

LIST OF CONTENTS

<u>Subject.</u>	<u>Page.</u>
<u>CHAPTER I</u> <u>INTRODUCTION</u>	
1.1 Exploration History	3
1.2 Aim of Study	7
1.3 Materials and Techniques	7
1.4 Previous works	8
<u>CHAPTER II</u> <u>GEOLOGICAL SETTING</u>	
2.1 Stratigraphy of Ras Fanar Field	11
2.1.1 Paleozoic Sandstones of Nubia Facies	13
2.1.2 Mesozoic Sequence	13
2.1.3 Tertiary Sequence	14
2.1.3.1 Paleocene - Eocene Succession	14
2.1.3.2 Eocene - Oligocene Unconformity	15
2.1.3.3 Miocene Succession	16
2.1.3.3.1 Nullipore Carbonates	16
2.1.3.3.2 South Gharib Formation	17
2.1.3.3.3 Zeit Formation	19
2.1.3.3.4 Post - Miocene Sequence	19
2.2 Structural Setting of Ras Fanar Field	19
2.2.1 The First Tectonic Phase	20
2.2.2 The Second Tectonic Phase	20
2.2.3 The Third Tectonic Phase	22

<u>Subject.</u>	<u>Page.</u>
2.2.4 The Fourth Tectonic Phase	22
CHAPTER III <u>WELL LOGGING ANALYSIS</u>	
3.1 Introduction	23
3.2 Methodology	23
3.3 Data Preparation	24
3.4 Environmental Corrections	25
3.4.1 Formation Temperature	27
3.4.2 Correction of Fluid Resistivity	28
3.4.3 Bore Hole Diameter Corrections	28
3.4.4 Matrix Corrections	30
3.5 Well Log Calculations	30
3.5.1 Determination of Initial Reservoir Parameters	31
3.5.1.1 Reservoir Datum Level	31
3.5.1.2 Fluid Contacts	31
3.5.1.3 Reservoir Temperature	33
3.5.1.4 Reservoir Pressure	35
3.5.2 Determination of Water Resistivity (R_w)	35
3.5.3 Determination of Cementation Factor (m), Saturation Exponent (n) and Archie's Constant (a).....	36
3.5.4 Total Porosity Determination from Porosity Tools	37
3.5.4.1 Nuclear Porosity Tools	37
3.5.4.1.1 Compensated Neutron Log (CNL)	37
3.5.4.1.2 Formation Density Compensated Tool (FDC)	38
3.5.4.1.3 Litho - Density Tool (LDT)	38

<u>Subject.</u>	<u>Page.</u>
3.5.4.2 Acoustic Porosity Tools	39
3.5.4.2.1 Bore Hole Compensated Sonic Tool (BHC)	39
3.5.4.2.2 Long Spacing Sonic Tool (LSS)	40
3.5.5 Determination of Fluid Saturation	40
3.5.5.1 Water Saturation Determination	40
3.5.5.1.1 Dual-Laterolog (DLL)	41
3.5.5.1.2 Microspherically Focused log (MSFL)	41
3.5.5.1.3 Dual Induction log (DIL)	41
3.5.5.2 Hydrocarbon Saturation Determination	42
3.5.6 Lithology Estimation	42
3.5.6.1 Dia-Porosity Crossplot	43
3.5.6.2 Tri-Porosity Crossplot	43
3.5.6.2.1 M N Plot	43
3.5.7 Other Tools	45
3.5.7.1 Natural Gamma Ray Tool (GR)	45
3.5.7.2 Natural Spectroscopy Gamma Ray (NGT)	45

CHAPTER IV

PETROPHYSICAL CHARACTERISTICS OF NULLIPORE RESERVOIR

4.1 Petrophysical Evaluation	48
4.1.1 Mineralogy	49
4.1.1.1 Lithology Estimation From Core	49
4.1.1.1.1 Calcareous Components	51
i- Limestone	51
ii- Dolomite	51