

Major Faults, Seismicity and the Oilfields in Myanmar: A Digital Map Study

Ian Davison¹, Ian Steel¹, and Alexander Kurobasa¹

¹Earthmoves Ltd. Camberley, Surrey, UK. GU 15 2EF

ABSTRACT

Myanmar is one of the most seismically active countries in the World. The most recent large (M 6.8) earthquake was located 25 km W of Chauk and toppled many temple tops in the Bagan area on 24th August 2016 (marked with yellow label on Fig. 1). The hypocentre was located on the transpressional Kabaw Fault which lies near the western edge of the Central Burma Depression (CDB). The CBD is intensely affected by transpressional thrusts and folds and dextral strike-slip faults, which are responsible for trapping most of the discovered oil and gas. A plot of the earthquake epicentres from 1900-2016 indicates that most of the faults associated with oil and gas traps are still active and that the faults are both shallow reverse, and deeper strike-slip faults. There is a remarkable range of hypocentre depths from 200 km to 10 km along the oil field trend. We interpret this to be due to earthquakes located in the following zones: (a) the subducting Indian Ocean slab, (b) from intermediate (20-50 km) depths along major strike slip faults, and (c) from shallow depths (<20 km) on both strike-slip and thrust faults. The major Sagaing strike-slip fault has suffered 14 major earthquake events (> M6) over the last 116 years. Hypocentres on this fault are concentrated around 15-35 km depth indicating that there is strong mid/lower crust at these depths.

The intense large event seismicity has the potential to induce large amounts of sand and mud remobilisation, due to seismically induced pressure release from overpressured zones. Injectite sand reservoirs are documented in the offshore Shwe gas field (Cossey et al., 2014), and important mud volcanoes are present at many localities onshore. There is potential for further injectite sand reservoirs in the onshore area; where seismicity is most intense and where mud diapirs and volcanoes have been recorded.