

Interpretation of Geological Structures Based on Fault Fracture Density (FFD) and Its Implications to Liquefaction Potential in Kalibening Area, Banjarnegara Regency, Central Java

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First Author	
Last Author	
Authors	Sunan, HL; Gibran, AK; Aditama, MR; Iswahyudi, S; Widiatmoko, FR; Widagdo, A; Laksono, FXAT;
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Abstract	<p>The existence of geological structures is often associated with landslides and earthquakes. The Kalibening area is an interesting location for research on that purpose. This area is composed of Pleistocene and Recent rocks units. Based on its stratigraphy, the rocks in the area are truncated by fault structure. It means that the fault in the area is categorized as an active fault. The high morphology and a basin existence on its center indicate that the area formation was controlled by faults. The research is carried out to determine the trend of the geological structures that control the study area. To determine the trend of the geological structure, a structural mapping method of Fault Fracture Density (FFD) map combined with the Bouguer anomaly residual map and hillshade lineaments map is used. In general, the most important thing in the study of structural geology is the geometry of the structural elements. The conceptual model of geological structures is subsequently used to analyze the liquefaction potential of the study area. The interpretation of the structures shows the existence of dextral strike-slip fault followed by companion faults and pull-apart basin that is inferred as the result of normal faulting in the strike-slip mechanism. The dextral strike-slip fault produces a basin filled with loose sediment that is prone to liquefaction in the event of an earthquake and ground motion. This study concludes that the Kalibening area is prone to liquefaction due to the existence of the movement of dextral strike-slip fault, loose sediments that dominate the study area, and shallow groundwater table.</p>
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Author	FX ANJAR TRI LAKSONO, S.T, M.Sc.