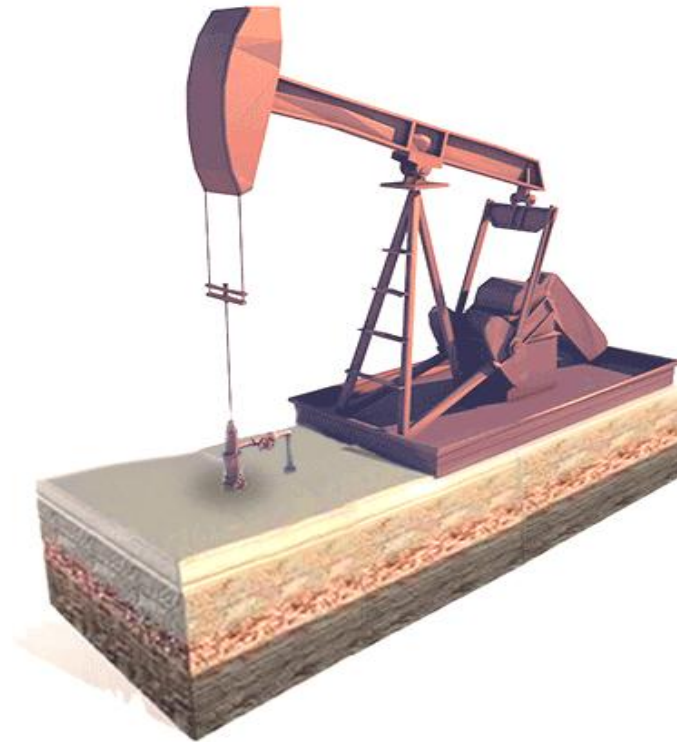




**PETROSANNAN
COMPANY**

CARBONATE POTENTIALITY OF AR/D Mbr, PETROSANNAN FIELD



**GPC WORKSHOP
CARBONATE RESERVOIR IN EGYPT**



AGENDA



1

FIELD OVERVIEW

2

INTEGRATED APPROACH OF INVESTIGATION

3

**UNLOCKING THE CARBONATE POTENTIALITY AND
OVERALL RESERVOIR REVIEW**

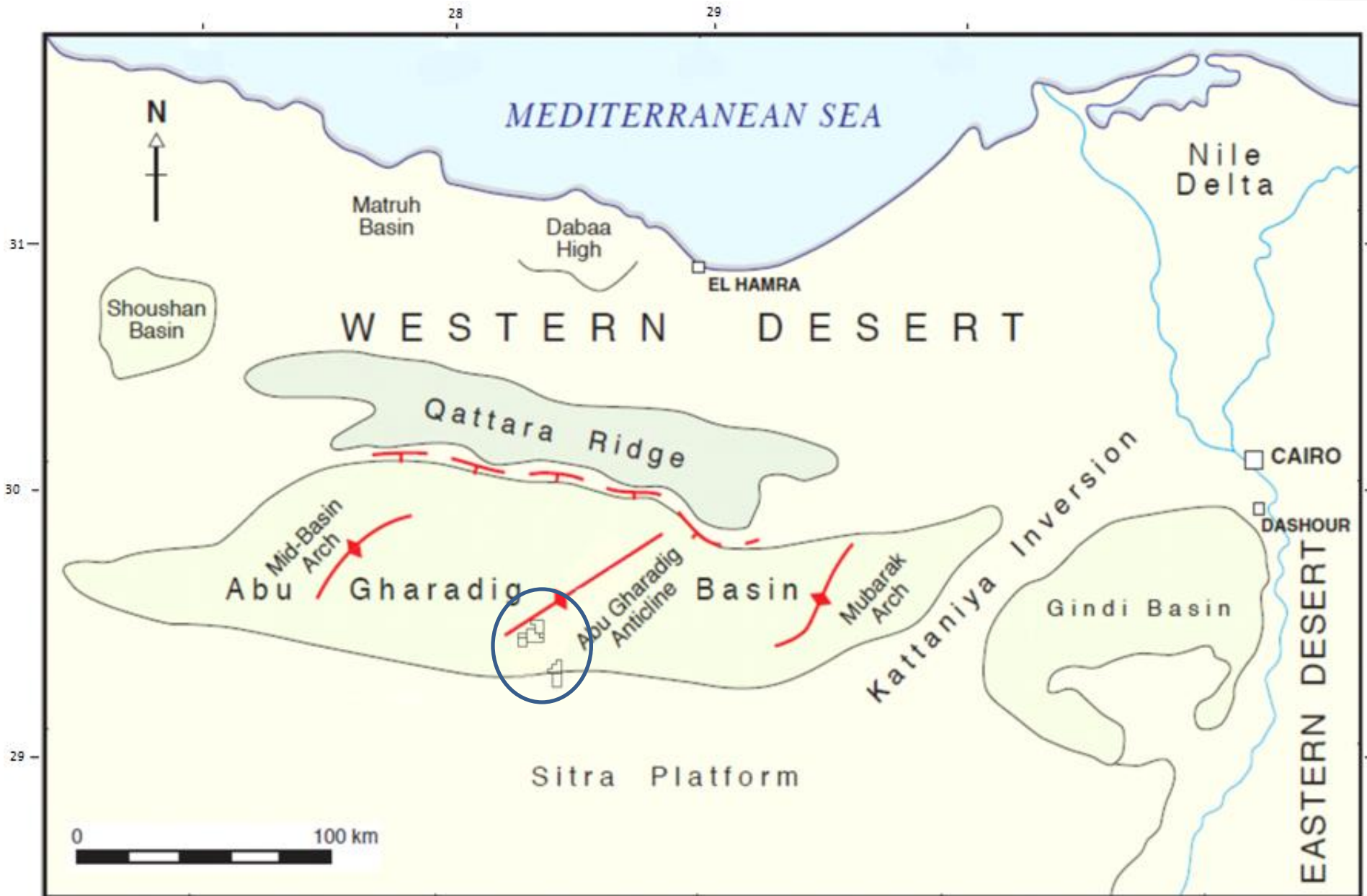
5

CONCLUSION

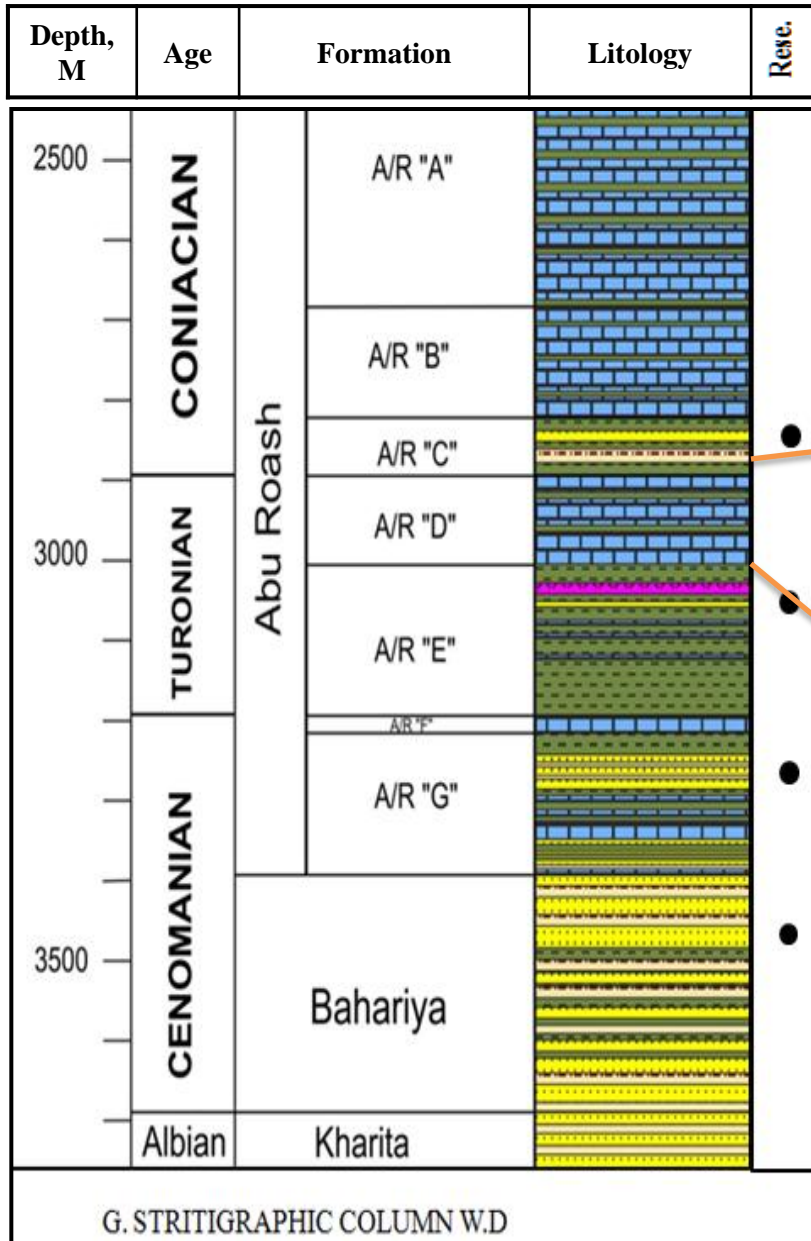
AGENDA



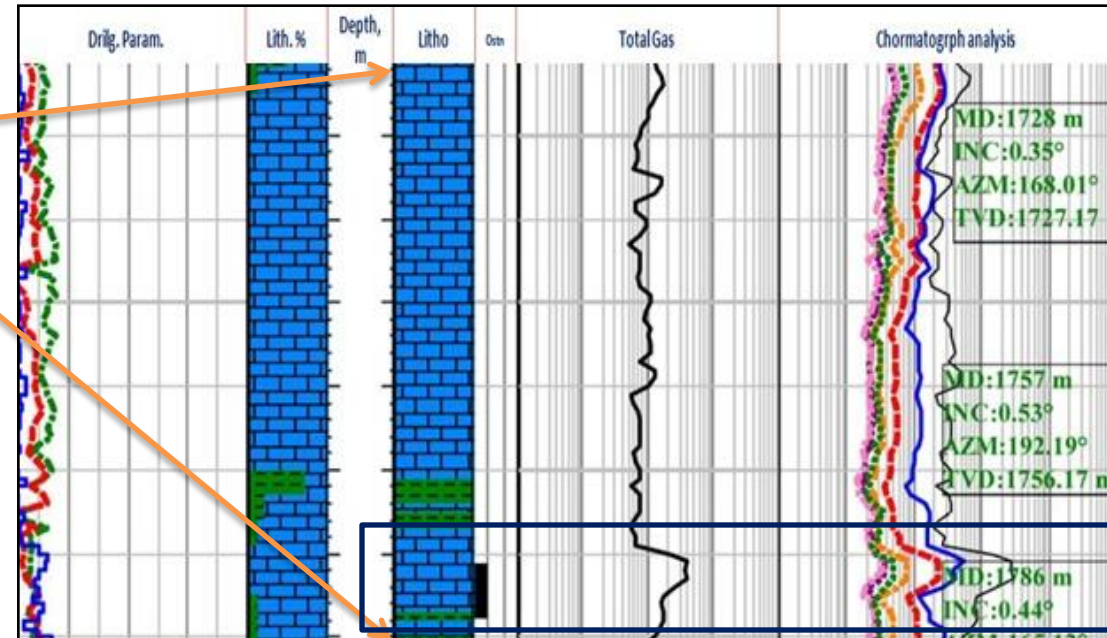
- 1 FIELD OVERVIEW**
- 2 INTEGRATED APPROACH OF INVESTIGATION**
- 3 UNLOCKING THE CARBONATE POTENTIALITY AND OVERALL RESERVOIR REVIEW**
-
- 5 CONCLUSION**



Location Map of the Petrosannan Field, Western Desert, Egypt

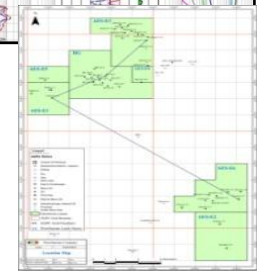
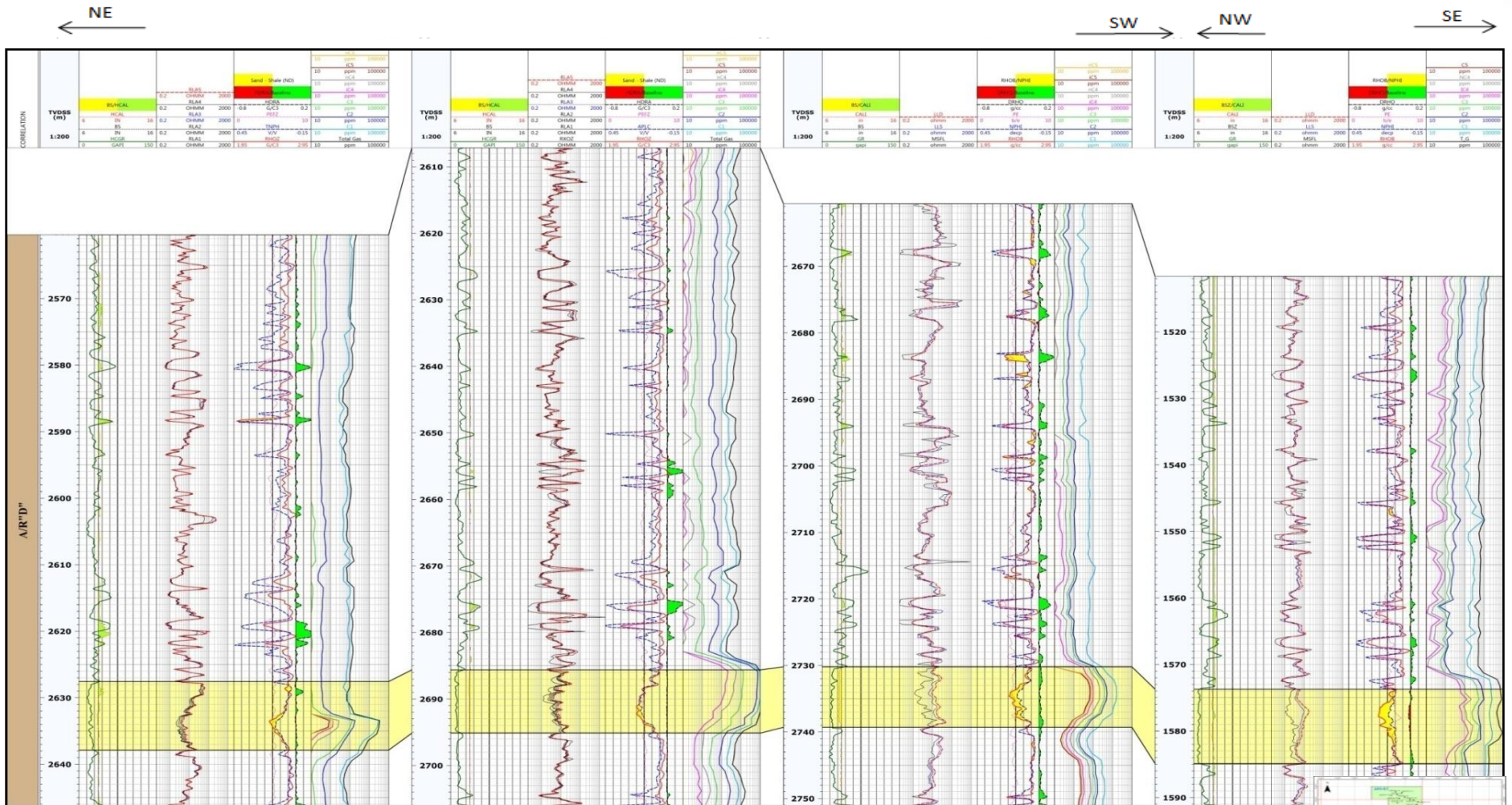


- Petrosannan conduct hydrocarbon production from clastic reservoirs.



- This interval is tested and proved hydrocarbon without any stimulation program so, the production potentiality not completely estimated.

WELL CORRELATION



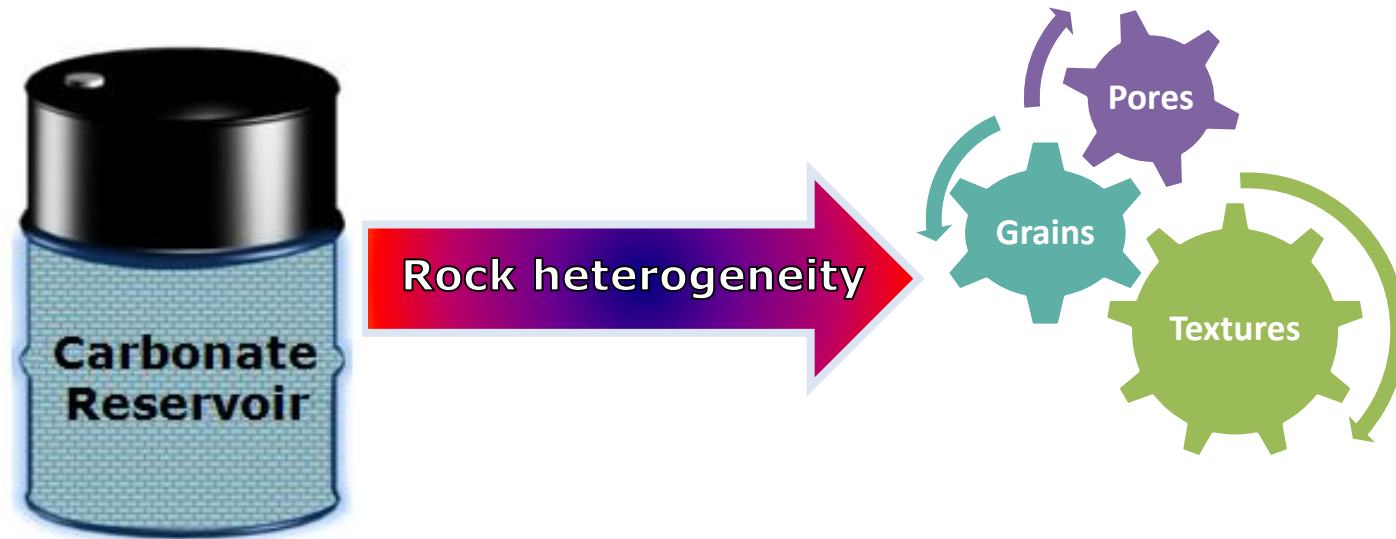
- Mainly limestone with thin beds of shale.
- The thickness ranges F/ 80 T/ 98 m.
- The potential part is continuous in the field with nearly stable thickness.

AGENDA



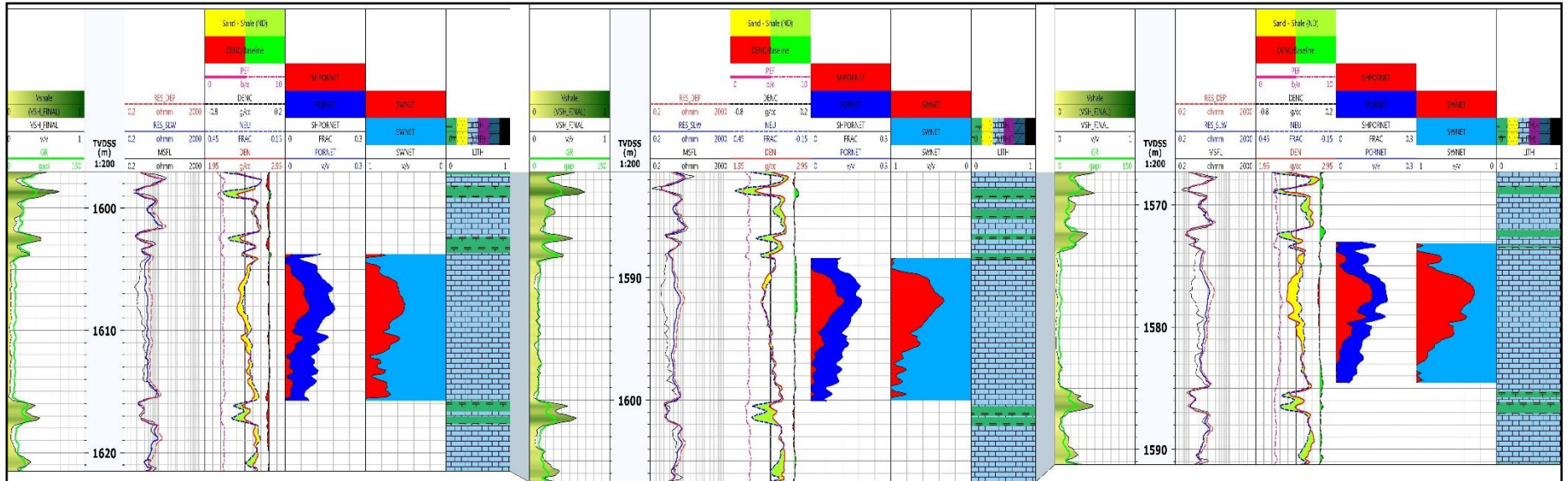
- 1 FIELD OVERVIEW
- 2 INTEGRATED APPROACH OF INVESTIGATION**
- 3 UNLOCKING THE CARBONATE POTENTIALITY AND OVERALL RESERVOIR REVIEW
- 4
- 5 CONCLUSION

Exploration and development in carbonate is more complex



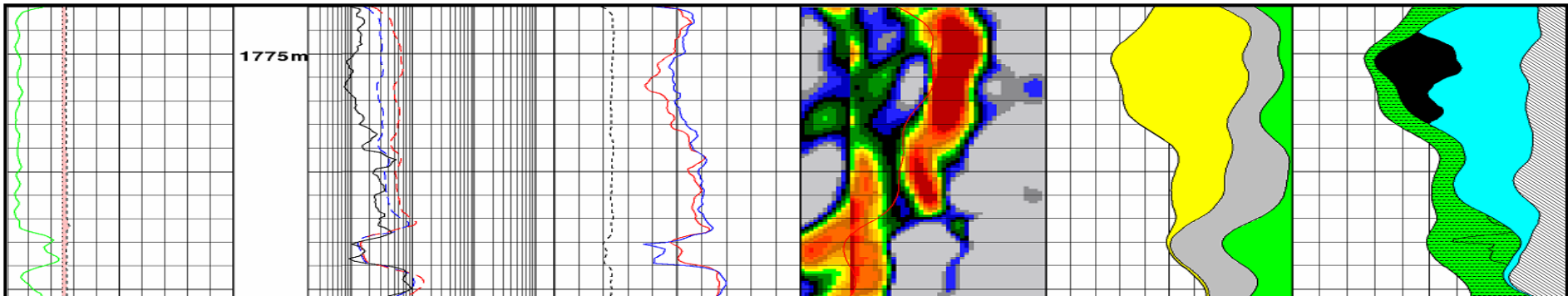
Heterogeneity at all scales

LOG ANALYSIS



Petrophysical Evaluation With Average porosity $\approx 17\%$, Net pay up to 5 m.

GR	BHFLAG	LLS	RHOB
0	API 200 15 0	0.2	2000 1.95 2.95
CALI	1:200	LLD	NPHI
6	16	0.2	2000 0.45 -0.15
	M.	MSFL	PE
		0.5	5000 0 20

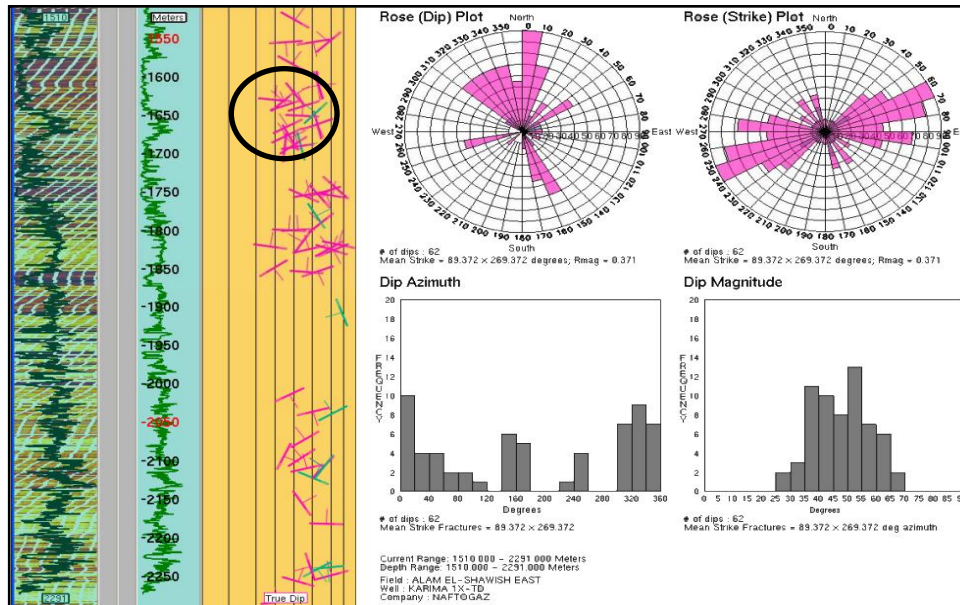


NMR DATA

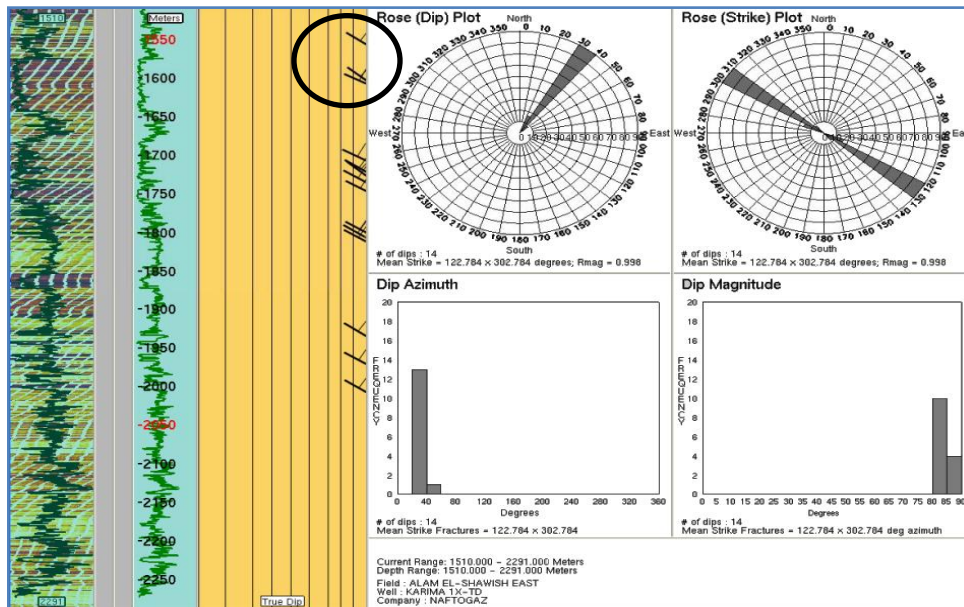
LOG ANALYSIS



XRFI DATA



Rose plots and histograms indicate **partial open fractures** with different directions



Rose plots and histograms indicate **Induced Fracture** with NE directions

CORE ANALYSIS

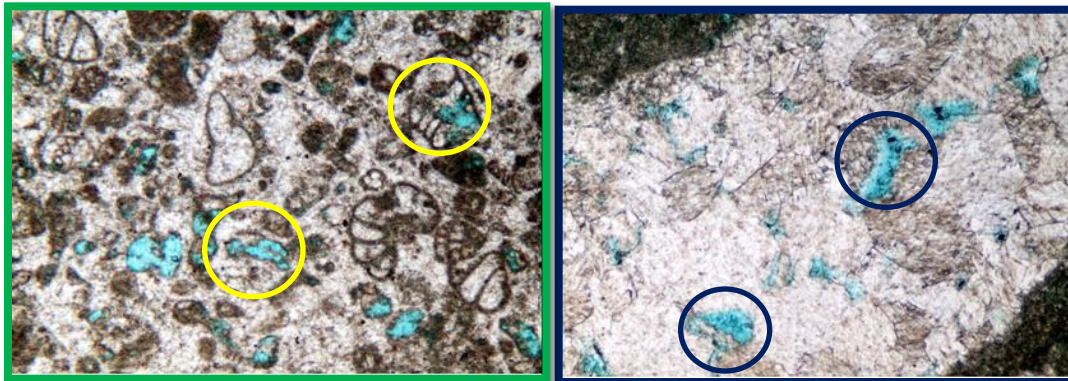


PETROGRAPHICAL ANALYSIS

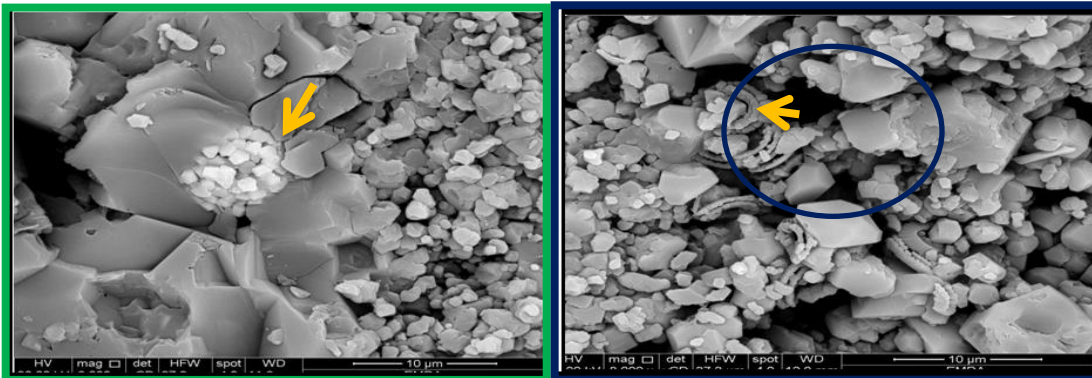


■ Packstone

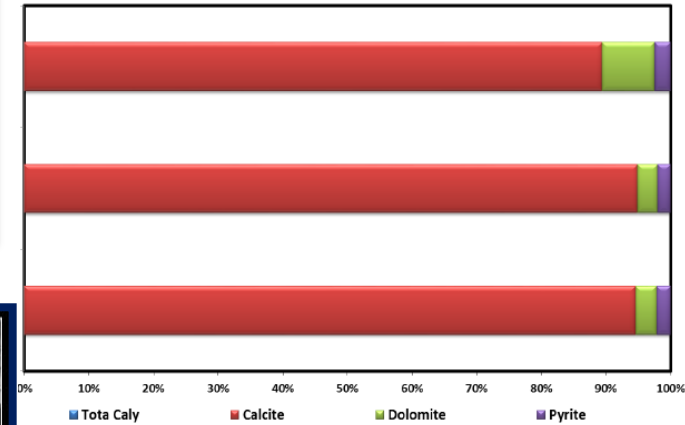
■ Wackstone



Thin Section analysis



Scanning Electron Microscopy



XRD Data Of The Examined Samples

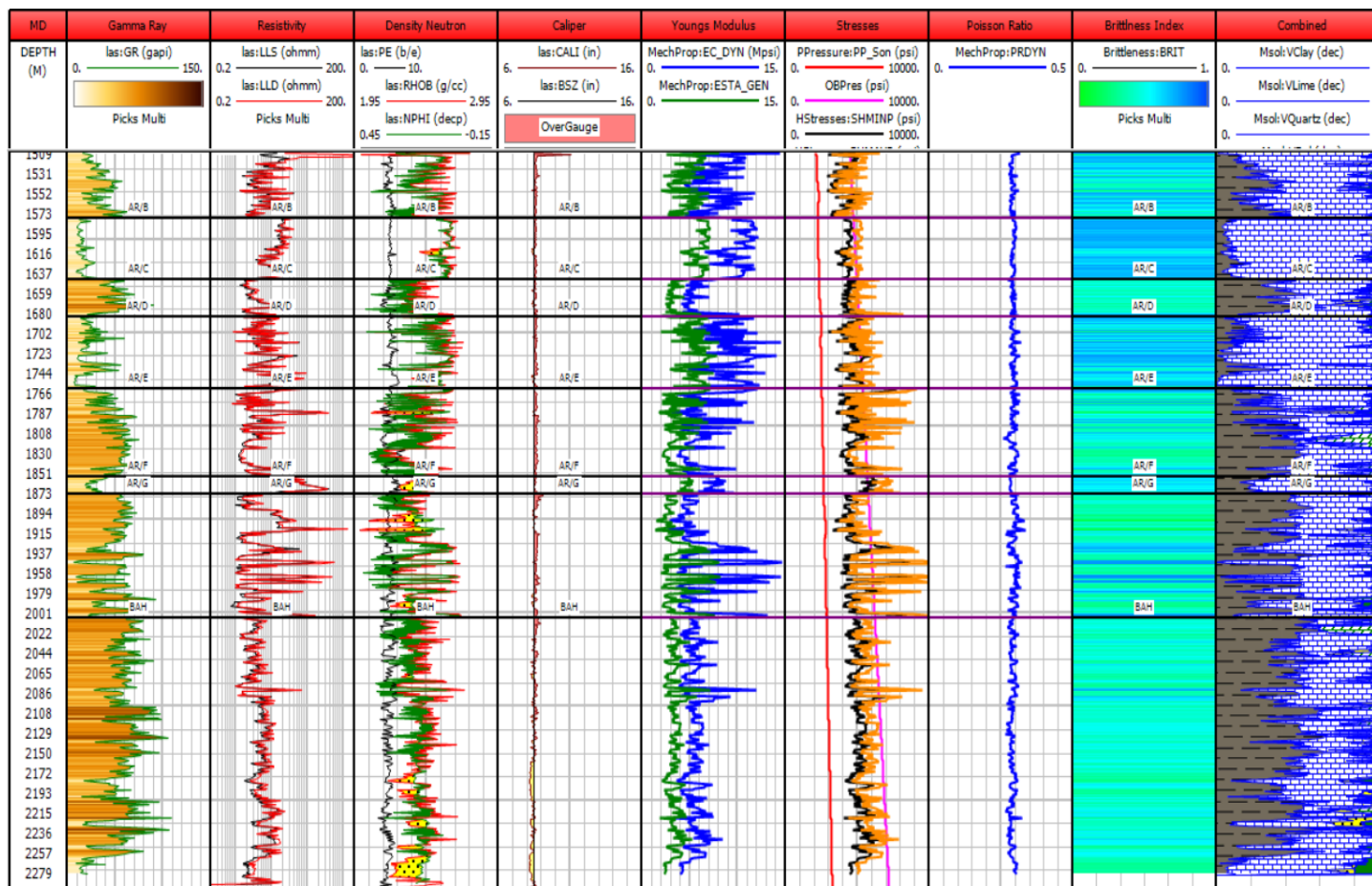


GEOMECHANICS ANALYSIS

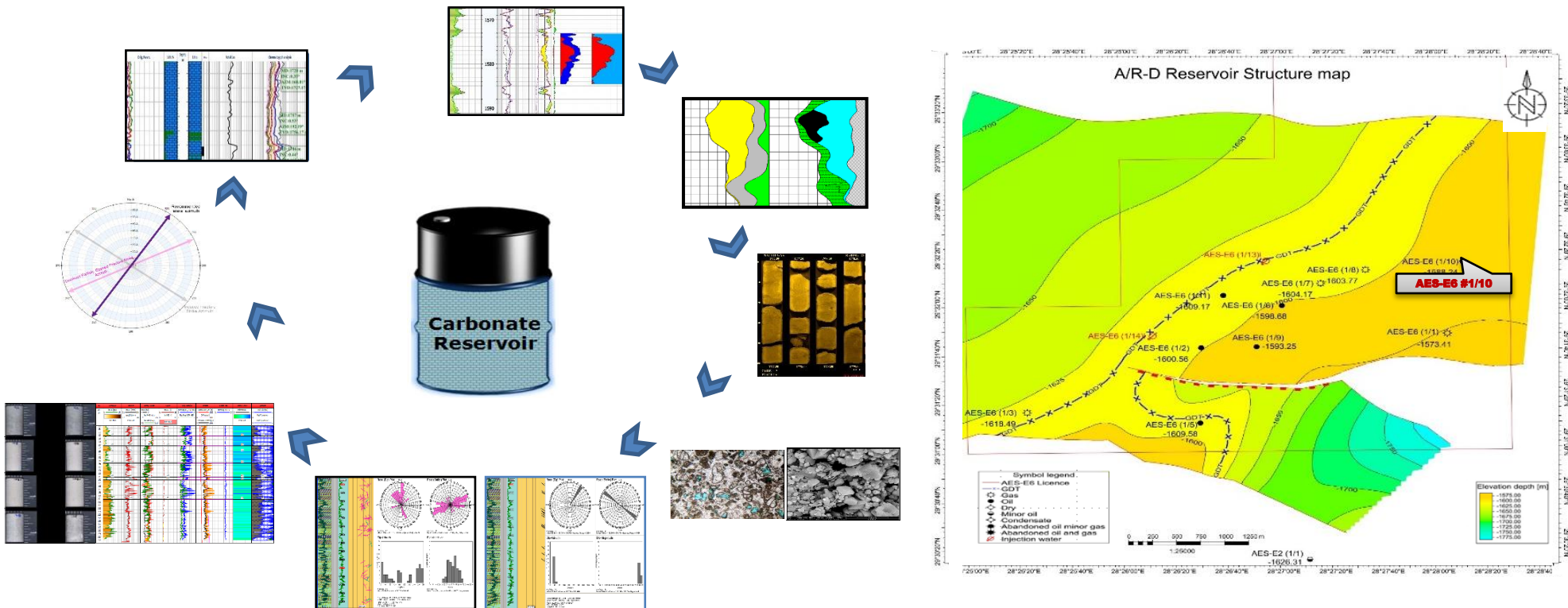


Sample ID	Depth (m)	Weight (g)	Bulk Density (g/cc)	Peak Strength (psi)	Young's Modulus (psi)	Poisson's Ratio (PR)	White Light Photo
92	1774.83	29.09	2.66	8964	2.22E+06	0.181	
108	1778.97	25.34	2.26	6212	1.87E+06	0.189	
108V	1778.97	22.81	2.25	4975	1.27E+06	0.18	
128	1783.92	22.82	2.52	1706	5.81E+06	0.257	

Geomechanics TEST RESULTS



Geomech. Plot



Stimulation AR/D reservoir in AES-E6

- Good reservoir parameters in this area.

AES-E6 1/10

- it is a closed well and Structurally higher than other wells.

AGENDA



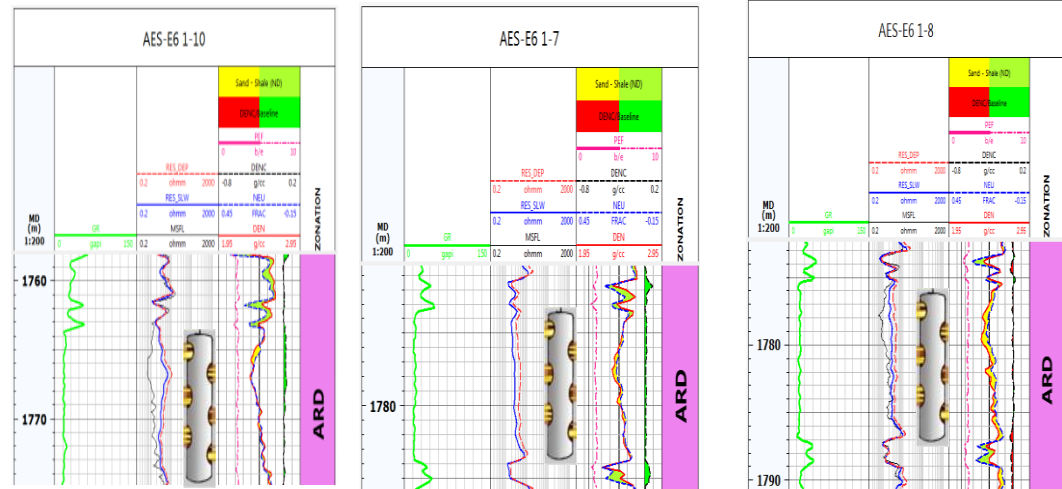
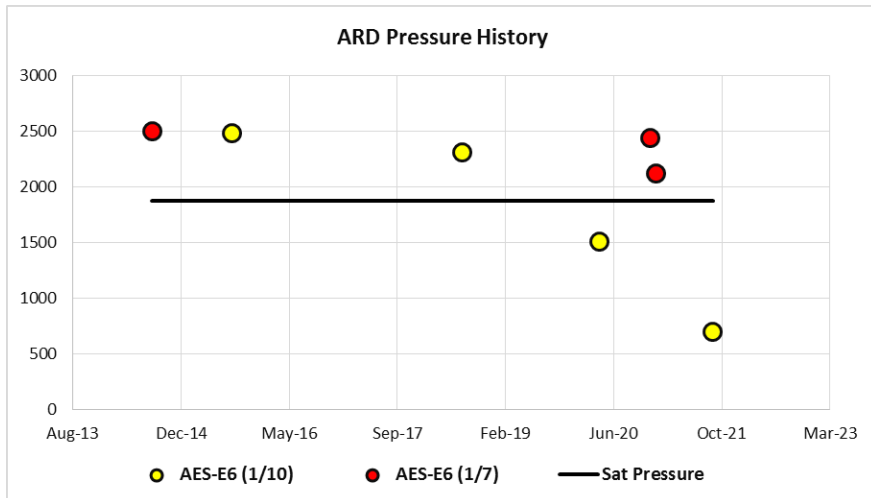
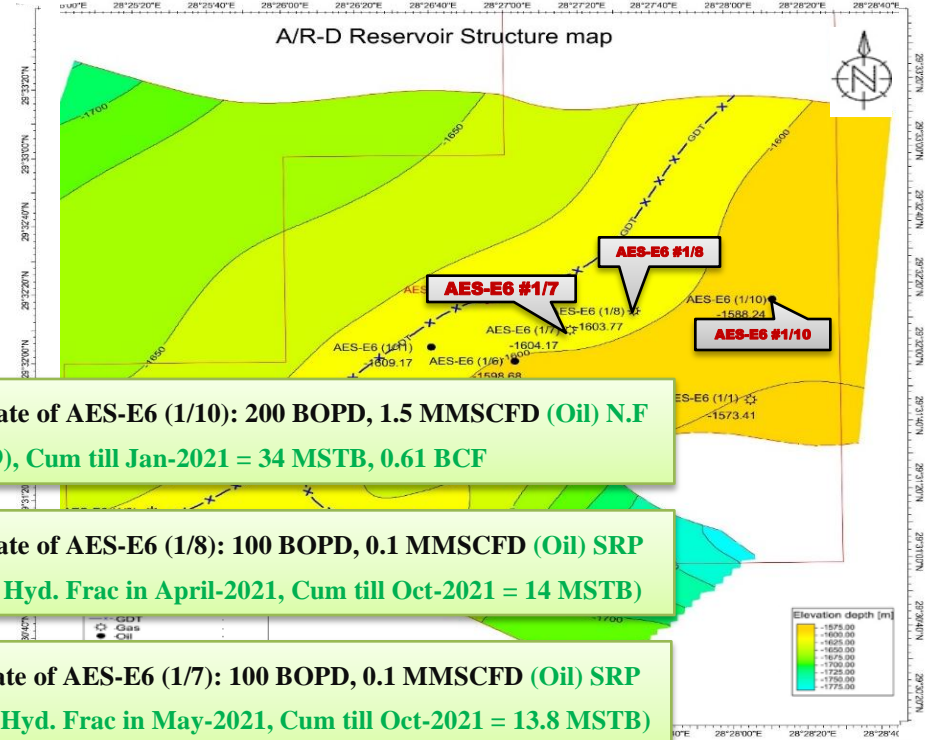
- 1 FIELD OVERVIEW
- 2 INTEGRATED APPROACH OF INVESTIGATION
- 3 UNLOCKING THE CARBONATE POTENTIALITY AND OVERALL RESERVOIR REVIEW**
- 4
- 5 CONCLUSION

RESERVOIR REVIEW AND PRODUCTION PERFORMANCE



ARD Reservoir Review:

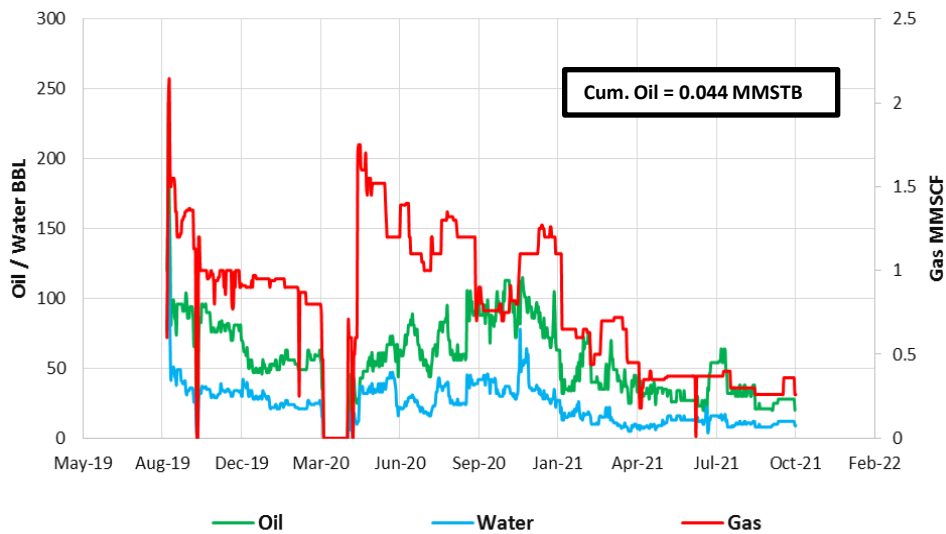
- Oil: 16 MMSTB, GIIP = 16 BCF
- Avg. Porosity 17%, Permeability (0.1-1) md
- Pi = 2500 psi (RDT from AES-E6 (1/7), Temp = 174 F
- PVT from surface sample: API = 36.5, Pb = 1856 psi, Initial Rs = 667 scf/stb, Oil Viscosity = 0.55 cp, Bo = 1.312 bbl/stb
- The added reserves for 1P and 2P cases are 0.15 and 0.2 MMSTB respectively.



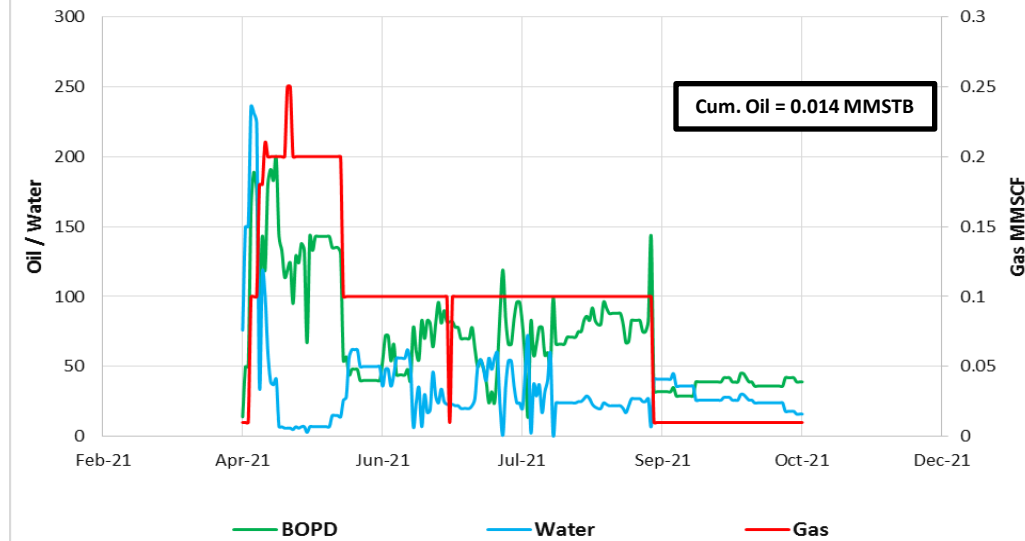
RESERVOIR REVIEW AND PRODUCTION PERFORMANCE



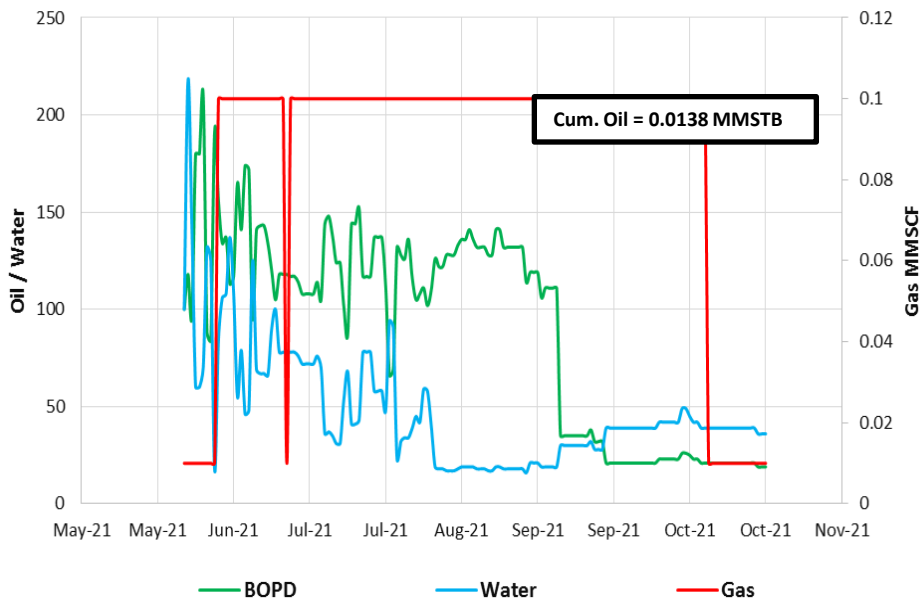
AES-E6 (1/10) Performance



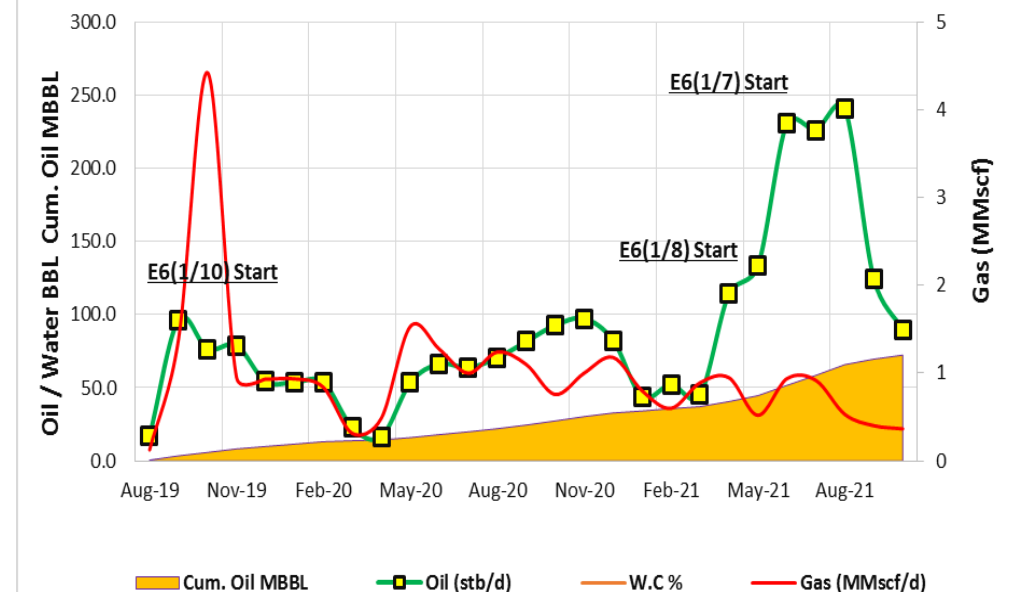
AES-E6 (1/8) Performance



AES-E6 (1/7) Performance



ARD Monthly Production Performance



AGENDA

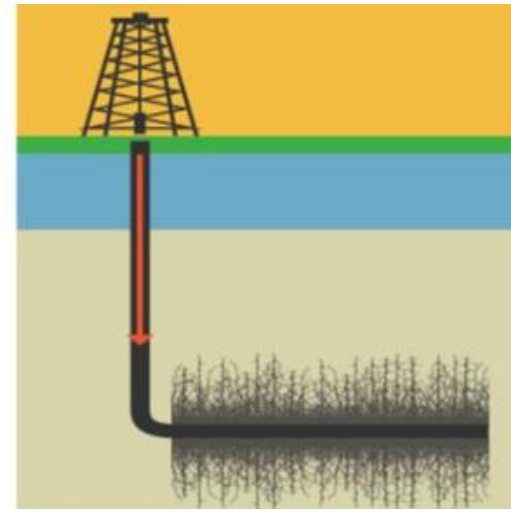
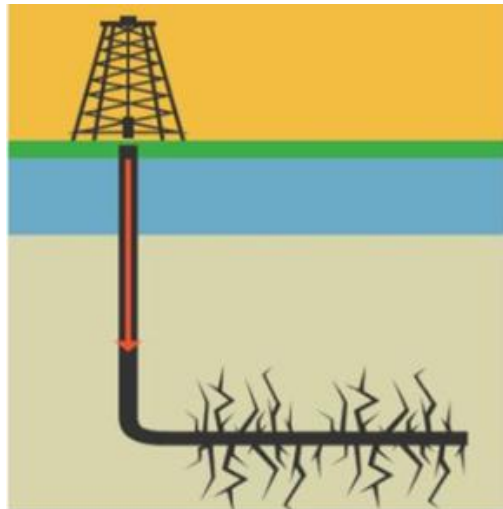


- 1 FIELD OVERVIEW
- 2 INTEGRATED APPROACH OF INVESTIGATION
- 3 UNLOCKING THE CARBONATE POTENTIALITY AND OVERALL RESERVOIR REVIEW
- 5 CONCLUSION

CONCLUSION



- AR/D Limestone is widely spreading reservoir in Abu Gharadig basin, and hydrocarbon production is proved.
- Petrosannan plan to stimulate AR/D reservoir in most development leases in selective candidate by using hydraulic fracturing In addition to that develop AR-D reservoir via drilling a horizontal with multi-stages hydraulic Fracking well not only to improve hydrocarbon recovery, but also to accelerate production.
- More over currently AR"B" limestone is under investigation to prove the potentiality and productivity.





THANK YOU