

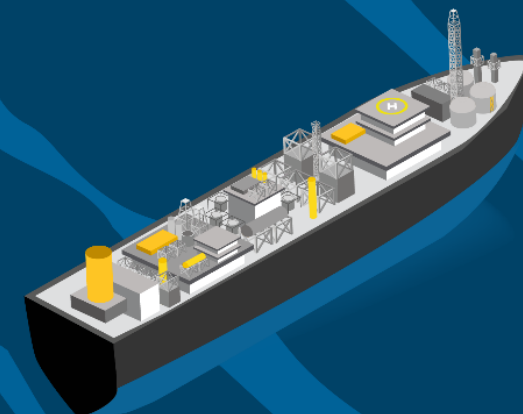


LUIGY TIELLET

PETROBRAS DECOMMISSIONING PROJECTS

Lessons from Marlim Field

NOVEMBER/2024



DISCLAIMER

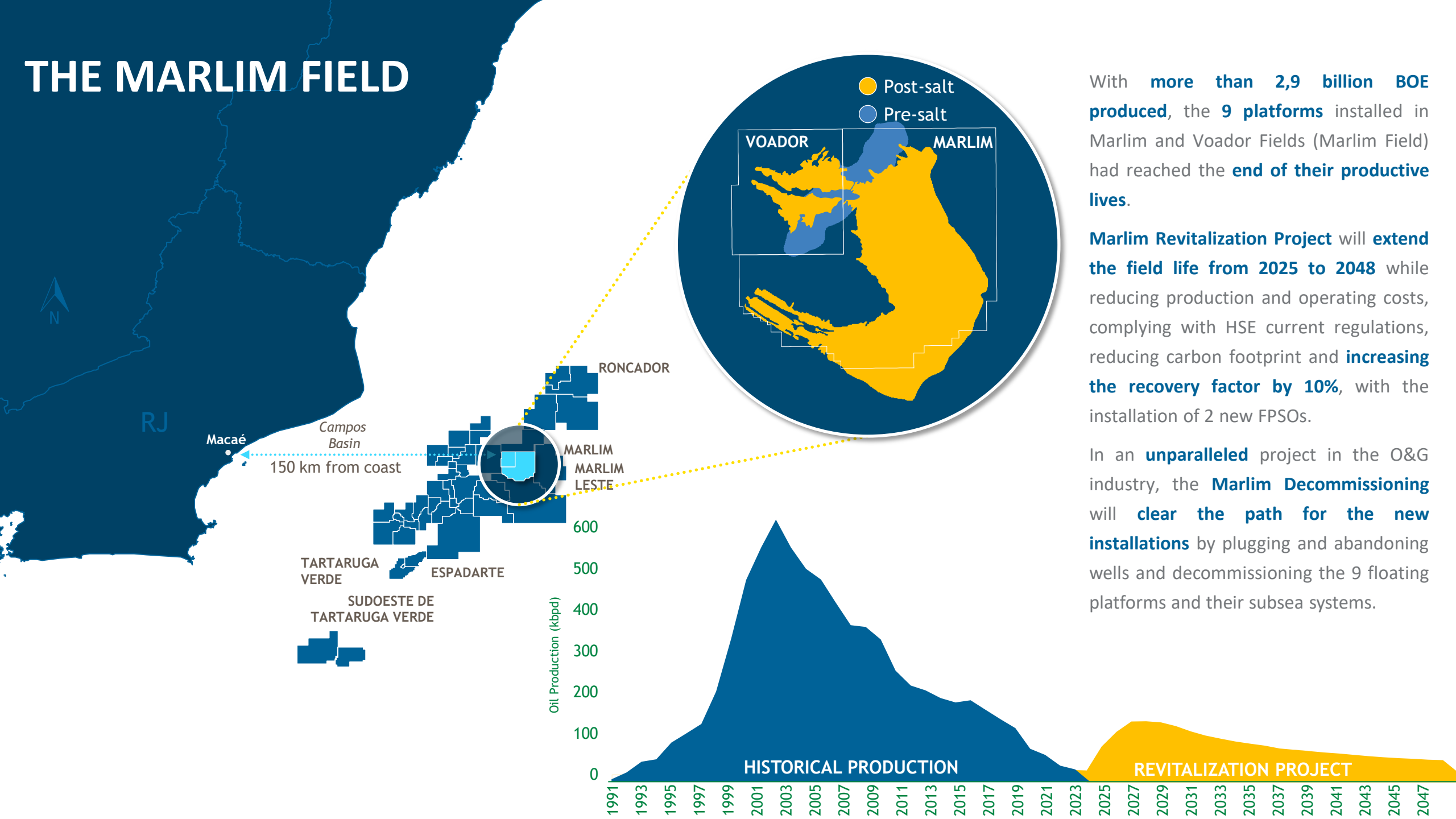
The presentation may contain forward-looking statements about future events that are not based on historical facts and are not assurances of future results. Such forward-looking statements merely reflect the Company's current views and estimates of future economic circumstances, industry conditions, company performance and financial results.

Such terms as "anticipate", "believe", "expect", "forecast", "intend", "plan", "project", "seek", "should", along with similar or analogous expressions, are used to identify such forward-looking statements. Readers are cautioned that these statements are only projections and may differ materially from actual future results or events. Readers are referred to the documents filed by the Company with the SEC, specifically the Company's most recent Annual Report on Form 20-F, which identify important risk factors that could cause actual results to differ from those contained in the forward-looking statements, including, among other things, risks relating to general economic and business conditions, including crude oil and other commodity prices, refining margins and prevailing exchange rates, uncertainties inherent in making estimates of our oil and gas reserves including recently discovered oil and gas reserves, international and Brazilian political, economic and social developments, receipt of governmental approvals and licenses and our ability to obtain financing.

We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information or future events or for any other reason. Figures for 2024 on are estimates or targets.

All forward-looking statements are expressly qualified in their entirety by this cautionary statement, and you should not place reliance on any forward-looking statement contained in this presentation.

THE MARLIM FIELD



With more than 2,9 billion BOE produced, the 9 platforms installed in Marlim and Voador Fields (Marlim Field) had reached the end of their productive lives.

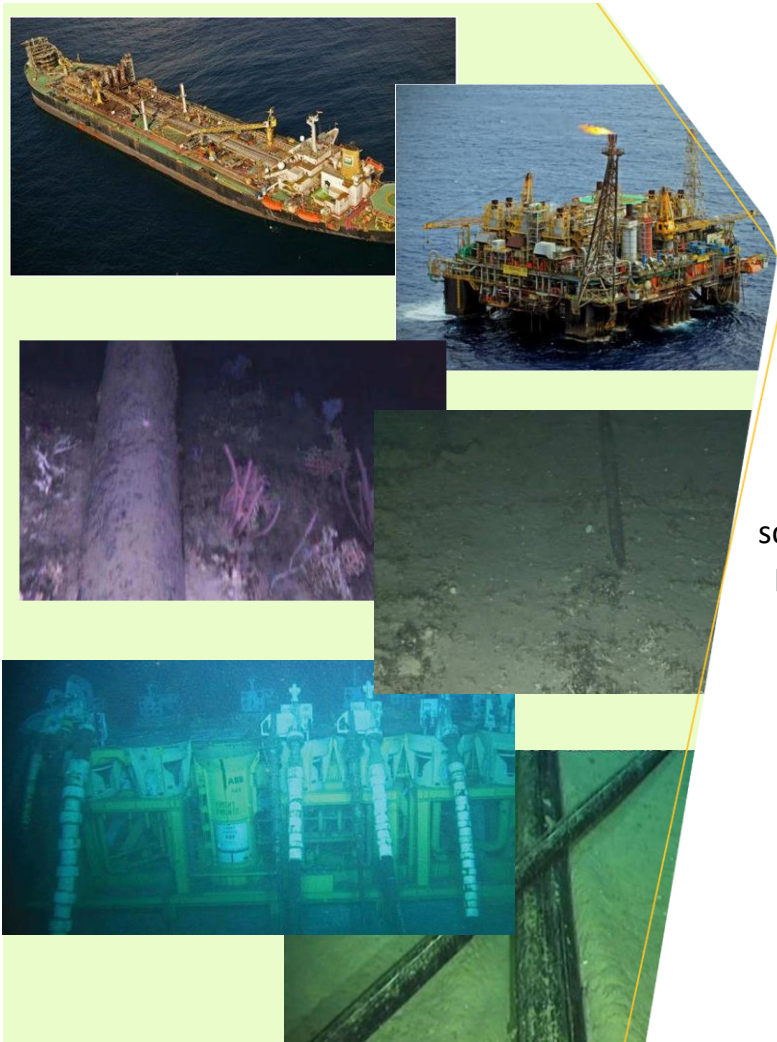
Marlim Revitalization Project will extend the field life from 2025 to 2048 while reducing production and operating costs, complying with HSE current regulations, reducing carbon footprint and increasing the recovery factor by 10%, with the installation of 2 new FPSOs.

In an unparalleled project in the O&G industry, the Marlim Decommissioning will clear the path for the new installations by plugging and abandoning wells and decommissioning the 9 floating platforms and their subsea systems.

MARLIM FIELD DECOMMISSIONING

A decorative teal line graphic that starts at the bottom left, rises to a peak, and then descends towards the bottom right, separating the title area from the main content area.

Marlim Field Decommissioning



Water depth
between
160 and 1000 m

Very complex
environmental
scenario at seafloor:
presence of deep-
water coral banks

Operations until
2030

90 Subsea Wells P&A
60 wells decommissioned since 2020

9 Platforms
5 FPSOs
4 SS



Green
Recycle

More than 300 Risers
Total: + 400 km
Flexible Free-Hanging Catenary
Pliant Wave
Steel Catenary Riser

+ 150
pull-outs
executed

More than 1.200 km of flexible
pipelines & umbilicals
+ 780 km of Flexible Pipes
(Oil, Gas and Water Injection)
+ 420 km of Umbilicals

500 km
removed to shore
for recycling in
the last two years

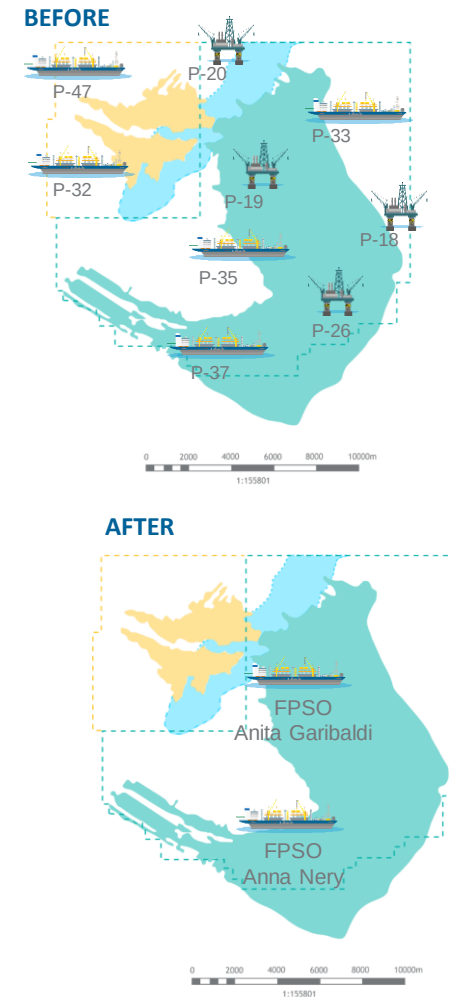
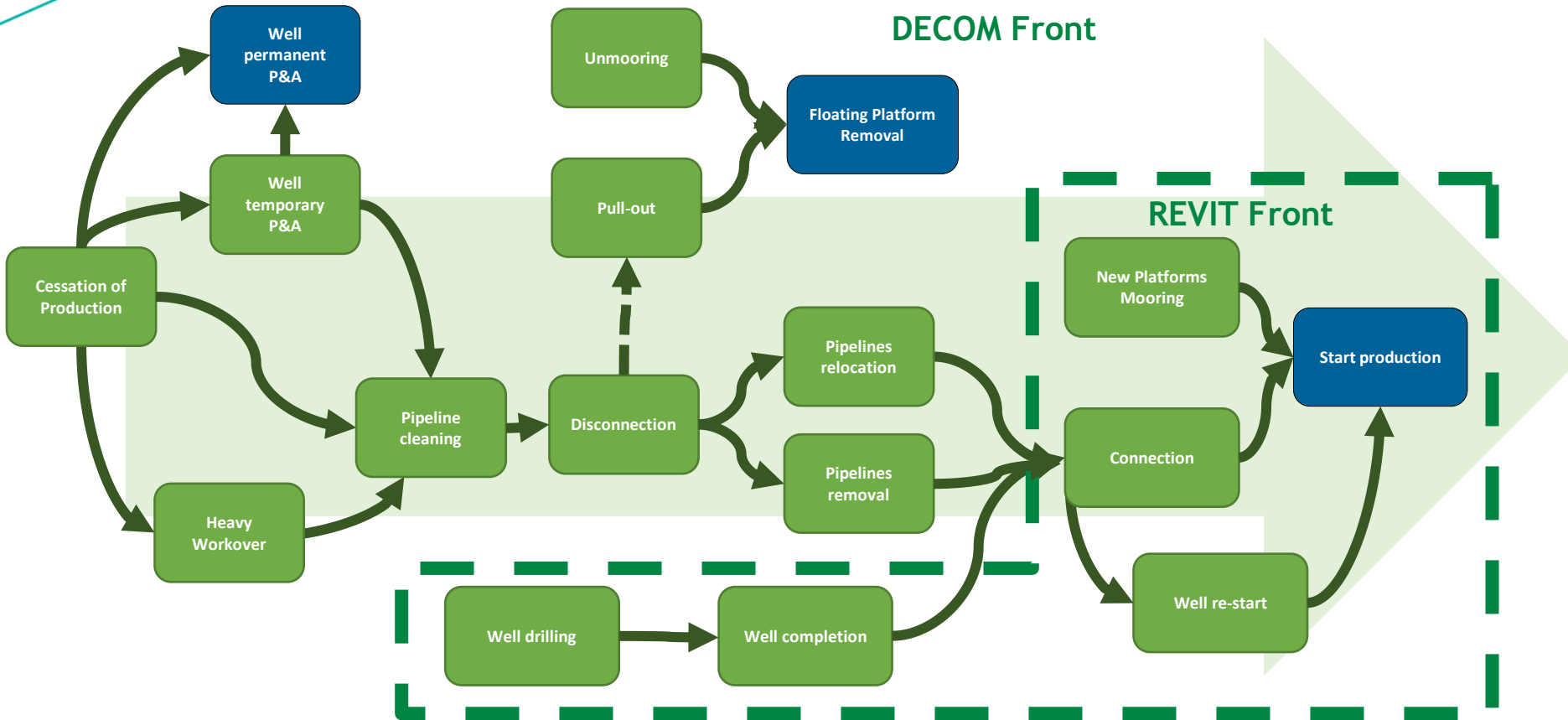
More than 225 km of
rigid pipelines
Gas
Oil → Diameters
up to 12"

More than 90 Mooring Lines
Drag anchors
Torpedo piles
Suction piles

Chains: + 80 km
Wire ropes: + 39 km
Polyester ropes: + 35 km

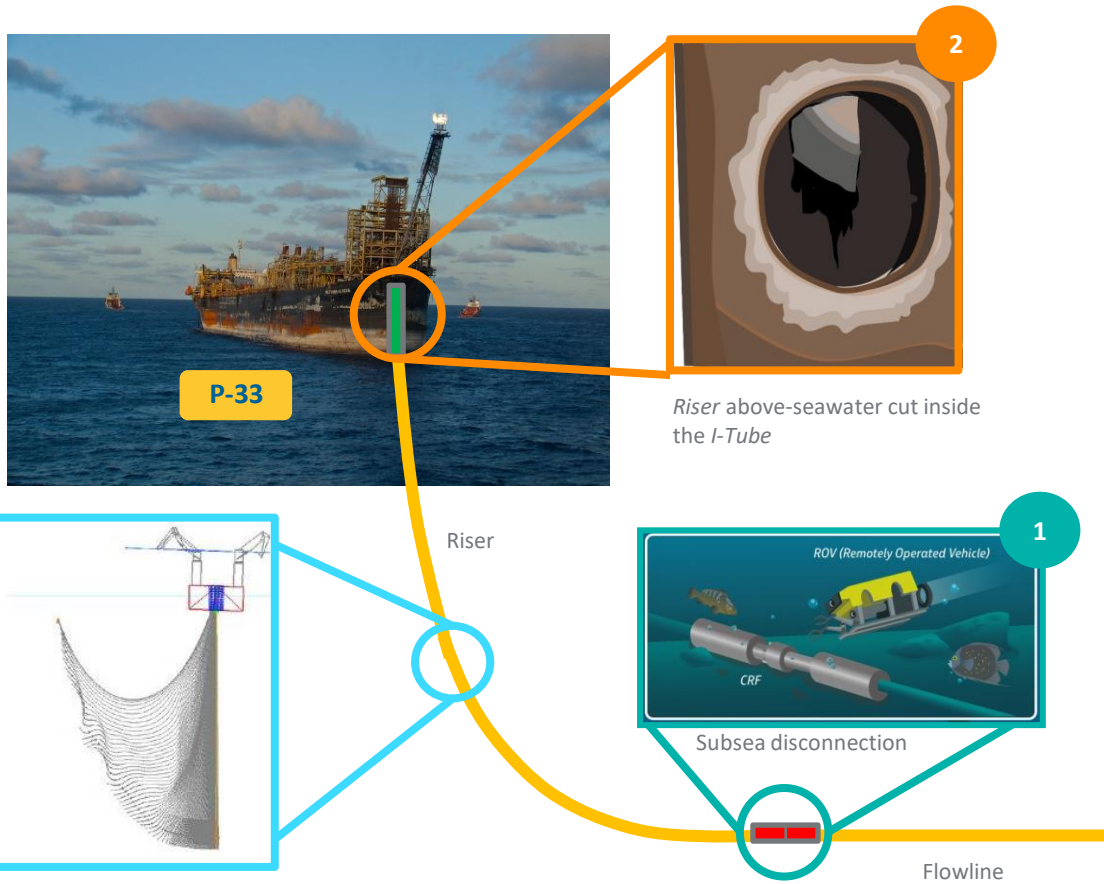
8 Large Subsea Equipment
6 Manifolds
(up to 275 tons – 15 x 8 x 6 meters)
Subsea Water-Oil Separating System
(365 tons – 22 x 8 x 4 meters)
Subsea Multiphase Pumping System
(156 tons – 7 x 7 x 8 meters)

DECOMMISSIONING AND REVITALIZATION INTERFACES



P-33 FPSO: Risers Pull-Out by Above-Seawater Level Cut

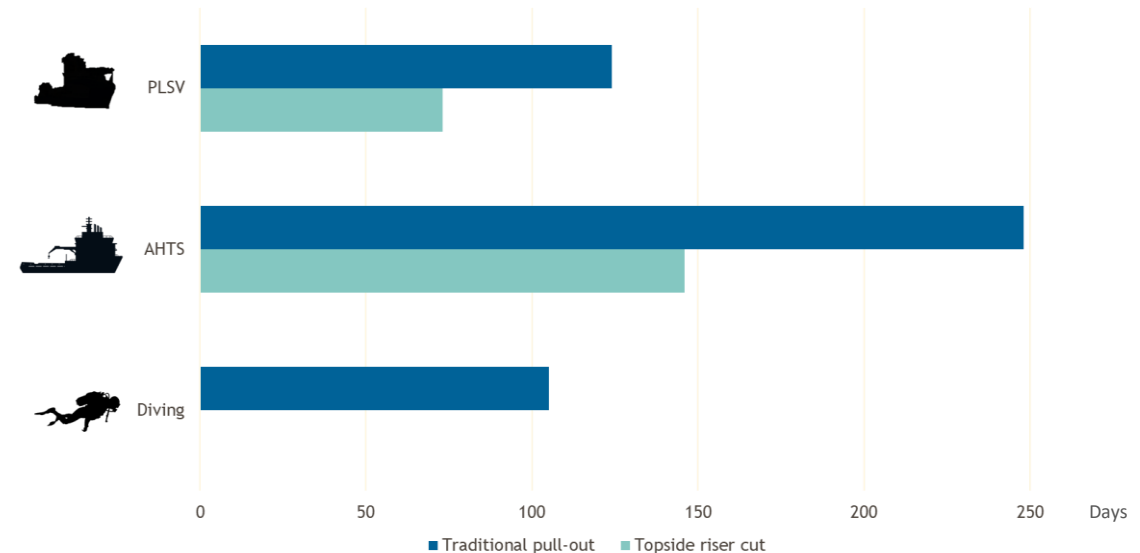
21 riser pull-out campaign including flexibles and umbilicals performed on P-33 (Internal Turret FPSO) decommissioning project. All risers were recovered using 2nd end pull-out and **cut on topside, inside the I-tubes**. All pipelines were previously cleaned, and operations were executed without accidents. As risers were retained and reeled by PLSV, there was no seabed touch after cutting, minimizing damages on corals.



BENEFITS

- Increased safety through the elimination of diving operations (**more than 100 days of DSV - Dive Support Vessel - avoided**)
- Reduced schedule uncertainty** by eliminating the need for pull-out systems (winch usage) and minimizing weather dependencies
- More than **40% reduction in PLSV** (Pipe Laying Support Vessel) **usage** and planned pull-out campaign costs (equating to **800 fewer PLSV workdays in the Marlim decommissioning**, which comprises around 300 flexible riser pull-outs)

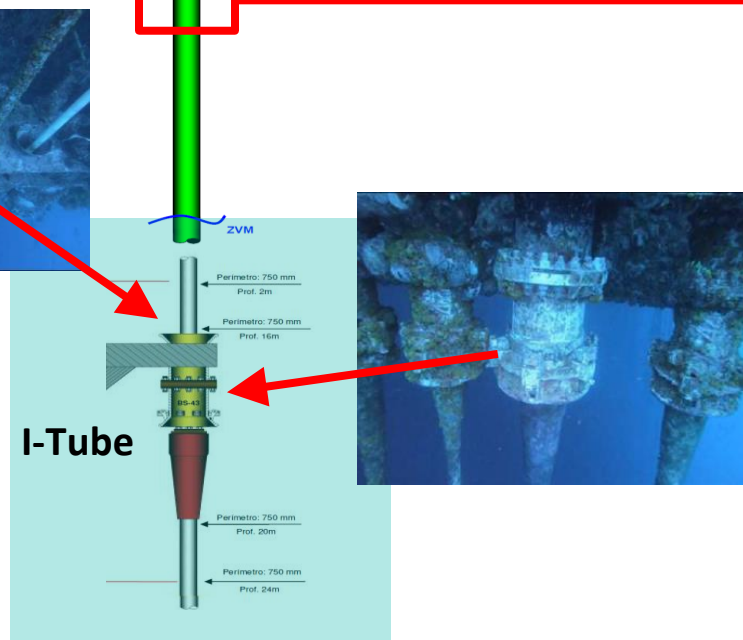
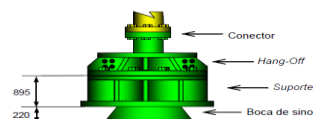
Efficiency gains in P-33 FPSO pull-out campaign



Risers Cutting Pull-Out Campaigns: Semi-Submersible Platforms



After the P-33 pull-out campaign, the topside riser cut was applied in other decommissioning projects with **different configurations**. The method was **adapted and implemented in two SS platforms** also in Marlim Field, P-26 and P-20, by using the same diamond-wire cutting tool previously coupled to an ROV, but this time **suspended on topside and coupled directly to the riser**.

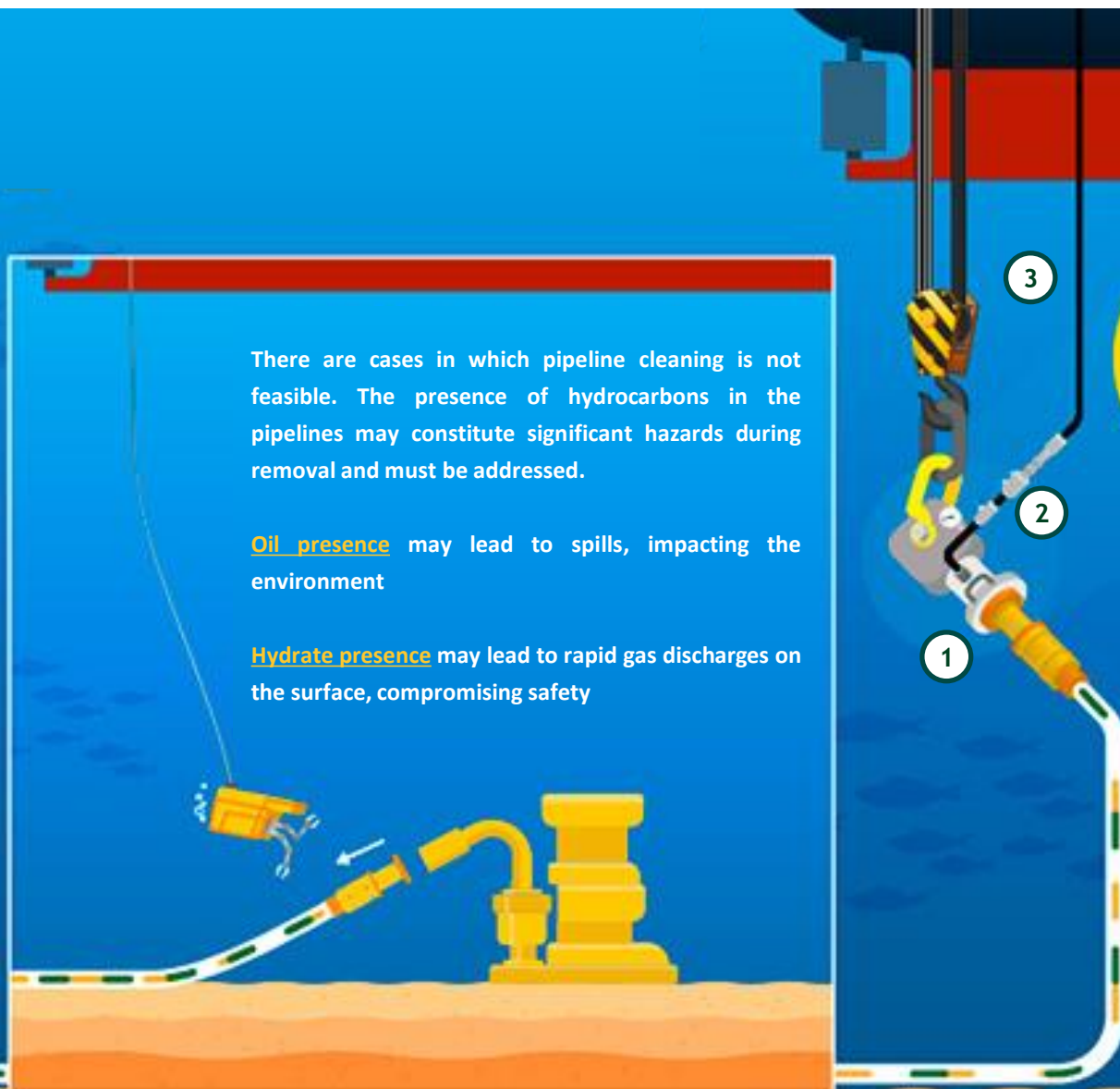


Removing Pipelines Containing Hydrocarbons

There are cases in which pipeline cleaning is not feasible. The presence of hydrocarbons in the pipelines may constitute significant hazards during removal and must be addressed.

Oil presence may lead to spills, impacting the environment

Hydrate presence may lead to rapid gas discharges on the surface, compromising safety



SOLUTION

An instrumented towing head (1) is installed on the pipeline end, allowing for internal pressure monitoring during removal and the purge of oil and gas that are collected in a safe area in the PLSV.

HOW IT WORKS

- The system is connected to the pipeline that will be removed
- Pipeline reeling starts
- The pipeline's internal pressure is monitored by a pressure gauge
- The pipeline is safely removed by the PLSV

If the internal pressure exceeds a safe value, a valve (2) is opened, allowing fluid transfer to the vessel by a jumper (3) that connects the towing head to a tank in the PLSV.

P-32: The sustainable recycling pilot

The P-32 auction process applied **the new guidelines for sustainable ship dismantling** from Petrobras and was held **exclusively to the national market**



P-32 auction finished on
july/2023

Technical Data



▪ Type FPSO



▪ Weight: 45000 ton



▪ Length: 337 m

The auction was awarded to GERDAU (steel company) in partnership with ECOVIX (shipyard) which will use the scrap for local steel production.

P-33: Berthing - bringing resiliency to the process

Technical Data



▪ *Type FPSO*



▪ *Weight: 49000 ton*



▪ *Length: 337 m*

Benefits

- Reduced Risk Exposure, Emissions (from Energy Generation and Logistics), and costs
- Simplified Logistics
- Resiliency enabling bidding / recycling tender

Key points

- *Adapting / new contracts for onshore services*
- *Integrity management*
- *Preparation for recycling*



Sustainable recycling policy highlights

- *Pre-inventorying the existing hazardous materials on the vessel to ensure the proper development of a recycling plan by the shipyard*
- *Considering the requirements of the European Union Ship Recycling Resolution 1257/2013 in the case of international shipyards and/or, in the case of Brazilian shipyards, the operating licenses and compliance with applicable environmental, safety, and occupational health legislation, rules, and regulations, including subcontractor management*
- *Recycling in shipyards equipped with technological solutions, such as dry docks or impermeable floor with an effective drainage system, that guarantee the containment of contaminants resulting from dismantling activities, preventing their release into the environment*
- *Providing monitoring of the actions planned by the shipyard to ensure compliance with sustainable and auditable safety, environmental, health, and social responsibility practices throughout the recycling process*



Next platforms to hook-out

Semissubmersible

P-26 19.379 TONNE
2024



FPSO
P-37 51.025 TONNE
2025



FPSO

P-35 51.504 TONNE
2025



SUMMING UP

- » Decommissioning with safety, respect for people and the environment
- » Decommissioning ≠ “installation played in reverse”: space for innovation and challenges to overcome
- » Numerous opportunities, resulting from robust and perennial demand
- » Brazil has many competitive advantages that place it in a favourable position for this market development
- » There are some technical gaps to be filled and challenges to overcome

[Visit our Decommissioning webpage](#)



DECOMMISSIONING:
*the last impression
remains!*

