

Bacalhau Project, a multi-national surface supplied diving operation in Brazil

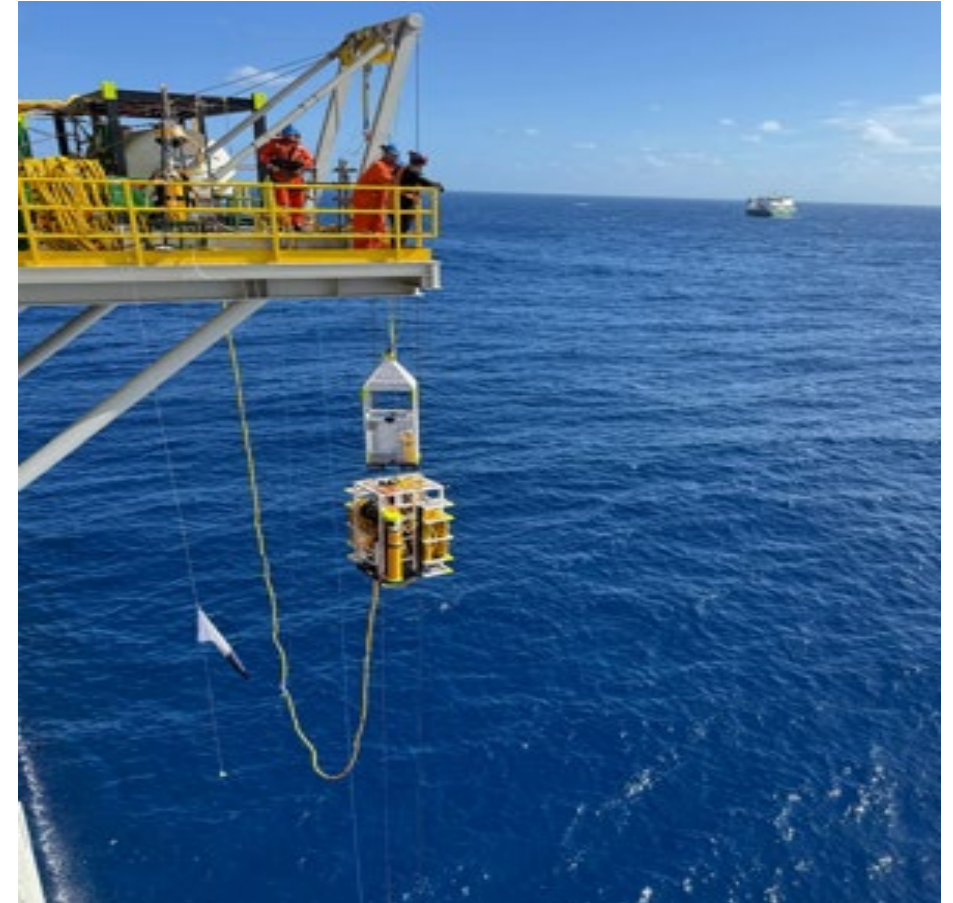
Operator Equinor
Diving Contractor Continental/JFD

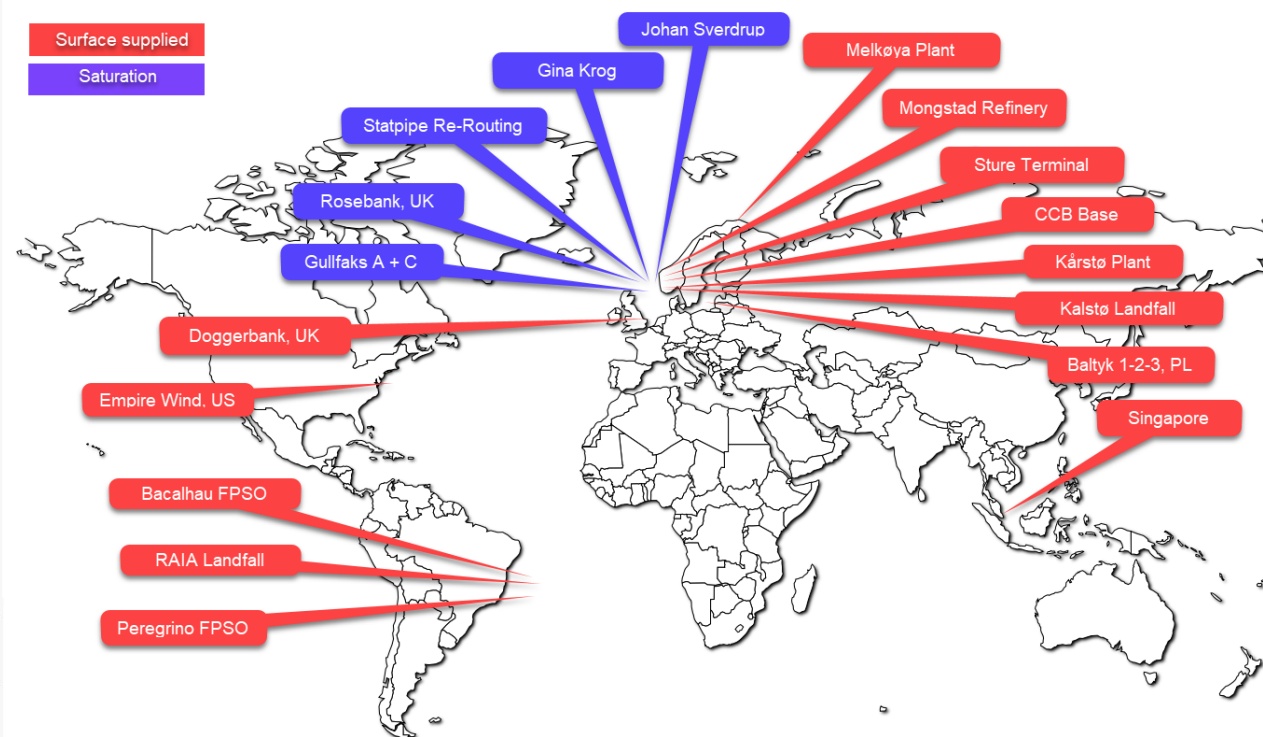
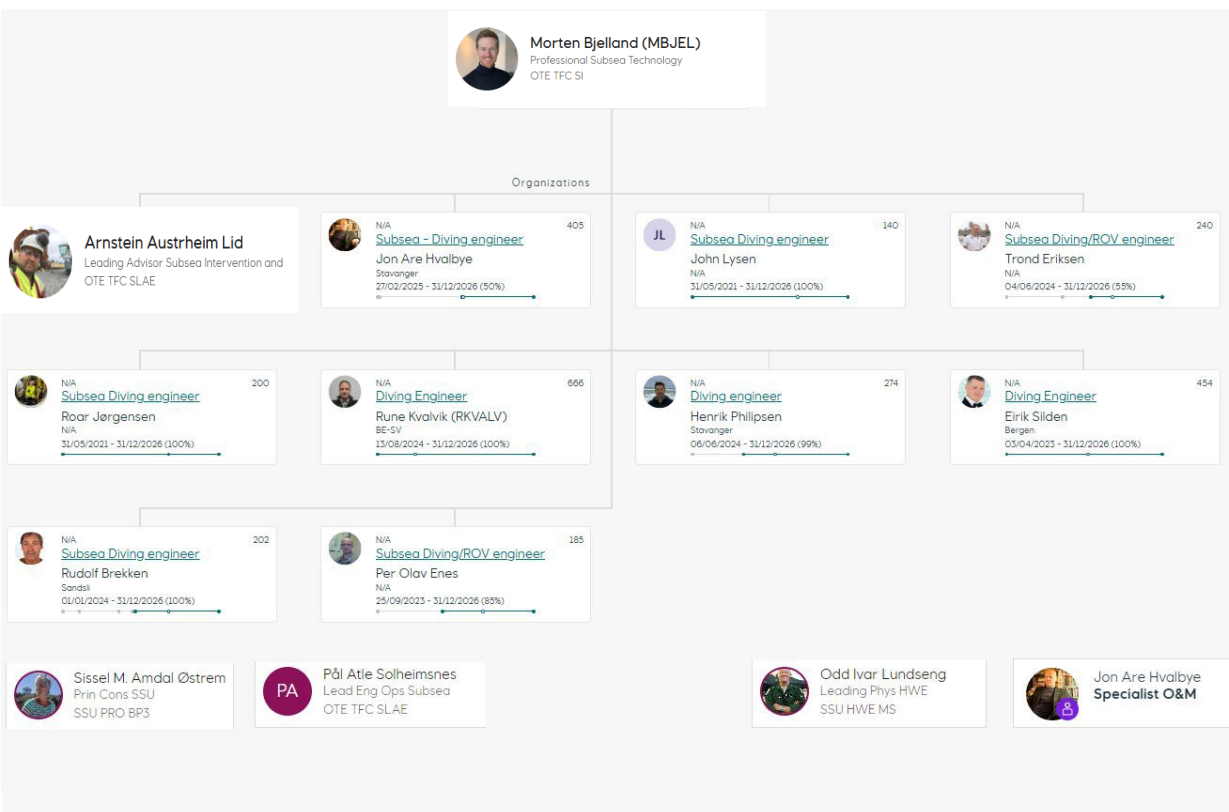
Bergen International Diving Seminar 4-5 of November 2025
Rodrigo Thomaz – Continental /JFD
Roar Jørgensen - Equinor



Bacalhau Project – Multi-national Diving Operation in Brazil

- Agenda
- Introduction :
 - Equinor Diving
 - Diving contractor Continental /JFD
- Overview of the Brazilian Diving industry
- Bacalhau Project
- Road map for compliance and common understanding
- Brasok development
- Diving related improvements
- Conclusion and Take away





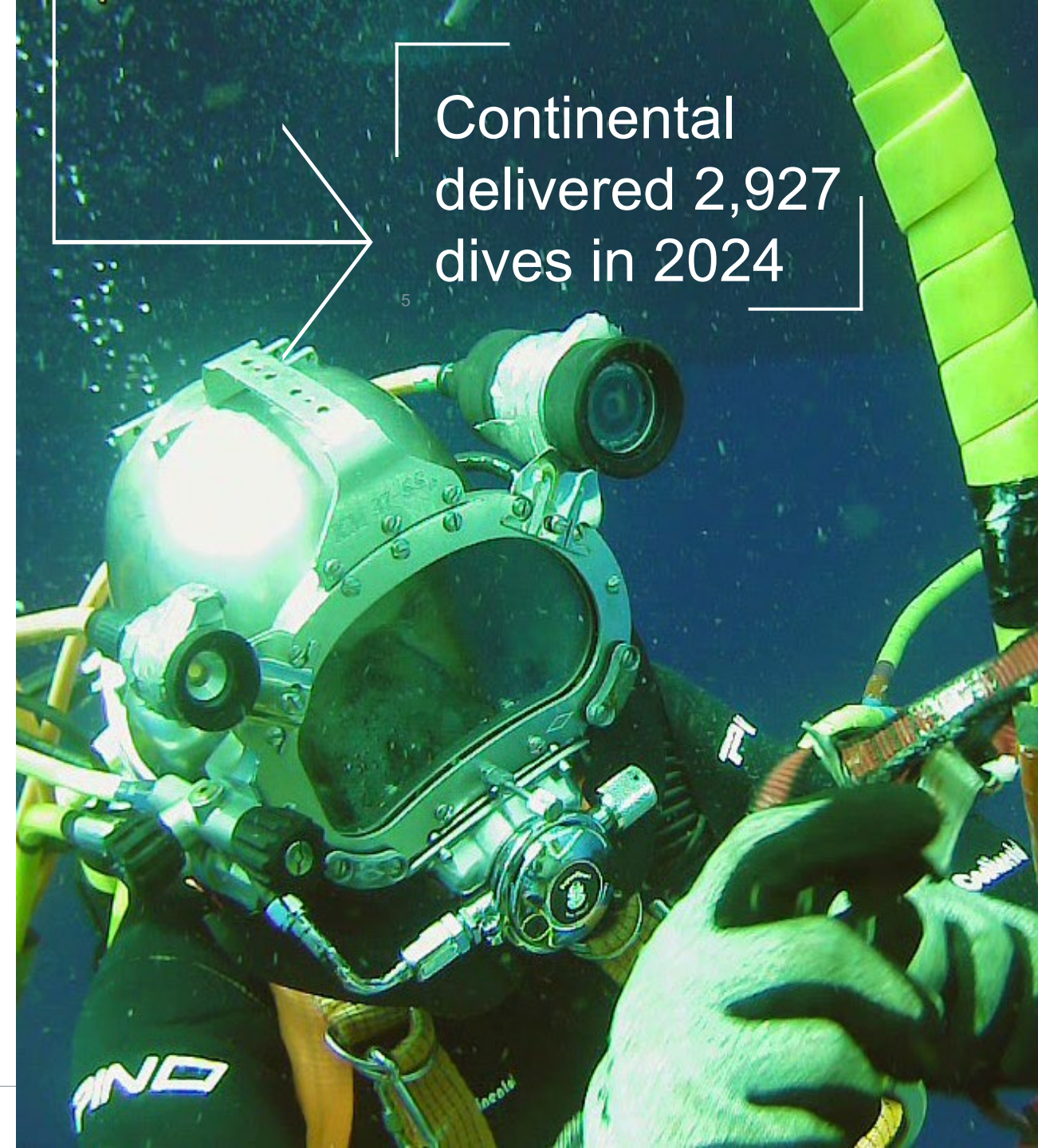


Continental / James Fisher in Brazil

- 50th year anniversary in 2025
- Part of the Energy Division of James Fisher plc group since 2019
- 11 Surface supplied diving spreads working. 1 according to NORSOK U-100 standard

200 permanent employed diving personnel
(all Brazilians)

IMCA certification by Q1-26

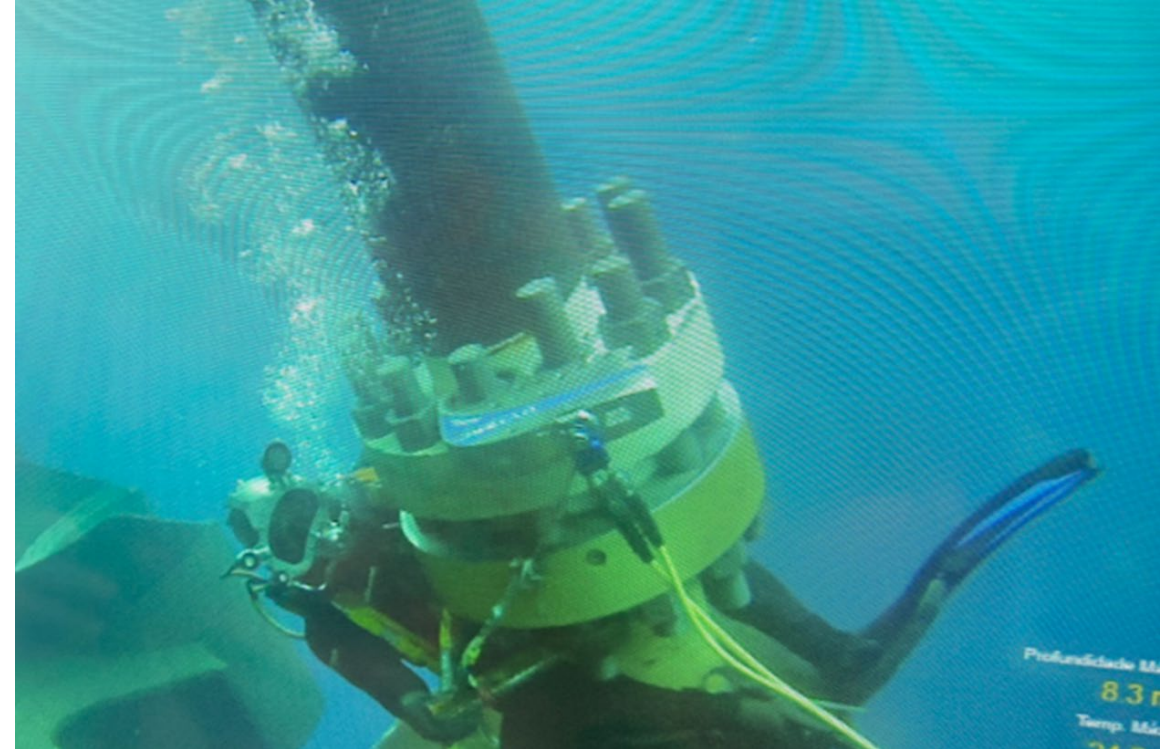


Continental
delivered 2,927
dives in 2024



Facts - Brazilian offshore diving industry.

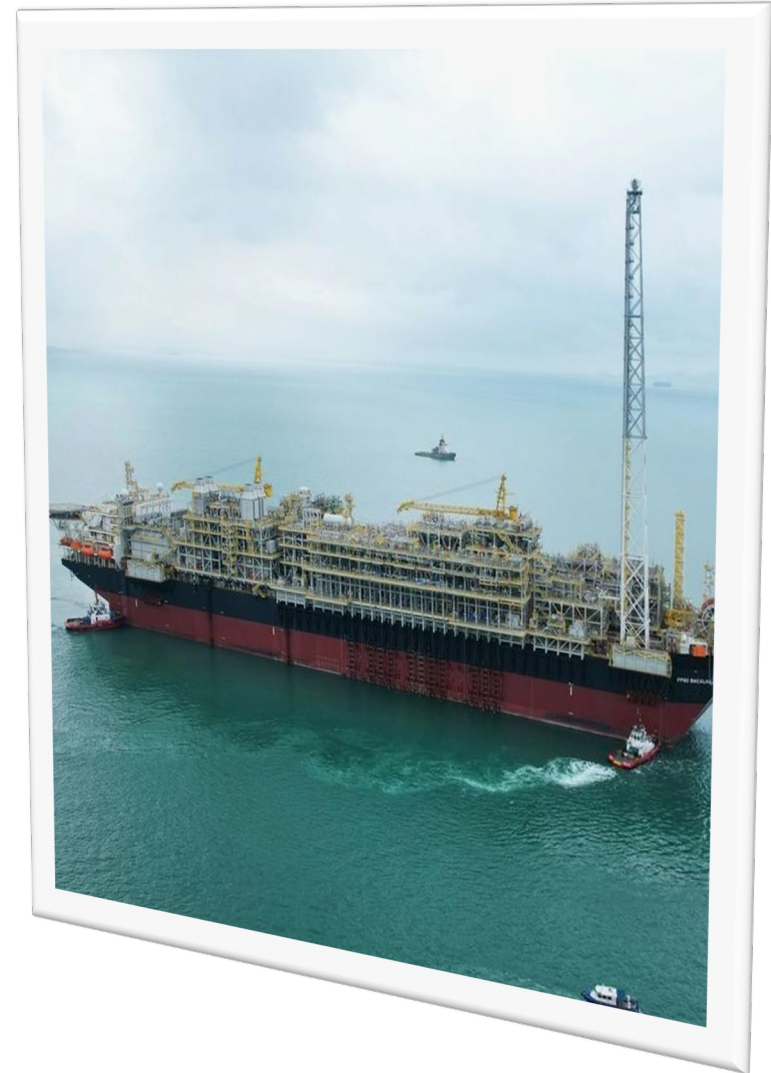
- Diving regulating authority is the Navy
- 1 dominating Operator and 15 smaller” Operators.
- 4 large Diving Contractors
- 14.000 air dives in 2024
- Most of the diving is from FPSO
- “no” saturation diving
- Don’t use Nitrox but one company has TUP
- Surface decompression -
 - Not recommended practices
- All diving personnel is permanently employed
- **HSE in Brazil**
- Major Operator decided in 2020 to reduce diving with 90%, due too many accidents and serious incidents
- Equinor has up till date 0 accidents (15 years n Brazil)
- Equinor consider diving as a “normal” working method as long as we operates according to Equinor Management System- ARIS.





Bacalhau FPSO (Floating Production Storage and Offloading)

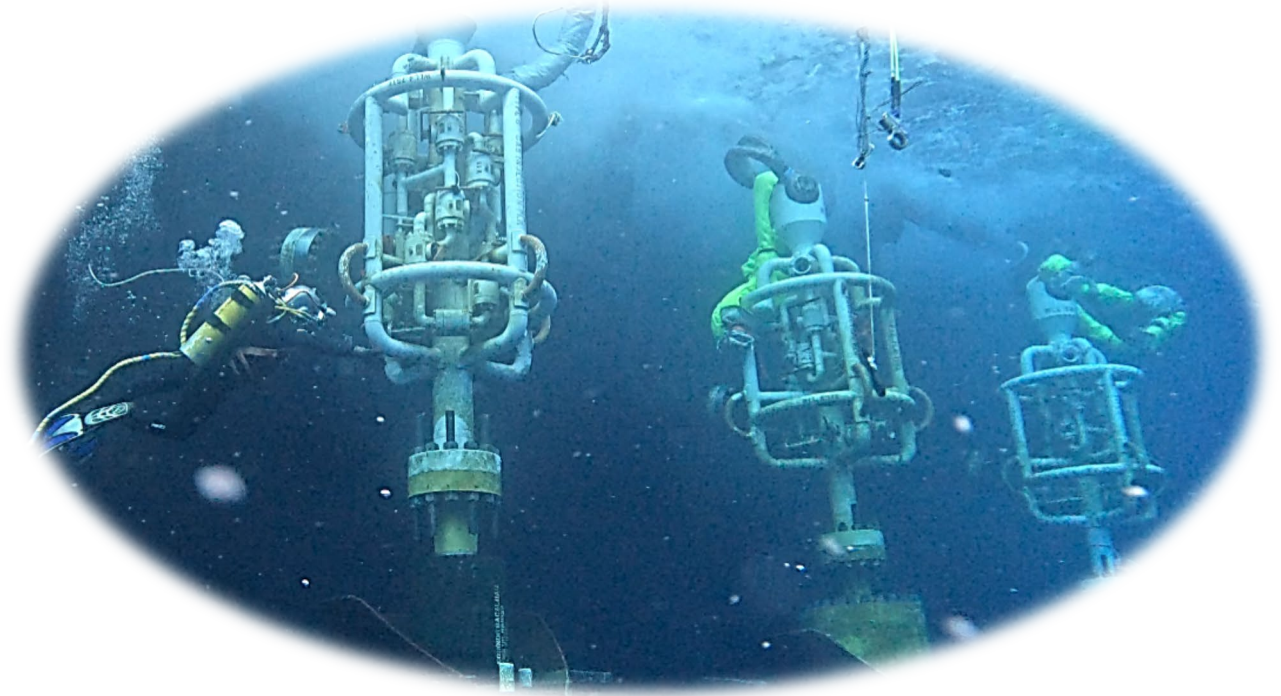
- Length 370m | Breadth 64 m
- Located at Bacalhau field 185km from Ilha Bela, Sao Paulo State
- +2,000m water depth,
- FPSO construction in Singapore by MODEC
- Arrived in Brazil in February 2025
 - Diving work started March 2025
 - Diving Tie in depth meters 0- 6 meters
- 1st oil October 2025





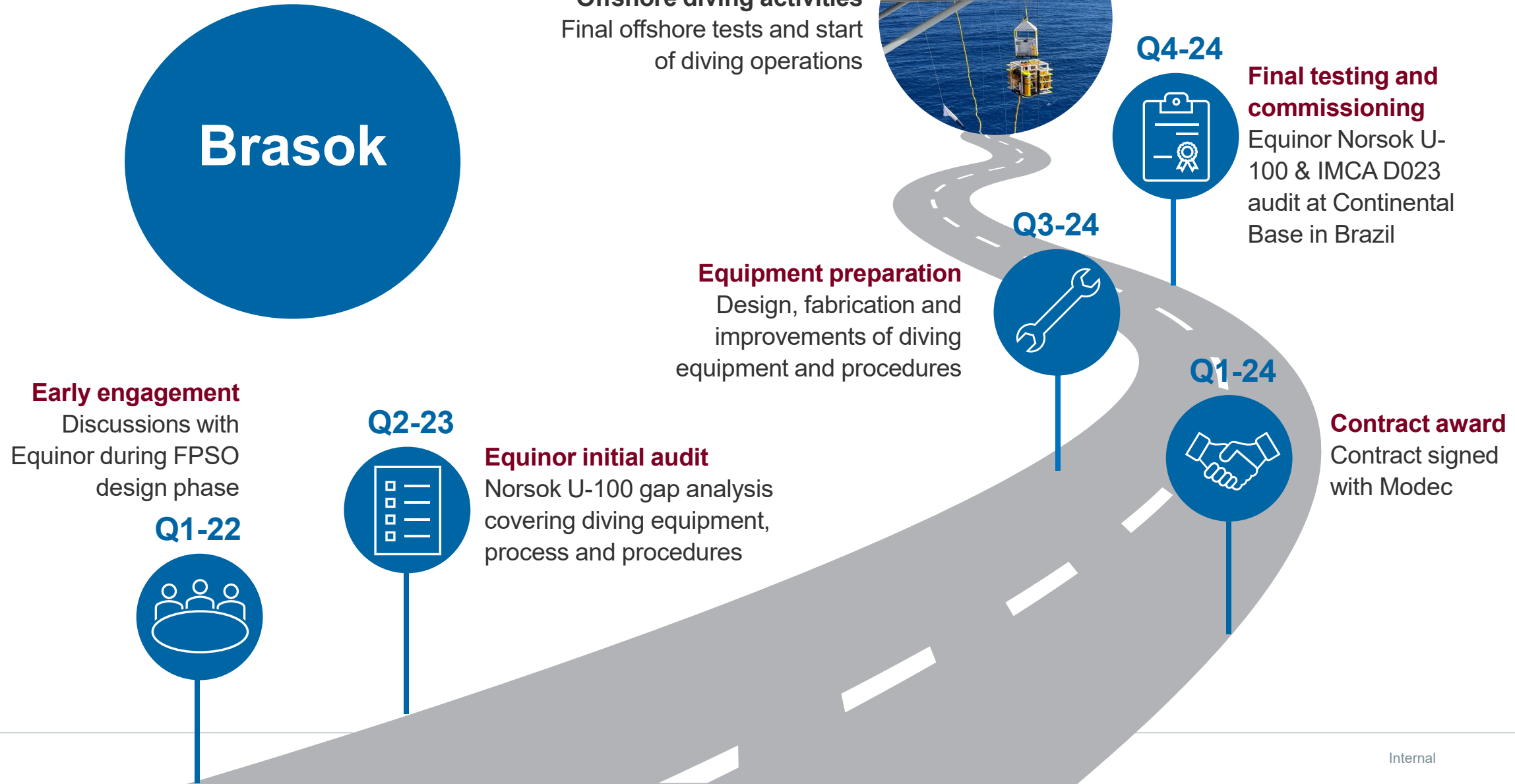
Equinor Bacalhau diving work

- **Multi-national participants**
 - Brazilian, French, English, Norwegian, Polish, Singapore
- **0 accidents**
- 864 Dives
- 468 diving hours (as of Oct 25) w/ 24hr/day teams
- Total 13 pull/tie-ins:
 - 11 rigid pipes/risers and 2 umbilicals
- Synergi Reports
 - 11 Quality
 - 1 HSE potencial
 - Fishing boats heading for diving site.





The 'Brasok' Roadmap





'Brasok': Norsok with Brazilian 'flavor'

Norsok U-100 & IMCA D023

Compliance with the U-100
revision Dec 2023 and IMCA
D023 revision 2.3



Norman 222

Full compliance with the
latest revision (Aug 2023)

Brasok

Common sense and lessons-learned

Equinor experience from
previous projects applied
to the Brazilian market



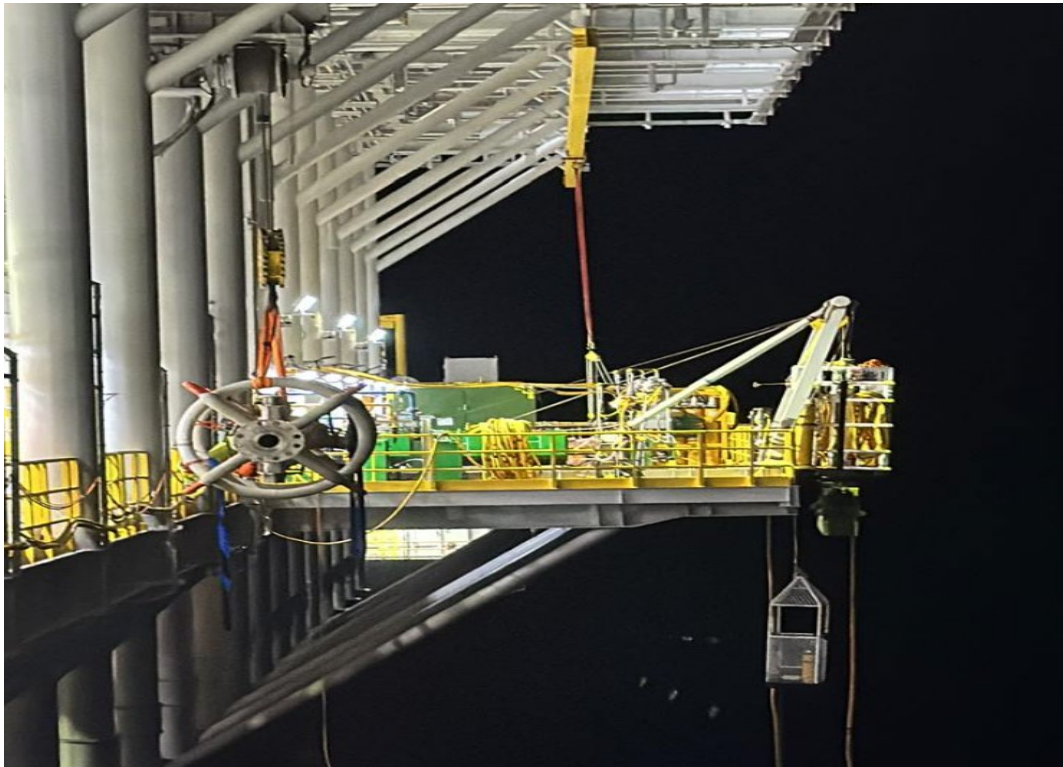
SMC procedures

Revision of procedures
and process to
incorporate the applicable
Norsok requirements

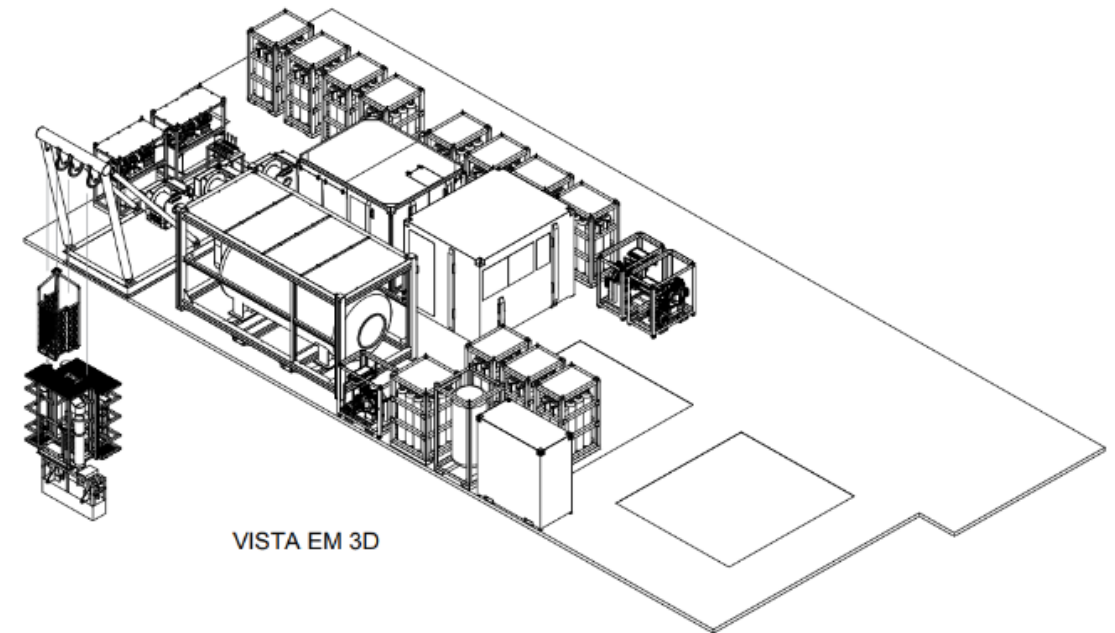
1,500 man-hours
required for 'Brasok'
compliance



Continental Bacalhau diving spread



Item	Technical improvement	Norsok U-100 Ref.
1	DDC Deluge system	Section 8.8
2	Cable stopping device	Section 8.11
3	Diving Telemetry w/ real-time (Internet) access	Section 9.3.2





Improvements

- DDC Deluge System - Installation of a DDC external deluge system using the FPSO fire-fighting water system to cool down temperatures in case of a fire and overheat by the sun.
- Medical Lock with interlock system
- Continental is first surfaced supply diving company in Brazil to implement this systems.



Improvements

Wire cable Stopping Device

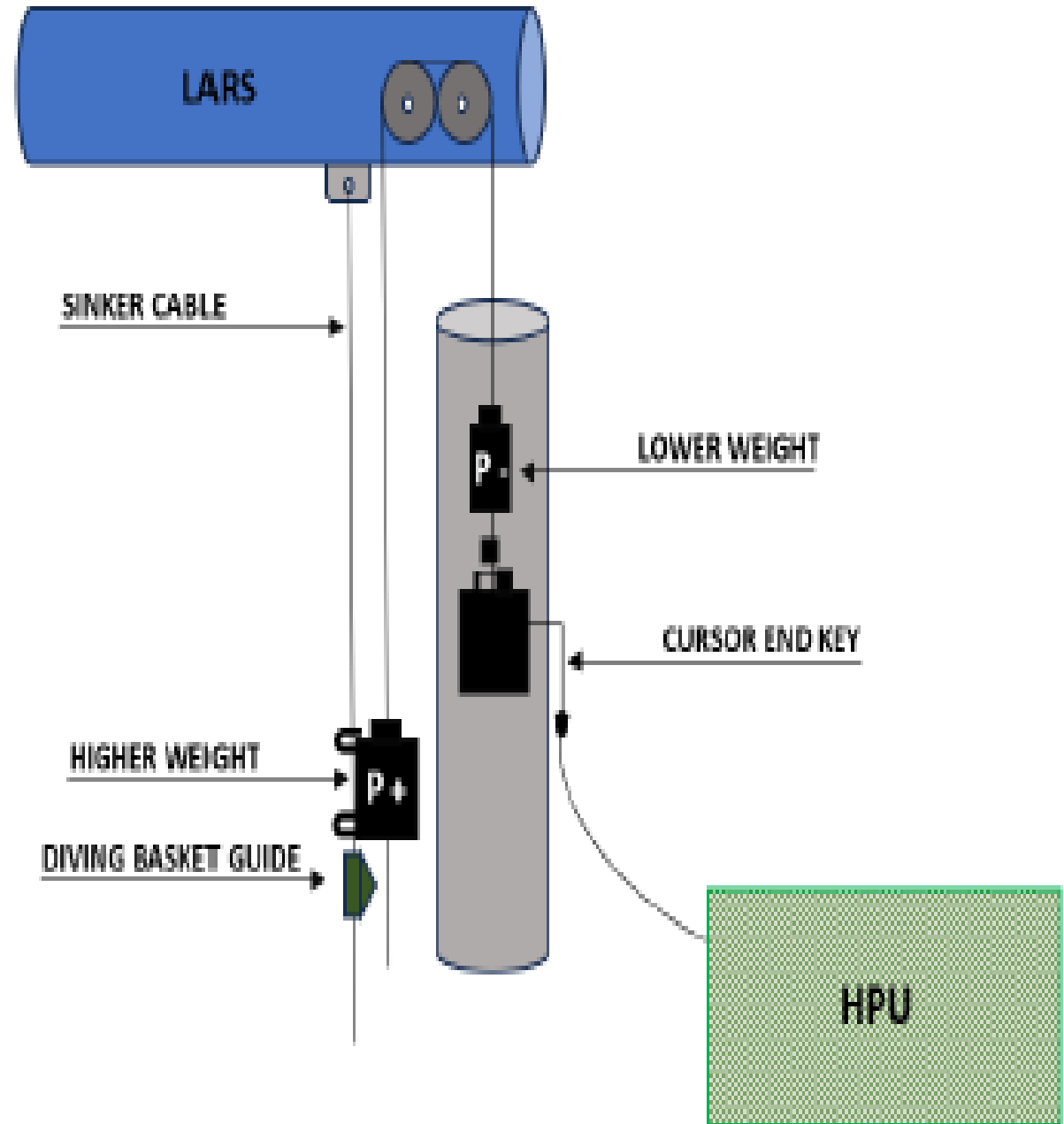
Main requirement:

LARS system to be equipped with a limit switch

Solution:

Installing a level change switch at the top of the LARS

- This will stop of the engine and the winch due will immidetly stop system.



Improvements

Diving Telemetry

Main requirement:

Online data system to record diver exposure data, of diver, bell, and chamber parameters.

Parameters to be measured, displayed, logged and retained on a continuous basis: time, diver's depth; pO_2 and pCO_2 in the diver's breathing gas, etc

Solution:

System comprised of control system, PCS Power Control, Bell/Surface Controls, Subsea cameras FullHD, LED lights





Improvements – Managements systems

- **Risk based maintenance system**
 - Dynamic
 - 3 risk categories
 - Red, Amber and Green
- New and improved HSE-Q systems
- Renewed the Continental Diving and Management System



Team collaboration as key success factor

Pre-project



Technical workshops



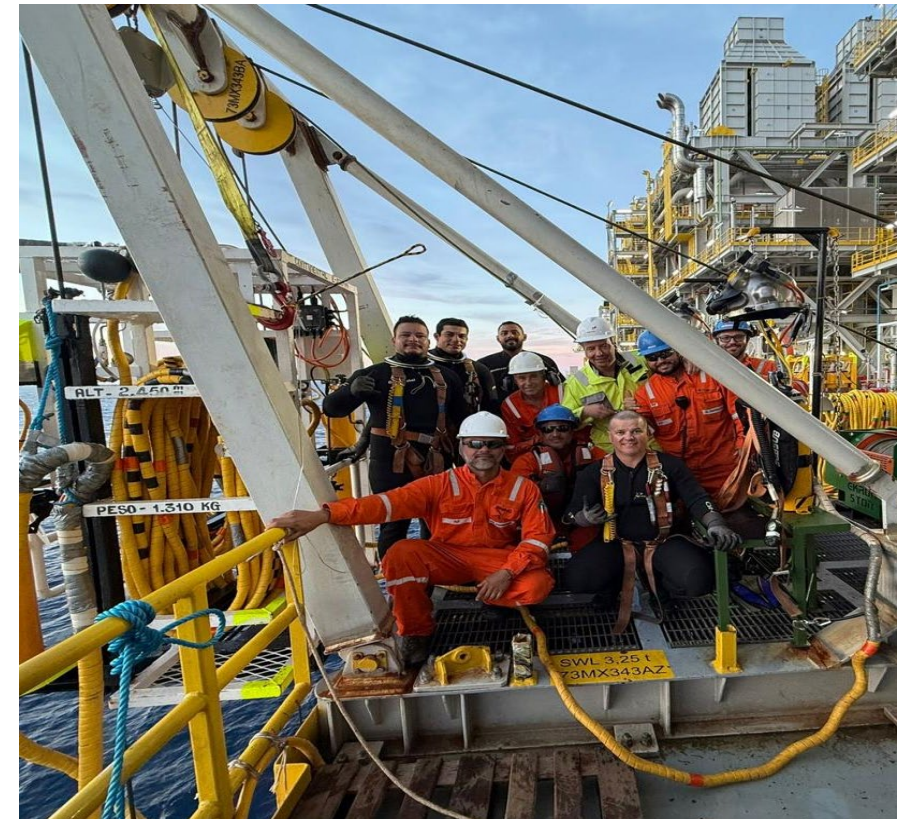
Integration





Conclusion and Take away

- The Bacalhau diving has been a success story
 - Zero accidents and serious incidents
 - Based on Respect and Trust
 - Management commitment and support
-
- Final Thoughts
“It wasn’t just the technology, the procedures, or the planning, it was the people. Collaboration across teams, cultures, and disciplines proved to be the true driving force behind our success “





Thank you – any questions