

CONTENS

SUBJECTS	PAGE No.
List of Contents	I
List of Figures	V
List of Tables	XI
Abstract	XIII
CHAPTER I	
I.1- Introduction	1
I.2- Purpose of this work	3
I.3- Previous gravity work	4
CHAPTER II	
Geologic Setting	8
II.1- Geomorphology	8
II.2- Stratigraphy	13
II.3- Structure	25
CHAPTER III	
Structural set up in Veiw of the Bouguer	
Anomalies and it's Qualitative Significance.....	35
III- 1 Introduction	35
III- 2 General Describtion and Geologic	
information obtained from the Bouguer	
Map.....	36
III- 3 Gravity Tectonic Trends and Their	
Significance.....	39
III.3.1- Fault Representation	39

II

III.3.2- Determination of the parameters of inclined faults.....	47
III.3.3- Determination of the Density contrast	59
III.3.4- Tectonic Significance of Fault parameters.....	64
III.3.5- Predominant range of the Basement depth.....	69
III- 4 Statistical tests on the fault parameters.	69
III.4.1- Product moment correlation coefficient. (Karl Person "K")...	71
III.4.2- Rank Order Correlation Coefficient. (Spearman "S")	74
III.4.3- Relationships between the fault parameters.....	75
III.4.4- Correlation between relations of fault parameters obtained for different areas of North Egypt and the study area.	80
III.4.5- Discussion.....	81

CHAPTER IV

Structural Set up in view of the Regional Component of the Bouguer Anomaly Field.....	91
IV - 1 General Statment and Principles of Local-Regional Separation.....	91
IV.1.1- Introduction.....	91
IV.1.2- Separation Principles :	92

III

IV.1.2.1- Using Smoothing (Graphical)	
Method.....	92
a- By Arithmetic mean.....	92
b- By Smoothing contours.....	92
c- By Smoothing of the	
profiles.....	93
IV.1.2.2- Analytical Methods.....	93
IV- 2 Determination of the Regional Component of	
the Bouguer Anomaly Field.....	95
IV.2.1- Separation Techniques.....	95
IV.2.1.1- Along Profiles.....	95
IV.2.1.2- Averaging the Bouguer Anomalies.	98
IV- 3 Determination of the Thickness of the	
Earth's Crust.....	102
IV- 4 The Regional Gravity Field and the Change	
in the Thickness of the Earth's Crust.....	106
IV- 5 The Relation between the Regional	
Component and the average Crustal	
Thickness.....	108

CHAPTER V

Structural Set up in Veiw of the Residual	
Component of the Bouguer Anomaly field.....	111
V- 1 The residual anomaly map	111
V- 2 The Geological Significance of the	
Residual Component.....	114
V.2.1- Tectonic trend Analysis.....	114
V.2.2- Shear Zones Determination.....	119

IV

V.2.3- Fault Parameters	123
V- 3 Basement Relief Map.....	130
V.3.1- Using the Residual values	130
V.3.2- Using Spectral Analysis	130
V.3.2.1- According to Treitle, 1971.	142
V.3.2.2- According to Cassano and Rocca, 1974.	142
V.3.2.3- By Mathematical Means.....	142
V- 4 Statistical testes	154
CHAPTER VI	
Correlation Between Surface And Subsurface Trends.	162
VI- 1 Introduction	162
VI- 2 Lineaments Deduced from landsate Images...	164
VI- 3 Correlation between landsate and Gravity detected Trends	168
CHAPTER VII	
Summary and Conclusion.....	172
References.....	180
Arabic Summary.....	204