



An investigation on the effect of specific charge on the downstream quarry operations.

FACULTY OF ENGINEERING

DEPARTMENT OF MINING AND WATER RESOURCES ENGINEERING

FINAL YEAR PROJECT REPORT:

**AN INVESTIGATION ON THE EFFECT OF SPECIFIC CHARGE ON THE
DOWNSTREAM QUARRY OPERATIONS:**

CASE STUDY: SEYANI INTERNATIONAL COMPANY LIMITED (SICL)

BY

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A final year project report submitted to the department of mining and water resources engineering in partial fulfillments of the requirement for a ward of bachelor's degree in mining engineering at Busitema University.



An investigation on the effect of specific charge on the downstream quarry operations.

ABSTRACT:

The value of specific charge in open pit quarry blasting processes considerably affects the efficiency of the blasting. Specific charge is defined as the mass of explosives required to break a unit volume of the rock.

When the specific charge was increased from 0.88 to 0.94, the mean rock fragmentation size reduced from 39.16cm to 34.19cm and a decrease in specific charge from 0.94 to 0.88 increased the mean rock fragmentation size from 34.19 cm to 41.82cm.

This research study provides awareness about the effect of specific charge on fragmentation size after blasting and the duration, working capacity and fuel and energy costs incurred in the downstream quarry operations carried out at SICL quarry. The mean fragmentation sizes, the unit costs of loading, crushing, and boulder crushing and specific charge values were separately determined in each blast test. Afterwards, the specific charge values were interrelated according to duration, working capacity and costs incurred in loading, crushing and secondary rock breaking.

Recommendations have been suggested on further analysis on the effect of specific charge on the downstream quarry operations.

DECLARATION:



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I, TUMUSHABE RODGERS registration number BU/UG/2016/124 do hereby declare that this final year project report is my own work and therefore, the matter embodied in it has never been submitted to any University or Institute of higher learning for the award of any degree or diploma.

Name: TUMUSHABE RODGERS.

Signature.....

Date.....

APPROVAL:

This final year project report has been submitted to the department of Water Resources and Mining engineering for examination with the approval of my supervisor.



An investigation on the effect of specific charge on the downstream quarry operations.

Name: MR. TUGUME WYCLIFFE

Signature:

Date:

DEDICATION

I dedicate this report to my beloved mum Mrs. Margret Katureebe for her parental guidance, encouragement and financial support towards my academic challenge. My profound gratitude to her for the care and unflagging assistance she has given me. May Almighty God reward her abundantly.



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ACKNOWLEDGEMENT



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First and foremost, my profound gratitude to God for the strength, courage and gift of life he has given unto me to face this academic challenge.

I am highly indebted to my supervisor, Mr. Tugume Wycliffe for his technical knowledge, inspiration and support leading to the successful completion of my final year project research. I am sincerely thankful to him for his able guidance and pain taking effort in improving my understanding of this project.

I am also grateful to other lecturers in the department of mining and water resources engineering for academic contribution towards completion of this report. An assemblage of this nature could never have been attempted without reference to and inspiration from the works of others, I acknowledge my indebtedness to all of them.

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LIST OF ACRONYMS

kWh/t Kilowatt hour per ton.

ABC Activity-Based Costing.

GPS Global positioning system



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ANFO Ammonium nitrate

UCS Uniaxial compressive strength

Old.LC point Old Line Crushing point.

New.CL point New Line Crushing point.

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