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|--------|-----------------------------|-------|----------------------------|---------|
| SYSTEM | PIPING SYSTEM CLASS: | III | HYDROSTATIC TEST PRESSURE: | 4.5 Bar |
| | DESIGN WORKING PRESSURE: | 3 Bar | JOINTS NDT: | - |
| | DESIGN WORKING TEMPERATURE: | - | PIPING MATERIAL: | STEEL |
| | SYSTEM PRESSURE CLASS: | PN10 | YARD SYSTEM TAG: | |
| | MEDIA FLASHPOINT: | - | | |

| | | | | | | |
|----------------------|-------------------|-------------|---------------|---------------|-------------|----------|
| PIPING SPECIFICATION | Nominal Dia. (ND) | Piping | | | Connections | |
| | | Pipe Type | Standard | Material | Type | Standard |
| | ≤40 | STEEL PIPES | ANSI B 36 | ASTM A53 GR.B | FLANGED | EN 1092 |
| >40/≤150 | STEEL PIPES | ANSI B 36 | ASTM A53 GR.B | FLANGED | EN 1092 | PN 10 |
| >200 | STEEL PIPES | ANSI B 36 | ASTM A53 GR.B | FLANGED | EN 1092 | PN 10 |

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|--------------------------------|--|------|------|------|------|------|------|------|--|
| ANSI B 36 SEAMLESS STEEL PIPES | Nominal diameter | ND20 | ND25 | ND32 | ND40 | ND50 | ND65 | ND80 | |
| | Outer diameter | 26,6 | 33,4 | 42,1 | 48,3 | 60,3 | 73,0 | 88,9 | |
| | Wall thickness, general (Schedule 40) | 2,9 | 3,3 | 3,6 | 3,7 | 3,9 | 5,2 | 5,5 | |
| | Wall thickness, in tanks (Schedule 80) | | | 4,8 | 5,1 | 5,5 | 7,0 | 7,6 | |

- GENERAL NOTES:**
- THIS DRAWING IS AN INDICATIVE SCHEMATIC ONLY.
 - FO PIPING SHALL BE SEAMLESS DRAWN MS BLACK STEEL.
 - FO PURIFIER IS NOT CONSIDERED IN THE PRESENT DESIGN. HOWEVER SAME CAN BE PROVIDED, IF IT IS REQUIRED BASED ON THE ENGINE OEM RECOMMENDATION AND QUALITY OF THE FUEL USED.
 - QUICK CLOSING VALVES ARE TO FITTED DIRECTLY ON RESPECTIVE TANK BULKHEAD AND SHALL BE OPERATED BOTH LOCALLY & REMOTELY.
 - OVERFLOW PIPE PENETRATION INSIDE THE TANKS SHALL BE ABOVE 95% OF TANK VOLUME.
 - THE MATERIAL OF SIGHT GLASS SHALL BE BRASS TYPE. THE SIGHT GLASSES SHALL BE PROVIDED WITH ILLUMINATION AND SUITABLE FIRE RESISTANCE WHICH SHALL BE VISIBLE FROM A READILY ACCESSIBLE POSITION
 - AN EMERGENCY FIRE PUMP IS ALSO CONSIDERED IN THE PRESENT DESIGN, THE FILLING OF WHICH SHALL BE MANUAL AND NOT PART OF MAIN FO SYSTEM. ITS REQUIREMENTS SHALL BE AS PER PARA. 2.2.2, CH:12 OF FSS CODE. FO SERVICE TANK FOR EMERGENCY FIRE PUMP SHALL BE SUFFICIENT TO RUN THE PUMP ON FULL LOAD FOR ATLEAST 3 HRS. SUFFICIENT RESERVE FUEL SHALL BE PROVIDED IN THRUSTER ROOM TO ENABLE THE PUMP TO RUN AT FULL LOAD FOR ADDITIONAL 15 HRS. SEPARATE APPROVAL FOR THIS SHALL BE TAKEN BY THE BUILDER PRIOR TO CONSTRUCTION
 - FO COOLER IS NOT CONSIDERED IN THE PRESENT DESIGN. HOWEVER SAME CAN BE PROVIDED IF IT IS REQUIRED AS PER ENGINE OEM RECOMMENDATION
 - STANDBY FO FEED PUMPS FOR MEs OR ONE SPARE PUMP SHALL BE STOWED ONBOARD
 - FO FLOW METERS MAY BE PROVIDED BASED ON OWNER REQUIREMENTS.

| NSFI | QTY | DESCRIPTION | CAPACITY | TYPE |
|--------------|-----|------------------|-------------------------|------------------------|
| 601 101no | 2 | MAIN ENGINE | APPROX. 1500 KW | |
| 651 101no | 2 | DIESEL GENERATOR | APPROX. 150 KW | |
| 701 101no | 2 | FO TRANSFER PUMP | APPROX. 8m3/hr, 2.5 Bar | ROTARY GEAR/SCREW TYPE |

SEE LETTER E-125138-180430



REVIEWED

MAIN PARTICULARS

| | |
|-----------------|--|
| LENGTH O.A | abt 32.00 [m] |
| LENGTH B.P | abt 30.80 [m] |
| BREADTH (MLD) | abt 10.50 [m] |
| DEPTH (MLD) | abt 5.00 [m] |
| DRAFT (HULL) | abt 3.70 [m] |
| SCANTLING DRAFT | abt 4.50 [m] |
| COMPLEMENT | 10 PERSONS |
| BOLLARD PULL | 50 T @100% MCR |
| INSTALLED POWER | abt 3000 [kW] |
| CLASS NOTATION | SWASTIKA SUL, SWASTIKA IY, TUG, INDIAN RIVER SEA VESSEL TYPE - 4 |

**11-SEP-2021
PLAN ENDORSED FOR IN-PRINCIPLE APPROVAL**

| | | | | | |
|--------|-------------|-------------------------------|-------|---------|----------|
| Rev. I | 30-Aug-2021 | For publishing on IPA website | VKM | AK | NFC |
| No: | Date | Description | Drawn | Checked | Approved |

| | | | | | |
|-------------------------------------|--------------------------------|-------|------------------------|-------------|----------------|
| ASTDS | 50T BP HARBOUR TUG | | | | |
| DESIGN NO : CT3250 | TITLE | | | | |
| | | | FUEL OIL SYSTEM | | |
| | COCHIN SHIPYARD LIMITED | 1:120 | A3 | CT3250 | CT3250-701-001 |
| P.O. Bag 1653, COCHIN-682015, INDIA | | Scale | Format | Project No. | Dwg. no. |

| ARMATURE AND FITTINGS LEGEND | | | | REFERENCE DRAWINGS | |
|------------------------------|------------------|--------|-----------------|--------------------|-----------------------|
| Symbol | Designation | Symbol | Designation | Symbol | Designation |
| | SDNR VALVE | | BUTTERFLY VALVE | | LEVEL ALARM HIGH |
| | NON RETURN VALVE | | DRAIN VALVE | | LEVEL ALARM LOW |
| | GATE VALVE | | FLEXIBLE BELLOW | | PRESSURE INDICATOR |
| | FO FILTER | | HAND PUMP | | ELECTRIC MOTOR |
| | BALL VALVE | | LEVEL GAUGE | | QUICK CLOSING VALVE |
| | SCREW PUMP | | SIGHT GLASS | | PRESSURE RELIEF VALVE |

| PIPE AND FITTING TAGS | |
|--|--|
| NOMINAL DIAMETER PIPE NUMBER SFI CODE FITTING NUMBER SEQUENCE PIPE NUMBER | Steel, galv. steel or CuNi pipes Precision tubes CLUX Copper tubes SSXX Stainless steel BLUX Blucher pipes |

This design was developed by Cochin Shipyard Ltd. for Indian Ports Association as a part of ASTDS Package. CSI does not make any representation or warranties, express or implied as to the completeness, accuracy, suitability of the design and it shall be the responsibility of the respective builder/end-user to make its own assessment / evaluation of any such completeness, accuracy, suitability of the design prior to construction, and any consequence thereof.