



PLATFORM DECOMMISSIONING IN THE NORTH SEA

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www.tdwilliamson.com





Introduction

■ Assets -> have a life cycle

■ Parameters

- Aging asset and fields
- Expansion pipeline systems
- Changing requirements / engineering standards
- Technology development
- Legislation

■ Maintain – Repair – Replace

■ Remove – Decommission



(Source: GASSCO)



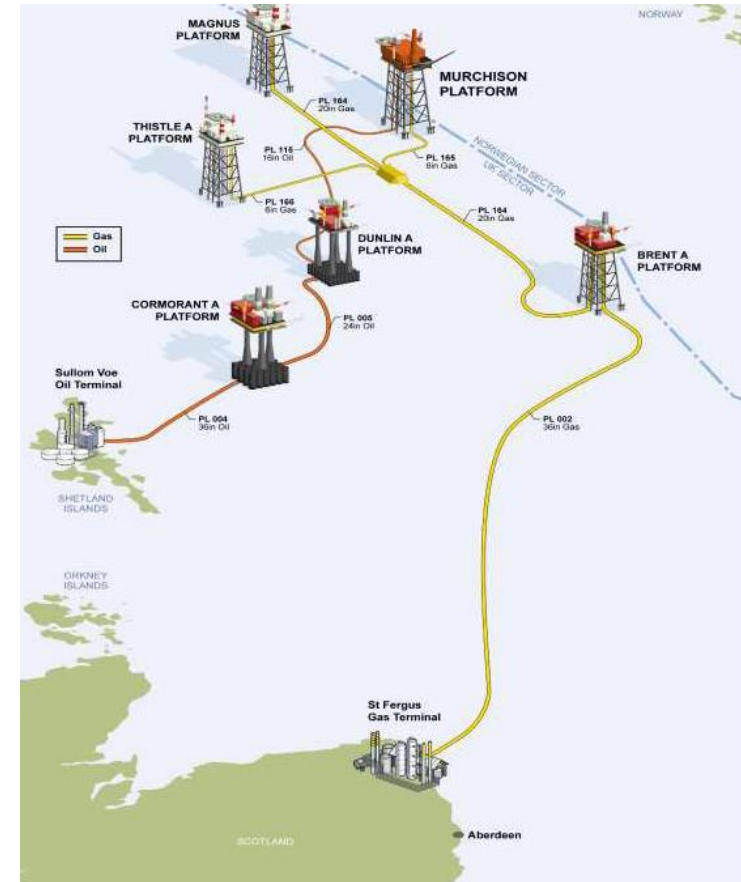
Platform Decommissioning Cases

- Frigg – platform bypass (2004)
- B11 – platform bypass (2013)
- Huldra - platform decommissioning (2014)

Decommissioning – Background analysis

- By 2019 (UK Cont. Shelf)
 - 140 fields could cease production by 2019
 - Spending up 50% on decomm. work

- Many applications for Decom
(www.gov.uk)



(Source: www.uk.gov)

Decommissioning – Background analysis

■ Key UK projects (examples):

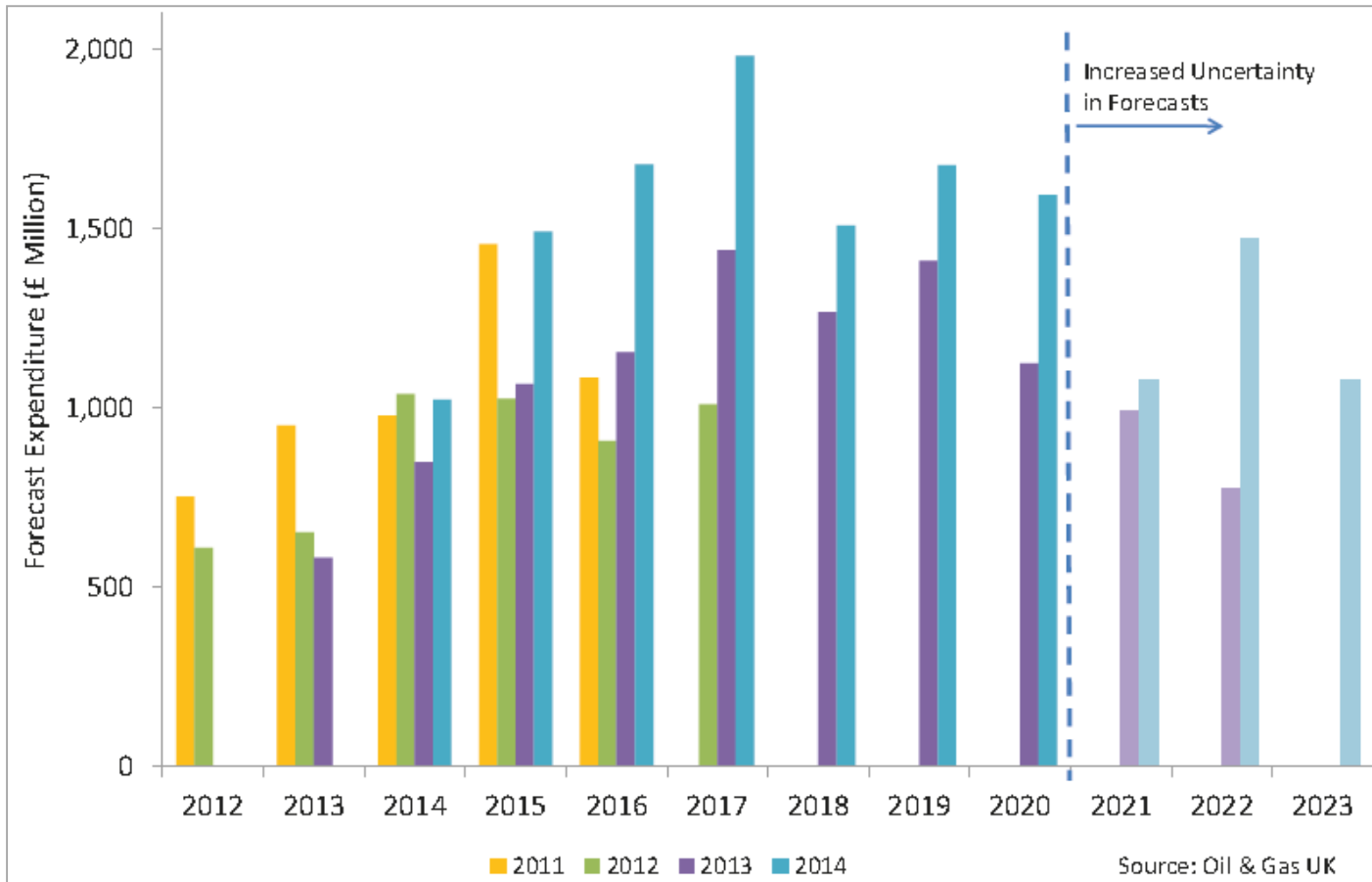
- Murchison Field – CNR
- Brent A, B, C – Shell
- Miller – BP
- Stamford & Rose – Centrica



(Source: www.uk.gov – Miller decommissioning)



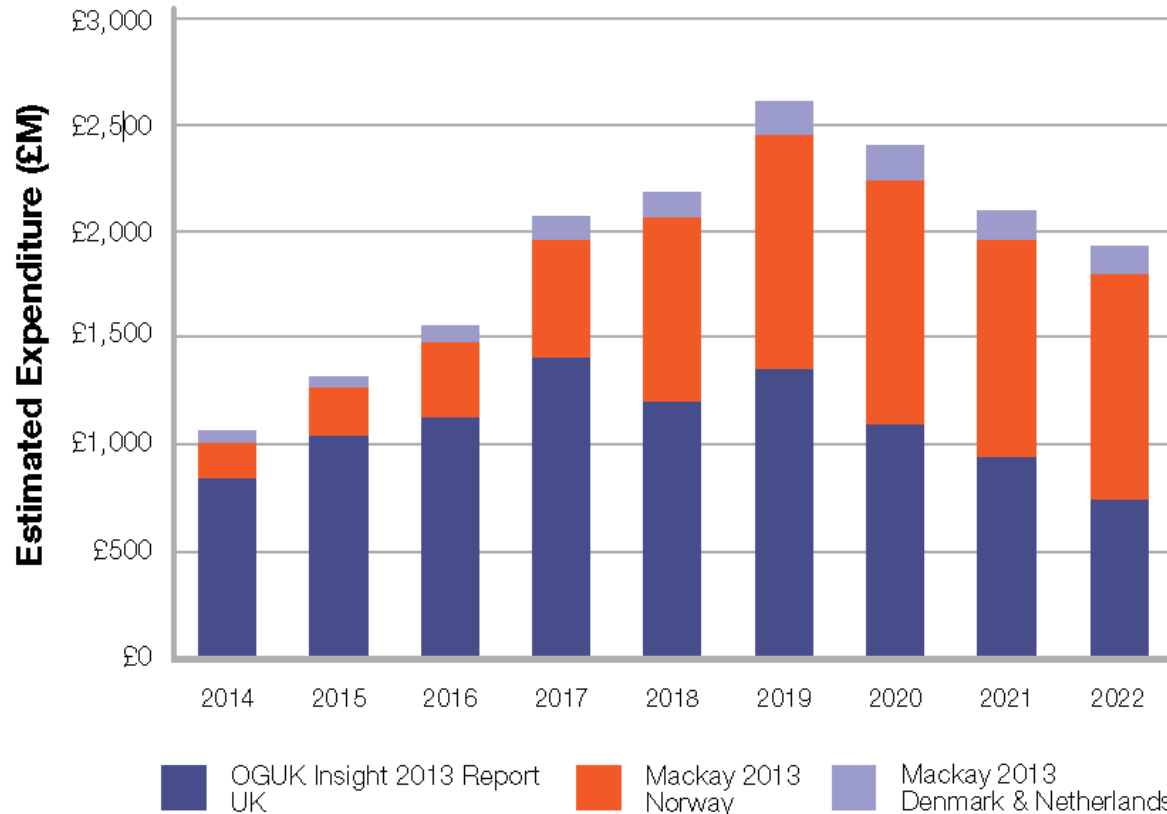
Decommissioning – Background analysis



(Source: Oil & Gas UK)

Decommissioning – Background analysis

Annual Estimated North Sea Decommissioning Expenditure



Source: Oil & Gas UK^[1], Mackay Consultants^[2]



Platform Decommissioning Cases

- Frigg – platform bypass (2004)
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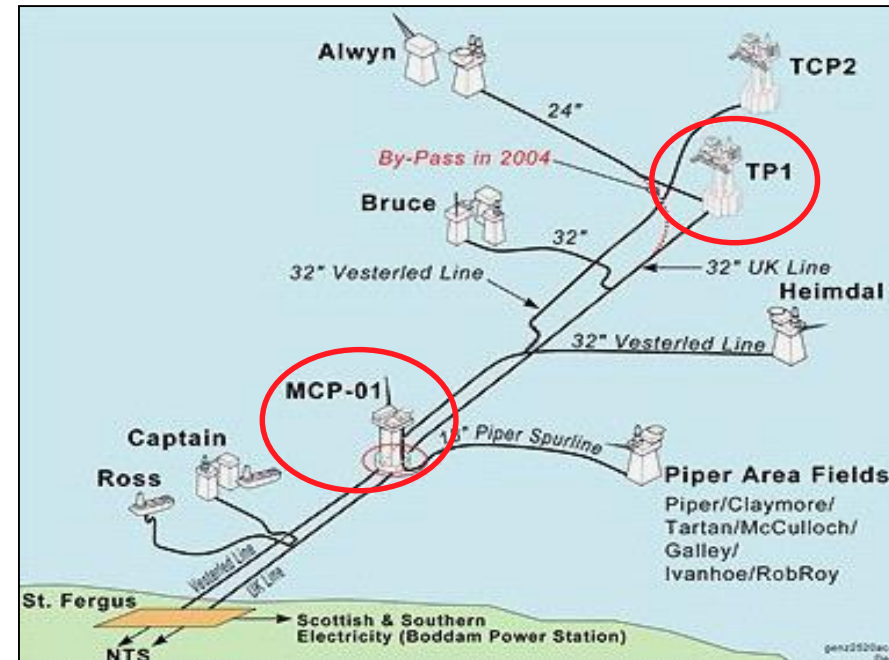
Case 1: Frigg – Bypass

Objectives:

- MCP-01 platform to be removed and decommissioned
- TP1 platform to be bypassed - connect the Alwyn line to the UK line

Alternatives;

- Depressurizing and flooding
- Local isolations

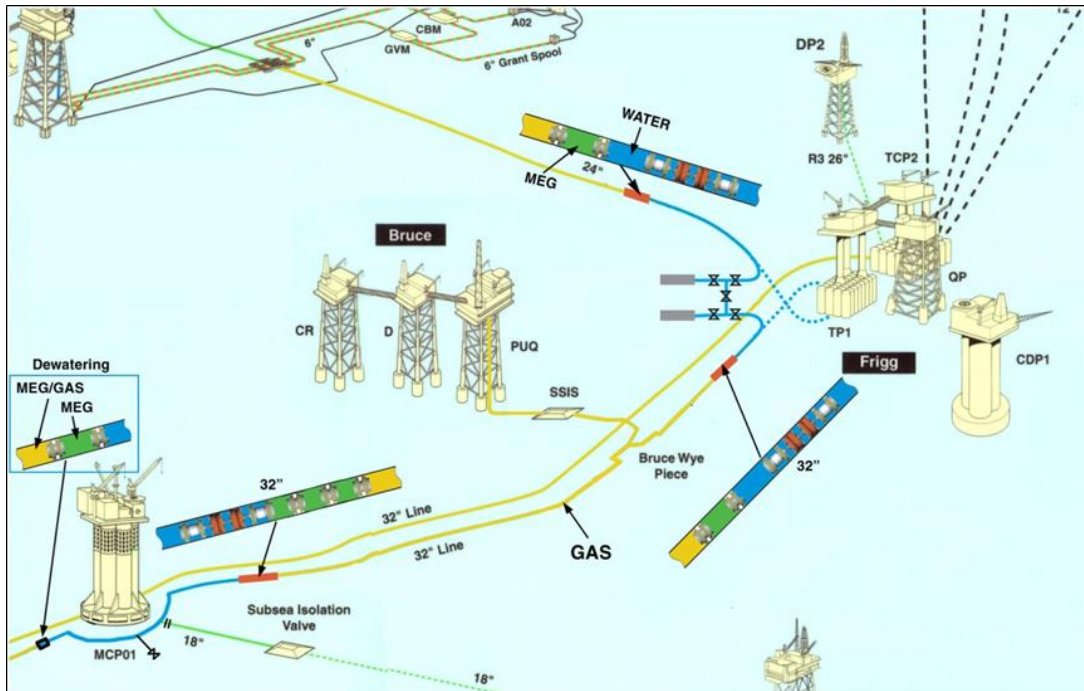


Frigg field overview (Source: University of Aberdeen, Frigg history article)



Case 1: Frigg – Bypass

- 3 off isolation tools used
 - 2x 32in SmartPlug® tools
 - 1x 24in SmartPlug® tool



Field overview during bypass operation (Source: TDW)

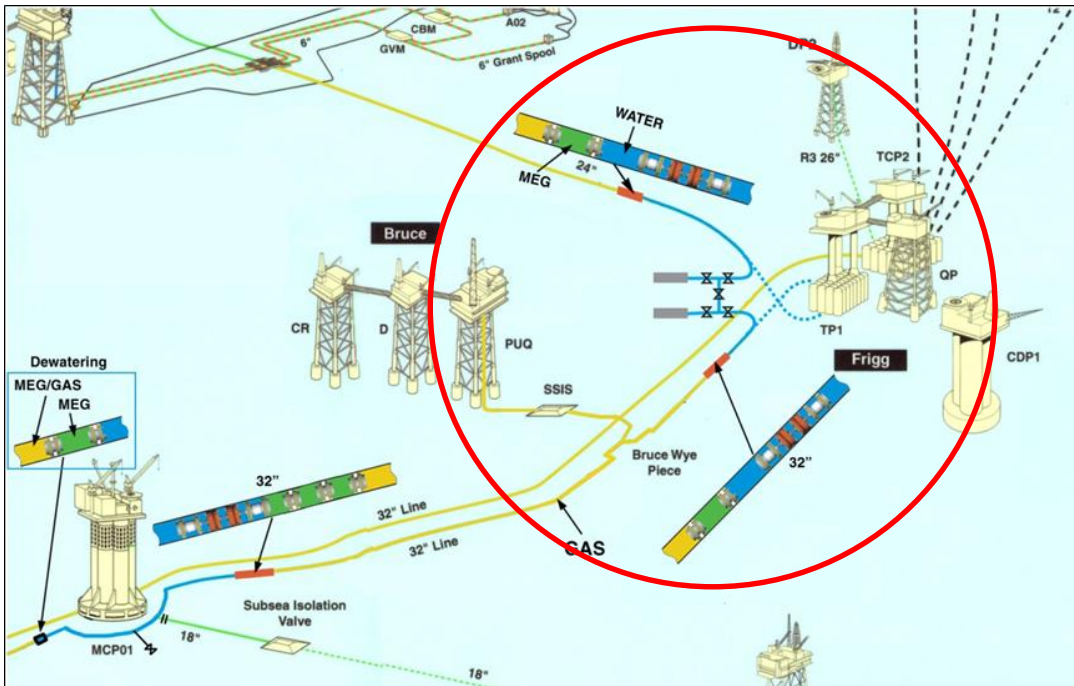


Case 1: Frigg – Bypass

■ TP1 bypass operation

- 1x 24in SmartPlug® isolation
- 1x 32in SmartPlug® isolation

- July 31st – Aug 14th
- Aug 5th – Aug 8th



Field overview during bypass operation (Source: TDW)



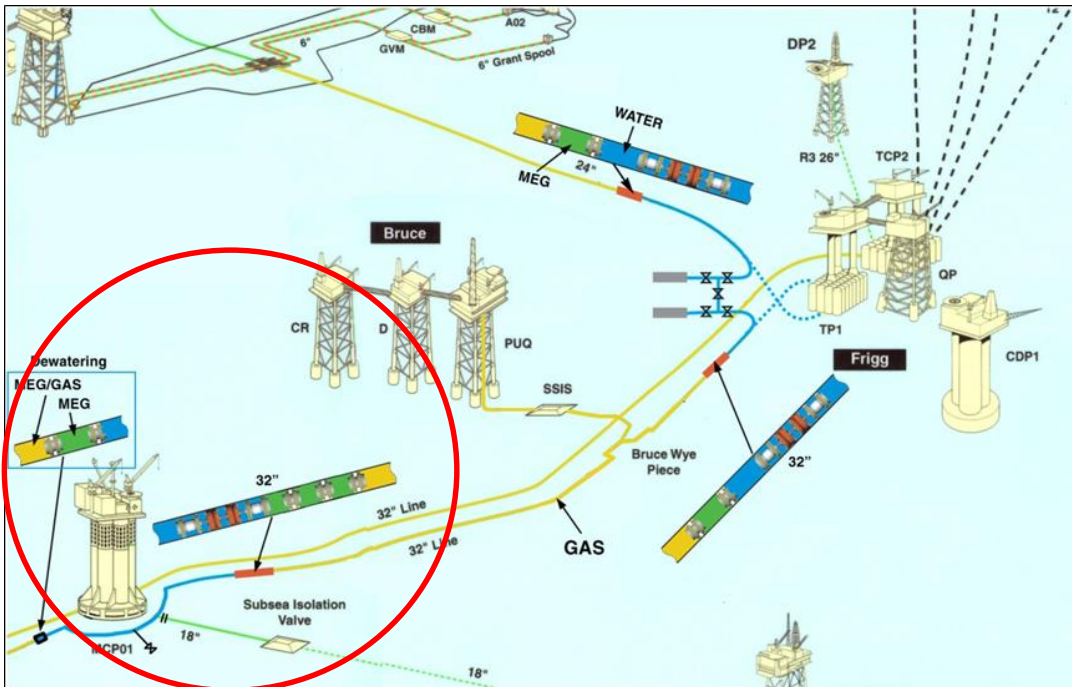
Case 1: Frigg – Bypass

■ MCP-01 bypass operation

- 1x 32in SmartPlug® isolation
- 2x pigs

- Aug 4th – Aug 23rd

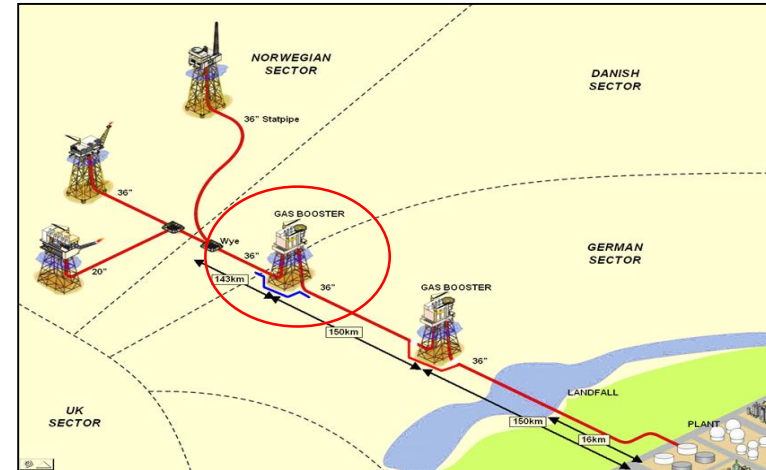
- Returned St. Fergus Aug 26th



Field overview during bypass operation (Source: TDW)

Case 2: B11 – Bypass

- Removal of B11 from Norpipe
 - Similar to H7 bypass in 2007
- Subsea bypass spool
- Two risers cut and spool tied in
- Alternatives;
 - Depressurize and flood pipeline
 - Isolate platform from pressurized line



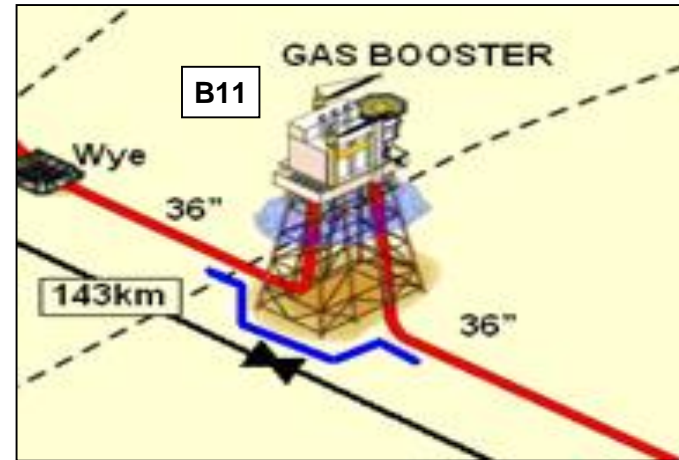
(Source: PTIL)



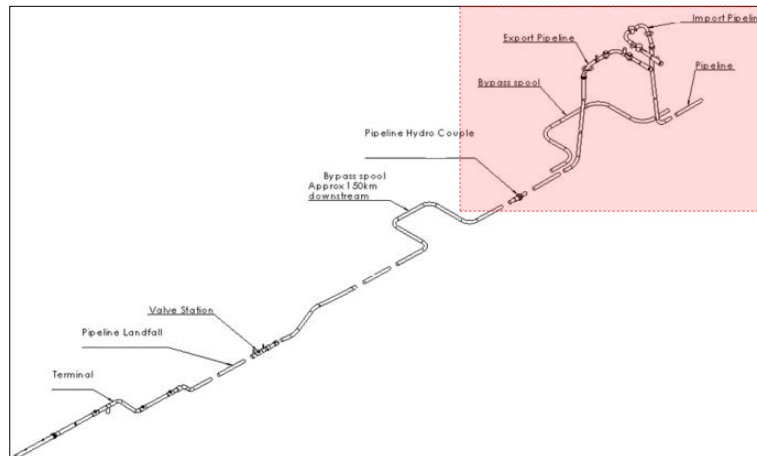
(Source: GASSCO)

Case 2: B11 – Bypass

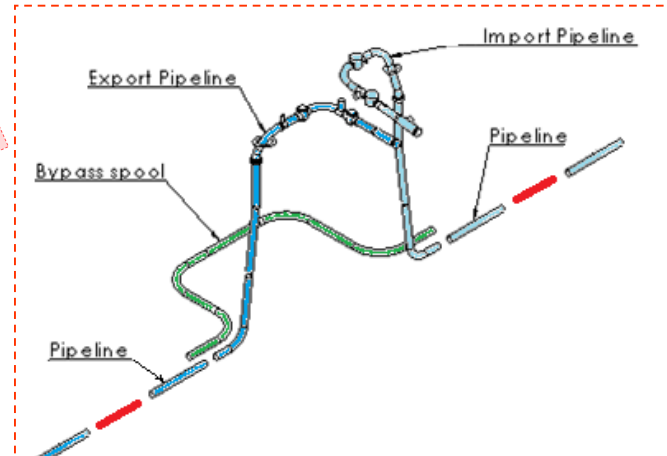
- Use of two SmartPlug® isolation tools
- 60 bar pressure
- 11 days of isolation
- 300km pigging to shore



(Source: PTIL)



(Source: TDW)

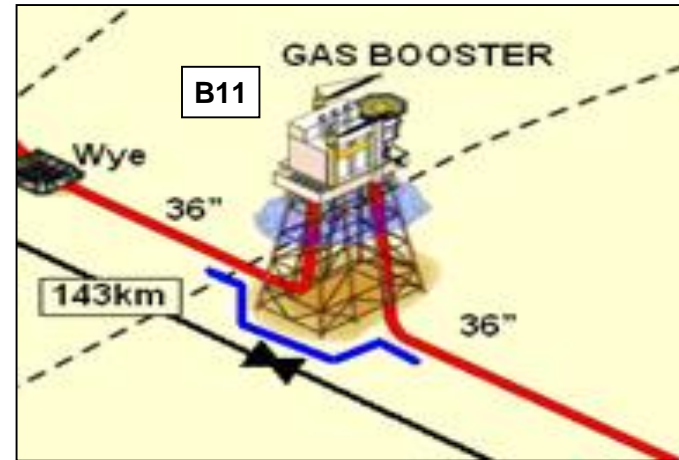


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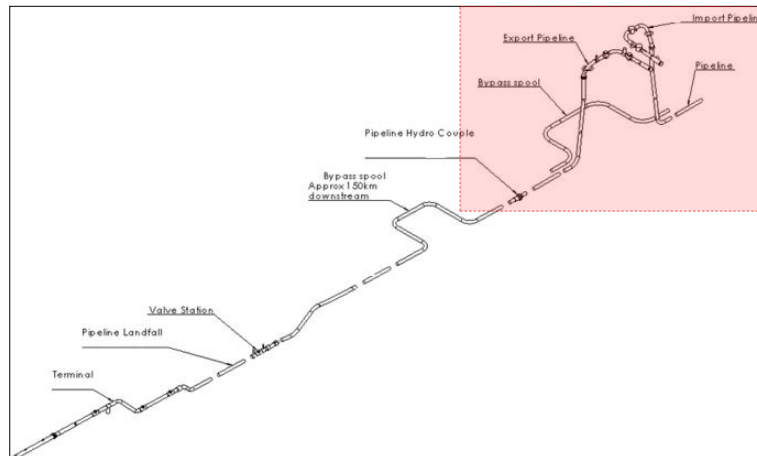
Case 2: B11 – Bypass

■ Sequence of events 2013

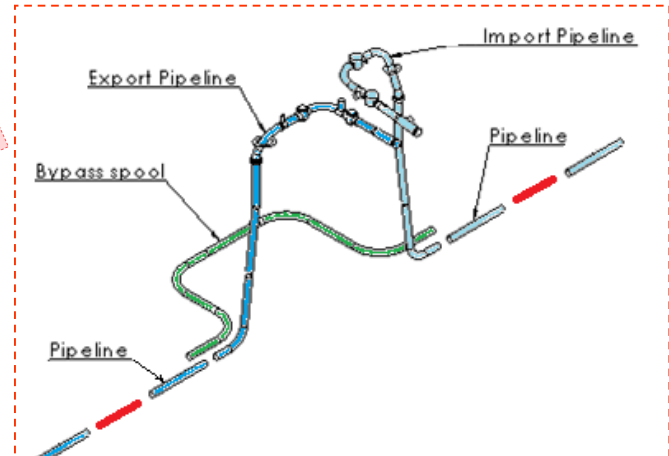
- 04.june: Loading tools
- 08.June: Tools set
- 08.-18. June: Tie-in operation
- 18.June: Unsetting tools
- 18.-21.june: Pigging to shore
- 22.June: Tools retrieved



(Source: PTIL)



(Source: TDW)



(Source: TDW)



Case 3: Decommissioning - Huldra



- Huldra – decommission old platform
 - Tie-in of new platform - Valemon
- New platform tie-in alternatives:
 - New line (177km) to Heimdal
 - New line (27km) to existing line (Huldra/Heimdal)
- Solution chosen:
 - Tie-in to existing line between Huldra and Heimdal



Source: Andre Osmundsen / Statoil



Case 3: Decommissioning - Huldra



■ Alternatives

- Decommission pipeline to make inert and safe
- Isolate local section using inline isolation tooling.

■ Solution

- SmartPlug® tool isolated local section to prevent flooding during the tie-in operation and maintain production



Source: Andre Osmundsen / Statoil



Case 3: Decommissioning - Huldra



■ Production gains

- Continued production from Huldra for an additional five months
- No decommissioning, flaring & flooding
- Isolation for 89days @ 74bar (avg.)



Source: Andre Osmundsen / Statoil

■ Additional gains

- Remote monitoring of isolation from shore
- TDW tracking system including cabled, acoustic, radio link and GSM-based monitoring



Other cases



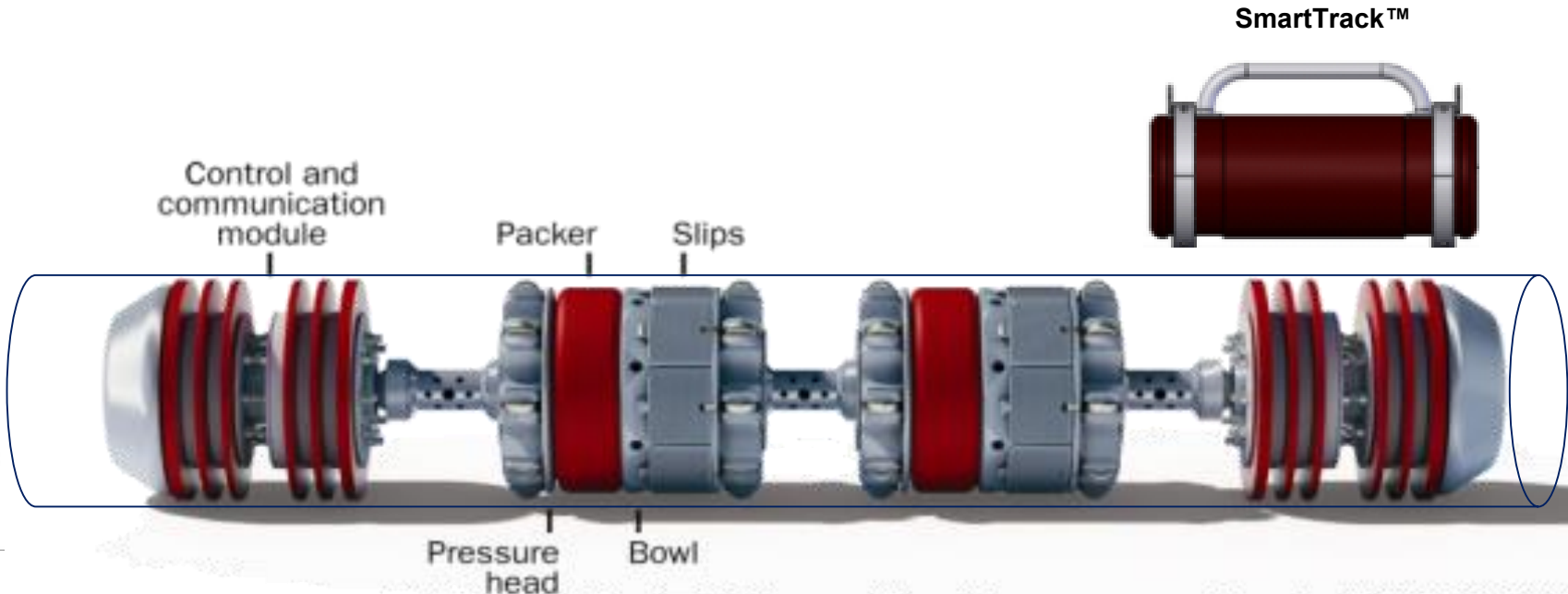
- 2005: 2x20in GOM region
 - Platform de-commissioning
- 2005: 16in GOM region
 - Pipeline de-commissioning
- 2006: 20in GOM region
 - Platform de-commissioning
- 2007: 36in North Sea region
 - Platform de-commissioning



TDW – SmartPlug® technology

■ [SmartPlug® isolation \(Frigg bypass animation\)](#)

Pipeline Performance™





Summary

■ SmartPlug® inline isolation technology provides significant advantages to:

- Minimize de-commissioning & re-commissioning scope
- Minimize disruption to production
- Avoid shut down or enable only partial shut down of system

- **Cost & schedule**