A GEOLOGICAL MODEL OF THE SOUTHWEST SECTOR OF AXIOS BASIN AS DEDUCED BY THE INTERPRETATION OF SEISMIC REFLECTION LINES

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The southern sector of Axios basin, specifically the area South of Koufalia and Pella and Eastwards of Alexandria, is studied by the exploitation of seismic reflection lines. These lines were shot on behalf of a regional oil exploration project by D.E.P.-E.K.Y. (Public petroleum corporation of Greece).

The used seismic lines were initially interpreted in order to obtain a time model. By means of an inversion technique based on ray tracing theory, the time models were converted to depth ones. In case of «stack» sections the normal incidence rays were considered. If the sections were subjected to migration, inversion was based on «image rays». Velocity calibration was mainly accomplished on the data of a deep borehole at the Loudias river area which was drilled for commercial purposes.

The results of the present study along with the corresponding of other research activity in the area were combined to produce an isodepth map of the alpine basement and the overlain post-tectonic sediments.

GEOPHYSICAL IMPLICATIONS IN ENVIRONMENTAL GEOLOGY FOR DEVELOPMENT OF THE EASTERN NILE DELTA, A.R. EGYRT

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The geoelectric investigation through about 180 vertical electric sounding (maximum AB = 200 m) in El-Sharkiya Province, Eastern Nile Delta, gave facinating results about the vertical and lateral changes in the lithofacies of the Holocene-Pleistocene sequence in this region as well correlated with the available bore holes.

The Pleistocene sandy formation that constitutes the main aquifer in the Nile Delta is found to have irregular surface. Its Paleotopographic features contain shallow «NE» ridges (depth range from 0.6 to 6 m). Some of the irregularties are very shallow forming burried gizera sands out cropping in the south forming «Turtle-backs». Many of the archaeological

hills are found to be associated with the sides of these ridges and sand gizeras as save sites against the high floods.

On the other hand, the Holocene Nile silt and clay has thicknesses ranging from 0.8 to 27 m with an average of about 7 m. It thickens in deeper parts in between the ridges and gizeras of the Pleistocene bedrock, while thins above these features.

It is interesting that the burried historical Nile branches in the studied area are traced. A part of Zisostrees Canal (12th Dynasty) is delineated. Also a part of the Pelusiac Branch is delineated in three stages of its evolution and westward migration (since 12th Dynasty, Herodotus, Btolmee and silting up before George the Syprous). Also a part of the Tantic Branch is traced.

Due to the fact that the Nile agricultural silt and clay cover in this province is relatively thin, the underlying Pleistocene aquifer is essily affected with the general land use. Therefore, the agricultural, industrial and municipal development of this province is very critical for both the main aquifer and the overlying agricultural layer.

It is recommended that deep or shallow sewage disposal must be considered through suiteble ways, as well as irrigation-drainage processes. The use of dangerous pestisides and excessive chemical fertilizers must be reduced. However, heavy and chemical industrial plants in the region must be avoided to save the Nile Delta particulary its eastern side.

GEOPHYSICAL STUDY OF THE UPPER CRUST STRUCTURE IN ORESTIAS AREA, EASTERN RHODOPE

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The aim of this paper is to study the inner structure of the crystaline basement in Orestias basin, E. Rodope.

The data that have been processed and interpreted are one seismic line and one gravity profile, both running N.S.

The principal axis of the basin is oriented N-NW – E-SE.

The gravity and seismic profiles are not coincided and have been chosen to cut the axis of the basin in the vertical sense.

The method used to manipulate the data is described bellow step by step:

1. Digitization of the main horizons (Oligocene – Eocene – basement) from the migrated seismic section.
2. Derivation of a geological model using image rays technique.
3. Estimation of the densities from three well logs in the area.
4. Calculation of the theoretical gravity profile.
5. Comparison of the observed gravity values with the calculated ones.
8. Revision of the model adding sporadic reflections from the crystalline basement.