AMPHIBOLITES FROM THE HOHER BOGEN, SOUTHERN TEPLÁ–BARRANDIAN UNIT — FORMER OCEAN FLOOR BASALTS, NOT GABBROS

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The southern margin of the Teplá–Barrandian (TB) unit is formed by an amphibolite belt, 20 km long and up to 4 km wide (Fig. 1). It is termed here Hoher Bogen amphibolite (HBA) belt, after a mountain of the same name. The grain size and metamorphic grade of these amphibolites increase from the north to the south. In the highest grade parageneses of both sides of the reaction pl1 + opx + cpx1 + hbl = pl2 + cpx2 + grt are preserved. Medium-grained, weakly foliated varieties within this area have been interpreted as relics of gabbro since Bergt (1905) and Fischer (1929) and these authors assumed that the whole amphibolite belt was derived from gabbros. This view was supported by the occurrence of true gabbros of the Neukirchen–Kdyně Igneous Complex (NKIC) in the immediate neighbourhood. Consequently the whole HBA belt was considered as a metamorphic member of the NKIC. For the Bavarian part of the NKIC — including the HBA — Fischer (1929) coined a term "Gabbro-amphibolitmasse von Neukirchen".

Contrary to this view, we suggest that the studied amphibolites are not a member of the NKIC and that they were derived from oceanic basalts. This interpretation is supported by petrographic observations and geochemical analyses.

A. Petrography. The gabbro-like amphibolites from the HBA belt differ from true gabbros of the NKIC in that they never show Carlsbad twins, ophitic or corona textures. Were they relics of gabbros, they should be preserved in lower grade rather than in high-grade domains.

B. Geochemistry. Figure 2 shows the composition of the HBA and samples from three different intrusions in the Bavarian part of the NKIC in the V/TiO_2 diagram of Shervais (1982). The HBA are clearly different from the intrusive rocks, as the former cluster into the MORB field. The Hoher Bogen samples with TiO_2 < 0.6 % are metamorphosed pyroxenites and harzburgites, which were tectonically emplaced along the fault that separates the Teplá–Barrandian from the Moldanubian unit (Fig. 1). In summary, these amphibolites and ultramafic rocks may represent relics of a metaophiolite complex.

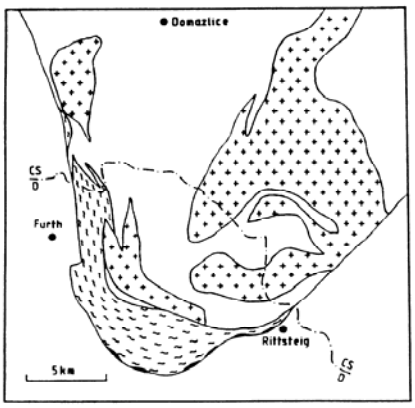

Fig. 1: Simplified map of the southern end of the Teplá-Barrandian unit. Waves: Hoher Bogen amphibolites. Black: ultramafic rocks. Crosses: intrusive rocks of the NKIC. Other rocks of the Teplá–Barrandian and the Moldanubian (western and south-eastern margin) units are left blank.

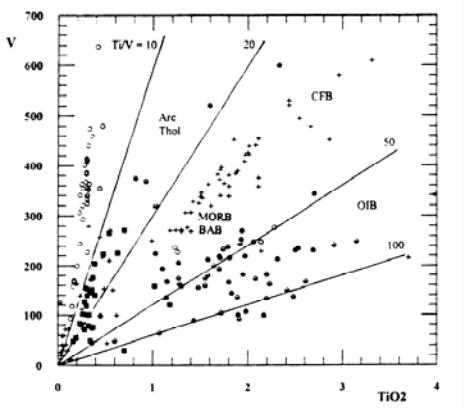

Fig. 2: V/TiO_2 diagram after Shervais (1982). Crosses: Hoher Bogen amphibolites and ultramafic rocks (TiO_2 < 0.6 %). Other symbols: intrusive rocks from the Bavarian part of the NKIC.