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 **IPS 2022**
INTERNATIONAL PERFORATING SYMPOSIUM

SEPTEMBER 26-28

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How Pumpdown Operation Tenacity Has Affected Cased Hole Procedures

IPS-5.1-22

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Tenacity is the quality or fact of continuing to exist

- Understanding what was the overall model before versus what is today
- Service company adaptation to singular services
- Safety and training designed to cater to specific provided service
- Gaps created by workforce and business cycle involving downturns
- Operations feedback
- Financial obstacles
- Looking forward to how do we improve

Cased Hole Services diversification



- Cased Hole Perforating
- Cased Hole Logging
- Pipe Recovery
- TCP

- 2005 – Horizontal shift

Independent providers emerging on market

Hydraulic Fracturing takes lead for revenue generation

- 2010- Wireline providers affected by activity levels and pricing
- 2015- Wireline personnel affected by geographic changes and compensation
- 2020- Pandemic affected world
- 2022- Working towards one type of service and or revenue generation rethinking the footprint entirely



One Trick Pony

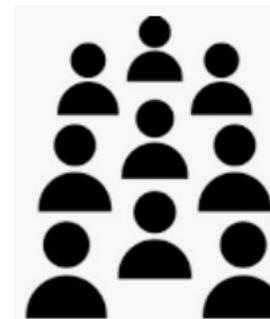
Service Providers have moved to a situation where the market is divided for Cased Hole

- Pumpdown
- Everything else
- Workforce is only trained on specific duties related to task at hand
- Management is fast tracked as well as wellsite supervisors
- Revenue generation has led to the highest risk business model be the focus



Highest amount of volume work and utilization

- Perforating high cluster count in multi well fracturing application
- Gun system requirement for multiple selections in one run
- Third party crane operations
- Larger crane for multi-well pad footprint
- Rental pressure control
- Pressure control components to minimize human exposure around wellhead
- Completion tool advancement in zonal isolation
- Faster trucks more computers
- Multi crews 24 hour wellsite work
- 24 hour operational management required



What are the biggest risks associated

- Explosives
- Overhead lifting operations
- Pressure control
- Wireline cable/ winch speed
- Driving
- Communication of the personnel



Available Resources

- API RP 67
- Perforating gun system provider training
- DOT / ATF / PHMSA training
- OSHA crane certification
- Pressure control training by manufacture
- Pressure control training by third party well intervention
- Wireline truck and panel manufactures training
- Frontline supervisor training
- Operators school
- Driving safety courses



Here is the problem

- Workforce reduction
- Time of experience
- Movement from one organization to the next
- Loss of compensation for training programs
- Specific job duties not overall understanding of the job as a whole

Created a workforce who is struggling to be safe and or have a lack of understanding – procedures not being followed higher risk of incident

Due to sheer volume of activity, we have also created urgency to get back in hole instead of being able to problem solve and or follow up preventing these incidents



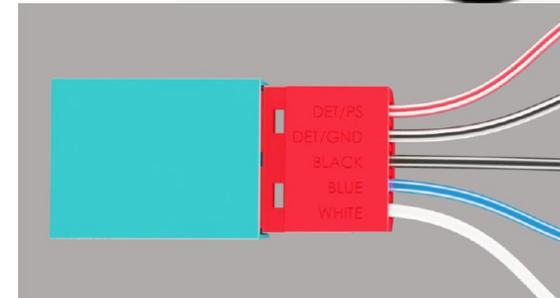
100 Wireline employees were asked

- What is the biggest risk associated with your job?
- What tools do you feel like you are offered to prevent an incident?
- Does your company value safety or operational efficiency higher ?
- When it comes to explosives what makes it safe for you to operate?



100 Wireline employees were asked

- What is the biggest risk associated with your job?
72% DRIVING
- What tools do you feel like you have to prevent an incident?
54% PHONE
- Does your company value safety or operational efficiency higher ?
83% OPERATIONAL EFFICIENCY
- When it comes to explosives what makes it safe for you to operate?
81% ELECTRONIC SWITCH



Cost of doing business

- Stage prices are down significant
- Workforce time is limited do to travel and locations
- Managers are firefighting not fire prevention
- Silos of the workforce for basic wireline skill sets

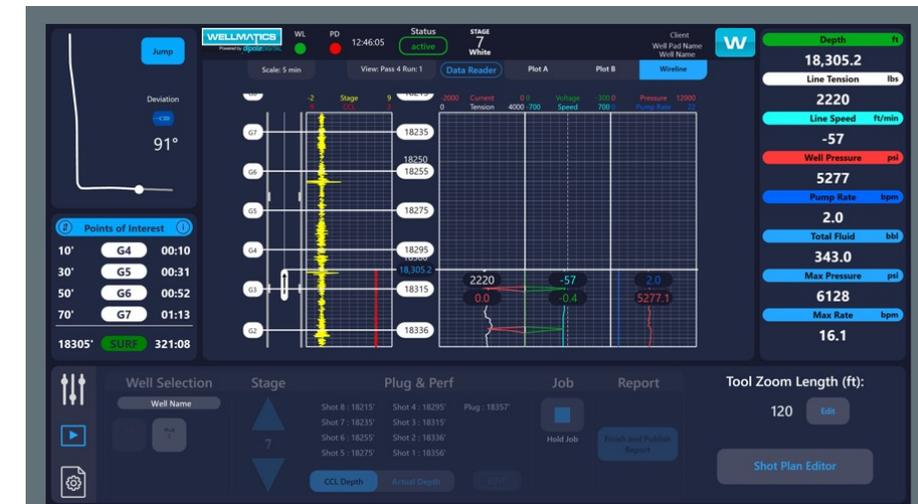
- Organizations have given a level of value to getting more stages shot then doing it safely - driven by the operator

- Equipment providers were driven to create technology to meet highest reliability standards but that has taken away the focus the user and created a false sense of security when it comes to safety or following a standard process



Invest in Employee/ Vendor

- Operators need to continue to drive wellsite standards
- Situational awareness discussions
- Post job reviews not just on equipment failures
- Wireline companies must have the pricing to a point that they can invest in more training for the new workforce
- Industry leaders need to devote time and communicate assistance in training opportunities.
- Employees need more accountability from management without fear of losing a crew
- Loyalty from operators to vendors to work thru these standard increases.
- Reevaluate the expectation of the type of employee needed
- Automate the process



Q&A
