Smart Solutions for Today's Geoscientist

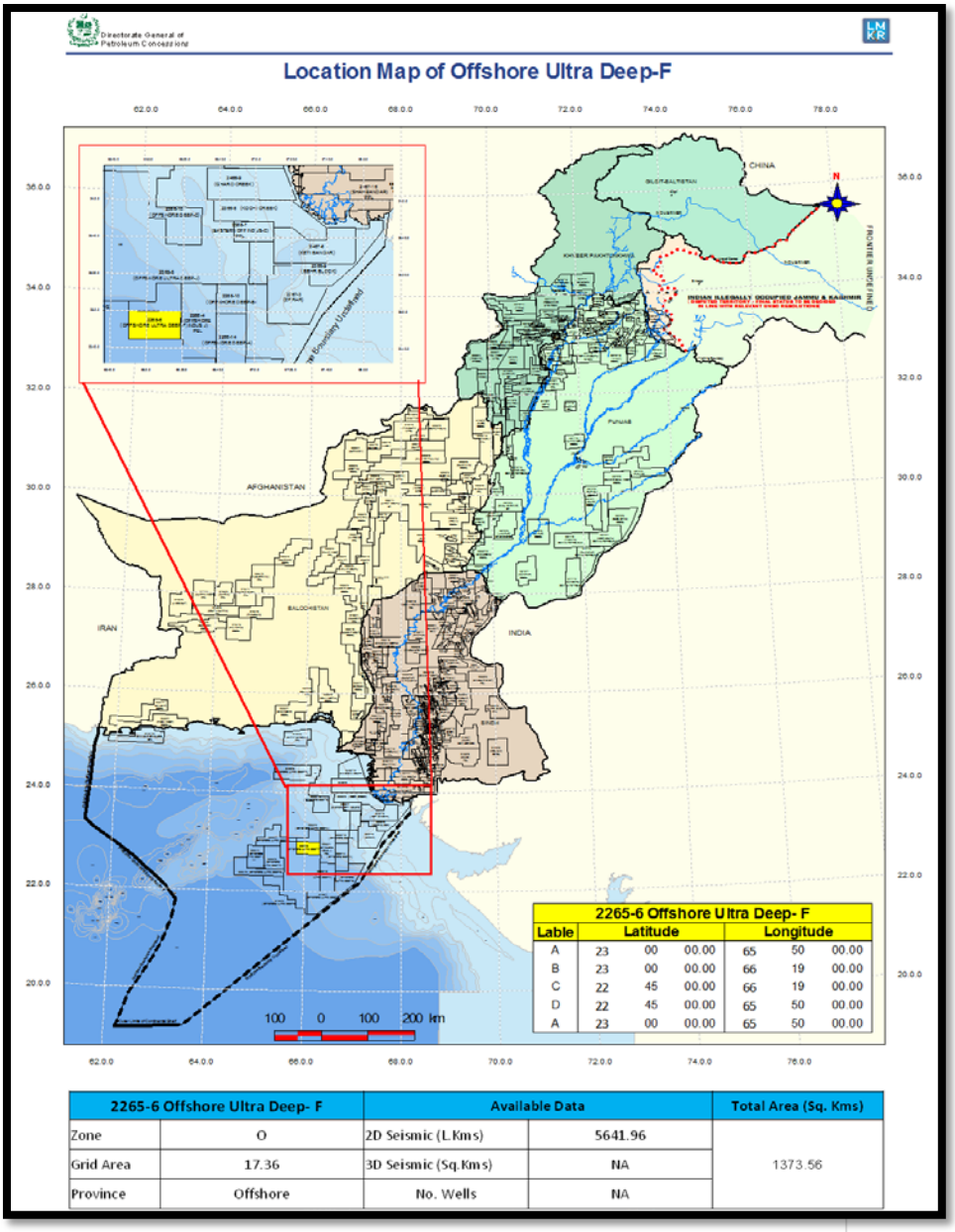
BLOCK: OFFSHORE ULTRA DEEP F

OFFSHORE BIDDING BLOCK ROUND 2023

MINISTRY OF ENERGY PETROLEUM DIVISION (DGPC)

INTRODUCTION

- Offshore Ultra Deep F Block covers an area of 1373.56 Sq. Kms.
- Geological Basin: Offshore Indus, Basin Pakistan.
- The block falls in Prospectivity Zone O
- ELF, WGC, BP, Phillips and Total acquired 2D seismic data approximately 5641.96 L. Kms in the block within the years 1977, 1999, 2000 and 2007 respectively.
- The Block is surrounded by Offshore Ultra Deep J (North) block.
- The wells drilled in the near vicinity is Kekra-01 and Pak G2-01.



2265-6 Offshore Ultra Deep- F		Available Data		Total Area (Sq. Kms)
Zone	O	2D Seismic (L.Kms)	5641.96	1373.56
Grid Area	17.36	3D Seismic (Sq.Kms)	NA	
Province	Offshore	No. Wells	NA	

2265-6 Offshore Ultra Deep- F						
Lable	Latitude			Longitude		
A	23	00	00.00	65	50	00.00
B	23	00	00.00	66	19	00.00
C	22	45	00.00	66	19	00.00
D	22	45	00.00	65	50	00.00
A	23	00	00.00	65	50	00.00

GEOLOGICAL HISTORY

Late Cretaceous – Early Paleocene:

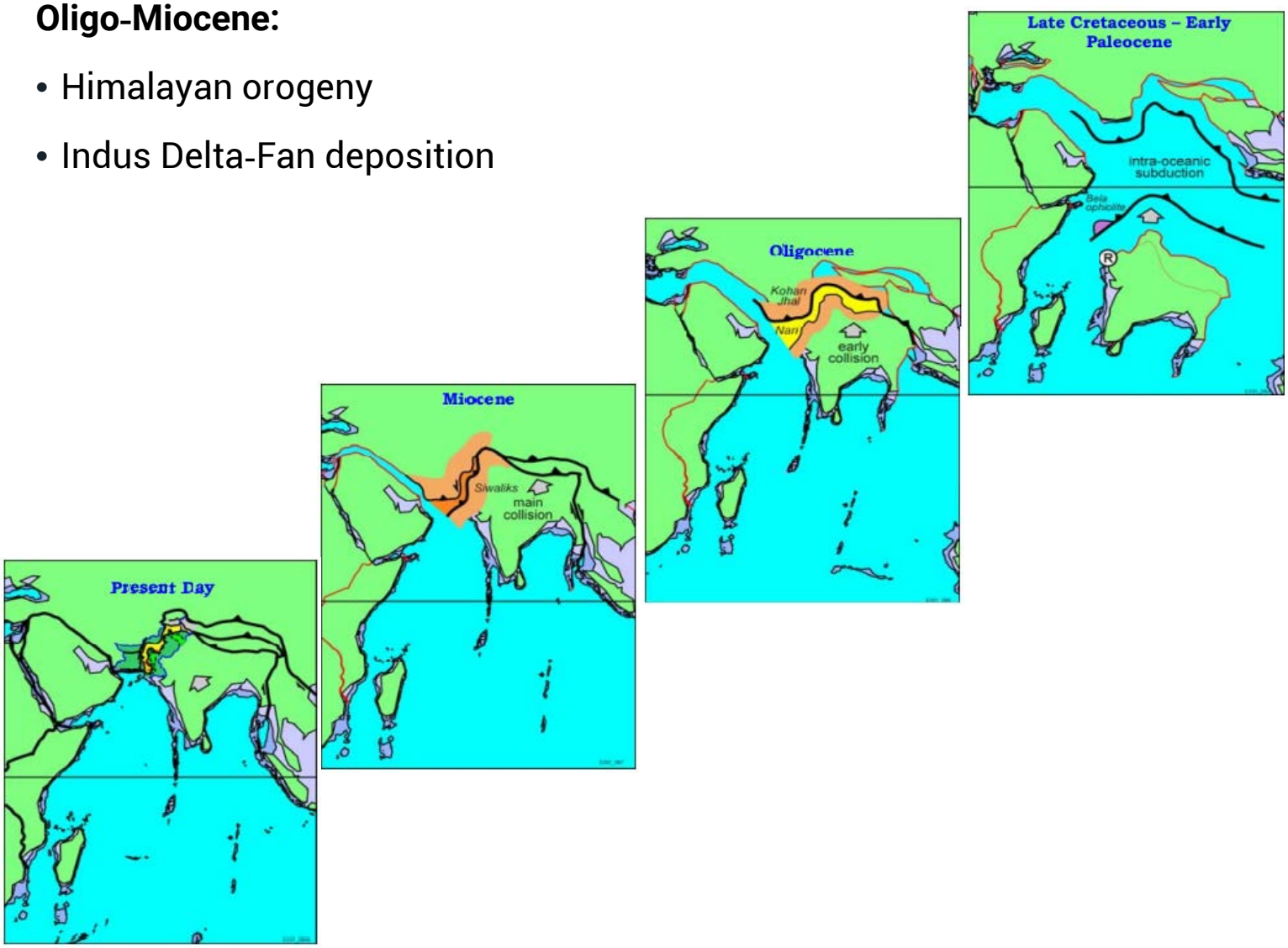
- Rapid northward movement of Indian Plate after separation from Madagascar
- Bela ophiolites obduction
- Extrusion of Deccan Volcanics

Paleocene - Eocene:

- Deposition of limestone on seamounts and shales in lows / depressions

Oligo-Miocene:

- Himalayan orogeny
- Indus Delta-Fan deposition



PETROLEUM SYSTEM

Source Rock:

- Paleocene carbonate section can be the source rock.
- Oligocene and Miocene section can also act as source rock in Offshore Indus Basin.

Reservoir Rock:

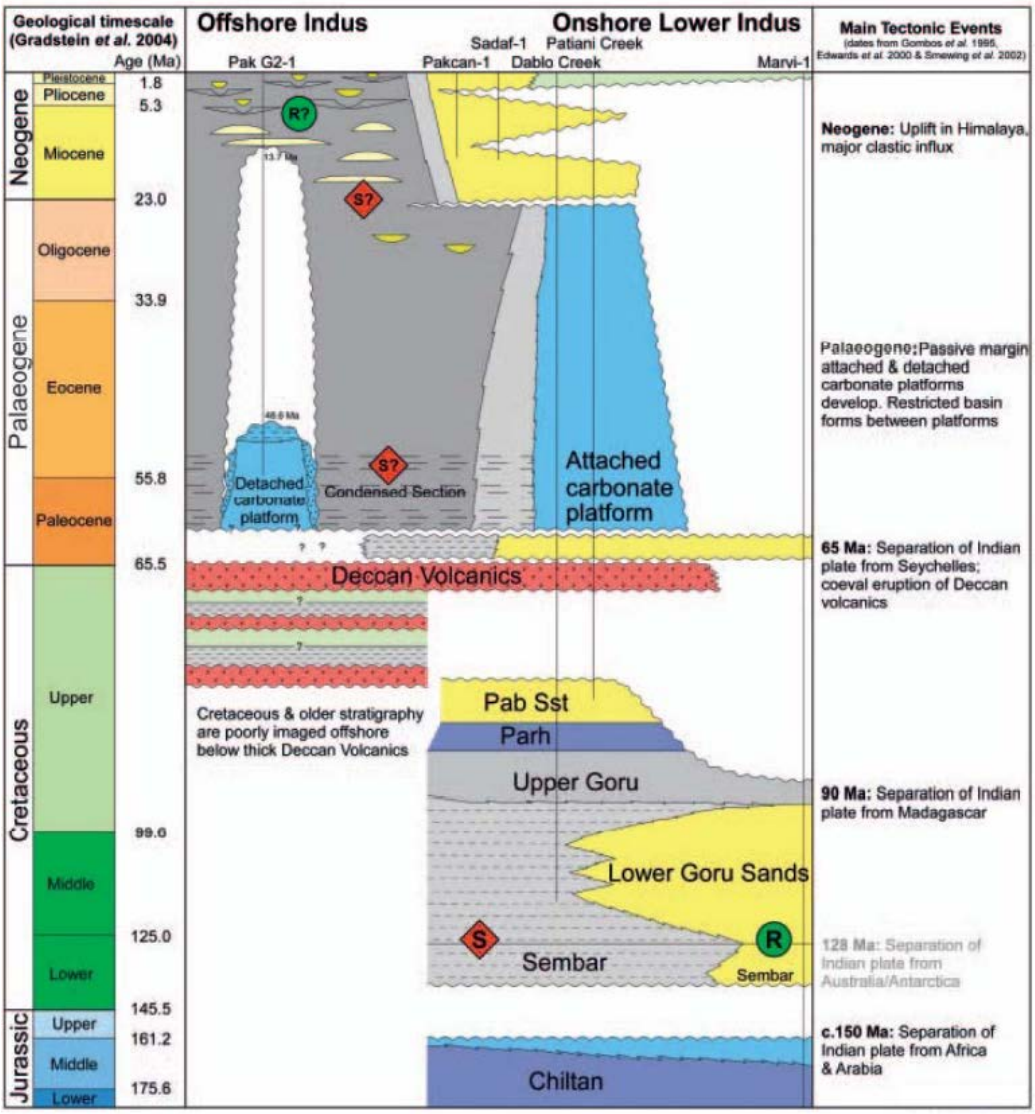
- Miocene sandstones are proven reservoir, Individual sandstone units vary in thickness from 2-50m with porosity ranging between 15-20%.

Seal:

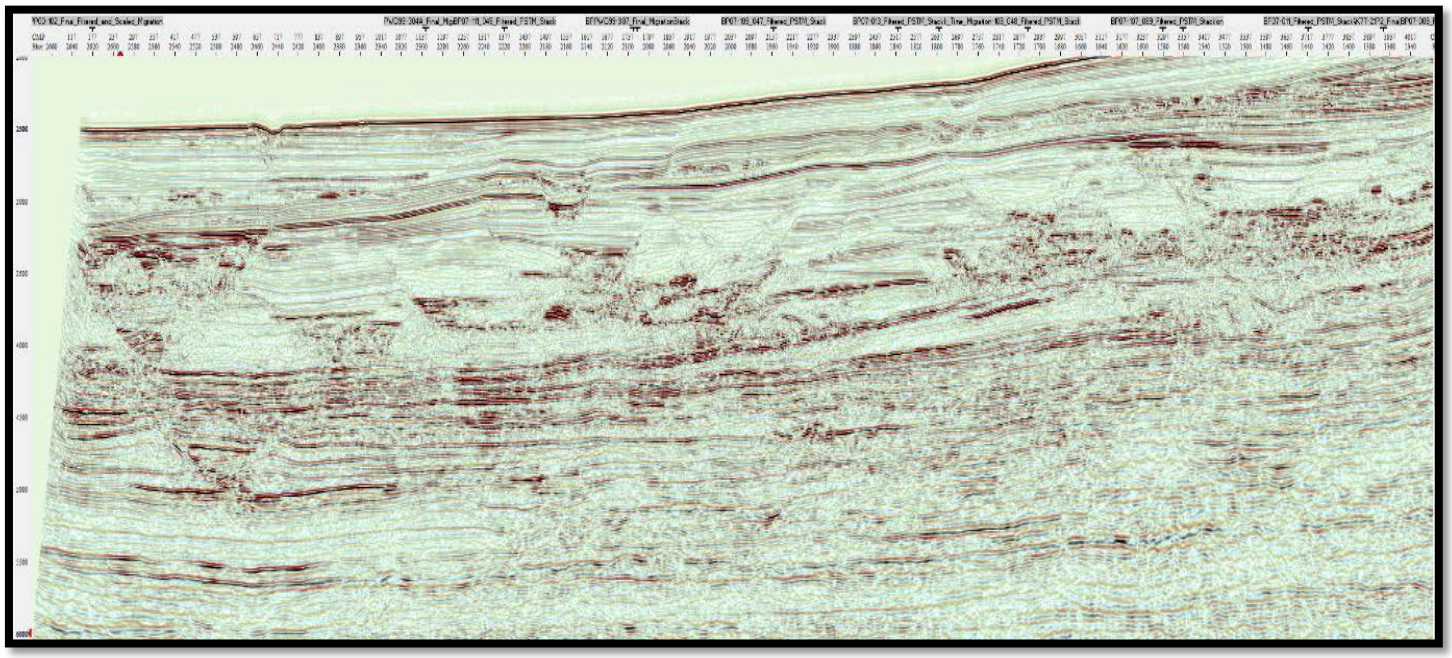
- Intra-formational shales of Miocene would provide seal for the Miocene sands.

Trap:

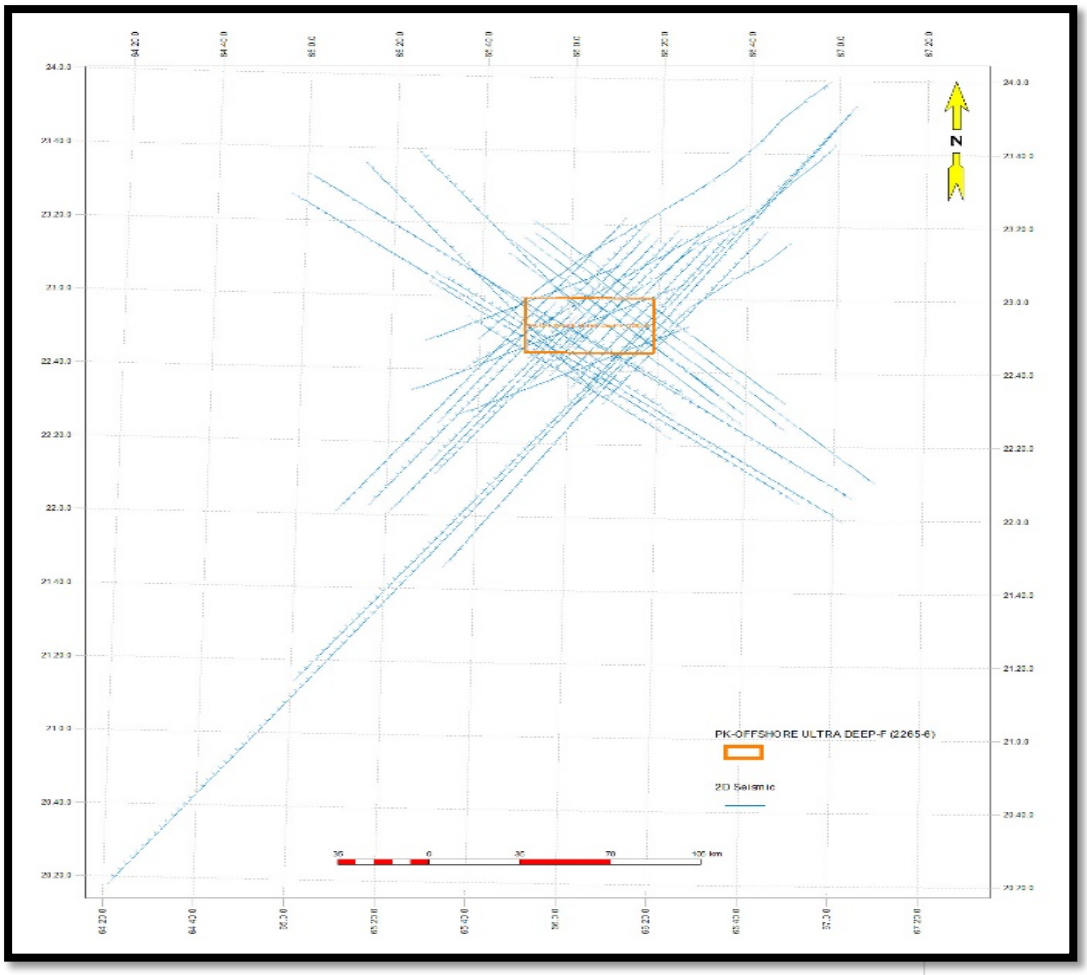
- Carbonates build ups over seamounts, growth faults, roll-over anticlines and stratigraphic traps within deltaic fan system (e.g., bars, barrier islands and pinch-out / facies change etc.) are likely trapping mechanisms



PROSPECTIVITY



- High resolution seismic data can allow to delineate true potential of the block
- Both structural and stratigraphic traps.



EXPLORATION RISKS

- Source & Charge: Medium to High risk
- Reservoir: Low to Medium risk
- Seal: Low to Medium risk
- Trap: Low to Medium risk
- Key challenges for future exploration in Tertiary Petroleum System are to establish:
  - Distribution and timing of effective source intervals' development within the drainage area of prospect.
  - Timing of over-pressuring (up to 7000 psi at 2800m in Indus Marine-1A well) within Miocene section (for Miocene and younger targets) with respect to source rock maturation and expulsion.

OPPORTUNITY

Comparison suggests that discoveries in offshore deltas have been made in:

- Extension of proven onshore petroleum system to offshore at drillable depth (e.g. Niger, Nile, Irrawady & Mahakam deltas)
- Reservoir –Seal pairs associated with good quality but less mature source rock drilled onshore (at shallow depths) progressively mature in offshore (e.g. Krishna-Godavri and Nile deltas)
- Biogenic gas found in shallow younger Tertiary section (e.g. Krishna-Godavri and Nile deltas)

International offshore exploration efforts in delta areas have generally been successful due to:

- Extension of established onshore petroleum system to offshore at drillable depths
- Good quality less mature source rock drilled onshore progressively mature in offshore
- Gas discoveries of biogenic origin.

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