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**Ground Penetrating Radar Imaging of Wolfcampian (Permian) Carbonate Platforms, Hueco Mountains, West Texas, USA**

The Hueco Group (Lower Permian, Wolfcampian) platform to basin carbonate succession exposed in the Hueco Mountains (western Diablo Platform) was studied integrating field descriptions with 2-D Ground Penetrating Radar (GPR) profiles. The studied interval comprises a complex record of deposition controlled by glacio-eustatic sea level fluctuations typical of icehouse periods. Field observations suggest amalgamation of highly complex, carbonate platforms typified by vertical facies offsets, conspicuous toplap geometries, recurrent shelf margin erosion, and basin shingled-to-restricted wedges. These observations occur below conventional seismic resolution (average 35 Hz) and have important implications to reservoir analysis. In order to image these field relationships, GPR profiles were acquired on top of different outcrops using two antenna setups (25 and 50 MHz) to attain a variable vertical resolution and a maximum penetration of 60 m. Reflections occurred at major electrical impedance boundaries such as sequence boundaries, clinoforms, and significant bedding planes. Furthermore, lateral and vertical facies changes can be detected by variations in amplitude and phase along reflections, particularly in areas dominated by low-conductive, phylloidal mounds. Density and P-wave velocity core plug measurements suggest that acoustic boundaries may coincide with reflections imaged by GPR profiles.

The accurate characterization of highly complex sequence architecture and facies distribution in Wolfcampian platforms by the means of high-resolution sequence stratigraphy and ground penetrating radar surveys can be critical to both hydrocarbon exploration and development (reservoir continuity and quality) of similar icehouse platform carbonates elsewhere.