

ABSTRAK

PT. Saptaindra Sejati *Jobsite* Samarata terletak di Kecamatan Segah, Kabupaten Berau, Kalimantan Timur. Kegiatan pembongkaran *Overburden* di lokasi penambangan dilakukan dengan pengeboran dan peledakan yang menimbulkan efek getaran tanah (*ground vibration*) dan suara ledakan (*air blast*) yang sangat beresiko terhadap lingkungan sekitar jika tidak dikontrol dengan baik mengingat dekatnya jarak dari lokasi peledakan ke daerah pemukiman warga Kampung Enau yang hanya sekitar 450 meter. Berdasarkan kondisi lapangan yang terjadi pada bulan Desember 2017 – Maret 2018 dimana tercatat *ground vibration* terbesar 3,29 mm/s dan *air blast* terbesar 135,8 dB.

Menurut Instruksi Kerja PT. Berau Coal dan SNI 7571 : 2010 efek peledakan di Pit C2 dikatakan tidak aman terhadap pemukiman warga sekitar. Dimana Instruksi Kerja PT. Berau Coal menetapkan standar *peak particle velocity* (PPV) < 2,2 mm/s dan *air blast* < 70 dB, dan berdasarkan SNI 7571 : 2010 bangunan pemukiman warga yang dekat dengan Pit C2 tergolong bangunan kelas 2 “Bangunan dengan pondasi, pasangan bata dan adukan semen, termasuk bangunan dengan pondasi dari kayu dan lantainya diberi adukan semen “ dengan standar standar *peak particle velocity* (PPV) < 3 mm/s dan *air blast* < 120 dB, nilai standar *peak particle velocity* (PPV) dan *air blast* berbanding lurus dengan isian bahan peledak yang digunakan. Semakin besar isian bahan peledak maka semakin besar nilai standar *peak particle velocity* (PPV) dan *air blast* yang dihasilkan. Maka perlu dilakukannya pengkajian ulang mengenai penggunaan bahan peledak emulsi yang digunakan per lubang ledak. Penulis melakukan evaluasi dari data hasil pengukuran *ground vibration* dan *air blast* aktual berdasarkan pendekatan dengan Teori *Scale Distance*, yang dihubungkan dengan grafik *power regresi* untuk memperoleh rumusan prediksi *ground vibration* dan *air blast*, yang kedepannya diharapkan bisa dijadikan acuan untuk menentukan jumlah isian bahan peledak per lubang agar *ground vibration* dan *air blast* yang terjadi tidak melebihi batas aman.

Hasil prediksi rumusan *ground vibration* dan *air blast* yang diperoleh selanjutnya dihitung koreksinya terhadap nilai *ground vibration* dan *air blast* aktual. Diperoleh koreksi rata-rata untuk *peak particle velocity* (PPV) prediksi yaitu sebesar 23 % terhadap *peak particle velocity* (PPV) aktual dan *air blast* prediksi sebesar 42 % terhadap *air blast* aktual. Rumusan prediksi *ground vibration* dan *air blast* kemudian digunakan untuk rekomendasi batasan maksimal untuk isian bahan peledak emulsi per lubang ledak di setiap zona di Pit C2 , untuk zona merah 34,5 kg/lubang, zona kuning 90 kg/lubang, dan zona hijau 160 kg/lubang. Rumusan prediksi ini cukup baik dan dapat digunakan sebagai acuan untuk prediksi getaran tanah dan suara ledakan agar dampak dari kegiatan peledakan terhadap lingkungan sekitar aman.

ABSTRACT

PT. Saptaindra Sejati Jobsite Sambarata is located in Segah District, Berau Regency, East Kalimantan. Overburden demolition activities at the mining site are carried out by drilling and blasting which results in ground vibration and explosive sound (air blast) which is very risky to the surrounding environment if it is not properly controlled given the close distance from the blasting location to the Kampung Enau residential area which is only about 450 meters. Based on the field conditions that occurred in December 2017 - March 2018 where the largest ground vibration recorded was 3,29 mm / s and the largest air blast was 135.8 dB.

According to the Work Instruction of PT. Berau Coal and SNI 7571: 2010 blasting effects in Pit C2 are said to be unsafe for local residents. Where is the Work Instruction of PT. Berau Coal sets the standard peak particle velocity (PPV) <2,2 mm / s and water blast <70 dB, and based on SNI 7571: 2010 residential buildings close to C2 Pit are classified as class 2 buildings "Buildings with foundations, masonry and mortar, including buildings with wooden foundations and floors with mortar "with standard peak particle velocity (PPV) <3 mm / s and air blast <120 dB, standard peak particle velocity (PPV) and water blast proportional to fill in explosives used. The greater the contents of the explosives, the greater the standard value of the peak particle velocity (PPV) and the blast water produced. It is therefore necessary to review the use of emulsion explosives used per explosive hole. The author evaluates the data from the actual ground vibration and air blast measurements based on the approach to Theory of Distance Scale, which is associated with a power regression graph to obtain the formulation of ground vibration and water blast predictions, which are expected to be used as a reference to determine the amount of explosive fillings per hole so that ground vibration and water blast that occur does not exceed the safe limit.

The results of the prediction of ground vibration and water blast obtained are then calculated for correction of the value of ground vibration and actual air blast. An average correction for the predicted peak particle velocity (PPV) of 23% against the actual peak particle velocity (PPV) and predicted water blast of 42 % against actual water blast. The formulation of ground vibration and air blast predictions was then used for maximum limit recommendations for filling emulsion explosives per explosive hole in each zone in Pit C2, for the red zone 34,5 kg / hole, yellow zone 90 kg / hole, and green zone 160 kg / hole . This prediction formulation is quite good and can be used as a reference for predicting ground vibrations and explosive sounds so that the impact of blasting activities on the surrounding environment is safe.