

GAS FORM-C

CLIPPER ODIN



«Industry leading provider of LPG and petrochemical tonnage»

FINAL

FUEL CONSUMPTION DATA NOT GUARANTEED

BASED ON:

OCIMF/SIGTTO

Ship Information Questionnaire for Gas Carriers

2nd Edition 1998

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Solvang ASA dates back to 1936. From very modest beginnings, the shipping company has now developed into one of the world's leading transporters of LPG and petrochemical gases. Solvang ASA has its headquarters in Stavanger, with offices in Oslo and the Philippines.

Solvang has a fleet of modern and efficient vessels - all built in the accordance with the most up to date specifications and fitted with new and efficient technology. Perhaps of greater importance than the modern technology is the way in which the vessels are operated – the people onboard. Good seamanship represents the very core of our business, and we place a firm focus on this area in the form of education, working on attitudes and training.

On every single sailing, we are required to demonstrate the full range of our experience and expertise. Our strength lies in reliable, high-quality deliveries. It is our goal to maintain a steady course towards the future, at the same time as making good use of the experience we have gained.

«Industry leading provider of LPG and petrochemical tonnage»

1. SECTION A – GENERAL INFORMATION

1.1 PRINCIPAL SHIP PARTICULARS

A1	PRINCIPAL SHIP PARTICULARS		CLIPPER ODIN
1.0	Date Questionnaire Completed		02.03.2017
1.1	Name of vessel		Clipper Odin
1.2	LR/IMO Number		IMO 9292101
1.3	Last Previous Name		Berge Odin
1.3.1	Date of Name change		N/A
1.4	Second Last Name Change		BW Odin
1.4.1	Date of Name change		N/A
1.5	Third Last Name Change		Odin
1.5.1	Date of Name change		N/A
1.6	Fourth Last Name Change		Clipper Odin
1.6.1	Date of Name change		42313
1.7	Flag		NIS
1.8	Port Of Registry		Stavanger
1.9	Official Number		
1.10	Call Sign		LAWQ7
1.11	VSAT		+44 2031454002/3/4
1.12	Fleet 77		870773235316
1.13	Fax		
1.14	Mini – M		
1.15	E-mail		master.clipper.odin@solvangship.no
1.16	GSM Mobile		+47 48294467
1.17	SAT C		
1.18	Vessel's MMSI Number		25832800
1.19	Max tank pressure	UNIT	
1.19.1	(1) Pressurized	[bar g]	
1.19.2	(2) Semi- Refrigerated	[bar g]	
1.19.3	(3) Refrigerated	[bar g]	0,450 (Harbour)/0,275 (Sea)
1.20	Minimum tank temperature	UNIT	
1.20.1	(1) Pressurized	[°C]	
1.20.2	(2) Semi- Refrigerated	[°C]	
1.20.3	(3) Refrigerated	[°C]	-50
A1	OWNERSHIP AND OPERATION		
1.21	REGISTERED OWNER		P/R CLIPPER ODIN DA
1.22	Visitor's address		Haakon VII Gate 8
1.22.1	City		N-4005 Stavanger
1.22.2	Country		Norway
1.23	Postal address		P.O. Box 90
1.23.1	City		N-4001 Stavanger
1.23.2	Country		Norway
1.24	Office Telephone Number		+47 51 84 84 00
1.25	Office Fax Number		+47 51 84 84 11
1.26	Office Telex Number		
1.27	Office e-mail Address		solvang-ethylene@solvangship.no
1.28	Number of Years Vessel Owned		0,3
1.29	NAME OF TECHNICAL OPERATOR		Solvang ASA
1.30	Visitor's address		Haakon VII Gate 8
1.30.1	City		N-4005 Stavanger
1.30.2	Country		Norway
1.31	Postal address		P.O. Box 90
1.31.1	City		N-4001 Stavanger
1.31.2	Country		Norway
1.32	Office Telephone Number		(+47) 51 84 84 00

1.33	Office Fax Number		(+47) 51 84 84 11
1.34	Office Telex Number		
1.35	Office e-mail Address		solvang-ethylene@solvangship.no
1.36	Number of Years as vessel Operator		1,0
1.37	Total number of vessels, Operator		23
1.38	COMMERCIAL OPERATOR		Solvang ASA
1.39	Visitor's address		Haakon VII's gt 6
1.39.1	City		N-0121 Oslo
1.39.2	Country		Norway
1.40	Postal address		P.O.Box 1734 Vika
1.40.1	City		N-0121 Oslo
1.40.2	Country		Norway
1.41	Office Telephone Number		(+47) 22 47 19 51
1.42	Office e-mail Address		chartering@solvangship.no
1.42.1	Office e-mail Address 2		operation@solvangship.no
1.43	Number of Years as vessel Operator		
1.44	Builder		DMSE
1.45	Name of Yard Vessel Built At		Seoul, Korea
1.46	Hull Number		2305
1.47	Date Keel Laid		04.04.2005
1.48	Date Launched		18.06.2005
1.49	Date Delivered		31.10.2005
1.50	Date of Completion of Major Hull Changes (If Any)		N/A
1.51	If Changes were made, specify changes and yard		N/A
A1	CLASSIFICATION	UNIT	CLIPPER ODIN
1.52	Classification Society	[Text]	DNV GL
1.53	Class Notation	[Text]	+1A1 TANKER FOR LIQUIFIED GAS
1.53.1	Cont.	[Text]	2G, EO, TMON
1.53.2	Cont.	[Text]	NAUTICUS (NB), Plus-1, NAUT-OC
1.54	If Class Society Changed, Name of Previous society	[Text]	N/A
1.55	If Class Society Changed, Date of Change	[Date]	N/A
1.56	Built in accordance with Regulations:		Approval recieved
1.56.1	IMO	[Yes/No]	YES
1.56.2	USCG	[Yes/No]	YES
1.56.3	RINA	[Yes/No]	NO
1.56.4	Other	[Yes/No]	NO
1.57	IMO Certification Certificate of Fitness		Approval recieved
1.57.1	IGC	[Yes/No]	YES
1.57.2	A328	[Yes/No]	NO
1.57.3	A329	[Yes/No]	NO
1.57.4	Letter of compliance	[Yes/No]	NO
1.57.5	Issued By	[Text]	DNV GL
1.58	Unattended Machinery Space certificate	[Yes/No]	YES (24hr)
A1	TONNAGES	UNIT	CLIPPER ODIN
1.59	Nett Registered Tonnage	[NT]	7799
1.60	Gross Tonnage	[GT]	25994
1.61	Suez Canal Tonnage		
1.61.1	Net Tonnage	[NT]	23288,3
1.61.2	Gross Tonnage	[GT]	27681,8
1.62	Panama Canal Tonnage		
1.62.1	Net Tonnage	[NT]	
1.62.2	Gross Tonnage	[GT]	

1.2 HULL DIMENSIONS

A2	HULL DIMENSIONS	UNIT	CLIPPER ODIN
2.1	Length Overall	[m]	180,0
2.2	Length Between Perpendiculars	[m]	172,0
2.3	Distance Bow to Bridge	[m]	142,10
2.4	Distance Bridge Front to Mid-Point Manifold	[m]	51,40
2.5	Distance Bow to Mid-Point Manifold	[m]	92,3
2.6	Extreme Breadth	[m]	29,2
2.7	Extreme Depth	[m]	18,2
2.8	Summer Draught	[m]	10,4
2.9	Corresponding Deadweight	[ton]	29217,0
2.10	Light Displacement/weight	[ton]	11935,0
2.11	Loaded Displacement (Summer)	[ton]	41151,0
2.12	Cargo Tank Cubic Capacity (100% full)	[m3]	38436,0
2.13	Distance from Keel to Highest Point (With mast down)	[m]	51,00
2.14	Air Draught normal ballast (With mast down)	[m]	43,7

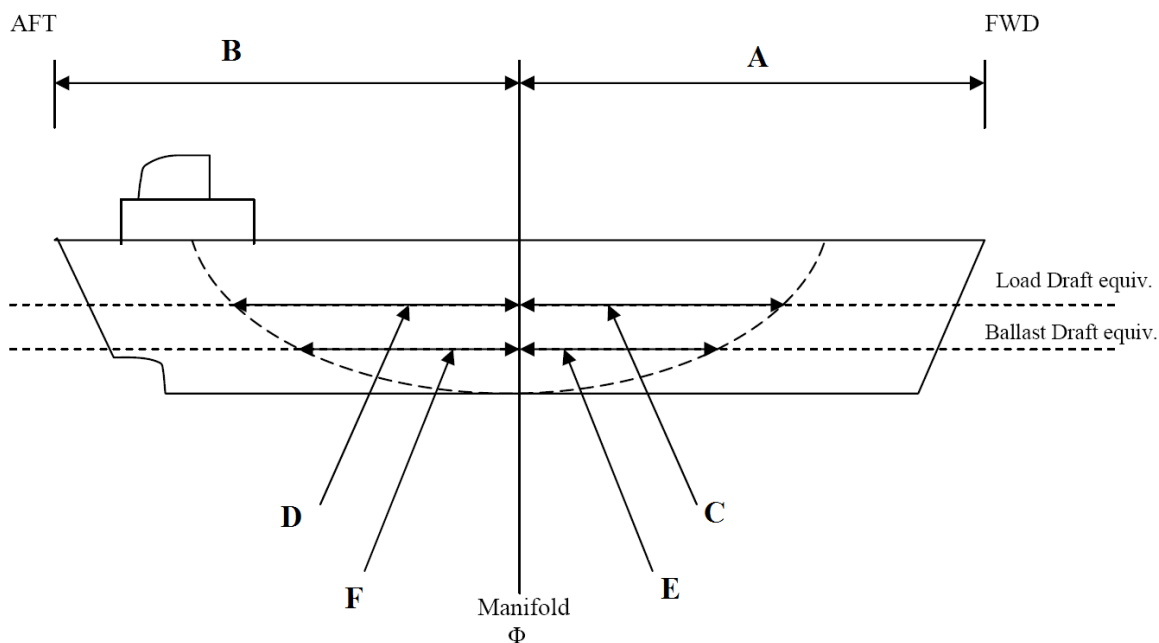
1.3 IMMERSION

A3	IMMERSION	UNIT	CLIPPER ODIN
3.1	Normal Ballast Draught	[TPC]	42,50
3.1.1	Draught	[m]	6,75
3.2	Loaded Draught	[TPC]	44,80
3.2.1	Draught	[m]	10,4

1.4 LOADED PARTICULARS

A4	LOADED PARTICULARS	UNIT	CLIPPER ODIN		
4.1	Cargo:		Propane	Ammonia	VCM
4.2	Density:	[ton/m3]	0,58	0,68	0,97
4.3	Cargo	[ton]	21884	25395	25920
4.4	Bunkers	[ton]	1500	1500	1500
4.5	DO	[ton]	95,00	95	95
4.6	Fresh Water	[ton]	90	90	90
4.7	Stores/Spares	[ton]	140	140	140
4.8	Lube Oil	[ton]	85	85	85
4.9	Ballast	[ton]	470	1140	168
4.10	Deadweight Const.	[ton]	204.6	204.6	204.6
4.11	Draught - Forward	[m]	9.00	10.38	10.20
4.11.1	Aft	[m]	10.10	10.42	10.60
4.11.2	Equiv.	[m]	9.55	10.40	10.40

1.5 PARALLEL MID-BODY DIMENSIONS



A5	PARALLEL MID-BODY DIMENSIONS	UNIT	CLIPPER ODIN
5.1	A Manifold to FWD	[m]	92,30
5.2	B Manifold to AFT	[m]	87,7
5.3	Loaded draft equiv-		
5.3.1	C Manifold to FWD side tangent line	[m]	31,4
5.3.2	D Manifold to AFT side tangent line	[m]	50,10
5.4	Ballast draft equiv.		
5.4.1	E Manifold to FWD	[m]	31,2
5.4.2	F Manifold to AFT	[m]	41,70

1.6 BUNKER CAPACITIES

A6	BUNKER CAPACITIES	UNIT	CLIPPER ODIN
6.1	HFO	[Grade]	IFO 380 (Standard)
6.1.1	Capacity @ 100 %	[m3]	2053
6.2	LSHFO	[Grade]	N/A
6.2.1	Capacity @ 100 %	[m3]	N/A
6.3	Diesel Oil	[Grade]	DO
6.3.1	Capacity @ 100 %	[m3]	735

1.7 FUEL CONSUMPTION DETAILS

Average speed and consumption, based on max force 4 Beaufort and 15% Sea Margin.

Vessel use mainly HFO for all consumers. DO/GO for INCN and when Rules & Regulations demands it for other consumers

A7	FUEL CONSUMPTION DETAILS	UNIT	CLIPPER ODIN
7.1	LOADED CONDITION		*About
7.2	Average speed over 12 months	[kn]	
7.3	Average consumption, Main engine	[ton/day]	
7.4	Consumption, AUX		
7.4.1	LPG	[ton/day]	9
7.4.2	Ethylene	[ton/day]	
7.5	Average consumption, AUX		
7.5.1	LPG	[ton/day]	5
7.5.2	Ethylene	[ton/day]	
7.6	BALLAST CONDITION		
7.7	Average speed over 12 months	[kn]	
7.8	Average consumption, Main engine	[ton/day]	
7.9	Average consumption, AUX	[ton/day]	
7.10	PORT/IDLE		
7.11	Average consumption, AUX, Loading	[ton/day]	9
7.12	Average consumption, AUX, Discharging	[ton/day]	7
7.13	Average consumption, AUX, Idle	[ton/day]	3,5
7.14	Average consumption, Boiler (depending on weather)	[ton/day]	2,0-3,0
7.15	OTHER		
7.16	INCN (When operating) - MDO/MGO	[ton/day]	
7.17	IGG-plant (When operating)	[ton/day]	
7.18	ME CONSUMPTION GRAPH/KNOTS		LOADED BALLAST
7.18.1	16,5	[ton/day]	40,0 39,0
7.18.2	16	[ton/day]	35,8 34,8
7.18.3	15	[ton/day]	28,6 27,6
7.18.4	13	[ton/day]	17,7 16,7
7.18.5		[ton/day]	

1.8 MAIN ENGINE PARTICULARS

A8	MAIN ENGINE PARTICULARS	UNIT	CLIPPER ODIN
8.1	Main Engine Make and Type	[Text]	Doosan B&W 6S50MC-C
8.2	No of Units	Pcs	1
8.3	Maximum Continuous Rating (MCR)	[kW]	9480
8.3.1	RPM	[RPM]	127
8.4	Total Available Power	kW	9 620
8.5	Normal service Power	kW	8 177

1.9 AUXILIARY PLANT

A9	AUXILIARY PLANT	UNIT	CLIPPER ODIN
9.1	Make and Type of Auxiliary Generators	[Text]	STX - MAN B&W 5L28/32H
9.2	Main Generators	[Pcs]	
9.2.1	No of Units	[Pcs]	3
9.2.2	Maximum Generator Output per Unit	[kW]	970
9.3	Generators, other	[Yes/No]	NO

9.3.1	No of Units	[Pcs]	N/A
9.3.2	Maximum Generator Output per Unit	[kW]	N/A
9.4	Shaft Generator	[kW]	N/A
9.5	Total Available Power	[kW]	2910
9.6	Emergency Generator	[kW]	
9.7	Emergency Fire Pump	[Text]	
9.7.1	Type	[Text]	Vertical Centrifugal
9.7.2	Delivery Pressure	[Bar]	8
9.7.3	Motive Power	[Text]	Electric
9.7.4	If Electrical, Indicate Power Required in kW	[kW]	33
9.8	Steering Gear Type		Electro-hydraulic
9.8.1	kW to Steer the Vessel with One Pump Unit	[kW]	35.6

1.10 POWER/SPEED INFORMATION

A10	POWER/SPEED INFORMATION	UNIT	CLIPPER ODIN
10.1	Trial Data		
10.1.1	NCR	[kW]	8536 @ 122.6 RPM
10.1.2	MCR	[kW]	9485 @ 127 RPM
10.1.3	Speed	[kn]	16.4
10.1.4	Draught	[m]	7.45
10.2	Normal Service Speed		
10.2.1	NCR	[kW]	8177
10.2.2	MCR	[kW]	9480
10.2.3	Speed	[kn]	16,5
10.2.4	Draught	[m]	9,5

1.11 THRUSTERS

A11	THRUSTERS	UNIT	CLIPPER ODIN
11.1	Make and Type	[Text]	Brundvoll CPP FU-63-LTC-1750
11.2	No. Installed	[Pcs]	1,00
11.3	Location and Rated Bollard Pull or kW output	[kW]	750

1.12 FRESH WATER

A12	FRESH WATER	UNIT	CLIPPER ODIN
12.1	Capacity of Distilled Tanks	[ton]	N/A
12.2	Capacity of F/D.W. Ts	[ton]	315,00
12.3	Daily Consumption	[ton/day]	10,00
12.4	Daily Evaporator Output	[ton/day]	30,00

1.13 BALLAST CAPACITIES AND PUMPS

A13	BALLAST CAPACITIES AND PUMPS	UNIT	CLIPPER ODIN	
13.1	Tank Capacities		Capacity [m3]	Tanks [Pcs]
13.1.1	Forepeak	[Col]	703,80	1
13.1.2	Wing or Side tanks	[Col]	10639,2	8
13.1.3	Aft Peak	[Col]	928,7	1
13.1.4	Other	[Col]		
13.1.5	Other	[Col]		
13.1.6	Total	[Col]	12 271,70	10
13.2	Ballast Pumps			
13.2.1	Capacity per pump	[m3/h]	500	
13.2.2	Model	[Text]	SVS250MS	
13.2.3	Type	[Text]	Electric	
13.2.4	Setting	[Text]	Vertical Centrifugal	
13.3	No of Pumps	[Pcs]	2	
13.4	Total Capacity	[m3/h]	1000	
13.5	Location	[Text]	Engine	
13.6	Control Location	[Text]	CCR / ECR / Bridge	

1.14 MOORING

A14	MOORING EQUIPMENT	UNIT	CLIPPER ODIN			
14.1	Mooring wires (On drums)		FWD	FWD DECK	AFT DECK	POOP
14.1.1	Number	[Pcs]				
14.1.2	Diameter	[mm]				
14.1.3	Length	[m]				
14.1.4	Maximum Breaking Load	[ton]				
14.2	Mooring wire tails		FWD	FWD DECK	AFT DECK	POOP
14.2.1	Number	[Pcs]				
14.2.2	Type	[Text]				
14.2.3	Diameter	[mm]				
14.2.4	Length	[m]				
14.2.5	Maximum Breaking Load	[ton]				
14.3	Mooring ropes (On drums)		FWD	FWD DECK	AFT DECK	POOP
14.3.1	Number	[Pcs]	6	2	2	6
14.3.2	Type	[Text]	Polyester	Polyester	Polyester	Polyester
14.3.3	Diameter	[mm]	52	52	52	52
14.3.4	Length	[m]	220	220	220	220
14.3.5	Maximum Breaking Load	[ton]	58,8	58,8	58,8	58,8
14.4	Mooring winches		FWD	FWD DECK	AFT DECK	POOP
14.4.1	Number	[Pcs]	6	2	2	6
14.4.2	[S]ingle/[D]ouble drums	[S/D]	D	D	D	T
14.4.3	Split drums	[Yes/No]	YES	YES	YES	YES
14.4.4	Motive power	[Text]				
14.4.5	Heaving power	[ton]	15	15	15	15
14.4.6	Brake capacity	[ton]	46,9	46,9	46,9	46,9
14.4.7	Hauling speed	[m/s]	15	15	15	15
14.5	Wires/ropes not on drums		WIRES	ROPES	EM'GENCY	
14.5.1	Number	[Pcs]		4		
14.5.2	Type	[Text]		Polyester		
14.5.3	Diameter	[mm]		52		
14.5.4	Length	[m]		220		

14.5.5	Maximum Breaking Load	[ton]	58,8
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A14	ANCHORS AND WINDLASSES	UNIT	CLIPPER ODIN
14.5.1	Windlass Motive Power (e.g. Steam, Hydraulic)	[Text]	Hydraulic
14.5.2	Hauling Power	[ton]	35,25
14.5.3	Brake Holding Power	[ton]	169,2
14.5.4	Anchor Type	[Text]	HHP Stockless Bower Anchor
14.5.5	Weight	[kg]	6 225
14.5.6	Is Spare Carried	[Yes/No]	YES
14.5.7	Cable Diameter	[mm]	70
14.5.8	No of Shackles Port	[Pcs]	11
14.5.9	No of Shackles Starboard	[Pcs]	10
14.6	TOWING EQUIPMENT		
14.6.1	Is Ship fitted with a Towing Bracket AFT(drum)	[Yes/No]	YES
14.6.2	If Yes, state SWL	[ton]	100
14.6.3	Is Towing Chain provided	[Yes/No]	YES
14.6.4	Dimensions of Towing Wire – Diameter	[mm]	57
14.6.5	Length	[m]	80
14.7	Windage on Ballast Draught		
14.7.1	End-on	[m2]	768
14.7.2	Lateral	[m2]	2888

Mooring diagram is provided in the appendix.

1.15 NAVIGATIONAL EQUIPMENT

A15	NAVIGATIONAL EQUIPMENT	UNIT	CLIPPER ODIN
15.1	Magnetic Compass	[Yes/No]	YES
15.2	Off Course Alarm – Magnetic	[Yes/No]	YES
15.3	Gyro Compass	[Yes/No]	YES
15.3.1	Specify number	[Pcs]	2
15.4	Off Course Alarm – Gyro	[Yes/No]	YES
15.5	Bridge Repeaters	[Yes/No]	YES
15.5.1	Specify Number	[Pcs]	5
15.6	Radar 3 GHz	[Yes/No]	YES
15.7	Radar 9 GHz	[Yes/No]	YES
15.8	Are Radars Gyro Stabilized	[Yes/No]	YES
15.9	Radar Plotting Equipment	[Yes/No]	YES
15.10	ARPA	[Yes/No]	YES
15.11	ECDIS (Electric Display and Information System)	[Yes/No]	YES
15.11.1	Make/Type	[Text]	Transas 4000
15.12	Depth Echo Sounder with Recorder	[Yes/No]	YES
15.13	Depth Echo Sounder without Recorder	[Yes/No]	NO
15.14	Speed/Distance Indicator	[Yes/No]	YES
15.15	Doppler Log	[Yes/No]	YES
15.16	Speed of Approach Doppler	[Yes/No]	YES
15.17	Rudder Angle Indicator	[Yes/No]	YES
15.18	Rudder Angle Indicator on Each Bridge Wing	[Yes/No]	YES
15.19	R.P.M Indicator	[Yes/No]	YES
15.20	R.P.M Indicator on Each Bridge Wing	[Yes/No]	YES
15.21	Controllable Propeller Pitch Indicator	[Yes/No]	N/A
15.22	Thruster (s) indicator	[Yes/No]	N/A
15.23	Rate of turn Indicator	[Yes/No]	YES
15.24	Radio Direction Finder	[Yes/No]	NO
15.25	NAVTEX Receiver	[Yes/No]	YES
15.26	GPS	[Yes/No]	YES
15.27	Transit SATNAV	[Yes/No]	NO
15.28	DECCA navigator	[Yes/No]	NO
15.29	Omega	[Yes/No]	NO
15.30	Loran C	[Yes/No]	NO
15.31	Weather Route System	[Yes/No]	YES
15.32	Sextant(s)	[Yes/No]	YES
15.33	Signal Lamp ALDIS	[Yes/No]	YES
15.34	Anemometer	[Yes/No]	YES
15.35	Engine Order Recorder	[Yes/No]	YES
15.36	Course Recorder	[Yes/No]	YES
15.37	Steering motor controls controls fitted on bridge wings	[Yes/No]	YES
15.38	Is bridge Equipped with a “Dead Man” Alarm Equipment	[Yes/No]	YES
15.39	What chart outfit coverage is provided	[Yes/No]	
15.39.1	Worldwide	[Yes/No]	YES
15.39.2	Limited	[Yes/No]	NO
15.39.3	If Limited Please Indicate	[Text]	N/A
15.40	Formal Chart Correction System in use	[Yes/No]	YES
15.41	Electronic Chart System in use	[Yes/No]	YES

1.16 COMMUNICATIONS EQUIPMENT

A16	COMMUNICATIONS EQUIPMENT	UNIT	CLIPPER ODIN
16.1	Main Transmitted Including Radio Telephone Distress Frequency	[Yes/No]	YES
16.2	Main Receiver Including Radio Telephone Distress Frequency	[Yes/No]	YES
16.3	Radio Telephone Distress Frequency Watch Receiver	[Yes/No]	NO
16.4	Main Radio Antenna	[Yes/No]	YES
16.5	Reserve Radio Antenna	[Yes/No]	NO
16.6	Main and Reserve Installations Electrically Separate and Independent	[Yes/No]	YES
16.7	2182 kHz Bridge auto Alarm	[Yes/No]	NO
16.8	Alarm Signal Generating Device	[Yes/No]	NO
16.9	VHF Radio (s)	[Yes/No]	YES
16.9.1	Specify Number	[Pcs]	3
16.10	Portable VHF/UHF Radios	[Yes/No]	YES
16.10.1	Specify Type and Number	[Pcs]	SAILOR SP3520
16.11	Are Sets Intrinsically Safe	[Yes/No]	YES
16.12	Inmarsat Satellite System	[Yes/No]	YES
16.13	Specify System Type A, B, C, F or VSAT	[Text]	FBB, VSAT
16.14	Is the ship equipped as per GMDSS Requirements	[Yes/No]	YES
16.15	If Yes, which area of operation is vessel certified to operate in	[Text]	A1, A2, A3
16.15.1	EPIRB	[Yes/No]	YES
16.15.2	SARTS	[Yes/No]	YES
16.16	Emergency Lifeboat Transceiver	[Yes/No]	NO
16.17	At least Three Survival craft Two-way Radio Telephone Apparatus	[Yes/No]	YES
16.18	Full Set of Publications	[Yes/No]	YES

2. SECTION B – CARGO SYSTEMS

2.1 GENERAL INFORMATION

B1	CARGO - GENERAL INFORMATION		CLIPPER ODIN	
1.1	List Products Which the Ship is Certified to Carry			
1.1.1	1.	Ammonia, anhydrous		
1.1.2	2.	Butane		
1.1.3	3.	Butane/propane mixture		
1.1.4	4.	Butadiene		
1.1.5	5.	Butylene		
1.1.6	6.	Propane		
1.1.7	7.	Propylene		
1.1.8	8.	Vinyl Chloride		
1.1.9	9.			
1.1.10	10.			
1.1.11	11.			
1.1.12	12.			
1.1.13	13.			
1.1.14	14.			
1.1.15	15.			
1.1.16	16.			
1.1.17	17.			
1.1.18	18.			
1.1.19	19.			
1.1.20	20.			
1.1.21	21.			
1.1.22	22.			
1.1.23	23.			
1.1.24	24.			
1.2	Transport and Carriage Condition		UNIT	
1.3	Minimum Allowable Tank Temperature		[Celsius]	-50
1.3.1	Maximum Allowable Tank Pressure (Seagoing setting)		[bar g]	0,275
1.3.2	Maximum Allowable Tank Pressure (Harbour setting)		[bar g]	0,4
1.4	Grades which can be Loaded or Discharged Simultaneously		[Pcs]	2
1.5	Grades which can be Transported Simultaneously		[Pcs]	2
1.6	Number of Products Re-liquefied Simultaneously		[Pcs]	2
1.7	State Natural Tank Segregations (Possible combinations)		UNIT	
1.7.1	1.		[Tank]	1+2 +3
1.7.2	2.		[Tank]	
1.7.3	3.		[Tank]	

2.2 CARGO TANKS

B2	CARGO TANKS	UNIT	CLIPPER ODIN
2.1	Cargo Tanks		
2.1.1	Type	[Text]	Type A
2.1.2	Material	[Text]	Carbon Manganese LT
2.2	Maximum Allowable Relief Valve setting	[bar g]	0,4
2.3	Safety Valve Set Pressure – If Variable Give Range of Pilot Valves		
2.3.1	Seagoing setting	[bar g]	0,275
2.3.2	Harbour setting	[bar g]	0,45
2.4	Maximum Vacuum	[bar g]	0,05
2.5	Maximum Cargo Density (98% full)	[kg/m3]	970
2.6	Maximum Rate of Cool-Down	[C/h]	10

2.7	State any Limitations regarding Partially Filled Tanks	[Text]	70.7% -VCM
2.7.1	Cont.	[Text]	
2.8	State Allowable Combinations of Filled and Empty Tanks	[Text]	No.3 full, 1&2 empty
2.8.1	Cont.	[Text]	

2.3 CARGO TANK CAPACITIES

B3	CARGO TANK CAPACITIES	UNIT	CLIPPER ODIN				
3.1	Capacity	Tank	1	2	3	4	Total
3.1.1	100 %	[m3]	11528	15336	11638		38501
3.1.2	98 %	[m3]	11297	15029	11405		37731
3.2	Cargo						
3.2.1	iso-butane	[ton]	6711	8927	6774		22412
3.2.2	Propane	[ton]	6552	8717	6615		21884
3.2.3	Butadiene	[ton]	7355	9784	7425		24563
3.2.4	Propylene	[ton]	6891	9168	6957		23016
3.2.5	Ammonia	[ton]	7682	10220	7755		25657
3.2.6	Butylene/Butenes	[ton]	6711	8927	6774		22412
3.2.7	n-butane	[ton]	6790	9032	6854		22676
3.2.8	Ethylene	[ton]					

- Cargoes may not be applicable for vessel. Check which cargoes the vessel is certified to carry.

2.4 LOADING RATES

VR = Vapour Return, W/O VPR = Without Vapour Return

B4	LOADING RATES	UNIT	CLIPPER ODIN			
			REFRIGERATED		PRESSURE	
4.1	Cargo	[m3/h]	VR	W/O VR	VR	W/O VR
4.1.1	1 Butane	[m3/h]	1860	1600		
4.1.2	2 Propane	[m3/h]	1870	1400		
4.1.3	3 Butadiene	[m3/h]	1940	1650		
4.1.4	4 Propylene	[m3/h]	1760	1320		
4.1.5	5 Ammonia	[m3/h]	2050	1700		
4.1.6	6	[m3/h]				
4.1.7	7	[m3/h]				
4.1.8	8	[m3/h]				
4.1.9	9	[m3/h]				
4.1.10	10	[m3/h]				
4.1.11	11	[m3/h]				
4.1.12	12	[m3/h]				
4.1.13	13	[m3/h]				
4.1.14	14	[m3/h]				
4.1.15	15	[m3/h]				
4.1.16	16	[m3/h]				
4.1.17	17	[m3/h]				
4.1.18	18	[m3/h]				
4.1.19	19	[m3/h]				
4.1.20	20	[m3/h]				

2.5 DISCHARGING – GENERAL

Pumping curves for cargo main pumps and booster pumps are given in the appendix.

B5	DISCHARGING – GENERAL	UNIT	CLIPPER ODIN
5.1	Cargo Pumps	[Text]	Deepwell
5.1.1	Type of Pumps	[Text]	Centrifugal
5.1.2	Number per Tank	[Pcs]	2
5.1.3	Rate (per pump)	[m3/h]	465
5.1.4	Delivery Head	[mlc]	130
5.1.5	Maximum Density	[kg/m3]	970
5.2	Booster Pumps		
5.2.1	Type of Pumps	[Text]	Centrifugal
5.2.2	Number	[Pcs]	2
5.2.3	Rate (per pump)	[m3/h]	465
5.2.4	Delivery Head	[mlc]	130
5.2.5	Maximum Density	[kg/m3]	970

2.6 DISCHARGE PRESSURE

B6	DISCHARGE PERFORMANCE	UNIT	CLIPPER ODIN
6.1	Fully Refrigerated, Full Cargo Discharge Times (all pumps):		VR W/O VR
6.1.1	Manifold Back Pressure (1 kg/cm2) x	[h]	17 17
6.1.2	Manifold Back Pressure (5 kg/cm2) x	[h]	23 23
6.1.3	Manifold Back Pressure (10 kg/cm2) ^	[h]	52 52
6.2	Pressurized, Full Cargo Discharge Times (all pumps):		VR W/O VR
6.2.1	Manifold Back Pressure (1 kg/cm2) ^	[h]	
6.2.2	Manifold Back Pressure (5 kg/cm2) ^	[h]	
6.2.3	Manifold Back Pressure (10 kg/cm2) ^	[h]	

x = Based on largest single tank volume

^ = Based on discharging tanks one at a time

2.7 UNPUMPABLES

B7	UNPUMPABLES	UNIT	CLIPPER ODIN
7.1	Unpumpables, liquid		
7.1.1	Tank 1	[m3]	13,8
7.1.2	Tank 2	[m3]	17,6
7.1.3	Tank 3	[m3]	13,8
7.1.4	Tank 4	[m3]	
7.1.5	Total	[m3]	45,2

2.8 VAPORISING UNPUMPABLES

B8	VAPORISING UNPUMPABLES	UNIT	CLIPPER ODIN
8.1	Process Used	[Text]	Hot Gas / Puddle heating
8.2	Time to Vaporize Liquid Unpumpables After Discharge:		
8.2.1	Propane	[h]	13
8.2.2	Butane	[h]	15
8.2.3	Ammonia	[h]	87
8.2.4		[h]	
8.2.5		[h]	

2.9 RELIQUEFACTION PLANT

B9	RELIQUEFACTION PLANT	UNIT	CLIPPER ODIN
9.1	Plant Design Conditions		
9.1.1	Air Temperature	[°C]	45
9.1.2	Sea Temperature	[°C]	32
9.2	Plant Type		
9.2.1	Single Stage/Direct	[Yes/No]	YES
9.2.2	Two Stage / Direct	[Yes/No]	YES
9.2.3	Three Stage / Direct	[Yes/No]	YES
9.2.4	Coolant Type	[Text]	Seawater
9.3	Compressors		
9.3.1	Type	[Text]	Sulzer + Burckhardt
9.3.2	Model	[Text]	3K-140-3A
9.3.3	Number	[Psc]	3
9.3.4	Capacity (per unit)	[m3/h]	Varies
9.3.5	Are they oil free?	[Yes/No]	YES

2.10 COOLING CAPACITY

B10	COOLING CAPACITY	UNIT	CLIPPER ODIN	
10.1	State Cooling Capacity (per compressor, 2-stage @ - 0.4 bar g)		SW 32 [°C]	SW 15 [°C]
10.1.1	1 Propane @ -42 [°C]	[kcal/h]	274598	324650
10.1.2	2 Com. Propane (5 mol. % ethane @ -42 [°C]	[kcal/h]	277909	307966
10.1.3	3 Propane @ -20 [°C]	[kcal/h]	N/A	N/A
10.1.4	4 Propane @ - 5 [°C]	[kcal/h]	N/A	N/A
10.1.5	5 Iso -Butane @ -5 [°C]	[kcal/h]	361845	435848
10.1.6	6 Ammonia @ -33[°C]	[kcal/h]	463712	481772
10.1.7	7	[kcal/h]		

2.11 CARGO TEMP. LOWERING CAPABILITY

B11	CARGO TEMPERATURE LOWERING CAPABILITY	UNIT	CLIPPER ODIN
11.0	Time taken to lower the temp of:		
11.1	Propane from ...0 [°C] to -42 [°C]	[h]	N/A
11.2	-5[°C]to -42[°C]	[h]	N/A
11.3	-38[°C] to -42[°C]	[h]	88/75
11.4	+20[°C] to -0,5[°C]	[h]	N/A
11.5	+10[°C] to -0,5[°C]	[h]	N/A
11.6	Butane from +20[°C] to -0.5[°C]	[h]	N/A
11.7	+10[°C] to -0.5[°C]	[h]	N/A
11.8	+ 10[°C] to -5[°C]	[h]	N/A
11.9	Iso-butane -5[°C] to -12[°C]	[h]	138/94
11.10	Propylene from -42[°C] to -47[°C]	[h]	125/101
11.11	Ammonia from -30[°C] to -33[°C]	[h]	108/93

2.12 INERT GAS

B12	INERT GAS	UNIT	CLIPPER ODIN
12.1	Main IG Plant		
12.1.1	Type of System	[Text]	Combustion
12.1.2	Capacity	[m3/h]	3500
12.1.3	Type of Fuel Used	[Text]	MGO
12.1.4	Composition of I.G.		
12.1.5	Max O2	[%]	0,5
12.1.6	Max CO2	[%]	14
12.1.7	Max Nox	[%]	100
12.1.8	Max N2	[%]	Balance
12.2	Lowest Dewpoint Achievable	[°C]	-45
12.3	Used for	[Text]	Purging cargo tanks
12.4	Auxiliary IG or Nitrogen Plant		N2
12.4.1	Type of System	[Text]	Membrane
12.4.2	Capacity	[m3/h]	20
12.5	Lowest Dewpoint Achievable	[°C]	-70
12.6	Used for	[Text]	Purging of lines/comp
12.7	Nitrogen generator installed?	[Yes/No]	NO
12.7.1	Liquid storage Capacity	[m3]	N/A
12.7.2	Daily Boil-Off Loss	[m3]	N/A
12.7.3	Maximum Supply Pressure	[Bar]	N/A
12.7.4	Supply Capacity	[m3/h]	N/A
12.7.5	Used For	[Text]	N/A
12.7.6	HP Nitrogen	[Nm3]	N/A

2.13 CARGO TANK INTERTING/DE-INERTING

B13	CARGO TANK INTERTING/DE-INERTING	UNIT	CLIPPER ODIN
13.1	Time Taken From Fresh Air to Under 5% O2 at -25oC Dewpoint	[h]	21
13.2	Time taken from cargo Vapor to Fully Inert at - 25oC Dewpoint when:		
13.2.1	IG density less than product	[h]	N/A
13.2.2	IG density greater than product	[h]	35

2.14 GAS FREEING TO FRESH AIR

B14	GAS FREEING TO FRESH AIR	UNIT	CLIPPER ODIN
14.1	Plant Used	[Text]	Gas free fans
14.1.1	Number of fans	[Pcs]	2
14.1.2	Total capacity	[m3/h]	40000
14.2	Time taken from Fully Inert Condition to Fully Breathable Air	[h]	4

2.15 CHANGING CARGO GRADES

The table below show the number of hours needed to change grades from the removal of unpumpables to tanks fit to load. The quantity of inert gas consumed during the operation is also indicated.

B15	CHANGING CARGO GRADES	UNIT	CLIPPER ODIN	
15.1	From propane to:		[h]	[m3]
15.1.1	Iso-butane	[COL]	N/A	
15.1.2	Ammonia	[COL]	140	
15.2	From Iso-butane to:		[h]	[m3]
15.2.1	Propane	[COL]	N/A	
15.2.2	Ammonia	[COL]	140	
15.3	From ammonia to:		[h]	[m3]
15.3.1	Propane	[COL]	190	
15.3.2	Iso-butane	[COL]	190	

2.16 DECK TANK CAPACITIES

B16	DECK TANK CAPACITIES	UNIT	CLIPPER ODIN
16.1	Deck tank	[Yes/No]	YES
16.2	Deck tank capacities		293/146
16.2.1	1 Propane	[ton]	167,3/83,4
16.2.2	2 Ammonia	[ton]	195,4/97,4
16.2.3	3 Ethylene	[ton]	N/A
16.3	Maximum Allowable Relief Valve Setting	[bar g]	18
16.4	Lowest Permissible Temperature	[°C]	-50
16.5	Materials	[Text]	LT Carbon Manganese Steel

2.17 PRE-LOADING CONDITIONS

The table below indicates time and quantity of coolant required to cool down cargo tanks from ambient temperature and fully gassed up state sufficient to allow loading to commence.

B17	PRE-LOADING CONDITIONS	UNIT	CLIPPER ODIN		
17.1	Product		Quantity [ton]	VPR [h]	W/O VPR [h]
17.1.1	Propane	[COL]	90	12	35
17.1.2	Butane	[COL]			
17.1.3	Butadiene	[COL]			
17.1.4	Propylene	[COL]			
17.1.5	Ammonia	[COL]	85	7	15
17.1.6	VCM	[COL]			

2.18 VAPORISER

B18	VAPORISER	UNIT	CLIPPER ODIN
18.1	Type of Vaporizer	[Text]	Ttube
18.2	Number Fitted	[Pcs]	1
18.3	Capacity (per unit) – Propane	[Nm3/h]	3500
18.3.1	Liquid Supply rate	[m3/h]	15.57
18.3.2	Delivery temperature	[°C]	15
18.4	Capacity (per unit) – Ammonia	[Nm3/h]	3500
18.4.1	Liquid Supply rate	[m3/h]	19.28
18.4.2	Delivery temperature	[°C]	15
18.5		[Nm3/h]	
18.5.1		[m3/h]	
18.5.2		[°C]	

2.19 BLOWER

B19	BLOWER	UNIT	CLIPPER ODIN
19.1	Type of Blower	[Text]	Centrifugal
19.2	Number fitted	[Pcs]	2
19.3	Rated Capacity (per unit)	[Nm ³ /h]	20000
19.4	Delivery Pressure	[Bar]	0.150

2.20 CARGO RE-HEATER

Cargo re-heater capacities are given in the appendix.

B20	CARGO RE-HEATER	UNIT	CLIPPER ODIN
20.1	Type of re-heater	[Text]	Tube
20.2	Number Fitted	[Pcs]	1
20.3	Heating Medium	[Medium]	Sea water/Glycol
20.4	Discharge rates, SW = 15[°C], to raise product temperature:		
20.4.1	Propane from -42[°C] to 0[°C]	[ton/h]	267
20.4.2	Ammonia from -33[°C] to 0[°C]	[ton/h]	224
20.5	Cargo Heater Curve:	[Yes/No]	Yes

2.21 HYDRATE CONTROL

B21	HYDRATE CONTROL	UNIT	CLIPPER ODIN
21.1	Type of Depressant	[Medium]	Ethanol
21.2	Depressant Freezing Point Temperature	[°C]	-114
21.3	Max capacity of depressant	[Liter]	10000
21.4	Means of Injection	[Text]	Hand Pump
21.5	Any other system used	[Text]	Blowing with hot gas

2.22 CARGO MEASUREMENT

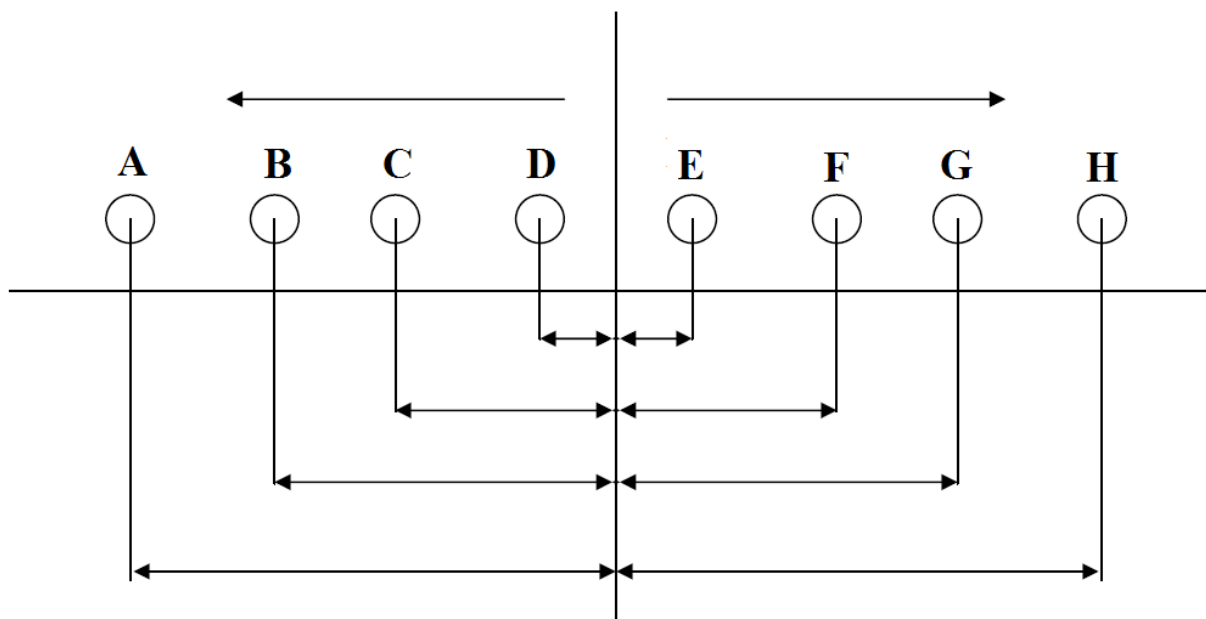
B22	CARGO MEASUREMENT	UNIT	CLIPPER ODIN
22.1	Level Gauges		
22.1.1	Are level gauges Local or Remote	[Text]	Local/Remote
22.1.2	Manufacturer	[Text]	Kongsberg Maritime
22.1.3	Type	[Text]	Radar Base GL100
22.1.4	Rated Accuracy	[-]	2mm
22.1.5	Certifying Authority	[Text]	NKKK
22.2	Temperature Transmitter		
22.2.1	Manufacturer	[Text]	Frenzelit-Werke Gmbh & Co. KG
22.2.2	Type	[Text]	Digital
22.2.3	Rated Accuracy	[-]	0.07 deg C
22.2.4	Certifying Authority	[Text]	NKKK
22.3	Pressure Transmitter		
22.3.1	Manufacturer	[Text]	Frenzelit-Werke Gmbh & Co. KG
22.3.2	Type	[Text]	Digital
22.3.3	Rated Accuracy	[-]	0,0033
22.3.4	Certifying Authority	[Text]	NKKK
22.4	Oxygen Analyzer		

22.4.1	Manufacturer	[Text]	Riken Keiki
22.4.2	Type	[Text]	GX8000/GX2001AS
22.4.3	Lowest Level Measurable		
22.5	Fixed Gas Analyzer		
22.5.1	Manufacturer	[Text]	Bravida
22.5.2	Type	[Text]	Moss Gas Detection LFG.7
22.6	Cargo Tank Calibration Tables		
22.6.1	Are Cargo Tank Calibration tables available	[Yes/No]	YES
22.6.2	Measuring Company	[Text]	Intertek Caleb Brett- KIMSKO
22.6.3	Certifying Authority	[Text]	Intertek Caleb Brett- KIMSKO
22.6.4	Calibration calculated tocm ½ cm.....	[Yes/No]	YES
22.6.5	Tables established tocmcm.....mm	[Yes/No]	YES
22.6.6	Trim and List corrections Available	[YES/NO]	YES
22.6.7	Temperature Corrections available	[YES/NO]	YES
22.6.8	Float Gauge Tape Corrections Available	[YES/NO]	YES

2.23 CARGO SAMPLING

B23	CARGO SAMPLING	UNIT	CLIPPER ODIN			
23.1	Cargo tank sample level	[Tank]	1	2	3	4
23.1.1	Top	[Yes/No]	Yes	Yes	Yes	
23.1.2	Middle	[Yes/No]	Yes	Yes	Yes	
23.1.3	Bottom	[Yes/No]	Yes	Yes	Yes	
23.2	Can sample be drawn from?					
23.2.1	Tank Vapor Outlet	[Yes/No]	YES			
23.2.2	Manifold Liquid Line	[Yes/No]	YES			
23.2.3	Manifold Vapor Line	[Yes/No]	YES			
23.2.4	Pump Discharge Line	[Yes/No]	YES			
23.3	State connection					
23.3.1	Type	[Text]	Closed loop			
23.3.2	Size	[Inch]	0,5			

2.24 CARGO MANIFOLD



B24	CARGO MANIFOLD	UNIT	CLIPPER ODIN			
24.1	Distance from center of manifold to:					
24.1.1	Stern	[m]	87,7			
24.1.2	Bow	[m]	92,3			
24.1.3	A	[mm]	7450			
24.1.4	B	[mm]	6450			
24.1.5	C	[mm]	4950			
24.1.6	D	[mm]	2950			
24.1.7	E	[mm]	950			
24.1.8	F	[mm]	1050			
24.1.9	G	[mm]	2550			
24.1.10	H	[mm]				
24.2	Flange		Duty [Bar]	ASA	Size ["]	[R]aised/[F]lat
24.2.1	A	[COL]	Diesel Oil	100	4	
24.2.2	B	[COL]	Fuel Oil	200	8	
24.2.3	C	[COL]	Cargo Liquid	350	14	
24.2.4	D	[COL]	Cargo Vapour	200	8	
24.2.5	E	[COL]	Cargo Vapour	200	8	
24.2.6	F	[COL]	Cargo Liquid	350	14	
24.2.7	G	[COL]	Fuel Oil	200	8	
24.2.8	H	[COL]				
24.3	Height above uppermost continuous deck	[mm]	1400			
24.4	Distance from ship side	[mm]	3000			
24.5	Height above load waterline	[mm]	9200			
24.6	Height above light waterline	[mm]	12700			

2.25 CARGO REDUCERS

B25	CARGO REDUCERS	CLIPPER ODIN
25.0	ANSI 300	ANSI 300 -150
25.1	14"/300-16"/300 = 2 PCS	14"/300-16"/150 = 2 PCS
25.2	14"/300-12"/300 = 2 PCS	14"/300-12"/150 = 2 PCS
25.3	14"/300-10"/300 = 2 PCS	14"/300-10"/150 = 2 PCS
25.4	14"/300-8"/300 = 2 PCS	14"/300-8"/150 = 2 PCS
25.5		
25.6		
25.7		
25.8		
25.9		
25.0	ANSI 150	FUEL
25.1	8"/150-12"/150 = 2 PCS	8"/200 ASA-8"/200 ASA = 4 PCS
25.2	8"/150-10"/150 = 2 PCS	8"/200 ASA-4"/100 ASA = 2 PCS
25.3	8"/150-8"/150 = 2 PCS	8"/100 ASA-4"/100 ASA = 2 PCS
25.4	8"/150-6"/150 = 2 PCS	
25.5	8"/150-4"/150 = 2 PCS	
25.6	8"/150- 12"/300 = 1 PCS	
25.7		
25.8		
25.9		

2.26 CONNECTION TO SHORE FOR ESD/COM SYSTEMS

B26	CONNECTIONS TO SHORE FOR ESD AND COM. SYSTEMS	UNIT	CLIPPER ODIN
26.1	Is ESD connection to Shore available?	[Yes/No]	YES
26.1.1	System	[Text]	Pneumatic Loop
26.1.2	Type of plug	[Text]	SIGTO
26.3	Is Hose or cables Available on Board	[Yes/No]	YES
26.3.1	Specify Length	[m]	50
26.3.2	Specify type	[Text]	SIGTO

2.27 MANIFOLD DERRICK/CRANE

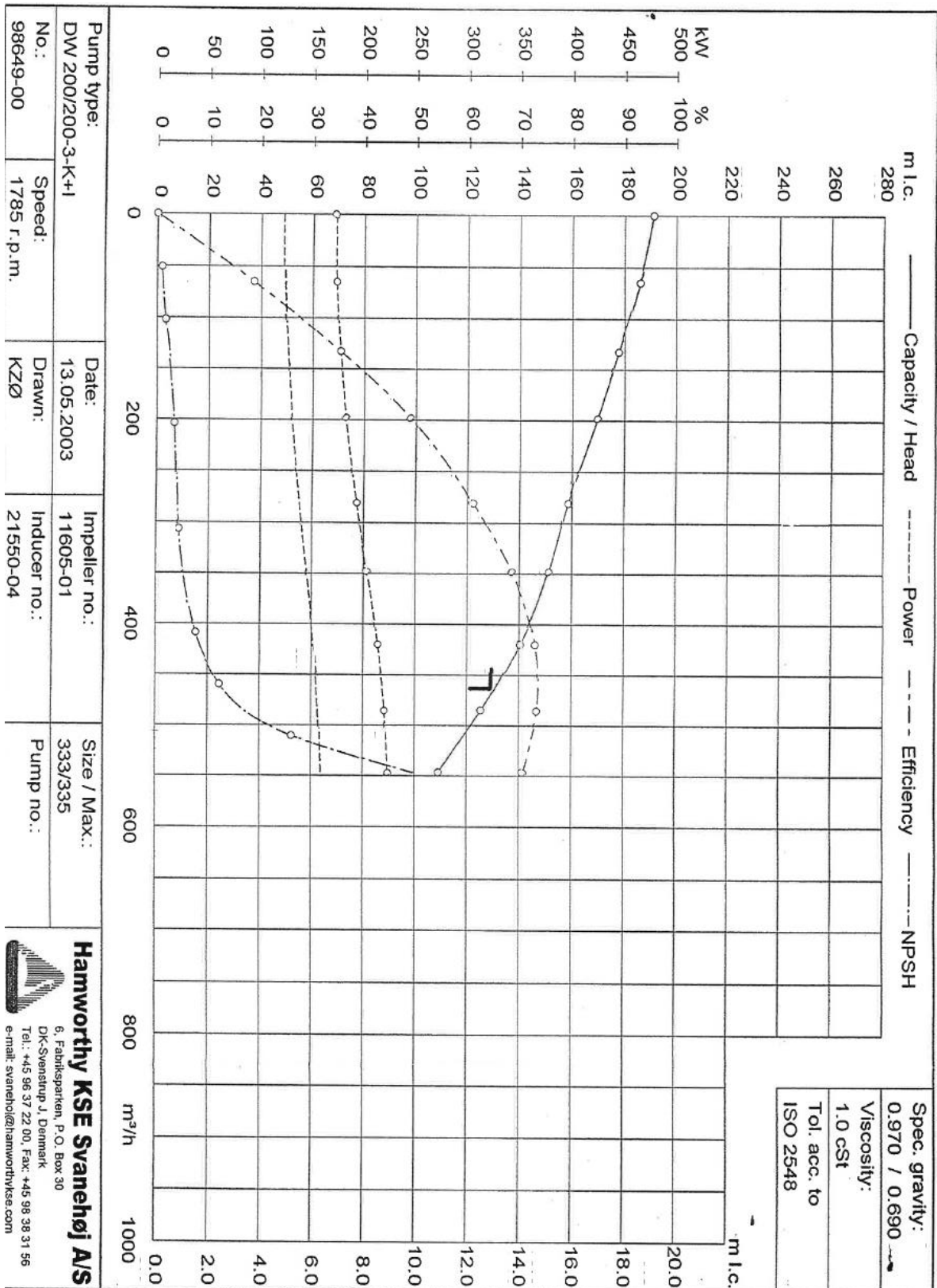
B27	MANIFOLD DERRICK/CRANE	UNIT	CLIPPER ODIN
27.1	Is Manifold Derrick Provided?	[Yes/No]	NO
27.2	Is Manifold Crane Provided?	[Yes/No]	YES
27.3	Is Lifting equipment Same P&SB?	[Yes/No]	NO
27.3.1	If NO, give details	[Text]	Center
27.3.2	Maximum outreach	[m]	24
27.3.3	Capacity at max. Outreach	[ton]	5

2.28 STORES HANDLING

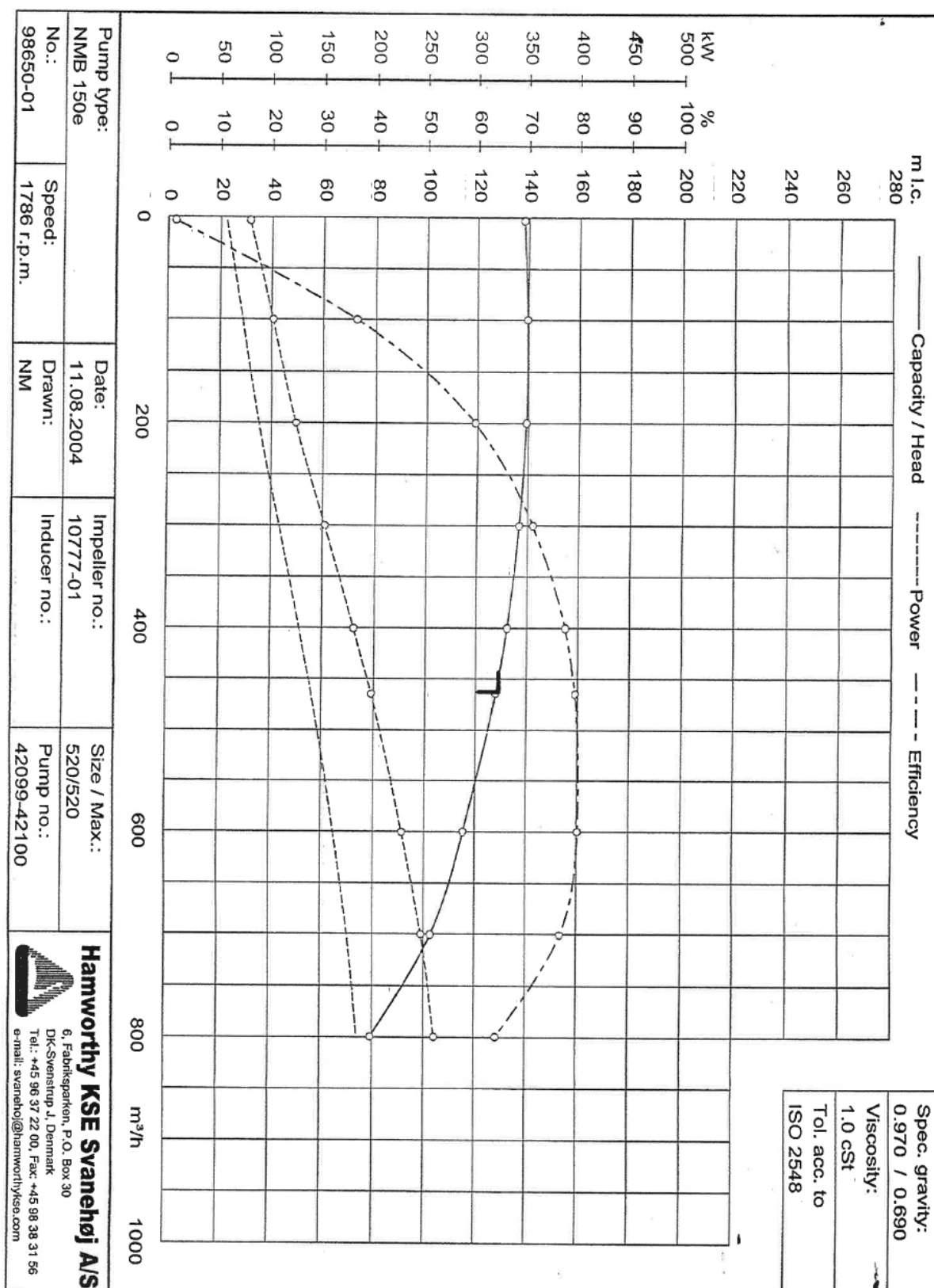
B28	STORES HANDLING	UNIT	CLIPPER ODIN
28.1	Number of cranes	[Pcs]	2
28.1.1	Location(s)	[Text]	P/S Bridge deck

3. APPENDIX/DRAWINGS

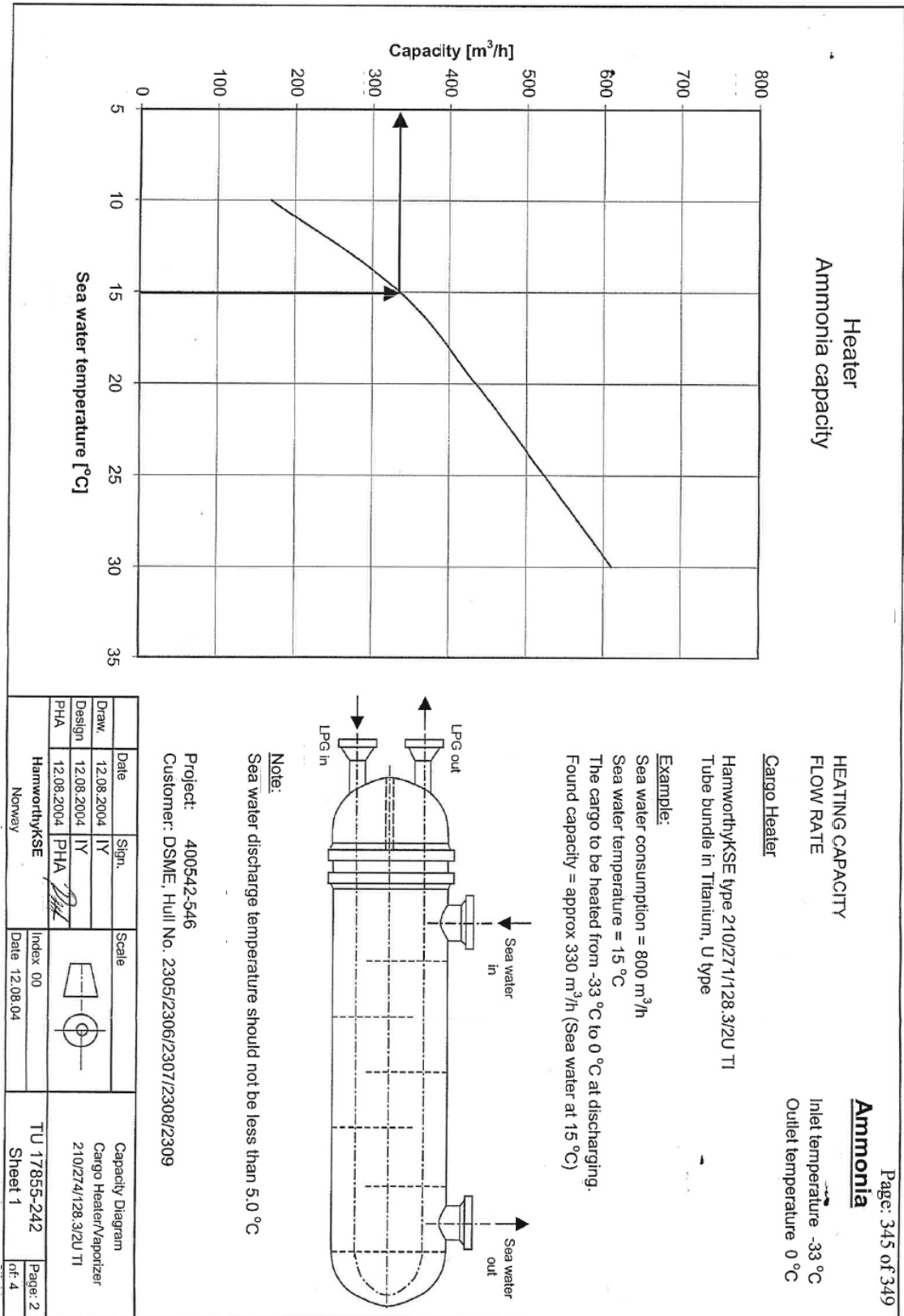
3.1 CARGO PUMPS



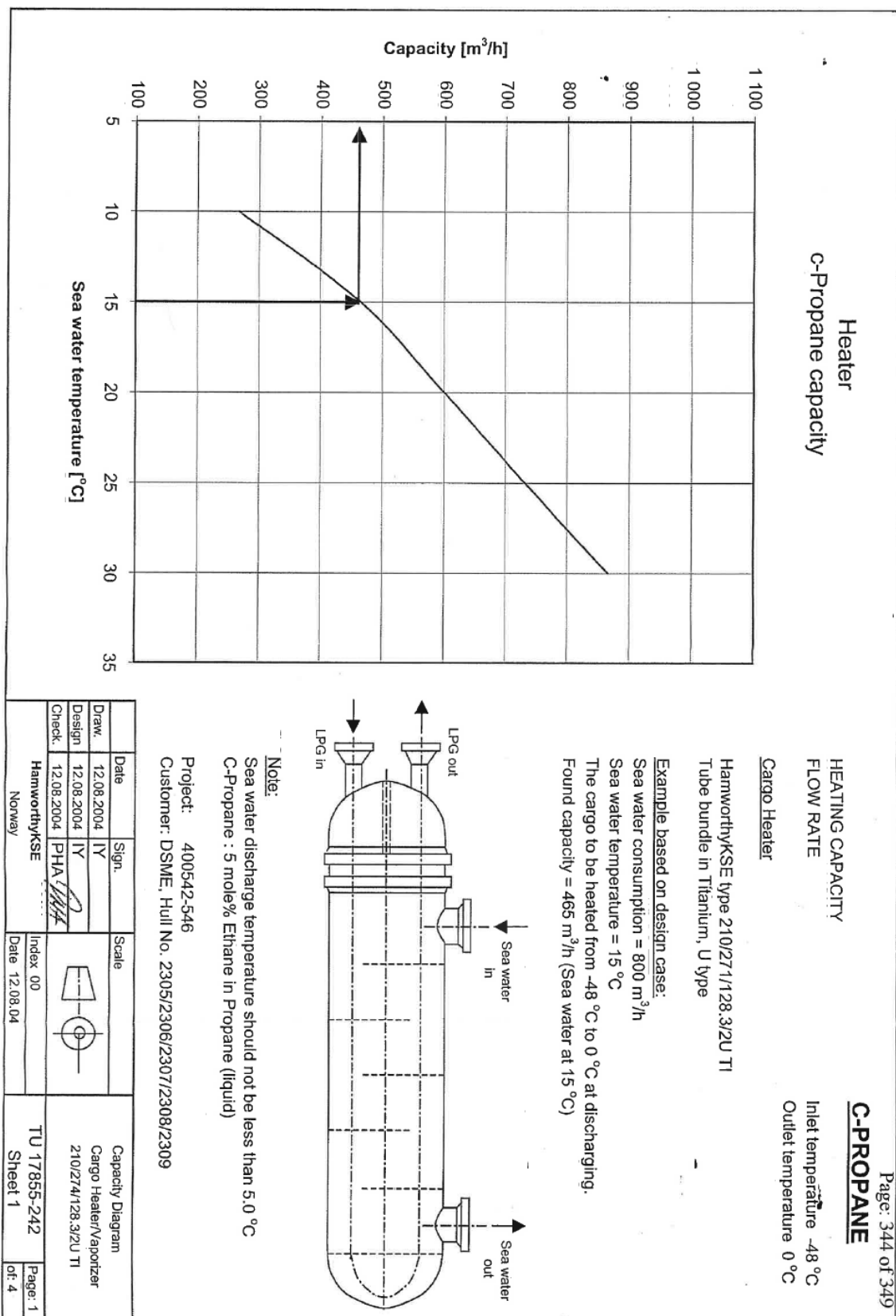
3.2 BOOSTER PUMPS



3.3 RE-HEATER CAPACITY, AMMONIA

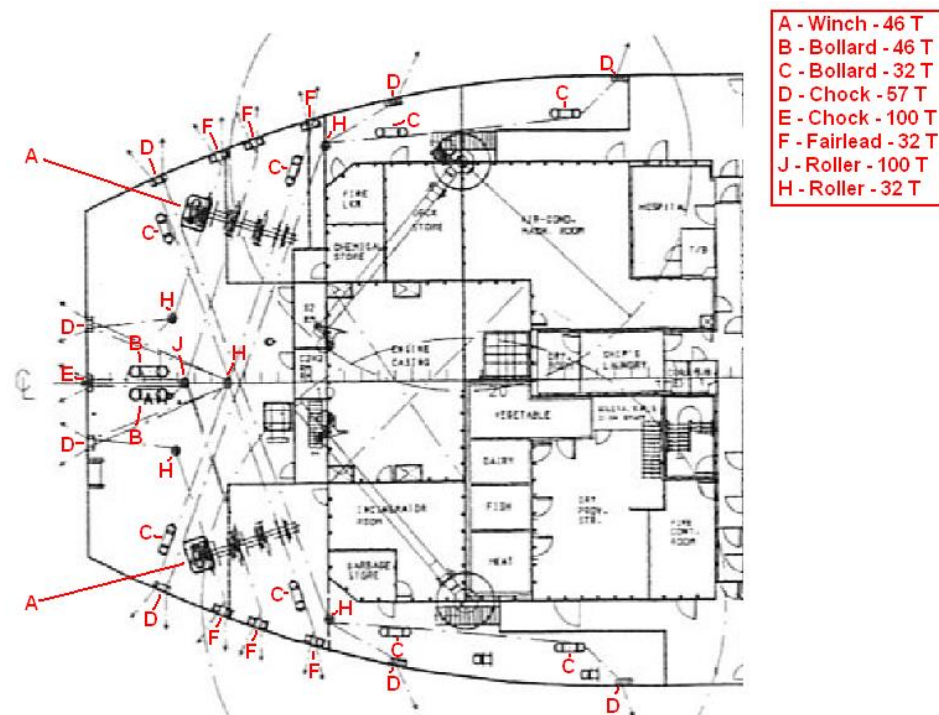
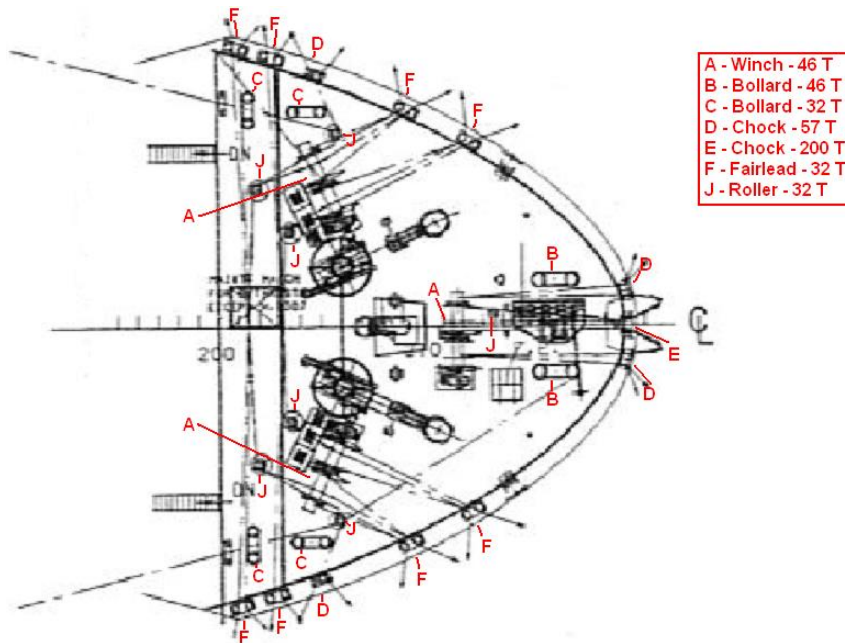


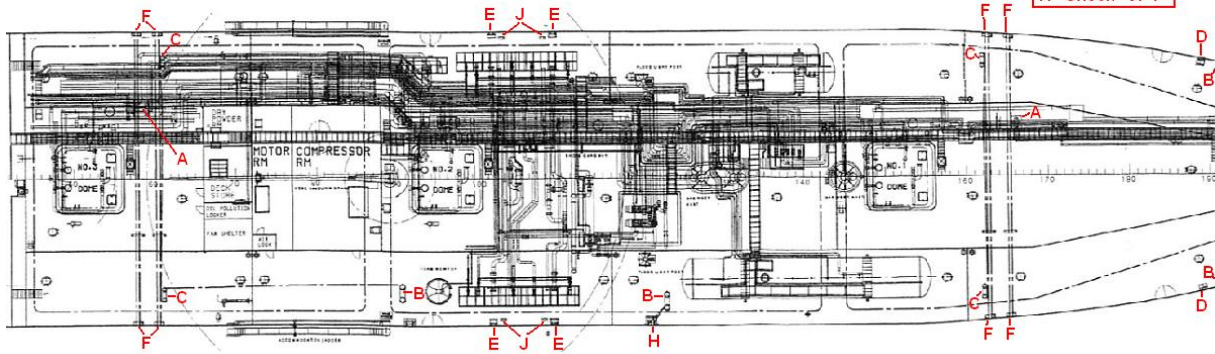
3.4 RE-HEATER CAPACITY, PROPANE



3.5 MOORING DIAGRAM

The diagram below illustrates the position of Winch Mounted Wires (W) and Ropes (R) together with Open (O) and Closed (C) Fairleads. Indicate also the position of mooring Bitts (B)





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