ABSTRACT

FOCAL MECHANISM APLICATION ON DETERMINING THE SEISMIC SOURCE MECHANISM IN DEEP MILL LEVEL ZONE AREA

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The research area located at the Deep Mill Level Zone area PT. Freeport Indonesia on level 2400-2800 mdpl, Mimika District, Papua Province. There is a high seismic activity in this area. It is important to use the microseismic sensor in underground mining operation monitoring to prevent the disaster of mining activity by using travel time of wave.

There were 56 microseismic sensors on the area, they are uniaxial sensors and triaxial sensors. Data that used on this research started from January 3rd 2017 until April 12th 2017 where collected 5316 micro earthquake events. From those 5316 events that happen during this research, there are 32 earthquakes which has more than 0.7 moment magnitude. That point is the minimum threshold for an earthquake that has a high possibility to create a severe damage on the underground mining operation. On the magnitude 0.7, the energy released from the earthquake is around $13x10^7$ nm and it is more than enough to create devastating damage on the area. By Aplicating the focal mechanism, the source mechanism that happen on the earthquake and the direction of the earthquake can be known.

The focal mechanism type in the research area is dominated by the double couple mechanism which has a high probability to be caused by the structure activity with 24 seismic events. The compensated linear vector dipole type has a high possibility to create damage in the area that proved by 2 of the 6 events with this type are create a severe damage on the area.

Kata Kunci *: Microseismic, focal mechanism, seismic wave, damage*