Application of Integrated Geophysical Strategies in the Albertine Graben and Its Petroleum Potentiality

Nimmagadda, Shastri Lakshman[1], Reuben Kashambuzi[2], Ernest Rubondo[3], Robert Kasande[4]
(1) Kuwait Oil Company, Kuwait City, Kuwait (2) Commissioner, Entebbe, Uganda (3) Assistant Commissioner of PEPD, Entebbe, Uganda (4) Principal Geologist, Entebbe, Uganda

Albertine graben, in the Western Uganda covers an area of 20,000 sq km, but only few square kilometers area has so far been studied. About 15000 line kilometers of aeromagnetic surveys conducted all along the Albertine graben, have established presence of sedimentary basins and several depo-centers along the entire length of this graben. There are total five sub-basins, each having an average of 5000 sq km area. Ground gravity and magnetic surveys conducted in the Semliki basin, which is falling in the south western part of Albertine graben; interpret a total column of about 6 kilometers thick sediments. There are several active oil seeps all along southern and eastern margins of these rifted basins.

Under Commonwealth Fund for Technical Cooperation (CFTC) project, two sub-basins of the rifted Albertine graben have been studied. All the gravity, magnetic and seismic data have been integrated. Several structure maps have been prepared at different unconformity surfaces along with time-thickness, paleo-reconstruction, interval velocity maps and seismo-geological cross sections. Several seismic anomalies, which are attributed to stratigraphic and hydrocarbon indicators have been examined. Prospective areas have been identified and ranked them for further exploration. Recently drilled well data on an anticline structural closure have provided significant oil and gas shows, which have shown worldwide attention and interest of exploration venture in the Western Ugandan Albertine graben.