Chemical composition of fifteen samples of the second generation and one (unmetamorphic) sample (Maissau quarry) from the first generation has been examined in detail. The second generation shows a regionally controlled variation from gabbroic, potassic mafic to trachyandesitic compositions (Fig. 1).
Internal zoning of dykes with biotite-rich marginal zones, clinopyroxene-rich intermediate and rare felsic central sectors has been often observed. Both first and second generation dykes are enriched in Ba, K, Rb, Sr, Ni, Cr, P and LREE, and depleted in Nb. The degree of enrichment is higher, as examplified in REE patterns, within the Maissau sample (Fig. 2). According to Sr isotopic characteristics ($^{86}Sr/^{87}Sr$: c. 0.714) a major crustal component is included within these mafic potassic and trachyandesitic magmas (FRANK et al., 1990) of the second generation. Chemical characteristics argue for a largely crust-contaminated mantle source which we explain to result from post-collisional remelting of the subducted lithosphere. Supposing (1) low internal fluid pressure, respectively fluid pressure in equilibrium with hosts rocks within the lithosphere, and (2) open connection between the primary magma chamber at depth and present crustal level during magma emplacement the high density contrast between dykes and crustal country rocks argue for an origin deep within the lithospheric lid.

FRANK, W., SCHARBERT, S., THÖNI, M., POPP, F. & HAMMER, S., (1990): Isotopengeologische Neuergebnisse zur Entwicklungsgeschichte der Böhmischen Masse. - Österr. Beitr. Meteor. Geophysik, 3, 185 - 228.

CONDITIONS OF ECLOGITE FORMATION WITHIN THE MONOTONOUS UNIT, SOUTHEASTERN BOHEMIAN MASSIF

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Detailed studies in order to evaluate the P-T conditions of eclogite formation and subsequent retrogression have been carried out on the Gutenbrunn eclogite which is exposed within the Monotonous Unit near the southwestern margin of the Rastenberg Granodiorite (EXNER, 1970). The eclogitic mineralogies are well-preserved within patchy lenses which are variably overprinted by symplectite formation during retrogression. Garnet and jadeitic clinopyroxene occurs within completely annealed fabrics. Garnet displays some internal zoning within weigth percent range of FeO, MgO and CaO, with highest MgO values along margins. The garnet-clinopyroxene thermometer of ELLIS & GREEN (1979) in the modification proposed by CARSWELL & HARLEY (1990) was used to estimate T conditions, and the pressure-control on clinopyroxene composition for minimum P estimation (HOLLAND, 1983). Considering the jadeite content of ~0.35 within clinopyroxene, compositional variations within garnet rims and clinopyroxene the peak conditions of the Gutenbrunn eclogite are estimated to be within 760 ± 40 °C and >17 ± 2 kb.

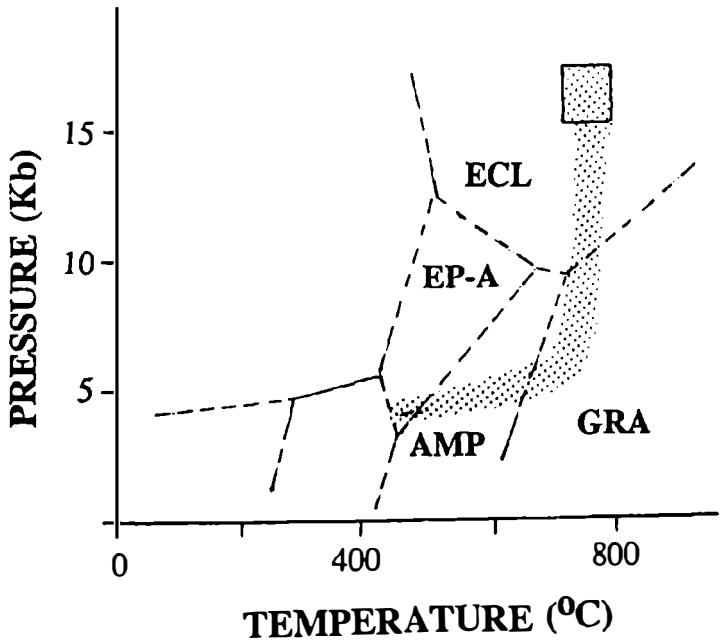

Fig. 1: Suggested P-T path of the Gutenbrunn eclogite.

Retrogression after peak P-T conditions formed symplectite in several stages under static stress conditions. Symplectite includes diopsidic clinopyroxene which is partly replaced by amphibole, plagioclase, olivine, spinel and epidote. Succession of mineralogical assemblages suggest first ca. isothermal decompression later followed by nearly isobaric cooling. A supposed P-T path is given in Fig. 1. The Gutenbrunn eclogite evidences deep burial of rocks within the Monotonous unit. We suppose a short period of burial which is followed by rapid decompression and cooling as indicated by the well-preserved eclogite mineralogies. We interpret that the burial of the Monotonous unit as western extension of the foreland-related, lower continental plate resulted from a subduction respectively from loading of that unit by the Gföhl microcontinent. Exhumation and decompression of the Gutenbrunn eclogite is interpreted by duplex stacking which resulted from footwall propagation of thrust surfaces within the foreland continental crust.

CARSWELL, D.A., HARLEY, S.L. (1990): Mineral barometry and thermometry. - In: CARSWELL, D.A. (ed.): Eclogite facies rocks. 83-110, Blackie: Glasgow.

ELLIS, D.J., GREEN, D.H. (1979): An experimental study of the effect of Ca upon garnet-clinopyroxene Fe-Mg exchange equilibria. - Contrib. Mineral. Petrol., 71, 13 - 22.

EXNER, C. (1970): Zur Rastenberger Granittektonik im Bereich der Kampkraftwerke (Südliche Böhmische Masse). - Mitt. Geol. Ges. Wien, 61, 9 - 39.

HOLLAND, T.C.B. (1983): The experimental determination of activities in disordered and short-range ordered jadeitic pyroxenes. - Contrib. Mineral. Petrol., 82, 214 - 220.