

# **Architecture and Reservoir Properties of Submarine Channels: Outcrop Analogues from the Upper Cretaceous Rosario Formation of Canyon San Fernando, Baja California, Mexico**

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We present field data from a deep marine channel-levée complex (Late Cretaceous Rosario Formation, Canyon San Fernando, Baja California, Mexico) formed on a continental slope. The Canyon San Fernando field area provides excellent quasi-3-D exposure of a third-order sequence consisting of a canyon to levéed slope channel succession with numerous channel bodies and their related deposits.

The entire complex spans a total stratigraphic thickness of approximately 1000m including channel bodies that range from entirely canyon confined (some bounded by levées internal to the canyon) to those that are entirely levée-confined. The channel bodies are made up of individual channel elements or 'building blocks'. Each type of channel element has a distinct architectural style and reservoir properties.

By assessing the properties of individual channel elements in the field, and observing the way these are combined to form larger scale channel bodies in the outcrop, the reservoir properties of such larger scale bodies in the subsurface can be predicted. The use of 3-D digital mapping workflows, allied to the interpretation of digital photomosaics (both of which are calibrated to detailed sedimentary logs), allows us to map geometries and lithofacies in three dimensions. Quantitative and statistical analysis of the channel element fill allows us to assess the properties of individual channel elements and composite channel bodies in both 2-D and 3-D.