RINGKASAN

Blok Cikoneng merupakan salah satu blok penambangan di PT. Cibaliung Sumberdaya dimana aktifitas penambangan sedang di lakukan pengembangan untuk menuju ke *Cross Cut* 13. Dalam kegiatan tersebut terjadi ambrukan di elevasi 971 mRL yang disebabkan oleh kondisi batuan yang lemah di sekitar lubang bukaan tersebut. Akibat kondisi ini maka dibuat rencana jalur akses baru pada dinding kiri (arah timur) dengan posisi lubang bukaan ±15 m dari ambrukan. Hasil pengeboran geoteknik di sekitar jalur akses baru mendapatkan jenis batuan yang sejenis dengan batuan di lokasi ambrukan pada kedalaman 0 sampai 20 m.

Hasil evaluasi menunjukan ambrukan terjadi akibat kekuatan batuan yang lemah sehingga menghasilkan ketidakcukupan penyangga yang dipasang. Dari hasil evaluasi lubang bukaan menggunakan pendekatan Hoek-Brown (1980) diperoleh nilai GSI=38, m_b=0,499, s=0,0001, a=0,513, c_m=0,293 MPa dan ϕ_m=23,17°. Pemetaan kondisi massa batuan di sekitar jalur akses yang baru berdasarkan RMR_{89} termasuk dalam kategori kelas III (batuan sedang). Sistem penyangga yang dapat digunakan berdasarkan hasil pemetaan berupa sistematik *bolts* dengan panjang 4 m, spasi 1.5 - 2 m di atap dan dinding dengan *wire mesh* di atap, serta *shotcrete* 50-100 mm di atap dan 30 mm di sisi bukaan.

Berdasarkan simulasi metode elemen hingga dengan bantuan perangkat lunak *Phase2 v.8.0* dibuat empat simulasi rancangan kombinasi sistem penyangga untuk dipasang di jalur akses baru. Hasilnya pada simulasi pertama (tanpa penyangga) kondisi lubang bukaan belum memenuhi kriteria kestabilan. Pada simulasi kedua (penyangga *split set* spasi 0,8 m, *shotcrete* tebal 200 mm, dan *wire mesh*) terjadi peningkatan nilai pada tiap titik pengamatan, tetapi jumlah titik pengamatan yang belum stabil masih sama dengan simulasi pertama. Selanjutnya untuk simulasi ketiga (penyangga *split set* spasi 1 m, *shotcrete* tebal 100 mm, *wire mesh*, dan *H-Beam*) nilai pada tiap titik pengamatan semakin meningkat lagi dibandingkan simulasi kedua, namun masih lima titik pengamatan yang belum memenuhi kriteria kestabilan. Untuk simulasi keempat (penyangga *split set* dengan spasi 0,8 m dan *shotcrete* tebal 200 mm, *wire mesh* serta H–*Beam*) terlihat lubang bukaan pada semua titik pengamatan telah memenuhi kriteria kestabilan.

ABSTRACT

Cikoneng block is one of the mining blocks in PT. Cibaliung Sumberdaya where the mining activities were being development into Cross Cut 13. In this activity occurred failure in 971 mRL elevation caused by weak rock conditions around the opening hole. As the result of this condition would make new access ramp in the left wall (the east) with the position of the opening hole ± 15 m from the failure. The result of the geotechnical drilling in the new access ramp received rocks as kind as in the failure location at the depth of 0 to 20 m.

The evaluation results showed that the collapse occurred due to weak rock strength resulting in the insufficient of the installed support. By the evaluation result used Hoek Brown (1980) approach gained the score of GSI=38, mb=0.499, s=0.0001, a=0.513, c_m= 0.293 MPa, and ϕ_m= 23.17°. The mapping of rock mass condition around the new access ramp based on the RMR89 is included in the 3rd class (medium rocks). The support system that could be used based on the mapping result was systematic bolts with 4 m of length, space 1.5 to 2 m in the roof and wall with wire mesh in the roof, and also shotcrete 50 to 100 mm in the roof and 30 mm in the opening side.

Based on the finite element method simulation in software rocks of phase2 v.8.0 made four simulation combination plans of support system was fitted in the new access ramp. The result of the first simulation (without support system) opening hole condition was not filled the stability criteria yet. In the second simulation (split set support space 0,8 m, shotcrete thickness 200 mm, and wire mesh) there was an increase occurred to the value in every observation point, but the numbers of unstable observation point were still the same as the first simulation. The next third simulation, (split set support space 1 m, shotcrete thickness 100 mm, wire mesh, and H-beam) the score in the point of observation was more increase than the second simulation, but it still had 5 points of observations that were not filled the stability criteria yet. The fourth simulation (split set support space 0,8 m and shotcrete thickness 200 mm, wire mesh, and H-beam) there was an opening hole in all the point of observations which are already filled the stability criteria.