

**PETROPHYSICAL INTERPRETATION OF RESERVOIR  
ZONE OF SAWAN GAS FIELD, MIDDLE INDUS BASIN,  
PAKISTAN**



**By**

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of the requirement for the degree of M.S in Geology

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**2014**

**CERTIFICATE OF ORIGINALITY**

This is to certify that the intellectual contents of the thesis

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**SAWAN GAS FIELD, MIDDLE INDUS BASIN, PAKISTAN**

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## **ABSTRACT**

Petrophysical interpretation of Sawan gas field is carried out by using two wells log data i-e Sawan-03 and Sawan-07. The objective of the research work is to evaluate the hydrocarbon potential of well Sawan-03 and Sawan-07. Research work also included the lithology identification of well Sawan-03 and Sawan-07. Geographically, project area is located in Khairpur district about 499 km in the north of Karachi, Pakistan. Tectonically, project area falls at the southern boundary of Middle Indus basin. Study area shows tectonics of extensional regime. As a result, structures like horst and graben are formed. Normal faults are also present in the study area. In study area, Sembar formation is acting as a source potential and Lower Goru formation is acting as reservoir body. Shale of Sembar formation is charging the reservoir of Lower Goru formation.

The data used in this research work to achieve objectives and goals comprised of complete suits of wire line logs in LAS (Log Ascii Standard) format. The petrophysical interpretation includes shale volume, effective porosity, permeability, water saturation, hydrocarbon saturation, bulk volume of water, bulk volume of hydrocarbon, moveability of hydrocarbons and finally netpay thickness. For this purpose, petrophysical interpretation has been done to evaluate the hydrocarbon potential of Sawan-03 and Sawan-07. Well log data of these two wells has been interpreted by using Geographix software. Lithology identification also has been done in order to know the lithology of reservoirs. For this purpose, cross plots have been plotted between NPhi and Rhob then they are overlaid on Baker Atlas lithology determination chart.

On the basis of all these evaluated petrophysical characteristics, research work determined that the reservoirs of well Sawan-03 and well Sawan-07 have hydrocarbon potential as they show good effective porosity, permeability and hydrocarbon saturation. Result also showed that sandstone is the main and major lithology in the reservoir zones of well Sawan-03 and Sawan-07.

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