

Centrica E&P Devex 2017

9 May, 2017



- MEng in Manufacturing Sciences, University of Strathclyde
- MBA, INSEAD
- Production Engineer, Shell International E&P
- Principal, The Boston Consulting Group
- Netherlands Asset Director, Centrica E&P

- Asset Director North Sea, Centrica E&P
 - CNS, SNS and NLCS
 - Operated and non-operated assets
 - Assets in all phases of the life cycle: exploration, appraisal, development, production and decommissioning
 - Based in Aberdeen and Amsterdam
 - Chairman NOGEPA (NLs E&P Association)
 - Chairman SNS Rejuvenation Special Interest Group

- Overview
 - Operations in the UK, Norway, Netherlands and Canada
 - Among the top gas producers on the UK Continental Shelf – presence in the UK goes back more than 30 years
 - Established a significant business with operated assets in Norway
- Strategic Review
 - Group-wide review identified E&P as an important part of the portfolio, and key to maintaining balance sheet strength.
 - E&P now aims to be an agile, sustainable, European oil & gas business, producing 40-50mmboe per annum.

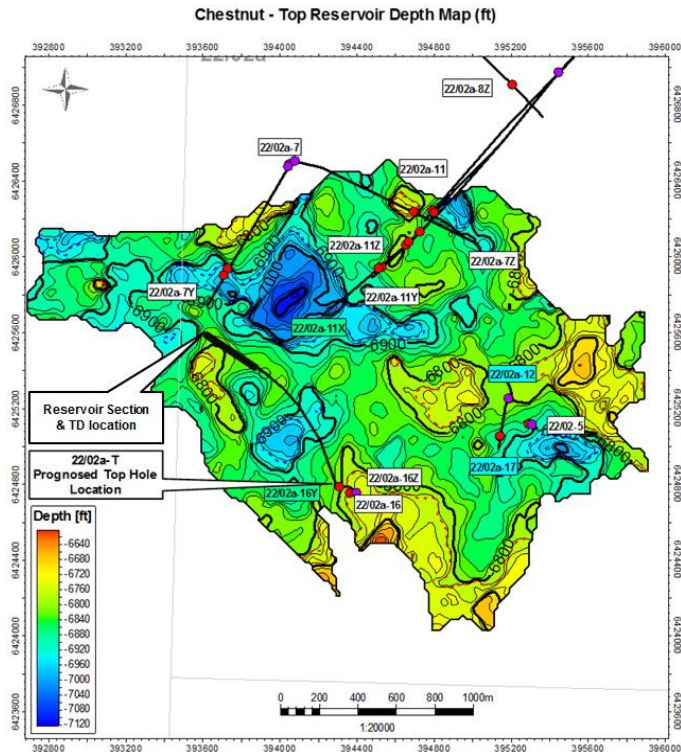
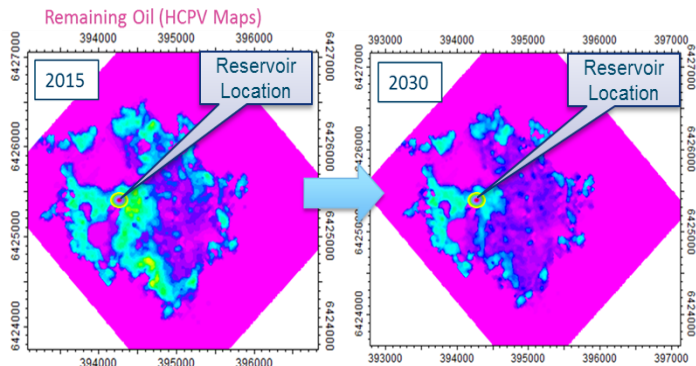
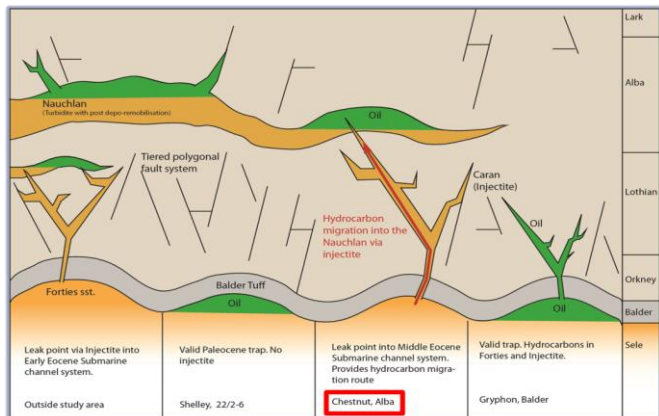
Moving Ahead With \$50 Oil

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- Central North Sea
 - Chestnut: extended contract for Hummingbird FPSO for a further three years
 - Drilling new oil well
- Southern North Sea
 - Infill drilling
 - New developments and the Efficiency Taskforce
 - Cygnus
 - Late Life and Rejuvenation
- Recruitment

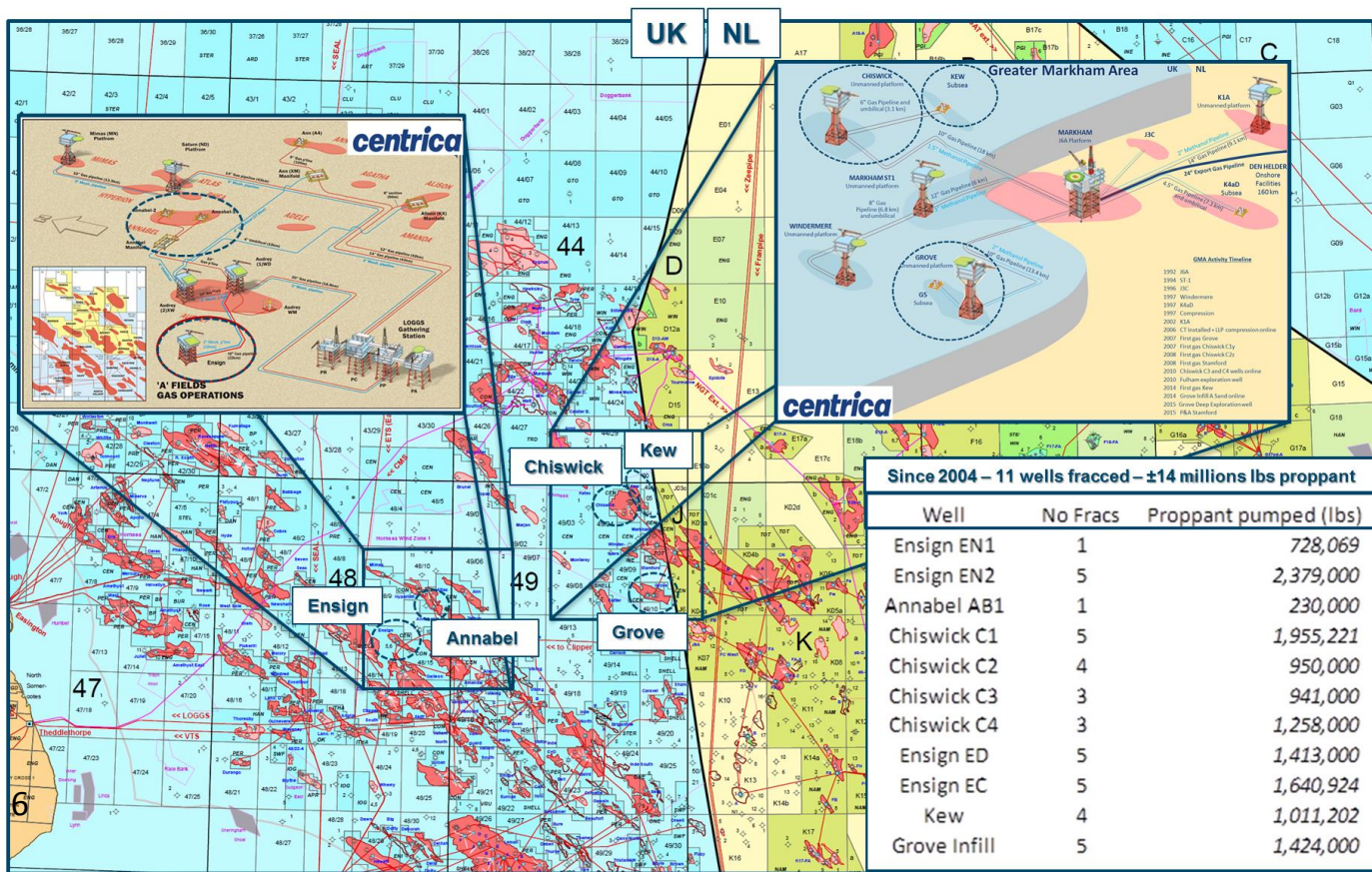


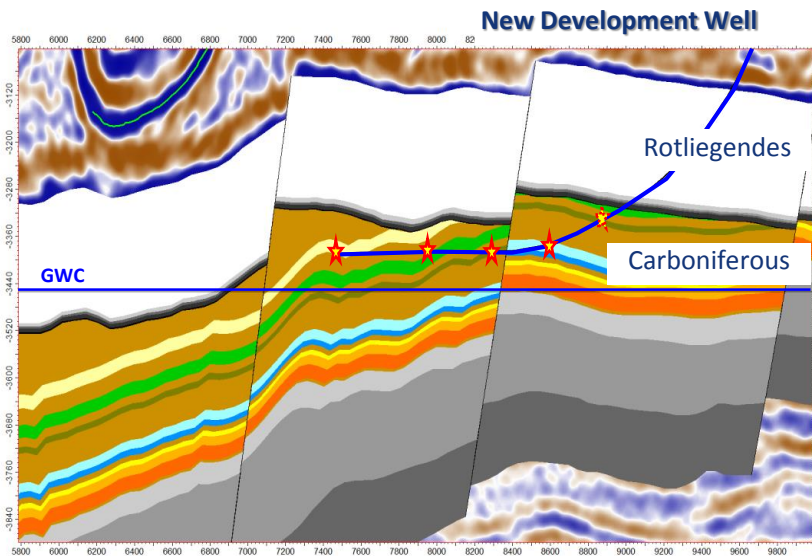
Chestnut oil field



Centrica SNS Tight Gas Experience

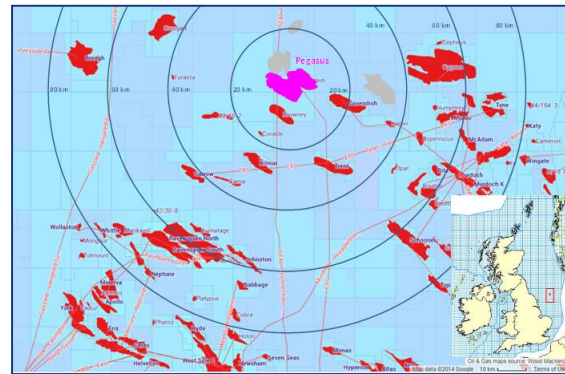
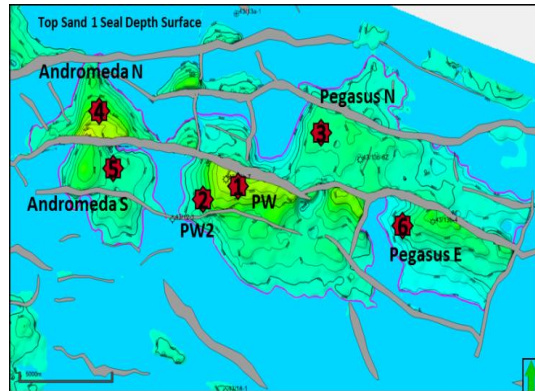
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Pegasus and the Efficiency Task Force

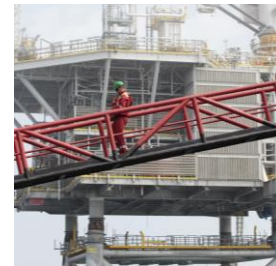
- Proven discovery in concept select phase – volumes could exceed 200bcf
- Exploration prospects nearby
- Multiple export route options – and risks
- Collaboration with OGUK's ETF and 70+ experts across supply chain to assess development solution
- Potential cost savings identified across multiple areas:
 - Engineering and market conditions
 - Manufacturing, procurement and fabrication



Cygnus

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- Largest single producing gas field in the UK North Sea
- On stream in December 2016, now accounts for 5% of UK gas production
- With 48.75% interest, Centrica is working with operator Engie to maximise potential of the Greater Cygnus Area



SNS Rejuvenation Special Interest Group

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OIL&GAS^{UK}



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SNS Rejuvenation SIG

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SIG steering group selected three initial work groups based on the following criteria:

- Likely to have a big impact
- Reasonable chance of success
- Achievable / demonstrable outcomes within a reasonable timescale

Initial work groups

Tight Gas Developments

Shell (focal point)
Centrica
Baker Hughes
Premier Oil
Fraser Well Management

Synergies Between Renewables and E&P

SSE (focal point)
ODE
JFMS
Sembmarine SLP
Lloyds Register

Transfer of Best Practice Between the UK and Dutch Sectors

Oranje-Nassau Energie (focal point)
Centrica
Premier Oil
Sembmarine SLP

SNS SIG Events 31 May and 1 June

Tight Gas Hackathon 31 May

Topic	The Challenge
1	Stimulation: How can we do what we normally do better (i.e. more efficiently and cheaper)?
2	Technology: How can we make reservoirs give up their gas more easily?
3	Reservoirs: how can we better improve our understanding of reservoirs? e.g. improve our ability to identify open natural fractures, faults, baffles.
4	Production: How do we maintain production on existing tight gas fields?
5	Logistics: What can be done to reduce the cost of logistics on tight gas developments and how can we reduce the clean-up time on a fraced tight gas well?

Special Interest Groups 1 June

Rejuvenation - AM

This event seeks to stimulate the discussion around the challenges experienced in harnessing the remaining potential of the Southern North Sea, by searching for innovative business and technical solutions.

Late Life and Decommissioning - PM

EEEGR, in association with the Decom North Sea, is hosting an afternoon event dedicated to the latest developments in the oil & gas Late Life & Decommissioning Sector.

Thank you for
your attention
Questions?

