This presentation is about RE-USE and FDDV by Thor Sterker
What we do for a living?

Cost estimate of 700++ platforms
What is driving cost up?

**Regulator want...**
- Decommissioning Security Assurance
- Compliance with Legislation
- Create jobs & plow money back into society
- Spend decommissioning money in N-Sea

**Operators want..**
- Compliance with Laws & PSC agreements
- Sustainable operations
- Protect their Reputation
- Funds to discharge liability
- Ultimate control how the money is spend
- Highest HSEQ performance
- No risk or surprises at the end of field life

**Industry want..**
- Get on with the job NOW!
- To do the job in lean times (fill in work)
- Share Risks and Rewards (not EPRD contracts)
- Redeploy resources from cancelled projects
There should be funds for asset retirement liabilities!

Amount capitalised within **fixed assets** is **depleted** (depreciated) as part of the cost of oil and gas properties on the same (unit of production) basis as other oil and gas assets. This means that the cost of decommissioning is expensed to profit and loss over the life of the field, rather than in one big hit after the field has stopped producing.

- **Initial provision grows** over time as **discounting ‘unwinds’** - see example later

- **Key idea** is that **by the time the field dries up, asset is down to 0 and provision is up to the full cost of decommissioning, in the money of the day when this takes place.**
Annual reports of 11 of the major oil companies (Shell, Chevron, Exxon and so on).

Asset retirement obligation, sometimes named decommissioning provisions:

- In 2004: $27 bn (on the balances of these oil majors)
- In 2009: $79 bn
- In 2014: $144 bn
- In 2015: $160 bn

So there is a massive increase in a decade. But can they pay?

Cash and cash equivalents on the balances of these same 11 oil majors:

- In 2004: $55 bn
- In 2009: $76 bn
- In 2014: $149 bn

Bron: Financieel Dagblad
So.... we must drive cost down

Need real actions not management of speech solutions

- Re-use of platform topsides
- Re-use of jackets or parts
- Re-use of proven methods
- FDDV concept
- ?
- We have another 85 ideas and improvements
History of re-using decommissioned facilities

Netherlands
1. Fixed platforms removed: 20
   • Q/1 Helder - B reused
   • K/9c-A
   • K/10-C - reused
   • K/10-V - reused
   • K/11-B - reused
   • K/11-FA-1
   • K12-A - reused
   • K/12-E - reused
   • K/13-A
   • K/13-B
   • K/13-C
   • K/13-C
   • K/13-D - reused
   • L10/G - reused
   • L/10-K - reused
   • L/11-A - reused
   • P/12-C
   • P/14-A - reused
   • Q/4
   • Rijn P/15-B

2. Re-used: 11 (55%)
CASE STUDY: Topside Refurbishment

USED TOPSIDE

VERIFICATION BODY
- 3rd party Verification Authority

FABRICATORS
- Refurbishment procedure
- Refurbishment activities

ENGINEERING CONSULTANTS
- Engineering activities

REFURBISHED TOPSIDE
CASE STUDY: Topside Refurbishment

3 MONTHS

5 MONTHS

6 MONTHS
CASE STUDY: Transportation

Specifications
Type: 4 Pile Deck
Main Deck Dimensions: 70' x 80'
Cellar Deck Dimensions: 53' x 67'
Sump Deck Dimensions: 20' x 40'
Leg Spacing: 40' x 45'
Leg Diameter: 42"
Deck Weight: 315 Tons
Year: 1995
INSTALLED, COMMISSIONED & FIRST OIL ON 31-12-2012
Assume:
1600 Ton, jacket and piles, 700 Ton topside, 280m Ton process equipment, Year 2016

New build cost:

- Engineering and procurement: US$ 12 M.
- Fabricate Top + Jacket+ piles: US$ 5 M.
- Transport & Installation (K1): US$ 7.5 M.
- Total: US$ 24.5 M.

Re-use existing facilities

- Decommission: US$ .2M.
- Preparations: US$ .5M.
- Remove and transport: US$ 6M.
- Refurbish and test: US$ 3M.
- New Jacket: US$ 1.2M
- Transport and install: US$ 7.5M.
- Total: US$ 18.4M.

First oil / Gas 6 months ahead of schedule!
Jacket reuse?

Scraping cost 1000T * US$ 500/T = (US$ 500K)
Scrapping cost 1000 T * 250/T = US$ 250K
Loss:

Dismantling cost 1000T * US$ 500/T = (US$ 500K)
Re-use tubulars 1000T * US$ 2500/T = US$ 2500K
Value gain:

Scrapping cost:

<table>
<thead>
<tr>
<th>Cost Type</th>
<th>Quantity</th>
<th>Unit Cost (US$)</th>
<th>Total (US$)</th>
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<td>1000T * US$ 500/T</td>
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However, it contains Hazmat such as Mercury
The greatest proportion of anthropogenic mercury emissions to the atmosphere comes from Asia, which contributes about 50% of the global total.
If nor re-used - Contaminated North Sea oil production and storage tanker end up on the beach in Bangladesh October 2016.

Source: NGO Shipbreaking Platform - Maersk owned FPSO North Sea Producer
Solution?
Convert hazardous waste into green waste
Idea is to convert idle Deepwater Drilling Units into FDDV
Vacuum Distillation.

Acid cleaning

Chemical decontamination
Solves a lot of practical issues, HSE problems, Permitting and Licensing headaches
Classed and certified to decontaminate platforms, FPSO’s, pipelines, seabed, deep draft ships & vessels
Tackle the Haz-Mat problem in situ, at the beginning of the pipeline not at the end.
All hazardous operation under Owners Safety Management System
Containment - process facilities are kept intact and can be decontaminated as one complete system
No need to train Onshore Yard personnel how to deal with Hazardous Materials in India, Pakistan, Bangladesh
Only need to train a select group of skilled laborers / engineers working on the FDDV
Decontaminated platforms classed as Green waste.
No need to worry about Trans Frontier Shipment Reg’s (Compliant with Basel & Hong Kong Convention)
No need for dedicated onshore Decontamination, Dismantling, Disposal Yard.
No special planning permission issues for the onshore decontamination facilities.
More (any) yards would now be able to accept an platform which is certified “free from..” – less congestion
Re-use of topsides and equipment becomes more feasible as there is no liability issue with handing over a Clean Platform / equipment
No Risk to Health, Safety & Environment as a result of the presence of Mercury (and other contaminants)
ZERO emissions (other than emissions from FDDV engines)
No Reputation Damage
Use FDDV to prepare platform prior to HLV arriving in field – thus reducing risks of delay to high value asset
Pre-cutting of Topsides and jacket foundation piles
Pre cleaning / removal of contaminated drill cutting piles on seabed
More reasons spring to mind
Because of its efficiency and its capability to operate in international waters it can work continuously in waters from ASCOPE members, therefore Co-funding of the FDDV Feasibility study by Operators of the eight (8) ASCOPE member States eases the financial burden.

Together with Universiti Technologi Petronas (and others to be identified) we intent to perform a feasibility study to prove the concept and to be able to estimate the cost efficiency and HSE benefits. This feasibility study would take approx 12 months with as small dedicated team of 4 to 6 fulltime Scientists / Naval Architect, Process – Facilities Engineers / Chemist / Environmental engineer.

At this moment and time we estimate that the budget for the entire feasibility study to be around US$ 400k. to prove the FDDV concept.

Plan is to organize a workshop with all stake holder to formulate the definitive concept study deliverables in Q3 2017, describing , schedule and finish date of the study and resources required to perform the study.

Per Ascope members that would be around US 75,000= (plus or minus 15%)

Others are welcome to join the Group.
It takes courage to step out for others to follow
Decommissioning is not for the timid
Thank you for your attention

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