

Firma Plug and Abandonment Solutions

Safely Decommissioned 21 Phase III Wells In

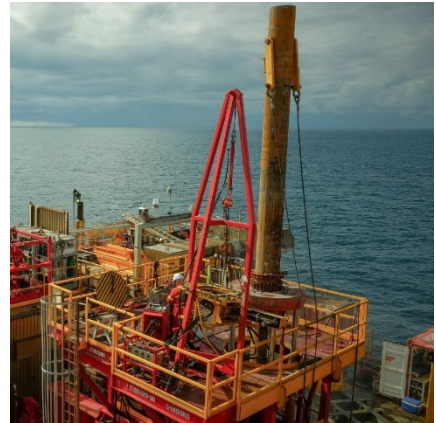
Turnkey Project with International Operator

Objectives

- Develop an environmentally sensitive rigless framework to enable 21 aging and isolated wells to be safely decommissioned.
- Deliver wells, systems, interface, and structural engineering to enable regulatory approval on the framework.
- Engineer a phased offline and online operation to reduce the carbon footprint by eliminating the requirement for a drilling rig.
- Provide integrated wellsite management of services including supervision, permit holding, and multiskilled crewing.

Our Approach

- A key pillar involved decarbonizing well decommissioning operations by removing a jackup drilling rig and the associated carbon footprint costs and resources.
- The team undertook the engineering with an eye to replacing the requirement for a drilling rig with a rigless workover system. The rigless workover unit operates using electrical power instead of conventionally designed hydraulic power units, further decarbonizing the operations.
- The operational philosophy focused on two primary pillars: safely reducing risk and how to increase the overall operating efficiency.
- The integrated engineering, procurement, and services management (EPSm) contract structure enabled a framework to develop engineering systems, procedures, and contingency operations. Integrated wellsite management enabled the teams to operate safely, with clear planned and contingency operations, and with the engineered safety systems applied to reduce risk on first-time operations.
- A phased delivery was used with offline abrasive cutting technology to make multi-string cuts to release the wellbores, removing the additional cost of a rig and crew being on location. This allowed the workover unit to be mobilized later, reducing costs as well as the complexity of first-time operations and the potential for human performance traps.
- The workover unit was mobilized and commissioned as simultaneous operations (SIMOPs), allowing the cut wellbores to be proof-pulled in batches. This increased efficiency built in contingency for additional cutting, if required, and reduced the project timeline.



The well slot recovery operations are rigless, eliminating the requirement for a drilling rig and the associated carbon footprint.

LOCATION
Australia

WELL TYPE
Offshore producers

CASING SIZE AND TYPE
20 in. surface
16 in. intermediate
10-3/4 in. intermediate

PRODUCTS/SERVICES

- Project management
- Wells engineering
- Structural engineering
- Facility engineering
- Wellsite management
- Rigless pulling unit
- Abrasive well severance services
- Pumping services
- Fishing services
- Conductor jetting services
- Tubular running services
- Conductor recovery services



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Our Approach (continued)

- Upon successful completion of a cut, each well slot was recovered in batched operations which included:
 - Fishing and recovering the conductor to the rigless workover unit using internal catch spears.
 - Operating a high-pressure water jetting system to remotely remove marine growth from the conductor tubulars as they were jacked, reducing complications at the fixed slip area and increasing the safety of the unit crew.
 - Concentric cold working boring operations of the nested string to allow proprietary lifting pins to be installed, thereby structurally linking the tubulars, enabling lifting operations using engineering equipment specific to the project requirements.
 - Surface cutting of the nested tubulars with cold working saws to section the tubulars into safe lengths to be handled and set down on the platform storage areas.
 - Laydown and backloading of cut sections for offloading from the platform.



Rig-free pulling unit integrated to the platform

Value to Customer

- A total of 21 wells were successfully decommissioned, allowing the facility to move into the structures decommissioning phase.
- The rigless approach allowed the operator to execute at a significantly lower carbon footprint and sustainably decommission aging facilities and remove risk to the environment.
- The offline abrasive cutting technology trial was executed over 51 days with 785 operating hours requiring 5,964 workhours—independent of the rigless workover unit to de-risk first-time operations—and reduced the net carbon footprint of operations, with the workover unit only being mobilized when required to perform SIMOPS.
- Online batch proving and recovery operations were executed over 94 days with 2,609 operating hours requiring 20,726 workhours delivered at 99.1% productive time. The safety systems enabled the crew to safely complete operations with no incidents to personnel or the environment.
- The engineered systems enabled an operational improvement of well times by 373% across the project, with the final four wells increasing the technical limit of previous projects.

