



**Balnaves, Coniston, Greater East Spar
and Julimar**
Geotechnical / Geophysical and Biological
Survey

**Environment Plan: Public Summary
October 2011**

This summary has been submitted to comply with Regulation 11(7)(8) of the Offshore Petroleum and Greenhouse Gas Storage (Environment) (OPGGs(E)) Regulations 1999.

Introduction

Apache proposes to carry out four general petroleum support activities surveys in Commonwealth waters (Coniston, Greater East Spar, Balnaves and Julimar surveys). These activities consist of geotechnical and biological surveys and are proposed to commence on 8 October 2011 (weather conditions permitting) using the vessel Mamta from Greatship Subsea Solutions.

The location coordinates of the survey sites are shown in **Tables 1 to 4** below. **Figure 1** below shows the location of all four surveys on the North West Shelf, which also illustrates near-shore habitat types.

The General Petroleum Support Activities Environment Plan (GPSA EP; EA-00-RI-158) will be used to manage the proposed activities, as it covers the expected environmental risks and control measures to be undertaken during the three types of programs.

Table 1: Boundary coordinates for the Balnaves Field Development Defined Area

Latitude (S)			Longitude (E)		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
20	02	25.238	115	09	51.484
20	02	26.999	115	12	43.517
20	05	09.578	115	12	41.677
20	05	07.814	115	09	49.594

GDA 94, Zone 50

Table 2: Boundary coordinates for the Coniston / Novara Field Development Defined Area

Latitude (S)			Longitude (E)		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
21	18	03.330	114	04	00.700
21	18	18.209	114	05	04.819
21	19	55.340	114	06	22.601
21	21	46.429	114	06	40.381
21	22	08.670	114	06	28.051
21	22	49.912	114	04	45.271
21	23	19.522	114	03	49.889
21	23	49.621	114	03	13.309
21	24	54.911	114	02	14.500
21	19	54.739	114	01	13.901
21	18	57.784	114	01	38.060

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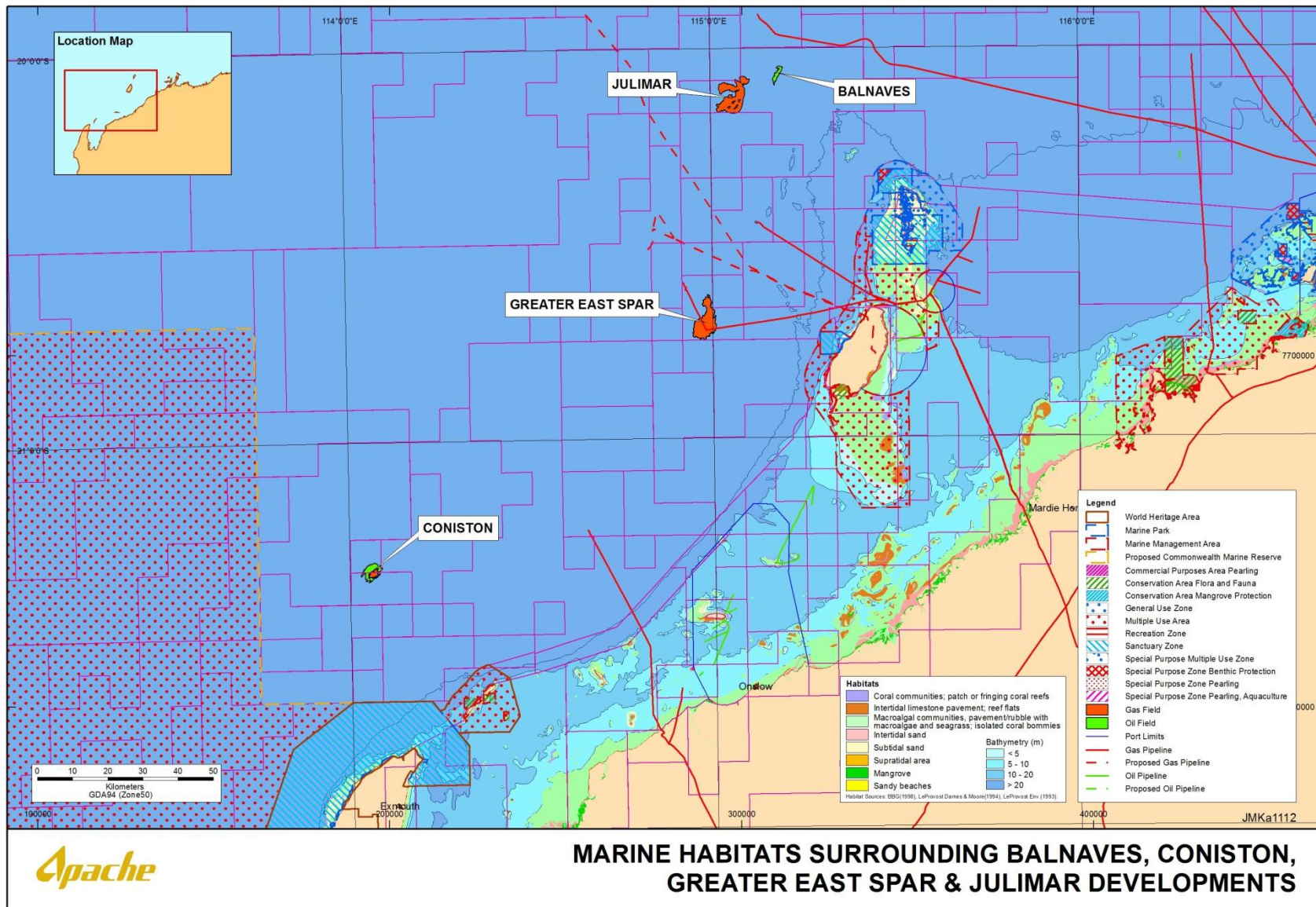


Figure 1: Locations of the proposed survey sites

Table 3: Boundary coordinates for the Greater East Spar Survey Area

	Latitude (S)			Longitude (E)		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Halyard-1 well	20	36	18.74	114	55	08.41
Future Beam well	20	41	12.75	115	01	53.20
East Spar PLEM	20	43	90.89	114	59	03.77

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Table 4: Boundary coordinates for the Julimar Survey Area

	Latitude (S)			Longitude (E)		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Wheatstone Platform	19	55	45.77	115	23	02.21
Brunello A manifold	20	01	49.07	115	12	06.86

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Program of Activities

The survey activities will commence with the Coniston surveys, followed by Greater East Spar, Balnaves and Julimar. **Table 5** below shows the anticipated duration at each site to carry out the survey scope of works. The activities are intended to commence on 6 October and finalise on the 6th of November, weather permitting.

Table 5: Anticipated duration of GPSA surveys per site

Site	Duration
Coniston	4 days
GES	5 day
Balnaves	6 days
Julimar	14 days

A brief overview of activities is given below.

Biological seabed surveys

Biological seabed surveys (stills and video acquisition using an ROV) will be conducted over the proposed subsea equipment footprints and the flowline corridors within the Balnaves, Coniston/Novara and Greater East Spar (Phase 2) development areas. This will be followed by benthos sampling at one location in each survey site for identification of infauna diversity. The benthos sampling will be carried out with a Van Veen grab sampler or a box corer.

Geotechnical surveys

Geotechnical surveys for all four sites consist of in-situ testing (piezocone penetration (PCPT)) and acquisition of geotechnical soil samples.

All activities at the survey sites will be undertaken in accordance with the regulations and guidelines set out in the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (OPGGs(E))*.

Greatship Mamta

Apache will use the Greatship Mamta (see **Appendix B**) to carry out the GPSA surveys at the four locations. The vessel will adhere to Apache's requirements as committed to in the GPSA EP as well as with Apache's Environmental Requirements for Marine Vessels procedures (AE-91-IQ-202) including refueling management, marine fauna sighting and reporting, incident

and waste management. Mobilisation will occur in Broome and demobilisation in Port Hedland.

General Environmental Considerations

Marine habitats

Regional surveys of the NWS indicate the seafloor composition is uniform throughout the area but with spatial variation in the grain size and origin of surface sediments. Surface sediments in the area are predominantly composed of skeletal remains of marine fauna, with lenses of weathered sands. Regionally, the seafloor tends to be flat, unconsolidated and sedimentary with occasional calcarenite rock outcrops.

The unconsolidated sediments generally support a diverse benthic infauna, consisting predominantly of mobile burrowing species, which include molluscs; crustaceans (crabs, shrimps and smaller related species); polychaete, sipunculid and platyhelminth worms; asteroids (sea stars); echinoids (sea urchins), and other small infaunal animals.

Marine fauna

The location of the proposed survey sites is distant from any sensitive habitats and Marine Reserves. The survey programme during October coincides with the peak sea turtle and seabird nesting periods on the Montebello and Lowendal Island groups and with the dugong breeding period. Also, the survey programme will be carried out during the peak south migration period of the humpback whale and it is therefore likely that humpback whales might be encountered during the survey programme (see **Table 6**).

Table 6: NWS biological and human activity seasons

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Dugong breeding	breeding								breeding			
Hawksbill turtle nesting												
Flatback turtle nesting												
Green turtle nesting												
Loggerhead turtle nesting												
Coral spawning												
Whale migration						north			south			
Whale sharks												
Algae	growing				Shedding fronds				growing			
Seabird nesting												
Prawn trawling												
Tourism												
Hannah-1 drilling period												

Key

	Peak activity, presence reliable and predictable
	Low level of abundance/activity/presence
	Activity not occurring within the area
	Proposed survey programme

Environmental Guidelines and Commitments

The environmental guidelines and commitments for the proposed activities that are outlined in the GPSA EP (EA-00-RI-158) and Apache's Environmental Requirements for Marine Vessels procedure (AE-91-IQ-202) will be followed for all activities during the proposed survey work.

In addition, the vessel will follow the mitigation recommendations from the HAZID workshop and the Regulations 2000 (Part 8 – Interacting with cetaceans and whale watching) requirements for interacting with cetaceans.

Stakeholder Consultation

There are no stakeholders of relevance to the GPSA activities as this is a limited duration project at each location and the vessel will directly communicate with any other vessels in the vicinity as per normal AMSA regulations.

Further Details

For further information about the geotechnical and biological survey program, please contact:

Jolanda Keeble

Senior Environmental Scientist

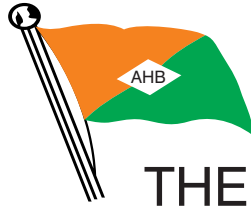
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Appendix A
Greatship Mamta Vessel Specification



THE GREATSHIP GROUP

8,160KW DP2 MULTI ROLE ROV
AND SUPPORT VESSEL

GREATSHIP “M” CLASS

GREATSHIP MAMTA



Greatship Global Offshore Services Pte Ltd

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Phone: +65 6576 5600 | Fax: +65 6223 9059 | Email: marketing@greatshipglobal.com

OUTLINE SPECIFICATION

Class Notation	DNV: +1A1, E0, SSC, DYNPOS AUTR Clean, Comf-V(3), Supply vessel, LFL*, DK(+), hl (2,5/2,8) Naut OSV(A)
Place of build	Keppel Singmarine, Singapore
Year of build	July, 2010
Flag	Singapore
IMO	9466453

MAIN PARTICULARS

Design	MT 6012
LOA	93.60 m
Length PP	86.60 m
Breadth moulded	19.70 m
Depth moulded	7.85 m
Max loaded draft	6.30 m

PERFORMANCE

Trial Speed	14.5 knots
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CAPACITIES

Deadweight	Approx 4068 tons
Net tonnage	1450
Gross tonnage	4850
Deck cargo	Approx 1070 tons
Cargo deck dimensions	63.6 x 15.85 m
Deck area	1020 m ²
Deck strength	10 t/m ²
Freezer room	Available
Cooler room	Available
Tank washing	Available

DECK EQUIPMENT

Capstans	2 x 10 tons
Tugger winches	2 x 15 tons
Deck crane	2 x 5 tons @ 15 m radius
Cargo securing winches	6 x 3 tons

SPECIAL OPERATION FEATURES

ROV handling capability	Launching / recovery area & power capacity of 2 x 1250 KVA
Offshore Crane	50 / 75 tons AHC, 2000m wire
Fire Fighting (option)	FiFi I
Helicopter deck	Suitable for Sikorsky S92
Moonpool (option)	6 m x 5.3 m
Container sockets	5 x 440V + 5 x 240V
Sea water cooling line on deck	30m ³ / hr
Service air outlets on deck	7
Survey cabling	Main deck to wheel house
CCTV coverage for all key areas with display at Wheelhouse, ECR and Charterer office	

DISCHARGE

Dry bulk	2 x 30 m ³ / min at 5.6 bar
Fresh water	1 x 0 - 200 m ³ / hr at 9 bar
Ballast / drill water	2 x 0 - 200 m ³ / hr at 9 bar
Liquid mud / brine	4 x 0 - 100 m ³ / hr at 24 bar
Methanol + Special products	2 x 100m ³ / hr at 9 bar (each)
Fuel oil	2 x 0 - 200 m ³ / hr at 9 bar
Brine	2 x 0 - 200 m ³ / hr at 24 bar
Methanol	2 x 0 - 200 m ³ / hr at 9 bar
Inert gas	Nitrogen gas generator 11 Nm ³ / hr
Slop	2 hydraulic pumps

PROPULSION AND MACHINERY

Main engines: kW	2 x 2600 kW, 2 x 1480 kW
Main engines: model	Wartsila 8L26 / 8L20
Propellers	2 x steerable thrusters, 2600 kW, 2800 mm (dia)

THRUSTER

Bow 1	1 x 1050 kW / 900 rpm CPP, Tunnel
Bow 2	1 x 1050 kW / 900 rpm CPP, Tunnel
Bow 3	1 x 1050 kW / 900 rpm CPP, Tunnel

AUXILIARY ENGINES

Shaft generators	Nil
Diesel generator	Nil
Emergency generators	1 x 189 kW
Supply system – voltage	690 V / 440 V, 60 Hz

ACCOMMODATION

1-man cabins	11
1-man cabins (client)	5
2-man cabins	25
Marine crew	16 – 20 persons
Hospital	Yes
Recreation rooms	Gym, Reception, Lounge
Conference rooms	2
Offices	2 nos
Sky lobby	1
Total accommodation	66 berths, fully air-conditioned

ANCHORING EQUIPMENT

Anchor points	2 x min 10 tons
Winches	2 x electric driven anchor / mooring

DP SYSTEM

Gyro compass	3 units
Position reference units	2 x DGPS + 1 Cyscan (optional)
Acoustic reference	1 x HiPap 500 + 1 HiPap trunk
Motion reference	2 units
DP class	II
ERN	(99, 99, 95)

OTHERS

Rescue craft	1 unit FRC + 1 unit rescue boat
Water maker	25 m ³ / day
Sewage treatment plant	Suitable for 66 persons + holding tank

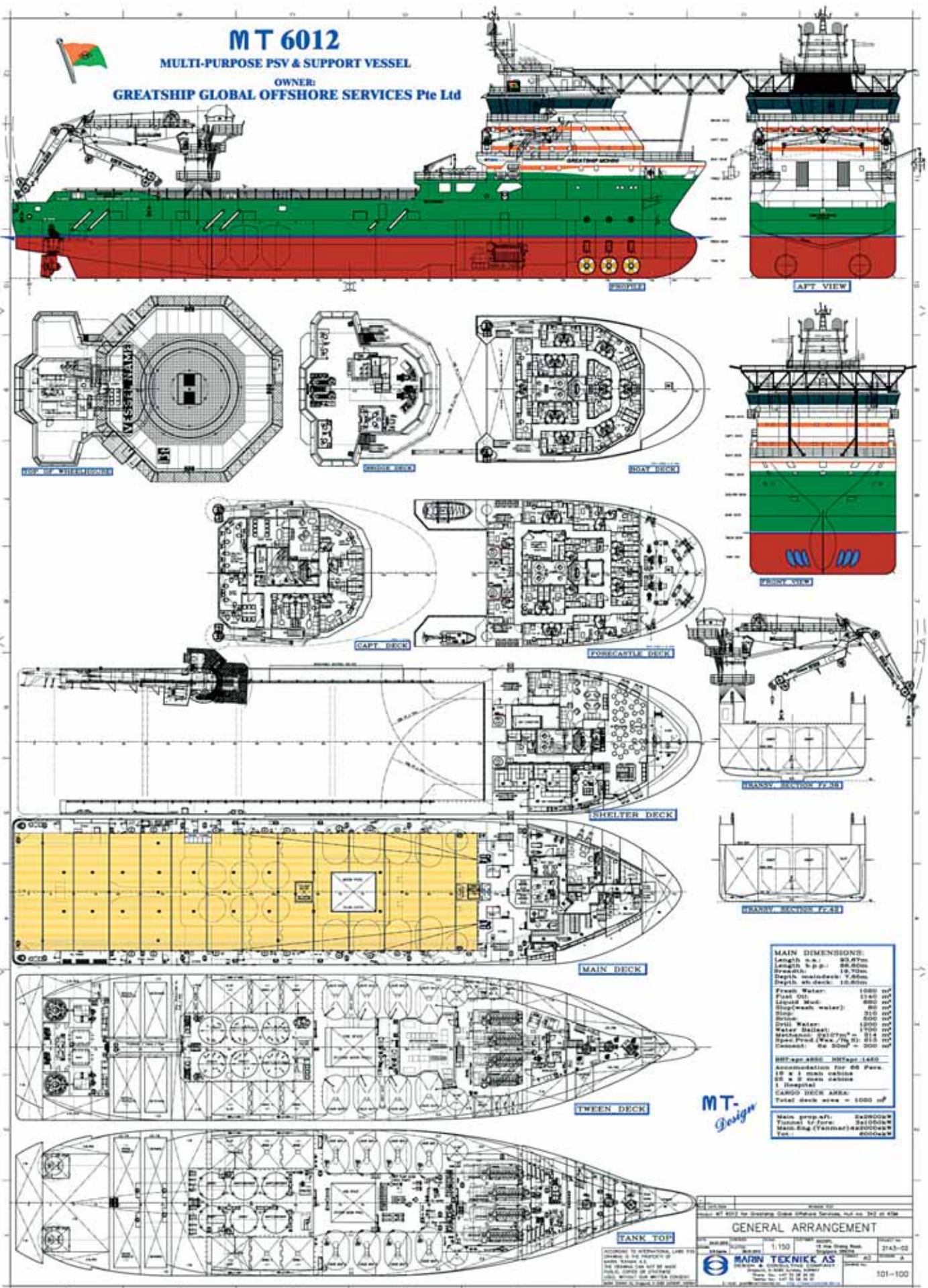
REGULATORY COMPLIANCE

SPS Code 2008	Yes
Crew accommodation comfort	Complies with class & IMO regulations for noise & vibration
Environment protection	Complies with IMO regulations & class requirements for environmental protection

NAVIGATION EQUIPMENT

Bridge design	Complies with periodic one-man operations
Electronic charts	Dual ECDIS
Navigational watch alarm	Complies with IMO recommendations from BNWAS
Survey area	2 nos. provided

GENERAL ARRANGEMENT PLAN



MAIN DIMENSIONS:

- Length o.a.: 82.87m
- Length b.p.p.: 66.00m
- Breadth: 19.70m
- Depth maindeck: 7.65m
- Depth wh.deck: 16.00m

Water Capacity:

- Fresh Water: 1000 m³
- Fuel Oil: 1240 m³
- Liquid Wash: 680 m³
- Sludge (wash water): 80 m³
- Rough: 210 m³
- Drain: 500 m³
- Drill Water: 1200 m³
- Water Ballast: 1700 m³
- Machinery: 25107 m³
- Deck Prod (Wax / Rig Oil): 815 m³
- Accommod: 6m 2000 m³

ACCOMMODATION: 60 PERMITS

- Accommodation for 60 crew
- 10 x 3 man cabins
- 10 x 2 man cabins
- 1 Hospital

CARGO DECK AREA:

- Total deck area = 1000 m²

MT-Design

GENERAL ARRANGEMENT			
Scale: 1:150	Sheet No: 2143-02	Rev: A	101-100
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