A prominent feature of this outcrop is the presence of feldspar-rich veins, 1 to 10 cm in thickness, which have been variously described as pegmatite veins (Bowes et al., 2002), felsic leucosomes (Timmermann et al., 2004), and feldspar veins (Zulauf, 1997). These veins are significant because they cross-cut foliation in amphibolite, but are themselves folded (Fig. 16), having been described as constrictional mullions by Zulauf (1997, see his Fig. 3C). Thus, these veins place important constraints on the timing of metamorphism and exhumation in the MLC.

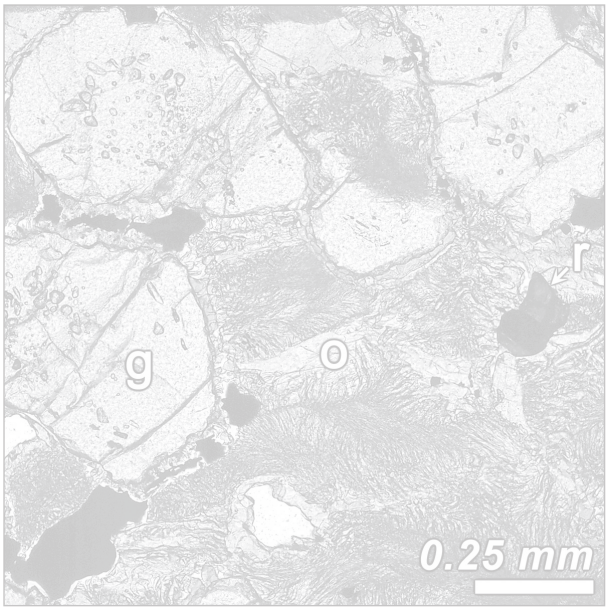
Hornblende from amphibolite at this locality yields a $^{40}Ar/^{39}Ar$ age of 377 ±4 Ma (Singer, in preparation). In the feldspar veins, two fractions of titanite yield almost concordant U-Pb ages of 366 ±13 and 378 ±4 Ma (Timmermann et al., 2004), and hornblende and biotite yield $^{40}Ar/^{39}Ar$ ages of 379 ±4 (Bowes *et al*., 2002) and 374 ±1 Ma (Singer, in preparation), respectively. All of these results, including that for biotite, are within error of each other and indicate that rapid cooling of the MLC through ~500–350 °C was complete by Famennian time.

Stop 3-4 (Day 3). Eclogite, Tisova (Small, Abandoned Quarry in Eclogite)

Coordinates: N50°02′12.8″ E12°50′49.5″

Fine- to medium-grained quartz eclogite is exposed in this quarry, and boulders of kyanite-quartz eclogite occur in a field *c*. 50 m. away. As described by O'Brien (1992, 1997), eclogite at this locality has been weakly overprinted by a granulite facies stage of recrystallization, followed by a more pervasive amphibolite facies stage. As a result, omphacite in kyanite-quartz eclogite has been completely replaced by symplectite, although a few relict grains of omphacite persist in quartz eclogite (Fig. 17); the jadeite content of such relict omphacite ranges from 27 to 38 % (Fig. 5). Garnet in quartz kyanite is richer in Alm + Sps component than that in kyanite-quartz eclogite (Fig. 4), and garnet in kyanite-quartz eclogite shows strong prograde compositional zoning, with a core to rim decrease in Alm, Grs, and Sps, and increase in Prp (Fig. 10; *cf*. Fig. 3 in O'Brien, 1997). The cores of such strongly zoned garnet grains contain inclusions of pargasitic amphibole, clinozoisite, and plagioclase.

Because omphacite in kyanite-quartz eclogite has been completely replaced by symplectite in samples examined by us, no P-T estimates for the eclogite stage of this rock type were possible. However, the presence of relict omphacite in quartz eclogite allows a minimum P-T estimate to be made, which is 13.7 kbar, 670 °C. Note that O'Brien (1997) reports values of 17.0–19.5 kbar and 640–715 °C for eclogite from the Tisová locality (Fig. 11).



■ **Fig. 17.** Photomicrograph of Tisová quartz eclogite, Locality 4 (plane polarized light). Abbreviations: g, garnet; o, omphacite; r, rutile. Omphacite has been largely replaced by symplectite. Note abundant quartz inclusions in garnet.

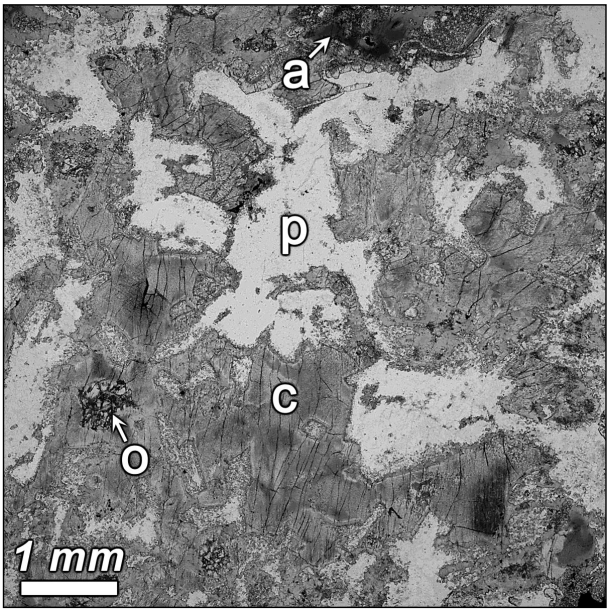
Stop 3-5 (Day 3). Metagabbro, Výškovice (Abandoned Quarry in Metagabbro)

Coordinates: N49°55′47.4″ E12°47′16.0″

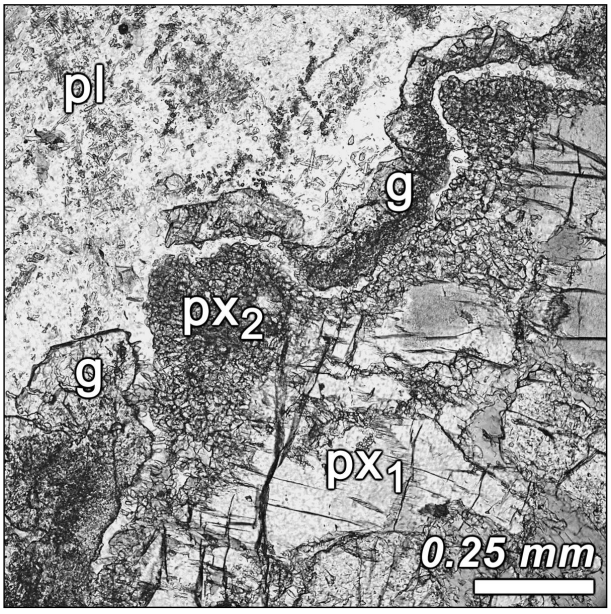
Metagabbro at this locality has retained a medium- to coarse-grained, ophitic texture (Fig. 18) and a relict igneous mineral assemblage of augite (X_{Mg} = 0.85), enstatite (X_{Mg} = 0.70), pargasitic to edenitic amphibole, minor biotite, plagioclase, and accessory apatite, rutile, and ilmenite. Amphibole is interstitial to, and surrounds augite and enstatite. Locally, augite and amphibole are poikilitic. Biotite is associated with, and enclosed by, amphibole.

Partial recrystallization has resulted in the growth of fine-grained garnet coronas at contacts between ferromagnesian minerals and plagioclase (Fig. 19), replacement of calcic igneous plagioclase by very fine-grained sodic plagioclase (An_{33}) and zoisite, growth of very fine-grained sodic augite at the margins of igneous augite, and replacement of brown, igneous amphibole by green, metamorphic amphibole. Garnet has a composition of $Alm_{38-44}Prp_{30-40}Grs_{22-26}Sps_{0-1}$, shows a slight prograde zonation with a core to rim increase in X_{Mg}, and locally contains tiny kyanite inclusions. Metamorphic sodic augite contains up to 17 mol% jadeite, and metamorphic amphibole contains less TiO_2 than does its igneous counterpart, 0.2–0.3 wt % *vs*. 2.1–2.4 wt%.

P-T conditions for the recrystallized assemblage, garnet + plagioclase + sodic augite + kyanite + quartz, were estimated to be 12.0–13.0 kbar and 585–615 °C (Fig. 11), as determined by exchange thermobarometry and Thermocalc. Bowes and



■ **Fig. 18.** Photomicrograph of Výškovice metagabbro, Locality 5 (plane polarized light), illustrating relict ophitic texture. Abbreviations: a, amphibole (pargasite to edenite); c, clinopyroxene (augite); o, orthopyroxene (enstatite); p, plagioclase.



■ **Fig. 19.** Photomicrograph of Výškovice metagabbro, Locality 5 (plane polarized light), illustrating neoblastic growth of garnet and clinopyroxene. Abbreviations: g, garnet; pl, plagioclase replaced by zoisite and more sodic plagioclase; px_1, relict igneous augite; px_2, fine-grained neoblastic sodic augite.

Aftalion (1991) obtained a concordant U-Pb age for zircon of 495 ±1 Ma from the large metagabbro boulder at the entrance to the quarry. Zulauf (1997) reports a K-Ar age of 385–397 Ma for amphibole from metagabbro, and a K-Ar age of 369 Ma for biotite, which are interpreted to reflect Late Devonian metamorphism and cooling of metagabbro.

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