

Color by:
Depth ft (binned)

Depth Bin (ft)	Percentage
0 - 999	7.1%
1000 - 1999	5.9%
2000 - 2999	6.6%
3000 - 3999	5.5%
4000 - 4999	9.1%
5000 - 5999	10.5%
6000 - 6999	7.8%
7000 - 7999	6.0%
8000 - 8999	6.8%
9000 - 9999	12.6%
10000 - 10999	7.6%
11000 - 11999	5.5%

Color by:
Depth ft (binned)

Depth ft (binned)	Percentage
0 - 999	7.0%
1000 - 1999	5.8%
2000 - 2999	6.7%
3000 - 3999	5.5%
4000 - 4999	9.2%
5000 - 5999	10.4%
6000 - 6999	7.7%
7000 - 7999	5.8%
8000 - 8999	6.6%
9000 - 9999	12.9%
10000 - 10999	7.5%
11000 - 11999	5.4%
12000 - 12999	9.7%

0 - 999 » Curr... 75.40 ≤ x...

40.16

Avg(Predicted ROP ft/hr)

75.44

Avg(Optimiz...

55.16
Avg(Predicted ROP ft/hr)

Avg(Optimiz...

93.54
Avg(Predicted POP ft/hr)

Actual ROP ft/hr,
Predicted ROP ft/hr,
Optimized ROP per
Depth ft

Color by:
(Column Names)

- Avg(Actual ROP ft/...
- Avg(Predicted ROP ...
- Avg(Optimized ROP)

Depth ft (binned)

Box plot

Data table:

	0 - 1...	20...	40...	60...	80...	10...	1200...
Count	5...	5 5 2 2 2 6 6 6 5 5 5 6 6 6 6 6 9 9 8					
Median	4...	3 3 2 2 3 5 5 5 3 3 5 5 5 3 3 3 5 5 5...					
Avg	3...	3 3 3 3 3 5 5 5 3 3 5 5 5 3 3 3 5 5 5...					
StdDev	1...	1 1 2 2 2 2 2 2 1 1 1 3 2 2 2 2 1 1 1...					
Var	1...	1 1 5 4 5 5 4 4 3 2 3 9 7 8 4 4 2 1 2...					

Depth ft (binned) » (Column Names)

Legend:

- Actual ROP ft/hr (Blue)
- Predicted ROP ft/hr (Orange)
- Optimized ROP (Green)

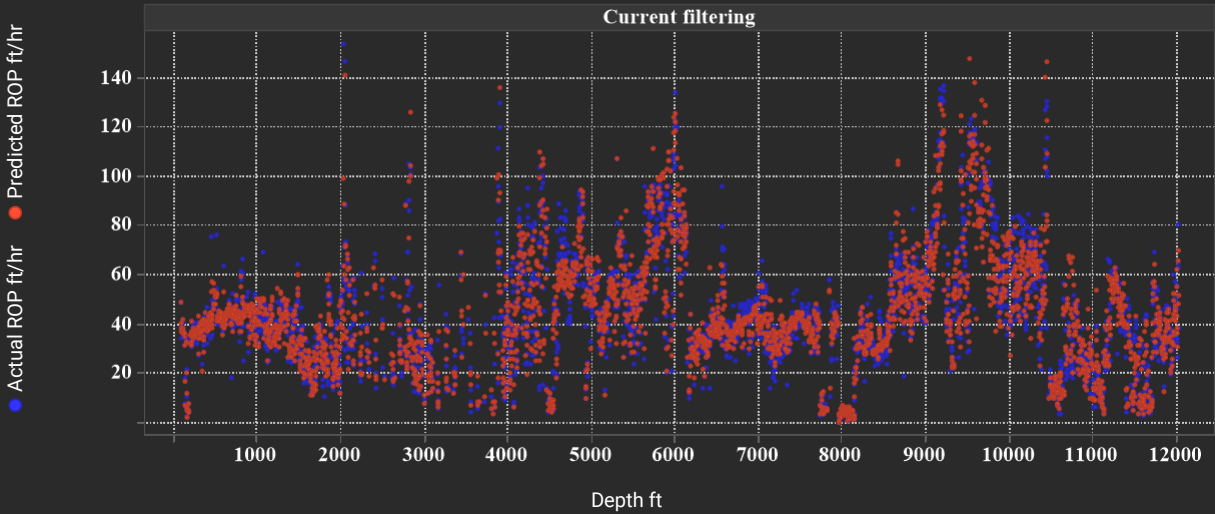
Reference points:

- ▼ Min
- ▲ Max
- ★ Upper Inner Fence

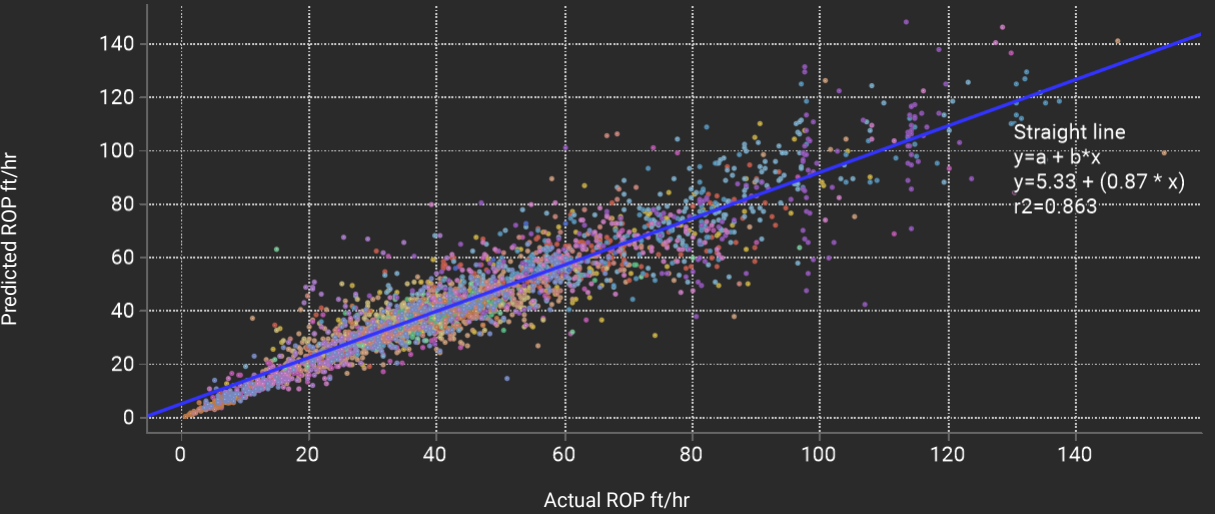
Column	(Subsets)	
Depth ft	All data	2
r	All data	
RPM	All data	
Torque f-p	All data	3
Flow gpm	All data	
SPP Psi	All data	
ECD lb/gal	All data	
ppg psi/ft	All data	
ToothWear	All data	
Reynold Num...	All data	
Actual ROP ft...	All data	
Predicted RO...	All data	
Optimized ROP	All data	
inputRowIndex	All data	
Marked 10:19...	All data	

[illegible]

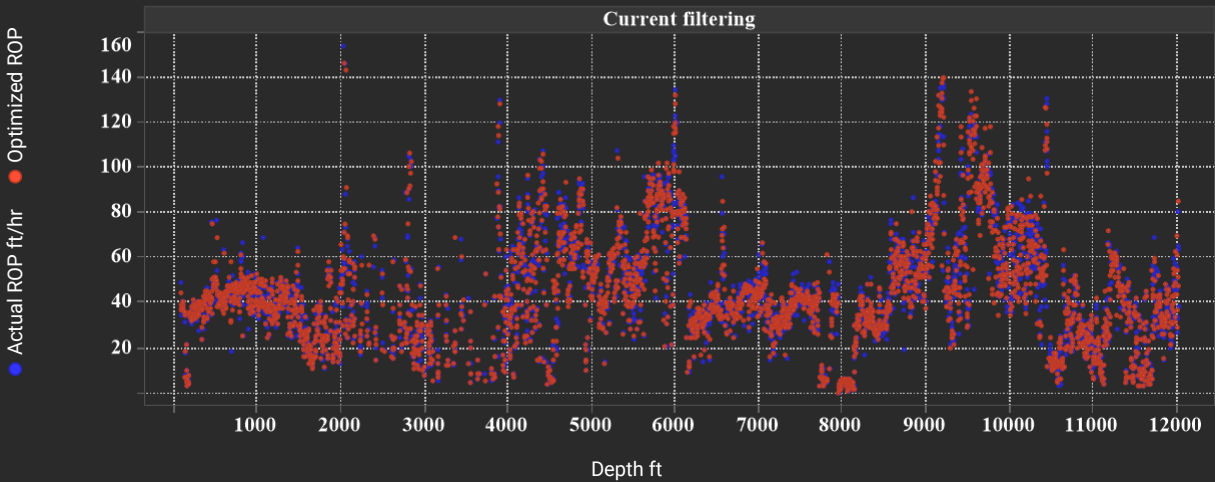
Actual ROP ft/hr, Predicted ROP ft/hr vs. Depth ft



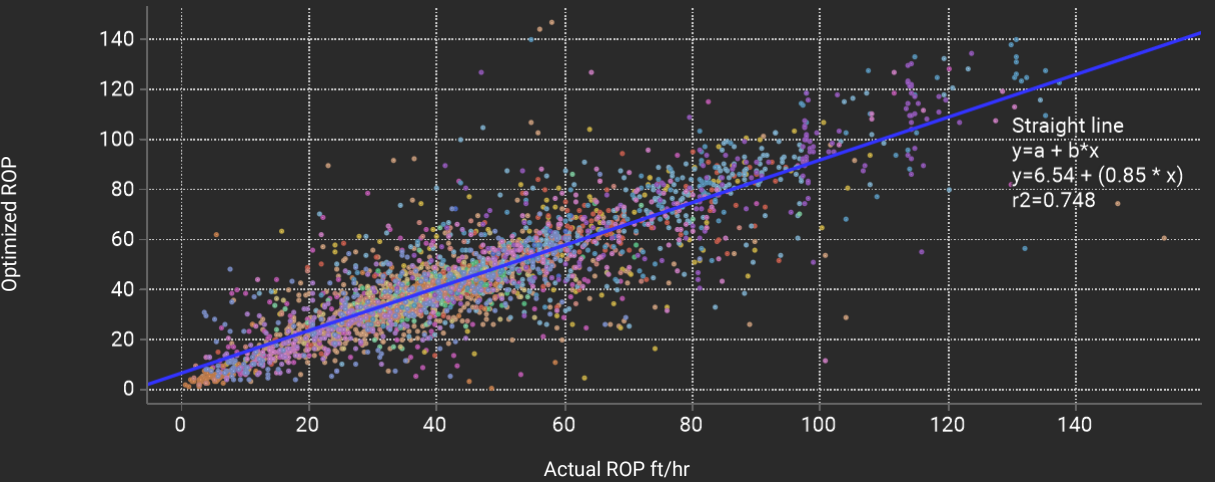
Predicted ROP ft/hr vs. Actual ROP ft/hr



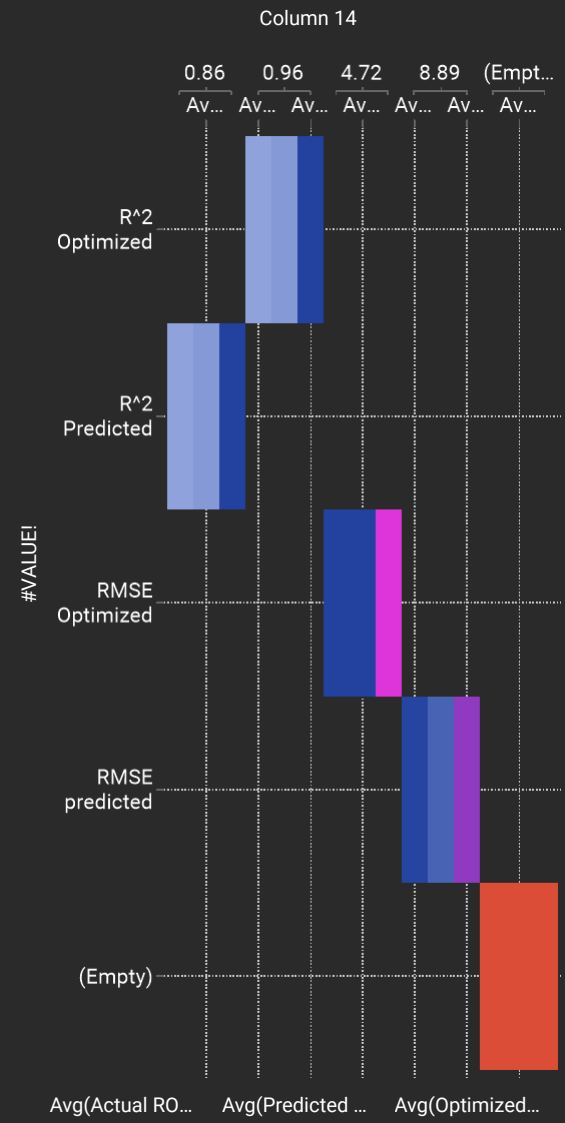
Actual ROP ft/hr, Optimized ROP vs. Depth ft



Optimized ROP vs. Actual ROP ft/hr



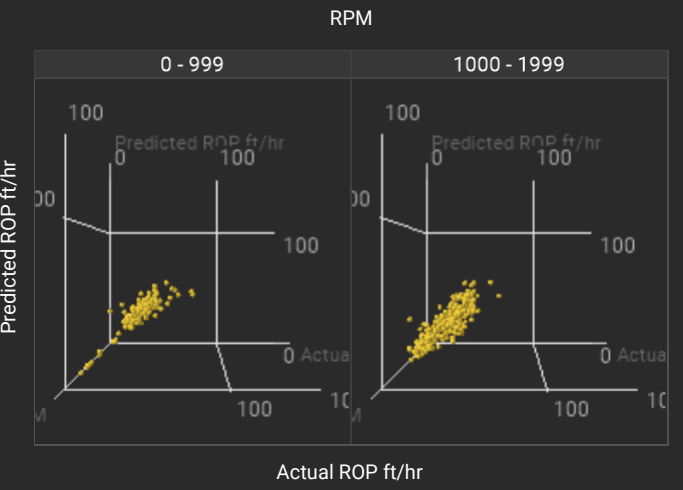
Actual ROP ft/hr, Predicted ROP ft/hr...



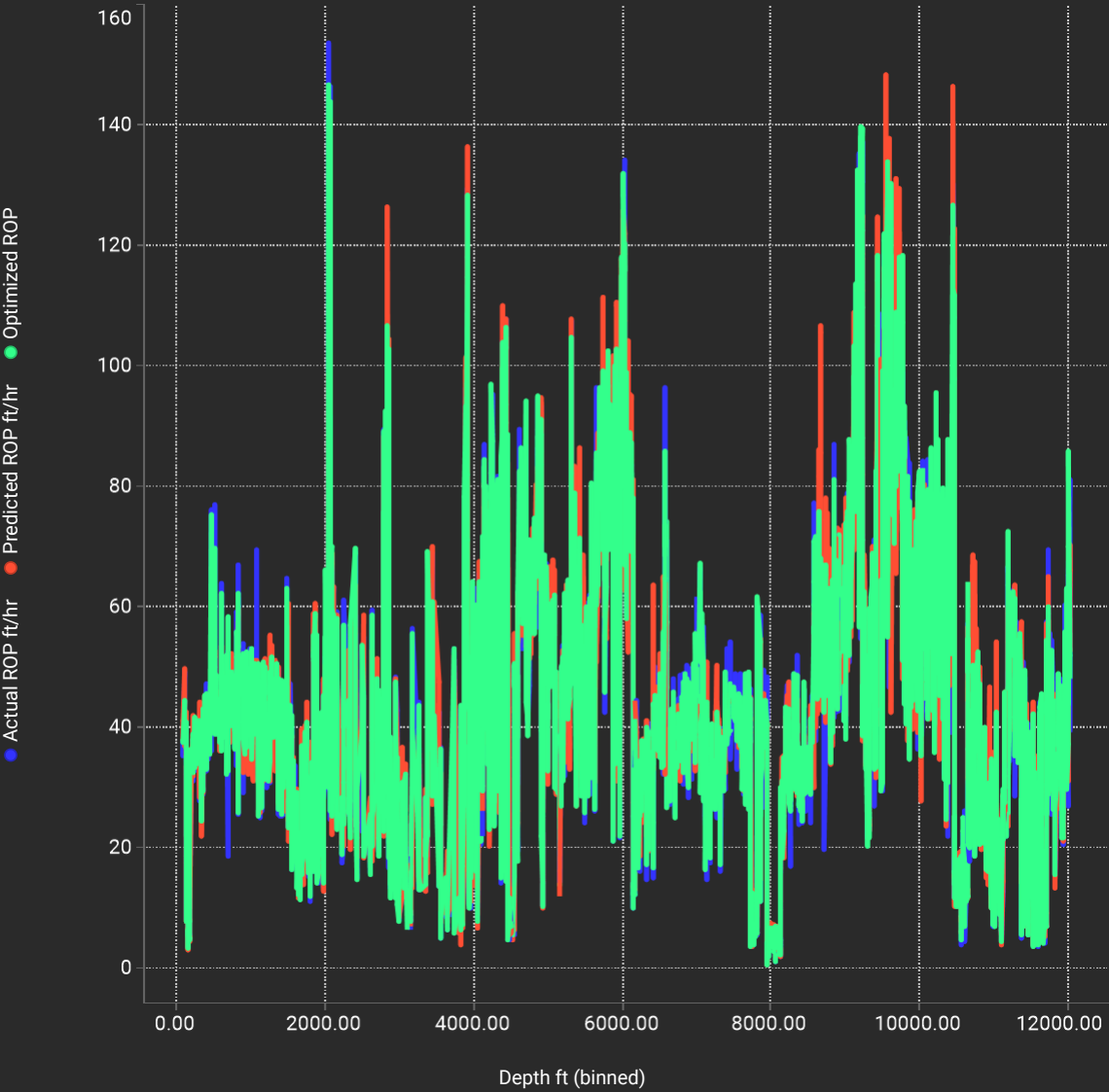
Predicted ROP ft/hr, Optimized ROP per Dept...

Actual ROP ft/hr (binned) » (Column Names)				
Depth ft (binned) » Lithology » Formation	0.00 ≤ x < 20.00		20.00 ≤ x < 40.00	
	avg(Predicted...	Avg(Optimize...	Avg(Predicted...	Avg(Optimize...
	10.02	14.18	37.67	38.2
	19.81	19.74	31.86	32.4
	19.76	22.19	29.59	33.4
	12.60	17.73	30.27	33.0
	17.11	18.97	26.16	24.8
	14.14	22.81	31.53	38.4
	12.78	13.59	36.63	34.6
	13.28	16.53	37.81	43.7
	-	-	36.31	32.8
	11.97	39.04	39.70	46.6
	-	-	-	-
Avg(Predicted ROP ft/hr)		Avg(Optimized ROP)		

RPM vs. Actual ROP ft/hr and Predicted ROP ...

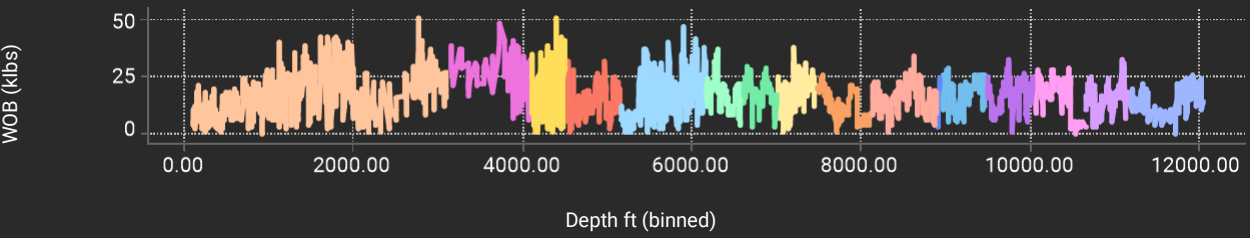


Actual ROP ft/hr, Predicted ROP ft/hr, Optimized ROP – Depth ft

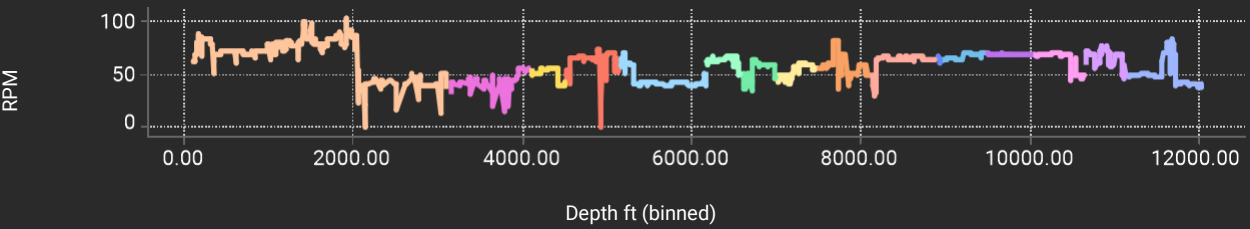


The Parameters that affect on Rate of Penetration

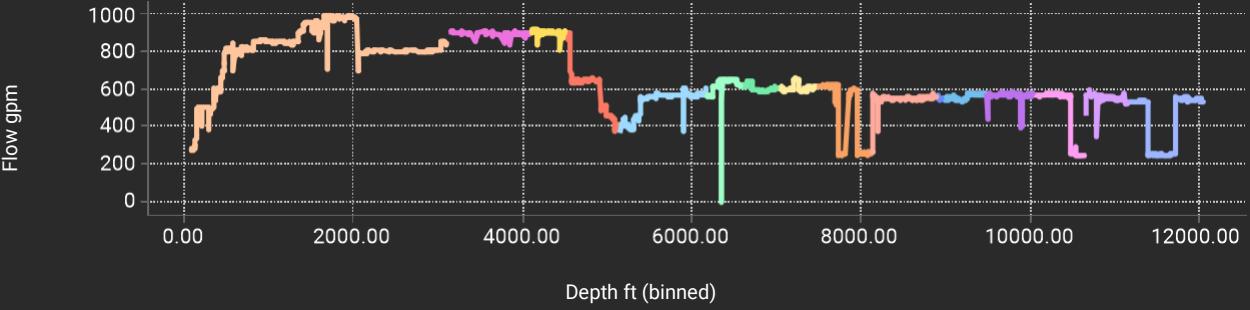
WOB (klbs) – Depth ft



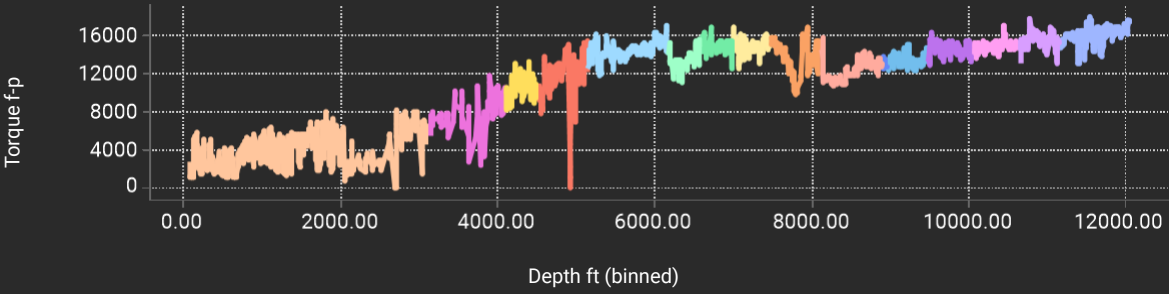
RPM – Depth ft



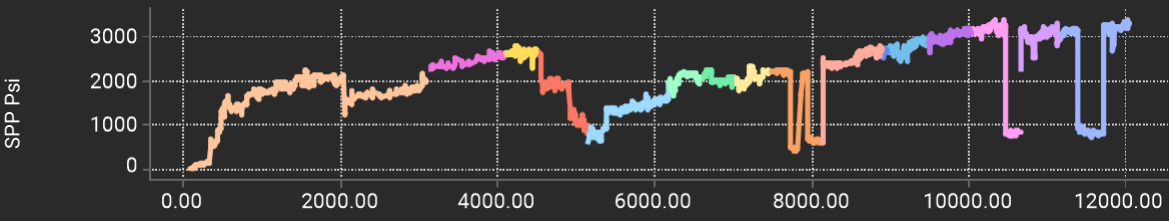
Flow gpm – Depth ft



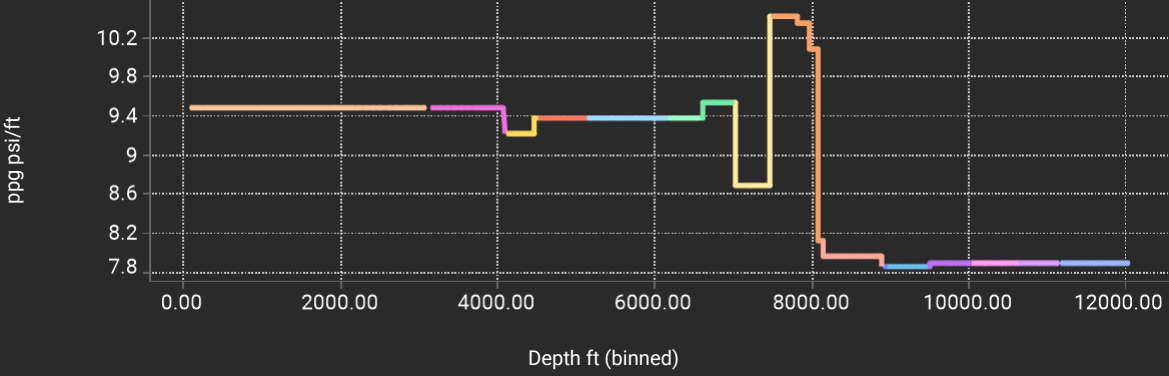
Torque f-p – Depth ft



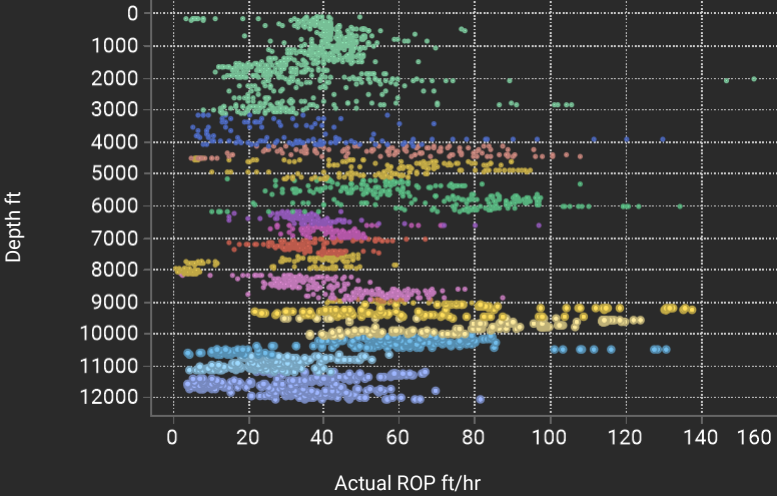
SPP Psi – Depth ft



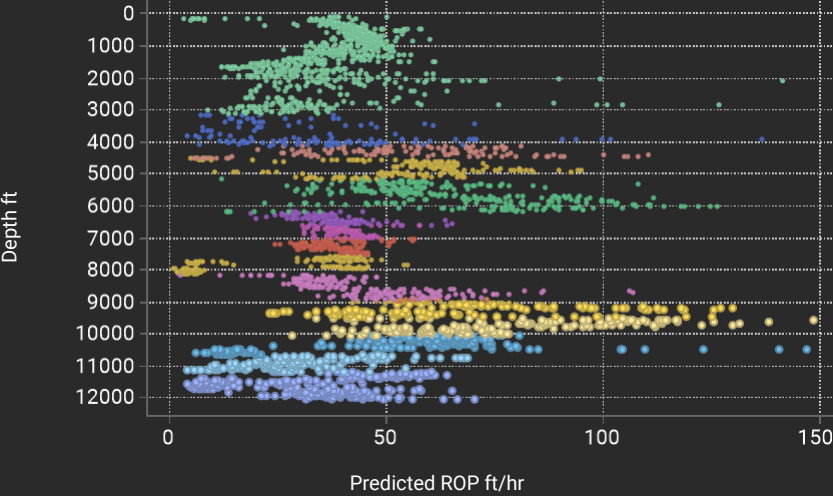
ppg psi/ft – Depth ft



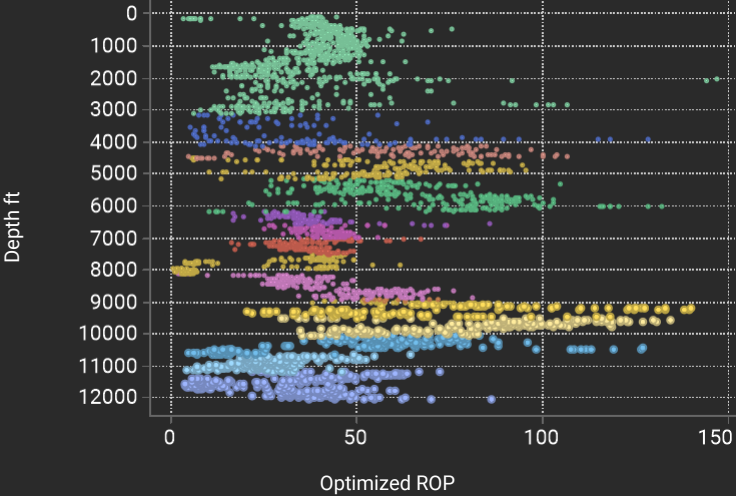
Depth ft vs. Actual ROP ft/hr



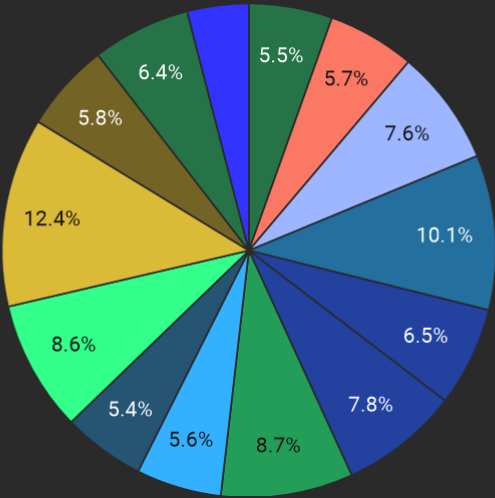
Depth ft vs. Predicted ROP ft/hr



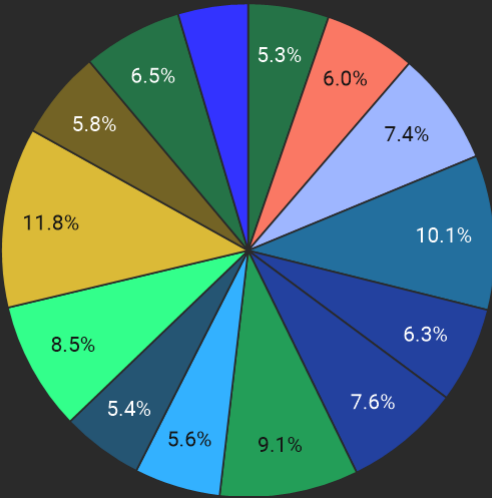
Depth ft vs. Optimized ROP



Avg(Actual ROP ft/hr) per Lithology



Avg(Predicted ROP ft/hr) per Lithology



Avg(Predicted ROP ft/hr) per Lithology

Data table:

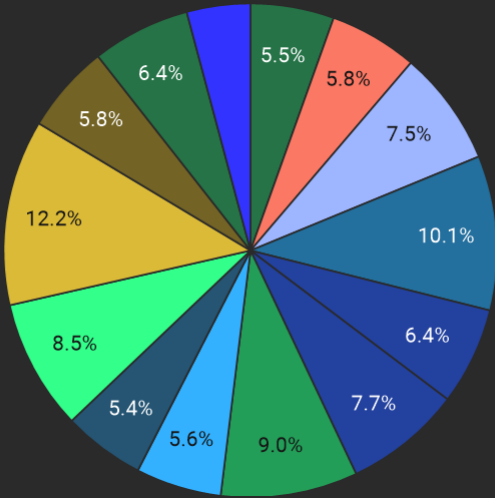
Project

Color by:

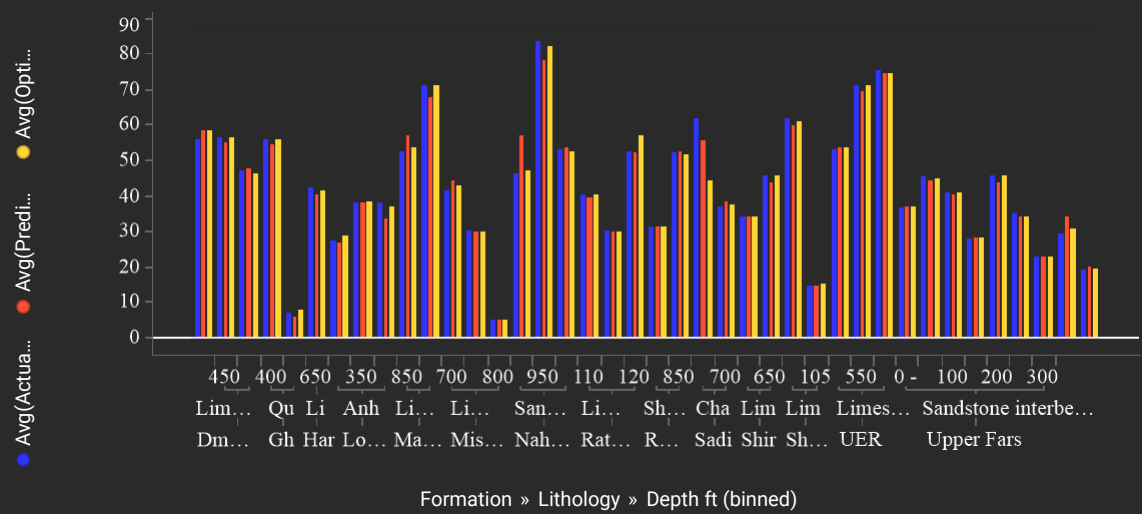
Lithology

- Anhydrites interbedded with shale
- Chalky, Marly and Clayey
- Limestone
- Limestone and Dolomite
- Limestone with Dolomite
- Limestone with dolomite and shale
- Limestone with Marls
- Limestone with plastic shales
- Limestone with shale
- Limestone with silty shale
- Shale
- Silty shale

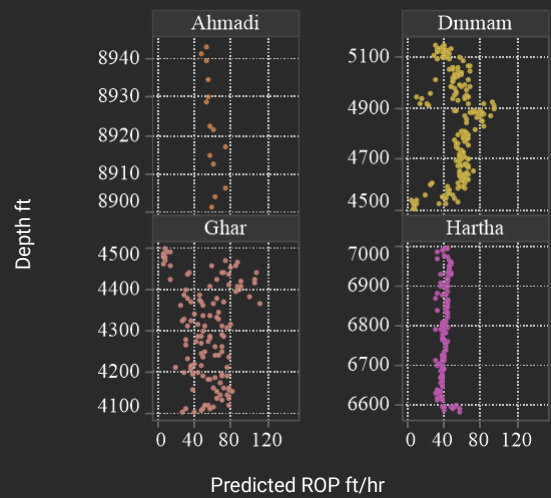
Avg(Optimized ROP) per Lithology



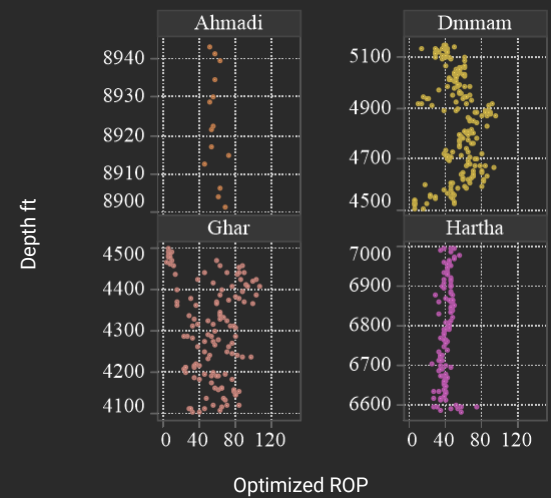
Actual ROP ft/hr, Predicted ROP ft/hr, Optimized ROP per Formation, Lithology, ...



Depth ft vs. Predicted ROP ft/hr



Depth ft vs. Optimized ROP



Lithology per Formation, Lithology

Upper Fars		UER	
Sandstone interbedded with red/brown Clays.		Limestone and Dolomitic limestone	
Ratawi	Shuaiba	Mishrif	Nahr Umr
Limestone with shale	Limestone with dolomitic lates	Limestone	Sandstone and shales
Rumaila	Mauddud	Sadi / Tanuma / ...	
Shale	Limestone	Chalky, Marly and Cryst Limestone	
Dmmam	Zubair	Ghar	Lower F...
	Shale at top with limestone	Quartz	Anhydrite s interbedded with Claystone, Shale and Limestone
		Shiranish	
		Limestone with plastic Marl	
		Ahmadi	

Data table:
Project

Color by:
Max(Depth ft)

- Max (12028)
- 10924
- 9820
- 8716
- 7559
- 5351
- 4247
- Min (3091)

Size by:
Count(Lithology)

Hierarchy:
Formati... » Lithology