

**PETROPHYSICAL ANALYSIS OF SUI UPPER
LIMESTONE AND SUI MAIN LIMESTONE IN
QADIRPUR GAS FIELD, MIDDLE INDUS BASIN,
PAKISTAN**



By

SAAD ALI IQBAL KHAN

**Department of Earth and Environmental Sciences
Bahria University, Islamabad**

2012

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A thesis submitted to Bahria University, Islamabad in partial fulfillment of the requirement for the degree of M.S in Geology

By

Saad Ali Iqbal Khan

**Department of Earth and Environmental Sciences
Bahria University, Islamabad**

2012

ACKNOWLEDGEMENTS

The thesis was completed by the assistance of Department of Earth and Environmental Sciences, Bahria University and Directorate General of Petroleum Concession, Government of Pakistan. I wish to express my sincere and deep sense of gratitude to thesis supervisors Mr. Yasir Zeb (Exploration Geophysicist, Eni Pakistan) and Co. supervisor Ms. Mehwish Nadeem Butt (Geophysicist, Pakistan meteorological Department, Islamabad) who not only provided me fruitful guidance but their very sympathetic attitude always encouraged and inspired me to work hard. Their guidance, remarkable suggestions, constant encouragement and constructive criticism enabled me to complete this thesis work.

I am thankful to Dr. Muhammad Zafar, Head of Department of Earth & Environmental Sciences, Bahria University Islamabad, for his co-operation during research. Special thanks to Prof. Dr. Tahseenullah Khan Bangash ,Department of Earth and Environmental Sciences, Bahria University, Islamabad, for his kindness and guidance through out the research work.

ABSTRACT

Qadirpur gas field is one of the major gas reserves of Pakistan, which is located in the southern portion of the Qadirpur structure of Sulaiman sub basin in middle Indus basin. Gas has been discovered from middle Eocene carbonate reservoirs in Qadirpur areas. Sui Main Limestone is the main producer of gas in Qadirpur Gas-field area. The Qadirpur area is operated by Oil and Gas Company Limited, Pakistan. The present tectonic features of the Sulaiman sub basin and its structures came into existence during post Cretaceous orogenic events. The sub basin is bounded on the east by Indian shield and on the west by the marginal zone of the Indian plate. On the north side, it lies Sargodha high and Pezu uplift and Sukkur rift in south.

The petrophysical analysis for Sui Upper limestone and Sui Main limestone of Qadirpur well 14, 15, 16 and 17 in the Qadirpur Gas Field of Middle Indus Basin has been carried out after having the data of wells from Directorate General of Petroleum Concession of Pakistan (DGPC) in the form of wireline logs. Petrophysical analysis involves the study of parameters of shale volume, average porosity, effective porosity, saturation of water, saturation of hydrocarbon, saturation of pore volume of hydrocarbon, saturation of pore volume of water, lithology and thickness of productive zone. The net pay thickness is estimated by applying the cutoff values of petrophysical parameters. The value of volume of shale for the Sui upper limestone ranges from 15.07 to 38.9%. The value of effective porosity ranges from 7.44 to 25.42%. The value for saturation of hydrocarbon ranges from the 35 to 40% and the water saturation ranges up to 60%. The value of volume of shale for the Sui main limestone ranges from 29.9 to 60%. The value of effective porosity ranges from 11.33 to 23.58%. The value for saturation of hydrocarbon ranges from the 35 to 72.73% and the water saturation ranges up to 27.2 to 65 %.

The isopach maps of the reservoir formations thickness and Petrophysical parameters are prepared showing the extent of formations in nearby areas. The correlation of reservoir formations is prepared showing that the reservoir is getting shallower in the northward side of Qadirpur Gas field.

CONTENTS

ACKNOWLEDGEMENTS	i
ABSTRACT	ii
FIGURES	vi
TABLES	x

CHAPTER 1

INTRODUCTION

1.1	Location of study area	1
1.2	Data for research	3
1.3	Objectives of study	3
1.4	Methodology	3

CHAPTER 2

GEOLOGY AND TECTONICS

2.1	Regional tectonics of the area	6
2.1.1	Punjab platform	7
2.1.2	Sulaiman depression	7
2.1.3	Sulaiman fold belt	7
2.2	Geology of the area	9
2.3	Structure of the area	11
2.4	Petroleum prospect	11
2.5	Stratigraphic succession of the area	13
2.5.1	Alluvium	13
2.5.2	Siwaliks	14
2.5.3	Nari formation	14
2.5.4	Kirthar formation	14
2.5.4.1	Drazinda member	14
2.5.4.2	Pirkoh limestone member	15
2.5.4.3	Sirki member	15
2.5.4.4	Habib rahi limestone member	15

2.5.5	Ghazij formation	16
2.5.6	Sui upper limestone	16
2.5.7	Sui shale	16
2.5.8	Sui main limestone	16

CHAPTER 3 METHODOLOGY

3.1	Demarcation of zone of interest	20
3.2	Volume of shale	20
3.3	Lithology	21
3.4	Porosity	21
3.4.1	Types of porosities	21
a)	Neutron porosity (P_{hin})	21
b)	Effective porosity (P_{hie})	22
c)	Density porosity (P_{hid})	22
d)	Average porosity (P_{hia})	23
e)	Sonic porosity	23
3.5	Permeability	23
3.6	Resistivity of water (R_w)	24
3.7	Saturation of water (S_w)	24
3.8	Saturation of hydrocarbon (S_{hc})	25
3.9	Cut off	26

CHAPTER 4 PETROPHYSICAL INTERPRETATION

4.1	Zone of Interest	27
4.2	Petrophysical interpretation of Sui Upper Limestone in Qadirpur 14	28
4.3	Petrophysical interpretation on Prism of SUL in Qadirpur 14	29
4.4	Petrophysical interpretation of Sui Upper Limestone in Qadirpur 15	32
4.5	Prism Interpretation on Prism of SUL in Qadirpur 15	33
4.6	Petrophysical interpretation of Sui Upper Limestone in Qadirpur 16	36
4.7	Prism Interpretation on Prism of SUL in Qadirpur 16	38
4.8	Petrophysical interpretation of Sui Upper Limestone in Qadirpur 17	41

4.9	Prism Interpretation on Prism of SUL in Qadirpur 17	44
4.10	Petrophysical interpretation of Sui Main Limestone in Qadirpur 14	47
4.11	Prism Interpretation on Prism of SUL in Qadirpur 14	44
4.12	Petrophysical interpretation of Sui Main Limestone in Qadirpur 15	52
4.13	Prism Interpretation on Prism of SML in Qadirpur 15	56
4.14	Petrophysical interpretation of Sui Main Limestone in Qadirpur 16	59
4.15	Prism Interpretation on Prism of SML in Qadirpur 16	62
4.16	Petrophysical interpretation of Sui Main Limestone in Qadirpur 17	65
4.17	Prism Interpretation on Prism of SML in Qadirpur 17	68
4.18	Lithology identification	71

CHAPTER 5

CORRELATION AND MAPPING

5.1	Correlation of Qadirpur 14, 15, 16 And 17	74
5.2	Isopach Mapping	77
5.2.1	Thickness map of sui upper limestone	78
5.2.2	Thickness map of sui shale formation	79
5.2.3	Permeability of sui main limestone	80
5.2.4	Effective porosity of sui main limestone	81
5.2.5	Shale volume of sui main limestone	82
5.2.6	Effective porosity of sui upper limestone	83
	CONCLUSIONS	84
	RECOMMENDATIONS	85
	REFERENCES	86

FIGURES

Figure 1.1.	Map Showing the Location of study area.	2
Figure 1.2.	Interpretation flow chart for formation evaluation.	5
Figure 2.1.	Map showing regional tectonic setting of Pakistan.	8
Figure 2.2.	Basin Architecture of Pakistan.	9
Figure 2.3.	Map showing physiographic and tectonic features of Middle Indus Basin.	10
Figure 2.4.	Map showing the geological features of Qadirpur area.	11
Figure 2.5.	Map showing the geological location of Qadirpur Gas Field, Middle Indus Basin, Pakistan.	12
Figure 2.6.	Chart showing stratigraphic succession and Reservoir, Cap and Source Rocks of Qadirpur area in the middle Indus Basin.	19
Figure 4.1.	Graph of Volume of shale of Sui Upper Limestone in Qadirpur well 14.	28
Figure 4.2.	Graph of Average porosity and Effective porosity of Sui Upper Limestone in Qadirpur well 14.	29
Figure 4.3.	Petrophysical interpretation of the Sui upper limestone in Qadirpur well 14.	31
Figure 4.4.	Graph of shale volume and depth of Sui Upper Limestone in Qadirpur Well 15.	32
Figure 4.5.	Graph of average porosity and effective porosity.	32
Figure 4.6.	Graph of permeability of Sui Upper Limestone in Qadirpur well 15.	33
Figure 4.7.	Petrophysical interpretation of Sui Upper limestone in Qadirpur well 15.	35
Figure 4.8.	Graph of shale volume and depth of Sui Upper Limestone in Qadirpur well 16.	36
Figure 4.9.	Graph of average porosity and effective porosity of Sui upper Limestone in Qadirpur well 16.	36
Figure 4.10.	Graph of hydrocarbon saturation and water saturation of Sui Upper Limestone in Qadirpur well 16.	37
Figure 4.11.	Graph of permeability of Sui Upper Limestone in Qadirpur well 16.	38
Figure 4.12.	Log of petrophysical properties of Sui Upper Limestone in Qadirpur well 16.	40

Figure 4.13.	Graph of Shale Volume of Sui Upper Limestone in Qadirpur well 17.	41
Figure 4.14.	Graph of average porosity and effective porosity of Sui Upper Limestone in Qadirpur well17.	41
Figure 4.15.	Graph of Saturation of Water and hydrocarbon Saturation.	42
Figure 4.16.	Graph of Permeability of Sui Upper Limestone in Qadirpur well 17.	43
Figure 4.17.	Graph of Saturation of pore volume of Sui Upper Limestone in Qadirpur well 17.	43
Figure 4.18.	Petrophysical Interpretation of Sui Upper Limestone in Qadirpur well 17.	46
Figure 4.19.	Graphical representation of Volume of shale of SML in Qadirpur well 14.	47
Figure 4.20.	Graphical representation of average porosity of Sui Main Limestone in Qadirpur well 14.	48
Figure 4.21.	Graph of effective porosity of Sui Main Limestone in Qadirpur well 14	48
Figure 4.22.	Graphical representation of permeability of Sui Main Limestone in Qadirpur well 14.	49
Figure 4.23.	Log of interpreted Petrophysical parameters of Sui Main Limestone in Qadirpur well 14.	51
Figure 4.24.	Graphical representation of volume of shale of Sui Main Limestone in Qadirpur well15.	52
Figure 4.25.	Graph of effective porosity and average porosity of Sui Main Limestone in Qadirpur well 15.	53
Figure 4.26.	Graph of permeability of Sui Main Limestone in Qadirpur well 15.	53
Figure 4.27.	Graph of water saturation and hydrocarbon saturation of Sui Main Limestone in Qadirpur well 15.	54
Figure 4.28.	Graph of saturation of hydrocarbon pore volume of Sui Main Limestone in Qadirpur well 15.	55
Figure 4.29.	Graph showing hydrocarbon pore volume of Sui Main Limestone in Qadirpur well 15.	55
Figure 4.30.	Petrophysical interpretation of Sui Main Limestone in Qadirpur 15.	58
Figure 4.31.	Graph of Volume of shale of SML in Qadirpur well 16.	59

Figure 4.32.	Graph of Average Porosity and Effective Porosity of Sui Main Limestone in Qadirpur well 16.	59
Figure 4.33.	Graph of hydrocarbon saturation and water saturation of Sui Main Limestone in Qadirpur well 16.	60
Figure 4.34.	Grraph of hydrocabon pore volume of SML in Qadirpur well 16.	61
Figure 4.35.	Graph of saturation of hydrocarbon pore volume of SML in Qadirpur well 16.	61
Figure 4.36.	Petrophysical Interpretation of Sui Main Limestone in Qadirpur well 16.	64
Figure 4.37.	Graph of volume of shale in Sui Main Limestone of Qadirpur well 17.	65
Figure 4.38.	Graph of effective porosity and average porosity of Sui Main Limestone in Qadirpur well 17.	66
Figure 4.39.	Graph of saturation of hydrocarbon and water saturation in SML of Qadirpur well 17.	66
Figure 4.40.	Graph of the hydrocarbon pore volume of Sui Main Limestone in Qadirpur well 17.	67
Figure 4.41.	Graph of saturation of hydrocarbon pore volume of Sui Main Limestone in Qadirpur well 17.	68
Figure 4.42.	Log showing curves of interpreted Petrophysical properties of Sui Main Limestone in Qadirpur well 17.	70
Figure 4.43.	Baker atlas cross plot of Sui upper limestone in Qadirpur 15.	71
Figure 4.44.	Baker atlas cross plot of Sui upper limestone in Qadirpur 16.	71
Figure 4.45.	Baker atlas cross plot of Sui upper limestone in Qadirpur 17.	72
Figure 4.46.	Baker atlas cross plot of Sui Main limestone in Qadirpur 15.	72
Figure 4.47.	Baker atlas cross plot of SuiMain limestone in Qadirpur 16.	73
Figure 4.48.	Baker atlas cross plot of Sui Main limestone in Qadirpur 17.	73
Figure 5.1.	Log showing correlation of Petrophysical parameters of Qadirpur Wells 14, 15, 16, and 17.	76
Figure 5.2.	Base Map of Qadirpur well 14, 15, 16 and 17 wells of the Qadirpur Gas Field, Pakistan.	77
Figure 5.3.	Thickness contours map of Sui Upper Limestone in Qadirpur 14, 15, 16 and 17 wells of Qadirpur Gas Field, Pakistan.	78

Figure 5.4.	Map showing thickness contours of Sui Shale Unit of Qadirpur 14, 15, 16 and 17 wells of Qadirpur Gas Field, Pakistan.	79
Figure 5.5.	Permeability contour map of Sui Main Limestone of Qadirpur 14, 15, 16 and 17 well of Qadirpur Gas field, Pakistan.	80
Figure 5.6.	Effective Porosity contour of Sui Main Limestone in Qadirpur 14, 15, 16 and 17 wells of Qadirpur Gas Field, Pakistan.	81
Figure 5.7.	Contour map of shale volume of Sui Main Limestone in Qadirpur 14, 15, 16 and 17 wells of Qadirpur Gas Field, Pakistan.	82
Figure 5.8.	Effective porosity contours of Sui Upper Limestone in Qadirpur 14, 15, 16 and 17 wells of Qadirpur Gas field, Pakistan.	83

TABLES

Table 2.1.	Table showing the formation tops of the wells of Qadirpur gas field.	13
Table 2.2.	The formation thickness chart of the wells of Qadirpur Gas field.	18
Table 4.1.	Showing the Zones of Interest for wells in Qadirpur Gas Field.	27