

**GAS FORM C****Main particulars****2.1 PREAMBLE**

Ship's name	BW Birch
Owners	BW VLGC Limited Clarendon House 2 Church Street Hamilton HM11, Bermuda
Flag – Registry	Isle of Man - Douglas
Builder	HYUNDAI HEAVY INDUSTRIES , Ulsan , S.Korea
Delivery	12 th September 2007
Class	DNV
Class notation	+1A1 Tanker for Liquefied Gas OPP-F E0 CLEAN PLUS-2 BIS TMON NAUTICUS (New building)
IMO No.	9320740

GRT/NRT	
International	47386/17305
Suez	50626.89/45775.59
Panama	NA

2.2 HULL

	Meters	Feet
LOA	225.48	739.76
LBP	215	705.38
Breadth	36.60	120.18
Depth	22.0	72.31
Keel to highest point	53.438	175.32

Max summer draft	12.574	Corresponding deadweight	58123
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TPC fully loaded	71.4 Tonnes / cm @ Draft 12.574 m
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Mean draft with full bunkers and full cargo		
Specific Gravity	Mean draft	Corresponding DW
0.580	11.59 m	51655
0.597	11.79 m	53029
0.609	11.94 m	54053
0.650	12.40 m	57359
0.680	12.52 m	58235



Communication equipment	
International call sign	2GXX6
Radio station	OFCOM
Satcom F	
- Telephone	765113690 (Sat F)
Vsat - Telephone	+65 31586618 / +47 81503218
- Telefax	
Satcom C	423593736/37
MMSI	235101301
E-mail	bwbirch@synergyship.commbox.com

2.3 MACHINERY

Main Engine	
MAN B & W 6S60ME-C Mk7	
Max Cont.	18,420 hp
Grade fuel used	IFO 380 CST

Auxiliaries	
Diesel	03 Nos
Make	MAN B & W 6L28/32H
kW/RPM	1100kW/720 RPM / Aux
Grade fuel used	IFO 380 CST

Speed/Consumption*	
Guaranteed average loaded/ballast speed over 12 months	
Average consumption on Main Engine guaranteed speed	
Average consumption on auxiliaries	

*) Above based on 50/50 propane/butane and max force 5 Beaufort

Slow speed/consumption figures as guidance only	
Average loaded/ballast	Consumption
Loaded Speed	21.0T/day
Ballast	21.0T/day

Average consumption in port	
Inert gas plant when operating	
Boiler consumption	

Permanent bunkers capacity (Excl. daily service tanks)	
HFO	1981 Cbm @ 98% capacity
GAS OIL	174 Cbm @ 98% capacity
MDO	



2.4 CARGO INSTALLATION

Transportable products and respective quantities								
Tank No.	100 % m ³	98 % m ³	Butane 0.578(15°C)/ -3°C/200mb mt	Propane0. 0.506(15°C)/ -41°C/200mb mt	Butadiene 0.65 -4 °C mt	Propylene 0.609 -47 °C mt	Ammonia 0.68 -33 °C mt	
1	17913.466	17555.197	10469	10123	11400	10663	11920	
2	21840.958	21404.139	12764	12343	13895	12995	14540	
3	21845.980	21409.061	12767	12345	13895	12991	14538	
4	20702.254	20288.209	12098	11699	13175	12317	13785	
Total	82302.658	80656.606	48098	46510	52365	48966	54783	
Decktank capacity					NA			
Transportable products and respective quantities : NA								
<i>Other transportable products:NA</i>								

Scantlings of the cargo tanks are based on a maximum density of cargo of 690kg/m³. Cargo with density up to 1,000 kg/m³ may be carried in the cargo tanks on the following conditions:	
For density of 1,000 kg/m ³	NA
For densities between 610 and 1,000 kg/m ³	NA

Tank working pressure	
Maximum pressure	400 mb
Minimum pressure	-50 mb
Minimum temperature acceptable in tanks	-50 °C

Loading rate - tons/hour	4800 CBM/hr
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2.5 CARGO PUMPS

Number and type	8 Vertical Deepwell Centrifugal of 600 m ³ /h, 120 m.l.c.
Location	2 in Aft part of each tank
Max permissible specific gravity	0.69 Kg/M3
Time for discharging full cargo using all pumps against no backpressure	Abt 18 Hrs
Cargo remaining onboard in cargo tanks after completion pumping	120 CBM Liquid
Total head when working in series with booster pump	120 m.l.c. + 2x115 m.l.c. or 120 m.l.c. + 115 m.l.c. max 25 bar
Booster pumps	Type:Centrifugal , 02 Nos

**2.6 CARGO COMPRESSORS**

Number and type	04 Nos , Reciprocating 3K 140-3A Burckhardt Compressor
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	Propane	Ammonia
Refrigeration Capacity	5% ethane) 4 x 290,000 kcal/h	4 x 490,000 Kcl/Hr
Suction pressure	0.4 bar	0.4 Bar

2.7 INERT GAS SYSTEM

Does the vessel use inert gas?	Yes
Utilization	Inerting & Gasfreeing of cargo tanks and filling of holds if required.

Does the vessel produce inert gas?	Yes
Type	Stoichiometric combustion
Daily production	127,200 m3 , 0,4 bar

Composition of inert gas	
Carbon dioxide	Maximum 14% by Volume
Oxygen max.	Maximum 0.5% by Volume
Carbon monoxide max.	Maximum 100 ppm
Hydrogen max.	-
Nitrogen	Balance
Soot	'0' bacharach
Sulphur oxides max.	Maximum 1 ppm
Dewpoint	Maximum -40°C after dryer and expansion to atmosphere

State if any shore supply of liquid nitrogen may be required	
May be required for purging tanks prior to lading butadiene or ammonia	
What quantity?	Depends on requirements

2.8 GAS FREEING

Can this operation be carried out at sea?	YES
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State method incl. all details	
For LPG Boil Off	Hot Gassing using reliquefaction Plant 24 hrs/36 hrs - for propane/butane. Timings will vary depending on quantity of liquid in the tank.
Inerting	Using IG Plant, in 18 Hrs atmosphere can be changed to fully inerted condition
Ventilating for Entry	Using Vent blowers in 18 Hrs atmosphere can be changed from fully inert condition to fully breathable fresh air
For NH₃	Hot gassing, ventilation, arrival port in gas free dry air condition, N ₂ purging from shore and gassing up thereafter.

Advise time required and consumption of inert gas if any	
From LPG approximately	5 Days / 94,500 cubic meter
From NH₃ approximately	9 Days / 94,500 cubic meter



Is the vessel equipped with inert gas blower?	Yes
Capacity	5300 cbm/Hr
Ventilation fan	2 x 10,000 m3/h

**2.9 CHANGING GRADE**

Can this operation be carried out at sea?	Yes - Except Gassing up.
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State method used and time required for changing from NH₃ to LPG and vice versa, to reach 50 ppm of previous cargo in tanks atmosphere, the tanks being dry and free of moisture (dewpoint plus 10 degrees C)

From NH₃ to LPG	Ammonia-propane/butane:time taken for hot gassing,ventilation and inerting tanks(above time is approximate for ventilation as vessel does not have air heater),arrival port in inerted condition, gassing up thereafter.
Time required	9 Days

From LPG to NH₃	C4- NH ₃ : arrive gas free & tanks dried to -35degC,for gassing up at berth. (time taken- heating+inerting+aeration/ Nitrogen purging if required by charterer at berth)
Time required	5 Days

Can vessel reduce in tank atmosphere and gas installation concentration of previous cargo below 50 ppm?	Yes, but time consumed and expenses incurred to reduce concentration of previous cargo in tank atmosphere below 50 ppm to be for time-charterer's account.
Method used, time required and extra shore supply if any	Inerting and ventilation, normally no shore supply.
How can it be checked that no liquid gas remain onboard	By temperature sensors in tank bottom.

2.10 CARGO HEATER

State discharging rate for propane with 2.5 mol % ethane to be brought from -42 °C to 0 °C at sea temperature of 15 °C	600 Cbm/Hr
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2.11 CARGO VAPORIZER

In case of need of vapour gas during discharge, can vessel produce its own if no shore gas available?	Yes
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2.12 REFRIGERATING APPARATUS

Is it independent of cargo?	No
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2.13 MEASURING APPARATUS

What gauges onboard	HSH/Enraf Level Gauges
Location and type	02 Nos For each tank dome/UASI 806 MHN/HT37
Number of temperature sensors/gauges pr tank	7 in total (3 each side + 1 in tank dome)
Number of pressure sensors/gauges pr tank	1 each Tank

**2.16 LIFTING DEVICE**

Where situated	Aft	Amidship
Number and type	02	01
Lifting capacity	5T	10T
Max. distance from ship's side of lifting hook	12 m	6.2 m

2.17 HOSES

For what products are hoses suitable	NA
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Number	Length	Diameter	Working pressure	Flange

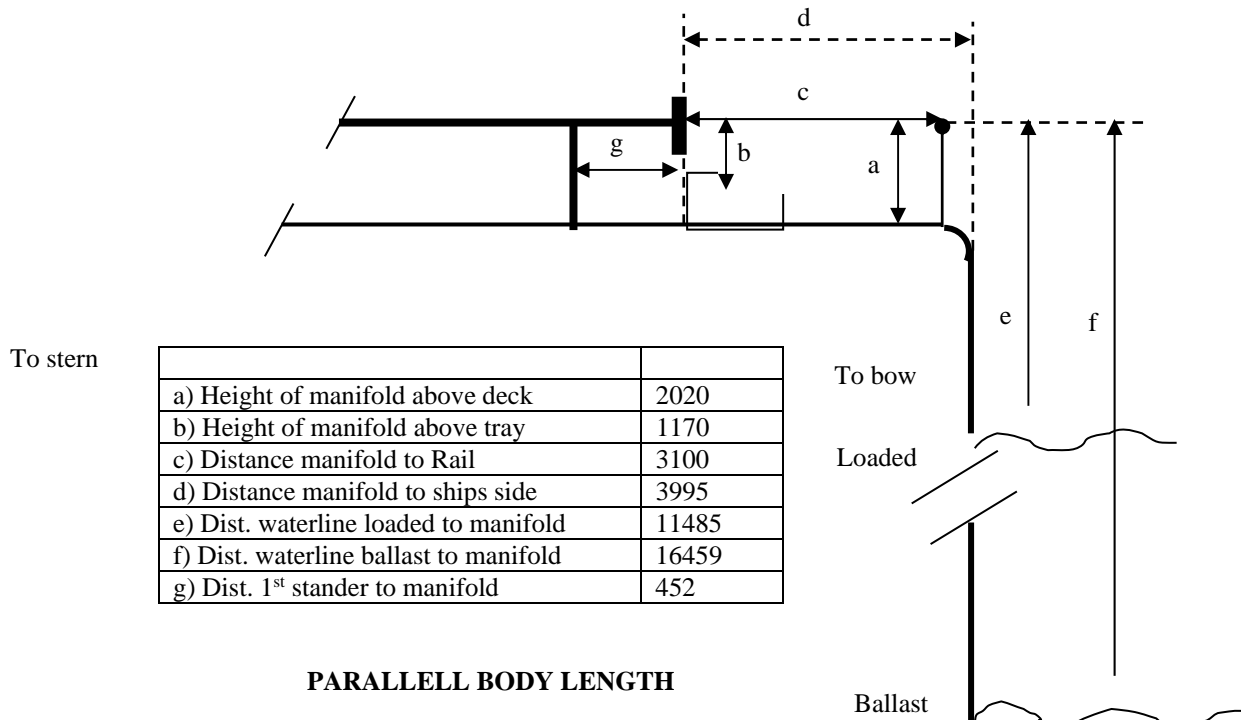
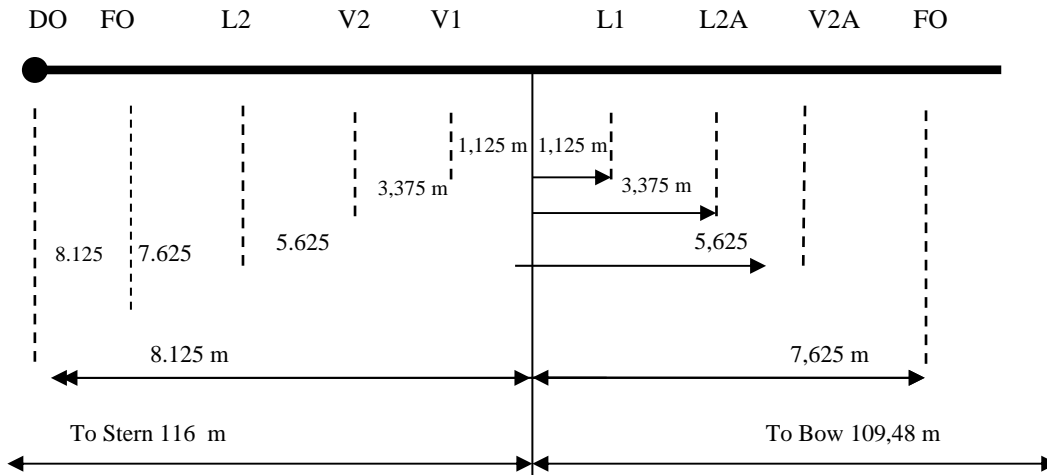
2.18 SPECIAL FACILITIES

How many grades can vessel segregate?	02
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Indicate systems	Tank Nos. 1-3/2-4 or 1-3-4 and 2
Is vessel able to load/discharge two or more grades simultaneously?	Yes, two grades
Can vessel sail with slack tanks?	Yes
Is vessel fitted with purge tank?	NA



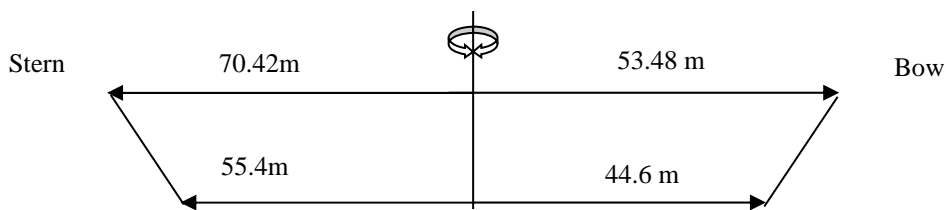
ARRANGEMENT OF CARGO MANIFOLD



a) Height of manifold above deck	2020
b) Height of manifold above tray	1170
c) Distance manifold to Rail	3100
d) Distance manifold to ships side	3995
e) Dist. waterline loaded to manifold	11485
f) Dist. waterline ballast to manifold	16459
g) Dist. 1 st stander to manifold	452

PARALLELL BODY LENGTH

LOADED CONDITION



BALLASTED CONDITION