ABH 1600
Box-Hole Borer

Presentation
B McKeown & K Moxham
GM: Marketing and Service
Sandvik Mining and Construction

IN PARTENERSHIP WITH LONMIN PLATINUM

Introduction

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Conventional Box-hole Development

A high risk and arduous occupation -

- Many industry fatalities – Gold and Platinum
- Hazardous work - Heights, confined space, gases, heat etc
- Low productivity - <1m per day, impact on production
- Skills shortage – Rock Drill Operators, average age >48
- Attractive Job - ???????

Introduction

Objectives of this alternate methodology -

Develop a safer and more productive method -

- Zero harm
- Remove workers from a hazardous/arduous work
- No use of explosives
- Hole accuracy improved

Provide cost effective alternative -

- Excavation of Box-holes and Travelling-ways
- Rock cutting and powered by electro-hydraulics
- Have Mobility – Transportable via mine rail
- Accelerate opening up of ore reserves

Specifications

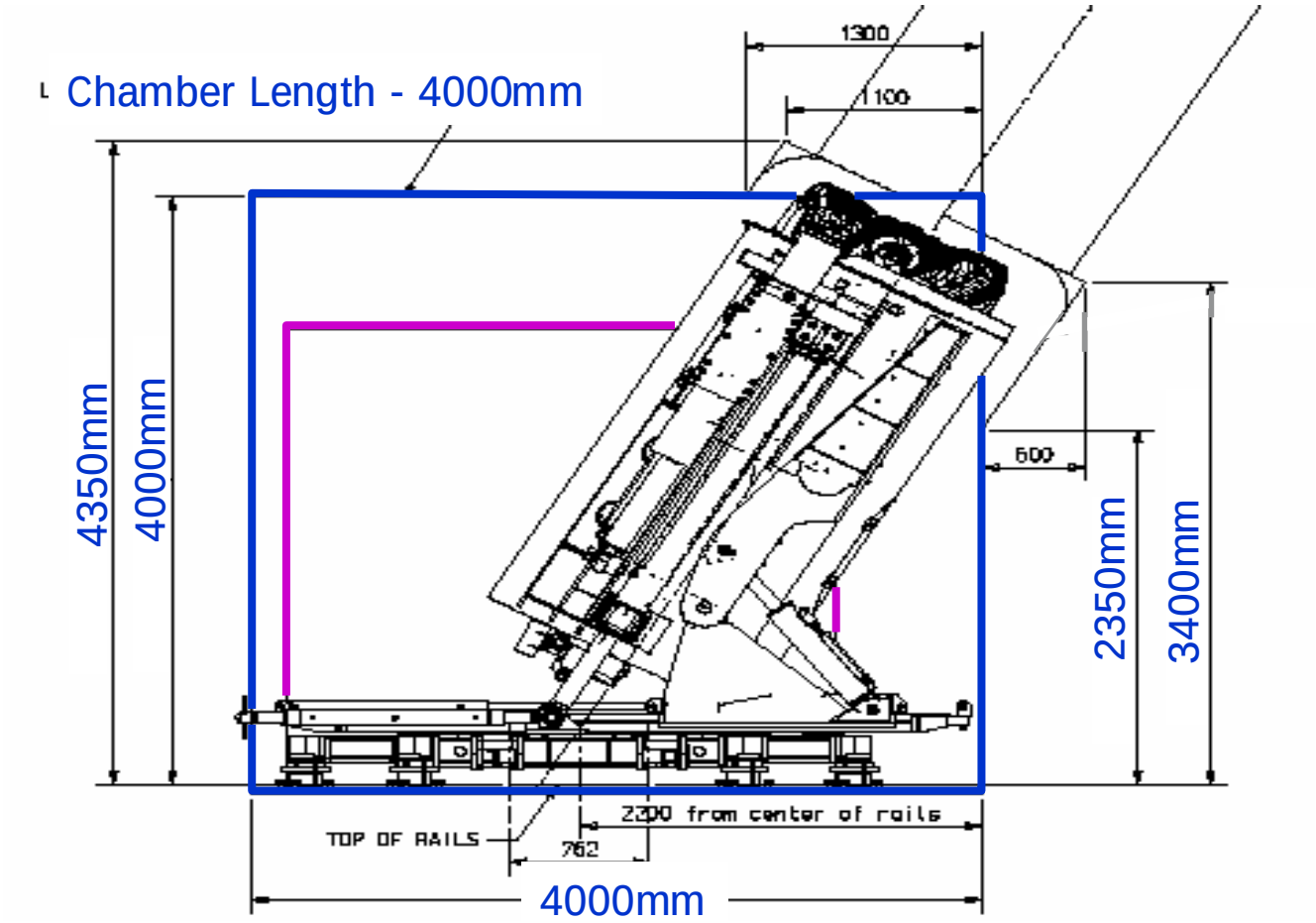
Application:	Excavation of Box-holes and Travel-ways.
Cross-section:	Final Hole Diameter - 1,6m
Length of Hole:	Max 100m ave 25m
Inclination:	35° to 85°
Rock type:	Norite, Poroxonite, Anorthosite, Pegmatiod, UG2/Merensky Reefs
Rock strength:	> 230 MPa
Method:	Railbound Non-explosive continuous rock cutting

Specifications (Continued)

Accuracy:	+/- 500mm over 50m	
Transport:	max. length per unit	4,5 m
	max. width	2,1 m
	max. height from rails	2,05 m
	max. weight per unit	11 tons
Power Supply:	1000V	
Ore Transport:	95 KW Vacuum Cleaner	
Dust Suppression:	20 KW Colliery Scrubber box	

Specifications (Continued)

- Chamber Length - 4000mm



Performance Capacity

Production Rate:	Ave 1.5m/h advance (2.5m/h)
Production per Shift:	6 m Per Shift
Collaring:	5 hours
Setup Time:	6 hours
Set Down Time:	6 hours
Tramming Speed:	12 km/h

Borer in Position

Borer Collaring (Continued)

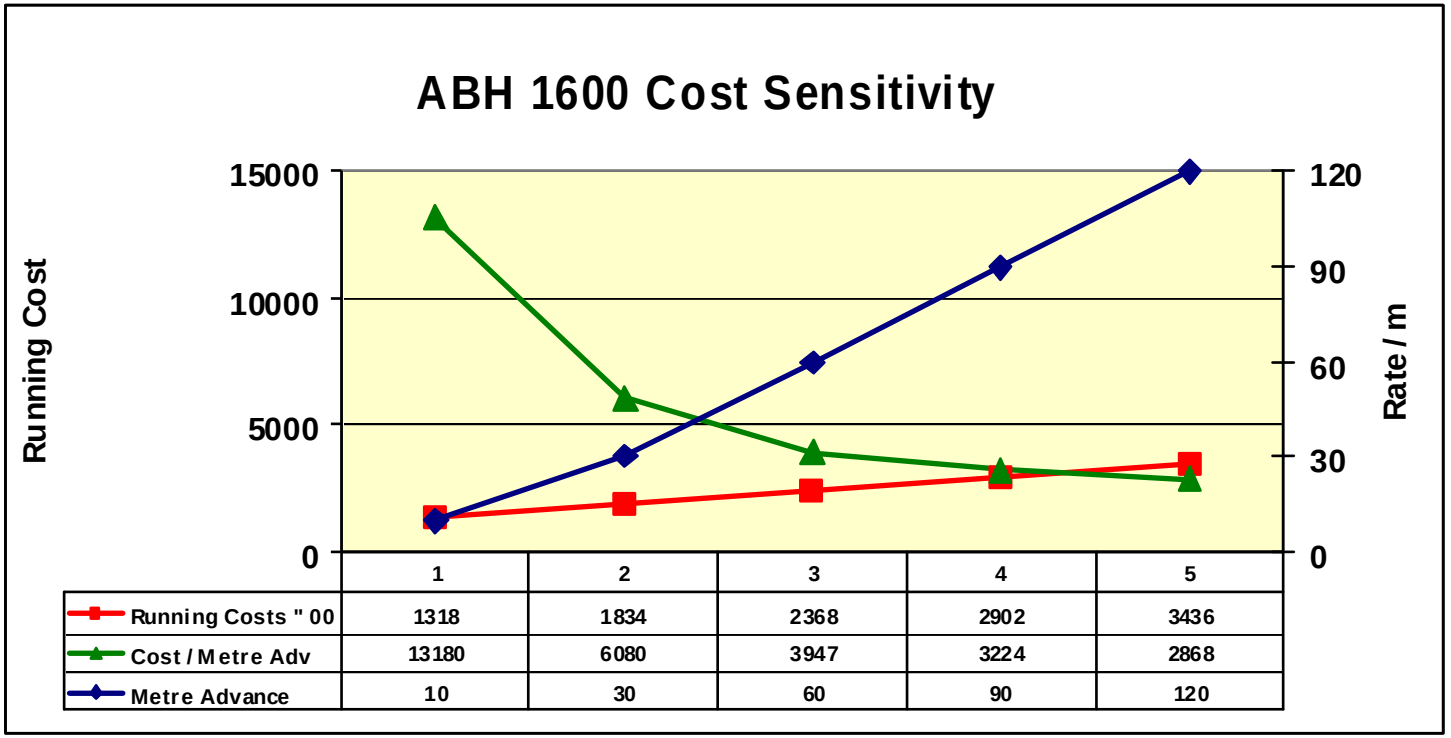
Borer cutting (Continued)

Cutting Chips

Box-hole Borer Performance

Description	Unit	Hole 1	Hole 2	Hole 3	Hole 4	Hole 5	Hole 10
Establishment	Hrs	14:00	11:00	10:40	10:45	09:32	07:40
Collering	Hrs	07:00	06:40	06:20	06:30	06:14	05:32
Boring Hrs	Hrs	07:00	09:47	09:48	09:32	08:37	07:44
Length of Hole	m	8.60	13.60	14.00	14.60	13.80	12.53
Avg Advance Rate	m/hr	1.22	1.43	1.47	1.56	1.65	1.68
Best Advance Rate	m/hr	1.71	1.8	1.87	2.1	2	2.1
De-Establishment	Hrs	14:00	14:00	09:00	09:20	06:15	06:33

Summary Box-hole Sensitivity



Conclusion

Proved a viable alternative -

- Safer
- More productive and cost effective
- Attracts talent – Skills - operator maintainer