

NE OBAYED & N. MATRUH BLOCKS

Location:

The Blocks are located in the north Western Desert in Matruh area, North of Obayed and Matruh Gas fields, West of Kanaysis Gas Field and NW of Tarek Gas Field.

Structural Setting:

The two blocks are located in Matruh basin area, where horst, half horst and graben blocks bounded by NW dominant normal faults and NE intersecting normal faults.

Stratigraphic Section:

The stratigraphic column is a typical sedimentary sequence of the Western Desert, It is characterized by thick Alam El Bueib Fm. or Matruh shale (Early Cretaceous), and thick Khatatba Fm. (Mid Jurassic) and thin Paleozoic section.

Reservoir Potentiality:

The area is characterized by many clastics reservoirs. The primary reservoirs are Khatatba Fm. (lower and upper Safa Members) & Alam El Bueib (AEB) Fm. (Early Cretaceous), Paleozoic sands also are good reservoirs.

Khatatba Fm. is producing gas in Obayed and Matruh fields.

AEB Fm. is producing gas in Kanayis and NE Tarek fields. In well Siqueifa-1, AEB Fm. has moderate - good gas shows.

Khatatba Fm. has good Gas shows in lower and upper Safa Members in Matruh 3-1 and Matruh 2-1 wells with good porosity from cores in well Matruh 3-1 (5 – 10%).

Eocene Carbonates have good oil shows in wells: Siqueifa-1 and Abu Tunis-1.

Source Rock Potentiality:

Khatatba and AEB formations have very good richness (TOC% 1-5) that mature enough to generate and expel oil and gas. The three Kerogens (I, II, III) are abundant in each formation.

Seal:

Masajid Fm. Carbonates and Khatatba shales and Limestones streaks form a good top seal for Safa Member (Khatatba) reservoir.

AEB Shales and Limestone streaks form a good top seal for AEB sands.

Lower Jurassic shales and Paleozoic shales form a good top seal for Paleozoic sands.

Lateral seal is provided either by normal bounding faults or structural closure (3 way or 4 way dip closures).

Migration and Entrapment:

Burial history (basin models) show that migration of oil from Khatatba Fm. started on latest Cretaceous – Early Tertiary, (after formation of traps "Aptian – Maastrichtian").

Gas Migration started on (Oligocene - Miocene) "also after longer time of trap formation".

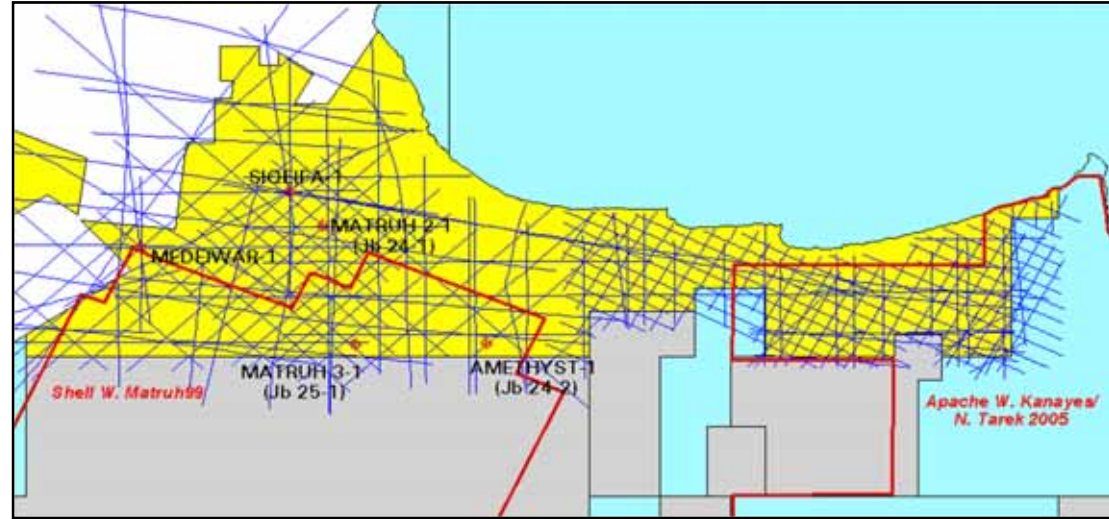
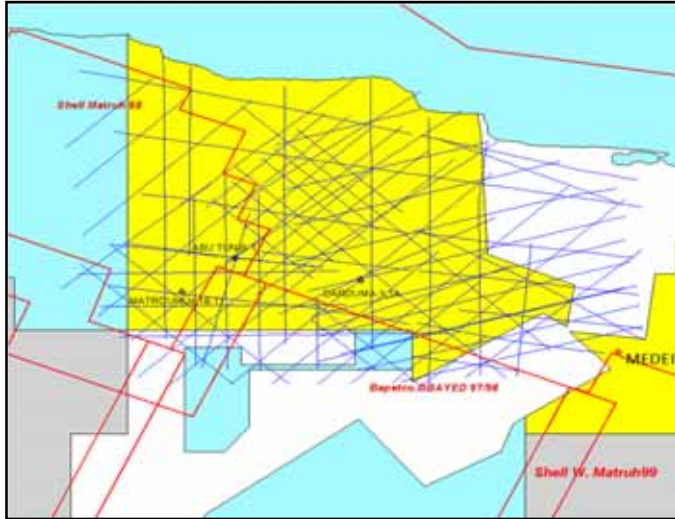
Hydrocarbon generation and migration from AEB Fm. started later than Khatatba source. This means that short migration pathway from the depocenter of Matruh basin and Shushan basin is more expected and supposed...leading to entrapment in the downdip closures (3 and 4 way dip) before the highest structural closure.

The nature of depositional pattern of Khatatba Fm. which is Fluvial – lacustrine leads to the occurrence of sand channels of Safa Member which leads to stratigraphic entrapment and lateral or up dip discontinuity.

This may explain the reason for dry results of the highest structural closures of Sigeifa and Matruh wells.



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Total 2D: 1497 Km & 3D Survey: 321 Km² & Wells: 3

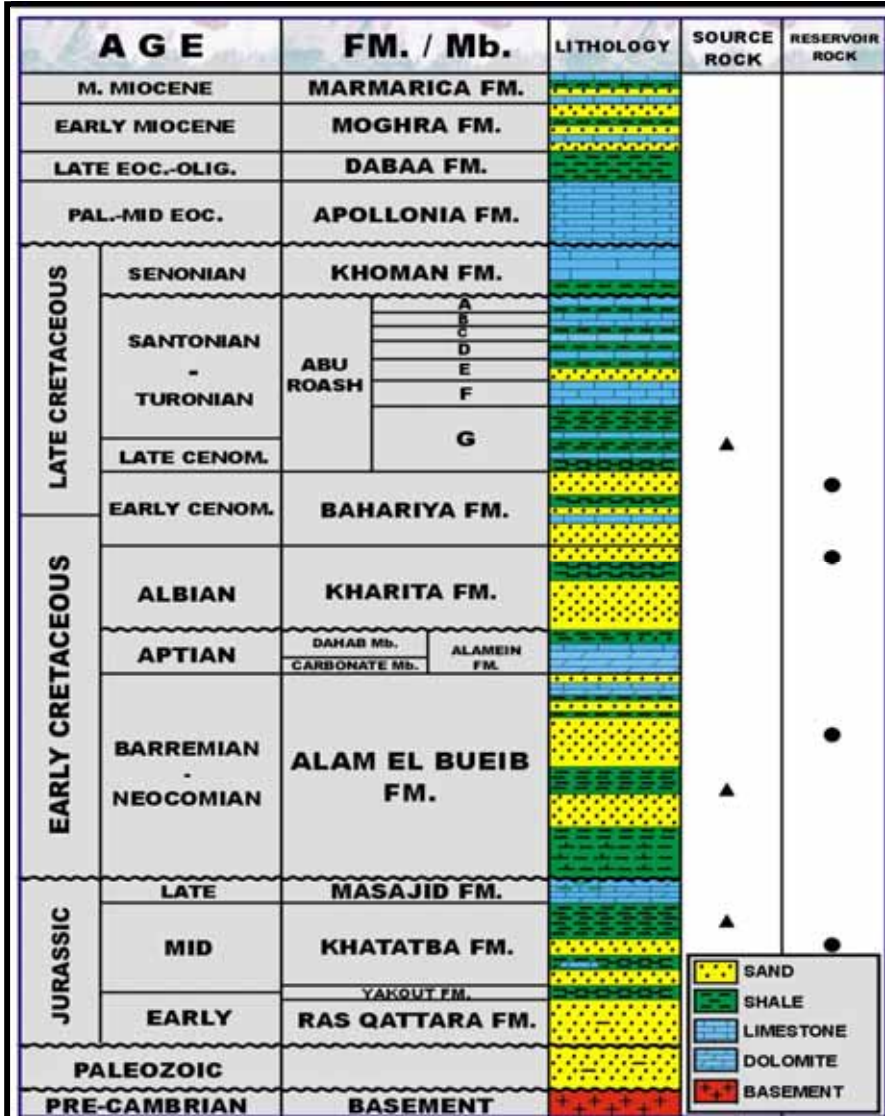
Total 2D: 2520 Km & 3D Survey: 319 Km² & Wells: 5

NO.	WELL NAME / NEW NAME	COMPANY	SPUD. DATE COMP. DATE	LAT. LONG.	T.D. FEET	FORMATION REACHED	FINAL STATUS
1	Amethyst -1 (Jb 24-2)	APACHE	19/08/2004 11/11/2004	31° 06' 33.5" 27° 20' 04.2"	16,300	MIDDLE JURASSIC	P & A
2	JC 18-1 (Jc 18-1)	SHELL	15/04/2000 10/07/2000	31° 14' 10.8" 26° 47' 53.8"	14,820	KHATATBA (MIDDLE JURASSIC)	P & A
3	Matruh 3-1 (jb 25-1)	SHELL	01/05/1994 05/09/1994	31° 06' 34.4" 27° 25' 40.0"	15,447	JURASSIC	P & A
4	Matruh 2-1 (jb 24-1)	SHELL	13/05/1992 31/08/1992	31° 11' 38.4" 27° 18' 40.0"	15,604	JURASSIC	P & A
5	DARDUMA -1 (Jc 20-1)	ARCO	11/12/1976 21/04/1977	31° 14' 50.0" 26° 57' 19.0"	14,625	LOWER JURASSIC	P & A
6	SIQEIFA -1 (jc 23-1)	PHILLIPS	13/07/1970 23/10/1970	31° 13' 19.0" 27° 17' 16.0"	13,190	JURASSIC	P & A With Gas shows in Jurassic and Oil shows in Eocene & Cretaceous
7	MEDEIWER -1 (jb 22-1)	PHILLIPS	14/05/1970 16/07/1970	31° 10' 43.0" 27° 10' 55.0"	11,576	LOWER CRETACEOUS	P & A
8	ABU TUNIS -1 (jc 19-1)	PHILLIPS	12/02/1968 22/04/1968	31° 16' 08.0" 26° 50' 08.0"	12,487	JURASSIC	P & A



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STRATIGRAPHIC COLUMN OF THE NORTH WESTERN DESERT



STRATIGRAPHY :

- The stratigraphic column is the typical sedimentary sequence of the Western Desert province, it is characterized by thick Alam El Bueib Fm or Matruh shale (Early Cretaceous), thick Khatatba Fm. (Mid Jurassic) and thin Paleozoic section.

SOURCES :

- Khatatba and AEB formations have very good richness (TOC% 1-5) that mature enough to generate and expel oil and gas. The three kerogens (I, II, III) are abundant in both formation.

RESERVOIRS :

- The primary reservoirs are **Khatatba** Fm (lower and upper Safa Member) and **AEB** Fm (Early Cretaceous).
- **Paleozoic** sands also are good reservoirs.
- Khatatba Fm is producing gas in Obayed and Matruh fields. AEB Fm is producing gas in Kanayis and NE Tarek fields. In well Siqueifa-1, AEB Fm has moderate to good gas shows. Khatatba Fm has good gas shows in lower and upper Safa member in Matruh 3-1 and Matruh 2-1 wells. **Eocene** Carbonates have oil shows in wells : Siqueifa-1 and Abu Tunis-1.

SEALS : **Masajid** Carbonates, **Khatatba** shales, and **Paleozoic** shales.

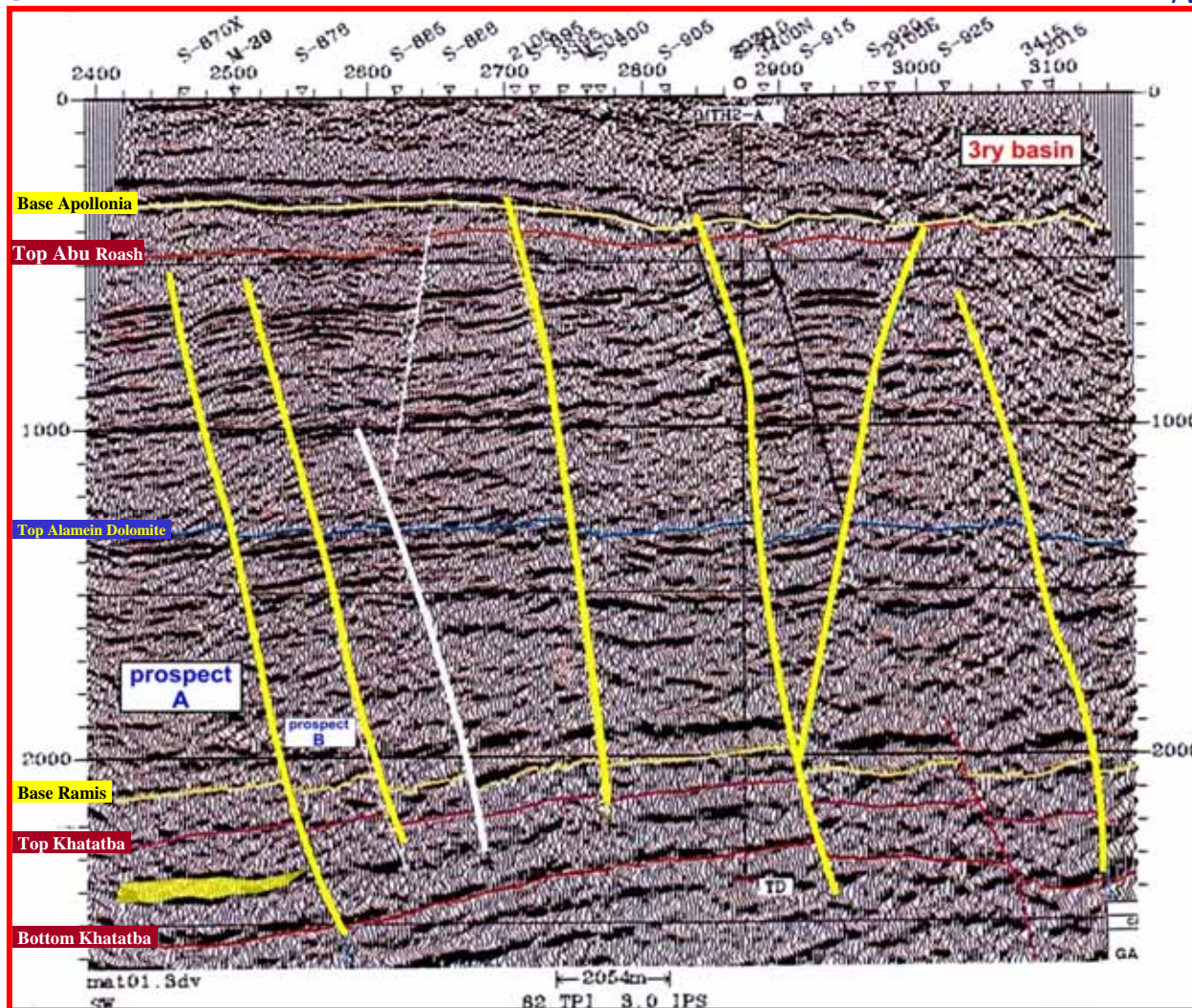


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Seismic Line : S 164

SW

NE



- **Thickening of Tertiary Northward.**
- **Prospects (A , B) lies on three way dip closures of half horst blocks.**
- **Stratigraphic traps of Safa Member may control the hydrocarbon entrapment.**

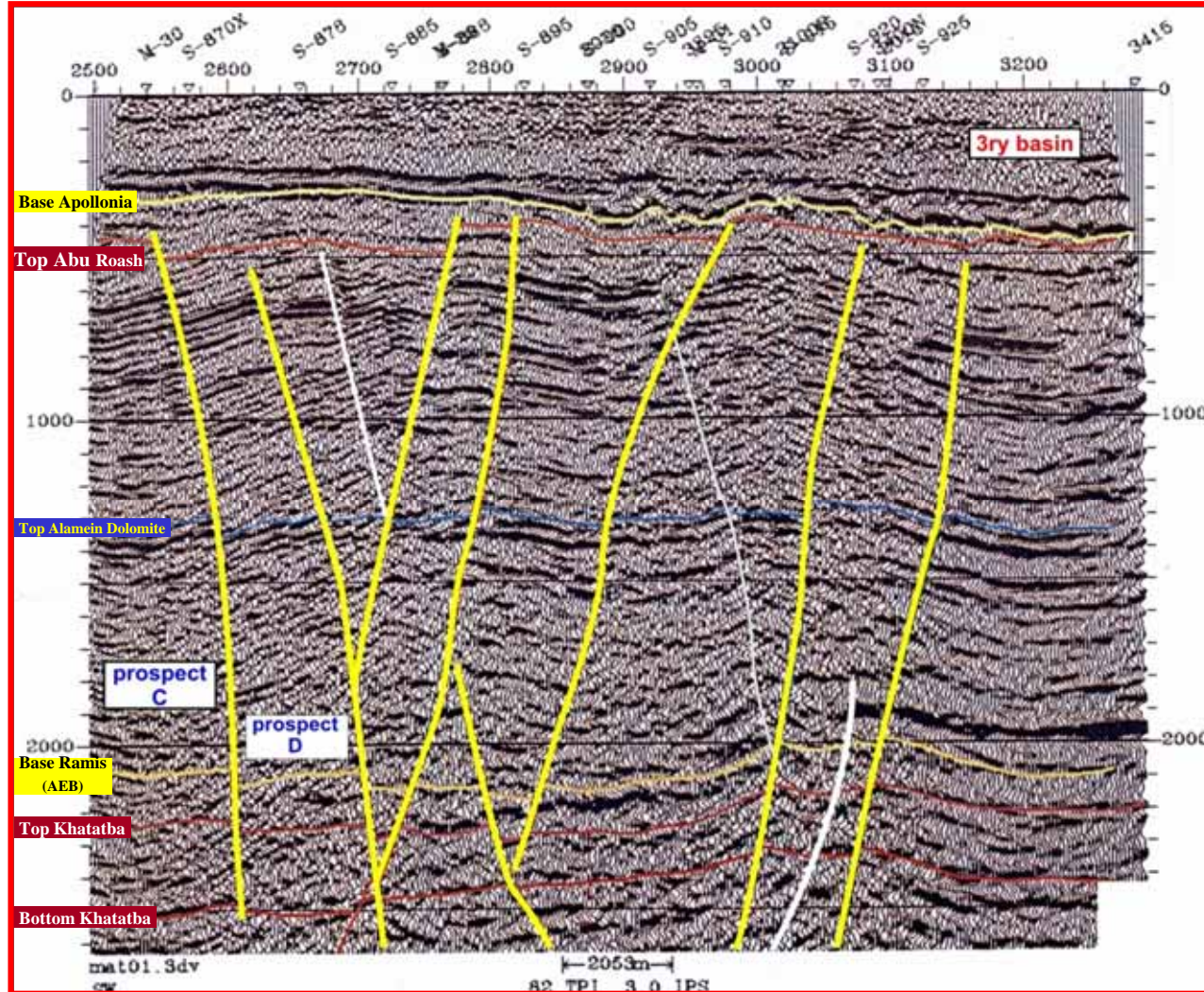


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Seismic Line : S 174

SW

NE



- *Thickening of Tertiary Northward.*
- *Prospects (C , D) on three way dip closures on half horst blocks on top Alamein and Khatatba.*
- *Vertical and up dip migration from Matruh basin are supposed. Migration from Shushan Basin is expected.*

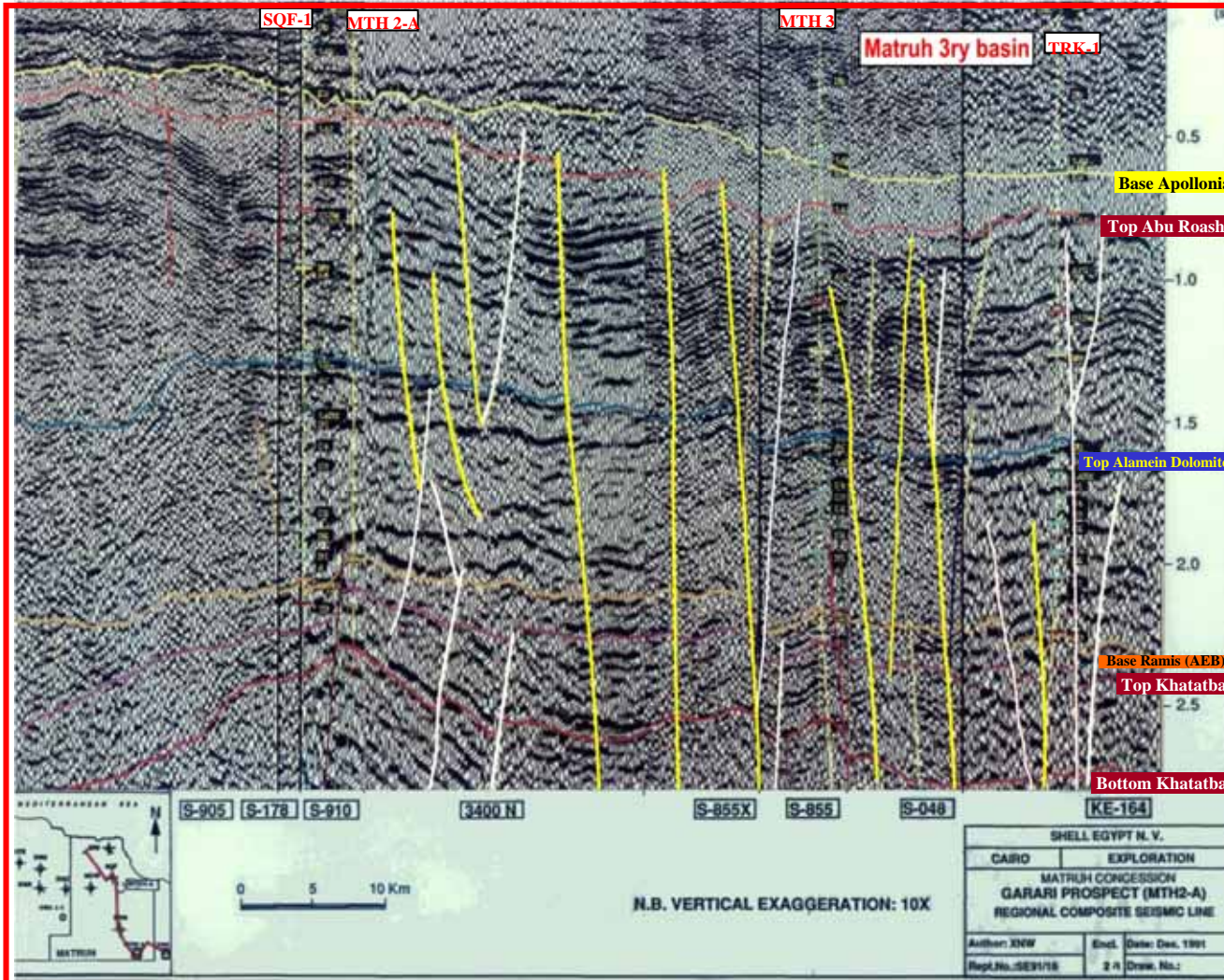


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Regional Composite Seismic Line

NW

SE



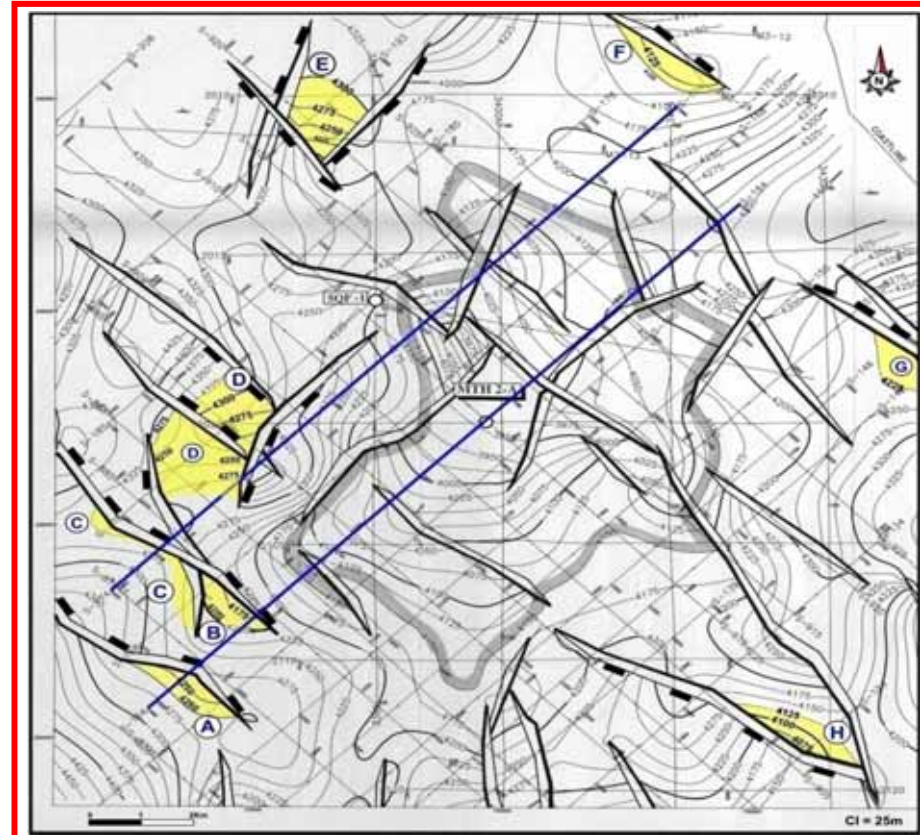
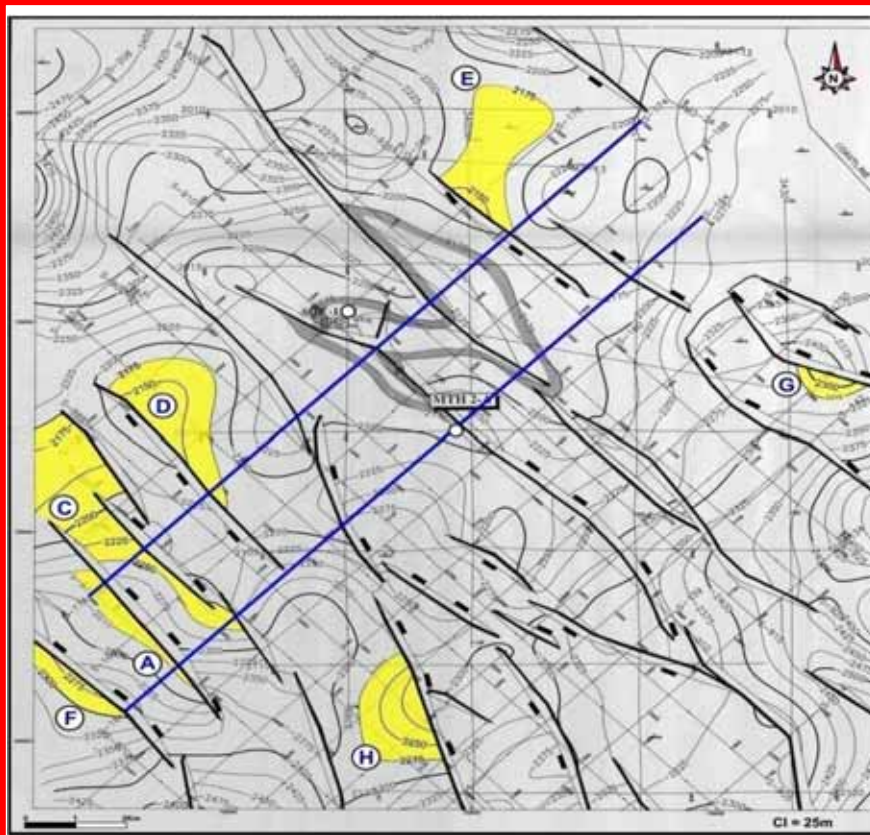
- *Thickening of Tertiary southward Matruh Basin.*
- *Tarek Discovery on downdip closure may be due to short migration pathway, this let us to test the remaining prospects on the half horst structural blocks (low areas).*



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Top Alamein Dolomite Depth Map

Near Top Khatatba Depth Map



Traps : 3 way dip closures on the half horst and horst blocks shown on remaining prospects A to H in both Khatatba and Alamein formations.