STRUCTURAL CONTROLS ON THE ARCATA EPITHERMAL VEIN SYSTEM, PERU

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Arcata is a low sulfidation epithermal deposit located in the southwestern portion of the Huanzo Cordillera, at about 180 km northwest of Arequipa and between 4,600 and 4,900m above sea level. It is situated within a broad belt of Neogene calc-alkaline intermediate to silicic volcanic rocks composed of a thick sequence of andesitic lava flows with thin intercalations of volcaniclastic rocks. These rocks overly a voluminous and widespread sequence of ash flow tuffs.

Principal veins of the Arcata district contain crustiform, symmetrical banding, comb and open space-filling textures. Precious metals are mostly contained in Ag-sulfosalt minerals (mainly pyrargyrite), tetrahedrite, and acanthite with important amounts **(WHAT %?)** of sphalerite, galena and chalcopyrite. Ore shoots are laterally continuous and span 250 to 350 meters vertically. The principal veins have average widths from 1 to 2.5 meters. Most of the principal veins are localized by subparallel normal faults that trend generally between N40°W and N70°W and dip between 40° and 65°. Veins in the northeastern part of the district dip to the southwest, whereas veins in the southwest dip to the northeast. The resultant fault pattern forms a graben with several hundred meters of total fault offset. Slickenlines on the walls of two major veins (Baja and Tres Reyes veins) indicate consistent down-dip movement with rakes between 75° and 90°. Structural analysis reveals low plunge tension axes trending between N16° and N29°E and sub-vertical compression axes.

Principal veins contain hydrothermal and tectonic breccia, symmetric banding, open space-fill textures, slickensides on the vein walls, and gouge material, suggesting that extensional tectonic activity and mineralization were simultaneous, with repeated reopening and also post-mineralization movements.

The position of ore is related to the structurally most favorable fault position and orientation. Vein width is mostly controlled by changes in strike and dip of the faults, and the wider portions of veins contain the higher grade ores. The main veins, like Marion and Tres Reyes veins, horsetail to the southeast, forming several splits that also represent normal faults. The movement along those faults produced a progressive down-dropping of fault blocks toward the central part of the graben. In general, ore shoots are much more continuous in the central part of the veins.