Al-Saad, D., Sawaf, T., Gebran, A., Barazangi, M., Best, J. A., and Chaimov, T. A., *Northern Arabian platform transect across the Palmyride mountain belt, Syrian Arab Republic, Global Geoscience Transect 1.* The Inter-Union Commission on the Lithosphere and the American Geophysical Union, Washington, D. C., 1991.

Abstract:

This transect traverses central Syria for approximately 450 km from the Iraqi border in the southeast to the Turkish border in the northwest (see transect location map and appendix note 1) and is one of three transects that represent the Syrian Arab Republic's contribution to the Global Geoscience Transects (GGT) Project. Syria is located on the northern portion of the Arabian platform, which is surrounded by major active tectonic systems: the Zagros belt to the east and northeast, the East Anatolian and Bitlis suture to the north, and the Dead Sea transform fault system along the Levantine margin to the west. More than 2000 km of industry seismic reflection data linked by nine exploration wells and surface geologic maps provide a detailed image of subsurface structure to about 10 km depth along the transect, and when combined with two-dimensional modeling of the gravity and magnetic data, make it possible to construct a complete geological cross section through the entire crust.

Three major tectonic provinces of central Syria are crossed by the transect from south to north: the Rutbah uplift, the intraplate Palmyride mountain belt, and the Aleppo plateau.

The Rutbah uplift is a broad, domal basement-cored feature located on the stable northern Arabian platform and is the northernmost part of a larger uplift centered in Iraq. Isopach maps indicate that the Rutbah uplift region was an Early Paleozoic depocenter that collected approximately 6-7 km of Phanerozoic, mostly Paleozoic, sediments.

The Palmyride fold belt forms a northeast-southwest trending intracratonic mountain belt, representing the Late Mesozoic and Cenozoic inversion of an Early Mesozoic failed rift. The Palmyrides act as a mobile tectonic zone between the relatively stable Rutbah uplift and the less stable Aleppo plateau. A system of en echelon faults and broad folds characterize the northeast region, while short wavelength folds, generally with relatively steep, southeast faulted flanks dominate in the southwest.

The Aleppo plateau lies immediately north of the Palmyrides. Its sedimentary section is generally 4-5 km thick and is composed of both Paleozoic and Mesozoic strata. Although this region appears relatively undeformed on seismic reflection data, a system of northeast-southwest trending, near vertical faults with probable strike-slip motion crosscut the region.

Two-dimensional gravity modeling indicates that the northern Arabian platform beneath Syria may have an early tectonic history similar to the exposed Arabian shield to the south in Jordan and in Saudi Arabia, marked by Proterozoic convergence and Early Cambrian rifting. Mesozoic

rifting and Cenozoic transpression in Syria are linked to later plate interactions with the Eurasian plate in the north and east and to the opening of the Red Sea.

The GGT transects in Syria provide new comprehensive Phanerozoic stratigraphic cross sections and estimates of crustal architecture that detail the structural and stratigraphic history of the northern Arabian platform beneath Syria. Major active tectonic systems outline the boundaries of the Arabian plate on its northern flank: the Dead Sea transform fault system along the Levantine margin to the west, the East Anatolian fault system and Bitlis suture to the north, and the Zagros suture and fold belt to the east and northeast. Each of these systems has contributed to the development of the Cenozoic tectonic framework of Syria.

The database for this transect includes detailed geologic maps (appendix note 2), a composite seismic profile consisting of eight seismic reflection lines, information from nine exploratory wells (ranging in depth from 2 to 4 km), and Bouguer gravity (appendix note 3) and aeromagnetic (appendix note 4) data. The 450-km seismic transect includes information from an additional 1500 km of seismic reflection data forming cross lines and nearby parallel lines within a 100-km swath along the transect.