

## Oil and Gas Content in Upper Cretaceous of Manavi Anticline Structure Eastern Georgia

Prof. Mevlud Sharikadze<sup>1</sup>, Zurab Suramelashvili<sup>2</sup>, and Michael Nibladze<sup>3</sup>

<sup>1</sup>Geologist, Tbilisi, Georgia

<sup>2</sup>Geologist, Tbilisi, Georgia, [zurab@canargo.ge](mailto:zurab@canargo.ge)

<sup>3</sup>Country representative of Canargo Ltd, Tbilisi, Georgia, [michael@canargo.ge](mailto:michael@canargo.ge)

Manavi area (45 km<sup>2</sup>) is located in East Georgia, 50 km east from Tbilisi. Geotechnically, it is located within the extreme eastern ending of Achara-Trialeti folding system and from oil geology point of view, it belongs to oil-gas-bearing region adjacent to Tbilisi. Seven oil and one oil and gas deposits, from where up to 205 Mln BBls of oil has been produced to-date, were discovered here mostly in 1980s. Manavi structure is the eastern extension of the chain of Samgori-Patardzeuli-Ninotsminda sub-latitudinal anticline fields.

In 2000, Israeli and Chinese geophysical companies conducted more than 250 km seismic survey (2D) based on which isochronal and structural maps on Upper Cretaceous in 1:50000 and 1:25000 scales were drafted. Based on deep geological drilling and seismic data, it was determined that Later Cretaceous, Paleocene and Neogene age terrigenous carbonate and volcanic sedimentary rock complexes with total thickness exceeding 5 km participate in geological structure of the region. There are two structural stages identified within the sedimentary formations: upper stage (Alochthone) represented by Paleocene-Pliocene sediments, as an integral tectonic plate, by underthrusting system is displaced from north-east to south-west; and the presence of brachyanticline sub-latitudinal fold of Manavi represented by Upper Cretaceous sediments is identified in the lower stage (Autochthon). Its length is 18 km, width 6 km and oil saturation elevation 360 m.

Within the years of 2001-2006, CanArgo drilled two wells, M11 (TD 4570m) and M12 (TD 5019m), in the Upper Cretaceous of Manavi brachymorphic fold. As expected, the Upper Cretaceous appeared to be the most significant from oil geology point of view (the wells opened top of Upper Cretaceous respectively at 4257m (-3168m) and 4495 (-3313m) depths). The Upper Cretaceous here is presented by two litho-stratigraphic sections: upper, the so called carbonate section (max. thickness 300m) and lower, the so called tuff section (opened in well M12 at 4853-5109 m interval). The first one is presented by foraminiferous microfauna (Upper Senonian) and the second one by andesite-dacite and andesite-basalt psammitic and vitrophyric tuffs (Lower Senonian). Secondary cavities-fractures and caverns one part of which is opened are developed within the carbonate section. Respectively, the reservoir here is fractured-cavernous. Gas kicks and drilling mud losses were encountered during drilling these rocks several times. Lower tuff section is predominantly characterized by porous and fractured reservoirs.

Oil resources for the Upper Cretaceous of Manavi Structure have been estimated by volumetric method and make 670 million barrels in place.