R/V Sarmiento de Gamboa: a New Vessel for Spanish Marine Research

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INTRODUCTION

A new research vessel is under construction in C.N.P. Freire shipyard in Vigo, Galicia, Spain. Finnanced by Spanish Ministerio de Educación y Ciencia, with european FEDER funds (60%) , Consejo Superior de Investigaciones Científicas and Xunta de Galicia (regional government of Galicia) with an overall cost of 22.5 million euros, will be operated by CSIC. Named "Sarmiento de Gamboa" honouring a Galician XVII century explorer, will be a multipurpose global (non polar) ship with 45 days endurance, silent and operating 330 days per year.

CHARACTERISTICS

The main working disciplines will be:

- ·Physical and chemical oceanography
- ·Marine Geology and Geophysics
- ·Marine Biology
- ·Meteorology
- ·Fisheries
- ·ROV deployment and operation

The main characteristics are:

- ·Overall Length 70.5 m
- ·Breadth 15 m
- ·Height 7.9 m
- ·Displacement 2979 Tn
- ·Draught 4.9 m
- ·Endurance 40 days /12 knots / 11500 nm
- ·Max. speed 15 knots
- ·Dynamic positioning
- ·Maximum Complement 42
- ·Propulsion: DC diesel-electric
- ·Bow And Stern Thrusters

Deck equipment: cranes and winches

- ·A suite of winches , 2 w/ slip ring
- ·Aft "A" frame and two portside frames (telescopic CTD frame and geological/plankton "A" frame).
- ·500 m^2 of laboratories
- ·Five containerized labs on working deck.
- ·Acoustic "gondola"
- ·Two Drop Keels for acoustic transducers.

The Propulsion
Because will be a silent ship, propulsion is diesel-electric.

- ·3 x 1400 kW (1958 HP) Värtsilä AC generator, 1000 rpm
- ·Siemmens coupling
- ·2 x 1200 kW Teco-Westinghouse tandem electric DC motors
- ·5 blade propeller.

SCIENTIFIC EQUIPMENT

Acoustics

The ship will be provided with an acoustic "gondola". This "gondola" is an "airplane-like" structure mounted on the hull. This structure is separated from the hull avoiding the bubbles produced by the bow of the ship could affect transducer face. Multi-beam and parametric echo-sounders will be installed on the "gondola".

Also, two drop keels will be installed in the middle part of the ship. These two drop keels of 3 meters long and 4 meters depth will separate the transducers installed from the hull avoiding noise produced by water flux and noise from hull itself. Doppler current meter, biological echo-sounders, acoustic modems and USBL transducers will be installed on these keels.

CTD Hangar

As an innovation on Spanish research vessels, CTD operation will be carried out from a hangar that will keep water sampling with safety. The hangar, two deck high, is equipment with a telescopic crane and an electrical winch , both inside the hangar.

ROV operation

"Sarmiento de Gamboa" is defined to operate IFREMER ROV Victor 6000 as specified, which means must be suitable and adapted for operating deep water ROV.

Seismics

Seismics equipment will be mobile installed on deck. Compressor will be containerized.

Fisheries

The ship will be provided with two 20 tons trawling winches for bottom and pelagic trawling, both mobile, and with facilities for fish manipulation.

Laboratories

One of the main goals of the ship is that laboratories are wide, avoiding small rooms. Adapting these wide rooms to the different

purposes will be one of the tasks during cruise planning. The objective is to not completely define the use of the main lab avoiding installations not to be used in different cruises, specially those rooms or labs in the upper deck. Thermo regulated lab, analysis and chemical and fisheries labs, on the principal deck will be used for sample manipulation, analysis and storing. Freezers, fish working area and hold are also on this deck.

On the bow the room for water continuous sampling and CO_2 sampling is installed. Wiring and electrical transducers paths coming from “gondola” and drop keels will be directed to the “Electronic Room” that contains all acoustics electronics and will be connected with upper deck “Electronic Control Room” and with the bridge.

The upper deck is the main scientific working area. Main lab, wet lab and “electronic control room” are all on this deck, avoiding long ways from one to the other.

Working Deck

Working deck is suited with an array of “tie down”. Separated 600 mm between, these tie-down will allow installation of the different equipment, containers and winches on the deck, adapting the distribution for the different cruises and purposes.

Five 20’ containers could be installed on the deck, including radioactivity lab and ultra clean lab.