

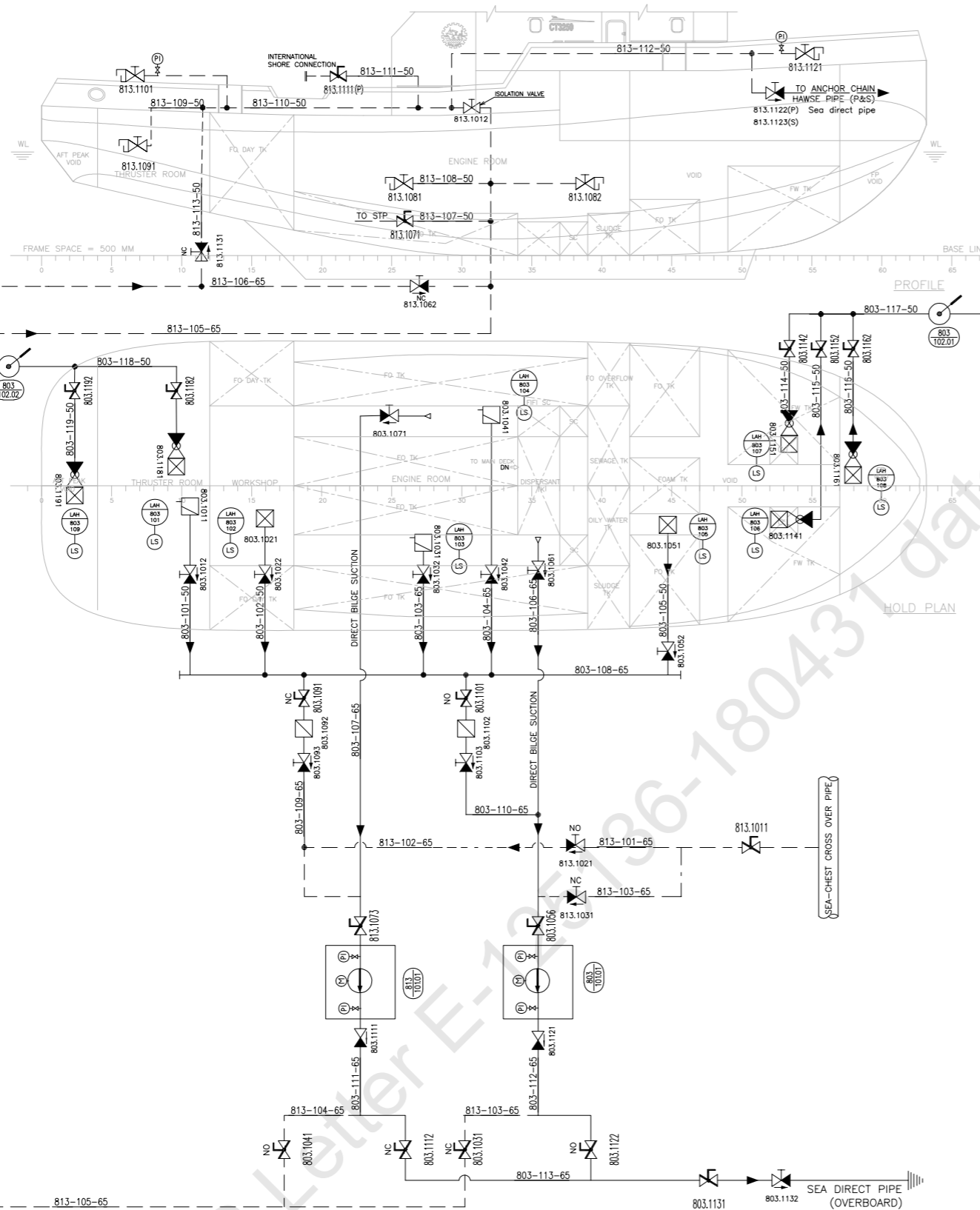
SEE LETTER: E-125136-180431

REVIEWED PLAN ENDORSED FOR IN-PRINCIPLE APPROVAL



13 SEP 2021

SEE NOTE 15



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:		
PIPING SPECIFICATION	Nominal Diameter (ND)	Piping	Standard	Material	Connections	
	≤40	STEEL PIPES	ANSI B 36	ASTM A53 GR.B	FLANGED	EN - 1092 PN 10
	>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
ANSI B 36 SEAMLESS STEEL PIPES	Nominal diameter	ND20	ND25	ND32	ND40	ND50
	Outer diameter	26,6	33,4	42,1	48,3	60,3
	Wall thickness, general (Schedule 40)	2,9	3,3	3,6	3,7	3,9
	Wall thickness, in tanks (Schedule 80)			4,8	5,1	5,5

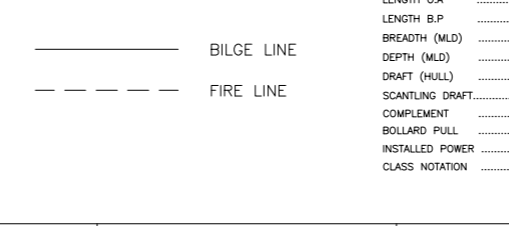
Remarks: Minimum wall thickness of pipes shall be in accordance with Part 4, Chapter 2, Table 2.2.2 of IRS Rules.

- GENERAL NOTES:**
- THIS DRAWING IS AN INDICATIVE SCHEMATIC ONLY.
 - PIPES SHALL BE SEAMLESS, GALVANIZED, SC.80 FOR FIRE LINES, PIPES WITHIN THE TANKS. FOR PIPES WHICH ARE EXPOSED/ACCESSIBLE SCH.40 CAN BE USED.
 - PENETRATION PIECE OF SCH.80 PIPE TO BE PROVIDED FOR PIPES PASSING THRU' W.T. BHD/TANKTOP/DECK.
 - MATERIAL OF OVERBOARD VALVES SHALL BE CAST STEEL AS PER RULES. HOWEVER STEEL/GREY CAST IRON MAY BE USED FOR OTHER VALVES COMPLYING TO CLASS RULES.
 - THE CASING OF PUMPS TO BE CAST BRONZE. THE TRIM OF PUMPS TO BE STAINLESS STEEL/BRONZE.
 - ALL PIPING FOR FIRE HYDRANTS SHALL BE ROUTED FROM OUTSIDE THE ACCOMMODATION.
 - SUCTION LIFT OF FWD AND AFT BILGE PUMPS SHALL NOT BE MORE THAN 7.3 m.
 - INTERNATIONAL SHORE CONNECTION, COMPLYING WITH CLASS RULES SHALL BE PROVIDED
 - THE HYDRANT AND HOSE COUPLING SHALL BE INSTANTANEOUS TYPE.
 - HANDLE WHEELS OF SDNR VALVES SHOULD EXTEND ABOVE THE FLOOR PLATE.
 - DISTANCE PIECES BETWEEN SEA INLET VALVES/SEA CHEST PLATING AND OVERBOARD VALVES/SIDE SHELL ARE TO HAVE SUBSTANTIAL WALL THICKNESS (PREFERABLY EQUAL TO SHELL THICKNESS).
 - SEA INLET AND OVERBOARD VALVES ARE TO BE OF FLANGED TYPE.
 - MATERIALS READILY RENDERED INEFFECTIVE BY HEAT ARE NOT TO BE USED FOR FIRE MAINS AND HYDRANTS.
 - RELIEF VALVES ARE TO BE PROVIDED IN CONJUNCTION WITH ALL FIRE PUMPS IF THE PUMPS ARE CAPABLE OF DEVELOPING A PRESSURE EXCEEDING THE DESIGN PRESSURE OF THE WATER SERVICE PIPES, HYDRANTS AND HOSES. THESE VALVES ARE TO BE SO PLACED AND ADJUSTED AS TO PREVENT EXCESSIVE PRESSURE IN ANY PART OF THE FIRE MAIN SYSTEM.
 - FO SERVICE TANK FOR EMERGENCY FIRE PUMP SHALL CONTAIN SUFFICIENT FUEL FOR 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.

PIPE DIMENSIONS	PUMPS CAPACITY
<p><u>Dim. main bilge pipe: (IRS RSV-2013 PT.4 CH.3 SEC.2)</u></p> <p>$dm = 1.5 \sqrt{(B+D)} + 25 \text{ mm}$</p> <p>$dm = 1.5 \sqrt{32(10.2+5)} + 25 \text{ mm}$</p> <p>$dm = 58.08 \text{ mm.}$</p> <p>Nearest commercial size: ND65.</p>	<p><u>Dim. main bilge pump:</u></p> <p>IRS RSV Pt.4 Ch.3 Sec.2</p> <p>$Q = 5.75 \times 10^{-3} \times d^2 \text{ [m}^3/\text{hour]}$</p> <p>$Q = \text{capacity of bilge pump [m}^3/\text{hour]}$</p> <p>$d = \text{rule diameter of bilge main [mm]}$</p> <p>$Q = 5.75 \times 10^{-3} \times 58.08^2 \text{ [m}^3/\text{hour]}$</p> <p>$Q = 21 \text{ [m}^3/\text{hour]}$</p> <p>Selected pump capacity : 35m³/hr</p>
<p><u>Dim. branch bilge pipe:</u></p> <p>$db = 2.0 \sqrt{C(B+D)} + 25 \text{ mm}$</p> <p>$dm = \text{internal diameter of bilge main [mm]}$</p> <p>$db = \text{internal diameter of branch bilge [mm]}$</p> <p>$L = \text{Rule length of ship [m]}$</p> <p>$B = \text{Moulded breadth of ship [m]}$</p> <p>$C = \text{Length of the compartment [m]}$</p> <p>$D = \text{Moulded depth to bulkhead deck [m]}$</p>	<p><u>Dim. main fire pump:</u></p> <p>IRS Pt.6 Ch.3 Sec.4,</p> <p>$Q_f = 4/3 \times Q \text{ [m}^3/\text{hour]}$</p> <p>$Q_f = \text{capacity of fire pump [m}^3/\text{hour]}$</p> <p>$Q = \text{capacity of bilge pump [m}^3/\text{hour]}$</p> <p>$Q_f = 4/3 \times 21 \text{ [m}^3/\text{hour]}$</p> <p>$Q_f = 28 \text{ [m}^3/\text{hour]}$</p> <p>Selected pump capacity : 35m³/hr</p>

NSFI	QTY	DESCRIPTION	CAPACITY	TYPE	LOCATION
803 101.01	1	BILGE PUMP	35 m ³ /hr, 3 Bar	POSITIVE DISPLACEMENT TYPE	ENGINE ROOM
803 102.no	2	BILGE HAND PUMP	3 m ³ /hr	SEMI ROTARY	MAIN DECK
813 101.no	1	FIRE PUMP	35 m ³ /hr, 3 Bar	CENTRIFUGAL, SELF PRIMING	ENGINE ROOM
813 101.03	1	EMERGENCY FIRE PUMP	25 m ³ /hr, 3 Bar	CENTRIFUGAL, DIESEL DRIVEN	THRUSTER ROOM

ARMATURE AND FITTINGS LEGEND				REFERENCE DRAWINGS	
Symbol	Designation	Symbol	Designation	Drawing No.	Drawing title
☒	SDNR VALVE	⊕	LEVEL ALARM HIGH	CT3250-101-001	GENERAL ARRANGEMENT
☒	NON RETURN VALVE	⊕	LEVEL SWITCH	CT3250-445-001	OILY WATER & SLUDGE OIL SYSTEM
☒	GATE VALVE	⊕	HOSE COUPLING		
☒	STRAINER	☒	BUTTERFLY VALVE		
☒	STRUM BOX	☒	FIRE HYDRANT		
☒	CENTRIFUGAL PUMP	☒	HAND PUMP		

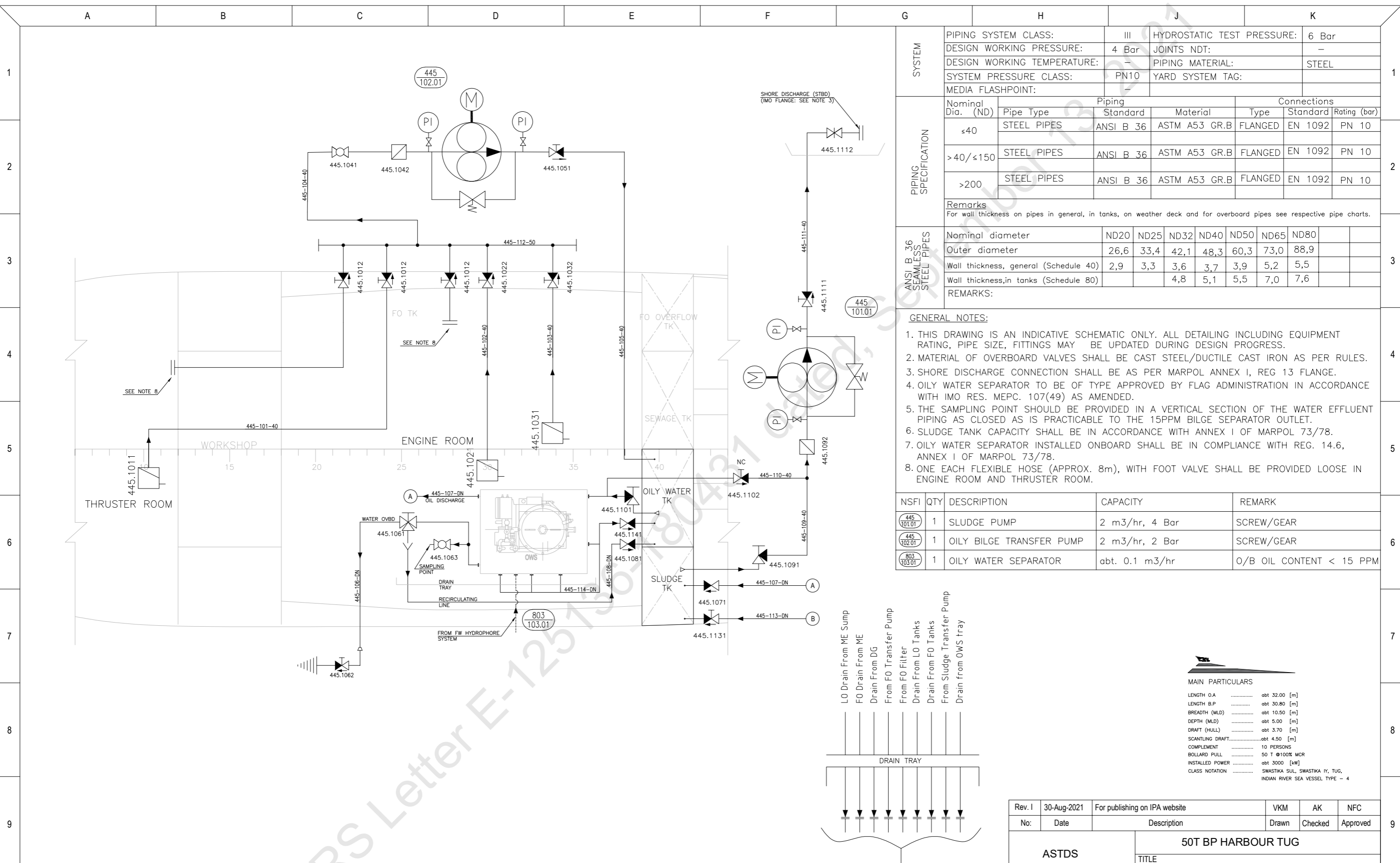


MAIN PARTICULARS

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

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			
		BILGE & FIRE SYSTEM			
COCHIN SHIPYARD LIMITED		1:200	A3	CT3250	CT3250-803-001
P.O. Bag 1653, COCHIN-682015, INDIA		Scale	Format	Project No.	Dwg. no.

This design was developed by Cochin Shipyards 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 therefrom.

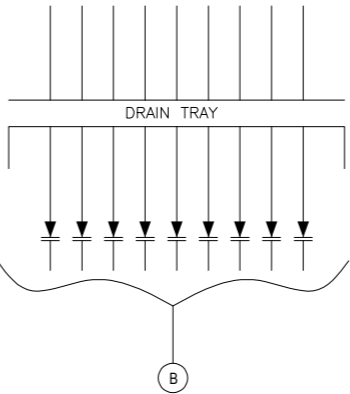


SYSTEM	PIPING SYSTEM CLASS:		III	HYDROSTATIC TEST PRESSURE:		6 Bar		
	DESIGN WORKING PRESSURE:		4 Bar	JOINTS NDT:		-		
	DESIGN WORKING TEMPERATURE:		-	PIPING MATERIAL:		STEEL		
	SYSTEM PRESSURE CLASS:		PN10	YARD SYSTEM TAG:				
MEDIA FLASHPOINT:								
PIPING SPECIFICATION	Nominal Dia. (ND)	Piping			Connections			
		Pipe Type	Standard	Material	Type	Standard	Rating (bar)	
	≤40	STEEL PIPES	ANSI B 36	ASTM A53 GR.B	FLANGED	EN 1092	PN 10	
	>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		
Remarks For wall thickness on pipes in general, in tanks, on weather deck and for overboard pipes see respective pipe charts.								
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
REMARKS:								

- GENERAL NOTES:**
- THIS DRAWING IS AN INDICATIVE SCHEMATIC ONLY. ALL DETAILING INCLUDING EQUIPMENT RATING, PIPE SIZE, FITTINGS MAY BE UPDATED DURING DESIGN PROGRESS.
 - MATERIAL OF OVERBOARD VALVES SHALL BE CAST STEEL/DUCTILE CAST IRON AS PER RULES.
 - SHORE DISCHARGE CONNECTION SHALL BE AS PER MARPOL ANNEX I, REG 13 FLANGE.
 - OILY WATER SEPARATOR TO BE OF TYPE APPROVED BY FLAG ADMINISTRATION IN ACCORDANCE WITH IMO RES. MEPC. 107(49) AS AMENDED.
 - THE SAMPLING POINT SHOULD BE PROVIDED IN A VERTICAL SECTION OF THE WATER EFFLUENT PIPING AS CLOSED AS IS PRACTICABLE TO THE 15PPM BILGE SEPARATOR OUTLET.
 - SLUDGE TANK CAPACITY SHALL BE IN ACCORDANCE WITH ANNEX I OF MARPOL 73/78.
 - OILY WATER SEPARATOR INSTALLED ONBOARD SHALL BE IN COMPLIANCE WITH REG. 14.6, ANNEX I OF MARPOL 73/78.
 - ONE EACH FLEXIBLE HOSE (APPROX. 8m), WITH FOOT VALVE SHALL BE PROVIDED LOOSE IN ENGINE ROOM AND THRUSTER ROOM.

NSFI	QTY	DESCRIPTION	CAPACITY	REMARK
445.101.01	1	SLUDGE PUMP	2 m ³ /hr, 4 Bar	SCREW/GEAR
445.102.01	1	OILY BILGE TRANSFER PUMP	2 m ³ /hr, 2 Bar	SCREW/GEAR
803.103.01	1	OILY WATER SEPARATOR	abt. 0.1 m ³ /hr	O/B OIL CONTENT < 15 PPM

- LO Drain From ME Sump
- FO Drain From ME
- Drain From DG
- From FO Transfer Pump
- From FO Filter
- Drain From LO Tanks
- Drain From FO Tanks
- From Sludge Transfer Pump
- Drain from OWS Tray



MAIN PARTICULARS

LENGTH O.A	abt 32.00 [m]
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SCANTLING DRAFT	abt 4.50 [m]
COMPLEMENT	10 PERSONS
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INSTALLED POWER	abt 3000 [kW]
CLASS NOTATION	SWASTIKA SUL, SWASTIKA IY, TUG, INDIAN RIVER SEA VESSEL TYPE - 4

ARMATURE AND FITTINGS LEGEND				REFERENCE DRAWINGS			
Symbol	Designation	Symbol	Designation	Symbol	Designation	Symbol	Designation
SDNR VALVE	3-WAY VALVE	HOPPER	REDUCER	FLANGE			
BALL VALVE	STRAINER	MUD BOX	GEAR PUMP	PRESSURE INDICATOR			
GATE VALVE	MUD BOX	FLANGE					
PRESSURE RELIEF VALVE	GEAR PUMP						
CHECK VALVE	PRESSURE INDICATOR						
ANGLE SDNR VALVE	ELECTRIC MOTOR						

Drawing No.	Drawing title
CT3250-101-001	GENERAL ARRANGEMENT
CT3250-803-001	BILGE & FIRE SYSTEM
CT3250-711-001	LUBE OIL SYSTEM

NOMINAL DIAMETER	PIPE NUMBER	SFI CODE	Material
XXX	XXXX	XXXX	Steel, galv. steel or CuNi pipes
XXX	XXXX	XXXX	Precision tubes
XXX	XXXX	XXXX	CuXX Copper tubes
XXX	XXXX	SSXX	Stainless steel
XXX	XXXX	BLXX	Blucher pipes

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No.	Date	Description	Drawn	Checked	Approved
ASTDS		50T BP HARBOUR TUG			
DESIGN NO: CT3250		TITLE OILY WATER AND SLUDGE OIL SYSTEM			
COCHIN SHIPYARD LIMITED P.O. Bag 1653, COCHIN-682015, INDIA	1:100	A3	CT3250	CT3250-445-001	
	Scale	Format	Project No.	Dwg. no.	
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