The Multilateral Future
A Partnership to Push the Envelope

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Overview

Multilateral Background

Well Construction Objectives

Challenges

First Gen Installation

Future Development

Conclusion

Q&A
Multilateral Background

Why introduce multilateral complexity for full section development?

*separation loss, directional intricacy (multi-conductor pads), surface footprint, spacing, casing design*
Well Construction Objectives

1. Delivery across diverse asset lithology portfolio…
   …rock competency dictates junction isolation needs

2. Beat marginal cost of drilling second, third, fourth well(s)…
   … scales for more laterals and *offshore* drilling market
Challenges

Design/Installation

- economic, repeatable
- reliable – setting depth/orientation assurance
- versatile – cased/cemented & port/packer completions
- robust – resistant to repeated exit window re-entry
First Gen Installation

Preliminary unsupported junctions

*Cleveland – TX Panhandle*

First BP/PP junction isolation tool trial(s)

*Cleveland – TX Panhandle*

[Link to article](https://www.wsj.com/articles/too-big-to-frack-oil-giants-try-again-to-master-technology-that-revolutionized-drilling-1471362741)
First Gen Installation

Mechanical integrity at junction no ID restriction

OH system, whip pulled, bent joint

Second lateral: semi-success, all ports/packers in OH

Changes made: remove stabilizer, lower packer, UBHO M/U

Third lateral: full placement/orientation success
First Gen Installation

- Set whipstock and mill window
- Drill and clean lateral
- Recover whipstock
- Install completion system
- Space out isolation joint to mechanically support junction
First Gen Installation

Verification

Side view camera rotating left to right

Left edge of window and JIT

Entire JIT in view

Right edge of window and JIT
Future Development

JIT Version IV

Self landing/orienting

Cementable

Temporary tieback to motherbore

Q1 2017 trial

← Liner To Surface

← Retrievable Hanger

← DV Tool

← Casing Exit Window

← Isolation Tool w/Key
Conclusion

Continuation: operator/supplier optimism

Innovation: new design approach to existing problem

Positioning: prototype developed as necessity in downturn market

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ENGINEER ADJUSTMENT AND RESET TOOL

INSTRUCTIONS FOR USE

A. Locate engineer that created situation.
B. Grasp hold on A-Side of tool firmly with both hands.
C. Initiate Extreme Contact of Engineer’s head with B-side of tool, until one of three conditions become apparent:
   A. Engineer’s line of thinking meets reality.
   B. Engineer admits that he or she has made a mistake.
   C. Engineer realizes that Non-engineering methods may work.

When any one of these conditions has been met; STOP !! ... ENGINEER HAS BEEN RESET!

Thoroughly clean the tool and place it back into its designated holder until needed again. Return Engineer to his or her work station and have them proceed as normal.
Backup

KOP: 8,652' @ 89°  Liner Top: 8,693'  7'' Shoe: 8,842'

CIBP Top: 8,689'

170' Tangent at 30° for ESP

Total 7'' Casing at 90° - 230°

Sidetrack Window - 80°  Liner Lap - 150°