SCIENCE AND TECHNOLOGY ORGANIZATION
CENTRE FOR MARITIME RESEARCH AND EXPERIMENTATION

Ship Specification Sheet

CRV LEONARDO

Ship Call sign: IALE

Hull Number: A5301

Classification: American Bureau of Shipping (ABS) notation +A1, Ⓔ, +AMS, +ABCU, +DPS-0

Flag: 2002 – Italian Public
2009 – Italian Navy

General Description:
LEONARDO is a versatile research platform for CMRE scientists which is particularly well suited for engineering development trials and scientific research experiments in shallow waters.

CRV LEONARDO was constructed by McTay Marine Limited in Bromborough, United Kingdom, as a quiet coastal Research Vessel between 2001 and 2002. The design and construction of CRV LEONARDO was in accordance with the rules and regulations of the American Bureau of Shipping (ABS). The vessel was delivered to NATO on 30 April 2002 and was accorded the flag of a public vessel of the Republic of Italy under an 2001 Memorandum of Understanding between the Ministry of Defense (MOD IT) and the Supreme Commander of the Allied Forces in the Atlantic.

On 16 November 2009, CRV LEONARDO was accorded an Italian Navy Flag to allow crewing and operation by Italian Navy personnel under an MOU with the Italian Ministry of Defence (MOD IT). Ownership and custody of the vessel remains with the NATO nations.

Vessel Characteristics:

Length overall	28.6 m
Length between perpendiculars	23.4 m
Molded beam	15.20 m
Depth, molded	9.0 m
Draught, full load	2.76 m
Displacement, loaded	393 t
Gross tonnage	321 t
Net tonnage	96 t
Block coefficient	0.693
Fuel capacity	51 cubic m
Fresh water capacity	35.8 t
Shaft power (max. continuous)	475 kw
Sustained sea speed (Clean hull)	10 knots
Effective range at 11.5 kn	1850 Nmi
Endurance port to port	5 days
Main Masthead height (top of radar antenna)	18.75 m
Secondary Mast height (top of radar antenna)	15.75 m

Communication and Navigation:
LEONARDO's navigation system consists in a fully integrated Kongsberg Maritime Bridge integrating a dynamic positioning system, electronic charting system, two (2) bridge master radars (X-band and S-band),a MDM 400 Marine Data Management system, and a Kongsberg Seapath 330 differential GPS system. Precise track control and auto pilot navigation is facilitated by direct computer steering between prescribed way points. As part of the INBS, the vessel can operate in a Dynamic Positioning Mode (DP-0 classed), the ship is highly capable with position keeping accuracy requirement. Onboard LEONARDO, a basic GMDSS based communication system is fitted.

Main GMDSS MF/HF Transceiver (DSC Radiotelephone)	Sailor HC 4500
Deck VHF transceiver	Sailor RT 4722
GMDSS SARTS – Transmitter	Jotron 8 GHz
Commercial Prodel – UHF Transmitter	ICOM IC 4088SR

Crewing:
The crew of 9 onboard consists of the Commanding Officer, Executive Officer, Chief Engineer, chief Boatswain, Cook, Electrician, 2 junior Boatswains, and mechanic.

Scientific Equipment:
The use of the Small and Large Winches are always used in conjunction with the Gantry A-Frame on the quarterdeck (maximum load 2.5 tons). A single dedicated hydraulic unit feeds the A- Frame, the mooring after winch, and the small stern windlass.

In order to simultaneously handle winches and gantry cranes near the small winch is a dedicated console with starting and stopping controls for hydraulic units and management of release and recovery of FRAME and winches.

The vessels fitted scientific equipment includes the Kongsberg HiPAP 500 system and a portable EM 3002 multibeam sonar system (through the internal moon pool.

A Kongsberg MDM 400 is fitted in the laboratory which enables storage and distribution of data from instruments found on board. Instruments included are:

a. Navigation system sensors;
b. Weather sensors;
c. Hydrographic instruments; and
d. Scientific instruments.

Engineering:
The propulsion system in LEONARDO consists in a bow thruster and two main azipod propulsors all manufactured by Schottel and supplied by three generators.

The three (3) main electrical generators (AC 380V 60 Hz) consists in two (2) N14 6 cylinder Cumming engines (236 Kw, 1800 RPM) and one (1) KTA 38 6 cylinder Cumming engine (620Kw, 1800 RPM) feeding a main switchboard through a power management system.

To a lesser extent than ALLIANCE, LEONARDO has been designed to be a quiet coastal research vessel and as such encompasses similar noise and vibration control features in its design. The diesel generator sets are resiliently mounted to reduce the structural transmission of vibration to the hull and the transformation of this vibration to noise in the water. The N14 generator sets have been enclosed in an acoustic booth which reduces the noise radiated from the diesel into the machinery space.

Container Capability:
LEONARDO has been designed to carry a single 10 foot standard ISO container on its quarterdeck. Power sockets for this container are available.

Deck and laboratory spaces:
The main operational scientific spaces onboard LEONARD consist of a Main Scientific Laboratory, primary work area and a wet laboratory, all located on the main deck.

	Area m^2	Area ft^2
Primary Working Area (Aft)	59	595
Wet Laboratory	6	61
Main Laboratory	30	336

Accommodation:
Given its role as a Coastal Research Vessel deploying mostly on a daylight activities, the accommodations in LEONARDO for scientific personnel are very limited. Should they be required, crew and scientific personnel in overnight activities can share six (6) double cabins overall. This means that personnel numbers onboard cannot exceed 12 in total. All accommodation is located on the lower / tank top deck. The lifesaving capacity for day activities accounts for a maximum of 20 personnel onboard, while for overnight activities, the maximum complement of the vessel is 12 persons.

Construction Details:
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Deck Equipment:
Two (2) small anchor windlass are located on the focsçle area and the anchor details are provided below.

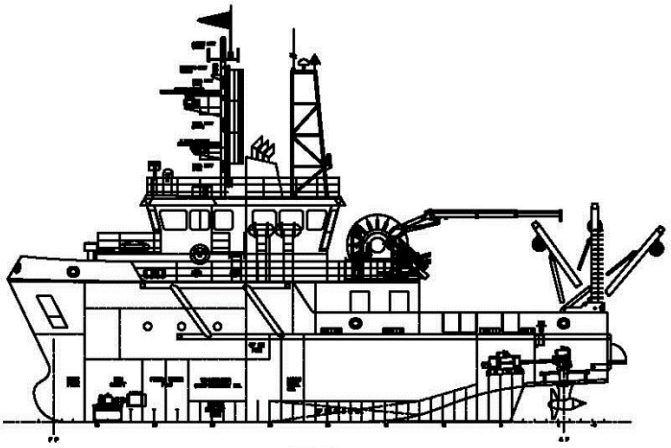
Chain link diameter (U2a grade steel – kenter type)	22.5 mm
Weight of an anchor	500 kg
Total length	27.5 m
Average hoisting speed	4 m/min

The ship is fitted with two (2) capstans on the quarter deck.

There are two (2) electro-hydraulic cranes onboard with articulated and/or telescopic jibs. One serving the bow area, the EFFER 10000 1S crane is fitted on a base located on the extension of the deck bridge. With a 1.6 ton capacity and a single telescopic arm (reach of 10 m), it serves mainly to launch/recover the workboat and liferafts. The second crane, EFFER 10000 3S is located aft near the scientific winches. It has a 2.0 ton capacity (reach of 12.5m from the ship) and has for main purpose the handling of scientific payload on the quarterdeck, as well as loading and unloading the vessel.

The ship has three scientific winches served by a single hydraulic unit:

a. Large Oceanographic Winch 2,000 kg;
b. Small Oceanographic Winch 2,000 kg; and
c. CTD Oceanographic Winch 500 kg



CONTACT

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