

## ABSTRACT

PT. Indoasia Cemerlang (PT.IAC) is a coal mining company. This company concession area located at Sungai Cuka, Tanah Laut reGENCY, South Kalimantan Province. Mining system used is surface mining with open pit methods. Current mining conditions will be expanded towards the southern part of IUP and made highwall slope which has an overall height of 157.83 m of crest to the toe, and elevation of 126.39 m on crest as well as the elevation of -31.44 m on the toe, as well as sidewall slopes that will be formed in the eastern part of IUP that has an overall height 105.30 m of top crest to the toe, elevation 77.24 m on a crest and elevation of -28.06 m on the toe. The mining plan for the development of slope stability analysis in order to obtain a stable slope geometry to support mining activities and reduce the potential failure that took place .

Geotechnical study was conducted on the highwall and sidewall. Prior to the expansion of the pit it is necessary geotechnical studies to study the characteristics of the rock mass in the area. The results of geotechnical studies can be determined stability slope geometry. Based on consideration condition of topography, geology and then adjust mine plan the existing coal seam, so drilling for geotechnical data collection is done at two points geotechnical drill holes and correlated with a two point infill drilling is GT.02, GT.05, IN.08, and IN.28.

Testing has been done in the laboratory to test rock samples are physical properties, direct shear test and compressive strength test. From the test results of the compressive strength of the material making up the slope known rocks are classified as weak, so it is possible the potential occurrence of circular failure. Modelling is based on data lithology geotechnical and infill drilling. The analytical method used is limit equilibrium of bishop stability analysis with probabilities approach then the guidelines slope is considered stable if  $FoS \geq 1.30$  and  $PoF < 10\%$ .

Based on the results of the analysis of slope geometry has been done, for highwall slope geometry soil material height is 4 m, slope angle  $20^{\circ}$ , and berm width 7 m, then for rock material, height is 9 m, slope angle  $55^{\circ}$ , and berm width 5 m obtained  $FoS$  1.424 with  $PoF$  0.53%. While the geometry of the sidewall slopes of soil material, height of 5 m, slope angle  $20^{\circ}$ , and a berm width 6m, then for rock material height 7 m, slope angle  $55^{\circ}$ , and berm width 6m  $FoS$  1.691 with  $PoF$  6.40%.