MCE Deepwater Development 2017

Initiatives towards Deepwater Projects DRILLEX reduction







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MCE Deepwater **Development 2017** BACKGROUND TOTAL DEEPWATER ASSETS Angola · B17 Kaombo (B32) UNITED KINGDOM · B14 Laggan/Tormore (600 m) Australie · Ichthysup.* Brésil · Gato do Mato Libra Brunei · CA1 (JGE-GRG) Congo · Lianzi NIGERIA Moho Egina (1,600 m) Nigéria · Akpo UNITED STATES **AZERBALJAN** Egina NIGERIA Chinook (2.700 m) Absheron (500 m) Akpo (1,325 m) Tahiti* (1,200 m) Usan Usan*(850 m) North Platte* (1,300 m) SNEPCO Bonga Ukot SW REPUBLIC OF THE CONG · Owowo W Moho Nord (1,200 m) Norvège · Asgard area ANGOLA REPUBLIC OF THE CONGO Garantiana Girassol (1,400 m) Moho Bilondo (1,100 m) Jasmim (1,400 m) Snohvitup.* Moho Phase 1 bis (700 m) D Under study Rosa (1,350 m) Under developmen Trell Lianzi* (1,000 m) BRAZIL Dalia (1,500 m) In production Libra' (2.000 m) Pazflor (1,030 m) ANGOLA UK · West of Xerelete (2,400 m) Kaombo (1,890 m) Clov (1,350 m) * Operated by others Shetlands area US · Chinook Total's deep offshore positions in 2015. 4.000 km² surface area North Plate Tahiti 15 strikes

- 4 FPSO units commissioned in 14 years (Girassol, Dalia, Pazflor, CLOV)
- 2 billion barrels: the aggregate production threshold reached in April 2015



DEEPWATER OPERATED ASSETS REPRESENT A SIGNIFICANT PART OF TOTAL PORTFOLIO PROVINTION OPPORTUNITIES TO FACE THE O&G INDUSTRY DOWNTURN

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DRILLING PERFORMANCE IMPROVEMENT

• Real Time Support Centre in HQ (Pau)



Optimization of operational decisions in Real Time



INCREASED SAFETY AND EFFICIENCY - NPT AND COST REDUCED - DELIVERY ENSURED

DRILLING PERFORMANCE IMPROVEMENT

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• Close loop Drilling & Wells Improvement Process





FASTEST WELL DRILLED AND COMPLETED IN 20.9 DAYS AND 0% NPT - SUBSEA WELL WORLD RECORD

RE-USE OF SUBSEA XMAS TREE

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- Fit for purpose approach
- Low cost engineering project
- First Xmas tree subsea move in the subsea industry (Xmas tree not recovered to surface)
- Xmas tree refurbishment required if subsea inspection not conclusive





6 MUSD COST SAVINGS AND EARLY PRODUCTION OF 1.5 MILLION OF BBLS

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STANDARDIZATION

• A West Africa operation: from 5 different spreads mid-2015, 2 in 2016, to 1 universal spread in 2017

BLOCK FIELDS	SYSTEM	CONTRACTORS	RIG	WELL CONSTRUCTION	INTERVENTION
Field #2	VXT	FMC Technologies		\checkmark	\checkmark
Field #1		FMC Technologies		✓	✓
Field #4	НХТ	Aker Solutions ⁻		\checkmark	\checkmark
Field #3		FMC Technologies Schlumberger		\checkmark	\checkmark







To be implemented by summer 2017



± 5 MUSD INVESTMENT GIVES MORE FLEXIBILITY TO THE AFFILIATE RIGS STRATEGY ENSURING IMMEDIATE GAINS AND FUTURE PROJECTS INVESTMENT COST SAVINGS

6

ALL ELECTRIC SUBSEA WELL







- R&D project launched 10 years ago aiming at Electric control for all functions: e-DHSV, e-WH, e-XT, e-SCM
- 2 e-XT installed in the Affiliate field since 2008
- e-Downhole safety valve developped in 2009 and fully qualified in 2015
- e-control system completed 2015
- System Integration Tests completed late 2015
- Well spudded february 2016
- First gas july 2016

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KEY TECHNOLOGY BENEFITS: COST CUTTING, HSE, FUNCTIONALITIES, AVAILABILITY ENABLER FOR FRONTIER AREA (WATER DEPTH, DISTANCE, WELL PRESSURE) FIRST STEP TOWARDS FULL ELECTRIC SUBSEA DEVELOPMENT

CONCLUSION

- Reducing Drillex and overall wells cost in Deepwater development is a must in the current context
- Performance and innovation culture are of paramount to reach this goal
- Standardization and fit for purpose yet versatile designs are keys for our future Project economics
- Significant economical margin of progress is still possible:
 - Performance, technology, vision, frontier environment (abyssal, harsh)...
 - Industry ambition, creativity and boldness are required
- A challenge: sustain performance level when the activity will recover

