

A Case for Late Diagenetic Dolomitization: The Lost Burro Formation (Devonian) of East Central California.

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The significance of late diagenetic, deep burial dolomitization has generally been underestimated. Shallow subtidal and peritidal carbonates in the lower Lost Burro Formation have been pervasively dolomitized. Except for porphyrotopic, micron- to fine decimicron-sized dolomite in the basal quartzose part, and decimicron-sized dolomite in dark units, crystallinity is commonly coarse centimicron-sized. In addition to the coarse crystallinity and zebroid structure, other evidence for late diagenetic dolomitization consists of relationships between dolomite and its peloidal microsparite precursor that occur near the top of the dolomite sequence: (1) facies relations between limestone and dolomite; (2) fracture-controlled(?) tongues of dolomite and dolomite fronts sharply transecting limestone beds; (3) "chicken-wire" dolomite enclosing remnants of limestone with disseminated replacement dolomite crystals that are cross-shaped and baroque. A complete spectrum occurs from dolomitization along microstylolites to the "chicken-wire" fabric to complete dolomite with a relict fabric. Petrographic and SEM studies strongly suggest that the coarse dolomite resulted from replacement rather than neomorphism of an earlier dolomite. Preliminary stable isotopic data substantiate a late, deep and hot origin for the dolomite.  $Mg^{2+}$  ions were delivered by water moving along microstylolites, and healed fractures and microcracks.

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