BUSITEMA UNIVERSITY

Pursuing Excellence

FACULTY OF ENGINEERING

DEPARTMENT OF MINING AND WATER RESOURCES ENGINEERING

FINAL YEAR PROJECT REPORT

ASSESSMENT OF DRILLING AND BLASTING PARAMETERS TO MINIMIZE ORE DILUTION AND ORE LOSS AT KILEMBE MINES.

BY

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ABSTRACT.

Dilution, which is difficult to quantify accurately, is a major concern in underground mining. The level of dilution at Kilembe mines is currently difficult to assess owing to the complexity of the ore body. The acceptable dilution levels differ from mine to mine but the current dilution of 66.6% on the mine is too high. This paper attempts to assess the drilling and blasting parameters so as to minimize excessive dilution levels at Kilembe mines.

Data for drilling and blasting and rock properties were collected in the field.

Minimum dilution was achieved after determining the optimum drilling and blasting parameters that affect dilution, optimum fragmentation, throw and ground vibration and this was done by assessing explosive and rock properties and other factors that contribute to ore dilution.

At the end of this project conclusion and recommendation were given based on title of assessment of drilling and blasting parameters to minimize ore dilution and ore loss at Kilembe mines.

DECLARATION

I KAIJUKA BRIAN hereby declare that the information in this report was written by me out of my own effort and it has never been presented to any university or institution. I hereby submit it to the department of Mining and Water Resource Engineering Busitema University for the award of a Bachelor's degree in Mining Engineering.

SIGNATURE: .....

DATE: 30/05/2016 .....

ACKNOWLEDGEMENT.

First and foremost I thank the almighty God who gave me strength, Courage and direction to accomplish this project. Keep me healthy and safe from the beginning of this course up to this moment.

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APPROVAL

This is to confirm that this report has been written and presented by KAIJUKA BRIAN.

SUPERVISOR: Ms.NANGENDO JACQUELINE.

Signature..... Date.....

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LIST OF ACRONYMS.

B- Burden

D- Diameter

de - Average size in situ segregation

d_h - Upper size of the rock product

e - The strength conversion factor of explosive

f - Coefficient of rock hardness.

Q - Powder factor

S -Spacing

γ- Rock density

1 CHAPTER ONE: INTRODUCTION.

1.1 BACKGROUND.

1.1.1 Location.

Kilembe mines are located within the Kilembe valley in the eastern foothills of the Rwenzori Mountains about 13 km North West of kasese town within kasese district in the western region of the republic of Uganda.

It is accessed by two roads from the capital, Kampala. The shortest route is via Mubende and Fortportal and this route is currently in good condition and the longer route is via Masaka, Mbarara and Bushenyi with a section of about 60km not in good order.

The concession area can also be accessed by chartered flight to kasese Airfield from Entebbe and in the past years, it could be accessed by railway which is now out of order.

1.1.2 Geology:

The Kilembe Series which hosts the copper-cobalt mineralization occurs within the Precambrian Buganda-Toro System. The system stretches across the Southern Ugandan border from the Rwenzori Mountains in the west almost to the Kenyan border. The Rwenzori Mountains are a tilted fault block within the Western Rift Valley system between the DRC and Ugandan Rifts.

Kilembe is situated in an area of highly folded pre-Cambrian Basement mignatites which form the kilembe series, and are intruded by granites, pegmatites and dolerites.

The Kilembe ore bodies are mainly disseminated to massive sulphides and generally appear to form 15% to 100% of the ore which has been mined to date. The principal copper mineral is chalcopyrite with its normal associated suite of secondary derivatives.

Other metallic minerals are pyrite, the principal sulphide and minor Pyrrhotite, Pentiandite, linnaeite, siegenite, molybdenite, sphalerite and magnetite. Cobalt is principally found as a replacement of iron within the pyrite lattice (Schlueter T 1997).

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