



CONCEALED PHENOMENA OPEN DOORS FOR CARBONATE POTENTIALS IN GPC BROWN FIELDS



October, 2022

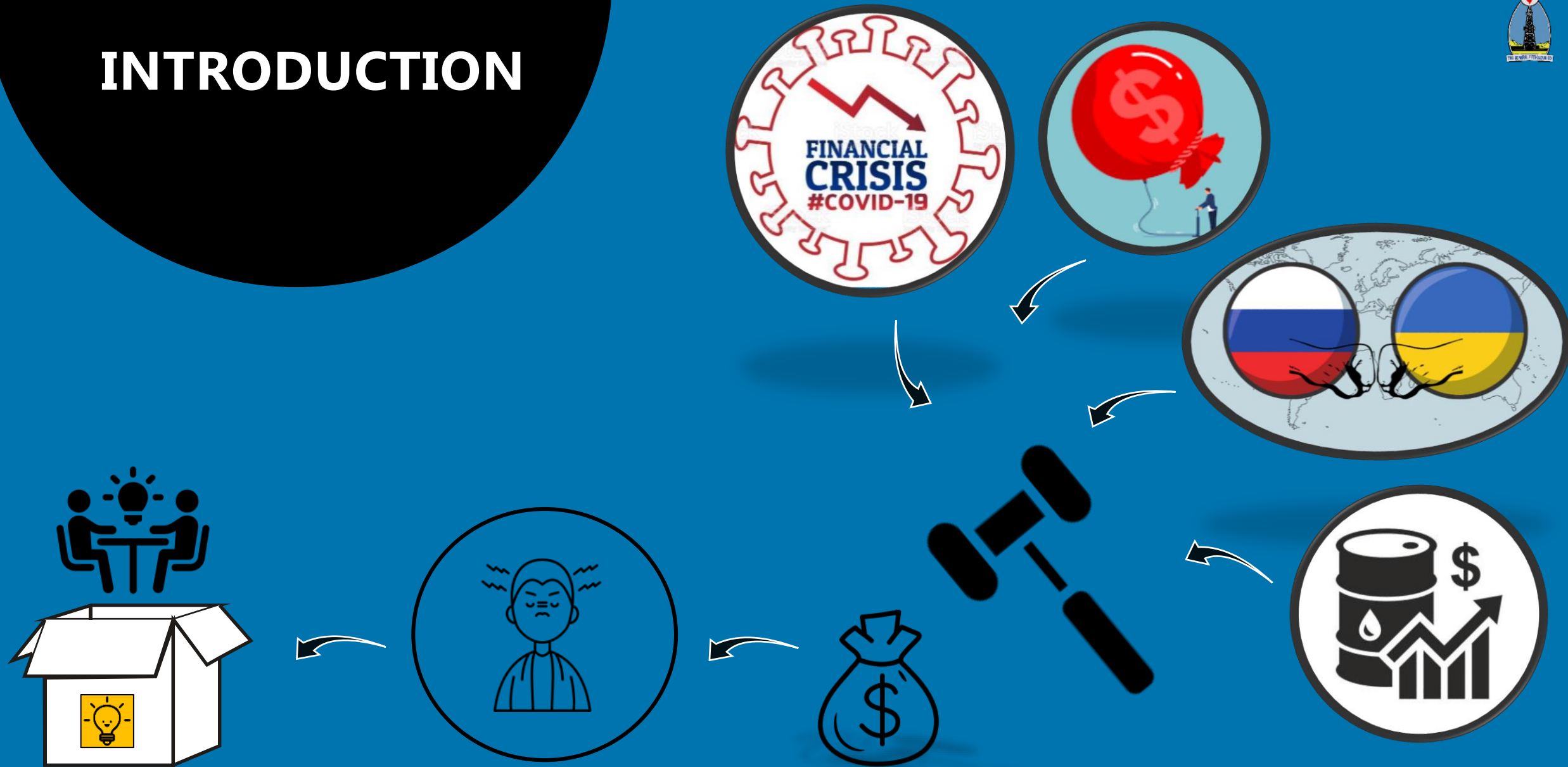
Presenters:

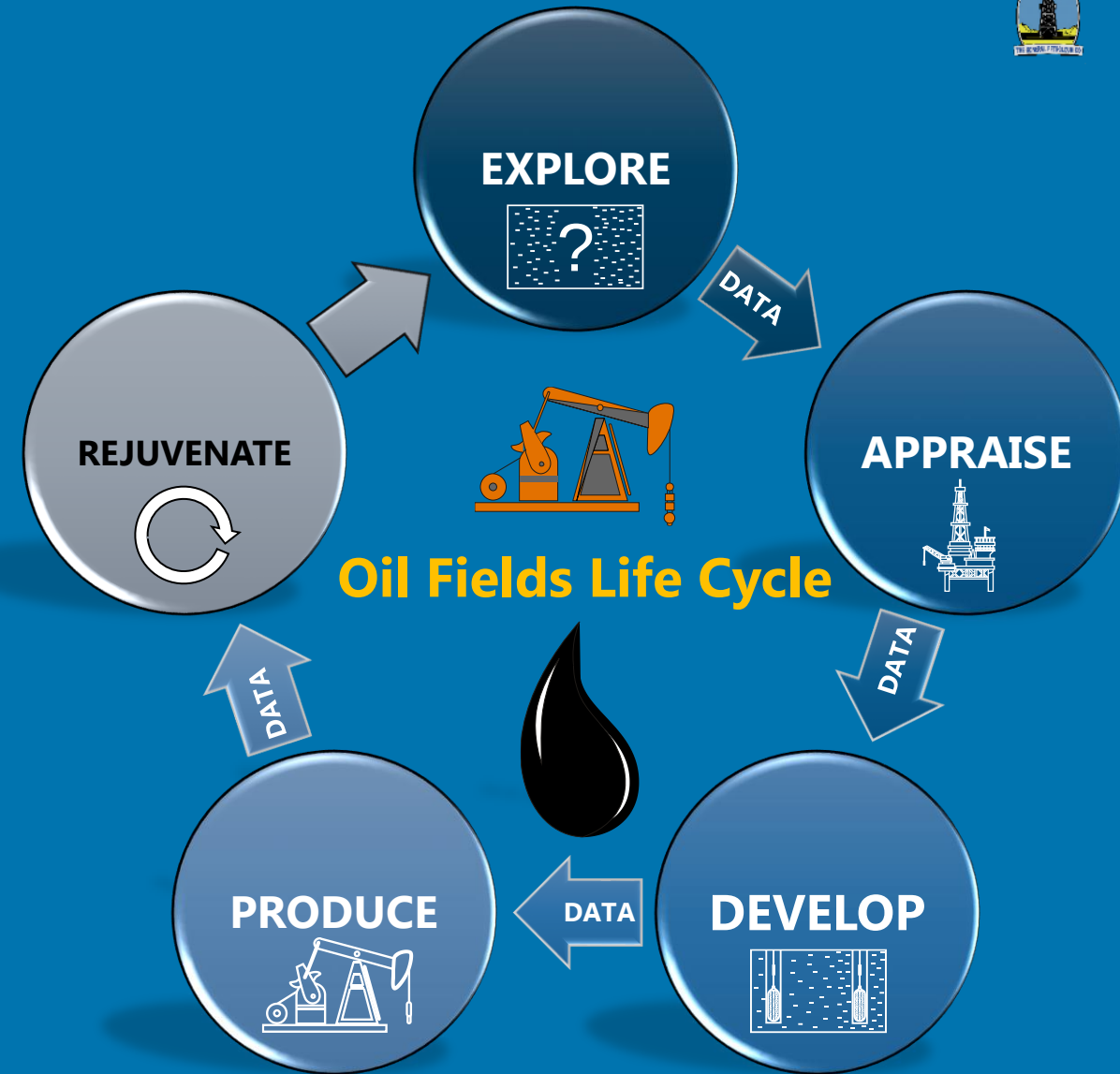
Omar Soliman

Ahmed Ismaeel

Alaa Abd El-Razek

INTRODUCTION







CREATIVITY REQUIRES THE COURAGE TO LET GO OF
CERTAINTIES | TAKE THE RISK.

—ERICH FROMM



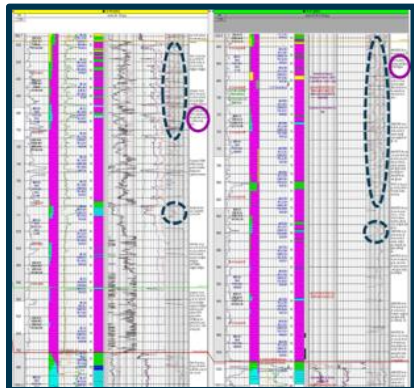
THE WORKFLOW HAS BEEN SET

SOUTH GHARIB CASE STUDY

1

Observations

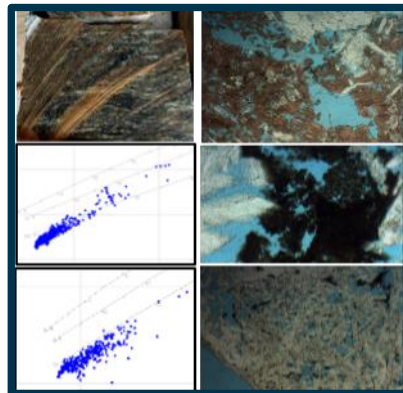
Phenomena
detection



2

Analysis

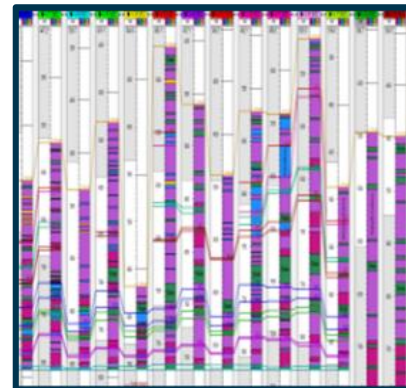
Sedimentology &
petrophysics



3

Description

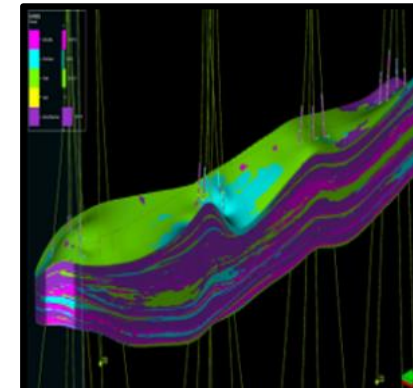
From undoubted
to doubted



4

Modelling

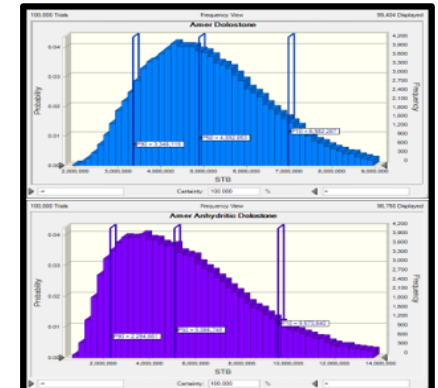
Model to
interpolate &
extrapolate facies



5

Calculations

Facies volume
calculations of
OOIP & reserves



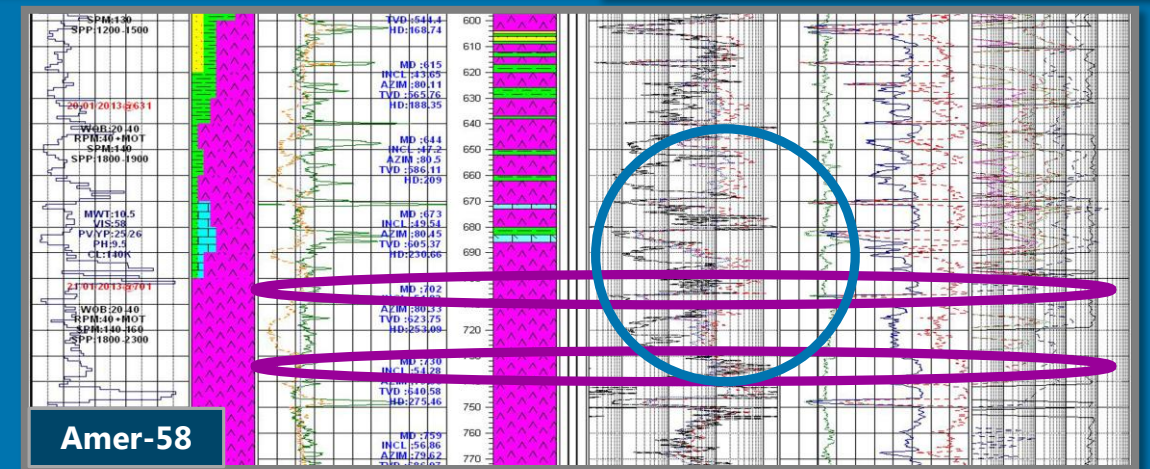
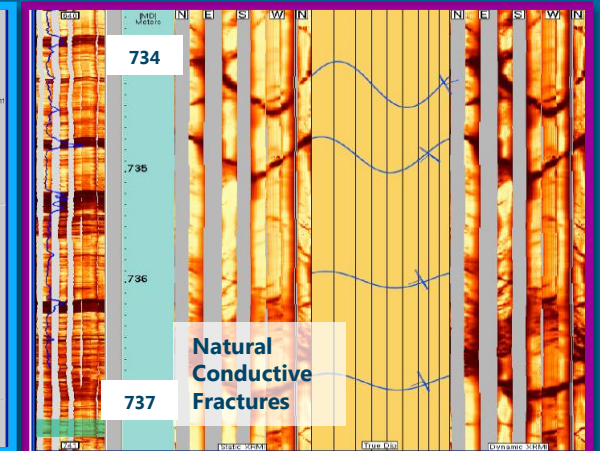
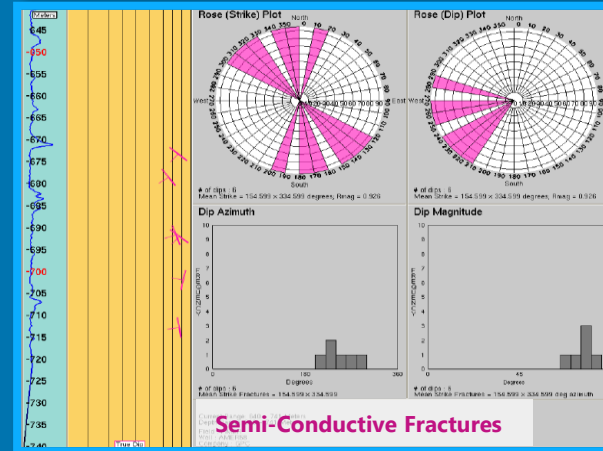
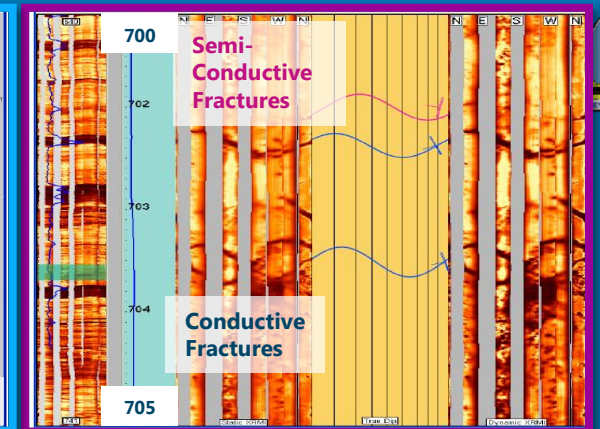
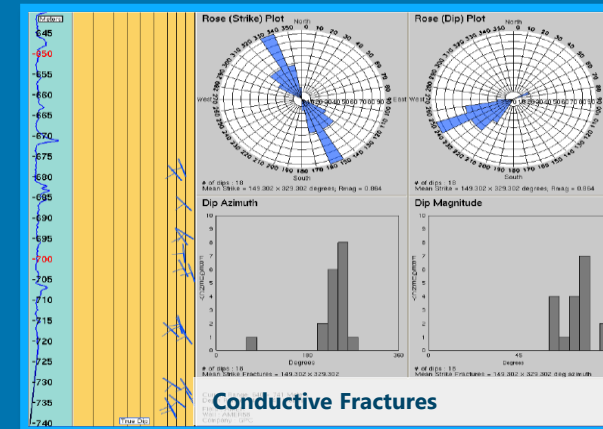


Observations

IT ALWAYS STARTS WITH OBSERVATION | SEE
The Most.

EVIDENCES FOR RESERVOIR PRESENCE WITHIN EVAPORATES DOMAIN

- Oil shows (A8 , 10 & B-10 , 70).
- Lithological description.
- Mud cake & gas readings.
- Log response.
- Formation image & fractures presence.





Analysis

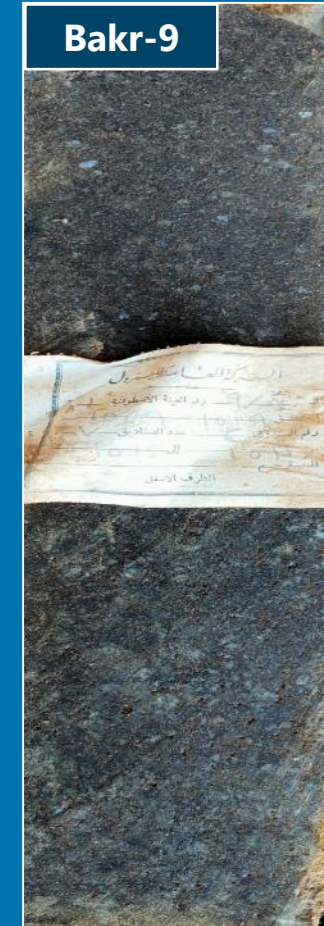
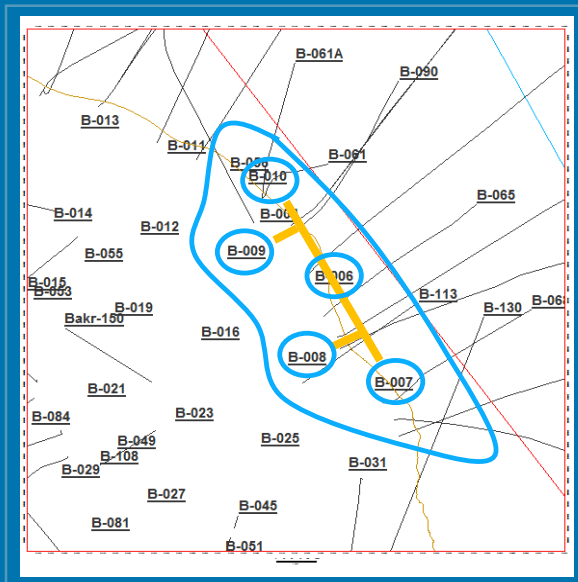
(Sedimentology &
petrophysics)

WITHOUT DATA IT IS JUST AN OPINION
| BE PRECISE.

Sedimentology

1. Data Availability

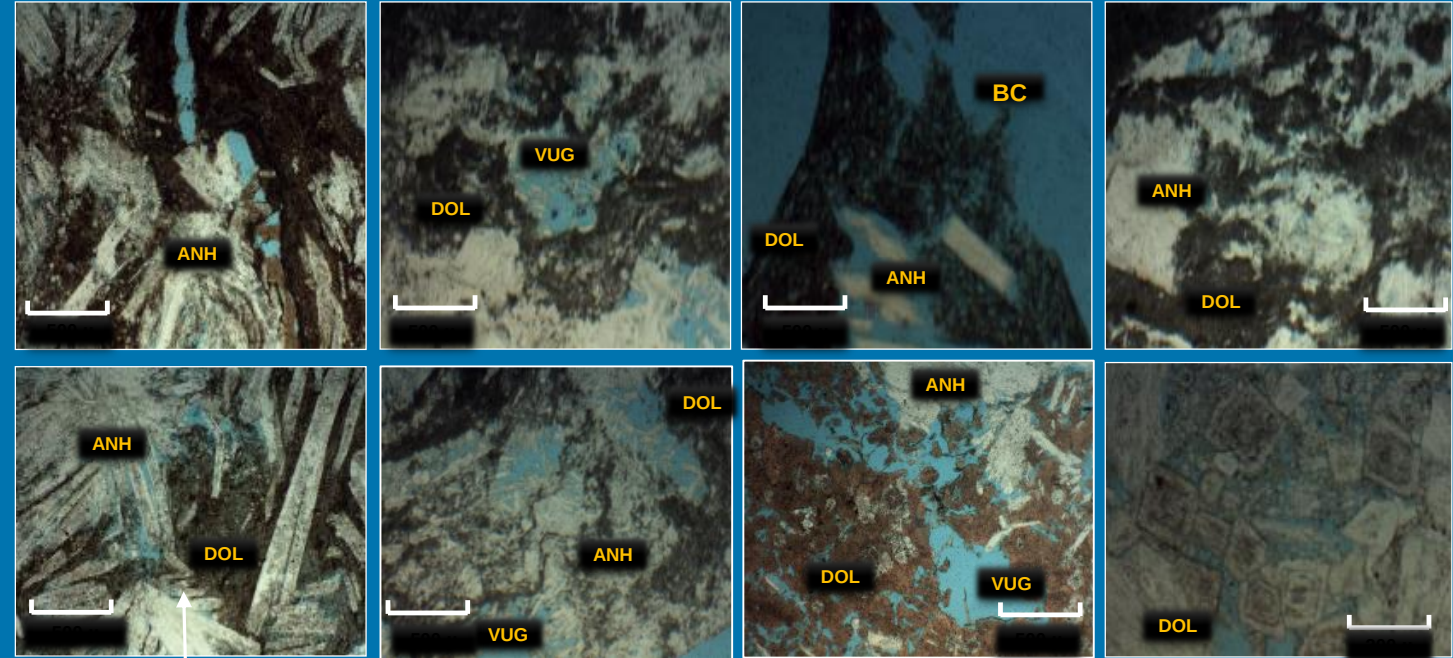
- Cores.
- Ditch cuttings.
- Thin sections.



Sedimentology

1. Data Availability

- Cores.
- Ditch cuttings.
- Thin sections.

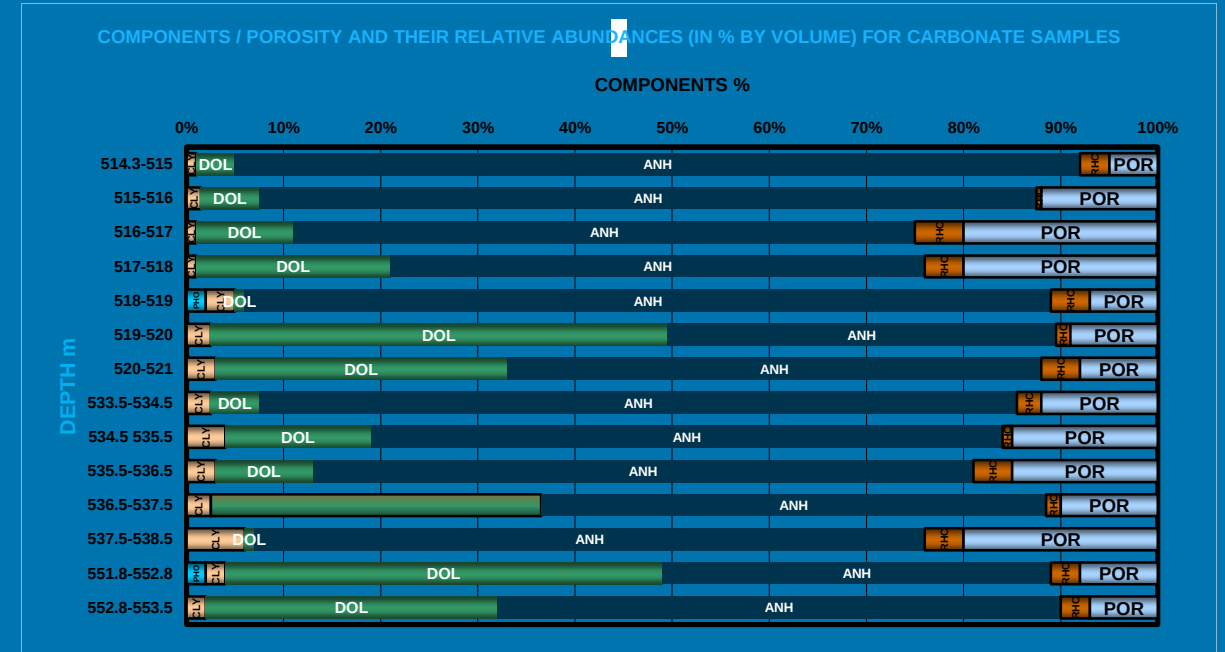




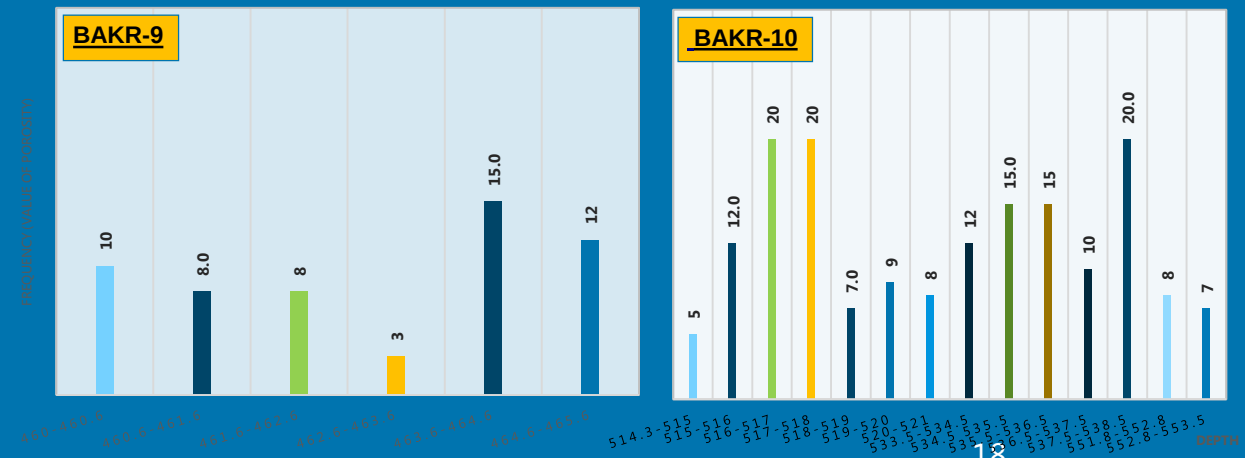
Sedimentology

2. Petrography. (Bakr-6, 9 and 10)

- Components & rock types.
- Porosity percent & types.



POINT COUNTED POROSITY FREQUENCY DIAGRAM FOR CARBONATE SAMPLE
(IN PERCENT BY VOLUME)



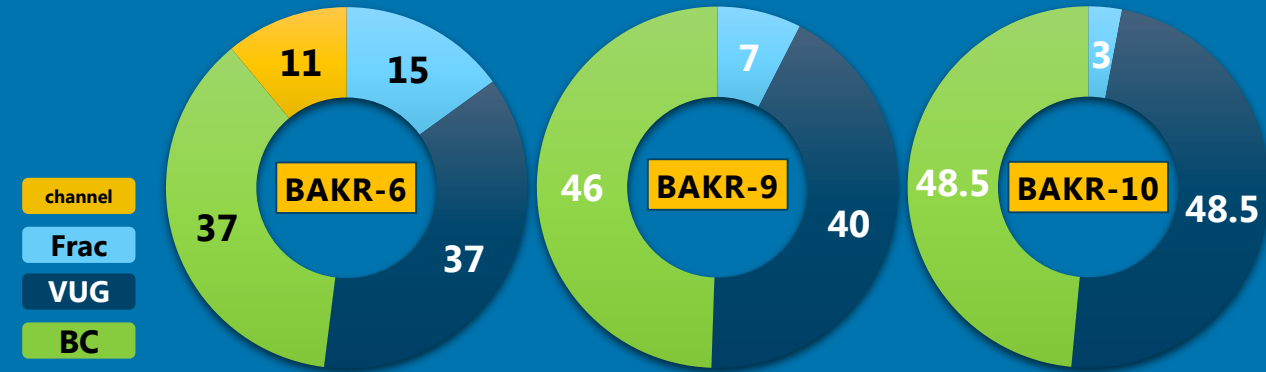


Sedimentology

3. Routine core analysis.

(Bakr-6, 9 and 10)

- Petrography results comparing.
- Porosity contribution in permeability.
- Porosity reached 16 % with average porosity 11 %.
- Permeability reached 40 mD with average Permeability 11 mD.



EPRI - CORE ANALYSIS LAB.

	Depth, (m)	Permeability		Porosity		Saturation		Grain Density, (gm/cc)	Plug D
		Horizontal, (mD)	Vertical, (mD)	Helium, %	Fluid, %	Oil, %	Water, %		
CORES INTERVAL RECOVERED (483.6-553.5) m									
BK-6	483.6-484.6	1.67	87.22	7.95	–	–	–	2.87	Dolo.
	540-541	6.86	7.42	13.69	–	–	–	2.94	Dolo.
	544-545	6.49	1.26	9.99	–	–	–	2.91	Dolo.
BK-9	460-460.6	1.72	1.73	10.26	–	–	–	2.91	Dolo.
	462.6-463.6	2.71	0.12	9.67	–	–	–	2.89	Dolo.
	464.6-465.6	0.59	0.25	11.56	–	–	–	2.89	Dolo.
BK-10	514.3-515	0.14	0.13	9.79	–	–	–	2.86	Dolo.
	515-516	7.41	0.15	12.36	–	–	–	2.91	Dolo.
	520-521	0.12	0.72	7.51	–	–	–	2.91	Dolo.
	533.5-534.5	18.35	17.30	14.08	–	–	–	2.94	Dolo.
	536.5-537.5	25.55	N.P.P.	16.45	–	–	–	2.90	Dolo.
	537.5-538.5	17.25	40.49	16.18		–	–	2.92	Dolo.

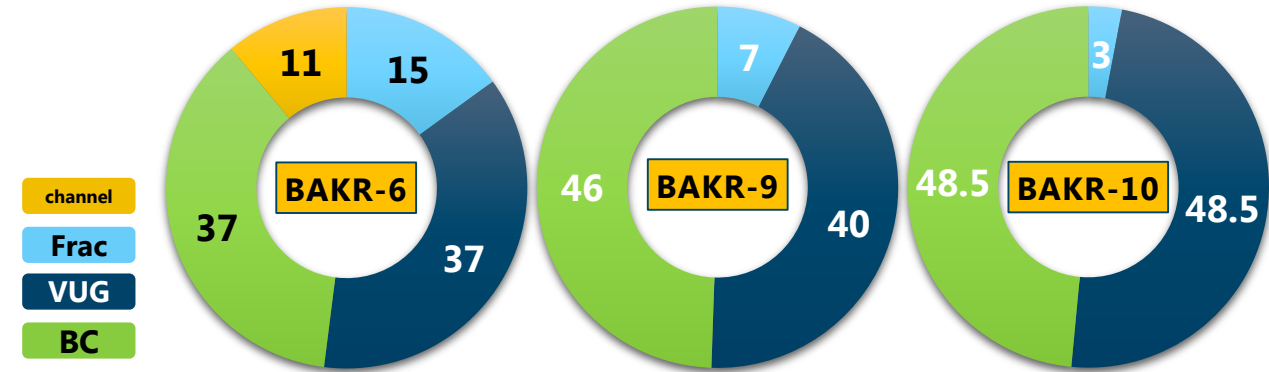
Sedimentology



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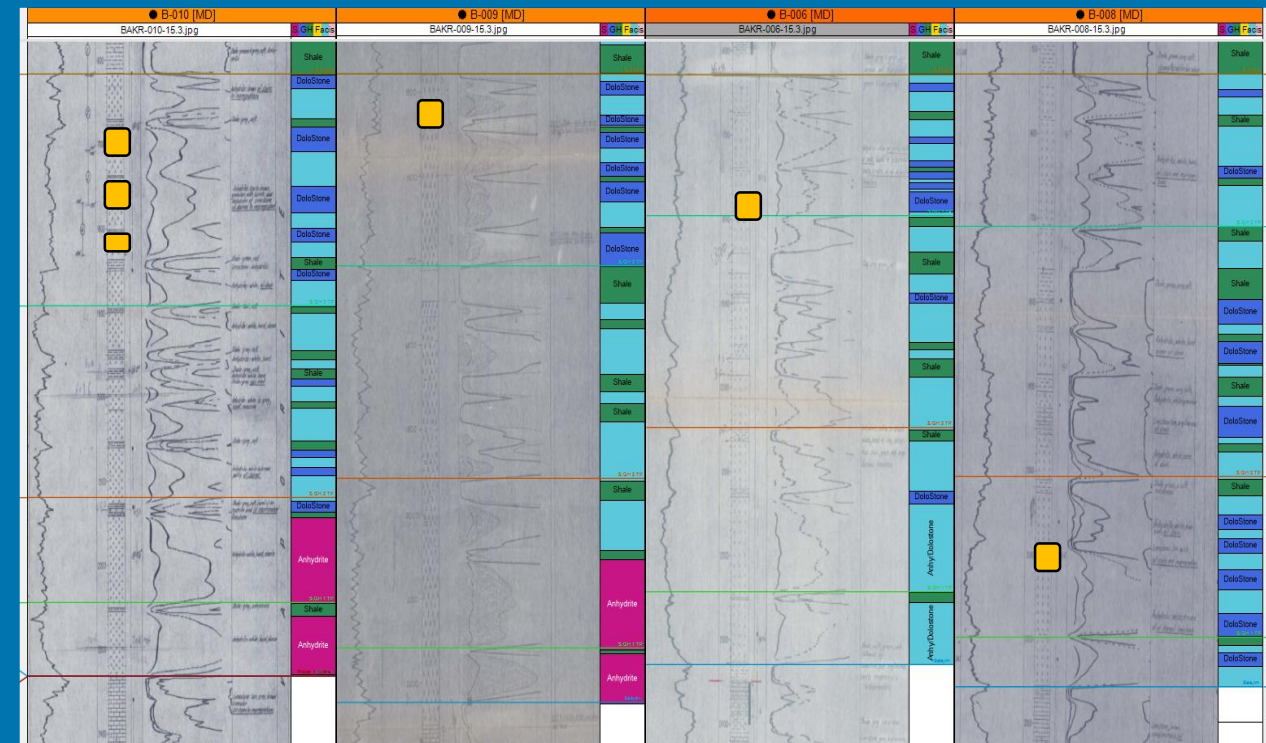
Sedimentology

4. Diagenesis.

(BK-6, 9, 10)

- Diagenetic effect :
 - Enhancing porosity
 - Dolomitization
 - Dissolution
 - Minor fracturing
 - Reducing porosity
 - Anhydrite replacement
 - clays
- Facies log made.

COMPANY-GPC								DATE:				DEPTH INTERVAL:																																																																																																																																																																																																																																																																																																																																																																																																																				
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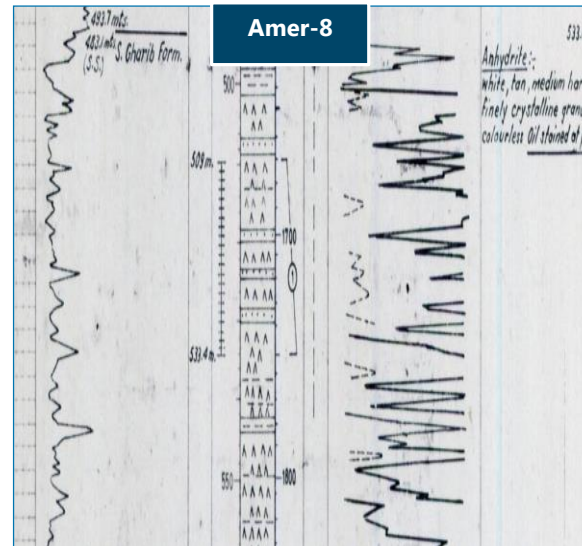
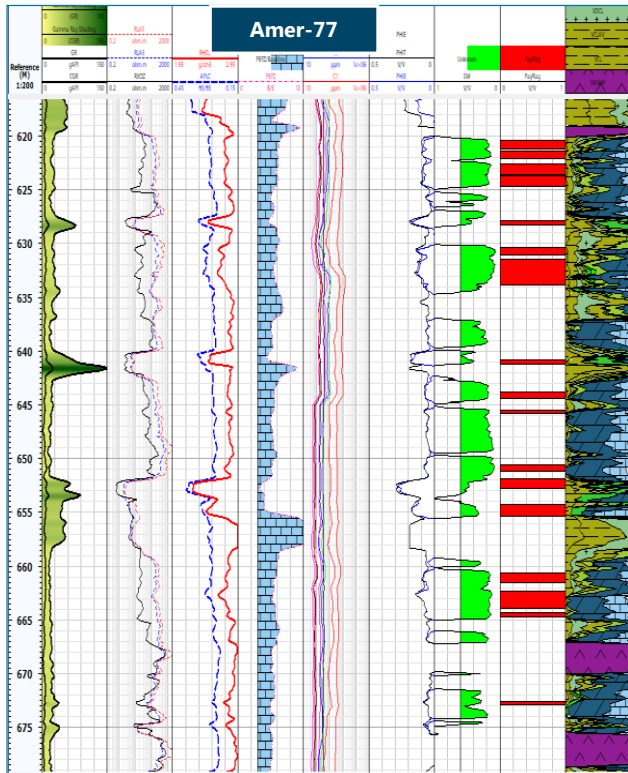
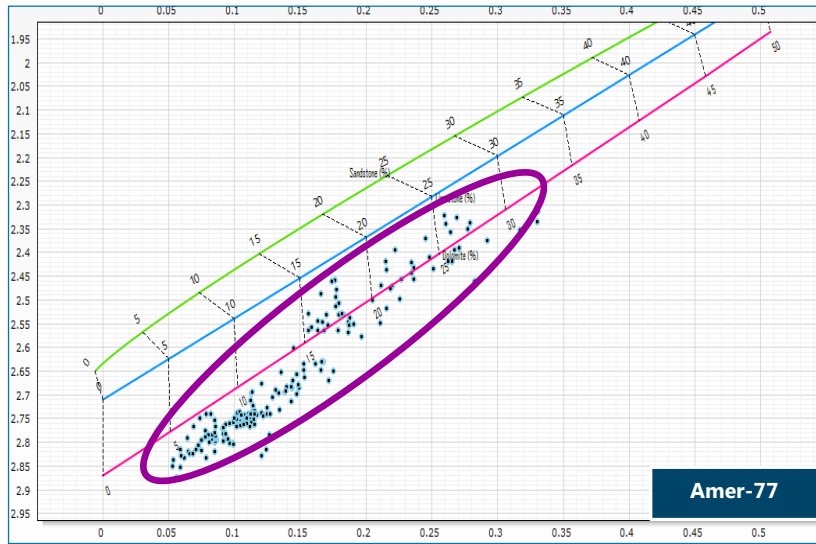
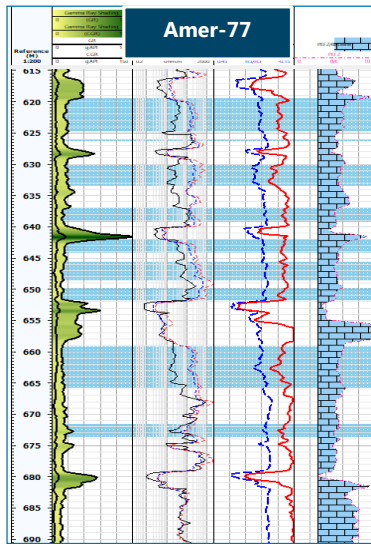


Petrophysics

1. Qualitative & Quantitative Evaluation.

(Amer-54, 58, 77)

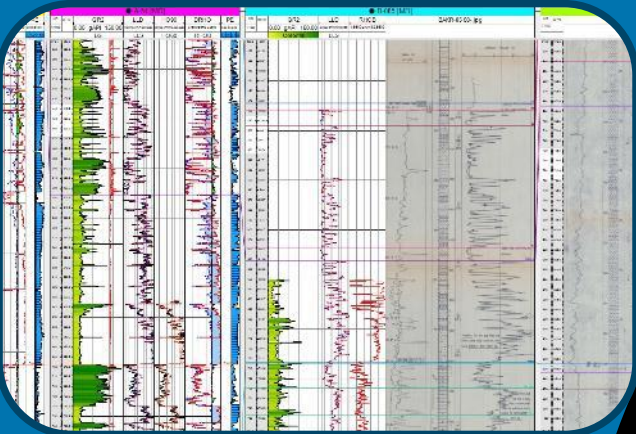
- Facies Type
- Petrophysical parameters
 - Net : 15 – 5 mt.
 - ϕ_e : 8 – 21 %.
 - SW : 15 – 50 %.
- DST
 - 4 Wells (A-8, B-10, 13, 70)
 - Oil : 32 – 125 BBL.
 - Oil + Gas + Mud : 500 BBL.
 - 21.5 API.



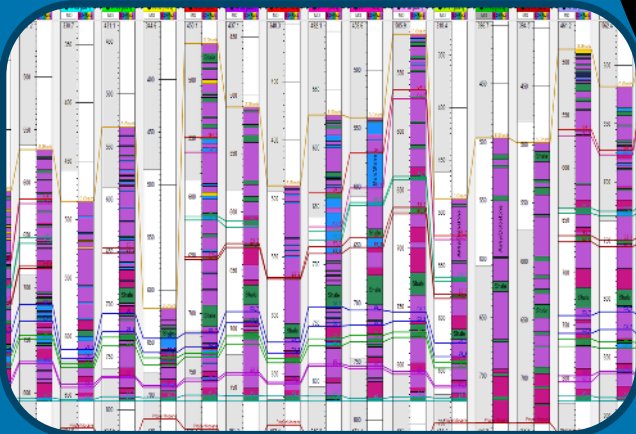


Model Building

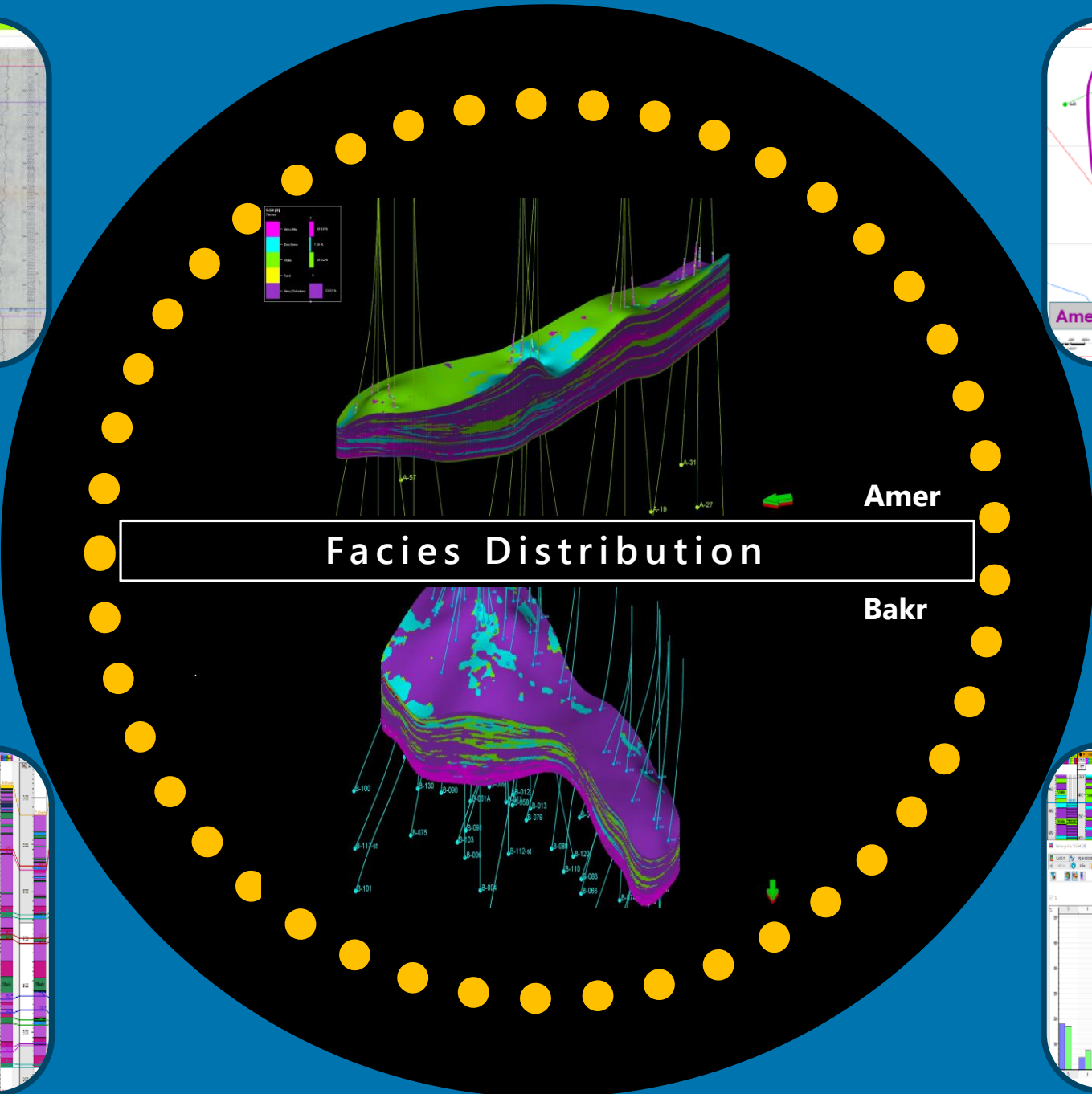
IF YOU CAN ANALYZE IT, YOU CAN VISUALIZE IT
| HAVE YOUR OWN VISION.



1. WELL CORRELATION.



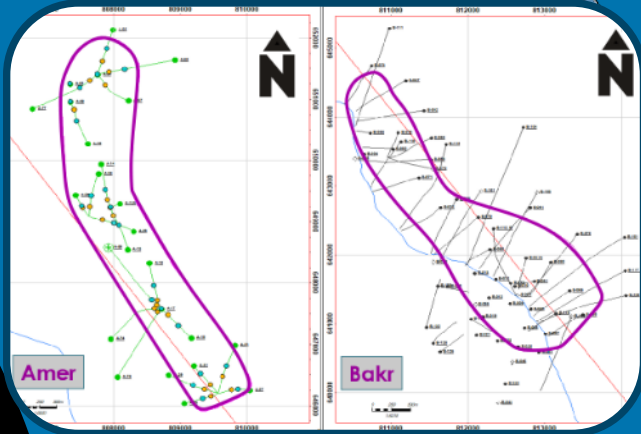
2. FACIES LOG IDENTIFICATION.



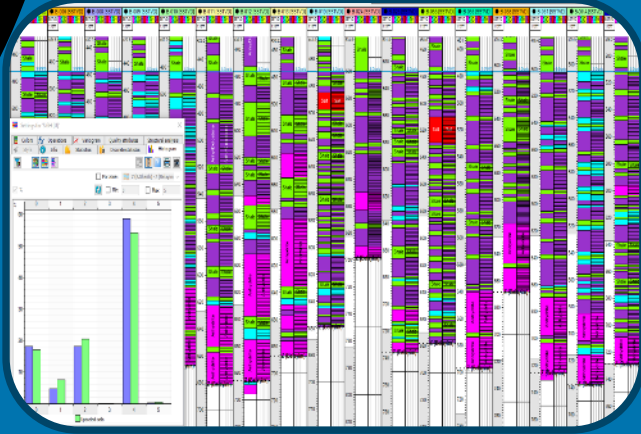
Facies Distribution

Amer

Bakr



3. BOUNDING AREA OF INTEREST.
(BAKR & AMER)

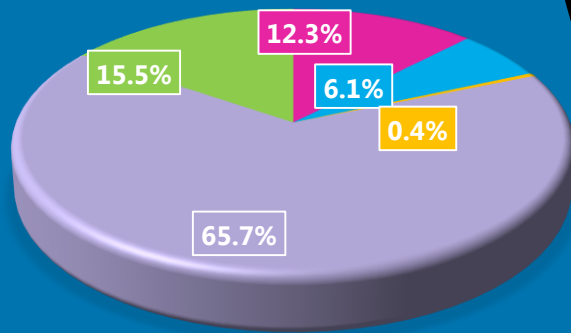


4. GRIDDING, ZONATION & LAYERING.



Amer Facies Volume

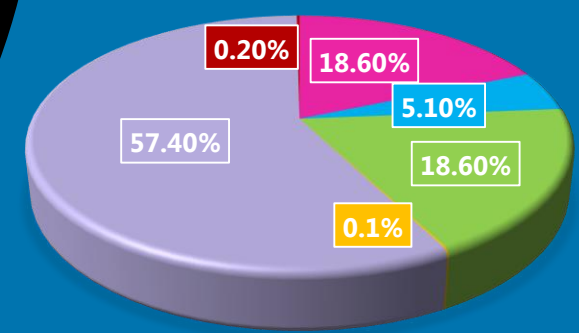
Bulk Volume (m3)	1,016,680,777	100.0%
Anhy / Dolostone	668,039,678	65.7%
Shale	157,585,520	15.5%
Anhydrite	125,373,734	12.3%
Dolostone	61,725,558	6.1%
Sand	4,086,304	0.4%



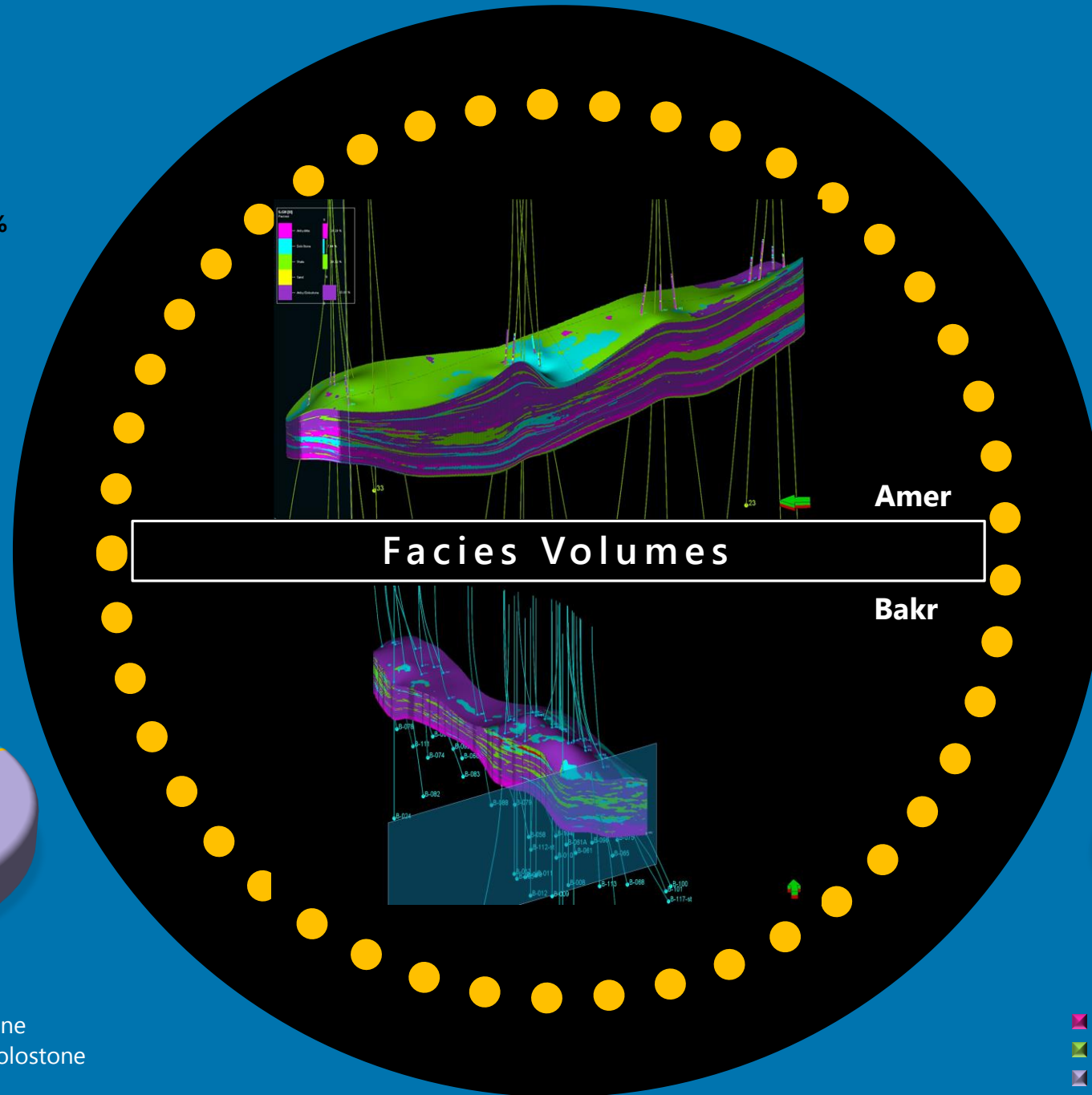
■ Anhydrite
■ Sand
■ Shale
■ DoloStone
■ Anhy/Dolostone

Bakr Facies Volume

Bulk Volume (m3)	831,481,727	100.0%
Anhy / Dolostone	477,261,992	57.4%
Anhydrite	154,848,394	18.6%
Shale	155,036,300	18.6%
Dolostone	42,001,090	5.1%
Salt	1,846,465	0.2%
Sand	487,486	0.1%



■ Anhydrite
■ Shale
■ Anhy/Dolostone
■ DoloStone
■ Sand
■ Salt

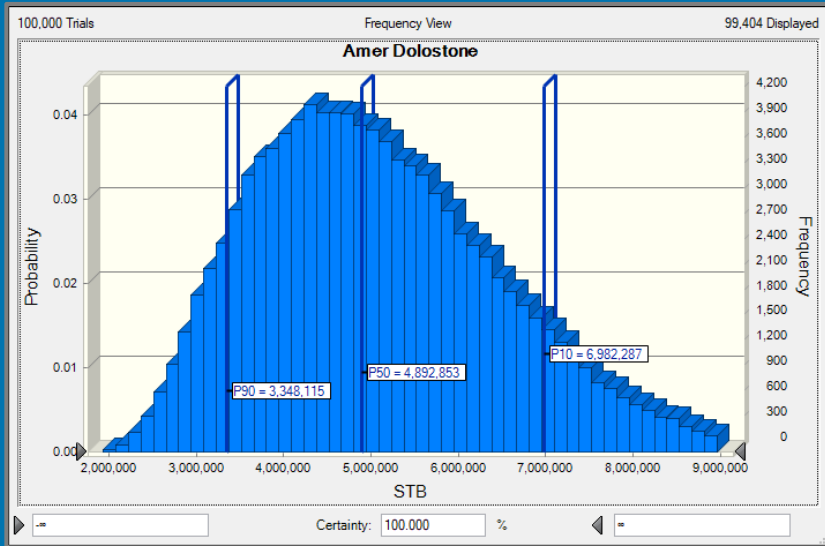




Volumes & Reserves

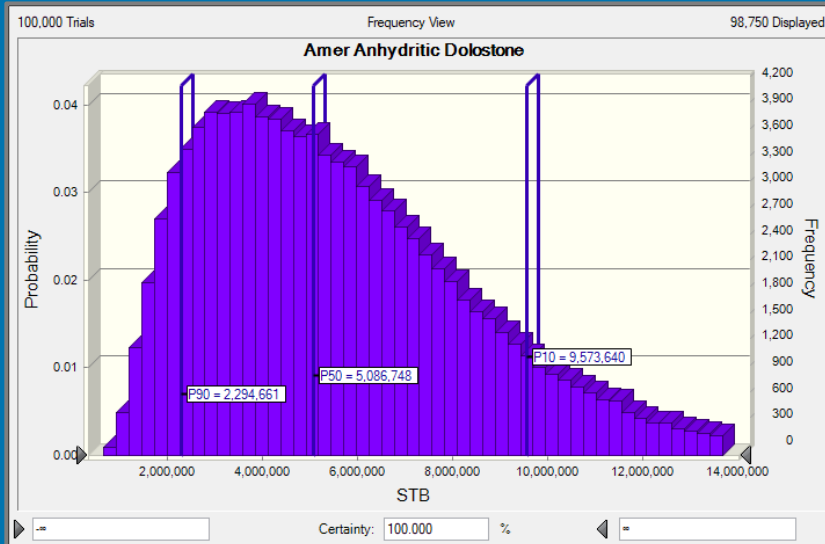
BECAUSE EVERY BARREL COUNTS | GO FOR IT.

AMER OIL FIELD



Amer Dolostone		
	Min	Max
Bulk Volume (m3)	61,725,558	
N/G (%)	80 %	90 %
φ_e (%)	12 %	20 %
SW (%)	45 %	15 %
Bo	1.05	1.15
RF (%)	10 %	20 %

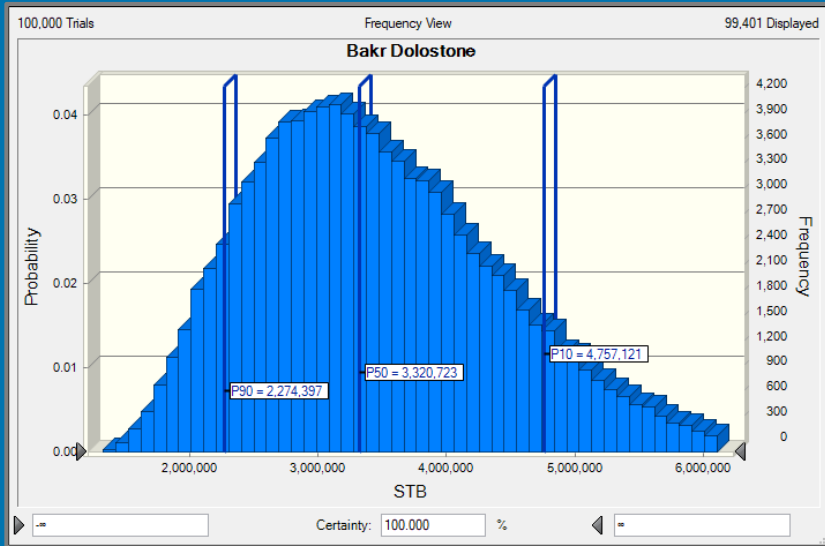
Probability	Recoverable Oil (MMSTB)
P 10	6.9
P 50	4.9
P 90	3.3



Amer Anhydritic Dolostone		
	Min	Max
Bulk Volume (m3)	668,039,678	
N/G (%)	10 %	50 %
φ_e (%)	7 %	13 %
SW (%)	55 %	15 %
Bo	1.05	1.15
RF (%)	5 %	10 %

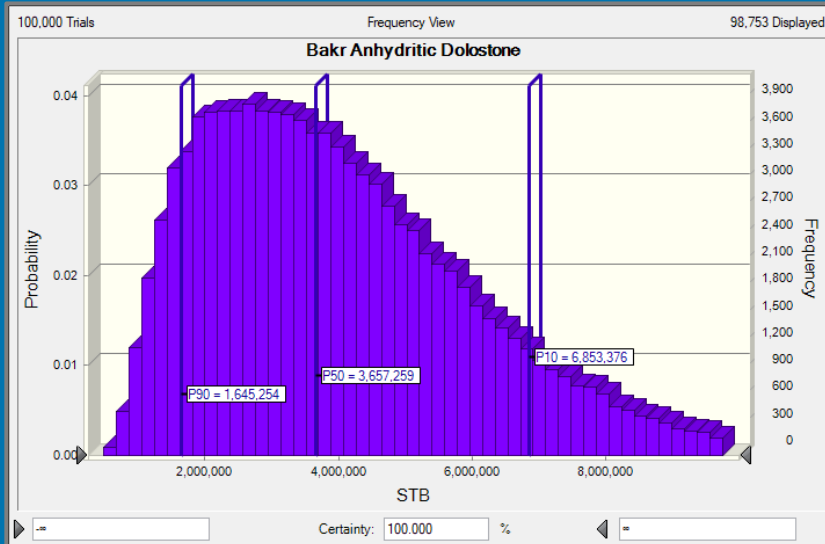
Probability	Recoverable Oil (MMSTB)
P 10	9.6
P 50	5.1
P 90	2.3

BAKR OIL FIELD



Bakr Dolostone		
	Min	Max
Bulk Volume (m3)	42,001,090	
N/G (%)	80 %	90 %
φ_e (%)	12 %	20 %
SW (%)	45 %	15 %
Bo	1.05	1.15
RF (%)	10 %	20 %

Probability	Recoverable Oil (MMSTB)
P 10	4.7
P 50	3.3
P 90	2.3



Bakr Anhydritic Dolostone		
	Min	Max
Bulk Volume (m3)	447,261,992	
N/G (%)	10 %	50 %
φ_e (%)	7 %	13 %
SW (%)	55 %	15 %
Bo	1.05	1.15
RF (%)	5 %	10 %

Probability	Recoverable Oil (MMSTB)
P 10	6.8
P 50	3.6
P 90	1.6

Recommendation



LONG-TERM PLAN

**DRILLING LOW COST WELLS
WITH SHALLOW DEPTHS**

SHORT-TERM PLAN



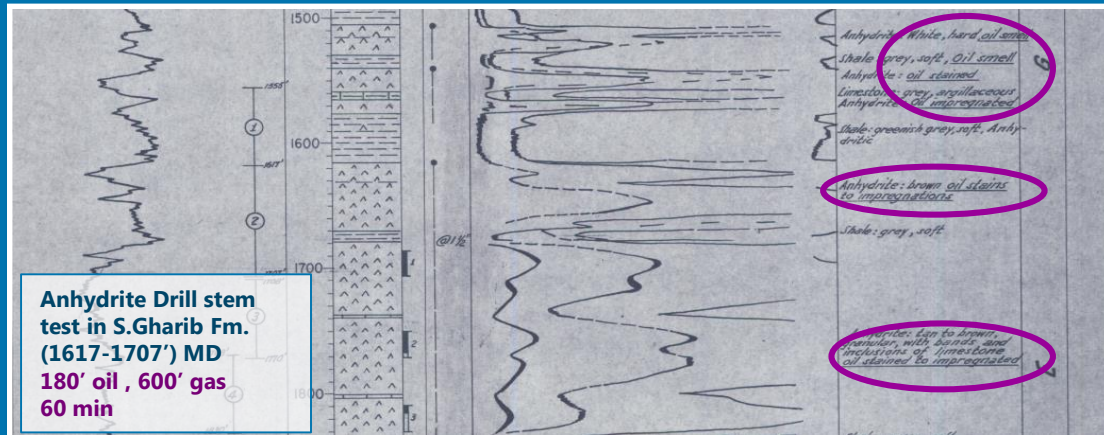
**RECOMPLETION OF THE TOP
PROMISING WELLS AS:**

- **B-10**
- **A-58**
- **A-77**

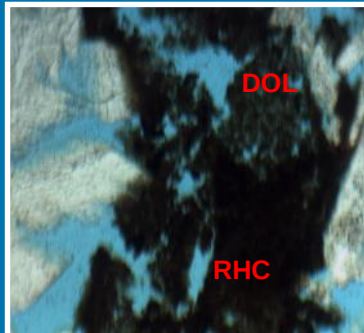
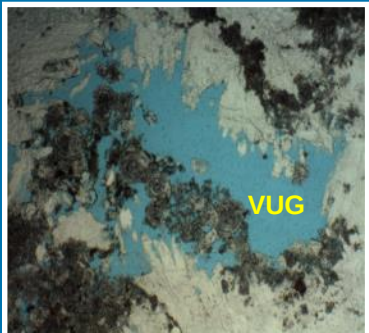


Recommendation

Bakr-10



1. RECOMMENDED S. GHARIB INTERVAL (492-558)



Parameters

ϕ : 16.5 %
K (h) : 25.55 MD
K (v) : 40.5 MD

Availability of various data

- Ditch cuttings.
- DST.
- Core.
- Thin sections.

2. BEST FACIES QUALITY AND HIGHER POROSITY

Spud: Mar/1959
Shut in: 2011

Bakr Oil Field
Well NO. 10
Vertical Well
Current July, 2010

9 5/8" CSG @ 114.3 mt

3 1/2" tbq

487

1 3/4" pump @ 786 mt

3 1/2" Gas anchor

762

Lower Miocene Perf:-
(792 - 808) mt

T.O 5 1/2" Liner @ 833.5 mt

7" CSG @ 850.4 mt
(20 #, J-55)

P.B @ 869mt

End of liner @ 885.1 mt
Eocene Perfs:-
(888.2 - 899.2) mt

TD @ 990.6 mt

3. SINGLE CASING IN INTEREST INTERVAL



CONCEALED PHENOMENA OPEN DOORS FOR CARBONATE POTENTIALS IN GPC BROWN FIELDS

THANK YOU

Presenters:

Omar Soliman

Ahmed Ismaeel

Alaa Abd El-Razek

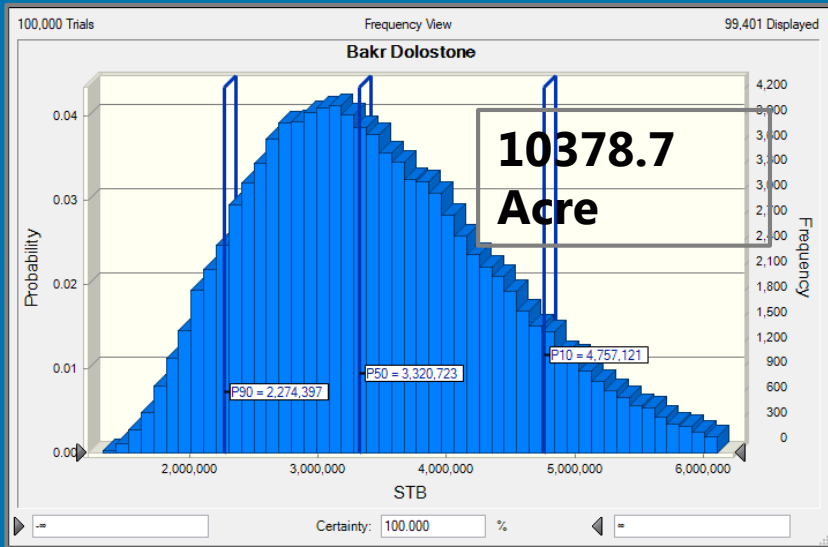
October, 2022



Analogue

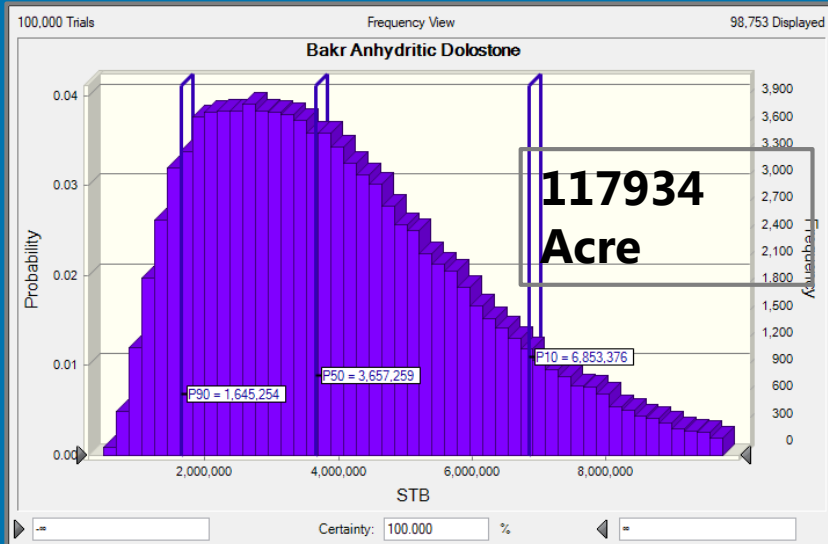
SUCCESS ISN'T A MONOPLY | MOVE FORWARD.

Different Parameters



Bakr Dolostone		
	Min	Max
Bulk Volume (m3)	42,001,090	
N/G (%)	80 %	90 %
ϕ_e (%)	12 %	20 %
SW (%)	45 %	15 %
Bo	1.05	1.15
RF (%)	10 %	15 %

Probability	Recoverable Oil (MMSTB)
P 10	4.7
P 50	3.3
P 90	2.3

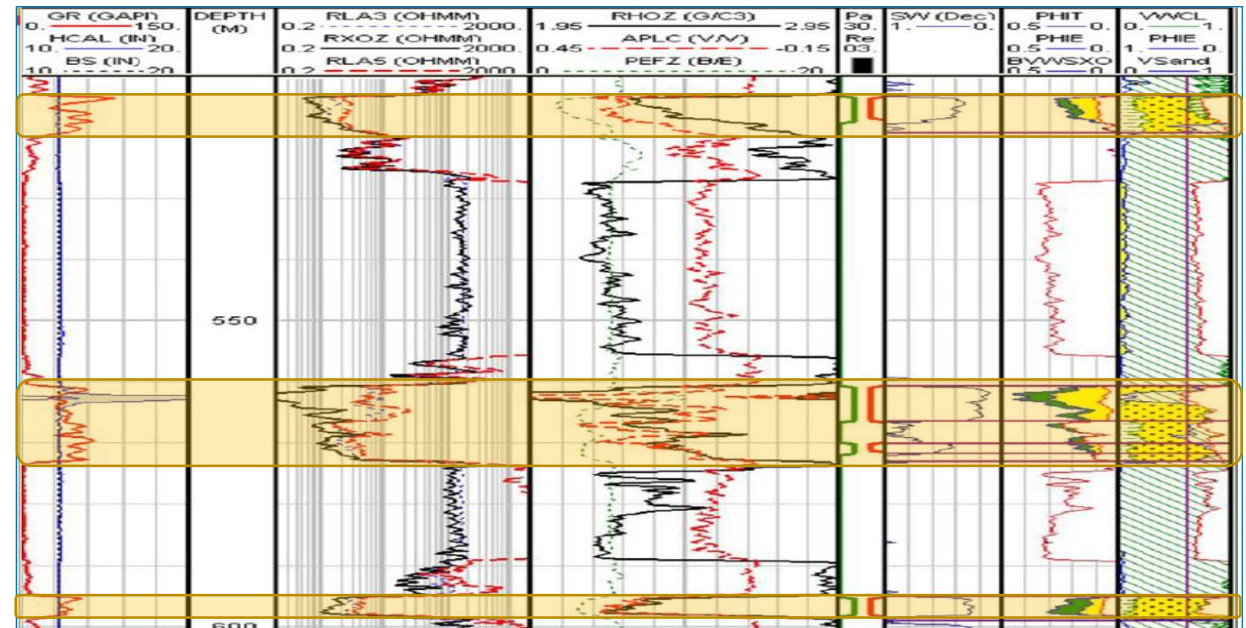
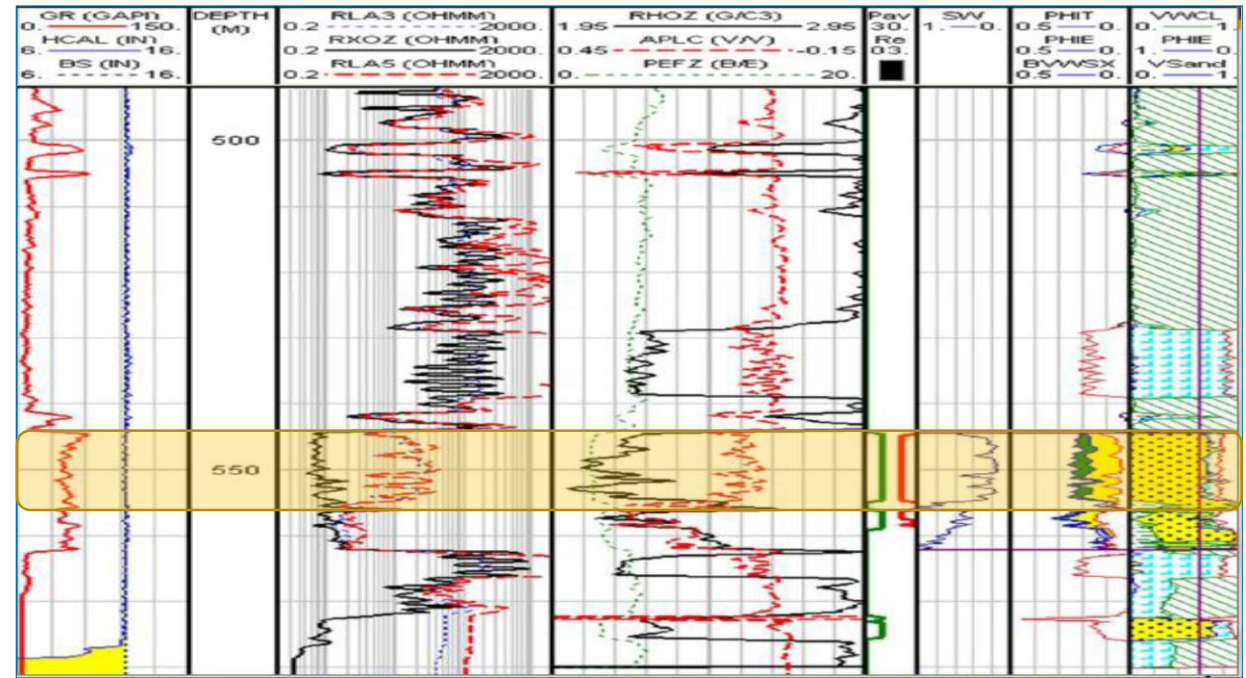


Bakr Anhydritic Dolostone		
	Min	Max
Bulk Volume (m3)	447,261,992	
N/G (%)	10 %	50 %
ϕ_e (%)	7 %	13 %
SW (%)	55 %	15 %
Bo	1.05	1.15
RF (%)	5 %	10 %

Probability	Recoverable Oil (MMSTB)
P 10	6.8
P 50	3.6
P 90	1.6

1. SHUKEIR NW

- Gas Reservoir



- Dolomite Reservoir

