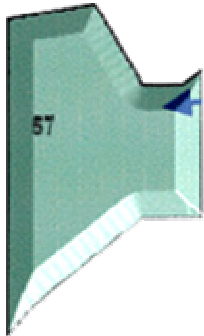


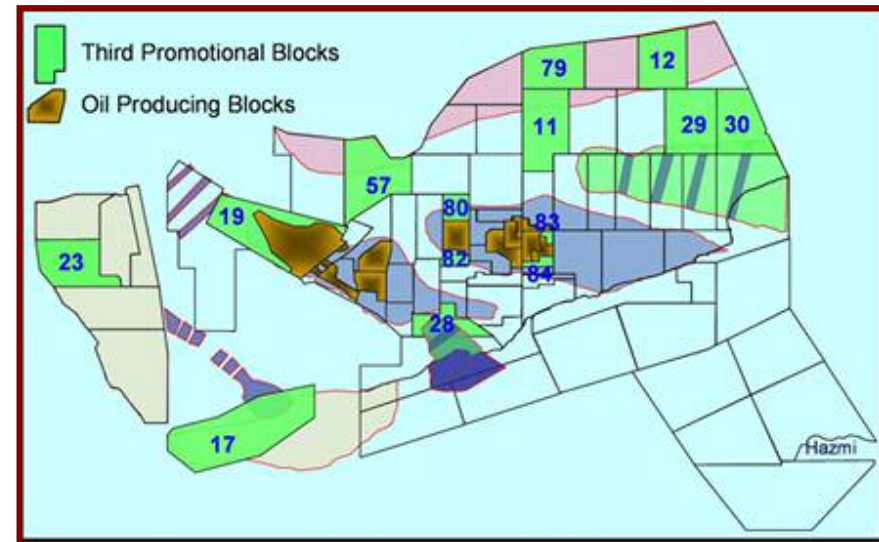
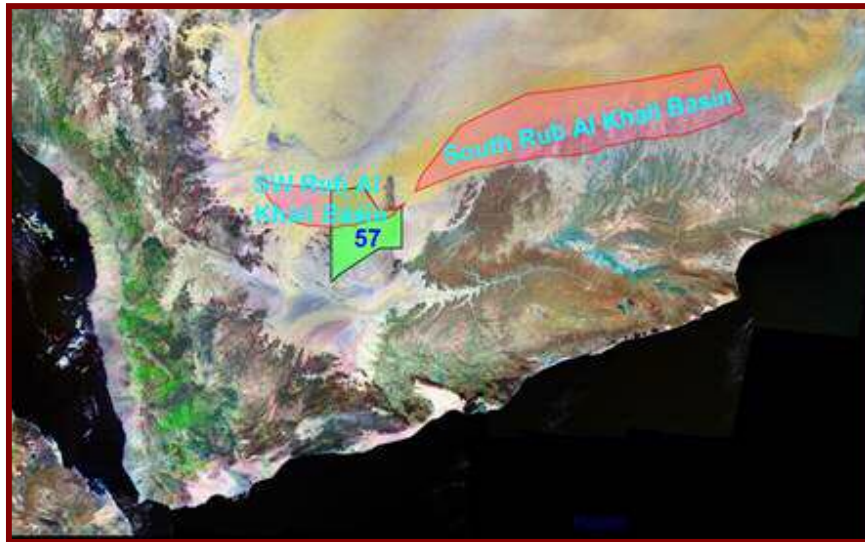


PEPA

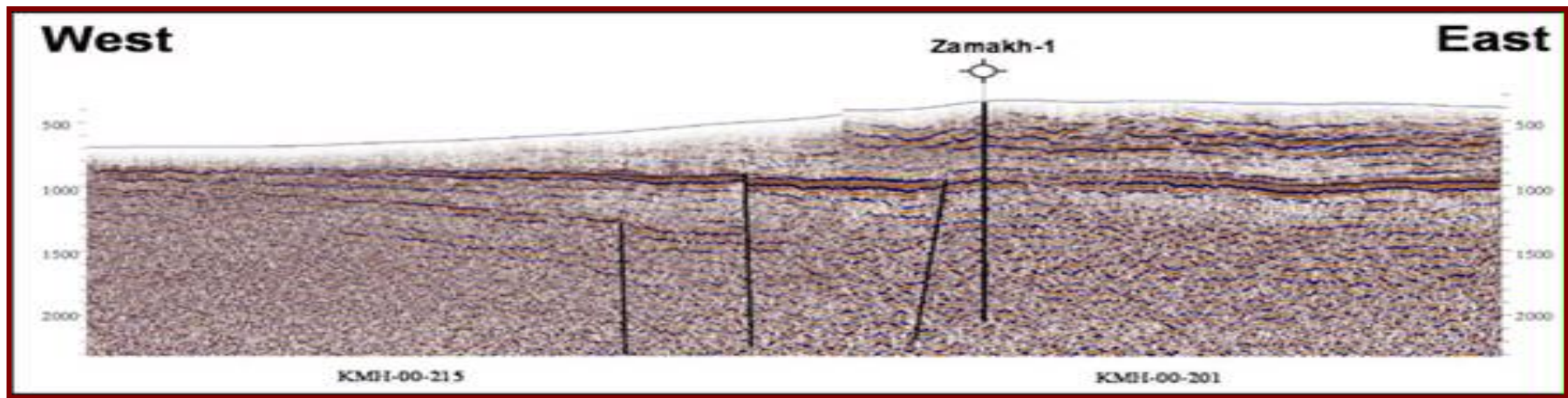
Block 57 (AL RAYAN)



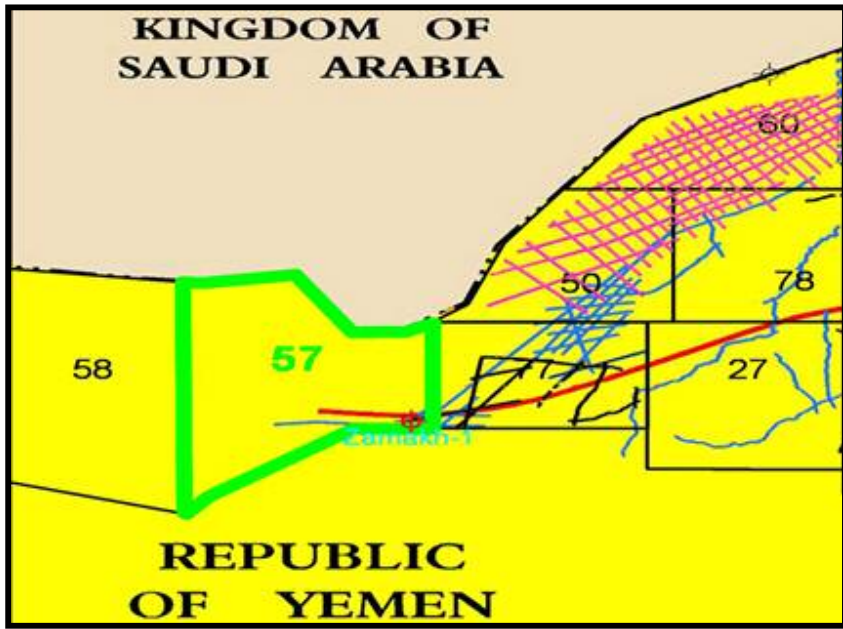
- Al Rayan Block (57) occupies an area of 10963 km² in the South Rub Al Khali Basin and Hadramawt Arch in the north-central part of Yemen.
- The Southern Portions of the blocks 57 may have Similar history to the Sabatayn basin.
- The petroleum system of the Rub Al Khali Basin has been confirmed by the discoveries of the major oil and gas fields in the Central Saudi Arabia (1989)).
- The area is not explored extensively, since few seismic data available.



Area (Km ²)	: 10,963
Province	: Shabwah – Al Jawf
Basin	: South –West Rub Al Khali Basin
Wells	: 1
Seismic	: 2D



Seismic Section in Block (57) crossing Zamakh-1 well



Previous Work Map

PREVIOUS EXPLORATION ACTIVITIES

Company	Period	Activities
Kerr-McGee	1997-2001	Geophysical (2D seismic)
Canadian Petroleum + Nexen	2001-2003	Geophysical (2D seismic) Drilling (1) Well

DRILLED WELLS

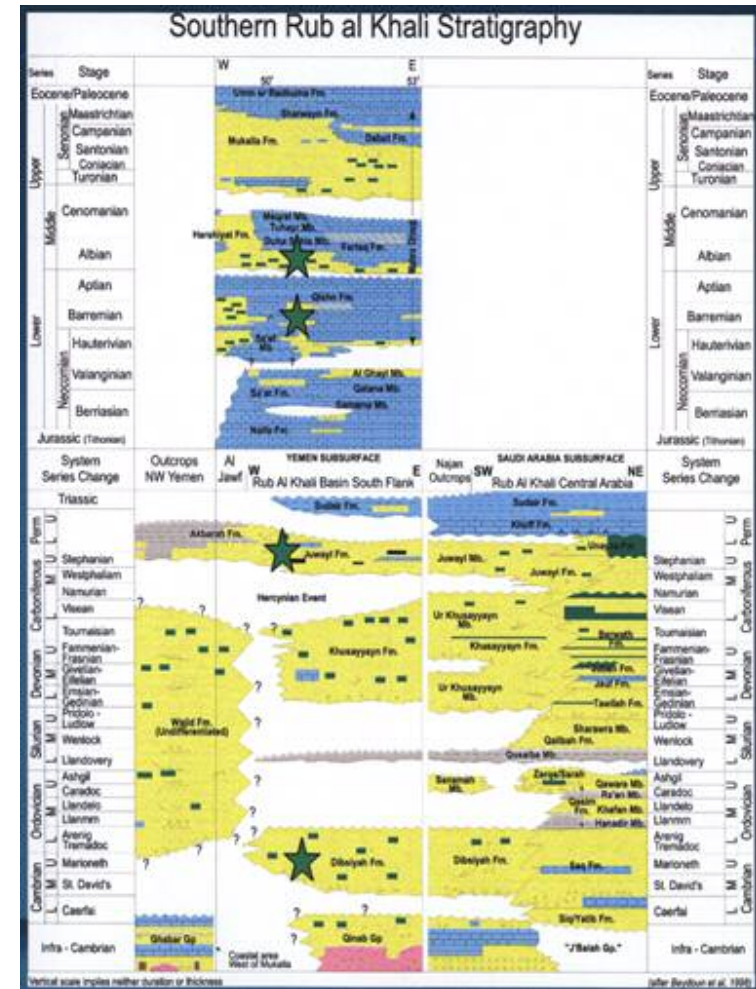
WELL NAME	COMPANY	DATE	TD	SHOWS
			TD FM	STATUS
Zamakh#1	Nexen	2001	686 m	Minor oil shows
			Basement	P & A

Rub Al Khali Blocks are located along the southern margin of the Rub Al Khali Foreland Basin. The prospective section is composed mainly of Mesozoic and Paleozoic elastics and shales thinning to the south onto the east-west trending North Hadramawt Arch.

Eleven oil fields currently produce 200,000 BOPD (API>40) from Paleozoic clastic reservoirs 420 miles to the north of the study area, south of Riyadh, Saudi Arabia. The proven source rocks for the Saudi fields are oil prone (type II) Silurian age shales of the Qusaiba Member within the Qalibah Formation. The Qusaiba source rocks are regionally widespread and extend southward into Yemen. Age equivalent Silurian argillaceous rocks have been identified in Shihr-1, Hathout-2 and possibly Qinab-1. The Silurian source rock quality and maturity levels are expected to improve basinward (north) and have effective source rock characteristics at, or just north, of the Saudi Arabian border.

Older Infracambrian source rocks appear to extend into northern Yemen from Saudi Arabia along the NW-SE trending Najd fault system. These Infracambrian grabens are recognised on Block 79, 59 and 36 and extend west onto Block 11 and east onto Block 12, 42 and 29. Seismic evidence suggests the presence of salt. In Oman, the Infracambrian Huqf Group Ara salt Formation is contemporaneous with organic rich source rock.

Southern Rub Al-Khali Stratigraphy



Basin modelling using the Hathout-2 well suggests that any Infracambrian source rocks present would be in the main oil window ($R_o=0.7$) on the northern half of the area.

The Infracambrian enters the main gas window just north of the present day Saudi Arabia-Yemen border. Oil analysed from the Tarfyat-1 well located along the North Hadramaut Arch is geochemically similar to oil derived from the Infracambrian Huqf source rocks of the South Oman Salt Basin.

Regional topseals are postulated to be the Silurian Qusaiba Member shales and Permian Akbarah Formation shales (equivalent to Khuff Formation limestones). The lower Permian Akbarah Shale is present in all blocks and could act as an effective seal. Based on existing well penetrations, other shales exist within the Paleozoic section that could act as potential top seals; namely, distal facies equivalents in the Dibsiyah (Cambro-Ordovician section). The northern portions of all blocks is thought to have the best developed petroleum system.

Reservoir targets include the Cambro-Ordovician, Devonian and lower Permian clastics. Core analysis from Hathout-2 indicates Cambro-Ordovician sandstone porosity of up to 20% and permeability ranging from several hundred millidarcies to over one Darcy. Log analysis from Shihr-1 suggests corrected sonic porosity of 15 -20 % for other clastic zones.

Many Infracambrian mobilised salt drape leads have been identified in the Infracambrian graben area and at least three antithetic fault dependant leads have been defined. Seismic suggests reefal buildups may occur within the Qishn (Shuaiba) carbonates and oil shows have been reported from the underlying Jurassic interval from several Saudi Arabian stratigraphic test wells north of the border. More seismic is required to properly evaluate the petroleum potential of this vast region.

PETROLEUM SYSTEM

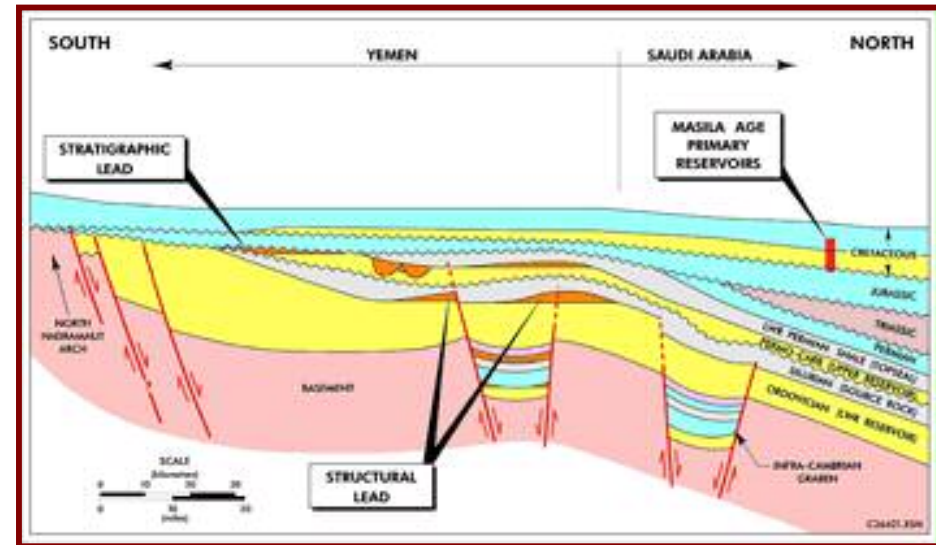
Play Concept

TRAPS AND PLAY FAIRWAYS

- Structural and stratigraphic.

SOURCE ROCKS

- The Silurian Qusaibah Shale of the Qalibah Formation source rock was confirmed by four exploration wells such as Shahar-1, Rakhawt-1, Hathout-2 and Qinab-1 in Yemen-Rub Al Khali Basin. The thickness of Qalibah Formation (21-118 metres). The maximum content of TOC is 1.25% in Hathout-2 well.
- The Infra-Cambrian source rock.



RESERVOIR - SEAL

- The fractured Precambrian Basement can be good reservoir (in the Southern part of the block).
- The Infra-Cambrian to Early Carboniferous clastics are a potential reservoir sealed by basinal Cambro-Ordovician shales of the Lower Silurian Qusaiba shale.
- Lower Permian (Juwayl Formation) clastics have potential reservoir facies. The Akbarah shales act as seal.
- The Jurassic Naifa-Shuqra Formation (limestone-dolomite).
- The Lower Cretaceous Qishn Formation (limestone-dolomite).
- The Upper Cretaceous Harshiyat Formation (sandstone).

