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**Relationship of mineralization in the Volcano  
Sedimentary Complex (Iberian Pyrite Belt) to the Sierra  
Norte Batholith, Southern Iberia**

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The Iberian Pyrite Belt (IPB) is part of the South Portuguese Zone, the southernmost tectonic unit in the Variscan Orogenic Belt. The IPB is one of the most outstanding massive sulphide provinces in the world, with about 1700 Mt total reserves that make it one of the largest sulphide concentrations in the earth's crust. Traditionally, the deposits of the IPB have been considered to be similar to the Kuroko type of VMS deposits. However, their location within a transpressive basin located at a passive continental margin dominated by detrital sediments suggests that they form an independent group of volcanic-related stratabound deposits, with no known modern analogues. It is generally considered that the volcanic rocks in the IPB are unrelated to the Sierra Norte batholith which also intrudes the South Portuguese Zone. This relationship is based primarily on age data. However if the IPB is related to batholith development then it is possible that mineralization in the pyrite belt is related in part to tectonic processes associated with the collision of Laurussia with Gondwana. This interpretation suggests that the mineralization in the IPB is not a simple VMS system but rather associated with collisional orogenesis. Various age dates from across the belt were used to create a spatial age map of the IPB in order to investigate deposit evolution. Geochemistry of the mineralized host rocks show a chemical signature consistent with rocks formed from intrusion into continental crust from a deep source. Also, mineralization occurred in the underlying Phyllite-Quartzite unit which suggests that the ore-forming material was emplaced from a deeper source that also intruded the older and stratigraphically deeper unit. These data together indicate that the mineralization did not occur through vents onto the seafloor like the traditional volcanogenic massive sulfide deposits. A detailed study of the field relationships and textures of volcanic rocks has revealed that nearly all the volcanic rocks in the Spanish sector of the IPB are intrusive with some minor associated hydroclastic volcanogenic deposits. Millions of tons of tin have been extracted from the VSC. The occurrence of tin in the IPB suggests an alternate model for mineralization. Traditional VMS deposits typically include Pb-Zn-Cu, whereas hydrothermal porphyry systems are the source for tin deposits. The occurrence of tin in the IPB indicates that a hydrothermal system was present and participated in the formation of the deposits.