

THE PALEOPROTEROZOIC HYVINKÄÄ-MÄNTSÄLÄ GABBROIC BELT

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The Hyvinkää-Mäntsälä Gabbroic Belt, southern Finland, forms a 150 km long, 20 km wide E-W-trending zone of several 1.88 Ga Svecofennian orogenic mafic-ultramafic intrusions. These intruded into a metavolcano-sedimentary sequence corresponding to a 2.0-1.9 Ga island arc. Locally, the intrusions are associated with coeval granitoids, expressed by mixing and mingling features. The Vähävesi, Karkkila and Hyvinkää are the major intrusions. Ten minor mafic-ultramafic bodies occur in the Mäntsälä area, the most important of which are the Hirvihaara and Soukkio Gabbros. All mafic-ultramafic intrusions in the belt are tholeiitic and present well-developed dynamic and non-dynamic layering, strong crystal fractionation, and differentiation. The Hyvinkää Intrusion is an oval lopolithic body. It consists of layered peridotites, pyroxenites, olivine-gabbros, homogeneous gabbros and granophyre. The Mäntsälä intrusions are poikilitic hornblende-gabbros, hornblendites and anorthosites. The Soukkio is a layered syenite-gabbro, mingled with quartz-monzonite. The Hyvinkää-Mäntsälä Gabbroic Belt has indications of PGE, Cu, Ni, Ti and P. The exploration of the Belt includes recent geological mapping, and geochemical, petrological and geophysical studies, all integrated into a GIS-based package. As a result, PGE minerals have been found at Hyvinkää, and drilling into the Hirvihaara Gabbro revealed 0.4% Ni and 0.6% Cu in the Lower Zone.