

**AAPG Annual Convention
Salt Lake City, Utah
May 11-14, 2003**

Marinus E. Donselaar and Cees R. Geel, Delft University of Technology, Delft, Netherlands

The Huesca Project: Integrated Sedimentary Architecture Modeling of a Low Net-to-Gross Fluvial Succession

This paper describes the successive steps undertaken for the construction and sensitivity analysis of a 3-D sedimentary architecture model of a low net-to-gross fluvial succession. The Huesca Fluvial Fan (Miocene, Ebro Basin, Spain) is the subject of this study. Outcrop data sets were acquired from extensive exposures of this fan in steep cliff faces. In addition, two shallow (200 m depth) wells were drilled in the study area to provide core and well log data. The hybrid data set for this study was completed with the acquisition of borehole seismic profiles (zero-offset and walk-away VSP's), a 2-D seismic survey, and a time-domain electro-magnetic survey around the boreholes. The Huesca fluvial succession comprises loosely-stacked meander-loop, braided stream and ribbon sandstones with minor crevasse-splays, embedded in a background of floodplain mudstone. Several palaeosols are continuous over the entire model area and were used as marker horizons. The 200-m-thick succession was subdivided into depositional sequences on the basis of advanced well-log analysis software. The resulting 'truth-case' 3-D architecture model is conditioned by all correlated outcrop and sub-surface data. The model was then analysed for its sensitivity to (a) the use of only a selection of the data set that formed the basis for the model, (b) the use of analogue data sets, and (c) the variation of the individual input parameters. The analysis shows the strong dependency of the model on net-to-gross and sandstone body width-thickness ratios.