



Petromall

Wellhead platforms, financing schemes and contracting strategies

Finding Petroleum, 21st February 2018

Rob Gill



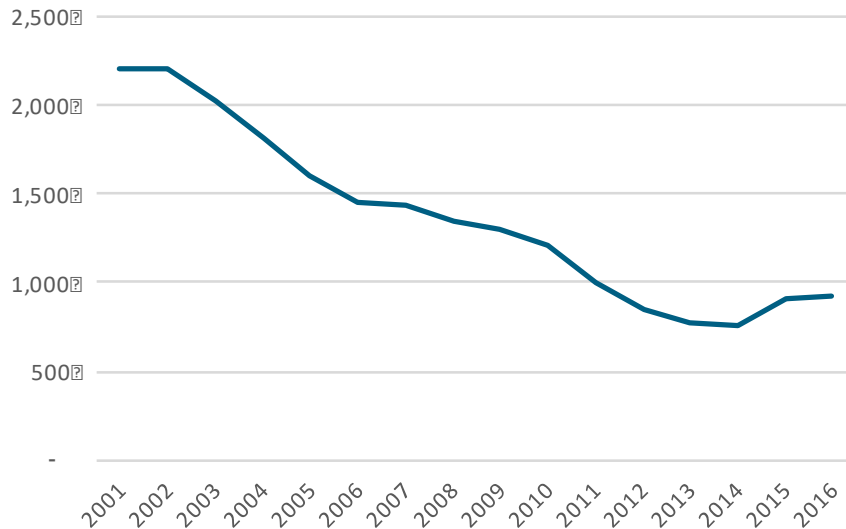
Wellhead platforms

- ▶ Setting the scene
- ▶ Wellhead platforms worldwide
- ▶ Wellhead platforms in the North Sea
- ▶ Financing new developments
- ▶ Contracting strategies

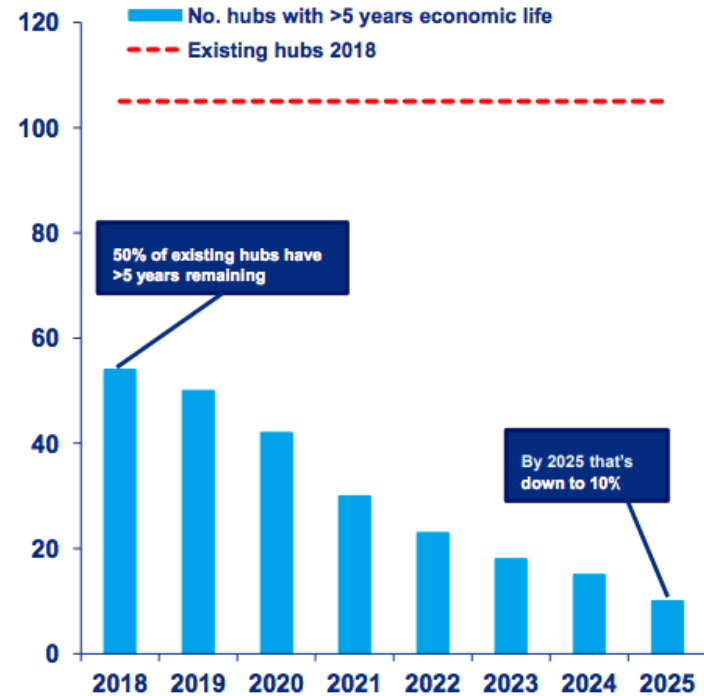


North Sea declining production

UK oil production kbbl/d



Infrastructure hubs with >5 yrs economic life





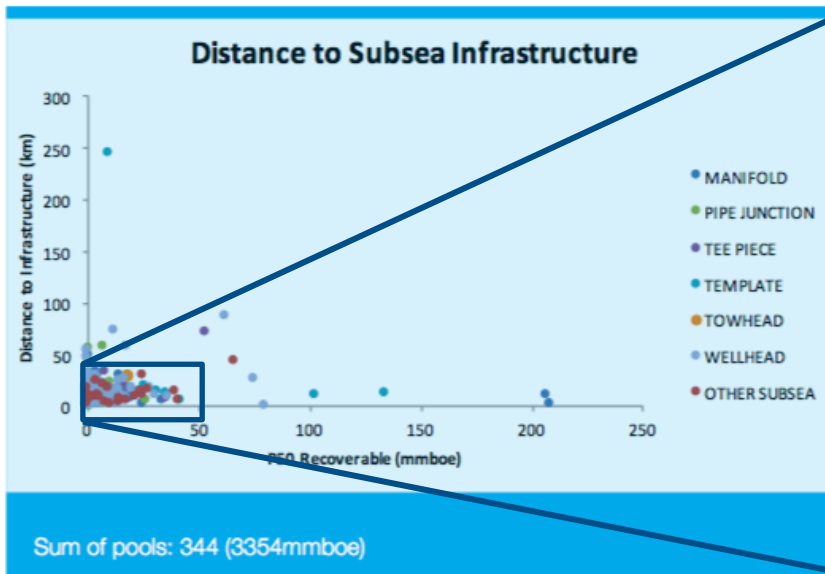
No shortage of processing and export infrastructure capacity

Concentrate on producing more through **existing facilities** to achieve more while spending less.

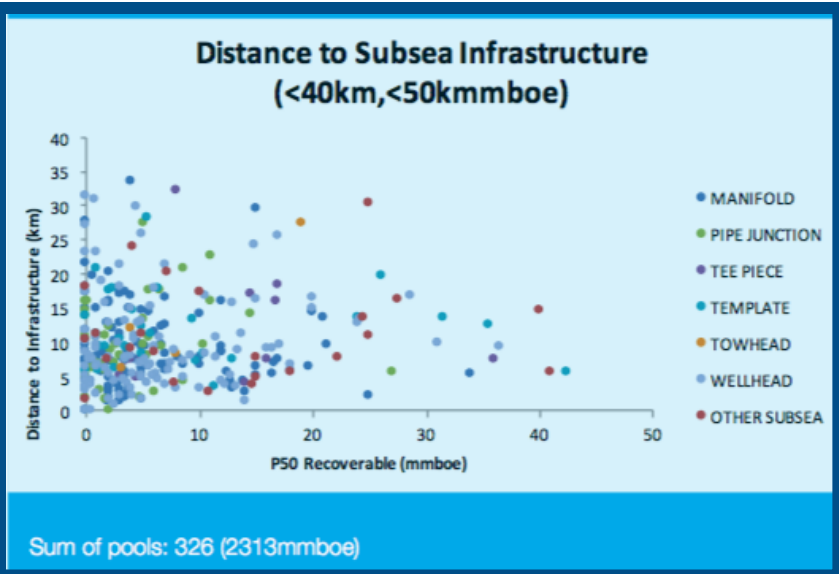
- EOR
- More wells within existing fields
- Tie back of new discoveries

Oil and gas ‘small pools’: UK North Sea

UKCS Oil & Gas “Pool” to Surface Infrastructure Proximity



UKCS Oil & Gas “Small Pool” to Surface Infrastructure Proximity

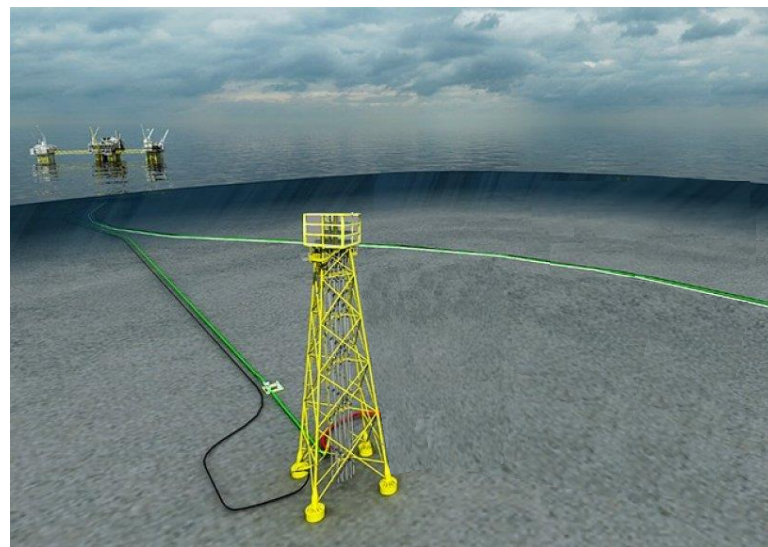
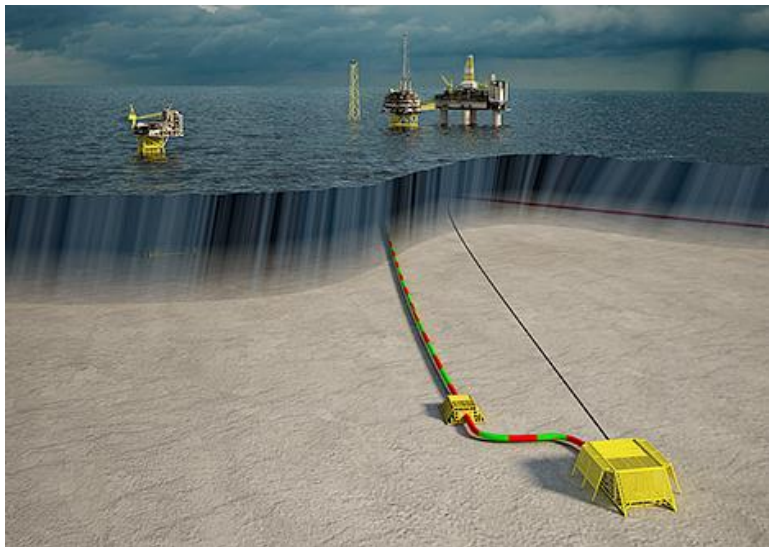


•Does Not Include: EC and WoH

Source: OGA PARS 2015 database, CDA

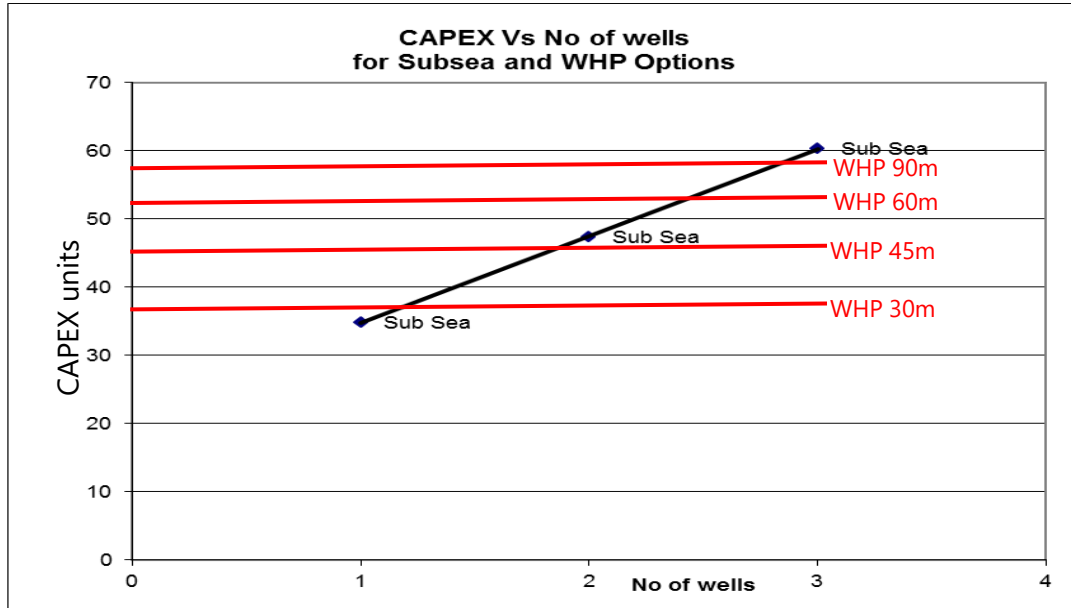


Subsea development or unmanned wellhead platform?





Subsea development or wellhead platform?



Economic crossover

SNS:

One well

CNS/NNS:

Three wells



Wellhead platforms

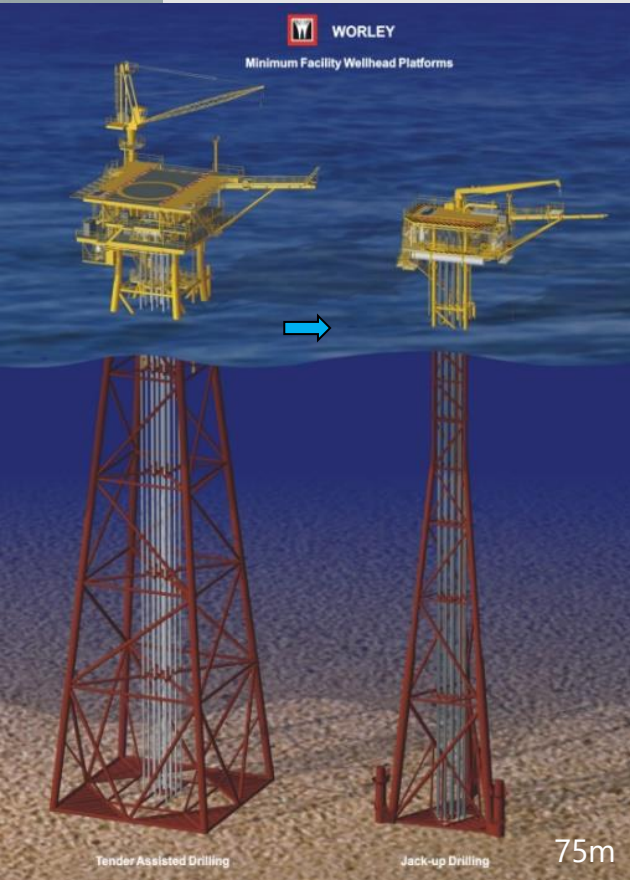
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Wellhead platforms

- Low cost/low risk
- Unmanned
- Minimal facilities
- No processing
- Access by sea rather than by air
- Standardised rather than bespoke
- Capable of rapid deployment

Unocal: Phase 19-21 Tripod, Thailand



Pile "swaging" rather than the multiday installation of the traditional through-leg piles enabled the overall platform installation to be reduced to 2 days

In a GOT first, the platform was made "re-locatable" by introducing bolted connections within the pile sleeves, jacket tower and topsides to jacket connection

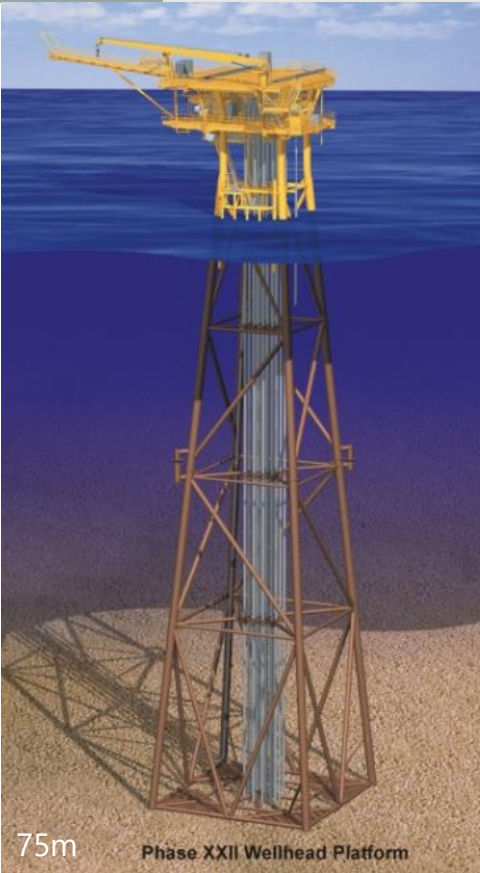


2 decks / 2 jackets per installation barge



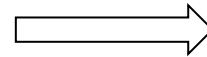
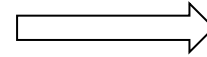


Unocal: Phase 22 – Phase 25, Thailand



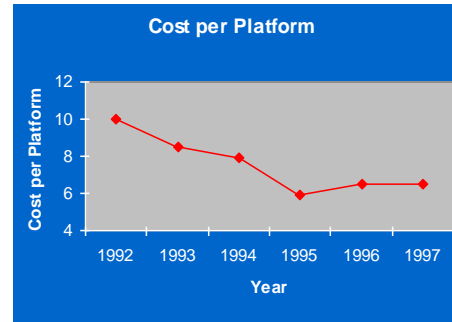
- Traditional 4 leg, down leg pile
- 12 Slot , 2.3m well spacing
- 635 Tonne jacket
- 545 Tonne deck
- No automation

Installed Cost '93
US\$ 10 million

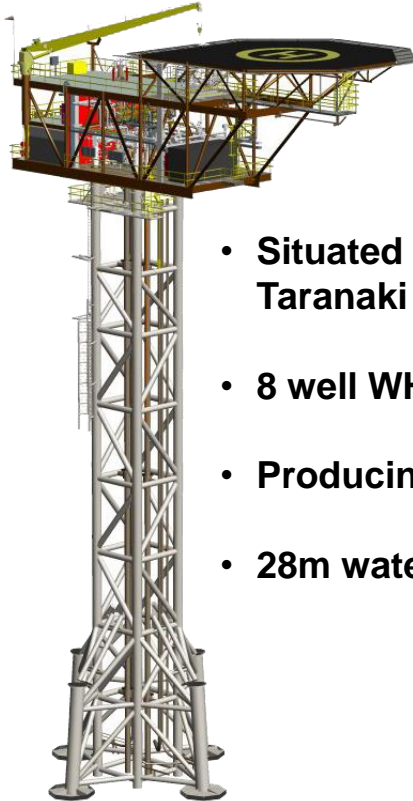


- Through leg piles
- 16 Slot , 1.2m well spacing
- 370 Tonne Jacket
- 425 Tonne Deck
- Full automation of facilities
- Booster Compression

Installed Cost '03
US\$ 6 million



Origin : Kupe : New Zealand



- Situated 14km off the Taranaki coast of NZ.
- 8 well WHP
- Producing 200 MMSCFD.
- 28m water depth

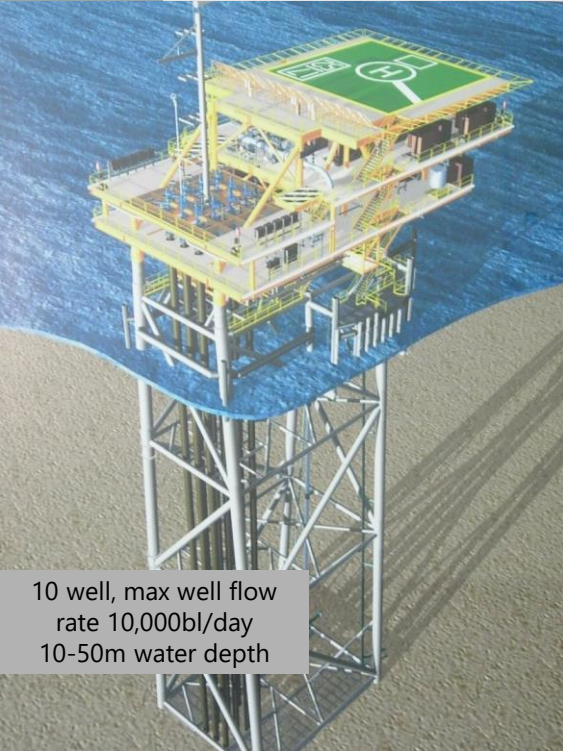


Weekly scraping (via remote operated multi scraper launcher)

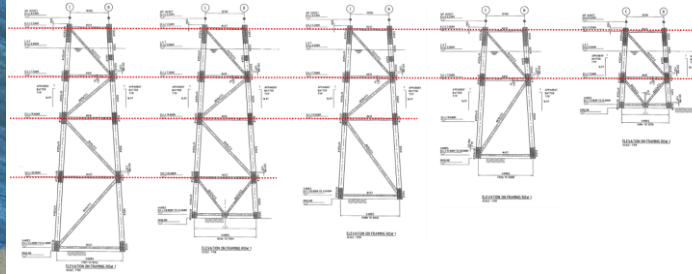


Saudi Aramco: 3S initiative, Persian Gulf

Standardisation, Simplification, SimOps



10 well, max well flow
rate 10,000bl/day
10-50m water depth



Water depth insensitive:
The upper section of the jacket remains unchanged – allowing stockpiling of materials and pre-fabrication



Wells are often installed prior to deck installation to decouple the JU Rig drilling and topside fabrication and installation schedules



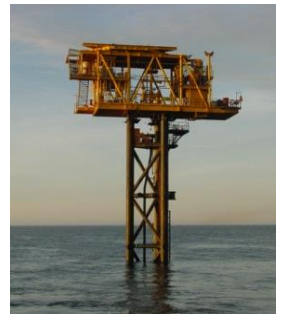
Since 2008, this design has become the new standard in Well platform offshore Saudi Arabia, with over 50 platforms installed and operating



Installation methods.

Linda, NSW, Australia

- 6 wells.
- 130 MMscfd of gas
- 5,000 bpd of condensate
- 30M water depth





Installation methods.

Oseberg West Flanken 2, Norway.

- 2,000 tonne jacket
- 10 Wellslots
- Water Depth = 105m
- 8km tieback to host facilities

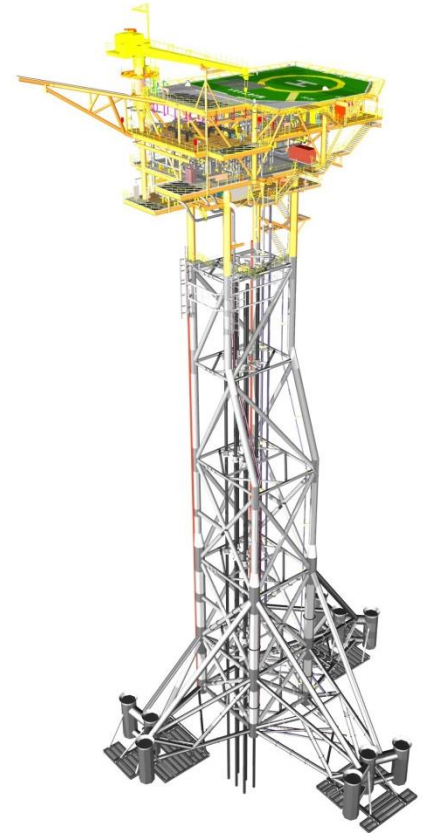




Installation methods.

Coogee Resources, NSW, Australia

- 6 Wells
- Water Depth = 77m
- Jacket dry Weight 1700MT
- Topside Lift Weight 750MT
- 9 Skirt Piles with 25m penetration





Wellhead platforms

- ▶ Setting the scene
- ▶ Wellhead platforms worldwide
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Typical unmanned wellhead platforms in the North Sea



- Lots of examples in the NL and DK sectors of the North Sea
- Generally up to 60m water depth
- Heerema, Ramboll



Heavily promoted by the Norwegian Petroleum Directorate



Heerema: Statoil Westflanken 2, 105m water depth.



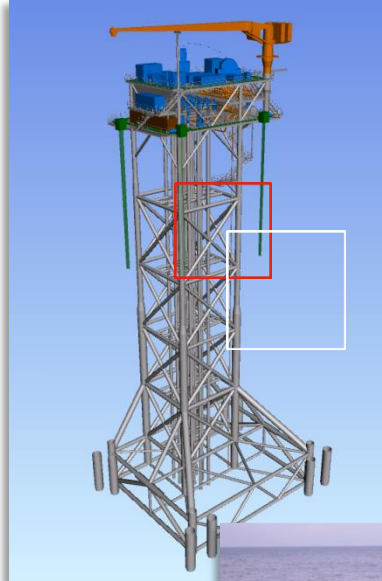
Kvaerner: 'Subsea on a stick': Aker BP, North of Alvheim, 120m water depth.



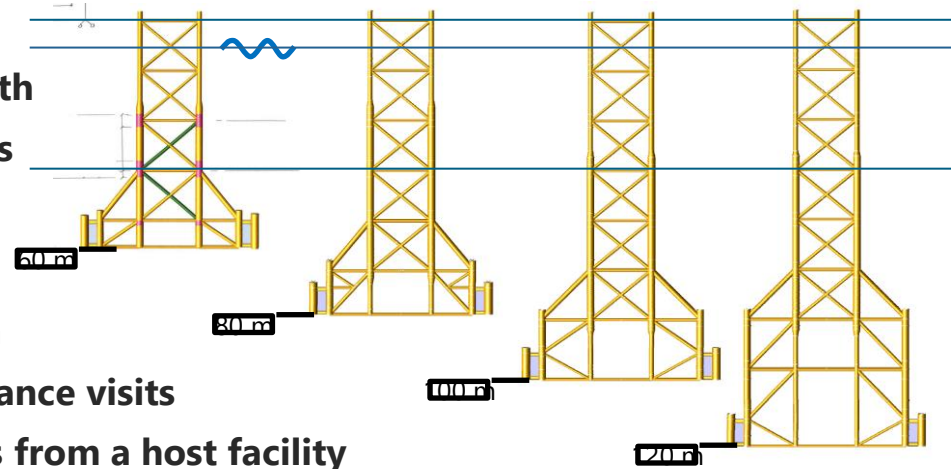
WorleyParsons: Standardised, modular platform.

Statoil, ConocoPhillips, Aker BP, Lundin and others are all looking at unmanned wellhead platforms in Norwegian waters for applications at water depths of >75m

New breed of unmanned wellhead platforms in the North Sea

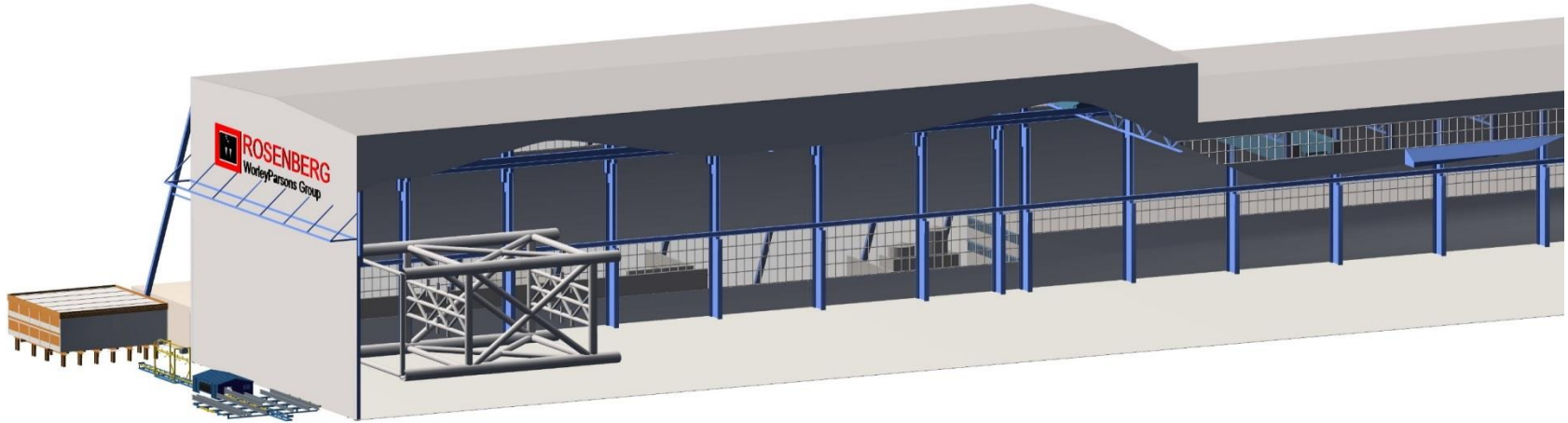


- 60-120m water depth
- 4-6 / 12-16 wellslots
- No processing
- Walk to work
- No accommodation
- 4-6 month maintenance visits
- Control and utilities from a host facility
- Minimisation of steel profiles and weld set ups
- A modular, standardised and repeatable design





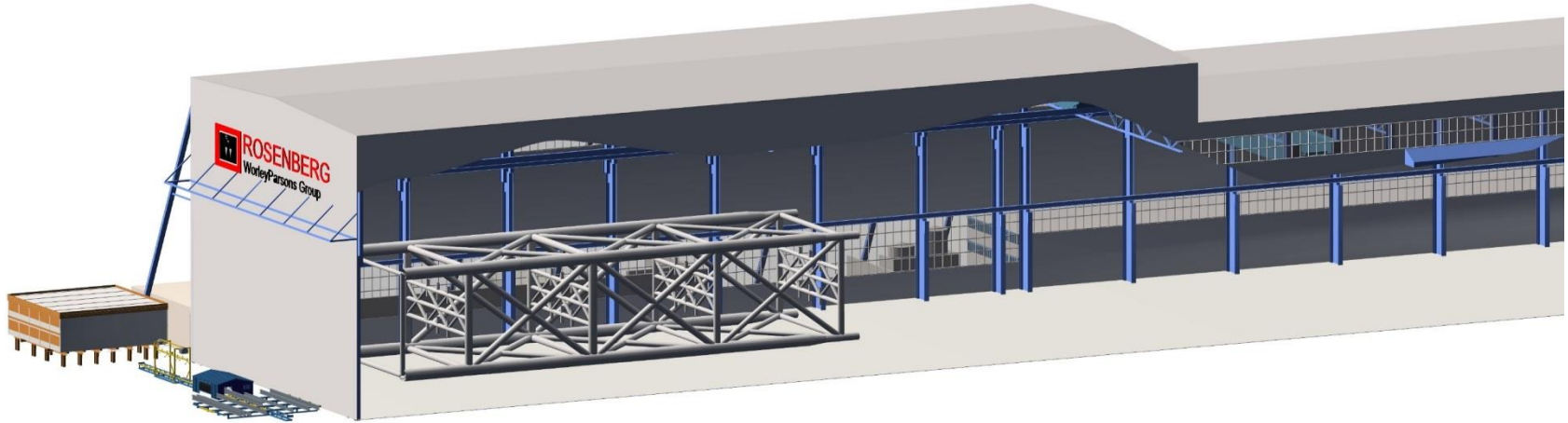
Built in sections



Block 0-1 ready for assembly to block 2-3



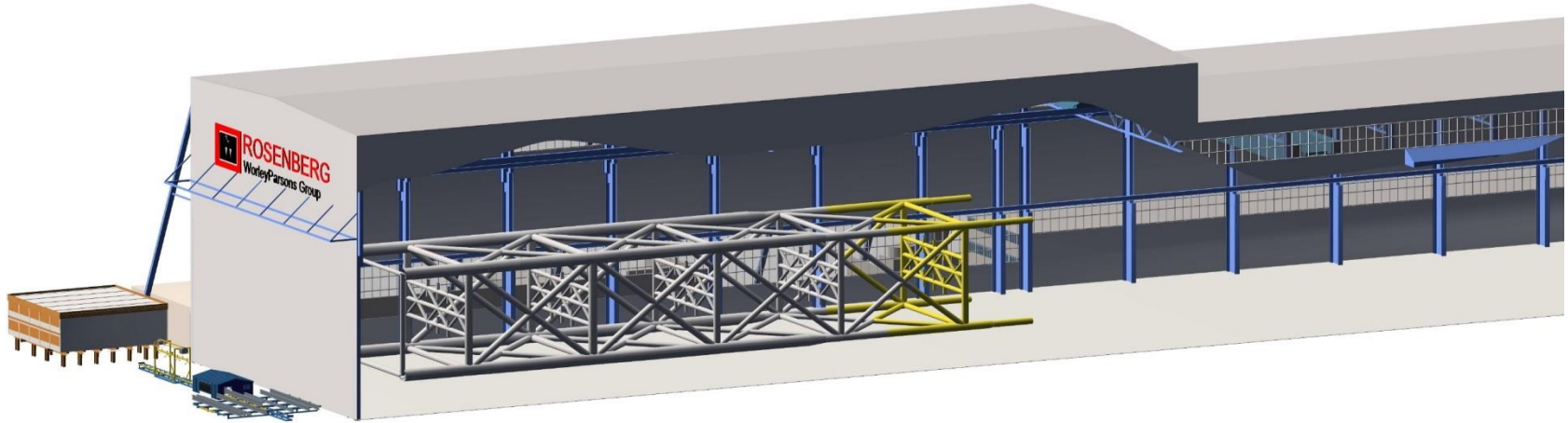
Built in sections



Block 0-1 assembled to block 2-3



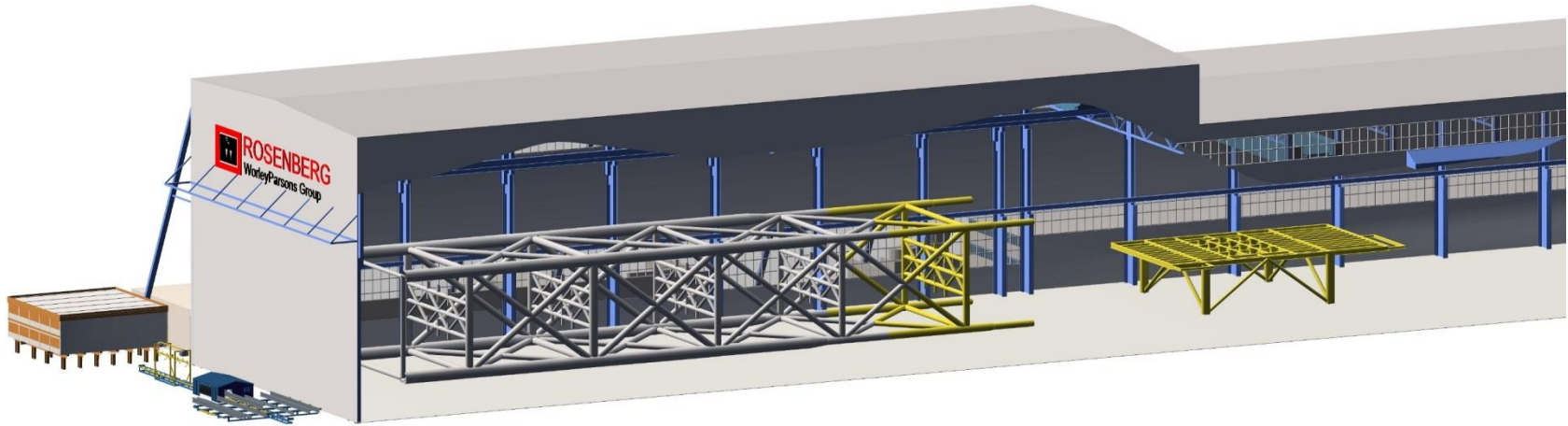
Built in sections



Block 4 assembled after surface treatment



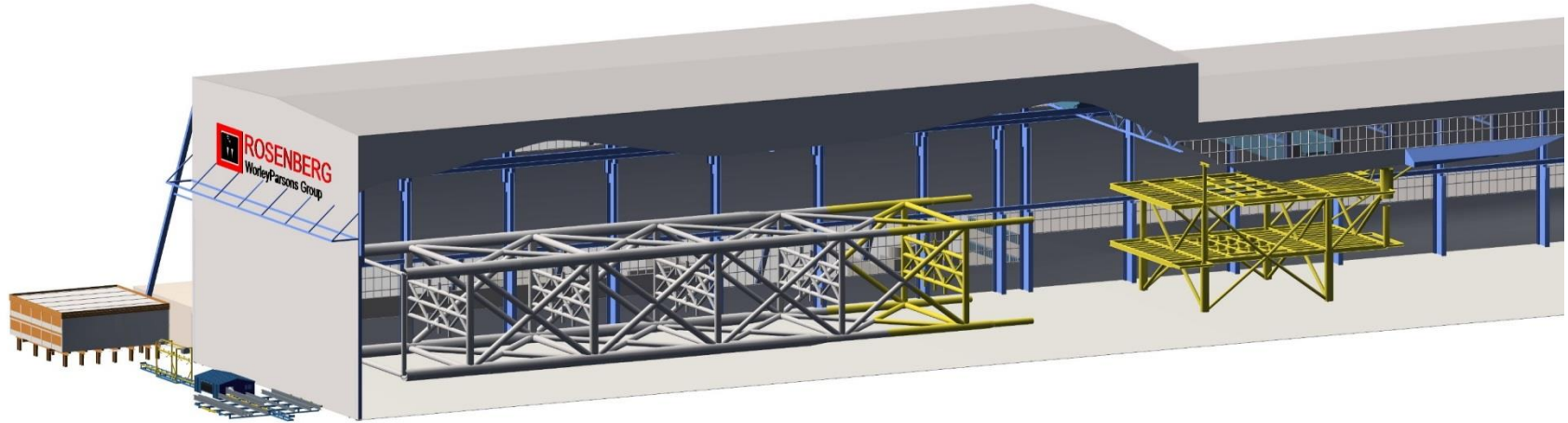
Built in sections



Topside will be fabricated in parallel with jacket



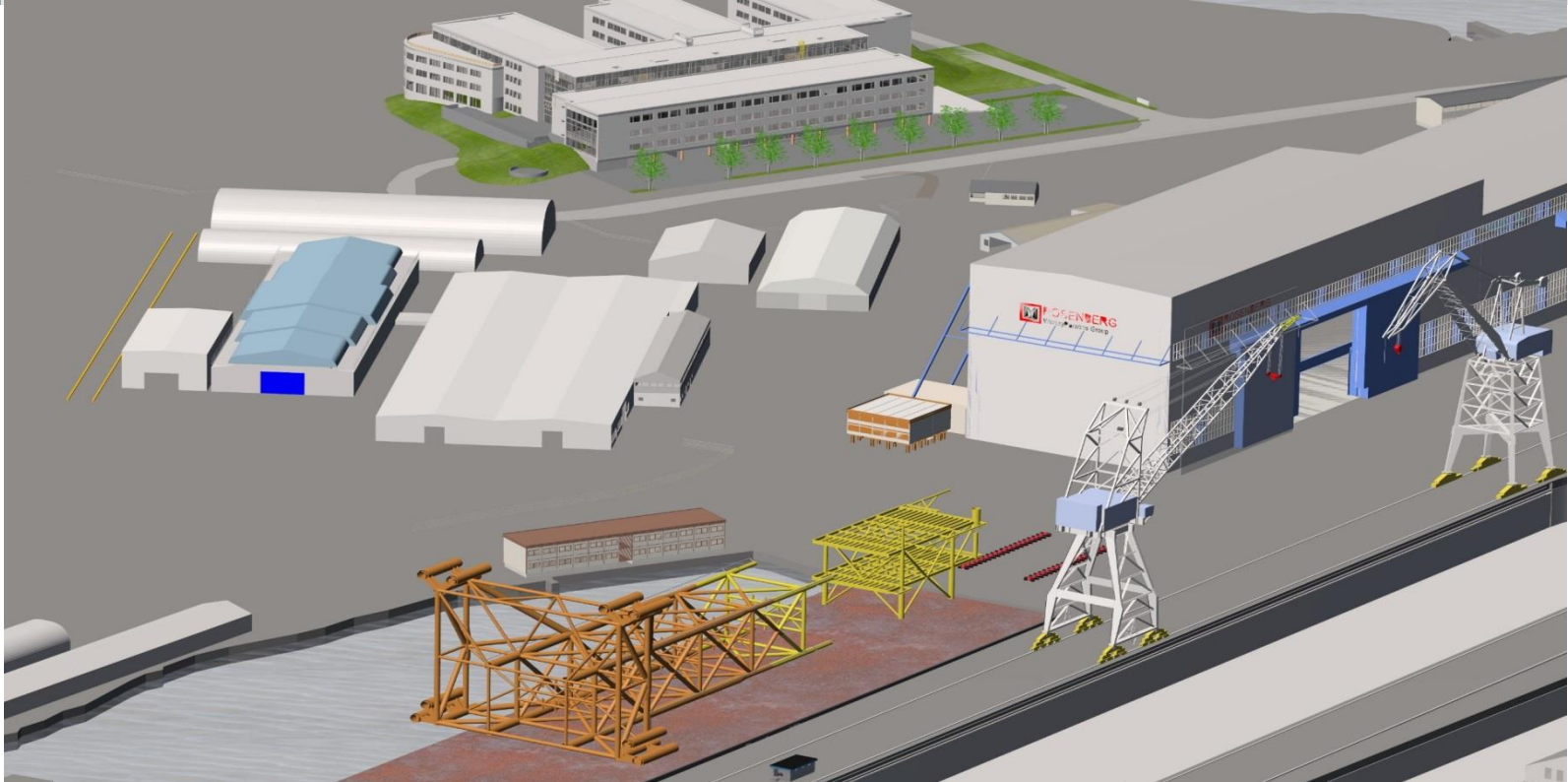
Built in sections



After surface treatment lower deck will be pre-outfitted with equipment. When all pre-outfitting are completed upper deck will be lifted on to lower deck for assembly and welding before outfitting will start.



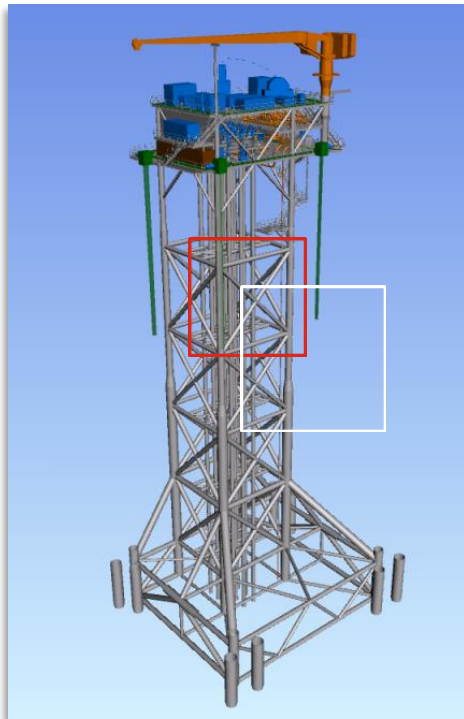
Jacket and topside transported to barge



Transportation will be performed by use of multi wheelers for both jacket and topside



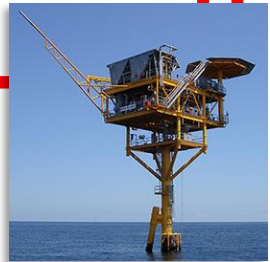
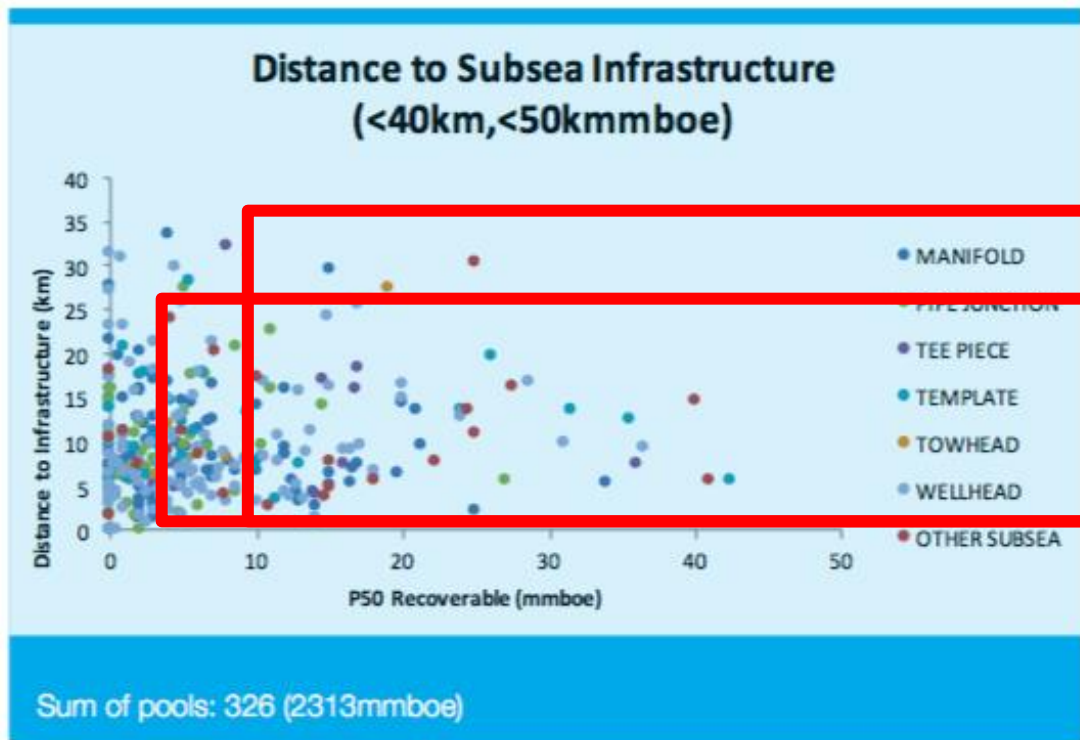
Barge launch.



Barge launch provides greater negotiating power to asset developer

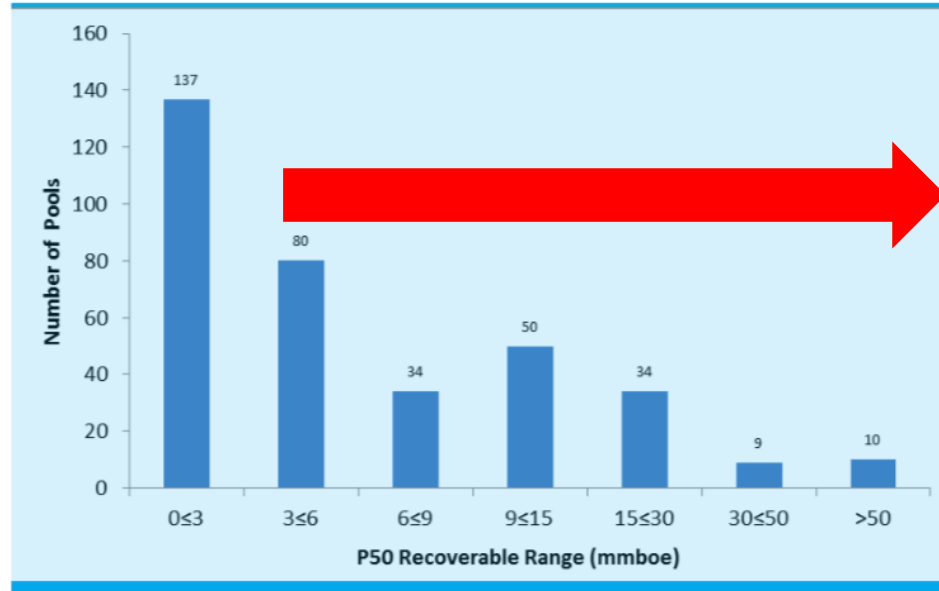


Oil and gas 'small pools': UK North Sea





Small pool size distribution.



Source: OGA PARS 2015 database, PEARS

Unmanned wellhead platforms could assist in exploiting 60% of fields
Equivalent to 94% of oil

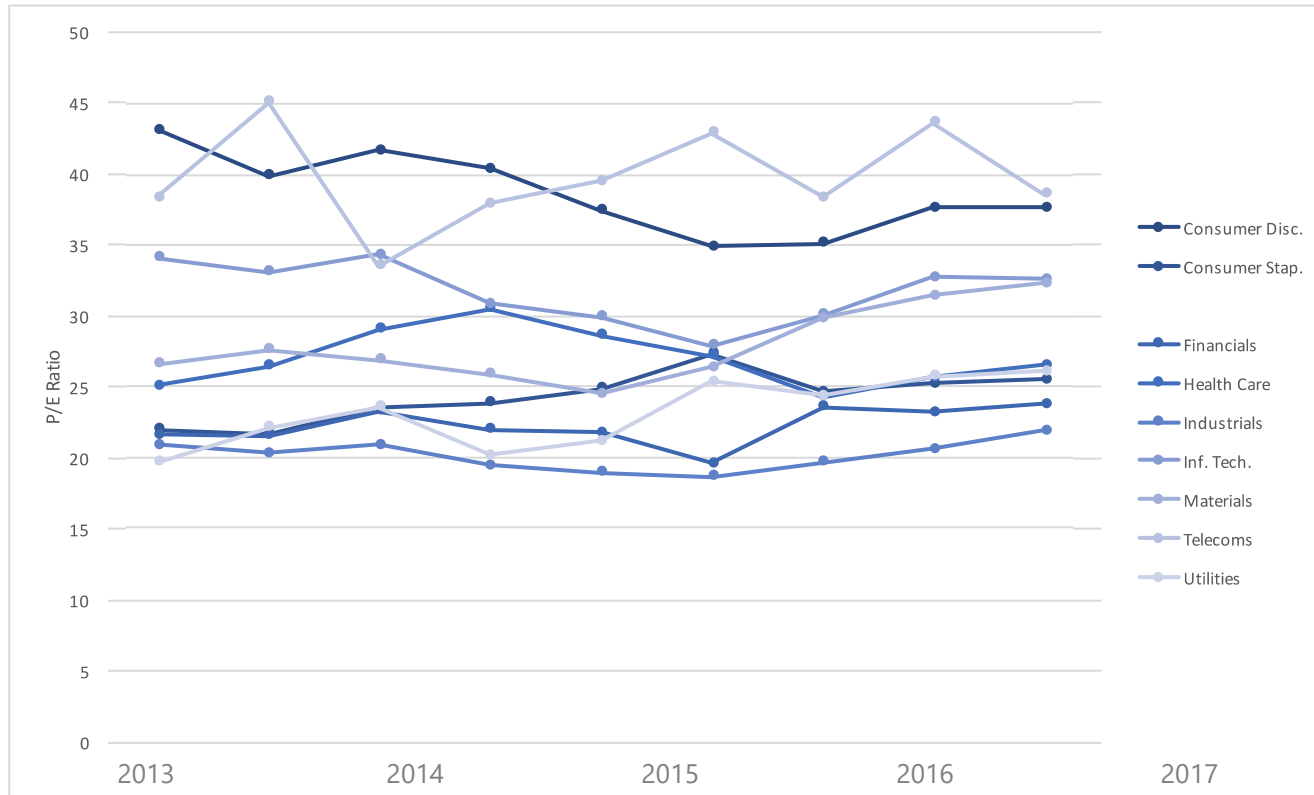


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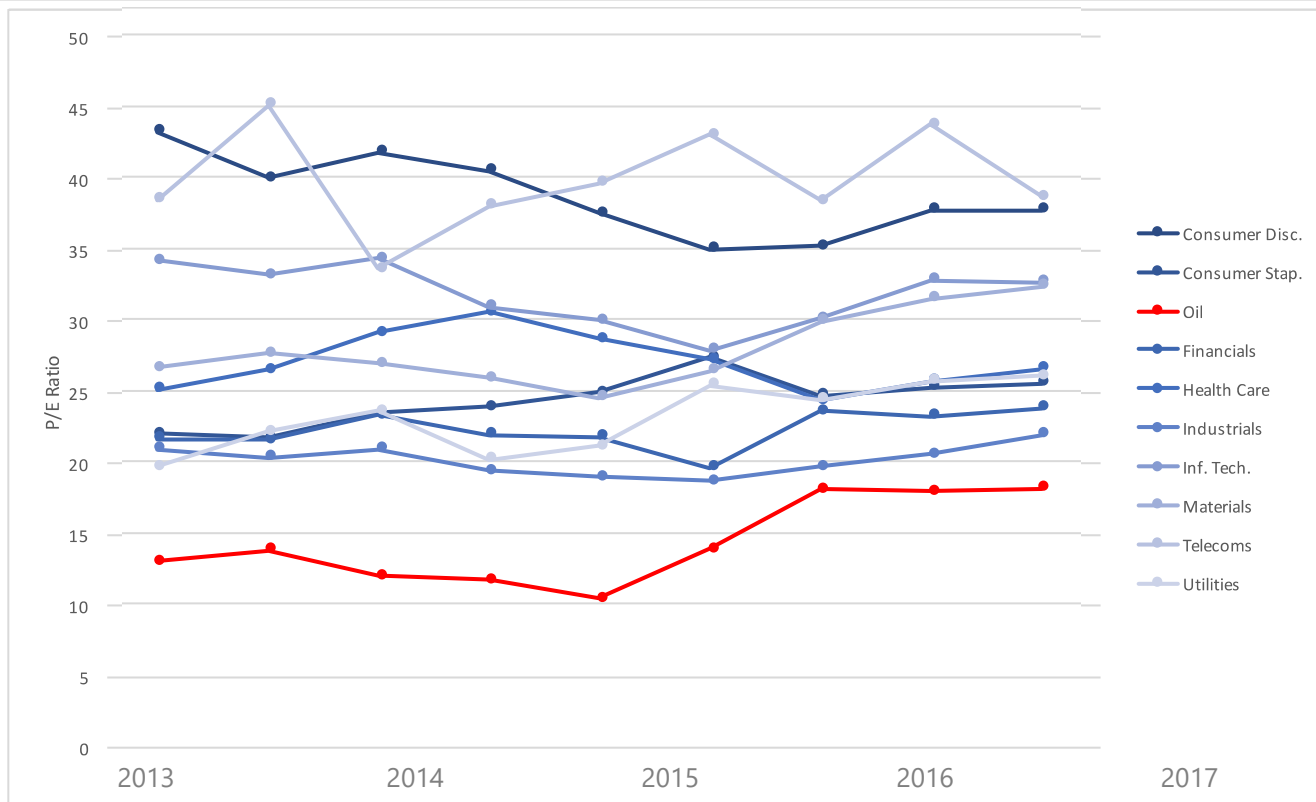


PE₁₀ ratios



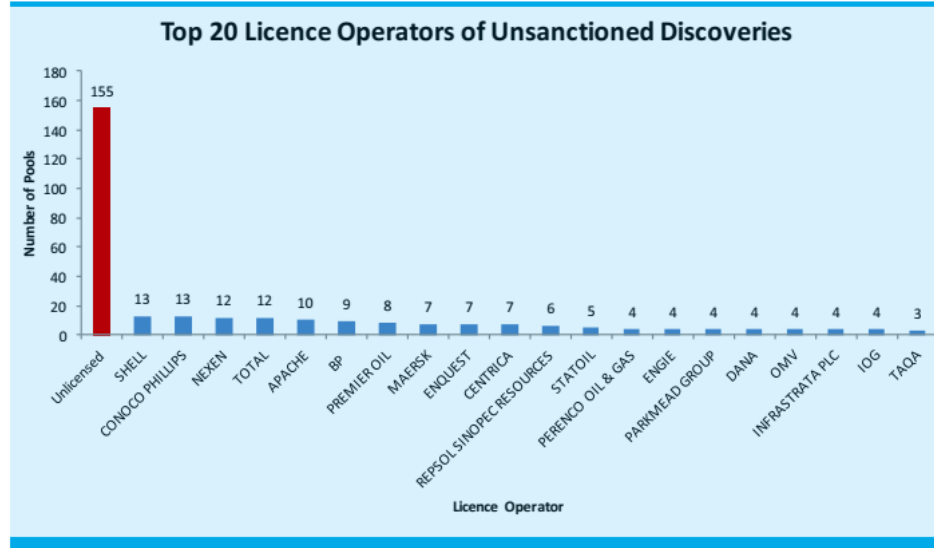


PE₁₀ ratios





Small pools' ownership



Source: OGA PARS 2015 database, PEARs

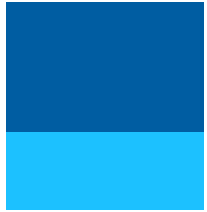
Most opportunities are unlicensed

Many others are operated by tier 2s or by independents

Balance sheets likely to be weak and/or with limited capacity for debt.



New Accounting Rules from 2019



Equity = \$0.7billion

Debt = \$0.3billion

Debt/equity = 43%



Equity = \$1.7billion

Debt = \$1.3billion

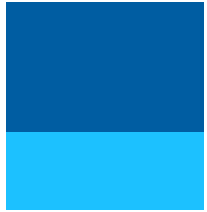
Debt/equity = 76%

Company also has a 10 year operating lease on a \$1billion FPSO which doesn't appear on the balance sheet as an asset or as a debt.

FPSO lease must be shown on the balance sheet as both an asset and a debt.



New Accounting Rules from 2019



Equity = \$0.7billion

Debt = \$0.3billion

Debt/equity = 43%



FPSO lease payments = \$100million

PBIT = \$60million

Interest = \$30million

} Interest coverage = 2x



Equity = \$1.7billion

Debt = \$1.3billion

Debt/equity = 76%

PBIT = \$160million

Interest = \$130million

} Interest coverage = 1.2x



Small pools investment environment

- ▶ The oil sector may not represent investors' first choice.
- ▶ Small pools will tend to be developed by smaller companies which may not have the most robust balance sheets.
- ▶ Accounting rules changes may push some companies to finance developments "off balance sheet".

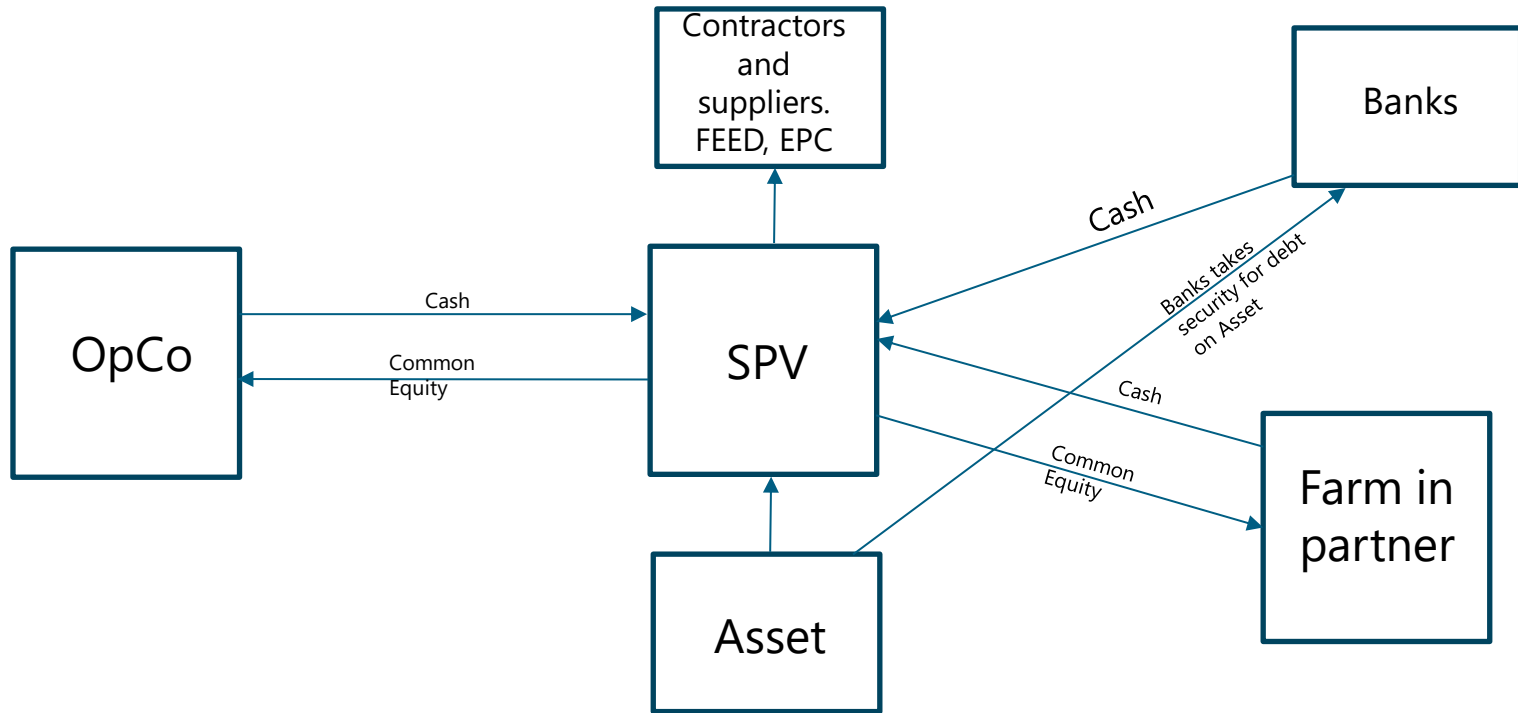


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Typical financing for a new development



OpCo has significant control of the SPV and so the value of both assets and debt of the SPV must be included within OpCo's consolidated balance sheet



Contracting strategy for a Wellhead platform

These developments are not complicated

- Standard designs and 'business as usual' tie ins.

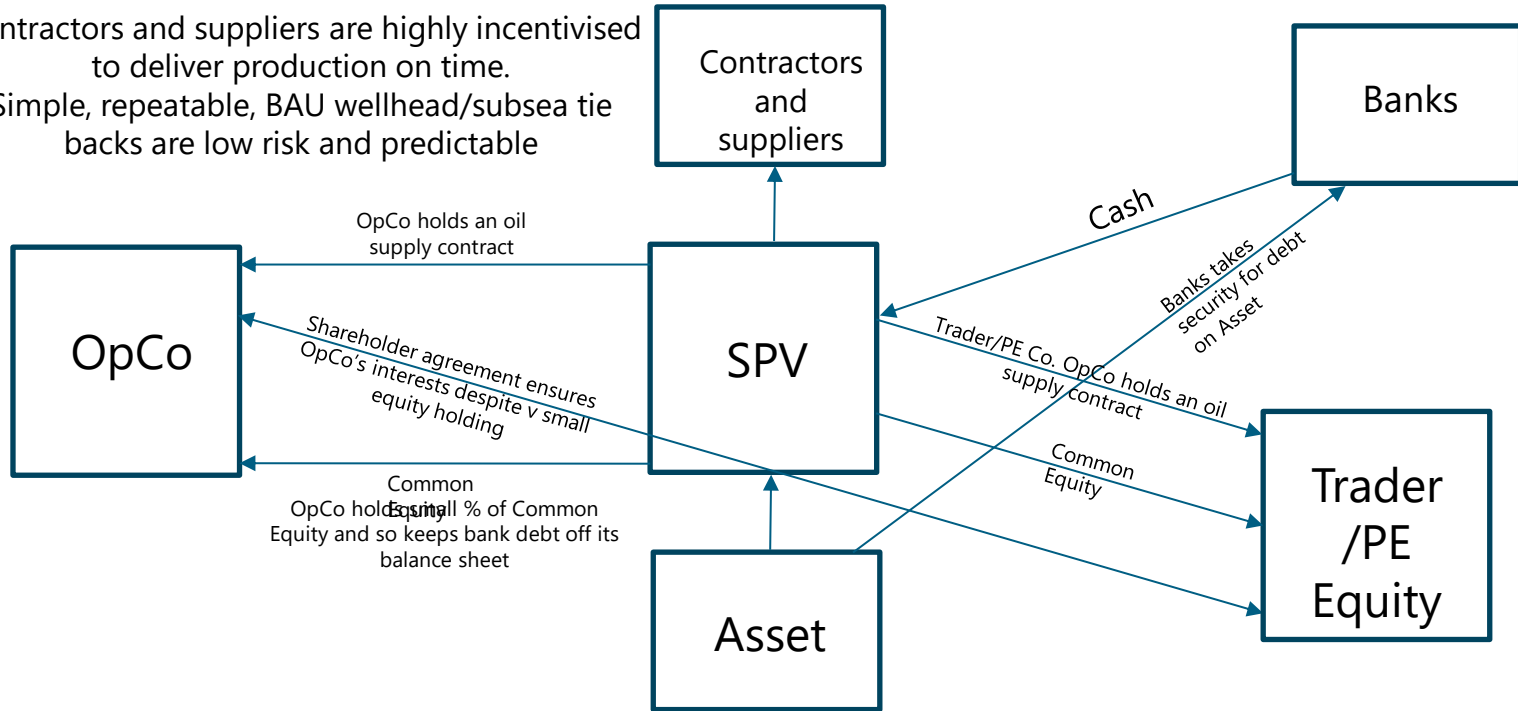
There is little requirement for a protracted concept design and FEED

- It's sufficient to specify tie in locations, reservoir properties and applicable standards.
- Allow full service design/construction/installation companies or consortia tender the design, construction and installation.

Tie back projects are well suited to a form of financing scheme and contractual arrangement which aligns the incentives of all participants.

Off balance sheet financing

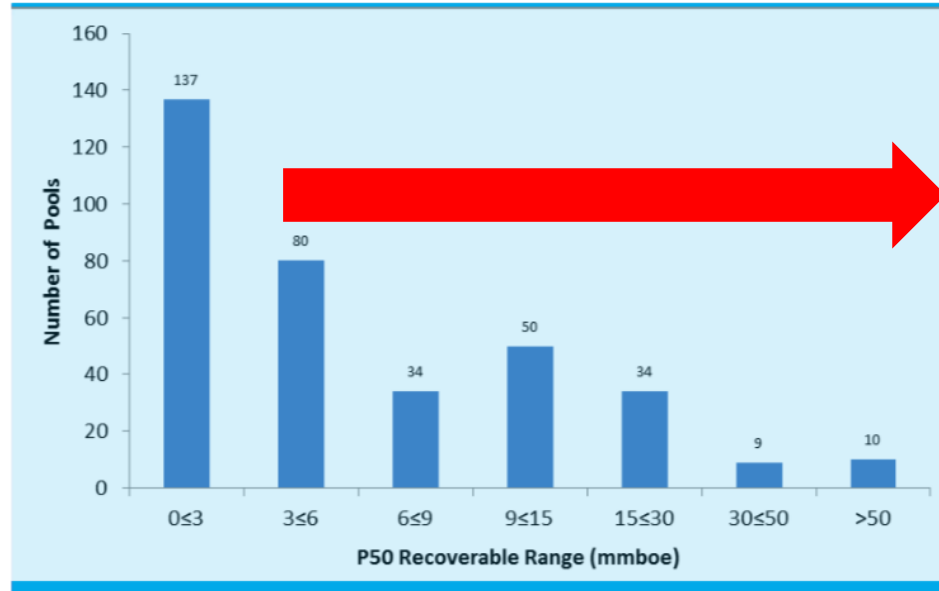
Contractors and suppliers are highly incentivised to deliver production on time.
Simple, repeatable, BAU wellhead/subsea tie backs are low risk and predictable



OpCo has no significant control of the SPV and so only the value of the oil prepayment will appear on OpCo's consolidated balance sheet



Summary



Source: OGA PARS 2015 database, PEARS

Unmanned wellhead platforms could assist in exploiting 60% of UK sector small pools equivalent to 94% of the total reserves within these fields

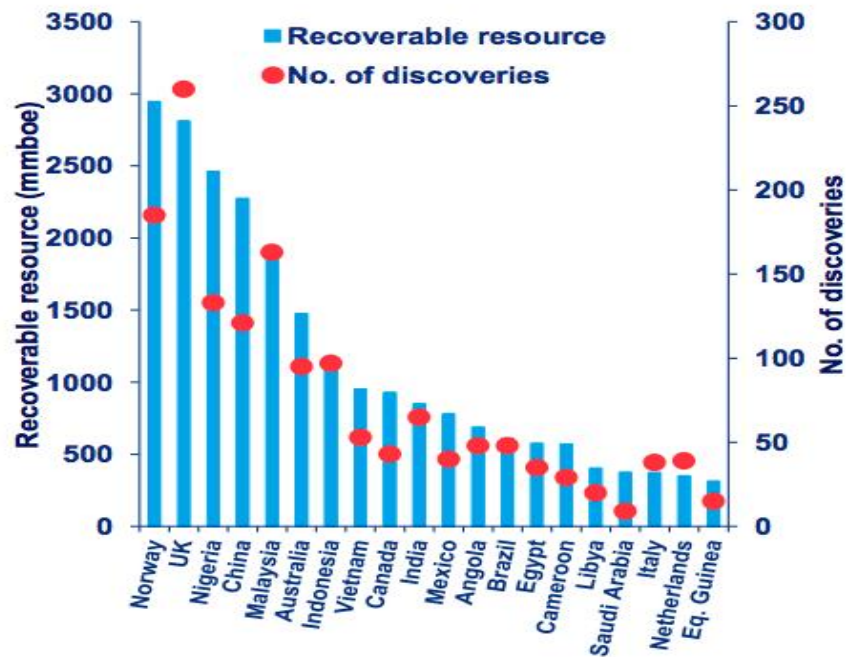
The North Sea has around 25% of the world's small pools

With 27 bnboe in small pools globally, there is huge potential to export solutions and approach to other sectors

Location of small pools globally*



Top 20 locations for resource in small pools





Thank you

Rob Gill

gillrw@btinternet.com