Structural and Stratigraphic Re-evaluation of the 26R Reservoir Using SCAT Dipmeter Analysis, 3-D Seismic, and 3-D Earth Modeling

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New geologic work on the 26R reservoir started with a reconsideration of the structural geometry of the reservoir. To define the geometrical shape of the reservoir container and the faults that segmented it into sub-compartments, SCAT Statistical Curvature Analysis) of dipmeter data and SCAT-constrained interpretation of 3-D seismic data was done. This work showed that the reservoir was cut by thrust faults as well as the previously identified main 26R normal fault. SCAT stratigraphic dipmeter interpretation was also used to identify the major stratigraphic breaks. In particular, SCAT analysis led to an accurate placement of the F unconformity in the wells and seismic sections, which provided a reference horizon for re-correlating the complex 26R turbidite stratigraphy. Revisions of the geology indicated by SCAT were then further extended, away from control, with a 3-D earth modeling software package. 3-D modeling is also being used to determine OOIP volumes, load a simulation model, output structure and isochore maps, and hold multi-disciplinary well reviews.

The 26R reservoir is a feldspar-rich, coarse- to fine-grained, angular, poorly sorted, immature sandstone that has been transported a short distance (10 mi) from its granitic source provenance. Deepwater turbidite processes resulted in turbidite lobes composed of 2 to 4-ft-thick, sand-rich, Bouma sequences stacked into massive sand units with blocky log character. The overall sedimentologic geometry is channellike in cross-section. The channel-form geometry is characterized on seismic and well logs as being on the order of 3000 ft wide and 1000 ft thick in the center, and tapering to zero thickness at the margins. Average porosity is 22% and is mainly primary intergranular porosity. Average permeability is 230 md and is controlled by clay blocking of pore throats.