



Research Vessels: A Shipyard's perspective

IRSO VANCOUVER 26.09.2024



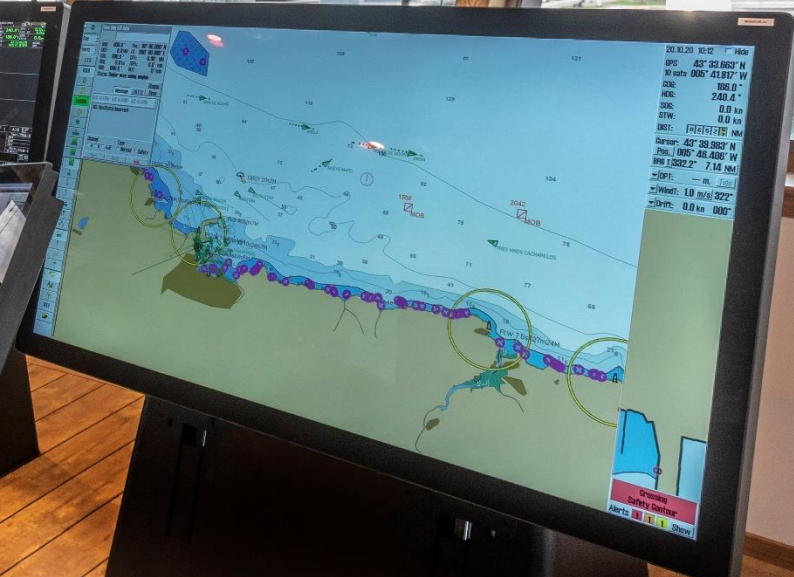






Control panel with various indicator lights and buttons.

24.10
240



Control panel with various indicator lights and buttons.




Holmøy
Maritime





DEEPOCEAN

A large white research vessel named "DR. FRIDTJOF NANSEN" is docked in a shipyard. The vessel has a white upper hull and a dark red lower hull. It features a complex superstructure with multiple decks, antennas, and a prominent mast. The ship is positioned in a dry dock, with concrete walls and various pieces of equipment visible. The scene is illuminated by the warm, golden light of a setting or rising sun, creating a dramatic atmosphere. The text "Research Vessels: Lessons Learned" is overlaid in white, bold, sans-serif font across the center of the image.

Research Vessels: Lessons Learned

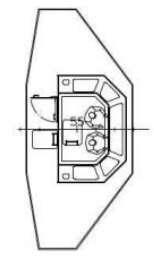
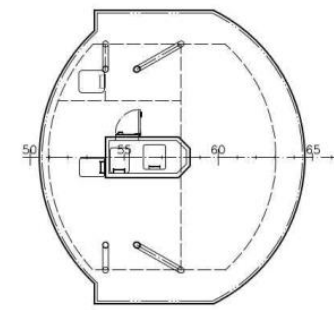
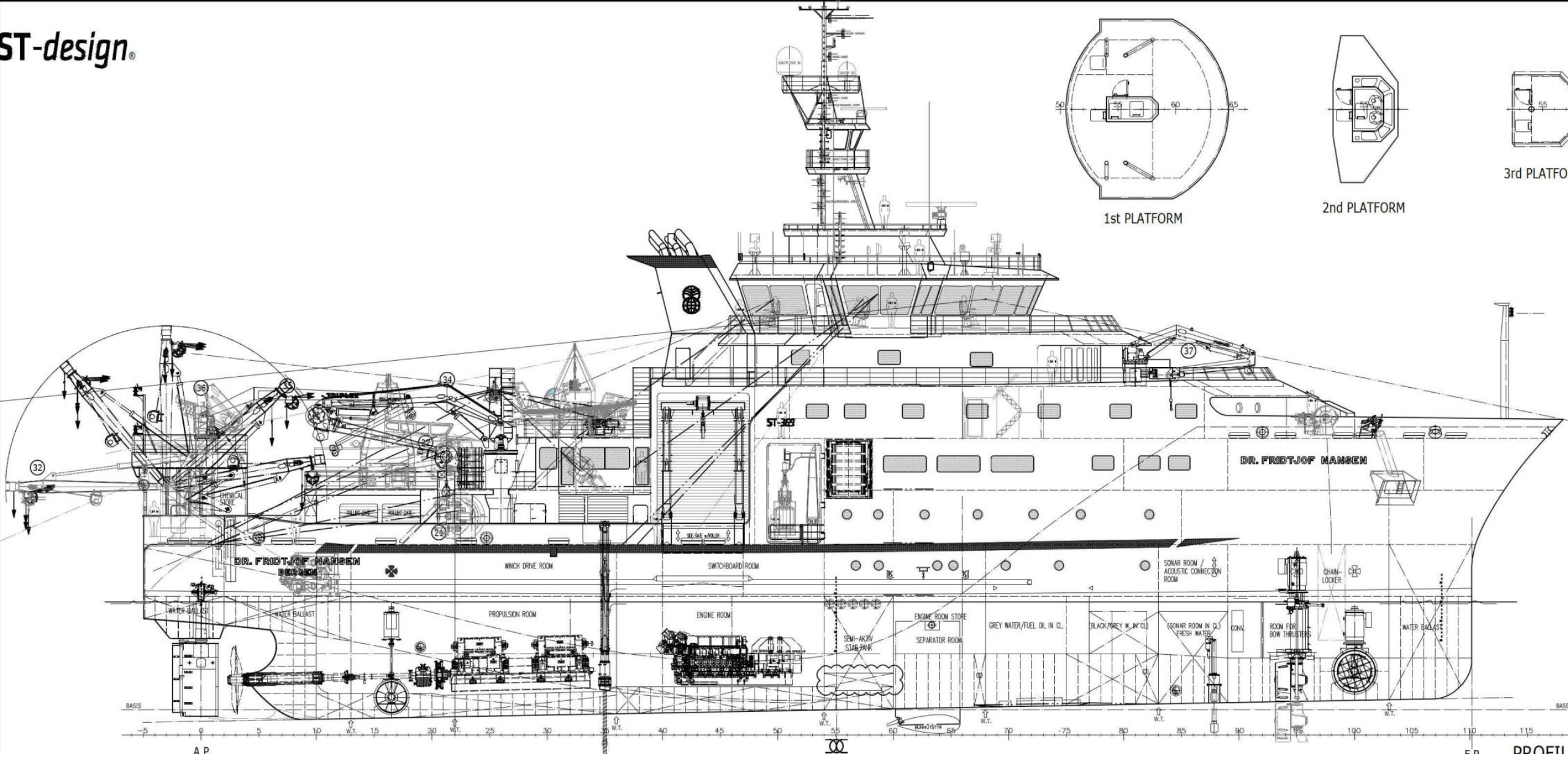
Lesson 1

Extremely compact vessels

- 75 m length & 17.5 m beam
- 30 technicians & 15 crew
- 6 labs, 2 Hangars (Main & CTD)
- 4 cranes, 2 A-frames & 1 L-Frame
- 17 winches
- 2 Drop keels
- 3 Thrusters & 1 Five blade propeller
- 1 survey boat for shallow waters
- ...

**The vessel should have
been
10 meters longer !**

**Luckily it wasn't or the
scientists would have
requested
even more things
onboard
!!!**



DR. FRIDTJOF NANSEN

DR. FRIDTJOF NANSEN

A P

DR. FRIDTJOF NANSEN

Lesson 2


Many unfamiliar challenges

- Extensive Hydroacoustic systems: Multibeam, Single Beam, ADCP...
- Several configurations: Hull mounted, Drop Keel, Blister, Gondola...
- Bubble Sweepdown
- Electromagnetic Compatibility and Electromagnetic Interference: EMC/EMI
- Underwater Radiated Noise, Excitation modes, Noise Curve, ICES 209
- Complex internal networks
- Many disciplines: Hydrography, Oceanography, Geology, Fishery, Seismic...

All of them critical, many of them uncertain even after the contract is signed !!!!

Lesson 3

**Like any other market, in the end it is a matter of
price & delivery time**

An aerial photograph of a large white research vessel with a red hull, named 'DR. FRIDTJOF NANSEN', navigating through a narrow fjord. The vessel is equipped with various scientific instruments, including cranes and a complex superstructure with multiple levels and windows. The surrounding landscape is lush and green, with steep, rocky cliffs and a small green field visible on the left. The water is a deep blue-green color. The text 'Brand new Ocean Class Research Vessel' and 'Approx. 70 M€' is overlaid in large white font across the center of the image.

Brand new Ocean Class Research Vessel
Approx. 70 M€

DR. FRIDTJOF NANSEN
BERGEN

DR. FRIDTJOF NANSEN

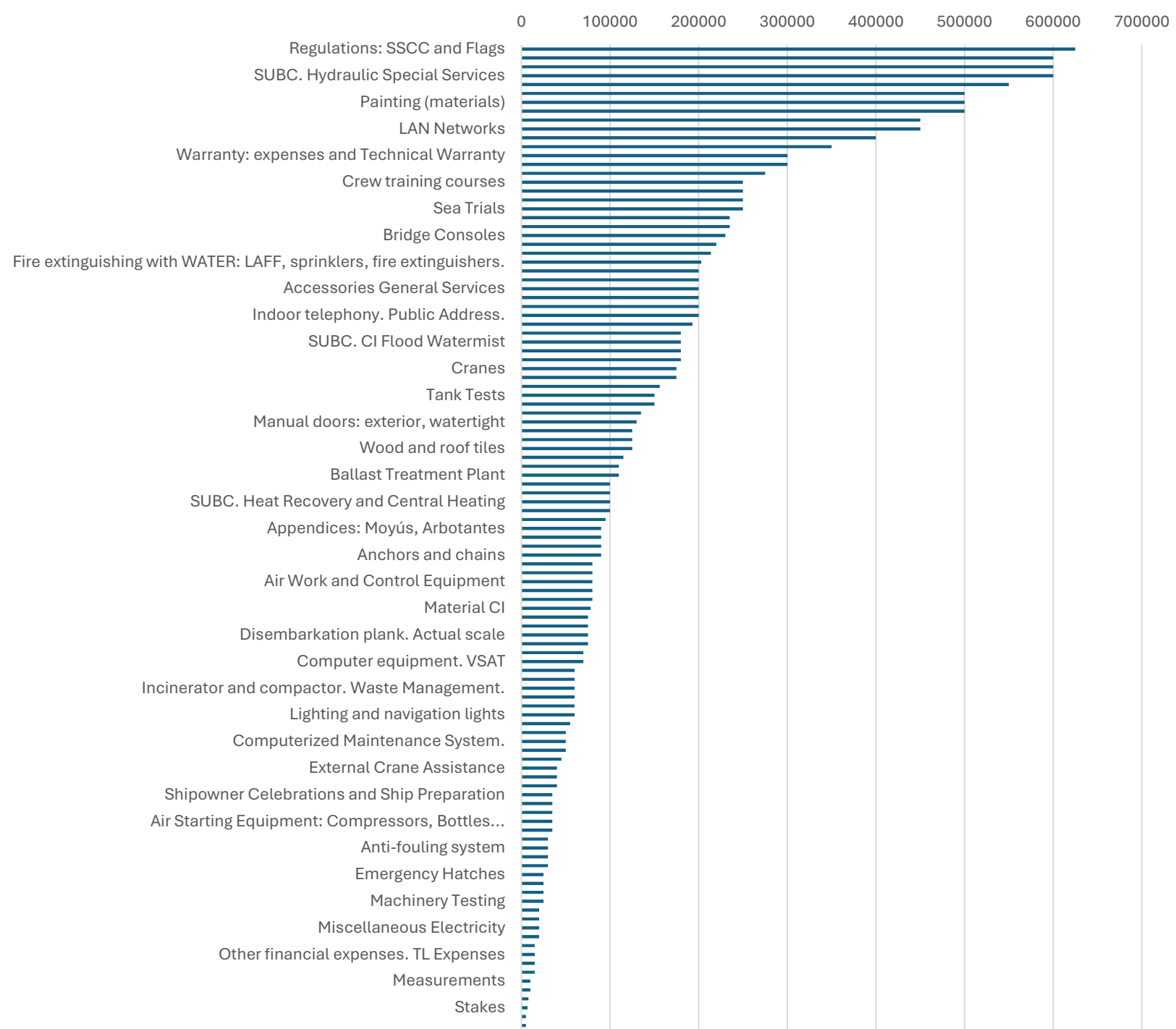
**Almost 50% of the cost comes from a few (<15)
“easy-to-track” items.**

**Through a vetted Maker’s List, the owner should
focus on those first**

Threshold > 1 M€

- Electrical Power, Control & Distribution: 7.5 M€
- Deck Machinery (Winches, cranes): 3.5 M€
- Isolation, Furniture, HVAC: 3.5 M€
- Design & Consultancy: 3.5 M€
- Internal Combustion Generators: 3 M€
- Hydroacoustic Equipment: 3 M€
- Propulsion: 2 M€
- Nav&Com and bridge systems: 2 M€
- USV: 2 M€, Shallow water Survey Craft: 2 M€...

**Not considering “Green”
Future Proof
Technologies**



Threshold < 1 M€

**The remaining 50%
is much more
difficult to track...**

Manufacturing costs: Man hours

Manhours...made by who?

- Hull yard?
- Outfitting yard?
- Direct workers? Indirect workers?
- Turnkey subcontractors?
- Project Management tasks?
- Overheads? Indirect costs?
- ...

Hull construction is the “easy part”, and its costs are easier to track down

Highest cost at North



Cheaper South East
ES: 5.5 | TR: 4.5 | VN: <4
€/kg

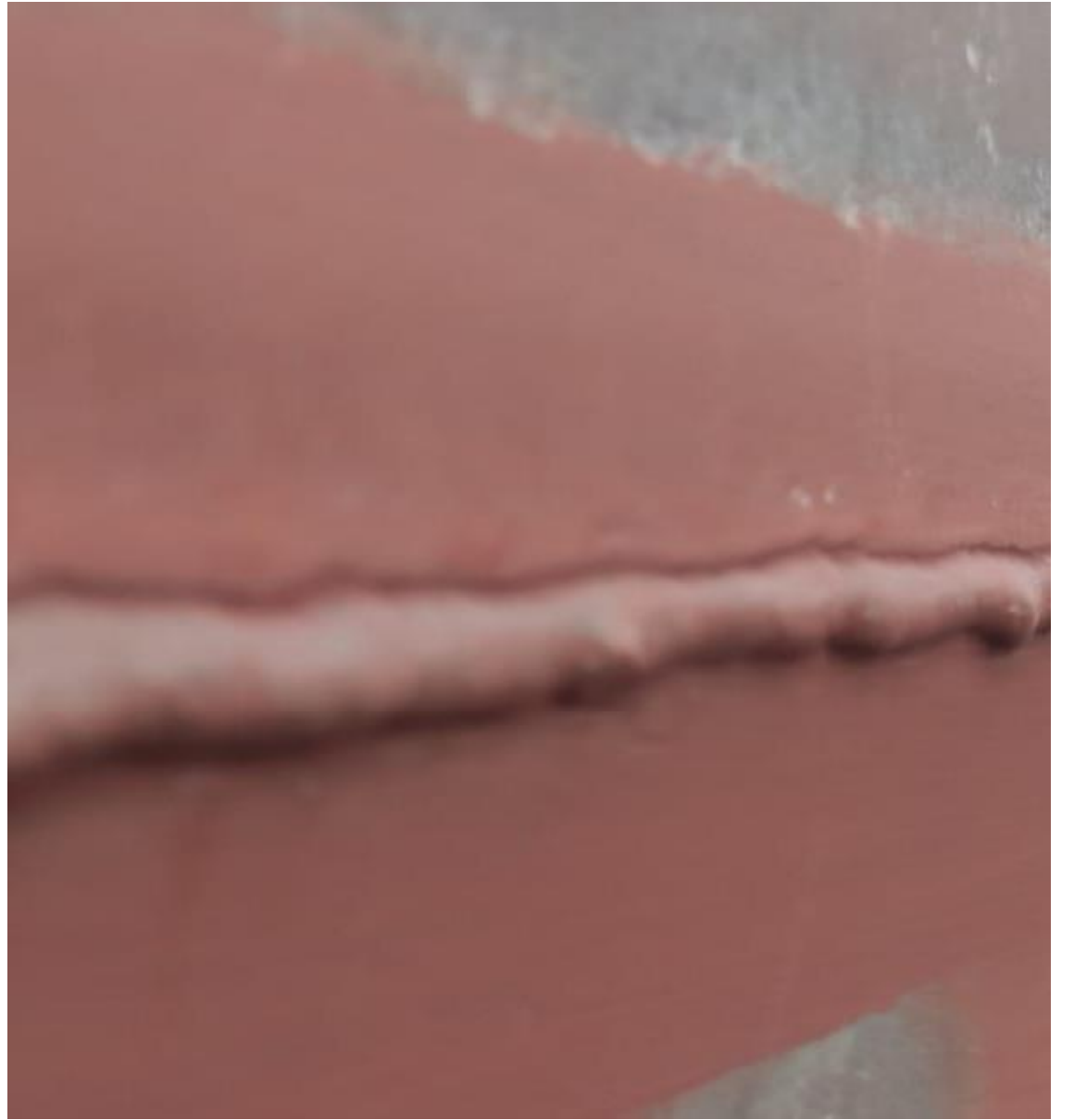
Rule of Thumb 1/3 hull, 2/3
Outfitting

Around 500.000 hours

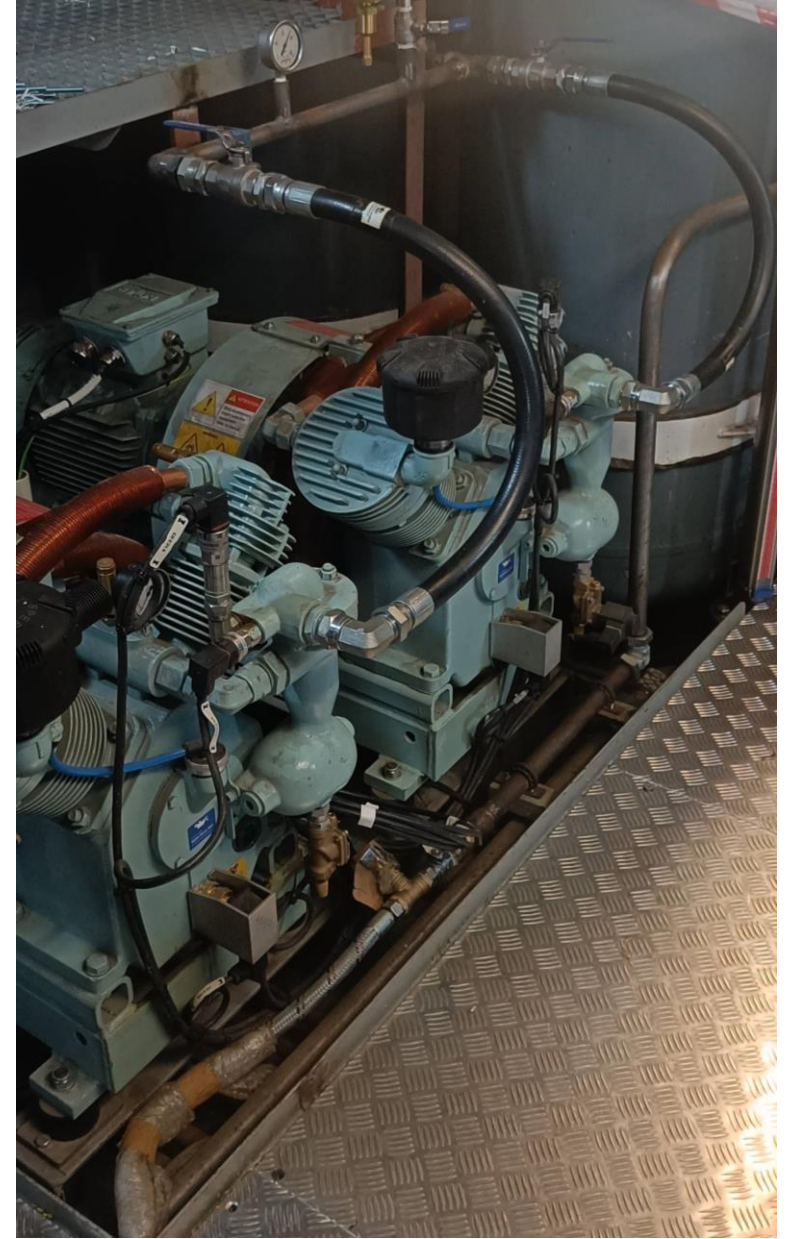
“As I hurtled through space, one thought kept crossing my mind: Every part of this rocket was supplied by the lowest bidder.”

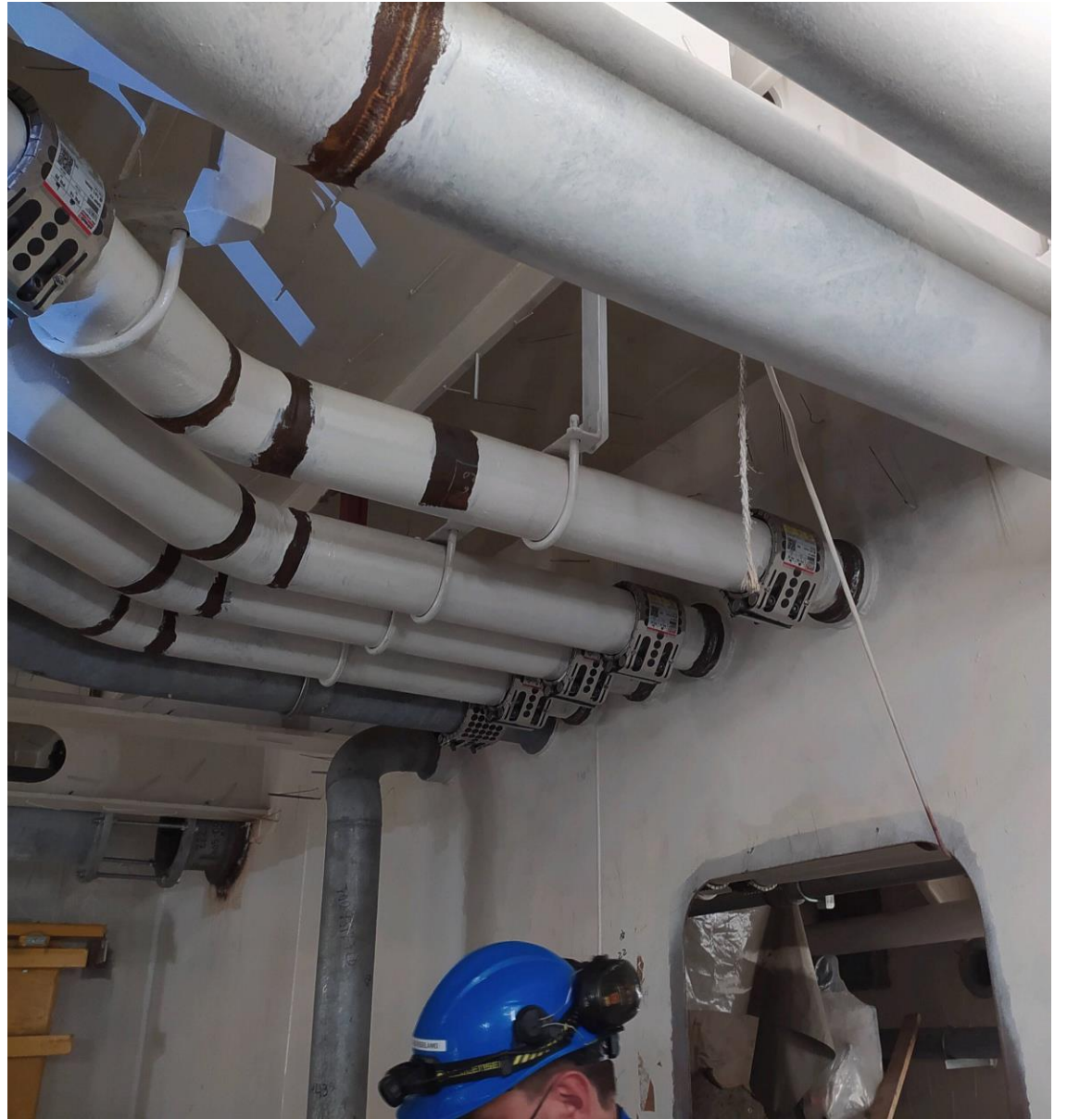
A photograph of an astronaut in a white spacesuit working on a spacecraft component. The astronaut is wearing a white helmet and a white spacesuit with a life-support system. The component is a large, cylindrical structure with various pipes and wires. The background is dark, suggesting the interior of a spacecraft. The text "7 Friendship" is visible at the bottom of the image.

7 Friendship





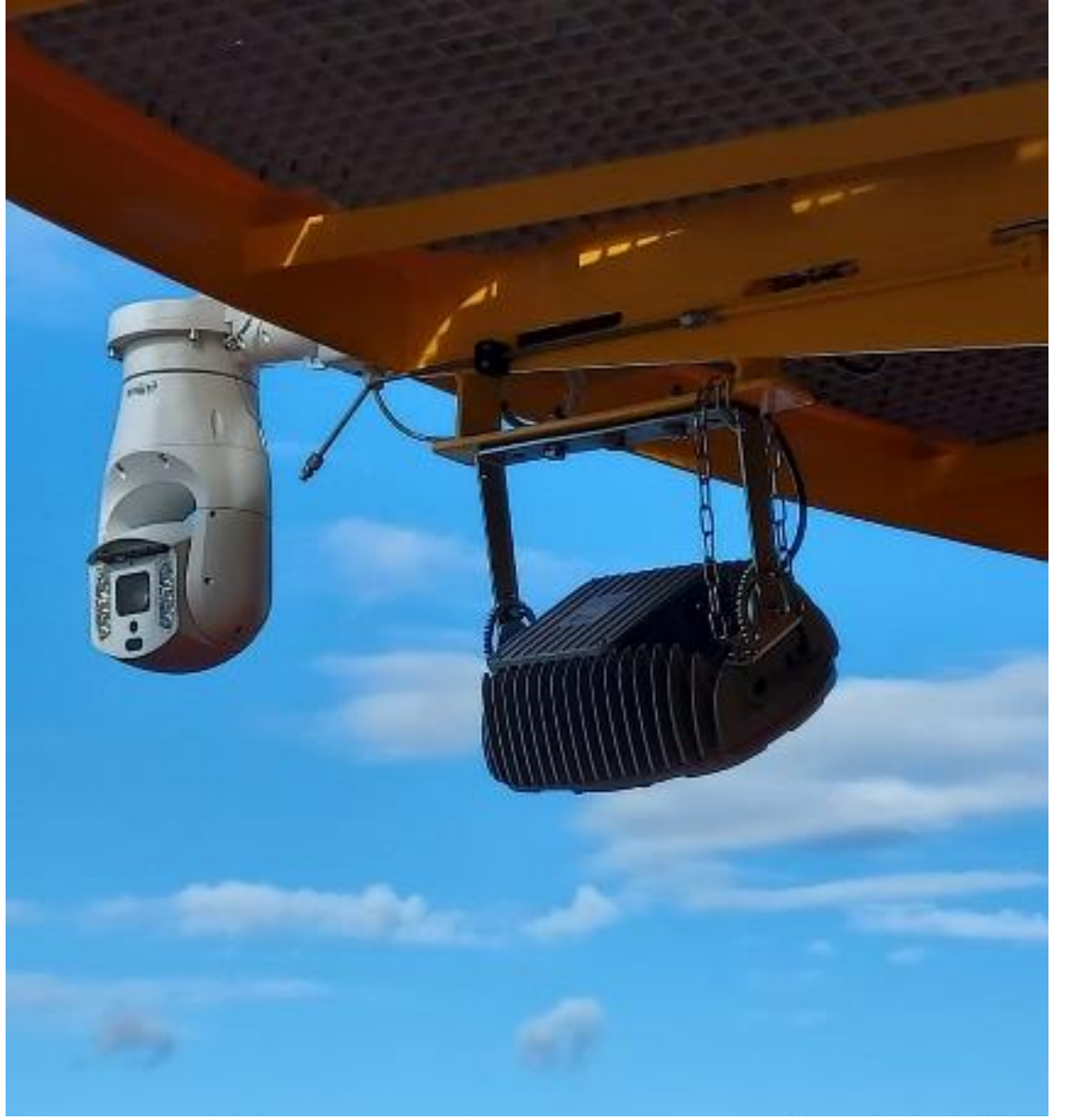
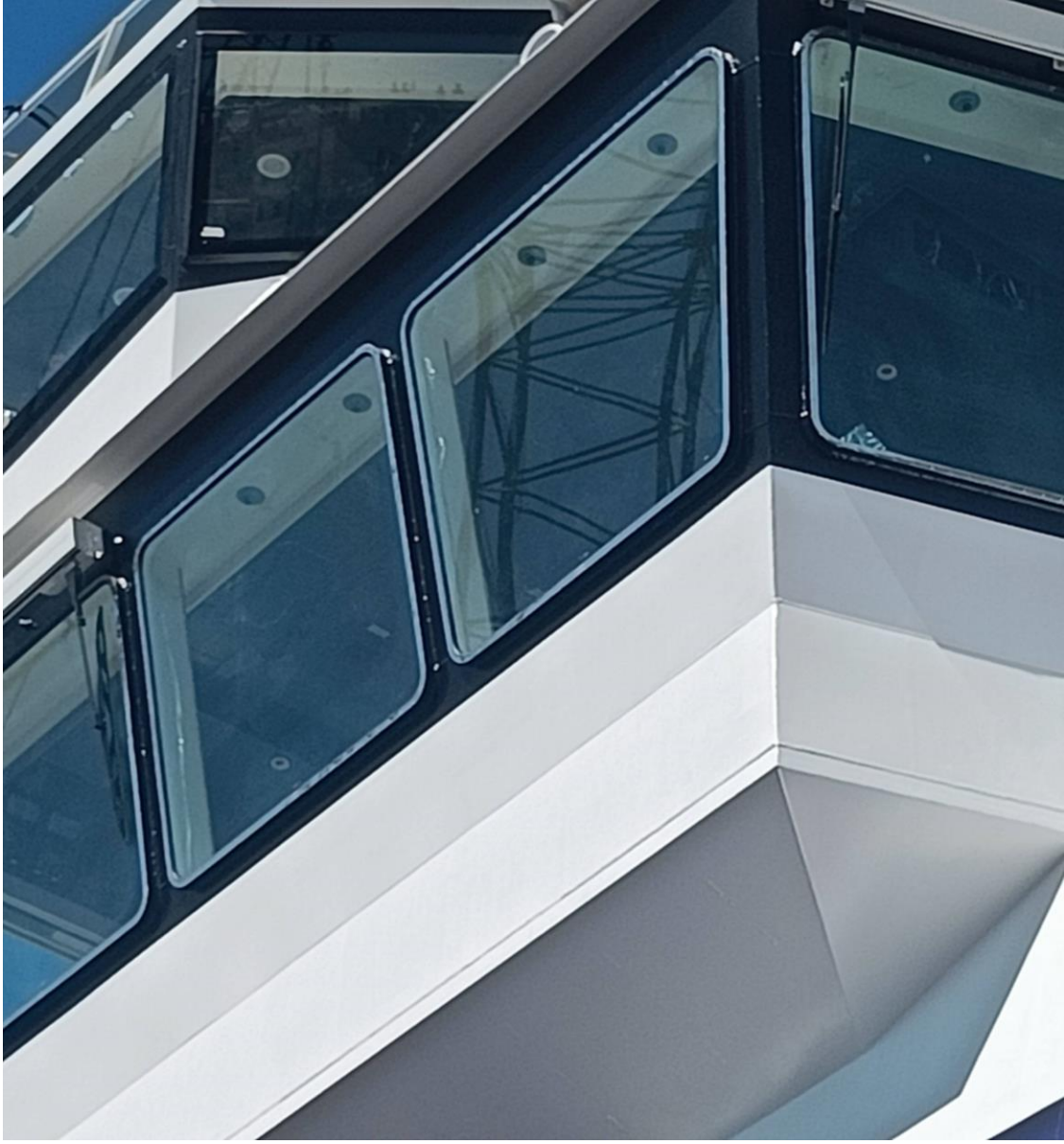


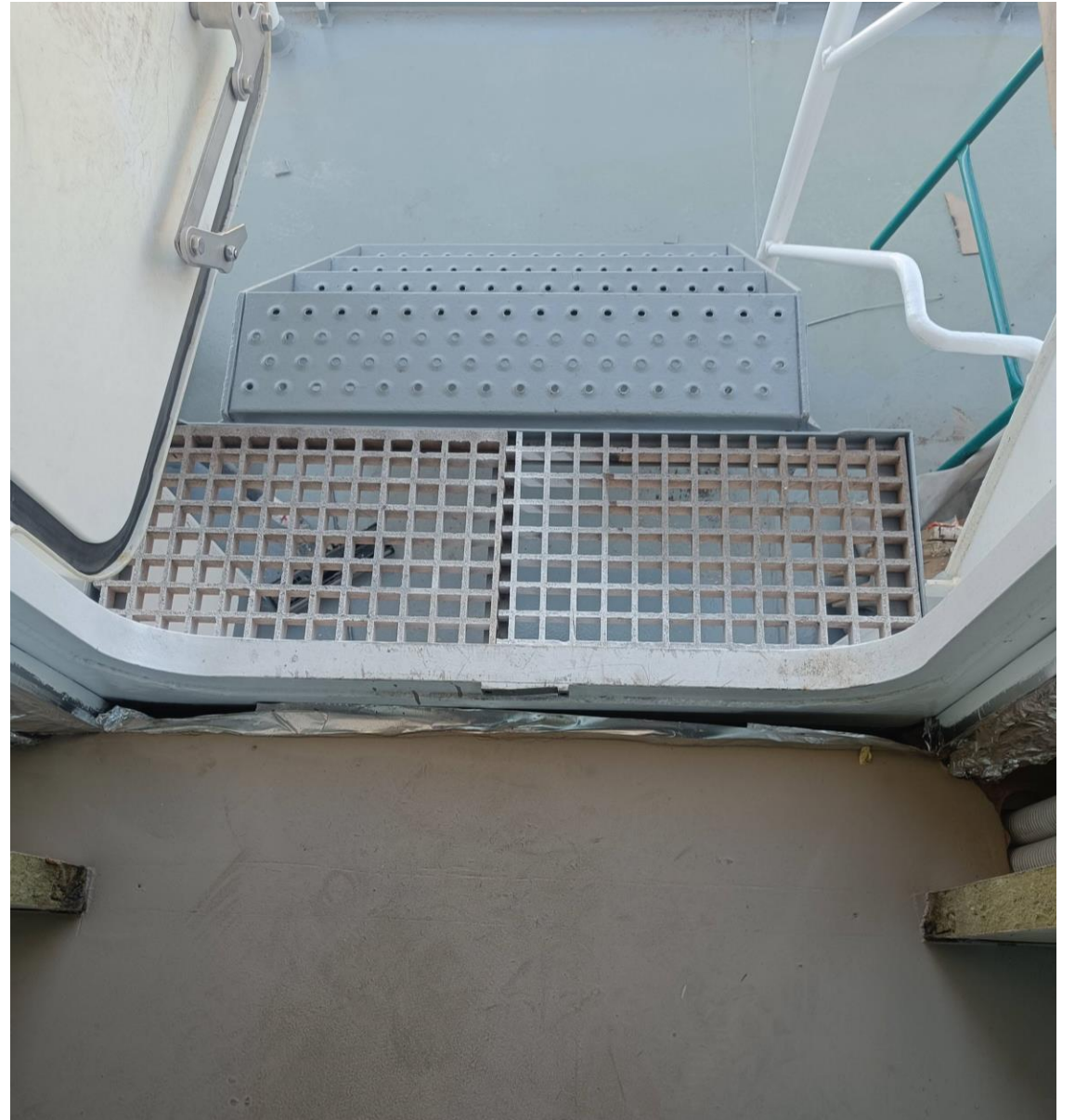










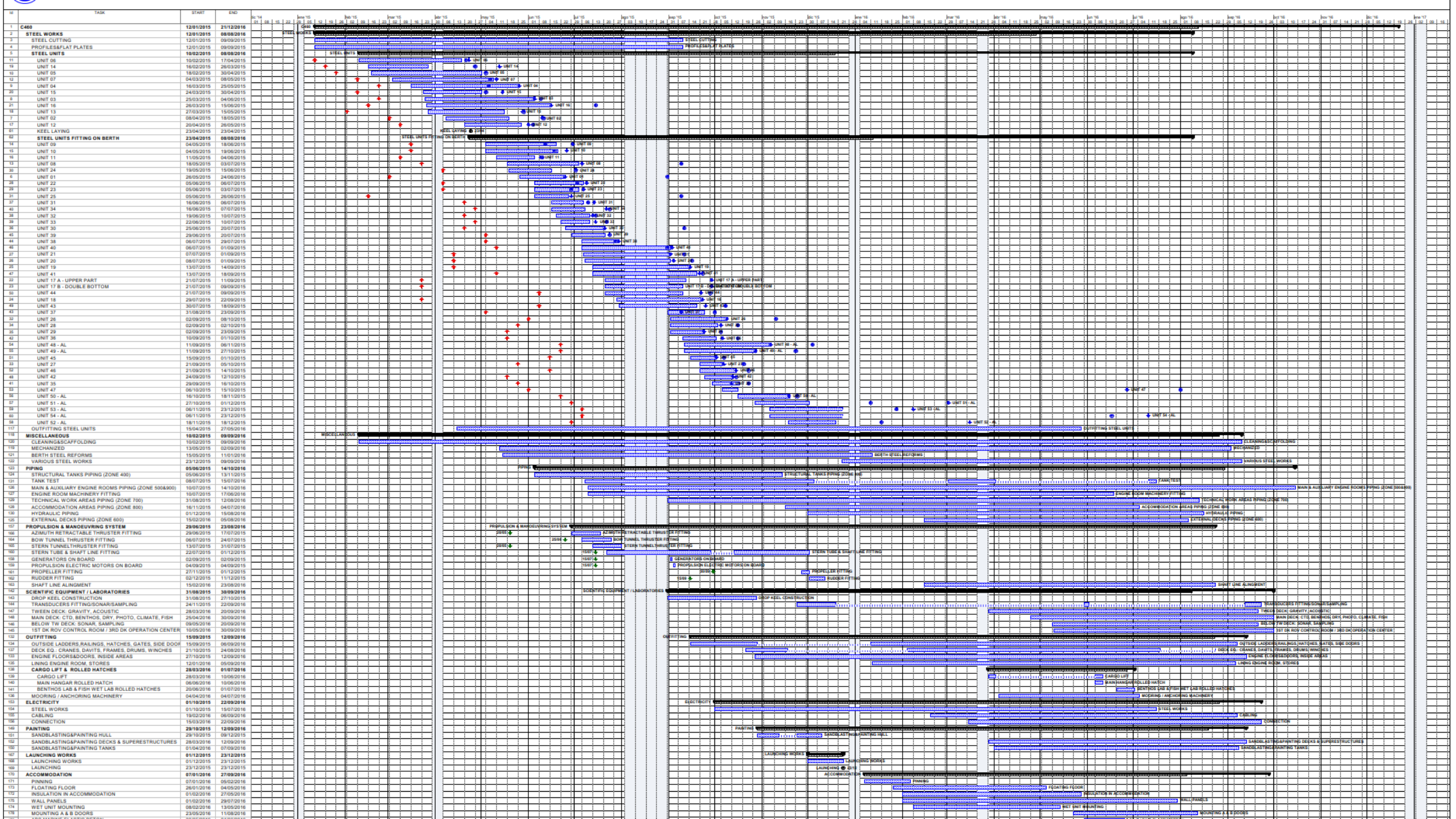


Delivery time

- A **commercial/private** yard has many reasons to aim for a fast delivery
 - A delayed vessel means additional hours on a fixed-price contract
 - A delayed vessel means additional indirect costs: Financing, Insurance...
 - Vicious cycle: subsequent delays on the next vessels
- The delivery is dependent on many “third parties”, not just the yard
 - Designer
 - Suppliers
 - Owner
- Between a rock and a hard place:
 - The relationship framework between yard and owner is provided by the latter (SBC)
 - The relationship framework between yard and its suppliers is provided by the latter

- Lifetime of a Research Vessel > 30 years
- Between 3 to 5 years to achieve the administrative “green light”
- Between 1 to 3 years of tender process to Contract Award with a yard...
- ...
- And now suddenly everyone is in a rush !!!

2 and ½ years: 30 months



- Progress – ref. master plan (MP) – rev 02
 - Lofting and production documentation delivery is according to plan and the good quality of steelwork continues.
- By date up to a manning of approx. 100 workers 10-11 hrs/day. (Electrical workers increased to 45 this week)

Efficient productivity in some areas are now somewhat reduced, mainly due to parallel activities with limited space and access.

Recommendation contractor (EBC) has 10-12 men on highrises, mainly on insulation work in technical areas.

- High activity in all areas, but we are now in the stage that spaces are getting narrow and hamper productivity. Conflicts and collisions which cause demolition and re-work are seen more often.

- Still lot of areas to be painted and /or repainted due to damage. With the hard push for completion, we do notice a reduction in quality of workmanship and a tougher inspection atmosphere!

CABLING WORKS NOT FINISHED

INJECTED FOAM

EQUIPMENT
OXIDATION

A Word of advice

Keep it Simple

Visit the yards, visit reference ships, talk to customers.



Hello ChatGPT, please provide an Answer for a Request for Tender for a new Research Vessel explaining why GONDAN Shipyard is the best shipyard in the world for such project.



Response to Request for Tender: New Research Vessel

Subject: Proposal for the Construction of a New Research Vessel

Dear [Tender Committee/Client Name],

GONDAN Shipyard is honored to submit our proposal for the construction of your new research vessel. We firmly believe that GONDAN is the ideal partner for this project, owing to our unparalleled expertise, state-of-the-art facilities, and commitment to delivering vessels that meet the highest standards of quality, innovation, and environmental sustainability. Below, we outline the key reasons why GONDAN Shipyard stands out as the best choice for this prestigious endeavor.

1. Proven Expertise in Specialized Vessels

GONDAN Shipyard has a long-standing reputation for building highly specialized vessels, including research ships, tugs, and offshore support vessels. Our extensive portfolio includes numerous

Avoid long tender process: They do not guarantee better results, but they do guarantee higher prices

Teamwork

Finding a Human Team that you can trust

Thank you for your time!!
Questions?

PS: Yards hate long warranty periods