Tithonian Extension by Double Flat Listric Faults in the Sierra de Crevillente (Betic, SE Spain)

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The “Congost” outcrop located to the southern side of the Crevillente Sierra (Alicante Province, SE Spain) shows a Rosso Ammonitico facies (RA) of Late Jurassic in age faulted, eroded, and unconformably overlied by the Late Albian grey marls and marly limestones. The RA lies over a regional unconformity (hardground with ferruginous crust) developed during the Late Bathonian to Early Oxfordian. The ammonite assemblages in the RA facies favoured a zone-level biostratigraphic control. The Late Jurassic succession is composed by 10 m of marly RA (Middle-Late Oxfordian), then 15 m of dm-thick alternating marly/calcareous RA (Kimmeridgian-Early Tithonian pp.), and finally, 35 to 60 m of dm-thick beds of RA limestones (Early Tithonian to the earliest Berriasian). In this Upper Jurassic succession, a set of listric faults can be recognized producing a thickness variation in the Tithonian-Berriasian interval, starting from the Verruciferum biozone (Early Tithonian). The resulting listric faults converge down to the lower part of the marly AR (oxfordian) becoming parallel to the stratatification, and thus forming a flat ramp which forms the upper detachment level of the listric faults. The recognized separation between listric faults is 50 m and their slips range from 20 to 30 m. Since the major detachment level in the Betic Cordillera is the top of the Late Triassic Keuper facies, the studied faults are considered the upwards “horse-tail like” faults of one master two-flats listic fault system.

Key words: Listric faults, Betic Cordillera, Jurassic.