

Seismic and Structural Data from the Puebla de Guzmán Anticline: An Overview of Crustal Architecture in the Iberian Pyrite Belt (SW Iberia)

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The Puebla de Guzmán Anticline (PGA) is one of the main structural features of the Spanish sector of the Iberian Pyrite Belt (IPB), along with the Valverde del Camino Antiform (VCA). Two main tectonic deformation phases have been recognized in the PGA, the antiform being essentially a second phase structure with some previous deformation inherited from the first phase. Seismic and field data support the interpretation of its internal architecture as an antiform with its southern limb affected by a south-vergent imbricate thrust system (Simancas et al., 2004; Mantero et al., 2006). Actually, the antiform is a thrust propagation fold linked to the development of the southern-limb thrust system. Its geometry is characterized by the presence of a frontal ramp (N100°E) ahead of its southern limb and a lateral ramp with approximately NNE-SSW strike, located at the eastern closure. The tectonic movement is distributed along a high number of thrust faults related to multiple detachment levels, which, in turn, are connected to a basal sole main detachment. The seismic image provided by the IBERSEIS profile shows the existence of these northdipping imbricate fan thrust systems, which converge into deeper detachment levels located at 12-15 km-depth. The structural model defined for the PGA could also be applied to other major regional structures in the South Portuguese Zone (Simancas et al., 2004). In fact, the VCA reproduces exactly the same model and the IPB as a whole represents a major imbricate sheet of a Variscan orogenic wedge.

Keywords: imbricate thrust systems, fault-propagation folds, South Portuguese Zone