

Midleton Well – Planning & Execution

Atlantic Ireland Conference, Dublin Oct. 27th 2015

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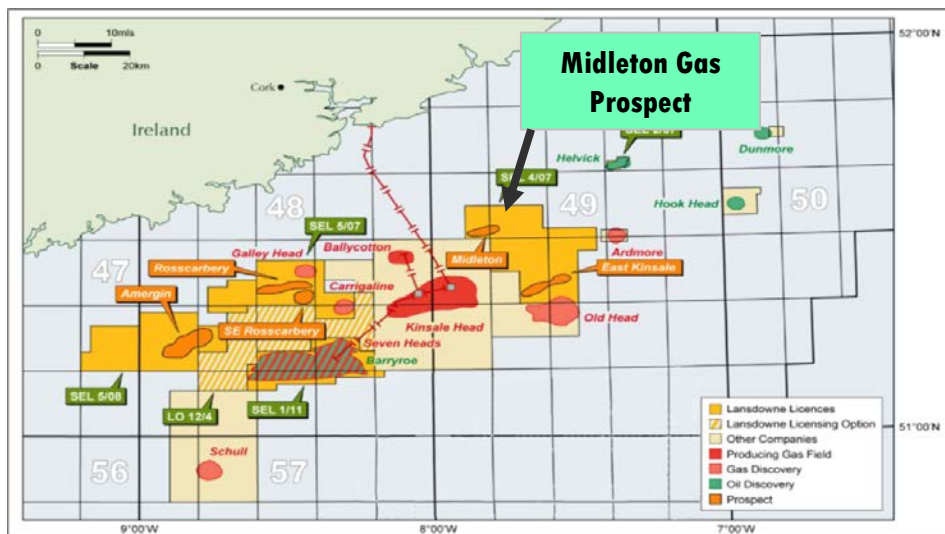
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Midleton Well

Introduction

Exploration Licence 04/07

- Issued to Lansdowne Oil & Gas in Aug. 2007
- 3D Survey in 2011
- Farm-in Agreement with Kinsale Energy (KEL) Nov 2014
- Licence Assignment Feb 2015:
 - KEL: 80%/Lansdowne: 20%
 - KEL to fund 100% of Exploration Well



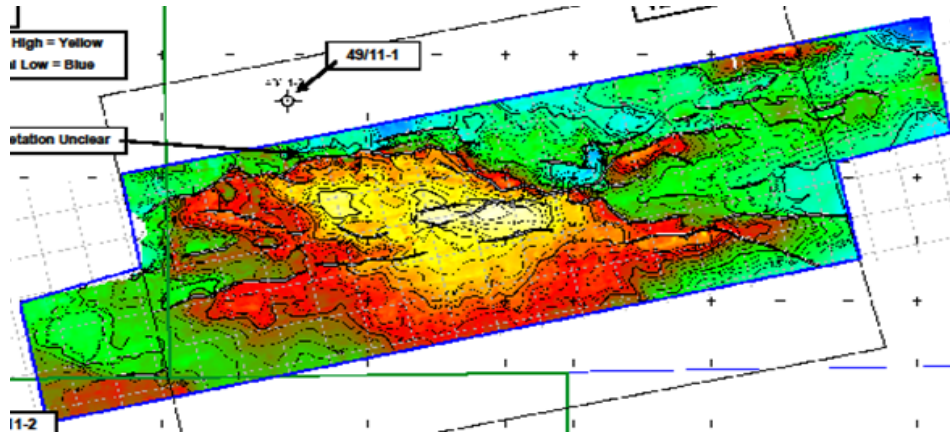
Celtic Sea - History

- Wells
 - 83 wells drilled since 1970 (excluding development wells)
 - 37 wells by Marathon: 1970 - 2003
 - 10 gas discoveries
 - 3 oil discoveries
- Developments
 - 3 gas developments:

• Kinsale Head	1978	(inc. SW Kinsale 1999)
• Ballycotton	1991	
• Seven Heads	2003	
- Very little drilling in last 10 years....Providence (Barryroe), Island Oil & Gas (Old Head, Schull)

Midleton Prospect

- Northern Margin of Basin
- On-trend with producing Ballycotton Field
- Amplitude Brightening at Greensand "A"-Sand level
- Shallow Target Depth (~3,000ft. SS)
- Target Horizons: Greensand + Upper Wealden



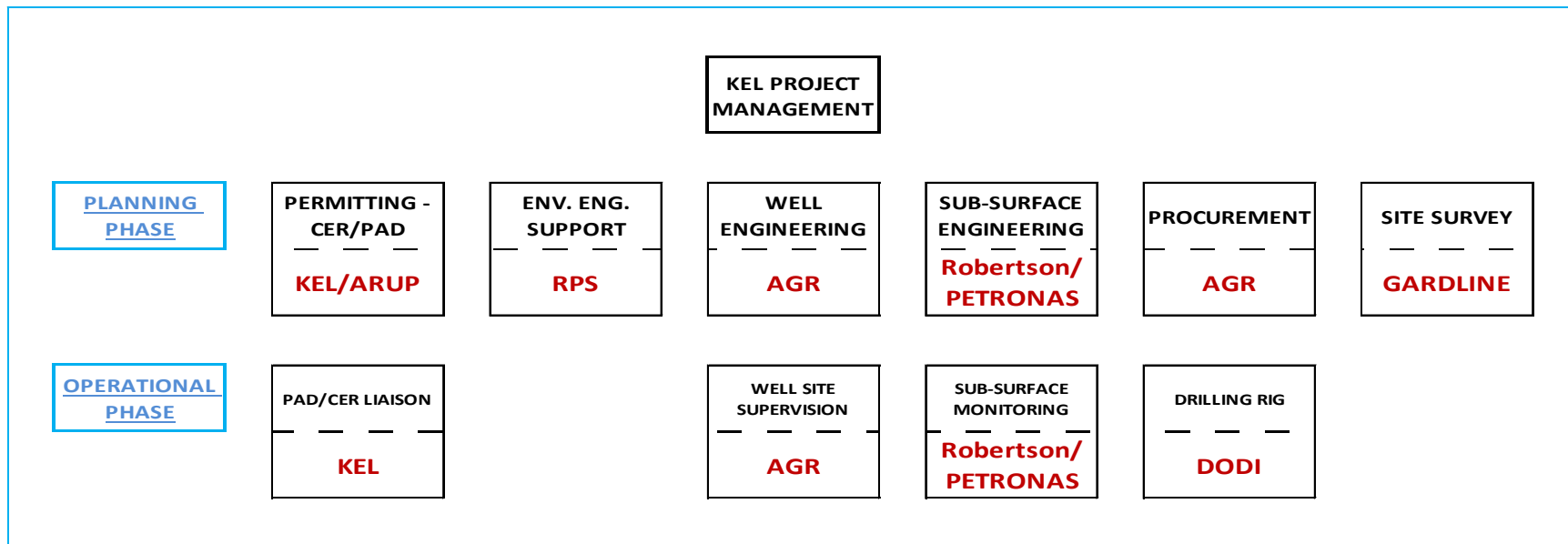
Original Plan

- Licence Obligation: Drill Well by **Dec 2016**
- Site Survey Summer 2015
- Well Permits/Safety Cases Q3/Q4 2015
- Drill Well Summer 2016
- Investigate Possible Rig-Share

2015 Opportunity

- Shell Corrib Workover scheduled for June/July 2015
- Drilling Rig: “Ocean Guardian”
 - Rig had availability after Corrib
 - Already had approved Safety Case
 - Previous operations in Ireland (Shell/Serica)
- Work to be Done:
 - All Permitting
 - Site Survey
 - Well Engineering
 - Services
 - Rig Contract
- Time Window: ~6 months – **Feb.-July**

Organisation



Key Service Providers:

- AGR Well Engineering
- RPS Environmental/Site Survey
- Arup Project Engineering

Stakeholders

- DCENR/PAD
 - Site Survey & Well Permits
- CER
 - Safety Case Submissions
- DTTAS
 - Oil Spill/Emergency Plans
- OTHER
 - State Agencies (~20)
 - Local Agencies (Fisheries, Harbour Board)
 - Suppliers, Contractors
- **Stakeholder Management Plan – KEL owned**

Permits – Key Submissions

- **DCENR (PAD):**

- Environmental Report
- Appropriate Assessment
- Generic/Final Well Proposal
- PUDAC



Department of Communications, Energy and Natural Resources
An Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádurtha

- **CER:**

- Well Work Safety Case
- Non-Production Safety Case



- **DTTAS (Coastguard):**

- Oil Spill Contingency Plan
- Emergency Response Plan
- Ship to Ship Transfer Permit



- **Challenges:**

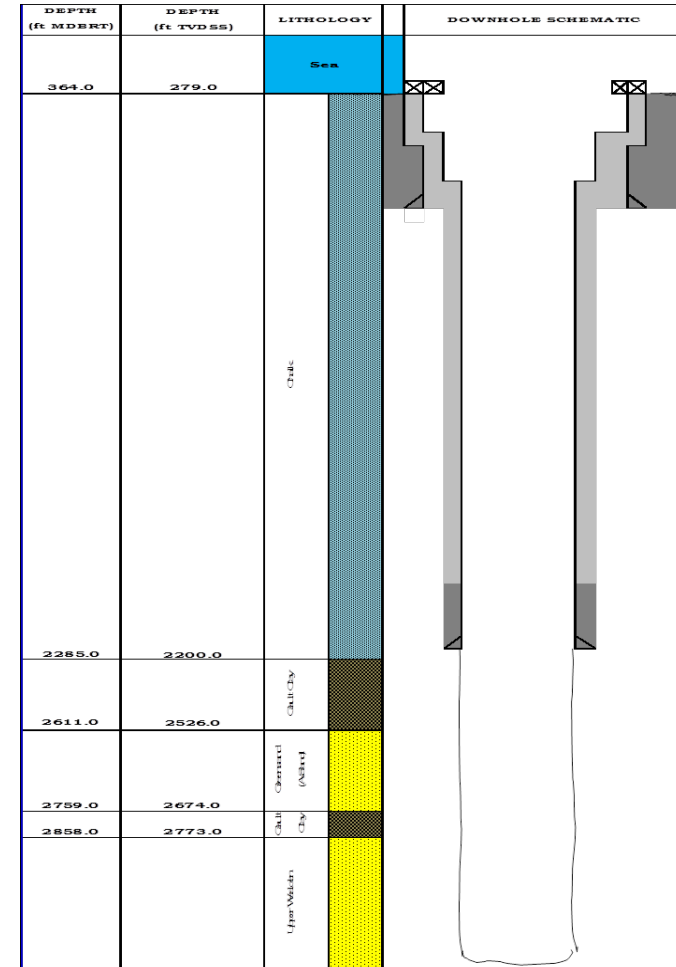
- Truncated timetable for preparation and submission (1-3mths).
- Schedule for key service company appointments (e.g. Drilling Fluids)

Timelines

- DCENR/PAD
 - 1st Meeting: Feb 18th
 - Preliminary Environmental Submissions: March 9th
 - Site Survey Application: April 2nd
✓ Approval May 8th
 - Final Well Proposal (FWP): June 26th
✓ Approval July 15th
- CER
 - 1st Meeting: Feb 18th
 - Safety Case Submissions: April 29th
✓ Approval July 14th
- DTTAS
 - 1st Meeting: March 25th
 - OSCP Submission: June 22nd
✓ Approval July 16th

Well Design

- Possible pressure depletion in 'A' Sands (Greensands)
 - Mud weight selected to address normal pressure environment whilst minimising overbalance in case of pressure depletion
 - Potential for Losses
 - Base Chalk (Fractured)
 - A Sands (if depleted)
 - Hard Drilling through Chalk
 - Difficulties with top hole drilling –Chert Nodules
 - Low Penetration Rates in intermediate section
- Drill chalk with 12 ¼" bit
- Slim-hole Design



Slim-hole Approach

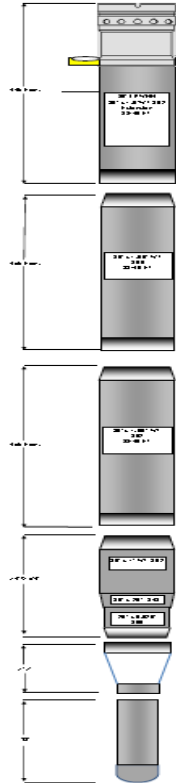
30" Housing

30" Conductor Joints

30" x 20" X-O

20" x 13 3/8" X-O

13 3/8" Shoe



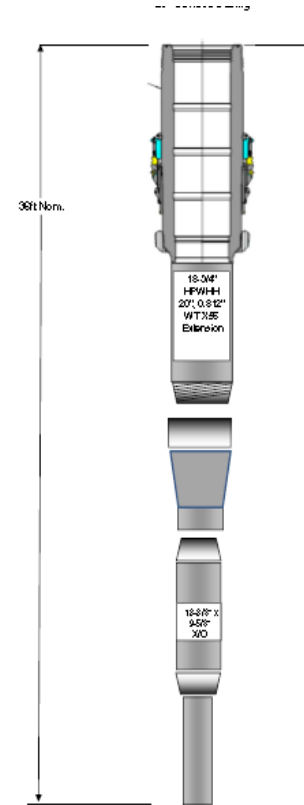
18 3/4" WHH

20" Casing

20" x 13 3/8" X-O

13 3/8" x 9 5/8" X-O

9 5/8" Csg.



Procurement

- AGR Kick-off Meeting: Feb 24th
 - LOGIC Contracts
 - AGR Pro-forma Scopes
 - Fast Turnaround
 - LLI's identified + ordered
- Drill Rig:
 - Enquiry Issued: Feb 27th
 - Contract signed: June 19th
- Service Contracts
 - 15 Enquiries
 - RCT Rules relaxed
 - Piggy-back on existing KEL Services (Logistics etc.)

Midleton Well

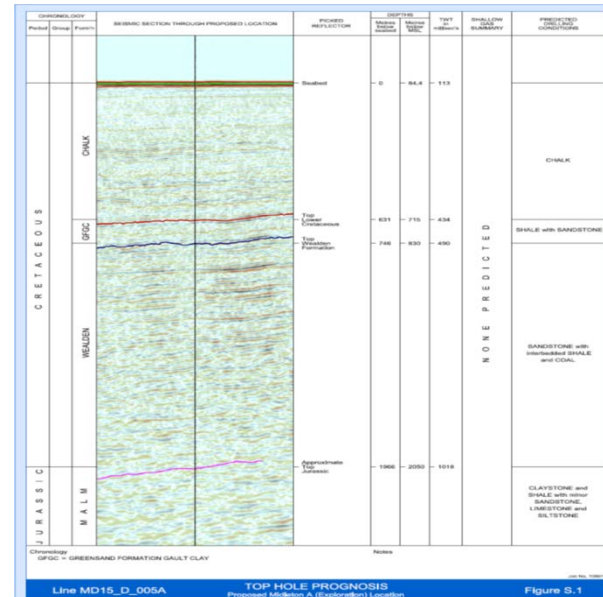
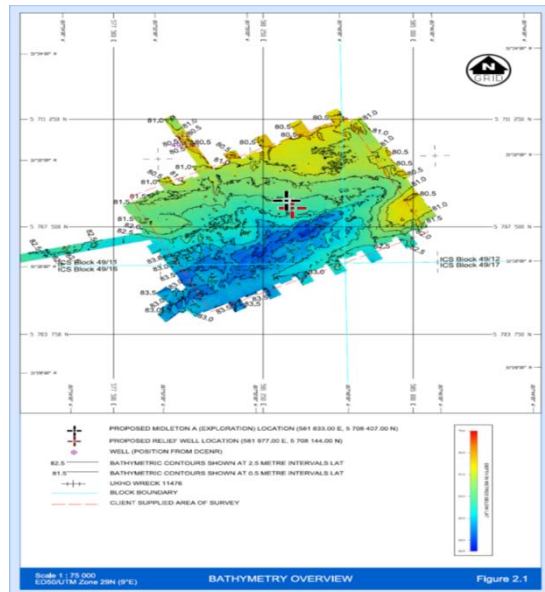
Operations

Site Survey



- “Polar Surveyor” - Gardline – Great Yarmouth UK
 - Mobilised May 19th
 - Survey Completed May 27th
 - Report Issued June 23rd
 - FLO + MMO (x2) onboard

Site Survey



- Analogue + Digital
- Environmental Samples – 2 Well Locations
- Good Data Quality
 - Seabed + Chalk as predicted

Drilling

Ocean Guardian – Diamond Offshore



- July 15: pre-lay Anchors
- July 22: Ocean Guardian on contract
- July 29: Spud Well
- Aug 9: Reached TD
- Aug 18: Rig on tow
- Aug 27: Rig off contract

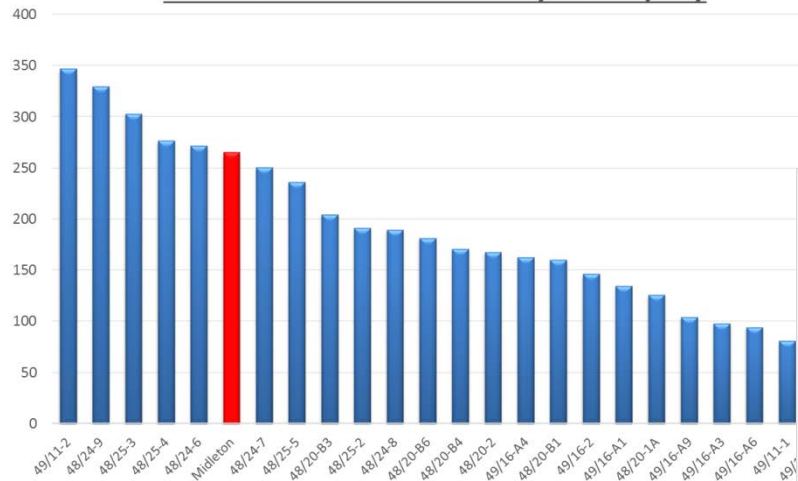
➤ **33.76 Days on hire....**

Drilling - Highlights

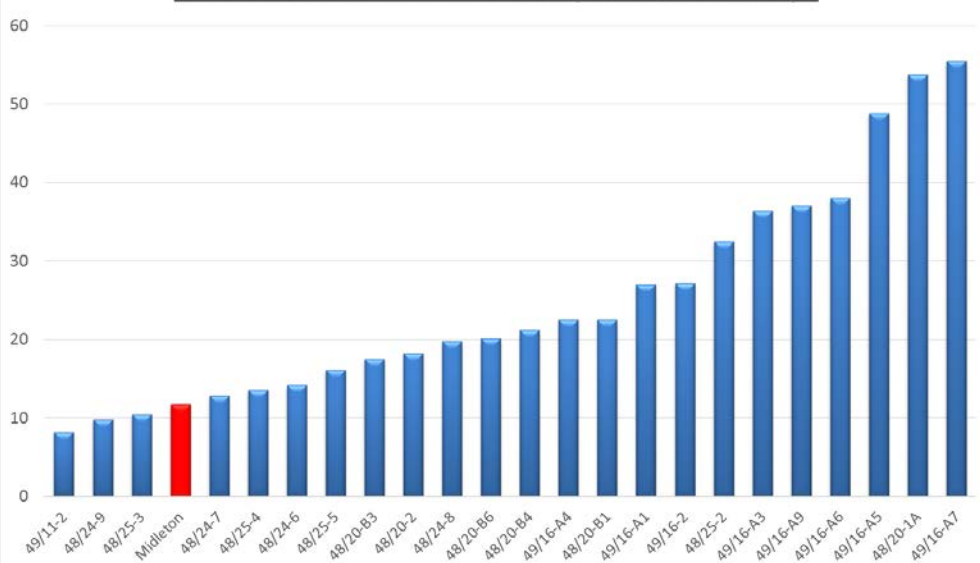
- Pre-lay of anchors worked well as any re-setting of anchors was carried out offline
- Top hole drilling strategy – 2 runs – (possibly drill in 1 run with 36'' bit/motor)
- 12-1/4" Insert bit on motor BHA drilled 1,616ft riserless through chalk section
- 8-1/2" hole drilled vertically through base chalk and both reservoir targets in one run
 - 10ppg KCL Glydril water based mud system
 - 14.13ppge FIT in base chalk

Drilling Performance

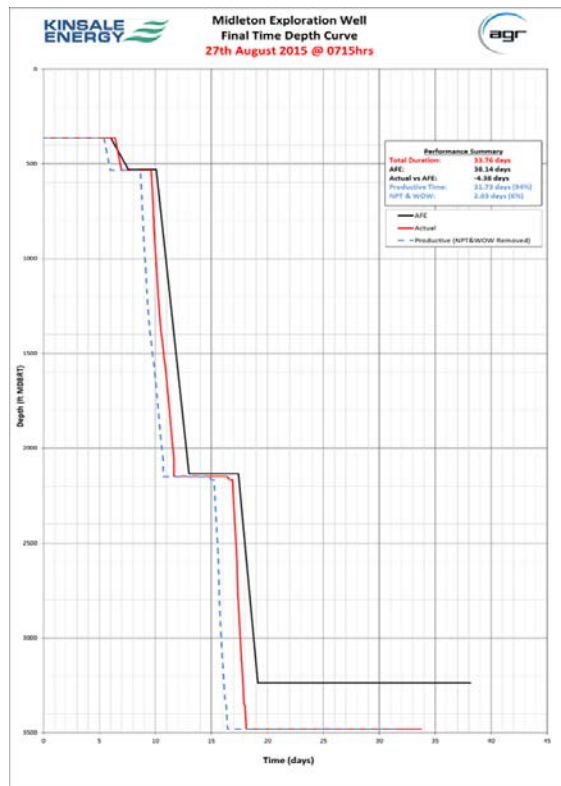
Midleton vs Offset Wells: Dry Hole ft/day



Midleton vs Offset Wells: Spud to TD - Days



Drilling Performance



Summary:

- Total Duration: 33.76 days
- AFE: 38.14 days
- NPT: 0.52 days (2%)
- WOW: 1.51 days (4%)

Breakdown(Time):

- Transit from Corrib: 2.29 days
- Transit to Firth of Forth: 6.71 days
- Total Transit: **9 days (26%)**

Breakdown(\$):

- Total Transit: **31.7%**
- (100% Mob/Demob) → **~40%**

Risk Mitigation

- **Regulatory**
 - Early + Frequent Engagement with Regulators
 - Fit for Purpose Documentation
- **Stakeholder Management**
 - Identify players
 - Be proactive
- **Contracting**
 - Use existing frameworks, if possible
 - Watch commitment schedule
- **Technical**
 - Economical Design
 - Pragmatic Approach e.g. no well test

Conclusions

- Successful Operation – well drilled safely and without incident
- CER Process only worked because of pre-existing OG SC
 - New CER AoC (Acknowledgement of Compliance) system for Rigs essential to allow flexibility in rig tendering
- Rig/Vessel mobilisation costs are a significant proportion of budget
 - Industry needs to be more efficient:
 - Reduced mob spend = more drilling spend
- Unlocking the Celtic Sea still a challenge.....



Thank you