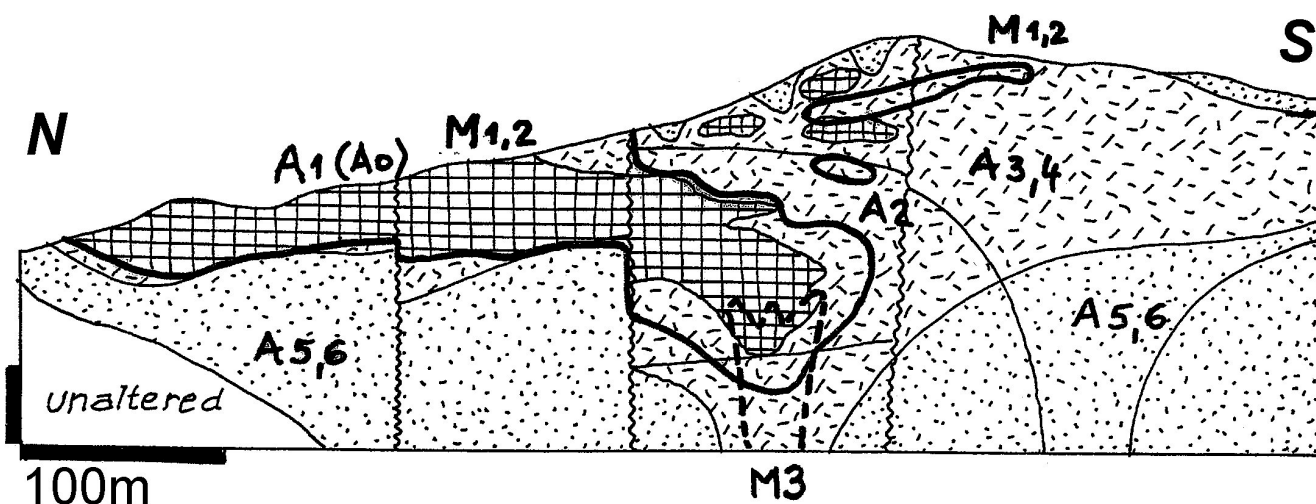


DM LITHOTHEQUE The Andes, West Cordillera., C. Peru; Cordillera Negra
2494.2 PIERINA (Huaraz) acid sulfate Au-Ag 2: ores



Pierina cross-section; Laznicka (2000) after Volkert et al. (1999)

LT 2494.2 LEGEND

| Unit No | Unit Description |
|---------|---|
| M1 | Mi-PI dispersed (invisible) gold in Fe oxides, quartz, relict pyrite in hypogene oxidised, previously quartz-alunite altered (acid sulfate alteration) porous residual vuggy silica after rhyodacite pyroclasts >> andesite |
| M2 | 14.7 Ma; relicts of earlier mineralisation stage preserved as kernels in M1: vuggy silica with alunite, native sulfur, enargite, covellite, younger barite; variable but mainly low Au content |
| M3 | Sulfides in presumed fluid feeder structure in the footwall: veins and mineralized fractures with pyrite, enargite, sfalerite in fractured silicified tuff |
| A0 | Alteration assemblages (determined by PIMA in the field; not megascopically recognisable) Late steam alteration effects superimposed on earlier alterations |
| A1 | Residual vuggy silica (principal host to Au), recrystallized from original host by magmatic steam, followed by alunite removal during hypogene leaching and silicification |
| A2 | Quartz-alunite (dickite, pyrophyllite) |
| A3 | Dickite (alunite, kaolinite, pyrophyllite, silica) |
| A4 | Pyrophyllite (dickite, kaolinite, silica, sericite) |
| A5 | Kaolinite, smectite, sericite, pyrite |
| A6 | Propylitic + clays (chlorite, kaolinite, smectite) |

LT 2494.2 SAMPLE DESCRIPTION

| Unit No | Sample Description | Sample No |
|---------|---|------------------|
| M1 | "Standard ore" (~4g/t Au) in brecciated vuggy silica with moderate hypogene Fe hydroxides in matrix and along fractures | 1 |
| | Silica added during hypogene oxidation stage superimposed on M1 | 2, 3 |
| M2 | Relict kernels of earlier high sulfidation stage (grey with yellow sulfur spots) surrounded by oxidised quartz + Fe oxides produced by hypogene leaching. The kernels have erratic gold contents (but there is some Cu in covellite), but the oxidised material constitutes the "standard" ore (around 4g/t Au) | 4-11 13 marco |
| | --late quartz, barite, acanthite fracture veinlet | 12 |
| M3 | Low-grade to sub-grade fringe of the Pierina orebodies, Au dispersed in quartz-alunite altered pyroclastics | 16+20 |