

STRUCTURE OF THE NORTHERN MARGIN OF THE
BITLIS SUTURE ZONE NEAR SIVRICE, SOUTHEASTERN TURKEY

by

Mark R. Hempton

A Dissertation

Submitted to the State University of New York at Albany

in Partial Fulfillment of

the Requirements for the Degree of

Doctor of Philosophy

College of Science and Mathematics

Department of Geological Sciences

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ABSTRACT

Detailed mapping near Sivrice shows that the northern margin of the Bitlis Suture zone consists of three major tectonostratigraphic units outcropping as distinct north-dipping thrust slices. From south to north these are: (1) the Pütürge Complex; (2) the Maden Complex; and (3) the Elazig Complex.

The pre-Eocene Pütürge Complex consists of 80% metapelite, 15% metaquartzite, and 5% recrystallized limestone. These rocks represent a continental margin sequence that has been metamorphosed to the lower greenschist facies. There are three generations of structural elements: (1) a transposition foliation and macroscopic isoclinal folds, (2) a crenulation cleavage and mesoscopic folds, and (3) kink bands. Structural analysis suggests that the second-generation structures were produced by a deformation phase that was oriented northeast-southwest. The Middle Eocene Maden Complex consists of colored melange that contains seven lithologies (in decreasing order of abundance): volcanoclastics, volcanics, mudstone, calcirudite, pelagic limestone, massive limestone, and basal conglomerate. These rocks are interpreted as near-arc basin deposits. Fine-grained sedimentary rocks have served as the melange matrix and contain two generations of structural elements: (1) a uniform northeast-dipping slaty cleavage; and (2) kink bands and folds. The Upper Cretaceous Elazig Complex consists of four units (from bottom to top): (1) metagabbro; (2) diabase; (3) basalt; and (4) andesite. The basalt unit contains calc-alkaline volcanoclastic horizons and many andesite dikes. Contacts between the units are structural except for a gradational lithologic contact between the diabase and metagabbro units. The Elazig Complex is interpreted as a

mafic island arc terrain.

Because of their similar orientation, the first-generation structures in the Maden Complex probably are related to the second-generation structures in the Pütürge Complex. These structures are interpreted to represent Medial Eocene assembly of the northern margin of the Bitlis Suture. First-generation structures in the Pütürge Complex are pre-Medial Eocene. Third-generation structures in the Pütürge Complex and second-generation structures in the Maden Complex probably formed during late Miocene suturing to the south.

The Neogene East Anatolian Fault cuts these units and is characterized by oblique-slip faulting near the Lake Hazar pull-apart basin.

Other difficulties of no ordinary nature presented themselves. Our route lay through the midst of those wild mountain tribes who from time immemorial have never acknowledged law or subjection, and who regarded our movements with infinite distrust. Owing to the insecurity of the country, habitations were so few that we were frequently obliged to carry provisions for many days together. Add to these facts the ruggedness and inaccessibility of the passes and mountains, as well as the intense heat of the climate (sometimes reaching 124^o Fahr. in the shade), and it may be conceived that our labours were attended with considerable danger as well as difficulty. Under these circumstances, I trust that every allowance will be made for the imperfect nature of this communication.

by William Kennett Loftus, Esq., F.G.S.

On the Geology of portions of the
Turko-Persian Frontier, and of
the Districts Adjoining

Geological Society of London Quar-
terly Journal, 1855, p. 247

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