Vessel Management Plan

Magallanes- ATIR Installation

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1 INTRODUCTION

1.1 Project Overview

Magallanes is installing a 2MW floating tidal device at EMEC tidal test site in the Fall of Warness in a water depth of 49m (LAT). The tidal platform will be carrying two tidal turbines.

The device has been built in Spain and will be towed to Shapinsay Sound (East of Kirkwall) for commissioning. The device will then be installed onto its preinstalled mooring system in the Fall of Warness.

Figure 1- Mooring location: Shapinsay and Eday

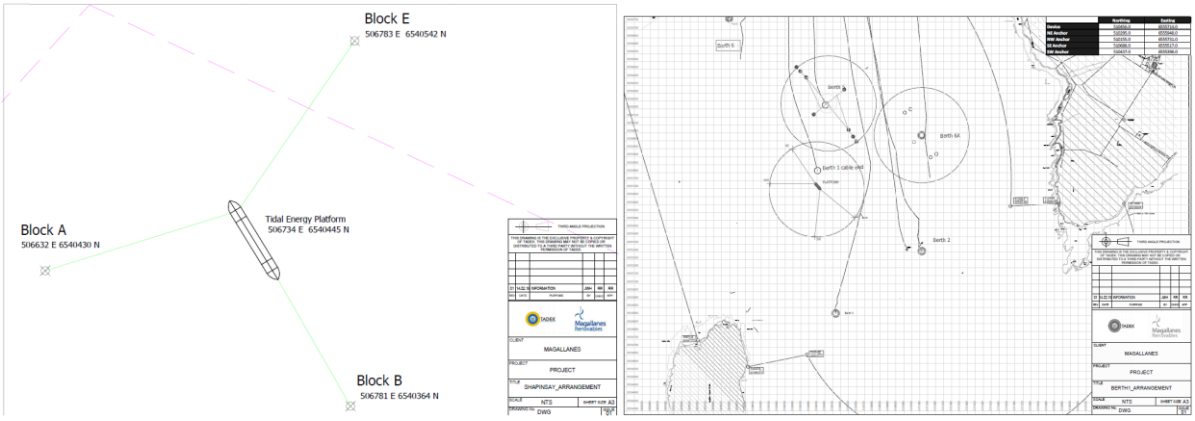


Figure 2- Left: Mooring Location at Shapinsay; Right: Mooring Location at Eday

1.2 Document Objective

This document outlines the Vessel Management Plan (VMP) that Leask Marine will follow during the offshore operations to undertake the installation of Magallanes Offshore Tidal Energy Platform (ATIR) References

2 SCOPE OF VMP

The following document cover the vessel activities in relation to:

- Number, type and specifications of vessels used;
- Approximate vessel transit corridors;
- Locations of working ports;
- Vessel coordination during installation.

2.1 Scope of Works

In order to fulfil all the requirements for the installation of Magallanes ATIR the project is divided into 6 phases, each of them is to be conducted in a single period of marine operations. This document undertakes the following operations:

1. Mooring Device at Shapinsay
2. Blade Assembly
3. Mooring Installation at Fall of Warness
4. Towing Operation to Fall of Warness
5. Device Hook-up
6. Cable Connection

Relevant paperwork such as Risk Assessments and Method Statements will be produced for each phase of the installation process, these documents contain the methodology to follow during each offshore operation, Site(EMEC) standard operating procedure requirements, Toolbox talks briefing, Vessel and Equipment, QHSE and Site Particulars

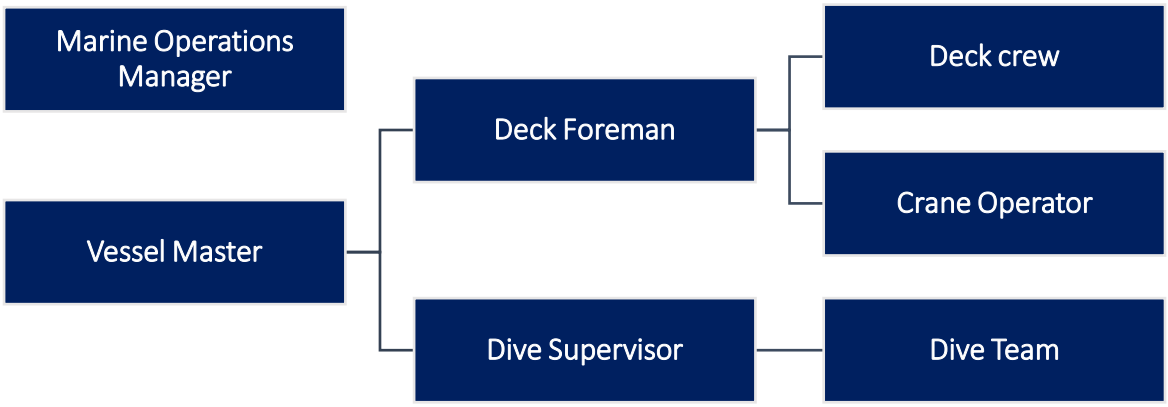
In all cases, vessel operations are subjected to the standard operating procedure and managed by the vessel master. These will be cover and identified during the RAMS Briefings.

All operators will be familiar with the practices to be adopted and exercised in the execution of:

- Emergency Response Plans;
- Man Overboard Procedures;
- Environmental Response.

3 OPERATION PARTICULARS

3.1 Operation Structure



The operation structure of each vessel remains constant throughout the project, some minor adjustment may appear, this will depend on the phase of work being performed.

3.2 Responsibilities

Each person in the organisation must ensure the effective implementation of the HSE Policy in their area of responsibility.

Leask Marine Operation Manager

Although he may delegate some of his tasks, the Project Manager is ultimately responsible for all Safety, Health and Environmental aspects of the Project. This includes amongst others:

- Perform a HSE Risk Assessment prior to commencement of the works;
- Examine whether the HSE Plan meets contractual and legal requirements;
- Ensure the employment of sufficient qualified and trained personnel;
- Ensure that employees understand the HSE Plan and their HSE responsibilities;
- Discuss the HSE Plan with Captains and subcontractors before start of work;
- Make sure that emergency preparedness and response is accurate;
- Arrange periodic HSE inspections and meetings;
- Develop and implement safety and health measures to minimise personnel risks;
- Review the effectiveness of the safety and health measures on the Project;
- Report incidents according Scaldis Incident Reporting and Follow-up (SC-028-007);
- Report the HSE actions such as inspections, audits and toolbox meetings;
- Ensure that suitable personal protective equipment (PPE) is provided to the personnel on the Project;
- Apply and communicate the project HSE instructions to suppliers / sub-contractors;
- Set HSE targets for the project;

Vessel Master

The vessel master is the responsible for all project-specific marine operations as well as the emergency response and environmental response coordinator. The vessel master has the authority to intervene in operations at any time if they deem in the vessels best interest.

Dive Supervisor

The dive supervisor is responsible for the safety of the dive team in all diving specific operations, as well to agree on decisions if conditions are unsafe and not suitable for diving operations.

All other personnel

The rest of the team will operate under the instruction of the Marine Operation Manager

3.3 Interfaces & Contacts

Client	Magallanes Renovables
Marine Contractor	Leask Marine Ltd.

Magallanes Renovables

TITLE	NAME	TELEPHONE	MOBILE
Managing Director	Mario Iglesias	+34 986 408 259	+34 656 828 776
R&D Technician	José Nuño	+34 986 408 260	-

EMEC

TITLE	NAME	TELEPHONE	MOBILE
Project Manager	Florence Ungaro	+44 (0) 7843 738 144	+44(0)1856852005
Operations & Maintenance Manager	John Skuse	+44 (0) 1856 852 205	+44(0)7972033137

Leask Marine

TITLE	NAME	TELEPHONE	MOBILE
Director	Douglas Leask	+44 (0) 1856 874 725	+44 (0) 7889 651 680
Operation Manager	Oliver Bethwaite	+44 (0) 1856 874 725	+44 (0) 7966 228 830
Commercial Manager	John Macleod	+44 (0) 1856 874 725	-
C-Odyssey		-	+44 (0) 7718 424 491

3.4 Communications

Internal Communications will be carried out by VHF and UHF radio with the following channels:

- Emergency Channel – VHF Channel 16
- Leask Marine – VHF Channel 74
- VTS – VHF Channel 11
- Harbours – VHF Channel 14

4 SITES

4.1 Site Details

The operations will take place at both EMEC Tidal Test Sites in Shapinsay and Eday at Orkney Isles.

The ATIR will be moored temporarily at the Scale Tidal Test Site, in Shapinsay Sound, as per Figure 3

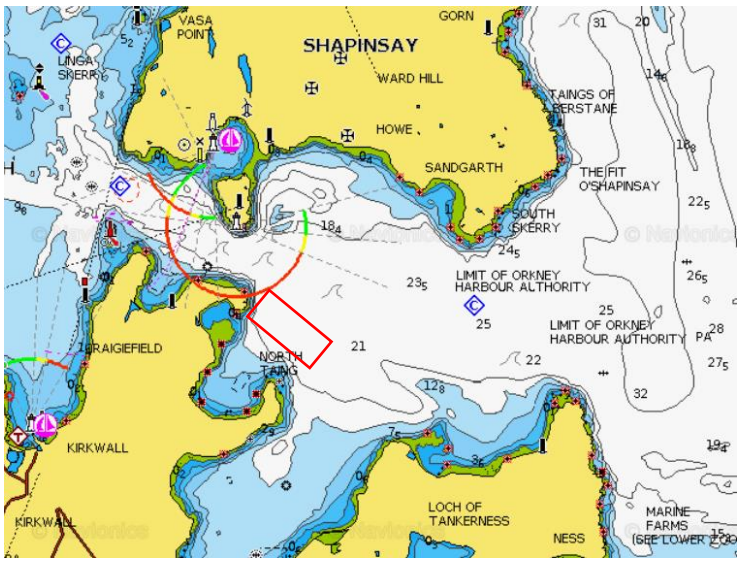


Figure 3 – EMEC scale tidal test site at Shapinsay. Orkney

The water depth is around 25m and the seabed is a mixture of gravel and stone. The northern part of the test site is within this main tidal flow while the south-western part of the site is in a more turbulent region with less predictable currents. The expected tidal flow through the area is zero to 1.17 – 1.46 Knots reaching up to 1.75 Knots at spring tides.

The device will be towed to Berth 1 at Fall of Warness as per Figure 4

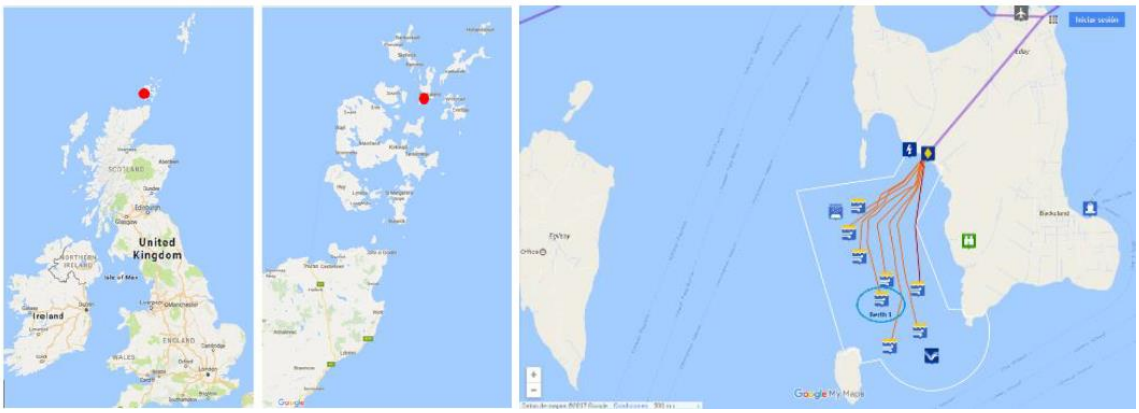


Figure 4 – Berth 1 at EMEC Test Site Fall of Warness

The water depth at berth 1 is 49m (LAT). The site in characterised by strong North-West and South-East tidal current expected to reach a peak of 4m/s (7.8 knots). Significant wave height, peaking at 6m, and high wind exposure are also forecasted for the sight

4.2 Access & Site Environment

All work sites are controlled for the duration of the operation:

- Secure site – All Leask Marine personnel to sign in/out
- Leask Marine permit to work required
- Works to be carried out from Vessel
- Crane / Man basket available if required

Daily Operations Meeting
Vessel Master / Project Operations Manager to confirm all vessel movements with other site parties and ensure all notifications are in place

4.3 EMEC Requirements

Entry to site is strictly according to EMEC requirements, principally, but not exclusively:

- **EMEC SOP-003 - Permit to Access Sit (Reference 13)**

- **EMEC SOP-063-07-02 – Maritime Safety Information (Reference 18)**

- EMEC REQUIREMENTS – PRE-ENTRY:

Permit in Place from EMEC for site access and installation works

- EMEC REQUIREMENTS – ENTRY:

Upon crossing over into the site, as indicated by the Admiralty chart line, the EMEC Duty Officer should be notified via text message to 07624 345 411, the following:

  - Name of Submitter
  - Name of Vessel
  - Time on Site
  - Persons on Board
  - Permit Number

- EMEC REQUIREMENTS – EXIT

Upon crossing over out of the site, as indicated by the Admiralty chart line, the EMEC Duty Officer should be notified via text message to 07624 345 411, the following:

  - Name of Submitter
  - Name of Vessel
  - Time on Site
  - Persons on Board
  - Permit Number

- EMEC REQUIREMENTS – RE-ENTRY:

If at any time the vessel leaves site for any duration the same entry protocol must be followed

5 VESSEL MANAGEMENT AND COORDINATION

5.1 Leask Marine QHSE

All procedures will be carried out in accordance with the Project QHSE plan.
Suitable site controls will be put in place which will include but may not be limited to:

- Risk assessment
- Tool box talks
- PPE to be identified before each operation.
- Ensure all emergency equipment on site is ready for use
- Any additional hazards to be identified and added to change of records form
- Ensure permit to work system is in place
- Sea Swell to be monitored at all times
- Tide to be monitored at all times
- Surface conditions to be monitored at all times
- Leask Marine Permit to work system signed off by client

5.2 Environmental Impacts & Aspects

Where possible, any Environmental Risk Assessment resulting from the design stage (prepared by client or engineer) will be taken into account. The risk assessment shall contain the identification of hazards, assessment of hazards and the implementation of control measures.

Following aspect shall as a minimum be considered:

- Energy consumption;
- Emissions to atmosphere, water and soil;
- Discharges to sea;
- Seabed disturbance ;
- Physical presence;
- Resource management;
- Noise (during both preparations and removal phase);
- Underwater noise;
- Dust and fumes;
- Marine growth;
- Emergency response including spill prevention, reporting and clean up;
- Handling hazardous materials.

6 TOWING ROUTE

The device is to be collected from Berth 1 at Shapinsay site and towed to Berth 1 at the Fall of Warness.

Taking into consideration a minimum water depth of 20m and a towing speed of 4 knots Leask Marine proposed the following towing route.

Based on this tow route the minimum clearance (at LAT) to the blades would be 1.4 m

In case of bad weather conditions, vessel to return to Shapinsay, by agreement of all parties. Clear 48 hrs weather forecast prior operation.

	EASTING	NORTHING
Shapinsay: Route Start	506668.6	6540323.3
Fall of Warness: Route End	510456.0	6555714.0

Table 1- Towing Route, start and ending point coordinates.

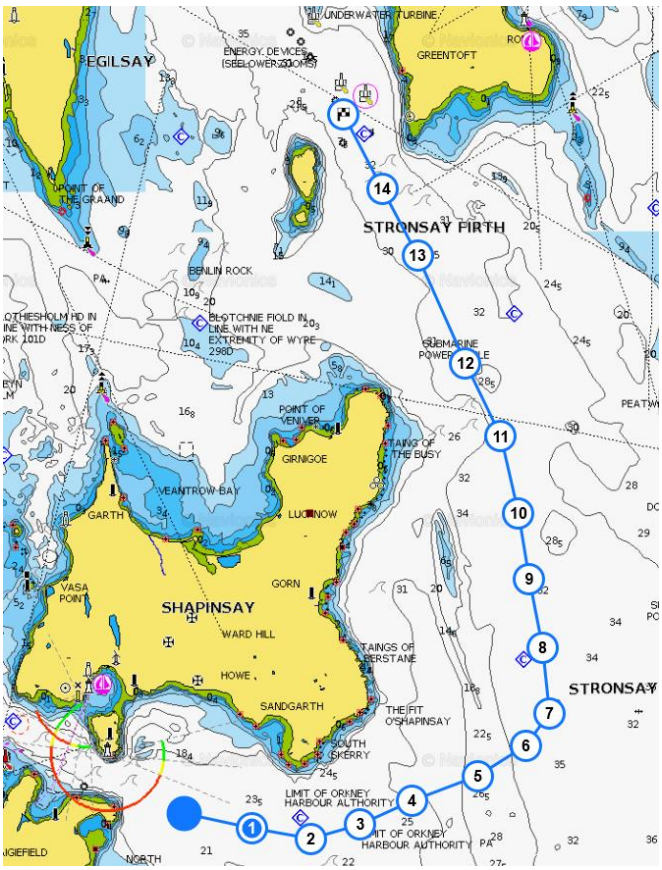


Figure 5- Proposed Towing Route

The following route was considered as a route to access EMEC Tidal Test Site when there is no ATIR on tow

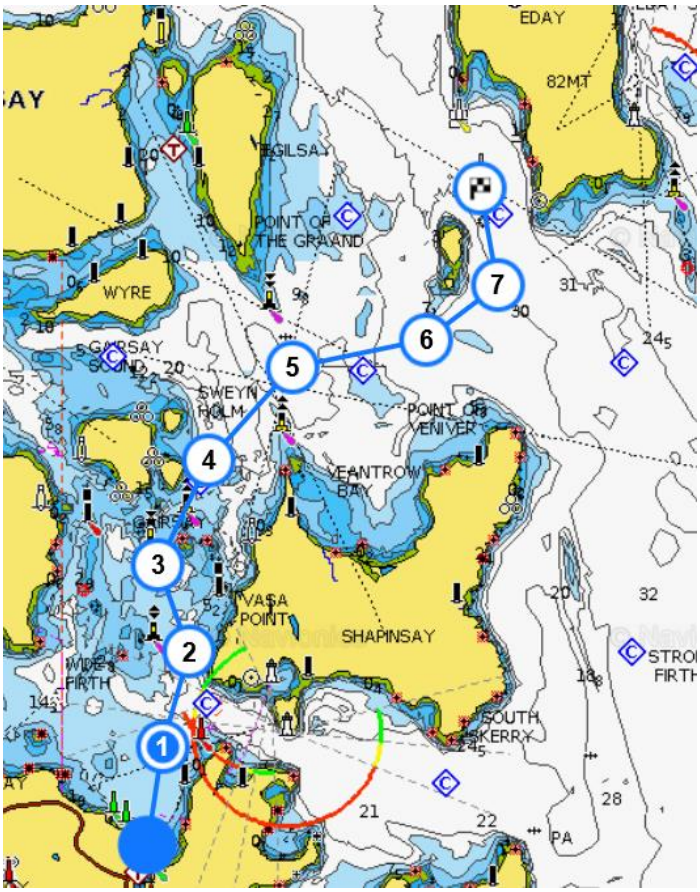


Figure 6- Proposed access route, no ATIR in tow

6.1 Vessel Ports

During the activities associated with the installation of the ATIR, the vessels are likely to use ports at Hatston in Kirkwall and Kirkwall Harbour.

7 OPERATION SCHEDULE

During the installation it may be necessary to demobilise multicat vessels from the Fall of Warness back to Hatston Pier, subjected to weather and tidal conditions.

Activity	Anticipated frequency of vessel movements
ATIR Installation	
Preparation and installation of moorings at Shapinsay Sound	5-10 day trips
Preparation and installation of moorings at Fall of Warness	5-10 day trips
Assembly of blades at Shapinsay Sound	8-10 day trips
Towing the platform from Shapinsay Sound to Fall of Warness	1-day preparation 1-day towing operation (2 x vessels)
Installation of the platform (including attachment to the moorings and subsea cable connection)	8-10 day trips (possibly over 2 x neap periods)
Surveillance/maintenance	
Surveillance on site	Visits at regular intervals. 2 trips per month (1-day trip). During the first month of platform operation, visits may be more frequent.
Maintenance on site	Visits at regular intervals. 1 trip per month (1-day trip). During the first month of platform operation, visits may be more frequent.
Towing the platform for maintenance	2-3 day trips
Redeployment of the platform at Fall of Warness after maintenance	4-6 day trips

8 VESSELS

The vessel that will collect the Floating platform from Shapinsay and tow to Fall of Warness will be either of Leask Marine Multicat Vessels the C-Fenna or C-Odyssey.
If required, any other Leask Marine Vessel can be used as a support vessel.

8.1 Main Vessels

The vessels proposed for the operation is the MV C-Odyssey and C-Fenna.

LEASK MARINE

MV C-Odyssey

Specifications

General

Type of vessel	Multiworker Twenty6
Year built	2011
Category	MCA Cat 1 Up to 150 miles (from safe haven)
Passengers	12 plus crew
Flag state	UK
Port of registry	Kirkwall
MMSI No.	235088132
IMO No.	9636307
Call Sign	2ETW7
Official Number	917987

Dimensions

Length	26m
Beam	10.5m
Depth	3.5m
Draught	2.5m
Air draught – mast up	13.8m
Air draught – mast down	8.2m
Gross tonnage	150t
Free Deck Space	120m²

Deck Equipment

Towing winch		60 t
Anchor handling		60 t
(Combined lift)		120 t
Tugger winch	3 x	15 t
Towing hook	SWL	25 t
Capstan		5 t
Bow roller	5m SWL	120 t
Aft roller	3m SWL	60 t
Deck carrying capacity		100 t
Deck crane	Hs 185t/m 5530kg @	18.5m
Deck crane (aft)	Hs 60t/m 4630kg @	10m

Hydraulics towing pins/stopper

Pins	
SWL	50 t
Design load	105 t
Hub	400 mm
Stopper	
SWL	75 t
Design load	150 t
Hub	400 mm

Tank Capabilities

Fuel/oil	100m³
Black/grey water	9m³
Fresh water	45m³
Dirty oil	0.9m³
Ballast water	88m³

Accommodation

Cabins	2 off twin berth 2 off single berth

Large mess room
Galley and laundry

Generators

1 off 78 KVA
1 off 35 KVA
K.W. 1790

Propulsion System

Main engines	2 x caterpillar C32
Total power	2,400bhp at 1,800 rpm
Propulsion	2x fixed pitch propellers Nozzles 1,500mm

Performance

Bollard pull	27 t
Speed	10 knots

MV C-FENNA

Specifications

General

Type of vessel	Neptune Eurocarrier 2611
Year built	January 2013
Category	MCA Cat 1 Up to 150miles (*from safe haven*)
Passengers	12 *(plus 3 crew)*
Flag state	UK
Port of registry	Kirkwall
Classification	B.V.
Official Number	922340
IMO	9675963
Call Sign	MBAH3
MMSI	232008023

Dimensions

Overall Length	26.48m
LPP	23.65m
Beam	11m
Depth	3.5m
Draught	2.61m
Freeboard	847mm
Free Deck Space	145m²
Maximum Deck load 100te (6t/m²)	
Gross tonnage	160.78t
Net Tonnage	76t

Tank Capabilities

Fuel Oil	106m³
Fresh Water	43m³
Lub Oil	5.7m³
Hydraulic Oil	1.9m³
Dirty oil	2m³
Gearbox oil	1.9m³
Bilge Water	8m³
Ballast	34m³
Sewage	4m³

Propulsion System

Main engines	2 x Cummins QSK38-M
Total Output	2 x 1400 bhp at 1800 opm
Gearboxes	Reintjes WAF 364L 4.92:1
Propulsion	2xF.P. Ø 1630mm

Bow Thruster

360° 280kw

Auxiliary Equipment

Generator Sets	Caterpillar C9, 2 x 200kW, 250 kVA
Fuel Oil Separator	Westfalia 1740, L/H, OTC-3-02-137

Deck Equipment

Deck Cranes - FWD Heila HLRM 230-4SL, Fixed hook SWL 10.3te at 16.5m winch SWL
- AFT Heila HLRM 140-3S, Fixed hook SWL 10te at 12.17m winch SWL

Winches
- 1 x Anchor Handling Winch 100te
- 1 x Towing Winch 50te
- 4 x Tugger Winches 15te *(Fwd Port, Fwd Stbd, Aft Port, Aft Stbd)*

Towing Hook	1 x Mampaey 30te SWL
Towing pins	2 x Hydraulic + wire catcher
Anchor	2 x 265kgs
Chain	110m x 17.5mm
Anchor winch	1 x 17.5mm hydraulic heeling motor: 140bar-60 ltr./min
Bow roller	6m

Performance

Speed	10 knots
Bollard Pull	35.6 ton

Accommodation

Heated and air-conditioned living spaces for 10 persons, consisting of 5 double crew cabins, a galley and mess and sanitary facilities.

Nautical Equipment

1 x X-band ATA Radar + ARPA, JRC type JMA-5212
2 x VHF radio telephones THRANE & THRANE type SAILOR RT 6222
1 x MF/HF radio telephone THRANE & THRANE type SAILOR 6300
2 x INMARSAT-C satellite communication systems THRANE & THRANE type SAILOR 6110
1 x Echosounder JRC type JFE-380/25
1 x Universal AIS JRC type JHS-182
1 x Auto Pilot ALPHASEAPILOT MFA
1 x Navtex JRC type NCR-333
1 x Satellite Compass JRC type JLR-21
1 x Magnetic Compass CASSENS & PLATH
1 x DGPS global positioning system JRC type JLR-7800
1 x EPIRB, MCMURDO type E5
1 x SART, MCMURDO type S4
1 x Speed log JRC type JLN-205
1 x GSM/UMTS system
1 x Bridge Navigational watch alarm system ALPHATRON

2 x portable VHF Radiotelephones GMDSS SAILOR type SP3520

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8.2 Dive Support Vessel/ Personnel Transfer Vessel

LEASK MARINE

MV Uskmoor

Specifications

General

Type of vessel	Workboat
Year built	1984
Category	MCA Cat 2 Up to 60 miles (from safe haven)
Passengers	14
Flag state	UK
Port of registry	Kirkwall
Official Number	705438
Call Sign	MDEF2
MMSI	232004463

Basic Functions
Marine support vessel
Dive support vessel
Commuter

Dimensions

Length	16m
Beam	5.5m
Draught	1..5m
Gross tonnage	40.31gt

Deck Equipment
Hydraulic Stern Gantry certificated at 4 tonnes
2 tonne Hydraulic Deck Winch
2no. 2 tone capstan winches
Hiab Crane XS 1222-2 lifting 3800kg at 2.8m/1280kg at 8.2m

Facilities
Specious galley and day cabin
Webasto diesel heating system

Generator
1 off 9 KVA Generator
1no. 10m³ Compressor

Propulsion System

Main engines	2 x Doosan 200bhp
Propellers	Twin fixed in nozzles
Speed	9 knots

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8.3 Personnel Transfer Vessels

LEASK MARINE

MV Challenge

Specifications

General

Type of vessel	Landing Craft
Year built	1989
Category	MCA Cat 3 Up to 20 miles (from safe haven)
Passengers	2 crew plus 6
Flag state	UK
Port of registry	Kirkwall
MMSI	235083546

Basic Functions

Marine support vessel
Dive support vessel
Commuter
Vessel to vessel transfer

Dimensions

Length	14.4m
Beam	4.26m
Draught	1.44m
Gross tonnage	under 15gt
Deck area	10m x 4.2m
Deck cargo	10 tonne

Deck Equipment

2 tonne winch
Palfinger PK12000/M/AD
980kg at 10.1m
Hydraulic Bow door ramp

Facilities

Specious galley and day cabin

Propulsion System

Main engines	2 x Ford 130 hp.
Propellers	2 fixed pitch propellers

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MV Explorer

Specifications

Ferryman FRM720 Workboat (RHIB)

Builder: Ferryman Boats RHIB

Built 2002

Classification: Mecal

Category: MCA cat 3 (Restricted): up to 20 miles from a safe haven

Speed: 25 knots maximum speed in calm water *(with reduced speeds in weather up to force 5)*

Commercial Purpose: Light Work Boat Duties

Maximum Number of Persons to be Carried: **6 Persons**

Call Sign: MNCU8

MMSI: 235037234

Length 7.4m

Beam 2.75m

Dry weight 420kgs

Engine: Volvo Penta KAD32P *(125 kW)*

Maximum H.P. 170HP

Maximum Load 450kgs (6 persons)

Equipment

Liferaft: 6 Person - Ocean Safety ISO9650, with Solas Pack B

Fixed VHF DSC

Portable VHF: ICOM IC MIEUROV

GPS: 2no. FURUNO NAVNET V

AIS: ICOM Class B Transponder MA-500TR

Radar: Incorporated in above

Sounder: Incorporated in above

Log: Incorporated in above

EPIRB: 6no. PLB's "Fast Find"

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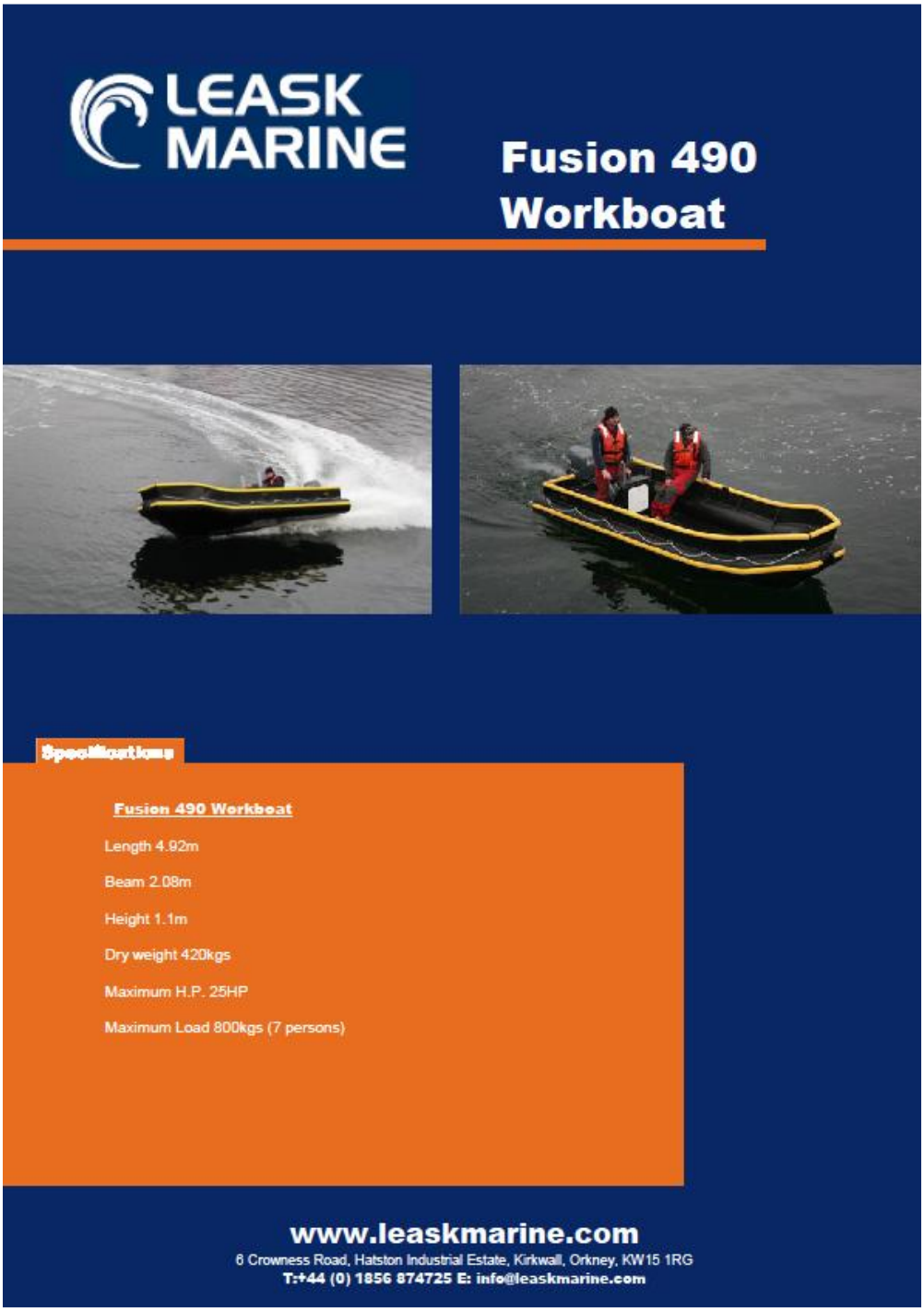
8.4 Line Boat



- The safety rescue boat is fitted with a 25bhp outboard
- The safety rescue boat will be in a constant state of readiness when the MV C-Odyssey is moored onsite, a designated operator and crew man will be assigned during the TBT.
- The vessels aft crane is used to launch and recover the emergency recovery vessel.

END OF DOCUMENT