

NEW SPANISH SURVEYING VESSEL "TOFIÑO"

The following plans and description of the new surveying vessel *Tofiño* have been received from the Spanish Hydrographer.

The vessel was launched at El Ferrol on 23rd August 1933, and it is hoped she will be completed and ready for service during the current year.

The vessel is named after the first Spanish Hydrographer, Don Vicente TOFIÑO de San Miguel, who was born at Cadiz on 6th September 1732, the son of a soldier who died in the field. He obtained a commission as Lieutenant in a cavalry regiment but, being interested in higher mathematics, he soon retired in order to carry out studies and investigations in this branch of science. In 1755 he obtained the post of professor at the Naval Academy and eventually became Director there of. In 1783, as a Brigadier in the Navy, he undertook a methodical survey of the coasts of Spain, and in the brief space of six years completed the hydrography of, and the preparation of Sailing Directions for, the coasts of Spain, Portugal, the Balearic Islands and the Azores. The originals of this work are in the Hydrographic Service and a comparison with modern charts shows the accuracy of those early surveys of the Peninsula.

He was promoted Chief of Squadron in 1789 and was elected a Fellow of the Royal Spanish Academy of History and of the Academies of Science of Paris and Lisbon.

He died at the Isla de Leon (now San Fernando) on 15th January 1795.

The surveying vessel *Tofiño*, which was entirely designed and constructed by the ASTILLEROS DE FERROL, DE LA S.E. DE C.N., has the following characteristics :

Length over all	68.400 m. (224.6 ft.).
Length between perpendiculars.....	64.050 m. (210.3 ft.).
Beam.....	10.668 m. (35.0 ft.).
Moulded depth to lower deck.....	5.791 m. (19.0 ft.).
Average draught at normal load	3.353 m. (5.25 ft.).
Displacement at this draught	1,220 tons.

The ship is designed to carry out hydrographic work in every type of sea conditions and of locality, observing that she has to work, among other places, off the coasts of the Sahara (i.e. Rio de Oro) and of the Gulf of Spanish Guinea under special conditions of climate and from distant bases.

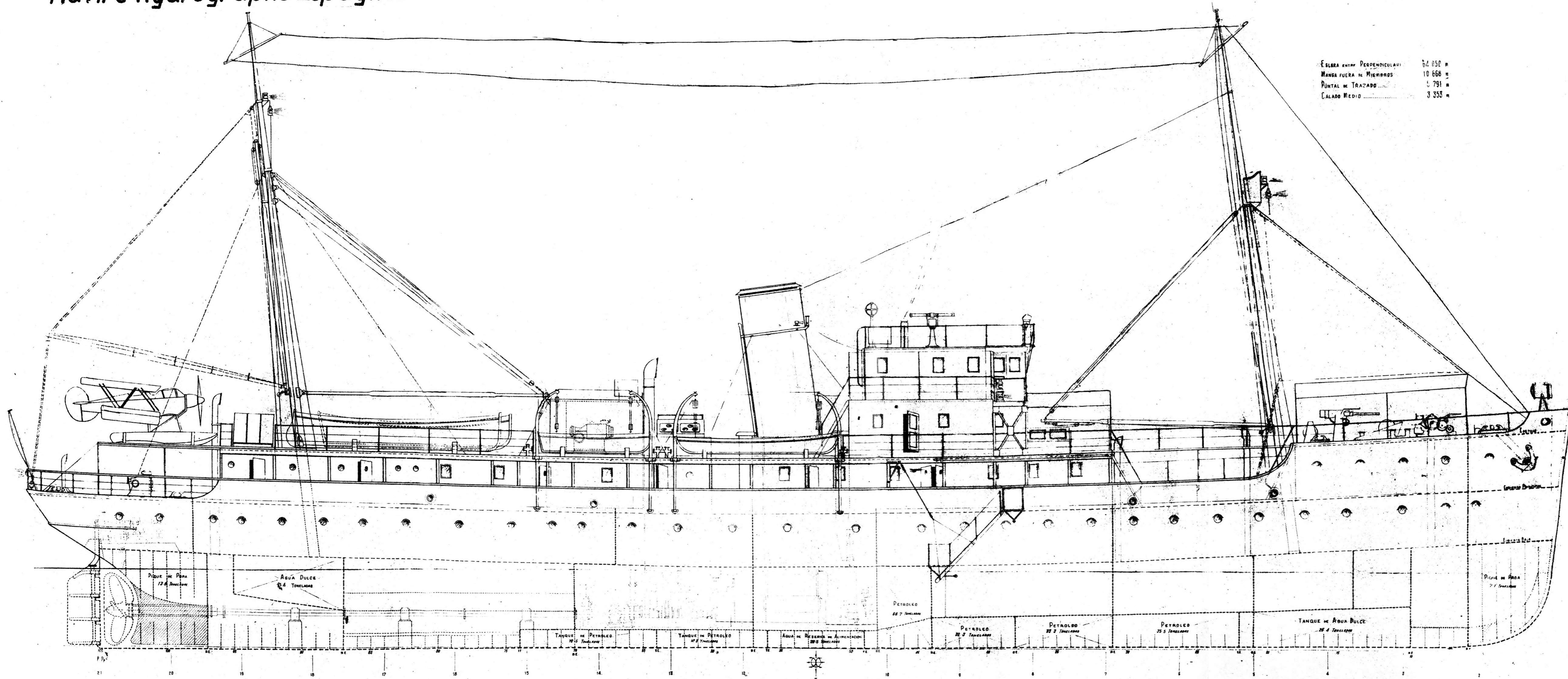
For these reasons the conditions of habitability, capacity of the store-room as well as the general qualities of strength, safety and good seaworthiness of this ship were the object of very close study and attention.

The propelling machinery of the vessel is of the steam reciprocating type, but of modern character, and consists of a two-cylinder CHRISTIANSEN AND MEYER compound engine supplied by two water-tube boilers generating steam which is superheated and gives a working pressure of about 220 lbs. per sq. in. The furnaces burn oil fuel.

Pl. I Spanish Surveying Vessel
 Navire Hydrographe Espagnol "TOFIÑO"

BUQUE PLANERO DE 1220 TONELADAS.

— PERFIL —

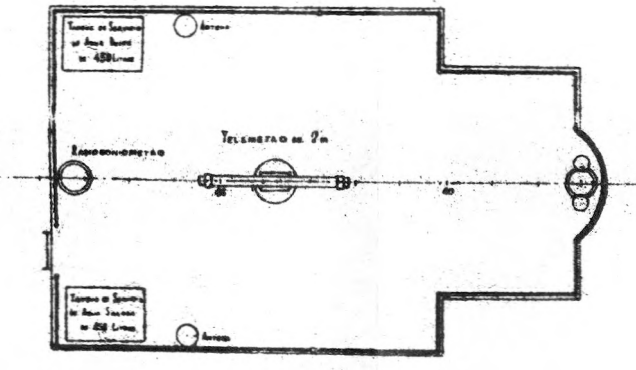
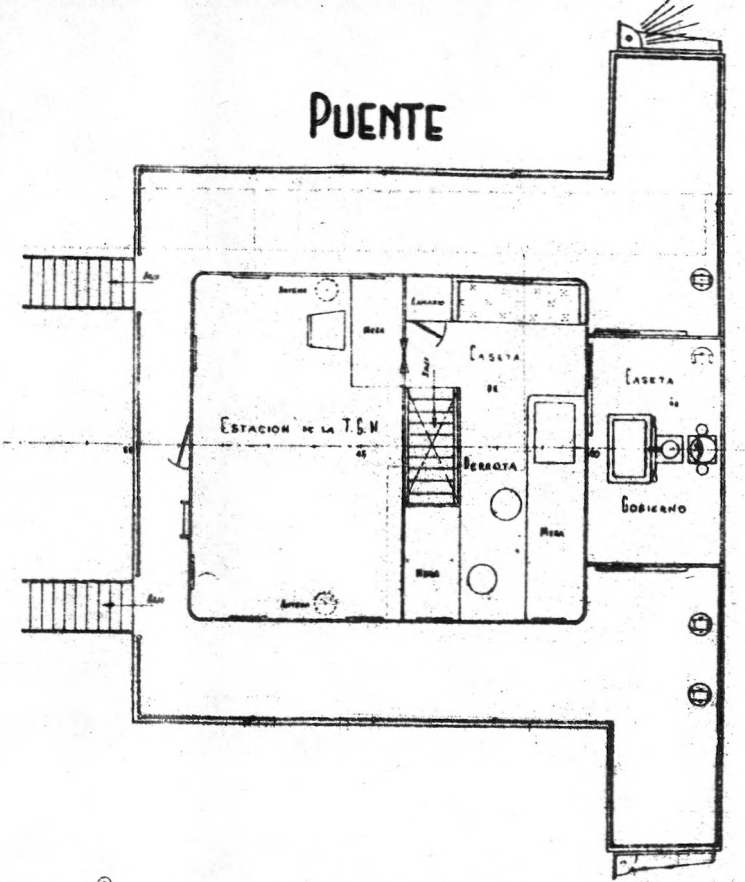
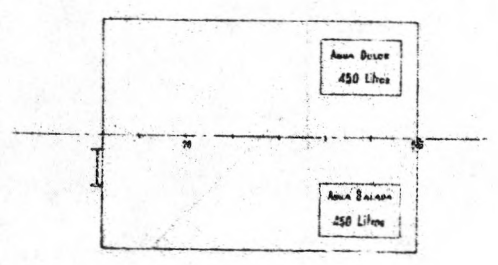


ESLORA ENTRE PERPENDICULARES	62.050 m
MANGA FUERA DE MIEMBROS	10.668 m
PUNTALES DE TRAZADO	5.791 m
CALADO MEDIO	3.353 m

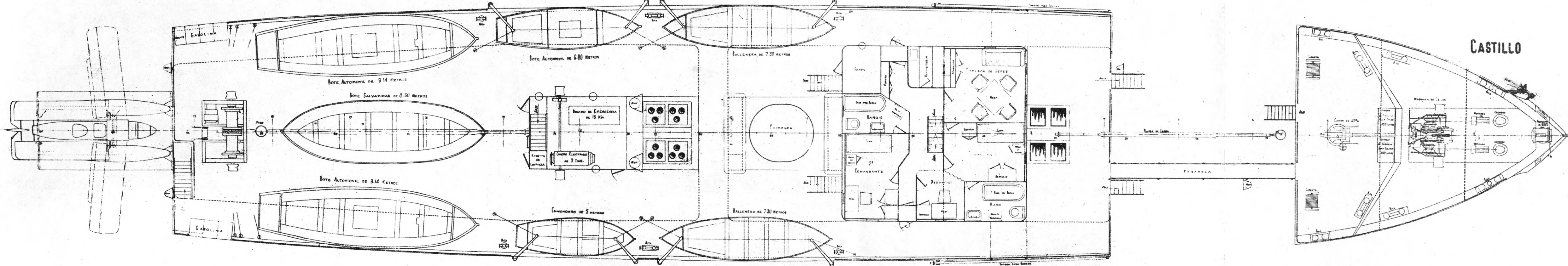
Pl. II Spanish Surveying Vessel "TOFIÑO" Navire Hydrographe Espagnol "TOFIÑO"

BUQUE PLANERO DE 1220 TONELADAS
PUENTE, CUBIERTA DE BOTES Y CUBTA PRINCIPAL

ESLORA ENTRE PERPENDICULARES..... 64.050 m
MANGA FUERA DE MIEMBROS..... 10.668 m
PUNTA DE TRAL..... 5.791 m
CALADO MEDIO..... 3.353 m

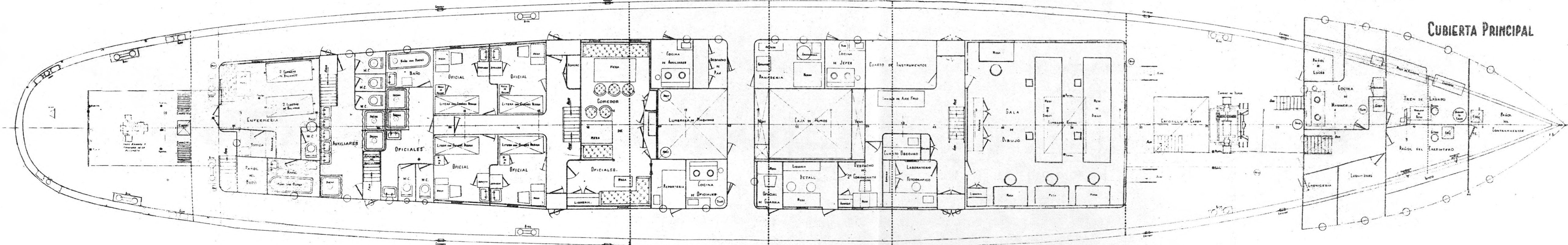


CUBIERTA DE BOTES



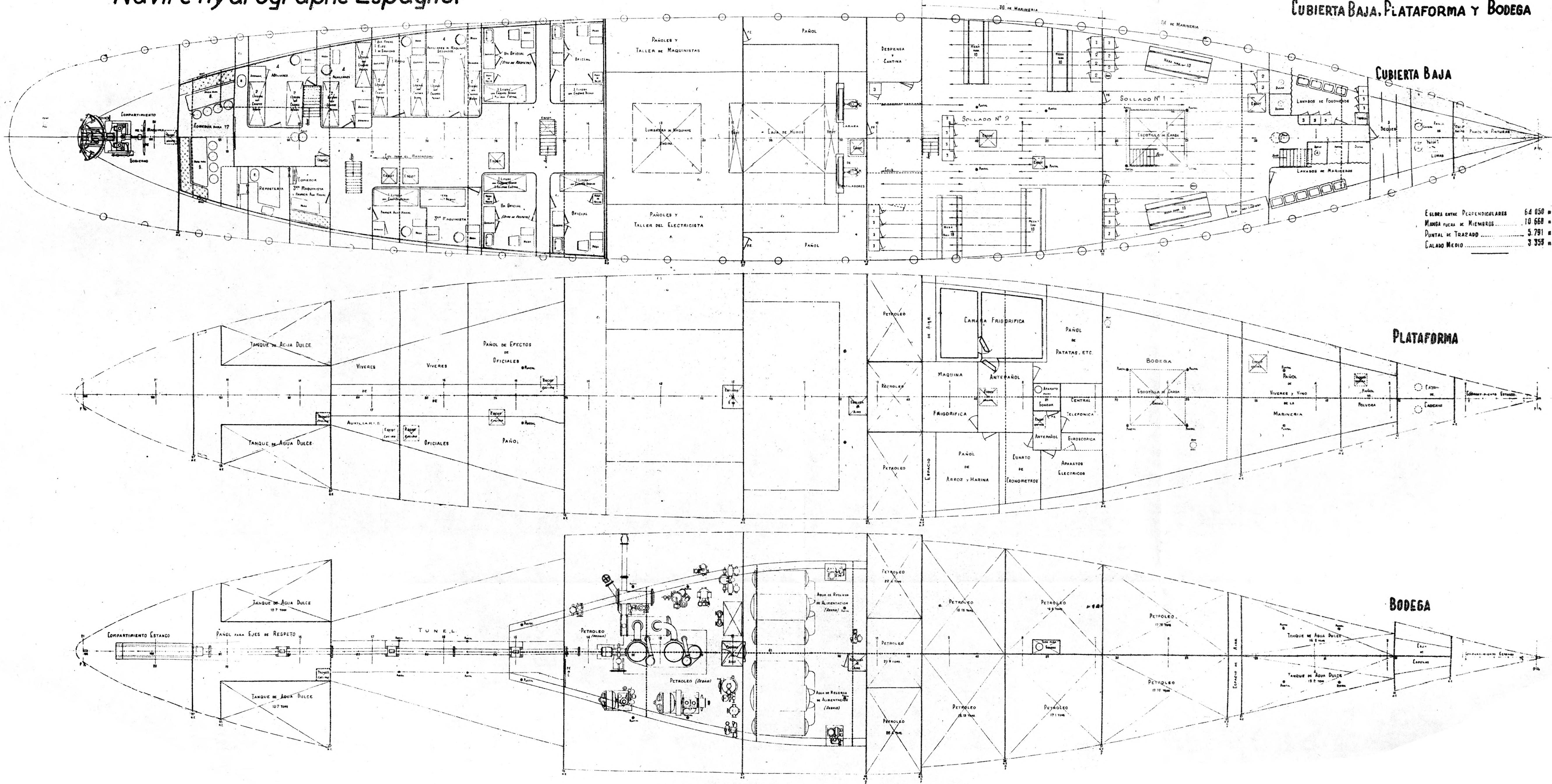
CASTILLO

CUBIERTA PRINCIPAL



Pl. III - Spanish Surveying Vessel "TOFIÑO"
 Navire Hydrographe Espagnol "TOFIÑO"

BUQUE PLANERO DE 1220 TONELADAS.
 CUBIERTA BAJA, PLATAFORMA Y BODEGA



The propelling machinery is of about 850 i.h.p. and this is sufficient to permit the vessel to reach and maintain a steady speed of 12 knots.

With a full stowage of fuel her radius of action at 10 knots will be not less than 5000 miles.

She will carry 1 Commanding Officer, 9 other Officers, 19 Petty Officers and Leading Seamen and 60 Seamen, all accommodated in good berths with ample sanitation, ventilation, supply of cool air to the draughting room, the cabins, other rooms etc.

In order that the work for which she is mainly intended may be carried out she has a commodious draughting room of about 23×23 ft. on the upper deck forward of the central superstructure, lighted from forward and on both sides by rectangular windows and from above by a skylight.

She will have a laboratory with a darkroom and near this there is a small store-room, easily accessible from both outside and inside, arranged for the storage of the instruments and appliances generally used for observation, for field work, etc.

The position of these rooms was studied with the greatest care and is very advantageous in its convenience and easy access from the bridge, the wireless room, the cabins of the C.O. and of the second in command, etc.

The vessel will be provided with a complete LANGEVIN-FLOISSON ultrasonic sounder with optical analyser and a recorder in the chart house on the bridge. In addition she will carry a special LUCAS machine for great depths and an ordinary THOMSON machine, both of these having electric motors for heaving in the wire.

She will also have an echo-sounder by H. HUGHES of the ARCADIA CHALLENGER type, capable of taking soundings in the deepest waters of the oceans.

The equipment for navigation will be very complete and will include, among other usual fittings :

A SPERRY gyro-compass with repeaters, a course indicator, an ODOGRAPH course tracing table, helm and revolution indicators, a CHERNIKEEF log, a fixed range-finder with 2-metre base, two portable ones of 1-metre base, etc.

Aft there will be a small seaplane which will be hoisted out and in by means of a suitable derrick on the mainmast and an electric winch. It will be of much use in the work to be undertaken.

There will be numerous boats of special build, viz : 2 unsinkable motor boats, 30 ft. long with robust motors and provided with two masts ; one life-boat, 28 ft. long, with outboard motor of about 8 h.p., also with two masts ; two 24 ft. whalers as well as one 20 ft. motorboat and a 16½ ft. dinghy of the usual type for ordinary service.

The three first boats mentioned will be hoisted out and in by means of a derrick on the mainmast ; the remaining boats are worked by revolving davits of the usual type.

The anchors and cables provided are considerably stronger than those usually carried by vessels of these dimensions in ordinary service. They include two stockless bower anchors weighing 3,150 lbs. each, another of 2,680 lbs. and a stream anchor of 785 lbs. the stock not included. The bower anchors will have some 240 fathoms of 1.6 inch studded cable.

She is provided with a very complete wireless equipment including a short-wave transmitter and receiver, a long-wave transmitter and receiver and a direction finder.

The electrical energy is provided by two dynamos each giving 35 kw., one of these being driven by steam and the other by Diesel engine. In addition there is another emergency Diesel dynamo of 15 kw.

The general structure of the ship was the subject of particular care; the rudder and the bottom of the hull, being most exposed to damage by grounding, were specially strengthened. Furthermore, the watertight bulkheads are closely spaced in order to give an ample reserve of buoyancy.

Two large, strong bilge keels are attached to the bottom of the hull over a length of 75 ft. with the double object of protecting and strengthening the submerged parts and of reducing the rolling of the ship.

With the same object, particularly for a sluggish vessel of low speed, she has been rigged to carry a jib forward and an auxiliary trysail on the main-mast.

She will carry a 24-inch electric searchlight, another for signalling and a 47 mm. gun.

Finally, there is a hold forward with a large hatch, served by the derrick on the foremast, in which can be stowed light surveying gear and various accessories for this work such as buoys, beacons, moorings, sweeps etc.

TENDERS TO THE SURVEYING EXPEDITION ONBOARD THE SURVEYING SHIP "GIRALDA"

For sounding in depths down to 100 metres two small auxiliary sister steamships, the *Castor* and *Pollux*, are used. They are of the fishing vessel type and of 50 tons each.

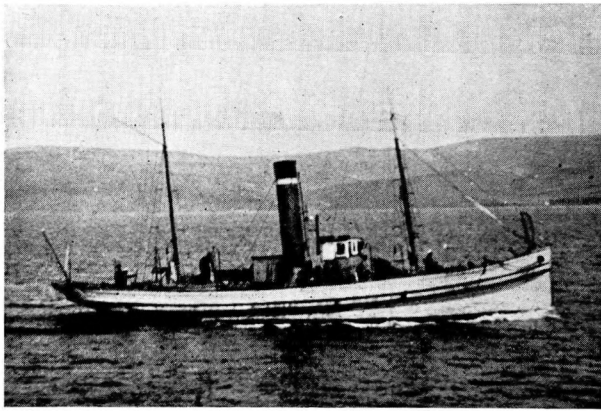
They are handy vessels and their principal work consists in running lines of soundings from 5 to 100 metres of water.

Their wooden hulls allow them to clean their bottoms and make small repairs in the vicinity of the surveying ground. They may be careened on some beach or in a small cove protected from the prevailing winds and seas. Drums on the fore winch make it possible to heave in up to 100 metres of sounding line in about 2 minutes.

Their average speed is from 9 to 10 knots.

The main features of these tenders are as follows :

Draught.....	2.48 m. (8.1 ft.)
Total length	21.20 m. (69.6 ft.)
Moulded breadth	4.70 m. (15.4 ft.)
Moulded depth	3.90 m. (12.8 ft.)
Engine power	98 h.p.



“Castor”

“Pollux”

Tenders — Vapeurs annexes

Gross tonnage	50 tons
Net tonnage	30 tons
Fuel capacity (coal)	12 tons
Engine.....	"Dumbarton"

COMPLEMENT.

Coxswain : a naval Petty Officer ;
Chief Engineer : a Petty Officer Artificer ;
One Leading Seaman ;
Two Stokers ;
Six Seamen.

