



**'JOCKO' EVANS
SYMPOSIUM**

-APRIL 10-12, 2025-



The Ugly Side of the Learning Curve

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**Petroleum
Consultants**

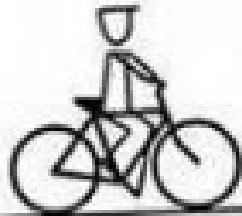
CREATING VALUE THROUGH EFFICIENCY AND INNOVATION!

Overview

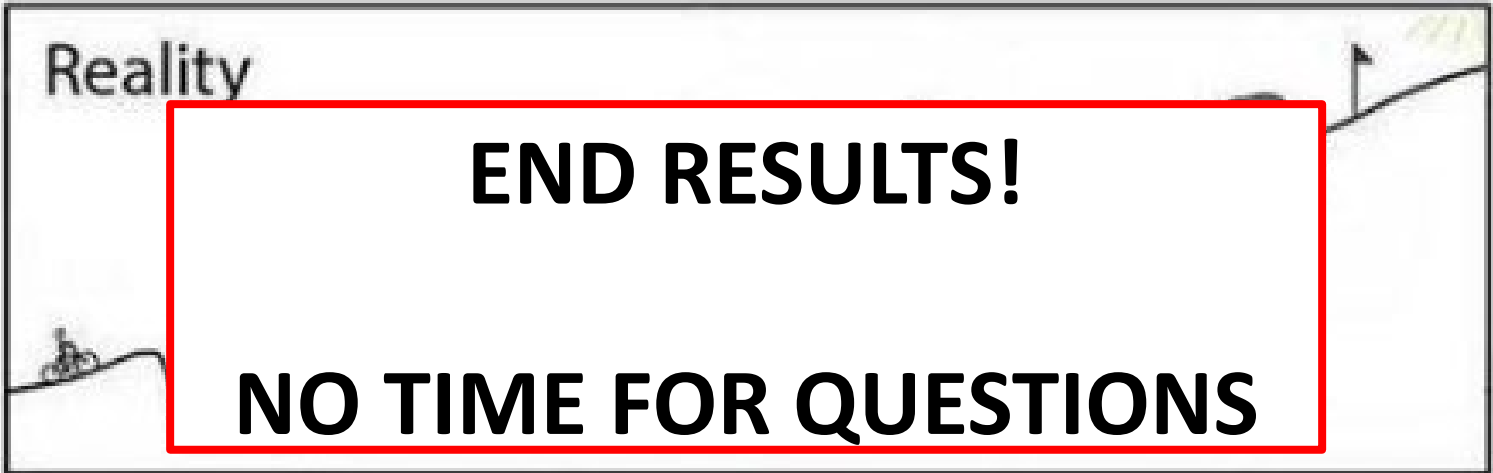
- Results-focused project reviews
- Converting learnings into value
- Evolution of a development program: the good, the bad, the **ugly**
- How can we leverage the ugly side of the learning curve?
- Audience participation (time pending)

All Glory, No Guts

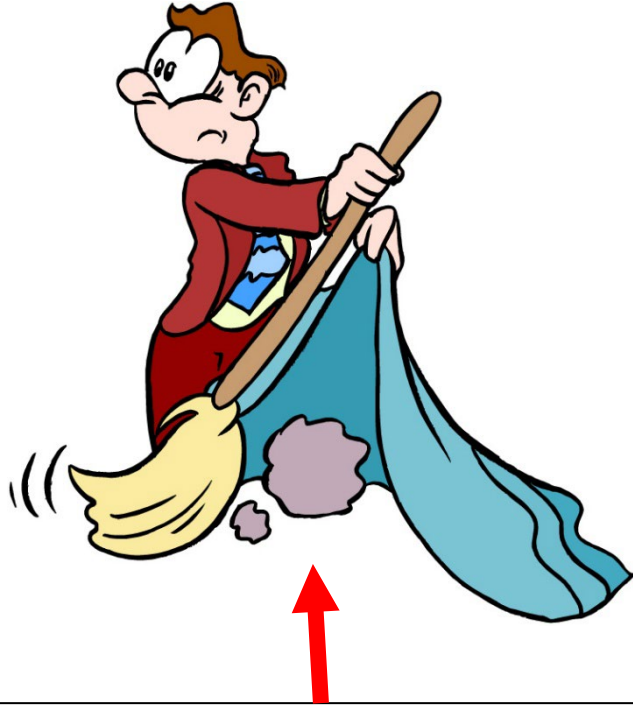
Your plan



Reality



Results-Driven Project Reviews



What are you sweeping?

1. Dust (minor problems)
 - Probably fine
2. Dog Shit (big problems/opportunities)
 - Not fine*

- Focus on tangible results from the project
 - Improved production, revenue
 - Reduced time, costs

Why do results get all the love?



TIME – our most precious commodity

- Busy teams, “bottom line up front” **B.L.U.F.**
- Charts and graphs (bright, shiny objects)



PSYCHOLOGY – an engineer’s mind is a scary place

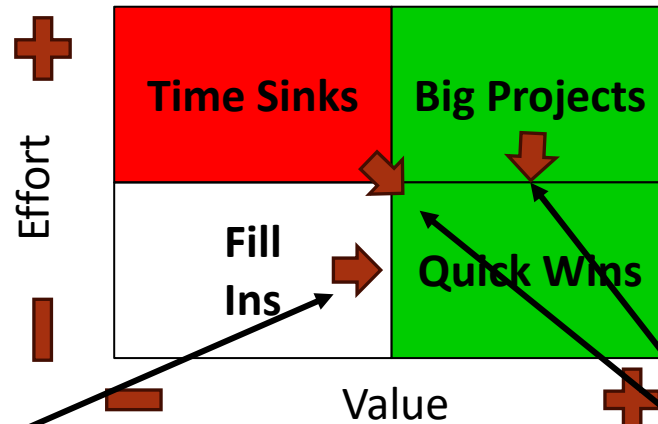
- Need to find the “right” answer
- Too proud to admit mistakes



COMPETITION – real or perceived

- Internal (business units, co-workers)
- External (potential investors, clients)

What are we missing?



Pursuit of perfection:

What parts of the project could be tweaked? Almost always there is something that could be handled differently/better. 90% and 100% are both A's but that extra 10% can be huge to the bottom line if repeated enough.

Solving common problems:

If your project hit some snags, there's a good chance others have/will hit this same problem. Maybe you (or somebody else) has solved it, and we can use a common solution to free up bandwidth to tackle the next big opportunity.

Shallow Horizontal Drilling Program

- Single-mile lateral
- Longest lateral in 20+ miles
- Casing successfully run/cemented

- 1.75-mile lateral
- First successful deep-set surface casing
- First successful trial of floating casing

Well #1
2021

Well #2
2022

Well #3
2023

Well #4
2023

- Two-mile lateral
- First curve/lateral run w/single motor
- Reduced 5.5" from 20# to 17#

- Two-mile lateral
- Highest ext. reach ratio well in WY*
 - 5.2 ratio (10,500' VS 2,000' TVD)
- **Beat AFE DvD curve**

Shallow Horizontal Drilling Program

- Single-mile lateral
- 24+ hours NPT to retrofit flowline on “surface” rig
- 1.83° motor unable to get adequate yields for curve
- Rig unable to rotate & PU near TD

- 1.75-mile lateral
- 20+ hr NPT surface casing run due to sloughing
- Two sidetracks due to ineffective hole cleaning
 - 8.75” hole w/4.5” DP, poor HZ geometry
- Cut lateral short due to T/D

Design changes from previous well:

- Larger rig (750 HP double)
- Reduced prod casing weight
- 2° motor for curve/lateral

Well #1
2021

Well #2
2022

Well #3
2023

Design changes from previous well:

- Pre-mix sfc hole mud system
- Return to 7-7/8” prod hole
- Implement 20/20/20 sweeps
- Simplify directional plan

Well #4
2023

Design changes from previous well:

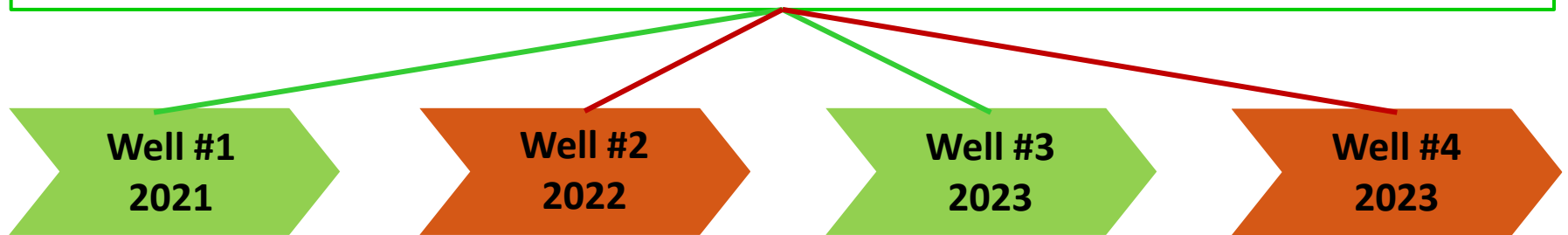
- Increase sfc casing to 9-5/8”
- Deep set sfc casing to avoid shallow sloughing
- Look for low GR count marker ~15’ from top of target bench
- Increase prod hole diameter, land lower to reduce mud losses
- Float production csg

- Two-mile lateral
- Dedicated roller-cone run for sfc float in 8-5/8” casing
- Sidetrack due to landing in wrong bench
- Switch to WBM ~1/2 into lateral due to lost circulation
- Days to run casing due to running shale exposed to WBM

- Two-mile lateral
- Highest ext. reach ratio well in WY*
- Beat AFE DvD curve

Shallow Horizontal Completion Program

ALL WELLS COMPLETED 100% FINE – NO ISSUES.
WORK COMPLETED BY DOUG RUBICK



Questions?



Shallow Horizontal Completion Program

- First modern HZ completion in 20+ miles
- 5+ hours NPT waiting on water
- 2" flowback iron used during drill out

Well #1
2021

Well #2
2022

- 1.75-mile lateral
- Clay Stabilizer not utilized during coil drill out.
- Excess water used during pump down (no pump down rings)

Well #3
2023

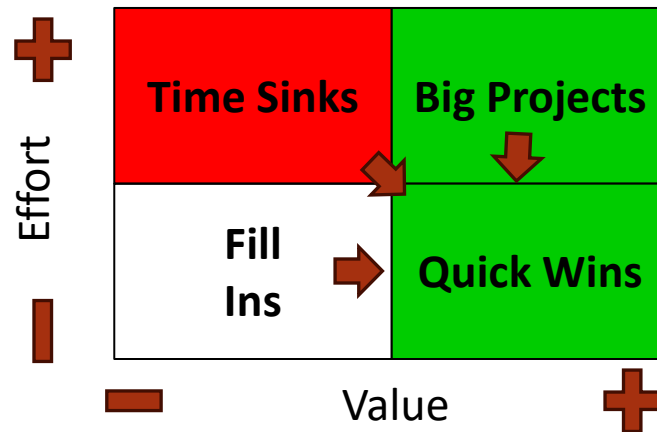
Well #4
2023

- Two-mile lateral
- Potentially under stimulated zones 2-4 due to incorrect perf design
- Did not run chemical tracers on toe stages

- Two-mile lateral
- Froze eight miles of water transfer lay flat line
- Set WY record for time to drill out last two plugs (friction)

Final Thoughts

- Sometimes the journey is more important than the destination
- Oil & gas industry = “opportunity-rich” environment



How can we use the ugly side of the learning curve?

Students/Early Career

- Don't be afraid to admit not having an answer, ask questions
- Seek out “institutional knowledge” from experienced personnel
- Embrace lookbacks/review processes
 - Capture learnings **ASAP**

Leaders

- Create opportunities for collaboration & knowledge sharing (internal & external)
 - E&P sharing gaining traction
 - “A rising tide lifts all ships”
- Capture/share learnings, use them to improve future projects

Questions?

