

P.V. "ALEXANDER VON HUMBOLDT"

(IMO NO. 8709573)

Vessel Particulars

From Attendance at Tilbury, Essex, UK

Between 5th – 7th October 2009,

on instructions of:

C.W. KELLOCK & CO. LTD

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1. **PARTICULARS OF VESSEL**

NAME: "ALEXANDER VON HUMBOLDT"

FORMER NAMES: ex. "JULES VERNE"
ex. "WALRUS"
ex. "NAUTICAN"
ex. "CROWN MONARCH"

OWNERS: MV Champ Elysees Ltd., Bahamas

SHIP MANAGERS: Club Cruise Entertainment & Travelling Services
EU N.V., The Netherlands

SHIP TYPE: Passenger Ship

FLAG: Bahamas

PORT OF REGISTRY: Nassau

CALL SIGN: C6WC2

OFFICIAL No: 8001348

CLASS: Det Norske Veritas (DNV)

CLASS No.: 15990

IMO No.: 8709573

CLASS NOTATION: ✕1A1 ICE-1C (for max draught 5.40 m) Passenger Ship

PROPULSION: Motor – Four (4) Bergen Diesel engines, type BRM-9, 4500 bhp (3310 kW), 750 rpm. Each twin diesel engine set drives through respective Lohmann & Stolterfoht reduction gearbox, GVE 1400R/L, to an Ulstein Propeller A/S controllable pitch 4 bladed high skew propeller, each propeller is 4,000 mm dia. at 169 rpm.

The vessel has two (2) Ulstein Propeller A/S bow thrusters (4 bladed), type SB 150 TV, each propeller 1580 mm dia., each driven by one (1) Jeumont Schneider electric motor, type FNCB 400 LR6 V1, 430 kW (585 bhp), 690 A, 0.85 Cosφ, 440 V, 60 Hz, 1194 rpm, 3 ph., and each propeller 390 rpm output.

BUILDER: Union Naval De Levante S.A., Valencia, Spain

BUILT: 10.1990

YARD No: 185

LOA: 152.50 m

LBP: 125.49 m

BREADTH (Ext.): 20.60 m

DEPTH (Mld.): 7.10 m

DRAUGHT (Max.): 5.8 m

TONNAGES:	International	Gross: 15,396 mt Net: 5,817 mt
	Suez Canal:	No Details
	Panama Canal:	No Details
	Light Ship:	8,287.90 mt
	Freeboard:	C1 - 1306 mm (Summer) Type "B" Ship
	Deadweight:	1,384 mt

2. PARTICULARS OF TENDER VESSELS

The vessel has two (2) motorised lifeboat/tenders, partially enclosed for carrying passengers to and from the vessel close to shore, as well as four (4) motorised lifeboats/rescue boats.

The details of the two (2) motorised lifeboats/tenders used are indicated below;

NAME:	Nos.1 & 2 lifeboat/tenders
BUILDER/TYPE:	Harding Safety AS, Norway, 11.40 m (L) x 4.50 m (B) x 3.80 m (D), type, CTL 36, 32.00 m ³ , 1988/1989. S/Nos.900439/1 & 900439/2, and Build Nos.199037#5 & 199037#4.
NUMBER OF PERSONS:	150 persons as lifeboat tender.
PROPULSION:	Motor – One (1) Fore Industrial Power diesel oil engine, Model 2728T, 5.95 L, 2400 rpm.
BUILT:	1988 & 1989
LOA:	11.40 m
BREADTH:	4.50 m
DEPTH:	3.80 m

The other remaining lifeboats (Nos.3, 4, 5 & 6) were also manufactured by Harding Safety AS, Norway.

- (a) Nos.3 & 4 Lifeboats - Type: MPC 36, GRP, 11.00 m (L) x 4.30 m (B) x 1.35 m (D), 44.92 m³ and also motorised, with Volvo Penta diesel engine, type 2000 series, 2003R SOLAS.
- (b) Nos.5 & 6 Lifeboats - Type: MOBL 22, GRP, 6.58 m (L) x 2.07 m (B) x 1.00 m (D), 10.40 m³ and also motorised, with Saab Diesel engine, type M.4.295GR-LB.

3. GENERAL SHIP'S PARTICULARS

The vessel was originally built in 1990 at Union Naval De Levante S.A., Valencia, Spain, and built to Det Norske Veritas (DNV) Society Rules.

The vessel is described as a passenger ship, built in steel with a welded construction. The hull is of single skin in way of the shell sides, with a double bottom construction in way of the bottom with integral ballast and fuel tanks. The engine room is situated in way of the lowest part of the ship spread over seven (7) watertight compartments, with the use of hydraulic water-tight doors.

The vessel also has a fin stabilizer plant, consisting of a port and stbd stabilizer fin unit.

It has one mast, one funnel stack, eight decks, a raked stem, bulbous bow, a transom stern and two rudders.

The vessel is diesel powered having four main diesel engines, and each twin set is coupled through reduction gearing each driving a single 4 bladed controllable pitch propeller (twin screw).

The vessel has two (2) motorised lifeboat/tenders for carrying passengers to and from the vessel close to shore, as well as four (4) motorised lifeboats/rescue boats.

The embarkation and disembarkation to/from the vessel to the motor tenders is achieved via one side shell door (one on the port side) in way of the Deck 2.

The vessel is divided into the following decks/areas as follows;

- (a) Sun Deck (Deck 8): Sun deck, storage lockers, ventilation rooms, lift machinery rooms, engine casings, toilets, Pacific lounge & fitness centre.
- (b) Bridge Deck (Deck 7): Wheelhouse, passenger cabins/suites, elevators, Lido bar, swimming pool & Jacuzzi (x2), ventilation rooms, engine casing, aux. casing, Veranda Restaurant & terrace/deck.
- (c) Jupiter Deck (Deck 6): Passenger suites/cabins, life boats/launching stations, elevators, beauty salon/sauna, printing room, cruise director, owner cabin, ventilation rooms, engine casing, Halon room, emergency diesel generator room, pantry, stores and sports deck area.
- (d) Salon Deck (Deck 5): Vista lounge, internet café, Taiz-show salon, shop, Harry's bar, library, Vier Jahreszeiten restaurant, elevators and passenger main galley.

- (e) Orion Deck (Deck 4): Forecastle deck, passenger cabins, Master living quarters, Chief Engineer living quarters, AC Engineer cabin, Hotel Engineer cabin, Chief Electrician cabin, 1st Electrician cabin, Executive chef, Sous chef, crew purser, ventilation rooms, elevators, lockers, engine casing, hospital, Doctor and Nurse.
- (f) Saturn Deck (Deck 3): Passenger cabins, paint store, Staff Captain living quarters, Hotel Manager living quarters, 2nd Officers cabins, entertainment staff cabins, elevators, ventilation & electrical transformer rooms, Chief accountant, back office, Information/shore excursions desks/offices, engine casing, crew laundry/elevator lobby, and aft mooring deck.
- (g) Neptun Deck (Deck 2): Passenger cabins, crew cabins, fwd store, electrical store, elevators, central office engine room, luggage area, office crew purser, linen area, pantry, changing room, bunker station, engine casing, crew bar, crew & staff mess room, incinerator, ventilation rooms, bakery & pastry area, crew galley, provision reception area, provision refrigeration rooms, handling space and steering gear space.
- (h) Deck 1: Crew cabins, fore peak tank, bow thruster space, main laundry, heeling tanks, F.O. tanks, daily service tanks, settling/storage tanks, engine control room, main engine compartment, aux. engine compartment, beverage storage rooms, dry provision rooms, incinerator/garbage rooms, refrigeration provision rooms, and ballast tanks/aft peak tank.
- (i) Tank Top: Forepeak tank, fuel/ballast tanks, potable water tanks, F.W. tanks, fuel tanks and related systems, fuel treatment plant, air conditioning compressor compartments, main and aux. engines' compartments, workshop and holding tanks.

The vessel was certified to carry a maximum total of 560 passengers, and the total number of persons for which lifesaving appliances were reportedly provided onboard was 790 (from the Record of Equipment for Passenger Ship Safety Certificate – Form P), in 254 cabins/suites.

All passenger accommodation (suites/cabins), consist of 2 berth outer and inner cabins all with their own private bath/shower rooms, W.C., wash basin, twin beds, a number of cabins have an additional Pullman type bed, cupboards, drawers, TV, radio, telephone, vanity unit, table, chair and bedside cabinets. The actual configuration depends on cabin category.

The vessel can reportedly carry a maximum of 230 officers and crew.

From the vessel's Loading Manual approved by Det Norske Veritas (DNV) dated 13 December 2002, the tanks listed below were noted installed on the vessel.

The vessel has the following reported water ballast, bunker, lubricating oil, fresh water and miscellaneous tank capacities;

Ballast Tanks (S.G. = 1.025 mt/m³)

Compartment	Name	Capacity 100%
Fore Peak Tank 1	T1	127.4 m ³
Ballast Tank 2	T2	33.5 m ³
Ballast Tank 3	T3	114.2 m ³
Ballast Tank 4	T4	34.8 m ³
Ballast Tank 6 P	T6P	9.1 m ³
Ballast Tank 6 S	T6S	9.1 m ³
Ballast Tank 9 P	T9P	52.1 m ³
Ballast Tank 9 S	T9S	52.1 m ³
Ballast Tank 15 P	T15P	46.0 m ³
Ballast Tank 15 S	T15S	46.0 m ³
Ballast Tank 26 P	T26P	9.7 m ³
Ballast Tank 26 S	T26S	9.7 m ³
Ballast Tank 27 P	T27P	20.3 m ³
Ballast Tank 27 S	T27S	20.3 m ³
Ballast Tank 29 P	T29P	77.9 m ³
Ballast Tank 29 S	T29S	77.9 m ³
Ballast Tank 8 P	T8P	22.8 m ³
Ballast Tank 8 S	T8S	22.8 m ³
Ballast Tank 22 S	T22S	27.4 m ³
Ballast Tank 22 P	T22P	27.4 m ³
Ballast Tank 24 S	T24S	25.1 m ³
Ballast Tank 24 P	T24P	25.1 m ³
Total Water Ballast		890.5 m³

Technical Fresh Water Tanks (S.G. = 1.000 mt/m³)

Compartment	Location	Volume 100%
Technical Water 5 C	T5	38.9 m ³
Technical Water 7 P	T7P	48.3 m ³
Technical Water 7 S	T7S	48.3 m ³
Technical Water 30 C	T30	21.0 m ³
Total Technical F.W.		156.5 m³

Fuel Oil Tanks (S.G. = 0.93 mt/m³)

Compartment	Location	Capacity 100%
Fuel Oil Tank 12 P	T12P	48.2 m ³
Fuel Oil Tank 12 S	T12S	48.2 m ³
Fuel Oil Tank 35 P	T35P	122.6 m ³
Fuel Oil Tank 35 S	T35S	113.8 m ³
Fuel Oil Tank 36 P	T36P	109.5 m ³
Fuel Oil Tank 36 S	T36S	108.0 m ³
Fuel Oil Tank 37 P	T37P	55.5 m ³
Fuel Oil Tank 37 S	T37S	55.5 m ³
Fuel Oil Tank 38 P	T38P	41.6 m ³
Fuel Oil Tank 38 S	T38S	41.6 m ³
F.O. Boiler Tank 43	T43	10.4 m ³
Total Fuel Oil		754.7 m³

Diesel Oil Tanks (S.G. = 0.85 mt/m³)

Compartment	Location	Capacity 100%
Diesel Oil Tank 13 P	T13P	24.1 m ³
Diesel Oil Tank 13 S	T13S	24.1 m ³
Diesel Oil Tank 17 P	T17P	15.2 m ³
Diesel Oil Tank 17 S	T17S	15.2 m ³
Diesel Oil Tank 19 P	T19P	4.0 m ³
Diesel Oil Tank 19 S	T19S	4.0 m ³
Diesel Oil Incinerator	T44	1.7 m ³
Em. Eng. Tank	T54	4.1 m ³
Total Diesel Oil		92.5 m³

Heeling Water Tanks (S.G. = 1.025 mt/m³)

Compartment	Location	Volume 100%
Heeling Tank 40 P	T40P	37.2 m ³
Heeling Tank 40 S	T40S	37.2 m ³
Heeling Tank 41 P	T41P	37.6 m ³
Heeling Tank 41 S	T41S	37.6 m ³
Total Heeling Water		149.5 m³

Fresh Water Tanks (S.G. = 1.000 mt/m³)

Compartment	Location	Volume 100%
Fresh Water Tank 31	T31	44.2 m ³
Fresh Water Tank 32 P	T32P	64.3 m ³
Fresh Water Tank 32 S	T32S	62.5 m ³
Fresh Water Tank 33 P	T33P	36.9 m ³
Fresh Water Tank 33 S	T33S	36.9 m ³
Fresh Water Tank 34 P	T34P	77.6 m ³
Fresh Water Tank 34 S	T34S	74.0 m ³
Total Fresh Water		396.5 m³

Lubricating Oil Tanks (S.G. = 0.90 mt/m³)

Compartment	Location	Capacity 100%
L.O. Tank 18 P	T18P	38.3 m ³
L.O. Tank 18 S	T18S	38.3 m ³
Dirty Oil 25 P	T25P	15.4 m ³
Dirty Oil 25 S	T25S	15.4 m ³
Stern Tube Emptying	T85	3.5 m ³
Total Lubricating Oil		111.0 m³

Miscellaneous Tanks

Compartment	Location	Capacity 100%
Fuel Oil Overflow	T10	16.1 m ³
Sludge Tank 14	T14	16.1 m ³
Crossover	T16	26.9 m ³
Sounding Pipe and Log	T20	3.9 m ³
Oily Water 23 P	T23P	15.6 m ³
Centralized System F.W.	T23S	15.6 m ³
Grey Water Tank 28	T28	61.1 m ³
Pulp Tank 87	T87	4.8 m ³
Holding Tank 88	T88	67.2 m ³
Holding Tank 89	T89	48.8 m ³
Swimming Pool	T55	89.9 m ³
Cofferdam 39	T39	23.2 m ³
Holding Tank 11 P	T11P	24.2 m ³
Holding Tank 11 S	T11S	24.2 m ³
Cofferdam 21	T21	30.3 m ³
Washing Machine Drain	T86	19.5 m ³
Total Miscellaneous		487.3 m³

Deck Equipment

(a) Mooring Machinery and Equipment:

- (i) Two (2) sets Hydraulik Brattvaag electro-hydraulic windlass combined with mooring winch, type BK12/WM-4185, each with one gypsy wheel, one hawser drum and one warping end. The combined windlass/mooring winch units are each driven by a Hydraulik Brattvaag hydraulic pump, type G-164, driven by an ABB Motor, 50 kW, 86 A, 1750 rpm electric motor.

Two (2) stockless bower anchors, believed to be 3,443 kg each.

Anchor chain total length believed to be 548 m, grade U-3, 52 mm dia.

There is also one (1) bower spare anchor available onboard.

- (ii) One (1) set Hydraulik Brattvaag electro-hydraulic mooring winch, type WM-4185, 8000 kg pull at 0 – 20 m/min, with two (2) hawser drums, and with one (1) warping end.
- (iii) One (1) set Hydraulik Brattvaag electro-hydraulic mooring winch, type WM-4185, 8000 kg pull at 0 – 20 m/min, with one (1) hawser drum, and with one (1) warping end.

The aft mooring winch units are driven two (2) Hydraulik Brattvaag hydraulic pumps, type G-164/518-EBB, each driven by an NEBB/ABB Motor, 50 kW, 86 A, 1750 rpm electric motor.

(b) Handling Facilities:

- (i) There is one (1) Schat-Davit Co. Inmetusa electric driven davit, type S.H.D, 1.5 mt SWL, S/No.1323, located on the fore deck.
- (ii) The vessel has eleven (11) Thyssen Boetticher passenger/ service/ crew/ provision/ garbage elevators, Mariner types (4 x 8 persons (600 kg); 2 x 12 persons (900 kg); 1 x 900 kg (provision lift); 1 x 500 kg (6 persons), 1 x 4 persons (300 kg), and 2 x 200 kg garbage lifts).

(c) Steering System:

- (i) There are two (2) Tenfjord Mek. Verksted A/S, electro-hydraulic rotary vane steering gear units, type 2 x 18M300 TS, S/Nos.11254 & 11255, each with two hydraulic power units, type 2GM 620, each power unit driven by an ABB electric motor, type MH-160-L-4, 15 kW, 26 A, 440 V, 1750 rpm, 60 Hz., 3 phase.

Main & Auxiliary Machinery

(a) Main Engines:

The vessel is equipped with four (4) Bergen Diesel diesel oil engines, types BRM-9, 4 stroke, single acting, 9 cylinders, 320 mm dia. bore, 360 mm stroke, and each with an output of 3,310 kW (4500 bhp) at 750 rpm MCR. Total Power Output

13,240 kW. Each engine has a BBC, VTR 354-11 turbochargers. The engines S/Nos.9017, 9018, 9019 & 9020. The governors are all Woodward types.

Each twin engine set drives through respective Lohmann & Stolterfoht GmbH reduction gearboxes (Port: GVE 1400R, Product No.1258PS, Order No.10062, Year 1989 & Stbd: GVE 1400L Product No.1258SB, Order No.10062, Year 1989, power input 2 x 3368 kW at 750 rpm, ratio 4.44:1) via couplings, to an Ulstein Propeller A/S controllable pitch 4 bladed high skew propeller, each propeller is 4,000 mm dia. at 169 rpm. Installation Nos.F1432 & F1433.

In addition, the port and starboard gearboxes each has a power take-off, which drives a shaft generator, details of which are indicated below.

(b) Bow Thruster:

There are two (2) Ulstein Propeller A/S bow thrusters (4 bladed), type SB 150 TV, (S.No.T-1151 & T-1152), each propeller 1580 mm dia., each driven by one (1) Jeumont Schneider electric motor, type FNCR 400 LR6 V1, 430 kW (585 bhp), 690 A, 0.85 Cos ϕ , 440 V, 60 Hz, 1194 rpm, 3 ph., and each propeller with a 390 rpm output.

(c) Auxiliary Diesel Generators:

There are two (2) Bergen Diesel auxiliary diesel engines, type BRG-6, vertical single acting, 4 stroke, direct injection, 6 cylinders, 320 mm bore, 360 mm stroke, each with a rated output of 3040 bhp (2235 kW) at 720 rpm. S/Nos.5003 & 5004. Each diesel engine has one (1) BBC, type VTR 254 turbo charger. Each has a Woodward governor.

Each diesel engine is directly coupled to an ABB Stromberg Drives synchronous generator, 3 phase, type HSPOL 710SH5, 2625 kVA (2100 kW), 440 V, 3444 Amps, 60 Hz, 0.8 PF, 710 rpm, year 1989. S/Nos.4540213 & 4540214.

(d) Emergency Diesel Generator:

There is one (1) Detroit Diesel Corp., USA, emergency diesel generator, 92 Power Series, model 8083-7405, type 08VF136774, V-8, 8 cylinders, 4.84" (123 mm) bore, 5" (127 mm) stroke, single acting, 4 stroke, water/radiator and fan cooled, with a rated output of 540 bhp at 1800 rpm. Eng.No.9A05536.

The diesel engine is directly coupled to an Indar S.A., 3 phase, A.C. generator, type LSB-355-S/4, 425 kVA, 440 V, 558 Amps, 60 Hz, 0.8 PF, 3 ph, 1800 rpm, year 1990. S/No.892.897.

(e) Shaft Generators:

There are two (2) ABB Stromberg Drives shaft generators, each driven via the power take-off drive shaft from the aft side of the port and starboard Lohmann & Stolterfoht reduction gearboxes. The generator is a 3 phase type, type HSPO 560RE2, year 1989, 2,625 kVA (2100 kW), 440 V, 3444 A, 0.8 pf, 1800 (Nr 2160) rpm, 60 Hz., S.Nos.4540215 & 4540216.

(f) Steam Generating Plants:

- (i) Two (2) Aalborg Marine Boilers & Engineering A/S, auxiliary oil fired composite boilers, type AQ-16, 9 bar max., 6.5 bar working pressure, oil fired side 2,000 kg/h steam capacity, and gas side (main engines exhaust) 2,800 kg/h steam capacity. S/Nos.7680 & 7681, year 1989.

The oil burning system is a Max-Weishaupt GmbH, type MS8Z oil burner.

- (ii) One (1) Aalborg Marine Boilers & Engineering A/S exhaust gas vertical smoke tube boiler, type AQ2, 9 bar max., 6.5 bar working pressure, with a 800 kg/h steam capacity (aux. diesel engines exhaust is used).

(g) Retractable Fin Stabilizers:

The vessel has one (1) Sperry Maine Gyrofin – Sasebo Heavy Industries Co. Ltd., Japan, retractable fin stabilizer plant, type 2R/034/J, consisting of two fin units (a port and starboard stabilizer fin unit) each fin 5.50 m (L) x 1.66 m (W).

(h) Air Compressors:

There are a total of five (5) air compressors;

- (i) Two (2) Sperre Mek. Verksted A/S, Norway, main starting air compressors, air cooled, type HL2/140, 88 m³/h (free air), 30 bar, 1180 rpm, S/Nos.140162 & 140163, each driven by an Stromberg - ASEA Motors electric motor, type HXA 200LB 6 B3 C / HXUR/C 408A3 B3, S1, 3332 VM3, 28 kW, 440V, 49 A, 60 Hz., 0.82 pf.
- (ii) One (1) Sperre Mek. Verksted A/S, Norway, control air compressor, air cooled, type LL2/77, 36 m³/h (free air), 10 bar, 1150 rpm, S/No.82073, driven by an ABB Motors electric motor, type HXA 132 SMC 6 B3C / HXUR/C 265C3, 3945 VM3, 5 kW, 440V, 10 A, 60 Hz., 0.79 pf.
- (iii) One (1) Sperre Mek. Verksted A/S, Norway, service air compressor, air cooled, type HLF2/77, 12 m³/h (free air), 8 bar, 1700 rpm, S/No.70697, driven by an ABB Motors electric motor, type HXA 100LB 4 B5C / HXUR/C 208A2 B5, 2612 VM3, 3.4 kW, 440V, 7 A, 60 Hz., 0.82 pf.
- (iv) One (1) Sperre Mek. Verksted A/S, Norway, emergency diesel generator air starting compressor, type HLF2/77, air cooled, 9.5 m³/h (free air), 30 bar, 3000 rpm, S/No.70699, driven by a HATZ Diesel engine, type E673LHK, No.561184053505.

(i) Oil Purification:

There are eight (8) sets of oil separators/purifiers;

- (i) Three (3) Alfa Laval (Spain), Main Engines/Aux. Engines F.O./D.O. purifiers, type FOPX 607 TFD-24-60, S/Nos.4048962, 4048963, and 4048964.
- (ii) Five (5) Alfa Laval (Spain), L.O. purifiers, type WHPX 405 TGD-24-60, S/Nos.4053759, 4053760, 4053761, 4053762 and 4053763.

(j) Passenger Accommodation HVAC System:

For air conditioning of the passenger accommodation and service spaces, there are three (3) ANISA - Sabroe – Aerzener Mascinenfabrik GmbH air conditioning compressor plants, type VMY 347M, (S/Nos.310027, 311749 and 320515), each driven by a Schorch electric motor, type BN7318L-PZ61U-Z 1EC 315L, IP23, Class F, 370 kW, 580 A, 440 V, 0.89 pf, 3560 rpm, 60 Hz.

There are eighteen (18) Anglo Naval e Industrial S.A (ANISA) AP-DT heating ventilation & air conditioning (HVAC) system fan rooms located throughout the vessel, and the system is designed for -15 deg.C outside temperature and inside accommodation +22 deg.C / 50% RH for heating.

(k) Refrigeration Plants:

(i) There are two (2) Carrier Corp. – Carlyle Compressor Co. provision chambers refrigeration compressors, types 5H40 A219 & 5H40 N72, R-22 compressor units, driven by ABB Motor electric motors, type MBT 225 S-4, 43 kW (58 hp), 440 V, 1780 rpm, 60 Hz.

(ii) There is one (1) Bock provision chambers refrigeration compressors (high temperature), type F5, R-22 compressor unit, No.AH16924-001, driven by ABB Motor electric motor, 17 kW, 440 V, 30.5 A, 1740 rpm, 0.86 P.F., 60 Hz.

(l) F.W. Generators:

(i) There are two (2) Atlas – Alfa Laval Desalt, Copenhagen, two (2) stage sea water distilling units, type AFGU 2-S-61, Unit Nos.A18009-1, A18009-2, A18010-1 & A18010-2, with a maximum total production capacity of 2 x 100 m³/day.

(ii) There is one (1) Sea Recovery Corp. Reverse Osmosis Desalination System, type SRC North Sea, S/No.NS9795102087. Frame configuration double length membrane elements (four), models Protec Bekaert Progressive Composite corp., PRO-8-1000, year 2008. It has a total output of 130 m³/day.

(m) Sewage System:

There are two (2) sewage treatment units, with respective vacuum tanks, one located forward and one located aft of the vessel;

(i) Two (2) Environvac “ORCA II - 330” sewage treatment units, type II MSD chemical injection system, each 330 persons capacity, 10,000 US Gal/day. S/Nos. Fwd Unit - RWT 89003-MJ & Aft Unit – RWT-89004-MJ.

The system is used with EVAC wall mounted toilet bowls in passenger and crew cabins.

(n) Incinerator:

There is one (1) Teamtec A/S, Norway/Golar Marine Incinerator, type GS500AUT, solid and sludge waste incinerator, with a Teamtec A/S burner, type H-510-30. Incinerator S/No.50212.

(o) Bilge Water Separator & Bilge Alarm:

There is one (1) Hodge Separators – The Victor “MiniSep” bilge oily water separating system, type/model, MS, S/No.9673, 10.0 m³/h, manufactured by Navitrade SA, Bilbao, Spain, year 1985, with a Rivertrace Engineering Ltd., type OCD-1, 15 ppm bilge oil monitoring alarm.

Speed & Fuel Consumption

The vessel’s main engines, auxiliary engines and oil fired boilers operate on IFO180 fuel, as well as on Marine Diesel/Gas Oil.

The vessel’s service speed was reported to be up to 16 knots, and the average fuel and lub. oil consumptions per 24 hours were reported as follows;

(a)	Main Engines fuel consumption at sea:	3200 litres/hr
(b)	Main Engines fuel consumption at sea:	200 kg/nm
(c)	Aux. Engines fuel consumption:	8.0 mt/day
(d)	MID Consumption IFO per hour:	3.2 mt/hr
(e)	Main Engine Nos.1,2,3 & 4 Lub. Oil Consumption per hour:	5.0 litres/hr/engine
(f)	Aux. Engine Nos.1 & 2 Lub. Oil Consumption per hour:	2.5 litres/hr/engine
(g)	Boilers in port consumption:	1.4 mt/day
(h)	Present port consumption (1 x Aux.Eng. & 1 x Boiler):	3.5 – 4.0 mt/day