Dual Frac Review

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Agenda

- Define Dual Frac

- Detail Zipper Frac vs. Dual Frac

- Operational Review

- HSA/COVID-19 Measures

- Results

- Summary

What is a Dual Frac?

- A 'Dual Frac' is when a company fracs two wells at the same time with <u>one frac crew</u>.
  - *Pioneer's: David Russell, QEP; Jason Bundick, XCL Resources; Gary Shinabarker, Great Western*

- There are several names for this operation:
  - *Dual Frac, Dual Stim, Simul Stim*
  - *Double-Barrel fracturing*
  - *Simulfrac – This term is also used when fracing two wells with two frac crews*

- Why Dual Frac?
  - *One word: Efficiency*
    - Increase effective frac stages per day by 60%
    - Increased frac stages/day results in significantly reduced frac time on location, reducing all associated rental equipment and personnel costs.
  - *Additionally, you bring wells online quicker = more incremental production for the month/year*

  - <u>Relative Article:</u> *A Double Vision: Service Companies Aim To Save Shale Dollars With Simultaneous Completions, Trent Jacobs, JPT Digital Editor, 15 July 2020*

Dual Frac vs. Zipper Frac - 'Typical Pad' example

- Zipper Frac Details
  - 40 bbls/ft; 2,200 lbs/ft; 200' stage length
  - Equals 8,000 bbls/stage/**85 BPM** = 94-minute pump time
  - Pump time + Pump down time + Swap over time = ~6.5 stages per day
  - 40 stages/well X 4 wells per pad = 160 stages
  - 160 stages/6.5 zipper frac stages/Day = 24.6 FRAC DAYS

- Dual Frac Details
  - (40 bbls/ft; 2,200 lbs/ft; 200' stage length) **X 2 wells**
  - Equals 16,000 bbls/dual frac stage/**120 BPM** = 133-min pump time to complete essentially two zipper frac stages
  - Pump time + Pump down time + Swap over time = 5 _dual frac stages_ per day
    - (effectively 10 zipper frac stages per day)
  - Thus, 160 stages/Effectively 10 'zipper frac' stages/Day = 16.0 FRAC DAYS

- Saving 8.6 Frac Days per 4 well pad   (35% reduction in frac days)

Dual Frac vs. Zipper Frac cont…

- Additional cost savings come from reduced HHP charges:

	Zipper	Dual Frac		
BPM	85	120		
Pumping Hours/Day	10	11	10%	*% Higher Pump Efficiency*
(Pumping Minutes)	612	672		
Bbl Pumped/Day	**52,020**	**80,640**	55%	*Increased fluid pumped/day*
Stages/Day	6.5	10.1	3.6	*Stages/Day Increase*
Frac Days	25.8	16.7	9.2	*Days Saved*
Total Stages	168	168		

Dual Frac – Layout Detail

Operational Execution

FracTetris

Pad layout and rig up planning

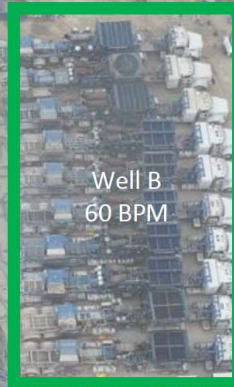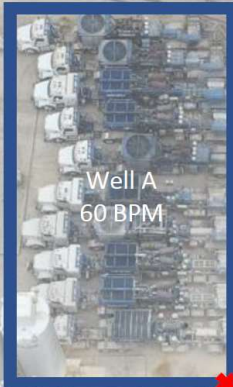**StimCommander Pumps**

- One operator controls rate for both wells
- Condition based operations
- Smooth rate transitions
- Automated Pressure Management

Process Trailer

- Independent Discharge Rates from Road and Curb Sides
- All-in-one Blender+ Hydration Unit

Well A
60 BPM
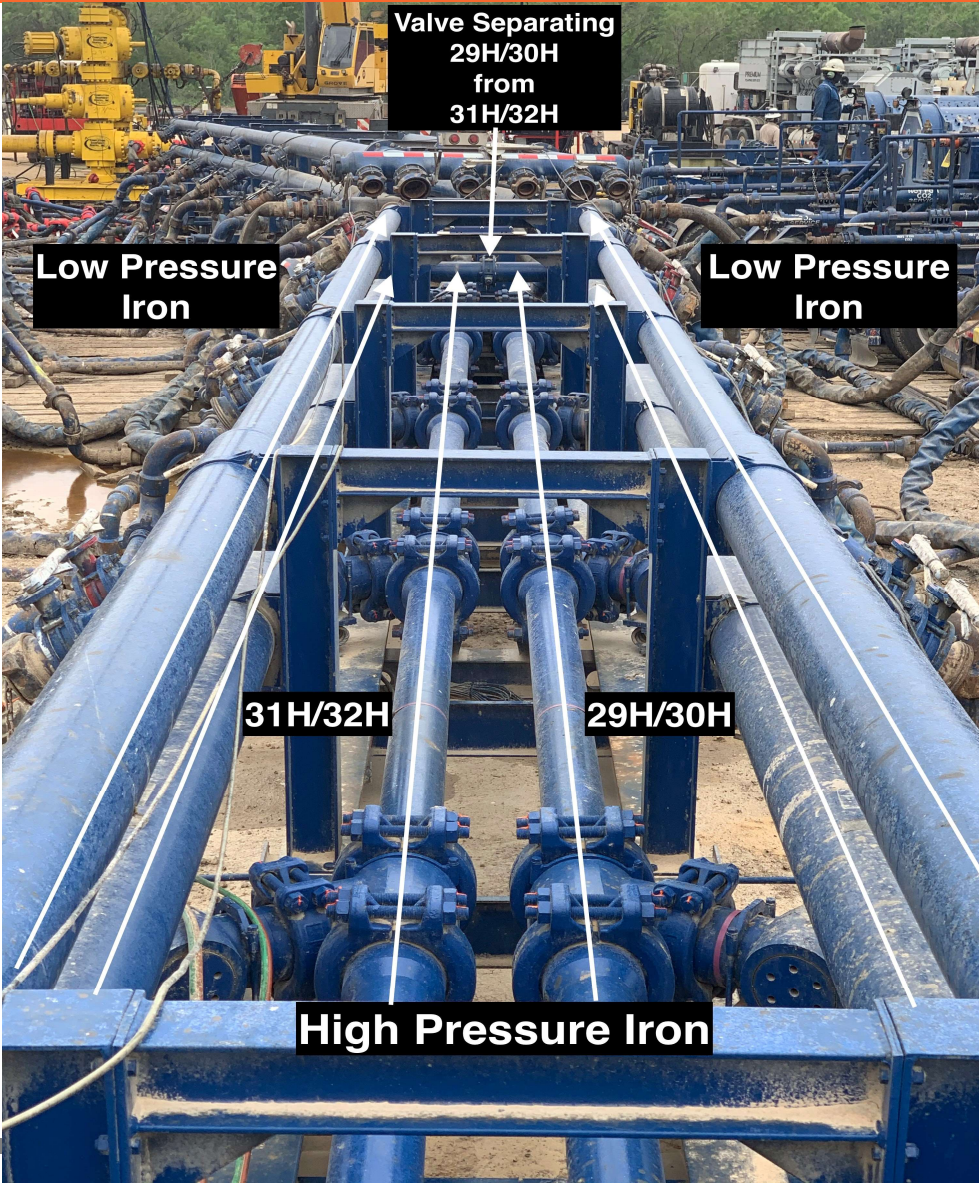
Well B
60 BPM

120 BPM

Schlumberger-Private

OneStim

Dual Frac – High Pressure/Low Pressure lines from Blender
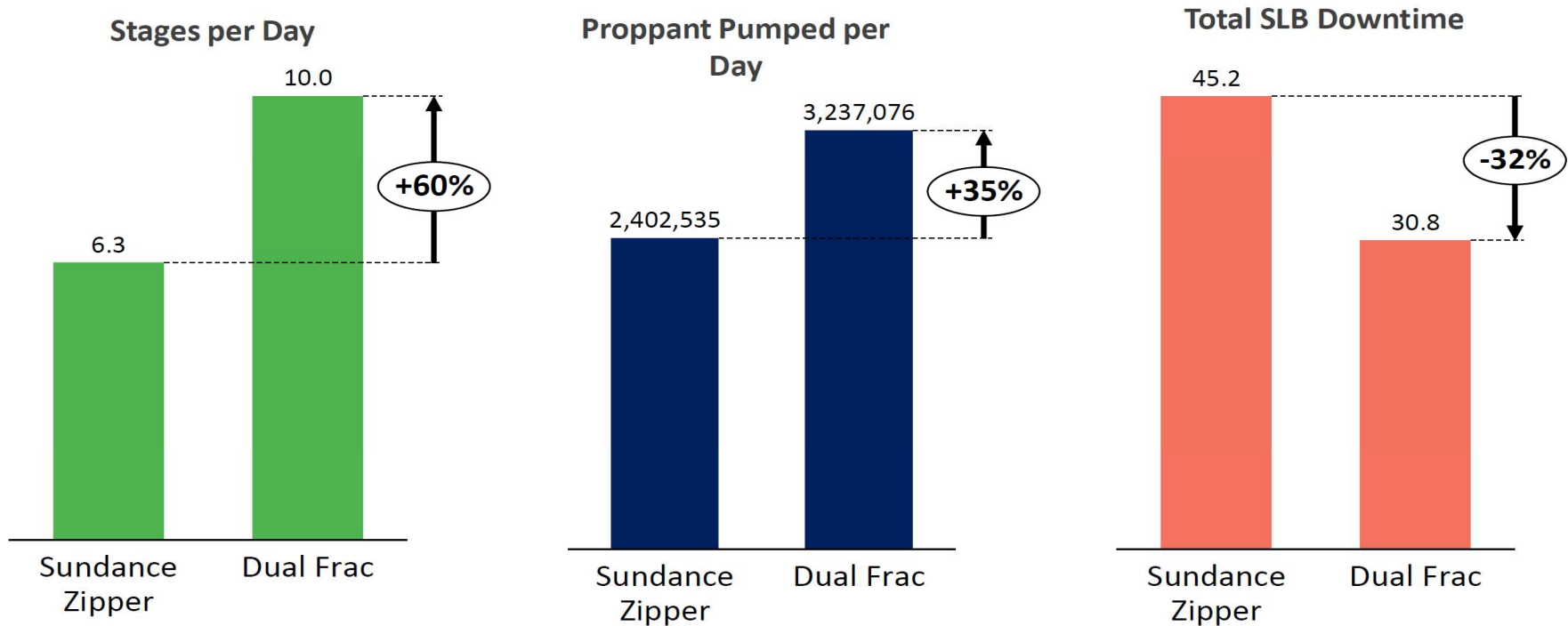
# Dual Frac – Overview Missile – High Press/Low Press lines

Harlan Bethune Summary

*Results compare a recently zipper-frac'd 4 well pad in the area to the dual frac pad

Dual Frac HSE / Covid-19 Mitigation Measures

- Held socially distanced Safety Meetings at the beginning of every shift (twice a day)

- Clear line of site to wellheads/valves

- No OSHA recordable injuries and no first aid cases

- Crew Overall Training Competency average at 95.9%

- Over 70 reported Observation Interventions during job

- Virtual Wellsite Audit

- Covid-19 Field Location Precautions
  - *100% Covid-19 online training*
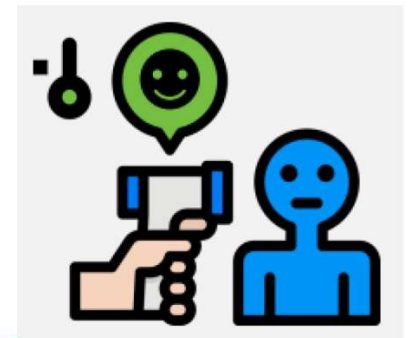
SUMMARY

- <u>Dual Frac is a highly effective way to complete wells quicker and cheaper</u>
  - *Reduced Frac Days by 38%*
  - *Effective way to bring production on-line quicker*

- <u>Best Practices:</u>
  - *Managing communications – frac van & personnel*
  - *120+ BPM pump rate requires reliable source of water, water storage and water transfer*
  - *Proppant Logistics: Pumping ~1MM lbs proppant/dual frac stage requires a sound logistical plan for sand delivery.*
  - *Wireline operations – Open one well at a time, drop the first gun, when ~500' down, open the second well and drop the second gun.*

- <u>Opportunities:</u>
  - *Increase pump rate from 60 BPM/well to 75+ BPM/well*
  - *Reduce 3rd party down time*

- <u>Conclusion:</u> The potential cost savings of utilizing a Dual Frac operation is worth the risk of water/proppant delays and the learning curve required to streamline operations.

Thank You

Questions?

High Pressure Iron to 29H/30H

High Pressure Iron to 31H/32H

Dual Frac – Missile to Hardlines to Wellheads