Nanhoron Quarry

[SH 287 329]

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Introduction

The Nanhoron Quarry GCR site preserves a rare exposure of the contact between the Nanhoron Granophyric Microgranite and its envelope of lower Ordovician sedimentary rocks. The intrusion is part of the Nanhoron Suite, a group of late Ordovician (Woolstonian) peralkaline intrusions aligned N–S along the western margin of the Llanbedrog volcanic centre. Nanhoron Quarry is a small working quarry, situated on the NW side of Nanhoron and just to the north of a major NE–SW fault (Figure 6.65). Although long-established, the quarry has expanded in recent years to satisfy an increased local demand for its product, providing new evidence concerning the contacts of the microgranite.

Description

The Nanhoron Granophyric Microgranite is exposed in Nanhoron Quarry (see (Figure 6.65)) and in a small quarry to the north, near Penbodlas. The host rocks are mudstones of the Nant Ffrancon Subgroup (Llanvirn). The microgranite is non-porphyritic and comprises anhedral quartz (up to 6 mm) and alkali feldspar (up to 1.0 mm), with less common subhedral oligoclase (up to 0.2 mm). A granophyric texture is variably overprinted by secondary alteration. The margin of the intrusion is fine grained, pervasively devitrified, weakly porphyritic (rare quartz, oligoclase and alkali feldspar phenocrysts up to 0.3 mm), and crowded with spherulites.

The main quarry provides excellent exposures of the core of the intrusion. In addition, a chilled margin can be traced running NW–SE close to the entrance to the main quarry and passing behind the south-west face. This margin can be followed into the lower, abandoned, section of the quarry, where it swings towards the northeast before apparently passing just to the east of the eastern face (see (Figure 6.65)). In the northern corner of the main quarry; a faulted contact with mudstones lies close to the centre of the arc defined by the chilled contact, suggesting that this faulted contact may constitute the core of a fold. Unfortunately the margins of the intrusion are not traceable outside the quarry, therefore the overall form of the intrusion is not known. Further exposures in the small quarry near Penbodlas suggest that the intrusion extends northwards, probably in continuity with the eastern limb of the folded structure in Nanhoron Quarry.

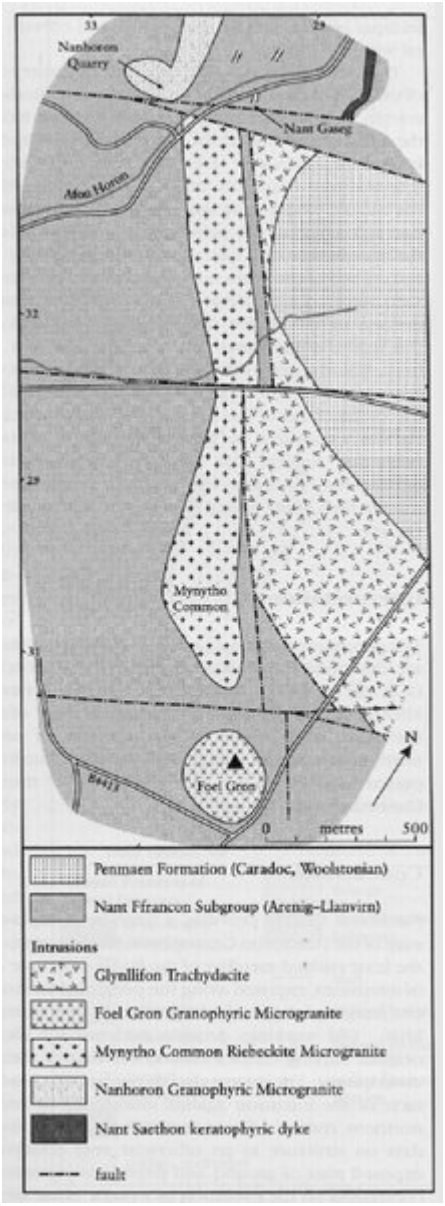
Interpretation

The geochemical features of the Nanhoron Suite are described in the account of the Foel Gron GCR site (p. 332). The Nanhoron Granophyric Microgranite is the least evolved component of the suite and is the most northern of a north-south line of cogenetic intrusions interpreted as defining the western margin of the Llanbedrog caldera.

Conclusions

Nanhoron Quarry provides a large fresh exposure of the Nanhoron Granophyric Microgranite, the least evolved member of the Nanhoron Suite of intrusions, exposed along the presumed western margin of the Llanbedrog volcanic centre on Ll■n. Old workings provide evidence for an original curving contact around the east of the main quarry. The quarry also shows faulted contacts of the intrusion against mudstones in its northern corner. These features present new data on structure in an otherwise very poorly exposed tract of ground and provide important constraints on the evolution of a major phase of alkaline igneous activity of Caradoc (Woolstonian) age.

References



(Figure 6.65) Map showing the distribution of the Nanhoron Suite of intrusions, south Ll■n.