Tooling development for P&A campaign in Brazil
Development of modular intervention tools to allow intervention on installed BH and 4# other OEM’s XTs and stand-alone 117 wellheads
Age of Subsea equipment mostly 30+ years old
Ambitious project schedule: 11 months from contract award to first equipment delivery
Unknown condition of subsea equipment
Changing requirements during design phase
Gaps in technical documentation from other OEMs, missing critical dimensions & tolerances

Simplify and optimize life of field tooling requirements.

Tooling can be adapted to multiple well types and functionality targeted to operational requirements.

Suit multiple well types & functionalities through modular approach to design.
Requirements and design solutions

**XTRT Group 001**
- 8 Interfaces tool
- 3 OEM’s
- 39 wells

**XTRT Group 002**
- 2 interfaces tool
- 12 BH wells

**XTRT Group 003**
- 3 interfaces tool
- H4 CPI connector
- 14 wells

**XTRT Test & transportation skid**
- 3 mandres sizes in one tool
- One size frame fits all
- Modular design

**XTRT Test & Handling cap**
- One tool for all intervention tools

**Tubing Hanger Mechanical RunningTool**
- 4 OEM’s
- 5 tools for Multiple wells

**Tree Cap Running & Retrieval tool**

**4 x Riser Adapters**
One common top interface for all Bottom interface and bores alligned with various wells req.
Agnostic Tooling

- Consolidation of tools into fewer modularized Units
- Less tools mean reduced overall manufacturing risk exposure and -cost
- Ability to adapt or reconfigure tooling for any OEM
- Flexibility in tooling configuration during offshore operations
- Supports a range of life of field operations on subsea XTs and THs
- Enables to target specific functionality requirements
- Fewer tools result in a reduced Carbon Footprint
- Significant reduction in number of technical interfaces to manage
Engineering Org Chart

Outsourcing as required
Project Successes

- Operations successfully started in October 2023
- To date 3 sets of tooling have been delivered: 10 top-level tools and supporting equipment
- An estimated 50% reduction in total subsea tooling costs
- Consistent & focused engineering team throughout the project: ~ 30 engineers, zero attrition or engineers moved out

Project Lessons Learned

- Upfront design phase is KEY and for this reason takes longer than usual (invest at the start to obtain the optimum outcome)
- Plan sourcing of the long lead items as early in the process as possible as this is a critical aspect of the process
- Assign dedicated engineering leads to miscellaneous sets of tools and have close communication between the different engineering teams