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• Integrated Hull, Riser And Mooring System Solutions • Optimized Execution And Delivery Models

Keppel F a JV of Keppel FELS & J. Ray McDermot

22.4 28.0

14.6

16.6

24.4 17.1 41.5

34.4

38.0

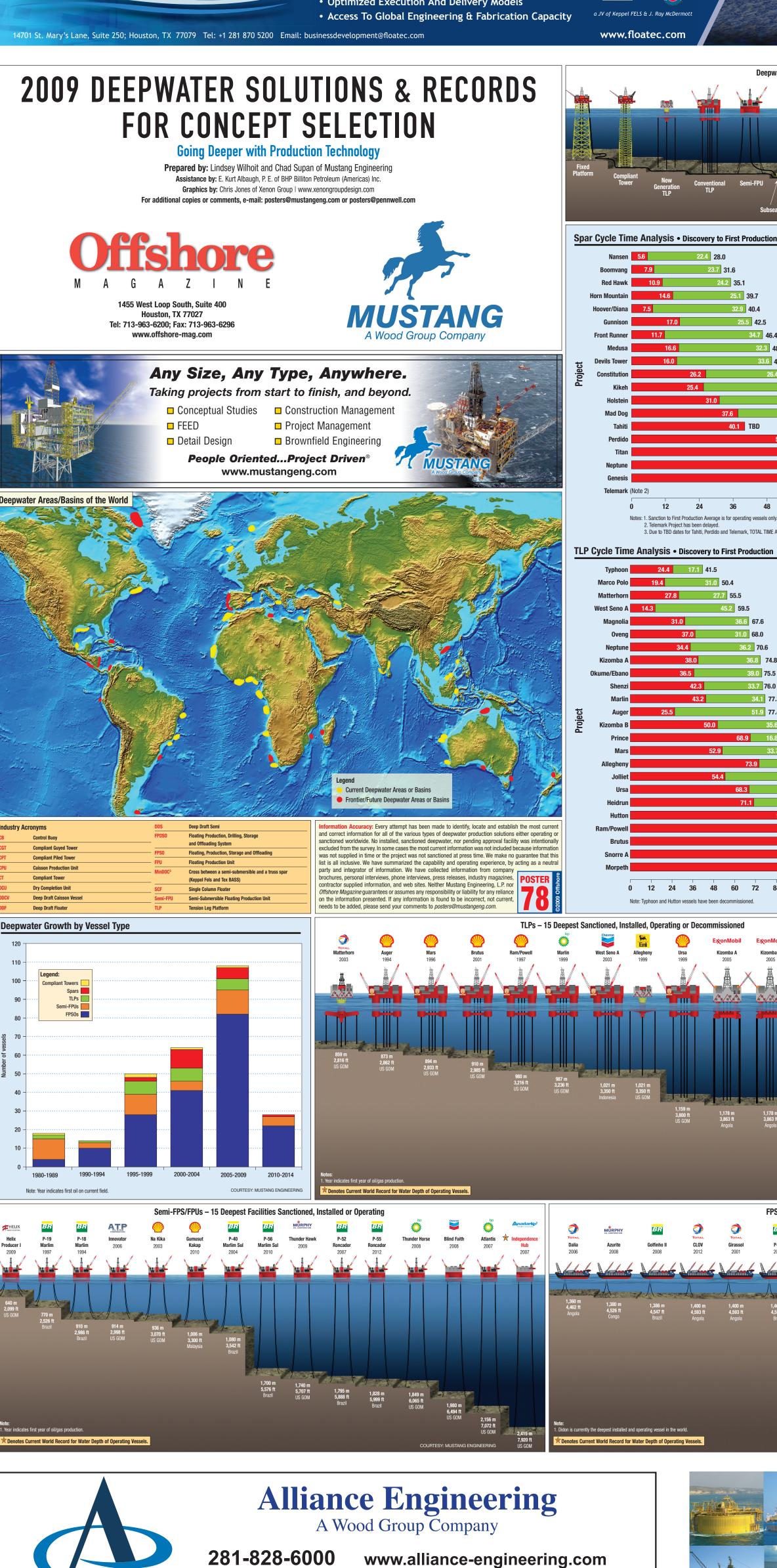
36.5

27.8

27.7 55.5

23.7 31.6

24.2 35.1



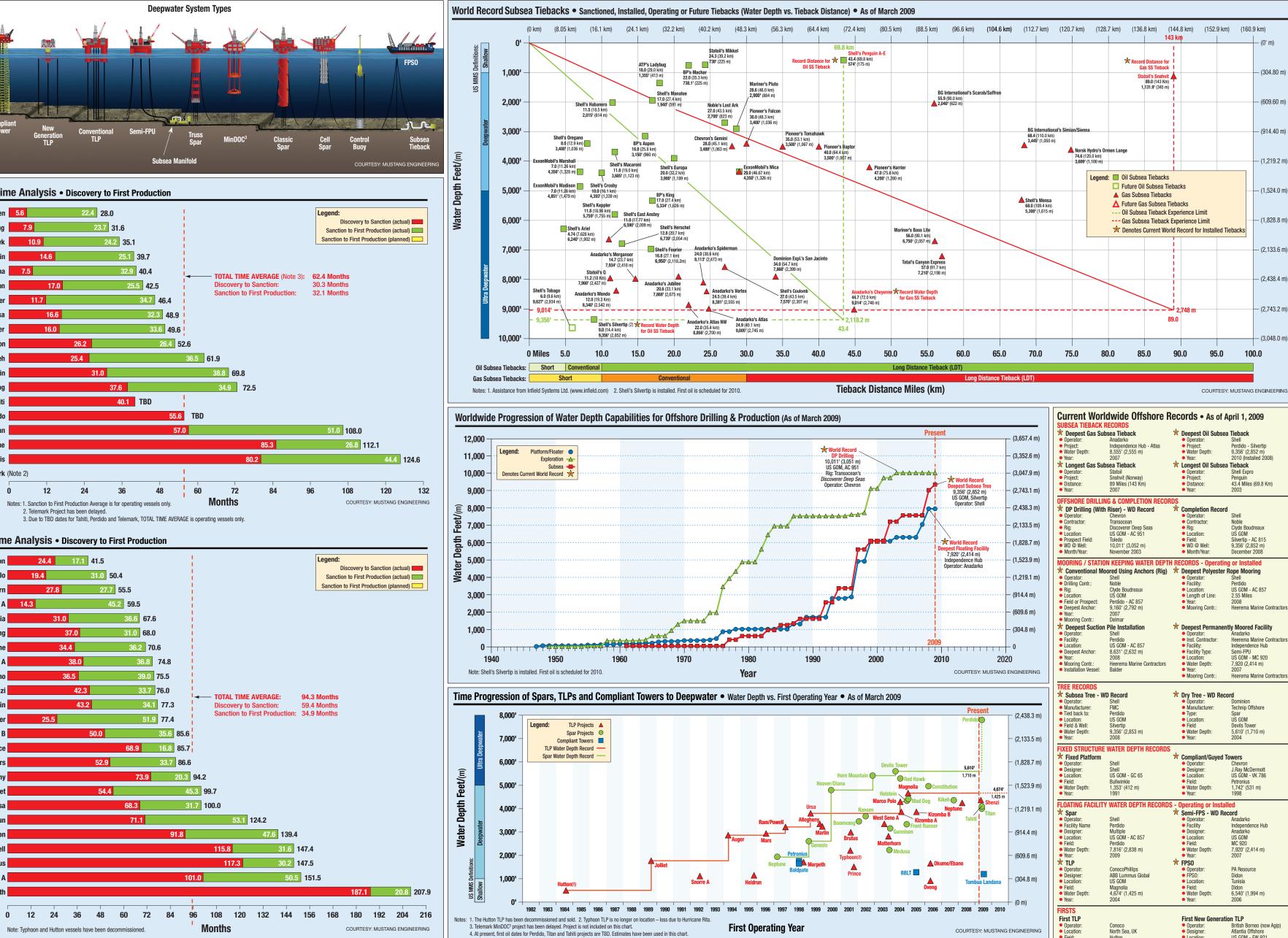
OFFSHORE ENGINEERING SOLUTIONS

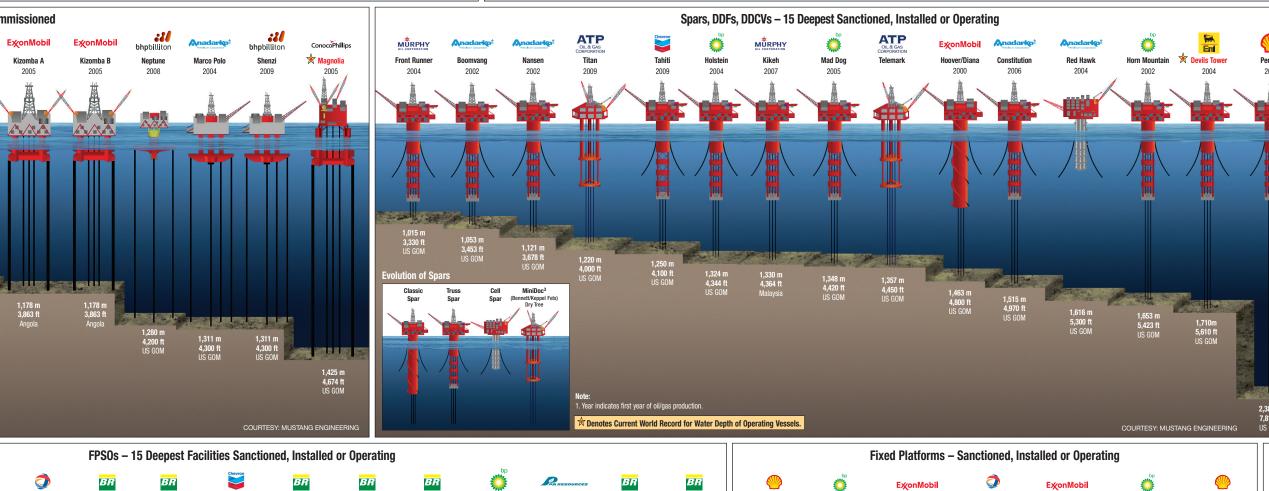


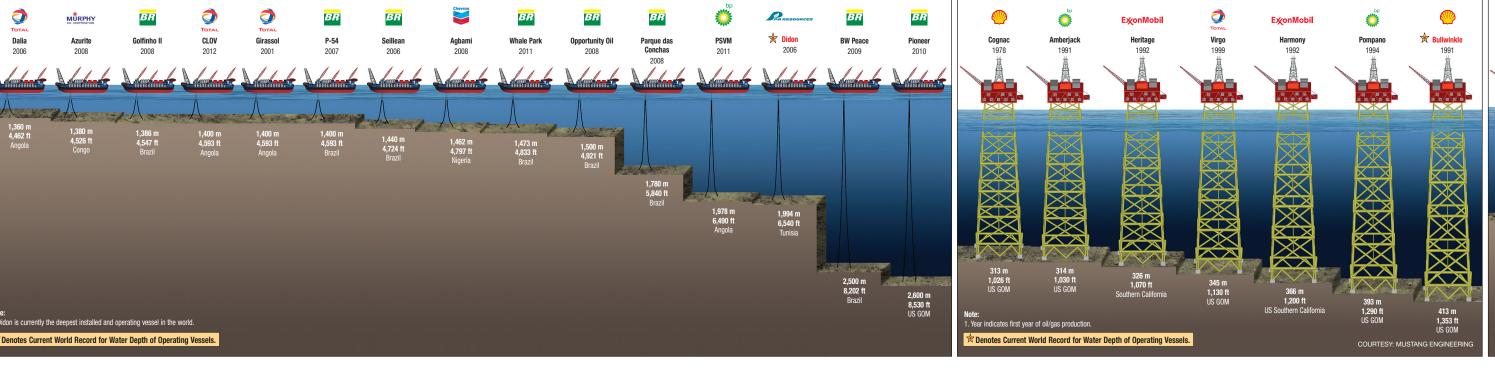
















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(LDT)				
		COURTES	Y: MUSTANG ENGINEERING	
	Current Worldwide Off	shore Records • As of	April 1. 2009	
	SUBSEA TIEBACK RECORDS	🖈 Deepest Oil Subs	•	
57.4 m)	Operator: Anadarko Project: Independence H	Operator: Operator: Project:	Shell Perdido - Silvertip	
52.6 m)	Water Depth: 8,555' (2,555 m Year: 2007	• Year:	9,356' (2,852 m) 2010 (Installed 2008)	
47.9 m)	 Longest Gas Subsea Tieback Operator: Statoil Project: Snohvit (Norway) 	 Congest Oil Subsect Operator: Project: 	Shell Expro Penguin	
43.1 m)	Distance: 89 Miles (143 K) Year: 2007		43.4 Miles (69.8 Km) 2003	
38.3 m)	OFFSHORE DRILLING & COMPLET ★ DP Drilling (With Riser) - WD Reference of the second		rd	
33.5 m)	Operator: Chevron Contractor: Transocean	 Operator: Contractor: 	Shell Noble	
	Rig: Discoverer Deep Location: US GOM - AC 95 Prospect Field: Toledo		Clyde Boudreaux US GOM Silvertip - AC 815	
28.7 m)	WD @ Well: 10,011' (3,052 r Month/Year: November 2003	m) • WD @ Well:	9,356' (2,852 m) December 2008	
23.9 m)	MOORING / STATION KEEPING WA			
19.1 m)	Operator: Shell Drilling Contr.: Noble	Operator: Facility:	Shell Perdido	
.4 m)	Rig: Clyde Boudreaux Location: US GOM	 Location: Length of Line: 	US GOM - AC 857 2.55 Miles	
0.6 m)	Field or Prospect: Perdido - AC 85' Deepest Anchor: 9,160' (2,792 m Year: 2007		2008 Heerema Marine Contractors	
,	Mooring Contr.: Delmar Deepest Suction Pile Installatio	n 🔺 Deepest Permane	ntly Moored Facility	
.8 m)	Operator: Shell Facility: Perdido	 Operator: Inst. Contractor: 	Anadarko Heerema Marine Contractors	
	Location: US GOM - AC 85 Deepest Anchor: 8,631' (2,632 m Year: 2008) • Facility Type:	Independence Hub Semi-FPU	
EERING	Mooring Contr.: Heerema Marine Installation Vessel: Balder	• Year:	US GOM - MC 920 7,920 (2,414 m) 2007	
EENING		Mooring Contr.:	Heerema Marine Contractors	
	TREE RECORDS Subsea Tree - WD Record Operator: Shell	Dry Tree - WD Re • Operator:	cord Dominion	
438.3 m)	Manufacturer: FMC Tied back to: Perdido	 Operator. Manufacturer: Type: 	Technip Offshore Spar	
150.5 III)	Location: US GOM Field & Well: Silvertip	Location:Field	US GOM Devils Tower	
33.5 m)	Water Depth: 9,356' (2,853 m Year: 2008) • Water Depth: • Year:	5,610' (1,710 m) 2004	
	FIXED STRUCTURE WATER DEPTI	H RECORDS The Compliant/Guyed	Towers	
328.7 m)	Operator: Shell Designer: Shell	 Operator: Designer: 	Chevron J.Ray McDermott	
523.9 m)	Location: US GOM - GC 65 Field: Bullwinkle Water Depth: 1,353' (412 m)	5 • Location: • Field: • Water Depth:	US GOM - VK 786 Petronius 1,742' (531 m)	
,	• Year: 1991	• Year:	1998	
219.1 m)	FLOATING FACILITY WATER DEPT Spar • Operator: Shell	Semi-FPS - WD R • Operator:		
4.4 m)	Facility Name Perdido Designer: Multiple	Facility Designer:	Independence Hub Anadarko	
,	Location: US GOM - AC 85 Field: Perdido	Field:	US GOM MC 920	
9.6 m)	● Water Depth: 7,816' (2,838 m ● Year: 2009 ★ TLP) • Water Depth: • Year: • FPS0	7,920' (2,414 m) 2007	
	Operator: ConocoPhillips Designer: ABB Lummus Gl	Operator:	PA Resource Didon	
4.8 m)	Location: US GOM Field: Magnolia Magnolia	Location: Field:	Tunisia Didon	
n)	Water Depth: 4,674' (1,425 m Year: 2004) • Water Depth: • Year:	6,540' (1,994 m) 2006	
	FIRSTS First TLP	First New Genera		
NEERING	Operator: Conoco Location: North Sea, UK	 Operator: Designer: 	British Borneo (now Agip) Atlantia Offshore	
	 Field: Hutton Water Depth: 486' (148 m) Year: 1984 	 Location: Field: Water Depth: 	US GOM - EW 921 Morpeth 1,700' (518 m)	
	First Spar • Operator: Oryx (now Kerr-)	• Year:	1998	
	Designer: Spars Internation Location: US GOM	nal • Operator: • Designer:	Shell Cameron	
lido 09	Field: Neptune Water Depth: 1,930' (588 m)	 Location: Water Depth: 	US GOM - OCS 407 #7 : WC 192 56' (17 m)	
	• Year: 1996 First FPS0	 Year: First Semi-FPS 	December 1960	
	Operator: Shell Facility Name: Castellon	 Operator: Facility Name: 	Hamilton Deep Sea Pioneer	
	Design: 60,000 DWT tan Location: Mediterranean, 4 Water Depth: 384' (117 m)		Converted MODU North Sea, UK Argyll	
	• Year: 1977	Water Depth: Year:	263' (80 m) 1975	
	HIGHEST THROUGHPUT CAPACITY Deepwater Fixed Platform	HIGHEST THROUGHPUT CAPACITY - Operating Vessels Only (Gas converted by dividing by 6)		
	Operator: Shell Facility Name: Bullwinkle	Compliant Tower • Operator: • Facility Name:	Chevron BBLT	
	 Total BOE (bpd): 253,000 Oil (bpd): 253 Mb/d 	 Total BOE (bpd): Oil 	277,000 277 Mb/d	
	Location: GC 155, GOM Year: 1991	Location: Year:	Angola 2006	
	Wet Tree TLP Operator: Hydro Facility Name: Sporre A	Dry Tree TLP • Operator: • Facility Name:	ExxonMobil Kizomba A	
	Facility Name: Snorre A Total BOE (bpd): 366,000 Oil: 360 Mb/d	 Facility Name: Total BOE (bpd): Oil: 	Kizomba A 317,000 250 Mb/d	
	Gas: 36 MMcf/d Location: Norway	 Gas: Location: 	400 MMcf/d Angola	
	• Year: 1996 Semi-FPS	• Year: Spar	2004	

StatoilHydr Asgard B 352,000 135 Mb/d 352 MMcf/

17,000 50 Mb/ 00 MM

Niger Delta OPL 209

Compliant Towers – Sanctioned, Installed or Operating

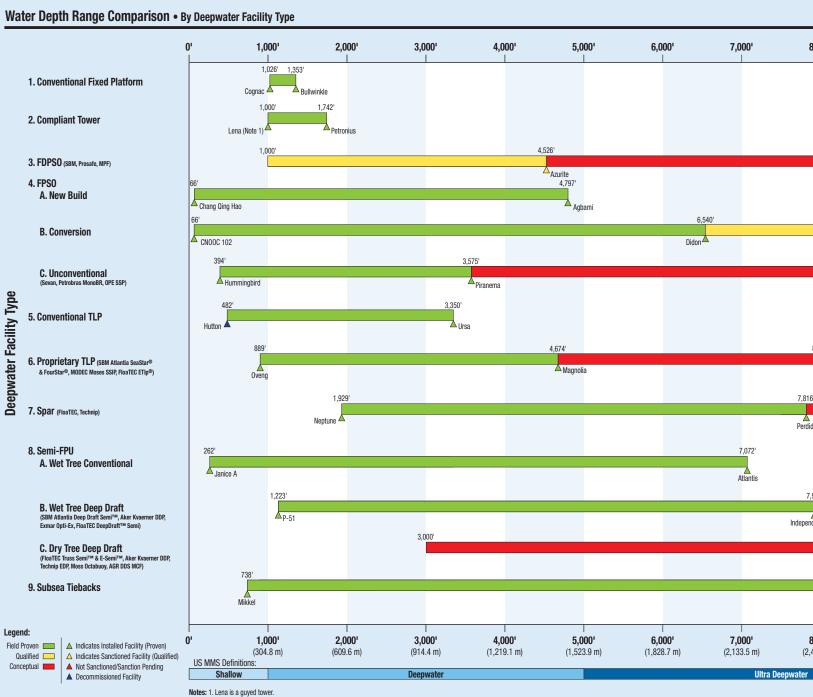
Norway - Haltenbank, Blk 6506

Operator:
Facility Name:
Total BOE (bpd):
Oil:
Gas:
Location:
Year:
Semi-FPS
Operator:
Facility Name:
Total BOE (bpd):
Cas:

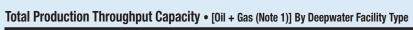
Jas: Gas Injection: • Location: • Year:

cility Name: tal BOE (bpd):

• Subsea Control Systems



Boosting



2. Compliant Tower

3. FDPSO (SBM, Prosafe, MPF)

B. Conversion

5. Conventional TLP

7. Spar (FloaTEC, Technip)

9. Subsea Tiebacks

ExxonMobil Hoover/Diana DDCV 154,000 100 Mb/d 325 MMcf/d US GOM - AC 25

ExxonMobil Kizomba A 2.2 B bbls Hydundai Heavy Industries Bik 15, Angola 2004

Spar • Operator: • Facility Name: • Total BOE (bpd):

Oil:
Gas:
Location:
Year:

Largest FPSO Storage Capability Operator: ExxonMobil FPSO Vessel: Kizomba A Oil Storage: 2.2 B bbls Pabricator: Hydundai Heavy Ir Location: Bilk 15, Angola Year: 2004

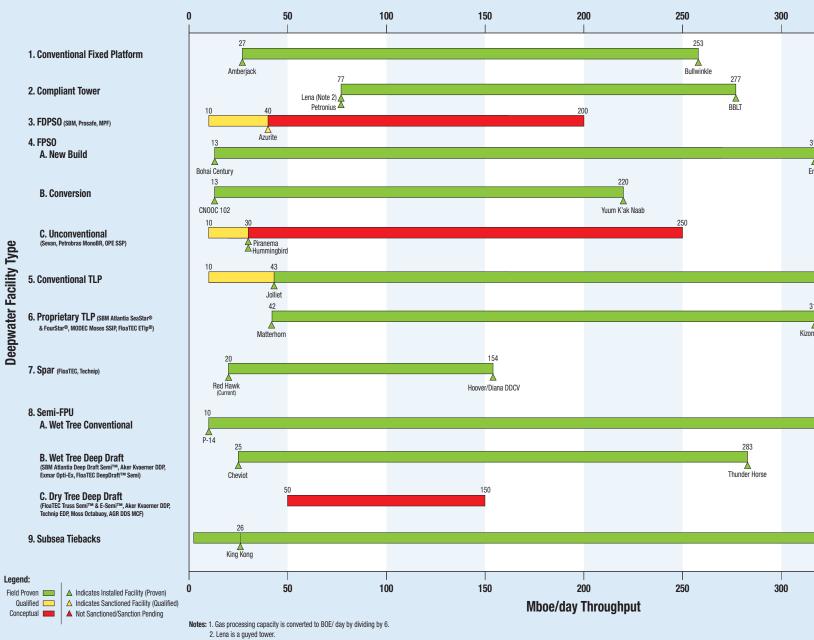
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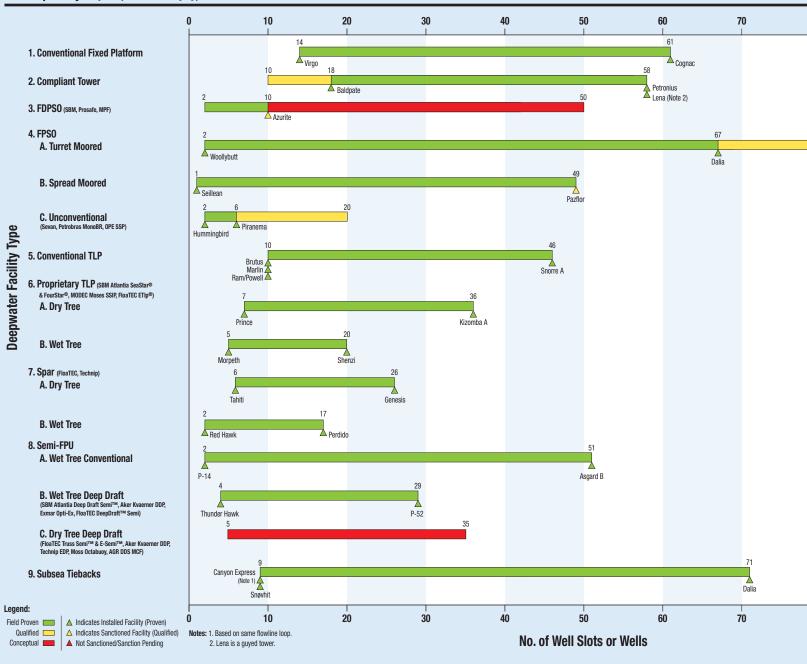
8. Semi-FPU

4. FPS0

A. New Bu





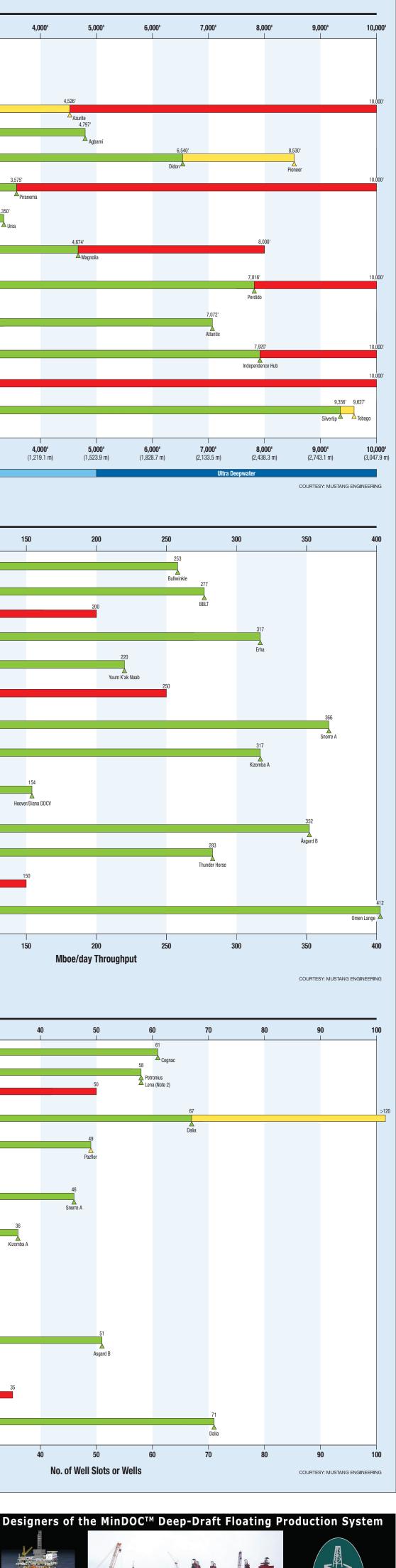


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