شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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HANAA ALY

Ain Shams University
Faculty of Sciences
Department of Geophysics

SEISMIC INTERPRETATION AND STRUCTURAL ANALYSIS OF THE 3D SEISMIC DATA IN SITRA FIELD, ABU GHARADIG BASIN, NORTHERN WESTERN DESERT OF EGYPT

By

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(B. Sc. in Geophysics, Faculty of Science, AinShams University, 1997)

A Thesis Submitted in Partial Fulfillment of the Requirements for Master Degree of Science in Geophysics

To

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Cairo-2021

Note

The present thesis is submitted to Faculty of Science, Ain Shams University in partial fulfillment for the requirements of the master degree of Science in Geophysics.

Beside the research work materialized in the thesis, the candidate has attended ten post-graduate courses for one year in the following topics:

1. **Geophysical Field Measurements.**
2. **Numerical Analysis and Computer Programming.**
3. **Elastic Wave Theory.**
4. **Seismic Data Acquisition.**
5. **Seismic Data Processing.**
6. **Seismic Data Interpretation.**
7. **Earthquake Seismology.**
8. **Engineering Seismology.**
9. **Deep Seismic Sounding.**
10. **Structure of the Earth.**

He successfully passed the final examinations in these courses.

In fulfillment of the language requirement of the degree, he also passed the final examination of an English language course.

Head of Geophysics Department

Prof. Dr. Abdel Khalek El Werr

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Kareem El-Kharboutly

Abstract

MASTER THESIS IN GEOPHYSICS, AIN SHAMS UNIVERSITY

Seismic Interpretation and Structural Analysis of the 3D Seismic Data in Sitra Field, Abu Gharadig Basin, Northern Western Desert of Egypt

Karim El-kharboutly

The application of 3D structural modeling enhances the spatial visualization of the different data sets and simulates the real situation in the field and pursues better communications through a targeted project by simulation. The petrophysicalmodel substitutes the unsuccessful role of the seismic attributes in the investigated area. This can be more helpful in solving the production problem in a specific oil field and it can serve any economic upcoming future appraisal.

Abu Gharadig basin is the most productive basin in the northern Western Desert region having an enormous high hydrocarbon potentiality. The basin is trending in the ENE–WSW direction having sediments varying in age from Late Jurassic to Early Cretaceous. The study area (SITRA - 8 Field) lies on the downthrown side of the main Abu El Gharadig Basin periphery fault in between the basin center and the Qattara High.

The present study is mainly devoted to propose a significant integration between the subsurface geological information, the interpreted 3D seismic data as well as the well logging data for the purpose of delineating the major effective subsurface structures at Sitra-8 Field region in northern Western Desert of Egypt. In addition, the study is establishing a well evaluation of Abu Roash-C reservoir.The study area lies between latitudes 29° 44' 41"and 29° 48' 00"Nand longitudes 27° 56' 27" and 28° 00' 00"E. It covers an area nearly about 35 km².

The author conducted 3D seismic interpretation analyses in parallel to non-conventional petrophysical modeling for five wells imaging the subsurface structures and the lateral distribution of varies reservoir facies. In addition, the iso-parametric maps of reservoir parameters were plotted creating a visual understanding of fluid flow. Furthermore, Allen Diagrams reporting fault sealing were established for detecting the hydrocarbon leaking problem.Finally, a future development of profitable hydrocarbon sources has been proved in the northern eastern parts of the studied area.

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