Introduction to Prospectors

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Prospectors International

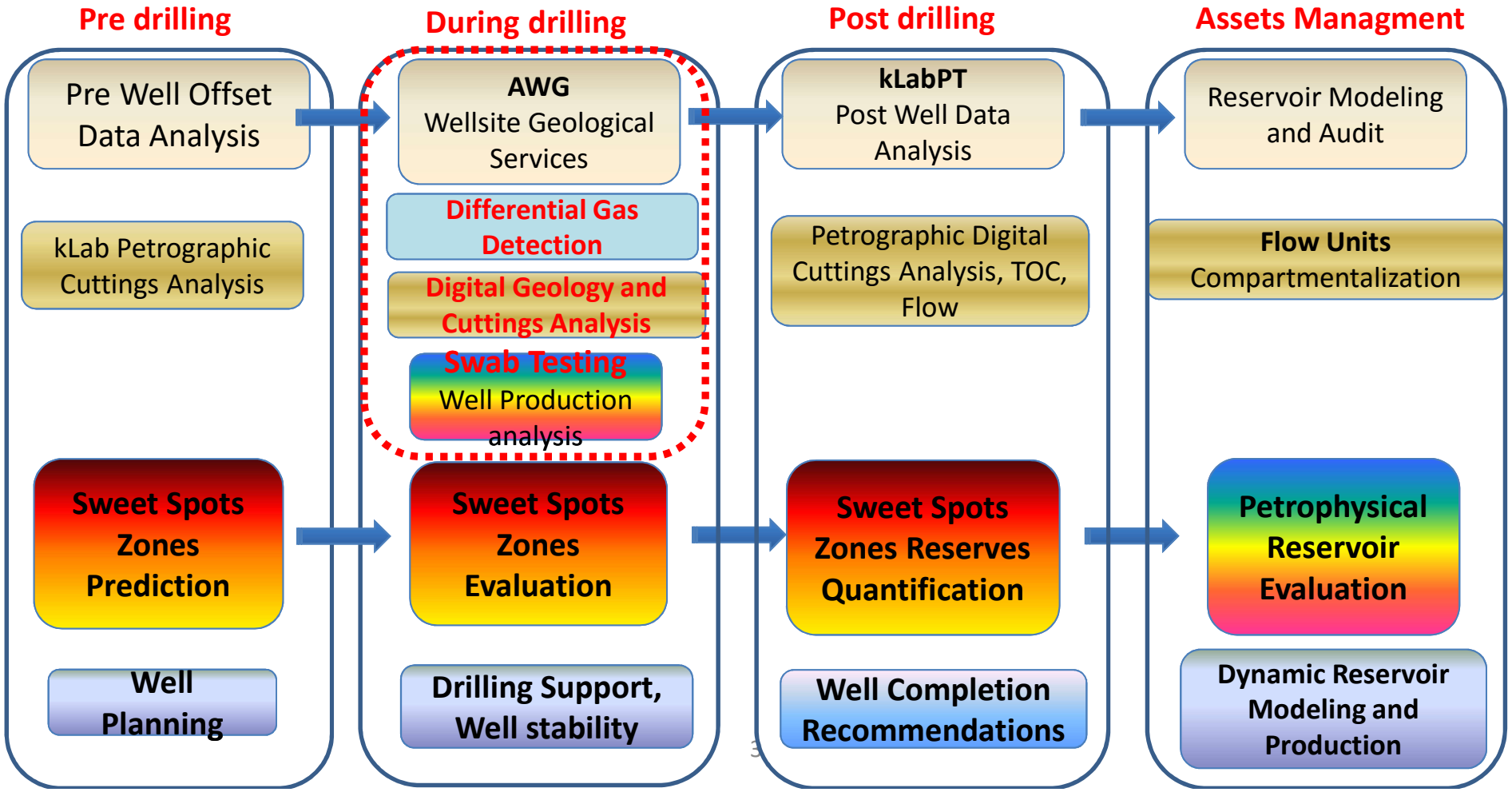
Get the Most from Your Wells, Use Prospector's International

We are a Boutique Wellsite Geological Services Company dedicated to providing the Oil and Gas Industry with the Highest Professional Quality Wellsite Geological Services and Advanced Wellsite Geological Tools to improve Real Time drilling, safety, testing and completion decisions using accurate Gas Detection, Lithology, Hydrocarbons, Reservoir Quality analyses with the most advanced technologies and techniques.

Today conventional mudlogging and wellsite providers are still using the standard gas chromatograph and lithology descriptions are entered in verbal, shortened form on the striplog – these are often incomplete and inaccurate.
Our Superior Differential Gas Detection System – DTG and Swab Test During Drilling - STDD in combination are eliminating any questions in Sweet Spot Detection. Report ready to call DST. No Bypass Zones.

Other than tracking the lithology during drilling the petrophysicst typically only harvests the gas and drilling data which is in digital form and the rock information is left sitting on the strip log.
We are implementing the Digital, quantitative geological, lithological and formation reservoir description delivered in XL digital form ready to be imported in Petrophysical Interpretation .

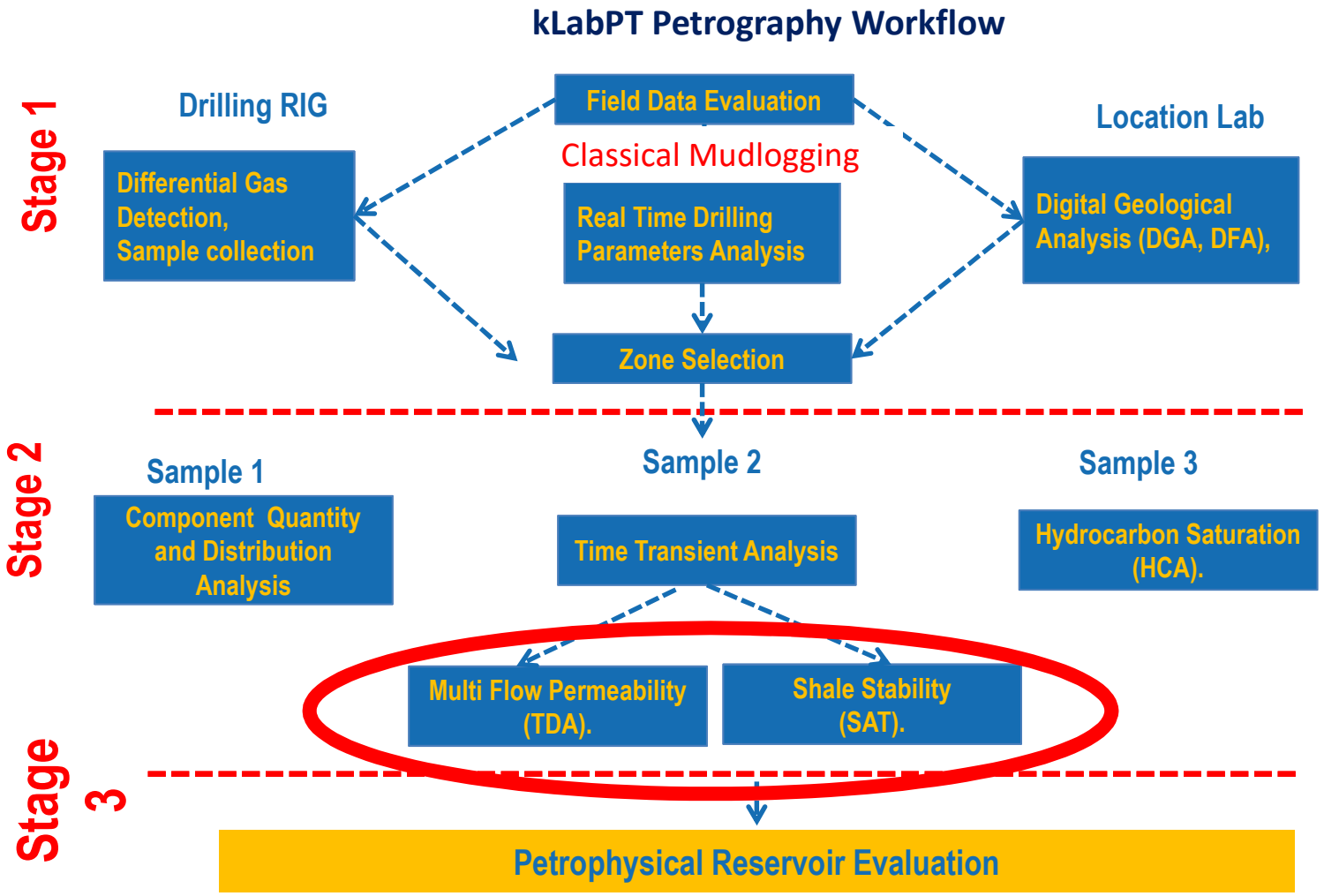
Advanced Wellsite Geological (AWG) Services Work Flow Chart



New Technologies

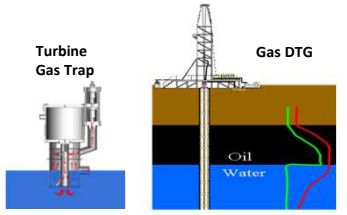
56 patents and patent pending, USA and Canada.

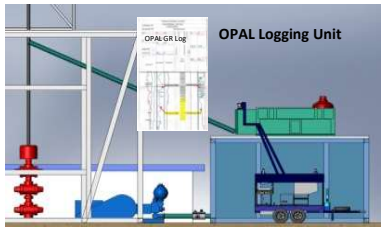
1. New Principals and Methodologies.
2. Advanced Mudlogging.
3. Advanced Hydrocarbon Evaluation using Differential Gas Detection.
4. Advanced Well-site Geological Supervision.
5. Integrated Geo-steering and Horizontal Wellsite Operation.
6. Special Lab Analysis for Reservoir properties.
7. Integrated Data Processing of Field, Lab and E-Logs Petrophysics.
8. Reservoir Engineering and Completion evaluation.
9. New oil field tools and lab equipment Design and manufacturing.

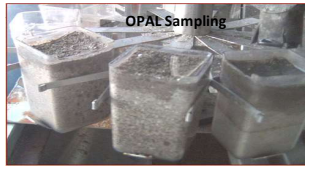

kLabPT Petrography Workflow
Stage 1
Drilling RIG
Field Data Evaluation
Location Lab
Classical Mudlogging
Differential Gas Detection, Sample collection
Real Time Drilling Parameters Analysis
Digital Geological Analysis (DGA, DFA),
Zone Selection
Stage 2
Sample 1
Sample 2
Sample 3
Component Quantity and Distribution Analysis
Time Transient Analysis
Hydrocarbon Saturation (HCA).
Multi Flow Permeability (TDA).
Shale Stability (SAT).
Stage 3
Petrophysical Reservoir Evaluation

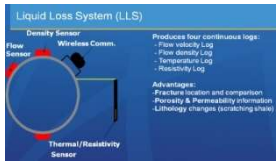
kLabPT System of Petrographic, Petrophysics Reservoir Formation Evaluation Technologies

Wellsite Equipment

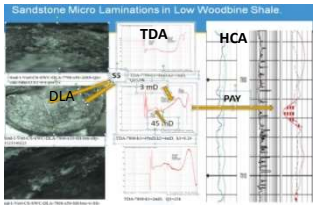


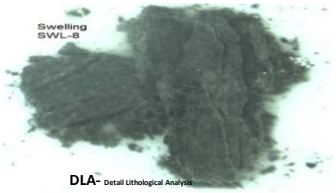


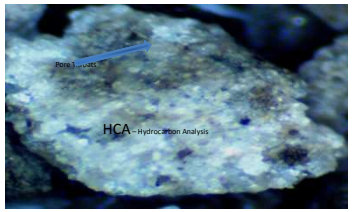


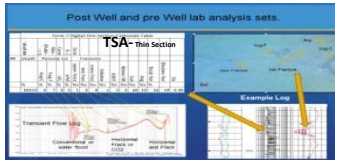


Analytical Methods

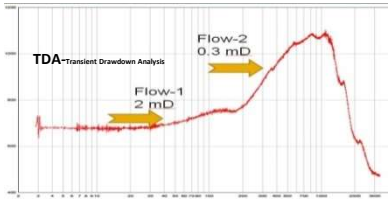


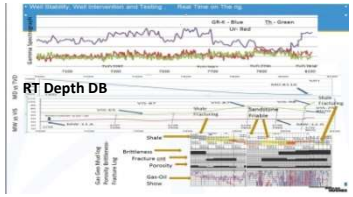


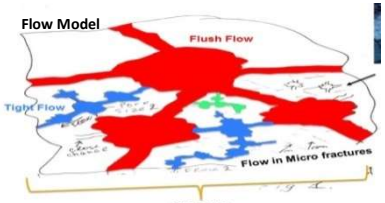


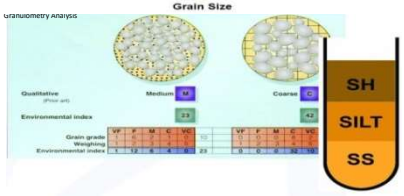


Analytical Principles

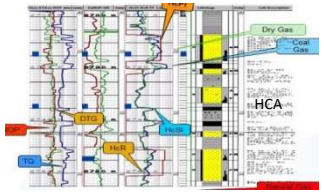


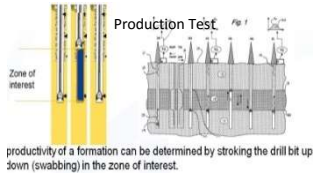


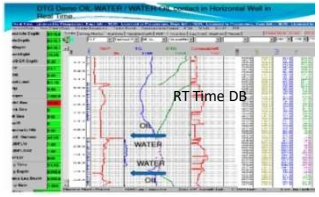


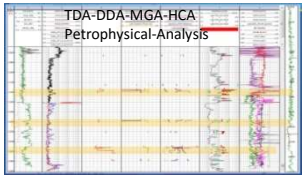


Integration









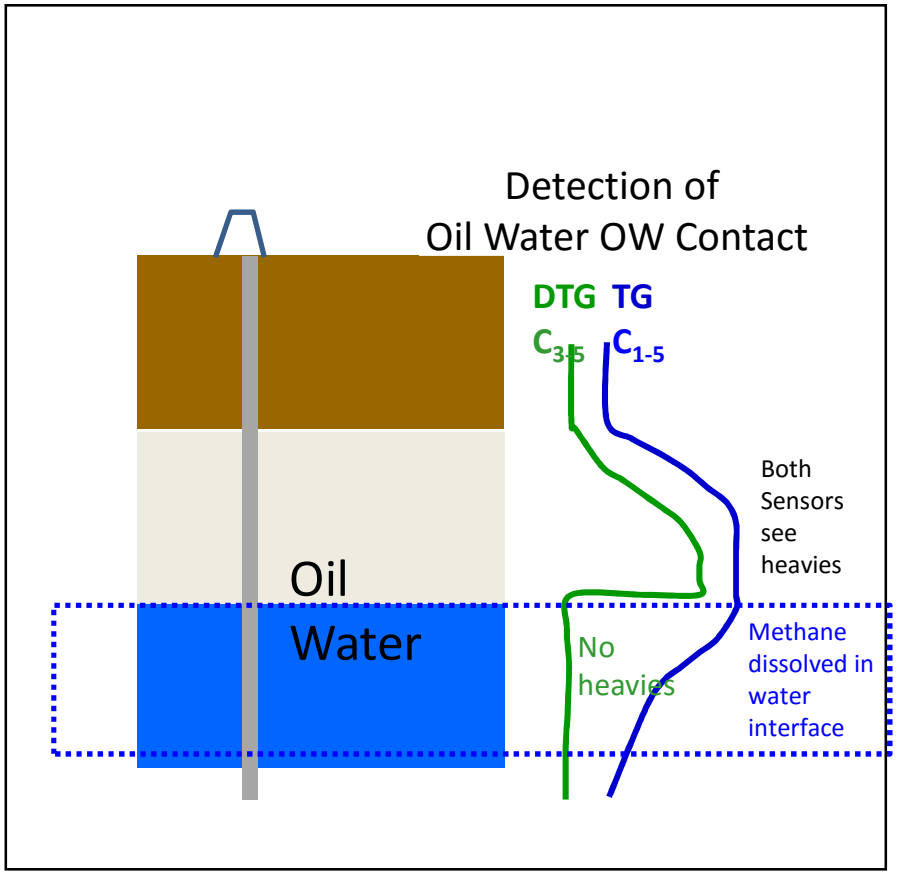
kLabPT is another Silver Bullet in your gun

Introduction to Wellsite Geological Services.

Deliverables:

1. Enhanced daily wellsite report.
2. Enhanced Lithological Log with Mudlog presentation with ROP, Lithology, Oil & Gas shows, Total Gas, Differential gas detector DTG with Oil Ratio OR=TG / DTG and detail digital lithology descriptions.
3. Oil show indicator for each interval with a hydrocarbon show and porosity analysis at wellsite provided by geologist.
4. Prospectors Differential Gas Detector data and initial interpretation.
5. Final Enhanced Mud logging presentation with interpretation and ties to wireline logs (GR,SP)
6. PSI final geological / mudlogging report on post-well data collected.
7. Professional Prospectors sample collection (Increased spot samples on each zone of interest and gas show).

Differential Gas Detection



Differential Gas Detection system (DTG)

- ❑ Propriety dual sensor gas system

Results can be used to evaluate:

- Oil water contact
- Gas-Chromatography effect in permeable rocks/reservoirs.
- Hydrocarbons migration path
- Oil Ratio
- Coal Gas beds
- Oil bearing or wet horizons

and to support the Log Interpretation.

Benefits:

- Enhances the detection of Hydrocarbon zones
- Simple interpretation using only 2 curves

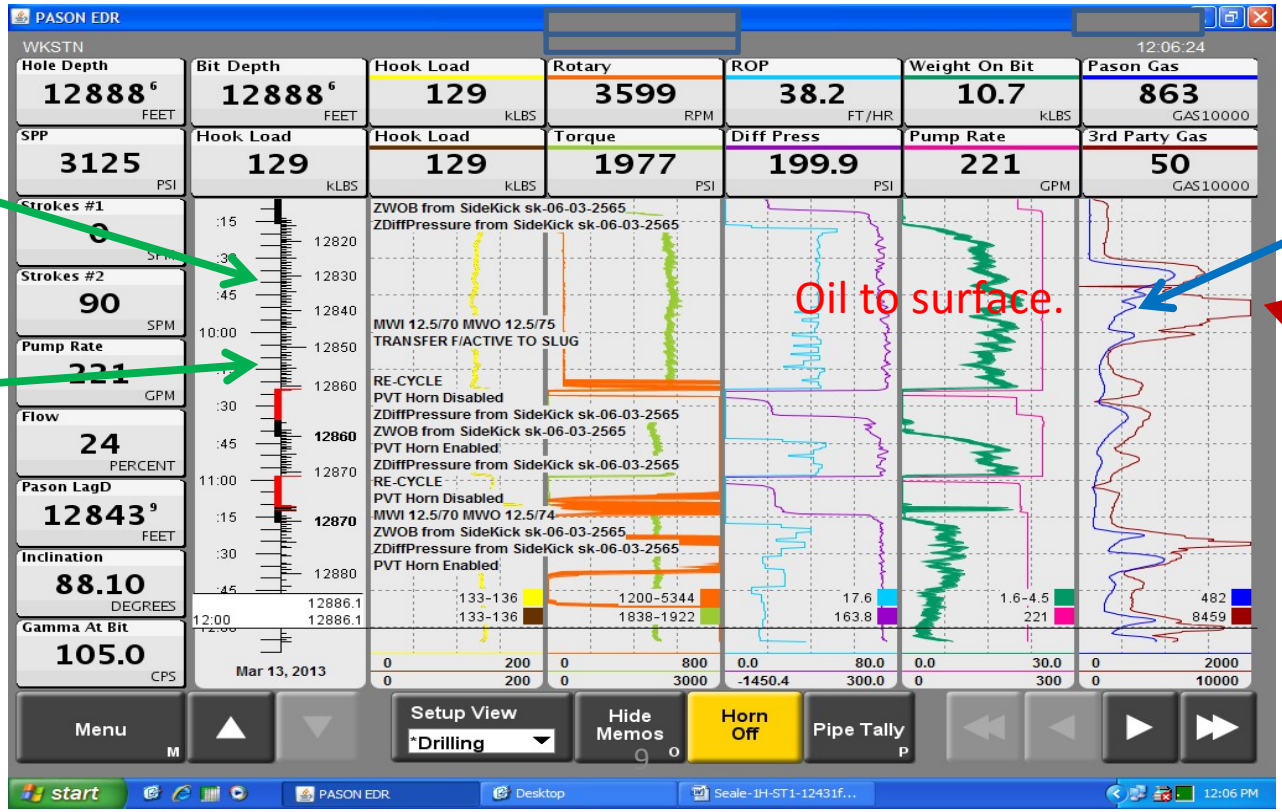
Differential Gas Detection DTG systems v's 3rd party conventional gas system

Example: Leon County horizontal

3rd party gas detection system **missed oil zones**. Heavies suppressed due to high BG gas, interpretation = gas, Well tested Oil

MD-12838'
LD-12825'
Gas Sample #8

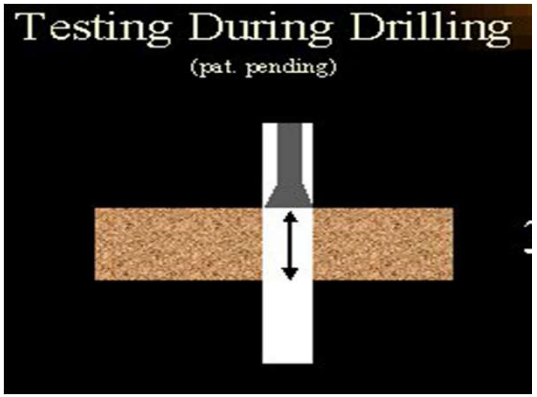
MD-12860'
LD-12851'
Gas Sample #9

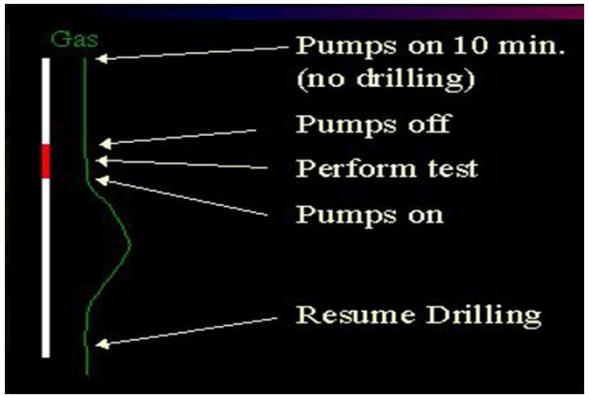


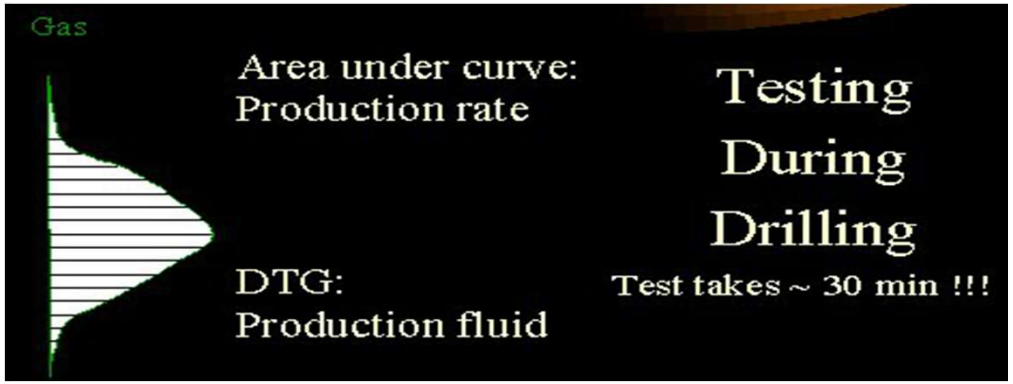
3rd Party Gas 695u **Missing the zone.** TG Deflecting negative On OIL Type Show

Prospectors DTD Gas 16458u **Define the Zone.** DTG Deflecting positive+ On OIL Type Show

Well Swab Test During Drilling







Well Swab Testing (WST)

- ❑ Actuating drill string after drilling a zone to draw reservoir fluids into the borehole (mini DST)
- ❑ Monitor test with Prospectors Surface Logging System (SLS) to estimate the hydrocarbon volume swabbed and estimated flow rate

Benefits:

- Defines Oil Producing Zones
- Eliminates the numerous of problems in the Petrophysical interpretation

Application immediately after the zone is drilled and before significant well damage has occurred will give the **best indication of the true reservoir potential.**

What is kLabPT System.

kLabPT is a set of Petrographic Services that are a quantifiable extension of classical petrography.

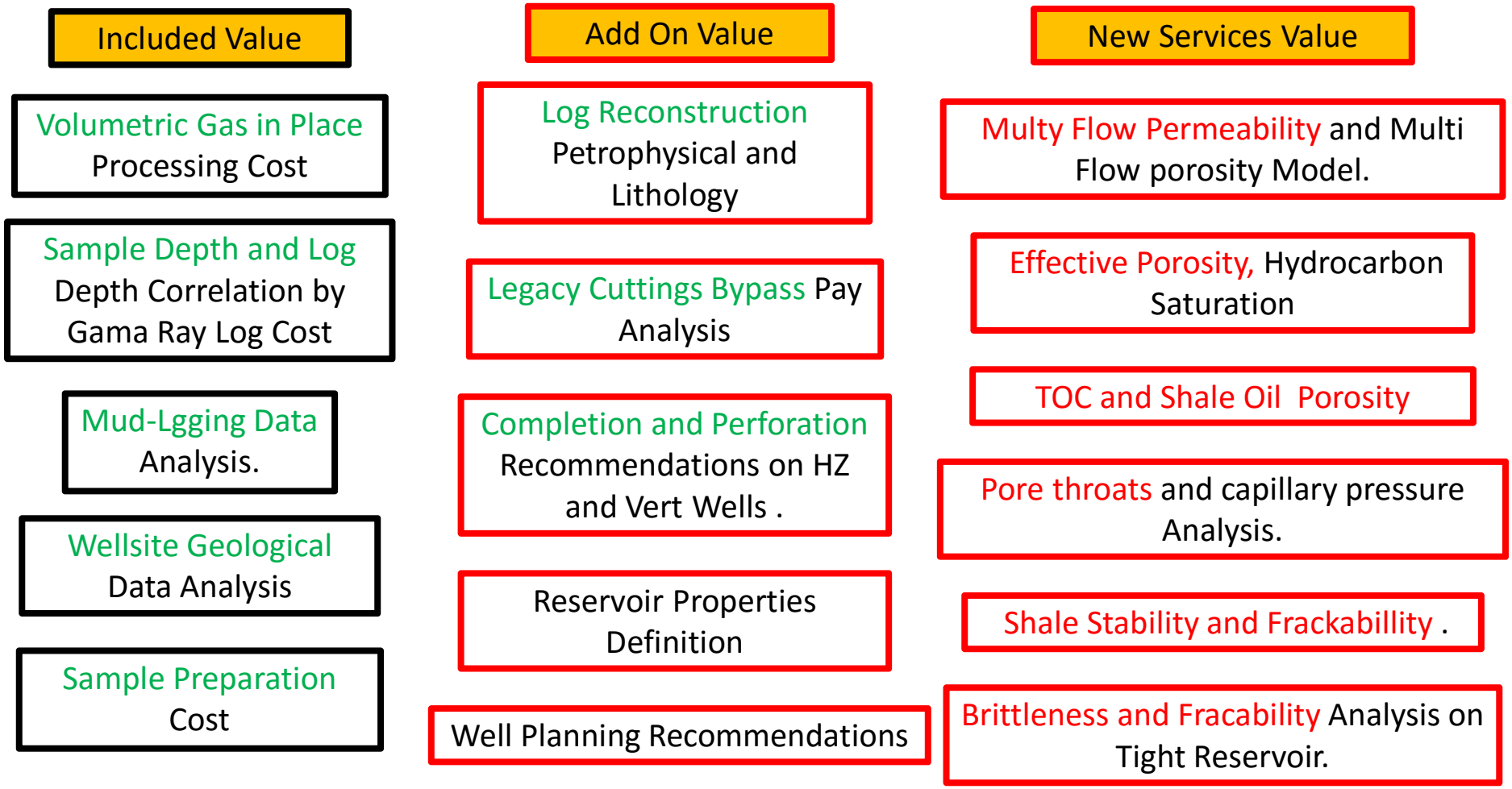
kLabPT have similar documentable methodologies that allow your associates to create reproducible results from cuttings.

kLabPT have well documented interpretation principals allow Petrophysics, Engineers, and Geoscientist to directly use the results.

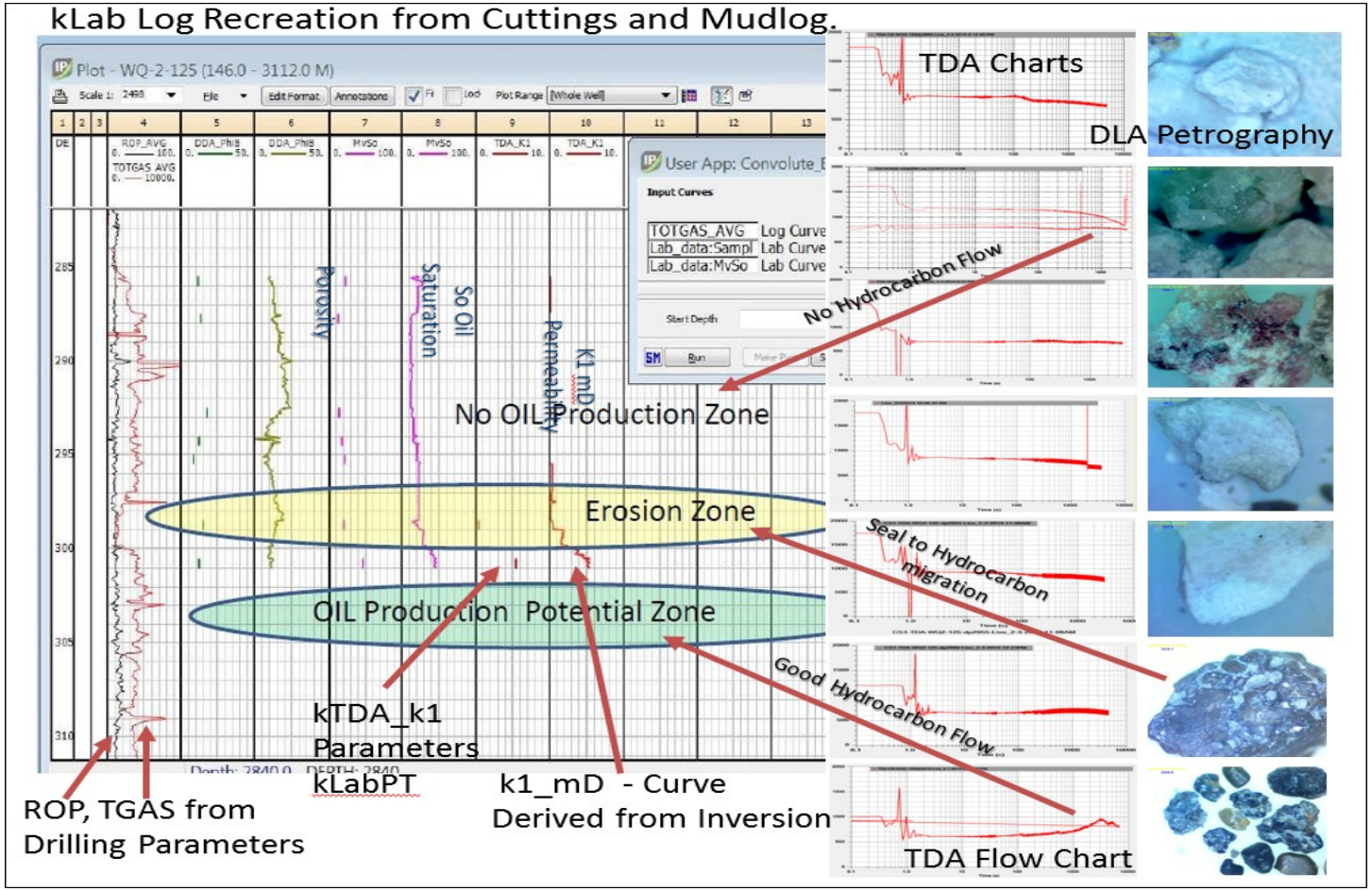
How the Drilling Cuttings Analysis are performed?

- **kLabPT is** a system that is measuring the Drilling Cutting and Cores mineralogical components quantities (LS, DOL, QTZ, SH, CLY, PYR, …)
- **kLabPT is** measuring Reservoir Parameters' components on drill cuttings and cores (PhiC, So, Sw, TOC, k_Perm, …).
- The **kLabPT methods** includes several geo-chemical analytical, and petrographic analyses of cuttings in the lab using special tools. The output of data is tabulated, and presented in an LAS file.
- The **kGeo-Algorithm** accepts the kLabPT Output parameters and calculates the required output to be exported into petrophysical software.
- **Case Study – Log Reconstruction, Completion, Time Transient Analysis, The Formation evaluation .**

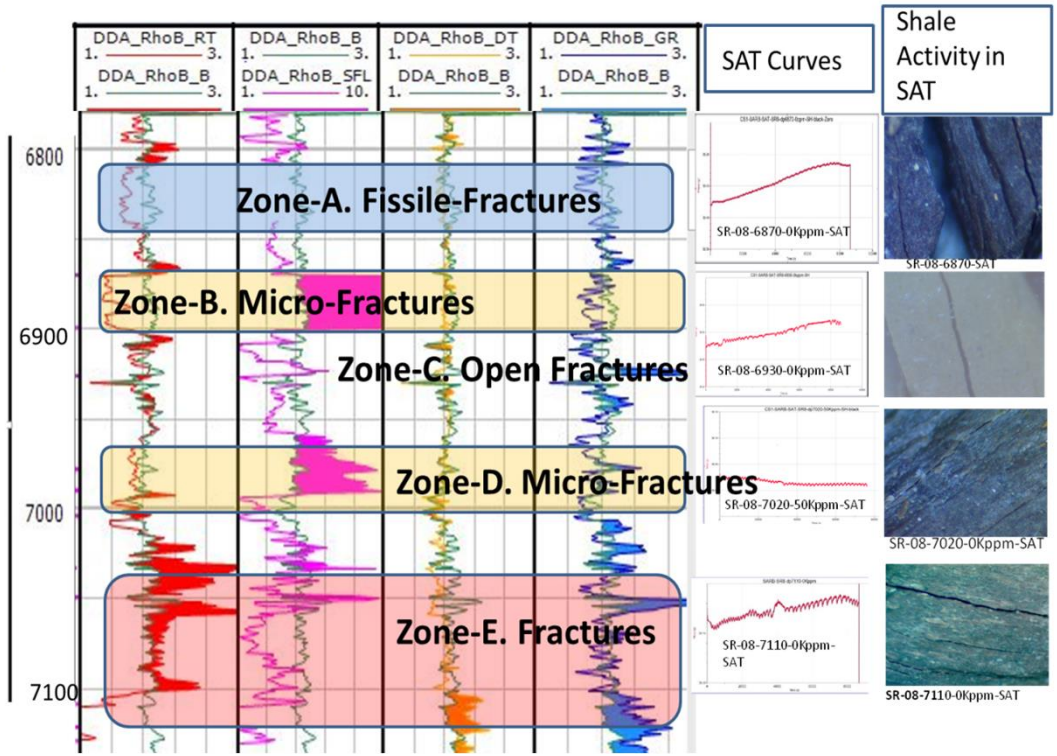
Part 1. kLabPT Services Value on Cutting.



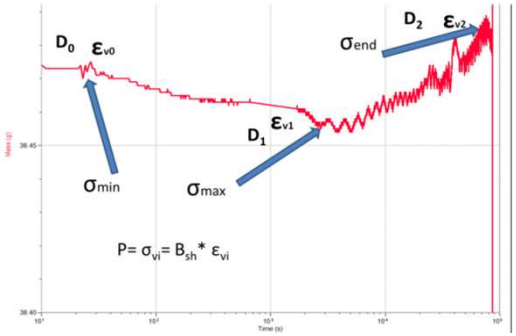
Log Reconstruction Case Studies.



Shale stability and compartmentalization
Case Study using SAT.



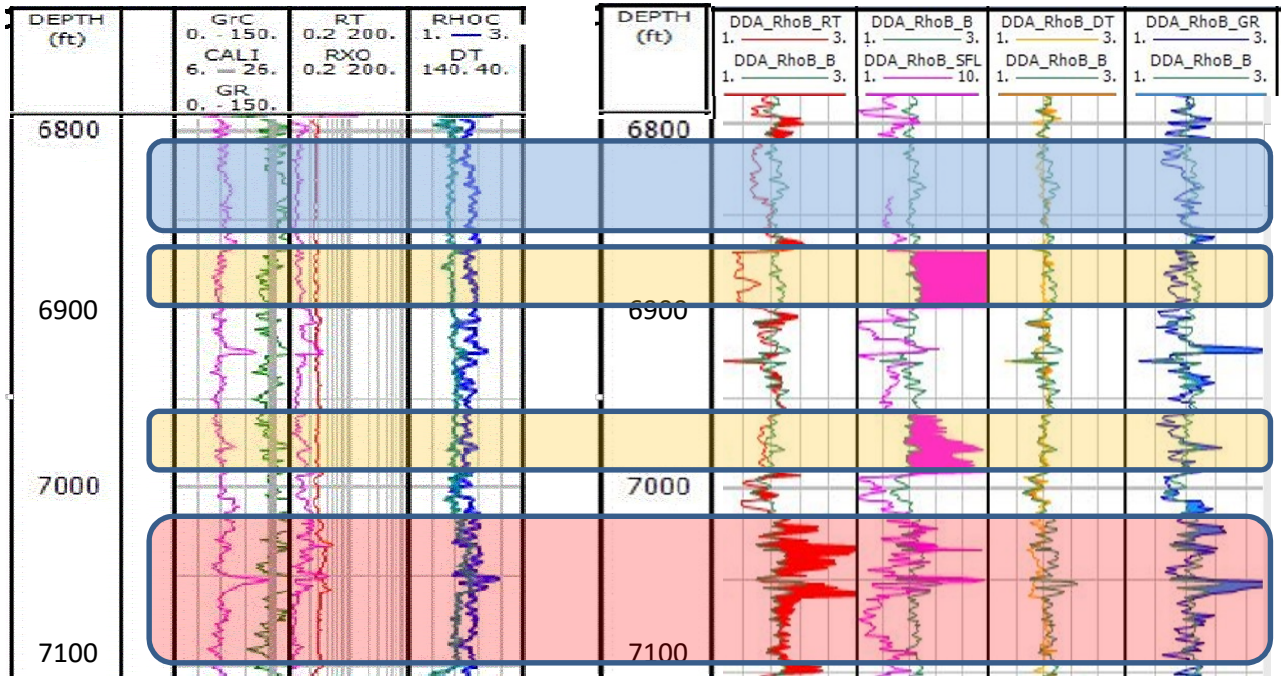
Stress & strain parameters manifested in the SAT



Shale stability and compartmentalization Case Study using SAT.

Log show no discrimination in Nahr-Urm shale.

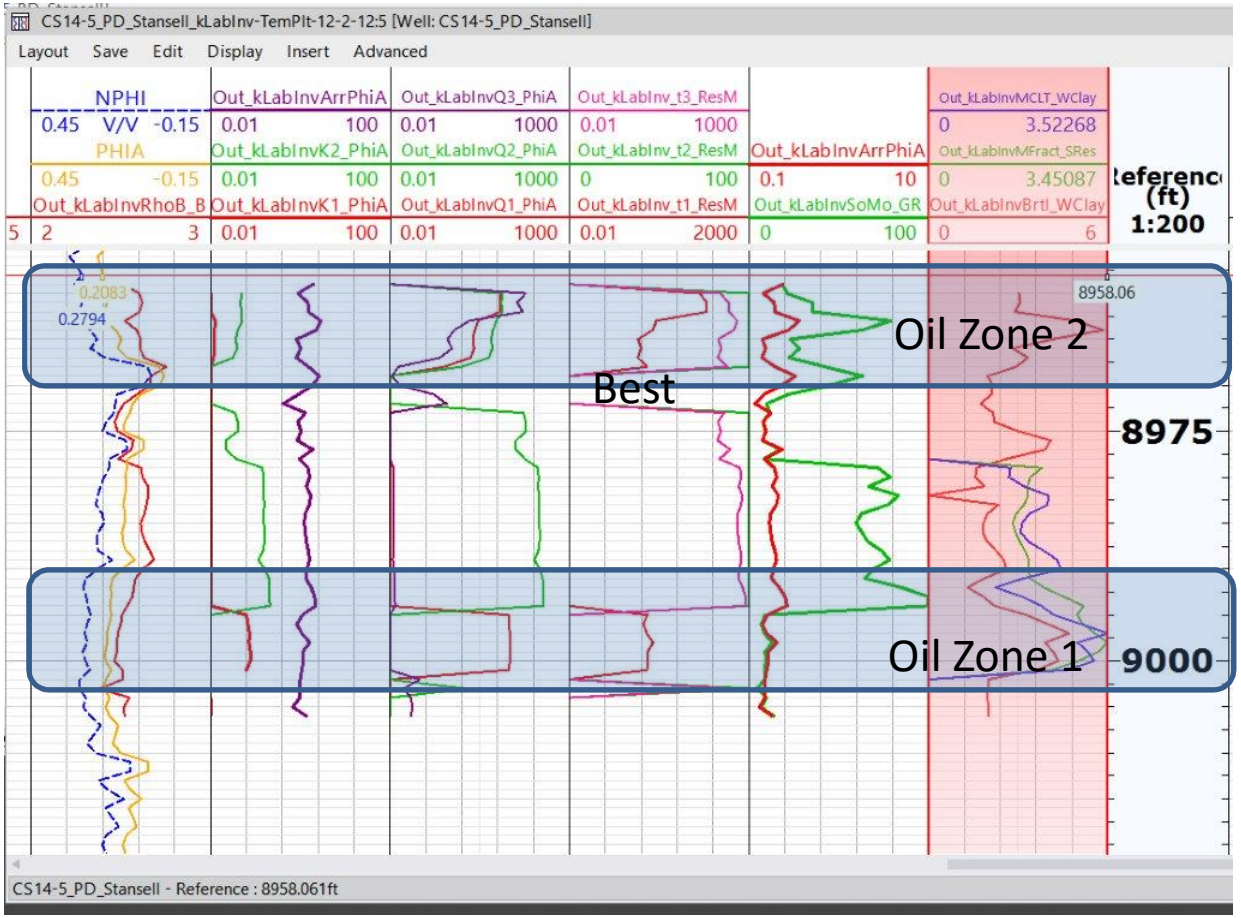
kLab defining the Compartments in Nahr-Urm shale.



Conventional Open Hole Log, GR, RT-RXO,RHOC-DT.

kLab Petrophysics Log Inversion.

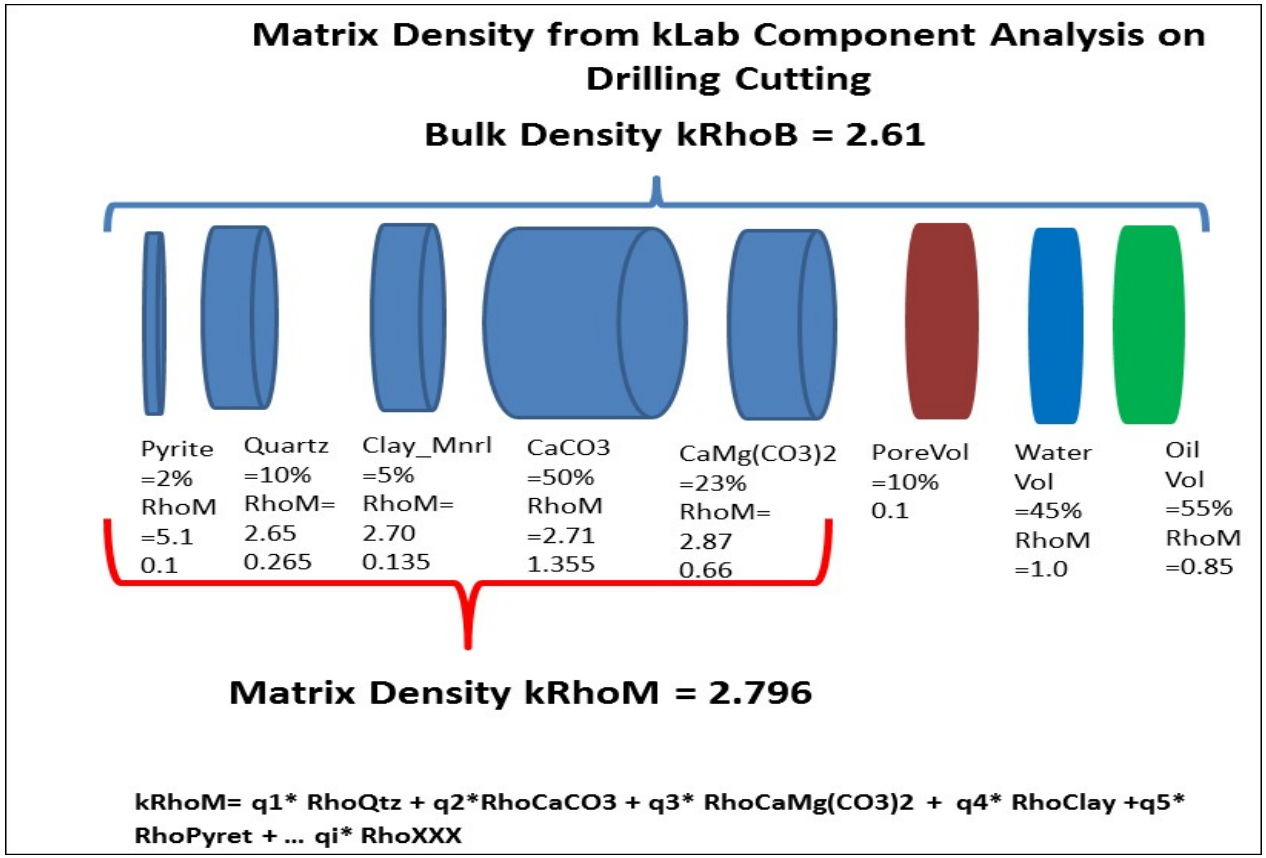
Frack and Completion recommendations in Unconventional shale oil play.
kLabPT Analysis of Extractable Hydrocarbons, Paulo Duro Basin.



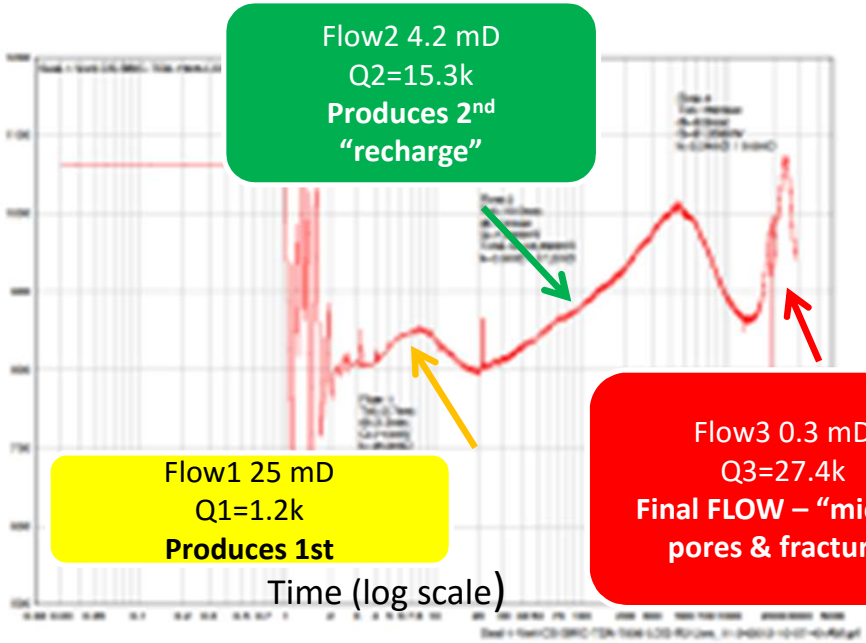
Best Shale Oil Zone, Good oil flow and good Frackabillity

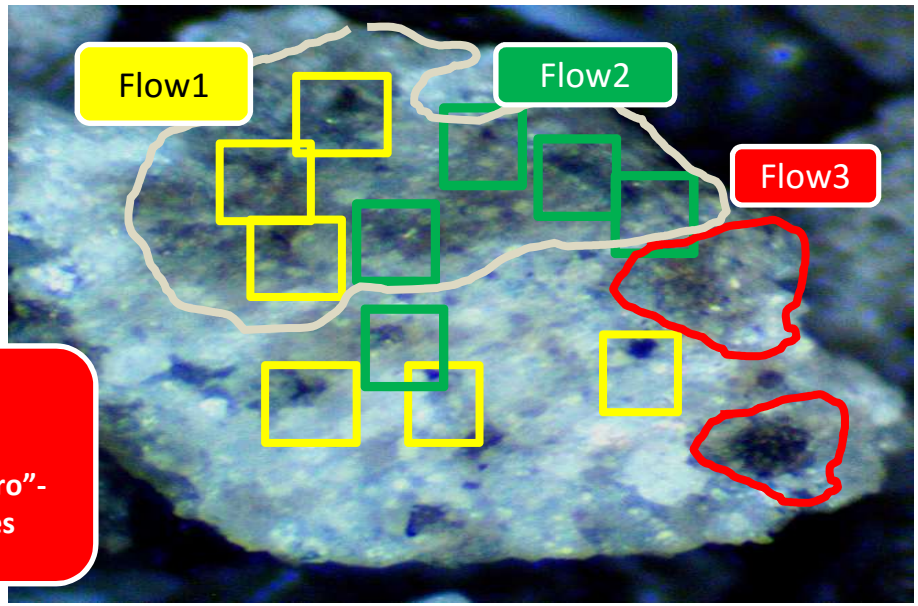
Best Shale Oil Zone, Good oil flow and good Frackabillity

Component Distribution Case Studies.



Transient Draw Down Analysis from Cuttings (kLabPT – Post Well Laboratory Analysis)





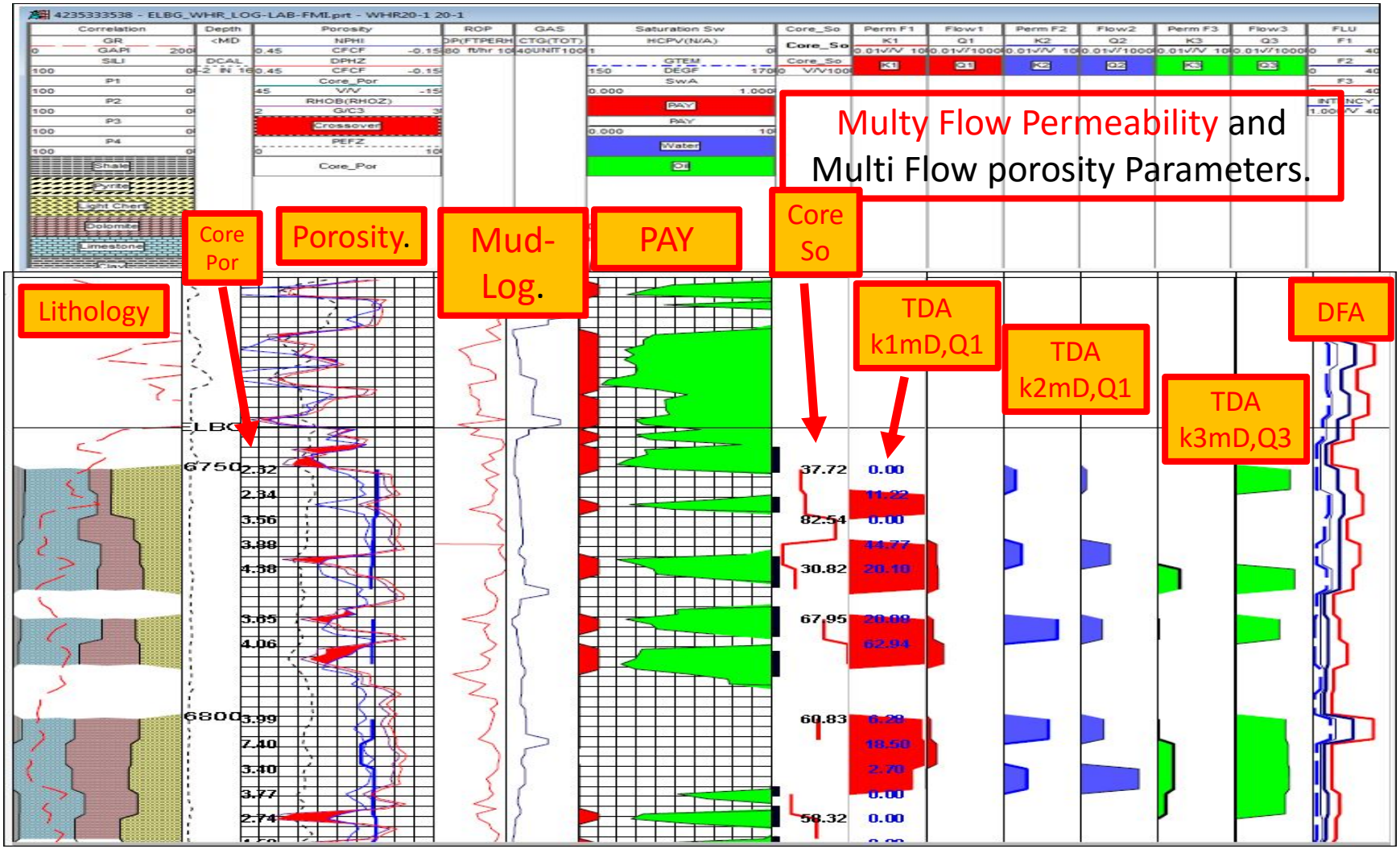
Example of Drawdown Analysis (TDA) from cuttings sample

Transient Drawdown Analysis (TDA)

- ❑ Measuring multi-flow permeability & porosity parameters

Benefits:

- Evaluate Oil flow potential (permeability & storage)
- Evaluating best rate to flow well to maximize drainage


Multy Flow Permeability and
Multi Flow porosity Parameters.
Core Por
Porosity.
Mud-Log.
PAY
Core So
Lithology
TDA k1mD,Q1
TDA k2mD,Q1
TDA k3mD,Q3
DFA
6750
6800
37.72
82.54
30.82
67.95
60.83
58.32

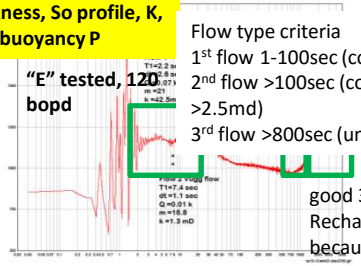
CS15-12-WHR21-1 - HCA

More samples – define reservoir & Sw
Define: column thickness, So profile, K, mutli flow-porosity, buoyancy P

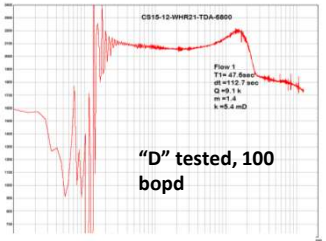
Flow type criteria
1st flow 1-100sec (conventional, k >2.5md)
2nd flow >100sec (conventional-tight, k >2.5md)
3rd flow >800sec (unconventional, k<0.5md)

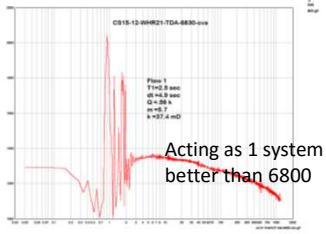
Tested 120 bopd

Tested 100 bopd

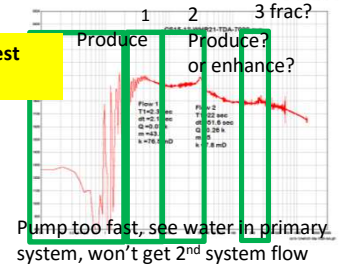


good 3rd flow, works w 2nd flow
Recharge k conventional, because of fast start time





Acting as 1 system – even better than 6800



Kostas best zone

1st flow depleted, reduces P, below

2nd flow = vug feeds

Pump too fast, see water in primary system, won't get 2nd system flow

-FinalSum-kLabIN-form7																			kLabS
		2.930		SS_QT	###		SH	2.675											
		7.000	7.000	8.000	###	###	####	12.000	13	14	43	44	45	46	47	48.00	49	50	51
		2.724	2.770					2.779	2.80	1.96									38
		DDA	DDA	DDA	DDA	DDA	DDA	DDA	DDA	DDA	HCA	HCA	HCA	HCA	HCA	HCA	HCA	HCA	DDA
		DDA_gpoB	DDA_RhoB_TOC	DDA_RhoB_Clastc	DDA_RhoB_Clst_Crsh	DDA_RhoB_Clst_Fnct	DDA_RhoB_micFrac	DDA_RhoB_Cor	DDA_RhoB_CorPyr	DDA_RhoM	DDA_RhoM_CorHc	DDA_RhoM_Cor	Iso_Res	Iso_Mov_k1_k2	Iso_tt_k2	Iso_Res_k3	HCA_Sw_Tot	HCA_Sw_Res	HCA_Sw_Camrid	HCA_Sw_Mov	DDA_LS
6700	10	2.753	2.818	2.692						2.787	2.787	2.82		11.55		36.2	52.2	16.03	4.86	31.4	42.5
6710	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6720	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6730	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6740	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6750	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6760	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6770	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6780	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6790	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6800	10	2.786	2.791	2.719						2.814	2.814			12.18		41.5	46.3	4.87	1.44	40.0	40.6
6810	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6820	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6830	10	2.778	2.811	2.671						2.796	2.796	2.8		10.17		54.2	35.6	0.00	1.82	33.8	49.7
6840	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6850	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6860	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6870	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6880	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6890	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6900	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6910	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6920	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6930	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6940	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6950	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6960	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6970	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6980	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
6990	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
7000	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
7010	10									0.000				0.00		0.0	0.0	0.0	0.00	0.0	
7020	10	2.794	2.809	2.677						2.795	2.795	2.8		33.56		66.4	0.0	0.00	0.00	0.0	42.0

"E" Tested, 120 bopd

"D" Tested, 100 bopd (perf 11') 6793-6808

Not tested (6814-29 recc)

Can we perf more to increase production?

Not tested (6882-91 recc)

Where is the water? Do more samples/logs

Not tested (6976-7008 recc)

HOW to GET STARTED?

Contact Konstandinos Zamfes at

kostaz@prospectorscorp.com

to arrange a Lunch and Learn Presentation or Workshop.