



पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय
MINISTRY OF PETROLEUM AND NATURAL GAS
Government of India

सत्यमेव जयते

Hydrocarbon Exploration & Licensing Policy

GEOSCIENTIFIC INFORMATION

OALP BID ROUND-X

25 Blocks on Offer | 13 Sedimentary Basins

Total : 191,986 Sq.km | Offshore Area : 175,115 Sq.km



Directorate General of Hydrocarbons
(Under Ministry of Petroleum & Natural Gas)



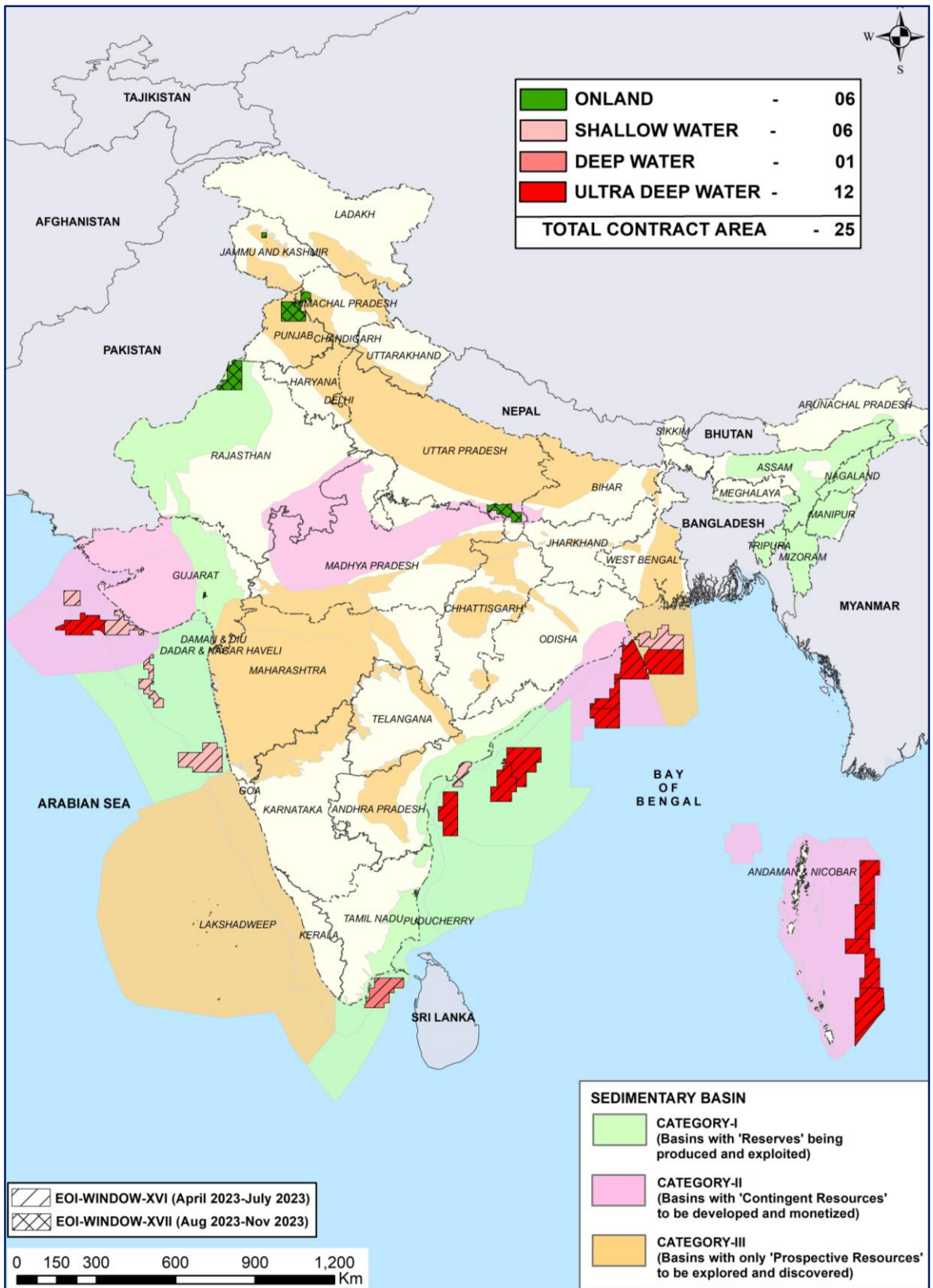
Blocks on offer
25

Area
1,91,986 Sq.km

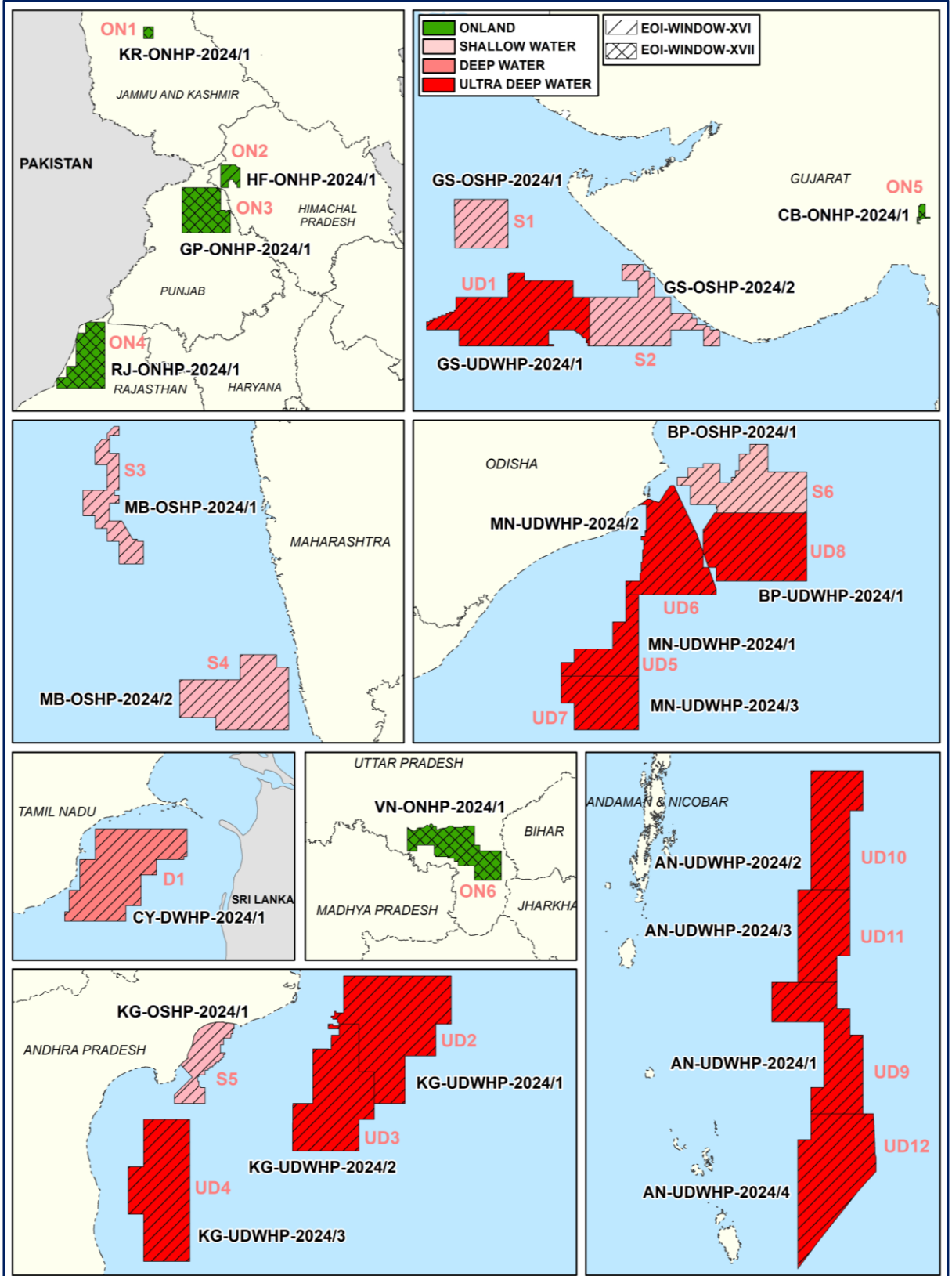
Sedimentary Basins
13

S. No.	BASIN NAME	BASIN CATEGORY	BLOCK NAME	MAP REF. No.	AREA (Sq. Km.)
ONLAND BLOCKS					
1	KAREWA	III	KR-ONHP-2024/1	ON1	283.83
2	HIMALAYAN FORELAND	III	HF-ONHP-2024/1	ON2	990.86
3	GANGA-PUNJAB	III	GP-ONHP-2024/1	ON3	5241.1
4	RAJASTHAN	I	RJ-ONHP-2024/1	ON4	5953.44
5	CAMBAY	I	CB-ONHP-2024/1	ON5	126.44
6	VINDHYAN	II	VN-ONHP-2024/1	ON6	4275.13
SHALLOW WATER BLOCK					
7	SAURASHTRA	II	GS-OSHP-2024/1	S1	3125.84
8	SAURASHTRA	II	GS-OSHP-2024/2	S2	6501.38
9	MUMBAI OFFSHORE	I	MB-OSHP-2024/1	S3	5838.03
10	MUMBAI OFFSHORE	I	MB-OSHP-2024/2	S4	13131.72
11	KRISHNA-GODAVARI	I	KG-OSHP-2024/1	S5	2967.83
12	BENGAL-PURNEA	III	BP-OSHP-2024/1	S6	9826.81
DEEP WATER BLOCK					
13	CAUVERY	I	CY-DWHP-2024/1	D1	9990.96
ULTRA DEEP WATER BLOCK					
14	SAURASHTRA	II	GS-UDWHP-2024/1	UD1	9059.6
15	KRISHNA-GODAVARI	I	KG-UDWHP-2024/1	UD2	12610.14
16	KRISHNA-GODAVARI	I	KG-UDWHP-2024/2	UD3	9511.65
17	KRISHNA-GODAVARI	I	KG-UDWHP-2024/3	UD4	9935.27
18	MAHANADI	II	MN-UDWHP-2024/1	UD5	5520.09
19	MAHANADI	II	MN-UDWHP-2024/2	UD6	10553.23
20	MAHANADI	II	MN-UDWHP-2024/3	UD7	7169.14
21	BENGAL-PURNEA	III	BP-UDWHP-2024/1	UD8	12315.99
22	ANDAMAN-NICOBAR	II	AN-UDWHP-2024/1	UD9	12816.65
23	ANDAMAN-NICOBAR	II	AN-UDWHP-2024/2	UD10	10027.90
24	ANDAMAN-NICOBAR	II	AN-UDWHP-2024/3	UD11	8732.15
25	ANDAMAN-NICOBAR	II	AN-UDWHP-2024/4	UD12	15481.03

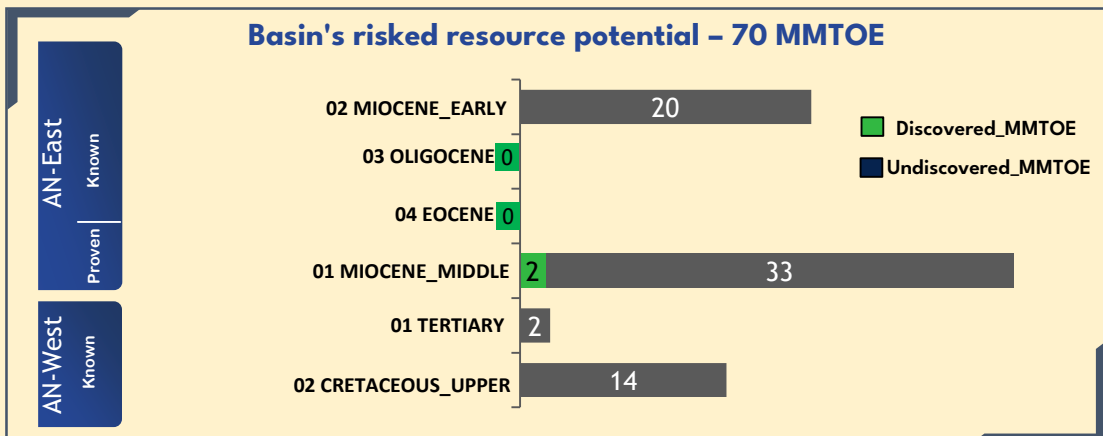
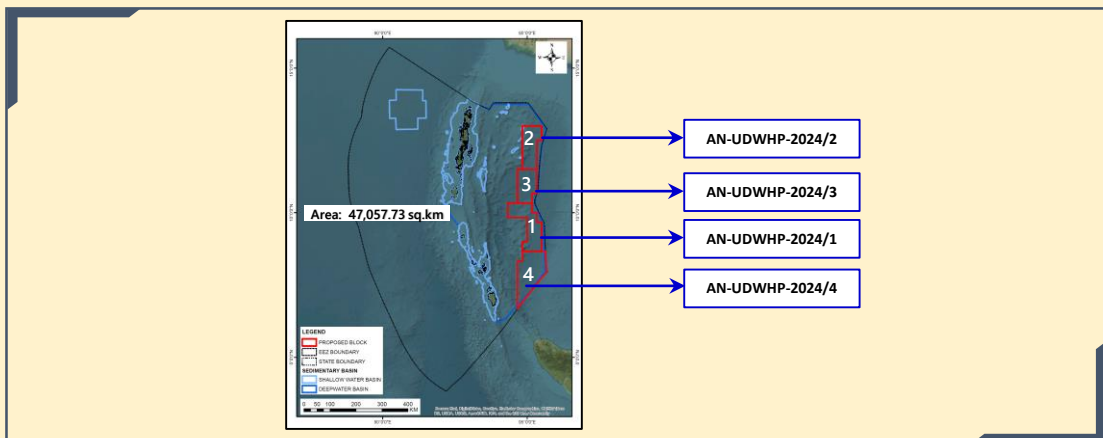
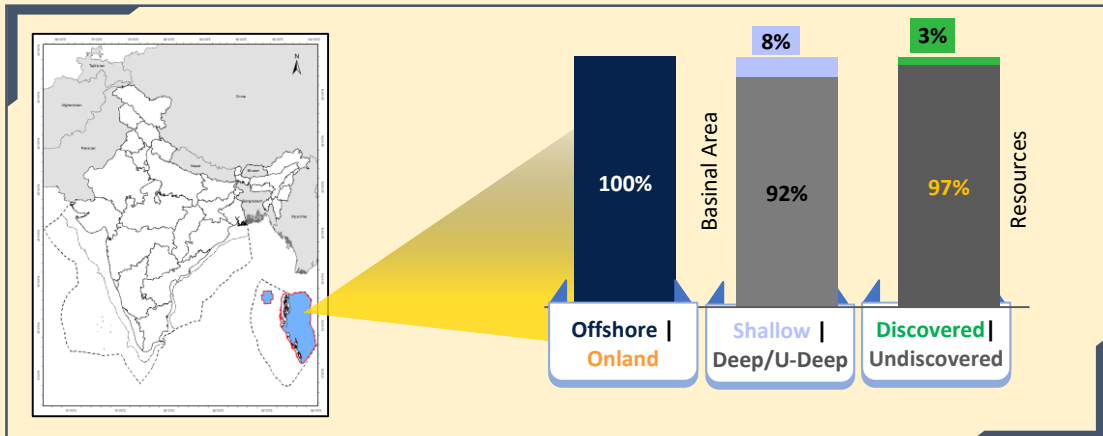
Blocks Offered Under OALP Bid Round-X



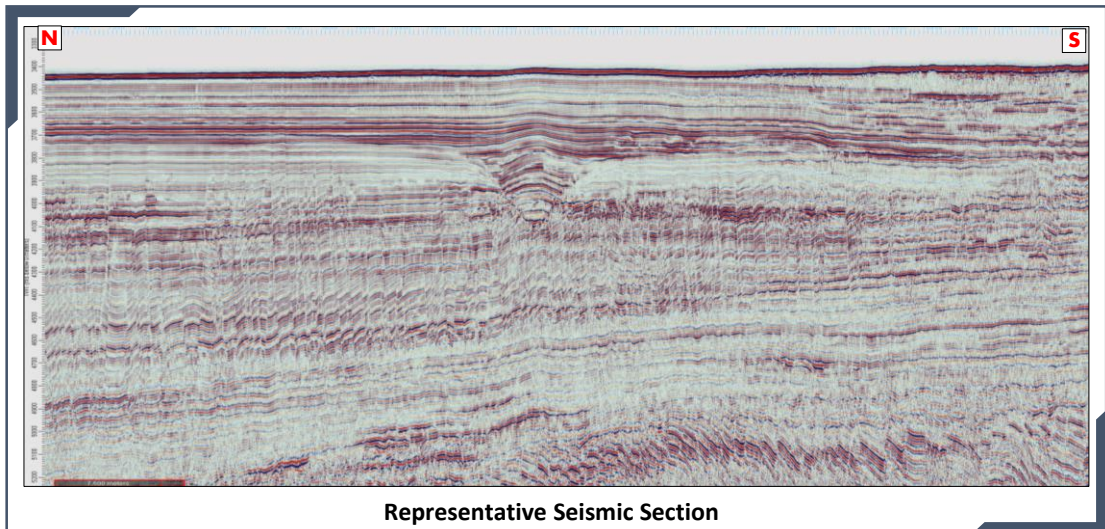
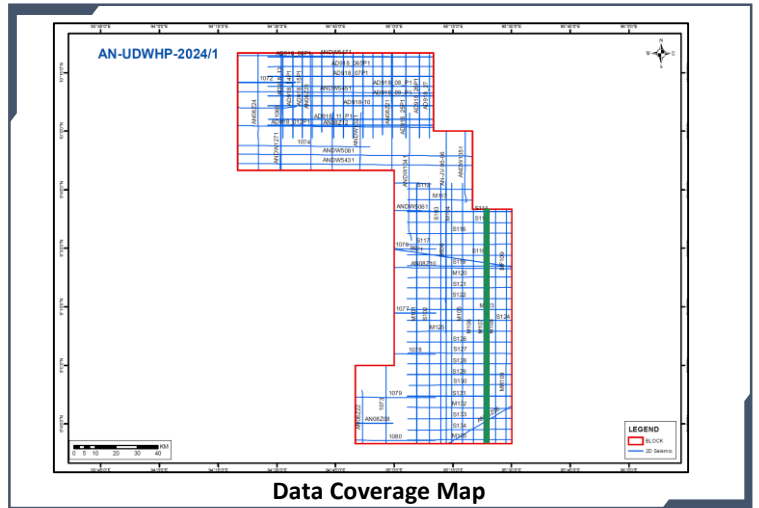
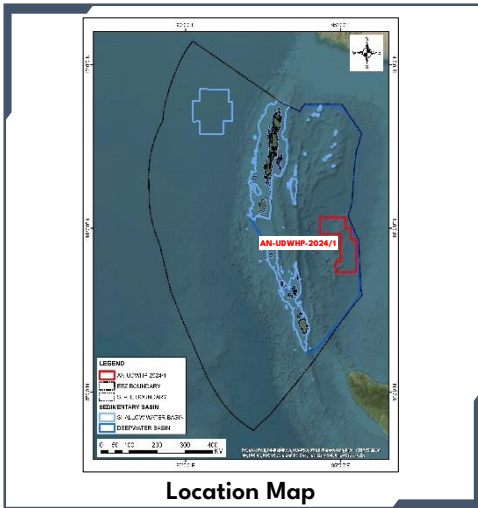
Index Map of Blocks on Offer



Andaman-Nicobar Basin



- ## Key Characteristics
- Fore-arc has a significant **Gas discovery in Miocene**, analogous to producing reservoirs of Myanmar and Indonesia gas fields
 - **Back-arc area** has sediments with significant prospectivity in the **Eastern Part**
 - **Gas hydrate** is established in Fore-arc

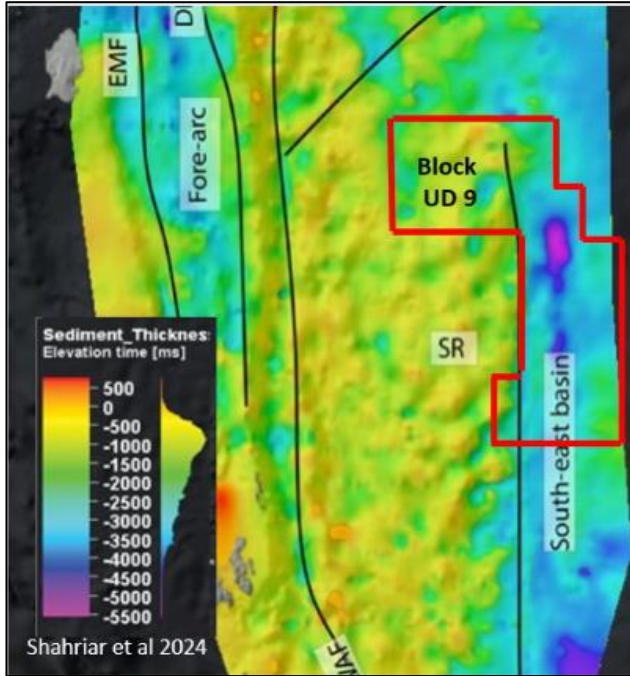


Data Availability		
2D (LKM)	3D (SKM)	Well
5206	0	0

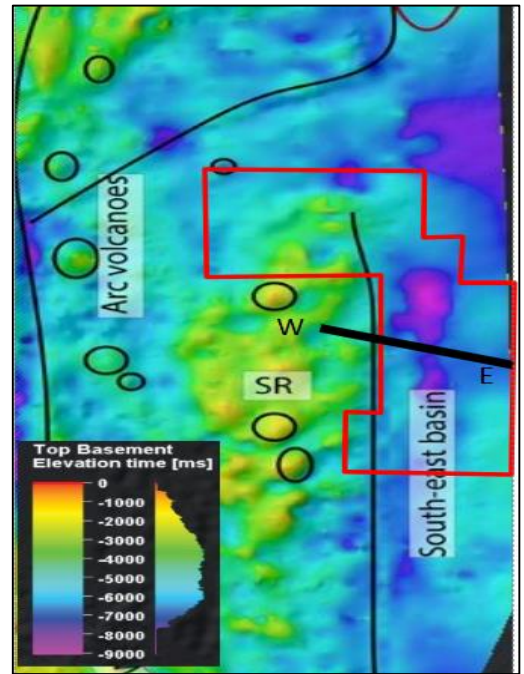
Target Horizon: To explore prospectivity in Miocene clastic. Oligocene and Paleocene-Eocene formations may also be targeted as secondary plays.

Petroleum System:

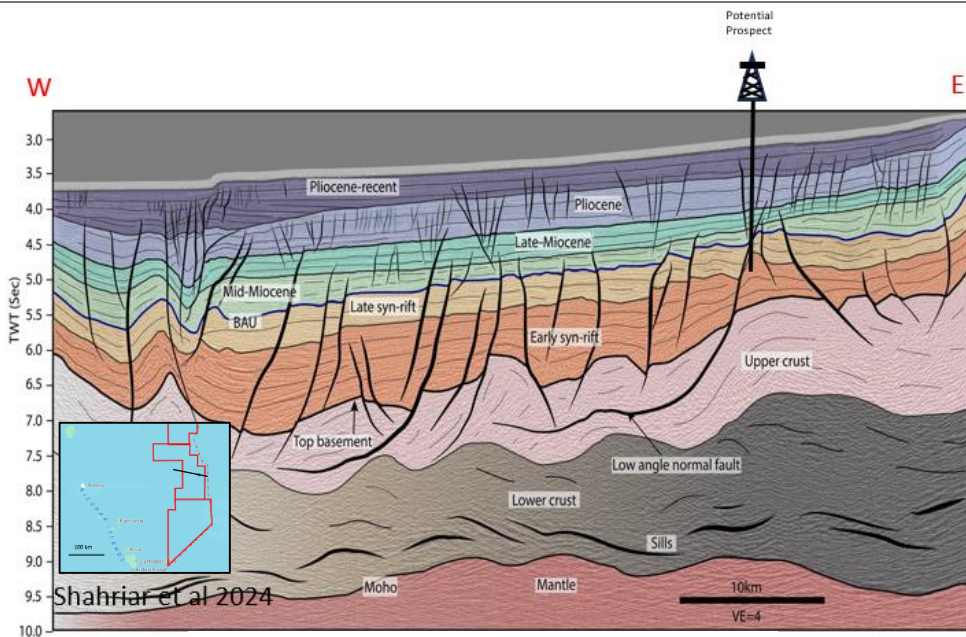
- Source rock:** Upper Cretaceous and Paleogene formations.
- Reservoir:** Dominantly Miocene clastic formations. Also evaluated in Oligocene and Paleocene-Eocene formations.
- Entrapment mechanism:** Structural and stratigraphic combinations.
- Seal:** Dominantly Miocene-Pliocene shales.
- Envisaged plays:** Middle Miocene, Early Miocene, Oligocene and Eocene.



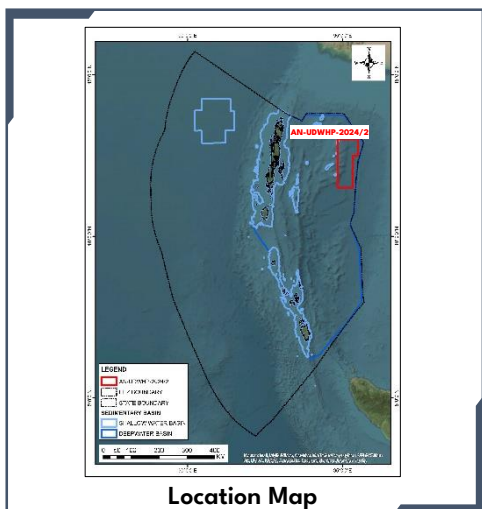
Sediment Thickness Map



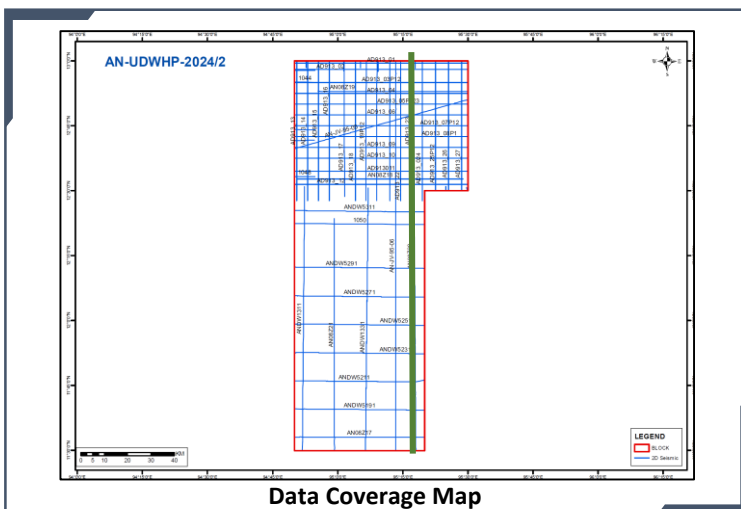
Basement Time Map



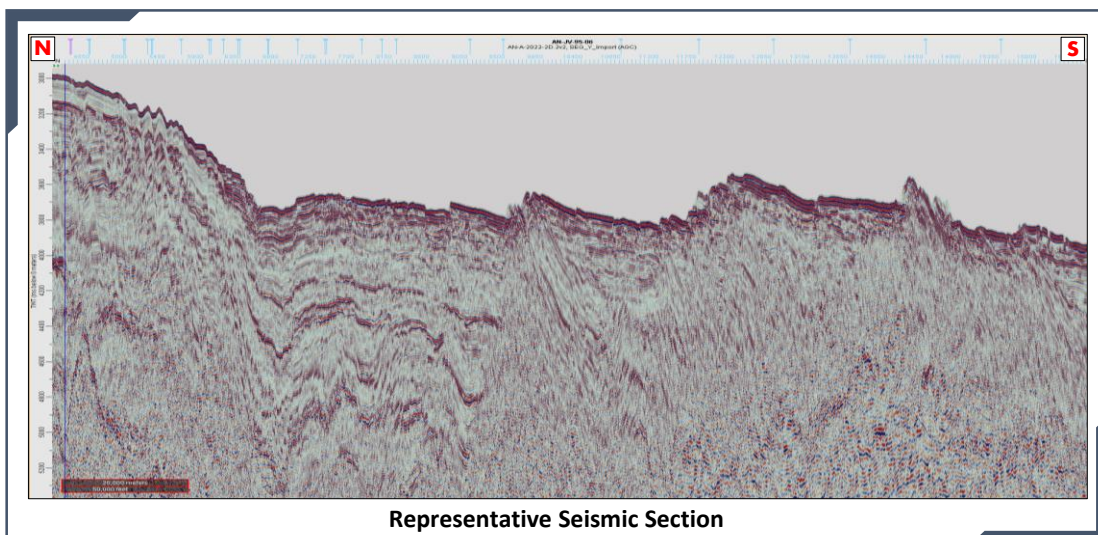
Seismic Section Shows Potential Lead



Location Map



Data Coverage Map



Representative Seismic Section

Data Availability

2D (LKM)	3D (SKM)	Well
3168	0	0

Target Horizon: To explore prospectivity in Miocene clastic. Oligocene and Paleocene-Eocene formations may also be targeted as secondary plays.

Petroleum System:

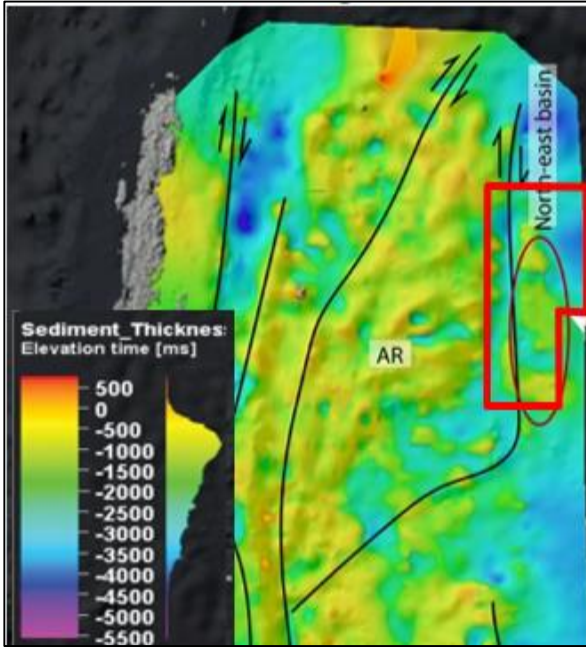
Source rock: Upper Cretaceous and Paleogene formations.

Reservoir: Dominantly Miocene clastic formations. Also evaluated in Oligocene and Paleocene-Eocene formations.

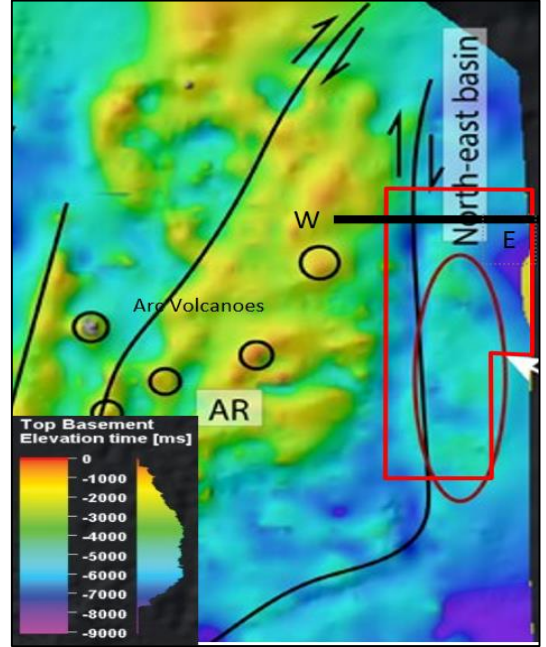
Entrapment mechanism: Structural and stratigraphic combinations.

Seal: Dominantly Miocene-Pliocene shales.

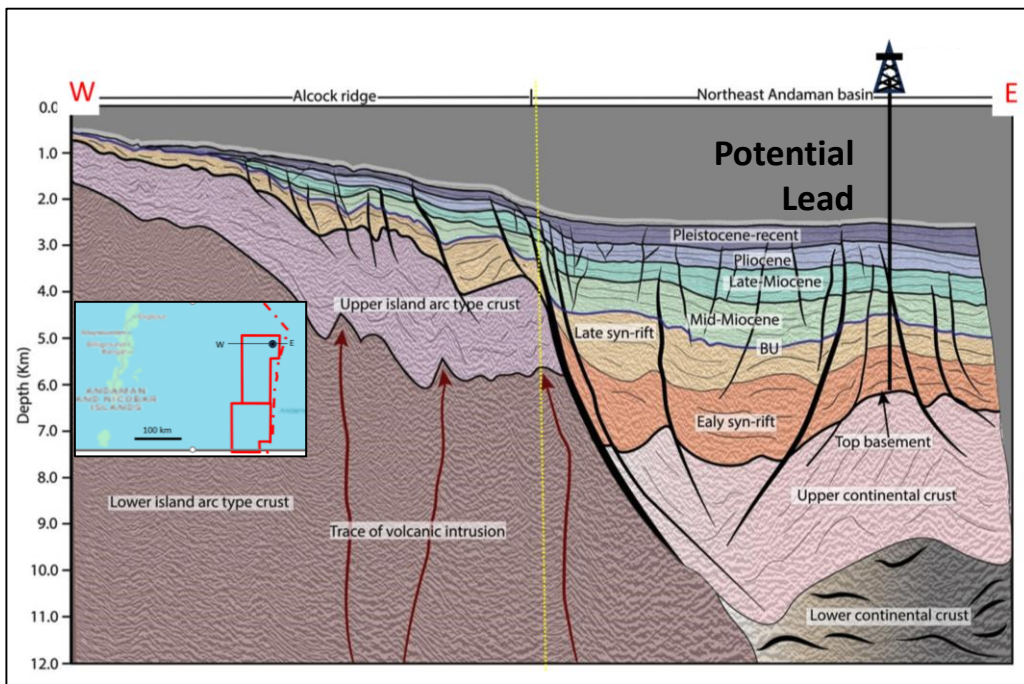
Envisaged plays: Middle Miocene, Early Miocene, Oligocene and Eocene.



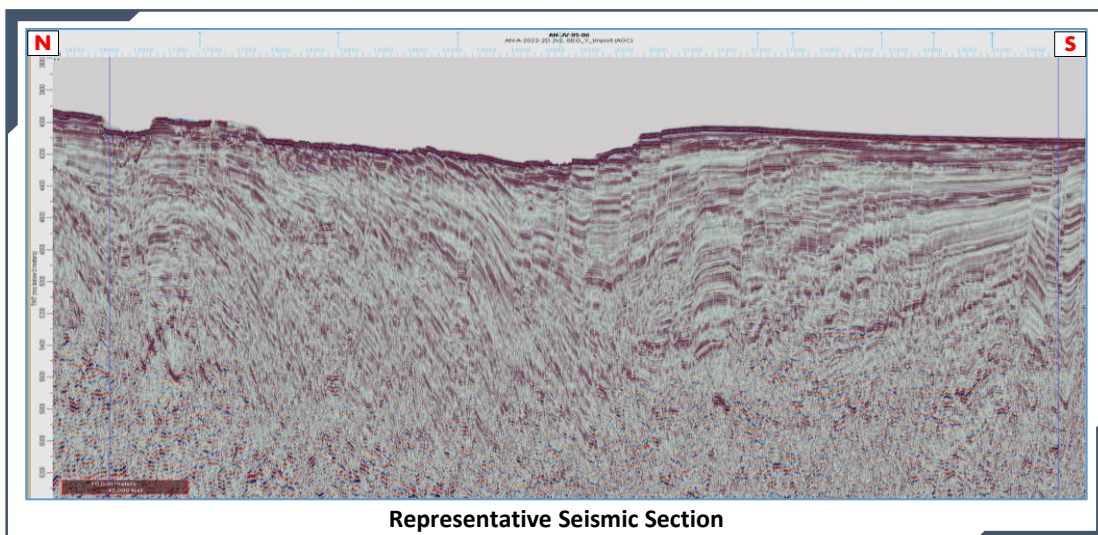
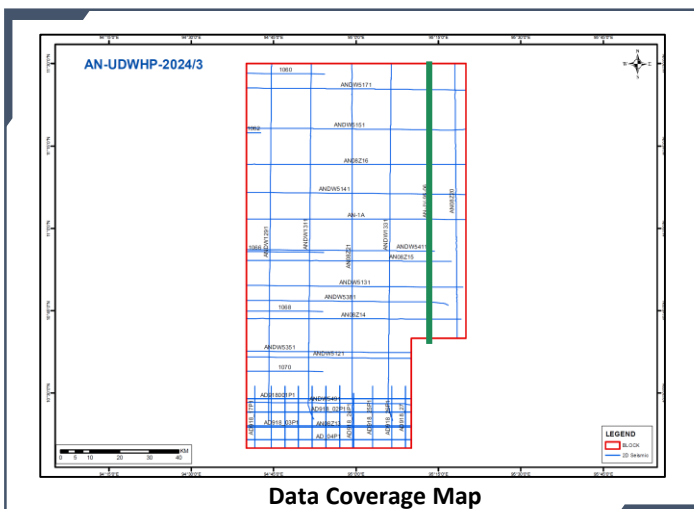
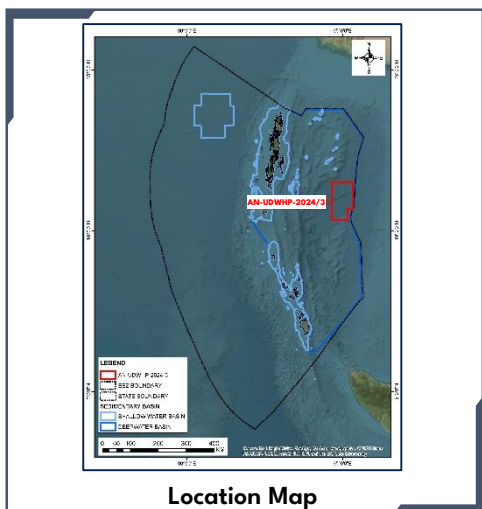
Sediment Thickness Map



Basement Time Map



Seismo-Geological Section Showing Potential lead

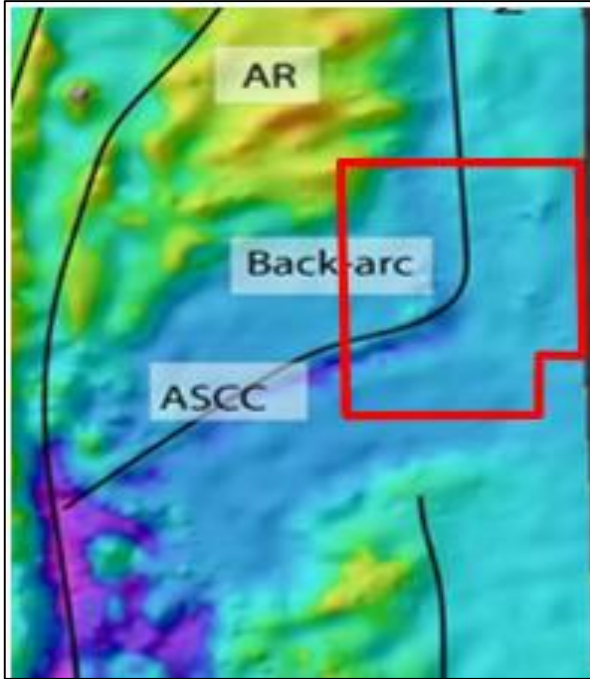


Data Availability		
2D (LKM)	3D (SKM)	Well
2153	0	0

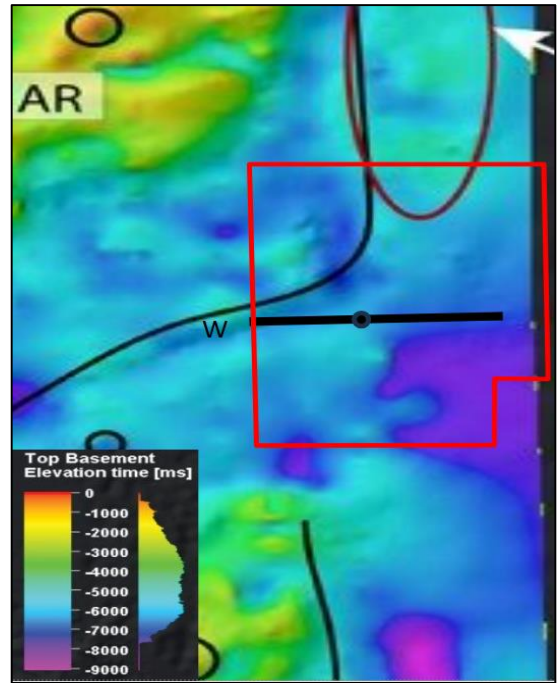
Target Horizon: To explore prospectivity in Miocene clastic. Oligocene and Paleocene-Eocene formations may also be targeted as secondary plays.

Petroleum System:

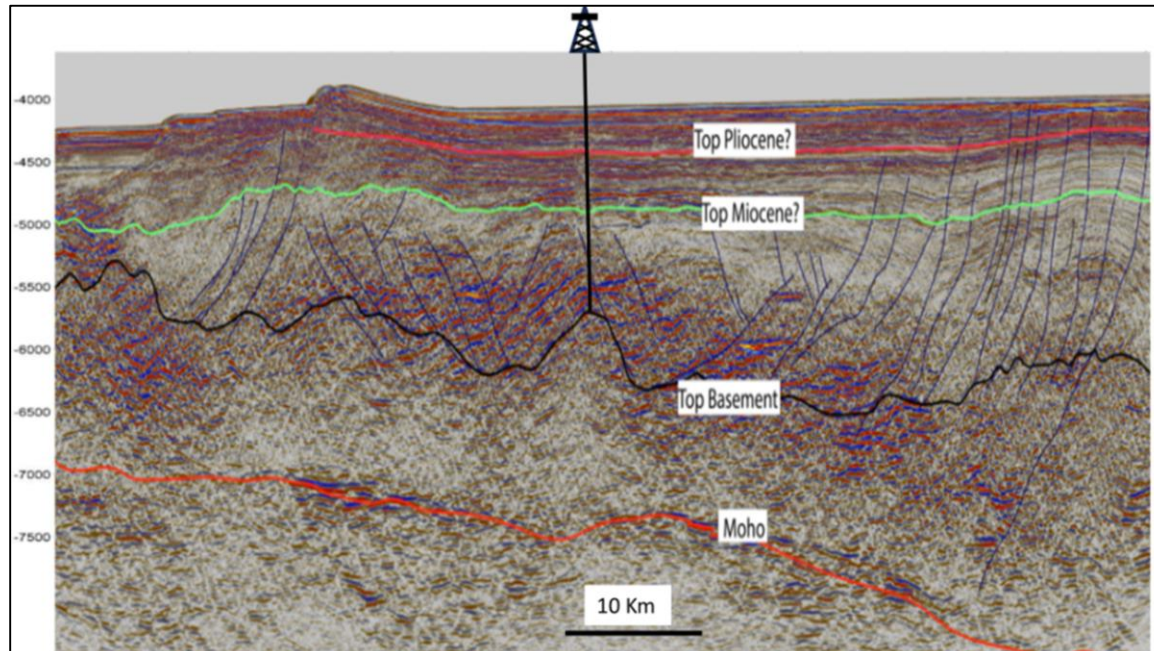
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- Reservoir:** Dominantly Miocene clastic formations. Also evaluated in Oligocene and Paleocene-Eocene formations.
- Entrapment mechanism:** Structural and stratigraphic combinations.
- Seal:** Dominantly Miocene-Pliocene shales.
- Envisaged plays:** Middle Miocene, Early Miocene, Oligocene and Eocene.



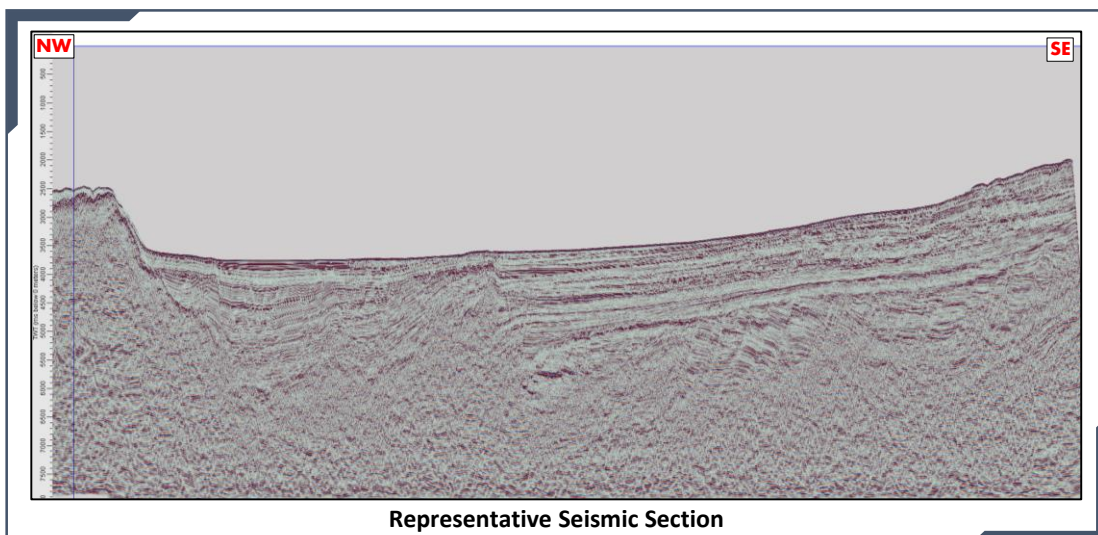
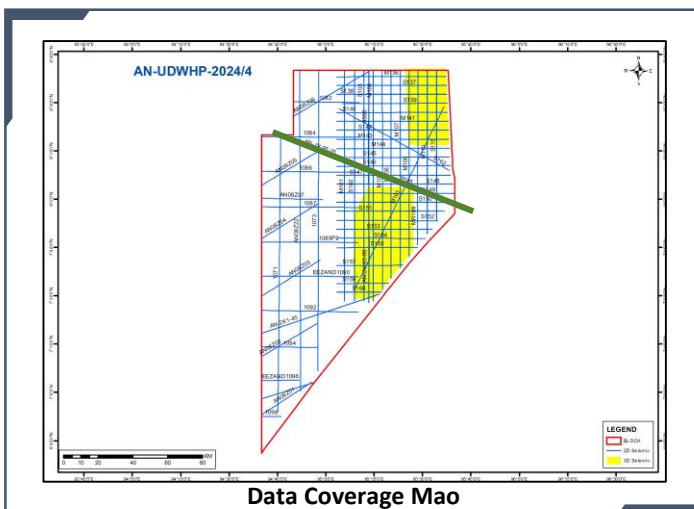
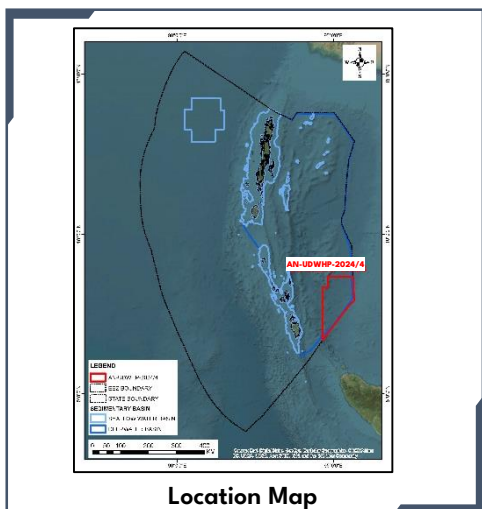
Sediment Thickness Map



Basement Time Map



Seismo-Geological Section Showing Potential lead



Data Availability		
2D (LKM)	3D (SKM)	Well
4557	2521	0

Target Horizon: To explore prospectivity in Miocene clastic. Oligocene formations may also be targeted as a secondary play.

Petroleum System:

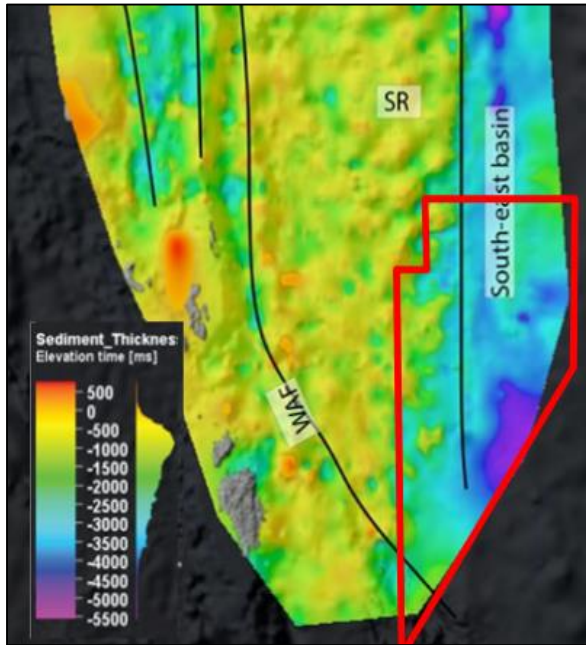
Source rock: Upper Cretaceous and Paleogene formations.

Reservoir: Dominantly Miocene clastic formations. Also evaluated in Oligocene and Paleocene-Eocene formations.

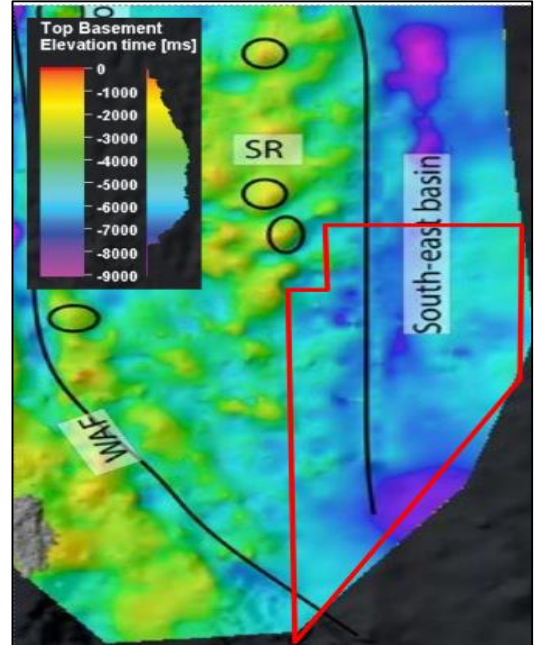
Entrapment mechanism: Structural and stratigraphic combinations.

Seal: Dominantly Miocene-Pliocene shales.

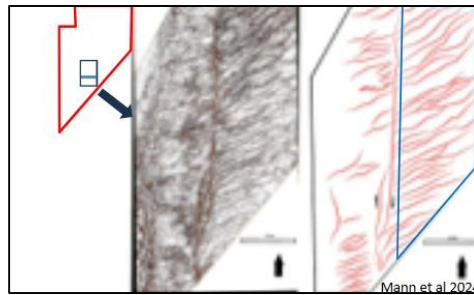
Envisaged plays: Middle Miocene, Early Miocene, Oligocene and Eocene.



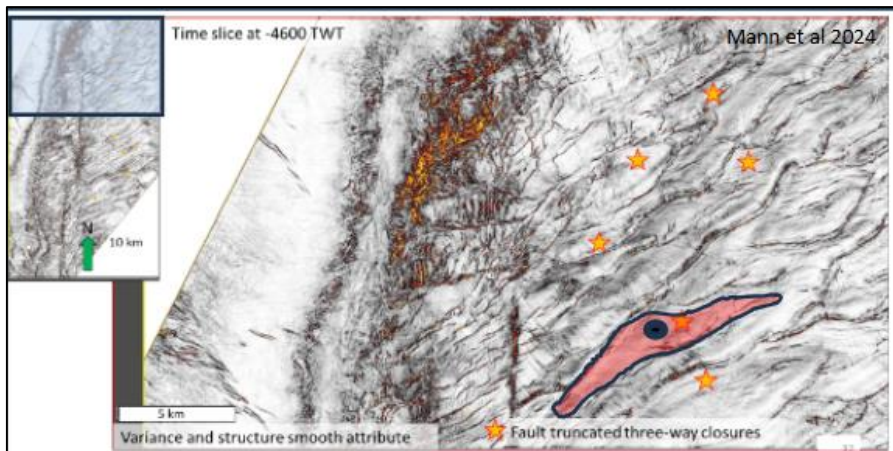
Sediment Thickness Map



Basement Time Map



3D extraction showing fault structure



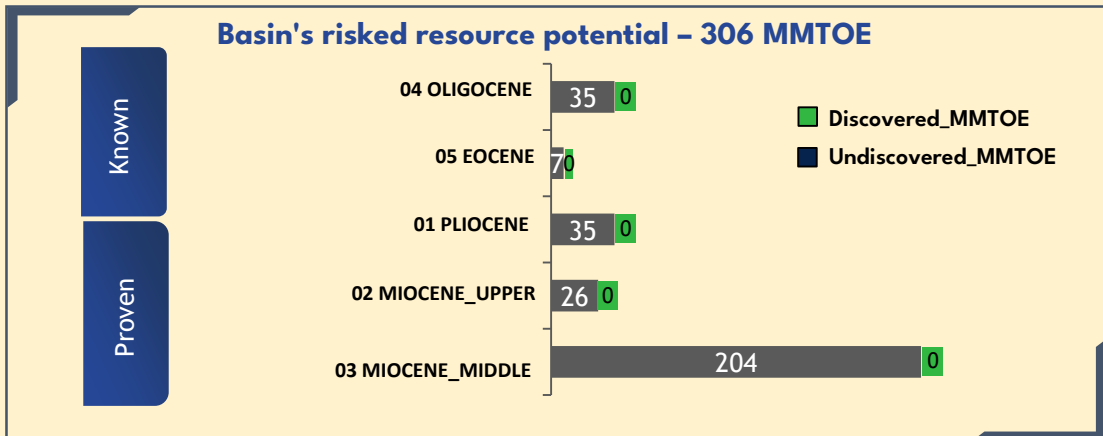
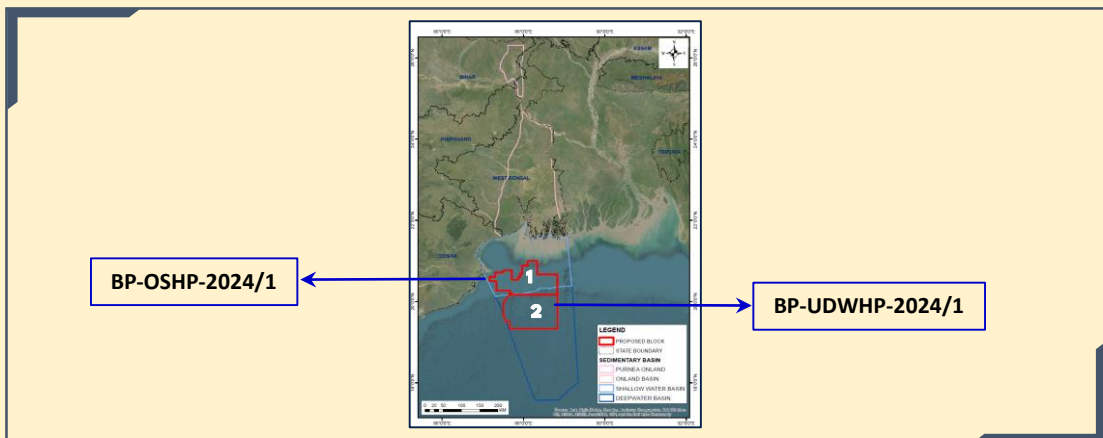
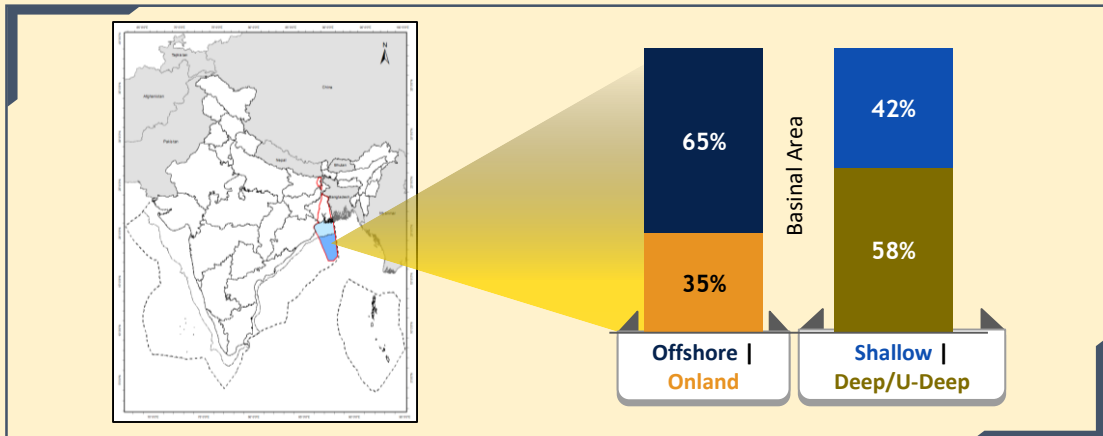
Potential Lead

Bengal – Purnea Basin

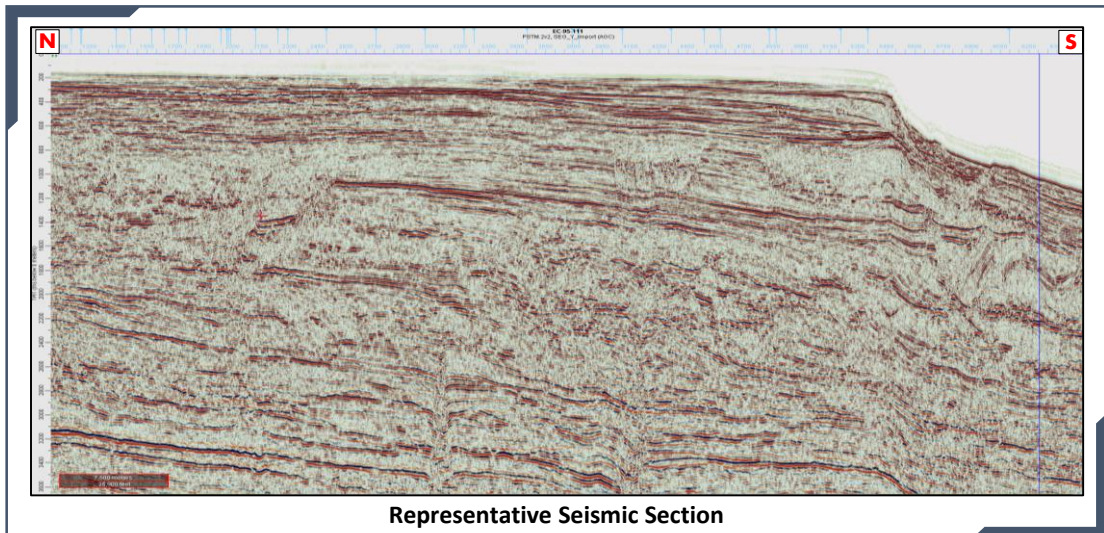
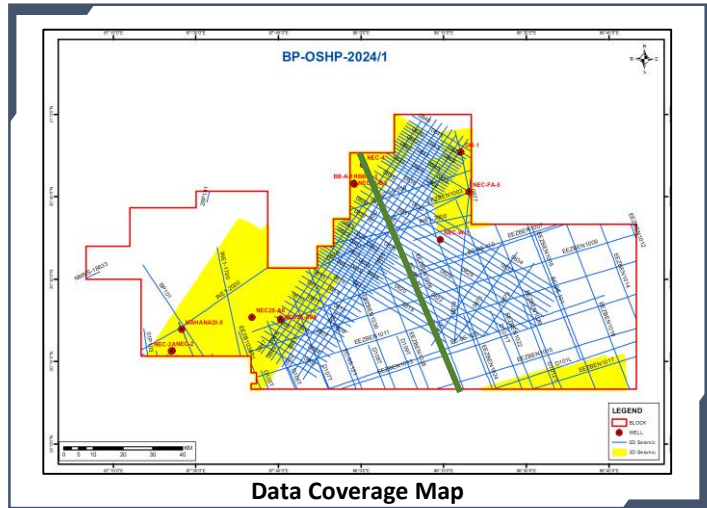
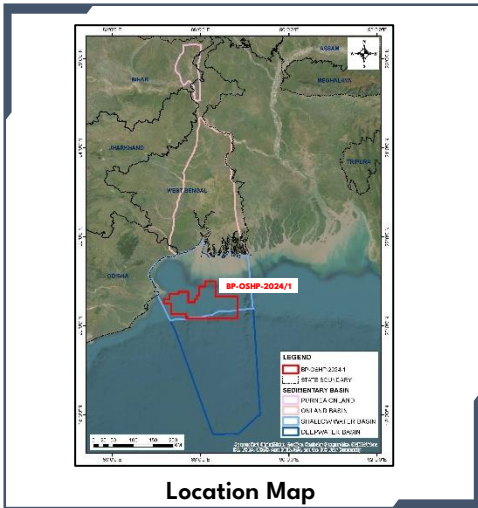
BENGAL – PURNEA BASIN

Significant Resource in Miocene

2 Blocks on Offer



- ## Key Characteristics
- 2/3rd potential lies in **Middle Miocene** play
 - Blocks close to a contract area with **6 gas discoveries**, contemplated for development
 - Occurrence of channelized deposits associated to subtle structures in the **east-central area**



Data Availability		
2D (LKM)	3D (SKM)	Well
5204	2600	12

Target Horizon: To explore prospectivity in Mio-Pliocene Formation and Oligocene Formation in the block area.

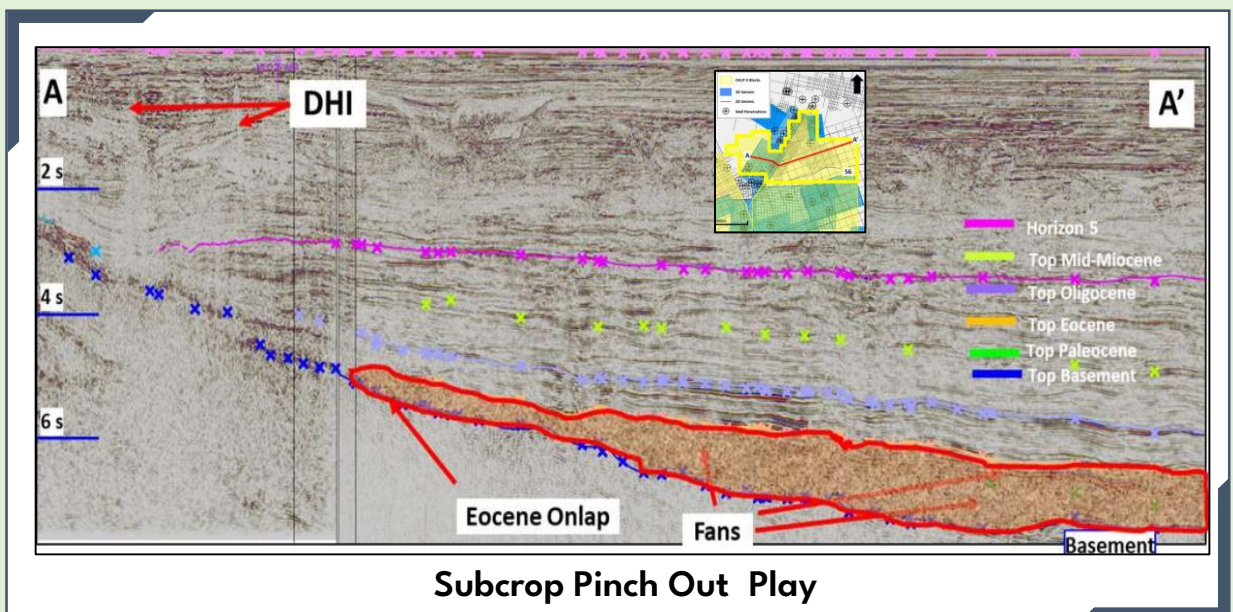
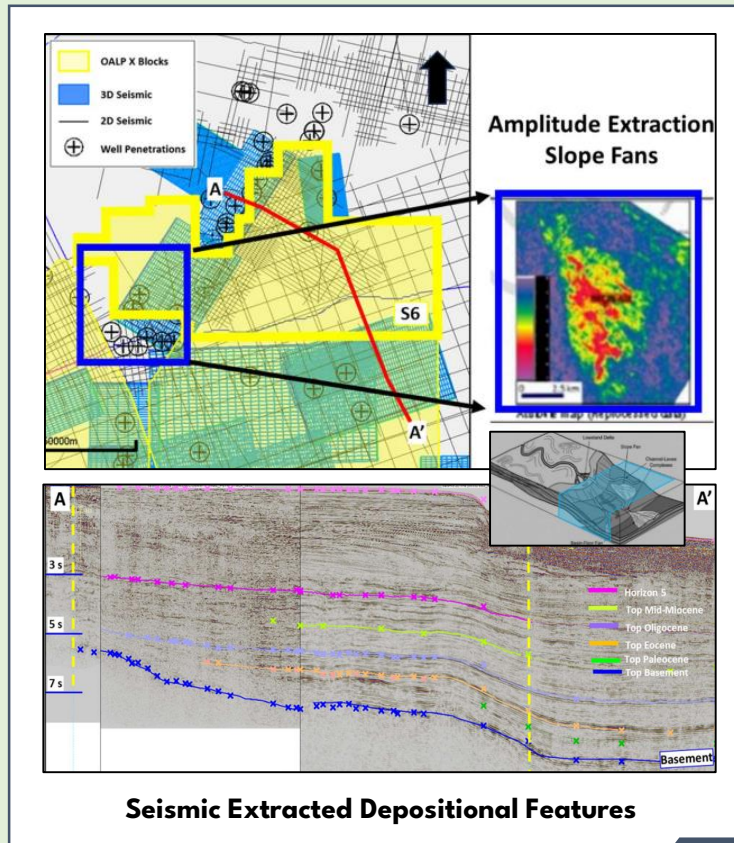
Petroleum System:

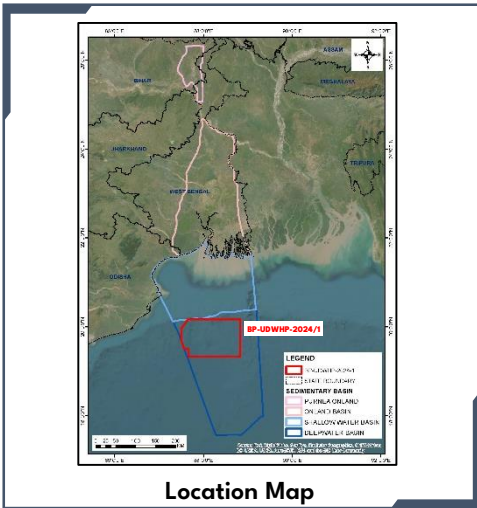
Source rock: Palaeogene and Cretaceous sediments (Thermogenic), Neogene (Biogenic)

Reservoir: Mio-Pliocene Formation and Oligocene Formation

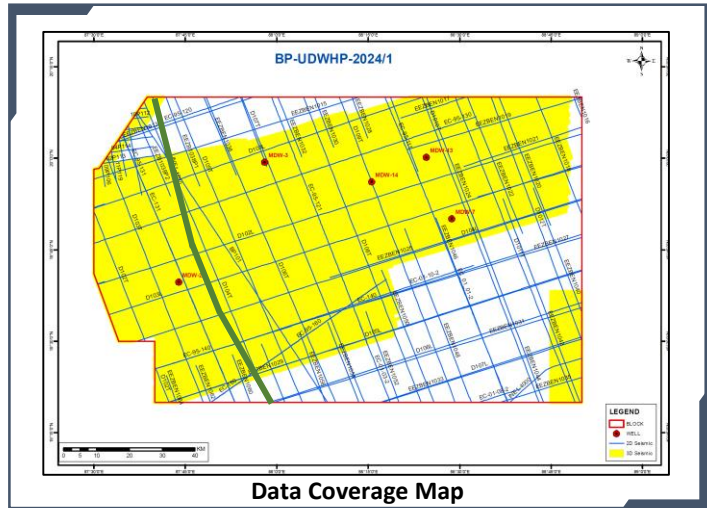
Entrapment mechanism: Structural, stratigraphic and strati-structural

Envisaged plays: Middle/Upper Miocene and Pliocene are proven plays, while Eocene and Oligocene are known but un-discovered.

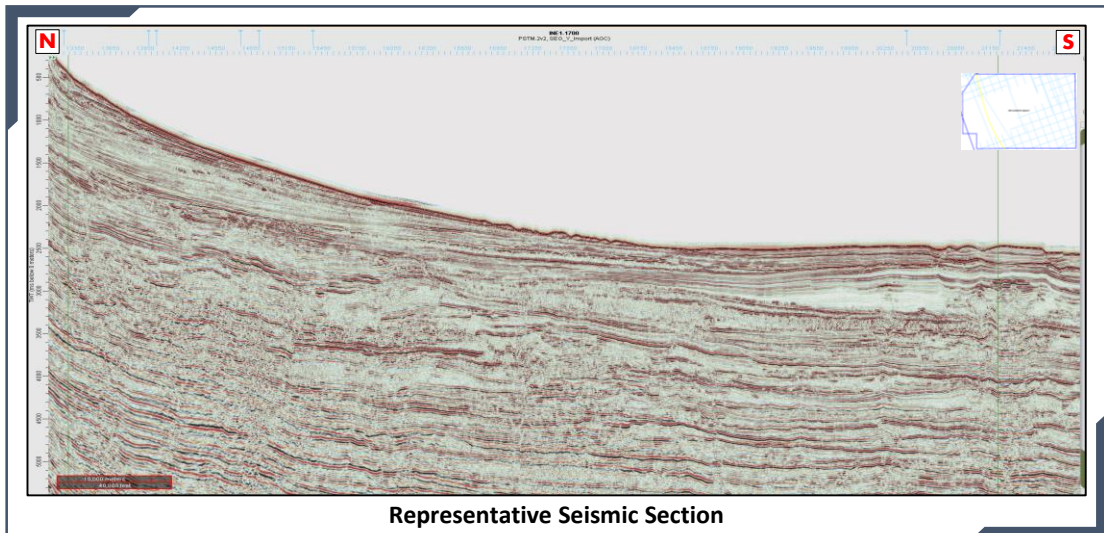




Location Map



Data Coverage Map



Representative Seismic Section

Data Availability

2D (LKM)	3D (SKM)	Well
4581	8392	5

Target Horizon: To explore prospectivity in Miocene-Pliocene clastic. Oligocene formations may also be targeted as a secondary reservoir.

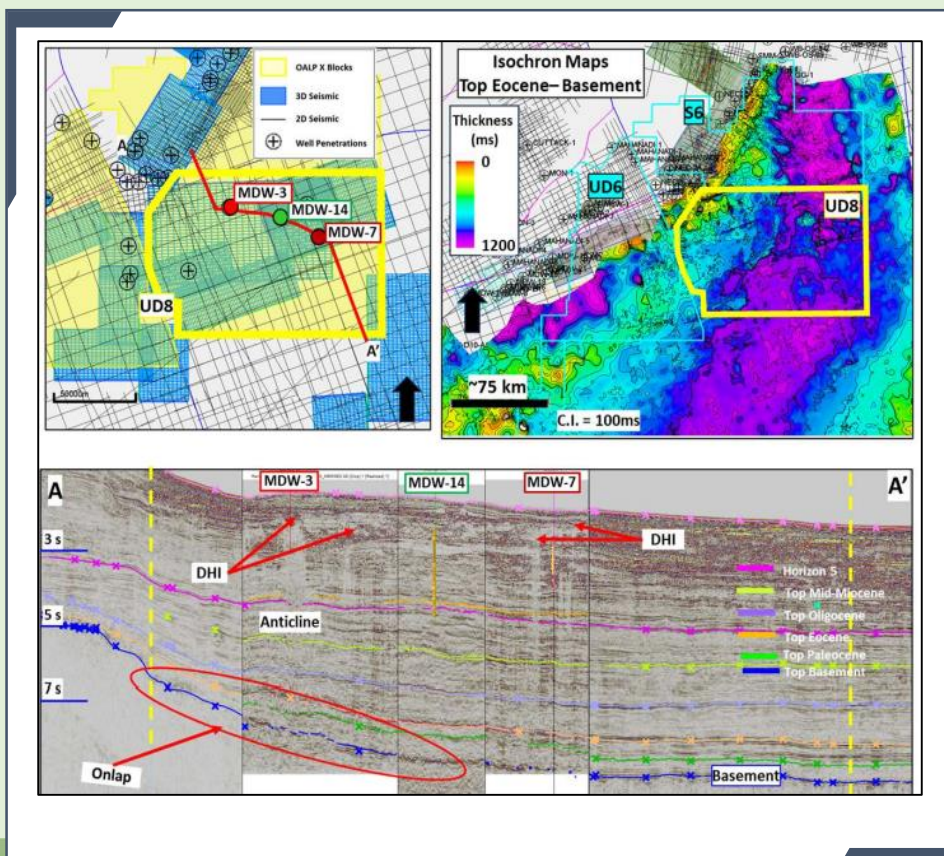
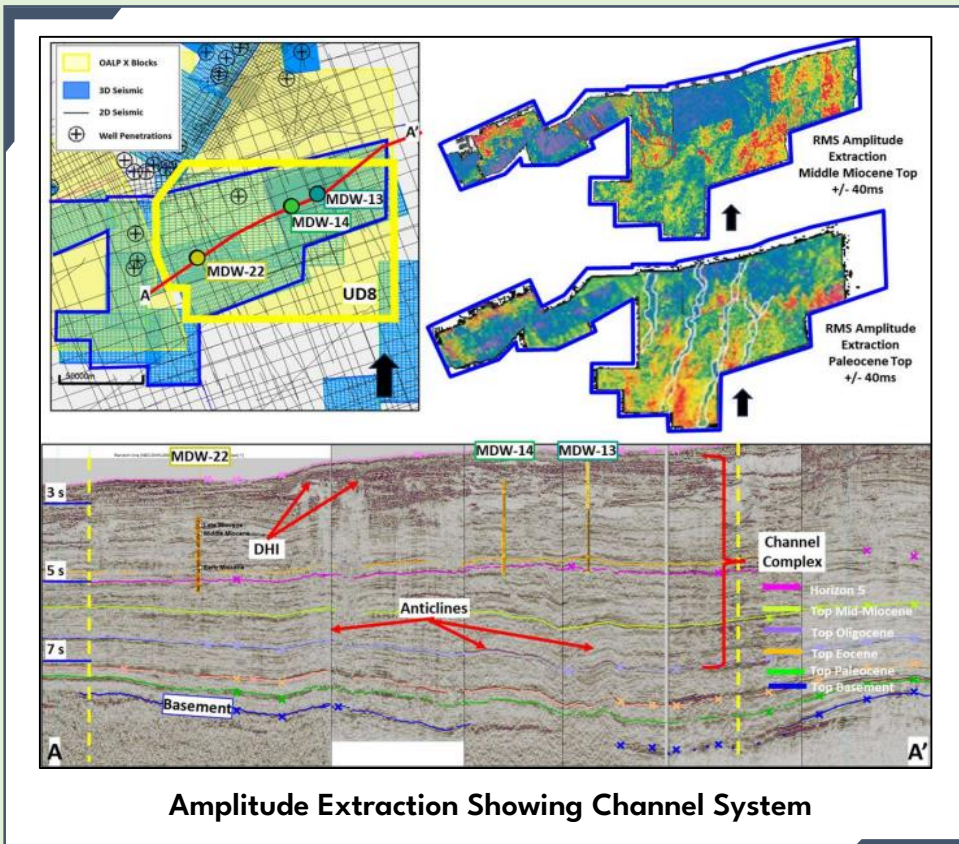
Petroleum System:

Source rock: Palaeogene and Cretaceous sediments (Thermogenic), Neogene (Biogenic)

Reservoir: Mio-Pliocene Formation and Oligocene Formation

Entrapment mechanism: Structural (fault or small 4-way closures), stratigraphic (channel-levee complex) and strati-structural

Envisaged plays: Oligocene (thermogenic), Middle Miocene (Thermogenic), Upper Miocene (Biogenic) and Pliocene (Biogenic) play

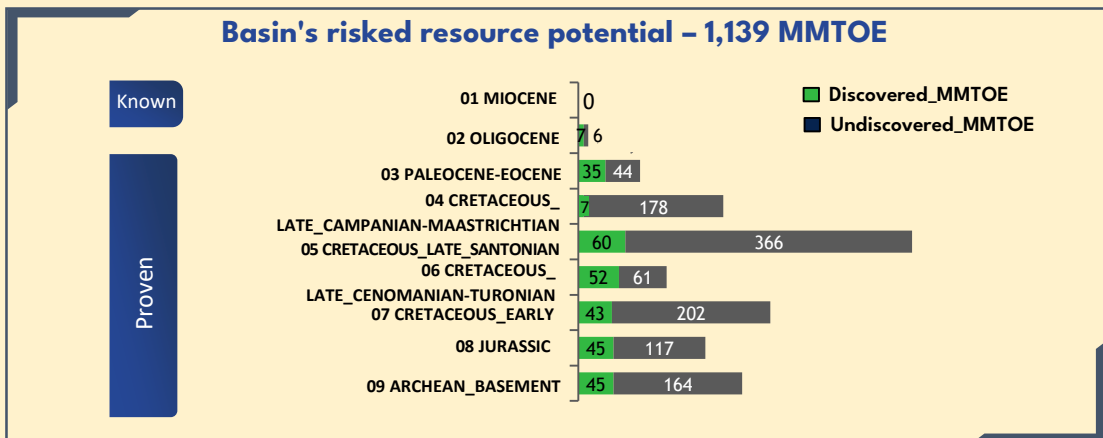
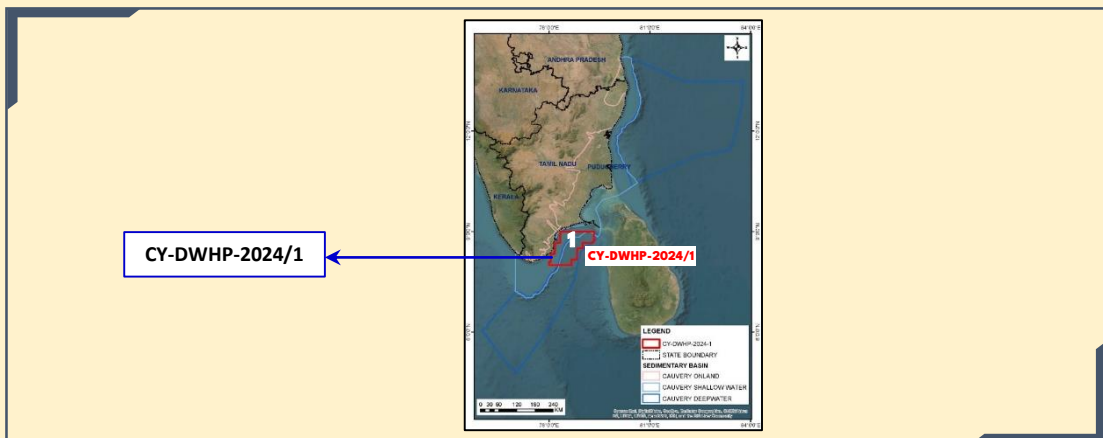
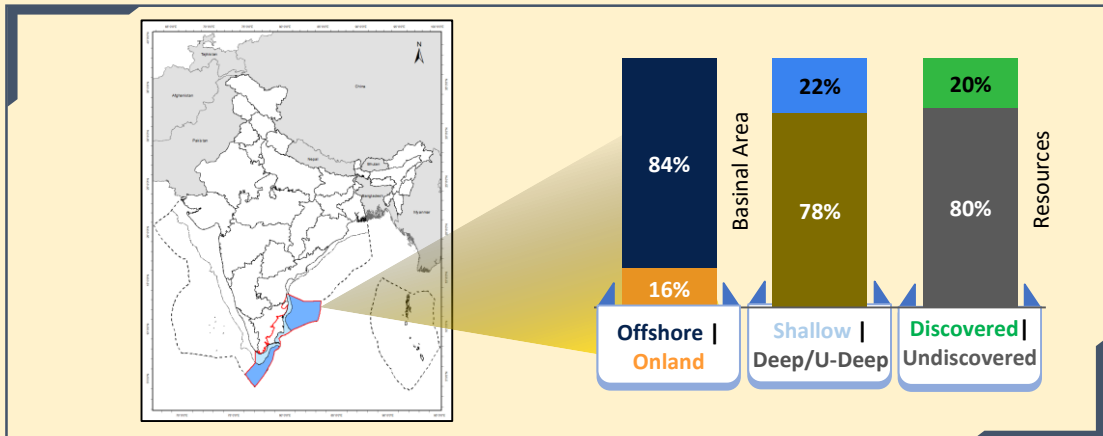


Cauvery Basin

CAUVERY BASIN

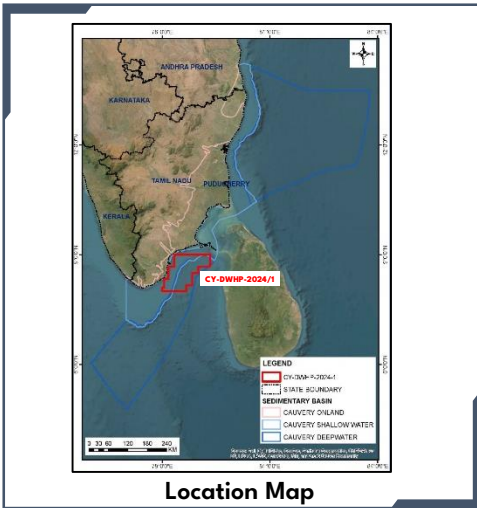
Proven resources in Mesozoic and Basement

1 Block on Offer

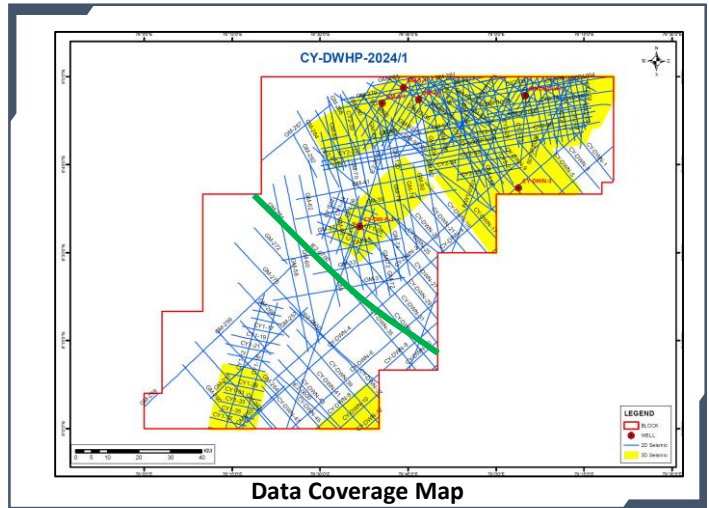


Key Characteristics

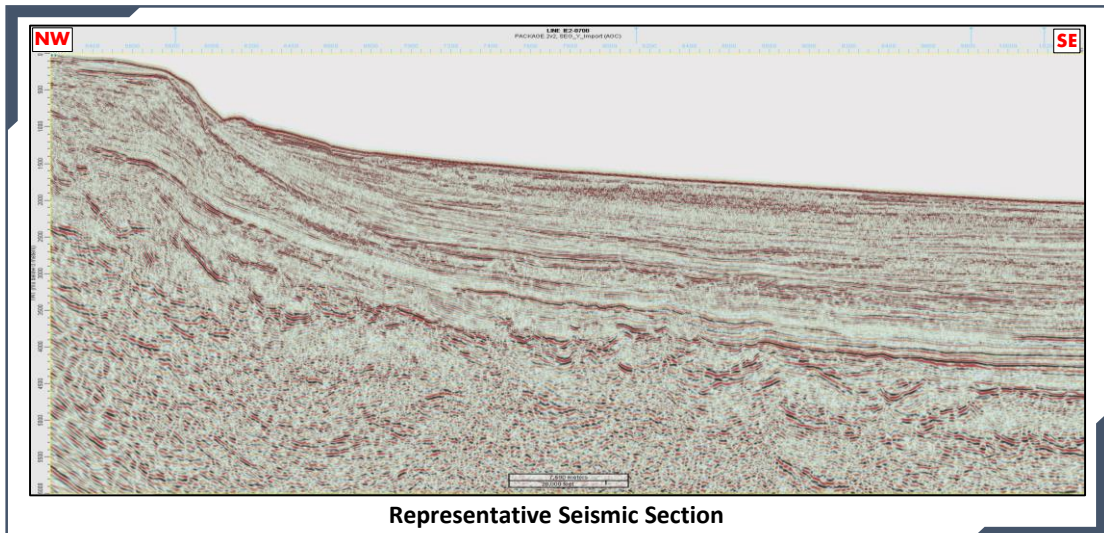
- Basin with significant production from **Mesozoic** and **Basement**
- Deep-to-Ultradeep water** largely appraised but less explored
- Opportunity to explore **Ultradeep** in the **north-east** and southern part towards **Gulf of Mannar**



Location Map



Data Coverage Map



Representative Seismic Section

Data Availability

2D (LKM)	3D (SKM)	Well
7555	3345	6

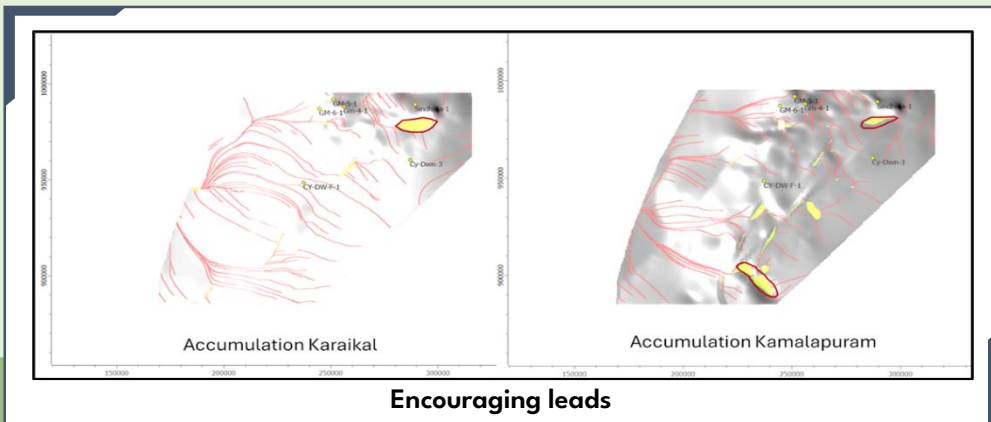
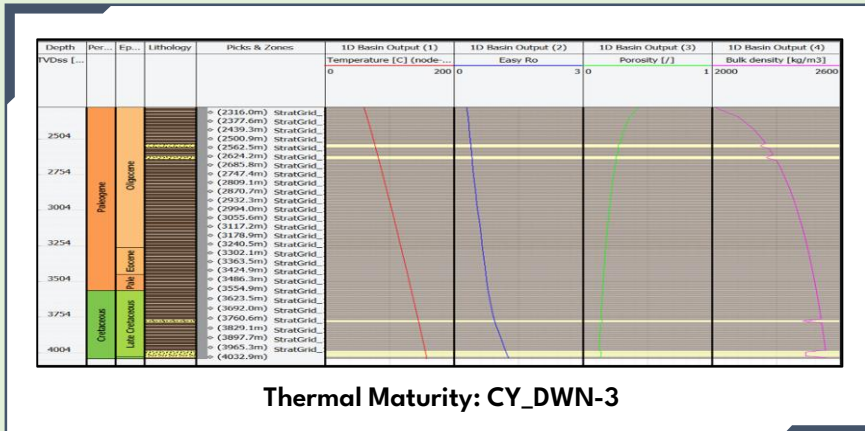
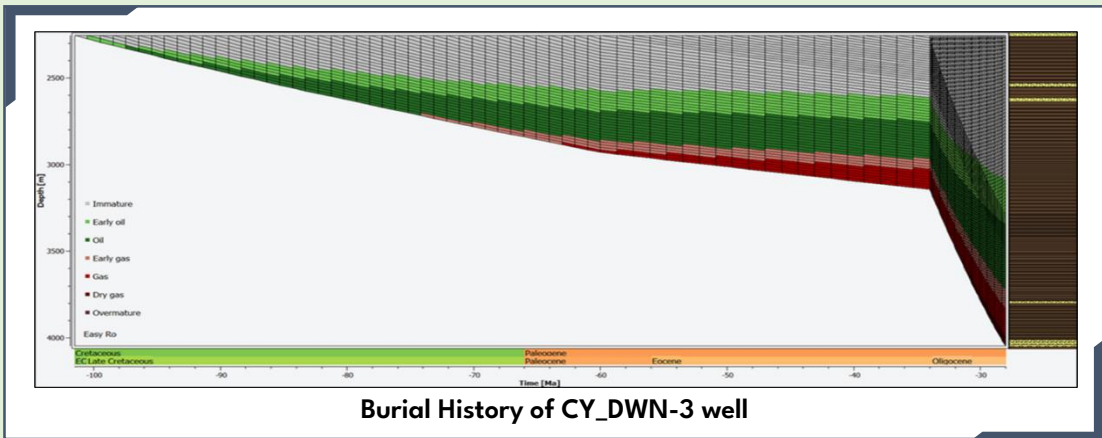
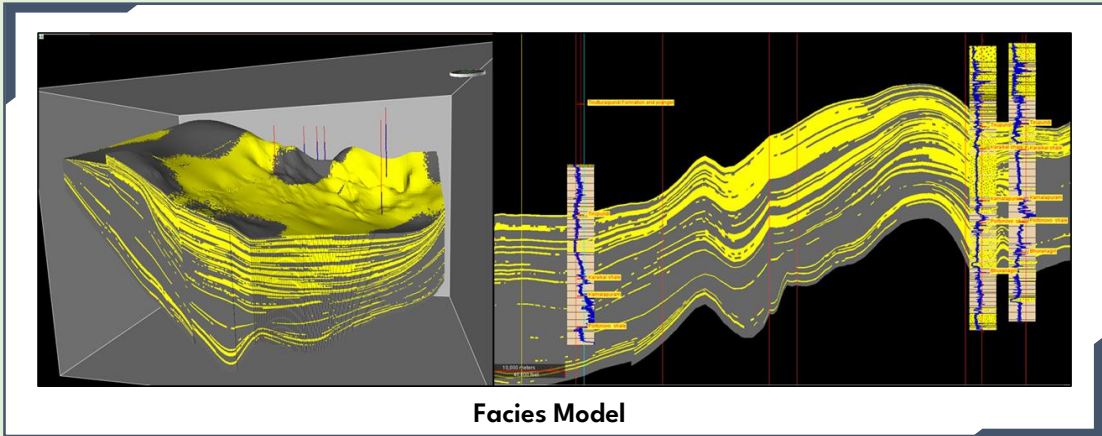
Petroleum System:

Source rock: Late Jurassic to Early Cretaceous sequences
Reservoir: Late synrift sequences, Lowstand sequences during Turonian, Late Coniacian-Santonian, Late Maastrichtian and Late Paleocene would result in the deposition of clastic reservoir facies in the Sub-Basin in the form of slope fans & basin floor fans.
Entrapment Mechanism: Fault closure, stratigraphic drape over structural highs, pinch-out traps and channel fills.
Envisaged plays: Basement, Cretaceous & Older and Tertiary play.
Thermogenic Petroleum System:

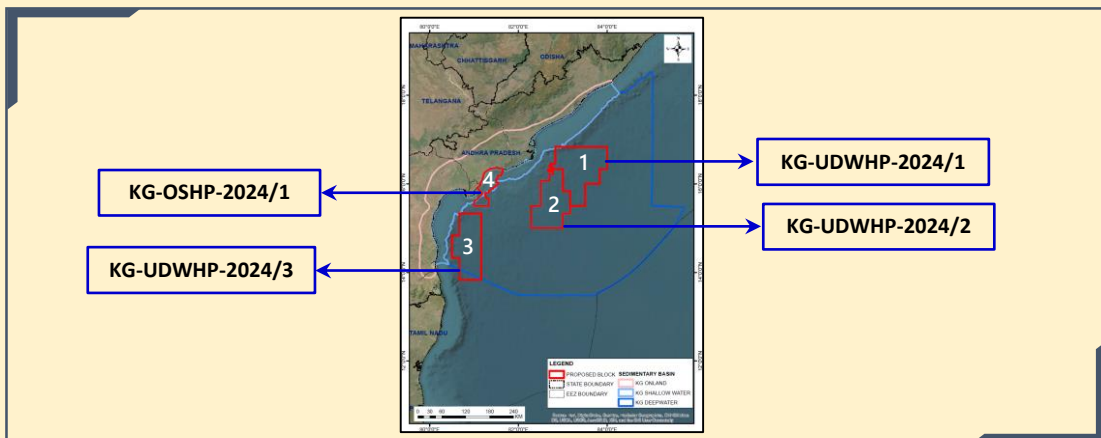
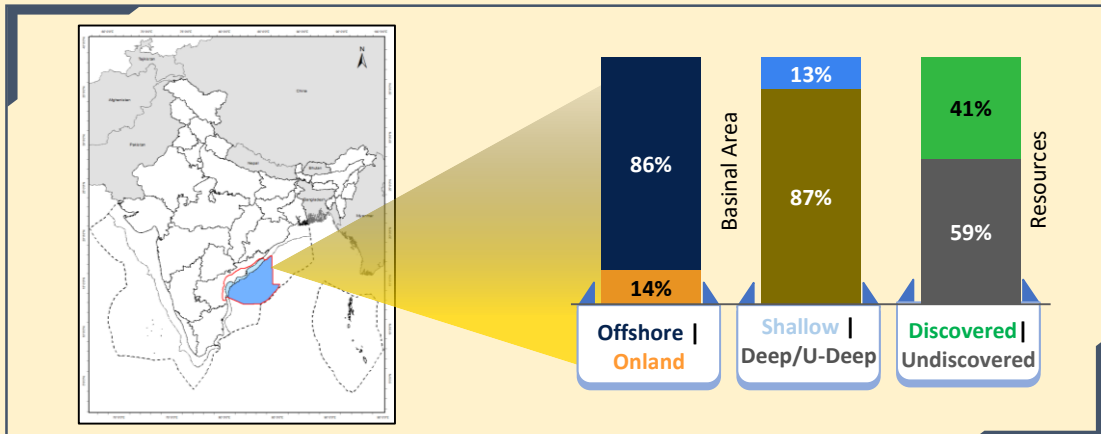
- Middle Jurassic** – Jurassic, Early Cretaceous, Late Cretaceous (?)
- Early Cretaceous** – Early Cretaceous, Late Cretaceous (?)
- Late Cretaceous** – Late Cretaceous (?)

Biogenic Petroleum System: 1.Oligocene – Oligocene (?)

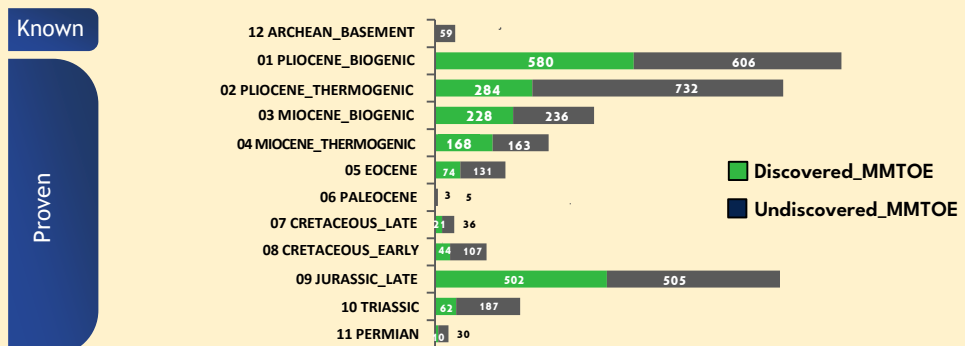
Target Horizon: Paleocene, Cretaceous & Basement/ Technical basement



Krishna-Godavari Basin

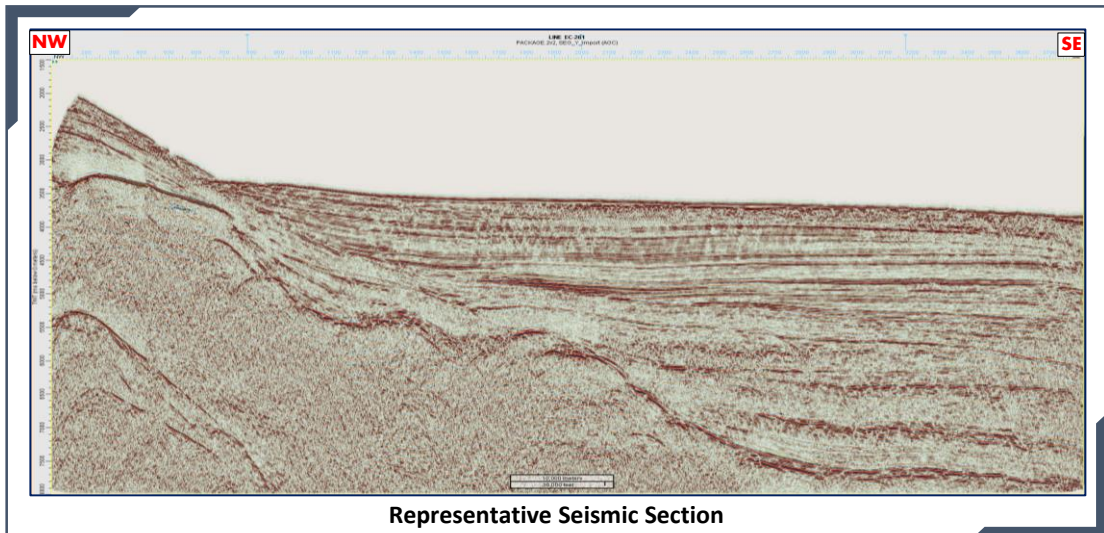
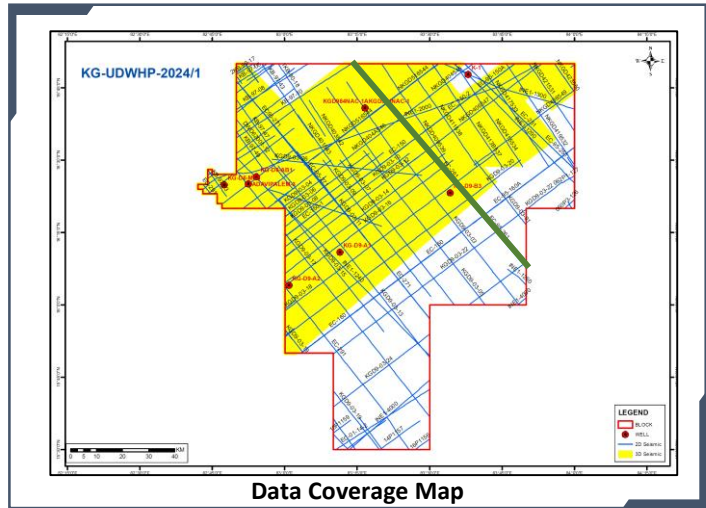
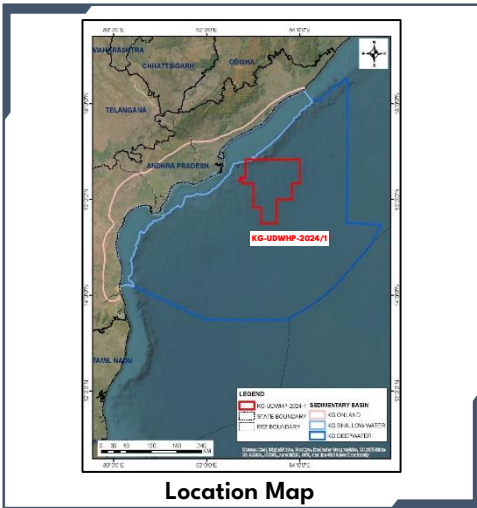


Basin's risked resource potential – 2,796 MMTOE



Key Characteristics

- Maximum resources, known for **country's largest deepwater biogenic gas field**
- With **2.0 BTOE** resource established, proven plays have significant prospective resources
- Deep/shallow water extensively appraised with **large-scale datasets**, an opportunity for intensive exploration of **channeled deposits**



Data Availability		
2D (LKM)	3D (SKM)	Well
4999	7714	9

Petroleum System:

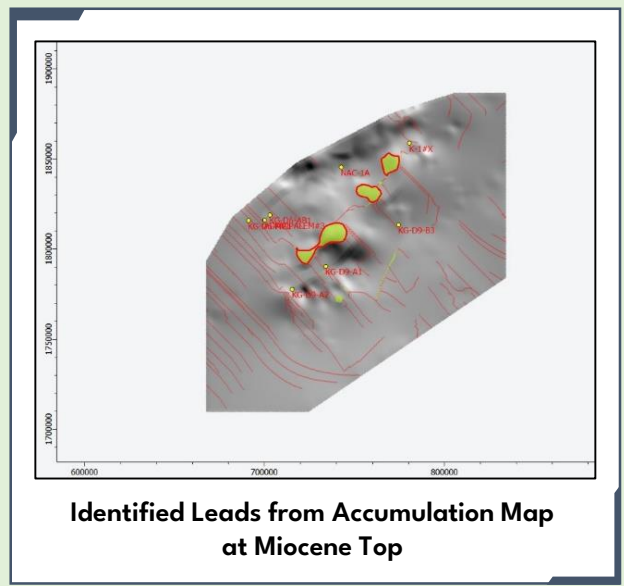
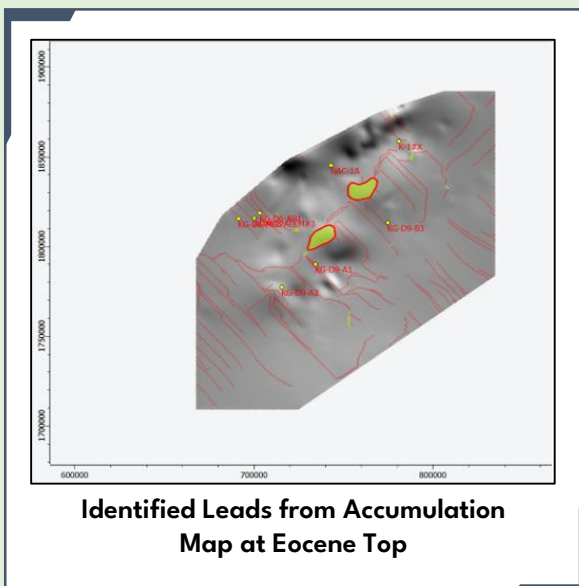
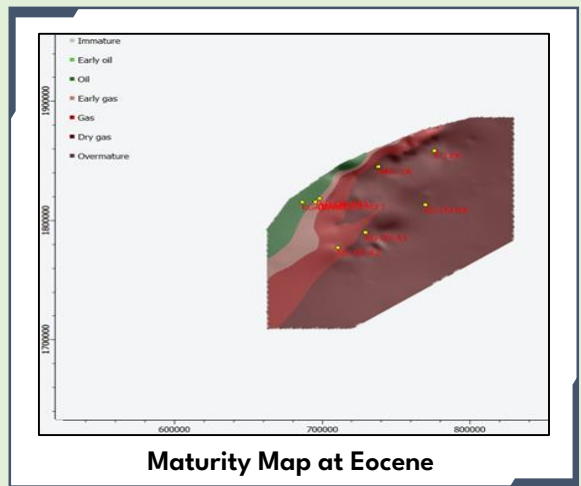
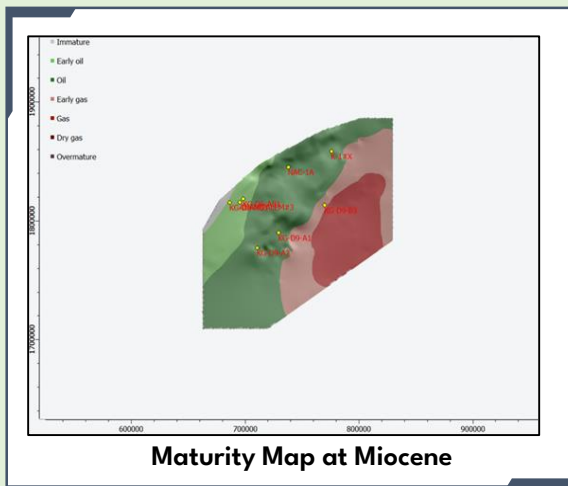
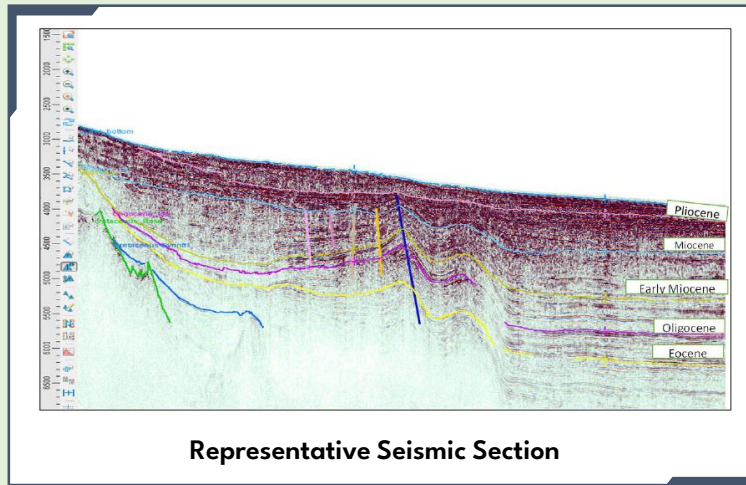
Source rock: Mesozoic / Eocene-Oligocene (Thermogenic), Mio-Pleistocene (Biogenic)

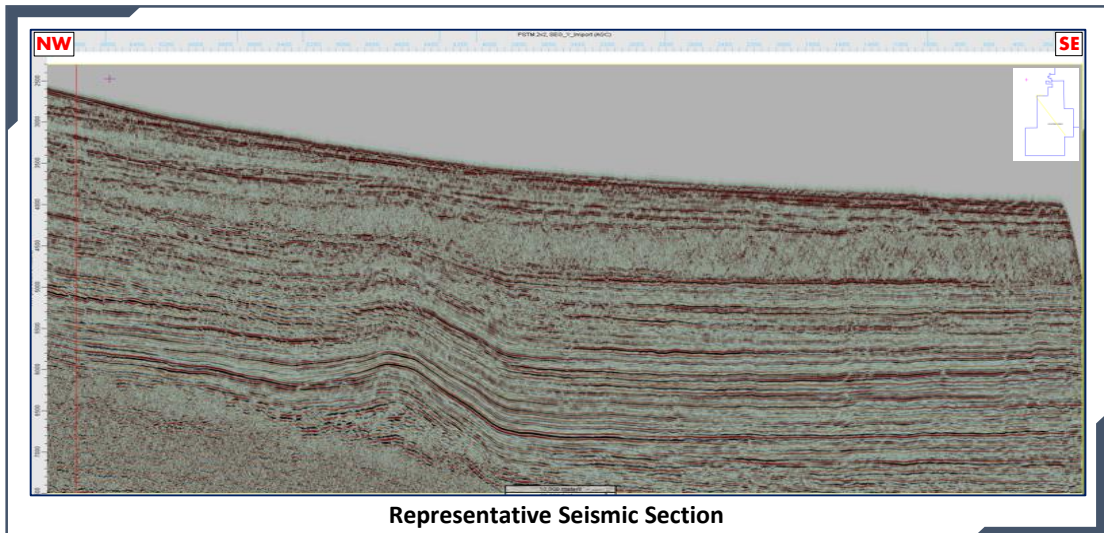
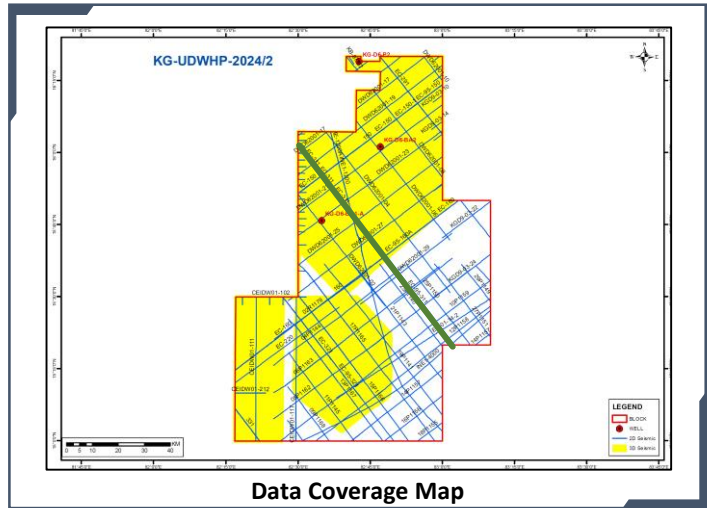
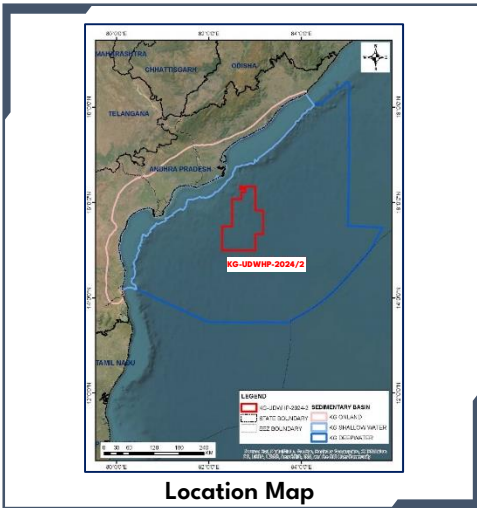
Reservoir: Mio-Pliocene and Pleistocene

Entrapment Mechanism: Stratigraphic and Strati-structural

Envisaged plays: Pleistocene Deepwater channel-lobe complexes, Pliocene Deepwater channel complexes abutting against frontal thrust, Late Miocene channelized lobes on the slope created by the frontal thrust.

Target Horizon: To explore prospectivity in Pliocene Deepwater channel complexes abutting against frontal thrust, Late Miocene channelized lobes on the slope created by the frontal thrust, Pleistocene Deepwater channel-lobe complexes.





Data Availability		
2D (LKM)	3D (SKM)	Well
3996	6019	3

Petroleum System:

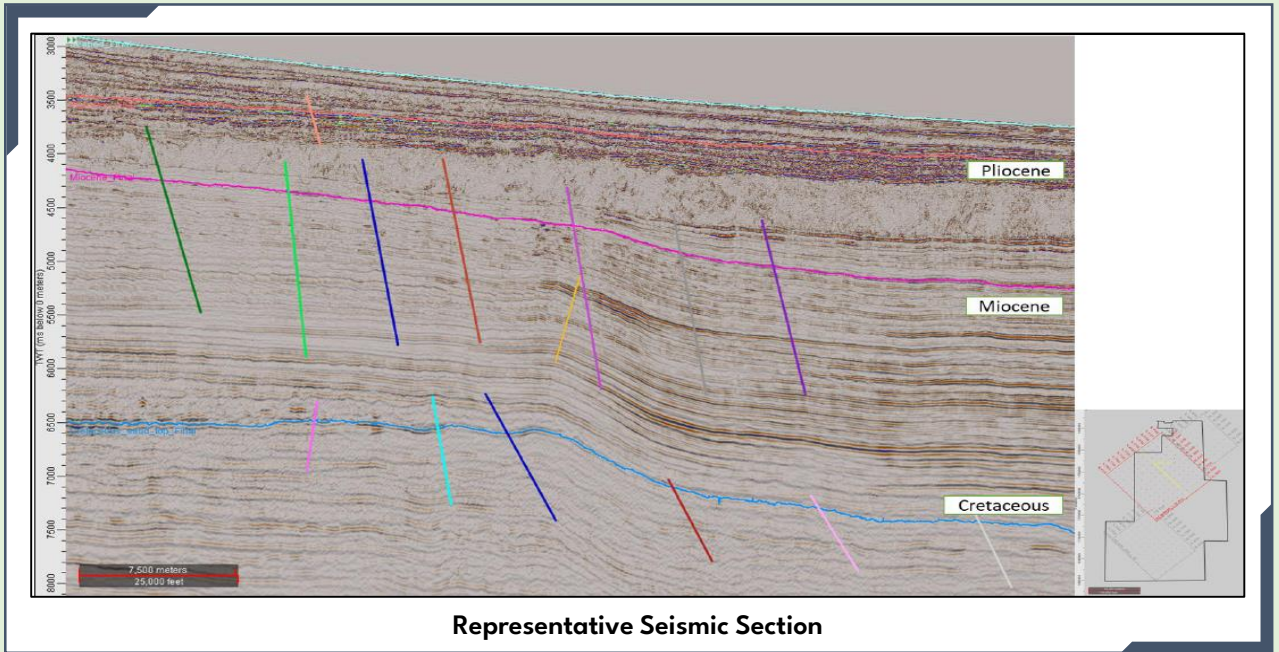
Source rock: Mesozoic/Eocene-Oligocene (Thermogenic), Mio-Pleistocene (Biogenic)

Reservoir: Mio-Pliocene and Pleistocene

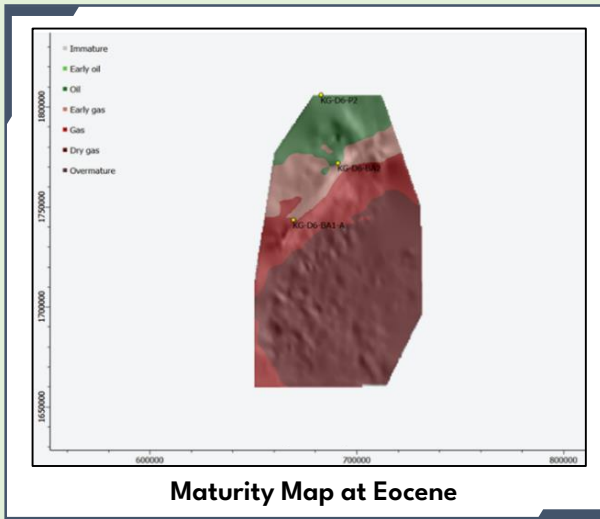
Entrapment Mechanism: Stratigraphic and Strati-structural

Envisaged plays: Pleistocene Deepwater channel-lobe complexes, Pliocene Deepwater channel complexes abutting against frontal thrust, Late Miocene channelized lobes on the slope created by the frontal thrust.

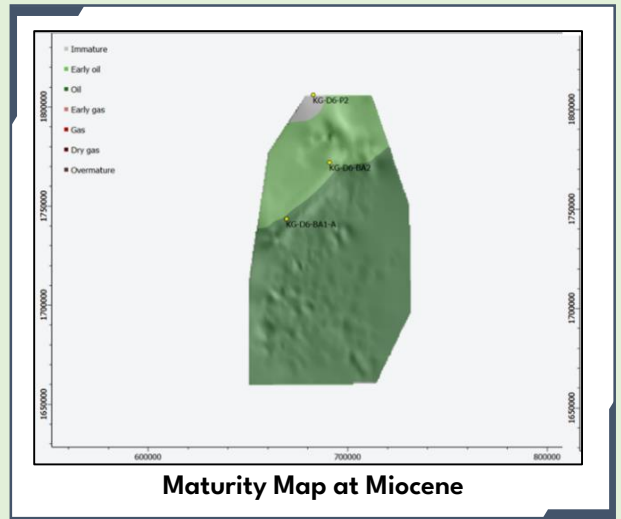
Target Horizon: To explore prospectivity in Pliocene deep-water channel complexes abutting against frontal thrust, Late Miocene channelized lobes on the slope created by the frontal thrust, Pleistocene deep-water channel-lobe complexes.



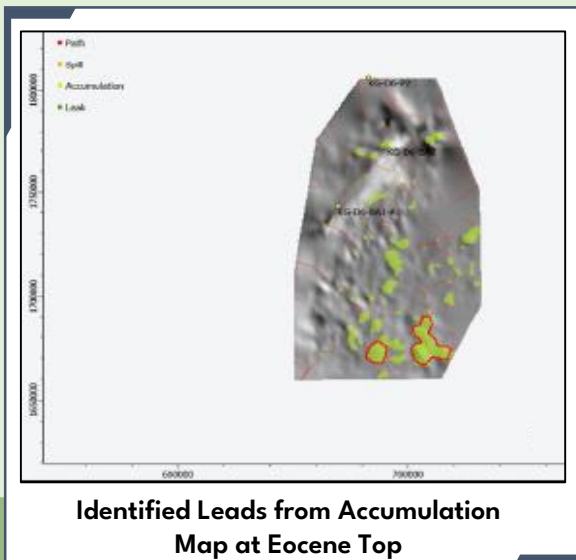
Representative Seismic Section



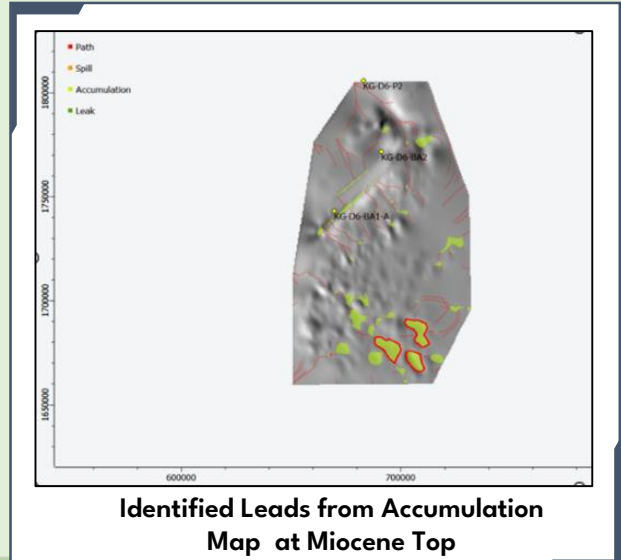
Maturity Map at Eocene



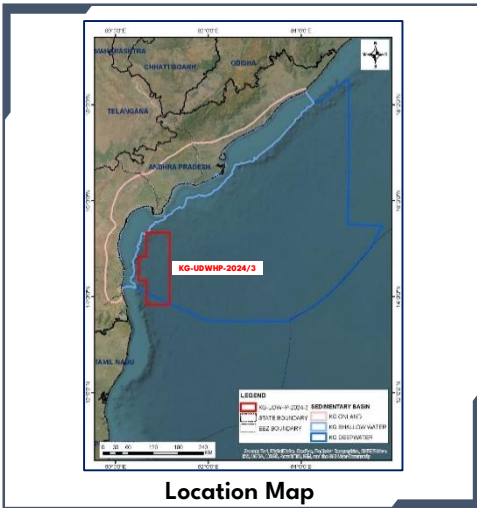
Maturity Map at Miocene



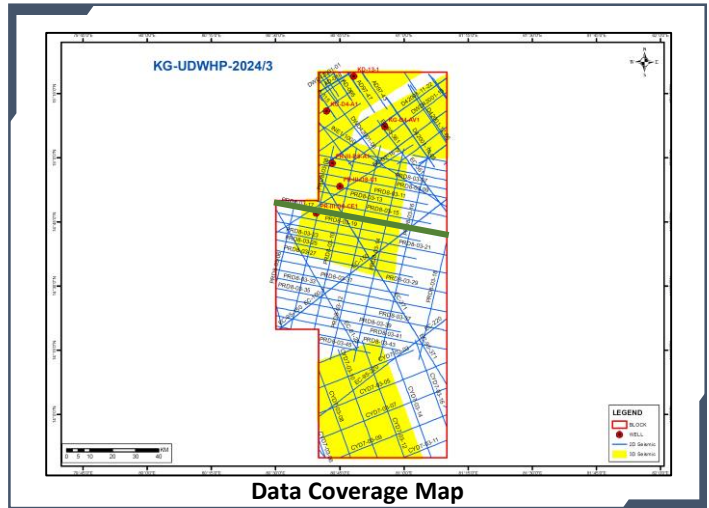
Identified Leads from Accumulation Map at Eocene Top



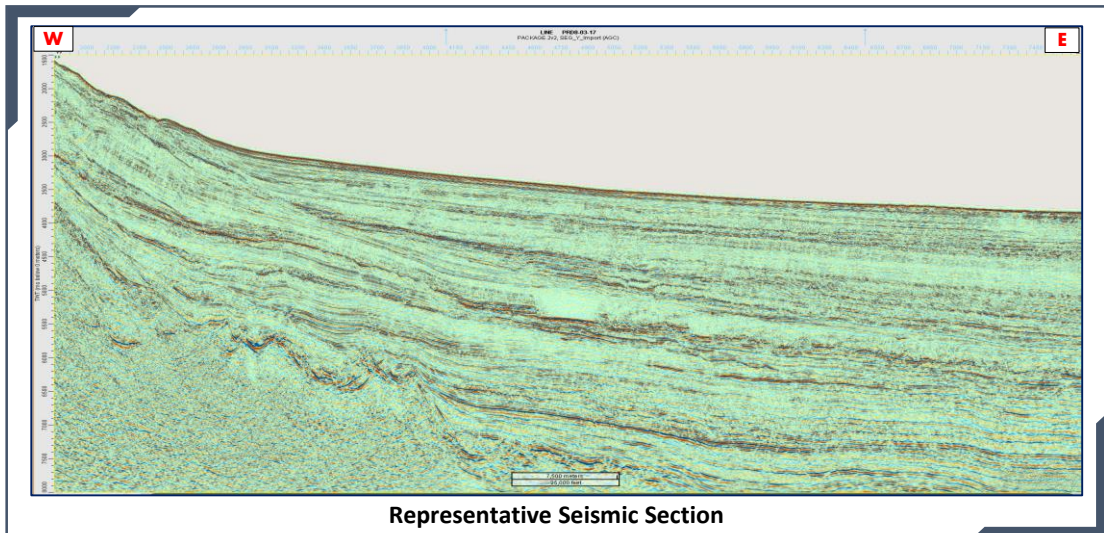
Identified Leads from Accumulation Map at Miocene Top



Location Map



Data Coverage Map



Representative Seismic Section

Data Availability

2D (LKM)	3D (SKM)	Well
4132	5035	6

Target Horizon: To explore prospectivity in Pliocene Deep-water channel complexes abutting against Frontal Thrust, Late Miocene channelized lobes on the slope created by the Frontal Thrust, Pleistocene Deep-water channel-lobe complexes.

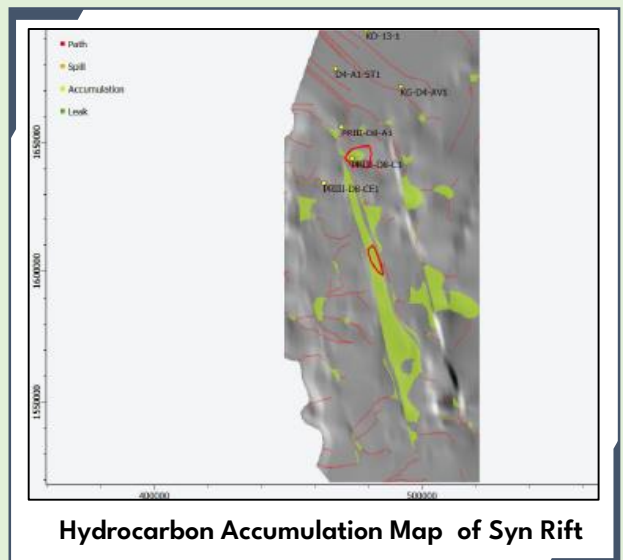
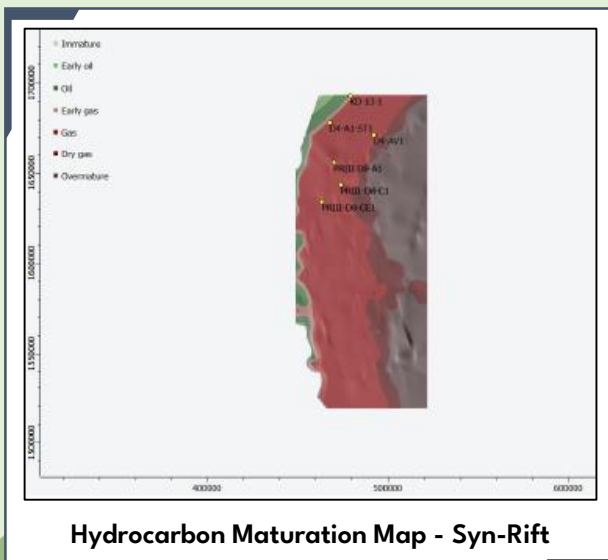
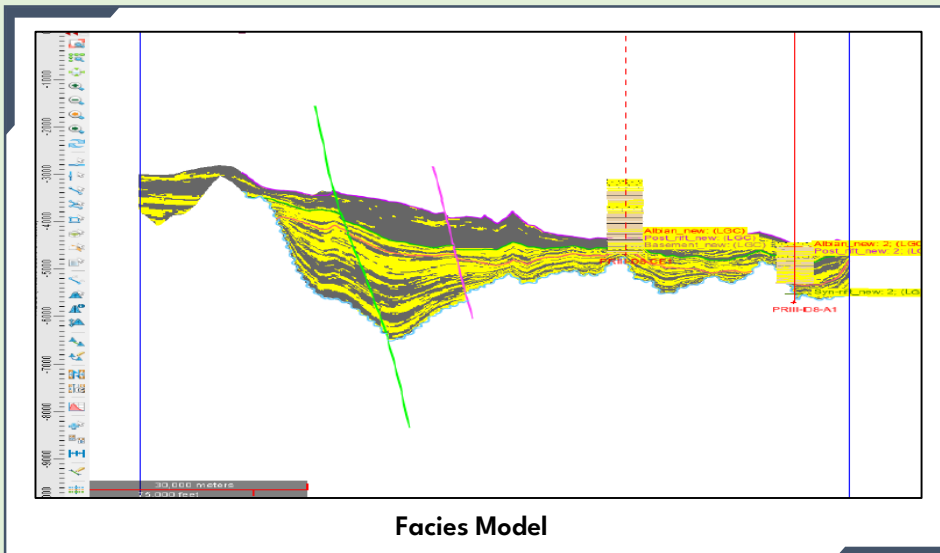
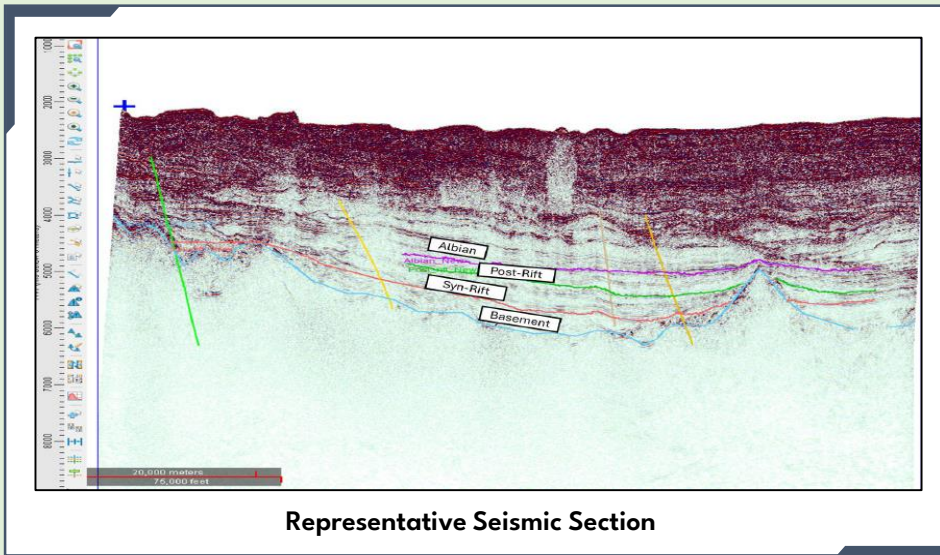
Petroleum System:

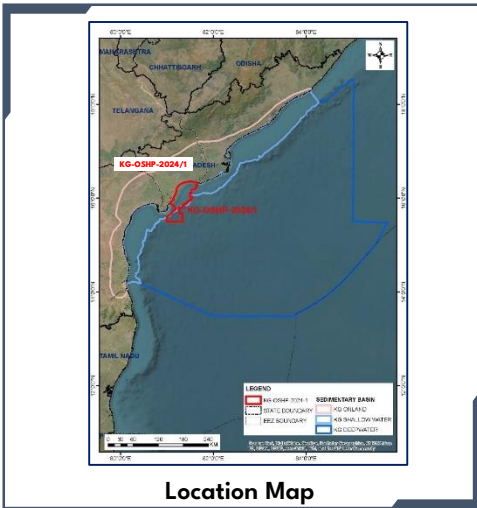
Source rock: Mesozoic/Eocene-Oligocene (Thermogenic), Mio-Pleistocene (Biogenic)

Reservoir: Mio-Pliocene and Pleistocene

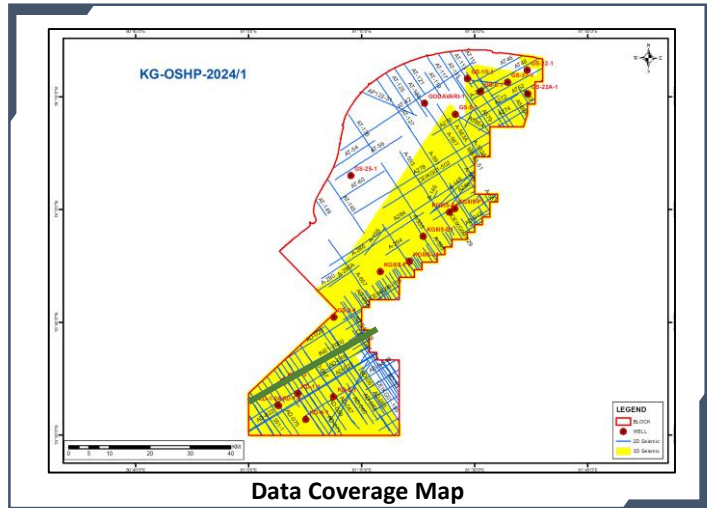
Entrapment Mechanism: Stratigraphic and Strati-structural

Envisaged plays: Pleistocene Deepwater channel-lobe complexes, Pliocene Deepwater channel complexes abutting against Frontal Thrust, Late Miocene channelized lobes on the slope created by the Frontal Thrust.

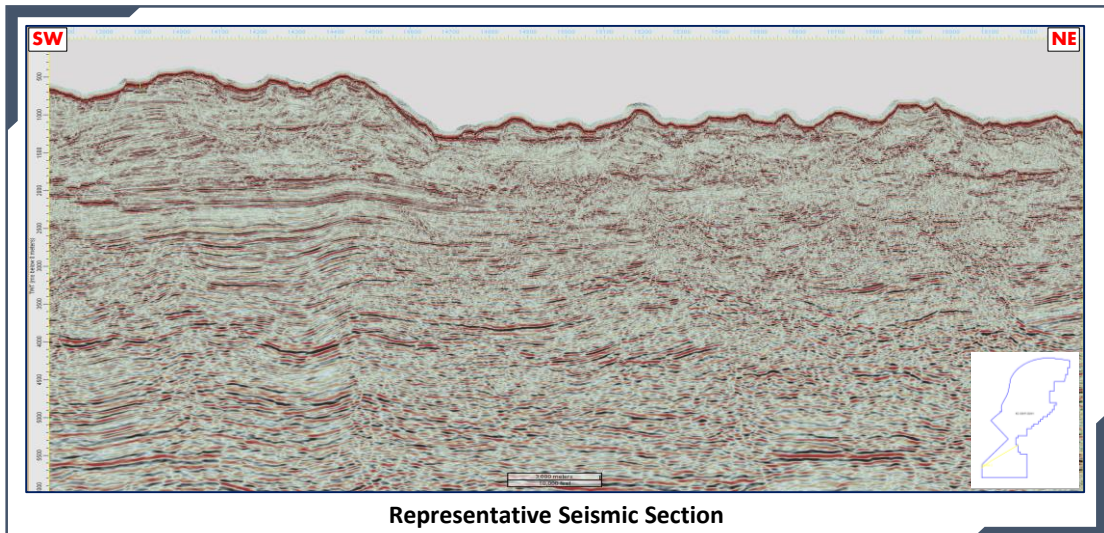




Location Map



Data Coverage Map



Representative Seismic Section

Data Availability

2D (LKM)	3D (SKM)	Well
2014	1811	20

Petroleum System:

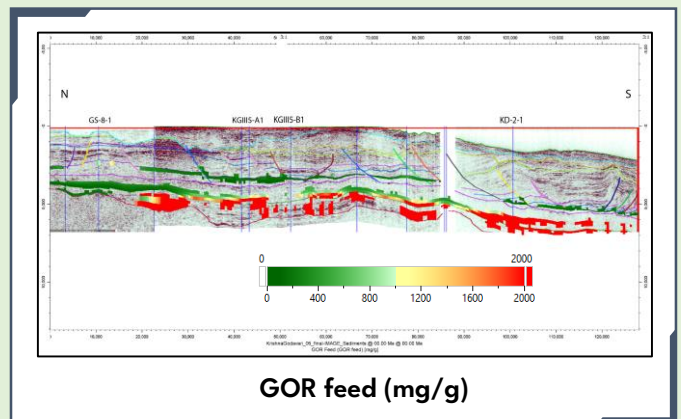
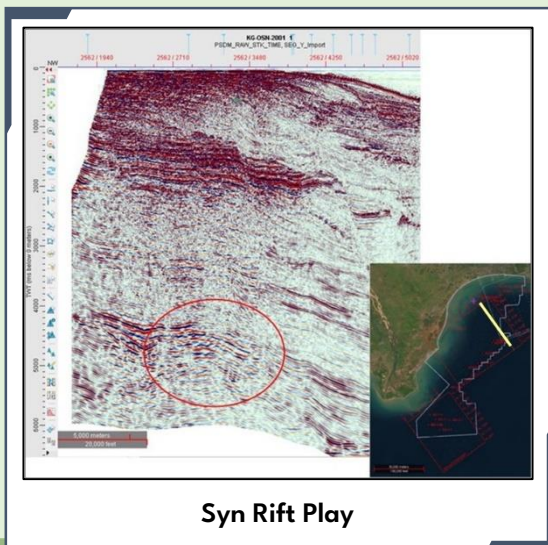
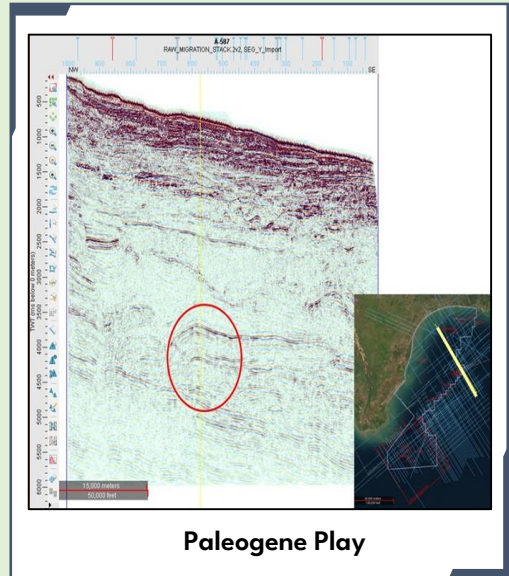
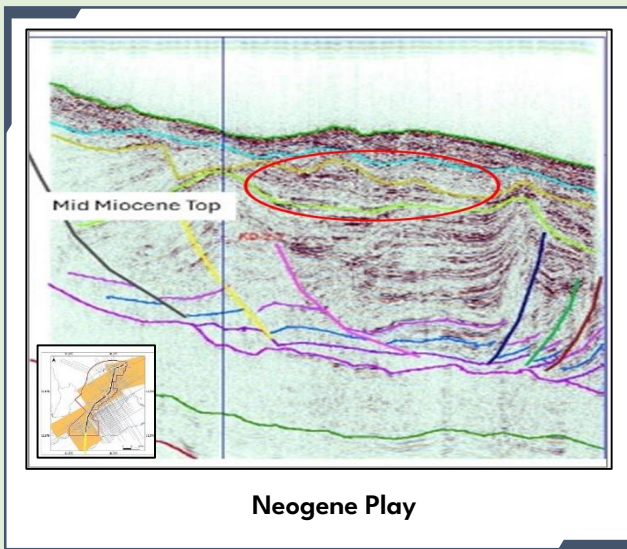
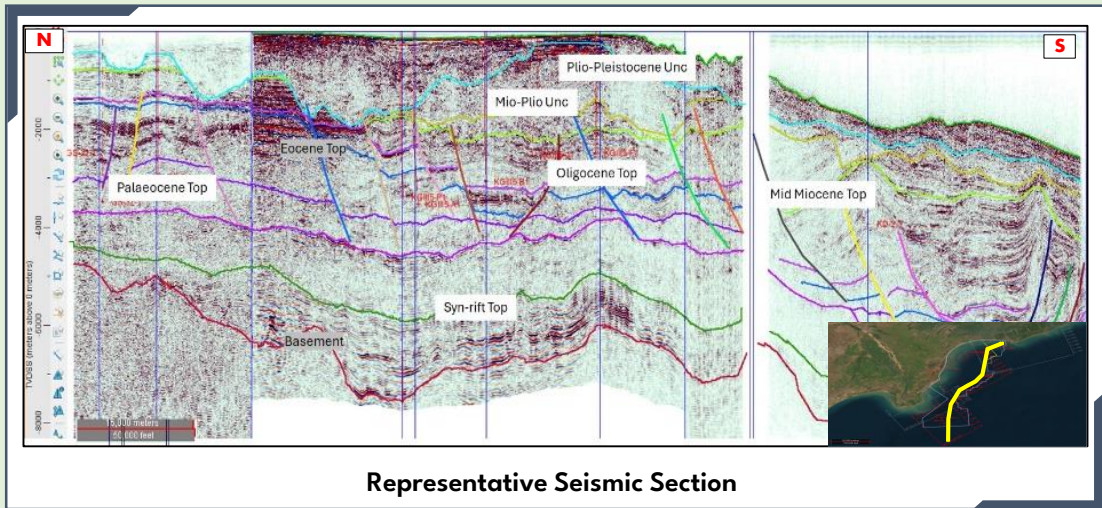
Source rock: Mesozoic / Eocene-Oligocene (Thermogenic), Mio-Pleistocene (Biogenic)

Reservoir: Mio-Pliocene and Pleistocene

Entrapment Mechanism: Stratigraphic and Strati-structural

Envisaged plays: Pleistocene Deepwater channel-lobe complexes, Pliocene Deepwater channel complexes abutting against Frontal Thrust, Late Miocene channelized lobes on the slope created by the Frontal Thrust.

Target Horizon: To explore prospectivity in Miocene and Pliocene plays of offshore bars, channel and slope fans.

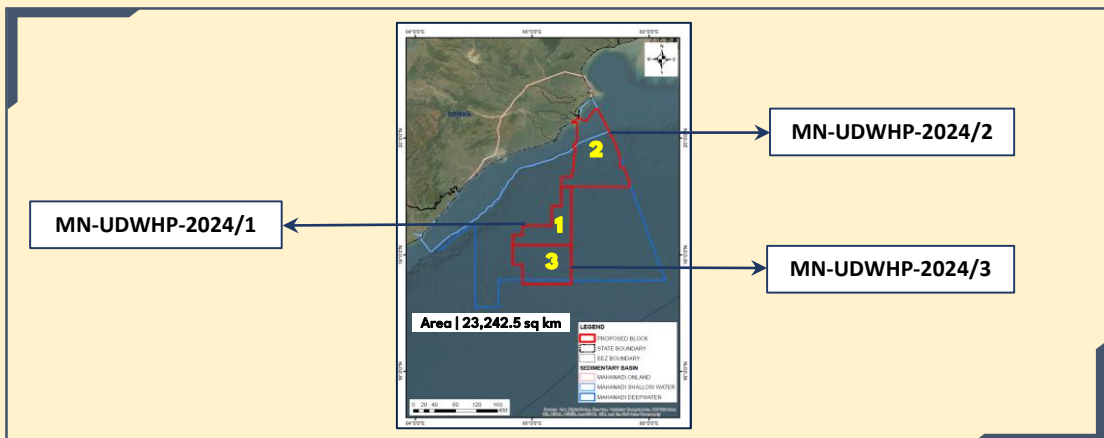
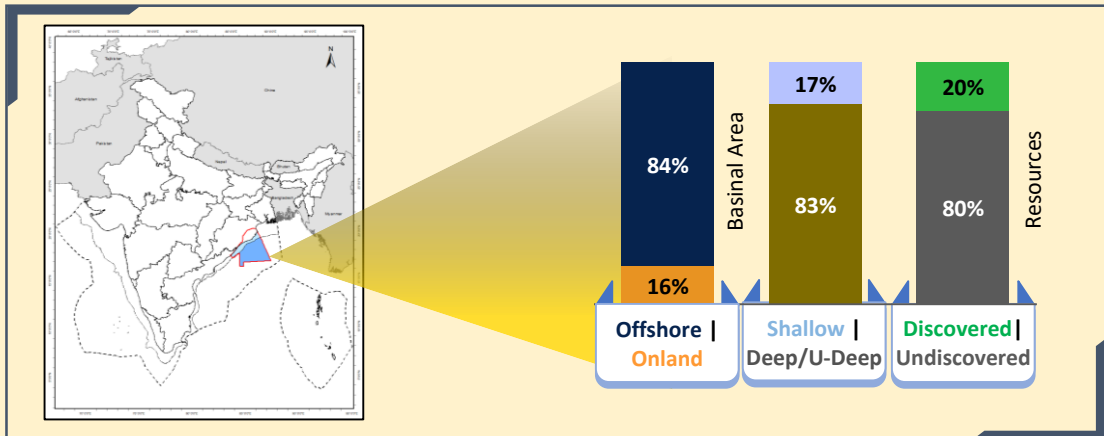


Mahanadi Basin

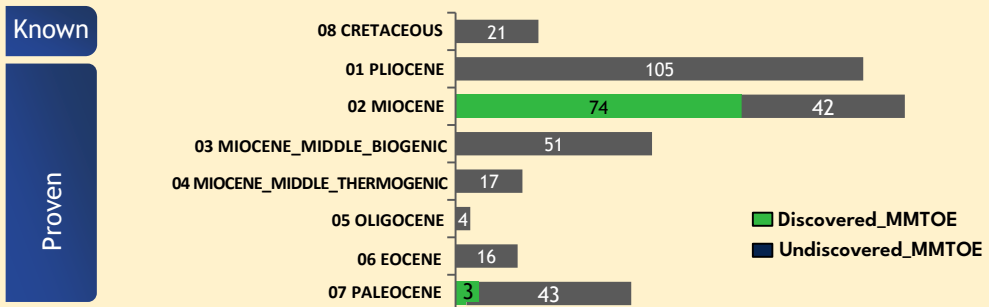
MAHANADI BASIN

Significant resource in Mio-Pliocene

3 Blocks on Offer

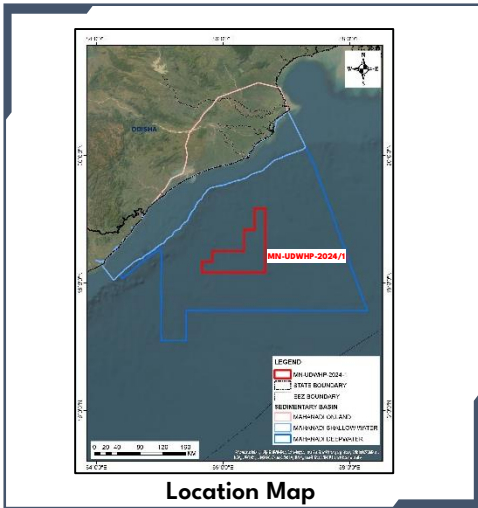


Basin's risked resource potential – 299 MMTOE

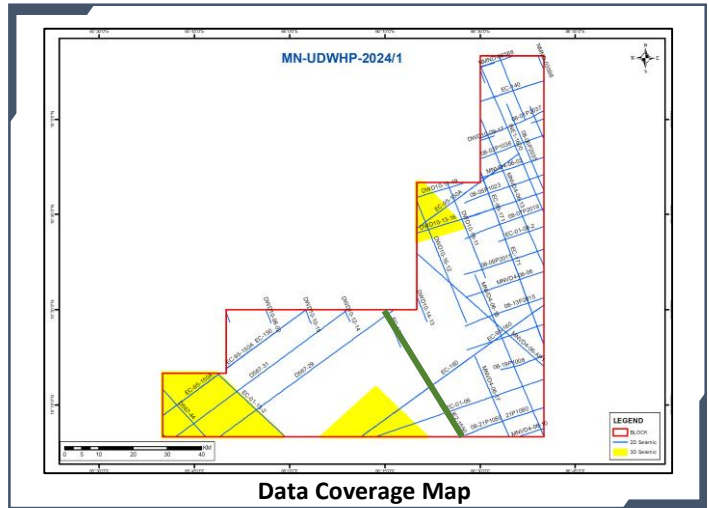


Key Characteristics

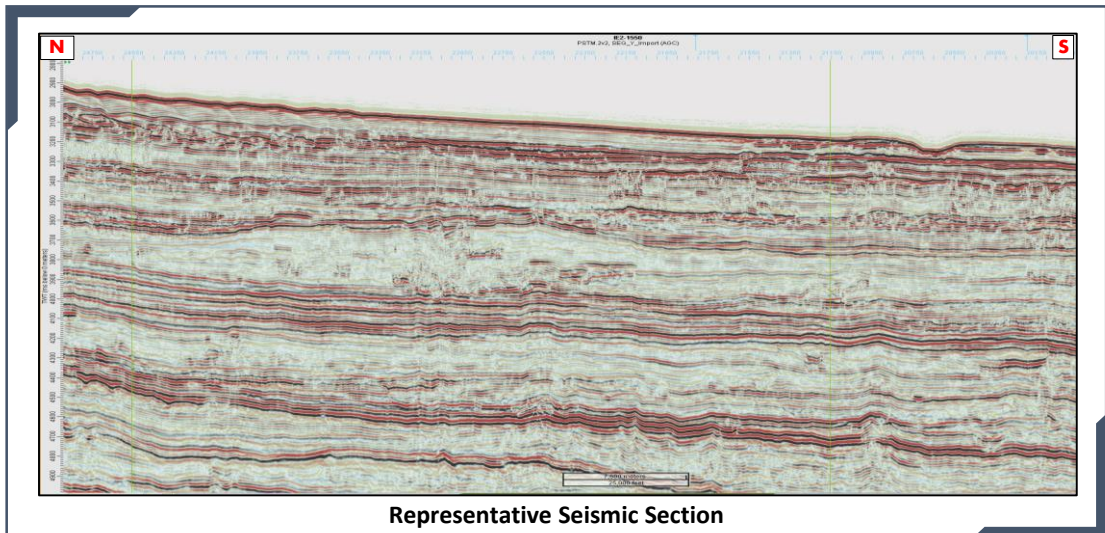
- Strong analogy with easterly Bengal offshore that has numerous small-to-medium discoveries
- Discovered Miocene play occurs as discrete and stacked reservoirs
- Opportunity to explore significant prospective resource of Pliocene Play



Location Map



Data Coverage Map



Representative Seismic Section

Data Availability

2D (LKM)	3D (SKM)	Well
1496	759	0

Petroleum System:

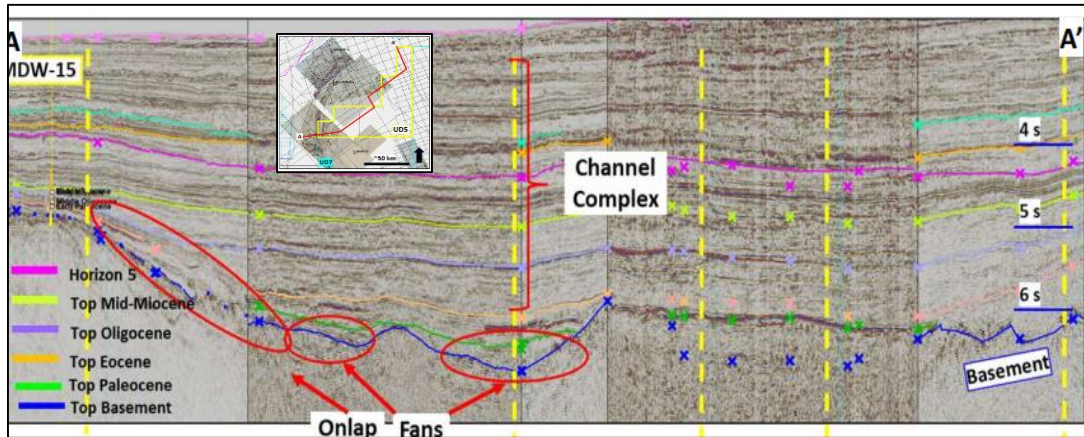
Source rock: Cretaceous / Paleogene (Thermogenic), Neogene (Biogenic)

Reservoir: Cretaceous, Oligocene, Mio-Pliocene and Pleistocene

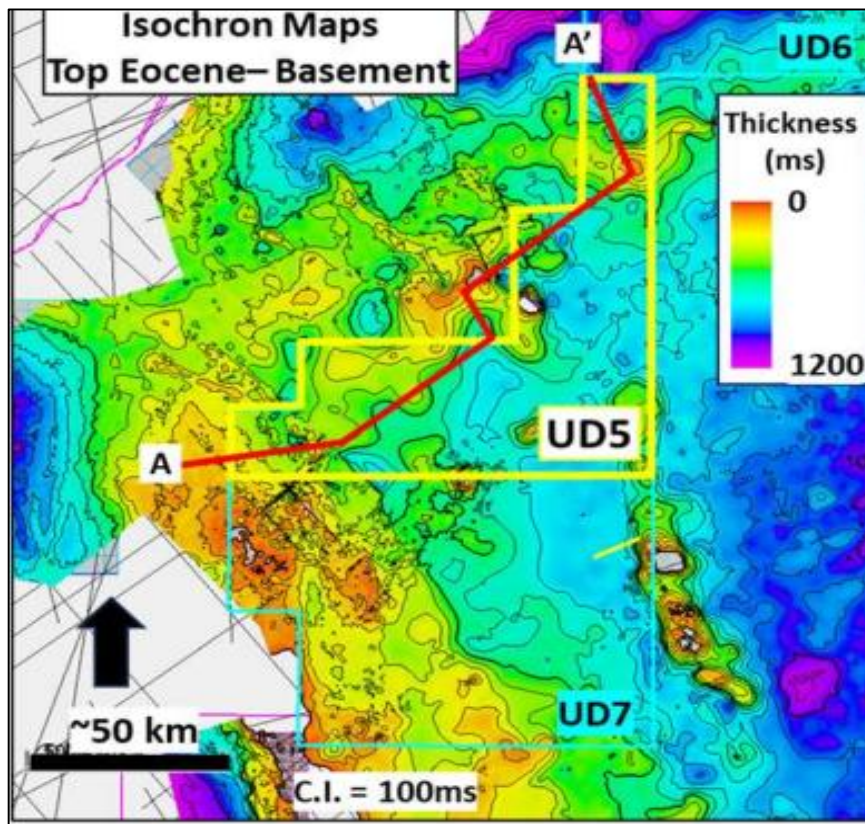
Entrapment Mechanism: Stratigraphic, Strati-structural

Envisaged plays: Paleogene and Neogene are proven plays, while Cretaceous is known but un-discovered play.

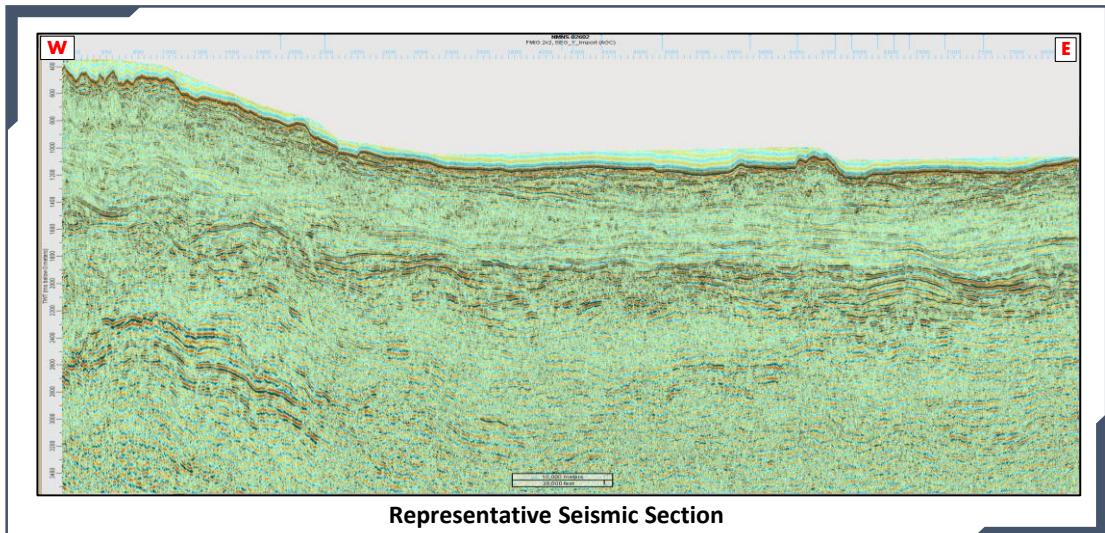
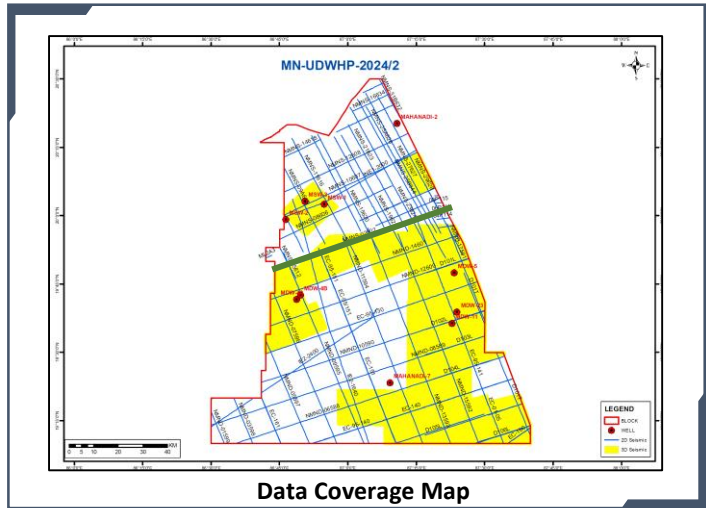
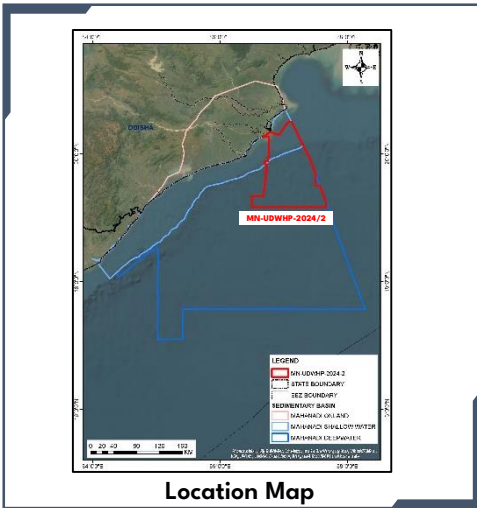
Target Horizon: To explore prospectivity in Middle Miocene and Cretaceous plays.



Seismic Section Showing Onlap & Channel



Isochron Map



Data Availability		
2D (LKM)	3D (SKM)	Well
3359	4541	10

Petroleum System:

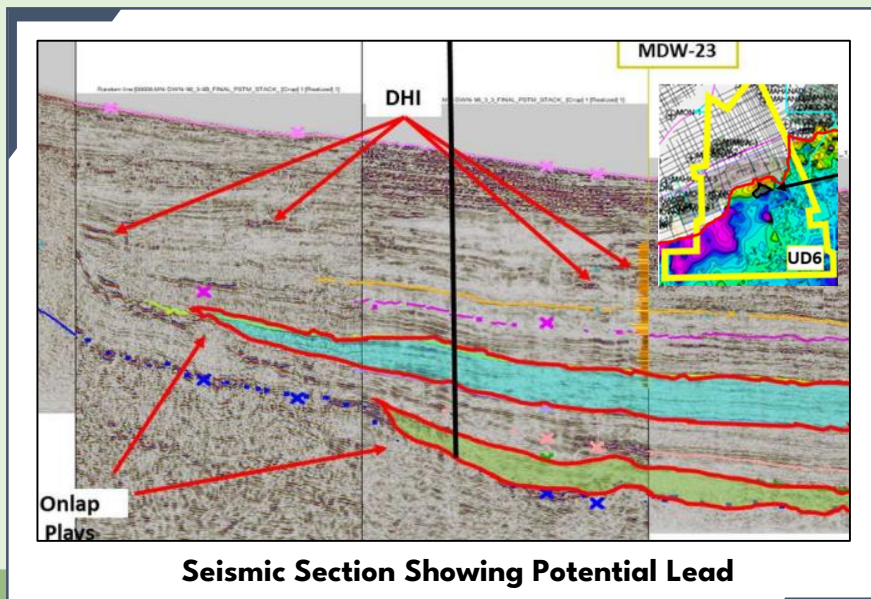
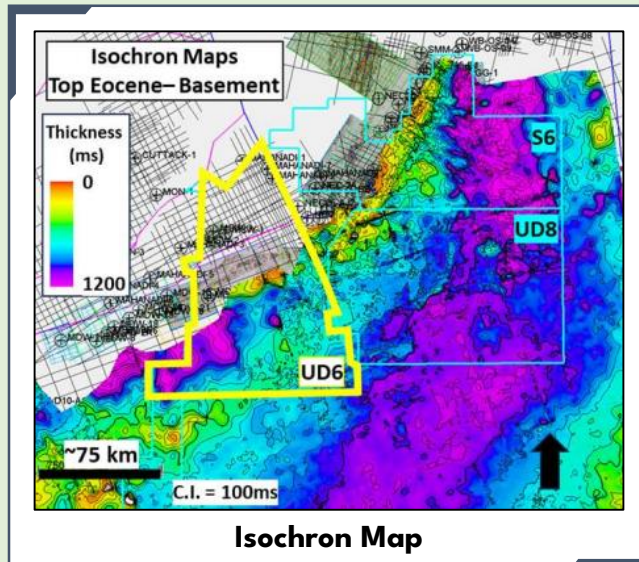
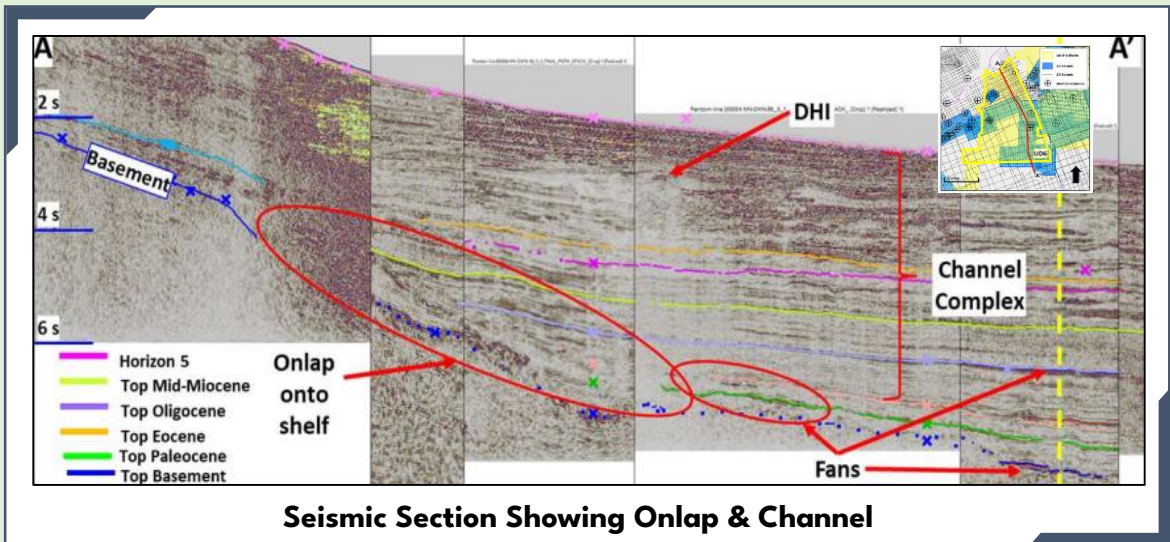
Source rock: Cretaceous /Paleogene (Thermogenic), Neogene (Biogenic)

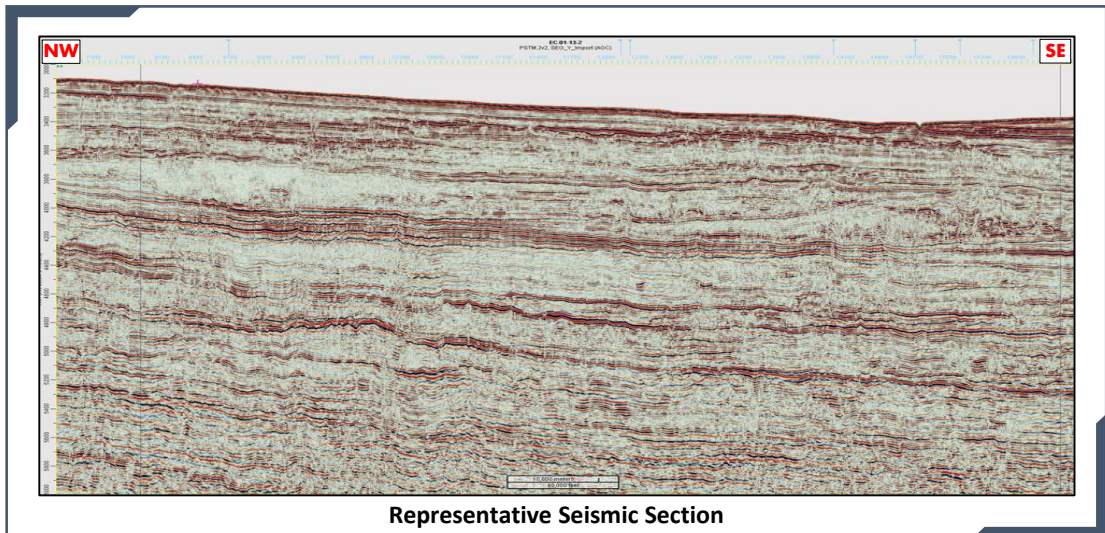
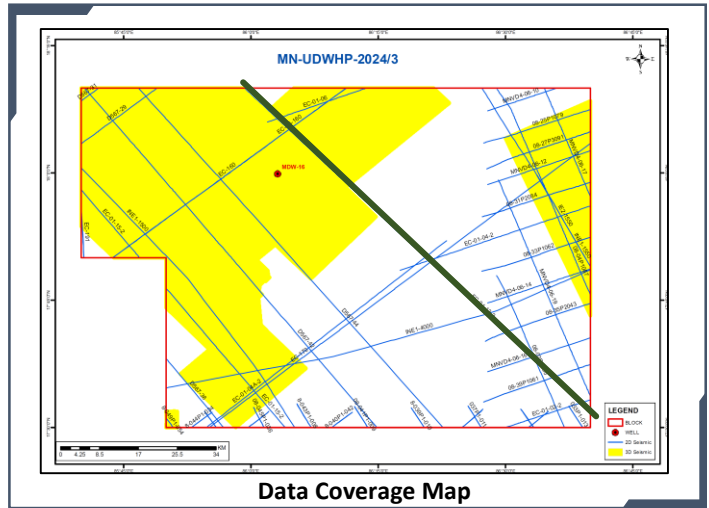
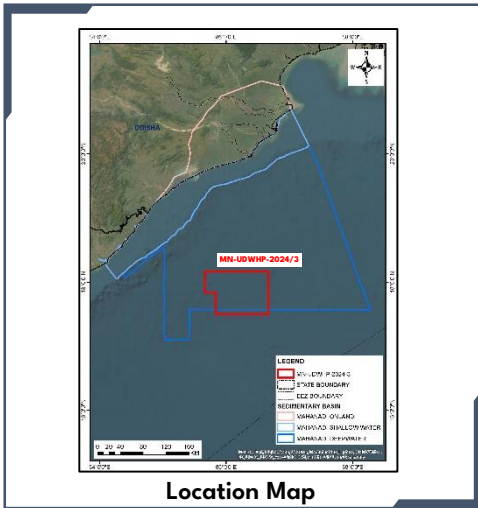
Reservoir: Cretaceous, Oligocene, Mio-Pliocene and Pleistocene

Entrapment Mechanism: Stratigraphic, Strati-structural

Envisaged plays: Paleogene and Neogene are proven plays , while Cretaceous is known but un-discovered play.

Target Horizon: To explore prospectivity in Middle Miocene and Cretaceous





Data Availability		
2D (LKM)	3D (SKM)	Well
1749	6019	1

Target Horizon: To explore prospectivity in Middle Miocene and Cretaceous plays.

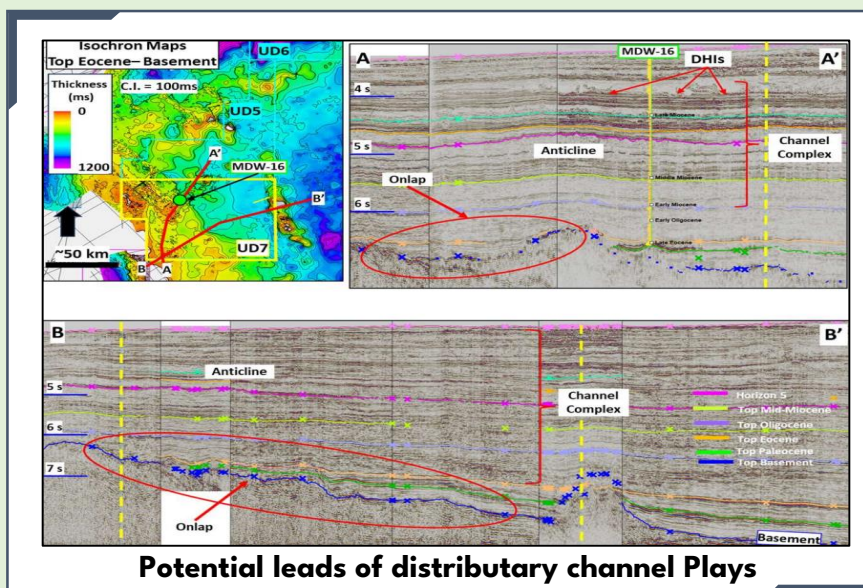
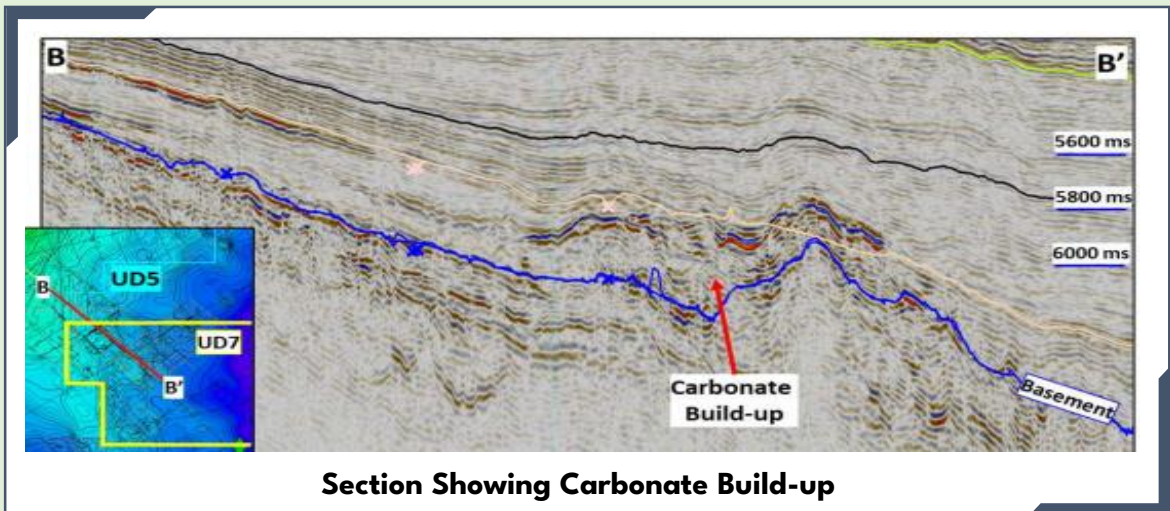
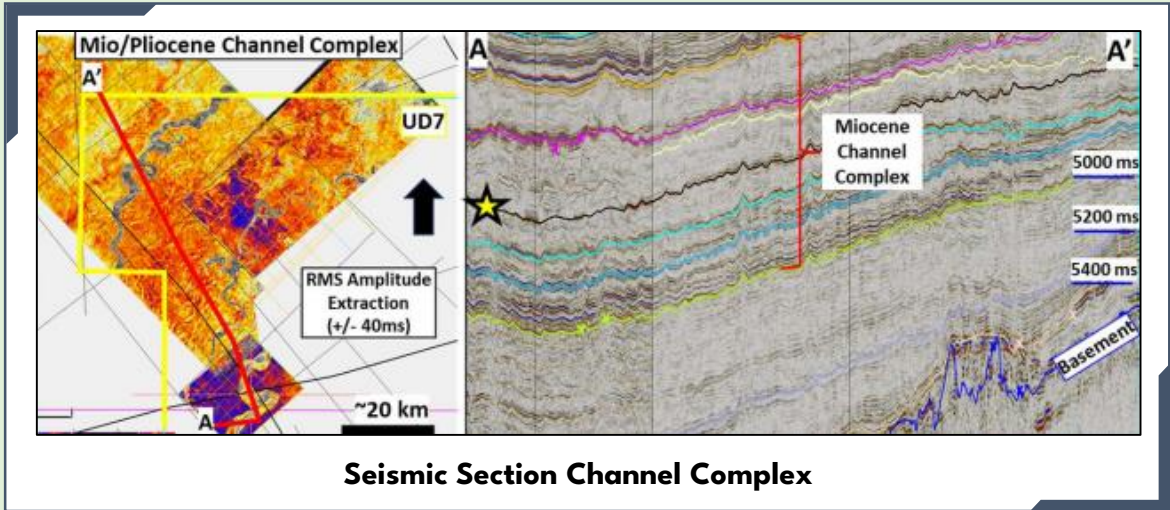
Petroleum System:

Source rock: Cretaceous/Paleogene (Thermogenic), Neogene (Biogenic)

Reservoir: Cretaceous, Oligocene, Mio-Pliocene and Pleistocene

Entrapment Mechanism: Stratigraphic, Strati-structural

Envisaged plays: Paleogene and Neogene are proven plays, while Cretaceous is known but un-discovered play.

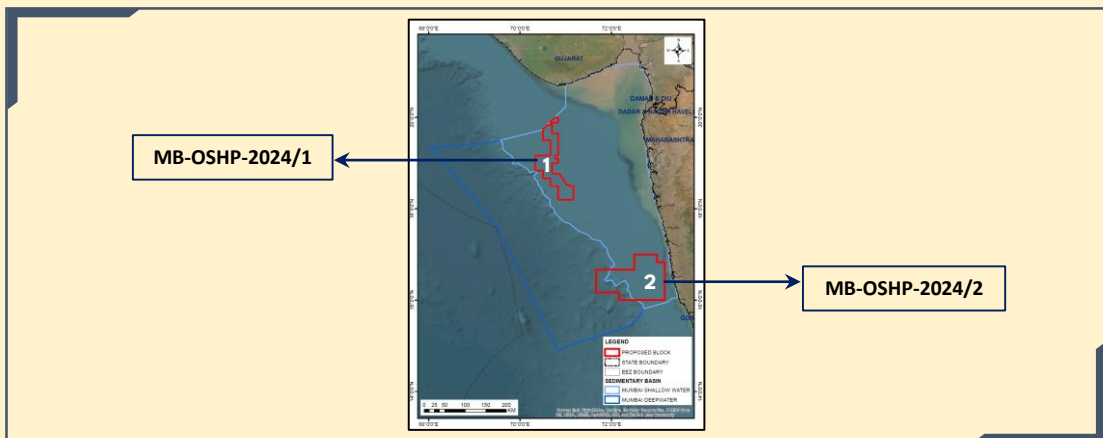
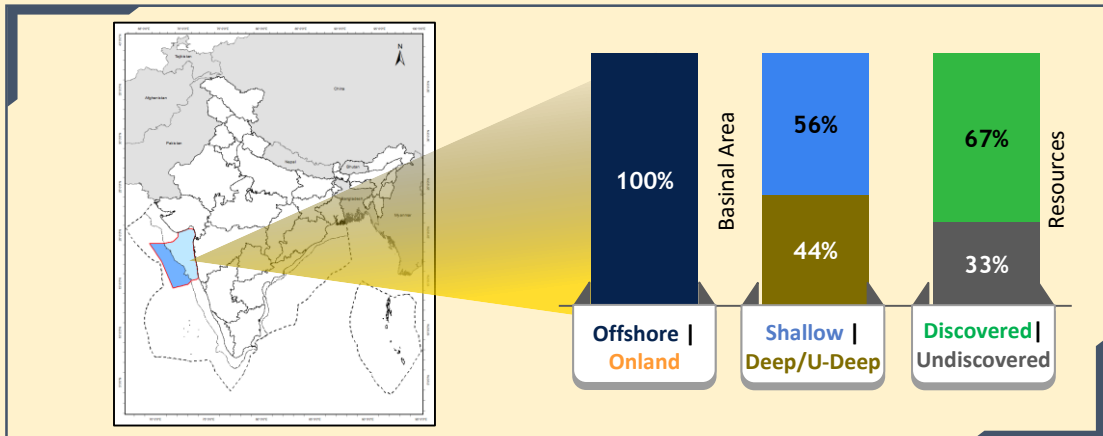


Mumbai Basin

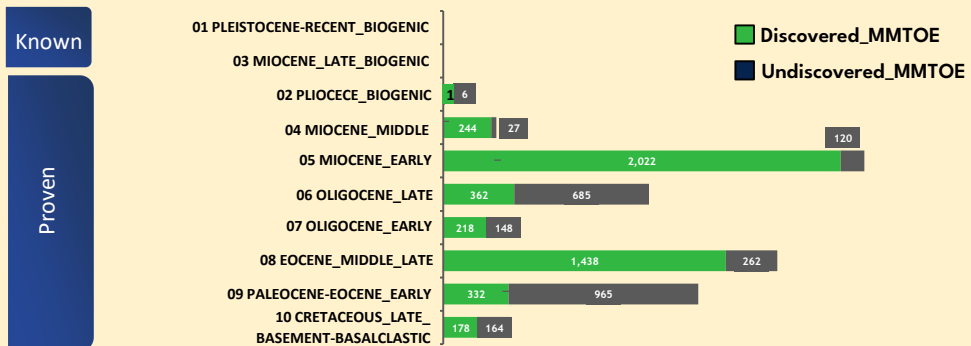
MUMBAI BASIN

Mostly discovered, Mesozoic an opportunity

2 Blocks on Offer

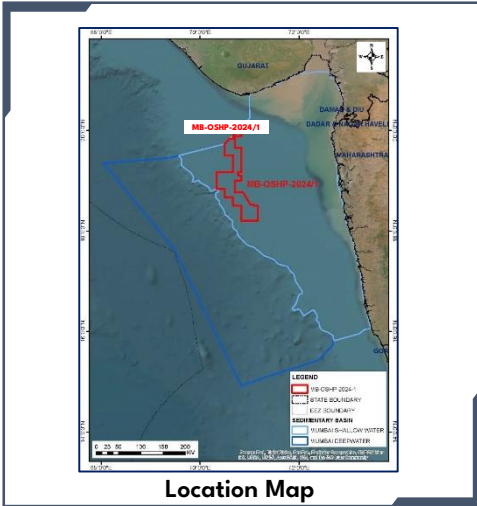


Basin's risked resource potential – 2,377 MMTOE

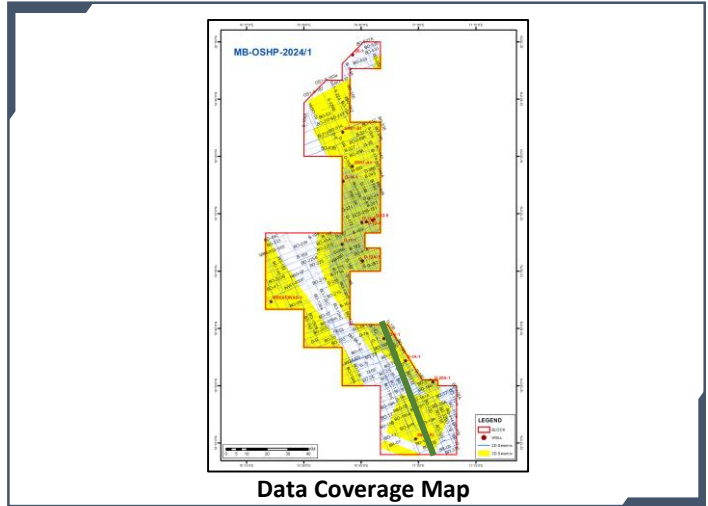


Key Characteristics

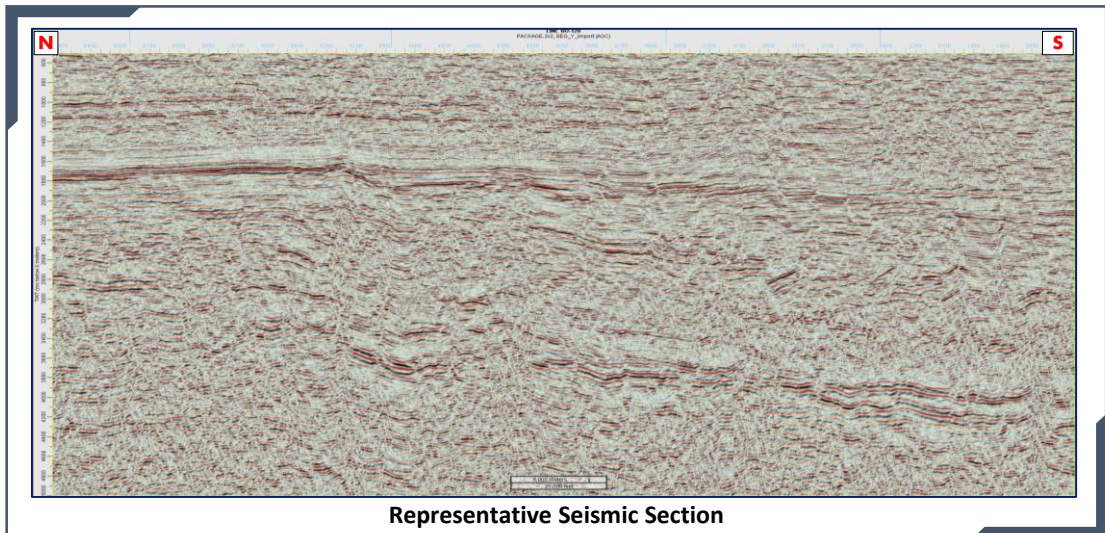
- The basin has discovered resources of 4.8 BTOE, producing half of country's oil and gas
- Opportunity to chase prospective plays (Paleocene and Eocene) towards Deepwater
- Opportunity to explore Sub-basalt Mesozoic Play at a deeper depth (3,000m+)



Location Map



Data Coverage Map



Representative Seismic Section

Data Availability

2D (LKM)	3D (SKM)	Well
19764	3596	15

Target Horizon: To explore prospectivity of Early Miocene and Middle Miocene

Petroleum System:

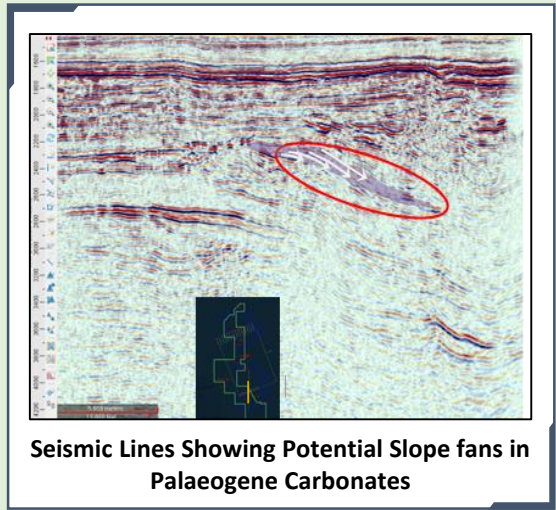
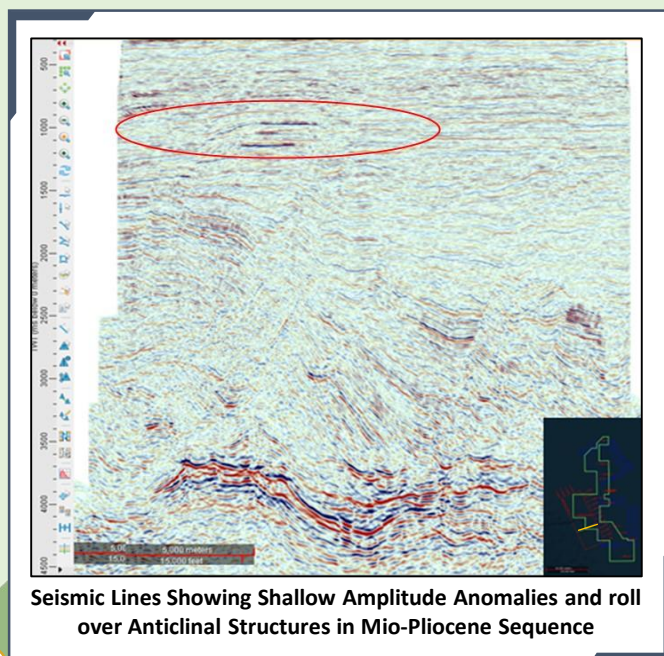
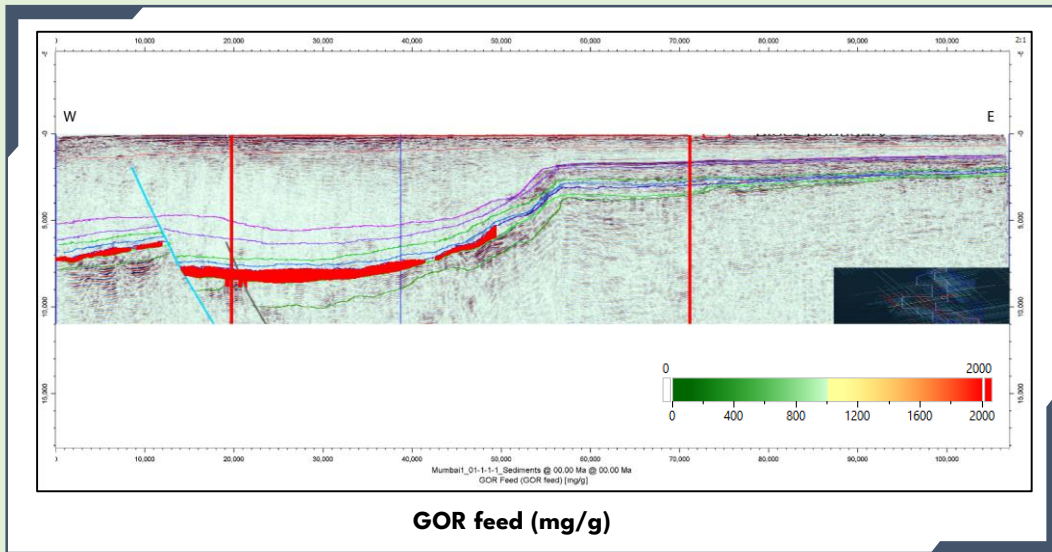
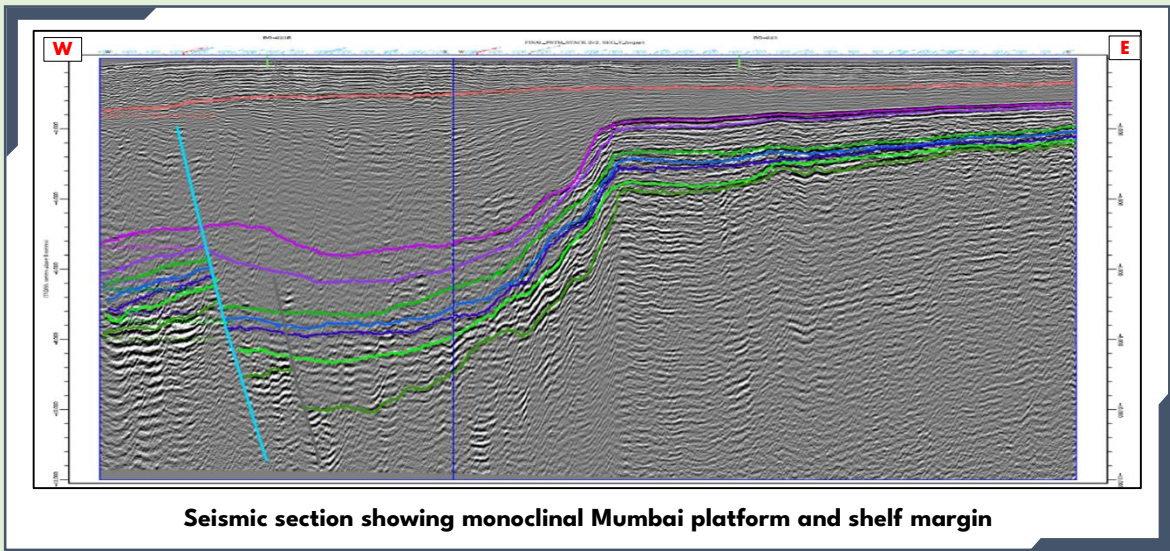
Source rock: Paleocene to Early Eocene

Reservoir: Panna Clastic (Paleocene), Devgarh Carbonate (Early Eocene), Bassein Limestone (Middle-to-Late Eocene), Mukta Limestone (Early Oligocene) and Miocene carbonates

Seal: Panna

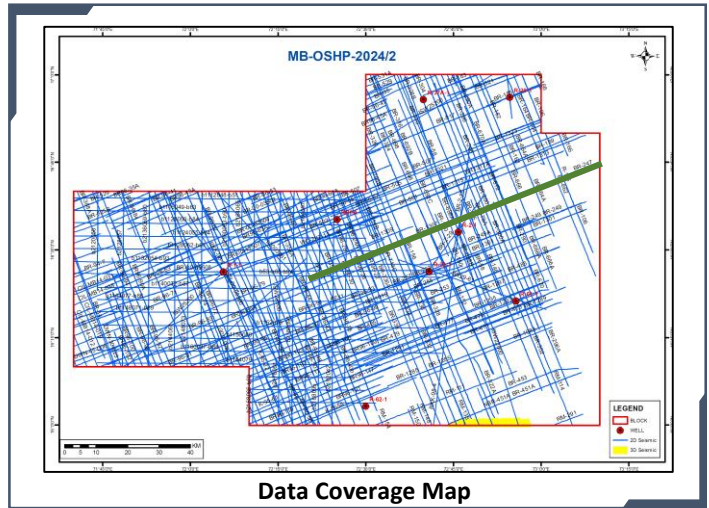
Entrapment mechanism: Structural (Fault-bound closures)

Envisaged play: Paleocene Clastic, Early Eocene Carbonate, Middle-Late Eocene Carbonate, Early Oligocene Carbonate and Miocene Carbonate

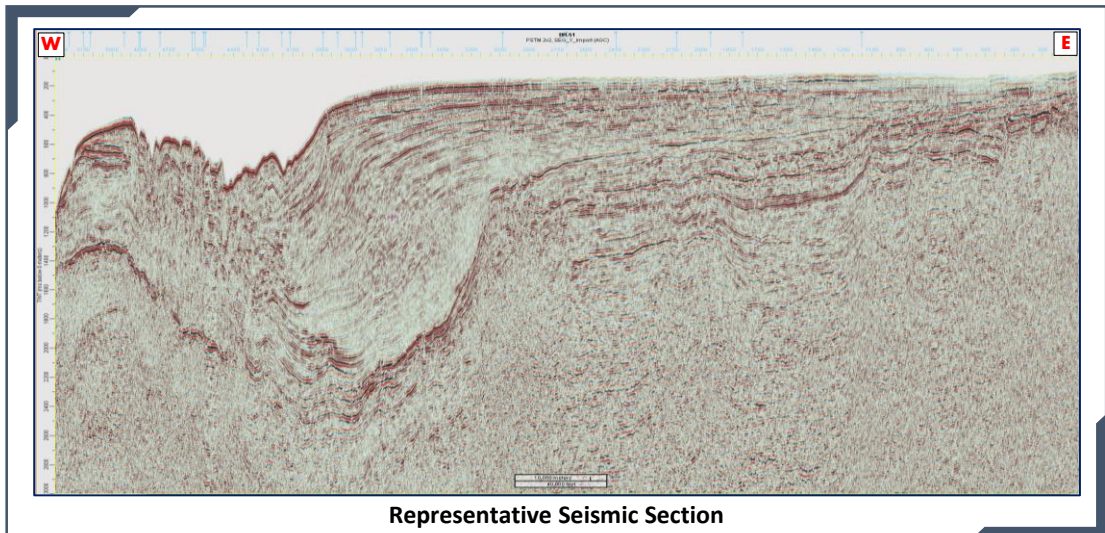




Location Map



Data Coverage Map



Representative Seismic Section

Data Availability

2D (LKM)	3D (SKM)	Well
23106	42	8

Petroleum System:

Source rock: Paleocene to Early Eocene

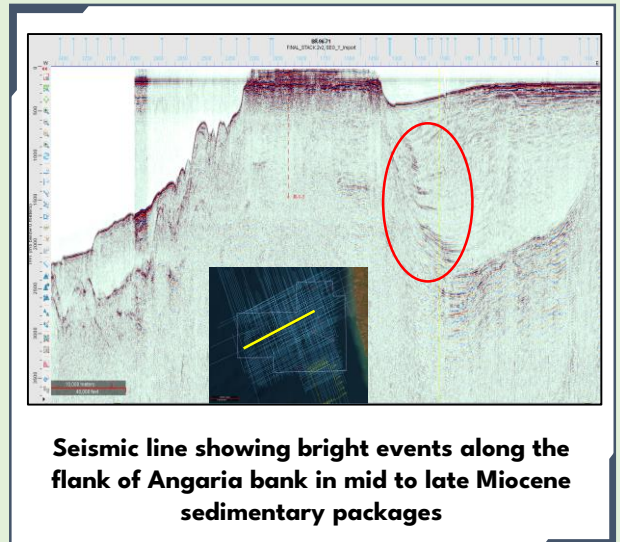
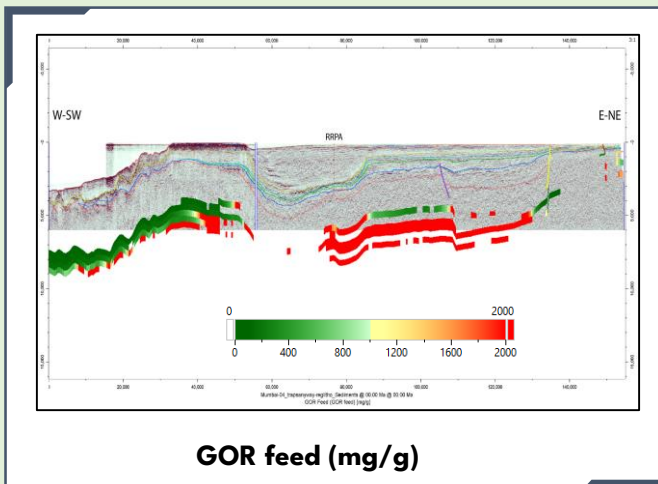
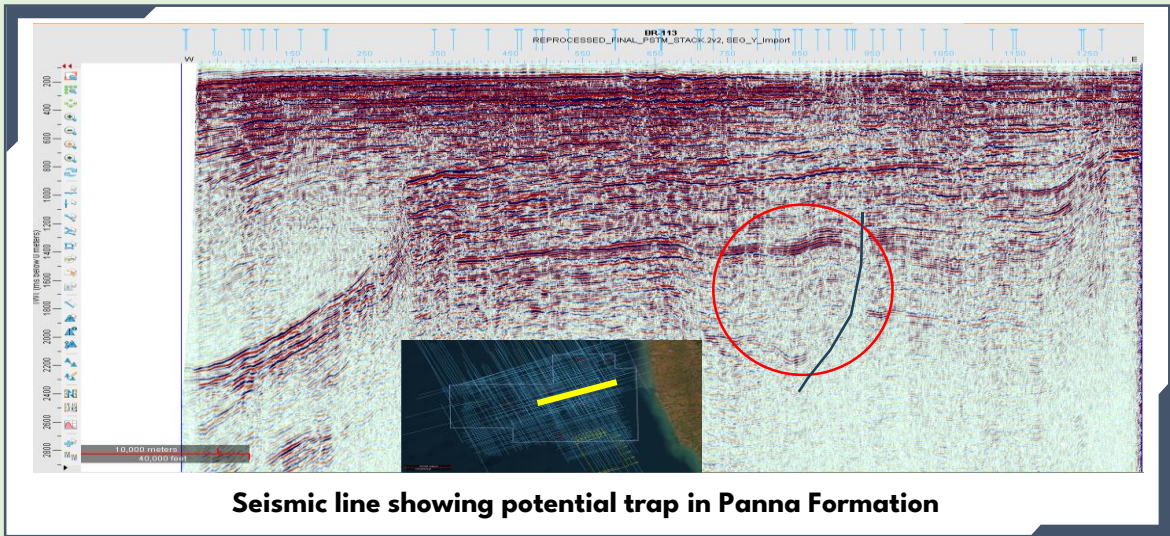
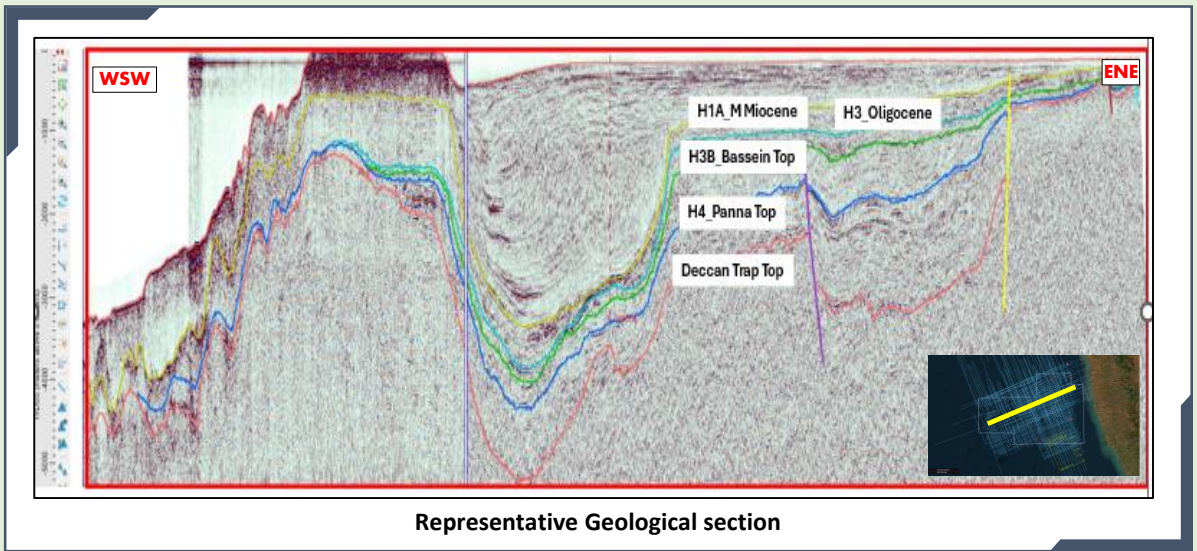
Reservoir: Panna Clastic (Paleocene), Devgarh Carbonate (Early Eocene), Bassein Limestone (Middle-to-Late Eocene), Mukta Limestone (Early Oligocene) and Miocene carbonates

Seal: Panna

Entrapment mechanism: Structural (Fault-bound closures)

Envisaged play: Paleocene Clastic, Early Eocene Carbonate, Middle-Late Eocene Carbonate, Early Oligocene Carbonate and Miocene Carbonate

Target Horizon: To explore prospectivity of Cretaceous, additionally play of Late Miocene (Biogenic)

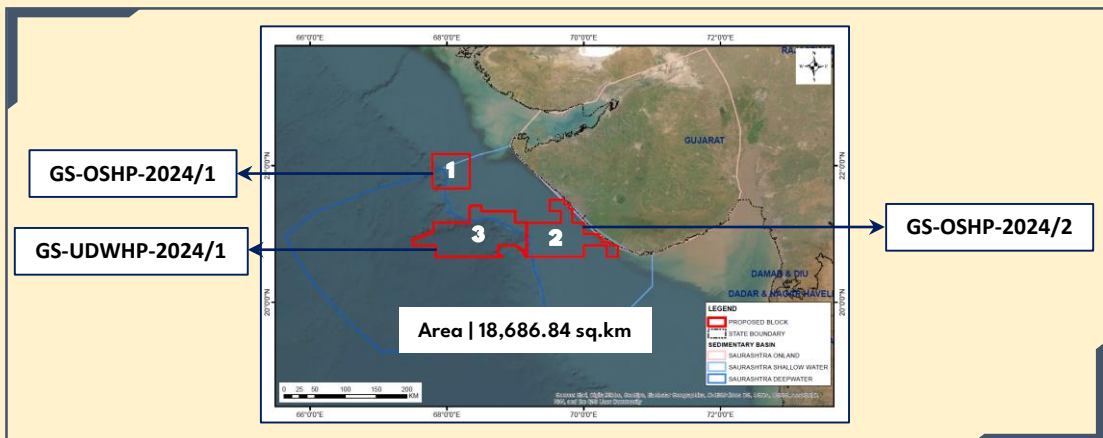
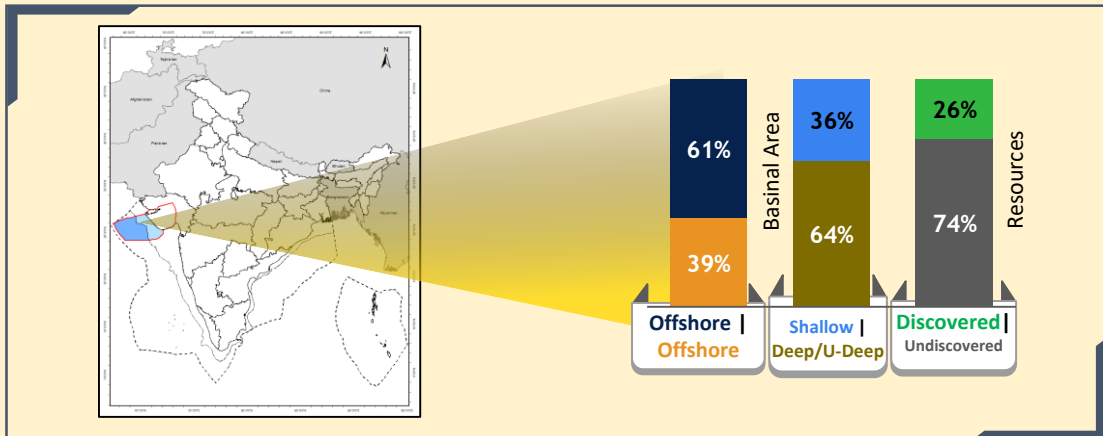


Saurashtra Basin

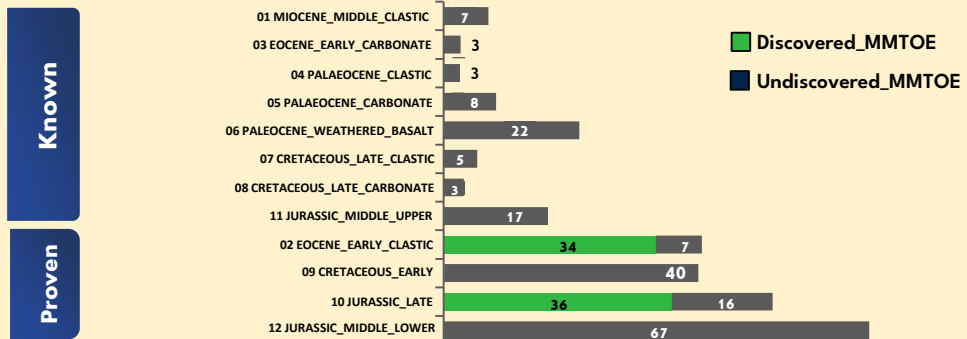
SAURASHTRA BASIN

Significant sub-basalt Mesozoic discovery

3 Blocks on Offer

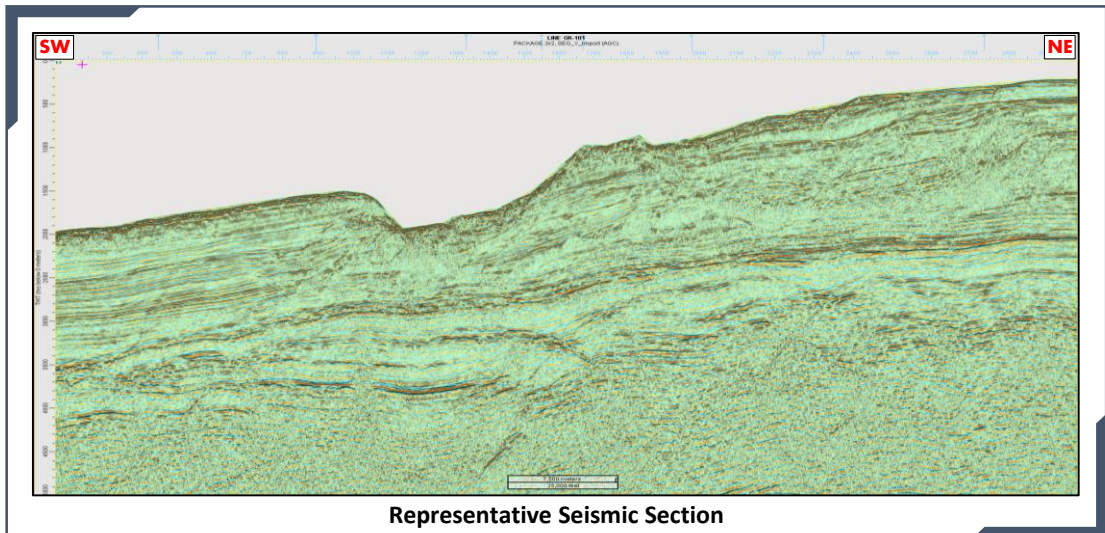
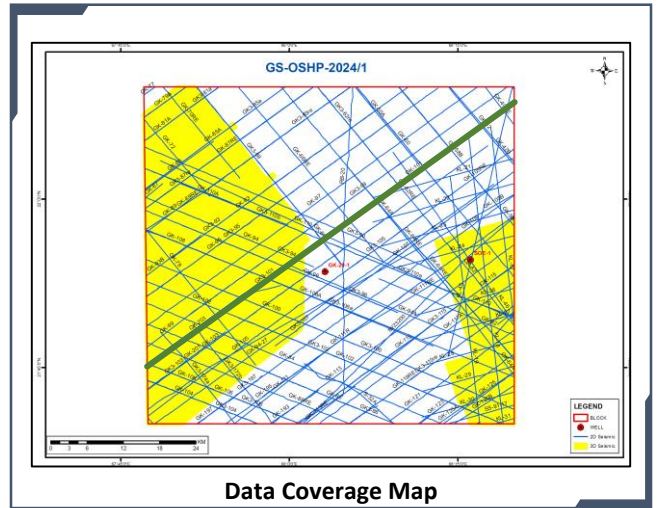


Basin's risked resource potential – 198 MMTOE



Key Characteristics

- Presence of prospective plays of **Middle Jurassic to Early Cretaceous**
- A significant gas discovery in **Early Cretaceous** reservoirs at 4,500m depth, below **2,500m thick weathered basalt**
- Extended proven **Tertiary Plays** of Kutch basin are potential target

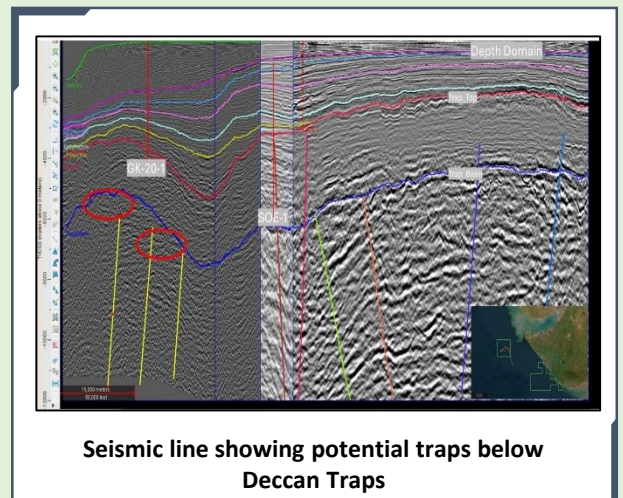
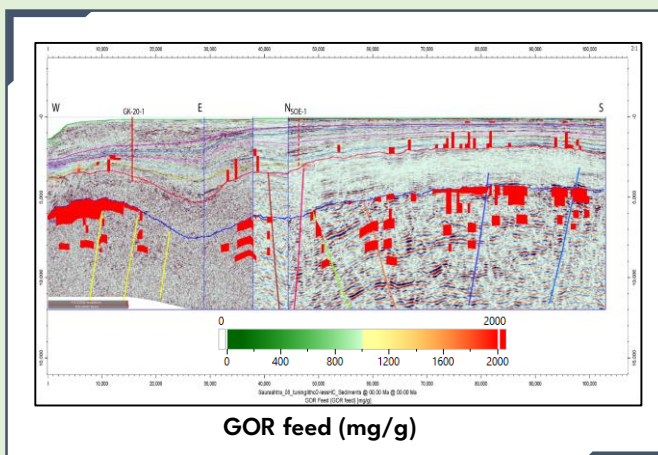
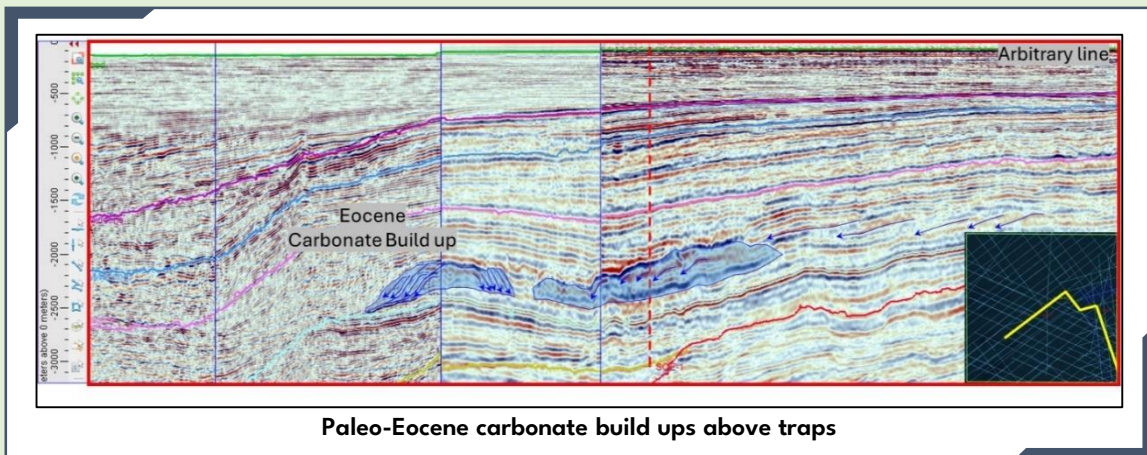
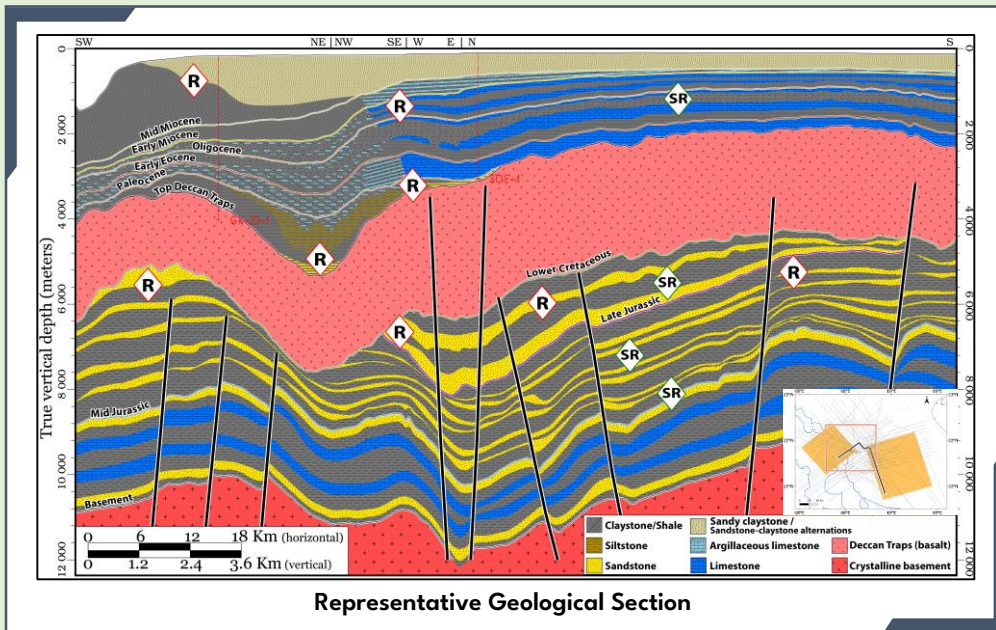


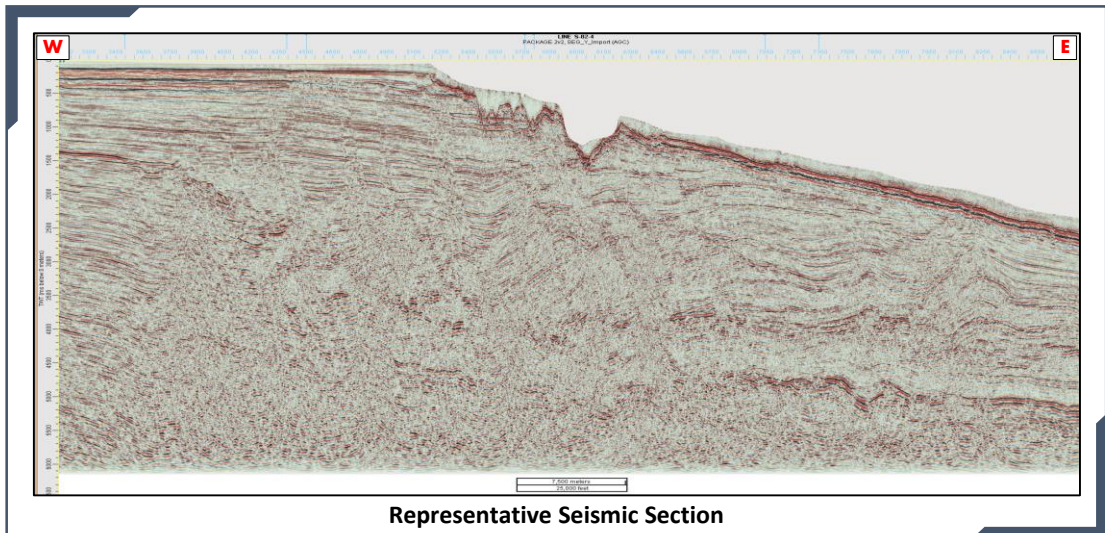
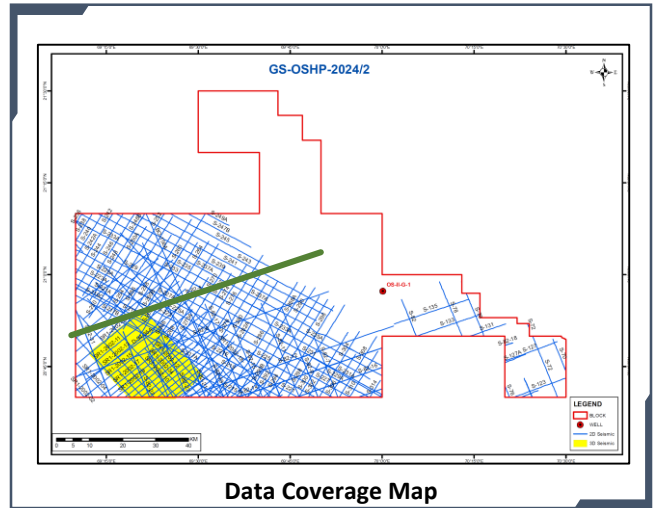
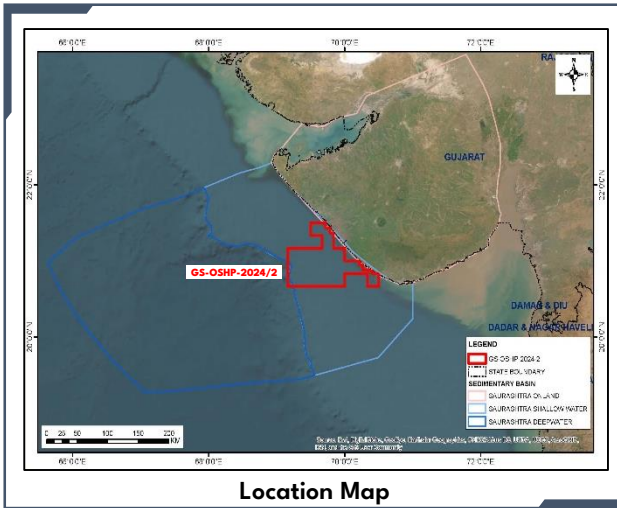
Data Availability		
2D (LKM)	3D (SKM)	Well
4252	1317	2

Target Horizon: To probe prospectivity in Middle Jurassic with Early Cretaceous.

Petroleum System:

- Source rock:** Mesozoic
- Reservoir:** Late Jurassic, Cretaceous, Eocene-Early Miocene, Fractured Basalt
- Seal:** Basalt/Shale
- Entrapment Mechanism:** Strati-Structural & Structural
- Envisaged plays:** Jurassic, Cretaceous Plays





Data Availability		
2D (LKM)	3D (SKM)	Well
5222	459	1

Target Horizon: To probe prospectivity in Middle Jurassic with Early Cretaceous.

Petroleum System:

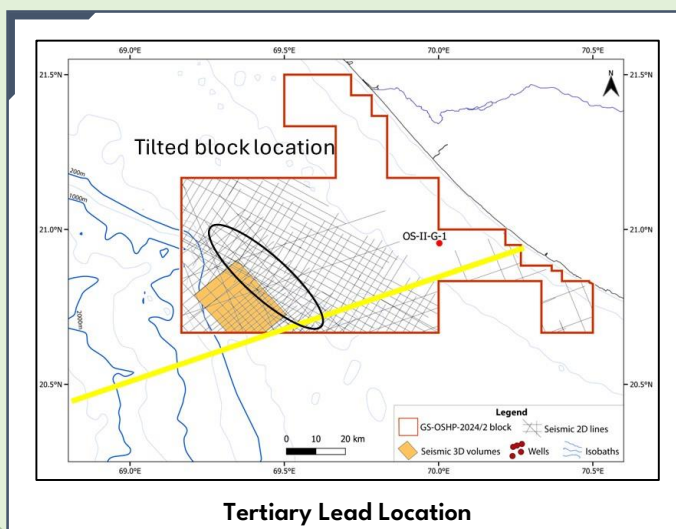
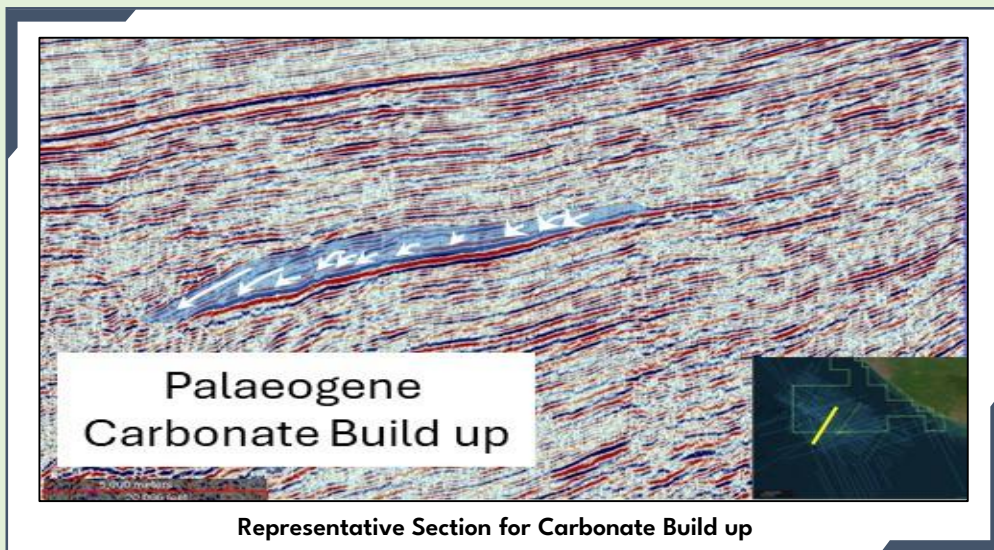
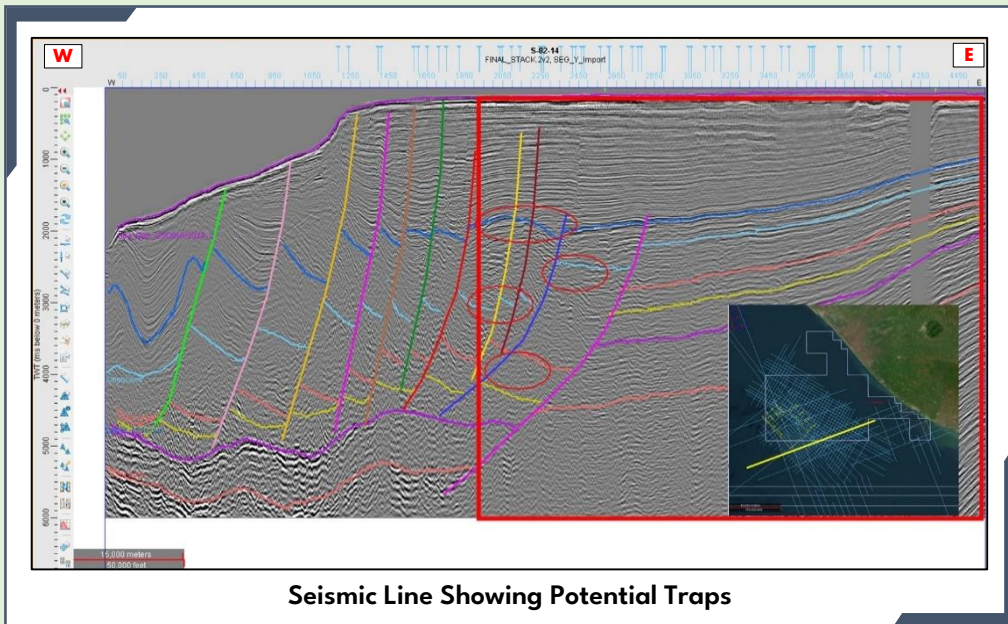
Source rock: Mesozoic

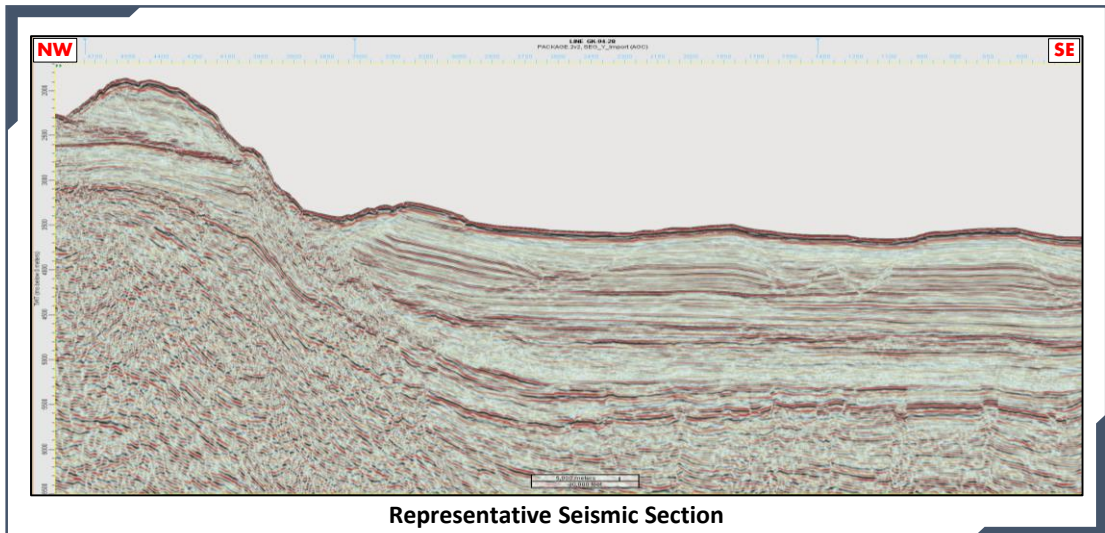
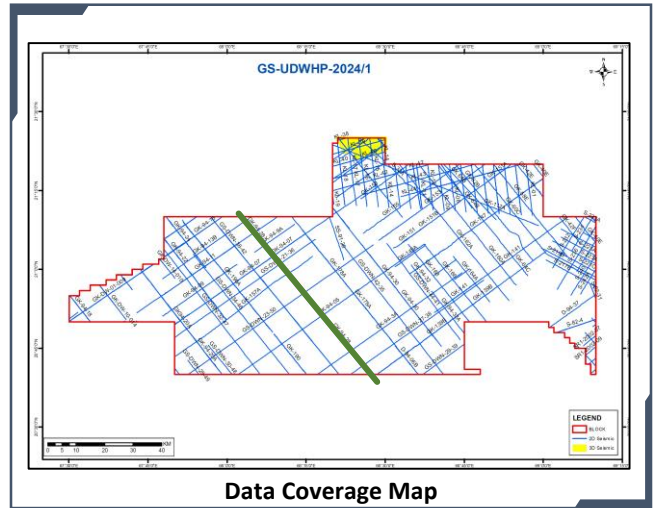
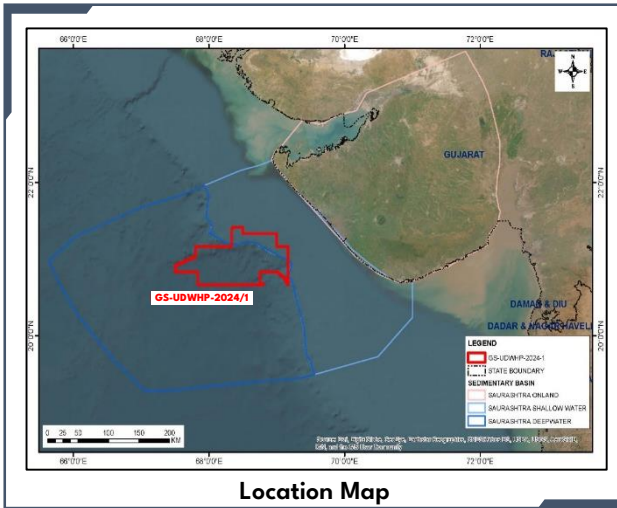
Reservoir: Late Jurassic, Cretaceous, Eocene-Early Miocene, Fractured Basalt

Seal: Basalt/Shale

Entrapment Mechanism: Strati-Structural & Structural

Envisaged plays: Jurassic, Cretaceous Plays



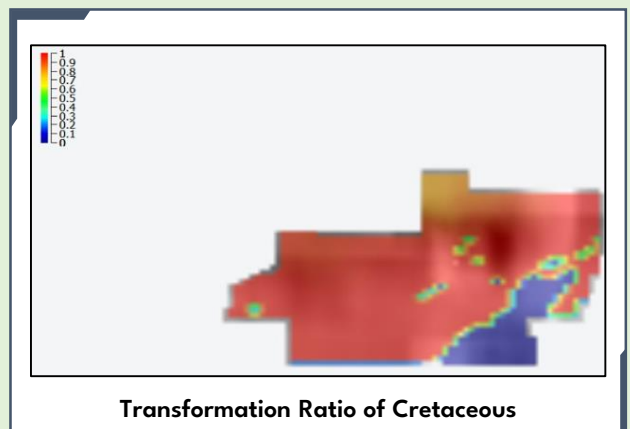
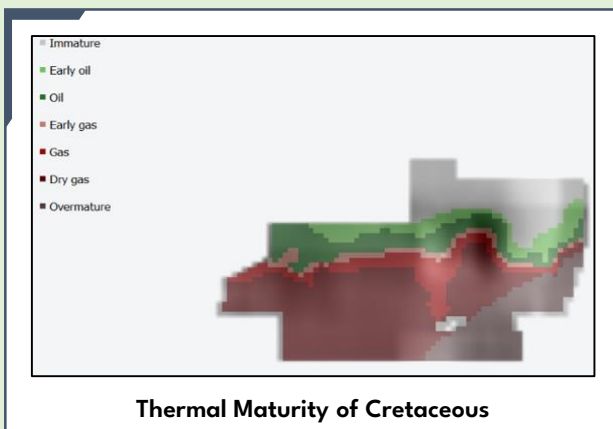
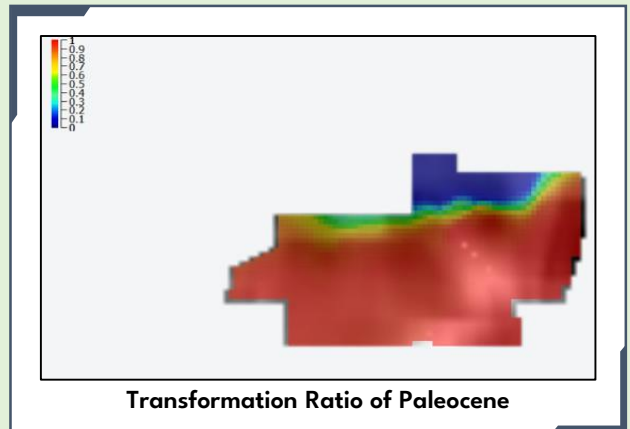
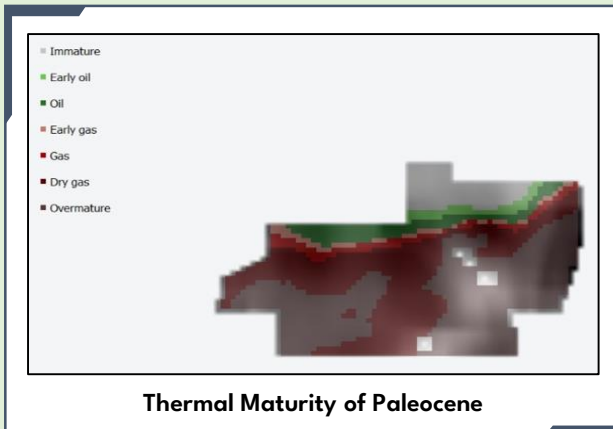
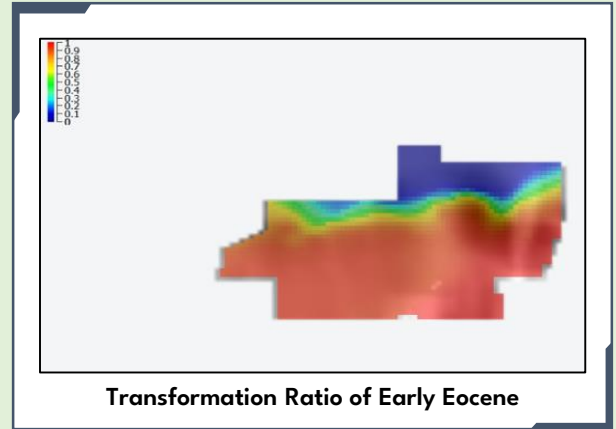
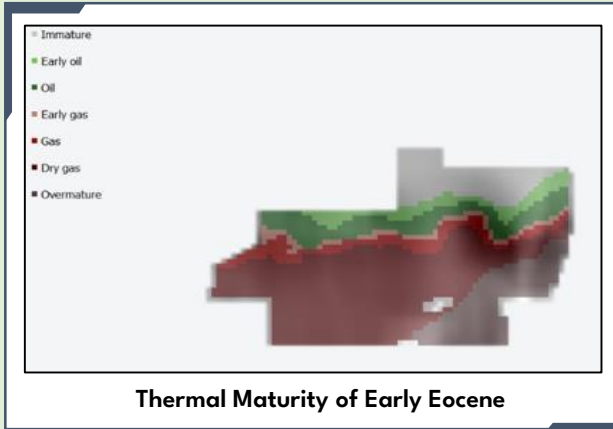


Data Availability		
2D (LKM)	3D (SKM)	Well
4677	78	0

Target Horizon: Prominent play is middle Jurassic with additional targets in Early Cretaceous

Petroleum System:

- Source rock:** Mesozoic
- Reservoir:** Late Jurassic, Cretaceous, Eocene-Early Miocene, Fractured Basalt
- Seal:** Basalt/Shale
- Entrapment Mechanism:** Strati-Structural & Structural
- Envisaged plays:** Jurassic, Cretaceous Plays

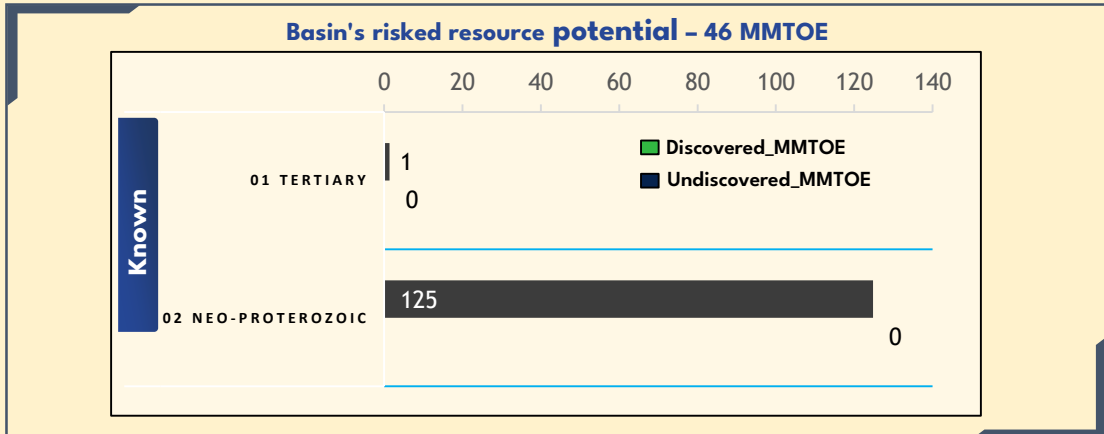
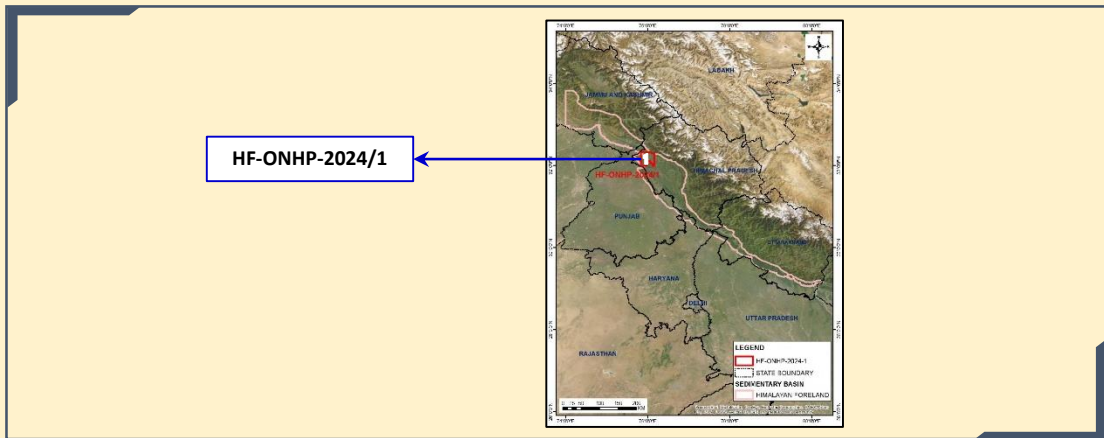
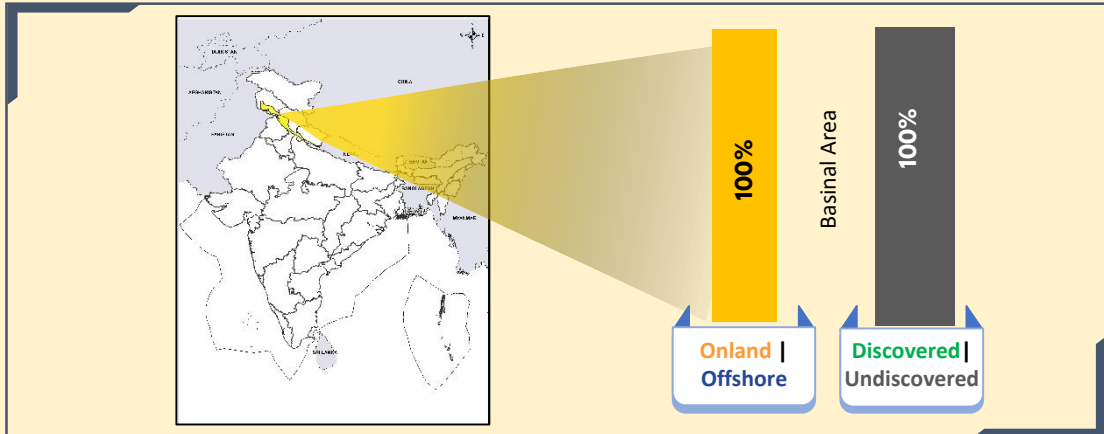


Himalayan Foreland Basin

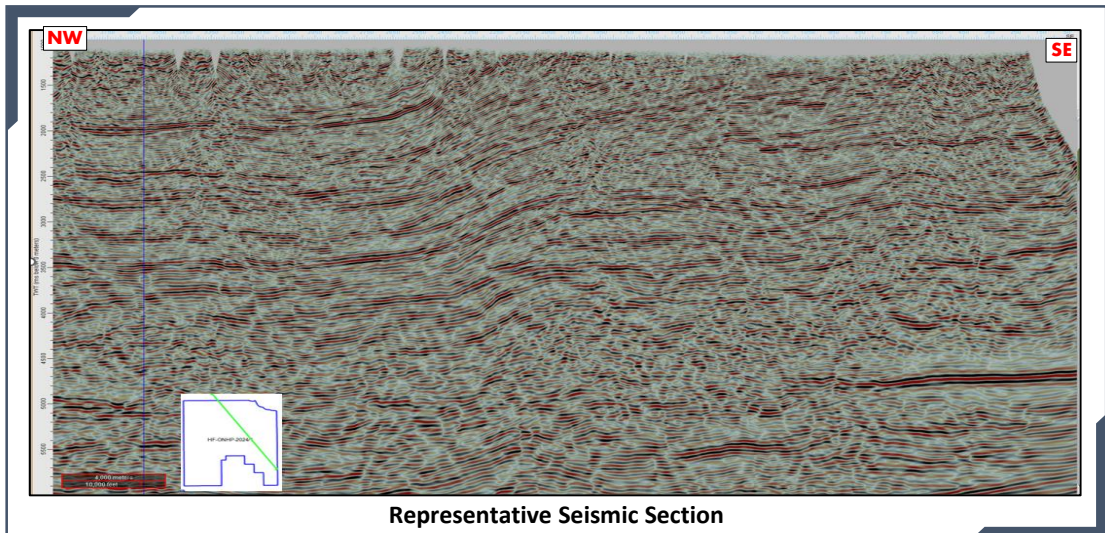
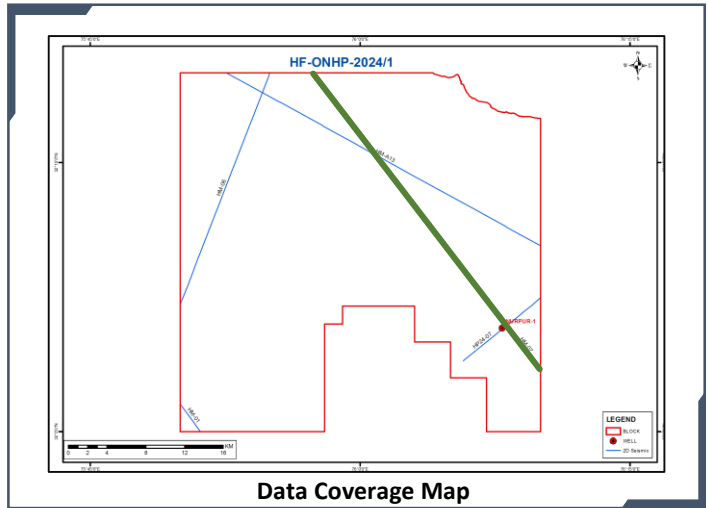
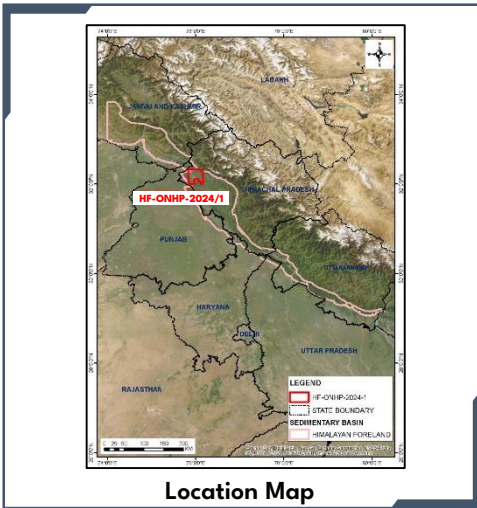
HIMALAYAN FORELAND

Strong analogy with Potwar Basin

1 Block on Offer



- ## Key Characteristics
- Basin area **30,110 sq km**
 - Hydrocarbon shows during drilling and testing
 - Target plays are Tertiary & Neo-Proterozoic
 - Analogy to producing **Potwar basin**, Pakistan
 - 1,564 LKM new 2D seismic data under **NSP**



Data Availability		
2D (LKM)	3D (SKM)	Well
107	0	1

Petroleum System:

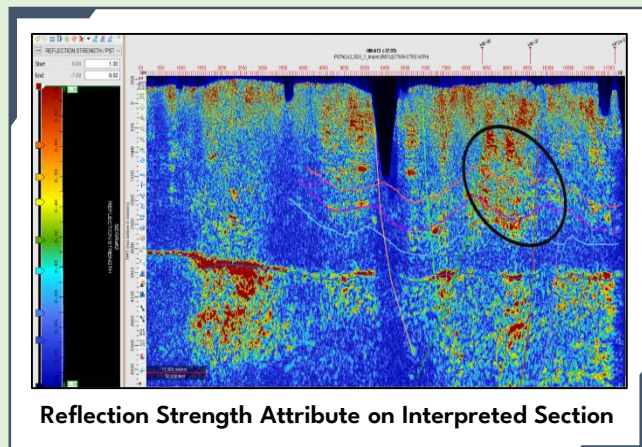
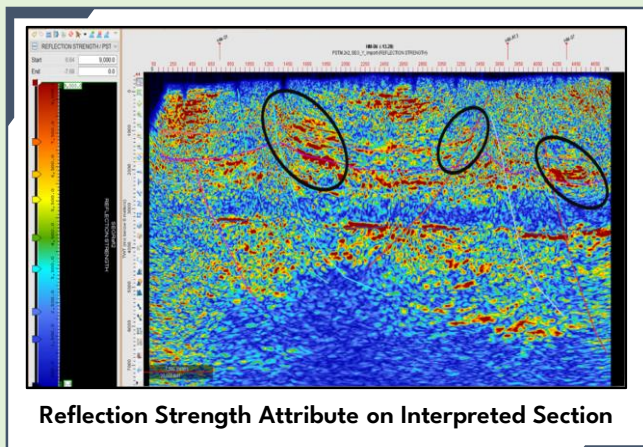
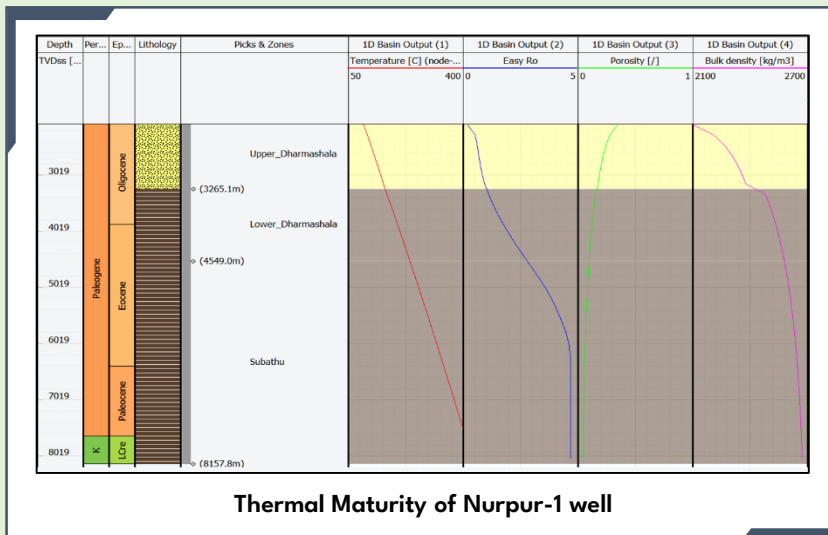
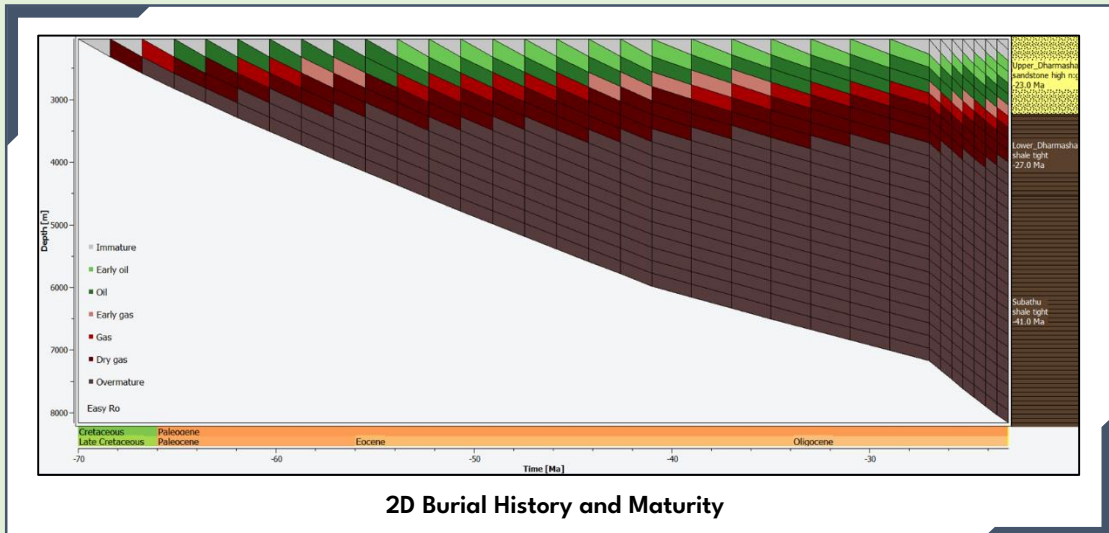
Source rock: Subathu Formation (Paleocene to Lr Eocene) & Lr. Dharmashala Formation.

Reservoir: Lr Subathu & Dharmashala Formation and Upper sequence of Mid-Lower Siwali Unit

Entrapment Mechanism: Strati- Structural

Envisaged plays: Paleozoic- Mesozoic, Paleocene to Eocene (Patala, Nammal, Sakesar & Chorgali lime Stone), Oligocene – Miocene (Murræe and Lower Siwalik)

Target Horizon: Lower Subathu, Dharmashala Formation and Upper sequence of Middle to Lower Siwalik Units

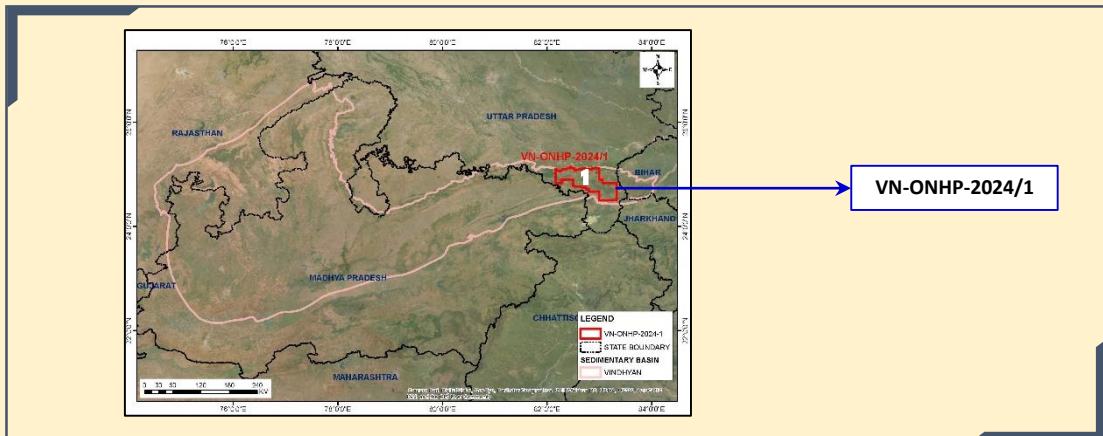
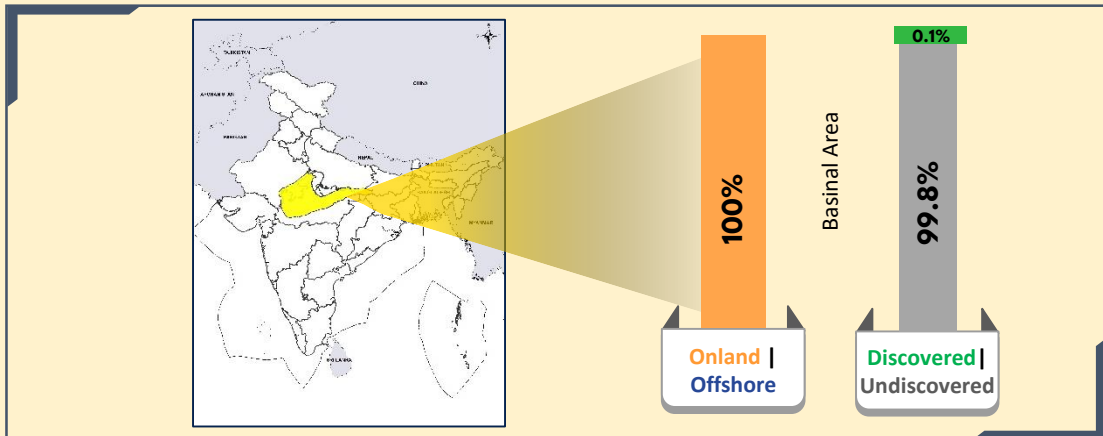


Vindhyan Basin

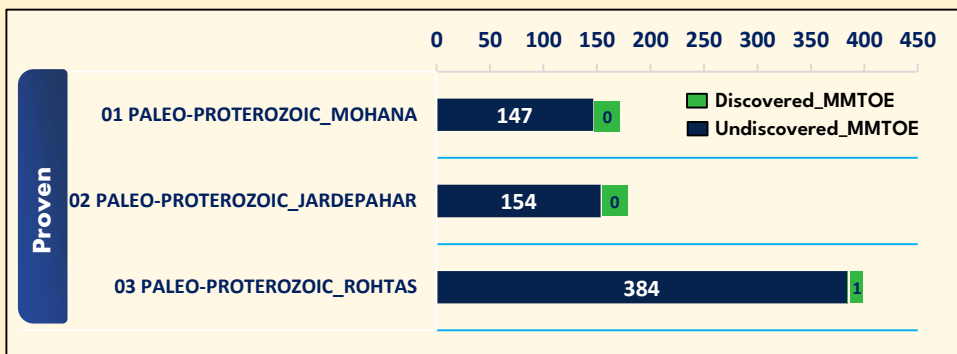
VINDHYAN BASIN

Largest Proterozoic basin with Gas discovery

1 Block on Offer

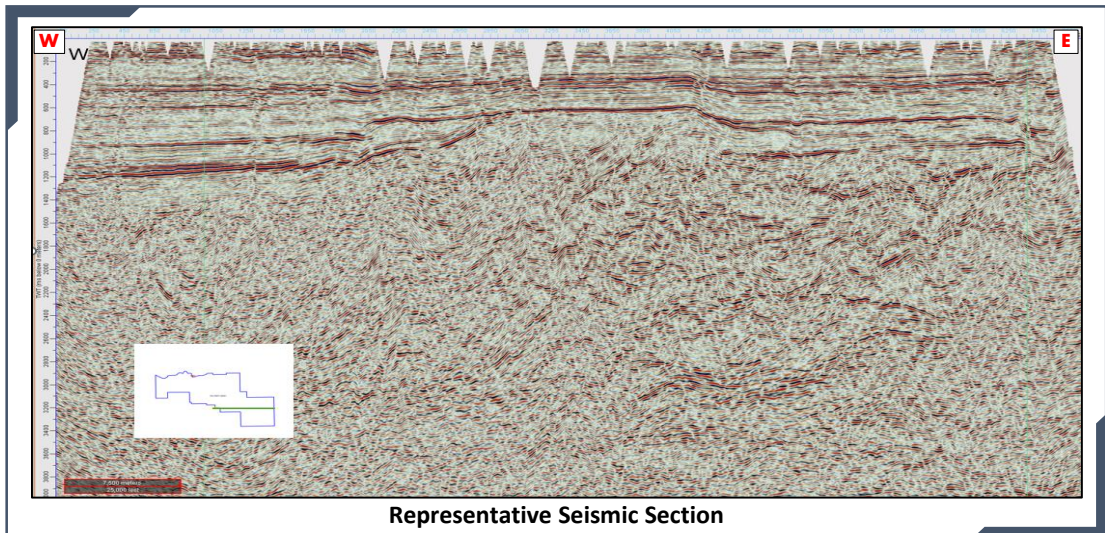
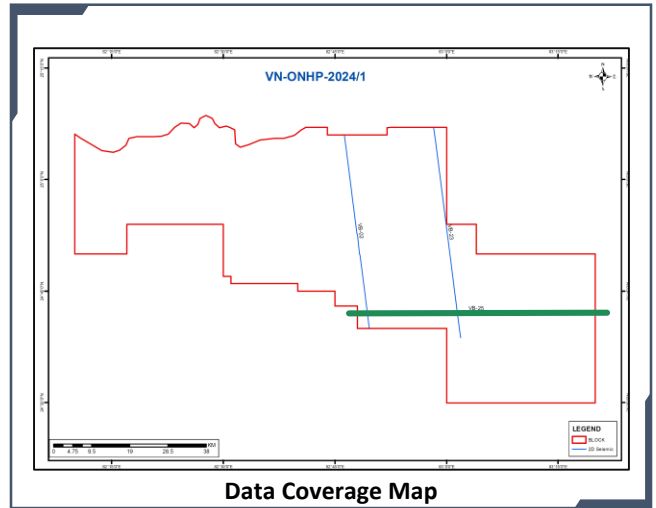
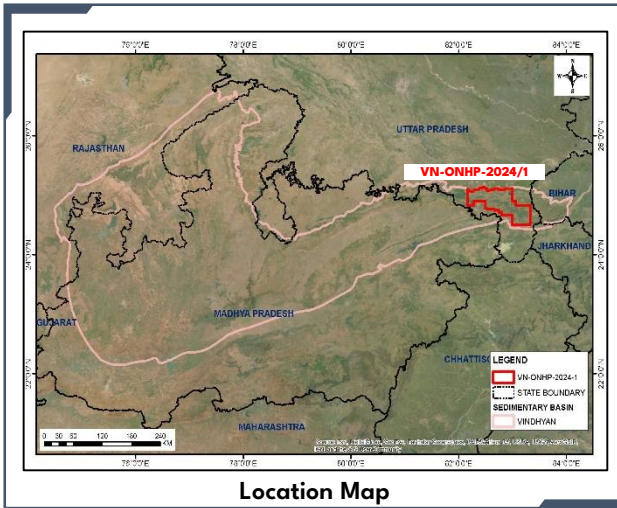


Basin's risked resource potential – 684 MMTOE



Key Characteristics

- Basin area 202,888 sq km
- Gas discovered in **Tight clastic** plays, first such instance in India's **Proterozoic basin**
- 5,373 LKM new 2D seismic data under **NSP** available
- **RGPT** had conducted a basin research study

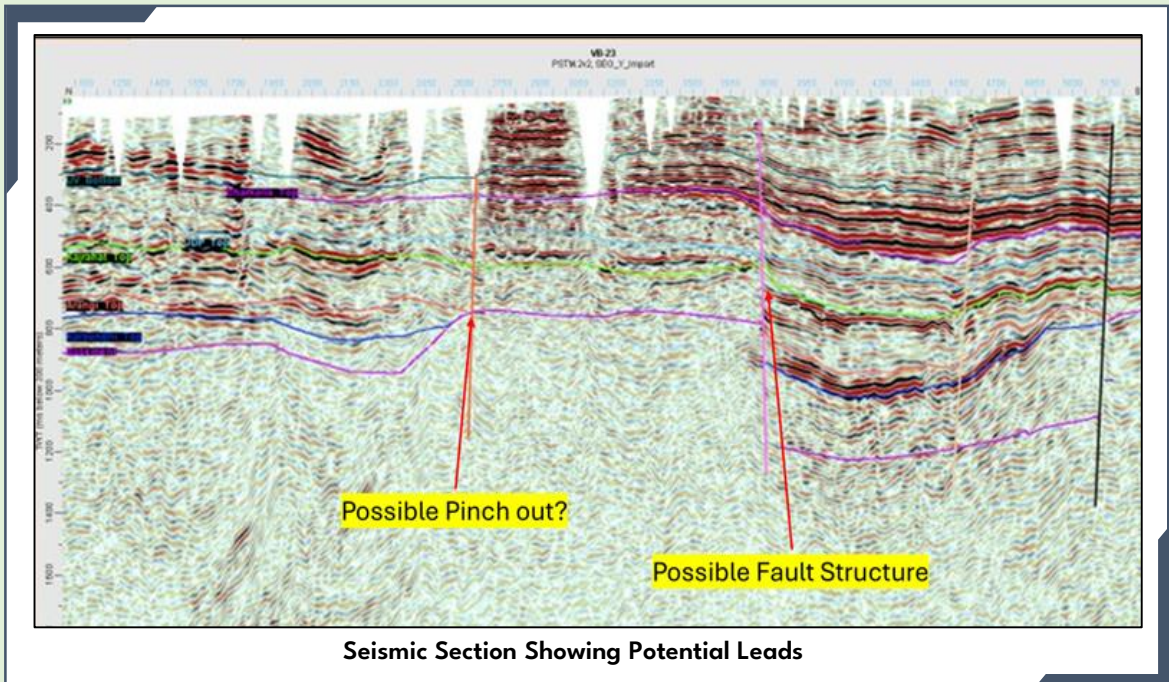
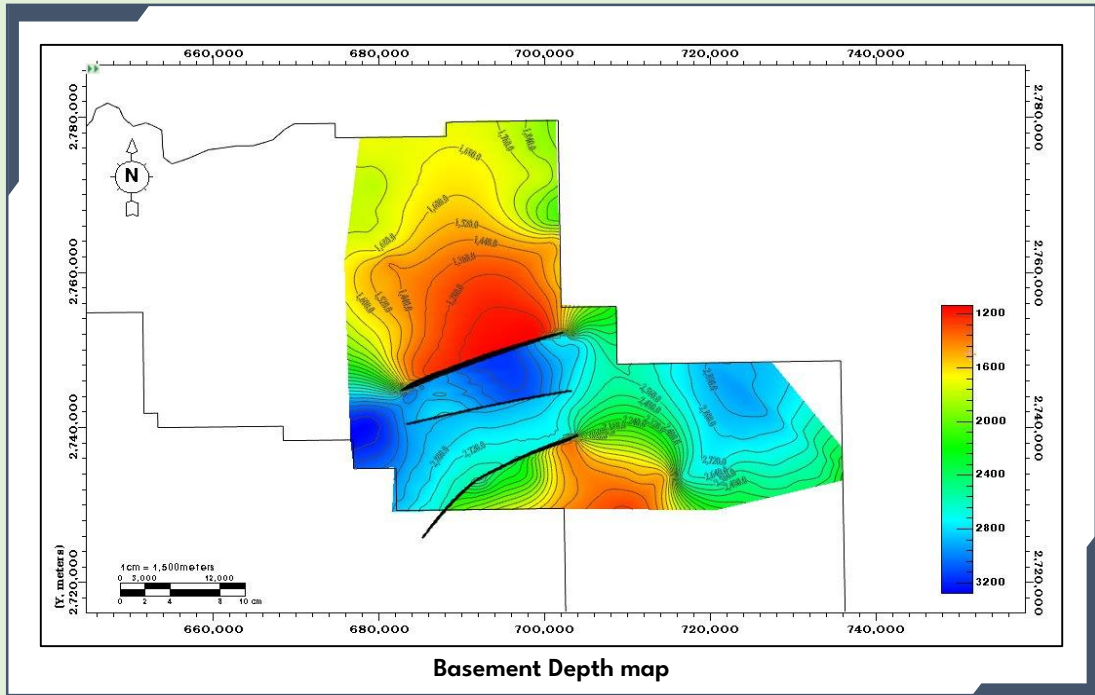


Data Availability		
2D (LKM)	3D (SKM)	Well
155	0	0

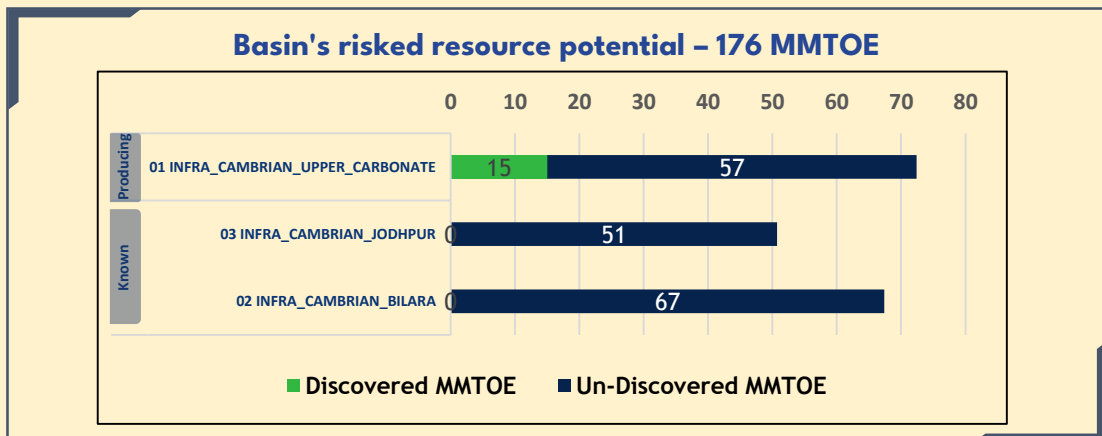
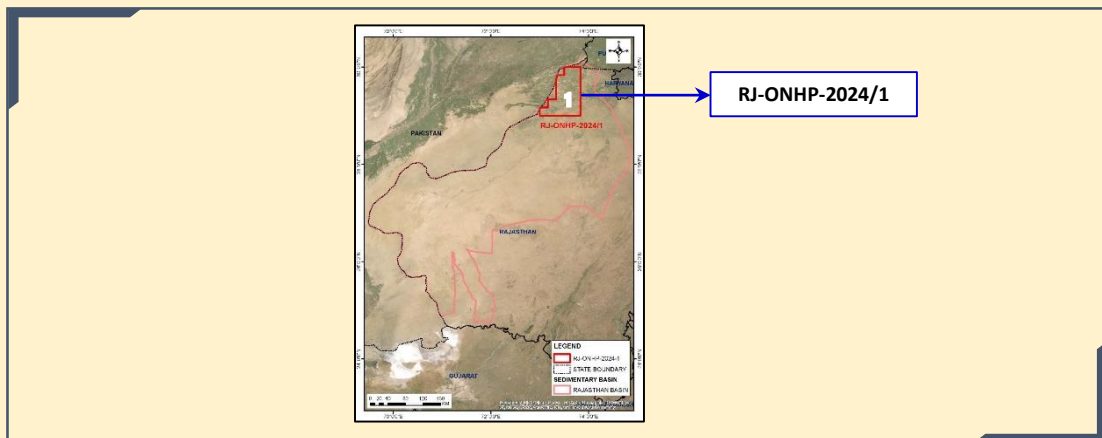
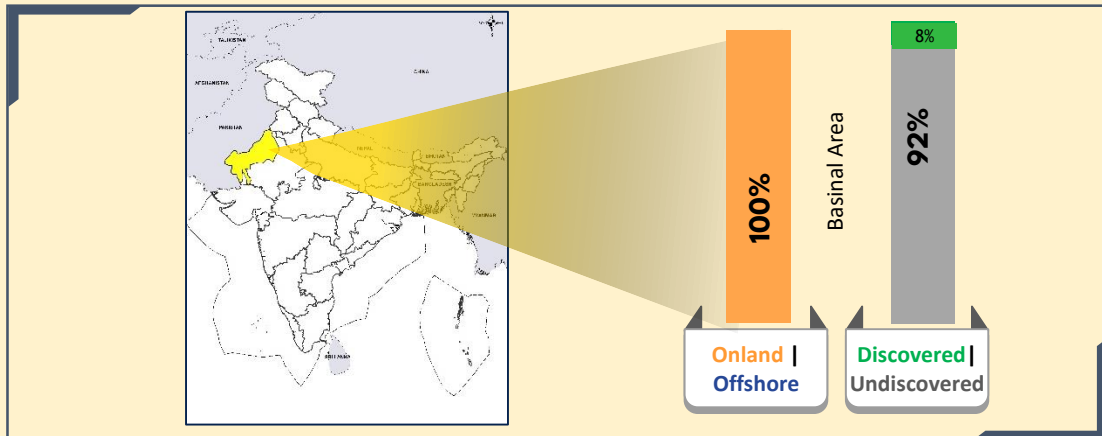
Target Horizon : The fractured clastic reservoirs within Jardepahar Porcellanite Formation and Kajrahat Limestone at shallower depth

Petroleum System:

- Source rock:** Deeper Arangi source sequence &
- Reservoir:** Fractured clastic reservoirs within Jardepahar Porcellanite Formation & Kajrahat Limestone
- Entrapment Mechanism:** Structural
- Envisaged plays:** Jardepahar and Kajrahat

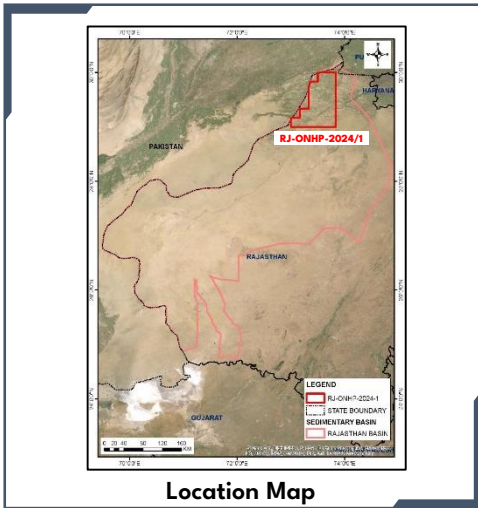


Rajasthan Basin

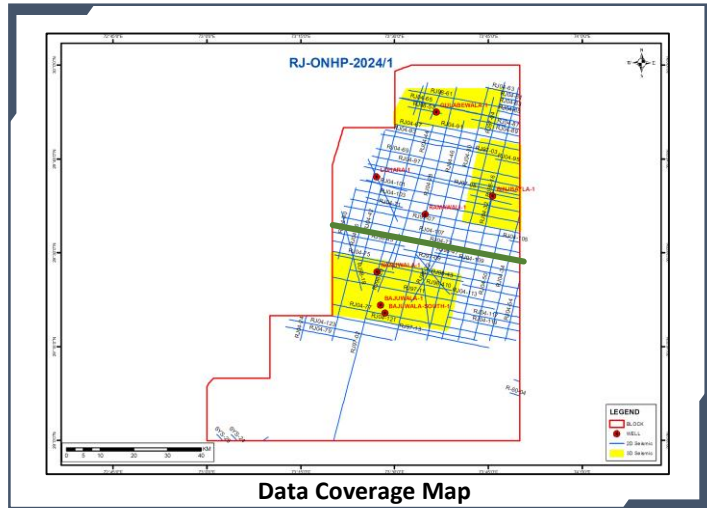


Key Characteristics

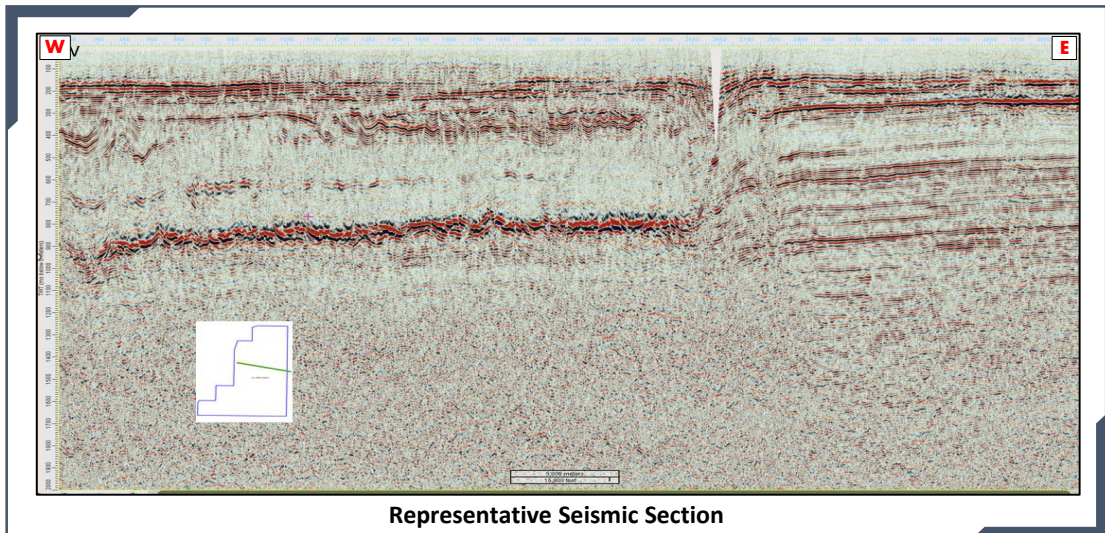
- Infra-Cambrian petroleum systems
- Analogy with the **South Oman salt basin**
- **Baghwala field** produced heavy oils
- New 2D seismic data available under NSP, more to be acquired under Mission Anveshan



Location Map



Data Coverage Map



Representative Seismic Section

Data Availability

2D (LKM)	3D (SKM)	Well
2149	1112	7

Target Horizon: Dolomitic limestone within HEG

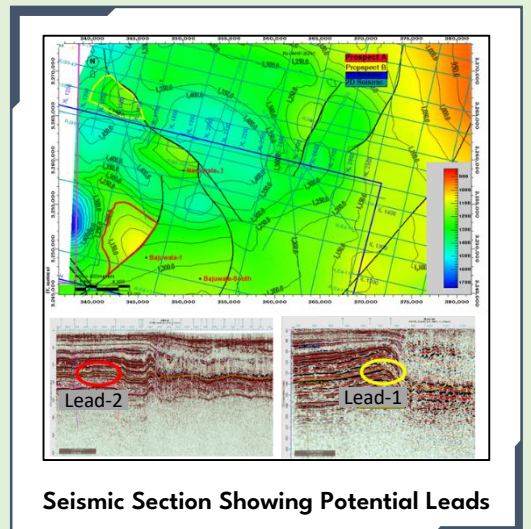
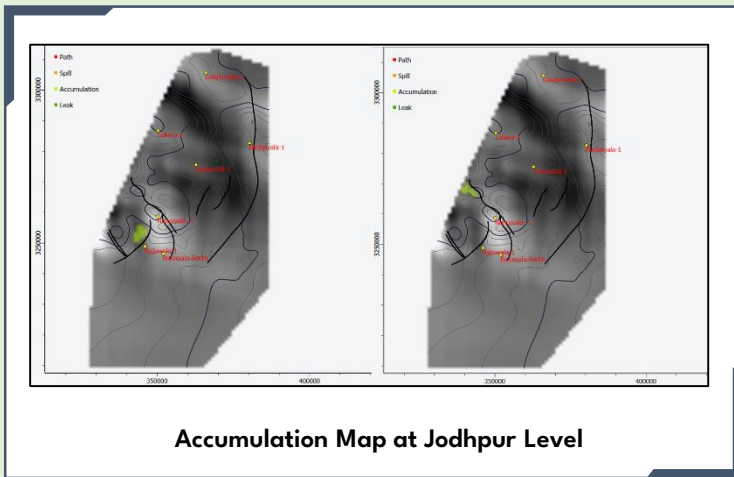
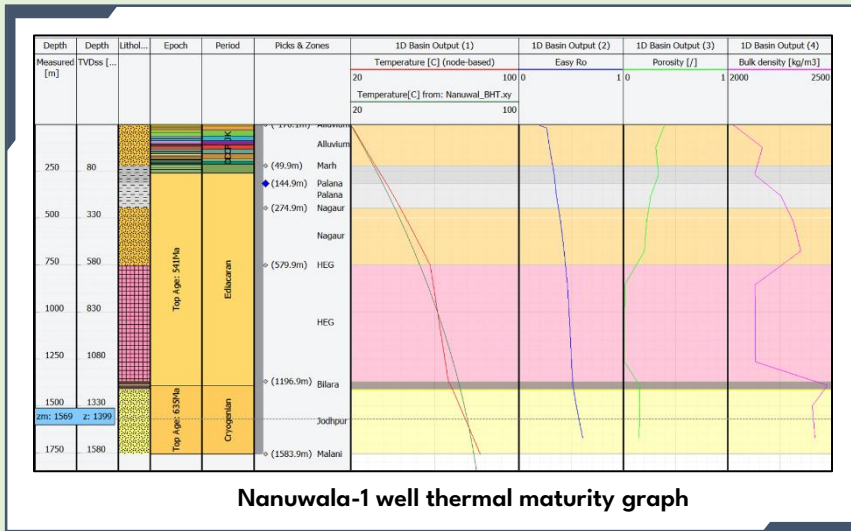
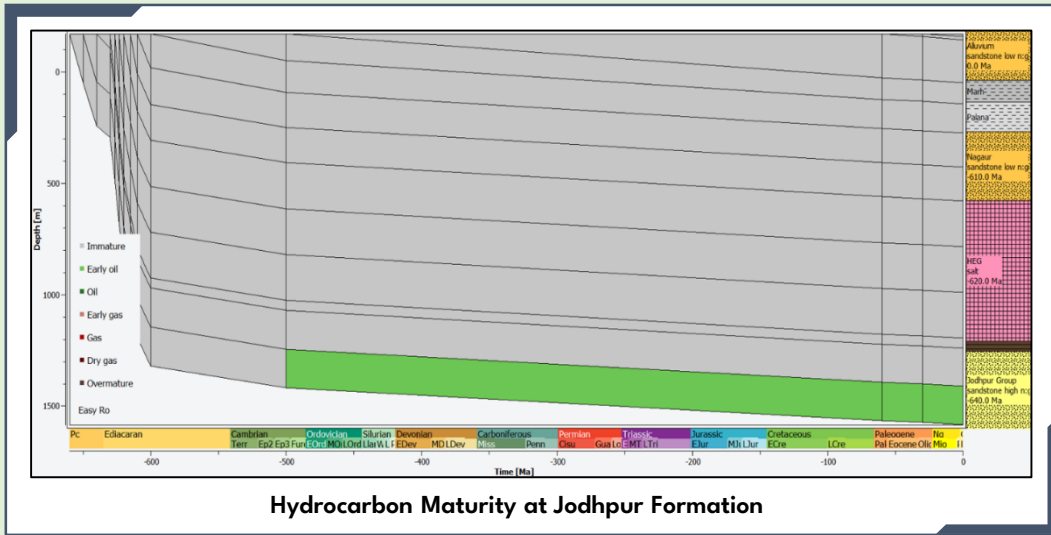
Petroleum System:

Source rock: Insitu generation in the stromatolitic dolomites within HEG of infra-Cambrian age.

Reservoir: Dolomitic limestone within HEG

Entrapment Mechanism: structural & stratigraphic

Envisaged plays: Carbonate play within HEG.

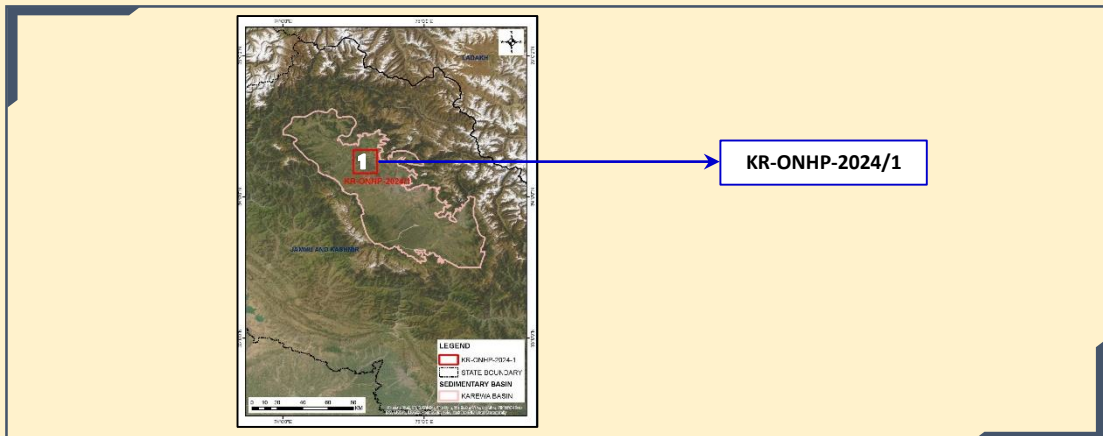
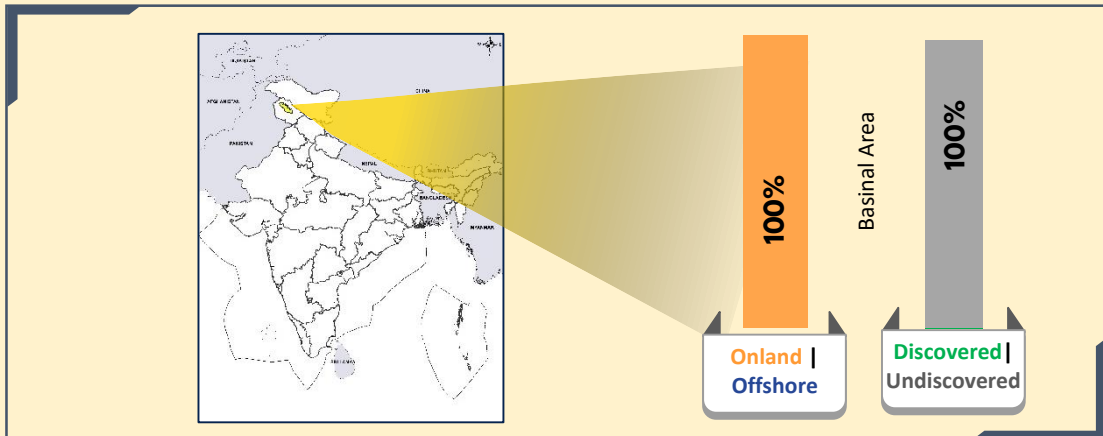


Karewa Basin

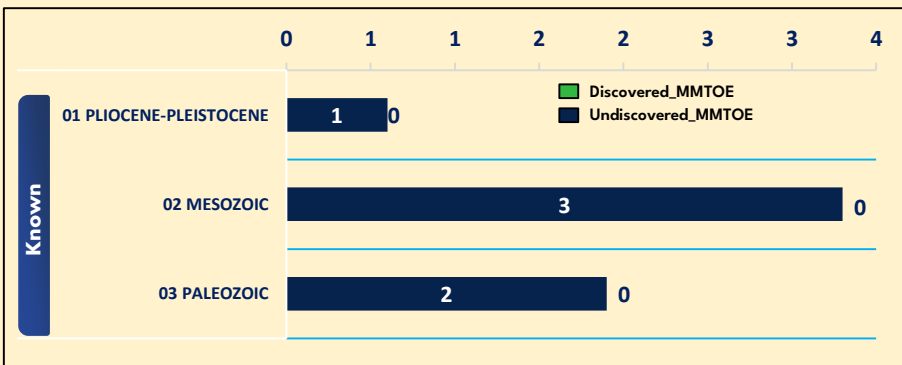
KAREWA BASIN

Intermontane basin with thick sequence

1 Block on Offer

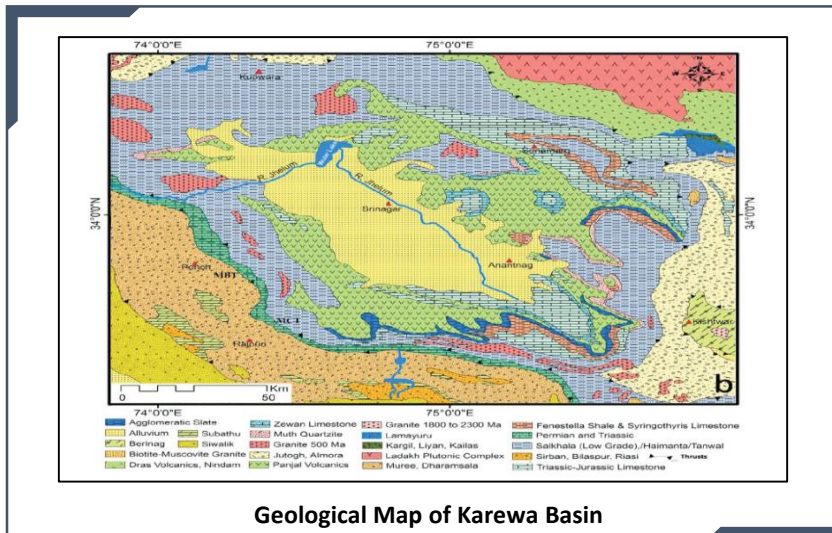
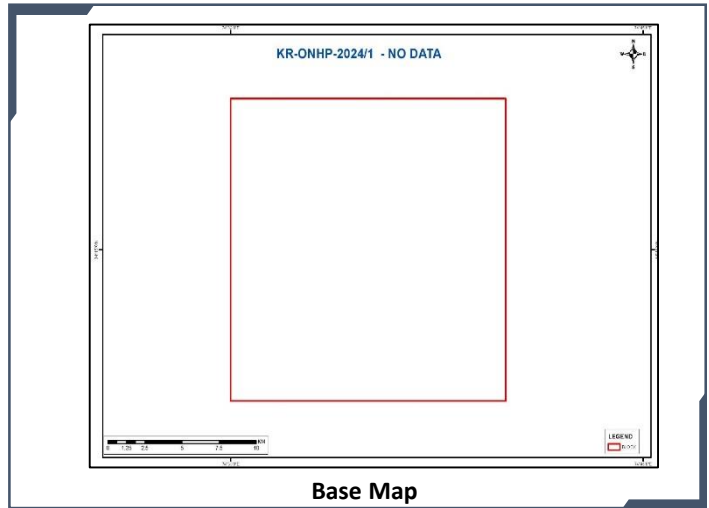
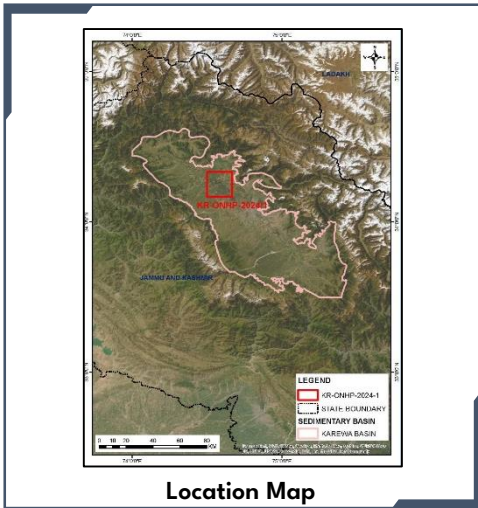


Basin's risked resource potential – 6 MMTOE



Key Characteristics

- More than 10,000m of sedimentary thickness
- Analogous to **producing Potwar basin of Pakistan**
- Paleozoic and Mesozoic are potential plays
- **Under AGG survey**, 1,817 FLKM data were acquired



Data Availability		
2D (LKM)	3D (SKM)	Well
0	0	0

Target Horizon: Pliocene fluvial sand in Karewa Formation

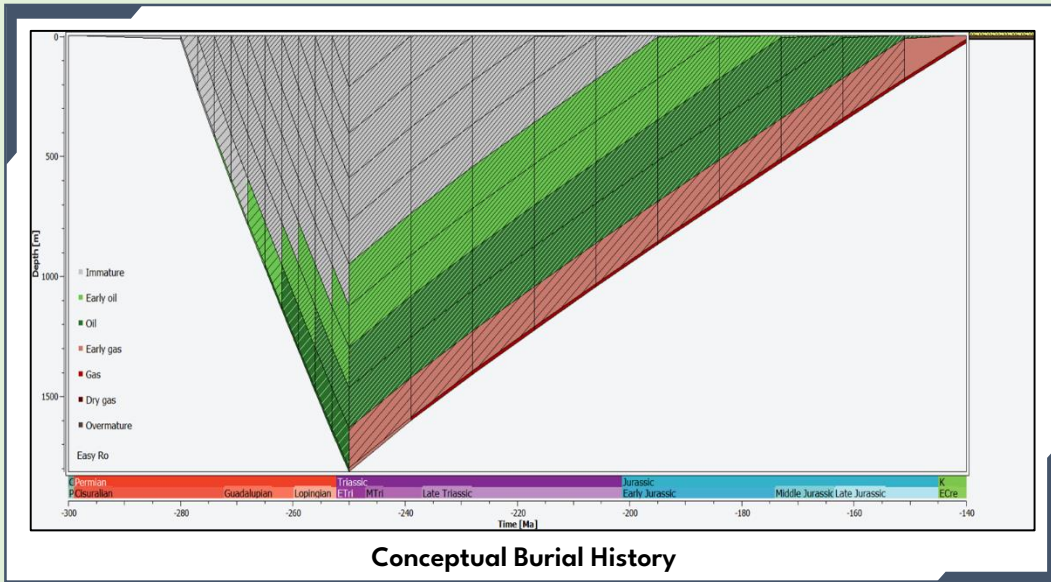
Petroleum System:

Source rock: Carbonaceous clays and lignite of Karewa group

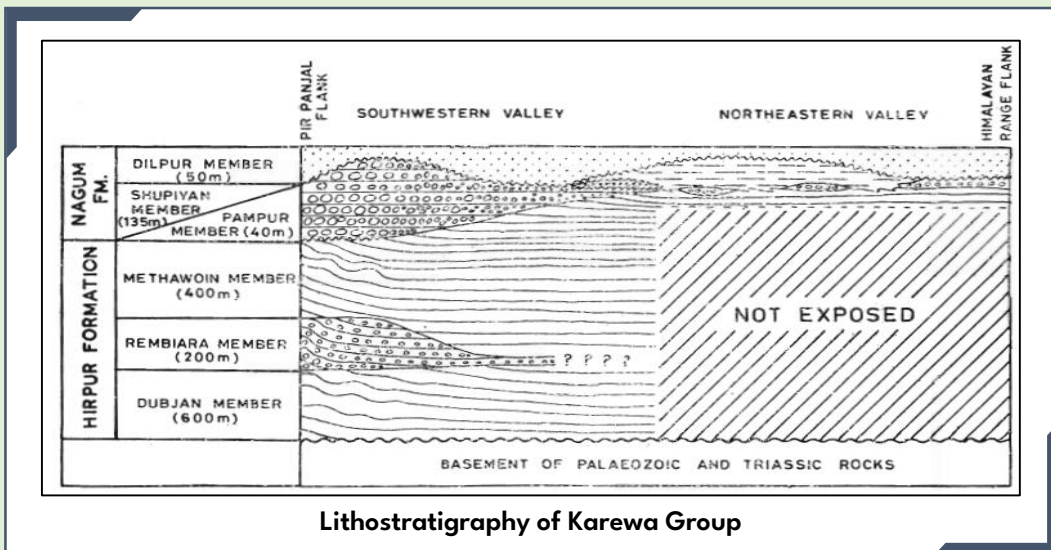
Reservoir: Pliocene fluvial sand within Karewa section

Entrapment Mechanism: Mainly stratigraphic associated with unconformities

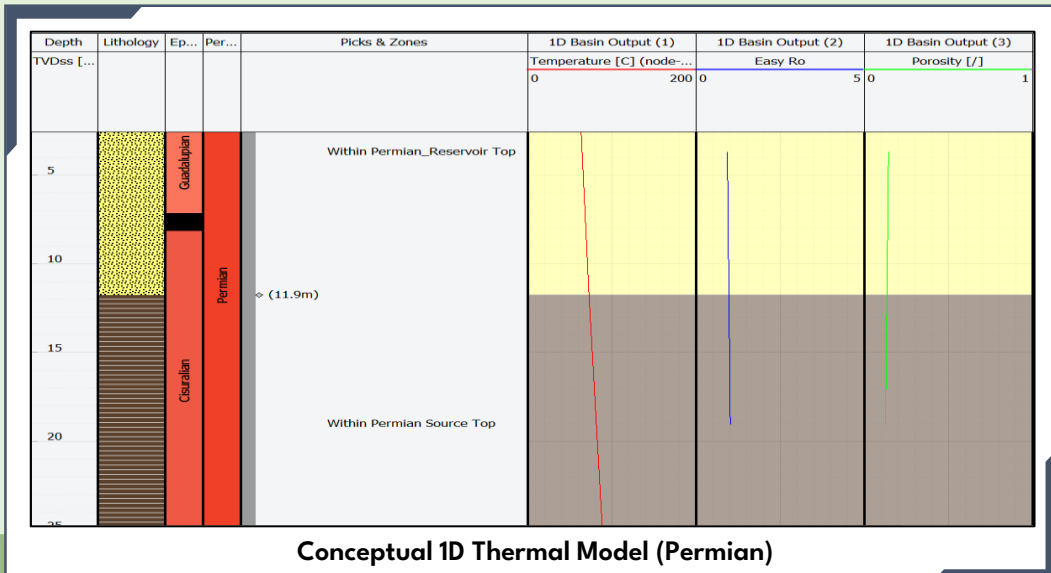
Envisaged plays: Plio-Pleistocene



Conceptual Burial History



Lithostratigraphy of Karewa Group



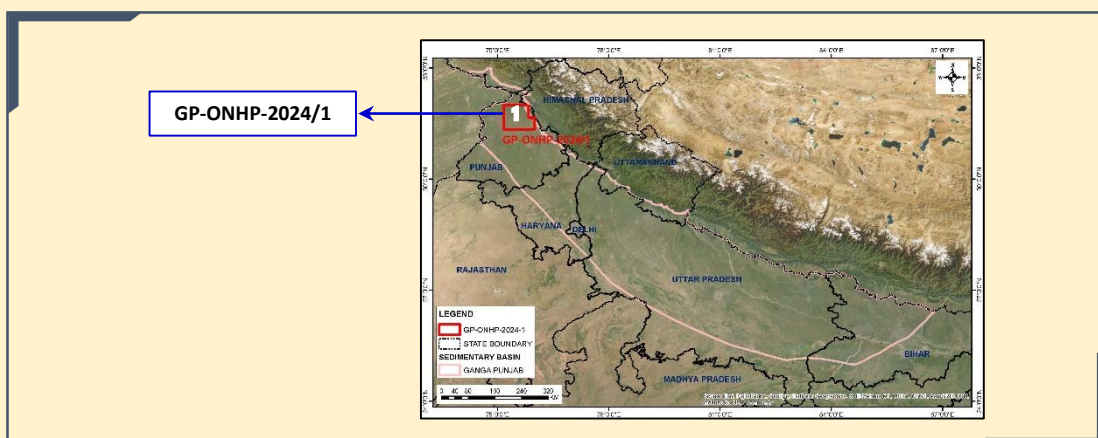
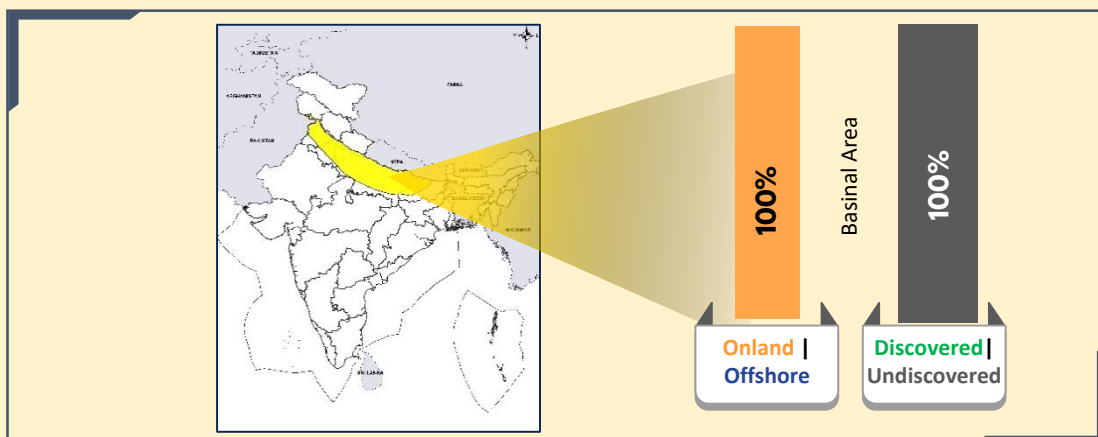
Conceptual 1D Thermal Model (Permian)

Ganga-Punjab Basin

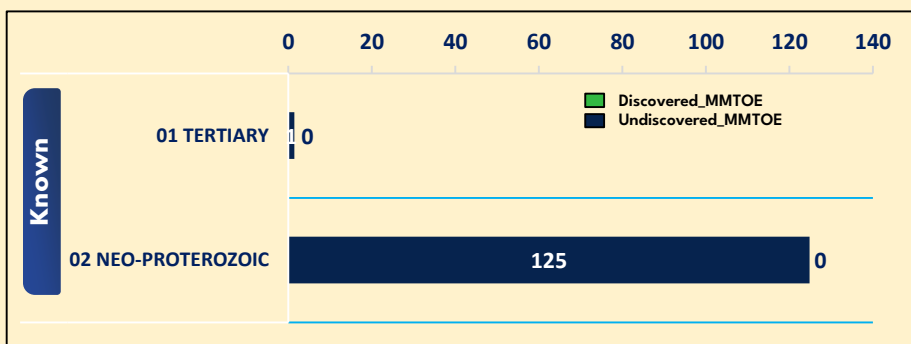
GANGA-PUNJAB BASIN

Largest onland basin

1 Block on Offer

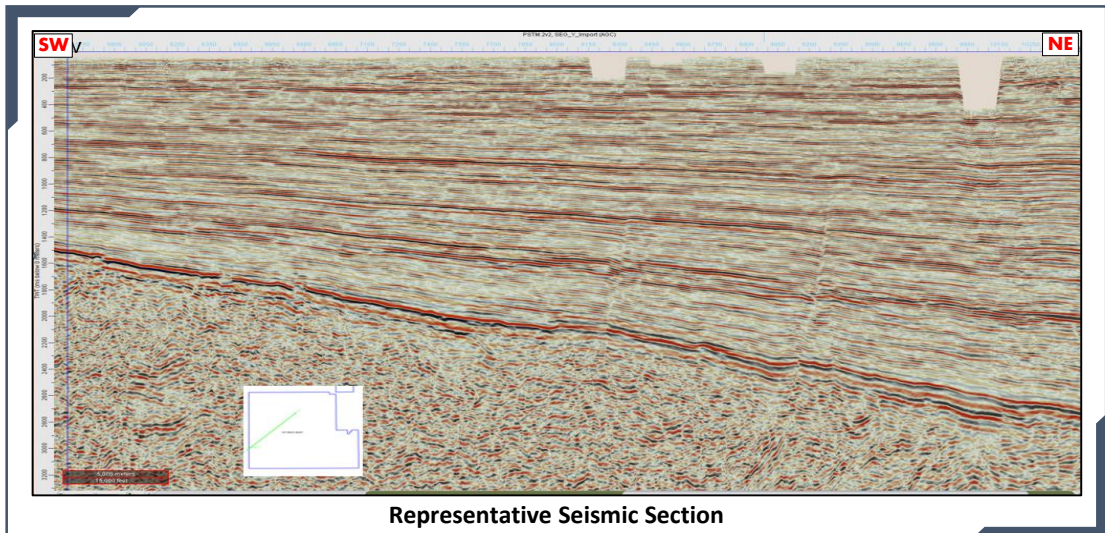
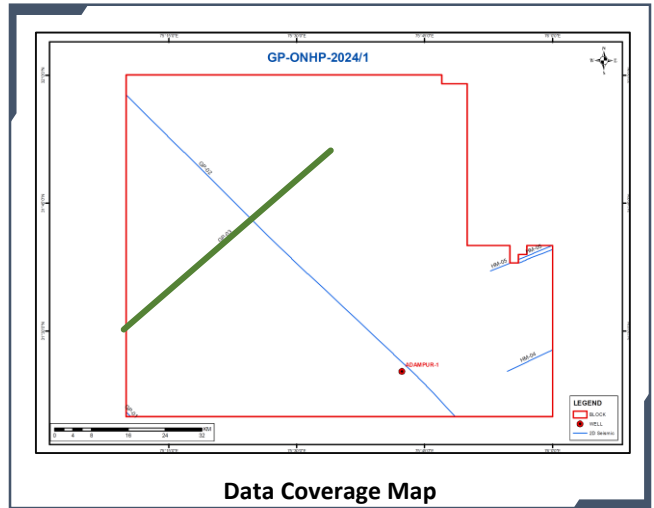
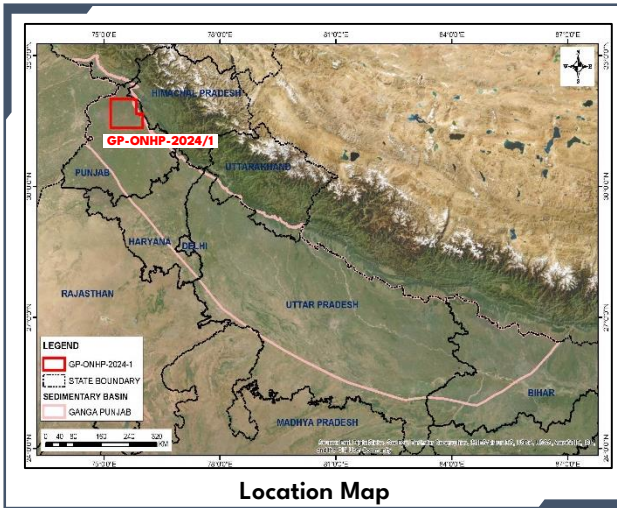


Basin's risked resource potential – 126 MMTOE



Key Characteristics

- Basin area 304,000 sq km
- **Hydrocarbon shows** during drilling and testing
- Major play, **Neo-Proterozoic has tight gas** sequence akin to Vindhyan basin
- 3,858 LKM new **2D seismic data under NSP available**, new 5,100 LKM data planned under Mission Anveshan
- **RGIPT had conducted** a basin research study



Data Availability		
2D (LKM)	3D (SKM)	Well
176	0	1

Target Horizon: Karnapur, Siwalik Sandstones & Vaishnodevi Limestone

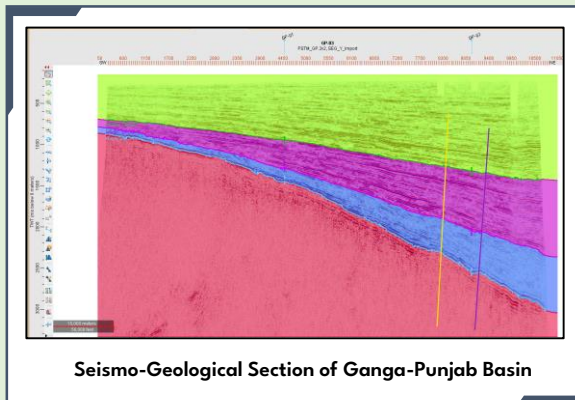
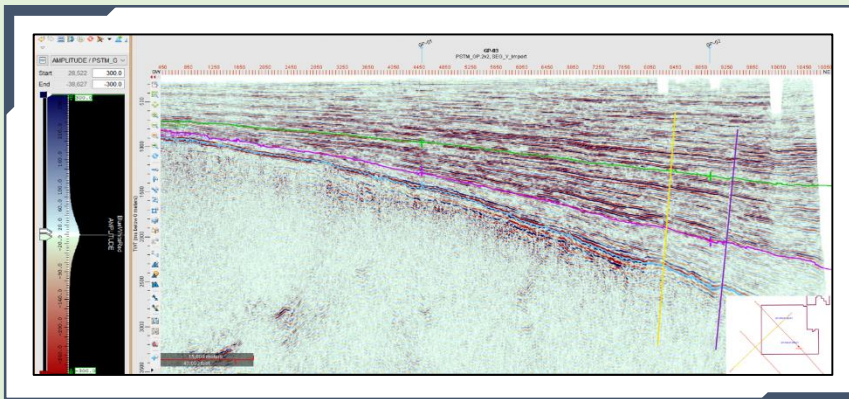
Petroleum System:

Source rock: Lower Siwalik, carbonate dominated Proterozoic (Vaishnodevi) & carbonaceous shale rich Palaeozoic (Agglomeratic Group)

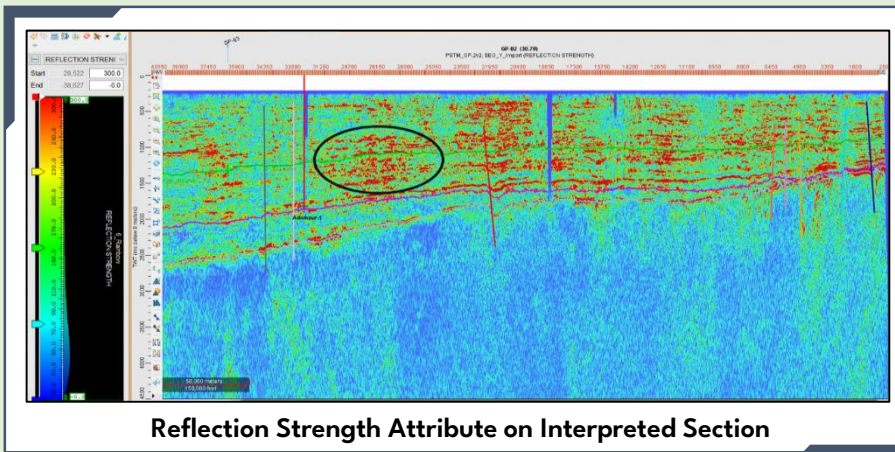
Reservoir: Siwalik sandstones, Vaishnodevi limestone

Entrapment Mechanism: Structural and strati-structural

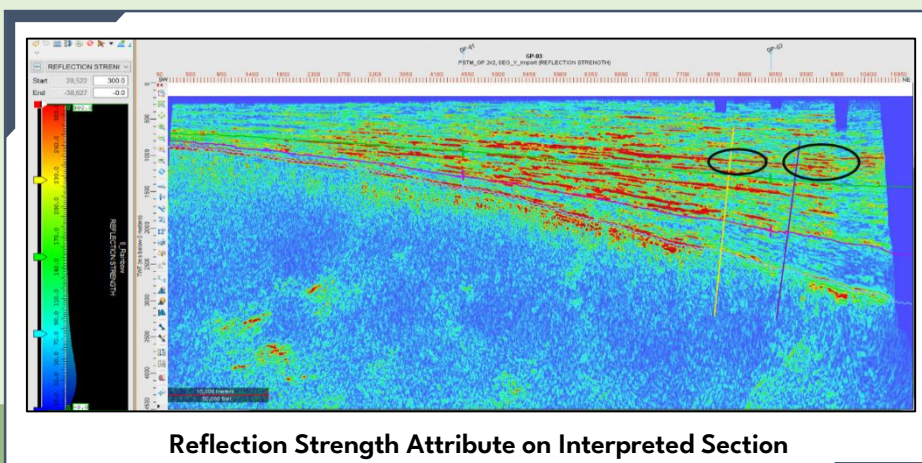
Envisaged plays: Karnapur and Karnapur-Dharamsala-Lower Siwalik



Seismo-Geological Section of Ganga-Punjab Basin

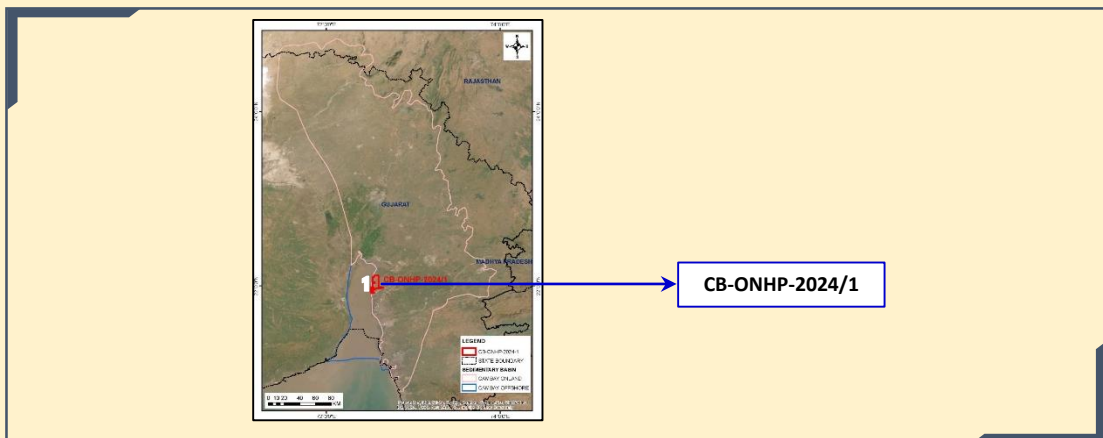
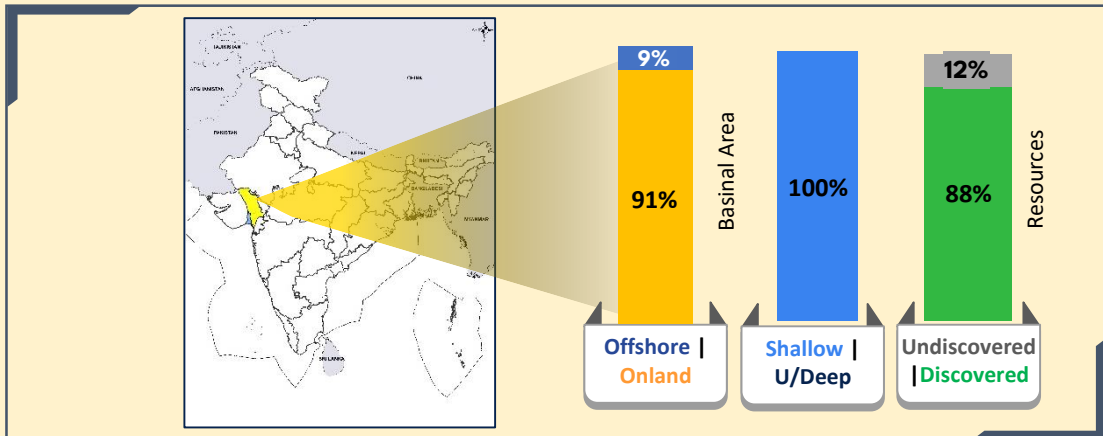


Reflection Strength Attribute on Interpreted Section

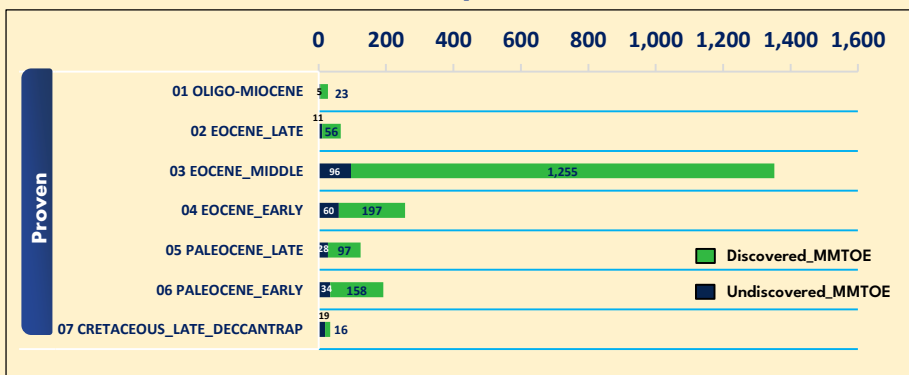


Reflection Strength Attribute on Interpreted Section

Cambay Basin

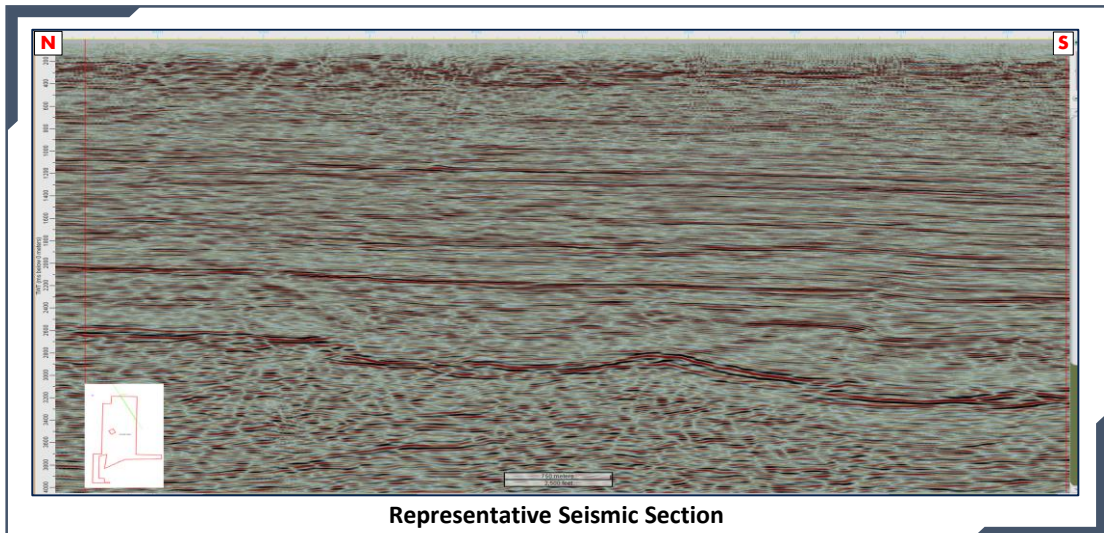
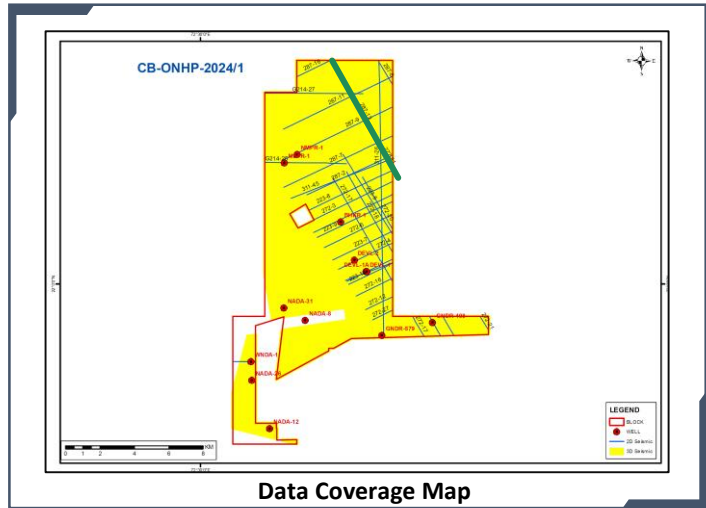
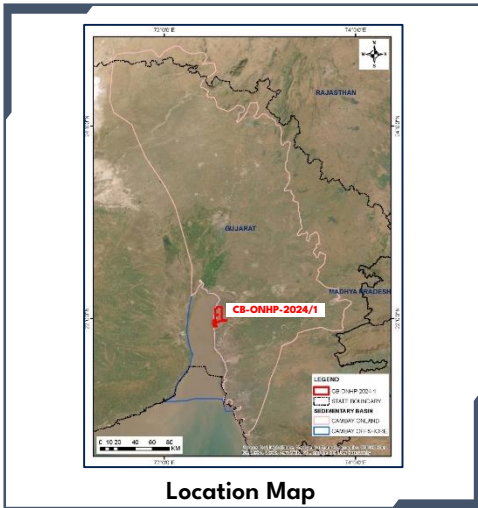


Basin's risked resource potential – 254 MMTOE



Key Characteristics

- **7 plays** – all proven and producing
- ‘Middle Eocene’ is the most prolific reservoir, developed by **2 major proto-deltas** (‘Kalol’ in the north-central part and ‘Hazad’ in the south)
- Deeper **Mesozoic plays** are largely unexplored
- **Largest field Gandhar** cumulatively produced (>40 MMT Oil, 40 BCM gas)



Data Availability		
2D (LKM)	3D (SKM)	Well
140	119	13

Target Horizon: Sands of Mid. & Late Eocene age , Silts within YCS of Early Eocene & Different Hazad sands (Middle Eocene)

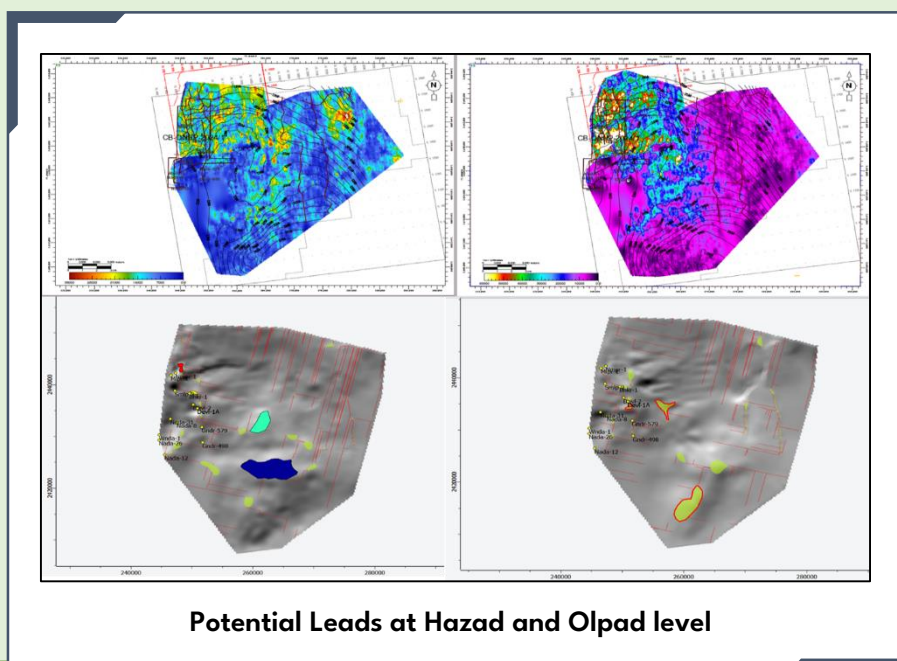
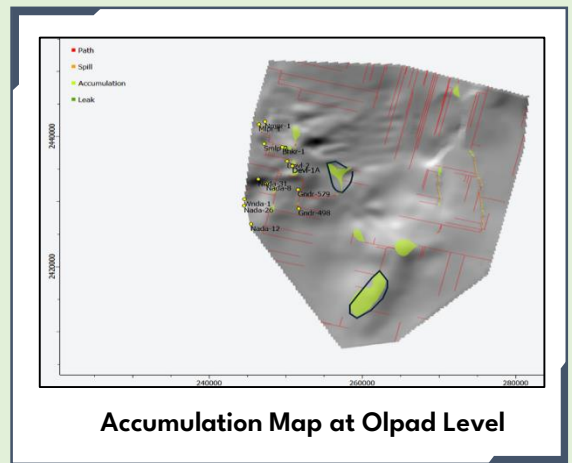
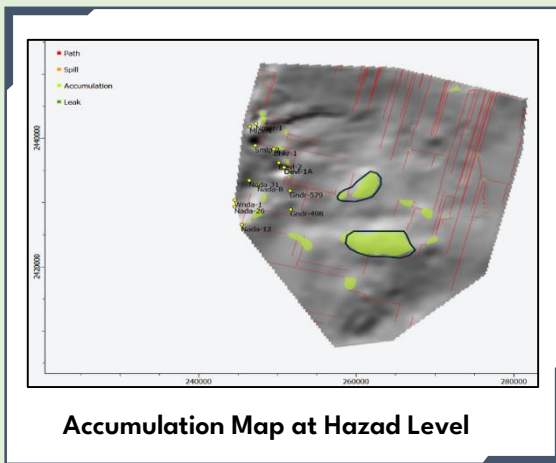
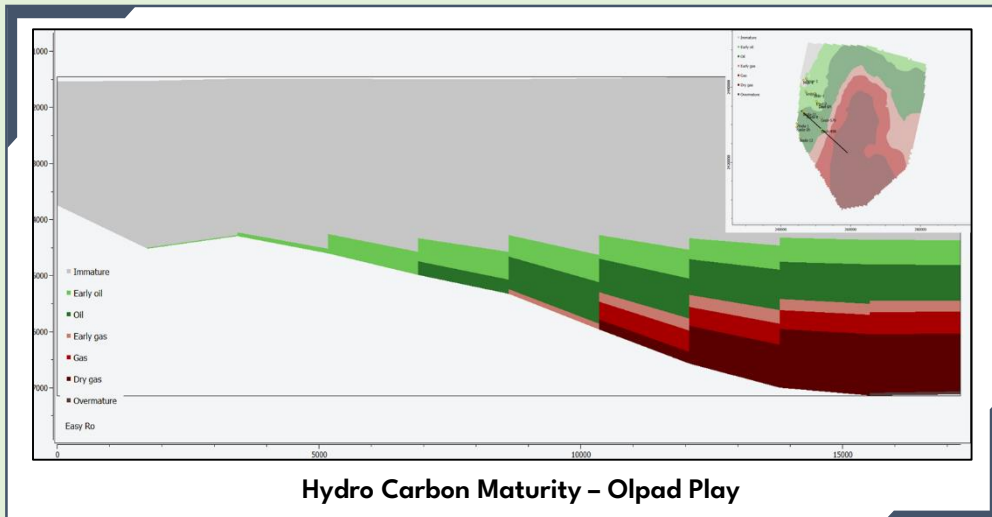
Petroleum System:

Source rock: Cambay Shale, Middle Eocene Hazad intervening shale and Kanwa Shales

Reservoir: Sands of Mid. & Late Eocene age , Hazad Sands

Entrapment Mechanism: Structural and stratigraphic

Envisaged plays: Early Eocene (sand/silt in YCS) & Paleocene sequences (sand/silt in OCS & Olpad Fm)



Overview of OALP Bid Rounds



DISCLAIMER

The Technical Brochure is a Geoscientific Information Outlook of the Exploration Blocks on Offer under OALP Bid Round-X. The Brochure has been prepared based on the data available with National Data Repository (NDR), specific to those purchased by the Originator Company as a part of Expression of Interest (EoI). DGH has brought out this Brochure pursuant to the subsurface study by international technical service providers. It is intended to guide and support the prospective bidders through the bidding process, including viewing of data at NDR. The opinions on prospectivity of the blocks are limited to one of several possibilities envisaged by the service providers. Hence the bidders should conduct their own scrutiny of data sets and assessment to build an independent view for a commercial decision



सत्यमेव जयते

**Ministry of Petroleum & Natural Gas
Government of India**



Directorate General of Hydrocarbons

(Under Ministry of Petroleum & Natural Gas)

OIDB Bhawan, Tower-A, Sector-73

Noida-201301, U.P. (INDIA)



DGH INDIA



@DGHIndia



DGH INDIA



DGH INDIA

Email :- facilitationoal@dghindia.gov.in

Web: www.dghindia.gov.in

Phone- +91-120-2472000 | Fax- +91-1202472049

