

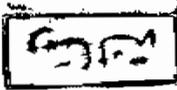
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Department of Geology
Faculty of Science
Ain Shams University

(Applied Geophysics)

SUBMITTED FOR THE DEGREE
OF MASTER OF SCIENCE IN GEOPHYSICS



B. S. C. (GEOLOGY)

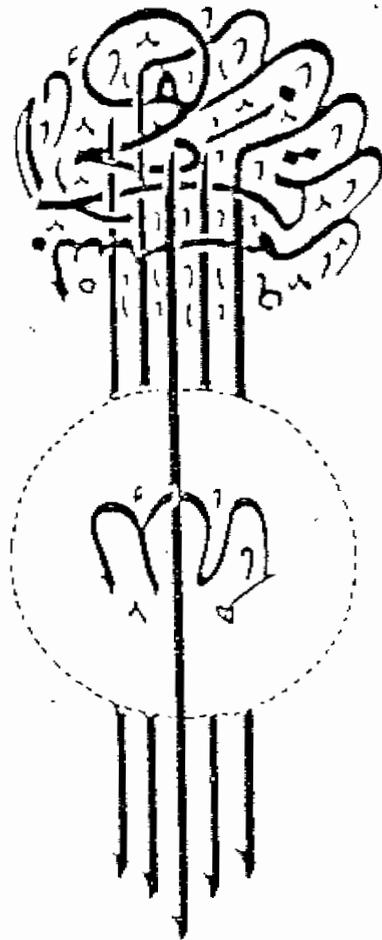
Mohamed El Said Abdel Fattah El Bohoty

BY

THESIS

NORTH SINAI, EGYPT.

SUB SURFACE GEOLOGIC SIGNIFICANCE
OF GEOPHYSICAL ANOMALIES IN





Prof. Dr. M. A. Bassiouni
M. H. Bassiouni
Head of the Department

He has also passed in examination of German language.

Courses.

He has successfully passed the final examination of these

- 9 - Magnetic Methods.
- 8 - Gravity Methods.
- 7 - Elastic theory.
- 6 - Potential theory.
- 5 - Geotectonics.
- 4 - Geomorphology.
- 3 - Mapping
- 2 - Lab techniques.
- 1 - Stratigraphic setting of Egypt.

one year in the following topics :

the candidate has attended nine graduate courses for
in geophysics. Beside the research work materialized in this
in partial fulfillment for the requirements of the M.Sc. degree
The present thesis is submitted to Ain Shams University

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A C K N O W L E D G M E N T S

In order to assign the problem, another information about the area is looked for such information can be provided upon the study of the geology of the drilled well and well logs or even from the geological features exposed on the ground surface. Unfortunately, the region under test is devoid except of very few wells drilled in it (namely El Maghara well, and also in the surrounding area namely Abu Hamth and El Khebra wells, drilled by some of old petroleum companies.

The results achieved from the analysis of such data being ambiguous, that is, different possible solution for one problem are expected, urge to get some approach leading to one unique solution, or at least, minimizing their number as possible it can be. However, the author finds it very difficult to identify the subsurface structure, within the area under study through the analysis of available gravity and magnetic data alone.

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CHAPTER-I
THE REVIEW OF GEOLOGICAL
AND GEOPHYSICAL WORK WITHIN
THE INVESTIGATED AREA

10

STRATIGRAPHIC SETTING OF THE AREA

The regional geology and stratigraphy of the area range in age from upper Jurassic to Recent. (Moon and Sadek "1921"; Hume "1929"; Sadek "1928"; Tromp "1938"; Shata and Gourel "1946"; Thebaud "1941"; and Said "1962"). Special attention is paid to the Jurassic outcrops and their relation with the overlying cretaceous rocks. All over north Sinai; Jurassic forms the most complete and thickest Jurassic exposure in Egypt.

The mountain range at Maghara forms an ellipse about 40 km long and 25 km wide. Its major axis trends in the southwest - northeast - direction. The elevation of such mountains reaches 500 m to 640 m in the highest point. In (Shushet El-Kaghara) it attains 735 m. The structure is pericline (sloping from a common center of strata). Not far away, other in earlier of Jurassic rocks (Limestone believed to be of lower Kimmeridgian or Upper Oxfordian age) occurring in the isolated dome of Gebel Um Matrath (260 m.) and in a hills called Jehem in the Resain El Aniza group (Fares, 1947). The stages identified by Fossils, range from the lower Bajocian or earlier to the lower Kimmeridgian overlain by the non-fossiliferous sandstone of the Nubia facies which is presumed to be of lower Cretaceous age. But no where else, has normal contact been observed. The lower Cretaceous has also been carefully studied. Its change of facies and its increase of

thickness should particularly be pointed out. Lithologically speaking, the limit corresponds to a striking change in weathering.

The upper pensylvanian-lower permian section (250 ms. thick) is exposed at the eastern slopes of the Northern Galala (Abdallah and Adindani, 1963) the succession comprises unfossiliferous sandstones, red shales, crinoidal limestone and silt stone have the top of section.

The Jurassic formation in north Sinai is exposed at the following localities.

Gebel Maghara, Risan Aniza and Gebel Minshereh.

Gebel Maghara:

The arrangement of sediments around the center of Maghara dome is the result vertical pressure at early Tertiary times. The structure of the Maghara Inlier is aperioline in the center of which Jurassic rock occupy an ellipse (37x14kms.). The long axis runs NE-SW direction. The total thickness of the exposed Jurassic rocks is 2000 meters, ranging in age from lower Bajocian or earlier to lower Kimmeridgian followed by nonfossiliferous Nubia sandstones assumed to be lower cretaceous age. Limestones and marls are developed in the upper part of the Jurassic succession, while the lower part is mostly formed of sandstone. The liassic seems to be poorly represented, Plat (I) shows a summary of exposed section from top to bottom.

