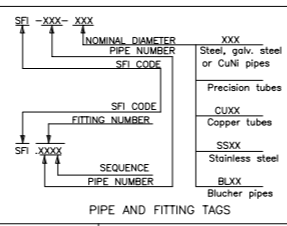


**SEE LETTER E-125698-180637  
REVIEWED**



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

ARMATURE AND FITTINGS LEGEND				REFERENCE DRAWINGS	
Symbol	Designation	Symbol	Designation	Drawing No.	Drawing title
	SDNR VALVE		LEVEL ALARM HIGH	CT3380-101-001	GENERAL ARRANGEMENT
	NON RETURN VALVE		LEVEL SWITCH	CT3380-445-001	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 33.0 [m]
LENGTH B.P.....	abt 31.3 [m]
BREADTH (MLD).....	abt 11.9 [m]
DEPTH (MLD).....	abt 5.4 [m]
DRAFT (HULL).....	abt 4.2 [m]
COMPLEMENT.....	14 PERSONS
BOLLARD PULL .....	80 T @100% MCR
INSTALLED POWER .....	abt 4800 [kW]
CLASS NOTATION.....	IRS - SWASTIKA SUL,TUG SWASTIKA IY, AGNI 1 (2400m <sup>3</sup> /hr)

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:				

ANSI B 36 SEAMLESS STEEL PIPES	Piping		Connections				
	Nominal Diameter (ND)	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	

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

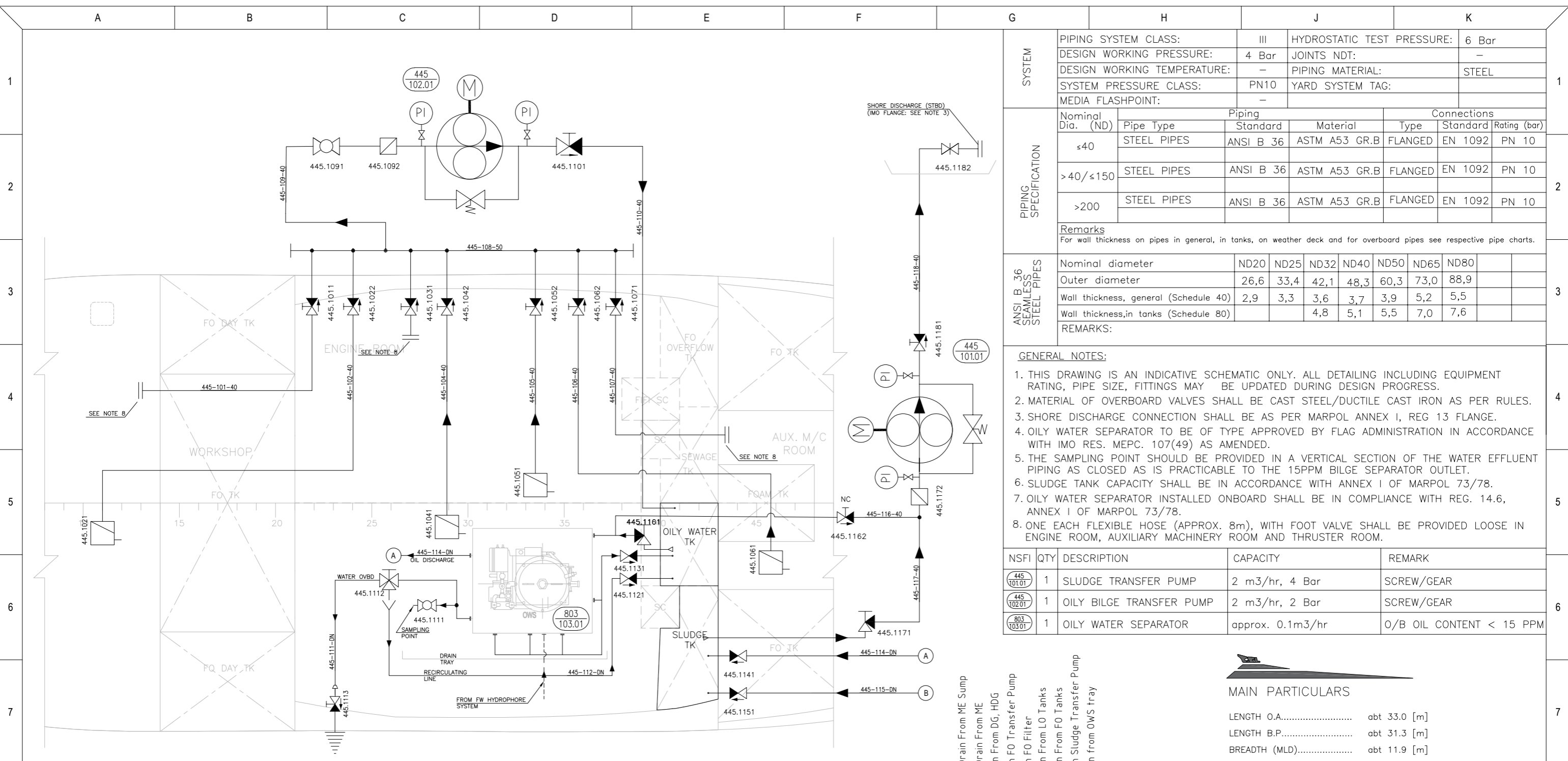
**GENERAL NOTES:**

- 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 AND CLASS CERTIFIED.
- MATERIALS READILY RENDERED INEFFECTIVE BY HEAT ARE NOT TO BE USED FOR FIRE MAINS AND HYDRANTS.
- RELIEF VALVES ARE TO BE PROVIDED IN CONNECTION 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 TO RUN THE PUMP ON FULL LOAD FOR ATLEAST 3 HRS. SUFFICIENT RESERVE FUEL SHALL BE PROVIDED TO ENABLE THE PUMP TO RUN AT FULL LOAD FOR ADDITIONAL 15 HRS.

PIPE DIMENSIONS	PUMPS CAPACITY
<p><u>Dim. main bilge pipe:</u> (IRS SVR-2020 PT.4 CH.3 SEC.2)</p> $dm = 1.68 \sqrt{L(B+D)+25} \text{ mm}$ $dm = 1.68 \sqrt{31.3(12+5.4)+25} \text{ mm}$ $dm = 64.09 \text{ mm.}$ Nearest commercial size: ND65.	<p><u>Dim. main bilge pump:</u></p> IRS SVR Pt.4 Ch.3 Sec.2 $Q = 5.75 \times 10^{-3} \times d^2 \text{ [m}^3/\text{hour]}$ $Q = \text{capacity of bilge pump [m}^3/\text{hour]}$ $d = \text{rule diameter of bilge main [mm]}$ $Q = 5.75 \times 10^{-3} \times 64.09^2 \text{ [m}^3/\text{hour]}$ $Q = 24 \text{ [m}^3/\text{hour]}$ Selected pump capacity : 35m <sup>3</sup> /hr
<p><u>Dim. branch bilge pipe:</u></p> $db = 2.15 \sqrt{C(B+D)} + 25 \text{ mm}$ $dm = \text{internal diameter of bilge main [mm]}$ $db = \text{internal diameter of branch bilge [mm]}$ $L = \text{Rule length of ship [m]}$ $B = \text{Moulded breadth of ship [m]}$ $C = \text{Length of the compartment [m]}$ $D = \text{Moulded depth to bulkhead deck [m]}$	<p><u>Dim. main fire pump:</u></p> IRS Pt.6 Ch.3 Sec.4, $Q_f = 4/3 \times Q \text{ [m}^3/\text{hour]}$ $Q_f = \text{capacity of fire pump [m}^3/\text{hour]}$ $Q = \text{capacity of bilge pump [m}^3/\text{hour]}$ $Q_f = 4/3 \times 24 \text{ [m}^3/\text{hour]}$ $Q_f = 32 \text{ [m}^3/\text{hour]}$ Selected pump capacity : 35m <sup>3</sup> /hr

NSFI	QTY	DESCRIPTION	CAPACITY	TYPE	LOCATION
803.101.01	1	BILGE PUMP	35 m <sup>3</sup> /hr, 3 Bar	POSITIVE DISPLACEMENT TYPE	ENGINE ROOM
803.102.no	2	BILGE HAND PUMP	3 m <sup>3</sup> /hr	SEMI ROTARY	MAIN DECK
813.101.no	1	FIRE PUMP	35 m <sup>3</sup> /hr, 3 Bar	CENTRIFUGAL, SELF PRIMING	ENGINE ROOM
813.101.03	1	EMERGENCY FIRE PUMP	25 m <sup>3</sup> /hr, 3 Bar	CENTRIFUGAL, DIESEL DRIVEN	AUX. M/C ROOM

Rev. I	30-Aug-2021	For publishing on IPA website			VKM	AK	NFC
No:	Date	Description			Drawn	Checked	Approved
ASTDS		80T BP TUG					
DESIGN NO: CT3380		BILGE & FIRE SYSTEM					
<b>COCHIN SHIPYARD LIMITED</b> P.O. Bag 1653, COCHIN-682015, INDIA		1:200	A3	CT3380	CT3380-803-001		
		Scale	Format	Project No.	Dwg. no.		



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, AUXILIARY MACHINERY ROOM AND THRUSTER ROOM.

NSFI	QTY	DESCRIPTION	CAPACITY	REMARK
445 101.01	1	SLUDGE TRANSFER PUMP	2 m <sup>3</sup> /hr, 4 Bar	SCREW/GEAR
445 102.01	1	OILY BILGE TRANSFER PUMP	2 m <sup>3</sup> /hr, 2 Bar	SCREW/GEAR
803 103.01	1	OILY WATER SEPARATOR	approx. 0.1m <sup>3</sup> /hr	O/B OIL CONTENT < 15 PPM

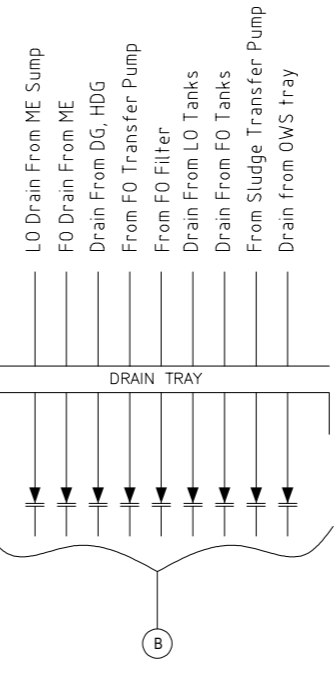
**SEE LETTER E-125698-180637**

**REVIEWED**



**PLAN ENDORSED FOR IN-PRINCIPLE APPROVAL**

**11-SEP-2021**



**MAIN PARTICULARS**

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LENGTH B.P.....	abt 31.3 [m]
BREADTH (MLD).....	abt 11.9 [m]
DEPTH (MLD).....	abt 5.4 [m]
DRAFT (HULL).....	abt 4.2 [m]
COMPLEMENT.....	14 PERSONS
BOLLARD PULL .....	80 T @100% MCR
INSTALLED POWER .....	abt 4800 [kW]
CLASS NOTATION.....	IRS - SWASTIKA SUL,TUG SWASTIKA IY, AGNI 1 (2400m <sup>3</sup> /hr)

Rev. I	30-Aug-2021	For publishing on IPA website			VKM	AK	NFC
No:	Date	Description			Drawn	Checked	Approved
ASTDS		80T BP TUG					
DESIGN NO: CT3380		TITLE <b>OILY WATER AND SLUDGE OIL SYSTEM</b>					
<b>COCHIN SHIPYARD LIMITED</b> P.O. Bag 1653, COCHIN-682015, INDIA	1:100	A3	CT3380	CT3380-445-001			
	Scale	Format	Project No.	Dwg. no.			
<small>This design was developed by Cochin Shipyard Ltd. for Indian Ports Association as a part of ASTDS Package. CSL 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.</small>							

ARMATURE AND FITTINGS LEGEND				REFERENCE DRAWINGS			
Symbol	Designation	Symbol	Designation	Symbol	Designation	Symbol	Designation
	SDNR VALVE		3-WAY VALVE		HOPPER		Drawing No.
	BALL VALVE		STRAINER		REDUCER		Drawing title
	GATE VALVE		MUD BOX		FLANGE	CT3380-101-001	GENERAL ARRANGEMENT
	PRESSURE RELIEF VALVE		GEAR PUMP			CT3380-803-001	BILGE & FIRE SYSTEM
	CHECK VALVE		PRESSURE INDICATOR			CT3380-701-001	FUEL OIL SYSTEM
	ANGLE SDNR VALVE		ELECTRIC MOTOR			CT3380-711-001	LUBE OIL SYSTEM

