

## **New Marine Research Vessel.**



The new Irish Research Vessel “KEARY”

### **Overview**

The RV Keary is Ireland’s latest marine research vessel and 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 will deliver survey data that will meet all required international specifications. The vessel was manufactured by Veecraft Marine of Capetown, South Africa between February 2007 and October 2008.

Length (OA)	15.5 m
Length (Hull)	14.6 m
Beam (moulded)	5.6 m
Draft	1.7 m
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**

POS MV is an inertially-aided Real-Time Kinematic (IARTK) technology developed by Applanix to provide accurate attitude, heading, heave, position, and velocity data, representing the latest in state-of-the-art inertial/GPS technology. In operational terms, the POS MV logs all motion of the RV Keary in space and time, allowing the removal of the vessels motion from the sonar and shallow seismic datasets.

Ultrashort Baseline positioning (USBL) allows instruments operating underwater to be accurately positioned in relation to the vessel. USBL systems calculate position by combining acoustic range and bearing data from a vessel transceiver with attitude, heading and GPS sensor information. This is useful when performing underwater camera work, using towfish instruments or during ROV operations.

VHF radio with GMDSS compliance

GSM integrated Mobile Broadband Internet connection

NAVTEX and Weatherfax receiver

Furuno Radar

Furuno 360 degree search sonar

Vessel's Furuno echo sounder – as distinct from the retractable survey echo sounder.

### **Acoustic Survey Equipment**

Kongsberg Simrad EA400 singlebeam echosounder

Kongsberg Simrad EM3002 multibeam echosounder

Edgetech chirp shallow seismic sub bottom profiler

Edgetech side scan sonar

Georesources Geospark 200 seismic sparker

AML sound velocity profiler

SV probe

### **Seabed Sampling Equipment**

Kongsberg Still and Video drop or tow camera

Inuktun crystal cam video camera system

Van Veen grab

Day grab

SeaRay Remotely Operated Vehicle

### **Innovations for INFOMAR operations on the RV Keary**

#### **(a) The Pod**

The pod was designed to accommodate the single beam head, multibeam heads, chirp, USBL transceiver 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.

The main advantages to this system are;

1. 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.
2. 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.

(b) POS MV

Due to operations being close to the coast, the POS MV data can then be post-processed using rinex data from active stations on the Ordnance Survey of Ireland GPS network. This eliminates the need to provide an onshore tide gauge infrastructure as tidal height changes can be extracted from the data for the specific area of operation.

(c) 360 degree serach Sonar.

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

(d) 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 will follow a predefined path on the survey plan and will 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.