# TENGIZ-CHALLENGES TO THE MANAGEMENT OF A LARGE CARBONATE RESERVOIR:
# I. RESERVOIR GEOLOGY

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Tengiz Field is a massive Carboniferous-Devonian carbonate reservoir currently produced by the Tengizchevroil (TCO) joint venture. Characterization of this thick, massive carbonate platform and its associated flank deposites is hampered by relatively sparse well control in the field and incomplete penetration of the reservoir.

A number of geologic studies are under way to better characterize the Tengiz reservoir. TCO completed a 1044 km2 seismic survey in 1998 to enhance the subsurface imaging of the reservoir. Results from the initial interpretation have aided in mapping the seismic character and attributes of the carbonate platform and flank facies and imaging faults in the reservoir. Coupled with data from existing and new wells, the 3-D interpretation has allowed TCO to identify high productivity regions of the reservoir for optimum field development.

Comprehensive logging and coring programs are required for newly drilled wells and for existing wells that can be deepened through the reservoir. These programs are designed to better characterize water saturation and porosity distributions in this low porosity, bitumen-filled carbonate reservoir. Recent applications of NMR and array induction logging technology, in conjunction with more standart logging tools, have improved understanding of the reservoir. Good quality borehole imaging in two recently drilled wells has greatly improved our understanding of the depositional patterns in the carbonate platform and flank regions.

Improved characterization of the Tengiz reservoir will permit better modeling of the carbonate reservoir in Korolev Field. In turn, reservoir characterization of Tengiz and Korolev should provide insights to the exploration potential of the Pre-Salt carbonates in the TCO license area.