 | |
| 574.101.04 | Sanitary space Exhaust fan-Lower Accom. | 1 | 230 | 0.2 | 0.2 | 0.8 | 1.0 | 0.1 | 1.0 | 0.1 | 1.0 | 0.1 | 1.0 | 0.1 | |
| | NAVIGATION EQUIPMENT | | | | | | | | | | | | | | |
| 411.01 | X - Band ARPA radar - Main Supply | 1 | 230 | 1.6 | 1.6 | 0.8 | 0.7 | 0.9 | 0.7 | 0.9 | 0.7 | 0.9 | 0.0 | 0.0 | |
| 414.02 | Echo Sounder - Main Supply | 1 | 230 | 0.2 | 0.2 | 0.8 | 0.8 | 0.1 | 0.8 | 0.1 | 0.8 | 0.1 | 0.0 | 0.0 | |
| 412 | GPS - Main Supply | 1 | 230 | 0.0 | 0.0 | 1.0 | 0.7 | 0.0 | 0.7 | 0.0 | 0.7 | 0.0 | 0.7 | 0.0 | |
| 414.01 | Speed Log - Main Supply | 1 | 230 | 0.1 | 0.1 | 1.0 | 0.7 | 0.0 | 0.7 | 0.0 | 0.7 | 0.0 | 0.0 | 0.0 | |
| | METEOROLOGICAL INSTRUMENTS | | | | | | | | | | | | | | |

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|------------|--|--------------|------|------------|------------------|-----|-----|---------|-----|---------------|-----|--------------------|-----|------------------------|--|
| | | QUANTITY | VOLT | POWER (KW) | TOTAL POWER (KW) | L.F | D.F | KW | D.F | KW | D.F | KW | D.F | KW | |
| 417.101.01 | AIS - Main Supply | 1 | 230 | 0.2 | 0.2 | 0.6 | 1.0 | 0.1 | 1.0 | 0.1 | 0.2 | 0.0 | 0.0 | 0.0 | |
| 254 | Window Wipers | 1 | 230 | 2.0 | 2.0 | 0.8 | 0.3 | 0.5 | 0.3 | 0.5 | 0.3 | 0.5 | 0.0 | 0.0 | |
| | MOORING AND ANCHORING FITTINGS | | | | | | | | | | | | | | |
| 434 | Anchor & Mooring capstain | 1 | 415 | 80.0 | 80.0 | 0.8 | 0.0 | 0.0 | 0.6 | 38.4 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | CRANE & DAVITS | | | | | | | | | | | | | | |
| | Boat Davit Winch | 1 | 415 | 15.0 | 15.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 331 | Crane Power Unit | 1 | 415 | 48.0 | 48.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 42 | COMMUNICATION | | | | | | | | | | | | | | |
| | GMDSS Equipment | | | | | | | | | | | | | | |
| 42.101.01 | VHF Radio telephone with built - DSC - Main Supply | 1 | 230 | 0.1 | 0.1 | 1.0 | 0.8 | 0.1 | 0.8 | 0.1 | 0.8 | 0.1 | 0.0 | 0.0 | |
| 42.101.02 | NAVTEX Receiver - Main Supply | 1 | 230 | 0.0 | 0.0 | 1.0 | 0.8 | 0.0 | 0.8 | 0.0 | 0.8 | 0.0 | 0.8 | 0.0 | |
| 42.101.03 | MF/HF Radio Equipment with DSC - Main Supply | 1 | 415 | 0.1 | 0.1 | 1.0 | 0.8 | 0.1 | 0.8 | 0.1 | 0.8 | 0.1 | 0.0 | 0.0 | |
| 42.101.04 | Handheld VHF Radio - Charging Station | 3 | 415 | 0.2 | 0.6 | 1.0 | 0.8 | 0.5 | 0.8 | 0.5 | 0.8 | 0.5 | 0.4 | 0.2 | |
| 42.101.05 | Other Nav & Communication equipments | 1 | 230 | 1.0 | 1.0 | 1.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.6 | 0.6 | 0.5 | 0.5 | |

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 Revision: Rev-I/01-09-2021

| SFI.NO | CONSUMERS | LOAD DETAILS | | | | L.F | D.F | SAILING | | TUG OPERATION | | FIRE FIGHTING MODE | | HARBOUR (SHORE SUPPLY) | |
|------------|-------------------------------------|--------------|------|------------|------------------|-----|-----|---------|-----|---------------|-----|--------------------|-----|------------------------|--|
| | | QUANTITY | VOLT | POWER (KW) | TOTAL POWER (KW) | | | KW | D.F | KW | D.F | KW | D.F | KW | |
| | MISCELLANEOUS | | | | | | | | | | | | | | |
| 816.101.02 | Fire Monitor System | 1 | 230 | 10.0 | 10.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 3.2 | 0.0 | 0.0 | |
| 816.101.03 | Monitor | 2 | 230 | 2.0 | 4.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.7 | 0.0 | 0.0 | |
| 793.101.01 | ME 1 Control Supply - Main | 1 | 230 | 0.2 | 0.2 | 0.9 | 0.8 | 0.1 | 0.8 | 0.1 | 0.8 | 0.1 | 0.0 | 0.0 | |
| 793.101.02 | ME 2 Control Supply - Main | 1 | 230 | 0.2 | 0.2 | 0.9 | 0.8 | 0.1 | 0.8 | 0.1 | 0.8 | 0.1 | 0.0 | 0.0 | |
| 793.101.03 | Thruster Control - Main | 2 | 230 | 0.1 | 0.7 | 0.9 | 0.8 | 0.5 | 0.8 | 0.5 | 0.8 | 0.5 | 0.0 | 0.0 | |
| | Workshop Equipment | 1 | 415 | 1.0 | 1.0 | 1.0 | 0.2 | 0.2 | 0.0 | 0.0 | 0.2 | 0.2 | 0.4 | 0.4 | |
| | GALLEY , LAUNDRY& PANTRY | | | | | | | | | | | | | | |
| 551.101.01 | Refrigerator | 2 | 230 | 0.3 | 0.6 | 0.8 | 0.5 | 0.2 | 0.5 | 0.2 | 0.5 | 0.2 | 0.5 | 0.2 | |
| 551.101.02 | Water Cooler | 1 | 230 | 0.3 | 0.3 | 0.8 | 0.5 | 0.1 | 0.5 | 0.1 | 0.5 | 0.1 | 0.5 | 0.1 | |
| 551.101.03 | microwave oven | 1 | 230 | 0.8 | 0.8 | 0.8 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.4 | 0.3 | |
| 551.101.04 | water purifier | 1 | 230 | 0.1 | 0.1 | 0.8 | 0.5 | 0.0 | 0.5 | 0.0 | 0.5 | 0.0 | 0.5 | 0.0 | |

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| SFI.NO | CONSUMERS | LOAD DETAILS | | | | L.F | D.F | SAILING | | TUG OPERATION | | FIRE FIGHTING MODE | | HARBOUR (SHORE SUPPLY) | |
|------------|--|--------------|------|------------|------------------|-----|-----|---------|-----|---------------|-----|--------------------|-----|------------------------|--|
| | | QUANTITY | VOLT | POWER (KW) | TOTAL POWER (KW) | | | KW | D.F | KW | D.F | KW | D.F | KW | |
| 551.101.05 | Garbage disposal units/ Plastic compactors | 1 | 230 | 1.5 | 1.5 | 0.8 | 0.3 | 0.4 | 0.3 | 0.4 | 0.3 | 0.4 | 0.3 | 0.4 | |
| 551.101.06 | Cooking Range | 1 | 415 | 15.5 | 15.5 | 0.8 | 0.6 | 7.4 | 0.6 | 7.4 | 0.2 | 2.5 | 0.2 | 2.5 | |
| 551.101.07 | Electric Kettle 1 Ltr | 1 | 230 | 1.5 | 1.5 | 0.8 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.0 | 0.0 | |
| 554 | Deep Freezer | 1 | 230 | 0.5 | 0.5 | 0.8 | 0.7 | 0.3 | 0.7 | 0.3 | 0.7 | 0.3 | 0.7 | 0.3 | |
| 558 | washing machine with Dryer | 2 | 230 | 0.5 | 1.0 | 0.8 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | 0.3 | |
| | Misc Equipment | 1 | 415 | 2.0 | 2.0 | 0.8 | 0.4 | 0.6 | 0.4 | 0.6 | 0.4 | 0.6 | 0.4 | 0.6 | |
| | Misc Equipment | 1 | 230 | 3.0 | 3.0 | 0.8 | 0.4 | 1.0 | 0.4 | 1.0 | 0.4 | 1.0 | 0.4 | 1.0 | |
| 427 | LIGHTS & OTHER EQUIPMENTS | | | | | | | | | | | | | | |
| 427.101.01 | General Lighting | 1 | 230 | 12.0 | 12.0 | 1.0 | 0.6 | 7.2 | 0.6 | 7.2 | 0.5 | 6.0 | 0.2 | 2.4 | |
| 427.101.02 | Flood Lights | 4 | 230 | 0.5 | 2.0 | 1.0 | 0.8 | 1.6 | 0.8 | 1.6 | 1.0 | 2.0 | 0.4 | 0.8 | |
| 427.101.03 | Fire and General Alarm System | 1 | 230 | 0.1 | 0.1 | 1.0 | 0.8 | 0.1 | 0.8 | 0.1 | 0.8 | 0.1 | 0.8 | 0.1 | |
| 427.101.04 | ICCP | 1 | 230 | 2.2 | 2.2 | 1.0 | 0.8 | 1.8 | 0.8 | 1.8 | 0.8 | 1.8 | 0.8 | 1.8 | |
| 427.101.05 | Search Light | 2 | 230 | 2.0 | 4.0 | 1.0 | 0.2 | 0.8 | 0.2 | 0.8 | 0.2 | 0.8 | 0.0 | 0.0 | |
| TBD | Trans-Rectifier cum Battery charger | 1 | 230 | 1.0 | 1.0 | 0.9 | 0.4 | 0.3 | 0.4 | 0.3 | 0.4 | 0.3 | 0.4 | 0.3 | |

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| SFI.NO | CONSUMERS | LOAD DETAILS | | | | L.F | D.F | SAILING | TUG OPERATION | FIRE FIGHTING MODE | HARBOUR (SHORE SUPPLY) | | |
|--------|--|--------------|------|------------|------------------|-----|-------------|---------|---------------|--------------------|------------------------|-----|-------------|
| | | QUANTITY | VOLT | POWER (KW) | TOTAL POWER (KW) | | | KW | D.F | KW | D.F | KW | |
| | | | | | | | | | | | | | |
| | | | | | | | KW | | KW | | KW | | KW |
| | TOTAL LOAD: | | | | | | (A) 90.2 | (A) | 127.0 | (A) | 84.2 | (A) | 46.1 |
| | DESIGN MARGIN 5% | | | | | | (B) 4.5 | (B) | 6.4 | (B) | 4.2 | (B) | 2.3 |
| | GROWTH MARGIN-5% | | | | | | (C) 4.5 | (C) | 6.4 | (C) | 4.2 | (C) | 2.3 |
| | TOTAL POWER CONSUMPTION=(A)+(B)+(C) | | | | | | 99.2 | | 139.7 | | 92.7 | | 50.7 |

| BUS BAR LOADS | | | | | | | | | | | | | | | | |
|---------------|----------------------------|--|--|--|--|--|----|-------------|--|--|--|--------------|--|-------------|--|-------------|
| | Load Connected To 415V Bus | | | | | | KW | 71.0 | | | | 107.6 | | 62.0 | | 35.9 |
| | Load Connected To 230V Bus | | | | | | KW | 18.9 | | | | 19.1 | | 21.9 | | 10.2 |
| | Design Margin 5% | | | | | | | 4.5 | | | | 6.4 | | 4.2 | | 2.3 |
| | Growth Margin-5% | | | | | | | 4.5 | | | | 6.4 | | 4.2 | | 2.3 |
| | Total Consumption | | | | | | | 98.9 | | | | 139.4 | | 92.3 | | 50.7 |

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|--------|--|--------------|------|------------|------------------|-----|-----|---------|---------------|--------------------|------------------------|------|------|------|
| | | QUANTITY | VOLT | POWER (KW) | TOTAL POWER (KW) | | | KW | D.F | KW | D.F | KW | | |
| | Main Generator No. 1 - 200kVA | | | 160 | KW | | | 98.9 | KW | 139.4 | KW | 92.3 | KW | |
| | Load Generator | | | | | | | 61.8 | % | 87.1 | % | 57.7 | % | |
| | | | | | | | | OR | | OR | | OR | | |
| | Main Generator No. 2 - 200kVA | | | 160 | KW | | | 98.9 | KW | 139.4 | KW | 92.3 | KW | |
| | Load Generator | | | | | | | 61.8 | % | 87.1 | % | 57.7 | % | |
| | Harbour Generator - 75kVA | | | 60 | KW | | | | | | | KW | 50.7 | |
| | Load Generator | | | | | | | | | | | % | 84.5 | |
| | 415/230V Transformer.1 - 40 kVA Delta/Delta | | | 40/32 | KVA/KW | | | 18.9 | KW | 19.1 | KW | 21.9 | KW | 10.2 |
| | Load on Transformer | | | | | | | 59.0 | % | 59.6 | % | 68.5 | % | 31.8 |
| | 415/230V Transformer. 2 - 40 kVA Delta/Delta | | | 40/32 | KVA/KW | | | 18.9 | KW | 19.1 | KW | 21.9 | KW | 10.2 |
| | Load on Transformer | | | | | | | 59.0 | % | 59.6 | % | 68.5 | % | 31.8 |

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| SI No | CONSUMERS | LOAD DETAILS | | | | | NORMAL CONDITION | | EMERGENCY CONDITION |
|--|--|--------------|---------------|---------------------|------|-----|------------------|-----|---------------------|
| | | QUANTITY | POWER (WATTS) | TOTAL POWER (WATTS) | L.F. | D.F | W | D.F | W |
| 1 | AIS-BACK UP SUPPLY | 1 | 30 | 30 | 0.5 | 0.0 | 0.0 | 0.7 | 10.5 |
| 2 | VHF WITH DSC BACK UP SUPPLY | 1 | 80 | 80 | 0.5 | 0.0 | 0.0 | 0.7 | 28 |
| 3 | MF/HF RADIO EQUIPMENT - BACK UP SUPPLY | 1 | 80 | 80 | 0.5 | 0.0 | 0.0 | 0.7 | 28 |
| 4 | NAVTEX RECEIVER - BACK UP SUPPLY | 1 | 12 | 12 | 0.6 | 1.0 | 7.2 | 0.7 | 5.04 |
| 5 | GPS - BACK UP SUPPLY | 1 | 4 | 4 | 0.5 | 1.0 | 2.0 | 0.8 | 1.6 |
| 6 | MAGNETIC COMPASS | 1 | 30 | 30 | 0.7 | 0.6 | 12.6 | 1.0 | 21 |
| 7 | RUDDER ANGLE INDICATOR | 1 | 24 | 24 | 0.6 | 1.0 | 14.4 | 1.0 | 14.4 |
| 8 | EMERGENCY LIGHT 24VDC: MACHINERY AREA | 1 | 45 | 45 | 1.0 | 0.0 | 0.0 | 1.0 | 45 |
| 9 | EMERGENCY LIGHT 24VDC:ACCOM AREA | 1 | 72 | 72 | 1.0 | 0.0 | 0.0 | 1.0 | 72 |
| 10 | ECHOSOUNDER-BACK UP SUPPLY | 1 | 30 | 30 | 0.5 | 0.0 | 0.0 | 0.8 | 12 |
| 11 | SPEED LOG - BACK UP SUPPLY | 1 | 60 | 60 | 0.6 | 0.7 | 25.2 | 0.8 | 28.8 |
| 12 | NAVIGATION LIGHTS (13Nosx25W) BACK UP SUPPLY | 1 | 325 | 325 | 0.7 | 0.0 | 0.0 | 1.0 | 227.5 |
| 13 | RADAR BACK UP SUPPLY | 1 | 20 | 20 | 0.8 | 0.0 | 0.0 | 1.0 | 16 |
| 14 | ME 1 CONTROL SUPPLY (BACK UP) | 1 | 200 | 200 | 0.8 | 0.0 | 0.0 | 1.0 | 160 |
| 15 | ME 2 CONTROL SUPPLY (BACK UP) | 1 | 200 | 200 | 0.8 | 0.0 | 0.0 | 1.0 | 160 |
| 16 | DG1 CONTROL SUPPLY | 1 | 100 | 100 | 0.9 | 0.0 | 0.0 | 0.0 | 0 |
| 17 | DG2 CONTROL SUPPLY | 1 | 100 | 100 | 0.9 | 0.0 | 0.0 | 0.0 | 0 |
| 18 | MAIN SWITCHBOARD CONTROL SUPPLY | 1 | 80 | 80 | 0.8 | 1.0 | 64.0 | 0.8 | 51.2 |
| 19 | THRUSTER CONTROL - BACK UP SUPPLY | 2 | 100 | 200 | 0.8 | 0.0 | 0.0 | 1.0 | 160 |
| 20 | ELECTRIC SIREN (BACK UP) | 1 | 125 | 125 | 0.2 | 0.0 | 0.0 | 0.5 | 12.5 |
| 21 | PA/COMMAND SYSTEM (BACK UP) | 1 | 100 | 100 | 0.5 | 0.0 | 0.0 | 0.8 | 40 |
| 22 | FIRE DETECTION AND ALARM SYSTEM | 1 | 100 | 100 | 0.9 | 0.0 | 0.0 | 0.8 | 72 |
| LOAD CONNECTED TO EMERGENCY SWITCHBOARD (Watts) | | | WATTS | 2017.0 | | | 125.4 | | 1165.5 |

| BATTERY CAPACITY CALCULATION | |
|---|-------------|
| LOAD CONNECTED TO EMERGENCY SWITCHBOARD (Watts) | 1165.5 |
| LOAD ON BATTERY(AMP) | 48.56 |
| TOTAL HOURS BACK UP REQUIRED | 12 |
| TOTAL AH REQUIRED | 582.77 |
| TIME RATE FACTOR | 0.7 |
| USAGE FACTOR | 0.9 |
| NEW CAPACITY (AH) | 925 |
| BATTERY CAPACITY SELECTED(AH),24V | 1000 |

| BATTERY CHARGER CALCULATION | |
|--|------------|
| NORMAL POWER REQUIRED(WATTS) | 125.4 |
| CURRENT CONSUMPTION(AMP) | 5.23 |
| CHARGING CURRENT REQUIRED TO CHARGE THE BATTERY 80% OF CAPCITY IN 10 HRS | 80 |
| TOTAL CURRENT REQUIRED | 85.23 |
| BATTREY CHARGER RATING(AMP) SELECTED@24V DC | 120 |

Note- Load indicated in the load calculation is preliminary. Load calculation and Battery and battery charger rating to be updated by ship yard/designer while constructing the vessel.

Refer IRS Letter E-125694-180936 dated, September 13, 2021