

AUTOMATIZING DRILLING PROCESSES TO DESIGN BETTER WELLS IN THE DYNAMIC UNCONVENTIONAL PERMIAN BASIN, TEXAS, USA.

Tony Lawal

Drilling Engineer – EWS Consulting



Currently Drilling Engineer for EWS Consulting.
Company located in the Permian basin capital,
Midland, Texas.

Previously held multiple roles related to Drilling. As
Well Site Supervisor for RSP Permian, company
acquired by Concho Resources, and as Directional
Drilling Engineer for Schlumberger.

Throughout more than 25 years of experience, has
worked in Nigeria and the United States.

Grew up in Nigeria, where he attended university,
earning a Bachelor of science in geology. Then he
attended his masters in the US in civil and
environmental engineering .

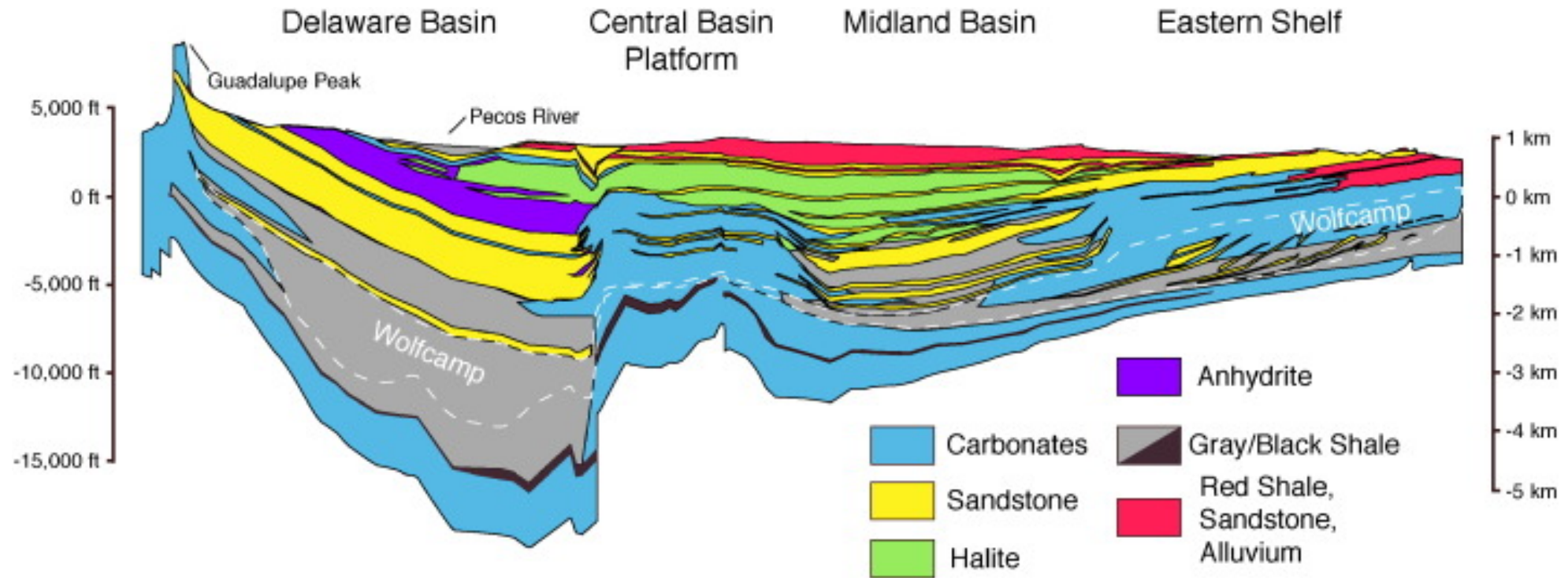


ABOUT THE SPEAKER



DrillPlan





ABOUT THE PERMIAN BASIN

The Permian : Delaware, Midland and Central basin. It's not as homogeneous as many think.

Constrain:

In US information is private. And although there is public information sources, information quality is poor in public resources.

So, new small E&P companies information is limited.

Around 380 rigs has operations in the Permian which makes it one of the busiest basins in the world regarding drilling activity.

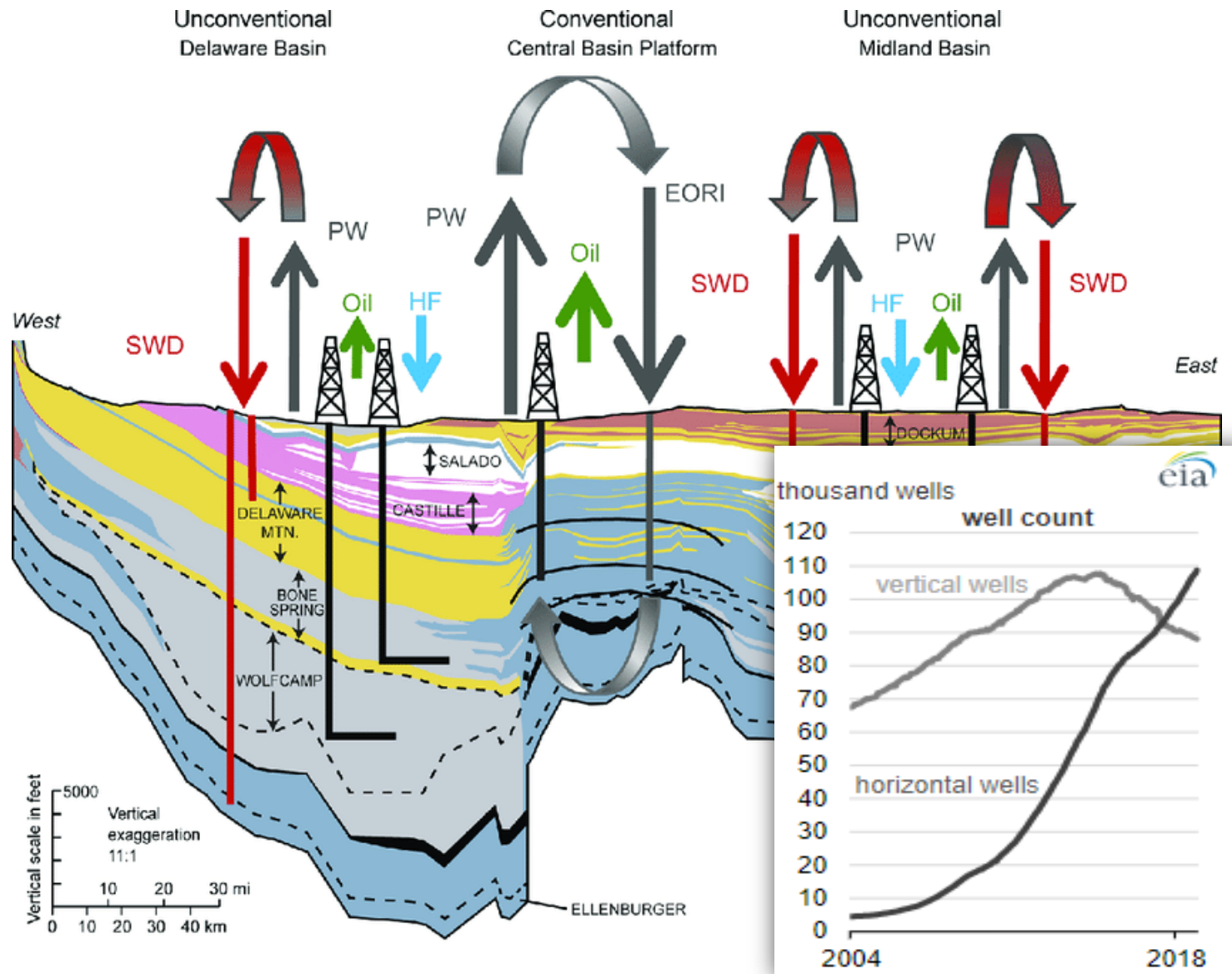


CONSULTANTS ROLE IN THE PERMIAN - EWS

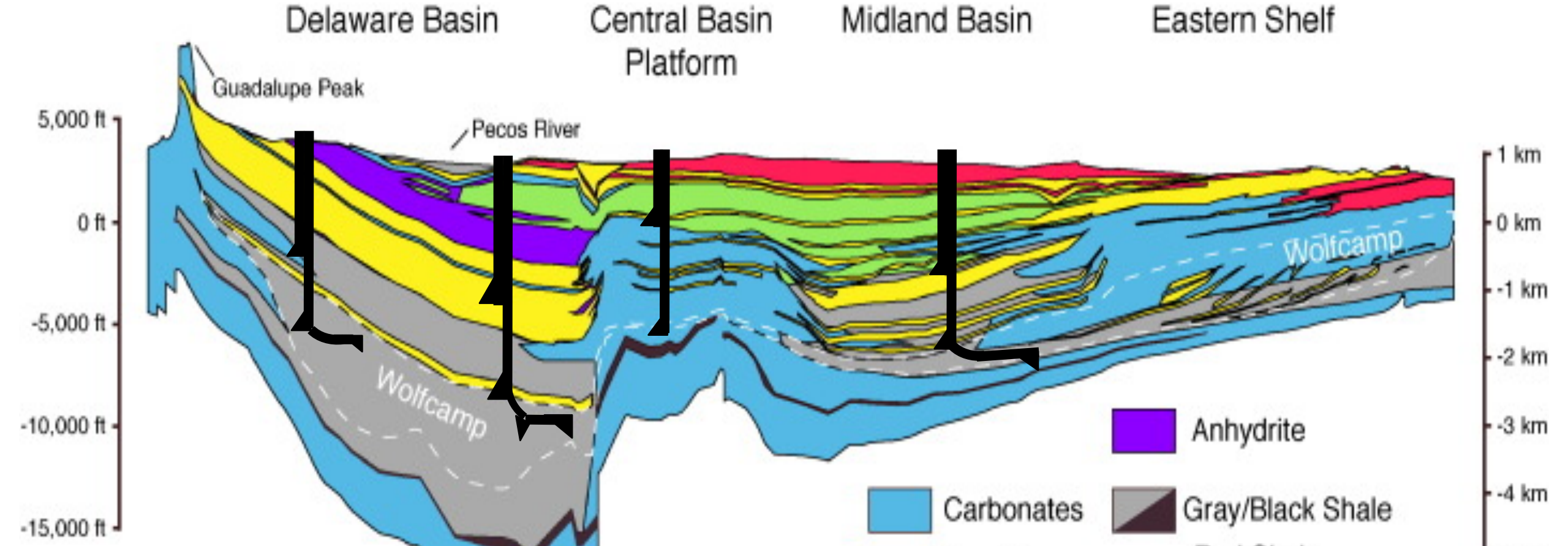
- In the United States individuals own the minerals.
- It's frequent to find new E&P start up companies with limited workforce. And then it with bankruptcy problems due to bad operations management.
- EWS has more than 25 years of drilling and completions experience in the Permian. Which makes it well known and a common engineering and operations resource for the Permian Players.
- ***Today EWS provides project management for about 25 rigs, all in the Permian, which represents the 7% of the market share.***



BUSINESS HIGHLIGHTS

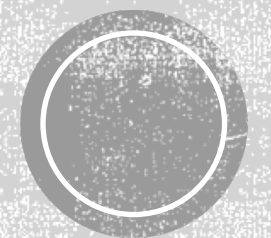


- There are 3 typical wells drilled in the Permian: **vertical conventional** wells, **unconventional horizontal** wells (The majority) and SWD wells.
- All the unconventional horizontal wells are fracked.
- Budgets are tight, although for unconventional horizontal wells average amounts are 3.5MMUSD*¹ for drilling, 3.5MMUSD*² for completions.
- Unconventional wells have very low permeability, so the decline curves are steep. So drilling and/or re-stimulation is required to maintain production.
- In the Permian basin are drilled around 20,000 wells per year.



TYPE OF WELLS

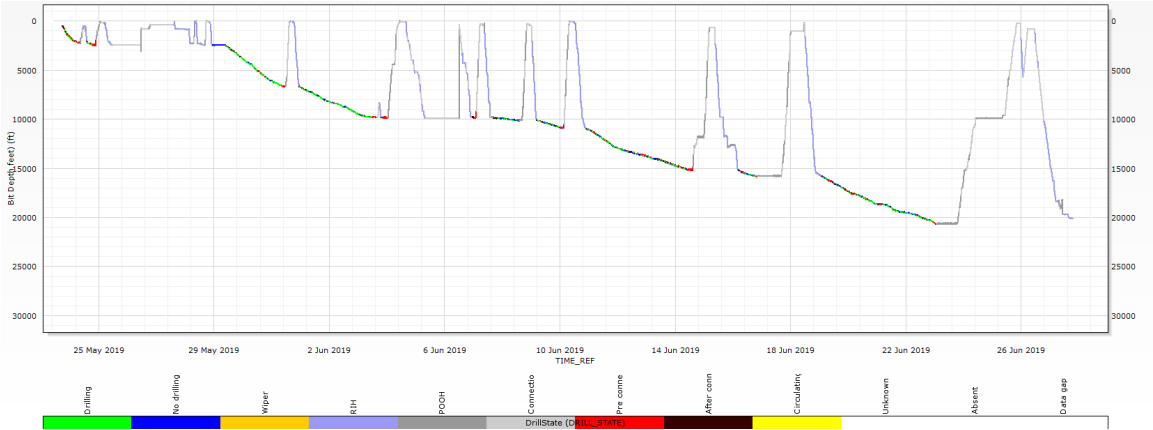
2, 3 or 4 strings, Delaware, central or Midland basin.



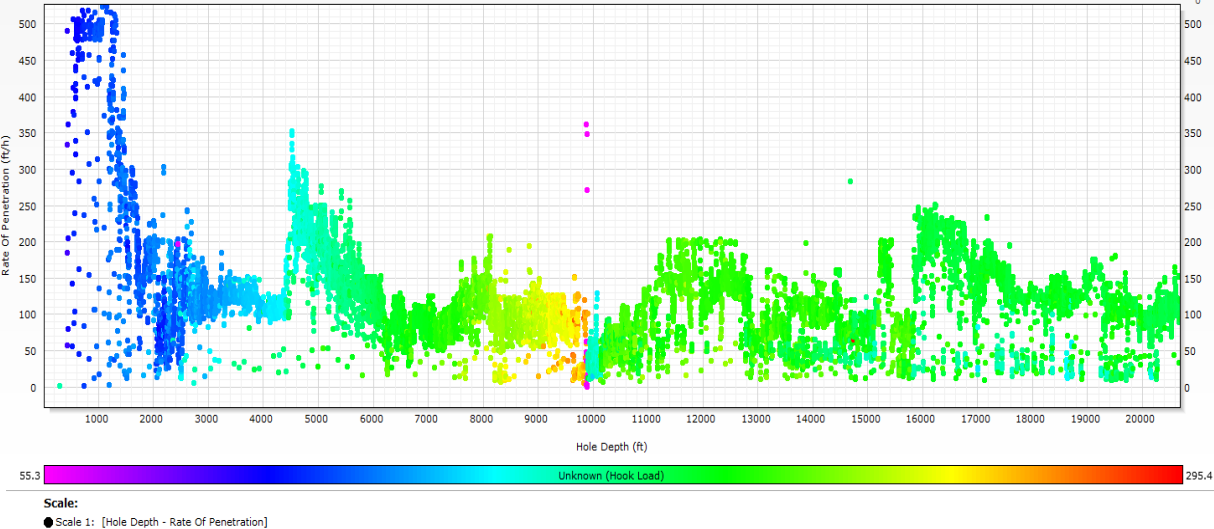
MEASURING RISKS



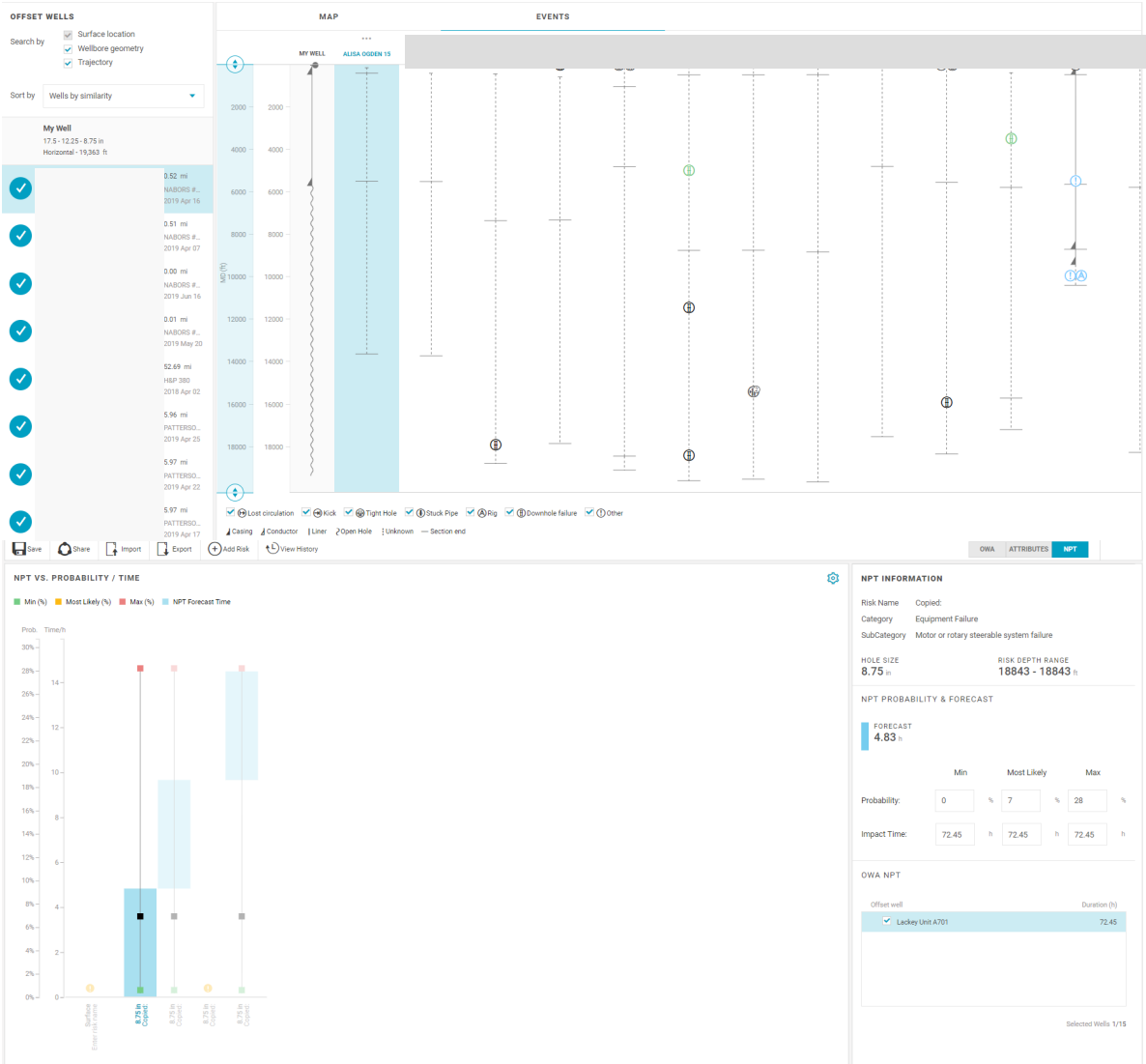
Representative Real Time Information



Record and measure key risk indicators (poor hole cleaning, packing tendencies, fluid losses, tool failures, etc)

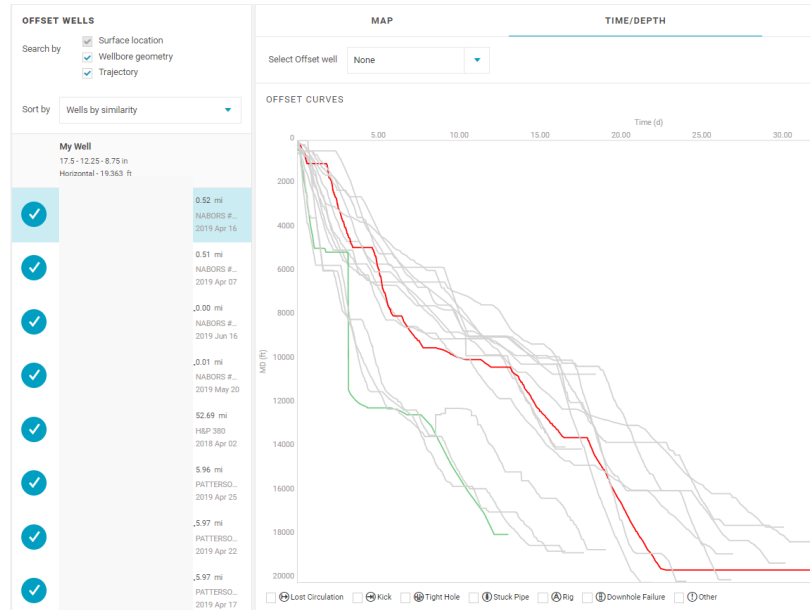
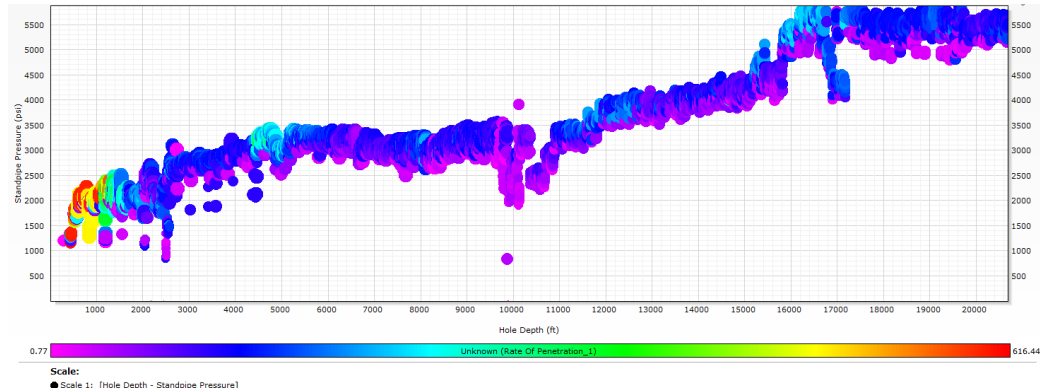


Calculate risk incidence and potential impact.

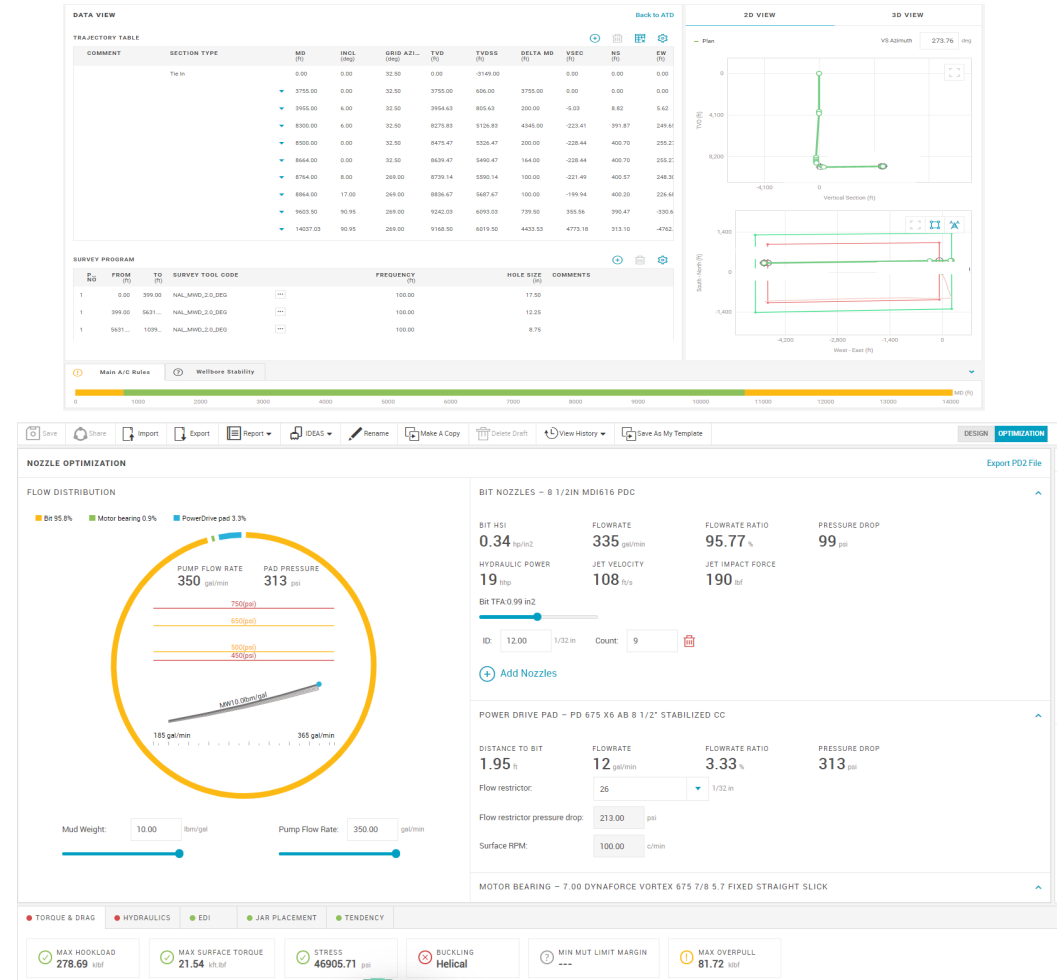


OPTIMIZATION OPPORTUNITIES

Execution Performance limitations analysis



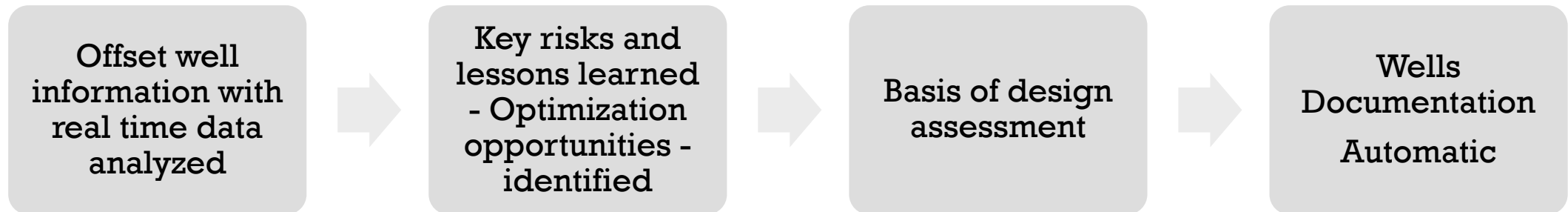
Engineering to avoid limitations and optimize variables



PROCESS OPTIMIZATION

Previously done:

- Well site supervisor lessons learned in the field were voice transmitted. Partially in excel files by engineering.
- Wells information didn't have same references, and documentation organization were not the best, so big amount of time is spent to do multi-well analysis.
- Calculations to re-asses management of change sometimes not possible.





“DRILLPLAN ALLOWS ENGINEERS TO ORCHESTRATE WELL PLANNING IN A FASTER AND MORE RELIABLE WAY. CAN DECREASE IN 50% THE AMOUNT OF TIME SPENT DOING DOCUMENTATION FOR THE DRILLING PROGRAM AND CAN REDUCE IN 50% LOST TIME DUE TO WAITING FOR INFORMATION STATUS IN OTHER PROCESSES AS THE RIGHT INFORMATION IS DELIVERED TO THE RIGHT PERSON ALWAYS.

RISKS DUE TO INFORMATION MANAGEMENT ARE DECREASED AS WELL TO THE MINIMUM, AND THESE RISKS HAVE THE POTENTIAL TO CREATE MULTIMILLION EVENTS.”

TONY LAWAL — DRILLING ENGINEER (EWS)

