

Sequence stratigraphic analysis of the Lower Jurassic succession, Western Iraq

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Abstract The Lower Jurassic succession of Western Iraq reflects deposition within various depositional environments. These are fluvial, coastal plain, sabkha, shallow restricted marine, and shallow open marine environments. Several third- and fourth-order cycles were recognized within the studied succession. Facies stacking patterns, cycle thicknesses, and symmetries were the direct result of different effects of the major controlling factors (eustacy, subsidence, rate of carbonate production, and clastic supply) at different locations within the study area of Western Iraq. The different rates of subsidence between the Rutba uplift, Anah Graben, and the unstable shelf area produced different effects on the Lower Jurassic sequence development. In the Rutba uplift where the rate of subsidence was at its minimum, eustacy was the major controlling factor. Tectonic subsidence was the major controlling factor on sequence development of the other sections where high rates of subsidence characterized these areas. The development of the Lower Jurassic basin in Western Iraq was initiated during the early stages of the Neo-Tethys opening. The physiography of this passive margin basin was controlled by the Hail-Rutba Arch and the Anah Graben within the stable shelf area. Facies architecture was controlled mainly by the change in accommodation (eustacy+ subsidence). The resultant relative sea level greatly affected the nature of carbonate production and consequently facies stacking pattern

Keywords Sequence stratigraphy . Lower Jurassic . Basin evolution . Western Iraq