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An Upper Jurassic Fluvial-Alluvial Valley Fill Reservoir in the Northeastern Border of the Neuquen Basin, Argentina

The purpose of this paper is to provide a regional overview of the paleogeography, sedimentary environment, and reservoir characteristics of the Upper Jurassic Petrolifera. This fluvial-alluvial unit (conglomerates and sandstones) formed as a basin-border response to a Kimmeridgian tectonic reactivation in the Neuquen Basin, Argentina. This basement reactivation triggered both a change in the basin paleogeography and the subsequent deposition of coarse clastic sediments in faulted interconnected depocenters. Facies characteristics suggest that alluvial fan and associated coarse braided river deposits were developed under arid paleoclimate conditions. The volcanic substrate is the main source of sediments for these alluvial and fluvial deposits. Paleocurrents of this unit suggest a west-southwestern transport direction. This unit was subsequently covered by aeolian and ephemeral fluvial deposits, which act as a seal. The interpretation of 3-D seismic allows the recognition of the Petrolifera unit up to a thickness as little as 15-25 feet and aids in identifying contrasts between depositional fairways and non-depositional areas. Seismic reflection patterns vary between offlap and discontinuous parallel patterns, depending on the predominant depositional environment. Trapping styles range between structural traps with either four-way closure or fault bounded, structural-stratigraphic, and stratigraphic.