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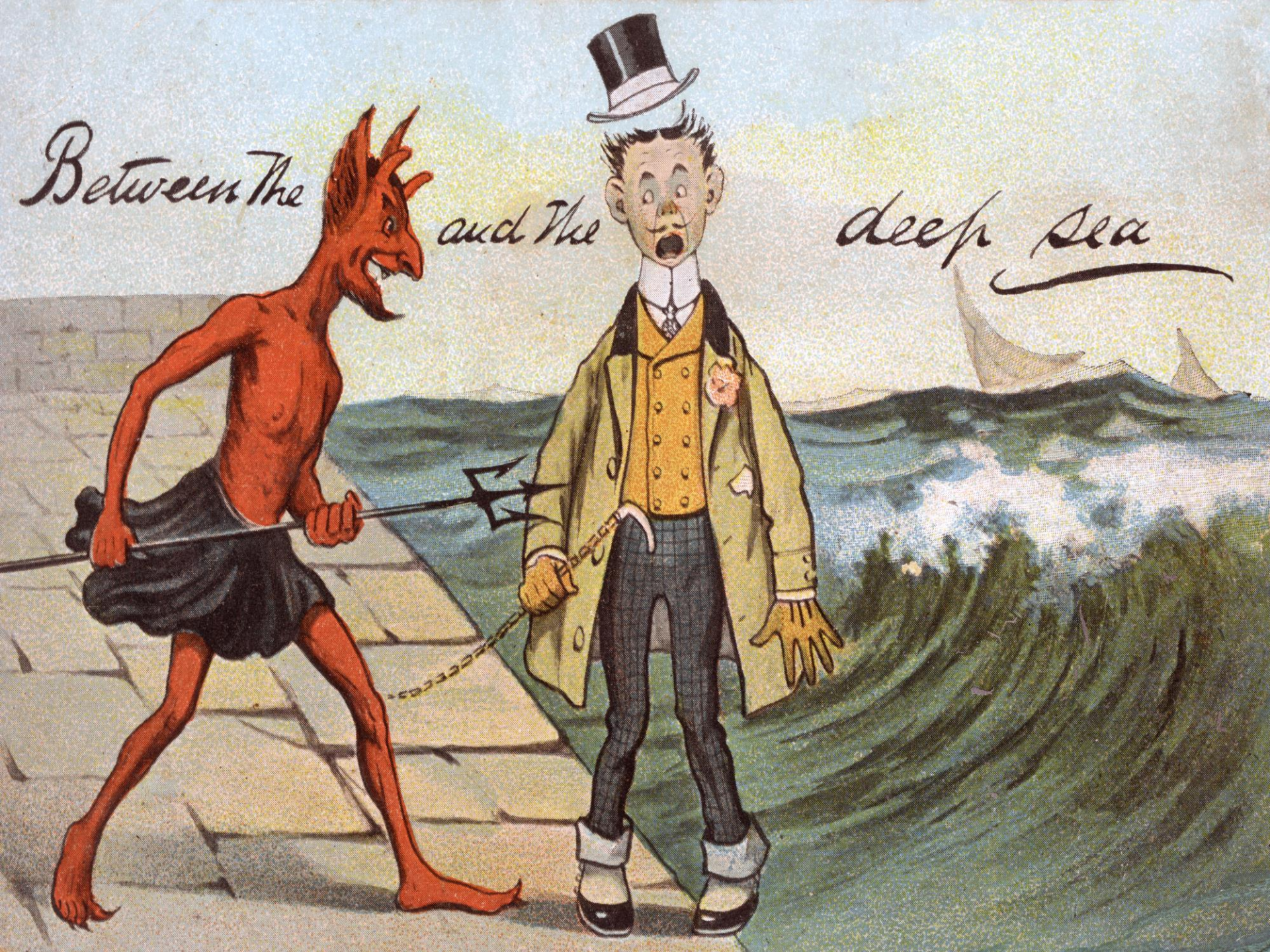
BETWEEN THE DEVIL AND THE DEEP SEA

Kevin Jarman
David Cox

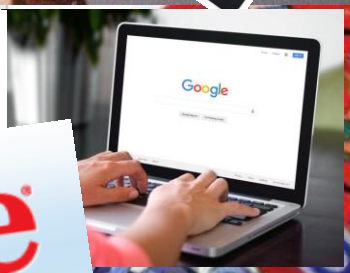
IUMI, Cape Town, September 18, 2018

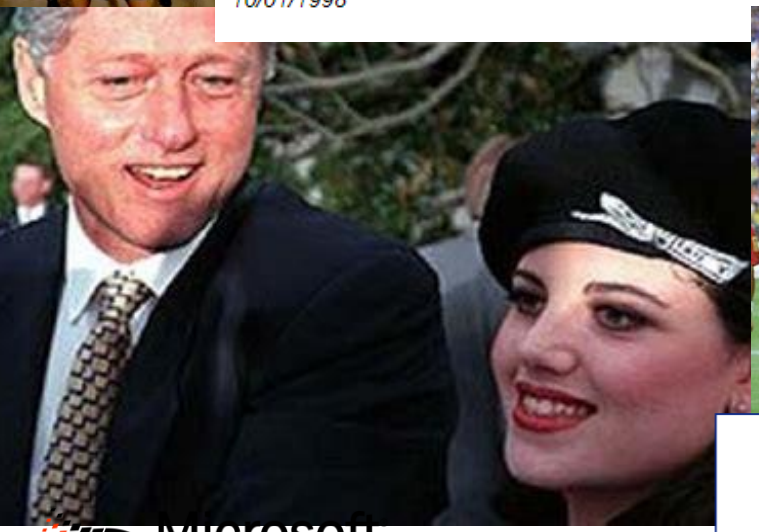

Between The
and The
deep Sea

Thirty-seven deepwater drilling units still in construction

10/01/1998

Offshore





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Education
Sport
Entertainment
Talking Point

On Air
Feedback
Low Graphics
Help

Tuesday, January 19, 1999 Published at 17:59 GMT

UK

What bugged you in 1998?

The Millennium Bug: so you know what it means, but what about how it looks?

It seems as if the new millennium and everything it threatens to bring with it has been on our minds more than we think.

According to a poll carried out by the Collins English Dictionary, Millennium Bug comes out as the term most representative of 1998.

UK Contents

- Northern Ireland
- Scotland
- Wales
- England

Internet Links

Collins English Dictionary

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In this section

Next steps for peace
Blairs' surprise over baby
Bowled over by Lord's
Beef row 'compromise' under fire
Hamilton 'would sell mother'
Industry misses new trains target

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"*When you look at the mix you need offshore, you need deepwater. The onshore by itself won't be enough to make up for the decline rates that you are seeing globally*,"

Lorenzo Simonelli, CEO Baker Hughes

"*You will see more deepwater over time, for sure*"

Bernard Looney, Head of BP O&G Production

"*Deepwater projects on either side of the Atlantic Ocean – from Norway to US and Angola to Brazil – are leading the charge towards new approvals. Higher oil prices, an improved outlook for gas demand and lower offshore development costs are driving this rebound….Not only are the suppliers charging less for their services, they have also improved efficiencies…. the time required to drill and complete a well has fallen by 30% in the North Sea, the Gulf of Mexico and Brazil over the past four years….Offshore projects can now compete with some of the best acreages in the Permian basin in terms of breakeven prices. With rising inflation in the US shale, offshore appears geared to out-compete shale this year and next*"

Audun Martinsen, VP Oilfield Service Research, Rystad Energy

"*Looking at the longer-term supply-demand, there is a certain amount of assets that will have to be developed…we are going to go back . . . [to] deepwater activity*"

Patrick Schorn, Schlumberger

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"*It* [Penguins] *is another example of how we are unlocking development opportunities, with lower costs*"

Andy Brown, Head of Shell O&G production

"*…..Although deepwater Gulf of Mexico has taken quite a beating over the last three years, the industry has clawed its way back to being competitive by significantly cutting costs, improving efficiencies and tightening up the supply chain. 2018 will be a forward looking year for the sector as it lays the foundation for longer term resurgence in 2019 and beyond*,"

William Turner,
Senior Research Analyst,
Wood Mackenzie

"*…the potential for advanced digital capabilities to improve deepwater competitiveness and productivity are monumental*,"

Wood Mackenzie

Long-term supply scenario indicates that offshore production could account for up to 50 percent of new supply requirements in 2025

McKinsey

DEEPWATER DEVELOPMENT RE-VITALISED

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- Offshore project approvals in 12 mos. to June 2018 more than double 2016
- Average 2018 investment $1Bn/project, down from $1.8Bn in 2013*
- 17 deepwater projects approved in 18 months to June 2018 ($45Bn+)
  - 16 of 17 deferred from pre-2015
  - Leaner / more standardized / lower service costs
  - Example: *Mad Dog 2*

    $20Bn / 29 wells / spar → $9Bn / 14 wells / semi-sub
- Deepwater operators are biggest beneficiaries of rig glut
  - Example: *West Neptune* (LLOG/ Seadrill)

    12/14 – 12/17: $573k p.d

    1/18 → : $155k p.d

*source: Rystad Energy

H1 2018 PROJECTS SANCTIONED
(OVER 50M B.O.E.)

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Projects	Country	Reserves (Million BOE)	Approval Date
Hadrian North	United States	95	Jan-18
Peshkabir	Iraq	70	Jan-18
R-Series Fields & R-12 (Ratna Revival)	India	62	Jan-18
Haliba	UAE	184	Feb-18
WDDM Phase 9B	Egypt	150	Feb-18
Sao Vang	Vietnam	95	Feb-18
Thunder Horse Northwest Expansion	United States	90	Feb-18
Argo Cluster	Italy	90	Feb-18
KG-DWN-98/2	India	500	Mar-18
Karish-Tanin	Israel	514	Mar-18
Cassia C (Trinidad Offshore Compression)	Trinidad & Tobago	328	Mar-18
Pegaga	Malaysia	225	Mar-18
Changbei Phase Two	China	176	Mar-18
Snohvit Phase Two (Askeladd)	Norway	120	Mar-18
Christine Lake MEG Phase 2B	Canada	110	Mar-18
Penguins re-development	United Kingdom	100	Mar-18
Valhall West Flank	Norway	90	Mar-18
Raageshwari Deep Gas (Phase Two)	India	85	Mar-18
Qusahwira Phase Two	UAE	80	Mar-18
Yme	Norway	64	Mar-18
Gorgon Stage Two	Australia	892	Apr-18
Ghazeer (Khazzan Phase Two)	Oman	695	Apr-18
Garraf Phase Two	Iraq	410	Apr-18
Vito	United States	285	Apr-18
Larak-Gorek-Bankong	Malaysia	360	Apr-18
Aerfugl	Norway	136	Apr-18
KG D6 Satelites (D-2, D-22, D-29, D-30)	India	120	Apr-18
Fenja Project	Norway	112	Apr-18
EK-Balam re-development	Mexico	345	May-18
Zinia 2	Angola	78	May-18
Johan Castberg	Norway	630	Jun-18
Long Lake Southwest	Canada	131	Jun-18
18 other projects (<50 MMBOE)	Various	420	Various

Source: Rystad Energy

‘HOT’ DEEPWATER EXPLORATION AREAS: 2018

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1) South America – *Brazil pre-salt reserves*

- In 2016, Brazil scrapped law requiring Petrobras to be operator and own 30% of all pre-salt offshore projects.
- Shell predicts production @ $40/bbl.

2) Middle East – *Offshore Egypt*

- *Zohr* (1,500m WD/reserves 850Bn m^3 - biggest gas discovery in Egyptian Mediterranean) started production 12/17 and expected to reach peak capacity 2019: 20 wells
- Oil and gas now 16% of Egypt GDP and 54% of foreign direct investment.

3) Africa – *Mauritania-Senegal-Gambia-Bissau-Conakry (MSGBC) Basin*

- High-impact wells, including Kosmos Energy *Yakaar* gas discovery, offshore Senegal, and ExxonMobil *Payara, Snoek and Turbot* oil finds, offshore Guyana.
- Hot spots for exploration in 2018: Senegal/Nile Delta/Suriname-Guyana basins.

4) North America – *US Gulf of Mexico*

- Shell advancing *Kaikias, Appomattox*, and *Coulomb* Phase 2 projects, deepwater GoM.

5) Europe & the Arctic – *UKCS and Barents Sea*

- Ineos pressing ahead with deepwater operations North of Shetland.
- Statoil *Johan Castberg* project in southern Barents Sea anticipates first oil circa 2022.
- Eni planning further wells in Goliat field, Barents Sea.

‘COOLER’ DEEPWATER EXPLORATION AREAS: 2018

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1) India – *Krishna-Godavari basin, Bay of Bengal*

- ONGC ultra-deepwater discovery, UD-1 (2,400–3,200m) postponed due to technological challenges re water-depth/sub-zero temp.

2) Canada – *Offshore Nova Scotia*

- Shell abandoned Monterey Jack well and announced Cheshire play not commercial: distance from shore 200km+ and technical challenges of 2km water depth increased cost/complexity.
- BP and Equinor have licences, deepwater Nova Scotia.

3) West Africa – *African Transform Margin*

- Low exploration activity planned in 2018.

4) East Africa – *Ruvuma Basin*

- Exploration slow but Mozambique developments moving forward.

5) Australia – *Carnarvon Basin*

- Reduced appetite for deepwater gas in Carnarvon Basin; low success rates and large volume of discovered stranded gas.

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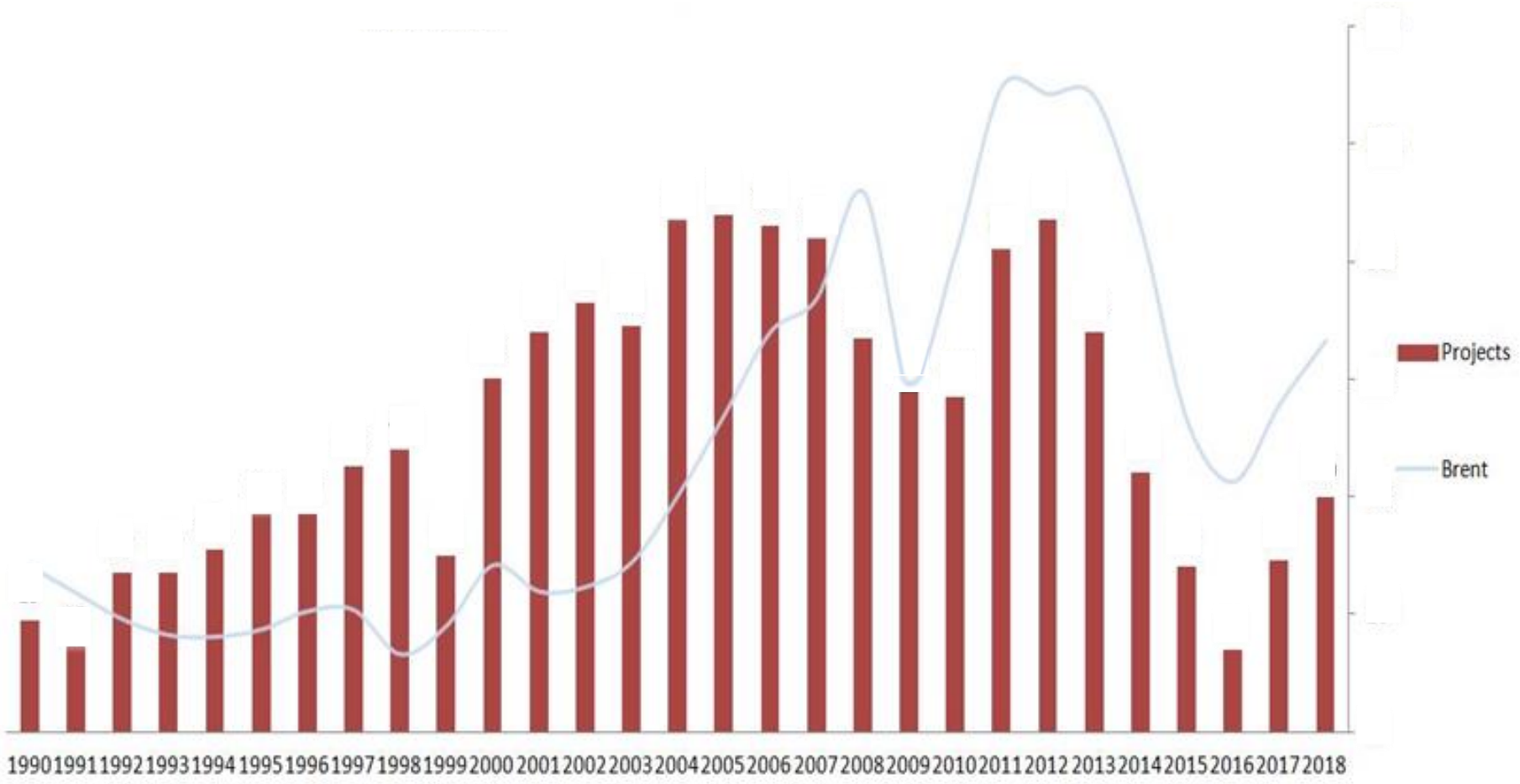
OFFSHORE PROJECTS V. OIL PRICE



Source: Bernstein, Reuters data, Q1 2018

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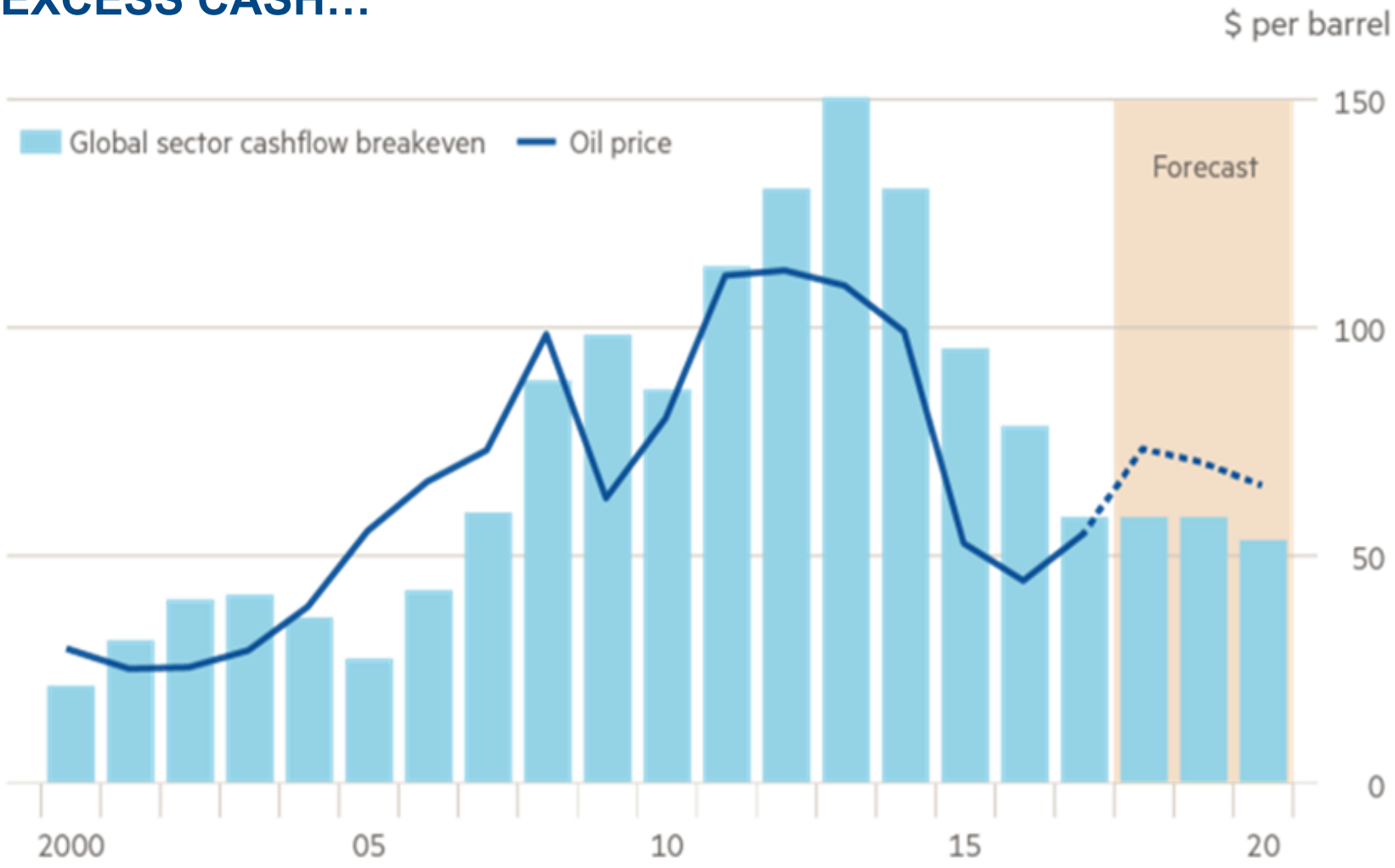
OIL MAJORS ARE NOW GENERATING EXCESS CASH…



Source: Barclays Research

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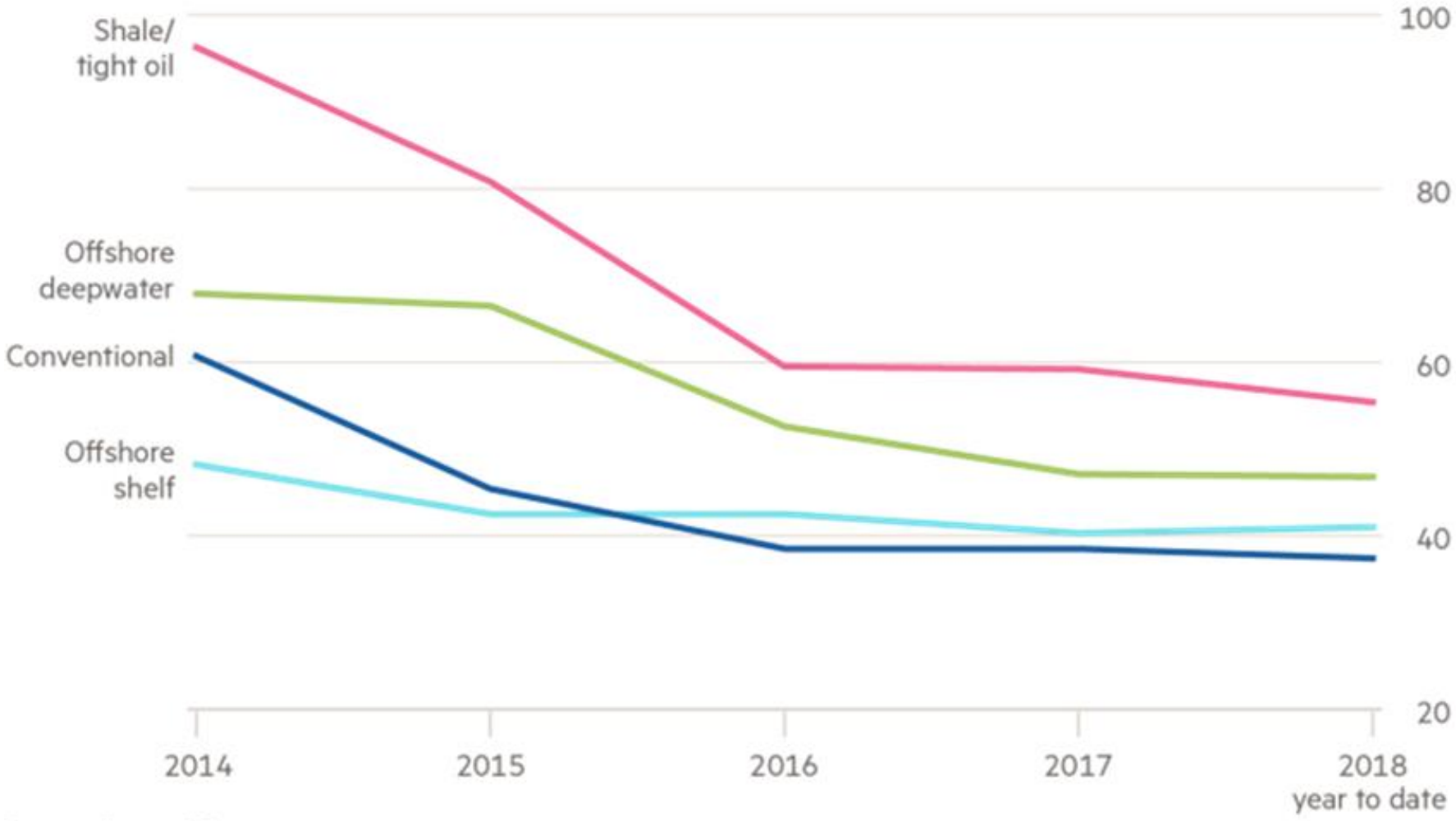
BREAK-EVEN PRICES



Source: Rystad Energy (based on Brent) 07/18

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DEEPWATER PROJECT COST REDUCTIONS

- Increased standardisation *“design one, build two”*
- Reduction of scope: engineering/manufacture/installation
- Design innovation
- Optimisation of contractor/supplier costs
- Sharing of services (e.g. rig pools)
- Early EPCI engagement
- Planning to reduce scope changes and delays
- Operator/Contractor partnerships

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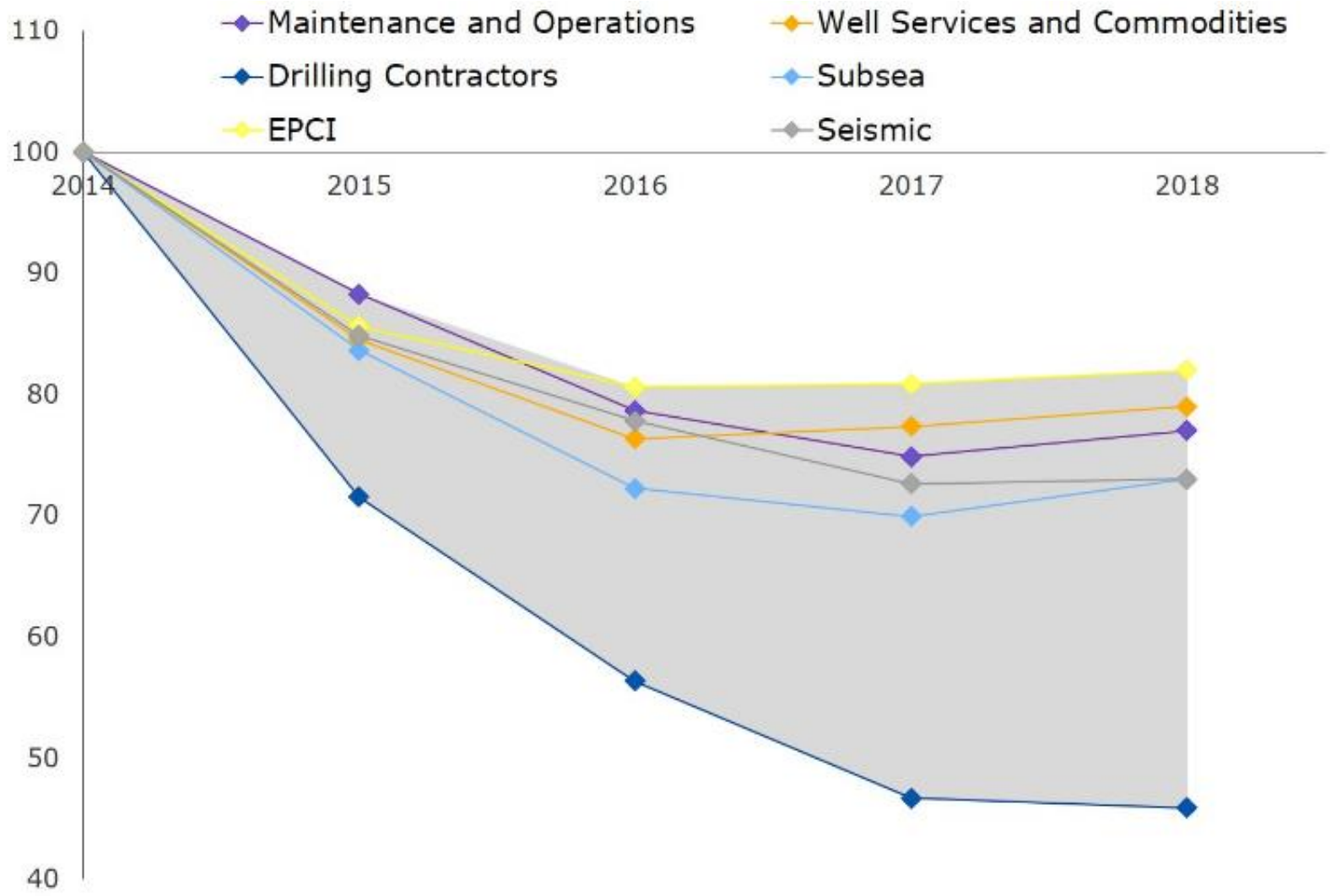
OFFSHORE SERVICE PRICE INDEX



Source: Rystad Energy Oilfield Service Analytics

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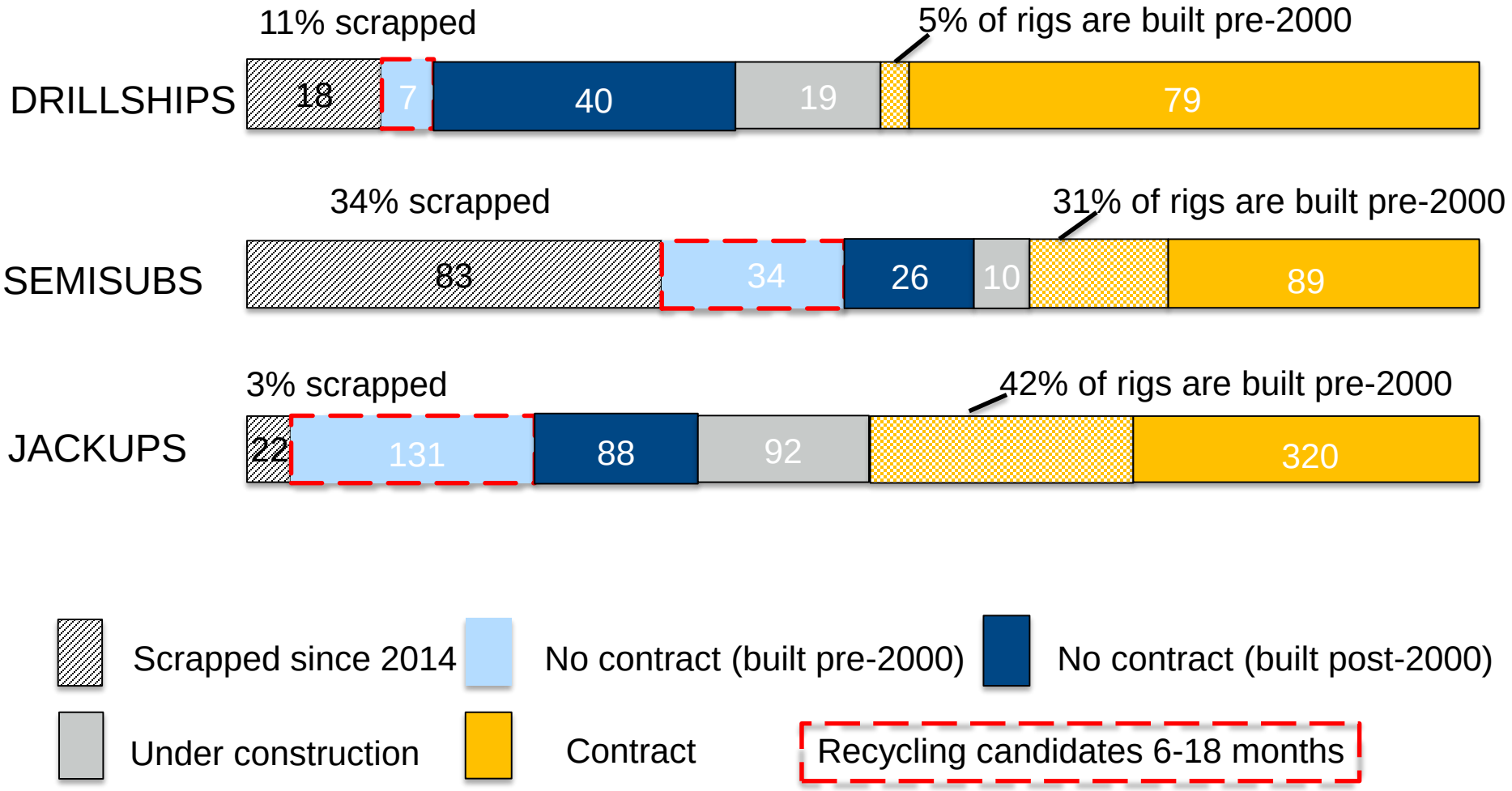
RIG MARKET: STATE OF PLAY



Source: Bassoe recycling report. February 2018

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RIGS SOLD FOR RECYCLING BY TYPE (2014 – 2018)

Year	JackUps	SemiSubs	Drillships
2014	0	14	0
2015	1	23	7
2016	6	19	5
2017	14	26	6
2018	11	6	2

Based on: Bassoe recycling report (Feb 2018) updated by MatthewsDaniel

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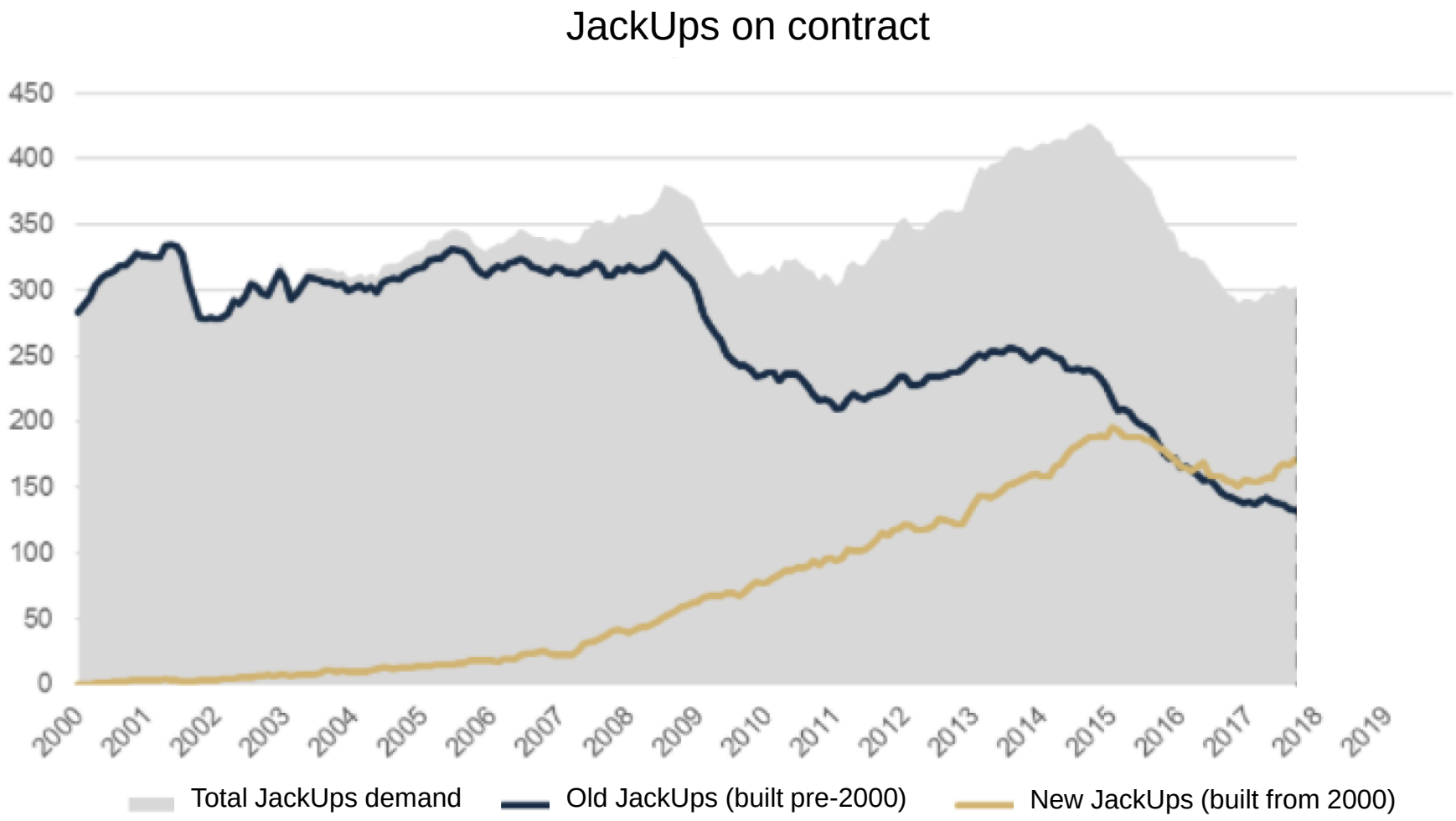
RISE OF THE NEW BUILDS



Source: Bassoe Offshore

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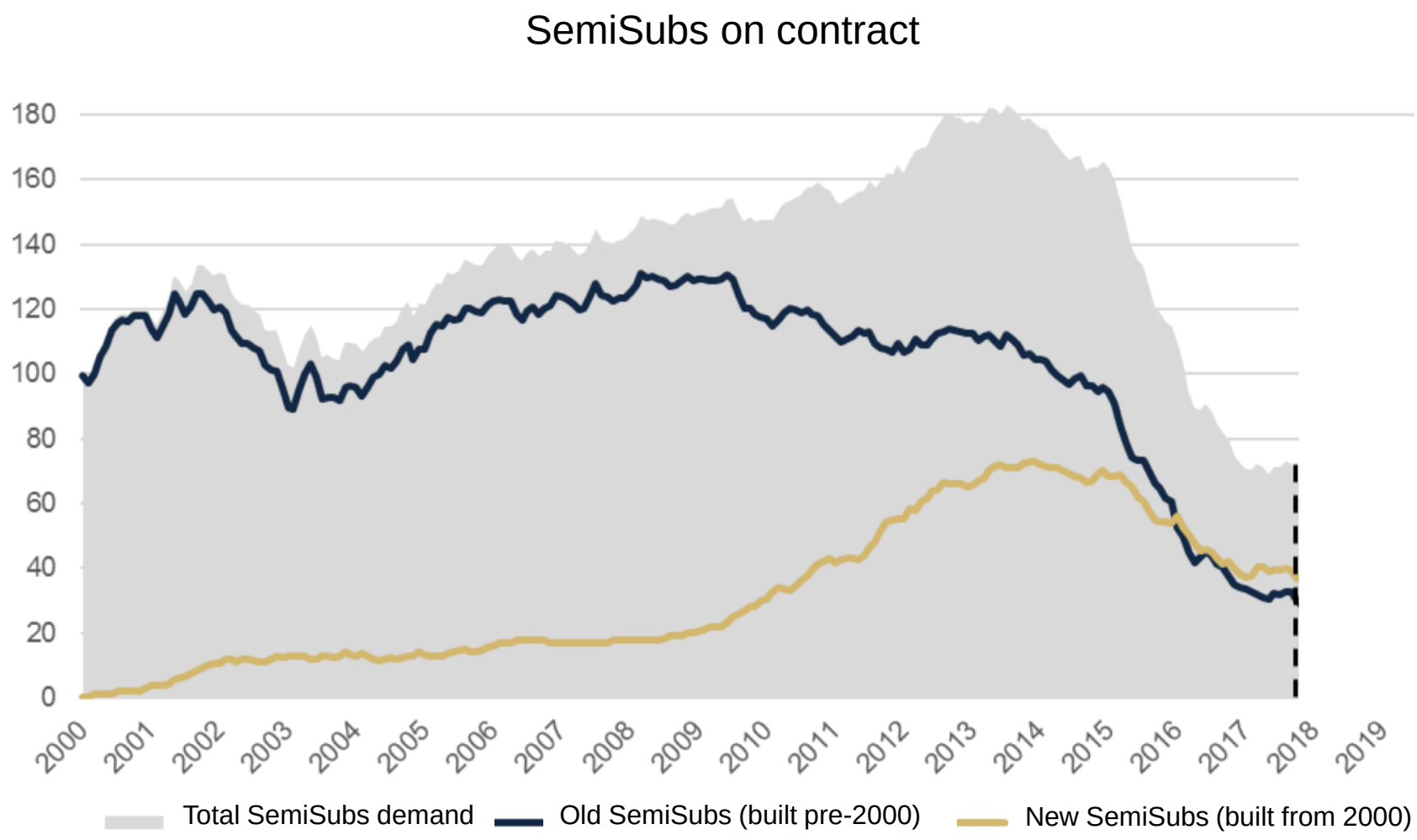
RISE OF THE NEW BUILDS



Source: Bassoe Offshore

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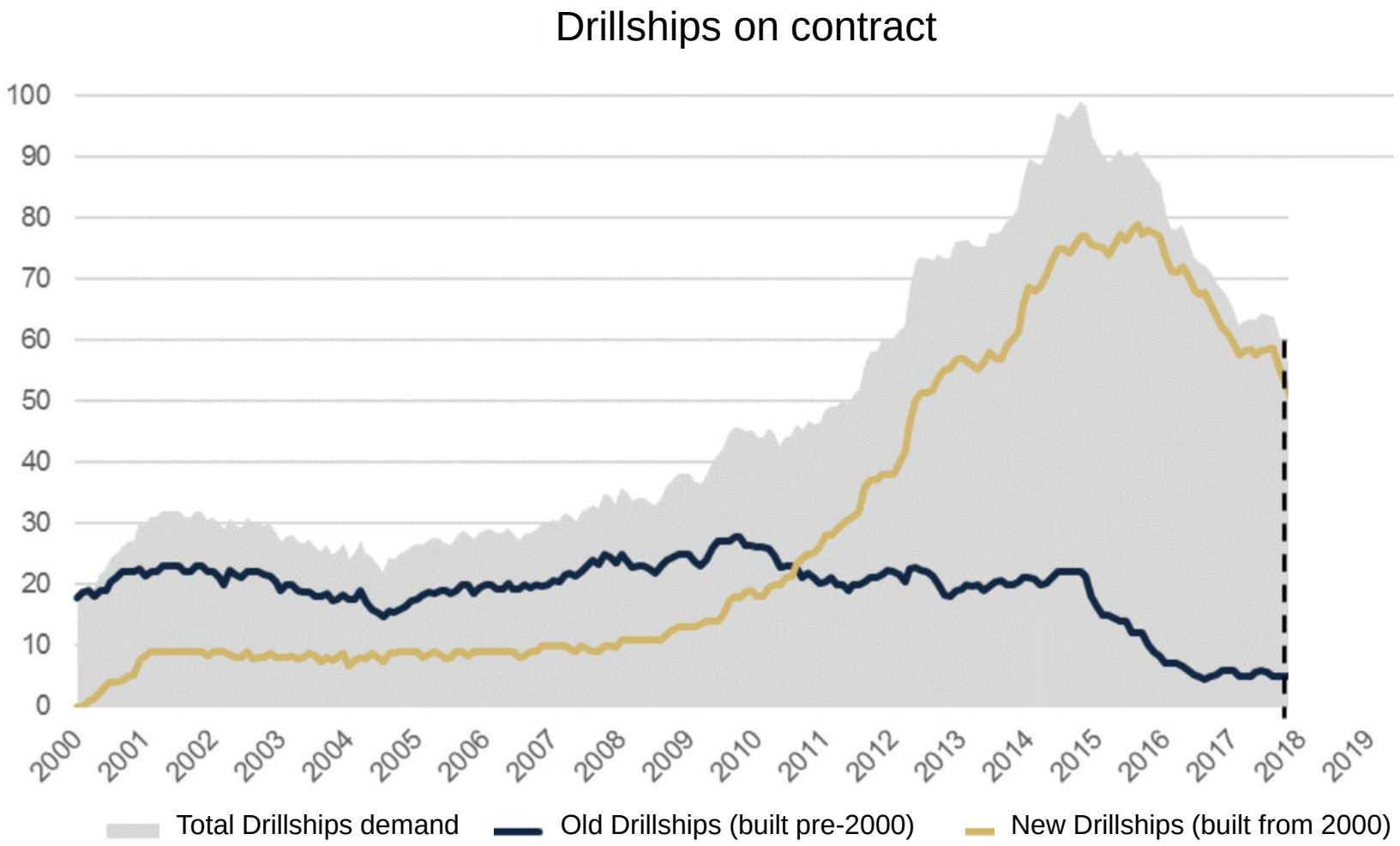
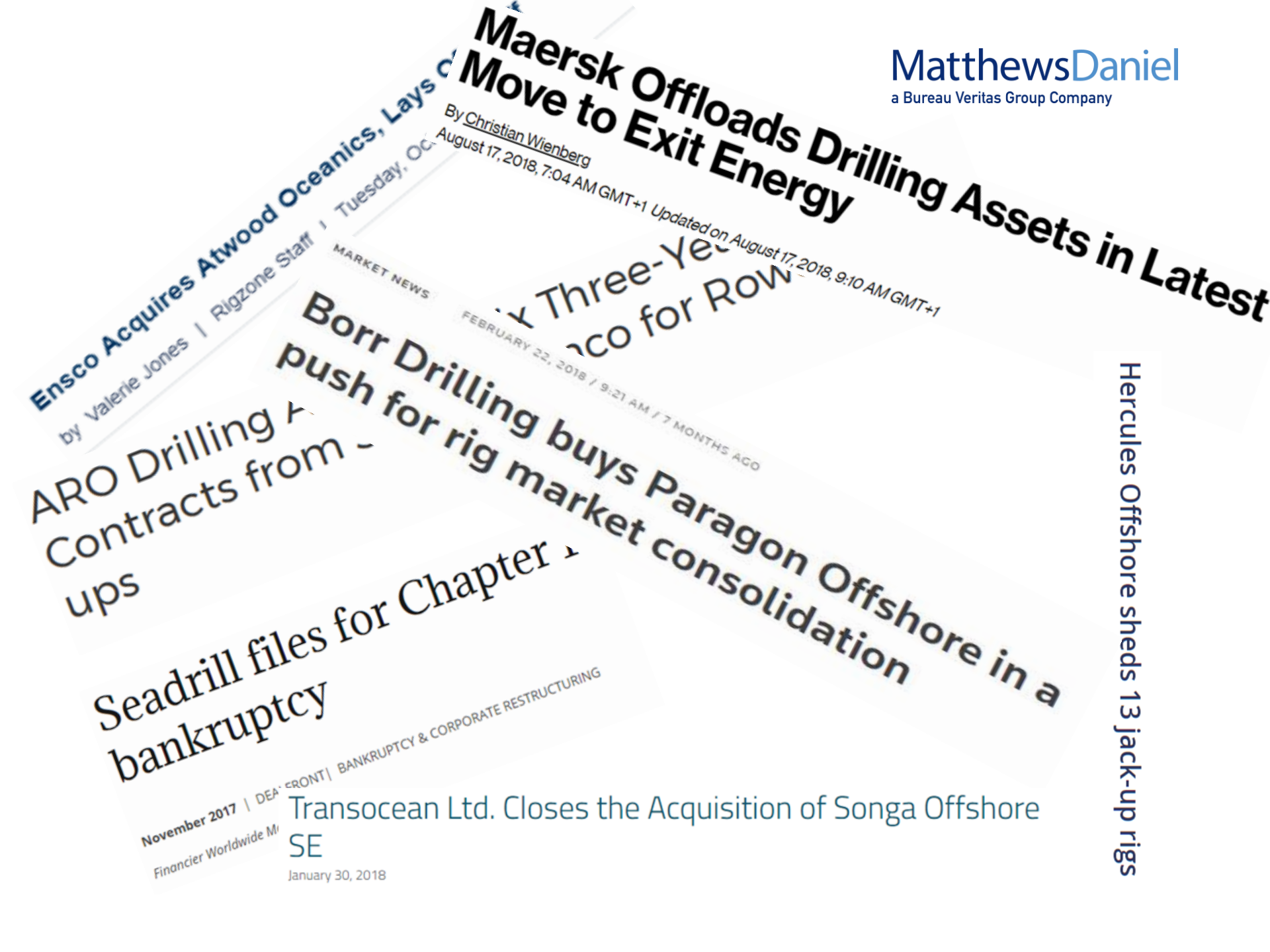
RISE OF THE NEW BUILDS



Source: Bassoe Offshore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Maersk Offloads Drilling Assets in Latest Move to Exit Energy
By Christian Wienberg
August 17, 2018, 7:04 AM GMT+1 Updated on August 17, 2018, 9:10 AM GMT+1
Ensco Acquires Atwood Oceanics, Lays
by Valerie Jones | Rigzone Staff | Tuesday, Oc
MARKET NEWS
FEBRUARY 22, 2018 / 9:21 AM / 7 MONTHS AGO
ARO Drilling
Contracts from
ups
Borr Drilling buys Paragon Offshore in a push for rig market consolidation
Seadrill files for Chapter
bankruptcy
November 2017 | DEA FRONT | BANKRUPTCY & CORPORATE RESTRUCTURING
Financier Worldwide M
Transocean Ltd. Closes the Acquisition of Songa Offshore SE
January 30, 2018
Hercules Offshore sheds 13 jack-up rigs

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Transocean moves to buy Ocean Rig for $2.7 billion

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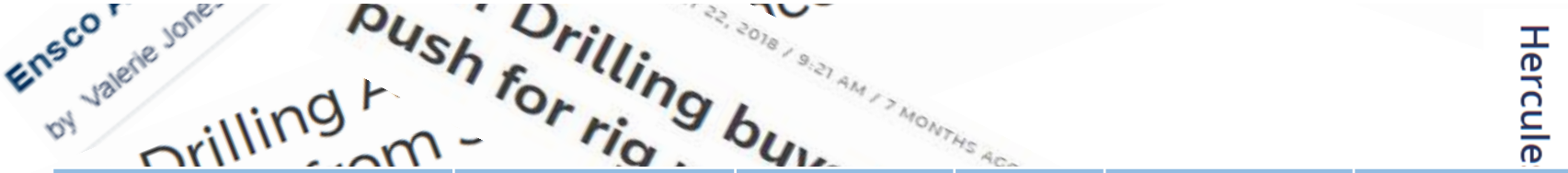
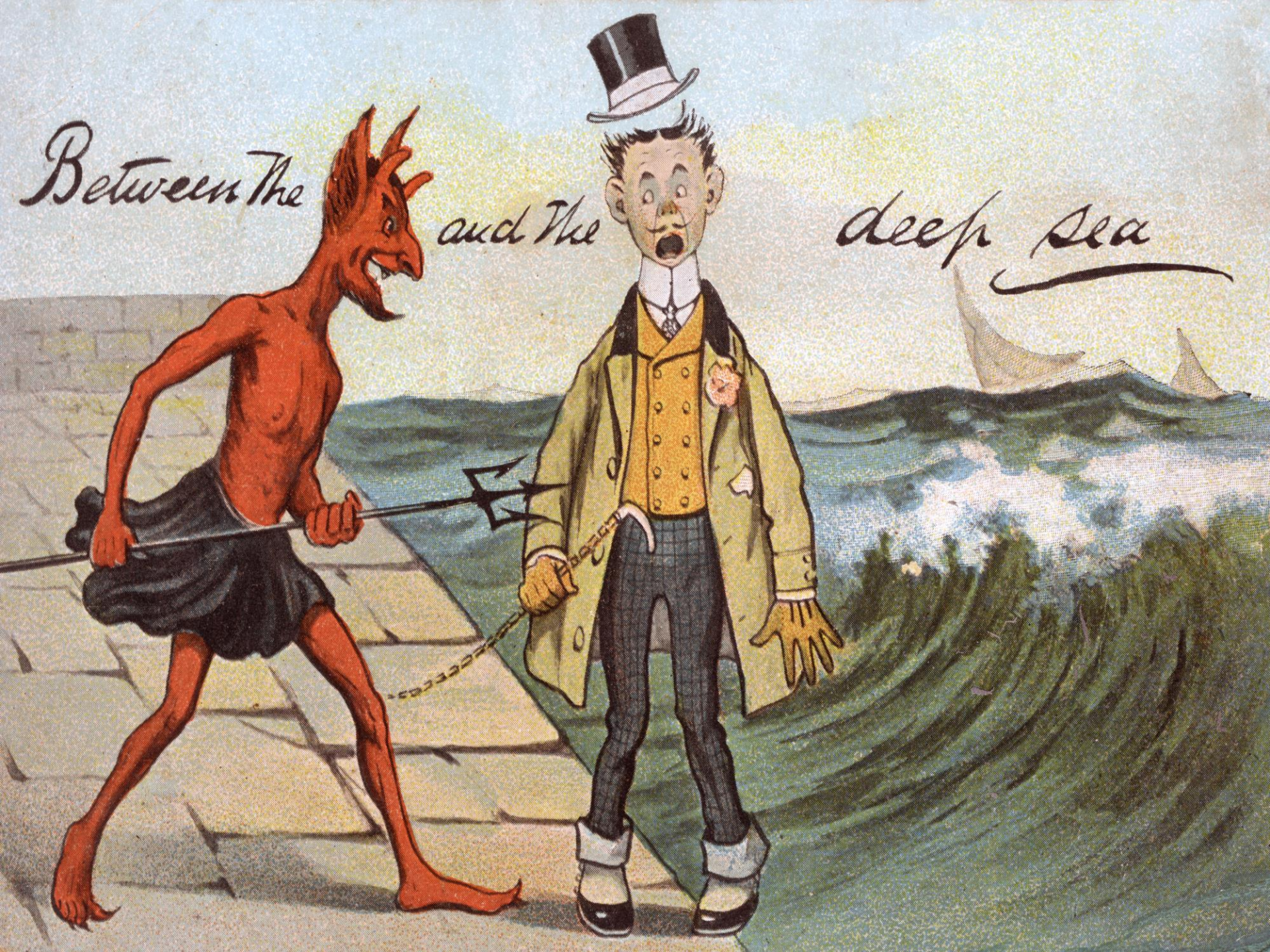
Transocean moves to buy Ocean Rig for $2.7 billion



Name	Type	Water depth	Year	Status	Value ($m)
Ocean Rig Skyros	Drillship	10,000	2013	Drilling	224-248
Ocean Rig Poseidon	Drillship	10,000	2011	Drilling	209-231
Ocean Rig Apollo	Drillship	10,000	2015	Cold stacked	192-212
Ocean Rig Mykonos	Drillship	10,000	2011	Warm/hot stacked	188-208
Ocean Rig Corcovado	Drillship	10,000	2011	Warm/hot stacked	188-208
Ocean Rig Athena	Drillship	10,000	2014	Cold stacked	186-205
Ocean Rig Mylos	Drillship	10,000	2013	Cold stacked	179-198
Ocean Rig Olympia	Drillship	10,000	2011	Cold stacked	167-184
Ocean Rig Paros	Drillship	10,000	2011	Cold stacked	167-184
Leiv Eiriksson	Semisubmersible	7,500	2001	Drilling	160-176
Eirik Raude	Semisubmersible	8,200	2002	Cold stacked	29 - 38
Ocean Rig Crete	Drillship	12,000	2020	Under construction	
Ocean Rig Santorini	Drillship	10,000	2019	Under construction	

Source: Ocean Rig/Bassoe analytics


Between The
and The
deep Sea

JACKUP LOSSES (2008 – 2017)

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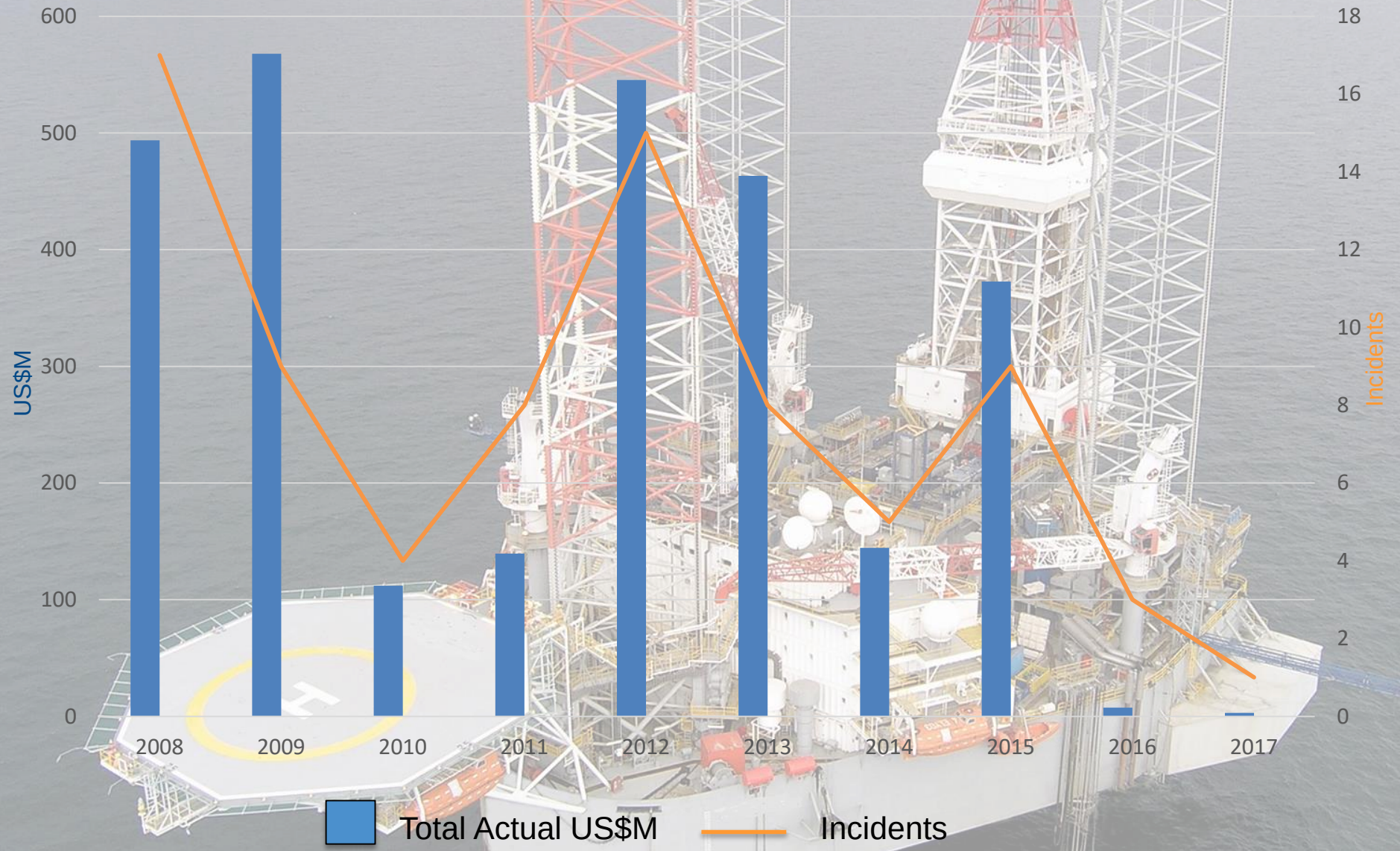

Source: WELD August 2018

SEMISUB LOSSES (2008-2017)

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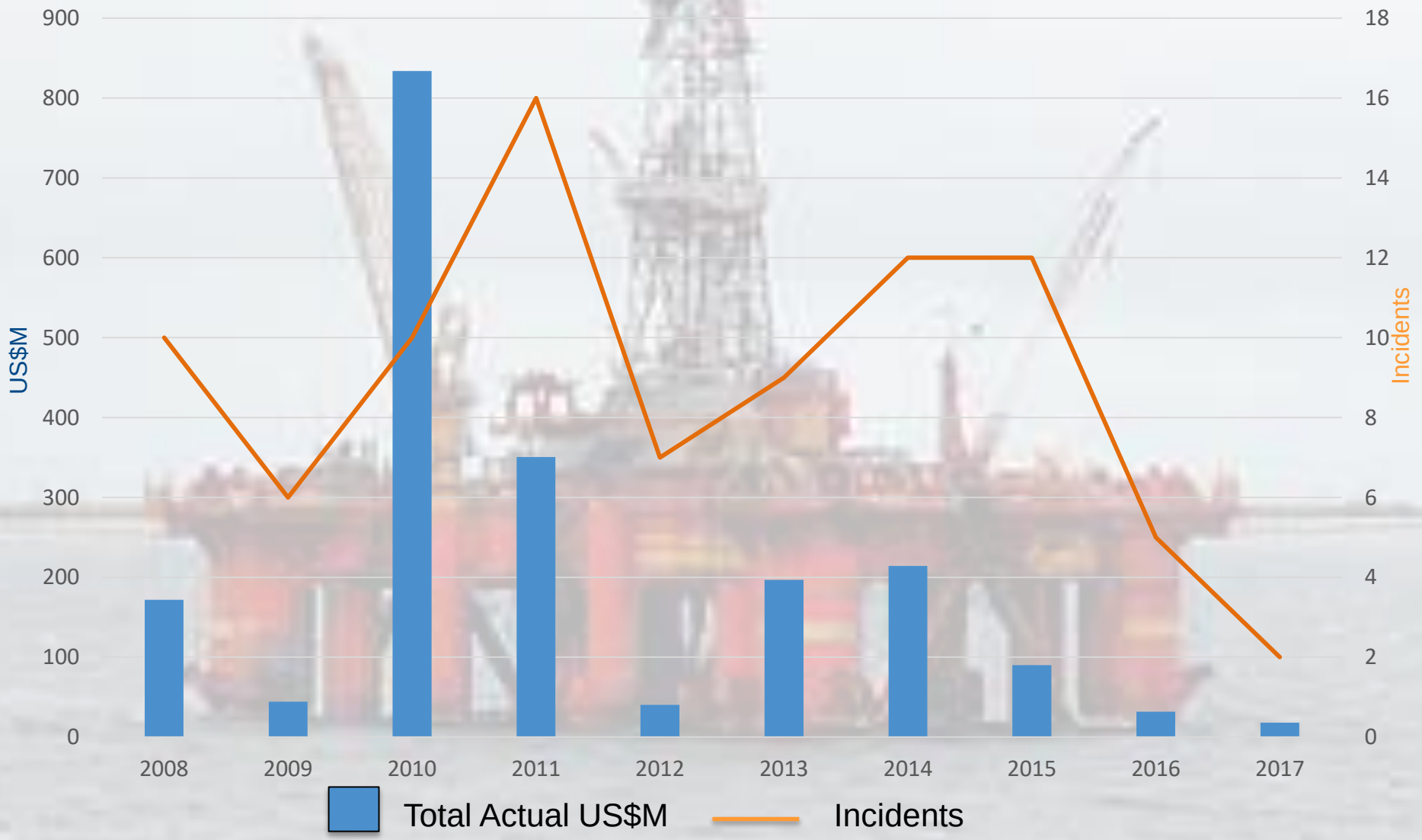

Source: WELD August 2018

DRILLSHIP LOSSES (2008 – 2017)

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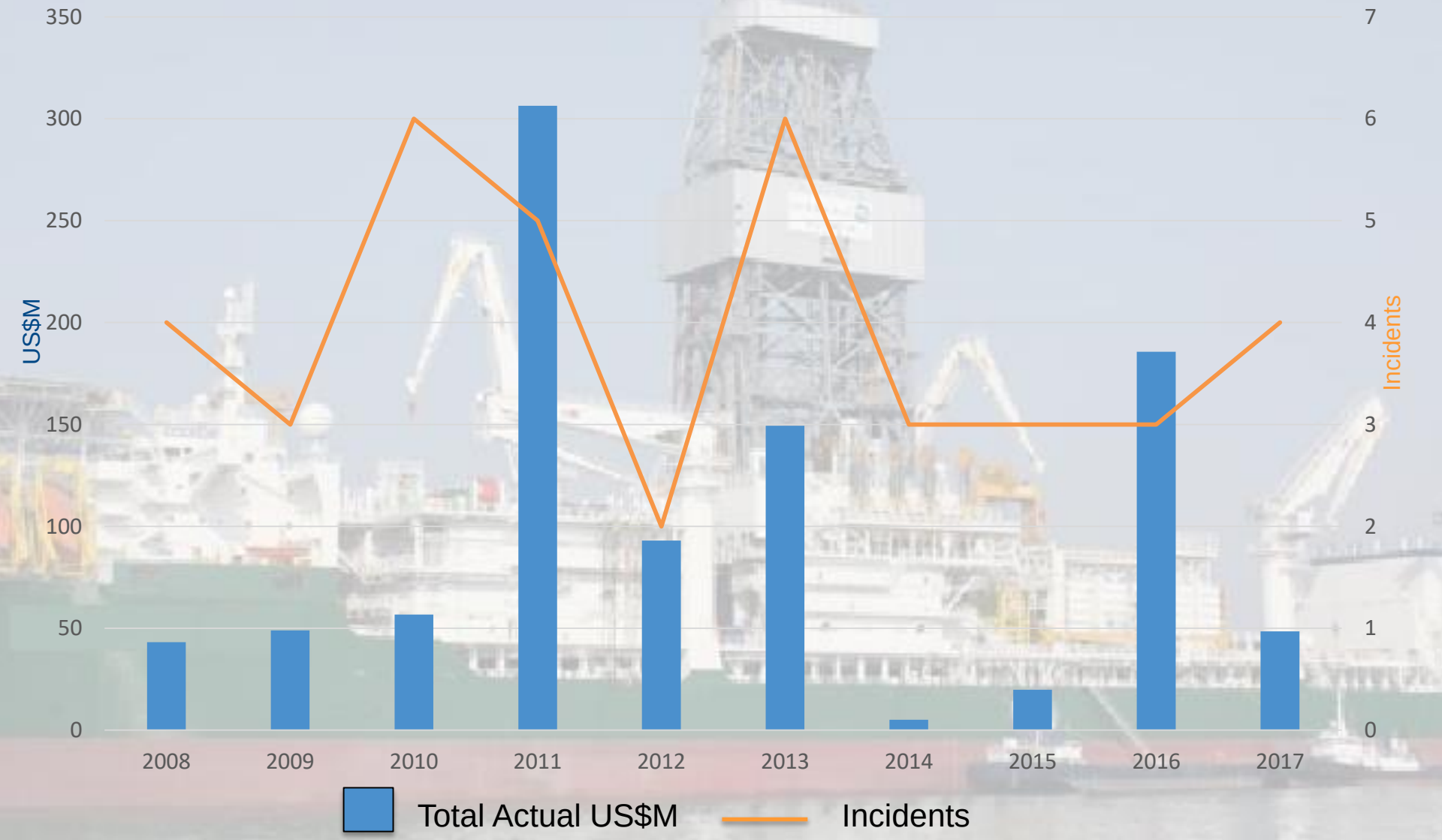

Source: WELD August 2018

COMPARISON

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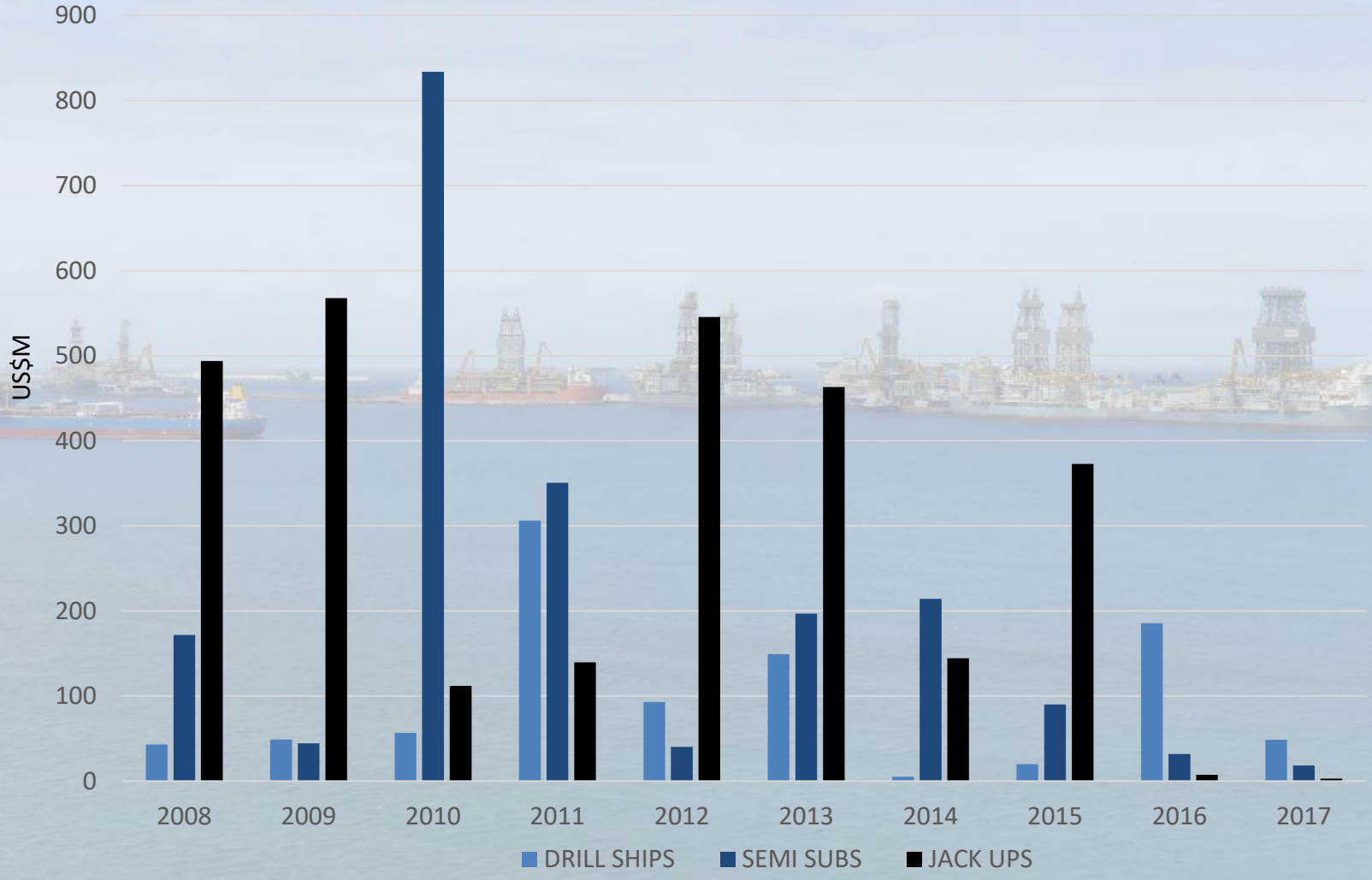

Source: WELD August 2018

COMPARISON

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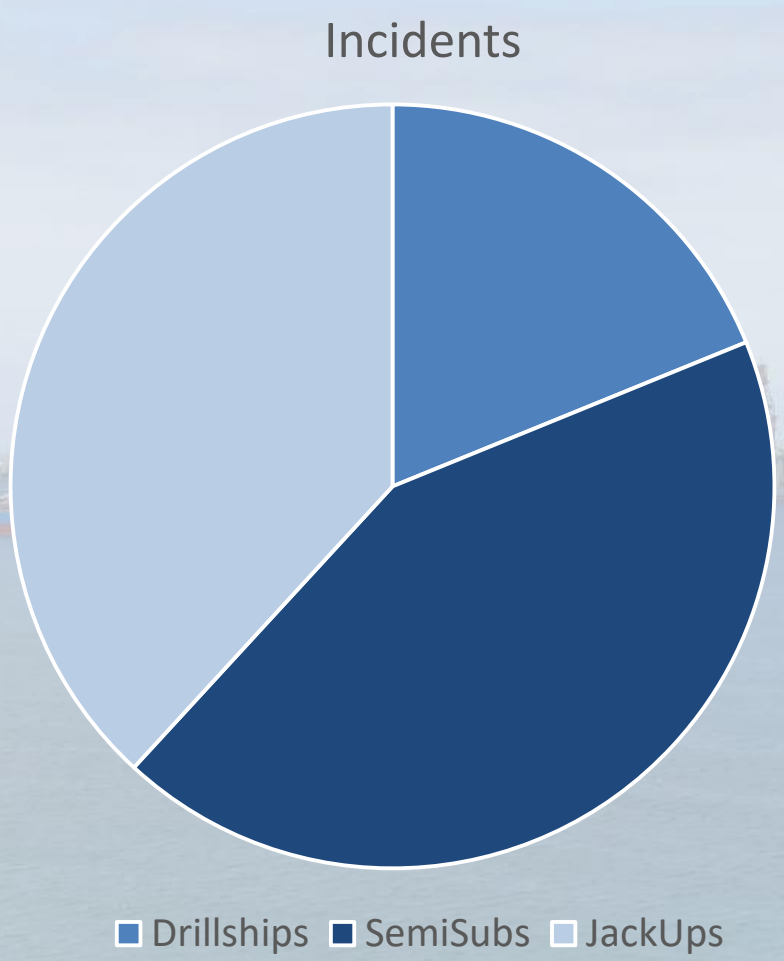

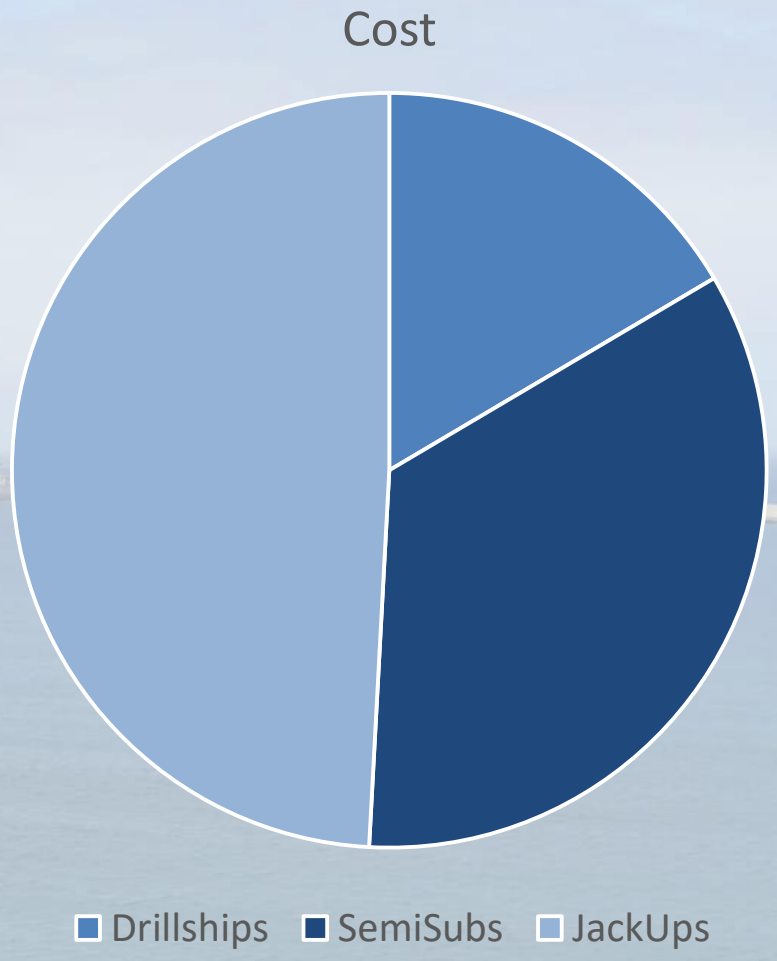

Source: WELD August 2018

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ALL PLATFORM LOSSES 2008-2017

Source: WELD August 2018

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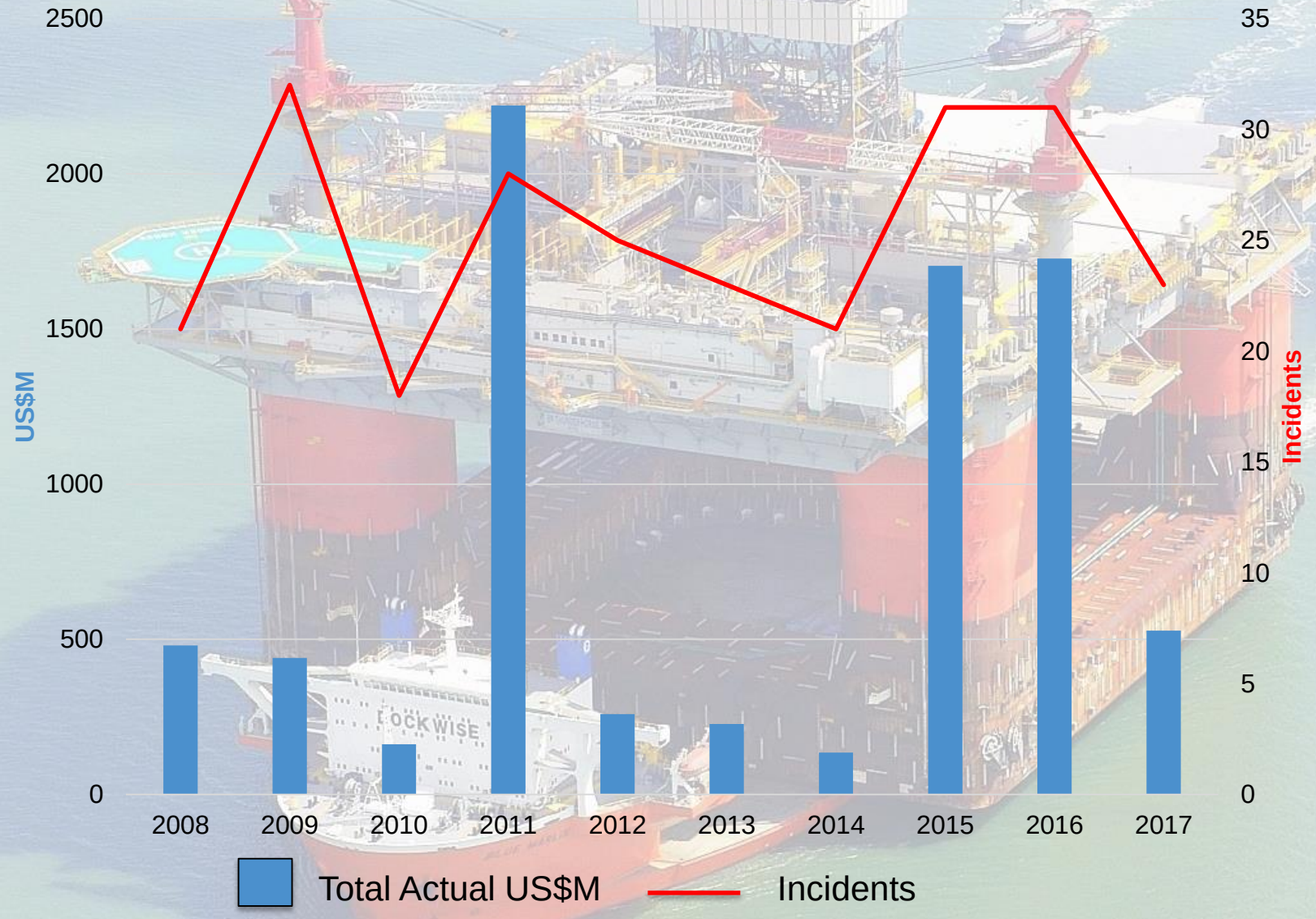
FLOATING PRODUCTION UNIT LOSSES 2008-2017



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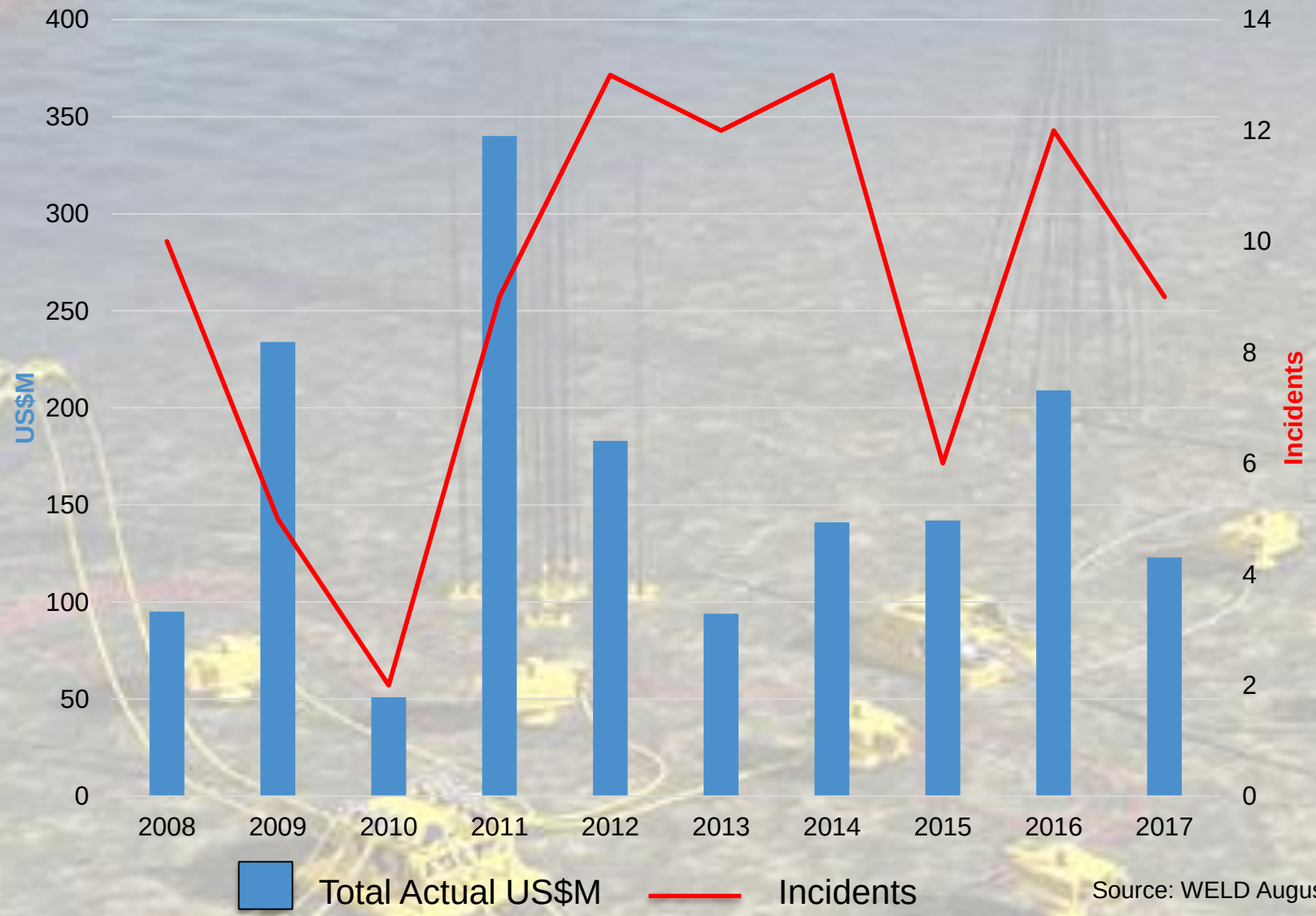
SSCS LOSSES 2008-2017



Source: WELD August 2018

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DEEPWATER HORIZON

- 5th Gen Semi Sub Built 2001
- 15 k PSI BOP
- 2,400 m / 8,000 ft WD Capacity
- 9,100 m / 30,000 ft DD Capacity
- Sank April 22, 2010

Macondo Well Control Incident

- Circa 1,500 m WD
- Blow out April 20, 2010
- Well killed August 4, 2010
- Well sealed September 19, 2010
- Estimated 4.9 million bbls spilled

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Big Foot TLP

- Walker Ridge Block 29, GoM
- 1,580 m WD
- Operator: Chevron
- 4 Column
- 16 Tendons
- Scheduled Production Q4 2015

Tendon Collapse

- May 2015 Hull Installation suspended due to strong currents
- 9 of 16 tendons collapsed to sea floor
- Remaining 7 tendons removed
- Big Foot returned to integration yard
- Re-Installed January 2018

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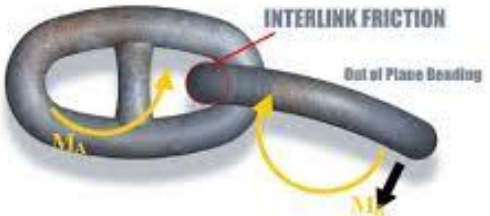
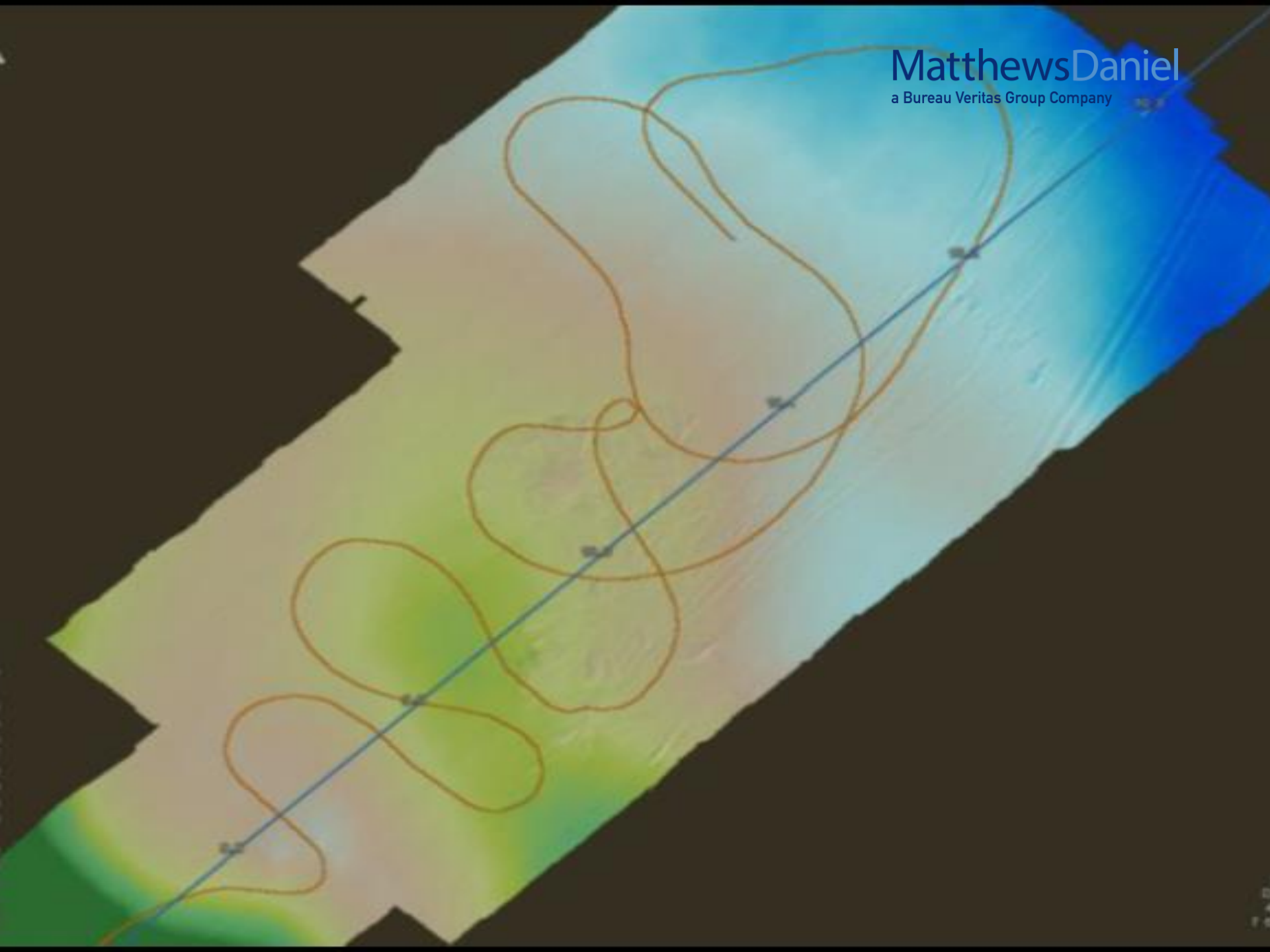
GIRASSOL

- 1,350 m WD
- Operator: Total
- Subsea systems tied back to FPSO
- Oil Offloading buoy
- Production started December 2001



Offloading Buoy Moorings

- Several chains failed after 8 months
- Fatigue life calculated as 20 years
- Included 3 x Factor of Safety
- Limitation of 2001 ‘State of Art’
- OPB issue identified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"Friction appears simple because we view it at the macro level, but is complex when examined at the detailed level: as individual components may behave differently to what we expect (increased clamping pressure reducing friction factor)..."

"…expected success based on replicating and/or scaling past success."

SOME COVERAGE THOUGHTS…

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- RIGS
  - Values
  - Reactivation
- FPU'S
  - Interface issues
  - What's in the water column
- CAR
  - Does WELCAR work for deepwater?
    - Schedule B
    - Clause 7 v. LEG wordings
- OPERATING
  - LoPI
  - RoD

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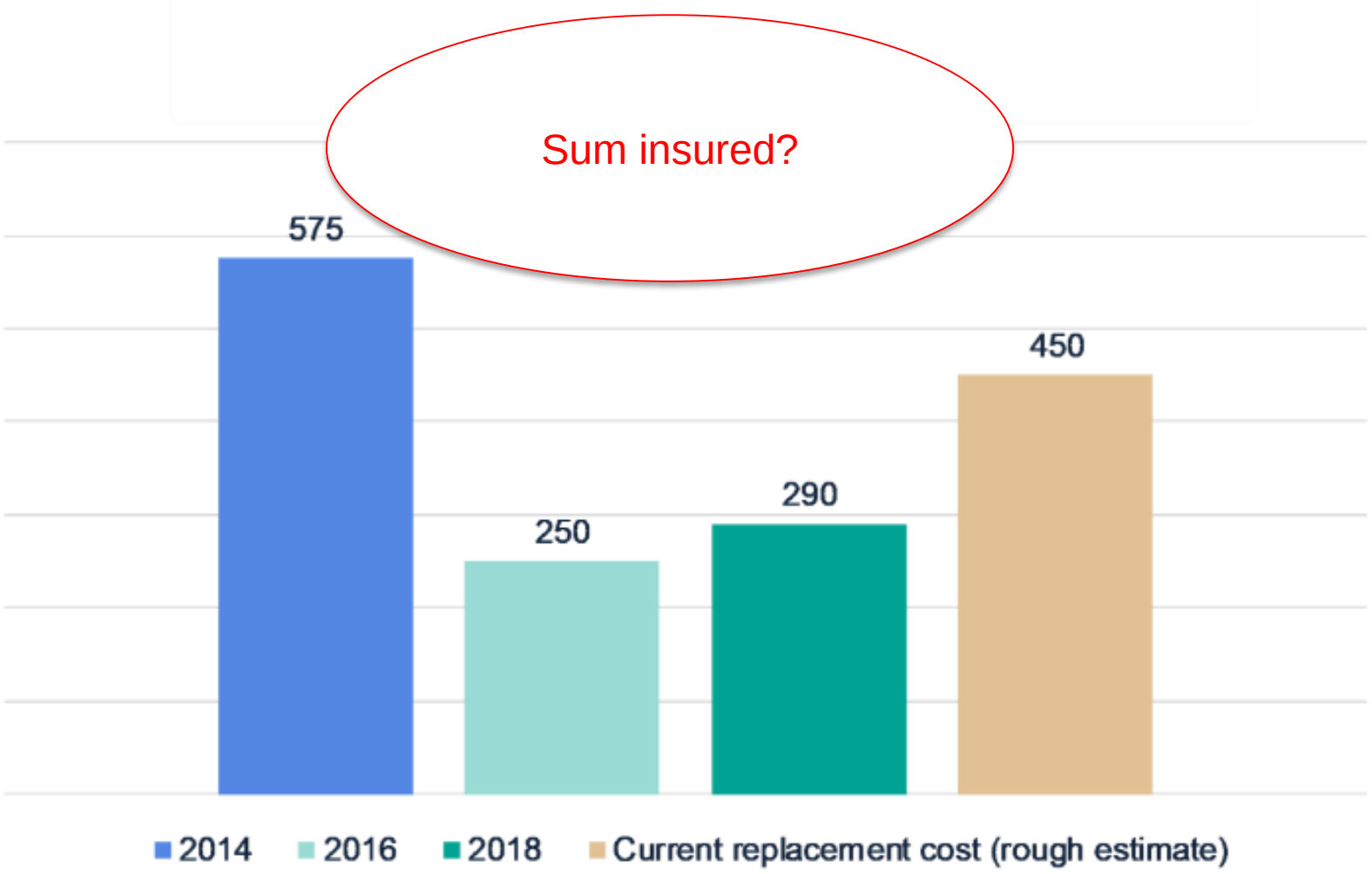
7TH GEN DRILLSHIP VALUE DEVELOPMENT 2014-2018 (US$M)



Source: Bassoe Offshore

SOME COVERAGE THOUGHTS…

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- RIGS
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- OPERATING
  - LoPI
  - RoD

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REACTIVATION

- Different risks v. passive lay-up
- Immediate hazards: Tows and mobilisation
- Delayed hazards: ‘Inexperienced’ crew + sub-optimal rig
- Failure of equipment to re-activate: Risk for insurers?

SOME INSURANCE THOUGHTS…

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- RIGS
  - Values
  - Reactivation
- FPU'S
  - Interface issues
  - What's in the water column
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- OPERATING
  - LoPI
  - RoD

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SOME INSURANCE THOUGHTS…

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  - Reactivation
- FPU'S
  - Interface issues
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DEEPWATER DEVELOPMENT RE-VITALISED

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- Offshore project approvals in 12 mos. to June 2018 more than double 2016
- Average 2018 investment $1Bn/project, down from $1.8Bn in 2013*
- 17 deepwater projects approved in 18 months to June 2018 ($45Bn+)
  - 16 of 17 deferred from pre-2015
  - Leaner / more standardized / lower service costs
  - Example: *Mad Dog 2*

    $20Bn / 29 wells / spar → $9Bn / 14 wells / semi-sub
- Deepwater operators are biggest beneficiaries of rig glut
  - Example: *West Neptune* (LLOG/ Seadrill)

    12/14 – 12/17: $573k p.d

    1/18 → : $155k p.d

*source: Rystad Energy

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Timing impact?

*source: Rystad Energy

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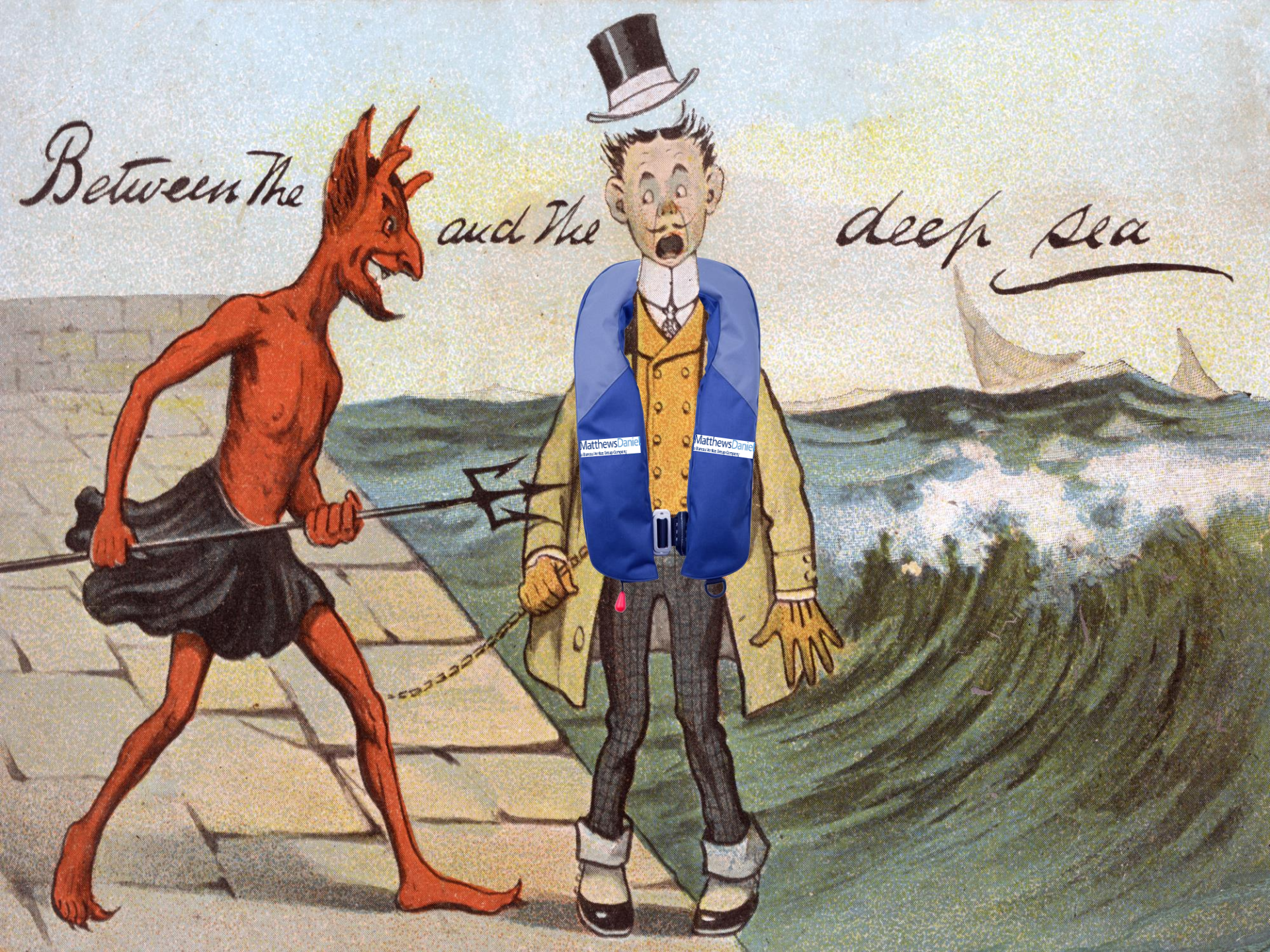
DEEPWATER PROJECT COST REDUCTIONS

- Increased standardisation *"design one, build two"*
- Reduction of scope: engineering/manufacture/installation
- Design innovation
- Optimisation of contractor/supplier costs
- Sharing of services (e.g. rig pools)
- Early EPCI engagement
- Planning to reduce scope changes and delays
- Operator/Contractor partnerships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