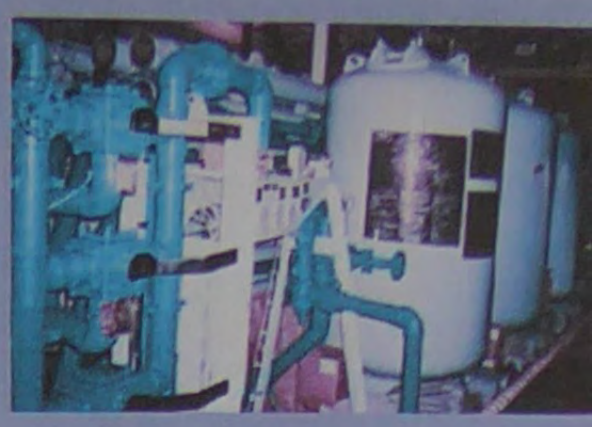
1.4 million Litres of drinkable water from seawater per day!

Two Reverse Osmosis Water Purification Systems mounted on a non-propelled water barge



Reverse Osmosis Water Purification System

PRODUCTION CAPACITY

Ready for immediate deployment, the systems are capable of producing daily a maximum of 300,000 gal (1.4 million litres) of filtered, desalted and drinkable water from seawater.

DIMENSIONS

Length: 120ft (36.6m)
Beam: 33ft (10.1m)
Depth: 10½ft (3.2m)
Displacement: 505 tons (513 tonnes)

EQUIPMENT INCLUDED

2 Banks reverse osmosis water purification units
Onboard chlorine manufacturing unit
2 Caterpillar 3406-engined highpressure water-pumps
2 Caterpillar 3406 back-up engines
2 High-pressure back-up pumps
2 Caterpillar 3306 155kW marine generators
20kW Caterpillar marine harbour generator
4 Hydraulic anchor winches and anchors
45t/m Hydraulic crane
2 Electric delivery pumps
2,500ft (762m) electric hose reel with 6” (152.4mm) delivery hose
Sufficient hermetically-sealed reverse osmosis filters to operate the vessel for three years.

LOCATIONS/DELIVERY

The barge is currently lying in safe berth at Valletta Harbour Malta.

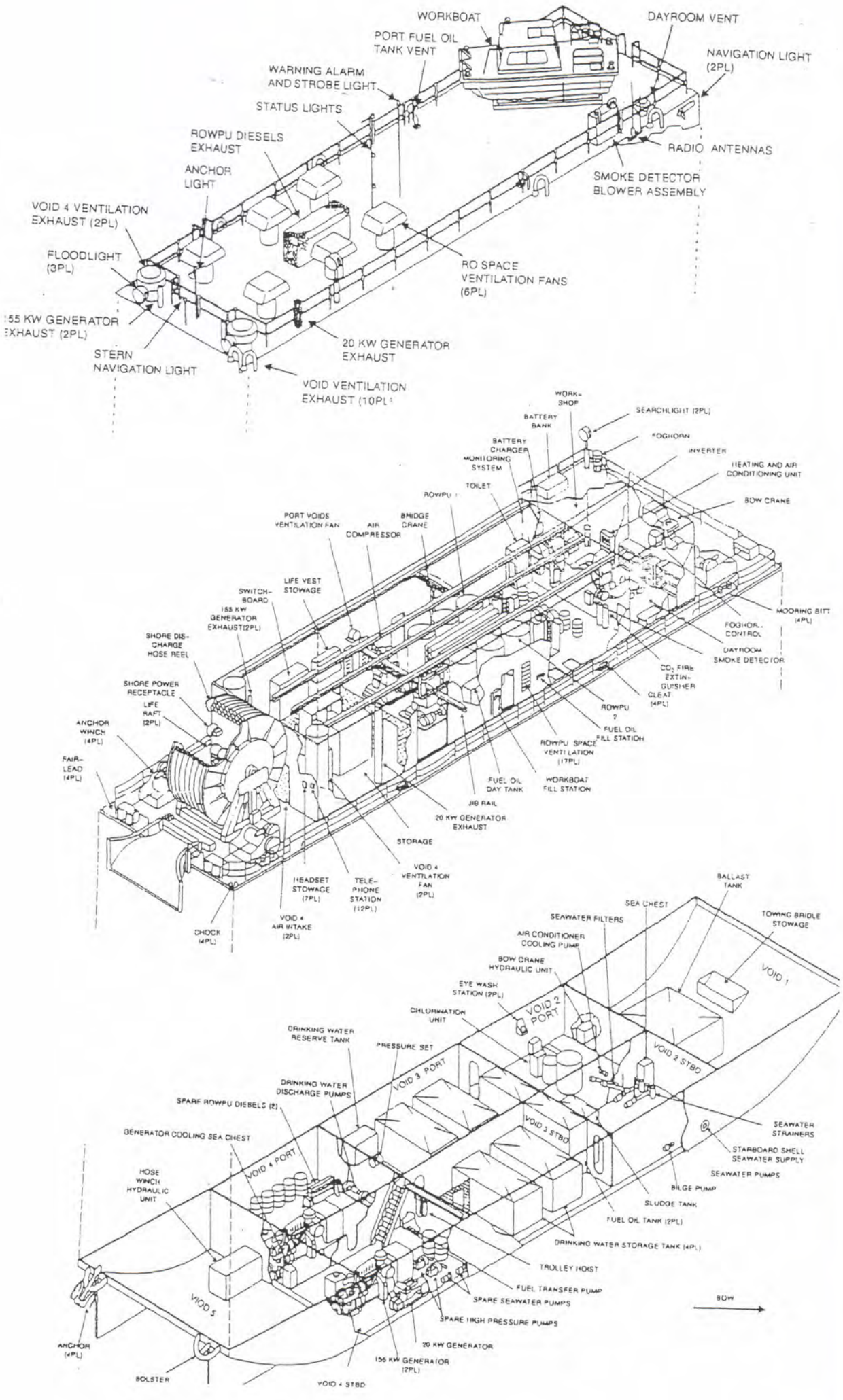
The vessel can be relocated globally.

ONBOARD FACILITIES

- Accomodation, mess and ablutions facilities for crew
- Onboard workshop
- Full fire and safety systems
- Onboard consumables and spares store
- Onboard incinerator

INTERNAL FLUID CAPACITIES

- Fuel Capacity: 72,000 gal (327,600 litres)
- Water Capacity: 15,000 gal (68,250 litres)


WORKBOAT
DAYROOM VENT
PORT FUEL OIL TANK VENT
NAVIGATION LIGHT (2PL)
WARNING ALARM AND STROBE LIGHT
STATUS LIGHTS
ROWPU DIESELS EXHAUST
RADIO ANTENNAS
ANCHOR LIGHT
SMOKE DETECTOR BLOWER ASSEMBLY
VOID 4 VENTILATION EXHAUST (2PL)
FLOODLIGHT (3PL)
RO SPACE VENTILATION FANS (6PL)
155 KW GENERATOR EXHAUST (2PL)
20 KW GENERATOR EXHAUST
STERN NAVIGATION LIGHT
VOID VENTILATION EXHAUST (10PL)
WORK-SHOP
SEARCHLIGHT (2PL)
BATTERY BANK
FOGHORN
BATTERY CHARGER
INVERTER
MONITORING SYSTEM
HEATING AND AIR CONDITIONING UNIT
TOILET
ROWPU 1
BOW CRANE
PORT VOIDS VENTILATION FAN
AIR COMPRESSOR
BRIDGE CRANE
LIFE VEST STOWAGE
SWITCH-BOARD
155 KW GENERATOR EXHAUST (2PL)
MOORING BITT (4PL)
FOGHORN CONTROL
SHORE DISCHARGE HOSE REEL
DAYROOM SMOKE DETECTOR
SHORE POWER RECEPTACLE
CO2 FIRE EXTINGUISHER
LIFE RAFT (2PL)
CLEAT (4PL)
ANCHOR WINCH (4PL)
ROWPU 2
FUEL OIL FILL STATION
FAIRLEAD (4PL)
ROWPU SPACE VENTILATION (17PL)
FUEL OIL DAY TANK
WORKBOAT FILL STATION
JIB RAIL
20 KW GENERATOR EXHAUST
STORAGE
VOID 4 VENTILATION FAN (2PL)
HEADSET STOWAGE (7PL)
TELEPHONE STATION (12PL)
CHOCK (4PL)
VOID 4 AIR INTAKE (2PL)
BALLAST TANK
SEA CHEST
SEAWATER FILTERS
TOWING BRIDLE STOWAGE
AIR CONDITIONER COOLING PUMP
BOW CRANE HYDRAULIC UNIT
VOID 1
EYE WASH STATION (2PL)
VOID 2 PORT
CHLORINATION UNIT
DRINKING WATER RESERVE TANK
PRESSURE SET
VOID 2 STBD
VOID 3 PORT
DRINKING WATER DISCHARGE PUMPS
SPARE ROWPU DIESELS (2)
VOID 3 STBD
SEAWATER STRAINERS
GENERATOR COOLING SEA CHEST
STARBOARD SHELL SEAWATER SUPPLY
VOID 4 PORT
HOSE WINCH HYDRAULIC UNIT
SEAWATER PUMPS
BILGE PUMP
SLUDGE TANK
FUEL OIL TANK (2PL)
DRINKING WATER STORAGE TANK (4PL)
TROLLEY HOIST
FUEL TRANSFER PUMP
SPARE SEAWATER PUMPS
VOID 5
SPARE HIGH PRESSURE PUMPS
BOW
ANCHOR (4PL)
20 KW GENERATOR
156 KW GENERATOR (2PL)
BOLSTER
VOID 4 STBD

Desalination Barge 231A F.A.Q.

1. History of the Barge – operational and stacked

The barge was built for the US army and was kept as a standby RO system in case US Army requested her operation. The barge was never used and all equipment was preserved and labelled with date. The Membranes that came with the unit are all still in plastic and stored.

This barge has the capability of producing 300,000 gallons of drinking water at 24hr. period and due to its 4 point mooring system sea conditions does not exceeding Sea state 3. Barge cannot operate where water depth is less than 15 feet at low tide. This level of water production is based on optimum environmental and optional conditions. The ROWPU system has two identical units, ROWPU 1 and ROWPU 2, that can be run independently and can produce 150,000 gallons per 24 Hr.

These Units were designed to run process feed water (sea salt water or brackish water from river or lake) into two products; brine water or dirty water that is dumped overboard and highly filtered non salt water which can also be stored on board barge in 4 tanks that hand hold a total capacity 15,000 gals. The Barge complies with WHO guidelines according to field quality of water and salinity and was built to reject 98% salinity.

2. Running of the plant – fresh water production:

i. When was it last fully operational

Barge was as stand by RO system and no records that it was run.

ii. When was it last test run

Generator and main pumps engines are run monthly without using High pressure pumps and membranes.

iii. What specialist knowledge is required to run it on a continuous basis

1 engineer with and 1 electrical knowledge to maintain engines and generators and 1 analyses person to analyse quality of water from RO systems

3. Barge certification

i. What certification does the barge have (Registration / Build / Safety certificates?)

Temporary Registration and can be Registered under any Flag

ii. Are there a full set of Construction Drawings and Operating / Maintenance Manuals for the Barge, as well as the RO Plant

Yes there are full set of Construction Drawings and Stability Manual and R/O plant

iii. When was the barge last dry docked – is there a certificate or record

Last Docked 29/03/2016 where scraping and high pressure water blasting was done, ultrasonic readings taken and 1 coat of primer and 2 coats of antifouling applied, all anodes changed and all underwater valves serviced.

iv. Are there log books recording previous operation and maintenance

barge is stacked

v. Is there a Stability Booklet for the barge

Yes available

4. Barge maintenance

i. Has the barge had a recent underwater inspection

Yes during Dry docking and UD measurement taken.

ii. Any comments on the state of the hull underwater (growth), paint protection of the sides, decks and upper structures, as well as internal spaces

Good and same level of protection on hull, side paint protection, deck, upper structure and internal space.

iii. Other machinery (mooring winches, gensets, domestic services, etc) – maintenance / operating records

Anchoring Equipment

Qty 2	port side
Qty 2	Stb Side
Rated	8000 LBs
Wire Rope	600 ft

Anchors 4

Type:	1000Lbs Standard Danforth

Bow Crane

Manufacturer	GRU Idrauliche (Morgan Crane Comp)
Type:	Single Arm Hydraulic Articulating
41895 Lbs	6ft. 7inch
2,425 Lbs	30 ft.

Raw Water Pumps

Qty	2
Type Centrifugal Direct coupling	

Cartridge Filter Assy

Qty	2
Capacity	12 filters

Multimedia Filters

Qty	6

Reverse Osmoses Block X 2

Qty	Block of 16 Tubes
Each Tube	5 reverses osmosis Membrane element

Chlorination Unit

Qty	1 Unit

Discharge pumps

Qty 2

Type	421-8B
RPM	1750
GPM	260

Shore Discharge Hydraulic Hose Reel

Material	Coflexip
Length	2500 feet

Overhead work electric crane

Make Spanmaster	5tons

Ventilation

Qty 6	Extractors
Qty 2	Blowers

Air Compressor

Bedford Indiana NATLBD 31823

Welding Set

Lincoln

Workshop

Qty 1	Press FAMCO
Qty 1	Pillar Drill Rockwell
Qty 1	Grinding wheel Baldor
Qty1	Vice
Qty1	Work bench

Accommodation

Bunk beds	Qty 3 sleeps 9
Fridge freezer	Qty 1
Washing Machines	Qty 2

iv. Genset engine hours since new / last overhaul

No overhaul still in excellent condition with low working Hrs.

5. Can the barge deliver water at a variable volume/pressure?

Yes

6. What is the maximum permissible back pressure on the delivery end?

High pressure pump

Type Roto-jet V belt driven

Rating 350 gpm(1325(L/min) at 805psi (5550 Kpa)

HP/RPM: 260 BHP/4380 rpm

7. How long, typically, to start the whole reverse osmosis process?

Once it is running and all membrane installed 24 Hrs to initialize system.

8. Would it be possible to install electric motors to drive the pumps, rather than diesel driven pumps?

Yes, as they are belt driven

9. What is the output (kW, Volts, cycles) of the two large diesel gensets, as well as the smaller Harbour genset?

For Main RO Pumps 1

Type	Diesel :
Power Rated	325hp @2100rpm/ 250hp/1800rpm
Engine Model	3406 DI
Serial N0:	6TB02014
Arrangement N0.	4W 841
Total Hrs	841

Main RO Pump 2:

Type	Diesel :
Power Rated	325hp @2100rpm/ 250hp/1800rpm
Engine Model	3406DI
Serial No.	6TB02037
Arrangement No.	
Total Hrs:	709

Total 4 engines 2 assembled with pumps and 2 new spare

Generator 1

Type	Diesel
Power rated:	155 KW
Model	3306TA
Serial No.	85Z02041
AR	1W3818
Total Hrs	807

Generator 2

Type	Diesel
Power rated:	155 KW
Model:	3306DI
Serial No.	85Z02034
AR:	1W3818
Total Hrs:	814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24.07.2018 12:51

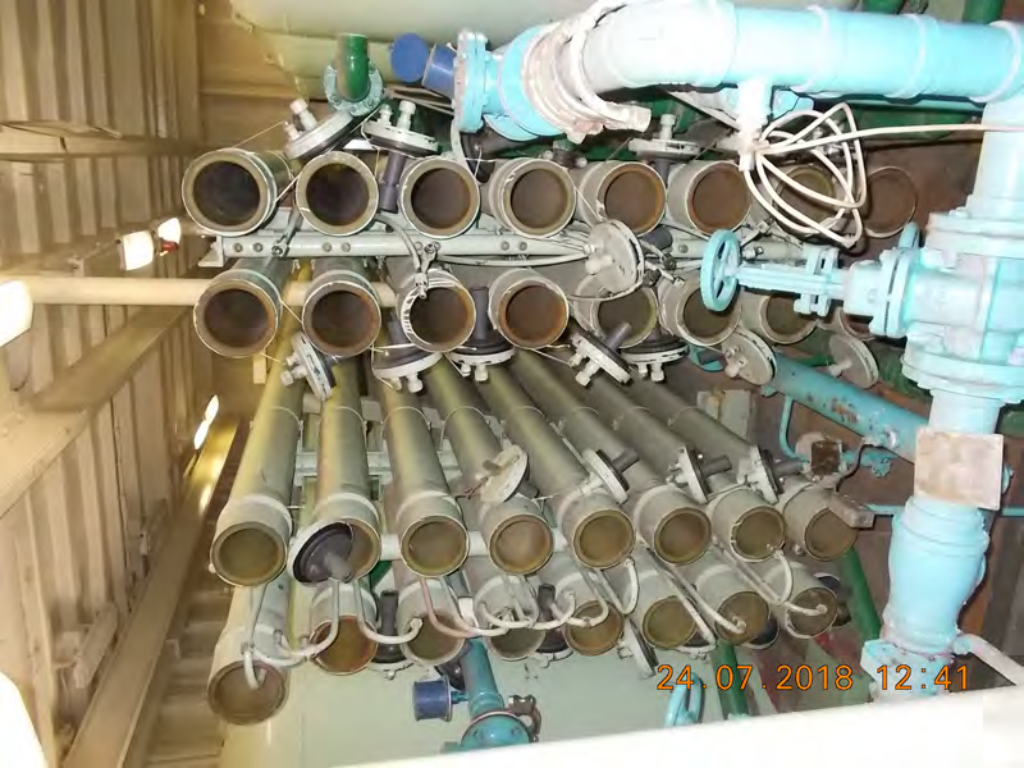

24.07.2018 13:03


BARGE 231A
24.07.2018 13:04


BARGE 231A
FREETOWN
24.07.2018 13:04


24.07.2018 12:40


24.07.2018 12:41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DANGER
CAUTION
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BRINE
TANK
SMOKING
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