

ABSTRAK

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Daerah penelitian secara administratif berada di Kecamatan Sangatta Utara, Kabupaten Kutai Timur, Provinsi Kalimantan Timur. Area penelitian merupakan wilayah izin usaha pertambangan PT. Kaltim Prima Coal. Kegiatan penelitian dilakukan pada wilayah penambangan batubara dengan sistem penambangan terbuka. Penelitian ini memiliki area dengan persebaran *Geological Strength Index* (GSI) dan *Uniaxial Compressive Strength* (UCS) yang berbeda, terletak di pit tidak aktif dan akan di aktifkan kembali sehingga perlu adanya kajian kondisi geologi dan geologi teknik. Metodologi yang digunakan pada penelitian ini meliputi pengambilan data permukaan di lapangan dengan melakukan pemetaan geologi dan geologi teknik. Selanjutnya, melakukan analisis laboratorium dari data lapangan dan analisis data sekunder. Analisis data sekunder geologi teknik yaitu persebaran beserta pemodelan zonasi rawan longsor berdasarkan nilai *Geological Strength Index* (GSI) dan *Uniaxial Compressive Strength* (UCS). Analisis data lapangan dilakukan dengan metode *scanline* untuk mendapatkan parameter massa batuan. Berdasarkan aspek geomorfologi daerah penelitian dibagi menjadi dua bentukasal dan enam bentuklahan yaitu area bukaan tambang (A1), *disposal* (A2), kolam pengendapan (A3), kolam tambang (A4), perbukitan terkikis (D1), dan bukit sisa (D2). Stratigrafi penyusun daerah penelitian yaitu Satuan *disposal*, Satuan batupasir Balikpapan, dan Satuan batulempung Balikpapan dengan struktur geologi sesar naik, kekar gerus, dan *cleat*. Pada aspek geologi teknik memberikan pemodelan rekomendasi geologi teknik terkait nilai persebaran *Uniaxial Compressive Strength* (UCS) dengan rentang nilai 1,12 – 2,22 dan *Geological Strength Index* (GSI) dengan rentang nilai 53,7-62,2. Zonasi rawan longsor dibuktikan pada sayatan A-A' yang menghasilkan nilai faktor keamanan 0,994 (lereng kritis) dan pada sayatan B-B' yang menghasilkan nilai faktor keamanan 1.345 (lereng stabil).

Kata kunci : Geologi, GSI, Pemodelan, RMR, UCS.

ABSTRAC

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The research area is administratively located in North Sangatta District, East Kutai Regency, East Kalimantan Province. The research area is the mining business license area of PT Kaltim Prima Coal. The research activities were conducted in a coal mining area with an open pit mining system. This research has an area with different Geological Strength Index (GSI) and Uniaxial Compressive Strength (UCS) distribution, located in an inactive pit and will be reactivated so that it is necessary to study geological conditions and geological engineering. The methodology used in this research includes collecting surface data in the field by conducting geological mapping and engineering geology. Furthermore, conduct laboratory analysis of field data and secondary data analysis. Secondary data analysis of engineering geology is the distribution and modeling of landslide-prone zonation based on Geological Strength Index (GSI) and Uniaxial Compressive Strength (UCS) values. Field data analysis is a scanline to obtain Rock Mass Rating (RMR). Based on geomorphological aspects, the study area is divided into two landforms and categorized as six landforms, namely mine opening area (A1), disposal (A2), settling pond (A3), sump (A4), eroded hills (D1), and residual hills (D2). The stratigraphy of the study area is Balikpapan sandstone Unit and Balikpapan mudstone Unit with the geological structure of thrust faults, shear joints, and cleats. The geological engineering aspect provides recommendation modeling related to the distribution value of Uniaxial Compressive Strength (UCS) with a value range of 1.12 - 2.22 and Geological Strength Index (GSI) with a value range of 53.7-62.2. Landslide prone zonation is evidenced in the A-A' section which produces a safety factor value of 0.994 (critical slope) and in the B-B' section which produces a safety factor value of 1.345 (stable slope).

Keywords: geology, GSI, modeling, RMR, UCS.