

STOPING-INDUCED DISPLACEMENTS IN A FRACTURED VEIN AT PONGKOR UNDERGROUND GOLD MINE, INDONESIA

Barlian DWINAGARA, Budi SULISTIANTO, Ridho. K. WATTIMENA¹

Suseno KRAMADIBRATA, M. Safrudin SULAIMAN¹

Kikuo MATSUI²

Iwan Dharma SETIAWAN³

¹Department of Mining Engineering

Faculty of Earth Science and Mineral Technology

Institute of Technology Bandung, Bandung 40132, Indonesia

E-mail : barlian@mining.itb.ac.id

²Kyushu University Fukuoka 812-8581, Japan

³Gold Mining Business Unit of Pongkor, PT. ANTAM, Tbk., Indonesia

ABSTRACT

The cut and fill method is applied at Pongkor underground gold mine where a number of level is mined simultaneously. To ensure that mining in each level can be carried out safely, sill pillars must be left at the top of each level, which thickness must be carefully determined. For the purpose of determination of the thickness, displacements in the vein must be understood.

INTRODUCTION

Considering the general characteristics of rock and ore, a full mechanised cut and fill method is adopted at Ciurug vein, Pongkor Underground Mine. More than one level is opened in order to maintain the continuity of total rate and grade of ore production, i.e level 500, level 600, and level 700. Consequently, sill pillars should be left immediately below the upper level.

Stability of the pillar is absolutely required for ensuring the safety of people and mining equipment. The pillar is the part of vein that is left. This naturally contains fractures and cracks that are induced by blasting. Measurement of displacement at the vein is therefore of importance to observe stoping-induced deformation.

A representation of ore body at cross-cut 6A located at elevation 568 was chosen for the measurement. This research is a continuation of the former research conducted in the neighbouring area (Sulistianto, et al, 2003a, 2004).

DISPLACEMENT MEASUREMENT

Extensometer

Measurement station was located at XC 6A in Level 500 of Block II Central Ciurug, at an elevation of 568 m, about 3.100 m from the portal and around 300 m from the surface. Boreholes for the placing the extensometer magnetic anchors ($T_0 - T_4$) were oriented horizontally and vertically into the vein (Au-Ag ore), as illustrated in Figure 1. The equipment used was *Intrinsically Safe Magnesonic Probe Extensometer* of Type 1062.