Exhumation Path of Retrogressed Eclogite from Biskupice, Gföhl Terrane

Martin RADVANEC[1] and Alice M. A. TOMÁŠKOVÁ[2]

[1] *Geological Survey of SR, Slovak Republic*
[2] *Geophysical Institute, Academy of Sciences of the Czech Republic, Boční II/1401, Prague 141-31, Czech Republic*

Dealing with eclogites, important issues also include the kind of detailed P-T path they follow on their way to the surface and the kind of modifications the rocks experience as they are returned to the surface.

An eclogite lens up to 20 by 400 m in size occurs at the locality of Biskupice, in a marginal zone of a garnet peridotite body. The eclogite is a fine-grained rock, with individual garnet porphyroblasts (up to 1 cm in size) surrounded by elongated clinopyroxenes. It consists of garnet, clinopyroxene, rare orthopyroxene, ilmenite, rutile, apatite, hornblende, plagioclase and spinel. Retrograde metamorphism of the eclogite resulted in the development of plagioclase + clinopyroxene symplectites after sodic pyroxene, overgrowth of plagioclase (+ orthopyroxene) corona on garnet, replacement of garnet with anorthite + enstatite + spinel + amphibole kelyphite, and growth of matrix amphibole.

Microtextural relationships indicate that:

- The oldest paragenesis was composed of clinopyroxene + garnet + rare orthopyroxene. Garnet and clinopyroxene grains have relatively homogeneous cores, and retrograde zoning is confined to within ~150 μm, or less, from grain margins. The P-T conditions of 41.5 ± 2.5 kbar and 1,214 ± 35.7 °C are based on the average of temperature estimates for ten garnet–clinopyroxene pairs, combined with five orthopyroxene–clinopyroxene–garnet triads. These estimates are comparable to those of the host garnet peridotite.
- Primary orthopyroxene of the eclogite was consumed by reaction Grs + 6 Opx = 3 Di + Prp.
- The first post-eclogite-facies alteration was the transformation of clinopyroxene into the symplectitic intergrowths of diopside + plagioclase accompanied with the breakdown of anorthite component according to the reaction An = CaTs + Qtz.
- The plagioclase and orthopyroxene (+ amphibole) coronas partially replaced the garnet according to the reaction 1 Prp + 1 Di + 1 Qtz = 4 En + 1 An at about 1,100 °C, 20 kbar.
- The retrogression to the amphibolite facies at 900 °C, 15 kbar yield to the replacement of garnet with kelyphite according to the reaction Grs + Prp = An + En + Sp. The absence of Qtz and Cpx indicates that this reaction is isochemical.
- The retrogression to the epidote amphibolite stage at 500–600 °C, 4–5 kbar resulted in the occurrence of low-pressure muscovite in symplectite around garnet.

Therefore, exhumation of the eclogite from the upper mantle produced kelyphites and coronitic textures and was dominated by a pressure decrease followed by fast undercooling. Rapid exhumation to the lower crust, perhaps due to extensional collapse, must have closely followed a collisional event in order to preserve the high-temperature characteristics of the eclogite.

Evolution of Depocenter Geometries in the Most Basin: Implications for the Tectonosedimentary History of the Neogene Ohře Rift (Eger Graben), North Bohemia

Michal RAJCHL and David ULIČNÝ

Department of Geology, Charles University, Albertov 6, 128 43 Praha 2,Czech Republic

The Most basin is the largest of the sedimentary basins preserved in the Ohře Rift (Eger Graben), a major tectonic feature in the NW Bohemian Massif. The Ohře Rift is a part of the Central European Rift System, together with the Rhine Graben and other Cenozoic extensional structures (Kopecký 1978; Bergerat 1987; Ziegler 1990), and is characterised by a system of sedimentary basins and intense intraplate alkaline volcanism (Kopecký 1978).

The NE-trending fault systems which confine the Most Basin and other rift basins of the Ohře Rift as essentially erosional relicts in the present-day topography are relatively young compared to the basin fill (cf. Adamovič and Coubal 1999). Construction of isopach maps of the basin fill and revision of geological maps and cross-sections, together with a DTM (digital terrain model) study show that during the deposition of the sedimentary infill, the basin was controlled by E–W (WSW–ENE)-striking normal faults, which separated individual depocentres (sub-basins) of the Most Basin named after their position: the Žatec, Chomutov, Central, Teplice and Ústí sub-basins. In plan view, the faults were arranged in an en-echelon pattern and divided by relay ramps, which commonly functioned as pathways of clastic input, for example the Bílina Delta System or the clastic bodies on the NE (Krušné hory Mts.) side of the rift. The same en-echelon arrangement is observed in the depocentres, divided by transverse, NW-trending fault zones or accommodation zones. In case of the Žatec Delta system (main fill of the Žatec sub-basin and, partly, of the Chomutov sub-basin), the NW-striking faults controlled the direction of clastic input.