



GAS FORM C

Main particulars

2.1 PREAMBLE

Ship's name	BW BOSS
Owners	BW Cyan Limited
Tech. Operator	BW Fleet Management AS
Flag - Registry	Nassau, Bahamas
Builder	Kawasaki Heavy Industries Ltd. Sakaide Works
Delivery	28/12/2001
Class	ABS
Class notation	+A1, Liquefied Gas Carrier, (E), +AMS, +ACCU (Unrestricted service)
IMO no.	9208239

GRT/NRT	
International	47,156 / 16,391
Suez	48,040.36/ 42,931.45
Panama	N/A

Is vessel approved?	
USCG	YES
IMO	YES

2.2 HULL

	Metres	Feet
LOA	230.00	754.59
LBP	219.70	720.80
Breadth	36.00	118.11
Depth	21.90	71.85
Keel to highest point	49.00	160.76

Max summer draft	11.624 m	Corresponding deadweight	54,800
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TPC, design draft	70.0 mt/cm
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Mean draft with 90% bunkers and full cargo		
Specific Gravity	Mean draft	Corresponding DW
Butane 0.605	11.45 m	53,557 mt
Propane 0.585	11.16 m	51,538 mt

Communication equipment	
International call sign	C6VS5
Satcom	
- Telephone Fleet 77	+870 773204068
- Telefax Fleet 77	+870 783020201
- Telephone Mini V-sat	+47 23960509 / +47 23960508
- Telephone Mini V-sat	+65 31586961 / +65 31587679
Satcom C Telex	430 907 710 / 430 907 711
E-mail	bw.boss@bwgas.com
MMSI	309077000



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2.3 MACHINERY

Main Engine	Kawasaki – Man B&W 5S70MC
Max Cont.	13,455 kW, 91 RPM
Grade fuel used	IFO 380 CST

Auxiliaries	Diesel	Turbogenerator
No.	3 sets	n/a
Make	Yanmar Diesel Engine Co.Ltd 8N21AL-SV	
Kw/RPM	1000 Kw x 900 rpm	

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

*) 50/50 propane/butane and max. force 5 Beaufort.

Slow speed/consumption figures as guidance only	
Average loaded/ballast	Consumption*)

*) Auxiliary engines included.

HFO consumption alongside in port	
Inert gas plant when operating	
Boiler consumption	

Permanent bunkers capacity (Excl. daily service tanks)	
HFO	2,666.874 m ³ (98%)
GAS OIL	229.81 m ³ (98%)

2.4 CARGO INSTALLATION

Tank No.	100% M ³	98 % M ³	Butane 0,596 -2 ⁰ C MT	Propane 0,581 - 41,5 ⁰ C MT	NH ₃ 0.680 -32 ⁰ C MT		
1	16,684.235	16,350.550	9,745	9,500			
2	23,184.216	22,720.532	13,541	13,201			
3	23,229.113	22,764.531	13,568	13,226			
4	21,202.988	20,778.928	12,384	12,073			
Total	84,300.552	82,614.541	49,238	48,000			
Decktank capacity					N/A		
Transportable products and respective quantities							
Other transportable products							



Scantlings of the cargo tanks are based on a maximum density of cargo of 605 kg/m^3 .
Scantling draft is based on full cargo with a density of 601 kg/m^3 .

Tank working pressure	
Maximum allowable tank pressure at sea	0.250 bar at sea
Minimum pressure	0.00 bar
Maximum allowable tank pressure at harbour	0.400 bar
Minimum temperature acceptable in tanks	- 48° C

Loading rate - tons/hour	Loading time without vapour return to shore when tanks are fully pre-cooled and the cargo is fully refrigerated. Butane – 2,300 mt/hr, Propane – 2,000 mt/hr
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2.5 CARGO PUMPS

Number and type	8 pcs deep well electric motor driven centrifugal self priming single-stage submerged, $600 \text{ m}^3/\text{h}$, 100m.l.c.; 4 pcs auxiliary electric motor driven centrifugal self priming single-stage submerged, $250 \text{ m}^3/\text{h}$, 100m.l.c.
Location	2 Deep Well in each tank + 1 Aux in each stb side
Max permissible specific gravity	0.605
Time for discharging full cargo using all pumps against no backpressure	abt 21 hrs
Cargo remaining onboard in cargo tanks after completion pumping	abt. 382 mt Butane
Total head when working in series with booster pump	155 m.l.c.
Booster pumps	2 x $400 \text{ m}^3/\text{h}$ at 100 m.l.c. / Horizontal centrifugal NMB 150C

2.6 CARGO COMPRESSORS

Number and type	4 x Sulzer 2K 160-2F
Capacity	$1,380 \text{ m}^3/\text{hr}$

	Propane	Butane
Refrigeration Capacity	(2,5 % mol. ethane) 740 Mj/h/unit	(2,5 % mol. ethane) 1000 Mj/h/unit
Suction pressure	0.100 barg	0.100 barg
Suction temperature	- 20° C (sea water: +32° C)	+ 10° C (sea water: +32° C)

2.7 INERT GAS SYSTEM

Does the vessel use inert gas?	Yes
Utilization	Inerting & gas freeing of cargo tanks and filling of holds if required.
Does the vessel produce inert gas?	Yes
Type	GLN 5000 – 025 BUF (SMIT GAS SYSTEM B.V.)
Daily production	$5,000 \text{ m}^3/\text{h}$, 0.250 barg



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Composition of inert gas	
Carbon dioxide	abt. 14%
Oxygen max.	abt. 2 %
Carbon monoxide max.	abt. 0.1 % (1000 ppm)
Hydrogen max.	n/a
Nitrogen	abt. 83 % (Balance)
Soot	n/a
Sulphur oxides max.	abt. 0.005 % (50 ppm)
Dewpoint	+5° C

State if any shore supply of liquid nitrogen may be required	
What quantity?	

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/heating	24 hrs/36 hrs - for propane/butane
Inerting	36 hrs
Ventilating for entry	36 hrs
For NH ₃	NA

Advise time required and consumption of inert gas if any	
From LPG	Abt. 60 hrs, 252,000 m ³
From NH ₃	n/a

Is the vessel equipped with inert gas blower?	Yes
Capacity	2 x 2,500 m ³ /h

Ventilation fan	2 IGS Blowers
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2.9 CHANGING GRADE

Can this operation be carried out at sea?	Yes – changing from Propane to Butane and vice versa
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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 °C).	
From NH ₃ to LPG	n/a
Time required	n/a
From LPG to NH ₃	n/a
Time required	n/a

Can vessel reduce in tank atmosphere and gas installation concentration of previous cargo below 50 ppm?	n/a
Method used, time required and extra shore supply if any	n/a
How can it be checked that no liquid gas remains onboard?	n/a



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2.10 CARGO HEATER

State discharging rate for propane with 5.0 mol % ethane to be brought from - 46 ⁰ C to - 5 ⁰ C at sea temperature of 15 ⁰ C	400 m ³ /h
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*) Note: Vessel is designed to handle cargo with 2.5 mol.% of ethane in liquid phase.

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?	n/a
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2.13 MEASURING APPARATUS

What gauges on board	Level Gauging System GL-100/5
Location and type	2 in each tank / radar type
Model	Level Gauging System GL-100/5
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

2.14 SAMPLES

Where can samples be taken?	By sample valve at cargo pump discharge and at manifold
Are samples bottles available onboard?	Yes

2.15 CARGO LINES (See. also last page of this gas form C)

Distance from cargo manifold to bow	116.80 m
Distance from manifold to stern	113.10 m
Height cargo manifold above deck	1.445 m
Height manifold above working platform	1.20 m
Height cargo manifold above waterline when ballast	16.258 m
Height cargo manifold above waterline when loaded	11.734 m
Distance manifold from ship's rail	3.90 m
Distance between loading and vapour return connections	2.40 m
Windage area in normal ballast condition	4,319
Is vessel fitted with SPM chainstopper suitable for 76 mm chain.	Yes
Is vessel fitted with cruziform bollards/fairleads/eye-pads in manifold area	Yes

Dimension of lines		
	Diameter	Flange size
Liquid	400 mm	400 mm (16") (ANSI 150)
Gas Line	300 mm	300 mm (12") (ANSI 150)
Booster Line	400 mm	400 mm (16") (JIS 20K)
Fuel Oil Line	150 mm	200 mm (8") (ANSI 150)
Diesel Oil Line	80 mm	80 mm (3") (JIS 5K)



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What reducers onboard			
Number	Diameter	Length	Pressure rating
2	16" – 16"	600 mm	ANSI 150
3	16" – 14"	600 mm	ANSI 150
1	16" – 12"	600 mm	ANSI 150
1	16" – 10"	600 mm	ANSI 150
2	12" – 12"	600 mm	ANSI 150
4	12" – 10"	570 mm	ANSI 150
2	12" – 8"	600 mm	ANSI 150
2	8" – 6"	320 mm	ANSI 150
1	8" – 6"	310 mm	ANSI 150 – ANSI 300
2	8" – 6"	320 mm	ANSI 300
1	16" – 14"	470 mm	JIS 20K – ANSI 150
1	16" – 12"	490 mm	JIS 20K – ANSI 150
1	16" – 14"	380 mm	JIS 20K – ANSI 300
1	16" – 12"	380 mm	JIS 20K – ANSI 300
1	16" – 10"	310 mm	JIS 20K – ANSI 300
1	16" – 8"	370 mm	JIS 20K – ANSI 300

2.16 LIFTING DEVICE

Where situated	Aft	Amidship
	2 provision cranes	1 hose crane
Number and lifting capacity	1 x 1.53 tons / 1 x 5.10 tons	1 x 5 tons
Max. distance from ship's side of lifting hook	8.70 m / 8.30 m	5.65 m

2.17 HOSES

For what products are hoses suitable?	LPG / Sea Water

Number	Length	Diameter	Working pressure	Flange
2	3,865 m / 6,890 m	5 inch / 4 inch	1,08 MPa	ANSI 150 – JIS 10K

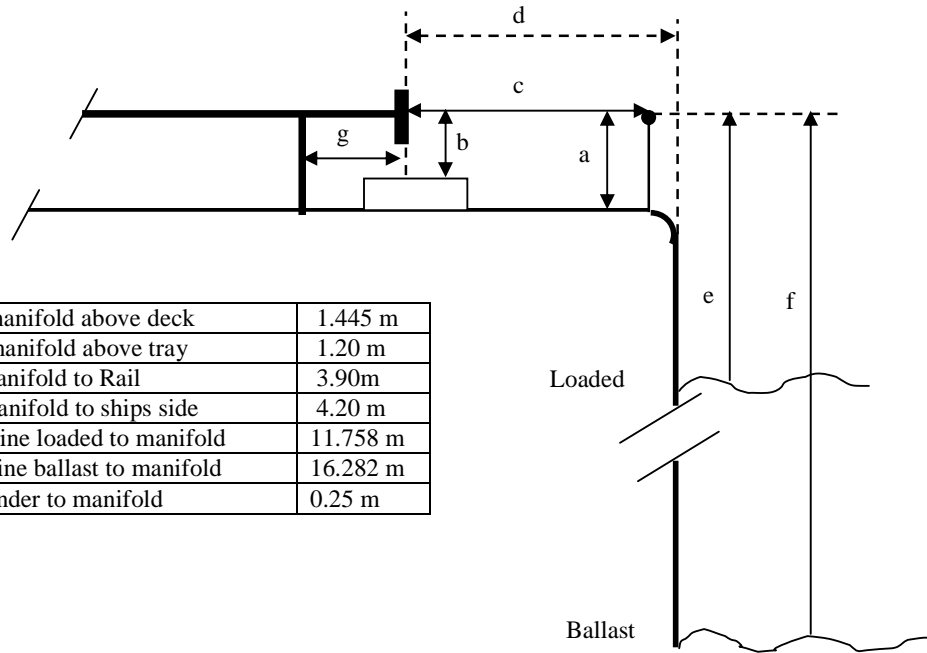
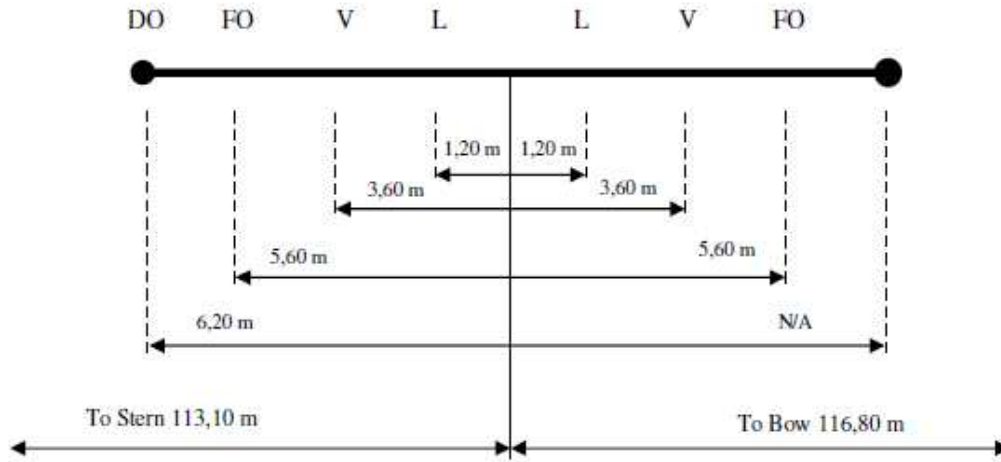
2.18 SPECIAL FACILITIES

How many grades can vessel segregate?	Two
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Indicate systems	Any combination depending on safe stress, stability, draft & trim Double valve segregation on liquid systems, single valve on vapour systems
Is vessel able to load/discharge two or more grades simultaneously?	Yes, two grades
Can vessel sail with slack tanks?	Yes. Depending on safe stress, stability, draft & trim
Is vessel fitted with purge tank?	No



ARRANGEMENT OF CARGO MANIFOLD



a) Height of manifold above deck	1.445 m
b) Height of manifold above tray	1.20 m
c) Distance manifold to Rail	3.90m
d) Distance manifold to ships side	4.20 m
e) Dist. waterline loaded to manifold	11.758 m
f) Dist. waterline ballast to manifold	16.282 m
g) Dist. 1 st stander to manifold	0.25 m

PARALLEL BODY LENGTH

LOADED CONDITION

