ABSTRACT

This report presents economic geology models for five mining sites at the Kenya fluorspar company limited that have been used in evaluation of fluorite ore. The area is located at Kimwarer, Elgeiyo-Marakwet County. Mining of fluorite has been ongoing since 1969 and in the year 2010, it produced 30 metric tonnes of fluorite. The lease area is lying between latitudes 0°13′N and 0°23′N and longitudes 35°35′S and 35°40′S covers an approximate area of about 9070 acres in the south western part of Kenya. Geologically, the area forms a section of the Mozambique belt which is part of the Precambrian basement complex of the rift valley overlain by Miocene phonolites and trachytes. Fluorite mineralization was emplaced either pre- or early to mid- Tertiary times (Miocene and Pleistocene), possibly at the onset of rifting during the development of the East African Rift system.

At Cheberen 1 deposits, four fluorite veins (A, B, C&D) are present with veins C&D pinching to out the north. Veins A&B form the main fluorite veins at Cheberen 1 averaging 40m in thickness and with a strike length of over 450m. Fluorite veins A&B are also present at Choff 1&4 as flat to gently westward dipping. Fluorite veins ranges in thickness from 2m to 15m with intercalating bands of quartz feldspar gneiss at Choff 1. Vein B forms the main vein at Choff 4 ranging in thickness from 6m to 18m with a strike length of 600m. At least 3 fluorite veins are present at Kamnaon striking NW-SE for a strike length of 600m. The veins have been drag folded into a large asymmetrical fold along NW to NNW-SE to SSE. Fluorite vein average between 5m to 10m thick at this site.

Fluorite coloration in the area is as a result of physical disturbance in the crystal structure, presents of radio-active elements e.g. uranium and thorium and also attributed to high content of minerals such as graphite and limestone inclusions in dark-grey and yellow-brown fluorite respectively. Within the fluorite vein, varying crystallization temperatures of the associated minerals contributed to the sequential order of these minerals.