Acorn Project Overview
Ian Phillips
Outline

• Overview of the Acorn Project
• The key – the Acorn Storage Licence
• Acorn Project – CCS and Hydrogen
• Timeline
The Scottish Net Zero Industrial Cluster

- Full Cluster roadmap
- Access to key infrastructure
- 9Mt of Scotland’s industrial CO\(_2\)
- A key UK and European CO\(_2\) transportation and storage solution
- Exciting suite of low carbon projects
- World class CO\(_2\) stores
- Carbon capture and storage and hydrogen infrastructure by the mid 2020s
The key – the Acorn Storage Licence

The Acorn Storage Licence

- Acorn CO₂ storage licence
- Captain sandstone fairway
- PBDE seismic database
- Shell seismic database
- Petrophysical data available (24 wells)
- Core data available (16 wells)

Detailed technical analysis on 24 wells
Data available for 73 wells
Extensive Seismic available

10 km

Blake
Cromarty
Atlantic
Goldeneye
East and West Rochelle
Hannay
The key – the Acorn Storage Licence

The Captain Sandstone – cross section
The key – the Acorn Storage Licence

The Acorn Licence

• Legal basis
  • Has been transposed into UK law using secondary regulation
  • Storage of Carbon Dioxide (Amendment and Power to Modify) (EU Exit) Regulations 2018

• Crown Estate
  • Lease option on full area issued 27 November 2018
  • First ever such lease option
  • Convert to full lease prior to FID – responsibility now with Crown Estate Scotland

• Oil and Gas Authority
  • CO₂ Storage licence issued 6 December 2018
  • First ever licence issued by the OGA
Acorn Project – CCS and Hydrogen

Project geography

SEGAL Gas Turbines

NSMP North site

NSMP Furnaces

NSMP South site

Goldeneye Structure = Acorn Phase 1 Store
Acorn Project – CCS and Hydrogen

Project overview - CCS

Segal Turbines

NSMP furnaces

Flue Gas

Heat Recovery

Carbon Capture

Dehydrate (remove H₂O)

Compress (to 90bar)

CO₂

Acorn Store
Acorn Project – CCS and Hydrogen

Hydrogen Project overview

Natural Gas

Clean (remove sulphur to ppb level)

Reform

CH₄ + steam → CO + H₂

Shift

CO + H₂ + O₂ → CO₂ + H₂

Capture (remove CO₂)

Purify (Remove CO)

Dehydrate (remove H₂O)

Compress (to 90bar)

Steam

CO₂ → Acorn CCS

H₂ → NTS

Oxygen

Compress (to 90bar)

Dehydrate (remove H₂O)

Capture (remove CO₂)

Shift

CO + H₂ + O₂ → CO₂ + H₂

Reform

CH₄ + steam → CO + H₂

Clean (remove sulphur to ppb level)

Natural Gas
A Potential Acorn Timeline

Phase 1
Establishing the anchor infrastructure

- Acorn Phase 1 FEED
- Acorn Phase 1 FID
- St Fergus injection
  - 300 kt/yr of CO₂
- Drill Acorn well #1
- Acorn Hydrogen FID
- Drill Acorn well #2

Phase 2
A catalyst for clean growth

- H₂ production
  - 440 kt/yr of CO₂
- Drill Acorn well #3 & #4
- First import
  - 1.5 Mt/yr of CO₂
- Acorn 150 Mt Storage site “Sold Out”
- Begin to develop Storage Site 2

2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030 & beyond
Acorn Project Overview
Ian Phillips presentation to EIC
Presentation to EIC – 13th August 2020