Capital discipline and productivity

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Disciplined capital investment – staying the course

**Upstream organic capital**

$\text{bn}$

- $13-14\text{bn}$
- Per annum

**Upstream organic capital to 2021**

$\text{bn}$

- **Exploration**
- **LTO$^1$ / Integrity**
- **BPX Energy**
- **Drilling**

- **$13-14\text{bn per annum}$**

(1) License to operate
Disciplined capital investment – right choices and strong execution

**Choices**
- Rigorous planning
- Technology leadership
- Global concepts

**Control**
- Chief Operating Officer

**Execution**
- Global wells
- Global projects
- Global subsurface
- Centres of expertise
Execution – competitive drilling and completion performance

**Drilling efficiency**

% top quartile offshore wells¹

- 2013: 20%
- 2014: 30%
- 2015: 40%
- 2016: 50%
- 2017: 60%
- 2018: 70%

**Completions**

% non-productive time²

- 2013: 30%
- 2014: 35%
- 2015: 30%
- 2016: 25%
- 2017: 20%
- 2018: 15%

**Improved performance**

- **Atlantis**
  - Targeting ~35% cost reduction (2016-2019)
  - Line of sight to additional ~15% cost reduction by 2021

- **Manuel**
  - Top quartile performance
  - Drilled competitively vs. low cost independent

- **Quad 204**
  - Top quartile 2018 D&C performance
  - ~60% cost reduction (2015-2018)

- **Oman**
  - ~60% cost reduction since start of appraisal
  - Set a basin drilling record in 2018

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(1) Source: IHS Rushmore
(2) Percentage of non-productive rig time
Delivering major projects

- **US Gulf of Mexico**
  - Thunder Horse Water Injection
  - Thunder Horse South Expansion
  - Thunder Horse Northwest Expansion

- **Alaska**
  - Point Thomson

- **Algeria**
  - In Salah Southern Fields
  - In Amenas Compression

- **Trinidad**
  - Trinidad Onshore Compression
  - Juniper

- **Angola**
  - Angola LNG

- **Egypt**
  - West Nile Delta – Taurus/Libra
  - Zohr
  - Atoll Phase 1
  - West Nile Delta – Giza/Fayoum

- **UK**
  - Quad 204
  - Clair Ridge

- **Azerbaijan**
  - Shah Deniz 2

- **Oman**
  - Khazzan Phase 1

- **Russia**
  - Taas Expansion

- **Australia**
  - Persephone
  - Western Flank B

**Projects on average under budget and ahead of schedule**

- **19 projects delivered**
- **~500 mboed net online to date**
- **Gross capital ~$100bn**
- **Net capital ~$30bn**

**Major project start-ups:**
- 2016
- 2017
- 2018
Execution - competitive projects performance

**Project costs**

IPA¹ ratio

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<th>IPA¹ ratio</th>
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2017 industry average

**Project schedule**

IPA¹ ratio

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2017 industry average

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(¹) Independent Project Analysis, a lower ratio indicates lower costs and schedule vs. IPA industry models, Upstream Industry Benchmarking Consortium industry average
Project delivery – what’s next?

Mindset and agility

Fast-paced tie-backs
- Gulf of Mexico and North Sea

Collaborative contracting
- Tortue, Mauritania and Senegal

Digital ecosystems

Next generation concepts
- Cypre, Trinidad

Digital twin
- Clair Ridge, North Sea

Remote operations
- Cypre, Trinidad

IOGP\(^1\)
- Live saving rules
- JIP33\(^2\)

Remote operations

Industry standardisation

Transformation

(1) International Association of Oil and Gas Producers
(2) IOGP-managed Joint Industry Project on standardisation of equipment specifications for procurement
Major projects – on track

BP net production from major projects

- Operating
- Construction
- Appraise/design

1,000 mboed


900 mboed by 2021
35% greater cash margins than 2015 base
20% lower development cost than 2015 base

19 delivered, 16 to go

**2016**
- In Salah Southern Fields
- Thunder Horse Water Injection
- Point Thomson
- Angola LNG
- In Amenas Compression
- Thunder Horse South Expansion

**2017**
- West Nile Delta – Taurus/Libra
- Trinidad Onshore Compression
- Quad 204
- Persephone
- Juniper
- Khazzan Phase 1
- Zohr

**2018**
- Atoll Phase 1
- Taas Expansion
- Shah Deniz 2
- Thunder Horse North West Expansion
- Western Flank B
- Clair Ridge
- West Nile Delta – Giza/Fayoum

**2019**
- Constellation
- Angelin
- Culzean
- West Nile Delta – Raven

**2020**
- KG D6 R-Series
- Tangguh Expansion
- Alligin
- Vorlich
- Zinia 2
- Atlantis Phase 3

**2021**
- Mad Dog Phase 2
- Khazzan Phase 2
- KG D6 Satellites
- Manuel
- Cassia Compression

FIDs:
- 2016: 6
- 2017: 3
- 2018: 9
- 2019-2021: ~20

(1) 2016-2025 average pre-tax operating cash flow per barrel at flat $52/bbl
(2) FID: final investment decision