

06.02.6758.165.07.193.25. 2370

04 May 2025

Dear Sir

AMENDMENT OF TECHNICAL SPECIFICATION

References:

A. DEW Ltd Tender no: 06.02.6758.165.07.193.25.2180 Dated 10 April 2025.

1 The subject mentioned technical specification is amended as follows:

Clause No	For	Read
Technical Specification Annex B of serial no: 01	Fresh Water Hydrophore System with Pump, Electrical Control Box & necessary accessories Tank volume: Min 500 Ltr Material of main parts: SS 316 No of Pumps: 02 sets (01 standby) Pump Capacity: 3.0 m3/hr, 4.0 bar Power: 3 phase, 515 V, 50 Hz Pump drive: Electric Motor Controller: Yes Pressure setting: 1.3 – 3.0 bar Make: To be mentioned Model: To be mentioned Country of Origin & Manufacturer: EU/USA/UK/Japan Certification: BV Type Approval/ BV Product Certificate	Fresh Water Hydrophore System with Pump, Electrical Control Box & necessary accessories Tank volume: Min 500 Ltr Tank Material: SS 316 No of Pumps: 02 sets (01 standby) Pump Capacity: 3.0 m3/hr, 4.0 bar Power: 3 phase, 415 V, 50 Hz Pump drive: Electric Motor Controller: Yes Pressure setting: 1.3 – 3.0 bar Reference: Domestic Water System Make: To be mentioned Model: To be mentioned Country of Origin & Manufacturer: EU/USA/UK/Japan Certification: BV Product Certificate
Technical Specification Annex B of serial no: 02	Sea Water Hydrophore System with Pump, Electrical Control Box & necessary accessories Tank volume: Min 100 Ltr Material of main parts: SS 316 No of Pumps: 02 sets (01 standby) Pump Capacity: 2.0 m3/hr, 4.0 bar Power: 3 phase, 515 V, 50 Hz Pump drive: Electric Motor Controller: Yes Pressure setting: 1.3 – 3.0 bar Make: To be mentioned Model: To be mentioned Country of Origin & Manufacturer: EU/USA/UK/Japan Certification: BV Type Approval/ BV Product Certificate	Sea Water Hydrophore System with Pump, Electrical Control Box & necessary accessories Tank volume: Min 100 Ltr Tank Material: SS 316 No of Pumps: 02 sets (01 standby) Pump Capacity: 2.0 m3/hr, 4.0 bar Power: 3 phase, 415 V, 50 Hz Pump drive: Electric Motor Controller: Yes Pressure setting: 1.3 – 3.0 bar Reference: Domestic Water System Make: To be mentioned Model: To be mentioned Country of Origin & Manufacturer: EU/USA/UK/Japan Certification: BV Product Certificate
Technical Specification Annex B of serial no: 03	Hydrophore Tank, Electrical Control Box & necessary accessories Tank volume: Min 500 Ltr, 4.0 bar Pipe Inlet Size: DN 65 Pipe Outlet Size: DN 65 Material of main parts: SS 316 Controller: Yes Pressure setting: 1.3 – 3.0 bar Make: To be mentioned Model: To be mentioned Country of Origin & Manufacturer: EU/USA/UK/Japan Certification: BV Type Approval/ BV Product Certificate	Fire System Hydrophore Tank, Electrical Control Box & necessary accessories Tank Capacity: Min 500 Ltr, 4.0 bar Tank Material: SS 316 Pipe Inlet Size: DN 65 Pipe Outlet Size: DN 65 Controller: Yes Pressure setting: 1.3 – 3.0 bar Reference: Bilge & Sea Water System; Fire System Make: To be mentioned Model: To be mentioned Country of Origin & Manufacturer: EU/USA/UK/Japan Certification: BV Product Certificate

Technical Specification Annex B of serial no: 05	Service Air Compressor Pressure: Min 7 Bar Receiver volume capacity: Min 200 Ltr Voltage: 50 Hz Make: To be mentioned Model: To be mentioned Country of Origin & Manufacturer: EU/USA/UK/Japan Certification: BV Type approved/ BV Class Certified.	Service Air Compressor Capacity: 200 Ltr, 7.0 bar Power: 3 phase, 415 V, 50 Hz Reference: Compressed Air System Make: To be mentioned Model: To be mentioned Country of Origin & Manufacturer: EU/USA/UK/Japan Certification: BV Type Approved/ BV Product Certificate
Technical Specification Annex B of serial no: 06	Service Air Bottle Pressure: Min 7 Bar Service Air Volume: Min 300 Ltr No of bottle: 01 Make: To be mentioned Model: To be mentioned Country of Origin & Manufacturer: EU/USA/UK/Japan Certification: Manufacturer certified	Service Air Bottle Volume: 300 Ltr Working Pressure: 7.0 bar Reference: Compressed Air System Make: To be mentioned Model: To be mentioned Country of Origin & Manufacturer: EU/USA/UK/Japan Certification: Manufacturer Certificate
Technical Specification Annex B of serial no: 07	Service Air Dryer Pressure: Min 7 Bar Make: To be mentioned Model: To be mentioned Country of Origin & Manufacturer: EU/USA/UK/Japan Certification: Manufacturer certified	Service Air Dryer Working Pressure: 7.0 bar Reference: Compressed Air System Make: To be mentioned Model: To be mentioned Country of Origin & Manufacturer: EU/USA/UK/Japan Certification: Manufacturer Certificate
Technical Specification Annex B of serial no: 19	Ejector Size: DN 125 × 100 × 125 (Inlet × Suction × Discharge) Thickness: 2.8mm (min) Capacity: 10 m ³ /h Material: Bronze/SS 316 Make: To be mentioned Model: To be mentioned Country of Origin & Manufacturer: EU (Denmark/ Spain/ Italy/ Holland) H S Code: To be mentioned Certification: BV Type Approved/ BV Product Certificate Pump need to be supplied with suitable starter	Ejector Size: DN 125 × 100 × 125 (Inlet × Suction × Discharge) Thickness: 2.8mm (min) Capacity: 10 m ³ /h Material: Bronze/SS 316 Make: To be mentioned Model: To be mentioned Country of Origin & Manufacturer: EU (Denmark/ Spain/ Italy/ Holland) H S Code: To be mentioned Certification: Manufacturer Certificate

2. Forwarded for information and necessary action please.

With regards



RUDDRAW MOHAMMAD NABI
 Lt Commander BN
 For Managing Director

Distribution:

External:

Action:

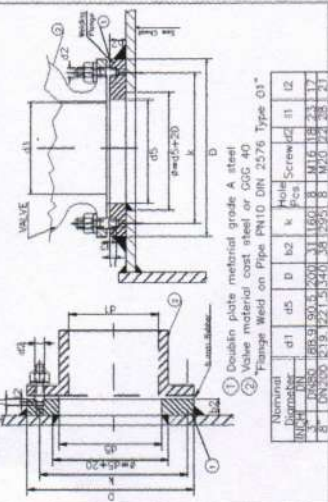
All concern suppliers

Internal:

GM (P&D), DEW Ltd

- Notes:
- This drawing is schematic only
 - Working pressure is 8 bar
 - Design pressure is 13.2 bar
 - Pipe material is 13.2 bar
 - All manual operated valves are to be provided with local indication showing whether they are opened or closed
 - Ship side valves on the shell plating shall be easily accessible
 - Inboard valves are to be capable of being opened from above the floor plates. The hand wheel of the valves are not to be less than 400mm above the bottom platform.
 - Bilge pumps may not be led through tubes for lubricating
 - Bilge pumps are to be fitted with water or feedwater
 - E/B bilge valves are to be of a capacity not less than 0.2m³/h
 - For tank locations details please see dwg no. R-07
 - For air vent/sounding details please see dwg no. P-05
 - The emergency bilge suction is to be located at the
 - In compartments other than machinery spaces and shaft
 - tunnels, the open ends of bilge suction pipes are to be
 - fitted with strum boxes or strainers having holes not
 - more than 10 mm in diameter. The total area of such
 - strainers is to be not less than the required
 - cross-sectional area of the suction pipe.

SEA CHEST & OVERBOARD VALVE CONNECTION



FLOODING LEVEL CALCULATION

Constant Values:

- s1= Person walk speed (m/s)
- s2= Distance travelled to reach the valve (m)
- s3= Distance travelled to reach the valve (m)
- s4= Distance travelled to reach the valve (m)
- s5= Distance travelled to reach the valve (m)
- s6= Distance travelled to reach the valve (m)
- s7= Distance travelled to reach the valve (m)
- s8= Distance travelled to reach the valve (m)
- s9= Distance travelled to reach the valve (m)
- s10= Distance travelled to reach the valve (m)
- s11= Distance travelled to reach the valve (m)
- s12= Distance travelled to reach the valve (m)
- s13= Distance travelled to reach the valve (m)
- s14= Distance travelled to reach the valve (m)
- s15= Distance travelled to reach the valve (m)
- s16= Distance travelled to reach the valve (m)
- s17= Distance travelled to reach the valve (m)
- s18= Distance travelled to reach the valve (m)
- s19= Distance travelled to reach the valve (m)
- s20= Distance travelled to reach the valve (m)
- s21= Distance travelled to reach the valve (m)
- s22= Distance travelled to reach the valve (m)
- s23= Distance travelled to reach the valve (m)
- s24= Distance travelled to reach the valve (m)
- s25= Distance travelled to reach the valve (m)
- s26= Distance travelled to reach the valve (m)
- s27= Distance travelled to reach the valve (m)
- s28= Distance travelled to reach the valve (m)
- s29= Distance travelled to reach the valve (m)
- s30= Distance travelled to reach the valve (m)
- s31= Distance travelled to reach the valve (m)
- s32= Distance travelled to reach the valve (m)
- s33= Distance travelled to reach the valve (m)
- s34= Distance travelled to reach the valve (m)
- s35= Distance travelled to reach the valve (m)
- s36= Distance travelled to reach the valve (m)
- s37= Distance travelled to reach the valve (m)
- s38= Distance travelled to reach the valve (m)
- s39= Distance travelled to reach the valve (m)
- s40= Distance travelled to reach the valve (m)
- s41= Distance travelled to reach the valve (m)
- s42= Distance travelled to reach the valve (m)
- s43= Distance travelled to reach the valve (m)
- s44= Distance travelled to reach the valve (m)
- s45= Distance travelled to reach the valve (m)
- s46= Distance travelled to reach the valve (m)
- s47= Distance travelled to reach the valve (m)
- s48= Distance travelled to reach the valve (m)
- s49= Distance travelled to reach the valve (m)
- s50= Distance travelled to reach the valve (m)
- s51= Distance travelled to reach the valve (m)
- s52= Distance travelled to reach the valve (m)
- s53= Distance travelled to reach the valve (m)
- s54= Distance travelled to reach the valve (m)
- s55= Distance travelled to reach the valve (m)
- s56= Distance travelled to reach the valve (m)
- s57= Distance travelled to reach the valve (m)
- s58= Distance travelled to reach the valve (m)
- s59= Distance travelled to reach the valve (m)
- s60= Distance travelled to reach the valve (m)
- s61= Distance travelled to reach the valve (m)
- s62= Distance travelled to reach the valve (m)
- s63= Distance travelled to reach the valve (m)
- s64= Distance travelled to reach the valve (m)
- s65= Distance travelled to reach the valve (m)
- s66= Distance travelled to reach the valve (m)
- s67= Distance travelled to reach the valve (m)
- s68= Distance travelled to reach the valve (m)
- s69= Distance travelled to reach the valve (m)
- s70= Distance travelled to reach the valve (m)
- s71= Distance travelled to reach the valve (m)
- s72= Distance travelled to reach the valve (m)
- s73= Distance travelled to reach the valve (m)
- s74= Distance travelled to reach the valve (m)
- s75= Distance travelled to reach the valve (m)
- s76= Distance travelled to reach the valve (m)
- s77= Distance travelled to reach the valve (m)
- s78= Distance travelled to reach the valve (m)
- s79= Distance travelled to reach the valve (m)
- s80= Distance travelled to reach the valve (m)
- s81= Distance travelled to reach the valve (m)
- s82= Distance travelled to reach the valve (m)
- s83= Distance travelled to reach the valve (m)
- s84= Distance travelled to reach the valve (m)
- s85= Distance travelled to reach the valve (m)
- s86= Distance travelled to reach the valve (m)
- s87= Distance travelled to reach the valve (m)
- s88= Distance travelled to reach the valve (m)
- s89= Distance travelled to reach the valve (m)
- s90= Distance travelled to reach the valve (m)
- s91= Distance travelled to reach the valve (m)
- s92= Distance travelled to reach the valve (m)
- s93= Distance travelled to reach the valve (m)
- s94= Distance travelled to reach the valve (m)
- s95= Distance travelled to reach the valve (m)
- s96= Distance travelled to reach the valve (m)
- s97= Distance travelled to reach the valve (m)
- s98= Distance travelled to reach the valve (m)
- s99= Distance travelled to reach the valve (m)
- s100= Distance travelled to reach the valve (m)

13.1.1. The operator can close the valve before the flooding starts.

13.1.2. The operator can close the valve before the flooding starts.

13.1.3. The operator can close the valve before the flooding starts.

13.1.4. The operator can close the valve before the flooding starts.

13.1.5. The operator can close the valve before the flooding starts.

13.1.6. The operator can close the valve before the flooding starts.

13.1.7. The operator can close the valve before the flooding starts.

13.1.8. The operator can close the valve before the flooding starts.

13.1.9. The operator can close the valve before the flooding starts.

13.1.10. The operator can close the valve before the flooding starts.

13.1.11. The operator can close the valve before the flooding starts.

13.1.12. The operator can close the valve before the flooding starts.

13.1.13. The operator can close the valve before the flooding starts.

13.1.14. The operator can close the valve before the flooding starts.

13.1.15. The operator can close the valve before the flooding starts.

13.1.16. The operator can close the valve before the flooding starts.

13.1.17. The operator can close the valve before the flooding starts.

13.1.18. The operator can close the valve before the flooding starts.

13.1.19. The operator can close the valve before the flooding starts.

13.1.20. The operator can close the valve before the flooding starts.

13.1.21. The operator can close the valve before the flooding starts.

13.1.22. The operator can close the valve before the flooding starts.

13.1.23. The operator can close the valve before the flooding starts.

13.1.24. The operator can close the valve before the flooding starts.

13.1.25. The operator can close the valve before the flooding starts.

13.1.26. The operator can close the valve before the flooding starts.

13.1.27. The operator can close the valve before the flooding starts.

13.1.28. The operator can close the valve before the flooding starts.

13.1.29. The operator can close the valve before the flooding starts.

13.1.30. The operator can close the valve before the flooding starts.

13.1.31. The operator can close the valve before the flooding starts.

13.1.32. The operator can close the valve before the flooding starts.

13.1.33. The operator can close the valve before the flooding starts.

13.1.34. The operator can close the valve before the flooding starts.

13.1.35. The operator can close the valve before the flooding starts.

13.1.36. The operator can close the valve before the flooding starts.

13.1.37. The operator can close the valve before the flooding starts.

13.1.38. The operator can close the valve before the flooding starts.

13.1.39. The operator can close the valve before the flooding starts.

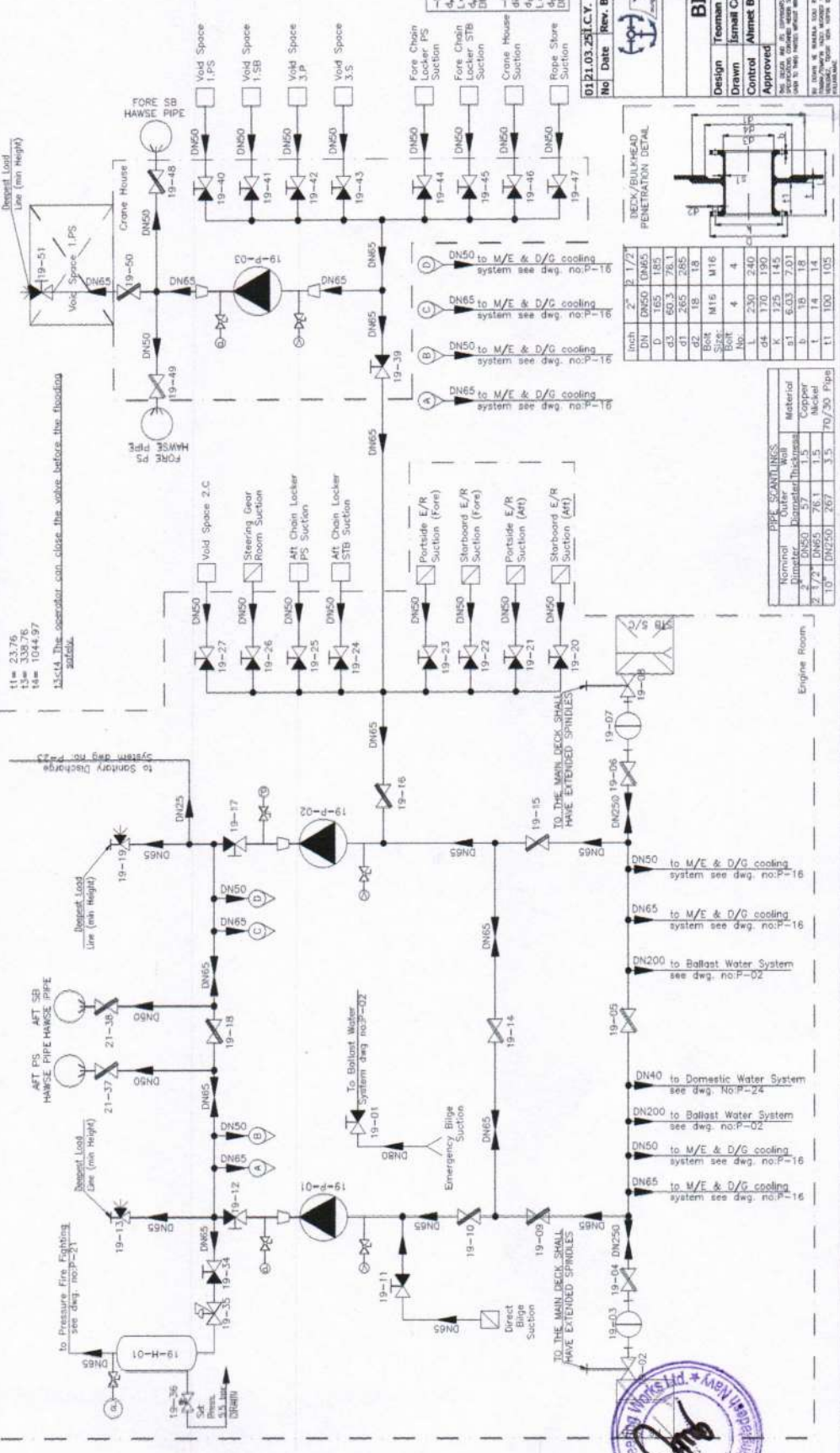
13.1.40. The operator can close the valve before the flooding starts.

13.1.41. The operator can close the valve before the flooding starts.

13.1.42. The operator can close the valve before the flooding starts.

13.1.43. The operator can close the valve before the flooding starts.

13.1.44. The operator can close the valve before the flooding starts.



13.1.1. The operator can close the valve before the flooding starts.

13.1.2. The operator can close the valve before the flooding starts.

13.1.3. The operator can close the valve before the flooding starts.

13.1.4. The operator can close the valve before the flooding starts.

13.1.5. The operator can close the valve before the flooding starts.

13.1.6. The operator can close the valve before the flooding starts.

13.1.7. The operator can close the valve before the flooding starts.

13.1.8. The operator can close the valve before the flooding starts.

13.1.9. The operator can close the valve before the flooding starts.

13.1.10. The operator can close the valve before the flooding starts.

13.1.11. The operator can close the valve before the flooding starts.

13.1.12. The operator can close the valve before the flooding starts.

13.1.13. The operator can close the valve before the flooding starts.

13.1.14. The operator can close the valve before the flooding starts.

13.1.15. The operator can close the valve before the flooding starts.

13.1.16. The operator can close the valve before the flooding starts.

13.1.17. The operator can close the valve before the flooding starts.

13.1.18. The operator can close the valve before the flooding starts.

13.1.19. The operator can close the valve before the flooding starts.

13.1.20. The operator can close the valve before the flooding starts.

13.1.21. The operator can close the valve before the flooding starts.

13.1.22. The operator can close the valve before the flooding starts.

13.1.23. The operator can close the valve before the flooding starts.

13.1.24. The operator can close the valve before the flooding starts.

13.1.25. The operator can close the valve before the flooding starts.

13.1.26. The operator can close the valve before the flooding starts.

13.1.27. The operator can close the valve before the flooding starts.

13.1.28. The operator can close the valve before the flooding starts.

13.1.29. The operator can close the valve before the flooding starts.

13.1.30. The operator can close the valve before the flooding starts.

13.1.31. The operator can close the valve before the flooding starts.

13.1.32. The operator can close the valve before the flooding starts.

13.1.33. The operator can close the valve before the flooding starts.

13.1.34. The operator can close the valve before the flooding starts.

13.1.35. The operator can close the valve before the flooding starts.

13.1.36. The operator can close the valve before the flooding starts.

13.1.37. The operator can close the valve before the flooding starts.

13.1.38. The operator can close the valve before the flooding starts.

13.1.39. The operator can close the valve before the flooding starts.

13.1.40. The operator can close the valve before the flooding starts.

13.1.41. The operator can close the valve before the flooding starts.

13.1.42. The operator can close the valve before the flooding starts.

13.1.43. The operator can close the valve before the flooding starts.

13.1.44. The operator can close the valve before the flooding starts.

0121.03.25 L.C.Y. Drawing has been revised according to class comments.

No. Date Rev. By Revision Note

70 ton SELF PROPELLER CRANE BARGE

TBN-SPCB-04

BILGE & SEA WATER SYSTEM

Design Toman TOMBAK

Drawn Toman TOMBAK

Control Toman TOMBAK

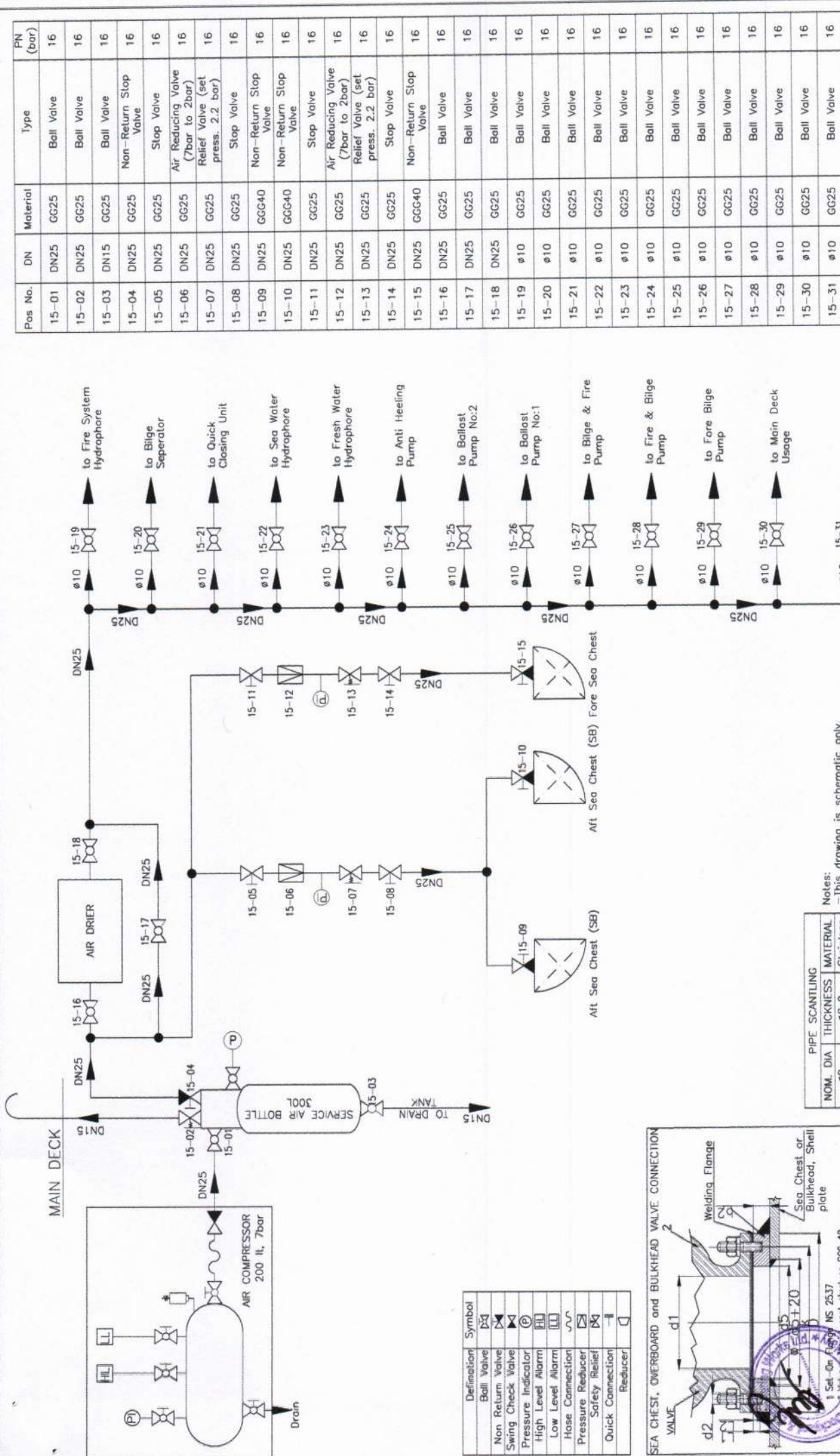
Approved Toman TOMBAK

Project No. SPCB-04

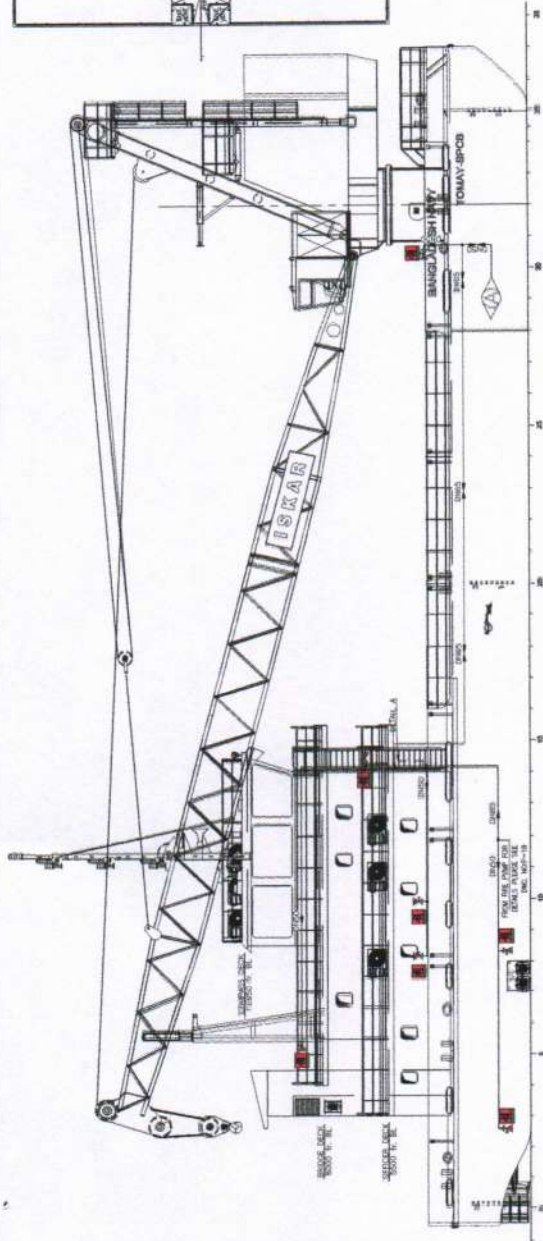
Scale 1/50

Issue Date 04.07.2024

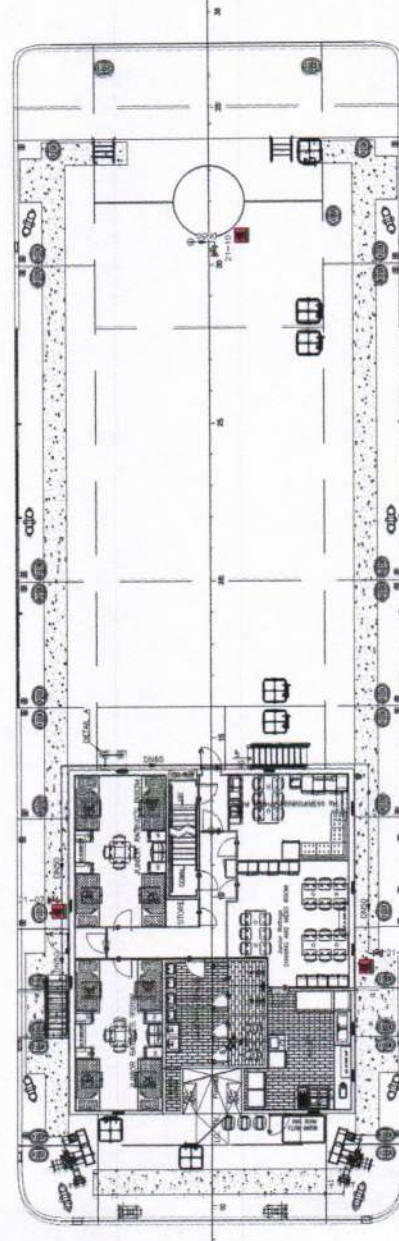




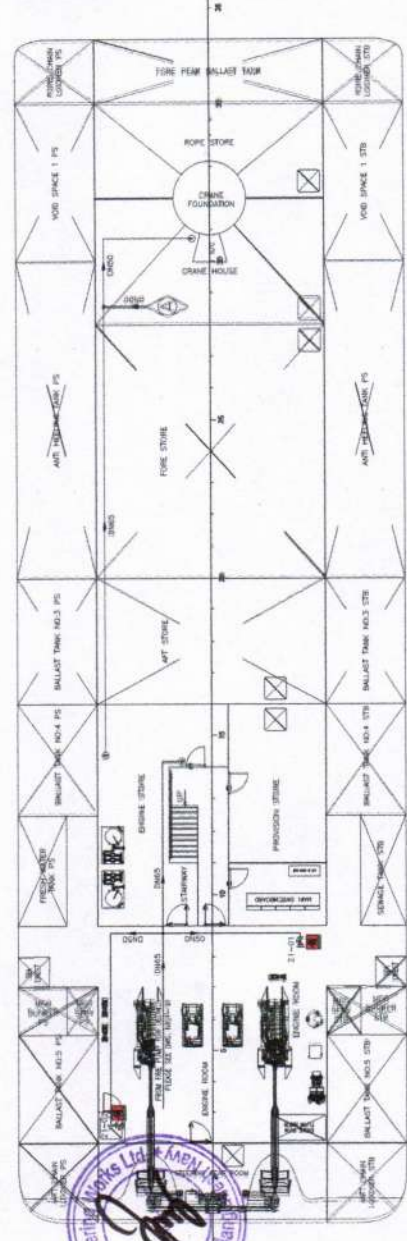
<									
--	--	--	--	--	--	--	--	--	--



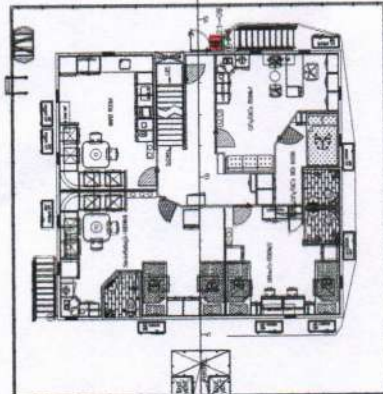
PROFILE VIEW



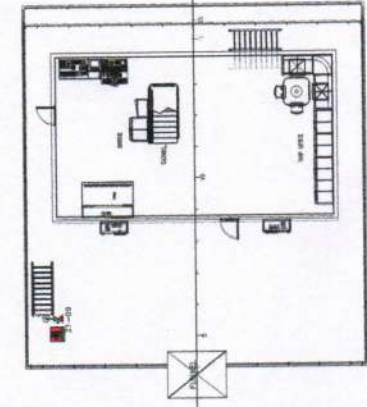
MAIN DECK PLAN VIEW



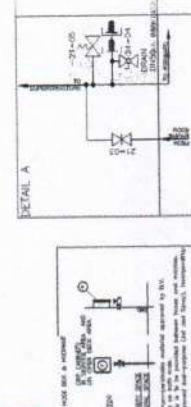
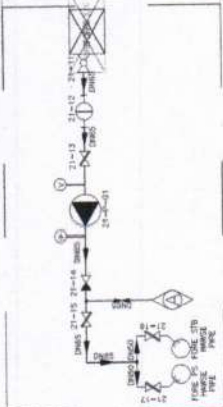
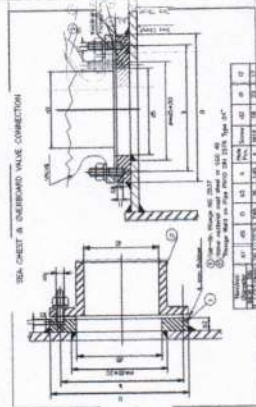
BELOW MAIN DECK PLAN VIEW



OFFICERS DECK

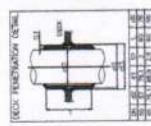


BRIDGE DECK

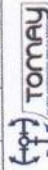


Item No.	Description	Quantity	Unit	Remarks
1	SEA CHEST & OVERBOARD VALVE CONNECTION	1	Set	
2	SEA CHEST & OVERBOARD VALVE CONNECTION	1	Set	
3	SEA CHEST & OVERBOARD VALVE CONNECTION	1	Set	
4	SEA CHEST & OVERBOARD VALVE CONNECTION	1	Set	
5	SEA CHEST & OVERBOARD VALVE CONNECTION	1	Set	
6	SEA CHEST & OVERBOARD VALVE CONNECTION	1	Set	
7	SEA CHEST & OVERBOARD VALVE CONNECTION	1	Set	
8	SEA CHEST & OVERBOARD VALVE CONNECTION	1	Set	
9	SEA CHEST & OVERBOARD VALVE CONNECTION	1	Set	
10	SEA CHEST & OVERBOARD VALVE CONNECTION	1	Set	

REVIEWED
 Checked by: [Signature]
 Date: 28-Mar-2020
 The plan approval office



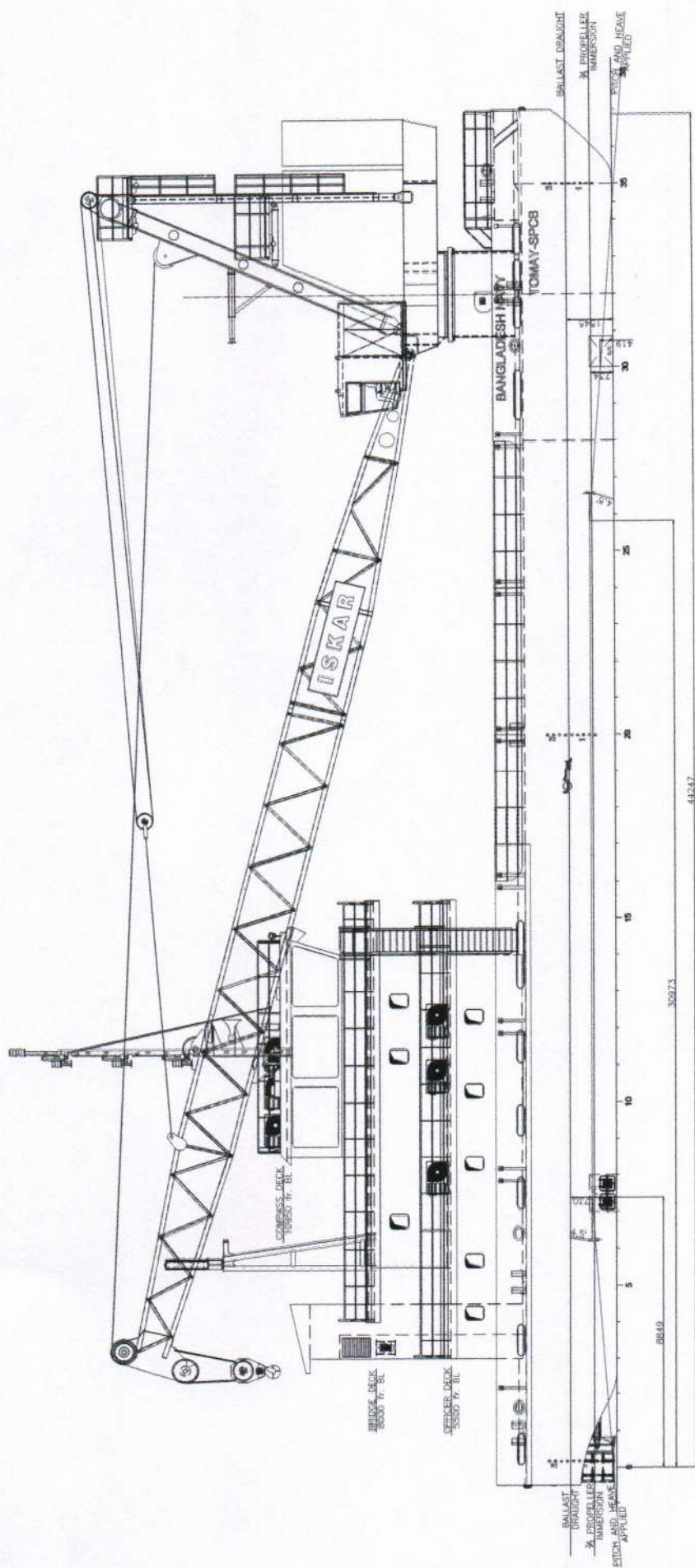
01/21/02/241 C.Y. Hydrants location on profile view have been revised.
 No Date Rev. By Revision Note



800 DWT
 OIL PRODUCT TANKER

TBN-SPCB-04
 FIRE SYSTEM

Design	Teaman TOMBAK	Shipyard Dockyard Engineering Ltd.
Drawn	Small Can YILMAZ	Owner
Class/ID	BV P-ASSE-4F	Class/ID
Control	Amnet Can YILMAZ	Control
Approved		Approved
Project No	SPCB-04	Project No
Drawing No	P-21	Drawing No
Scale	1/75	Scale
Issue Date	22.06.2024	Issue Date



L = Length between perpendiculars at the ballast: 44.036 meters

$\phi = 4.50''$

H = 0.73 m

Pos.1 - Waterline in the arrival ballast condition (acc.MSC/CIRC 1388 1.2.2)

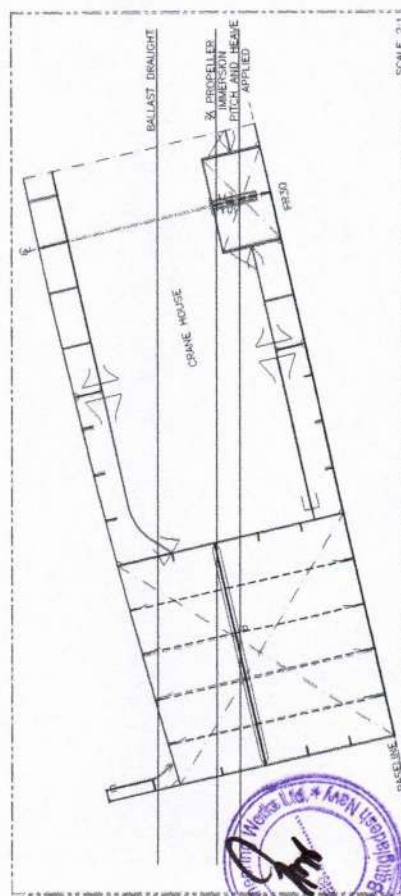
Draught MS: 1.456 m

Pos.2 - Waterline for which heave combined pitch is taken into account (acc.MSC/CIRC 1388 1.1.1)

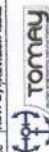
Pos.3 - Static waterline drawn through the level of 2/3 immersion of the propeller at even keel (acc.MSC/CIRC 1388 1.2.1)

Propeller diameter D - 0.97m

Axis of propeller - 0.618 m ab.BL



No. Date Rev. By/Revision Note



800 DWT

OIL PRODUCT TANKER

TBN-SPCB-04

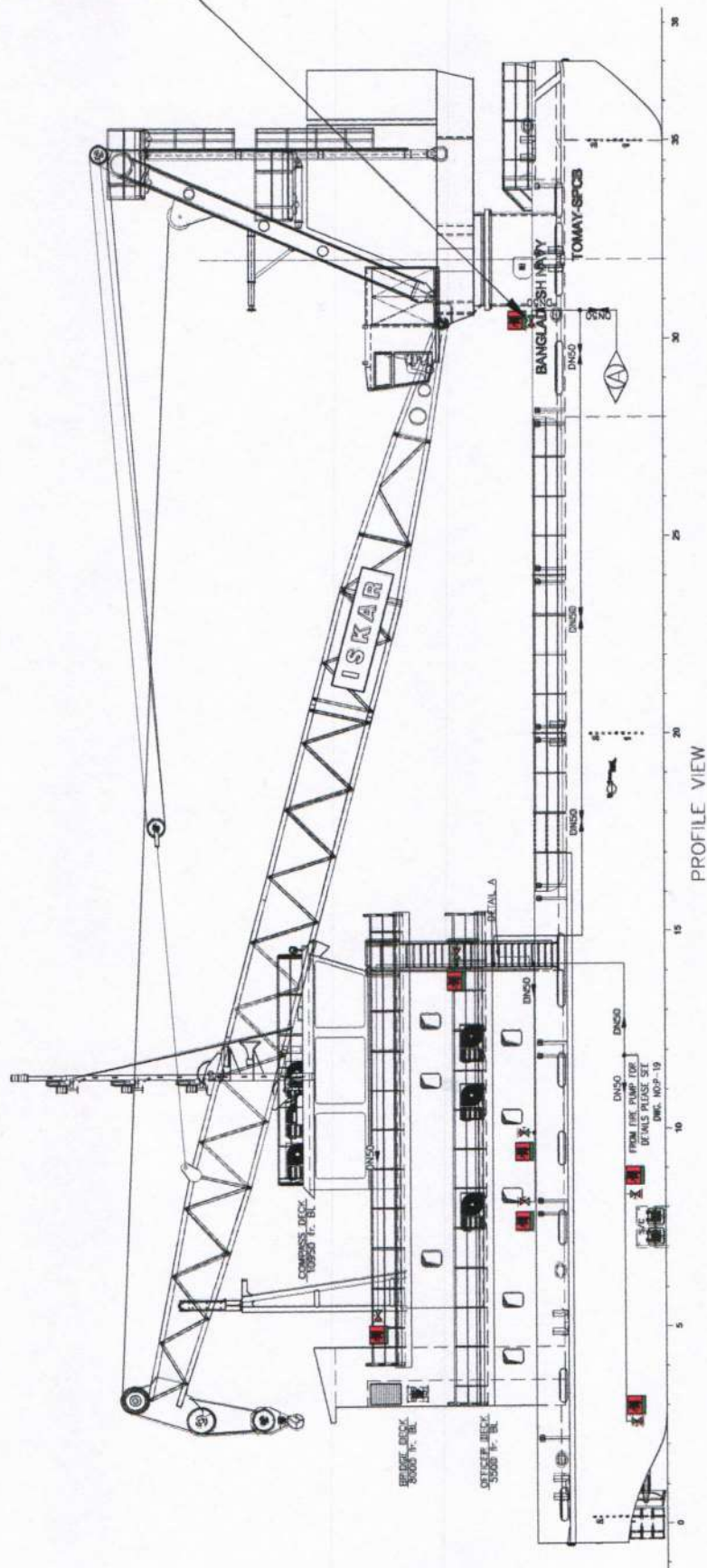
FIRE SYSTEM

Design	Thomas TOMAY	Shipyard/Design/Engineering Week Ltd
Drawn	Imam Can YILMAZ	Owner
Control	Imam Burek YILMAZ	Bangladesh Navy
Approved		Class/D
		RV / 48464F
		Project No
		RB 252
		SPCB-04
		Drawing No
		P-21
		Scale
		1:75
		Issue Date
		27.06.2024



TBN-SPCB-04 FIRE SYSTEM

OUTERMOST HYDRANT



	PIPE NOMINAL DIAMETER	DN65	DN50	TOTAL	
	TOTAL PIPE LENGTH (L)	40.83	1.5	-	m
h_F	TOTAL PIPE HEAD LOSS	9.214	0.077	9.291	m
	TOTAL FITTING CONSTANTS	4.49	2.4	-	
h_L	TOTAL FITTING LOSS	2.086	0.334	2.42	m
V	SPEED	3.019	1.653	-	m/s
h_Z	ELEVATION DIFFERENCE (PUMP TO OUTERMOST HYDRANT)			3.2	m
This calculation has been calculated according to Hazen-Williams equation.				14.911	m
$h_F =$ $(10.67 * L * Q^{1.852}) / C^{1.852} * D^{4.87}$ $C=120$ (C is the Hazen-Williams coefficient (dimensionless) 120 for steel)		PUMP INFORMATION		TOTAL HEAD LOSS	1.462 bar
$h_L = K(V^2/2g)$		FLOW RATE (Q): 25	m^3/h	2.538	bar
$h_{Total} = h_Z + h_L + h_F$		PRESSURE: 4	bar	0.254	MPa
				PRESSURE AT OUTERMOST HYDRANT	



FOR DN65 LINE			
NAME	VALUE (K)	TOTAL	TOTAL VALUE
RESTR. 1A	0.13	0	0
RESTR. 1B	0.16	0	0
RESTR. 1C	0.20	12	2.4
RESTR. 2A	0.15	0	0
RESTR. 2B	0.20	0	0
RESTR. 2C	0.25	0	0
RESTR. 3	0.50	0	0
RESTR. 4	0.75	0	0
RESTR. 5	1.00	0	0
RESTR. 6	3.00	0	0
RESTR. 7	1.50	0	0
RESTR. 8	1.00	1	1
RESTR. 9	0.90	0	0
RESTR. 10	0.04	6	0.24
RESTR. 11	0.35	0	0
RESTR. 12	0.10	0	0
RESTR. 13A	0.02	0	0
RESTR. 13B	0.40	0	0
RESTR. 14A	0.30	0	0
RESTR. 14B	0.60	0	0
RESTR. 14C	1.25	0	0
RESTR. 15	2.50	0	0
RESTR. 16	5.00	0	0
RESTR. 17	0.25	0	0
RESTR. 18	0.05	0	0
RESTR. 19	0.70	0	0
RESTR. 20	0.25	2	0.5
RESTR. 21	0.35	1	0.35
RESTR. 22	2.00	0	0
RESTR. 23	0.01	0	0
TOTAL			4.49

FOR DN50 LINE			
NAME	VALUE	TOTAL	TOTAL VALUE
RESTR. 1A	0.13	0	0
RESTR. 1B	0.16	0	0
RESTR. 1C	0.20	2	0.4
RESTR. 2A	0.15	0	0
RESTR. 2B	0.20	0	0
RESTR. 2C	0.25	0	0
RESTR. 3	0.50	0	0
RESTR. 4	0.75	0	0
RESTR. 5	1.00	0	0
RESTR. 6	3.00	0	0
RESTR. 7	1.50	0	0
RESTR. 8	1.00	0	0
RESTR. 9	0.90	0	0
RESTR. 10	0.04	0	0
RESTR. 11	0.35	0	0
RESTR. 12	0.10	0	0
RESTR. 13A	0.02	0	0
RESTR. 13B	0.40	0	0
RESTR. 14A	0.30	0	0
RESTR. 14B	0.60	0	0
RESTR. 14C	1.25	0	0
RESTR. 15	2.50	0	0
RESTR. 16	5.00	0	0
RESTR. 17	0.25	0	0
RESTR. 18	0.05	0	0
RESTR. 19	0.70	0	0
RESTR. 20	0.20	0	0
RESTR. 21	0.35	0	0
RESTR. 22	2.00	1	2
RESTR. 23	0.01	0	0
TOTAL			2.4



RESISTANCE OF VALVES AND FITTINGS TO FLOW OF FLUIDS

1		A		B		C	
		45°	0,13	60°	0,16	90°	0,20
2		A		B		C	
		45°	0,15	60°	0,20	90°	0,25
3		90° BENDS IN SERIES					0,5
4		90° BENDS IN SERIES					0,75
5		90° BENDS IN SERIES					1
6		CONFLUENCE IN TEE PIPE					3
7		ANGLE FLOW IN TEE PIPE					1,5
8		SEPARATION OF FLOW IN TEE PIPE					1
9		ANGLE FLOW IN TEE PIPE					0,9
10		STRAIGHT FLOW IN TEE PIPE					0,04
11		BRANCH PIPE (CONFLUENCE)		$Q_a=0,5Q$			
				$Z_d=0,35$	$Z_a=0,35$		
12		BRANCH PIPE (CONFLUENCE)		$Q_a=0,5Q$			
				$Z_d=0,1$	$Z_a=0,1$		
13		SEP. OF FLOW		$C_{D0.5}$	A		B
					$Z_d=0,02$	$Z_a=0,4$	
14		MITRE BENDS		A		B	
				45°	0,3	60°	0,6
15		COMBINATIONS WITH 90° PIPE ELBOWS					2,5
16		COMBINATIONS WITH 90° PIPE ELBOWS					5
17		INLET					0,25
18		INLET					0,05
19		INLET					0,7
20		BUTTERFLY VALVE					0,25
21		DISCO CHECK VALVE					0,35
22		FIRE HYDRANT					2
23		SEP. OF FLOW		$C_{D0.5}$	A		B
					$Z_d=0,01$	$Z_a=0,9$	



100

[illegible]


Tomay
 design engineering consultancy

THIS DESIGN AND ITS COPYRIGHTS ARE PROPERTIES OF TEOMAN TOMBAK. THE DRAWINGS & SPECIFICATIONS CONTAINED HEREIN SHALL NOT BE REPRODUCED WHOLE OR IN PART, OR NOT TO BE GIVEN TO THIRD PARTIES WITHOUT WRITTEN PERMISSION FROM TEOMAN TOMBAK