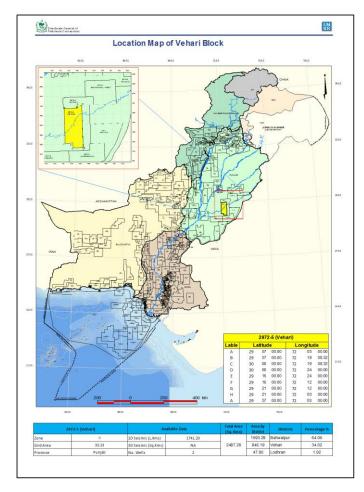


## **VEHARI BLOCK (2972-5)**

### Introduction

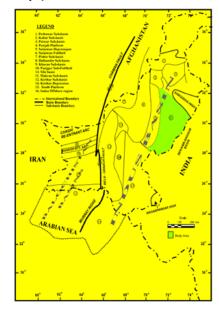
Vehari Block covers an area of 2487.28 sq km and is located in 1593.29 Bahwalpur, Vehari, and Lodhran districts of Punjab Pakistan. Geologically, it lies in the Central Indus Basin of Pakistan. The block falls in Prospectivity Zone II.



# **Geology and Tectonics**

Tectonically the block lies in the Central Indus Platform Basin which is a broad monocline dipping gently towards west direction. The plate rifting (Precambrian, Late Jurassic and Cretaceous), salt diapirism, Himalayan transpression, and reactivation of basement structures control the structures in CIPB. The subsurface structural features mainly relate to phases of Precambrian to Cambrian and Mesozoic extension but also to the effect of the peripheral collisional orogenies and consequent foreland basin deposition, according to the seismic data.

## Geological Map (Modified after Ahmed et al, 1994)



# **Stratigraphic Sequence**

The Salt Range Formation (Precambrian) is the oldest sedimentary horizon followed by Khewra Sandstone, Kussak Formation, Jutana Formation, and Baghanwala Formation (Cambrian). A large Paleozoic hiatus or erosion in the area is indicated by a major unconformity that exists at the top of the Cambrian sediments because of sediments which the of Ordovician Carboniferous are missing. The clastics and carbonates represent the Permian and Mesozoic. The carbonates are dominant in Paleogene. The Mio-Pliocene molasses are the youngest sediments.

### **Generalized Stratigraphic Chart**

| ERA           | PERIOD        | ЕРОСН           | FORMATION                   | LITHOLOGY          |                  |
|---------------|---------------|-----------------|-----------------------------|--------------------|------------------|
| (7            | Quaternary    | Recent          | Alluvium                    | 100000000000       | LEGEND:          |
|               | - Canada      | Upper           | Siwalik Group               |                    | LEGEND.          |
| 🚊             | Miocene       | Middle<br>Lower | i .                         | - in the same      | THE PERSON NAMED |
| 🛪             |               |                 | Nari/ Gaj                   |                    |                  |
|               | Oligocene     |                 | Kirthar                     |                    | Limestone        |
| Z             | Eocene        | Upper<br>Middle | Kirtnar                     |                    | 00000000         |
| CENOZOIC      |               | Lower           | Ghazii/Shale                |                    | Sandstone        |
|               | Paleocene     |                 | Dunghan                     | mann               | Tobales and      |
|               |               |                 | Ranikot                     | THE PARTY OF       |                  |
|               | S             |                 | Pah                         | 3000               | Shale            |
|               | Cretaceous    | Upper           | Miighalkot<br>Parh          |                    | *******          |
| (3            |               | Оррег           | Goru/Lumshiwal              |                    | Siltstone        |
| MESOZOIC      |               | Lower           |                             | SECTION CONTRACTOR | Sitistone        |
| \ \ \ \       | Jurassic      |                 | Sembar                      |                    | Source           |
| 6             |               | Upper           |                             |                    | Source           |
| 82            |               | Middle          | Chiltan/ Samana Suk         |                    | Reservoir        |
|               |               | -               | ,Shirinab, Datta/Shinawari_ | MARKET THE PARKET  | Reservoir        |
| _             |               | Lower           |                             |                    | Seal             |
|               | Triassic      |                 | Kingriali                   | 1000               | Seal             |
|               |               |                 | Wulagai                     | - HEE              |                  |
| ن اا          | Permian       |                 | Chhidru<br>Warcha           |                    |                  |
| PALE<br>OZOIC |               |                 | Dandot/Tobra                | ***********        |                  |
| <u>K</u> K    | Cambrian      |                 | Baghanwala                  |                    |                  |
| ш о           |               |                 | Khewra                      |                    |                  |
|               | Infra Cambria | n               | Salt Range Group            |                    |                  |
|               | Pre Cambriar  | ı               | Crystalline Basement        |                    |                  |







## **Petroleum Play**

The source rocks having good to very good potential with appropriate maturity levels to generate hydrocarbons are present in this area. Good potential reservoirs are present in the Paleocene and Eocene formations.. Effective seals along with structural as well as stratigraphic traps exist in the area.

#### Source

The potential source rocks of the area are the algal mudstones and rich dolomite horizons in the Salt Range Formation (Pre Cambrian). The dolomites present in the Salt Range Formation, drilled in nearby well shows good source rock potential. The potential source rocks in the Central Indus Basin is Bilara Formation (Infra-Cambrian) as this formation contains rich source rocks in the Punjab Platform. The Paleozoic and Mesozoic rocks also have some source potential.

### Reservoir

The reservoirs of the area include Bilara and Jodhpur Formation (Infra-Cambrian), Khewra Sandstone (Cambrian), Permian sedimentary sequence, lower parts of Samanasuk Formation (Jurassic), sand intervals of Lumshiwal Formation (Cretaceous).

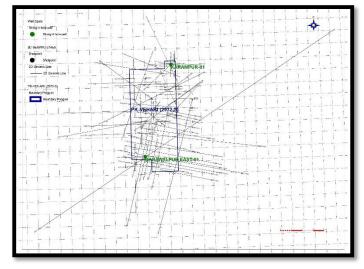
### Seal

The cap rock of this area includes the interbedded shales occurring within the reservoir horizons of Salt Range Formation, Khewra and Permian Formations. For Samana Suk and Lumshiwal reservoirs, the shales of Chichali and Ranikot can act as effective seal respectively.

### **Trap**

In this area Structural Traps drape anticlines along with stratigraphic traps (truncations) are possible to exist which will provide effective trapping mechanism for the accumulation of hydrocarbons.

## Vehari Block Base Map



**Well Data** 

| WELL NAME             | SPUD<br>DATE   | OPERA<br>TOR | WELL<br>TD | TD<br>FORMATION                     | PRIMRY<br>TARGET  |
|-----------------------|----------------|--------------|------------|-------------------------------------|---|
| BAHAWALPUR<br>EAST-01 | 19/12/<br>1980 | SHELL        | 3024 m     |                                     | Salt Range<br>Fm<br>(Precambri<br>an)                   |
| KARAMPUR-01           | 27/12/<br>1958 | SHELL        | 9955 ft    | Metamorphic<br>rocks (<br>Basement) | To<br>investigate<br>the HC in<br>Karampur<br>Structure |

### **Seismic Data**

| 2D SEISMIC DATA    | 3D SEISMIC DATA          |  |  |
|--------------------|--------------------------|--|--|
| Line km = 1,741.20 | 3D data is not available |  |  |



