

## **NEW VMS EXPLORATION POTENTIAL TO THE SE OF NEVES-CORVO MINE, IBERIAN PYRITE BELT, PORTUGAL**

ROSA, D.R.N., GEUS, Copenhagen, Denmark; INVERNO, C.M.C., Laboratório Nacional Energia Geologia (LNEG), 2610-999 Alfragide, Portugal, [carlos.inverno@lneg.pt](mailto:carlos.inverno@lneg.pt); ROSA, C.J.P., LNEG, 2610-999 Alfragide, Portugal; PEREIRA, Z., LNEG, 4466-956 S. Mamede Infesta, Portugal; ANDERSEN, T., Dept. Geosciences, Univ. Oslo, Norway; OLIVEIRA, J.T., LNEG, 2610-999 Alfragide, Portugal; MATOS, J.X., LNEG, 7801-902 Beja, Portugal

The Neves-Corvo VMS deposits area in the Devonian/ Carboniferous Iberian Pyrite Belt (IPB) comprises the late Famennian Phyllite-Quartzite Group, the Volcano-Sedimentary Complex (VSC), with a lower, autochthonous, Neves-Corvo deposits-hosting, late Famennian-Strunian suite and an upper, allochthonous (Tournaisian-)Viséan suite, and the mid late Viséan Mértola Formation (flysch). Palynomorph/ammonoid dating set Neves-Corvo deposits, overlying black shales topping felsic volcanic units, as of Strunian age. Recent geological 1:25,000 mapping (~90 km<sup>2</sup>), along Neves-Corvo NW-SE volcanic axis, found these Strunian black shales throughout the area, enhancing its exploration potential.

A recent deep drill-hole (1,888 m) at Cotovio, 5 km SE of Neves-Corvo, has been studied under the E.U.-FP7 Promine project, with correlation to nearby areas. Flysch rocks (0-693 m) overlie VSC sequences. Upper and lower VSC sequences comprise shales/siltstones and quartz-feldspar(±garnet)-phyric felsic volcanic units, respectively. These units grade from coherent through jigsaw-fit textured intervals to outer matrix-supported breccias with clast-rotated textures. Intrusive units are also possibly present. Palynological dating of mid late Viséan VSC top shales and U/Pb zircon dating of Tournaisian (345-350 Ma) felsic volcanics indicate this VSC sequence as from the upper volcanic suite.

In classification diagrams, these minorly hydrothermally altered felsic volcanic rocks plot as rhyolite and minor rhyodacite (porphyries), consistent with their

petrography, meaning that crustal fusion temperature was high enough, as in Neves-Corvo, to produce normal concentrations of immobile HFSE, contrasting other IPB areas.

The U/Pb-dated rocks are the youngest felsic volcanics in this axis, compared to Neves-Corvo ones (359 and 365 Ma) and others. Cotovio drill-hole did not reach the lower VSC suite, but the Strunian key horizon may exist down depth, as the presence of inherited zircon fractions dated at 359 Ma in the porphyries suggests. Folding or erosion may have placed this key, VMS-like horizon at lower depth in areas adjacent to Cotovio. The marginal, brecciated portions of the lower felsic volcanic suite piles will be favourable VMS targets. This SE extension from Neves-Corvo has high VMS potential, as the newly discovered Semblana deposit, 1-1.5 km E-ESE from the former five Neves-Corvo deposits, testifies.