

Expandable tubulars and their role as an enabling technology in Brownfield and Greenfield CCUS applications.

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Introduction



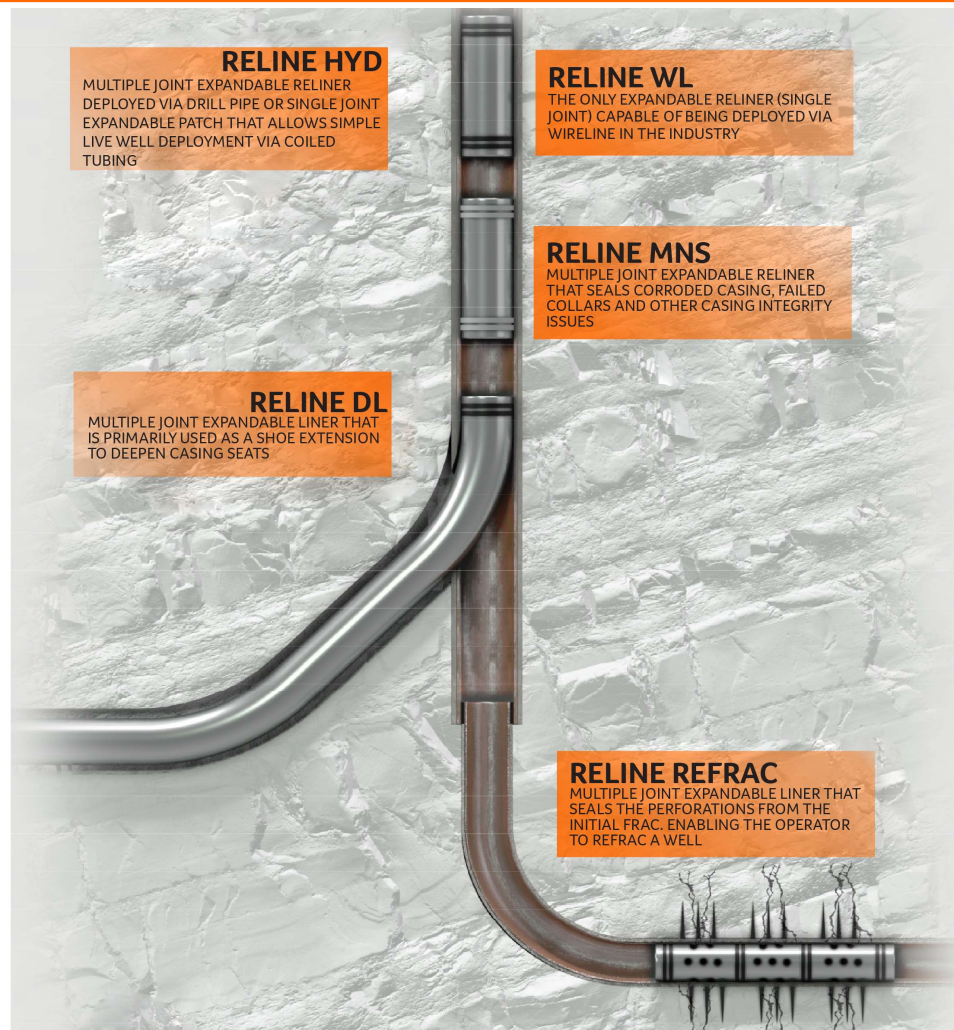
Introduction

- HQ – Aberdeen Scotland
- Positioned Globally
- 50 + Technologies
- Design Engineering team
- Applications Engineering
- 24/7 Operations Support



Expandable Portfolio

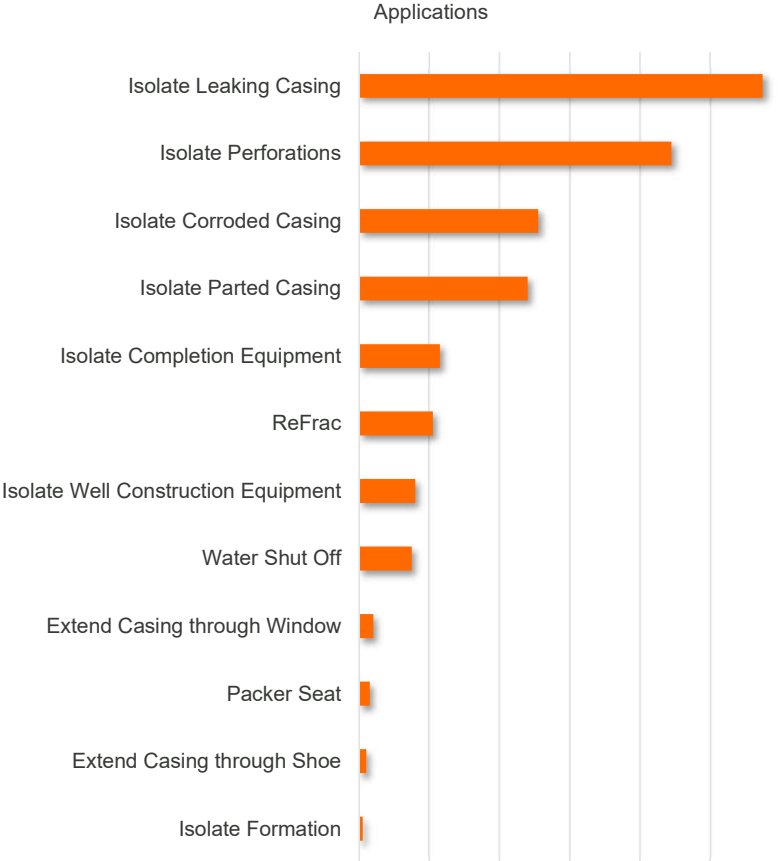
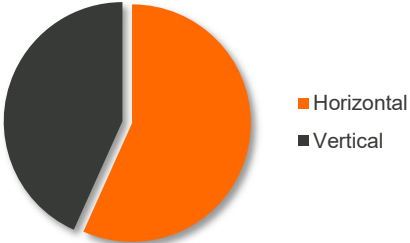
- Open Hole - Outer CORE
- Cased Hole - Inner CORE
- Shoeless
- DP Deployed options
- WL Deployed options
- CT Deployed options
- Carbon Steel / CRA's Available



Expandable Experience

HIGHLIGHTS

- Expandable Footage to date: ~375,000ft
- Deepest Installation: ~20,000ft TOL (GoM)
- Longest Single Expansion: + 9,000ft
- Available from 3 ½” up to 20” base casing



Why Expandable Tubulars?

- Expandable patches & liners offer significant ID & length advantages over conventional solutions such as scab liners or intervention straddles
- Larger ID's support primary drill bit / casing architecture design, larger completion equipment and future workovers
- Expandable seals can be used in cased hole for life of well isolation and tie back
- Used within the open hole to isolate trouble zones, depleted zones or compartmentalize multiple zones if required
- Larger ID's can significantly reduce frictional losses during high-rate stimulation, injection or drawdown



Reline Casing with Nickel CRA Liner

PROBLEM

Planned changes to existing production well would introduce corrosive fluid into a previously unexposed interval. The casing in this area was not compatible with the new requirements. This section of casing required to be covered with CRA material.

SOLUTION

- Coretrax ReLine MNS was deployed over a 380 ft interval
- Nickel CRA expandable liner was utilized
- Premium expandable Coretrax e2m connections enabled long length of liner to be run
- Metal to Metal anchoring utilized to seal to host casing
- No shoe eliminated need for drill out after installation

RESULTS

- Expandable liner successfully deployed and expanded in one trip
- Existing casing fully isolated from production with new CRA liner

PROJECT DETAILS

Location: Gulf of Mexico
Casing: 9 7/8" 62.8lb
Expandable Liner Length: 380 ft
Expandable Liner Material: Alloy 28
Expanded Liner ID: 7.560"
TOL: 19,517 ft



Expandable Liner enables conversion to Gas Storage

PROBLEM

Operator wished to convert old production well to Gas Storage. Existing perforations need to be isolated and reactive Shale formation below shoe need support.

SOLUTION

- Coretrax ReLine DL expandable liner system was deployed across the old perforations and an additional 137ft of open hole
- Elastomeric seal used to isolate perforations
- Expandable liner provided support to reactive Shale removing need to pump cement below previous shoe
- Large post expanded ID >5" allowed gravel pack completion to be run through liner

RESULTS

- Well successfully deepened through a sensitive Shale formation and existing perforations effectively isolated
- A gravel pack completion was deployed below the expandable liner enabling Gas Storage

PROJECT DETAILS

Location: Italy
Well MD: 3,350 ft
Casing: 6 5/8" 24lb
Casing Shoe: 3,167 ft
Expandable Liner Length: 311ft
Expanded Liner ID: 5.145"
TOL: 2,993 ft



Completely Reline existing wellbores

PROBLEM

Operator wished to resolve multiple well integrity issues that they were facing in 3 separate wells across a campaign

SOLUTION

- Cover the integrity issues in each well with one full length liner
- Elastomeric seal used in multiple locations to isolate integrity issues
- Post expanded pressure rating of liner capability of well over 10,000 psi

RESULTS

- Coretrax ReLine MNS expandable liner system was deployed across the three well campaign and expanded more than 27,000 ft of liner in total
- Total setting time from beginning expansion to exit top of liner was 9 hours per well
- Each run exceeded previous World Record length by over 1,000 ft

PROJECT DETAILS

Location: USA
Casing: 5 1/2" 20lb
Expandable Liner Length: + 9,000 ft per well
Expandable Liner OD: 4.25"
Expanded Liner ID: 4.10"



Cost Benefits

Amongst other benefits, it is expected that substantial cost savings may be achieved by reusing existing oil and gas infrastructure for Carbon Capture, Utilization and Storage (CCUS). An increasing number of oil and gas reservoirs are approaching the end of their productive lifetime, presenting an opportunity for conversion of the extensive facilities to enable CCUS

DOE, 2017

The existing wells in these assets present both an opportunity and a challenge for CCUS development. On one hand substantial cost-savings could be achieved by re-using wells for CO₂ injection, monitoring or pressure management.

Additionally, it can also reduce the significant costs associated with decommissioning of oil and gas infrastructure or drilling new wells solely for CO₂ storage. Reducing costs is widely seen as crucial to accelerating the implementation of CCUS around the world.

REX-CO2

Summary

Expandable tubulars can play a key part in repurposing existing assets

Utilizing Brownfield assets is a way to reduce cost

Recycling Brownfield assets reduces the environmental impact

Brownfield assets can be utilized to drill new wells utilizing expandable open hole technology to address problem formations

Sidetracking operations in existing wells can also benefit from expandable tubulars by reaching deeper targets whilst maintaining maximum ID for future operations.

Expandables can be used to maximize ID into the reservoir in Greenfield applications



THANK YOU

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