RV Keary

Overview

The RV Keary was formally dedicated by Minister Conor Lenihan and Mrs. Barbara Keary on October 6th 2009 at Poolbeg Yacht Club, Dublin. The launch coincided with a celebratory 10th anniversary conference of seabed surveying in Ireland, Seabed 10. According to Minister Lenihan, “in commissioning the new vessel, RV KEARY, we will also see cost effective mapping of our shallowest waters and a valuable addition to our national research capacity”. The RV Keary is owned by the Geological Survey of Ireland and will play an important role in INFOMAR’s commitment to survey the 26 priority bays and 3 priority areas outlined in the programmes strategy.

The vessel is named after Raymond Keary, one of Ireland’s pioneering marine geologists. It is a purpose built, aluminium catamaran designed for the survey of shallow waters, with a draft of only 1.7m. The 15 metre fully-equipped and state of the art hydrographic/geophysical launch deliver survey data that meet all required international specifications.

Specifications

Name:	RV Keary
Registered:	Dublin, Ireland
Call Sign:	EIGO9 (Echo India Golf Oscar Nine)
MMSI Number:	250001654
License:	Marine Survey Office P5 License for 12 passengers

Technical Specifications

Length (OA)	15.5 m
Length (Hull)	14.6
Beam (moulded)	5.6 m
Draft	2.1 m with equipment deployed
Engines	Cummins QSC 8.3-500 INT
Rating	368 kW/2600 rpm
Speed (90% power)	22 knots
Fuel	2000 litres
Hull Type	Asymmetrical catamaran
Construction	Marine Grade Aluminium

Navigation and Communication Equipment

Positioning system	POS-MV 320 inertially-aided Real-Time Kinematic (IARTK)
COMMS	GSM integrated Mobile Broadband Internet connection
	VHF radio with GMDSS compliance
	NAVTEX and Weatherfax receiver
Radar	Furuno
Sonar	Furuno 360 degree search sonar

Ship sounder	Furuno echo sounder

Survey Systems

Singlebeam ES	Kongsberg Simrad EA400 singlebeam echosounder
Multibeam ES	Kongsberg Simrad Kongsberg EM2040 multibeam echosounder
USBL	Sonardyne Scout Ultrashort Baseline positioning (USBL)
Subbottom profiler	Edgetech 3200XS chirp shallow seismic sub bottom profiler
Side Scan Sonar	Edgetech side scan sonar FS 4200
Sparker	GEO Spark 1500 seismic sparker
Positioning system	POS-MV 320 (with PosPac PPK software)
Base/Control GNSS	Leica GS10 (Shore based logging (PPK))
Sound Velocity Sensor	AML SV 'smart probe'
Sound Velocity Probes	AML and Valeport probes
Ground thruting	Seabed Sampling Equipment (Day grab and Van Veen grab)
	Kongsberg Still and Video drop or tow camera
	Inuktun crystal cam video camera system

Innovations for INFOMAR operations on the RV Keary

1. Retractable Pod

The pod was designed to accommodate the single beam, multibeam, chirp and USBL transducers and SV sensor in one housing. The pod is mounted on a hydraulic ram that can raise and lower the instrumentation into and out of the water. Once the pod has been lowered into the survey position, lateral rams lock the pod in place to assure that the system is stable and the instrumentation is in the same position every time the pod is moved. With the pod down, maximum speed is 10 knots. However, with the pod raised the maximum speed is up to 22 knots. This allows the RV Keary to transit quickly to and from areas of operation with minimum time lost to slow transits. Once onsite, the pod can be quickly lowered into place and survey can begin saving time and money. The ability to raise and lower the pod also provides safety for the instrumentation and vessel as the instruments are only in the water during survey operations. This reduces the chances of damaging the instruments in the pod, especially when operating at speeds higher than normal survey speed.

View of extended pod and hydrofoil which allows RV Keary to transit efficiently between survey areas and port.

2. 360 degree search Sonar.

As the RV Keary operates in relatively shallow depths, safety of the vessel is a major issue. A combination of lookouts and the forward looking sonar provides information about the nature and depth of the seabed ahead of the ship andl allow the crew to deal with any potential problems that lie in the survey path.

3. Auto Pilot Line Steering

Another development on the RV Keary is the use of online auto pilot steering of survey lines. This means that the vessel follows a predefined path on the survey plan and compensate for currents and wind that may affect the course of the vessel. Importantly, this system can be quickly switched to control by the Master when manual control of the vessel is desired. This system improves efficiency as the most effective line plan can be made to maximise the coverage of data for the time used to gather the data.

View of the bow of RV Keary with wave piercer in the centre to minimise the effect of waves on the vessels stability which improves data quality and comfort.

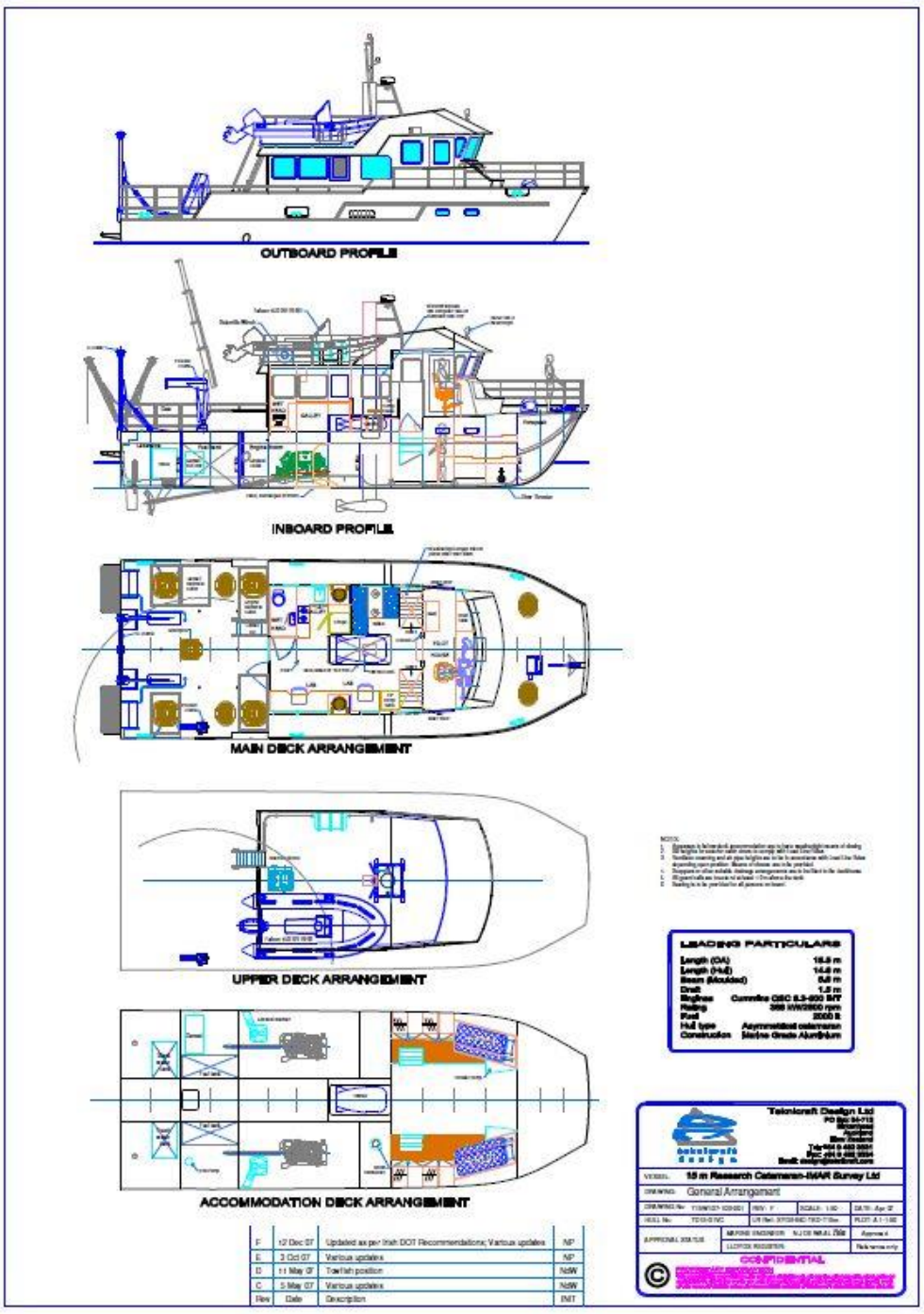
4. Applanix Pos-MV Unit

The RV Keary uses an Applanix POS-MV system to provide pitch, heave, roll, timing, positioning and heading information to the survey equipment and software. The POS-MV topside unit is connected to an IMU (inertial motion reference unit) mounted near the multibeam echosounder and to a pair of GNSS antennae all of which, when combined provide accurate attitude, heading and positioning readings to all the hydrographic and geophysical software. A 1 PPS (pulse per second) time-sync signal is provided to the acquisition softwares to insure adequate time sinchronisation.

Once the vessel's POS-MV nav. files are post processed with RINEX data from onshore GNSS base stations, the horizontal accuracy is improved to the order of +/-5cm with similar values in the vertical plane. This allows for the calculation of GPS tide heights with the vessel itself essentially acting as a tide gauge.

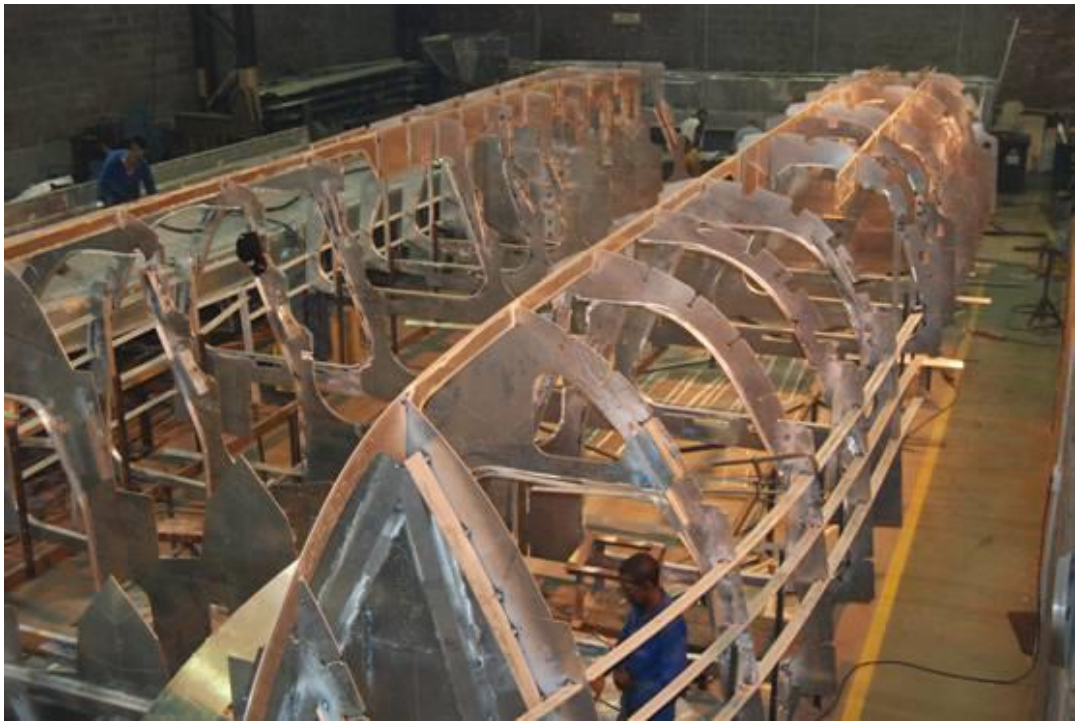
The construction of the RV Keary

The vessel contract to build the vessel was awarded to IMAR Tionscail, Galway with the assistance of Maritime Services Ltd. The vessel was designed by Nic De Waal of Teknicraft in New Zealand with the specific brief of a nearshore, shallow water survey platform.

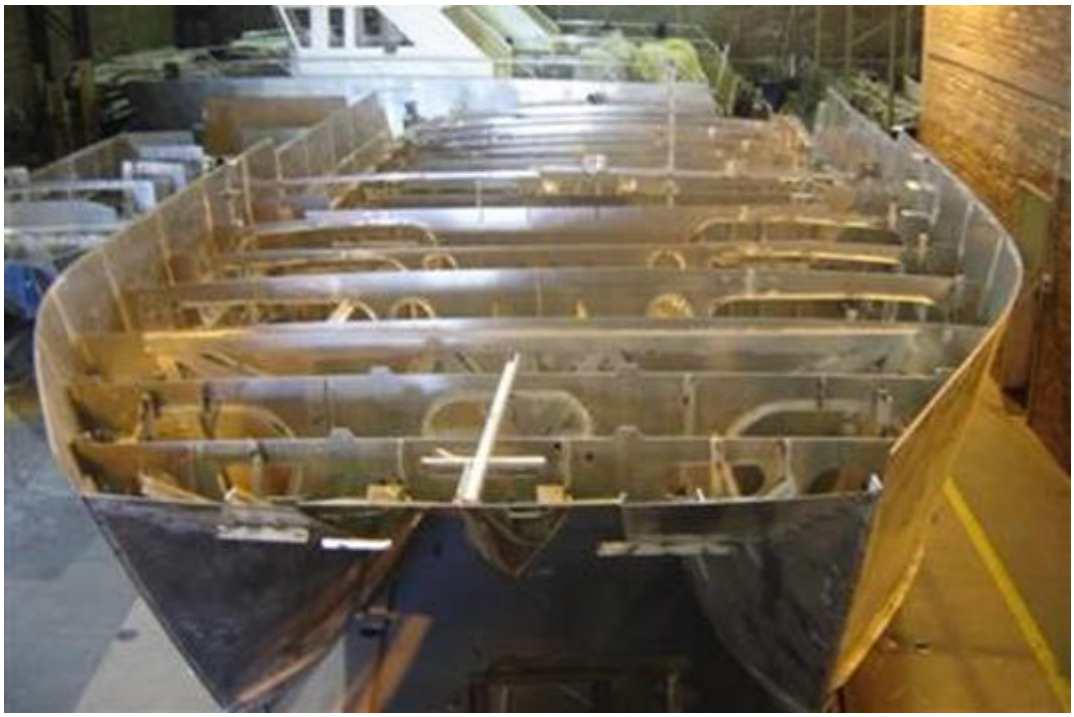


Plans of the RV Keary by Nic De Waal of Teknicraft.

The vessel was manufactured by Veecraft Marine of Capetown, South Africa between February 2007 and October 2008. The following images show the vessels fabrication:



Ribs of catamaran hulls being fabricated in the Veecraft workshop in South Africa.



Finished catamaran hulls awaiting deck and accommodation structure.

Near complete fabrication of aluminium external structure of RV Keary with bridge under construction.

View from the starboard quarter of RV Keary at the same stage of construction.

Internal fitting out of galley area.

View of finished dining area, forward of the galley.

View of finished galley.

View of finished bridge.

Initial sea trials in South Africa.

Back deck of RV Keary with A-frame used when performing seabed sampling operations.