

**FORMATION EVALUATION BY USING
PETROPHYSICAL ANALYSIS AND STRATIGRAPHIC
CORRELATION OF MISSA KASWAL WELLS 01, 02
AND 03, UPPER INDUS BASIN, PAKISTAN**



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of the requirement for the degree of MS in Geology

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	CONTENTS	Pages
ABSTRACT		vii
ACKNOWLEDGEMENT		viii
FIGURES		iv
TABLES		vi

CHAPTER 1

INTRODUCTION

1.1	Introduction	1
1.2	Introduction to the study area	2
1.3	Exploration history of the study area	2
1.4	Location	2
1.5	Objectives of the research project	3
1.6	Acquired data	3
1.7	Methodology	4

CHAPTER 2

GEOLOGY OF THE AREA

2.1	Geology and Stratigraphic	5
2.2	Structure geology of the area	7
2.3	Petroleum system of the area	9
2.3.1	Source Rocks	10
2.3.2	Reservoir Rocks	10
2.3.3	Seal/Cap Rocks	10

CHAPTER 3
METHODOLOGY

3.1	Wireline Logs Interpretation Work Flow	11
3.2	Marking potential zones of interest	12
3.3	Calculation of volume of Shale (Vsh)	12
3.3.1	From Gamma Ray Log	12
3.4	Porosity calculation	12
3.4.1	Density porosity	12
3.4.2	Sonic porosity	13
3.4.3	Average Porosity	13
3.4.4	Effective Porosity	14
3.5	Calculation of SwA	14
3.6	Calculation of hydrocarbon saturation SH	14
3.7	Cutoff criteria	14

CHAPTER 4
PERTROPHYSICAL INTERPRETATION

4.1	Raw log curves	15
4.2	Missa Kaswal well 01 selection of zone in Sakesar Formation	17
4.2.1	Missa Kaswal well 01 Sakesar Formation	18
4.3	Missa Kaswal well 01 selection of zones in Khewra Formation	20
4.3.1	Missa Kaswal well 01 Khewra Formation	21
4.4	Missa Kaswal well 02 selection of zone in Sakesar Formation	23
4.4.1	Missa kaswal well 02 zone “A”Sakesar Formation	24
4.4.2	Missa Kaswal well 02 zone “B”, Sakesar Formation	25
4.5	Missa Kaswal well 02 Selection of zone in Khewra Formation	27
4.5.1	Missa Kaswal well 02 Khewra Formation	28

4.6	Missa Kaswal well 03 selection of zone in Chorgali Formation	30
4.6.1	Missa Kaswal well 03 zone 01 Chorgali Formation	31
4.7	Missa Kaswal well 03 selection of zone in Sakesar Formation	33
4.7.1	Missa Kaswal well 03 Sakesar Formation	34
4.8	Missa Kaswal well 03 selection of zone in Khewra Formation	36
4.8.1	Missa Kaswal well 03 zone 03 Khewra Formation	37
4.9	Summation	39
4.10	Correlation	40
4.10.1	Stratigraphic correlation	37
	DISCUSSION	42
	CONCLUSIONS	44
	RECOMMENDATIONS	45
	REFERENCES	46

FIGURES

Figure 1.1.	Location map of the study area (Courtsey of OGDCL)	3
Figure 2.1.	Collision of Indian plate with Tibetan plate and formation of Himalaya	9
Figure 3.1.	Absolute Interpretation work flow	11
Figure 4.1	Raw log curves	16
Figure 4.2.	Figure 4.2. Selection of zone in Sakesar Formation	17
Figure 4.3.	Petrophysical interpretation of Sakesar Formation	18
Figure 4.4.	Average values of Sakesar Formation (in column chart) from depth 1839-1844m	18
Figure 4.5.	Selection of zone in Khewra Formation	20
Figure 4.6.	Petrophysical interpretation of Khewra Formation	21
Figure 4.7.	Average values of Khewra (in column chart) from depth 1862-1868m	21
Figure 4.8.	Zone of interest in Sakesar Formation	23
Figure 4.9.	Petrophysical interpretation of Missa Kaswal zone “A”	24
Figure 4.10.	Average values of zone “A” of Sakesar Formation (in column chart) from depth 1850-1855m	24
Figure 4.11.	Petrophysical interpretation of zone “B”, Sakesar Formation	25
Figure 4.12.	Average values of zone “B”, Sakesar Formation(in column chart) from depth 1860-1866m	26
Figure 4.13.	Selection of zone in Khewra Formation	27
Figure 4.14.	Petrophysical interpretation of Khewra Formation	28
Figure 4.15.	Average values of Khewra Formation (in column chart) from depth 2091-2134m	28

Figure 4.16.	Selection of zone in Chorgali Formation	30
Figure 4.17.	Petrophysical interpretation of Chorgali Formation	31
Figure 4.18.	Average values of Chorgali Formation (in column chart) from depth 1870-1896m	32
Figure 4.19.	Selection of zone in Chorgali Formation	33
Figure 4.20.	Petrophysical interpretation of Sakesar Formation	34
Figure 4.21.	Average values of Sakesar Formation (in column chart) from depth 1914-1940m	35
Figure 4.22.	Selection of zone in Khewra Formation	36
Figure 4.23.	Petrophysical interpretation of Khewra Formation	37
Figure 4.24.	Average values of Khewra Formation (in column chart) from depth 2144-2161m	38
Figure 4.25.	Stratigraphic correlation of Missa Kaswal well 01, 02 and 03	41

TABLES

Table 2.1.	Generl stratigrapic column of Potwar Basin	7
Table 4.1.	Average values of Sakesar Formation from depth 1839-1844m	19
Table 4.2.	Average values of Khewra Formation from depth 1862-1868m	22
Table 4.3.	Average values of Sakesar Formation of zone “A” from depth 1850-1855m	25
Table 4.4.	Average values of Sakesar Formation zone “B” from depth 1860-1866m	26
Table 4.5.	Average values of Khewra Formation from depth 2091-2134m	29
Table 4.6.	Average values of Chorgali Formation from depth 1870-1896m	32
Table 4.7.	Average values of Sakesar Formation from depth 1914-1940m	35
Table 4.8.	Average values of Khewra Formation from depth 2144-2161m	38
Table 4.9.	Table 4.9. Average values of three wells	39

ABSTRACT

The research work is carried out in the area of Missa Kaswal, which is located in Punjab province, Upper Indus Basin, Pakistan. The research work has done on the 03 wells of Miss Kaswal in order to find out the hydrocarbon potential through Petrophysical analysis. The study area is important for hydrocarbon traps, and most of them are structural traps. The sedimentary sequence of the Missa Kaswal ranges from the Pre-Cambrian to Pliocene age Siwaliks group. The main reservoirs in the area are Chorgali formation and Sakesar limestone of Eocene age. Formation evaluation and Stratigraphic correlation is the main purpose of this study at the level of Cambrian and Eocene rocks. Petrophysical studies include the determination of the porosities, resistivity of water, Saturation of water, Saturation of Hydrocarbon and Net pay thickness. Gamma ray, Resistivity, Sonic log, Neutron log, Density log and Calliper logs are used. Petrophysical results show the presence of clean Limestone with variable porosity in the prospective zones.. The Petrophysical analysis was performed on three main formations which are consider to be a good reservoir in the Missa Kaswal area, in well 01 Sakesar and Khewra Formation having promising signature to produce hydrocarbon on economic value, while in well 02 Sakesar Formation may be act as a good due to low volume of shale, Khewra Formation can act as a good reservoir in upper portion, and in well 03 also Khewra Formation have chances to produce hydrocarbons on economic value. In well 01 Sakesar in Formation hydrocarbon saturation is 49.78, effective porosity 8.7% and net pay thickness is 2.5m, While in Khewra Formation hydrocarbon saturation is 76.02%, and Netpay thickness is 3m, in well 02 Sakesar Formation in zone "A" and zone "B" water saturation are 49.11, 95.30, average and effective porosities are 2.1 and 0.5 respectively, and in Khewra Formation hydrocarbon saturation is 29.8%, average porosity is 7.1 and Netpay thickness is 0.5m. In well 03 Chorgali and Sakesar Formation have water saturation 80 and 86%, average porosities are 7 and 3% and Netpay thickness is 0m, and in Khewra Formation hydrocarbon saturation is 55.7%, average and effective porosities are 11.9 and 7.1% respectively and Netpay thickness is 9m . Stratigraphic correlation shows that the depth of the formations increases from well 01 to well 03 towards the eastern side of the basin, which means area is present towards limb of the anticline.

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