Metallogeny of Pampa de Olaen, Cordoba, Argentina.

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The Pampa de Olaen district is situated 20 km NW of Cosquín in Córdoba Province, Argentina within the Sierras Pampeanas Geological Province. The district comprises more than 25 mines of W mineralization distributed over an area measuring 20 km^2. The district geology is composed of Cambrian metamorphic rocks of the La Falda Metamorphic Complex which include orthogneiss, psammitic gneiss, minor amphibolite (some derived from basaltic protoliths with N-MORB geochemical signature), marble and calc-silicate. The sequence is intruded by Devonian high-K monzogranite related to the Achalian orogeny, and different generations of pegmatites dykes intensely sheared. A genetic relationship between igneous emplacements and W mineralization is not clear, as no contact metamorphic minerals are present. The mineralization consists of disseminated scheelite in calc-silicate layers and in small amphibolite-marble bodies, other ore minerals are sulfides (Sb – Bi – Ag – Zn) and oxides contained in the same lithology. Pampa de Olaen as mining district shows a multi-stage evolution, due to the complex tectonic history of the Pampean Ranges, consisting of four major Phanerozoic cycles. Many features of the mineralization correspond closely to the stratabound model where the deposition of scheelite-precursors is synchronous with the accumulation of a volcano-sedimentary sequence associated with a period of passive margin sedimentation during the Cambrian. This is followed by medium to high grade metamorphism and hydrotermal activity. Local remobilization and concentration of W occurs under structural control where penetrative folding is well developed.