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Title of Thesis:

**Tectonostratigraphic evolution of Abu-Roash and Shabrawet
Syrian Arc Structures, Northern Egypt**

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ABSTRACT

The present study concerns with tectonostratigraphic evolution of the Syrian Arc structures at Abu-Roash and Shabrawet areas. These two niches represent the only surface exposures of the Syrian Arc structures at the north of Western Desert and Eastern Desert respectively.

The sedimentary succession of the study area ranges in age from Paleozoic to Quaternary with several breaks and hiatus. Integration of the data obtained from surface outcrops and subsurface investigations delineates evolution of this sedimentary cover under influence of tectonic regime through geologic history.

The Late Paleozoic deposits are unconformably set on the Precambrian basement which is higher in Abu-Roash than Shabrawet. Thickness and facies distribution of the Jurassic-Early Cretaceous deposits in the study area reflects accelerated tectonic subsidence and deposition along E-W to ENE- trending rift related half grabens e.g. Kattaniya basin (Abu-Roash) and Shabrawet Basin.

The Late Cretaceous marine dominated deposits are affected by high degree of compression; represented by tectonic uplifting in the form of thin deposition or missing of the Late Senonian deposits as well as complete missing of Paleocene-Early Eocene deposits in both areas.

The Middle to Late Eocene rocks are exposed and mapped in Abu-Roash and Shabrawet areas and unconformably overlies the highly deformed Late Cretaceous rocks. The Middle Eocene strata of Abu-Roash are flat in contrary of Shabrawet area which is being deformed by folds and faults. Oligocene fluvial facies and their associated basaltic extrusions reported in the study area referring to initial stages of the GOS rifting. Miocene rocks of fluvial to shallow marine environmental suite are recorded only in Shabrawet area.

Detailed mapping of the study area at Abu-Roash and Shabrawet shows different structural provinces and sub areas as, Abu-Roash area comprises two major subareas; east Cairo-Alex road and west Cairo Alex-Road whereas Shabrawet area includes three major E-W trending sub-areas; Central sub-area, Southern sub-area and Northern sub-area.

Main structural elements recorded in the study area are represented by NW to WNW- and NE- trending normal faults, NE and ENE- to E-W trending reverse faults, ENE- and WNW-strike slip faults and N-s to NNE- trending left lateral strike slip faults. Folds recorded in the study area are found as NE to ENE-, NE-, E-W, NW- and WNW- trending plunging and double plunging folds; Most of these folds appeared as fault related folds in form of oblique folds.

Analysis of the structural assemblages in the study area delineates their development in terms of transpressional wrenching (with different convergence angle α).

Tectonostratigraphic evolution of the study area in term of structural analysis and paleostress reconstruction passed through the four main successive and intermittent deformational phases of different paleostress regimes as follows: 1) Triassic-Early Cretaceous N-S to NNW-extension. 2) Late Cretaceous NNW- compression and ENE- extension. 3) Middle-Late Eocene NW compression and NE extension. 4) Oligocene-Miocene NE extension.