

**Petrophysical analysis of Ratana well 03, Ratana, upper Indus
basin, Pakistan**



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**PETROPHYSICAL ANALYSIS OF RATANA WELL 03,
RATANA, UPPER INDUS BASIN, PAKISTAN**



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ABSTRACT

Petroleum is vital to almost all industries, and is of importance to the maintenance of industrialized civilization itself, and thus is a critical concern for many nations. Due to its importance this field has developed special interests of the scientists and various hydrocarbon agencies and a number of new geological and geophysical techniques have been developed to explore and exploit the hydrocarbon buried in subsurface geological formations. Petrophysics and well logging is one of the strong tools which are used to evaluate the formation characteristic features having potential for hydrocarbon development.

A successful petrophysical analysis of Ratana well#3 is carried out interpreting the given logs. Different parameters calculated are shale volume, saturation of water and hydrocarbon and porosity was determined using different logs. These were plotted onto MS-Excel understand sub surface characteristics and presence of fluids.

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ABBREVIATIONS

Porosity	ϕ
Log response	ΔT
Lithological Constant	A
Constant based on hydrocarbon density	C
Caliper Log	CALI
Gamma Ray Log	GR
Log response in the zone of interest, API units	GRlog
Log response in the shale beds, API unit	GR _{max}
Log response in the clean beds, API units	GR _{min}
Gamma ray Index	IGR
Permeability	k
Deep LateroLog	LLD
Cementation exponent	m
Main Boundary Thrust	MBT
milli Volt	mV
Saturation Exponent	n
North Potwar Deformed Zone	NPDZ
Neutron Log	NPHI
Density Log	RHOB
Resistivity of mud filtrate	R _{mf}
Equivalent resistivity	R _{mfe}
True Resistivity	R _t
Equivalent water resistivity SP	R _{we}
Salt Range Potwar Fold Belt	SRPFB
Saturation water	S _w
Time of fluid	t _f
Volume of shale	V _{sh}
Constant	W
Water oil contact	WOC