



# Technology making a difference

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# Technology in action at BP

TODAY

## Technology overview

- Areas of focus
- Deployment and creating value
- BP's technology flagships

## Flagship deep dives

- Pushing Reservoir Limits (EOR)
- Advanced Seismic Imaging
- Unconventional Gas
- GOM Paleogene

## Advanced Collaborative Environment (ACE) demonstration

- Front-end demonstration IT platform
- Field of the Future® in action

TOMORROW

## Field trip 1

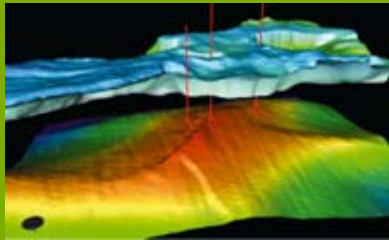
- Thunder Horse

## Field trip 2

- Texas City Refinery

# Major technology programmes

## Resource business extensions



- Unconventional gas
- Unconventional oil
- Gulf of Mexico Paleogene
- Advanced seismic imaging
- Beyond sand control
- Pushing reservoir limits
- Subsea well intervention/ deepwater facilities
- Field of the future
- Inherently reliable facilities
- Effective reservoir access

## Conversion technologies



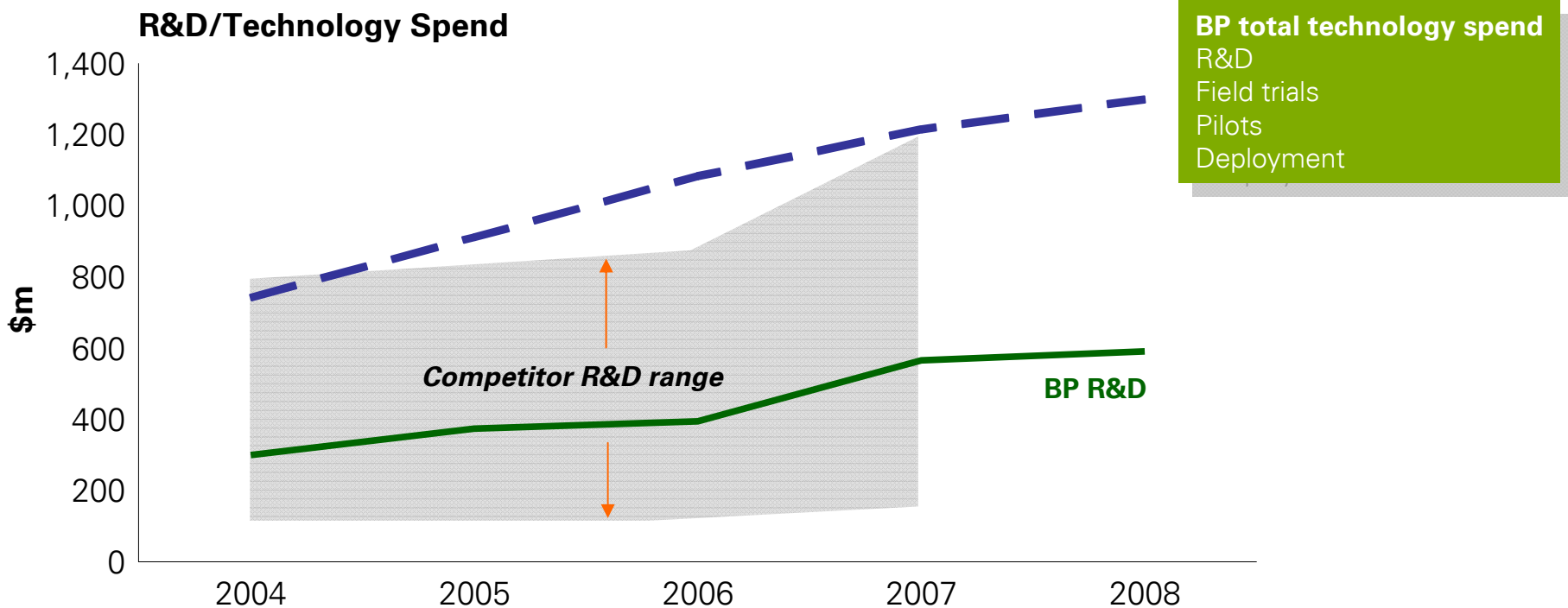
- Fuels
- Lubricants
- PTA
- Acetic acid
- Advanced refining
- Refinery of the future
- Coal

## Low-carbon technologies



- Solar
- Biofuels
- Carbon management

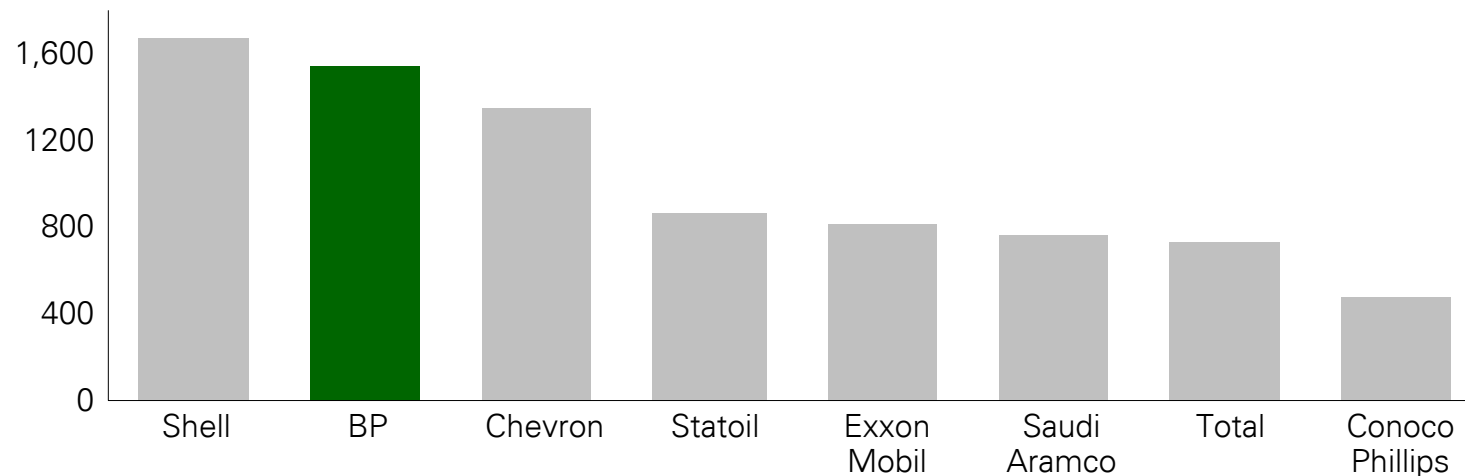
# Technology making a difference to the business





# Innovation management

- Integrated technologies to solve business problems
- Leadership positions in selective technologies
- Innovations captured and value extracted
- Deliberate decisions on commercialization routes:
  - In-house proprietary development
  - Managed IP ownership
  - Open collaboration



# Technology flagships

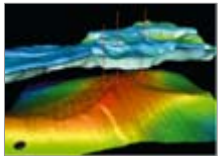
Each with potential to deliver 1 billion+ boe in reserves



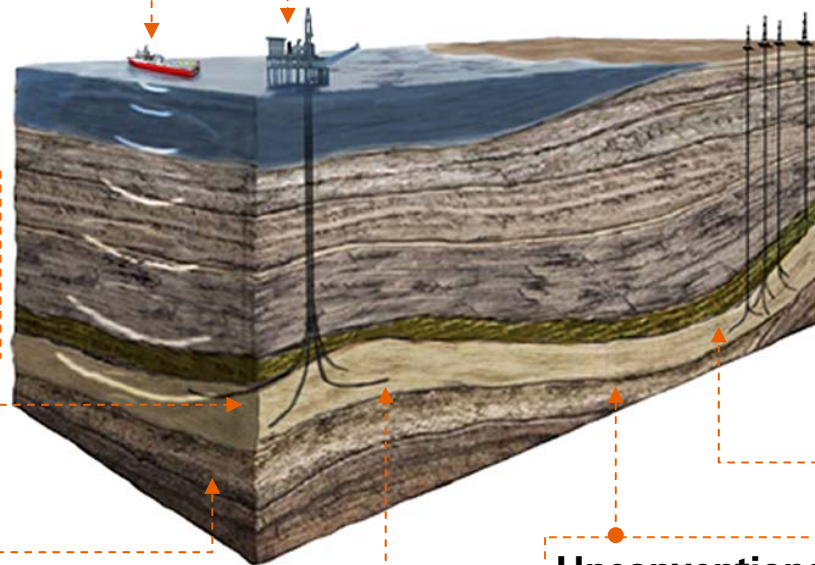
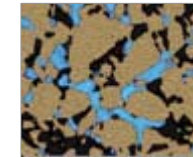
**Inherently Reliable Facilities**  
Monitor, predict and manage corrosion to increase operating efficiency

**Field of the Future™**  
Deliver 100mboed through real time reservoir, wells and facility management

**Advanced Seismic Imaging**  
Locate and enable access to new resources



**Pushing Reservoir Limits**  
Advanced gas injection and waterflood technologies



**Subsea Well Intervention/ Deepwater Facilities**  
Improve subsea recovery factors

**Unconventional Gas**  
Prove 12tcf tight gas resource

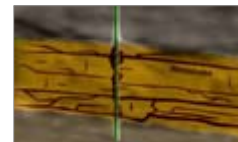
**Gulf of Mexico Paleogene**  
Progress 2 billion boe via sustained high pressure well tests

**Effective Reservoir Access**  
Four-fold increase in reservoir contact area per well

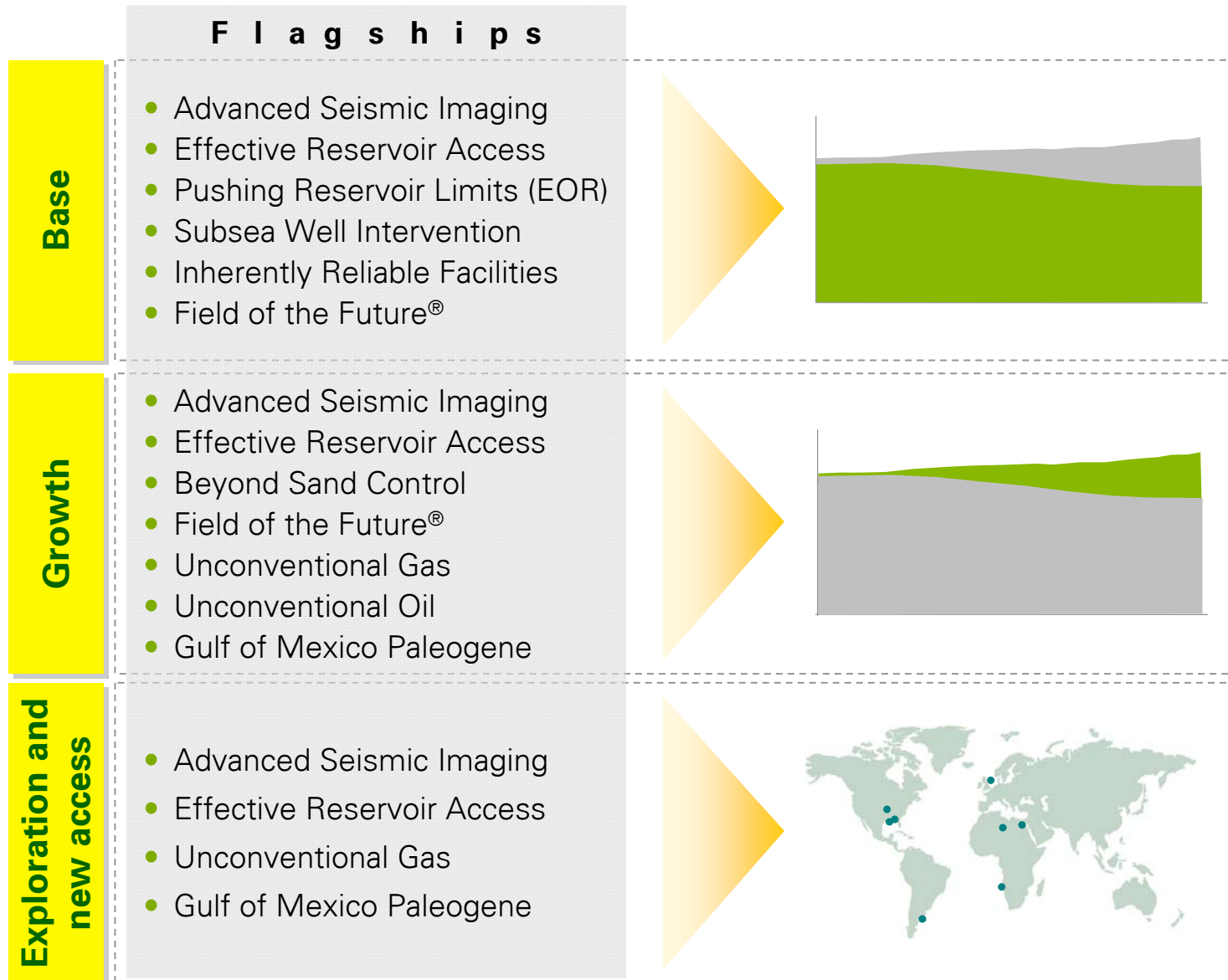


**Beyond Sand Control**  
Deliver capital expenditure savings and incremental production / resources

**Unconventional Oil**  
Progress 2 billion boe heavy oil resource



# Targeting and integrating technology

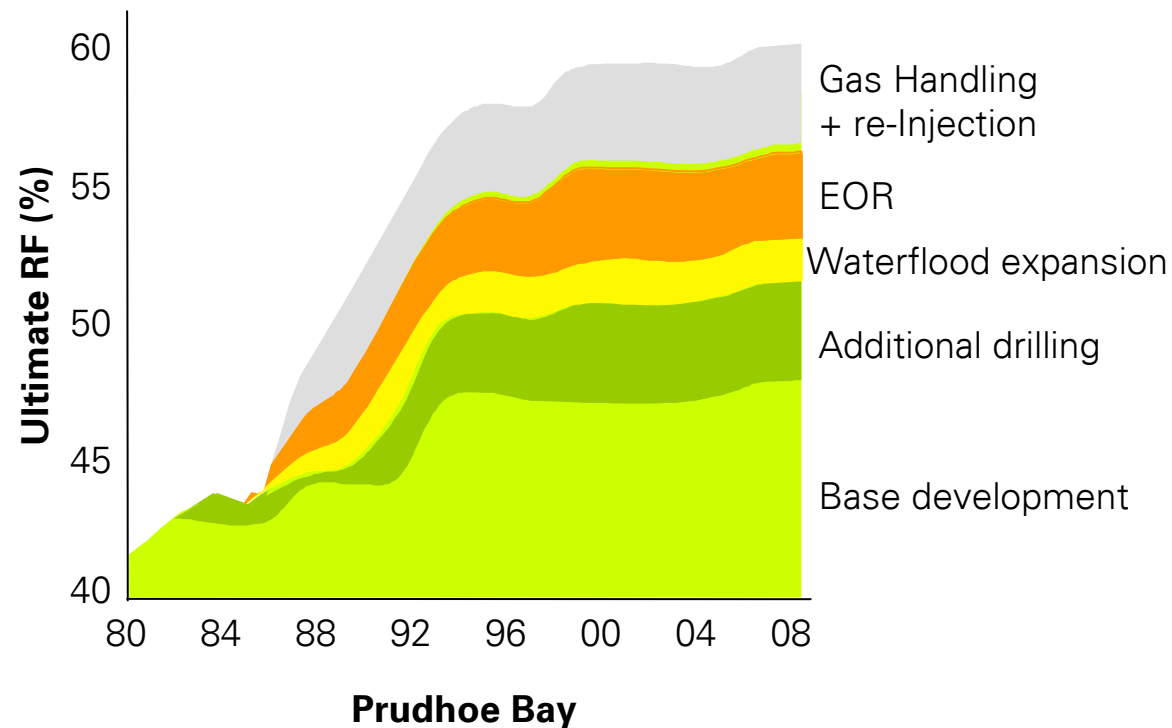


# Getting more from our base: extending field life



## Integrated technologies applied to business problems

- Technology, people and process
- Integration of flagship technologies
- Continuing to increase recovery



*Pushing  
Reservoir Limits*

*Field of the  
Future® tech*

*Inherently  
reliable facilities*

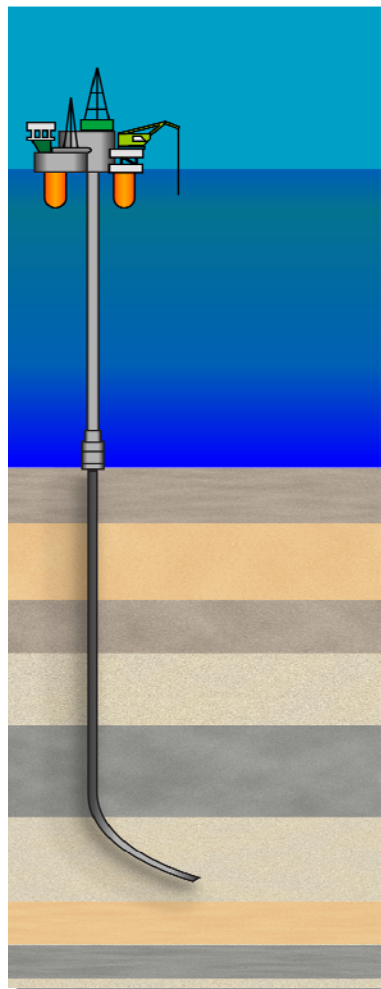
*Advanced seismic  
imaging*

*Effective reservoir  
access*



# Effective reservoir access flagship

**We invest >\$7 billion annually on drilling and well construction**



*Real-time well-site / office collaboration*

*Reduced non-productive time (NPT)*

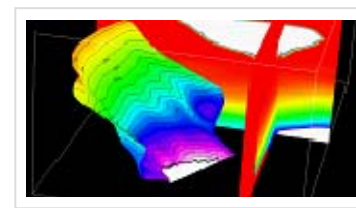
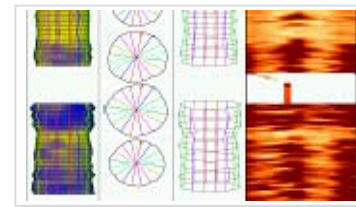
*Better wellbore placement*

## Flagship objectives

- Improve drilling efficiency through better real-time decisions

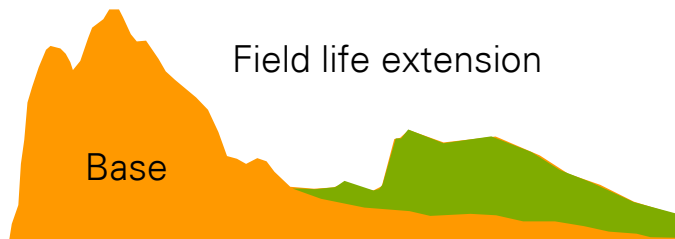
## Deployment

- New down hole measurements and rapid model integration





# Inherently reliable facilities flagship



## Flagship objectives

- Safe and reliable operations
- Extension of facilities life
- Addition of > 1 bn boe NP reserves



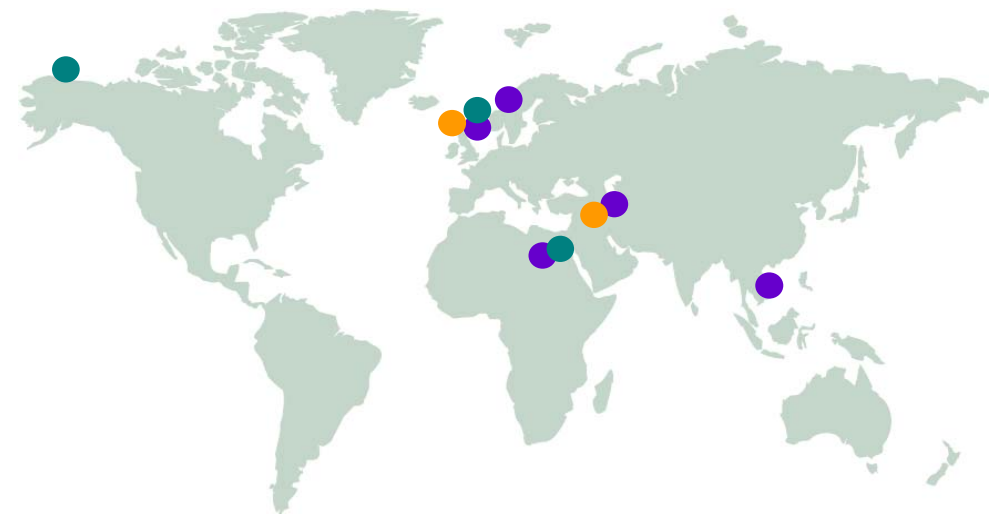
*Material selection and performance*



*Monitoring, inspection and assessment*

## Deployment

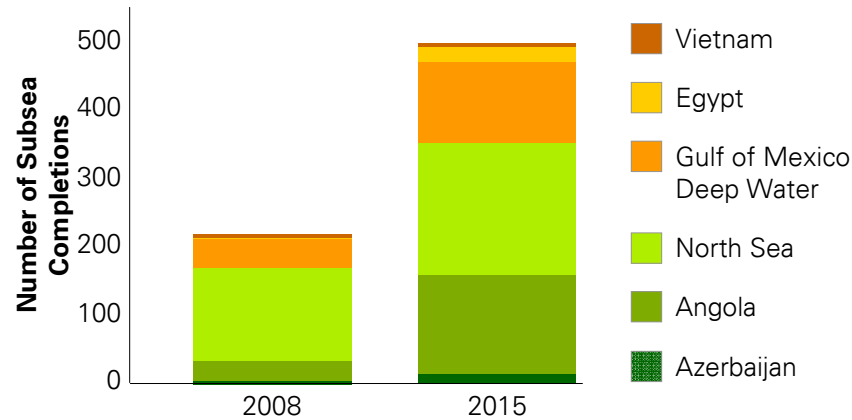
- Super-high strength low alloy steel casing
- Guided wave ultrasonic inspection
- Fibre optic cable pipeline sensing





# Subsea well intervention flagship

Our subsea production is increasing

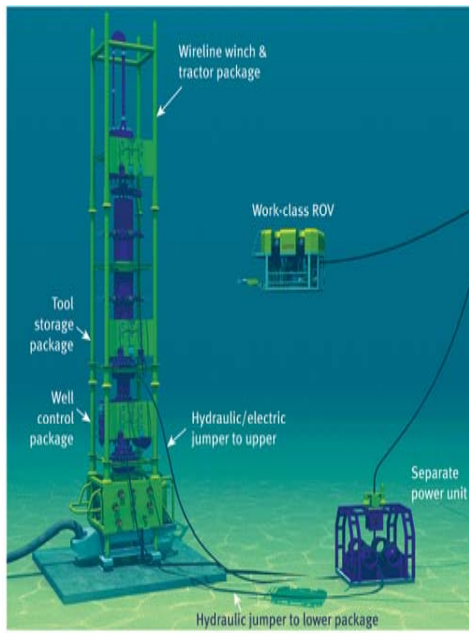


## Flagship objectives

- Deliver subsea recovery rates equivalent to dry tree developments
- Timely and cost effective wellbore access over field life

## Deployment

- AX-S™ rigless intervention system
- Coiled tubing subsea lubricator and jointed riser



AX-S™ is a registered trademark of Expro Group



2009 deployment

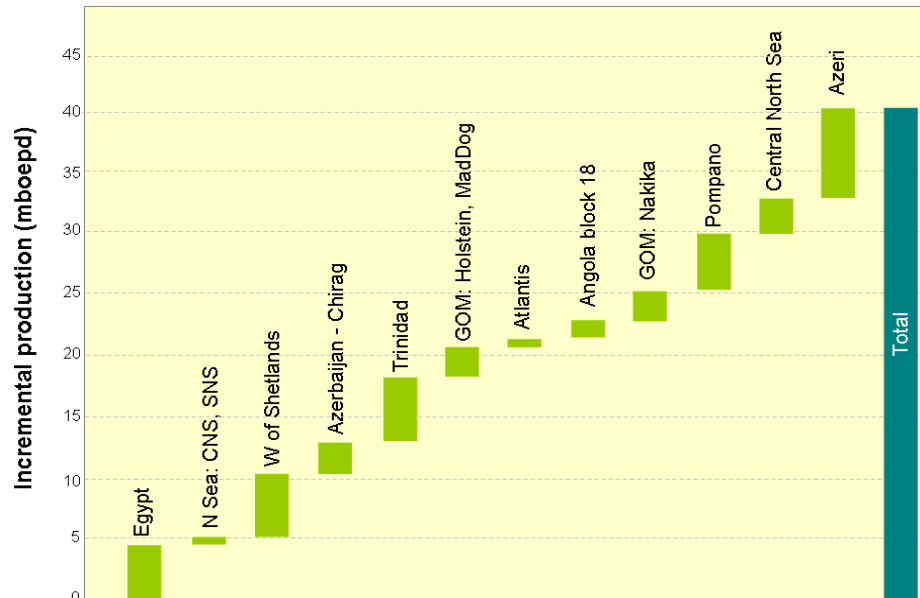
# Beyond sand control flagship



**By 2010 ~40% BP's production will come from reservoirs prone to sand production**

## Flagship objectives

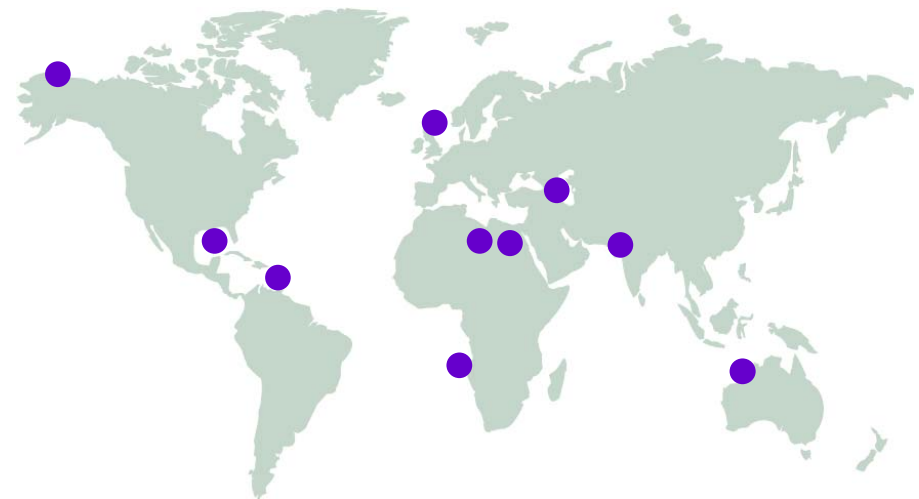
- Maximize production rate and keep the sand in the reservoir



*Incremental production from sanding models*

## Deployment

- Proprietary sand prediction and sanding models
- Open hole packers – Angola injectors
- First field test consolidation chemical



*BP assets with sand prone reservoirs*

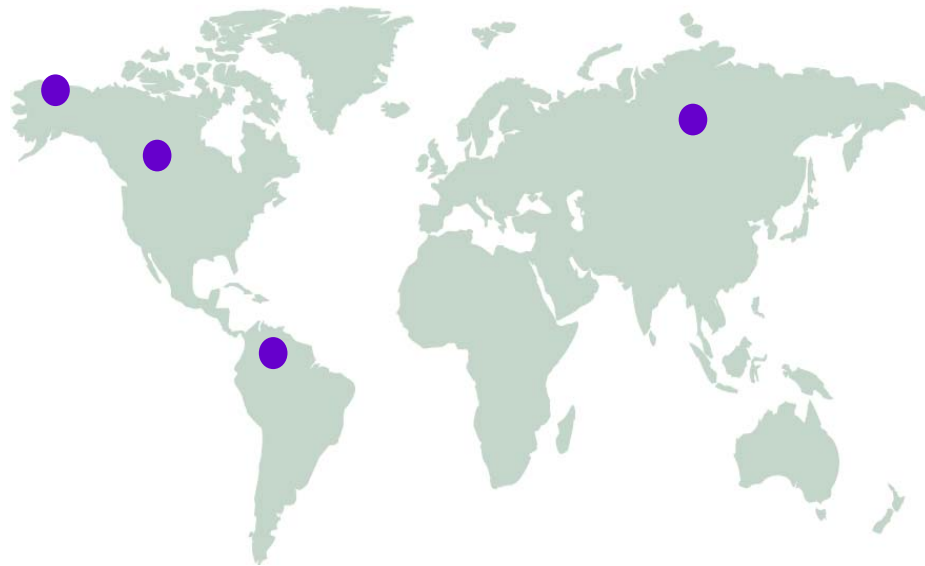


# Unconventional oil flagship

**BP has > 30bn bo unconventional oil in Alaska, Canada, Venezuela and Russia**

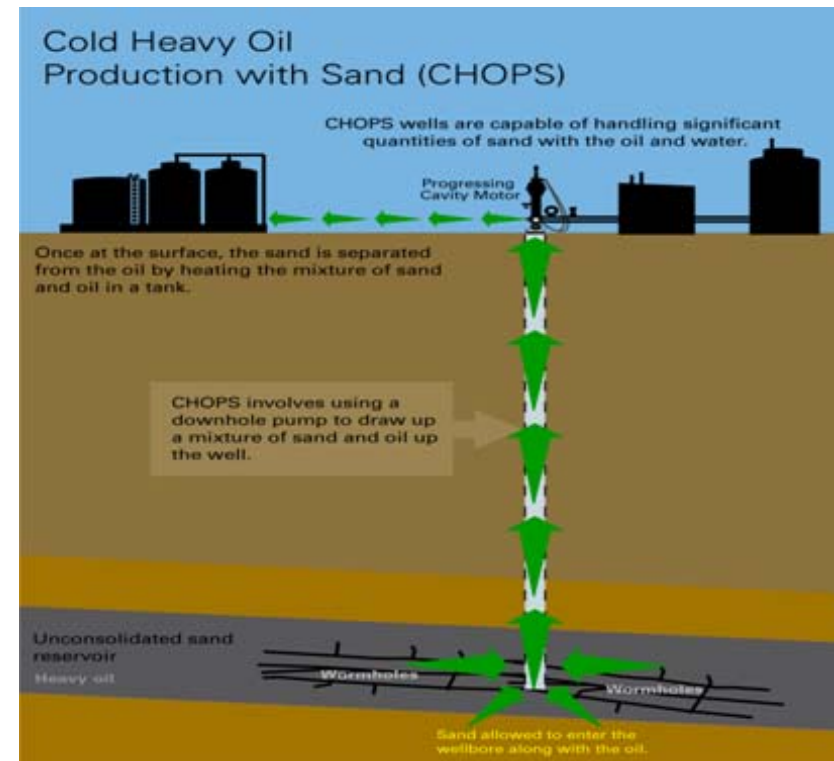
## Flagship objectives

- Deploy new recovery processes, leveraging our leadership position in cold heavy oil production
- Progress 2bn bo heavy / viscous resources

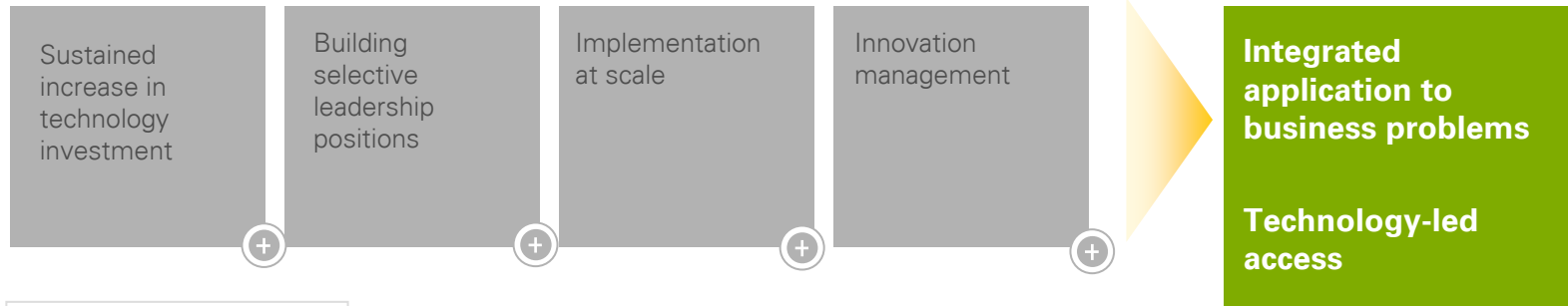


## Deployment

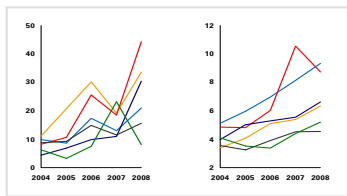
- Alaska multi-year CHOPS field trial



# Technology: making a difference in the business



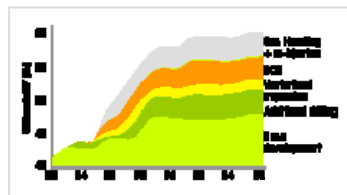
*New production*



*Cost efficiency*



*Exploration and access*



*Higher recoveries*

- Technology impacting**
- Safety
  - Environment
  - Production
  - Costs
  - Reserves