Gannet B Rejuvenation

At last, seismic sees through the gas chimney

DEVEX 2020

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Outline

- Field Introduction
- The seismic problem
- The seismic solutions
  - Technology improvements
  - Integration with other data
- Business impact
Gannet B (GB) Overview

- Forties, Gannet, Cromarty, Odin & Tay
- 4-way dip anticline above salt
- Discovered 1979
- 1 Exploration, 2 Appraisal Wells
- Production:
  - GB01s1 – Watered out
  - GB02s1 – Watered out, closed-in
  - GB03s1 – Producing
- Subsea tie-back to Gannet A
The legacy data problem

The Reservoir

Gas chimney

Sticky shale

Reservoir?

Reservoir

Reservoir
New Seismic

- Better imaging on the crest but still challenging
- Various scenarios considered using different geological models, seismic and well data.
- But we needed something to build confidence that the sands were present on the crest.
Optimising the Stack

Conventional full stack (0-40)

Appraisal well (thin Tay)

Planned well

4D Water Sweep

Tay

Tay?
Optimising the Stack

Optimised Stack

Planned well

Appraisal well (thin Tay)

Tay

Tay?

4D Water Sweep

W

NE
4D Water sweep around the field

- Fairly uniform contact rise and excellent connectivity
- Odin thin in North, Tay thin in South but are connected
- Shallowest 4D signal in Tay near GB01s1
- Confident no 4D over crest
- GBA03 water likely through Odin in South
- GBA03s1 water likely through Forties from NE

GB01s1 watered out
Aprox. 3km long, 3x vert Exag.
Good correlation of EEI amplitudes with Net sand in wells; $R^2 = 88\%$
Summary

- New seismic improved imaging but more confidence needed for crestal sand
  - Optimising seismic stacks makes a big difference
  - Integrating different data gave much greater insights and higher confidence
  - EEI again effective for highlighting and quantifying reservoir presence.

Impact: Infill well planned 2021

Remaining subsurface challenges
- Interpretation and depth conversion uncertainty
- Staying away from water
  - What about the Forties?
Acknowledgements

Subsurface & Wells Team: Conor Carleton, Christopher Freeman, Olivia Faulkner, Diana Cristancho, Alexander Watson, Charles Ileagu, Mike Porter, Andrew Vaughan, Manuel Vieira, Phil Webb

Geophysicists: Jonathan Brain, Rhea Sood, Steve Gouldesbrough, Dan Bright, Kate Lloyd, Sukbinder Sharma, David Bateman

Esso Exploration and Production UK Limited: Dag Isaksen, Katy Kuhnt, Jon Saundry