ABSTRACT

PT. Mitra Bara Jaya is one of the company’s coal concession, it’s located at the village of Bebatu, sub-district Sesayap Hilir, regency Tana Tidung, East Kalimantan Province. Mining activities that will be done, use open mine with bench system, so that it needs kinds of analysis of slope stability to support the next stages of the mining activities.

The condition of the research currently is in the preparation phase to mine. The study was conducted to find out the model of failure, the value of the calculation of slope stability factor effect. Minimum value of the safety is recommended for single slope, FoS > 1,5 for overall slope. The method which is used is the limit equilibrium method with Hoek & Brown (1980) failure criterion.

The Analysis slope stability is based on Hoek & Brown (1980) failure criterion with saturated condition. Minimum limits material can be called stable if it has value of FoS > 1.3 is clay stone material with geometry slope high 6 m and slope angle 45° at an altitude of 8 m with slope angle of 35°. The stability analysis of the overall slope by designing bench wide level are 4 m, 5 m, and 6 m on saturated condition with value FoS > 1,50 for every a drill hole.

The results of the analysis can be concluded that potential failure that might be occurs is circular failure. The recommendation for single slope is 6 m height with 45° slope angle and 8 m height with 35° and 40° slope angle. For the overall geometry with 6 m height and 45° slope angle that is the intersection A-A’ overall height level is 53 m with a 30° overall slope angle and bench wide 5 m, intersection B-B’ has overall height level is 57 m with a 29° overall slope angle and bench wide 5 m, and the last intersection C-C’ has overall height level is 26 m with a 30° overall slope angle and bench wide 5 m. Overall geometry with 8 m height by 35° and 40° slope angle that is in the A-A’ intersection overall height level is 53 m with a 30° overall slope angle and bench wide 4 m, intersection B-B’ has overall height level is 57 m with a 30° overall slope angle and bench wide 5 m, and the last intersection C-C’ has overall height level is 27 m with a 33° overall slope angle and bench wide 4 m.