SELECTED STRATIGRAPHIC AND STRUCTURAL FEATURES IN THE BE'ER ORA SHEET

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INTRODUCTION

The geological map of the Be'er Ora sheet is one of the standard 1:50,000 scale geological maps of Israel, carried out by the Geological Survey. Previous mapping in this area was done by Bentor and Vroman (1955), Slatkine and Wurzburger (1957), Bartov (1967), Garfunkel (1970) and Segev and Beyth (1986). The area is unique in its well-exposed long stratigraphic column from the Upper Proterozoic through the marine Cambrian, and up to the young Dead Sea Rift-related sediments. The structures in this area are controlled by several of southern Israel's major tectonic elements: the southern part of the Dead Sea Rift; the eastern part of the Themed Fault; and the central part of the Milhan Fault. The stratigraphy, structure and copper mineralization in the Timna Valley, which is in the heart of the mapping area, were reviewed by Segev et al. (1992). A brief description of selected features in the Be'er Ora map are given below.

THE SHEHORET FORMATION IN THE TIMNA VALLEY

The Middle Cambrian Shehoret Formation in southern Israel and Sinai was divided into three members (Weissbrod, 1981) according to their color and sedimentological criteria (from bottom to top; the thickness measurements are from Nahal Shehoret): (a) Multicolored Member (~36 m); (b) White Member (~27 m); (c) Variegated Member (~60 m). In the Timna Valley, however, about 10 km north of Nahal Shehoret, only the lower Multicolored Member is found. It is 35 m thick in the south, thinning to 25 m towards Har Mikhrot in the north. It is composed of alternating ledges of yellowish, fine- to coarse-grained subarkose, grit and pebbles, with beds of reddish brown silt and clay (Weissbrod, 1981) forming reddish cliffs. The two upper members of the Shehoret

Formation were eroded before the deposition of the Lower Cretaceous(?) Amir Formation (which unconformably overlies the Multicolored Member). The deeper erosion towards the north suggests a structural high.

THE MILHAN FAULT

The Milhan Fault is oriented NNE, and has been described as a sinistral strike-slip fault (Garfunkel, 1970; Lifshitz, 1986; Ginat and Zilberman, 1991). It is exposed in the NW corner of the Be'er Ora quadrangle and was mapped in considerable detail (Fig. 1). The nature of the fault changes along the strike. In its southern part, it is a normal fault (cross section A-A') placing the Turonian Gerofit Formation on the elevated eastern block against the Maastrichtian Ghareb and Paleocene Taqiye formations on the opposite downfaulted block. In the central segment (cross section B-B'), the beds are overturned, the fault planes are parallel to the bedding, and as a result, parts of the section, mainly in the Santonian Menuha Formation, are missing. In the northern segment (cross section C-C') the sequence is complete (without faulting) but is sharply tilted westward.

SMALL GRABENS WITH DOWNFAULTED SENONIAN BLOCKS

These grabens range in size from 0.5 to 2 km in length and 50 to 200 m in width. They were described by Ginat (1991) as part of the disharmonic structures in the Yotvata area. Two of them, one striking north and the other striking northwestward, were mapped in detail within the Be'er Ora sheet (Fig. 2). The grabens are bound by normal faults with slickensides and fault breccia on the fault planes. Their downblocks are rocks of the Ciniacian Zihor, Menuha and lower part of the Campanian Mishash formations. The blocks surrounding the grabens are built of the Turonian Gerofit Formation which form an elevated plateau.

The Senonian rocks within the grabens are not as thick as the Senonian section northwest of the Milhan Fault and in the Wadi Eteq syncline. This could be due to normal faulting within the grabens or because these areas were originally elevated at the time of Senonian deposition.

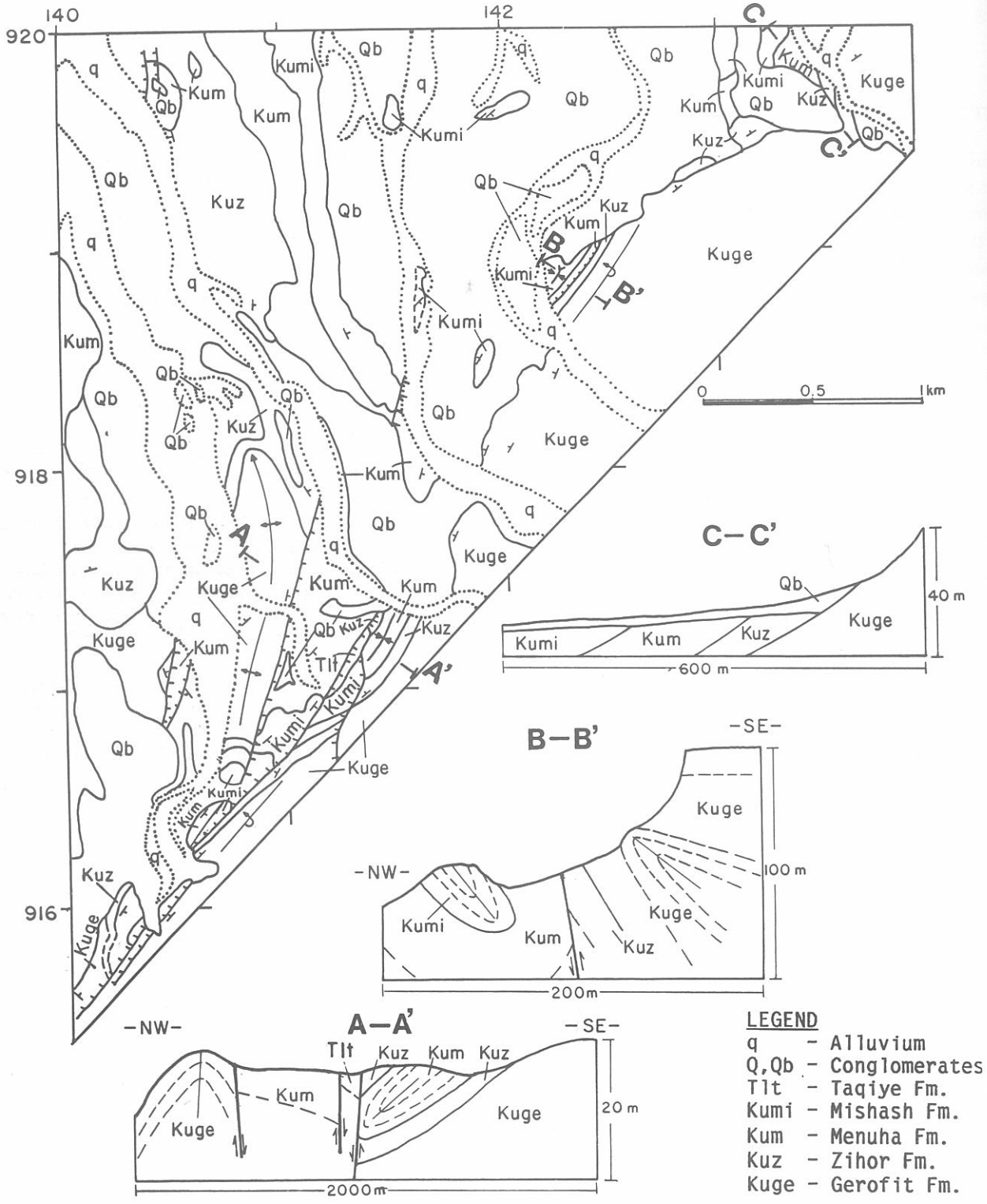

Figure 1. Geological map of the northwestern part of the Be'er Ora sheet with three cross sections.

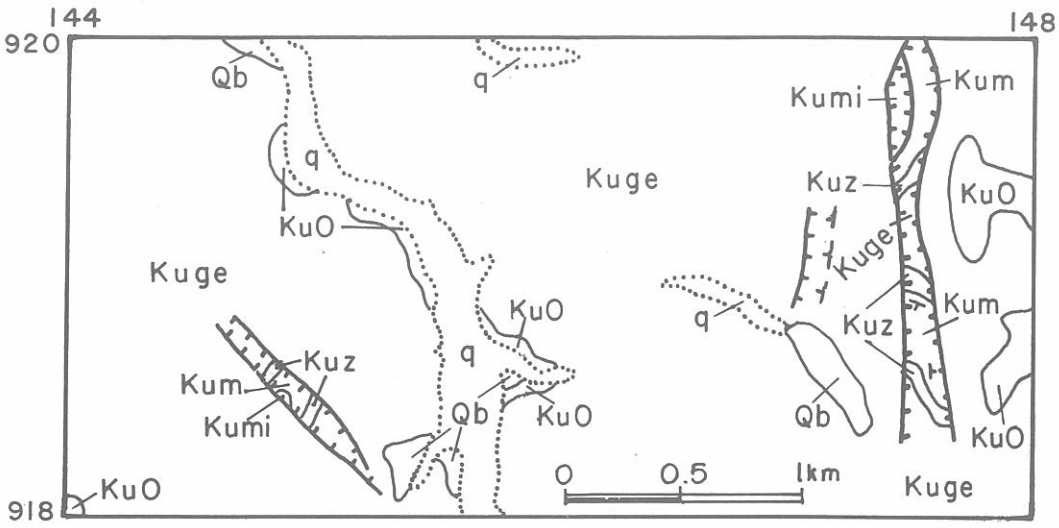

Figure 2. Geological map of the northern part of the Be'er Ora sheet showing the small grabens within the Gerofit Fm. For legend, see Fig. 1.

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