

## Determines the Continuity of Void in Underground Mine Tunnel Using Ground Penetrating Radar

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**Abstract :** Kucing Liar Underground Mine is a future mine of PT Freeport Indonesia PTFI that is currently being developed. In the development process, problems were found when blasting the tunnels; there were overbreak, and void occur caused by geological contact or poor rock conditions. Geotechnical engineers must evaluate not only the remnant capacity of ground support systems but also investigate the depth of rock mass yield within pillars. To prevent the potential hazard caused by void zones, geotechnical engineers must ensure the planned drift is mined in the best location where people can work safely. GPR, or Ground penetrating radar, is a geophysical method that can image the subsurface. This non-destructive method uses electromagnetic radiation and detects the reflected signals from subsurface structures. The GPR survey measurements are conducted 48 meters along the drift that has a poor ground condition with 150MHz antenna with several angles (roof, wall, and floor). Concern grounds are determined by the continuity of reflector/low reflector in the radargram section. Concern grounds are determined by the continuity of reflector/low reflector in the radargram section. In this paper, processing data using instantaneous amplitude to identify the void zone. In order to have a good interpretation and result, it combines with the geological information and borehole camera data, so the calibrated GPR data allows the geotechnical engineer to determine the safe location to change the drift location.

**Keywords :** underground mine, ground penetrating radar, reflectivity, borehole camera

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