



Shotfiring service is provided to MAXAM customers to make their blasting work easier providing expert support in mines, quarries and civil works. Permitting safety assessment and execution are the responsibility of the MAXAM crews and shotfirers. Knowledge of products and customer requirements are on behalf of perfect results.

APPLICATIONS

✗	Open pit mining
✗	Civil works, OP and tunnelling
✗	Underground mining
✗	Quarrying
✗	Underwater works

BENEFITS

The shotfiring service is based on the professionalism of MAXAM personnel in charge of the execution of the work. Some rules covered include:

Safety

The main activity in blasting practice, Safety is covered during shotfiring service.

- ✗ Risk assessment analysis prior to blasting.
- ✗ Comply with MAXAM standards in the planning and execution of blasts.
- ✗ Clearance area calculation.
- ✗ Post blast analysis.

Permits

Previously to the execution, needed permits have to be obtained.

- ✗ Certified shotfirers and blasters.
- ✗ Official permits to do the blast.
- ✗ Blast report and certificates in official and or customer format.

Execution

Professionalism is the golden rule for MAXAM crew during shotfiring service.

- ✗ Knowledge of MAXAM products and blasting technique.
- ✗ Professionalism and expertise.
- ✗ Follow up of blast plan and preparing of blast report.
- ✗ Avoidance and remedial of cut-offs.

Environment

Most of the time, environmental issues have to be considered during shotfiring service.

- ✗ Noise reduction by controlling free face and stemming
- ✗ Vibration control, based in MIC (maximum instantaneous charge) and timing, according to the blast plan.
- ✗ Fumes avoidance, performing the loading according to right procedure mainly in the presence of water.
- ✗ Leaching avoidance, by elimination of explosives spillage.

EQUIPMENT

Equipment used during shotfiring service is divided between; loading equipment (in Bulk operations, MMUs and cassettes) and firing equipment (blasting machines, stand alone or remote ones).

Other auxiliary equipment is used during loading (measuring tape, stemming control pole, etc) and stemming (buckets or stemming machines).

METHODOLOGY

Shotfiring service is performed in different steps, covering the needs of the customer.

- ✗ Definition of blast plan according to blast design
- ✗ Risk Assessment execution with the customer representative and corrections of dangerous items
- ✗ Priming, loading –according to blast plan, indicating changes–, stemming –controlling length–, and tie up –according to timing plan.
- ✗ Clearance area execution according to calculations.
- ✗ Check the blast in order to detect cut-offs and, eventually, remediation of them.
- ✗ Evaluation of blast results.
- ✗ Blast report preparation and sign off.

The documentation generated during shotfiring service is the proof of the work done, measuring the results of the blast in several ways:

- ✗ Explosive and initiation systems used, type and quantity
- ✗ Issues and special remarks during the execution of the blast
- ✗ Results obtained in terms of fragmentation, vibrations, heave, fumes, etc.

The blast report is a complete summary of shotfiring work.



MAXAM

HANSON REDHILL		1514 RL 180, East Face	
Date Fired	30/07/2015	Rock type	Granite
Time Fired	1200pm	Rock Density (g/cc)	2.7
Shoffler:	Scott Hyde 15402	Volume(m ³)	5,382
Technical Services	Mark Palmer	Blasted Tonnes	14532 t
Approved By	Jonathan Nolte	P. Factor (kg/m ³)	1.03 kg/m ³
Burden	2.6 m	Bench height	15.3m
Spacing	2.7 m	Avg Hole Length	16.6 m
Stem Hit	2.5 m	Hole Angle	10 deg
Diameter	89 mm	No of Holes	50
Subdrill	1 m	Total Metres	831 m

BULK EXPLOSIVES		BOOSTERS	
RIOFLEX MX 10000	5560 kg	RIOBOOSTER HE 150G	40
Rioflex Inhole Density MIC (kg)	1.26 kg 260.0 kg	RIOBOOSTER HP 400G	60
DOWNLINES		SURFACE CONECTORS	
RIONEL MS 7M 500MS	40	RIONEL SCE 6M 17MS	1
RIONEL MS 18M 450MS	60	RIONEL SCE 6M 25MS	12
		RIONEL SCE 6M 42MS	25
		RIONEL SCE 6M 67MS	11
LEAD IN LINES		OTHER	
RIONEL LLE 500M	1		

Environmental monitor results			
Location	Ground Vibration	Air Overpressure	Distance
Owl Rock	13.78 mm/s	113.5 dB	402 m
Midway	26.52 mm/s	115.8 dB	225 m
Williams Rd	0.54 mm/s	97.8 dB	2048 m

The information in this document is provided for information purposes only. MaxamCorp International, S.L. and/or its affiliates ("MAXAM") cannot, and do not, guarantee the information in this document is accurate and complete, and MAXAM shall not be liable for the contents of this document and/or for the consequences of any act or omission taken in reliance on the information contained herein. This information may be changed by MAXAM at any time. Please note that the contents of this document do not constitute a contractual offer and shall not be considered as any sort of contractual commitment on the part of MAXAM. If you wish to contract any of the services provided by MAXAM, you should contact your nearest MAXAM office.

version 1.0 January 2016