GEOLOGICAL AND SEDIMENTOLOGICAL STUDIES OF OLIGO-MIOCENE SECTIONS IN ABU ZENIMA AREA AND OCTOBER FIELD SINAI, EGYPT.

A. THESIS

Submitted in Partial Fulfilment for the Requirements of the

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IN

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BY

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NOTE

The present thesis is submitted from Badr Abass Khalil to Ain Shams University.in partial fulfilment of the requirements for the Degree of Master of Science in Geology .

Beside the research work materialized in this thesis, the Candidate has attended nine of the post-graduate courses during one year in the following topics :

- Mapping and sampling
- Applied Geophysics.
- Lab. Techniques
- Petrophysics
- Geophysical prospecting
- Lithostratigraphy
- Geotectonics
- Advanced structural Geology
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He has successfully passed the final examination of these courses . In addition, the student has successfully passed the German Language examination in Feb.,1982 .

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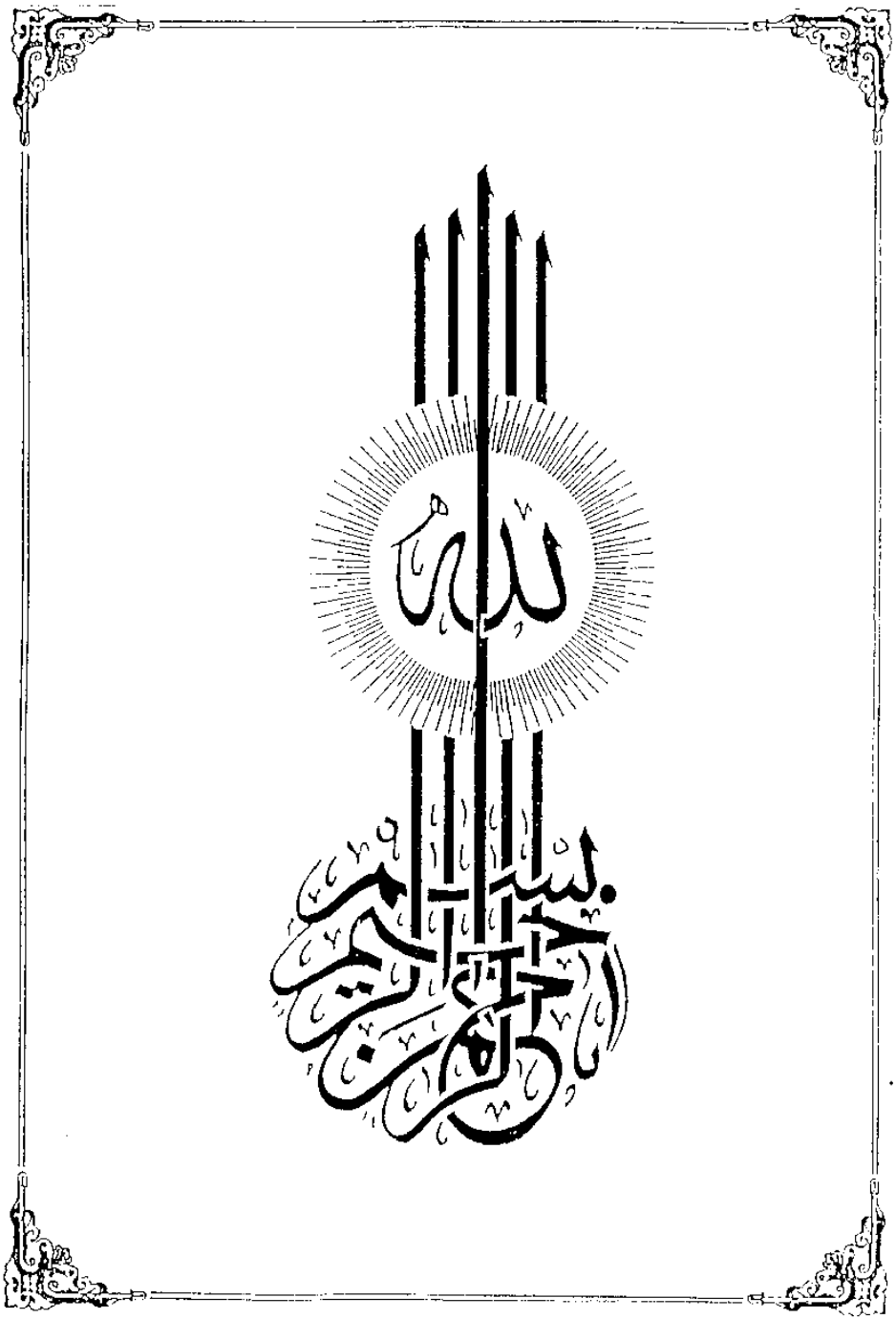

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A B S T R A C T

The present work deals with the study of the petrological and petrophysical properties of Oligo -Miocene sediments in the October-Agu Zenima area in the Gulf of Suez province; the most interesting and promising oil province in Egypt. This study is based on the data derived from various types of geological, paleontological, petrological, petrophysical and geophysical data in both surface and subsurface. The subsurface data include all the ditch samples, the side-wall cores and the conventional cores of two wells in the October field area. Surface data are represented by the Wadi Taybia surface samples. Moreover, the electric logs, (sonic, resistivity, density, gamma ray, spontaneous potential and dipmeter) were used to build the geological history of the study area.

A detailed sedimentologic and petrologic examination of thin sections representing the Oligo-Miocene sediments in the surface and subsurface are also considered. In addition, the residual and the mechanical analysis results were used to understand the environment of deposition. The petrophysical work includes the study of the porosity, permeability, grain density, bulk density and electric resistivity. Based on all these studies the geologic history and oil potentialities of the area were discussed.

INTRODUCTION

INTRODUCTION

1. Location :

The studied area as shown in Fig-1 is located in the central part of the Gulf of Suez, 135 Km. south-southeast of the Suez city at the northern tip of the Gulf of Suez. The October field occupies the western part of the studied area and is bounded by latitudes 28° 46' 40" and 28° 57' 10" North, longitudes 32° 57' 33" and 33° 10' East. Meanwhile, the Wadi Tayiba surface section is located at the mouth of the latitude 29° 04' 10" N and Longitude 33° 05' 46" E.

2. History :

In April 1977 Amoco (Egypt) drilled the first discovery well in the October oil field which is GS 195-1 (Oct. - A1). The well tested oil of 28° API gravity at a rate of 4685 BOPD on a 34/64" choke from Nubia Sandstone. This was followed by the Nubia producers GS 195-2 (Oct-B1), GS 185-1 (Oct.-C1) and GS 196-2A wells. In June 1978, GS 173-1 (Oct - D1) was drilled to the north of the GS 185-1 well to define the northern limits of the proven reservoir on the GS 185-GS 195 blocks. This well encountered Nukhul oil bearing conglomerates and sands. On ½" choke size, the well produced 4760 BOPD of 31.6° API gravity.

In December 1979, the GS 173-2 well was drilled to the east of the GS 173-1 (Oct -D1) to test the Nubia, and Nukhul, drilling results proved to be dry hole. GS 160-3 recommended to test the upthrown side of the back block of the GS 160-1 and GS 160-2 wells. The well was spudded in August 1980 and was completed as Nukhul oil well. The southern extention of the field has been identified by GS 197-1, GS 197-2, GS 206-1 and E-2 wells.

The October D-2 development well was drilled in May 1981 to the N.W. of the Nukhul discovery, Oct.D 1, to establish production from the GS 172 block. The

3.

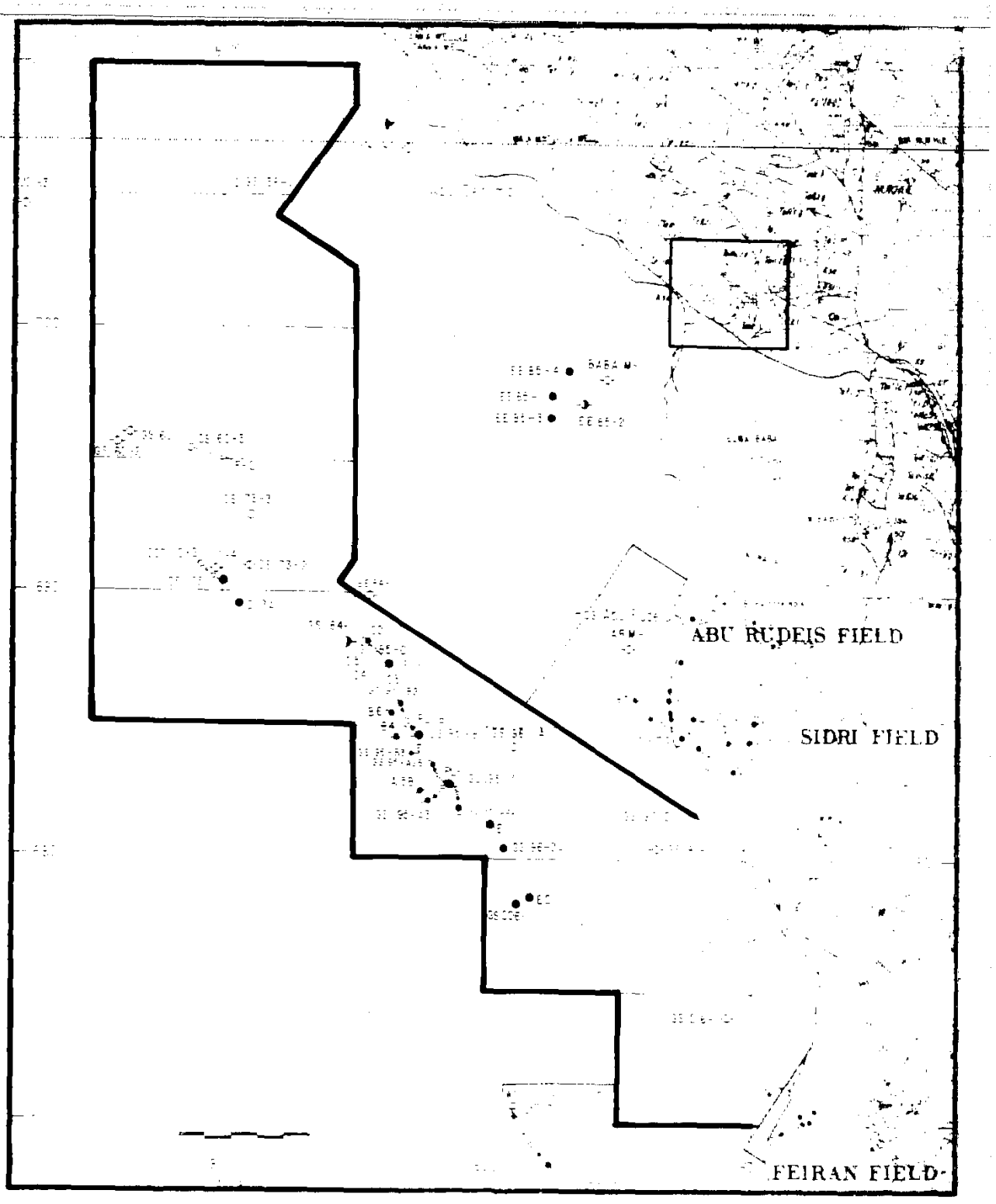

FIG : I

LOCATION MAP