The new vessel for the Spanish Institute of Oceanography (IEO-CSIC)

Jordi Sorribas (CSIC)

R.V. Odón de Buen

INTERNATIONAL RESEARCH SHIP OPERATORS

October 24-28, 2022

Large Scientific and Technological Facilities

1

They are Infrastructure of Public Ownership:
They belong to or are managed by public entities, whether dependent on the General State Administration and / or the Autonomous Communities.
In any case, they are financed mostly with public funds

2

Competitive Open Access:
Open to competitive access by users of the entire research community, coming from both the public sector and the private sector

3

They are "Singular", which means they are unique in their kind:
Large equipment & Complex experimental infrastructures that allows observing, analyzing and interpreting phenomena of interest.
Infrastructures necessary to facilitate the access of scientists to natural environments that offer and present unique characteristics for research.

The Fleet under "Large Scientific and Technological Facilities " Umbrella

GOBIERNO DE ESPAÑA
MINISTERIO DE CIENCIA E INNOVACIÓN

GLOBAL

REGIONAL

LOCAL

Short History of a successful story

Strategic plan: "Increase the fisheries capabilities of the national research fleet

IEO role: Advising the government on fishing strategies

2008: Initial specs, needs and draft design

First 2008 draft

2014 Withdrawal R.V Cornide de Saavedra (fisheries)

2018: Viability Studies & Start EU financing process …

2019: Approval by the European Commission by September 2019

2020: Final decision from Ministry of Science & Signature of the funding agreements

Administrative Framework & Funding

MINISTERIO DE CIENCIA E INNOVACIÓN

UNIÓN EUROPEA

FONDO EUROPEO DE DESARROLLO REGIONAL

"Una manera de hacer Europa"

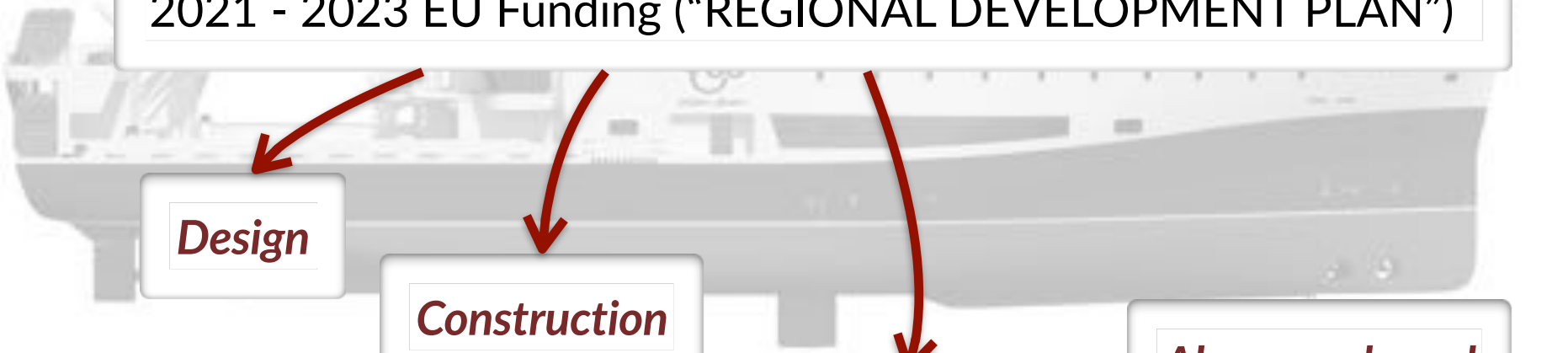
Programa Operativo Plurirregional de España 2014-2020

Ref: ICTS-2019-05-IEO-4

70 M €

EU Funding: 80%

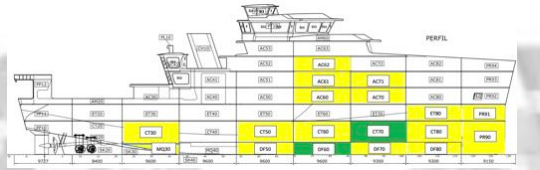
2021 - 2023 EU Funding ("REGIONAL DEVELOPMENT PLAN")



- *Design*
- *Construction*
- *Equipment*
  - *Always onboard*
  - *Fleet Equipment Pool*

Short History of a successful story

09-2020 — Review & rewrite Specs



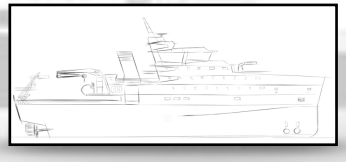
12-2020 — Tender Publication

03-2021 — Reception of two Offers

FREIRE SHIPYARD

ARMON

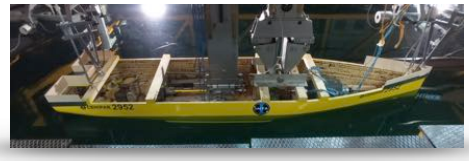
12-2021 — Signature of Contract



01-2022 — Start of detailed engineering, review and fine-tune specs

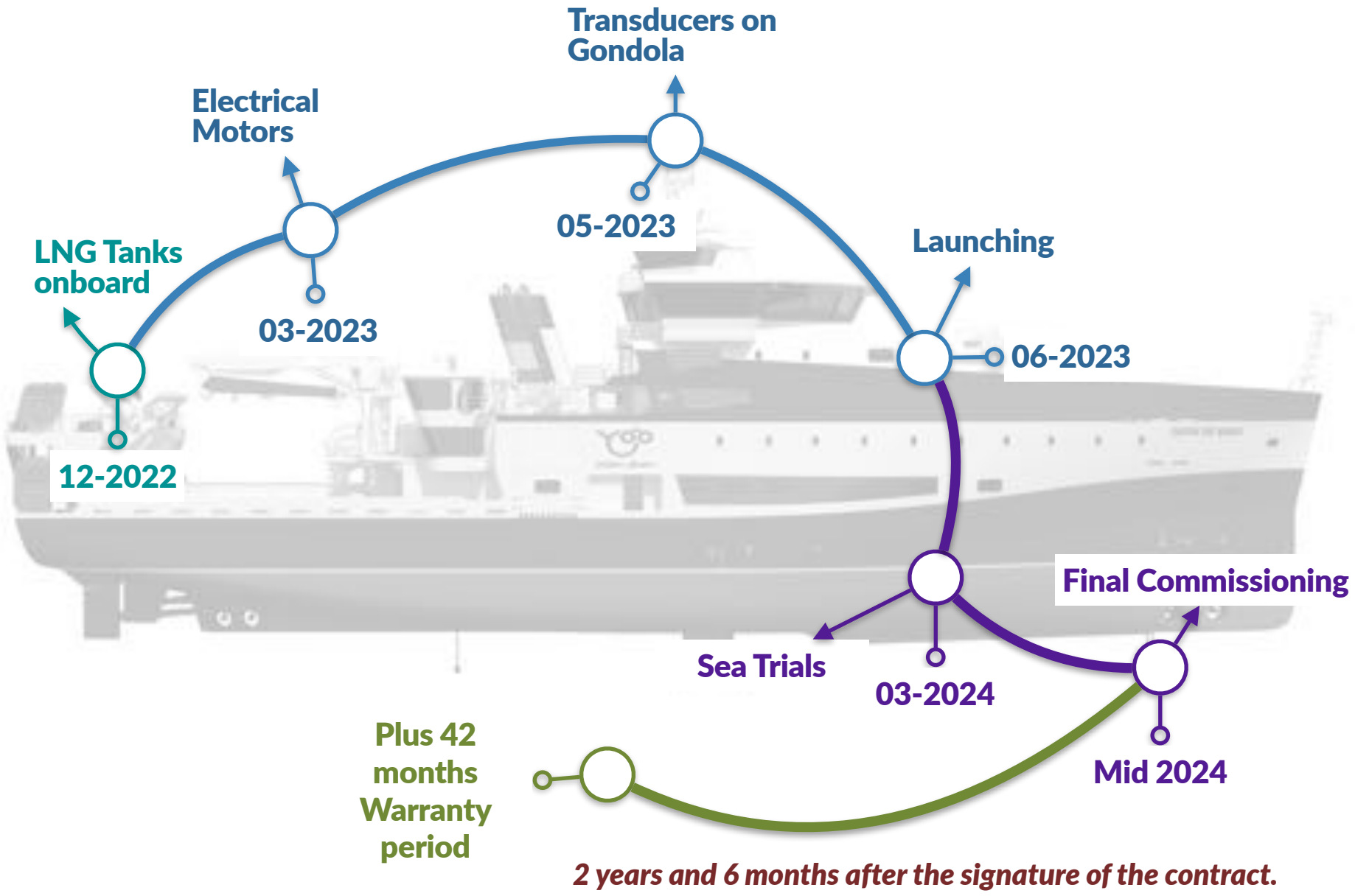
05-2022 — Start of cutting steel

06-2022 — Tank Tests



10-2022 — Keel Laying

Expected Milestones & Timing



2 years and 6 months after the signature of the contract.

Revision of the initial Draft : "Use Cases"

Initial Idea:

- Global Vessel
- Fisheries Research and Oceanography
- Green Vessel (low carbon footprint)

Review of Scientific Needs

- For what kind of surveys we want to use the vessel ?
- Which ones are not fully covered with actual fleet ?

Survey Typologies

- Where: Geographical Areas & Range Depths
- When: Temporal Frame
- With Who: Aprox Man power needed
- What: Working Scenarios

What We want to do onboard: Working Scenarios

- Name and Short Description of each specific task/activity
- Deck Requirements: Space & Equipment (frames, cranes, winches, …)
- Indoor Spaces required: Labs & Tech Spaces, specific needs
- "Always onboard" instrumentation needed
- Non permanent instrumentation needed
- Specific Technical Services required (water, power, comms, air, …)
- People involved in
- Navigation requirements
- Dependency and foreseen incompatibilities with other scenarios

Detailed Needs

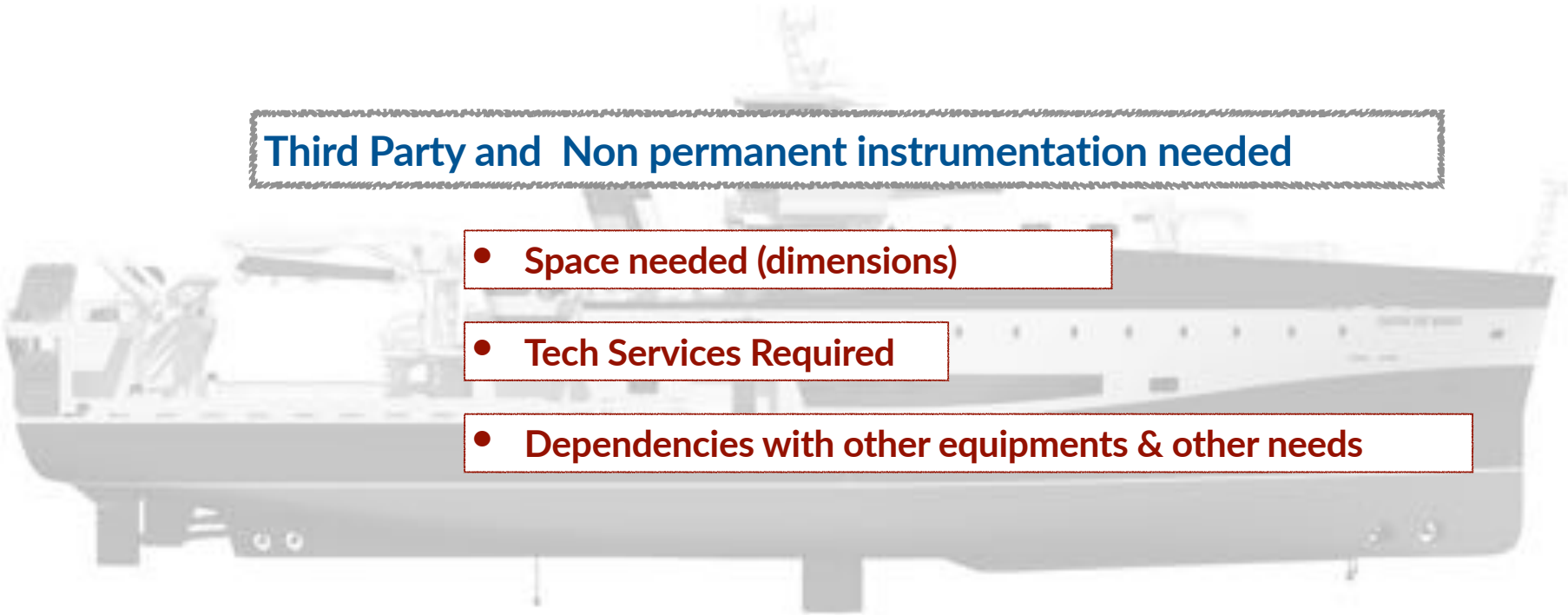
"Always onboard" instrumentation needed

- Minimum Tech Specs
- Spaces and desired Location
- Tech Services Required
- Dependencies with Other equipments & other needs

Indoor Spaces required: Labs & Tech Spaces, specific needs

- Minimum space required. Num of concurrent users & Equipment
- Preferred Location
- Specific "clima & comfort" conditions
- Contiguity with other spaces
- Access to Tech Services & Lines

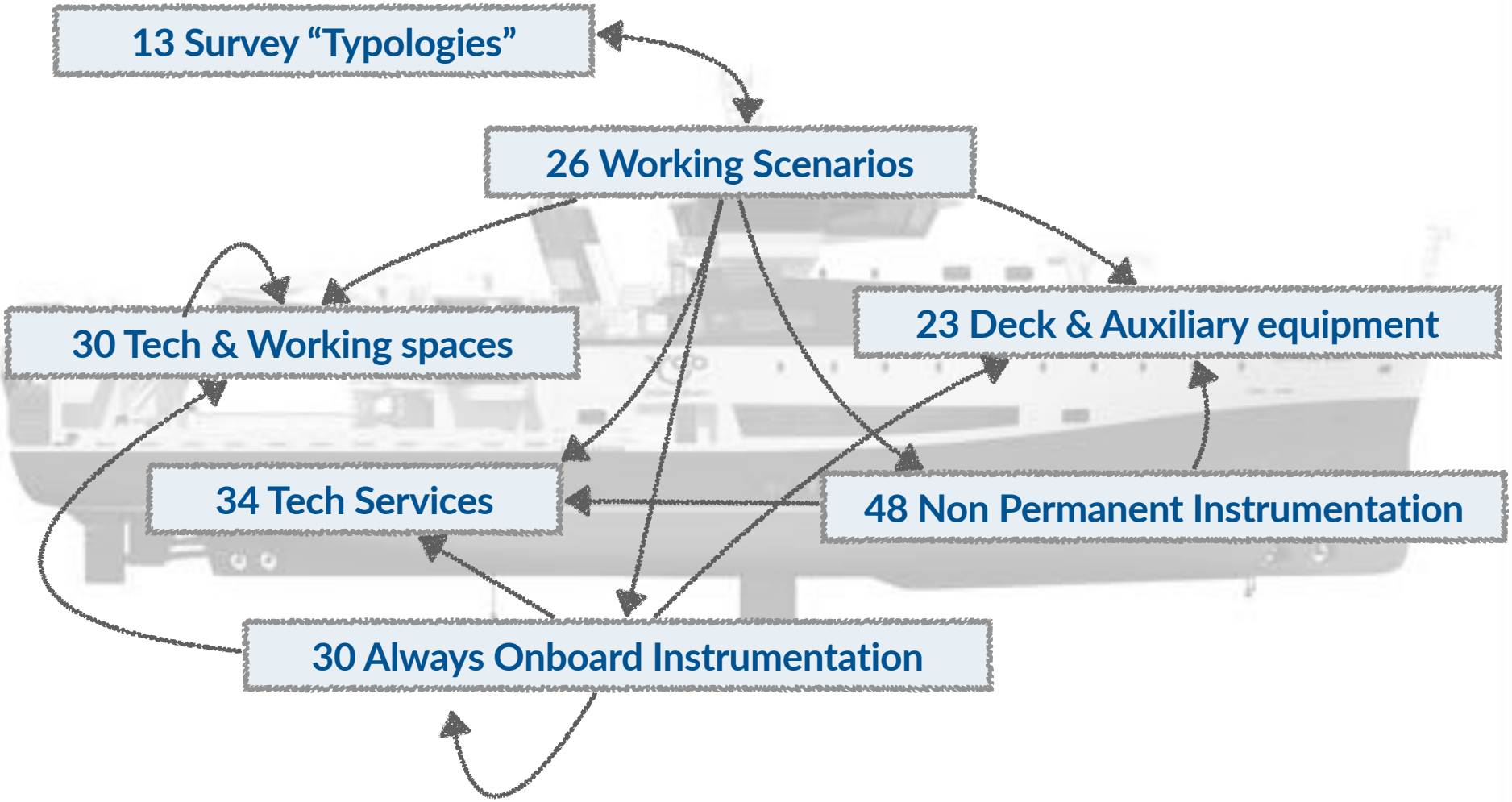
Detailed Needs



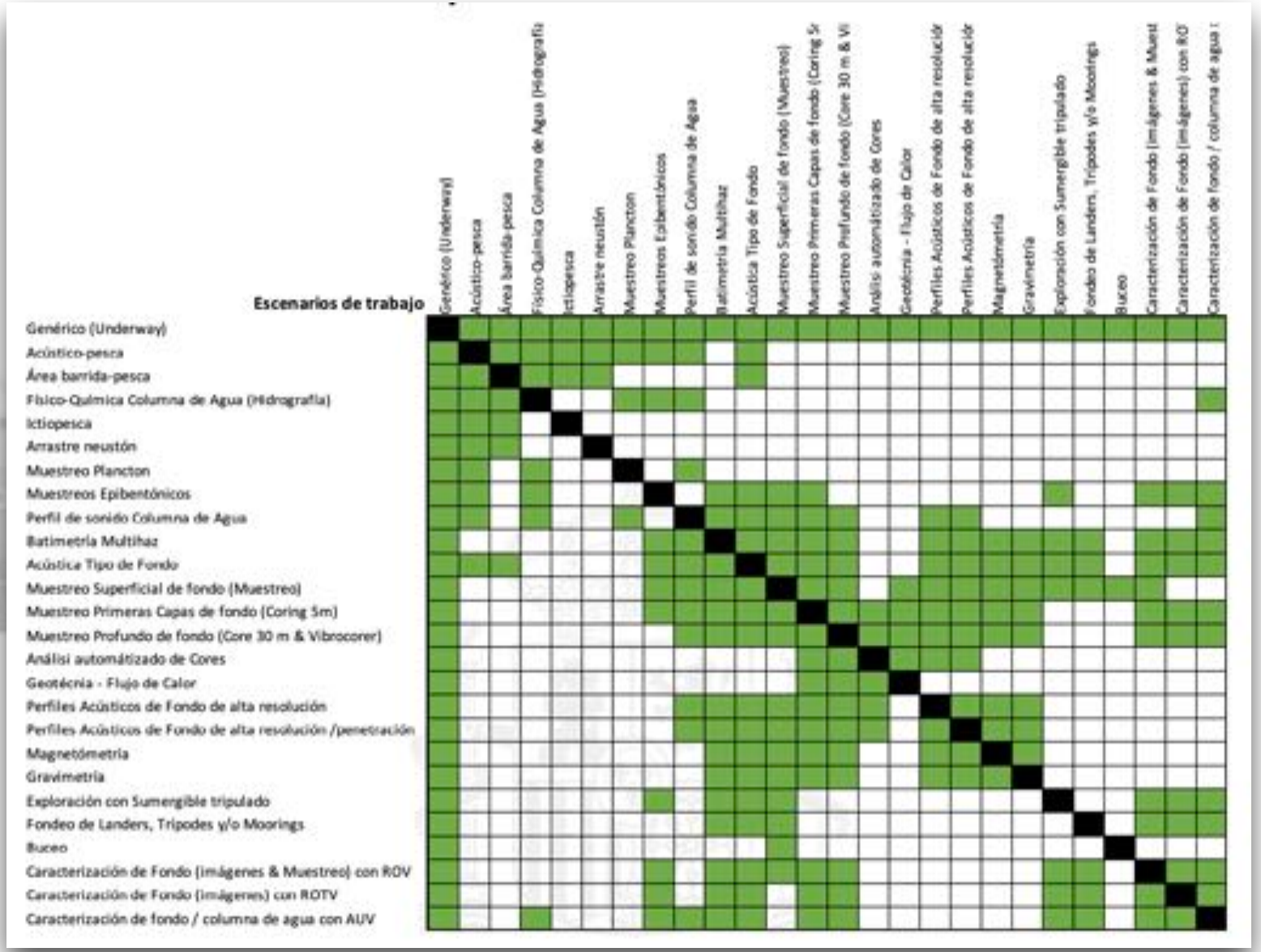
Third Party and Non permanent instrumentation needed

- Space needed (dimensions)
- Tech Services Required
- Dependencies with other equipments & other needs

Dependencies Matrix



Concurrency of Working Scenarios

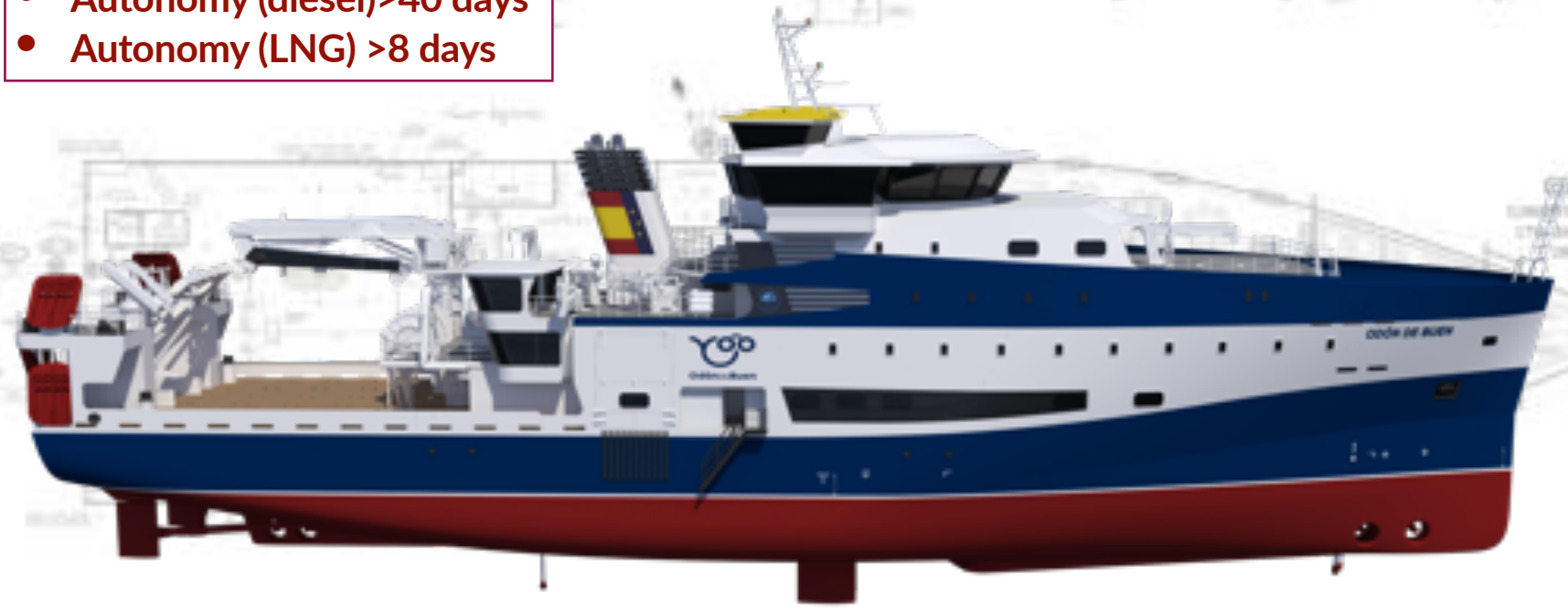


Main's & General Disposition

- Total length: 84.3 m
- Beam: 17.80 m
- Main deck at 8.4 m
- Maximum design draft: 6.54 m
- 19 Crew & 39 Scientist/Technicians

- Maximum speed 14.5 knots
- Autonomy (diesel)>40 days
- Autonomy (LNG) >8 days

- 2x INDAR 1700 kW electric motors
- 2 x Main Diesel Generator Sets: Wärtsilä 1200kW
- 2 x Diesel-LNG dual groups Main Generators: Wärtsilä 960kW
- 2x Line of shafts with fixed pitch propeller of 5 blades and diameter of 3200 mm.
- 4x Transverse propellers (2 stern and 2 fixed pitch bow with electric motor)



Main's & General Disposition

Class Notation

LR Class Notation:

✠100A1 'Oceanographic and Fishing Research', Ice Class PC7, *IWS, LA
✠LMC, PSMR, UMS, NAV1, IBS, PCAC(1,1), ECO(GW, NO_X3), OPS, DP(AA), LFPF(GF, NG), BWTS/* Descriptive Note: ShipRight(SCM, IHM)

Lloyd's Register

DP2

CLEANSHIP SUPER

DNV-GL SILENT-R

POLAR CLASS PC7

Decks and Outdoor workspaces

- Main Deck: 360 m^2
- 2 x Winches Deck

Up to 8 ISO 20 Containers

Free space at starboard side for 25 m coring

Decks and Outdoor workspaces

- Main Deck: 360 m²
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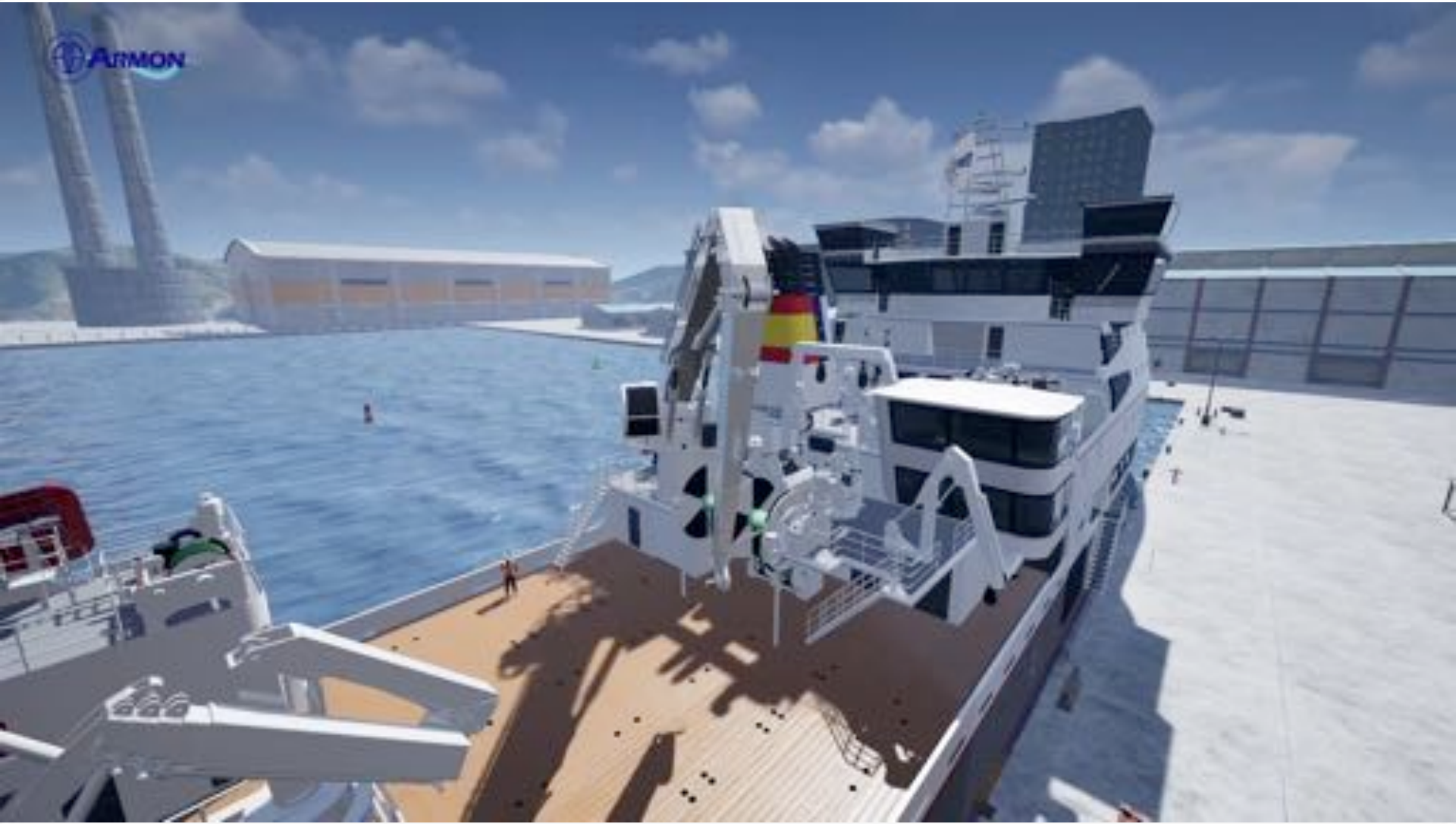
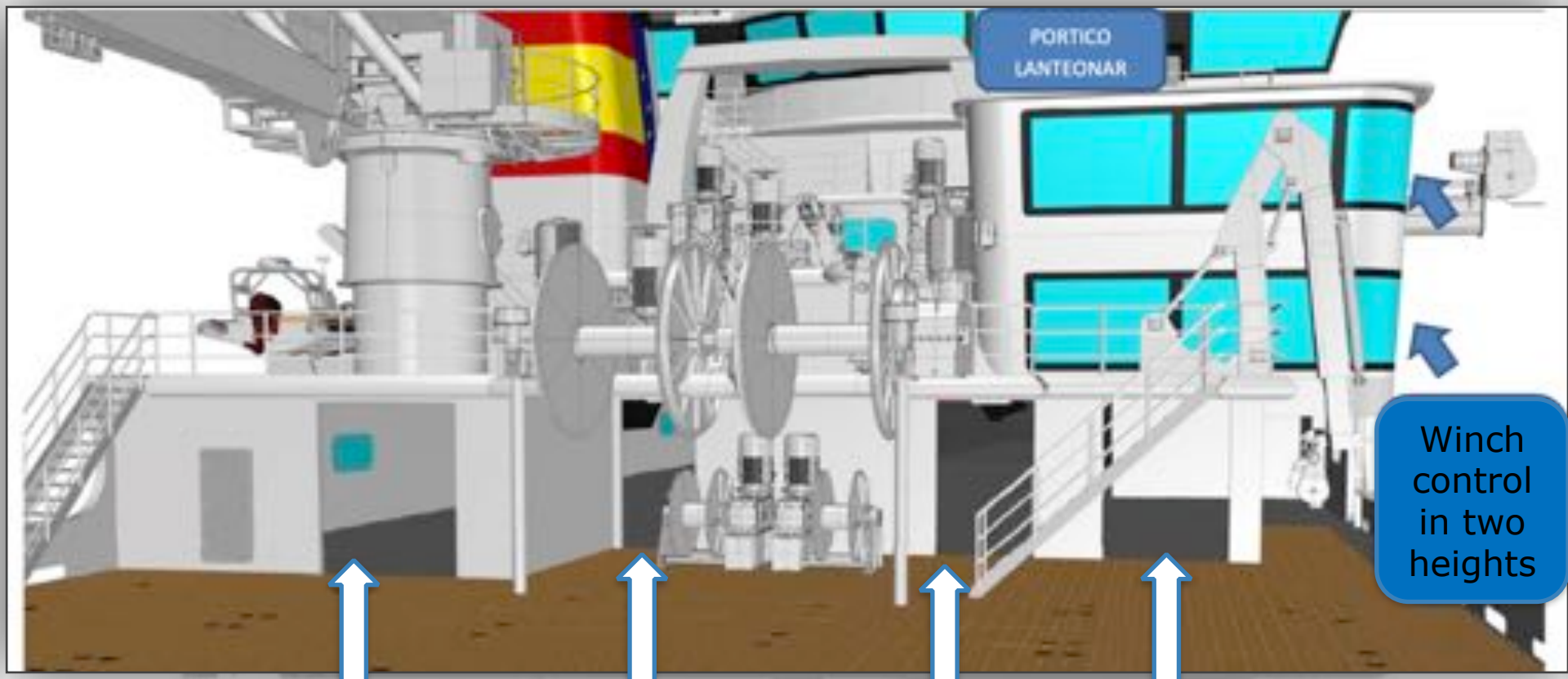
Up to 8 ISO 20 Containers

Free space at starboard side for 25 m coring

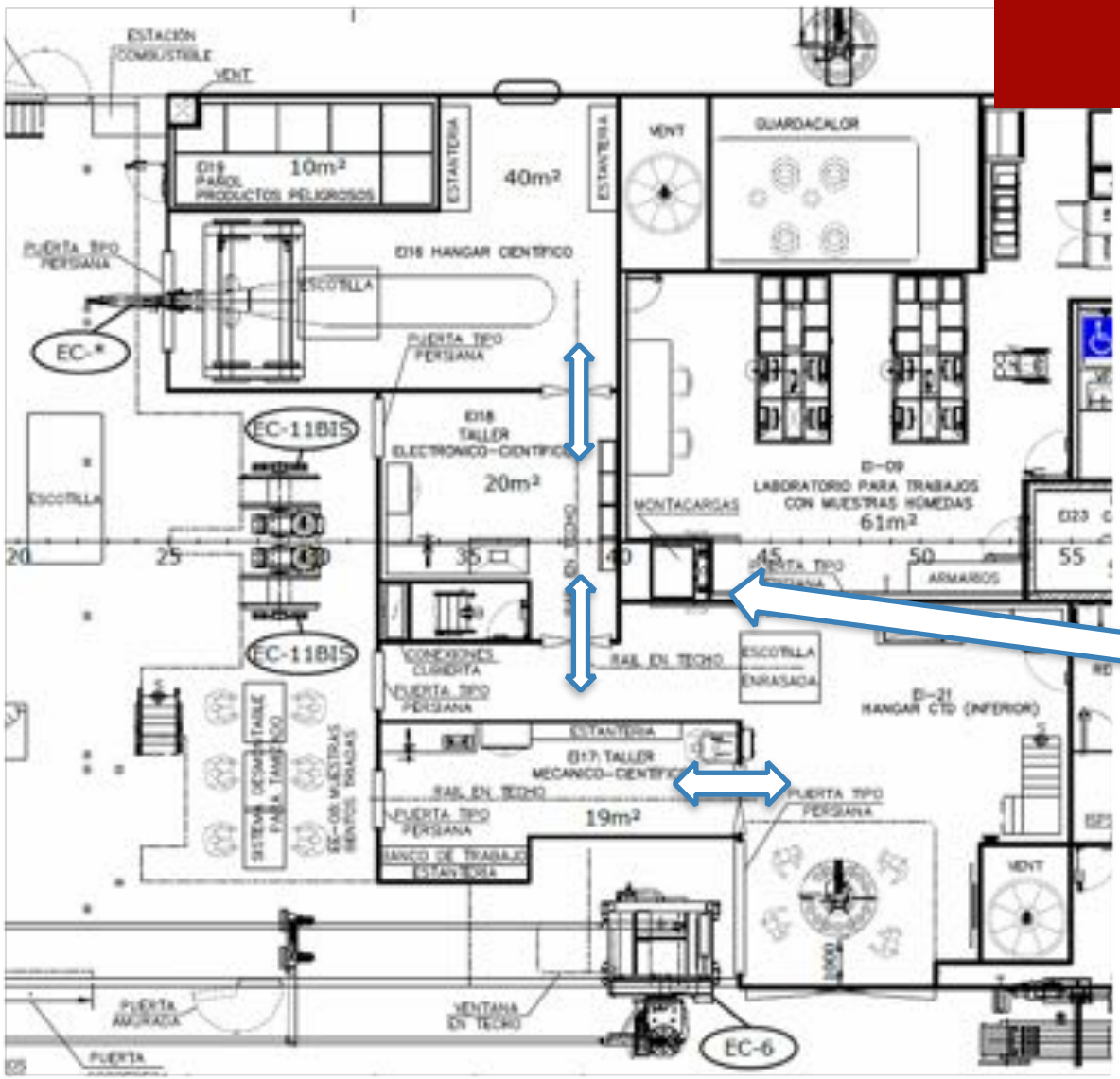


Decks and Outdoor workspaces



Direct connection from the working deck to the Hangars.

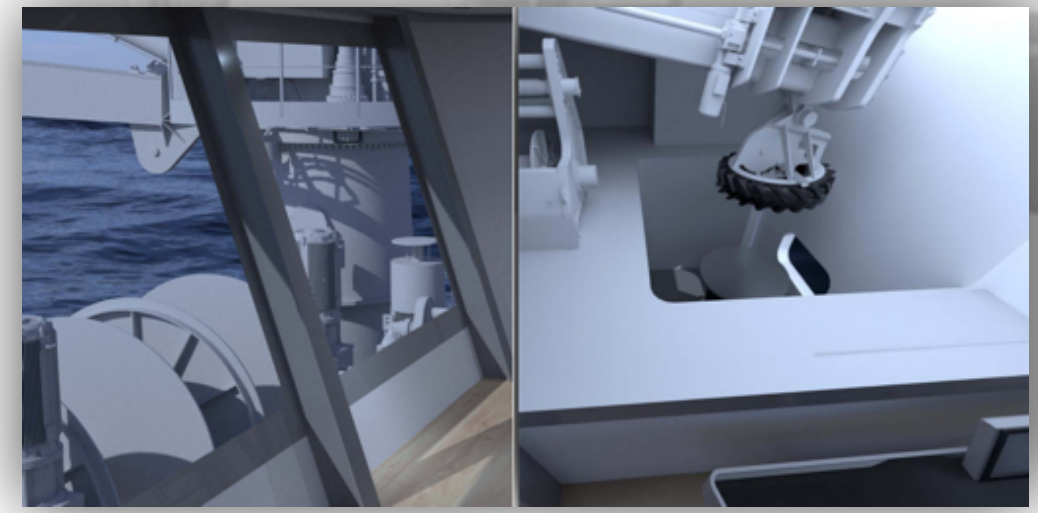
Hangars

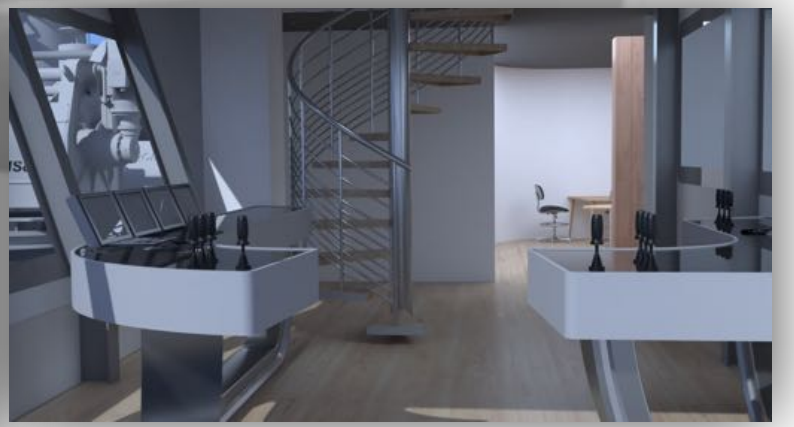


Hangars Inter-connected and direct conexión to Interior laboratories

Control Rooms

High visibility to decks and equipment





Control Rooms

High visibility to decks and equipment

Indoor Workspaces

Easy access; High connectivity between spaces; Luminous

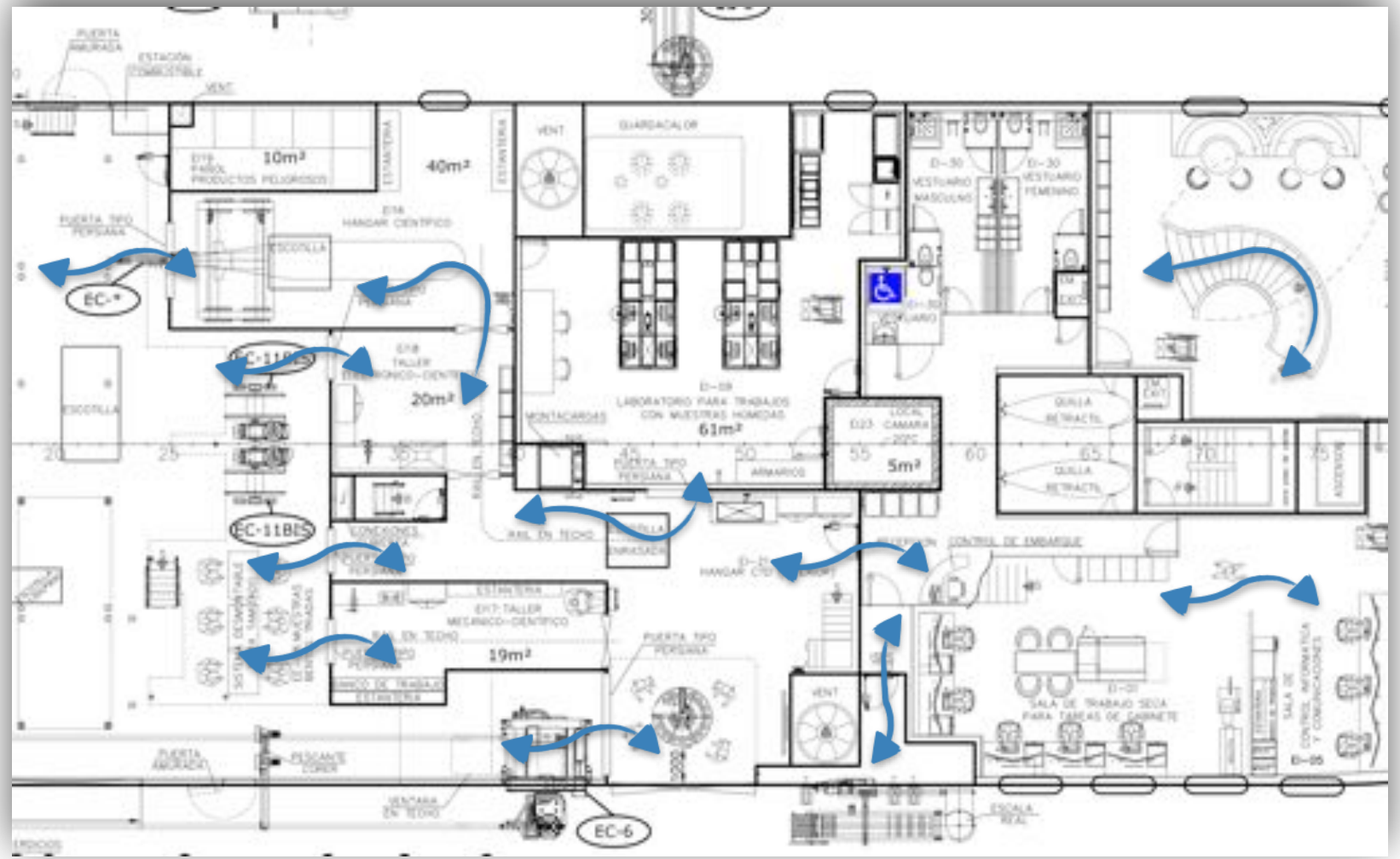
Labs and workhouses

Easy access; High connectivity between spaces; Easy routes

600 m² indoor work spaces

Specific Point in Tender …

Easy Access



Living spaces

Wide and open spaces; Luminous

Living spaces

Wide and open spaces; Luminous

Main Equipment

Always onboard …

A frames and Cranes

- Aft A-frame with aux winches: 30 ton
- Davit for coring operations: 20 ton
- Side davit for hydrographic operations: 5 ton
- CTD davit: 5 ton
- Davit for trawling operations: 1.5 ton
- Piston corer Lars: 0.75 ton
- Deck handling crane STB: 2.5 ton, 18.5 m
- Main deck handling crane PS: 12 ton, 16 m
- Deck handling crane: 1.8 ton, 14 m

Winches

- 2x Drag winches
- 2x Net Drums
- 2x Mesh winches
- 2x Lanting winches
- CTD winch
- Net probe winch
- Hydrographic winch
- Coring winch
- Multipurpose winch
- Optical cable winch
- 1x Longline hauler

Fisheries

- Auxiliary fishing gear
- Automatic triage system, associated with scales
- Ichthyometer system + automatic scale
- Fish database
- Pelagic fishing gear & gates
- Demersal fishing gear & gates
- Benthic fishing gear
- Jigger system for marking, with hoppers, tables and tanks on deck
- Cufes system

Main Equipment

Always onboard …

Acoustics

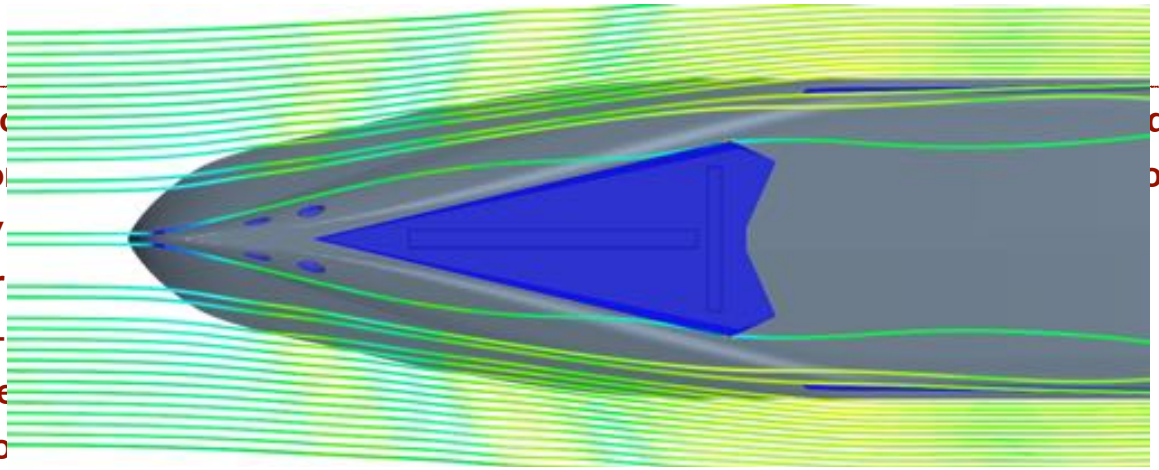
- Hydrographic ech
- Biomass evaluatio
- 2x high frequency
- Fishing nets sonar
- Deep water multi-
- Midwater multi-be
- High resolution bo
- Multi-beam biologi
- Pre-processing cons storage units
- Frequency synchron
- SVP Plus Deep Sea
- Multi-beam bathym biological echosoun
- Seismic profile proc
- Post-processing sof echosounder

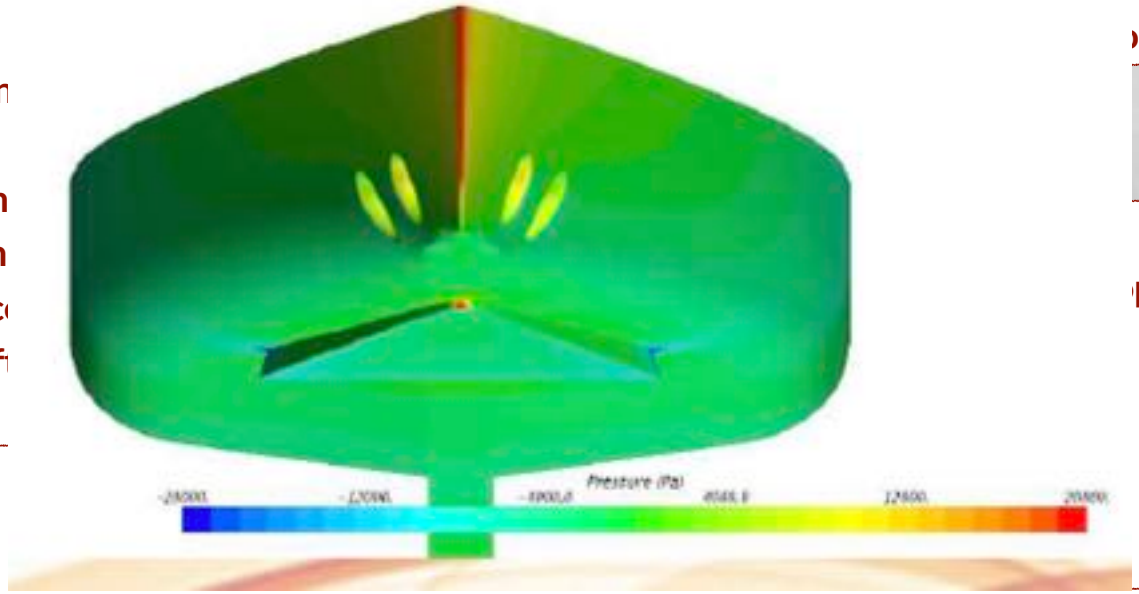
d heading system

osition reference

n software

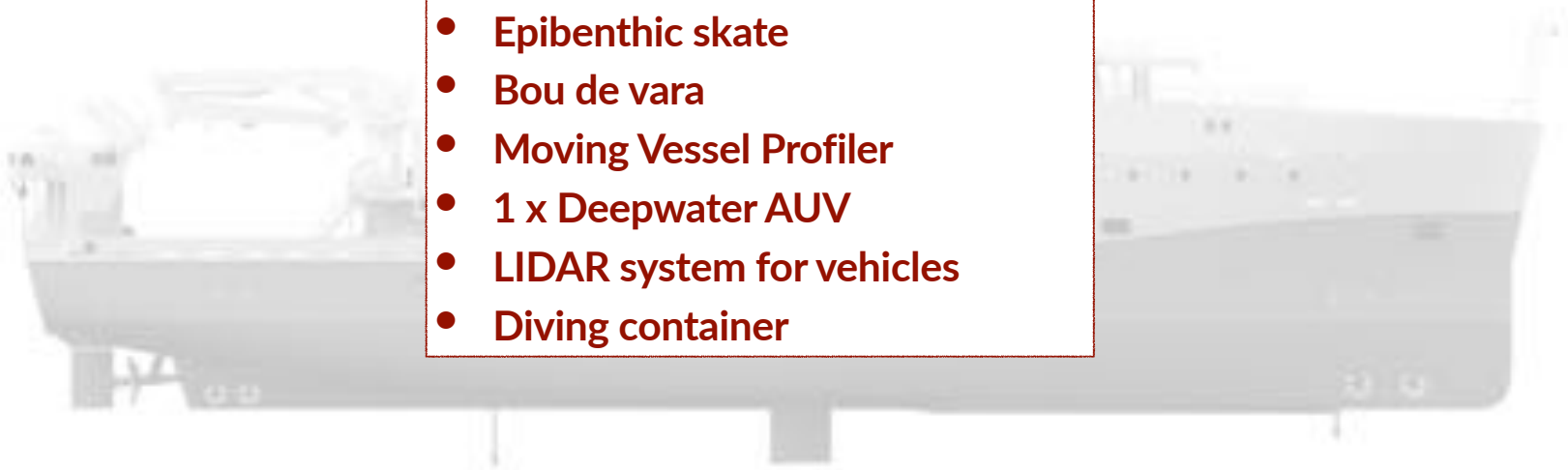
pes





Additional Equipment

supplied as an offer upgrade



- Sampler Networks
- Hipap compatible transponder set
- Dredges and Sediment Samplers
- Epibenthic skate
- Bou de vara
- Moving Vessel Profiler
- 1 x Deepwater AUV
- LIDAR system for vehicles
- Diving container

R. V. Odón de Buen

Name

Odón de Buen: Spanish oceanographer (1863-1945)

- In 1914 he founded the Spanish Institute of Oceanography, thus initiating the field of oceanographic research in Spain.
- In 1919, he participated in the definitive constitution of the International Commission for the Scientific Exploration of the Mediterranean Sea
- In 1924 he was a full member and chaired the Spanish Delegation to the meeting of the International Council for the Exploration of the Sea based in Copenhagen. From 1924 he chaired the Oceanographic Section of the International Union of Geodesy and Geophysics.
- During the Civil War he was imprisoned in Mallorca. In 1942 he moved to Mexico. He died in 1945 in Mexico D.F. with 82 years.

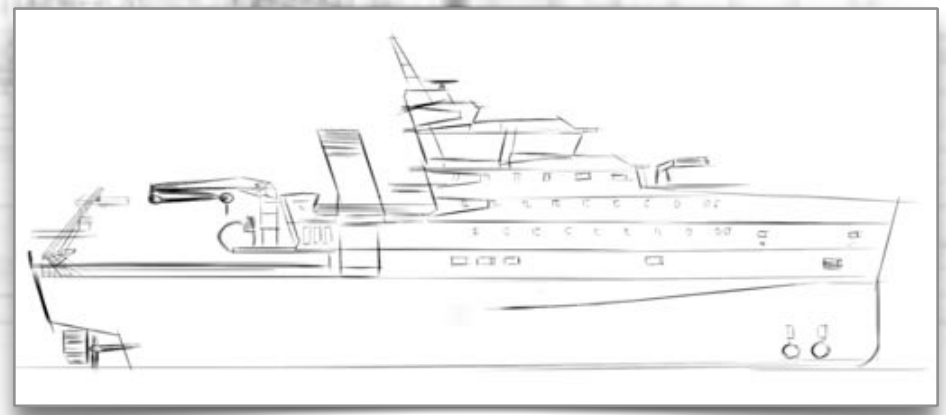
"I got to know the sea, I contemplated it superb, imposing (...), and I felt an insatiable desire to discover the secrets hidden under the waves and the causes, little apparent, of the origin of life and the oceans"
(Odón de Buen: 1934)

Efficiency

- *Low Carbon Footprint*
- *Silent Vessel*

Ability

- *Well Equipped*
- *Well Designed*



UTM
UNIDAD DE TECNOLOGÍA MARINA

ARMON

INSTITUTO ESPAÑOL DE OCEANOGRAFÍA 1914

Hopping to see you onboard soon ....

MINISTERIO
DE CIENCIA
E INNOVACIÓN

UNIÓN EUROPEA
FONDO EUROPEO DE
DESARROLLO REGIONAL
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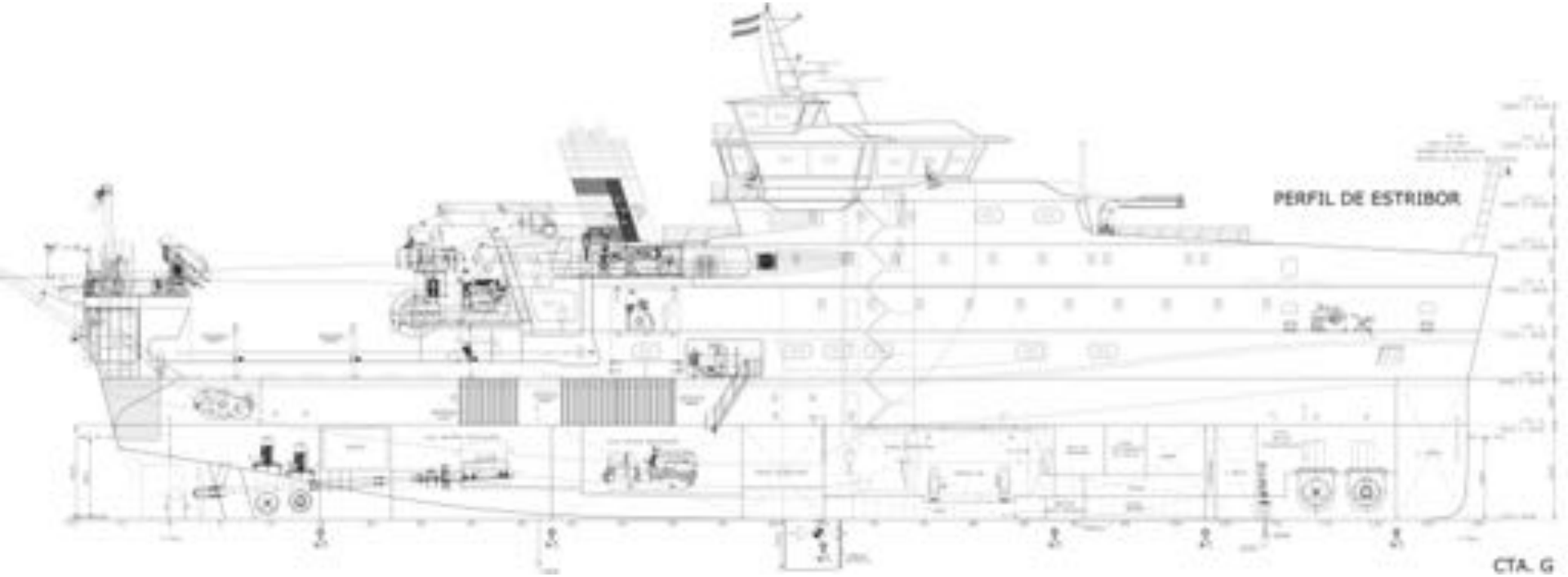
INSTITUTO ESPAÑOL DE OCEANOGRAFÍA 1914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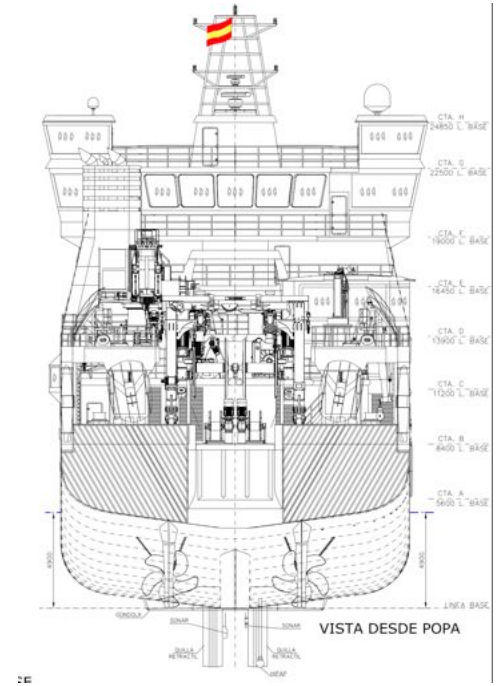
CTA. G


VISTA DESDE POPA

CTA. C
CTA. 11200 L. BASE
2700

CTA. B
CUBIERTA PRINCIPAL
CTA. 8400 L. BASE
2800

CTA. A
CTA. 5600 L. BASE
2800

FONDO