

# **ECONOMIC POTENTIAL OF METHANE GAS IN OLKARIA'S NORTH EAST AND EAST GEOTHERMAL FIELDS**

This project seeks to assess the quantity of methane gas produced during steam flow from the production geothermal wells drilled within Olkaria North East and East. Amongst the seven geothermal sections present within The Great Olkaria Geothermal Area (GOGA), these two (Olkaria North East and Olkaria East) have been chosen since they are the oldest and data on the exploitation of the wells drilled within these fields is substantial. This study was initially intended to cover the whole of the Great Olkaria Complex but the amount of time provided for the analysis of the data available on all the wells in this region was not favourable.

The analysis of methane gas distribution in the area has been done using a well contoured concentration map designed using Surfer 9.0 software. This has helped identify the region of highest gas potential. The quantification of the gas has been done using measured gas concentration values and average steam rates measured in the field. All the raw data needed for these sections was acquired from the Kenya Electricity Generating Company Ltd. (KenGen) with a student permit.

The sections on the geology and structural complexity of the area only serve to give a scientific foundation to the study. An understanding of the correlation between these methane gas values and the geology of the area and the fault structures in the region (knowing that methane gas can take advantage of faults and fractures and use them as migration pathways) provides an appreciation of the occurrence of this gas in the rift; particularly in Olkaria. This knowledge may be a means of deciding how to go about methane gas exploitation as a source of energy or indirectly to confirm the hydrocarbon potential of the nearby basins within the Central Kenya Rift. The assumptions and limitations of this study have been discussed in the respective sections of this report.

**KEYWORDS:** *Methane gas, Geothermal, economic potential.*