

The
DRILLER'S
PLAYBOOK

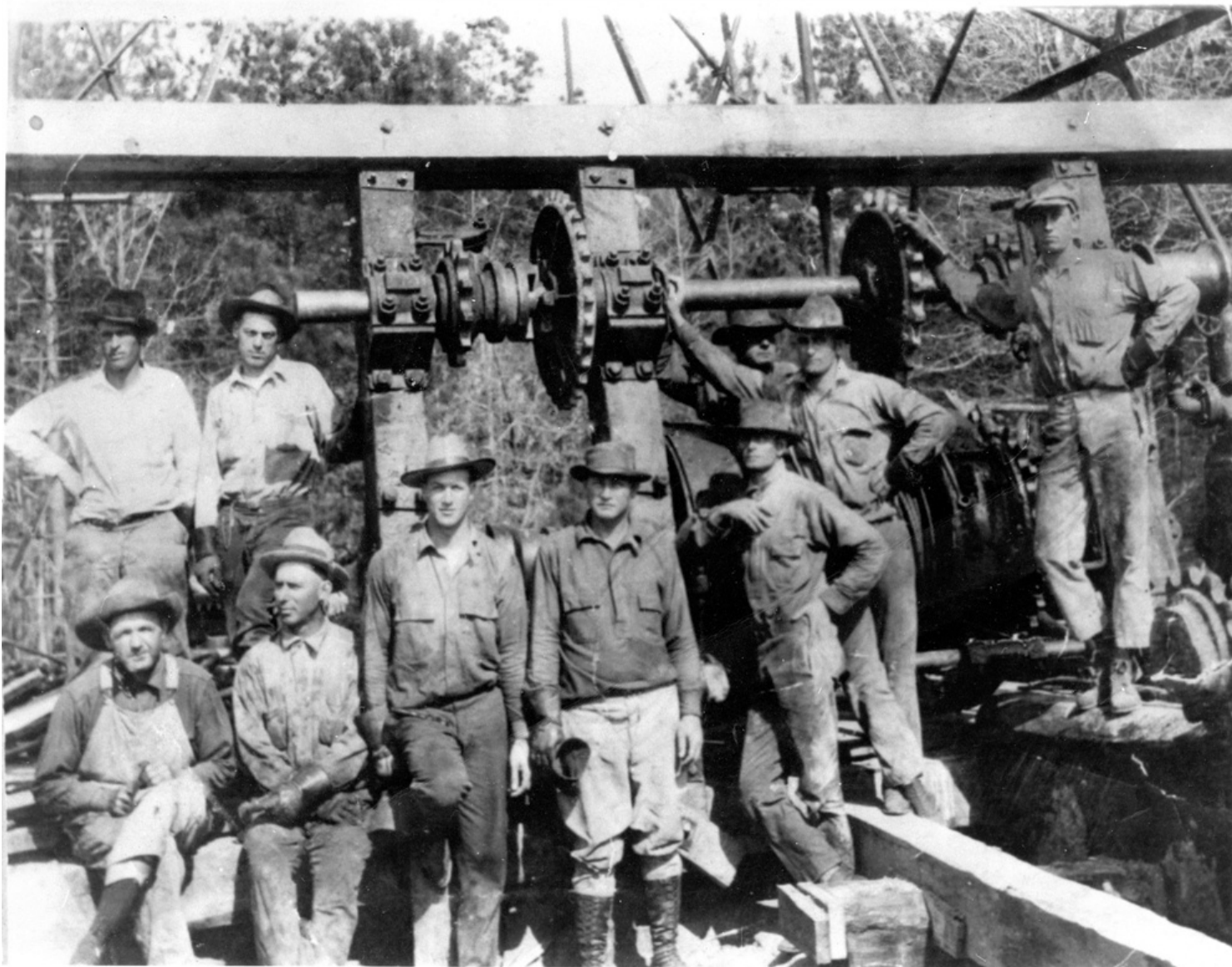
Wisdom for Horizontal Drillers
in the
Midland Basin

Andrew N. Hunter, Scott L. Lowry, and Stephen Byers

Horizontal Drilling Conference 5/21/19



A Texas Family Tradition



Great-Grandpa Bill (1920)

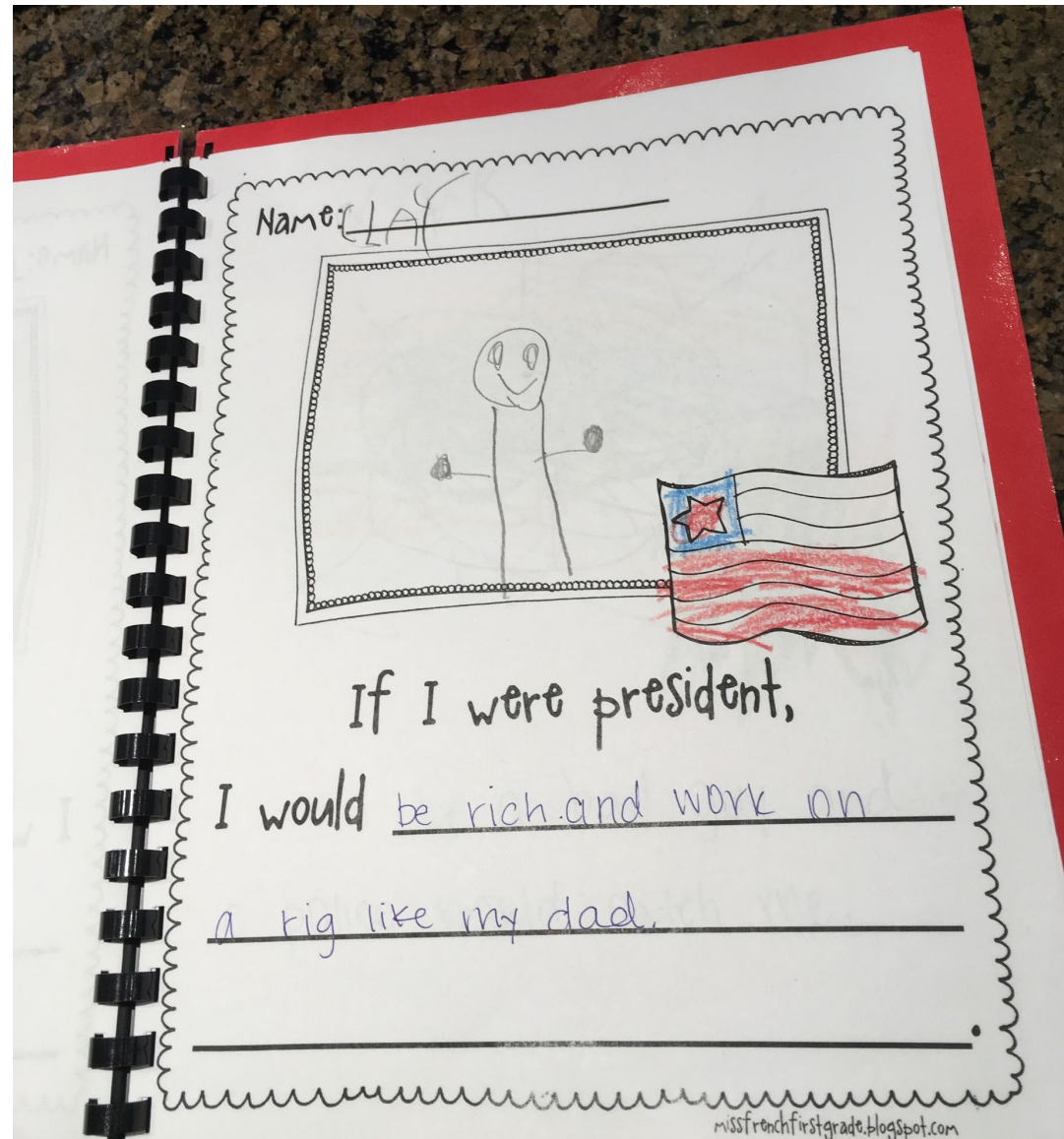


Grandpa Bilbo (Petroleum Engineer), Uncle John, and Stepdad Bill (1950s)



Ensign 151 crew including author and Guidon Supervisor and former Toolpusher Chris Robinson (2nd from Right)

The Next Generation



Forward Looking Statement

- The following slides outline our current best practices which are always subject to change based on new data and new observations
- We do not claim nor believe to be the best drillers in the basin but we're always striving for it
- We believe that all drillers benefit by sharing current best practices and strategies with peers and competitors (you get what you give)
- There is more than one way to drill a cost-effective well that meets objectives
- None of the technologies or services described herein are paid endorsements; we are simply sharing tools that we believe help us to drill more efficiently



Guidon Overview

Key Highlights

Contiguous, operated scale land position with rights to all benches

- 33,600 net acres (45,800 gross acres)
- >95% operated w/ JOA in place
- 94% HBP/CDC: can satisfy minimal CDC/expiration with 0.5 rig per year
- 20–30% AMI partner under JOA (~8,000 additional net acres)

Deep inventory of drill-ready, executable locations

- >1,200 drill-ready locations (operated, >7,500', >95% WI control, offset economically proven zones in MSPBY, JM, LSPBY, WCA, WCB)
- 5 zones / 8 benches currently being developed
- 9,600' average lateral length for all future drill ready locations

Robust current production profile and strong well results provide near-term cash flow

- Current production: 10,600 net boe/d (19,000 gross boe/d)
- Wells: 28 Hz producing¹ / 7 SIFOI / 13 WOC / 14 wells in progress
- Avg. EUR 126 MBOE/1,000' for the 16 wells > 3 months production
- Active rigs: 2

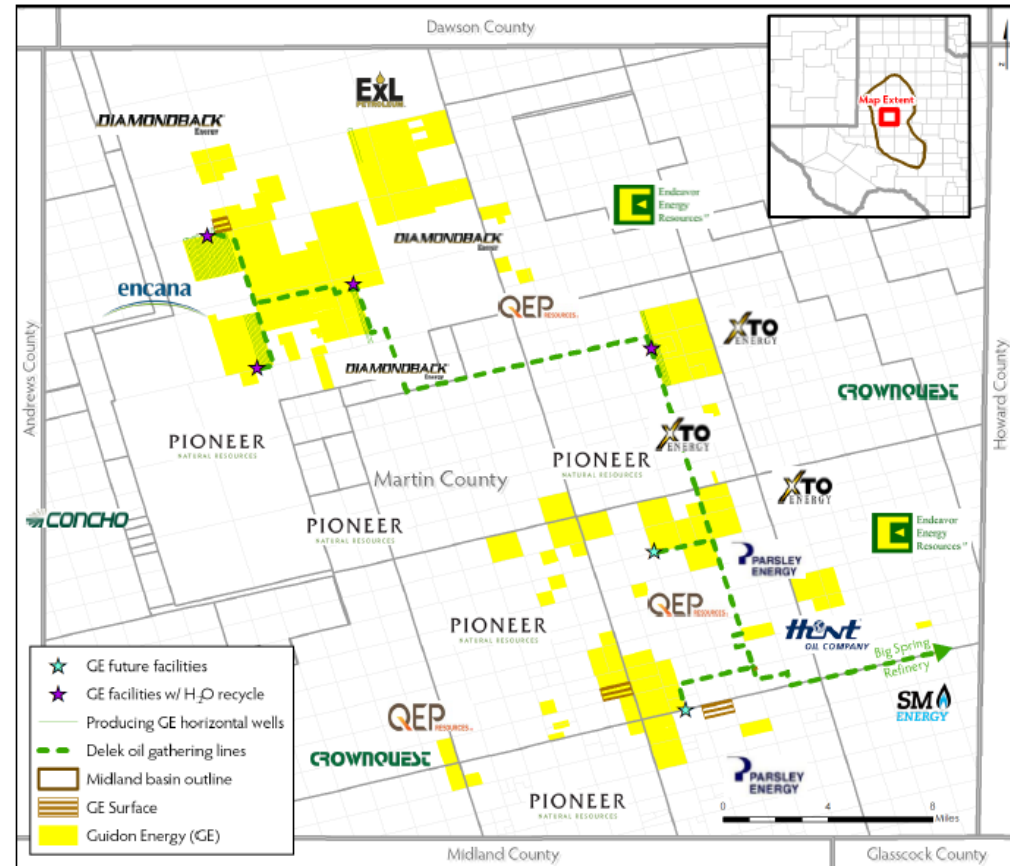
Crude, water, and gas infrastructure in-place to support near-term full-field development

- 200,000 bbl/d of current water recycle capabilities
- Partnership with Waterfield to provide 3 Ellenberger SWD wells with ~34 miles of 16" & 20" poly lines connecting across our development areas by the end of 2019
- Developing acreage position with focus on efficiency through pad drilling, production corridors, water recycling and offtake pipeline capacity

Proprietary science work and database across the asset to drive resource recovery

- Optimizing reservoir recovery through full core analysis across acreage and 330 mi² of high quality 3D seismic covering ~91% of leasehold
- 3,900' whole cores and extensive logs across the acreage position

Asset Position



* All data above as of March 1, 2019 and will change as development continues

¹ 8,500' average lateral length of the 28 producing / drilled wells

The Driller's Playbook

1. Building the Team
2. Surface Land Management
3. Development Tenants
4. Vendor/Rig Selection
5. Well Design
6. Turnkey Spudder Rig
7. 12-1/4" BHA
8. Curve/Lateral Summary
9. 6-3/4" Lateral BHA
10. Old vs. New School Directional and Geosteering
11. Optimized Morning Reports and Data Analysis
12. Philosophy

Building the Team

- **Drilling Engineers & Management should have previous experience working as a rig supervisor**
 - At Guidon we are fortunate to have former supervisors working at CEO, COO, VP, Manager, and Engineer positions
- **Balance “grey hair” and youth with a preference for former toolpushers working as night company men**
 - Experience is critical for tight hole, well control, and all other drilling hazards
 - Youth, enthusiasm, and new ideas keep everyone moving forward
 - Toolpusher usually sleeps at night; its beneficial to have a former pusher supervising operations
- **Set clear expectations with entire rig team**
 - Commitment to HSE
 - Honesty and respect
 - Focus on pre-planning
 - Top tier performance
- **The Importance of good rig team morale cannot be understated**
 - Team mentality: “strive to build a team with comradery and respect... “we” supersedes “me”
 - Delivery is important when communicating with Rig Supervisors “What do you think about ____?” vs. giving orders
 - Avoid micro-managing



Elliot Leavell and Josh McCall



Jud McCleod and Bobby Powell

If you get this wrong it doesn't matter how good your equipment or practices are

Surface Land Management

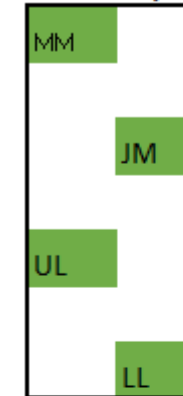
- **Although not a very populated area, the Midland Basin presents its own set of challenges for selecting drilling locations**
 - Tens of thousands of existing vertical wells and gathering lines
 - Power lines
 - Farm land
 - Ranch houses
 - Playa lakes
- **Partnership and fair treatment of land owners is mission critical**
 - Single point of contact
 - Minimize footprint by having a full development plan that maximizes well count per pad
 - Take care of their land
 - Do what you say you will do
- **At small companies like Guidon, the Drilling Department is also the Development Planning and Permitting Department**
 1. Work with technical team to select targets
 2. Select ideal well row position
 3. Initial review using Google Earth with KMZ files for your acreage position
 4. Boots on the ground to stake location
 5. Landowner approval of damages and surface use agreement
 6. Subsurface easements for off-lease locations



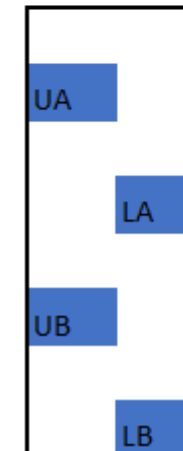
Development Tenants

- Off lease pads (adds ~300' of completable lateral length)
- Well count per pad of ~4 in order to preserve surface real estate for future full field development
- Laterals arranged in “wine rack” configuration to maximize vertical wellbore separation
- Pads for shallower targets closer to corridor center line – deeper targets further away (anti-collision mitigation)
- Allow sufficient time between POP & staking of the next group of wells in each development area to facilitate implementation of learnings
- Keep rigs and frac crews separated geographically to avoid offset frac impacts (OFI's) to wells being drilled

Pad 1 - Spraberry Cube



Pad 2 - Wolfcamp Cube



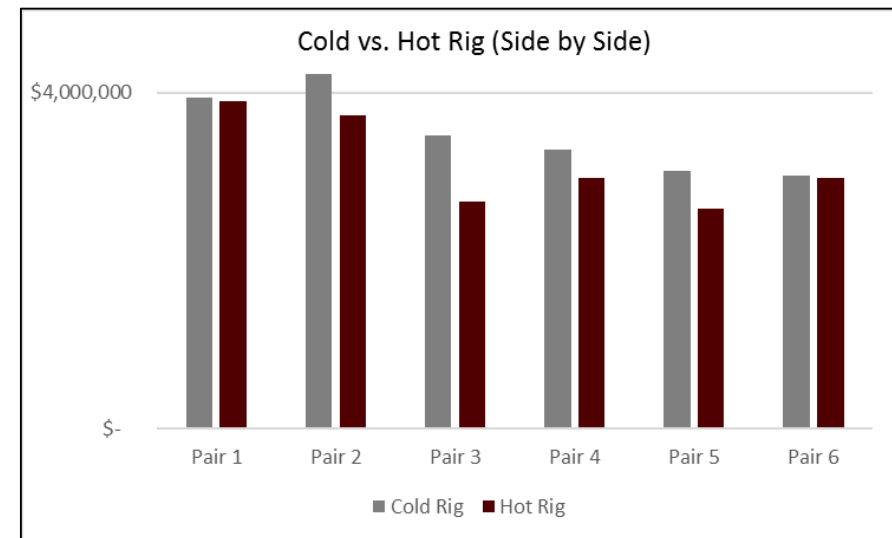
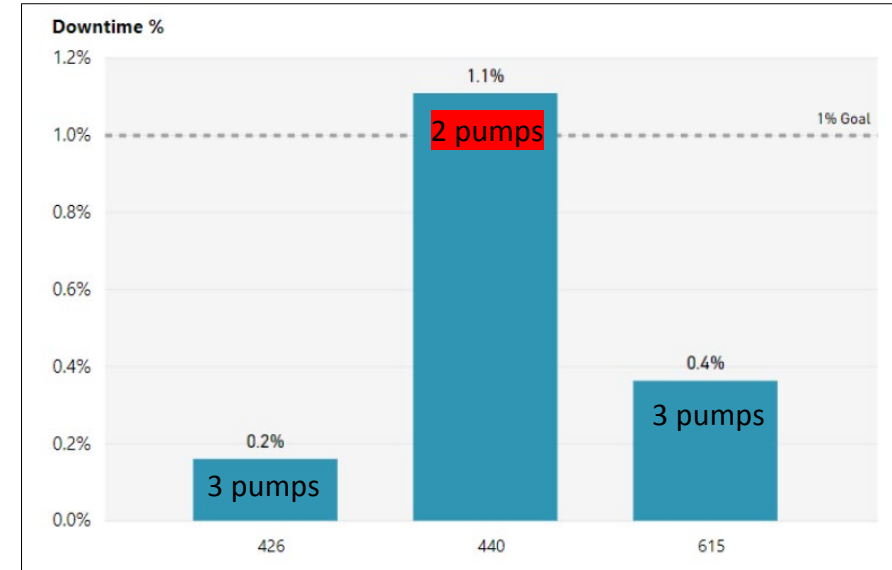
Construction Superintendent / Drone Pilot



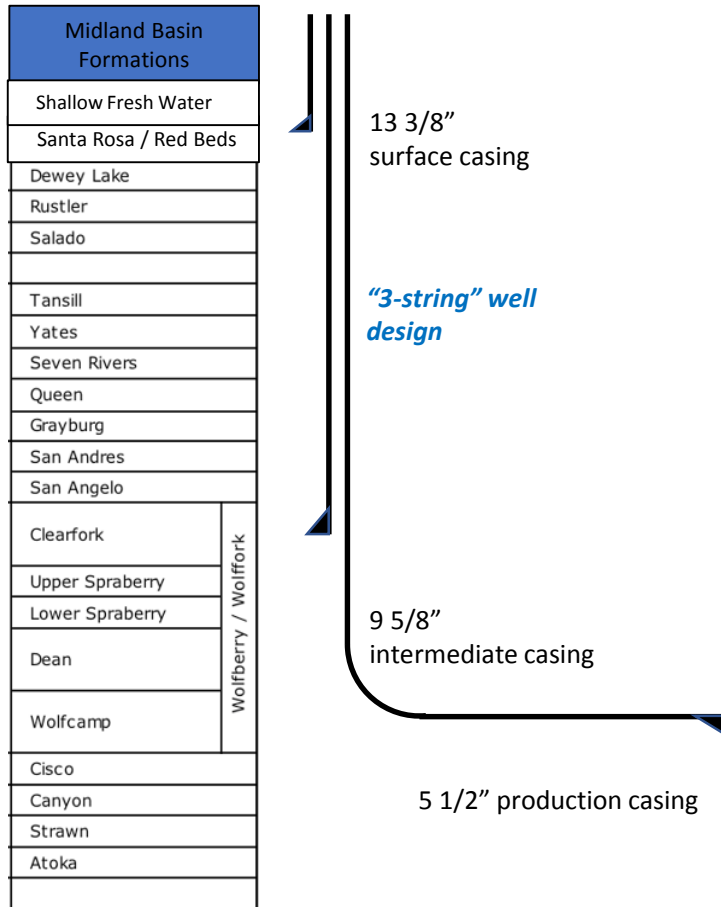
Buy your Construction Superintendent a nice drone camera

Vendor/Rig Selection for a Startup Company

- **Go with who you know; loyal to long term performance and integrity**
 - Same directional well planner, and directional coordinator for 5+ years
 - Same cementing service company for 8+ years
 - Same mud service advisor for 5+ years
 - Same casing provider for 5+ years
- **Drilling rig selection: you get what you pay for**
 - Currently contracting 2 high-spec walking rigs, each with 3 mud pumps
 - Remember... spread rate is 3x the rig dayrate; you can save significant money by drilling more efficiently with a higher spec rig (example below)
 - Average rig w/ \$5k lower dayrate: 20 days x \$80k spread rate = \$1.60 MM
 - High spec rig w/ \$5k (± 20%) higher dayrate: 19 days x \$85k spread rate = \$1.61 MM
 - Implies a break-even of 1 day savings (5% reduction in drilling days)
 - A high spec rig must drill 5% more efficiently to pay out the higher dayrate
- **A cold-stacked rig will cost you ± 10-15% more in the first quarter of ops after startup**
 - Represents ± \$400,000 of extra drilling cost per well
 - You'll pay this "fee" every time you laydown a hot, optimized rig and replace with a cold rig at a later date
 - It pays to go with a hot rig when possible



3-string Well Design



- All Spraberry targets to date have utilized this 3-string design (77% of all Hz wells to date)
- 1800' of 13-3/8" STC Surface
 - 17-1/2" hole
 - 400' of 54.5# on bottom for collapse
 - 1400' of 48# on top
 - XO joint from STC to BTC on top for cement head
- 6300 to 6850' of 9-5/8" 40# HCL80 BTC
 - 12-1/4" hole
 - Special drift to 8.75" to preserve liner contingency
 - Not using bond coat or rite-wrap
 - Set 250-300' into Clear Fork Lime but above first CF Shale
 - Stage tool 100 ft into Grayburg (top of gauge hole)
 - Stage 1: TOC at DV Tool with 20% excess
 - Stage 2: TOC at surface with 300% excess
- 18000' of 5-1/2" 20# P-110 GBCD
 - 8-3/4" hole to KOP and 8-1/2" Curve/Lateral
 - 6.3 Coupling OD
 - Max Operating Torque 29,620 ft-lbs (insurance policy)
 - Have only had to rotate 3 out of 60 Hz wells to date
 - TOC to 1000' inside previous casing, single 13.2 ppg slurry
 - 30 min time delay toe sleeve (full bore ID, 7.38" OD)

2,000+ Shallow SWD Wells in the Midland Basin

Midland Basin SWD Data Estimates

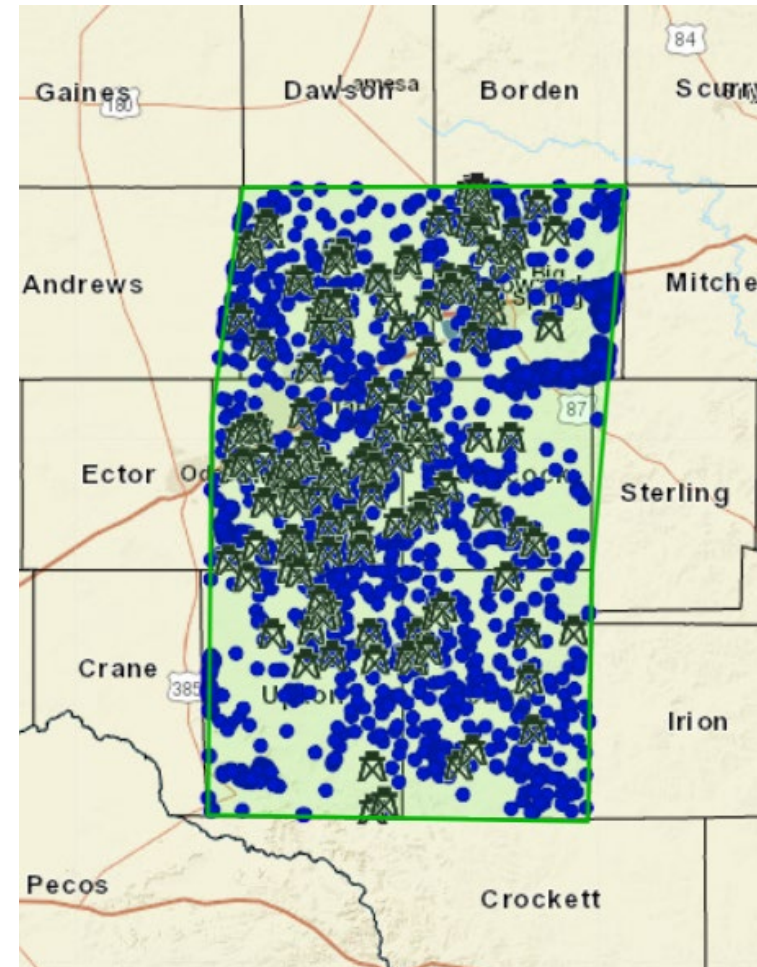
- Very rough estimates intended to show trend
 - 6-county data set = 4,250 square miles
 - Estimated daily oil production = $\pm 1,750,000$ BOPD
 - Estimated water cut = 2 bbl water produced for each bbl of oil (IHS)
 - 2,281 active SWD wells
 - 89% or $\pm 2,000$ are shallow disposal (upper perf < 6000')
 - 1 active shallow SWD every 2 square miles
 - Shallow disposal rate average = 1,250 bbl/day per well
 - Current estimate of 2,700,000 bbl/day* shallow disposal basin wide
 - **7x** the pre-Hz daily annual disposal volume in 2010
 - Projected Midland Basin production in 2025 = 3,600,000 BOPD**
 - Projected shallow disposal in 2025 = 5,400,000 bbl/day
 - Equates to **15x** the pre-Hz annual disposal volume in 2010
- **The current shallow disposal rate growth is not sustainable**

*SWD disposal rate assumes 2/1 oil/water ratio from IHS, 15% recycling, 10% goes to deep wells

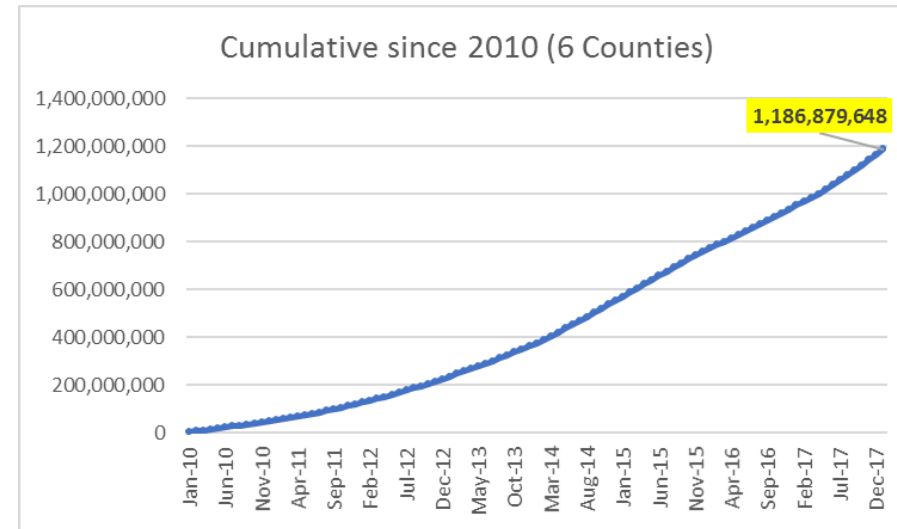
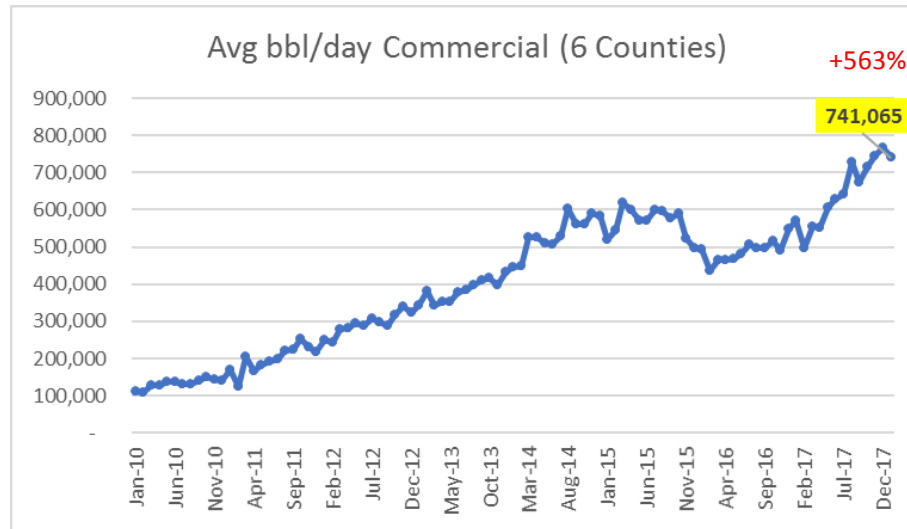
**2025 Oil projection based on annual growth of 300,000 bopd (approx. 2017-2018 YOY growth)

6 counties include Midland, Howard, Martin, Glasscock, Reagan, Upton

Martin, Howard, Midland, Glasscock, Upton, Reagan



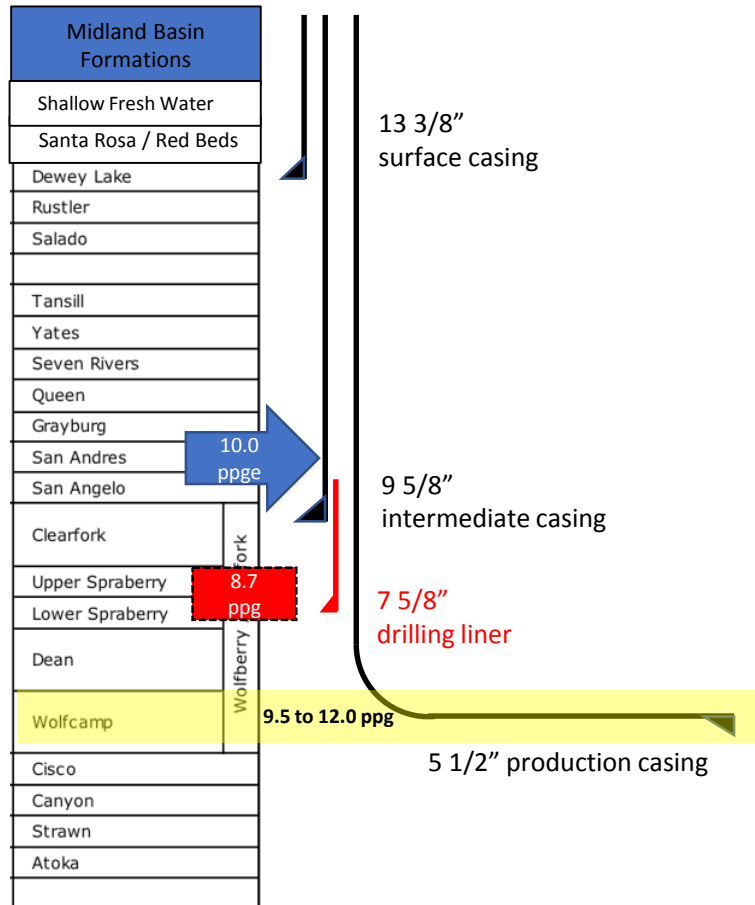
Commercial Disposal Has Increased 566% Since 2010



- 563% increase in commercial disposal volume since 2010
- 1.18 billion bbls injected since 2010
- ± 30% of disposal volume goes to commercial disposal wells*
- Public commercial disposal data supports rough estimate of growth based on total oil production and water cut (± 700% increase)
- Author has yet to find a way to query non-commercial disposal data by county
- Source: Commercial disposal into a nonproductive zone (W-14) for Midland, Howard, Martin, Glasscock, Reagan, Upton counties from 2010 to Jan 2018 [H10 Search](#)

*Assumes 2/1 oil/water ratio, 15% recycling, and 10% goes to deep wells, drilling info data indicates 40% of SWD wells are commercial

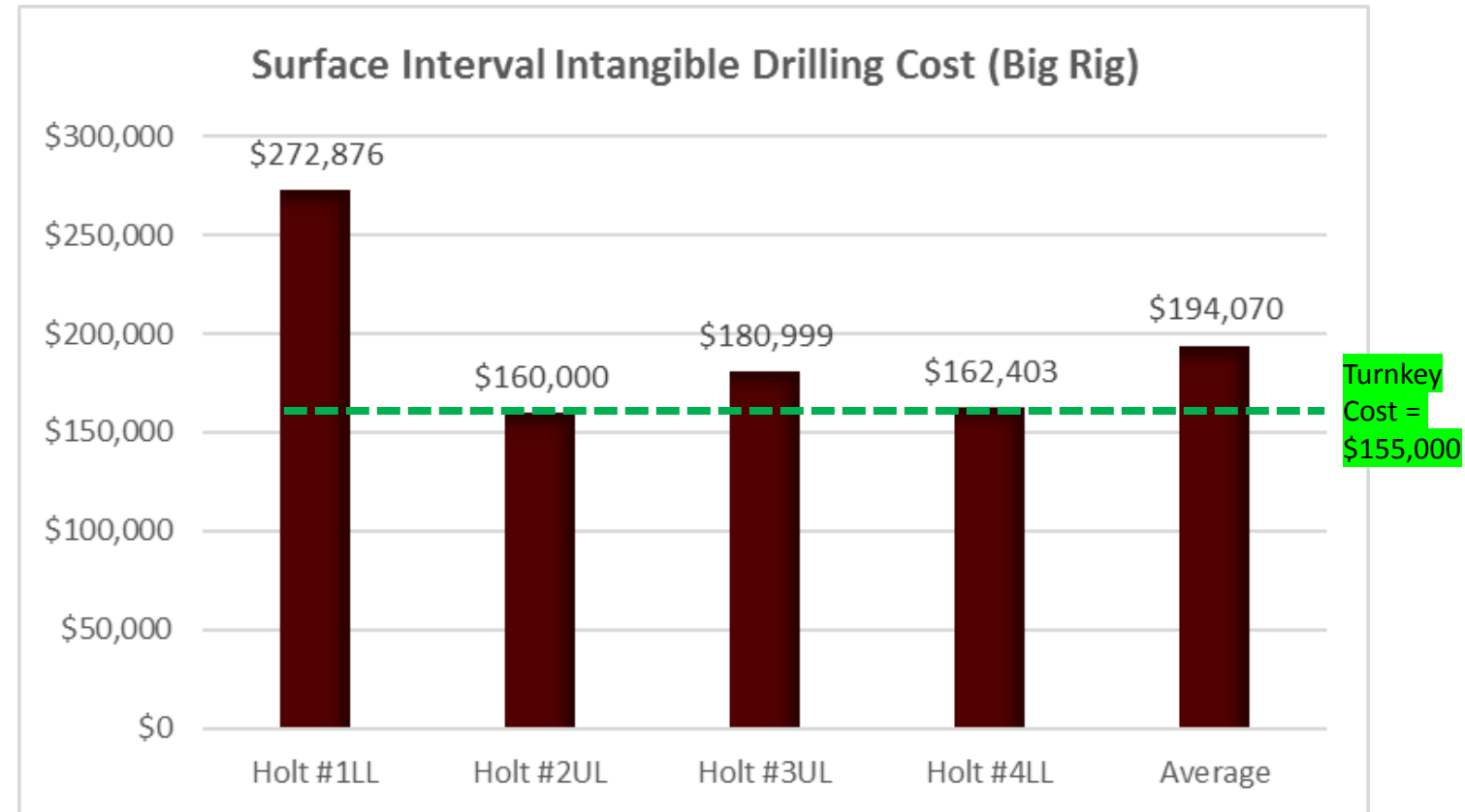
4-string Well Design



- All Wolfcamp targets to date (23% of all wells) have utilized a 4-string with the exception being the two wells on the very north of our acreage where there is no abnormal pressure in the San Andres
 - East Central Martin Co. San Andres = 9.3-9.4 ppg with 8.7 ppg Spraberry FG
 - West Central Martin Co. San Andres = 10.1-10.3 ppg with 9.0 ppg Spraberry FG
 - Far North Martin Co. San Andres = normal pressure with 9.0 ppg Spraberry FG
- 1800' of 13-3/8" STC Surface (same as 3-string)
- 6300 to 6850' of 9-5/8" 40# HCL80 BTC (same as 3-string)
- 2,500' of 7-5/8" 29.7# UFJ Liner
 - 8-3/4" hole with 8.8" drill-n-ream
- 6000' of 5-1/2" 20# P-110 GBCD above TOL
 - 6-3/4" hole with 6.8" drill-n-ream
 - 6.3 Coupling OD
 - Max Operating Torque 29,620 ft-lbs (insurance policy)
- 12000' of 5-1/2" 20# P-110 Hunting TLW
 - 6-3/4" hole with 6.8" drill-n-ream
 - 5.92 Coupling OD
 - Max Operating Torque 38,100 ft-lbs (insurance policy)
 - Have only had to rotate 3 out of 60 Hz wells to date
 - TOC Tail to 1000' inside previous casing, single 13.2 ppg slurry
 - TOC Lead to 2000' for OBM recovery
 - 30 min time delay slimhole toe sleeve (5.65" OD)

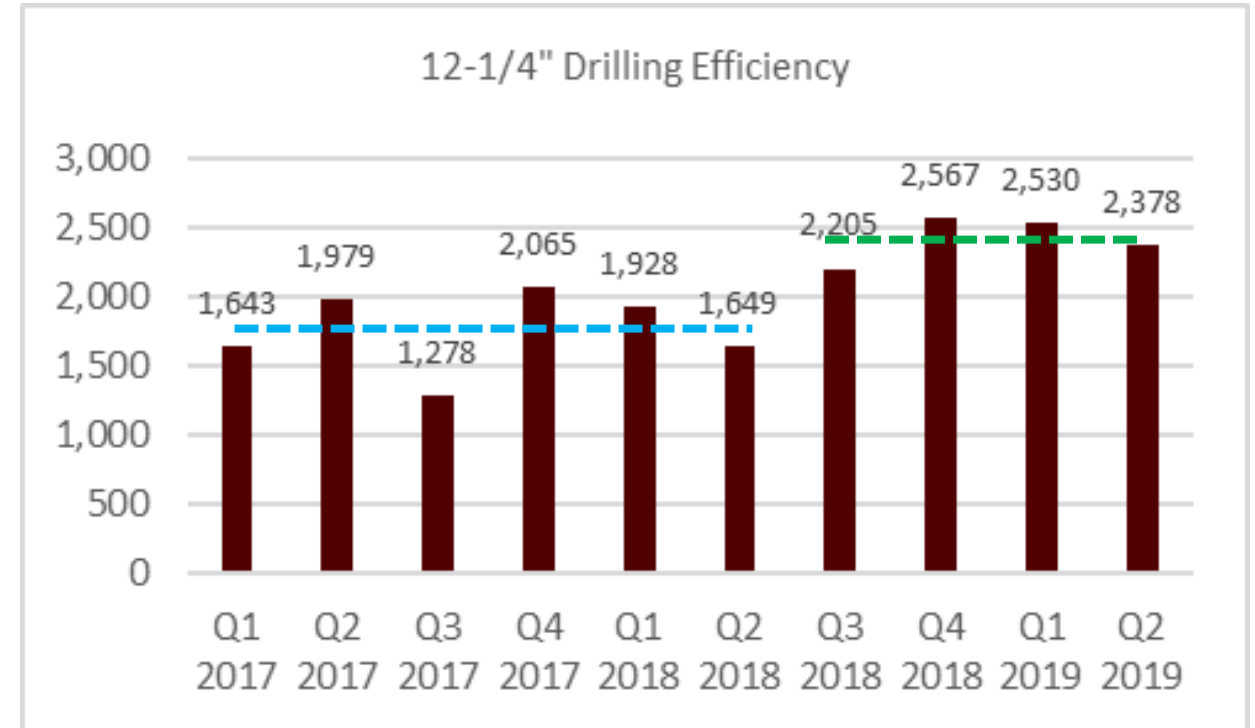
Turnkey Spudder Rig

- Use of turnkey spudder rig saving \pm \$40,000 / well
- Savings is unrisks; work scope is taken out of critical path
- Eliminates exposure to nearly all surface interval NPT cost
- Accelerates POP timing by 3 days per well

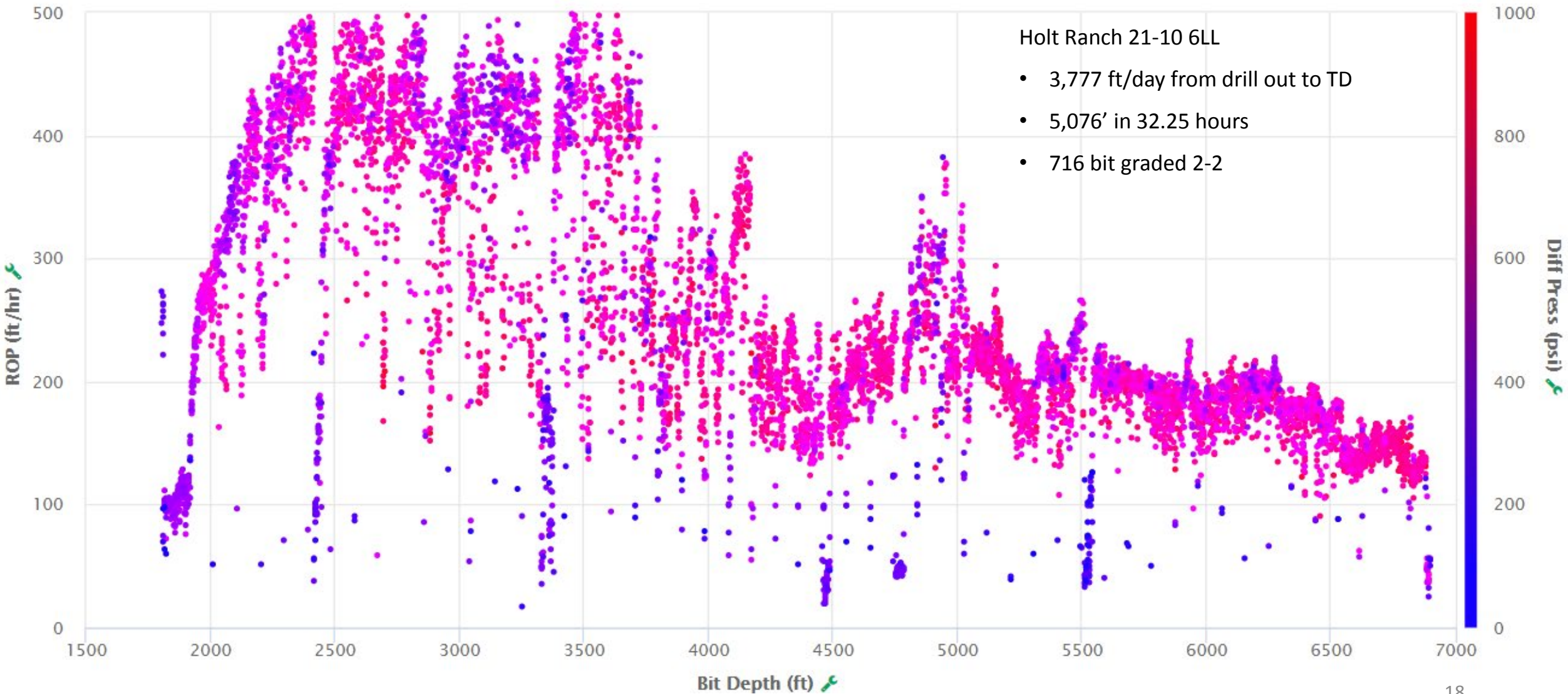


12-1/4" BHA Optimization

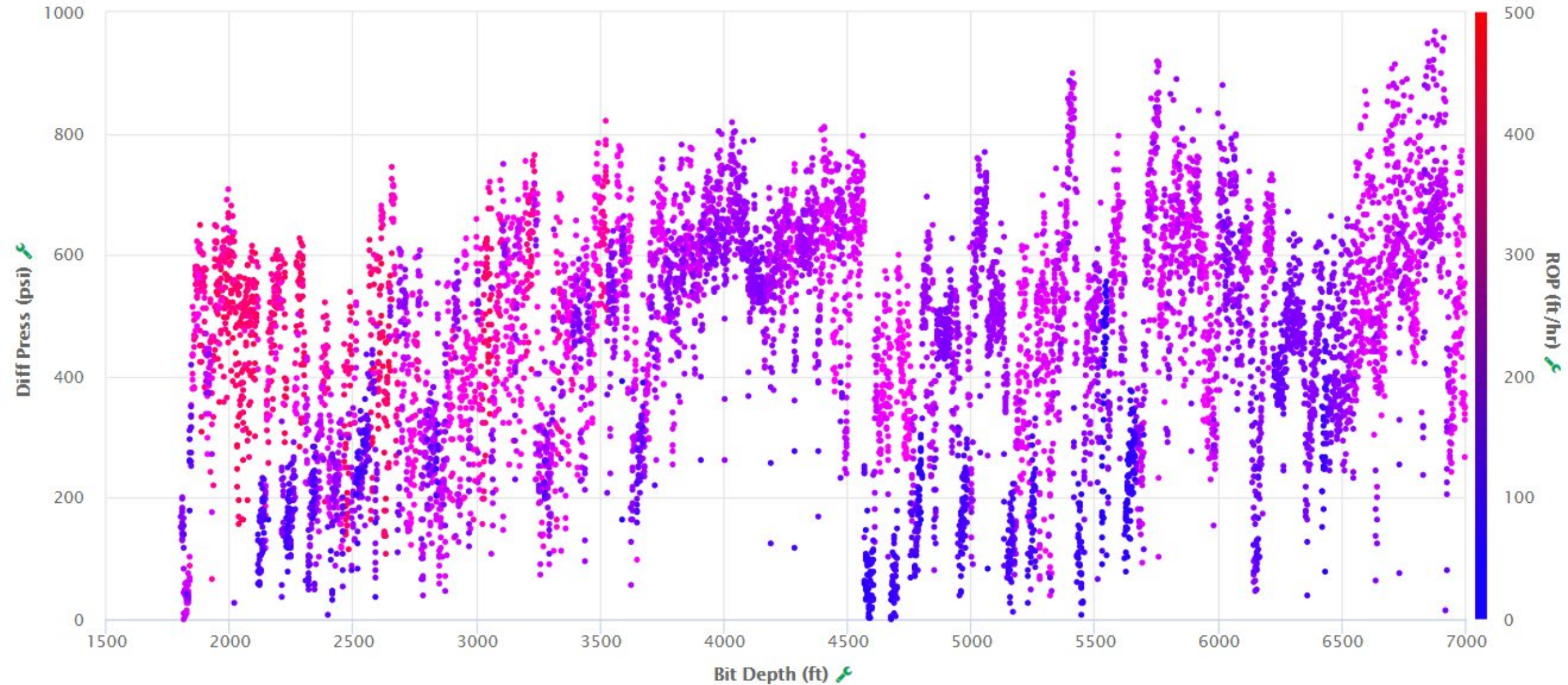
- **40% improvement** with new 8-3/4" power section in Q3 2018
 - 8-3/4" 7/8 lobe, 7 stage, 0.17 rev/gal
 - Previously running 8" 6/7 lobe, 4 stage, 0.15 rev/gal
- 800 gpm
- Hold 80 rpms until top of Clear Fork, then slow to 60
- Targeting 700-900 psi diff when rotating
- 716 bit
- 11-3/4" stabs above and below motor
- Shock sub above motor
- 4 stands of NC56 DC and 3 stands of 5" HWDP
- Average improved from 1748 ft/day to 2,504 ft/day



Top Performing 12-1/4" Interval



Top Performing 12-1/4" Interval



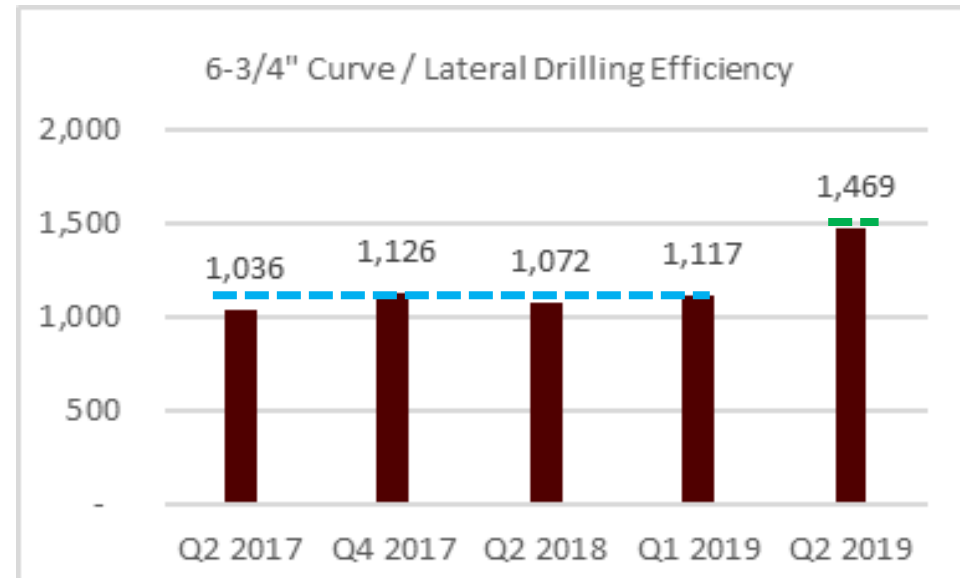
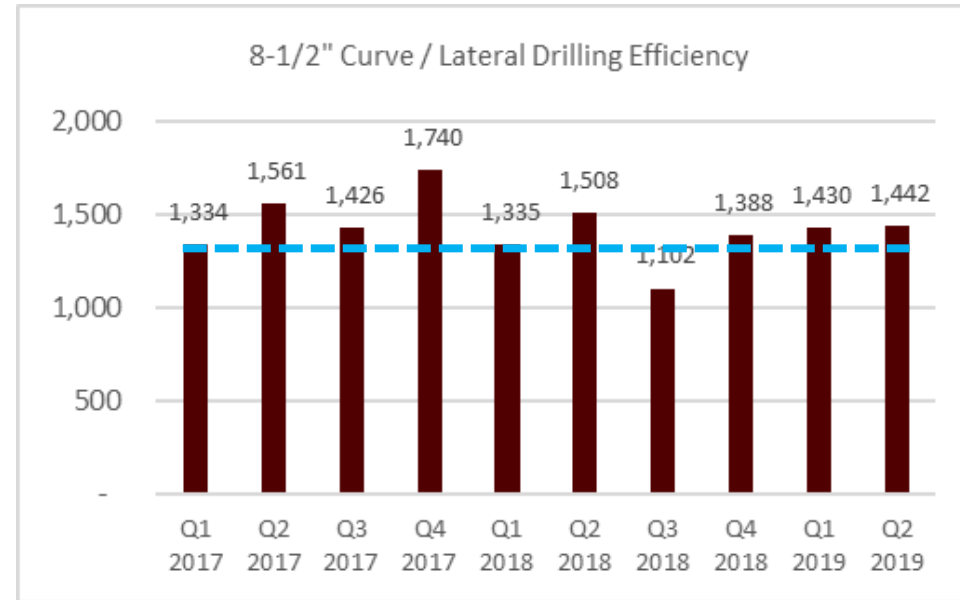
Curve/Lateral Summary

3-string Design (48 wells, 77% of all Hz wells)

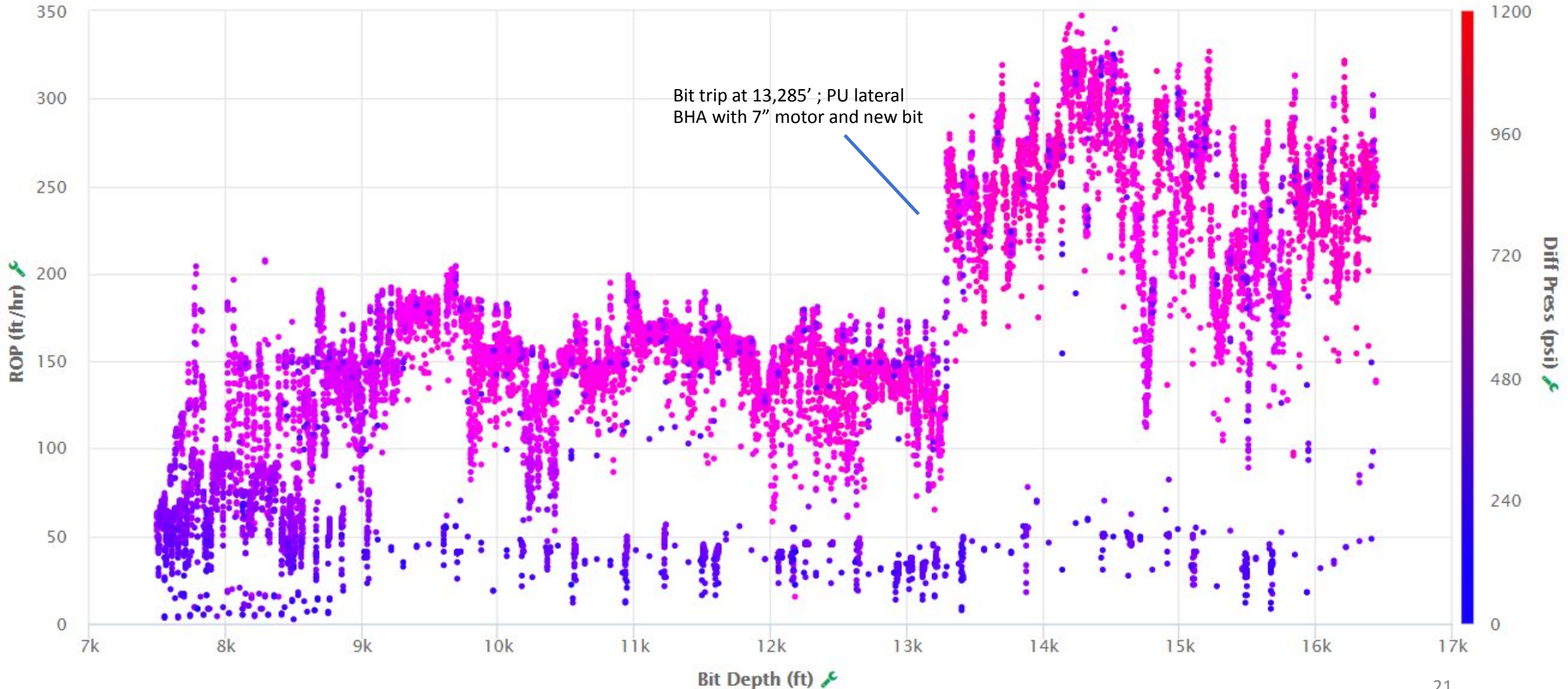
- Curve BHA: 2.0° slick, 6 3/4", 7/8, 6.4 stage, 0.28 rev/gal, 613 bit with 8 deg/100' curve
- Drill ahead in lateral until failure with 75-85 rpms
- Lateral BHA: 1.83° slick 7", 7/8, 6.9 stage, 0.25 rev/gal with 716 bit
- 575-600 gpm for Lower Spraberry benches (higher shale content), and 500-550 gpm for MM/JM/UL benches (higher limestone content); size agitator plate accordingly
- Performance limited thus far by high limestone content of most targets. Guidon has tested 8 benches in 6 different areas with 62 Hz wells drilled to date. No improvement seen with implementation of 7" lateral motor in Q3 2018.

4-string Design (14 wells, 23% of all Hz wells)

- 2.0 deg w/ 6-1/4" string stab, 5", 6/7 lobe, 8.0 stage, 0.84 rev/gal, 611 bit with 10 deg/100' curve to deepen liner shoe for integrity
- Drill ahead in lateral until failure with 60-75 rpms and 300 gpm
- Lateral BHA: 5-3/4" 6/7 lobe, 11.5 stage, 0.7 rev/gal (1.5° slick) with 611 bit
- Eccentric reamer used to mitigate tight clearance b/w hole size and semi-flush coupling OD (5.92")
- Performance limited until recently by 5" mud motors; significant improvement seen with 5-3/4" motors in Q2 2019

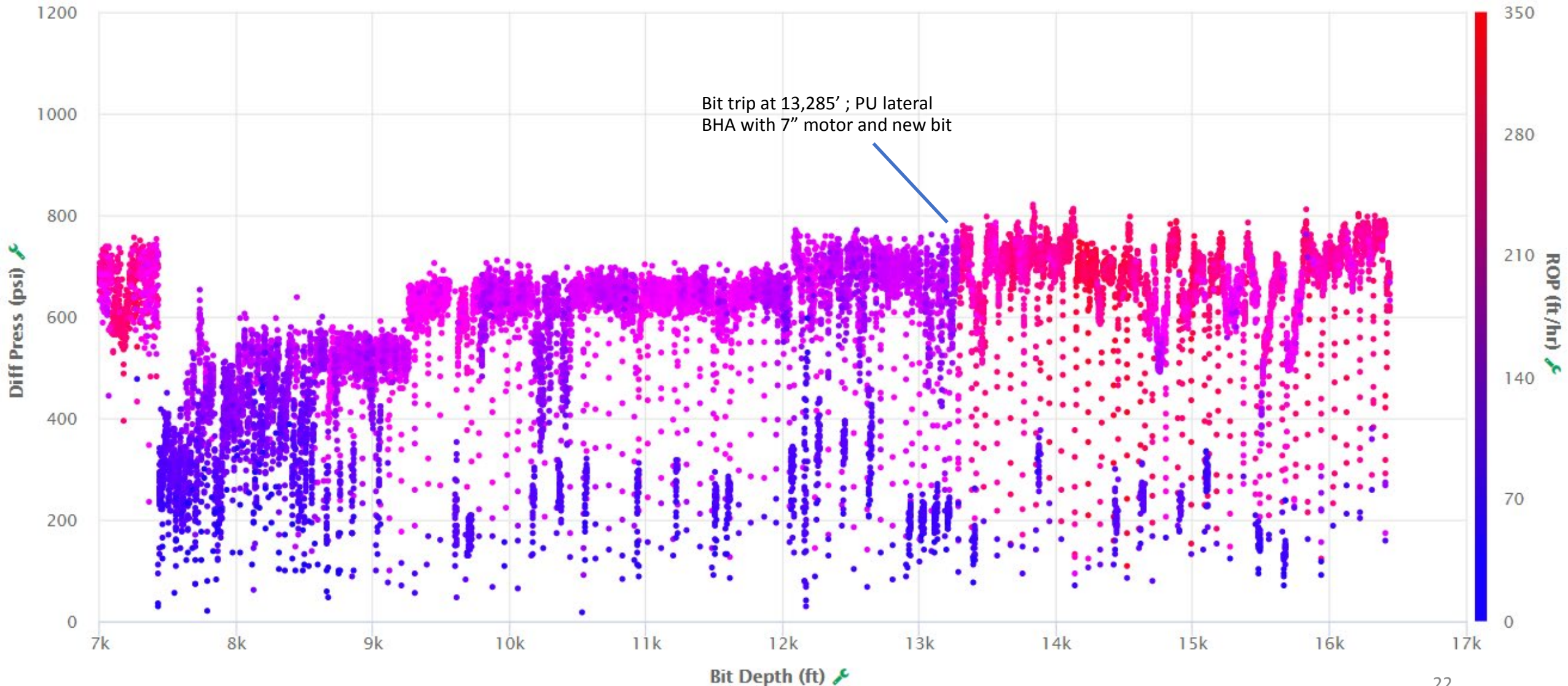


Top Performing 8-1/2" Curve/Lateral Interval



- Shark 6JM - 1,755 ft/day from KOP to TD

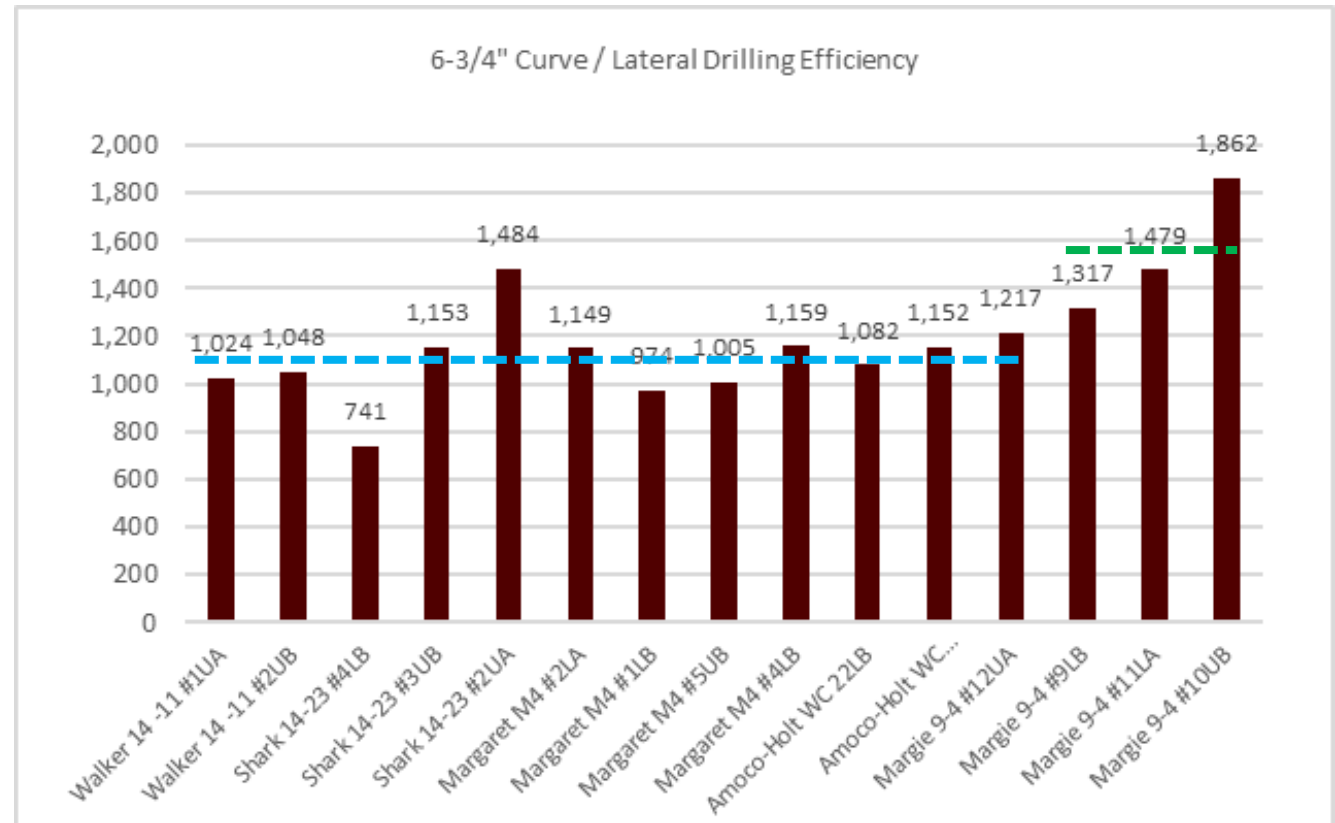
Top Performing 8-1/2" Curve/Lateral Interval



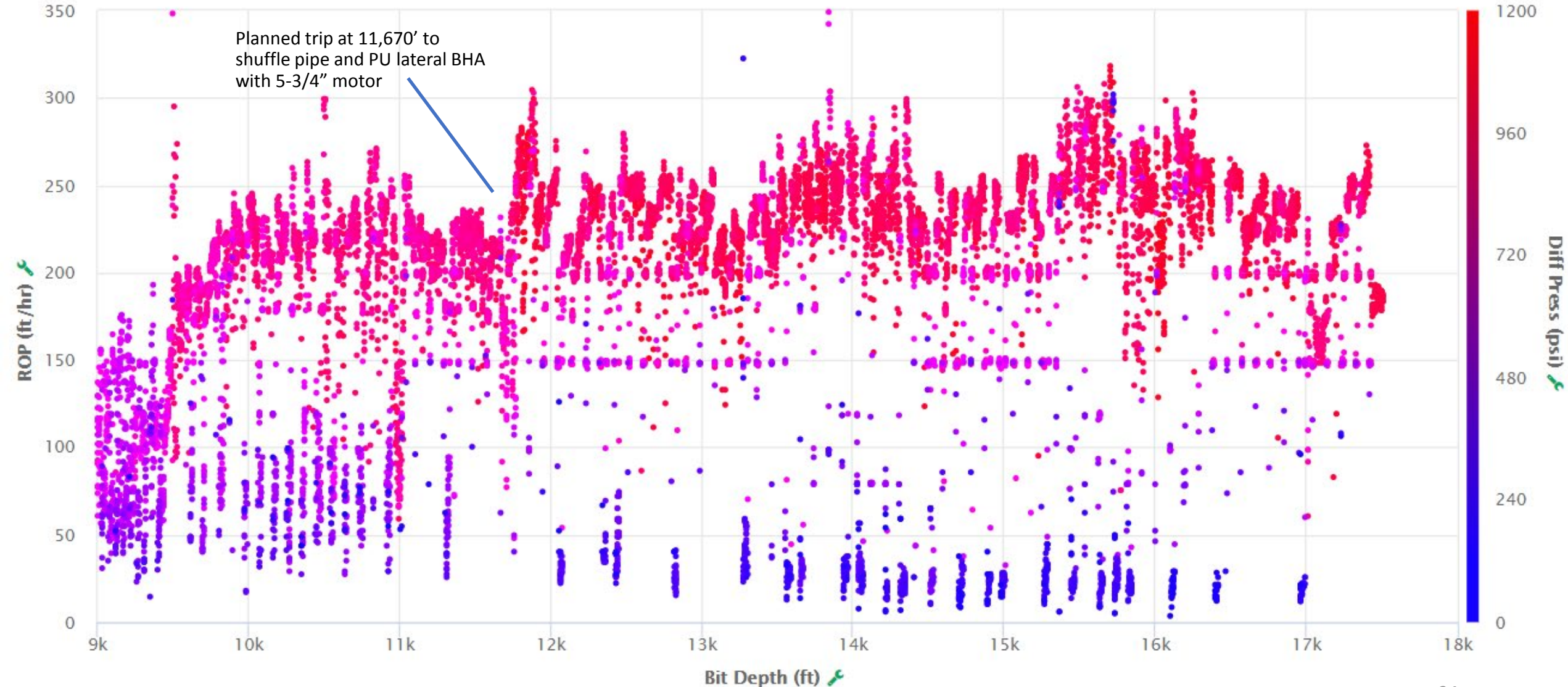
- Shark 6JM - 1,755 ft/day from KOP to TD

6-3/4" Slimhole Lateral BHA Optimization

- **41% improvement** with new 5-3/4" lateral motor on recent 3 well test
 - 5-3/4" 6/7 lobe, 11.5 stage, 0.7 rev/gal, slick
 - Previously running 5" 6/7 lobe, 8.0 stage, 0.84 rev/gal
- 300 gpm
- 60-70 rpms (sufficient hole cleaning with 4.5" DP x 6.75" hole)
- Targeting 800-1000 psi diff when rotating
- 611 bit
- Average improved from 1,099 ft/day to 1,553 ft/day
- Small sample size but trial showed promising results

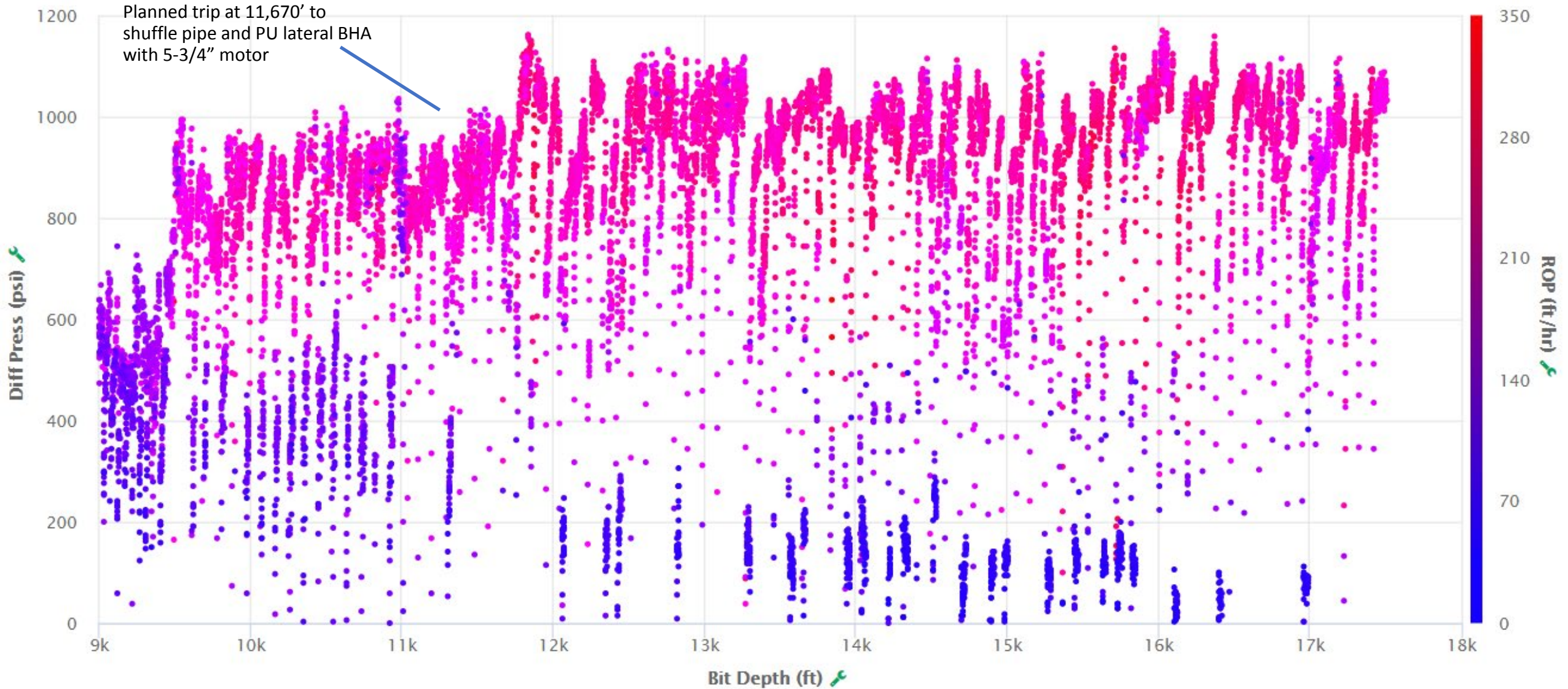


Top Performing 6-3/4" Interval



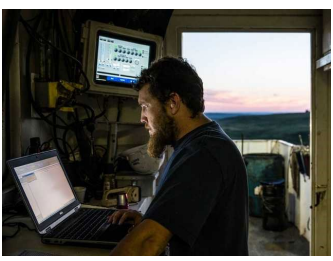
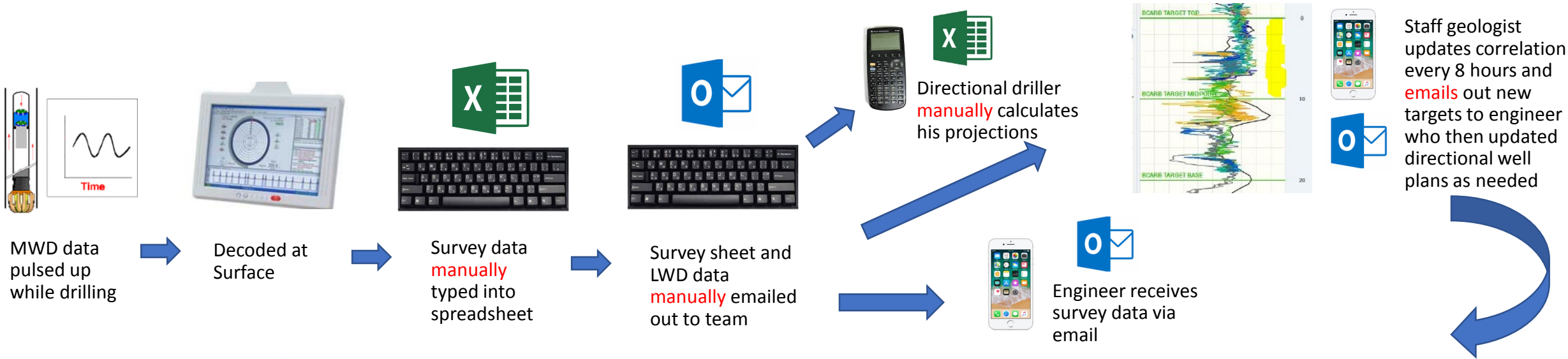
- Margie 10UB - 1,862 ft/day from drill out to TD

Top Performing 6-3/4" Interval



- Margie 10UB - 1,862 ft/day from drill out to TD

Old School Geosteering



Engineer **calls** Company Man to confirm motor yields and plan forward

Company man **picks up rig phone** and calls directional driller to relay questions

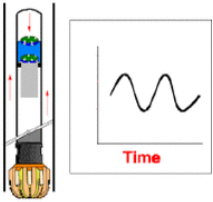
Directional driller **verbally provides** information to Company Man

Company Man **verbally provides** data to engineer who then **manually** confirms projections and dogleg needed with spreadsheet or calculator

Directional Driller executes slides based on **hand or spreadsheet calculations**

Engineer waits until the next survey data is emailed out

Optimized Geosteering Process



Staff geoscience picks target from advanced logs and core data and provides to 3rd party geosteering firm

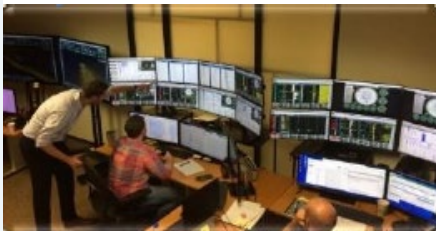
MWD data pulsed up while drilling

Decoded at Surface

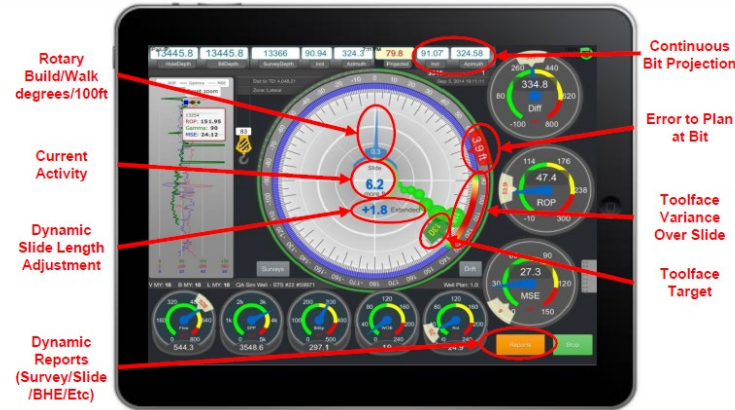
Data **Automatically** WITS to Motive Bit Guidance System (BGS)

Survey data and projections are calculated **automatically** by BGS and automatically emailed out to team via Welldrive FTP

Drilling Engineer has **real-time** access to all projections and Toolface efficiency



Rig Floor Display



Directional driller is given realtime slide/rotate guidance based on **automatically** calculated projections and Toolface efficiency. Engineer has **realtime** access to same dashboard and can observe remotely at their convenience.



Process makes it much easier to **target fast-drilling shale** within the given geologic target window. Ex. Drilling Engineer tells the BGS to target the 10' shale interval directly above the center line. Cost of these services represents < 1% of the drilling AFE.

3rd party geosteering provides new correlations every 4 hours and uploads to Welldrive which **automatically** distributes to team. Motive command center updates target line in the Bit Guidance System.

Optimized Survey Emails

Margie 9-4 (Alloc-1NH) 9LB Survey MD:9349.0 / TVD:9234.08 / Inc:60.88 / Azm:341.69 / VS:-55.15 / DLS:10.24 -PTB MD:9406.12 / TVD:9260.21 / Inc:64.04 / Azm:341.21 / VS:-4.46 / SVY-HLLR: Low:19.1 / Left:0.3 / PTB-HLLR: Low:11.1 / Left:1.6

Survey Accepted at 2019-04-05 11:37 (Rig Time)

Last Survey

MD 9349.0ft

INC 60.88°

AZM 341.69°

TVD 9234.08ft

NS -159.81ft

EW -372.76ft

VS -55.15ft

DLS 10.24°/100'

CL 48.0ft

Projected Borehole Position

MD 9406.12ft

INC 64.04°

AZM 341.21°

TVD 9260.21ft

NS -111.69ft

EW -388.97ft

VS -4.46ft

23.5ft of slide ahead @ -9.1° GTF, TF Precision 88.2%

Survey Point-HLLR Low: 19.1' / Left: 0.3'

Bit Projection-HLLR Low: 11.1' / Left: 1.6'

Recent Gamma: 101.0 API

Recent ROP: 0.0 ft/h

7.1°/100' minimal build rate required to go from projected inclination of 64.0°@9260.2' TVD to planned inclination of 90.3°@9342.0' TVD (313.9' VS)

AntiCollision: 193.5' from Margie 9-4 (Alloc-1NH) 11LA well (Partial)

AntiCollision: 336.7' from Margie 9-4 (Alloc-1NH) 10UB well (Partial)

AntiCollision: 421.9' from Margie 9-4 (Alloc-1NH) 12UA well (as drilled)

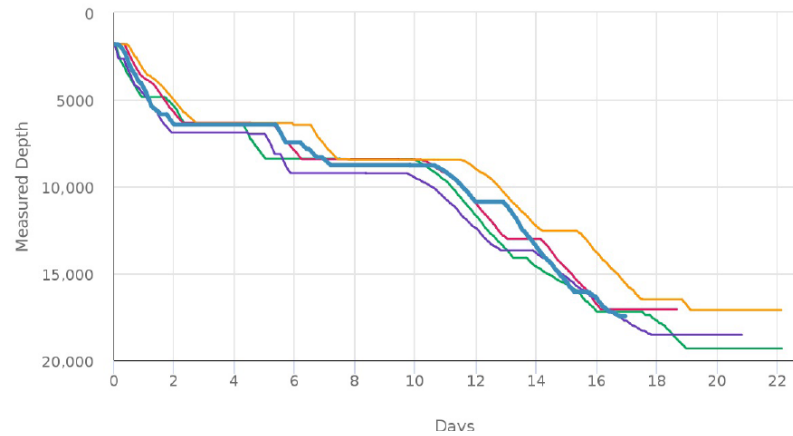
AntiCollision: 766.8' from Margie 9-4 (Alloc-1NH) 1LL well (Active)

Most Recent Motor Yield (BHA 3): 13.35°/100'

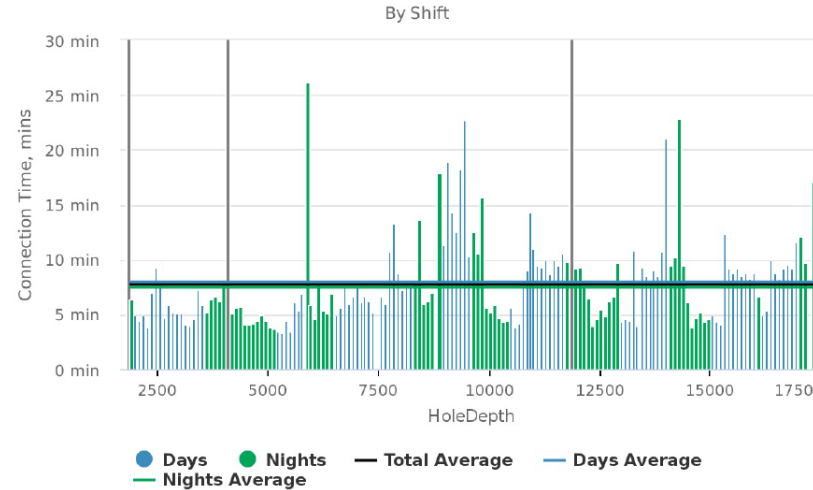
Average of Last 3 Motor Yields (BHA 3): 14.51°/100'

Optimized Morning Reports

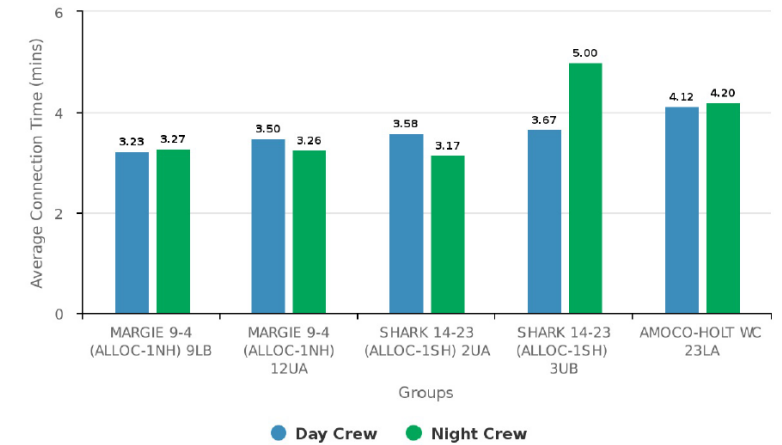
Days vs Depth (Full Well)



Connection Time Trend



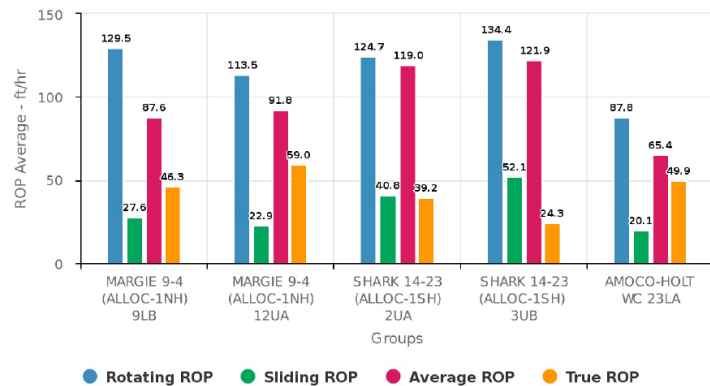
Slip-Slip Drilling Connection Time by Crew



ROP - Last 24 Hours (Last 24 hours)

Rate of Penetration

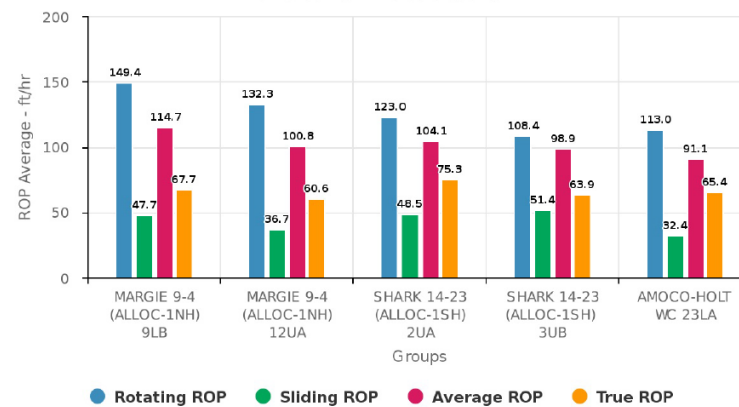
Note: Data occurring prior to 300ft hole depth omitted from calculations due to unreliability in the data quality.



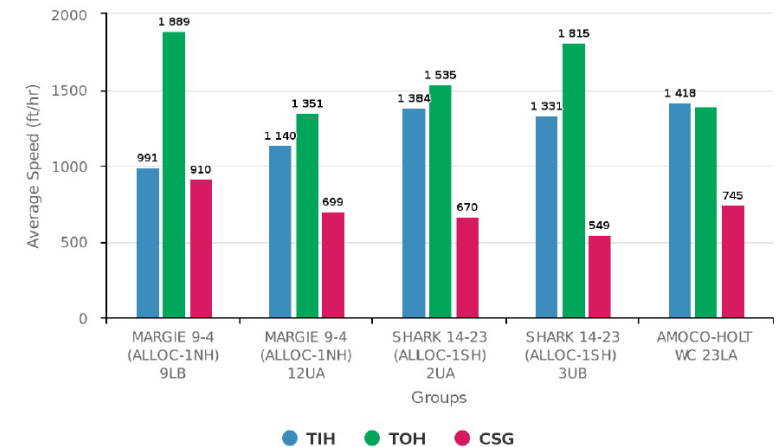
ROP (Full Well)

Rate of Penetration

Note: Data occurring prior to 300ft hole depth omitted from calculations due to unreliability in the data quality.



Tripping and Casing Average Speed



- Automated morning reports generated from EDR data and Mobilize service. Drilling engineer selects relevant offset wells for comparison.

Optimized Data Analysis



Step 2

Tabular Data

Start: 12/31/1969 6:00:00 End: 05/21/2018 1:23:17

Section: Lateral

(UOM)	ROP				Footage				Time			
	Rotating ROP (ft/hr)	Sliding ROP (ft/hr)	Average ROP (ft/hr)	True ROP (ft/hr)	Rotary (ft)	Sliding (ft)	Rotary % (%)	Sliding % (%)	Rotary (hrs)	Sliding (hrs)	Rotary % (%)	Sliding % (%)
SHARK 14-23 (ALLOC-1SH) 4LB	94.0	38.7	78.9	51.6	6773.4	1046.4	86.6	13.4	72.0	27.1	72.7	27.3
SHARK 14-23 (ALLOC-1SH) 2UA	125.8	48.3	109.1	73.9	6947.1	734.6	90.4	9.6	55.2	15.2	78.4	21.6
WALKER 14-11 (ALLOC-1NH) 1UA	100.7	35.5	80.1	56.6	6327.1	1027.2	86	14	62.8	28.9	68.5	31.5
SHARK 14-23 (ALLOC-1SH) 3UB	117.3	51.5	106.0	61.9	6917.0	633.9	91.6	8.4	58.9	12.3	82.7	17.3
WALKER 14-11 (ALLOC-2NH) 2UB	128.2	45.0	92.4	45.3	5843.7	1549.3	79	21	45.6	34.5	56.9	43.1
MARGARET M4 (ALLOC-1SH) 1LB:BHA 8 6.75" 9941 ft - 15733 ft	114.4	48.0	96.9	75.6	4729.8	711.0	86.9	13.1	41.3	14.8	73.6	26.4
MARGARET M4 (ALLOC-1SH) 1LB:BHA 9 6.75" 15733 ft - 19963 ft	108.2	26.4	85.2	63.9	3859.9	368.0	91.3	8.7	35.7	13.9	71.9	28.1

Time Depth: 05/21/2018 13:23

Surface Intermediate Curve Lateral All

Export as CSV



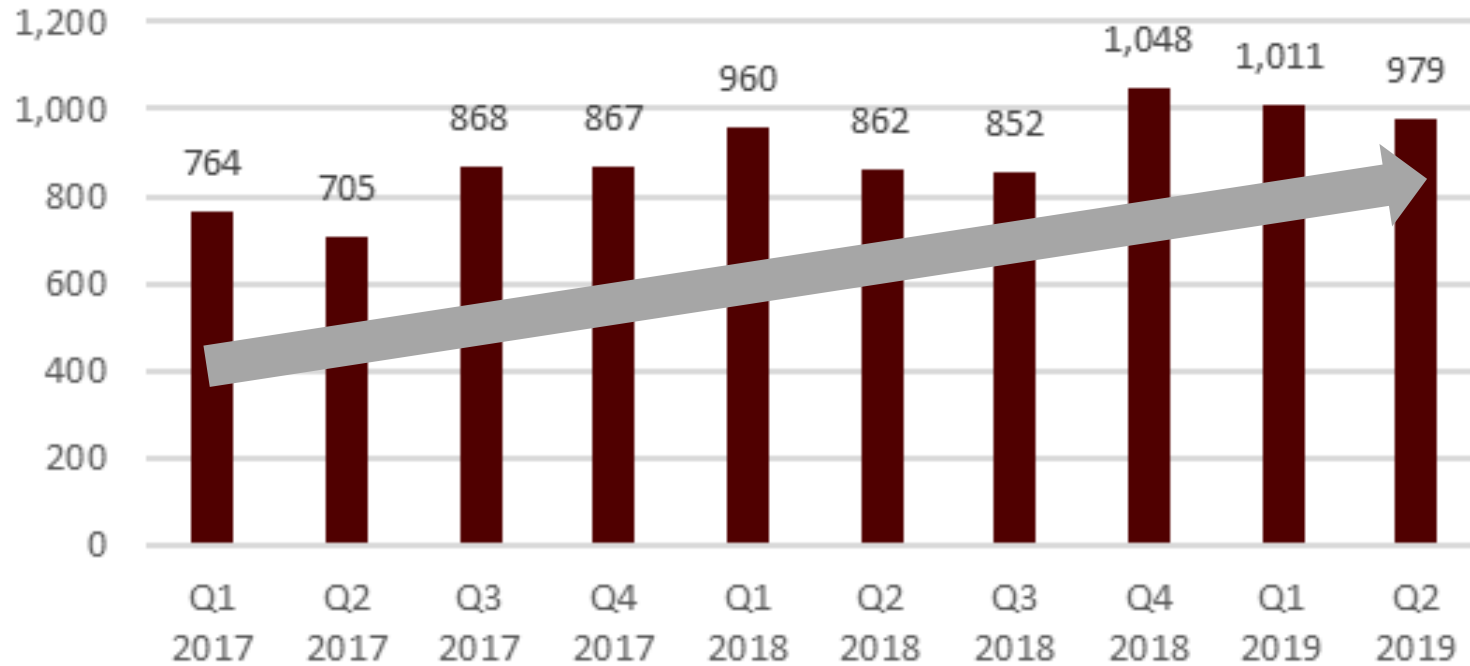
Step 3

Well Name	ROP				Footage				Time			
	Rotating ROP (ft/hr)	Sliding ROP (ft/hr)	Average ROP (ft/hr)	True ROP (ft/hr)	Rotary (ft)	Sliding (ft)	Rotary % (%)	Sliding % (%)	Rotary (hrs)	Sliding (hrs)	Rotary % (%)	Sliding % (%)
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- 3 minute workflow for same analysis

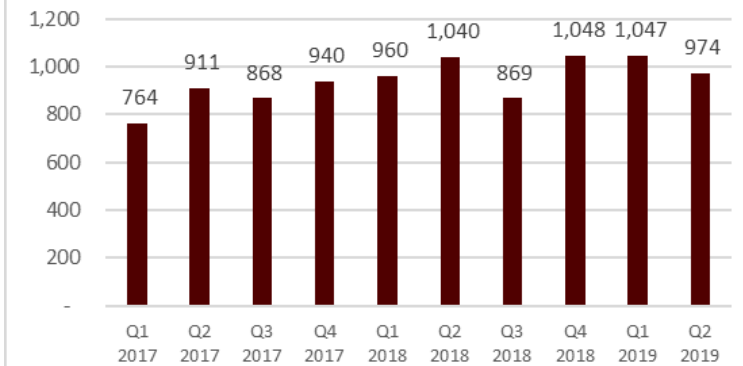
Let the Data Drive Your Decisions

Total Drilling Efficiency (Ft/Day RA to RR)



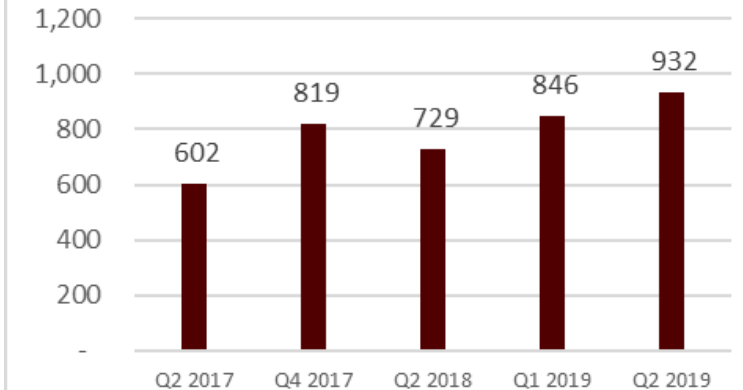
35% Improvement in Total Drilling Efficiency Since 2017 1H Startup

3-String Efficiency (Ft/Day RA to RR)



27% Improvement in 3-String Efficiency

4-String Efficiency (Ft/Day RA to RR)



55% Improvement in 4-String Efficiency

Advice from the Rig Supervisor

Concentrate on team building by creating a safety culture, listening to all input, and relaying data gathered to the office support. Learn to how to talk to people with different personalities and cultures to get them on board towards your goals. *-Jack Chamberlain*

The most important task is to keep the people working under your direction safe. With every informed decision you make, you must prioritize the safety of your rig personnel and service personnel. They depend on your competence while on the job. Safety is paramount and productivity is required. Both must be accomplished. *-Elliot Leavell*

Stay humble, treat people with respect, ask questions, be honest about your knowledge of the area, and learn from others failures so to not repeat them yourself. *-Jud McCleod*

You must always maintain focus and be attuned to the wellbore and what it is revealing to you, such as mud weights, flow out, cuttings, gas, torque, drag, pressures. *-Elliot Leavell*

When you question yourself about something, stop, and call for help. Two heads are better than one. *-Bobby Powell*

Always plan for multiple scenarios. Keep in mind that things don't always go to plan, think of "what if". *-Jud McCleod*

As a drilling supervisor one can set the work atmosphere of the drill site. A tight nit "family" type atmosphere creates high morale and ultimately creates an efficient operation. The day-to-day challenges and responsibilities help to keep me humble. *-Jud McCleod*

Carry yourself well and conduct yourself in a manner that is befitting of your job and company. In turn, you will find that your good work ethic will cause your coworkers to not only want to help you, but they will want to follow your lead as well. Developing good leadership skills is essential, and it starts with listening to those around you. Speak to people the way you want to be spoken to. Lastly, be prepared to train and teach people in a manner that meets your expectations. *-Elliot Leavell*

To be successful as a drilling supervisor you need to be able to think well on your feet in multiple types of situations and handle stressful situations calmly, because calmer situations are safer and more proactive. *-Chris Robinson*

Drilling is a competitive business. Personally, I like the challenge of new adventures in the drilling of oil and gas wells, in addition to the challenges of working for a new operator, encountering different people, and drilling in newly explored areas. Drilling is like a new frontier, and every well brings its own set of challenges that make it an exciting place to work. The caveat is for the team to strive to be better than what it was on the last job, and to be better than the competition, the next lease over. *-Elliot Leavell*

Workplace environment and management makes all the difference in the world to you being happy in the position. *-David Whitfield*

There is nothing better than working for some very good people. *-Bobby Powell*

Always speak your mind. Don't be afraid to take advice from others. Keep a positive attitude and open mind, the cup is always half full not half empty. *- Josh McCall*

If Wooden Was A Driller



THE ART OF
SUCCESS

PYRAMID OF SUCCESS

COMPETITIVE GREATNESS

"Perform at your best when your best is required. Your best is required each day."

POISE

"Be yourself. Don't be thrown off by events whether good or bad."

CONFIDENCE

"The strongest steel is well-founded self-belief. It is earned, not given."

CONDITION

"Ability may get you to the top, but character keeps you there – mental, moral, and physical."

SKILL

"What a leader learns after you've learned it all counts most of all."

TEAM SPIRIT

"The star of the team is the team. 'We' supercedes 'me'."

SELF-CONTROL

"Control of your organization begins with control of yourself. Be disciplined."

ALERTNESS

"Constantly be aware and observing. Always seek to improve yourself and the team."

INITIATIVE

"Make a decision! Failure to act is often the biggest failure of all."

INTENTNESS

"Stay the course. When thwarted try again; harder; smarter. Persevere relentlessly."

INDUSTRIOUSNESS

"Success travels in the company of very hard work. There is no trick, no easy way."

FRIENDSHIP

"Strive to build a team filled with camaraderie and respect: comrades-in-arms."

LOYALTY

"Be true to yourself. Be true to those you lead."

COOPERATION

"Have utmost concern for what's right rather than who's right."

ENTHUSIASM

"Your energy and enjoyment, drive and dedication will stimulate and greatly inspire others."

"Success is peace of mind which is a direct result of self-satisfaction in knowing you made the effort to become the best of which you are capable."

John Wooden, Head Coach

SUCCESS

Success is not a destination, it is a journey.

ACHIEVEMENT

Failure to prepare is preparing to fail.

12 Lessons in Drilling

1. Surround Yourself With Good People
2. "Stop Work Authority" Is The Most Important Policy
3. Find A Good Mentor
4. Learn From Your Mistakes And Don't Repeat Them
5. Every Job On The Rig Is Important
6. The Devil Is In The Details
7. Use The Right Tool For The Job
8. Resiliency Is Required
9. Make Greatness Attainable By All
10. Peer Review All Significant Changes To Your Plan
11. Make Data-Driven Decisions
12. Proper Planning Prevents Poor Performance



Frank McCarthy: "Buffalo Soldiers Advance as Skirmishes, Charge"

Appendix



Rig Supervisor Bios



Jack Chamberlain has 37 years in the oilfield. He started as a roughneck, and worked up to driller in the deep South Texas oil field drilling gas wells. He also drilled and worked his way up to OIM in the offshore side of the industry while drilling and completing wells in the GOM, Argentina, Chile, Trinidad Tobago, Cameroon, Gabon, Equatorial Guinea, Congo, and Nigeria. Jack started consulting as a drilling supervisor for Chesapeake energy drilling Haynesville wells, and Eagle Ford wells. He was a drilling supervisor for Energy XXI drilling and doing P&A work in the GOM. He was also a lone drilling supervisor for EQT drilling Marcellus wells in PA. Jack lives in McAllen Texas with his better half, and spends as much time as possible at their in Port Isabel, Texas.

Elliot Leavell has worked in the oil and gas industry for 40 years. He first began with Exxon Co. USA. While working with Exxon, he was offered a position as a Drilling Supervisor and was sent to a company drilling supervisory school in 1979, that later followed with his first rig assignment in 1980. Elliot worked as a Drilling Superintendent throughout Texas and Oklahoma for fourteen years. He left Exxon in 1992 and became an independent Drilling Consultant. Elliot's previous work areas have included inland barges in Texas costal waters, South Texas, jack-up rigs in the Gulf of Mexico, Austin Chalk Central and South Tx., Oklahoma, Eagle Ford Shale, and the Permian Basin for the last twenty-six years.

Josh McCall has 19 years of oilfield experience. He broke out in the oilfield working as a roustabout on a jack-up rig for Diamond Offshore in the GOM. He has also drilled wells in the Deepwater GOM, Colorado, Pennsylvania, California and Abu Dhabi. Josh recently spent 1 year working as a Rig Manager in the Midland Basin and then transitioned into the roles of Drilling Supervisor for Guidon Energy. Josh is from Monterey, LA and currently resides in Monterey, LA with his wife and 2 daughters.

Jud McLeod has 14 years of oilfield experience. He broke out as a roustabout for Diamond offshore drilling in GOM where he quickly worked his way up through hard work and dedication. He has also drilled wells in multiple shale plays throughout US land as well as Malaysia and offshore Qatar in the Persian Gulf, including HPHT and PMCD. Jud is currently a drilling supervisor for Guidon Energy in the Permian Basin. Jud is from and currently resides in Richton, MS with his wife and 2 kids. When he is not on the well site, he enjoys hunting, fishing, camping and spending time outdoors with his family.

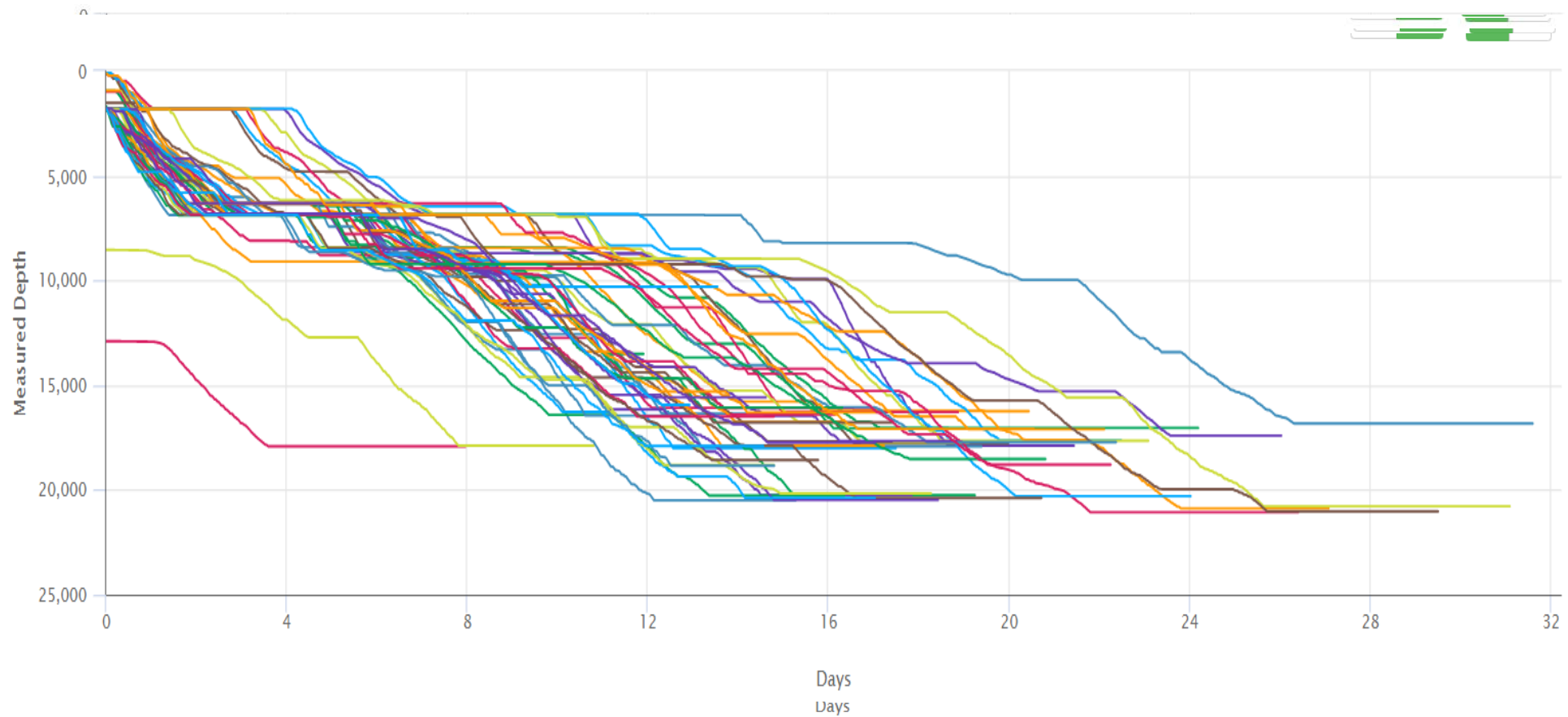
Ted O'Dell has 40+ years in the oil patch. He started with Halliburton Energy in Beaumont, Texas where he cemented both land and offshore wells. He then ran squeeze tools and drill stem test tools out of Beaumont, Galveston and Lafayette. Upon retiring from Halliburton he started consulting through Stokes and Spiehler out of Lafayette. He has worked throughout Texas, Louisiana, New Mexico and the Gulf of Mexico, inland barge and in Ecuador. Ted has drilled in the Cotton Valley, Travis Peak, Deep Bossier, Austin Chalk, Bone Springs, Haynesville and now the Spraberry. Ted served in Vietnam from '65 to '69. He is married to an understanding oilfield wife Linda. The raised 3 children and are now the proud Grandparents of 9 grandchildren and 5 great grandchildren.

Bobby Powell is from Lafayette, LA. He has 37 years of experience in the oilfield, with 28 years of supervisory experience, 12 years of rig superintendent and 7 years as a drilling superintendent/rig manager. He and his wife of 41 years have 3 kids and 5 grandkids.

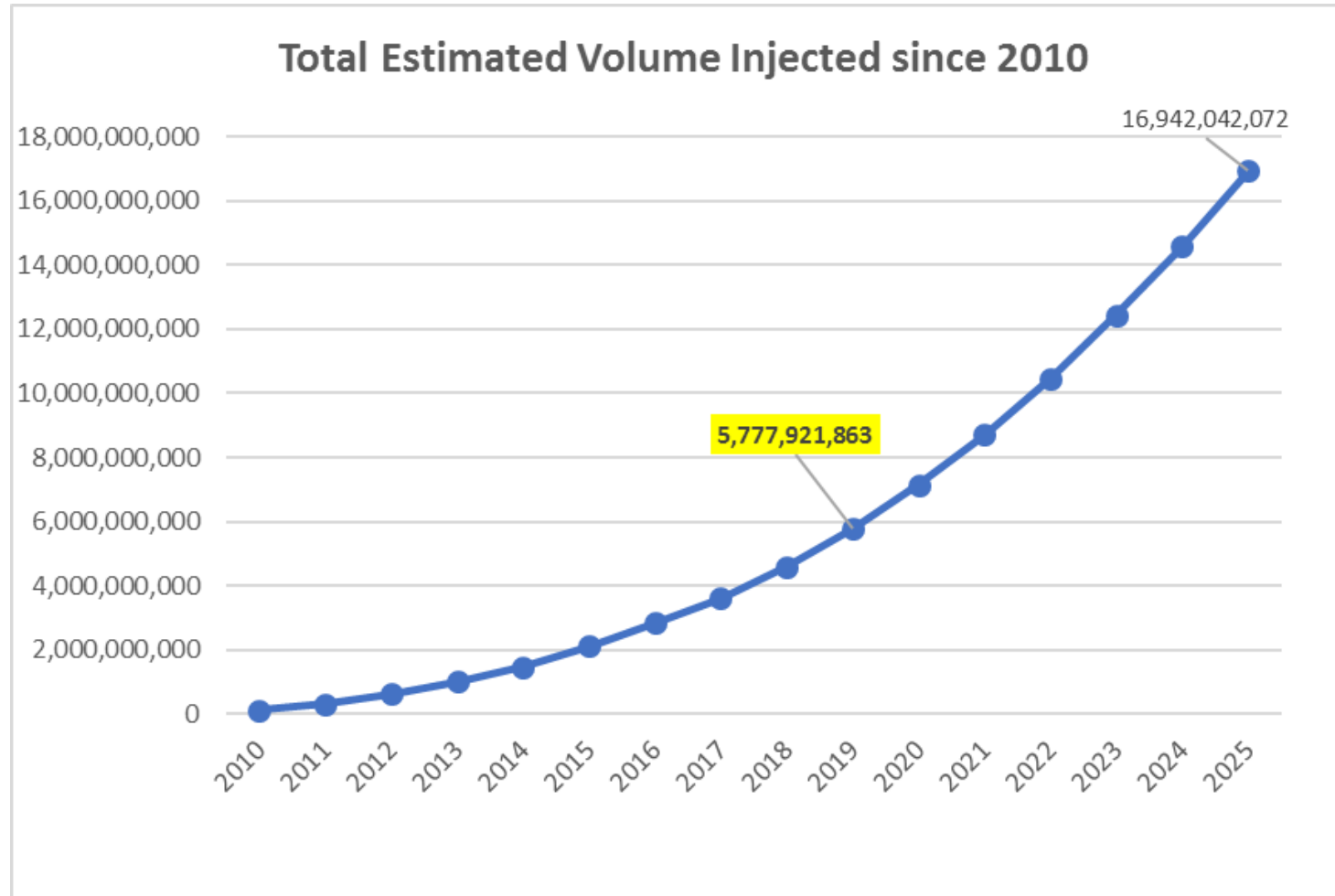
Chris Robinson grew up in Collinsville, MS and now resides in Enterprise, MS. He started in the oilfield 17 years ago after an 8 years in the Navy Seabees (Construction Battalion). He started out with Rowan Drilling as a roustabout on the Gorilla III. He worked offshore for 9months before transferring to their Land Division. Chris spent a majority of his career on Rig-33 working Floors, Derricks, Motors, Assistant Driller and Driller (East Texas Austin Chalk, Bossier Shale, Barnett Shale and Haynesville natural gas wells). Ensign Energy bought out the Rowan Land Division in 2011. This is where he took a Rig Managers position on Rig-151 where he worked the rig in the Permian Basin area until 2018. In March of 2018 he went to work as a drilling supervisor for Guidon Energy.

David Whitfield has 39 years of experience in the oil and gas industry. He started out as a drilling fluids engineer in the Gulf of Mexico after graduation from college. He has also worked wells in deep water G.O.M., California, India, Colorado, Utah, Oklahoma, Texas, Louisiana, and New Mexico. The last 14 years have been spent as a drilling supervisor in the Haynesville, Eagle Ford, Woodford, Delaware, and Permian plays, with 1 year as a drilling superintendent in Oklahoma. David is from Hattiesburg, MS and recently moved from Destin, FL to Ft. Worth, TX where he lives with his wife and enjoys his grandchildren who live nearby.

Days vs. Depth – Q2 2017 to Present

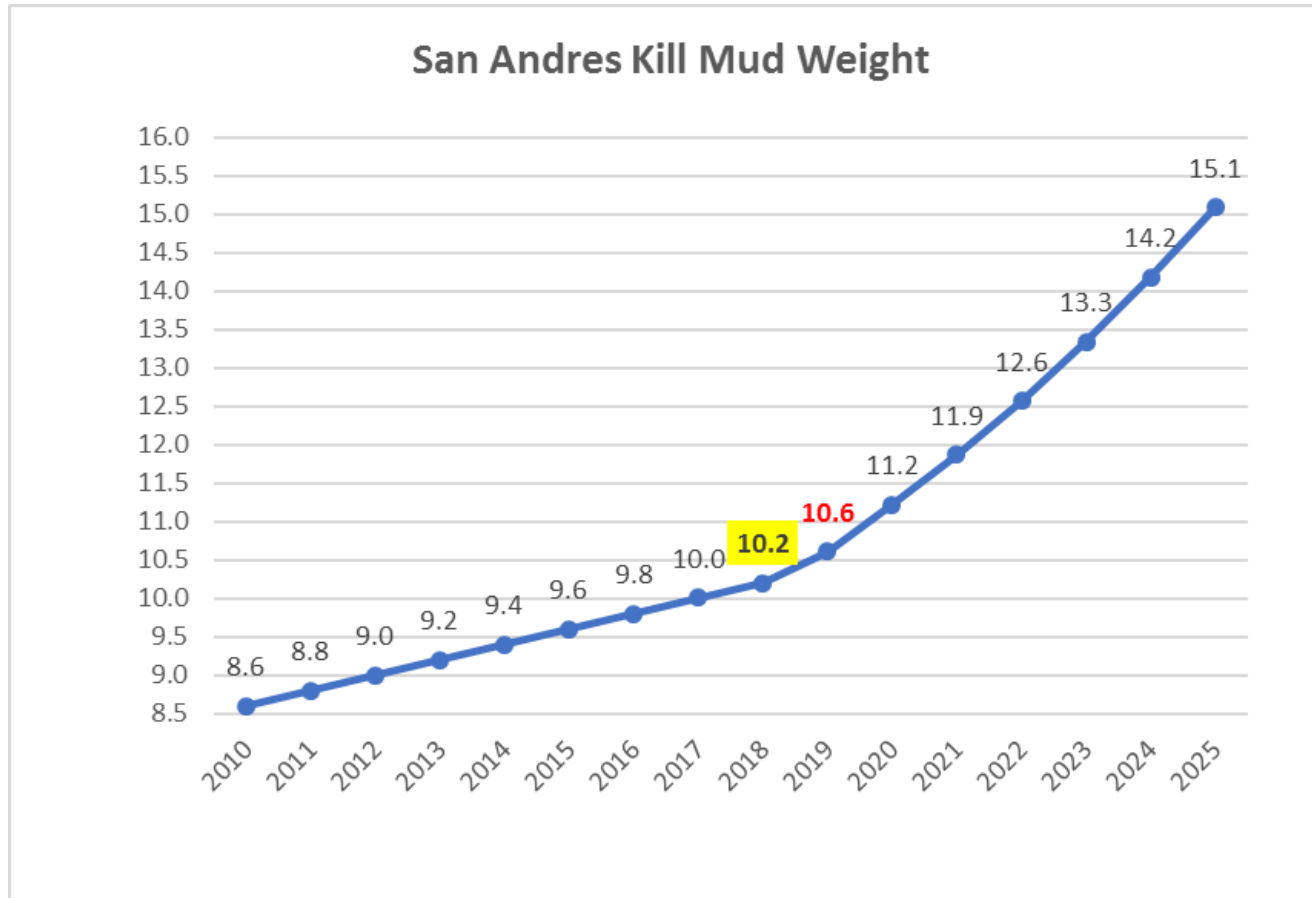


± 5 Billion Barrels Disposed Shallow Since 2010



- Based on total oil production volume, 2/1 water/oil ratio, and 10% goes to deep disposal wells

What Happens When We Add 5 Billion Barrels to a Closed System?



- Projection based on rough estimate of ppg increase per billion bbl injected since 2010 (0.3 ppg per MMMBW)
- At 10.2 ppg kill mud weight, we have already started to exceed the fracture gradient of the San Andres shale at 5900' TVD; lost circulation and differential sticking hazards increasing rapidly
- At 10.6 ppg kill mud weight we approach the fracture gradient of the Clear Fork lime, our primary 9-5/8" casing shoe
- Bottom hole pressure of San Andres does not appear to be regulated properly in the basin

Why is San Andres Injection Such a Drilling Hazard?

