



SHOTPlus™

SHOTPlus Standard
Use of Electronic Blasting Tools

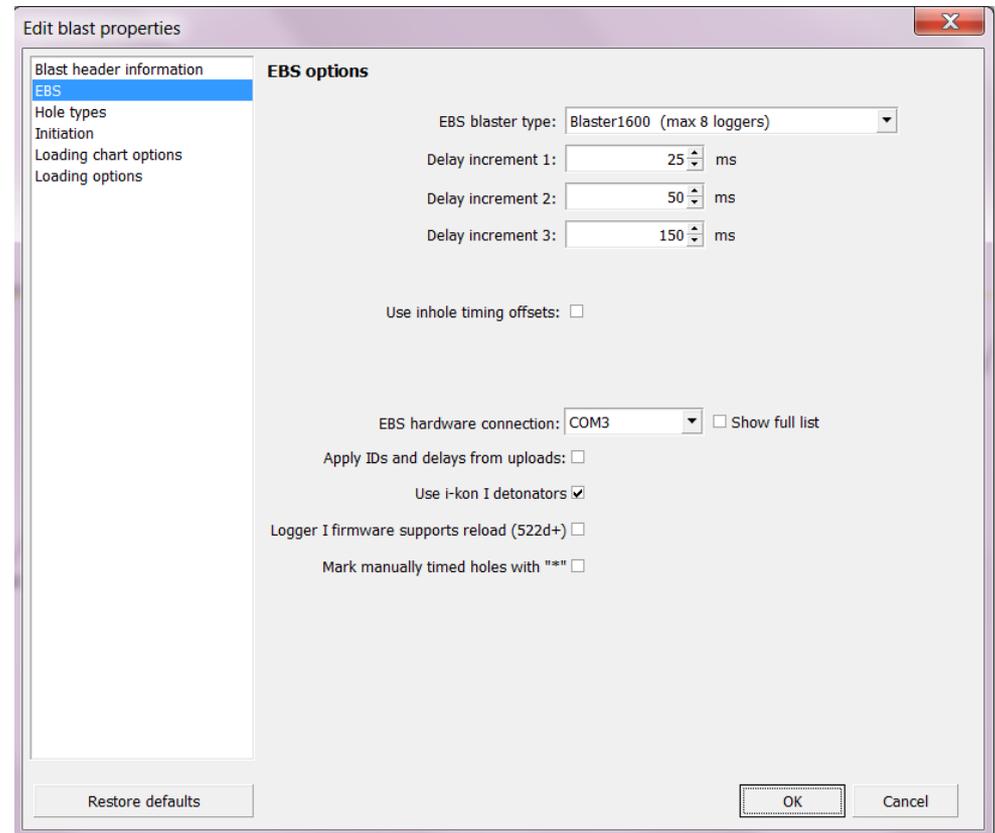
March 2017



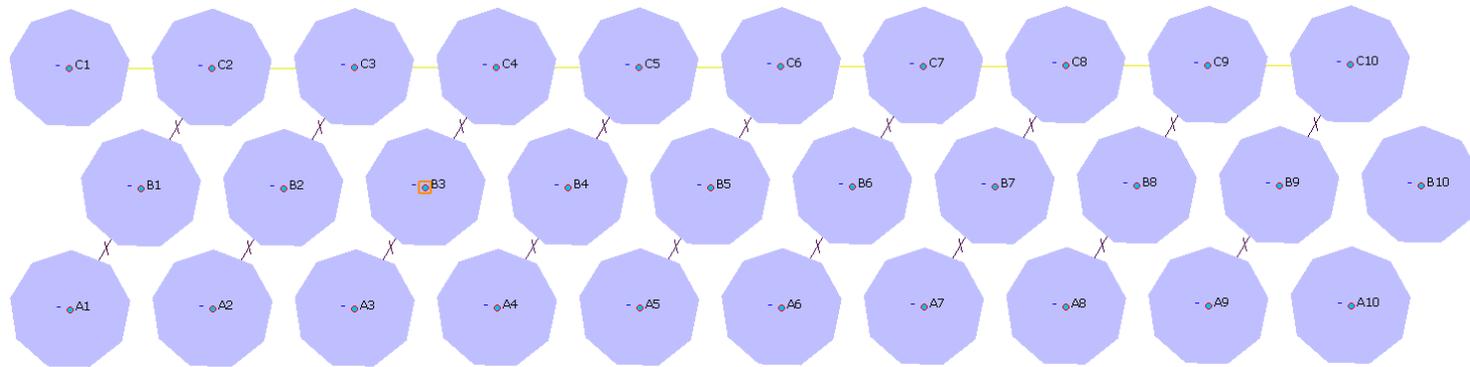
SET-UP OPTIONS

Users can define EBS properties in **Blast Properties**

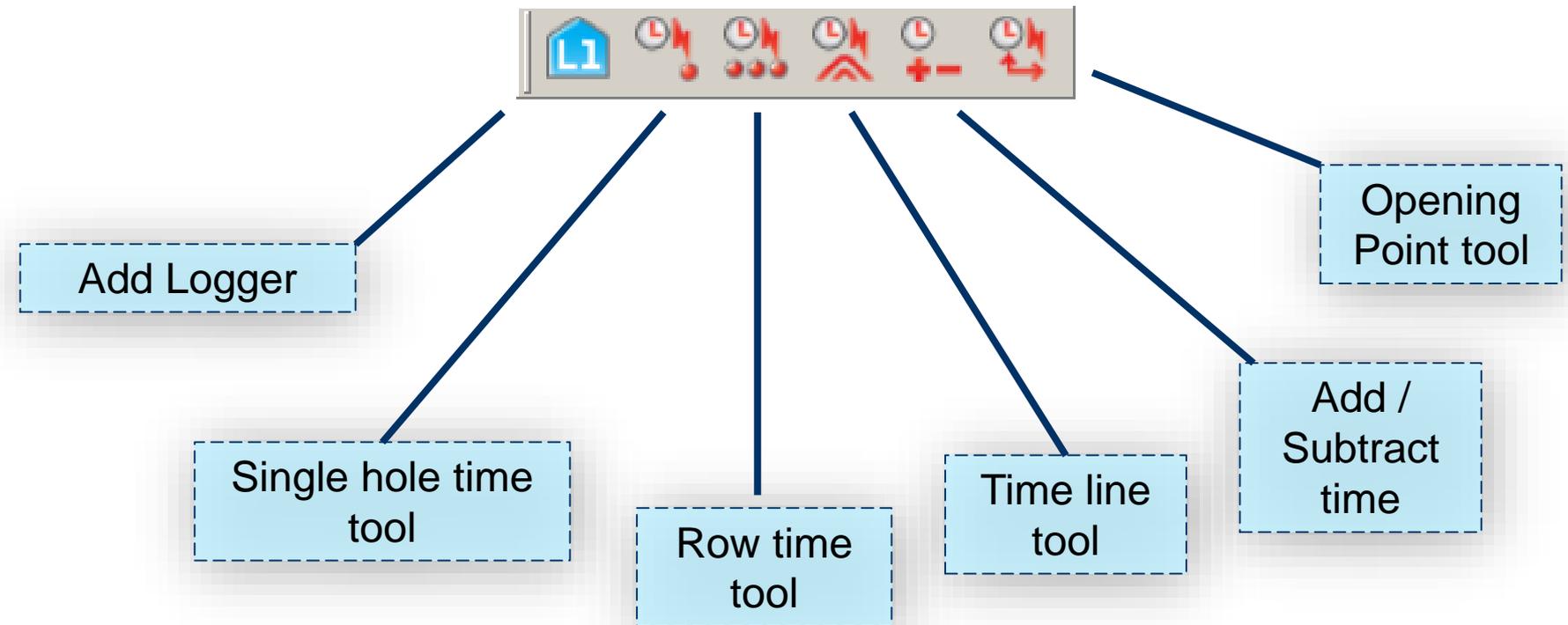
- Blaster Selection
- Hole to hole time increments
- Define COM ports
- Use of inhole timing offsets
- Apply use of logger upload information



- Search radius for hook-up of non-aligned rows



EBS TOOL ICONS

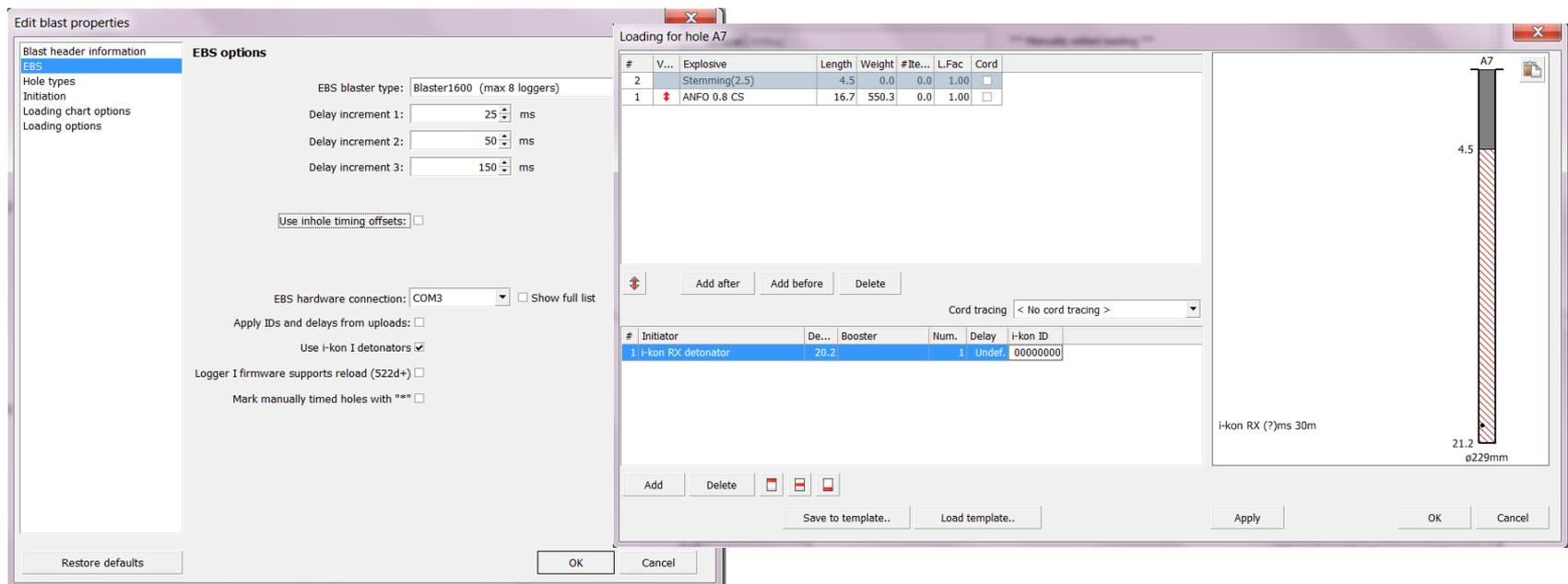


IN-HOLE OPTIONS

- Holes must be loaded with EBS product before timing design can be applied

Option 1

- Load hole **without** time off-sets



The screenshot displays two overlapping software windows. The 'Edit blast properties' window on the left shows the 'EBS options' tab with settings for 'Blaster1600', delay increments of 25, 50, and 150 ms, and a checked 'Use i-kon I detonators' option. The 'Loading for hole A7' window on the right shows a table of explosive charges and a diagram of a hole.

#	V...	Explosive	Length	Weight	#It...	L.Fac	Cord
2		Stemming(2.5)	4.5	0.0	0.0	1.00	<input type="checkbox"/>
1	↓	ANFO 0.8 CS	16.7	550.3	0.0	1.00	<input type="checkbox"/>

#	Initiator	De...	Booster	Num.	Delay	i-kon ID
1	i-kon RX detonator	20.2		1	Undef.	00000000

The diagram on the right shows a vertical hole labeled 'A7' with a diameter of 'ø229mm'. It features a 4.5m section of stemming at the top and a 21.2m section of ANFO below. The text 'i-kon RX (?)ms 30m' is visible near the bottom of the hole.

IN-HOLE OPTIONS

Option 2

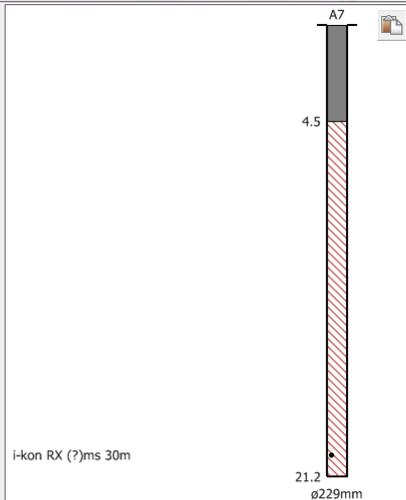
- Load hole with time off-sets

Loading for hole A7

#	V...	Explosive	Length	Weight	#Ite...	L.Fac	Cord
2		Stemming(2.5)	4.5	0.0	0.0	1.00	<input type="checkbox"/>
1	↓	ANFO 0.8 CS	16.7	550.3	0.0	1.00	<input type="checkbox"/>

Cord tracing < No cord tracing >

#	Initiator	De...	Booster	Num.	Delay	Offset	i-kon ID
1	i-kon RX detonator	20.2		1	Undef.	8	00000000



Edit blast properties

Blast header information

EBS

Hole types

Initiation

Loading chart options

Loading options

EBS options

EBS blaster type: Blaster1600 (max 8 loggers)

Delay increment 1: 25 ms

Delay increment 2: 50 ms

Delay increment 3: 150 ms

Use inhole timing offsets:

EBS hardware connection: COM3 Show full list

Apply IDs and delays from uploads:

Use i-kon I detonators

i-kon I firmware supports reload (522d+)

Mark manually timed holes with "***"

SINGLE HOLE TIME SET TOOL



EBS timing

Time

No change
 Increment
 Decrement

25 ms
 50 ms
 150 ms

...

Inhole timing determined by Initiator offset times.

Display Hole View

10 A1 35 A2 60 A3 ? A4 ? A5 ? A6 ? A7 ? A8 ? A9 ? A10

- Single click on each hole to apply time shown in the **Time box**
- Time will increase / decrease for next hole depending on increments set
- Additional detonators in the hole will have time increments as specified by the **in-hole delays**

ROW TIME SET TOOL



EBS timing

Time

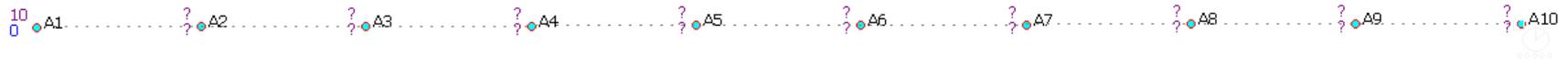
No change
 Increment
 Decrement

25 ms
 50 ms
 150 ms

...

Inhole timing determined by Initiator offset times.

Display Hole View



EBS timing

Time

No change
 Increment
 Decrement

25 ms
 50 ms
 150 ms

...

Inhole timing determined by Initiator offset times.

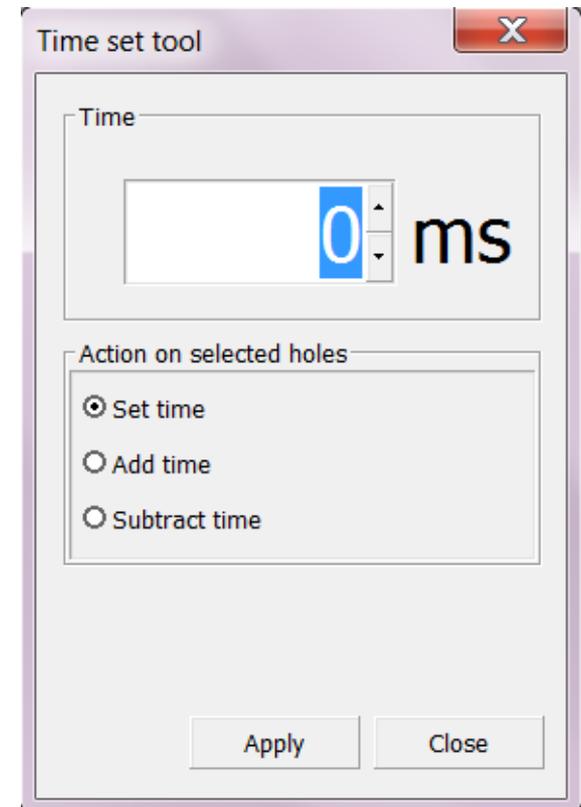
Display Hole View



- Set required search radius
- Click on first hole and drag away. Click on last hole
- Time in box will apply to first hole
- Time will increase / decrease for next hole depending on increments set

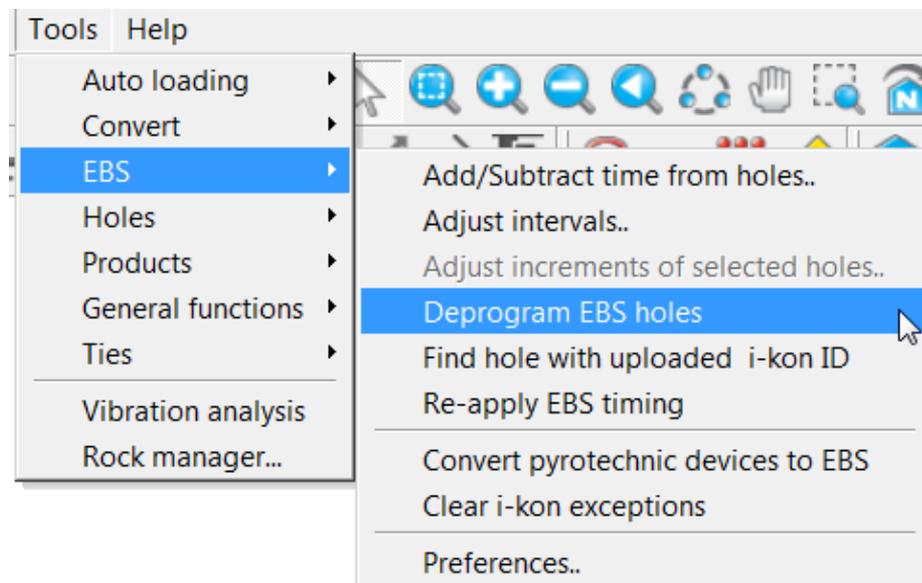
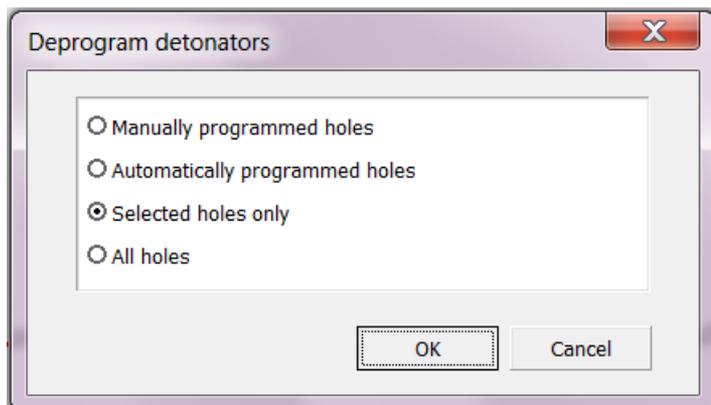
TIME SET TOOL

- Value will apply to the next clicked hole
- Set time: applies time in text box to the dets (according to in-hole offsets)
- Add time/Subtract time: adds or subtracts value in the text box from the current time of the hole
- Value can be set by
 - **Up / Down arrows** – increment / decrement by selected value
 - **Typing** a value in the box
 - **Ctrl - Click** on a timed hole to copy this time to the input box



DEPROGRAM EBS TIMES

- Removes times applied to **All, Selected, Manually Programmed** or **Automatically Programmed** holes



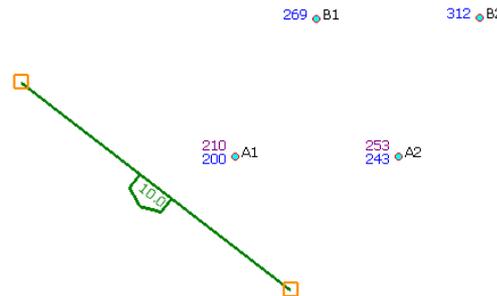
TIME LINE TOOL

Two options for time line tool



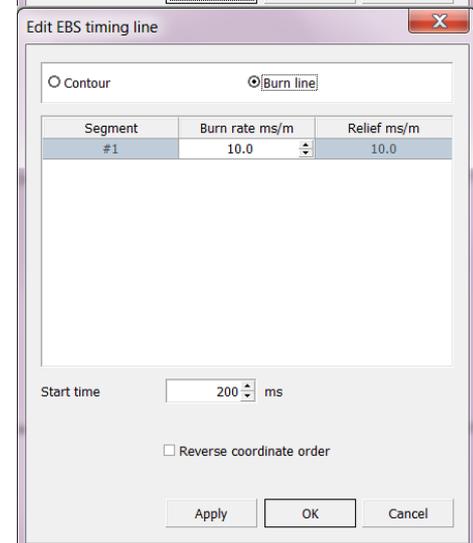
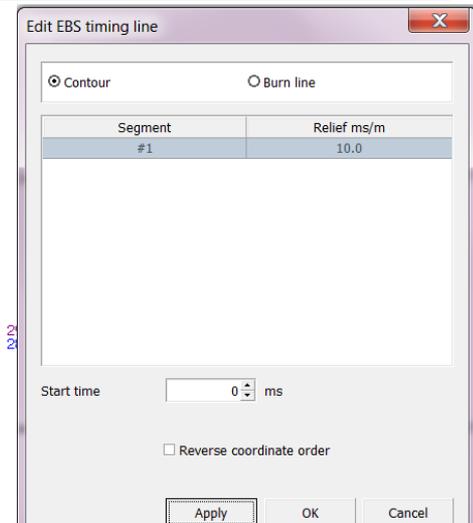
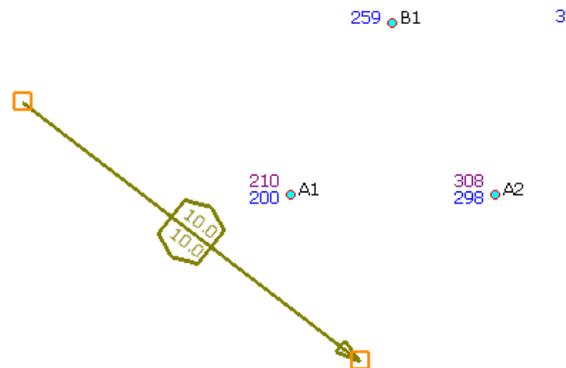
- **Contour Line**

Blast movement towards a line specified by burden relief



- **Burn Line**

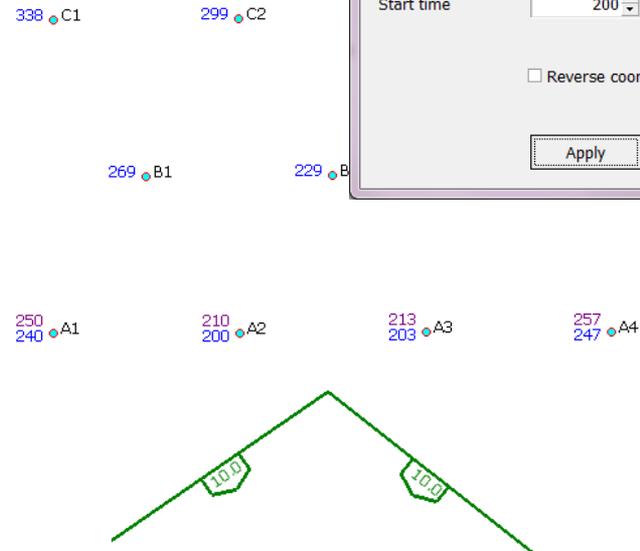
Blast movement along and towards a line



TIME LINE TOOL - CONTOUR



- Draw line
 - 3 segments only
 - blast moves **towards left** of line as drawn
- Select line type
 - **contour** or burn line
- Specify **burden relief** for each line segment
 - in milliseconds per metre (**ms/m**)
- Input **start time**



X

Contour
 Burn line

Segment	Relief ms/m
#1	10.0
#2	10.0

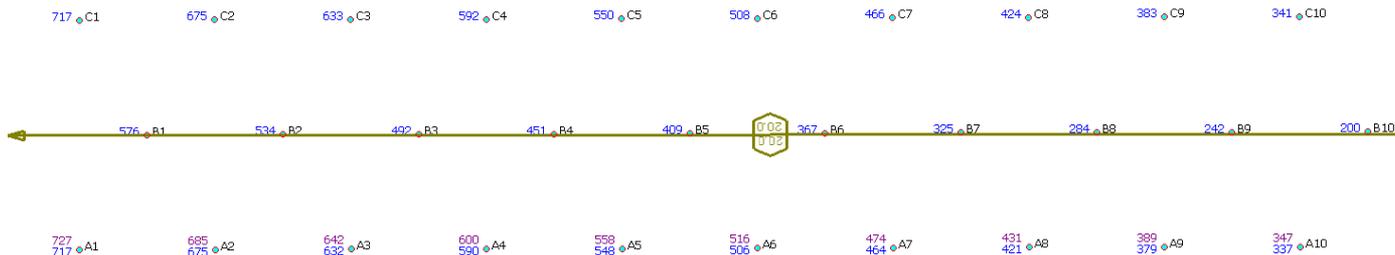
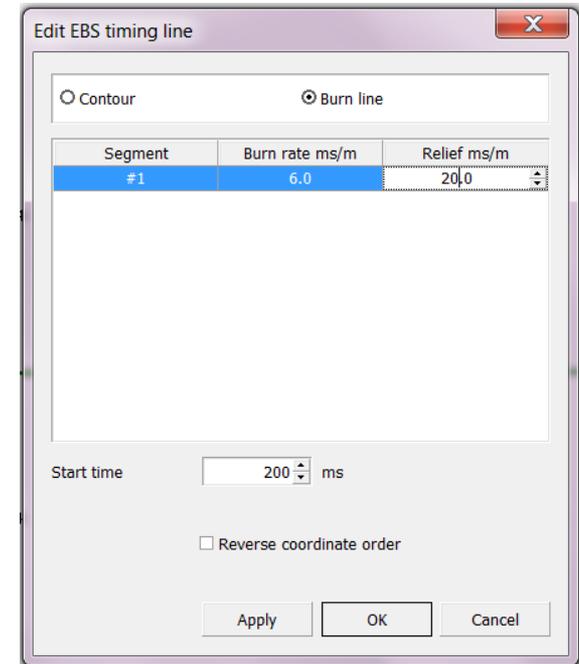
Start time ms

Reverse coordinate order

TIME LINE TOOL – BURN LINE

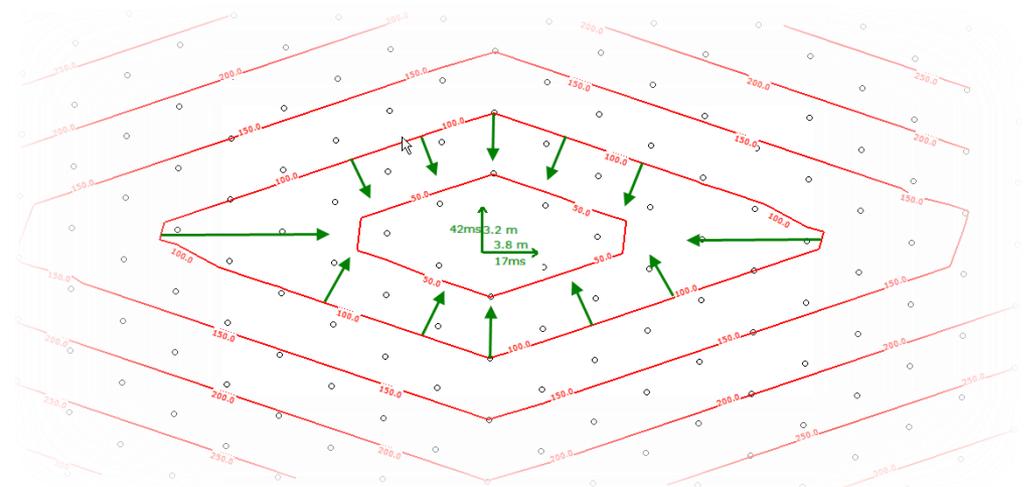


- Draw line
 - 3 segments only
 - blast moves **towards start** of line
- Select line type
 - contour or **burn line**
- Specify **burn rate** and **relief** for each line segment
 - in milliseconds per metre (**ms/m**)
- Input **start time**



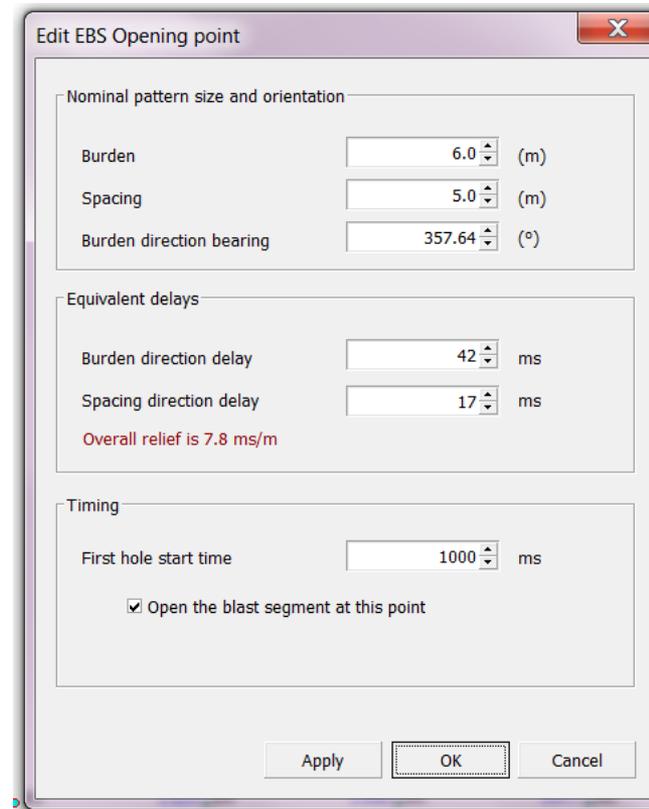
OPENING POINT TOOL

- **Opening Point tool**
Blast movement towards a point specified in the blast.
Movement orientation can be changed with **relief timing** in two directions

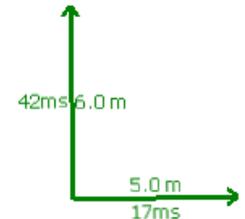


OPENING POINT TOOL

- Open tool and specify
 - burden
 - spacing
 - burden direction
 - required burden / spacing times
 - start time
- Place opening point on plan
 - adjust location
 - adjust rotation to suit

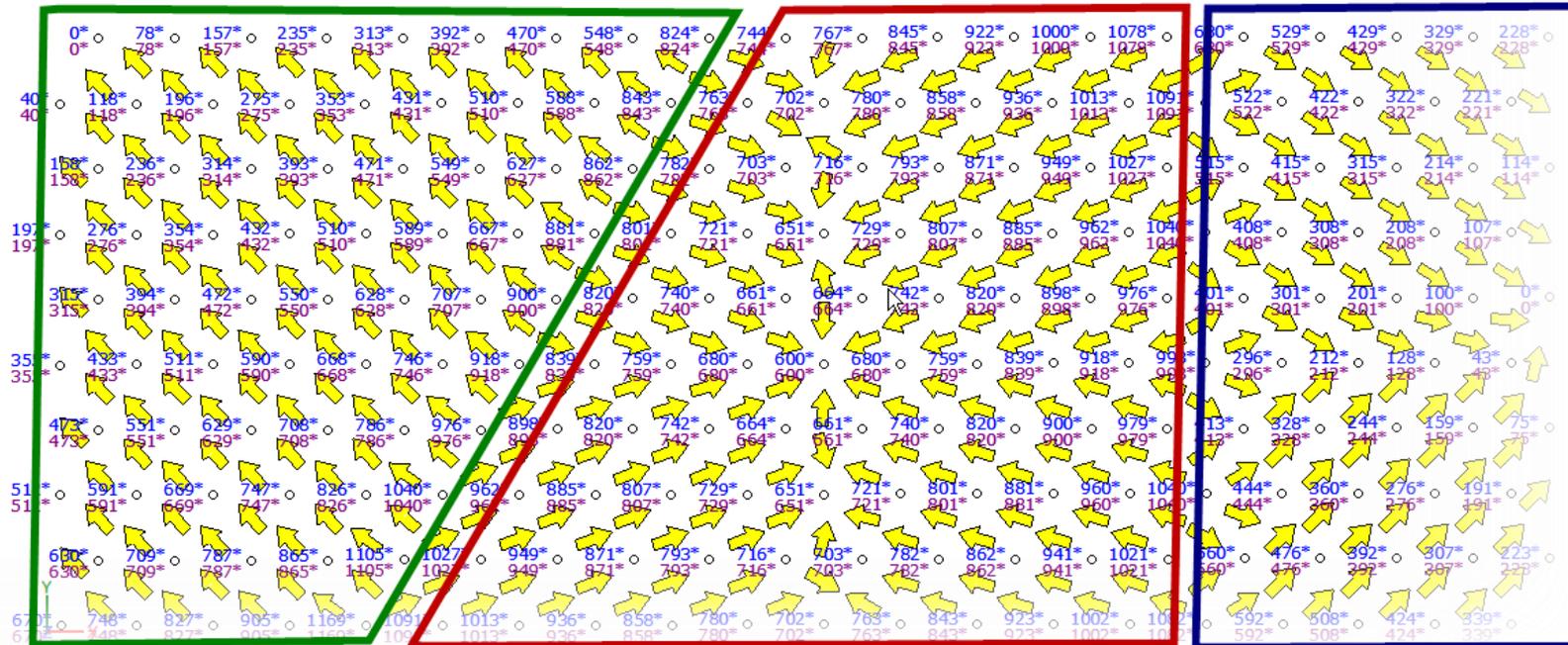


Section	Parameter	Value	Unit
Nominal pattern size and orientation	Burden	6.0	(m)
	Spacing	5.0	(m)
	Burden direction bearing	357.64	(°)
Equivalent delays	Burden direction delay	42	ms
	Spacing direction delay	17	ms
	Overall relief	7.8	ms/m
Timing	First hole start time	1000	ms
	Open the blast segment at this point	<input checked="" type="checkbox"/>	



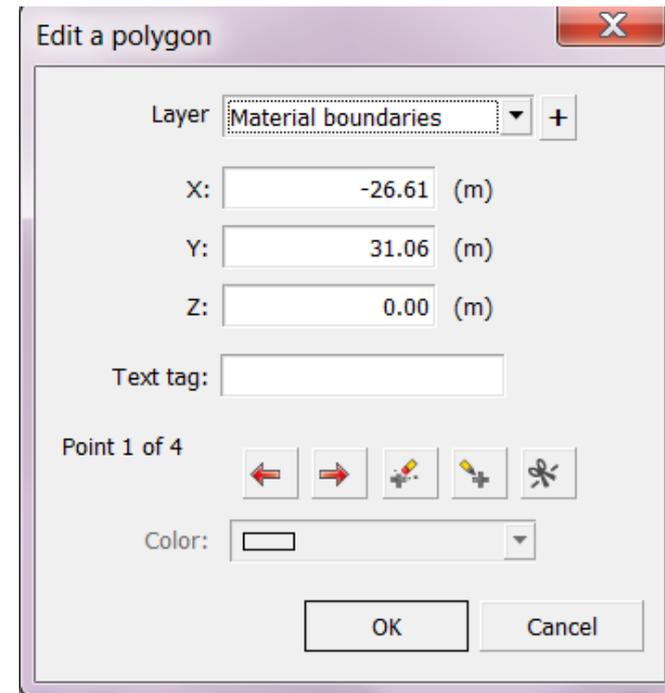
MATERIAL BOUNDARY

- **Confines** application of time tool **within a polygon**
- **Multiple** polygons can be used



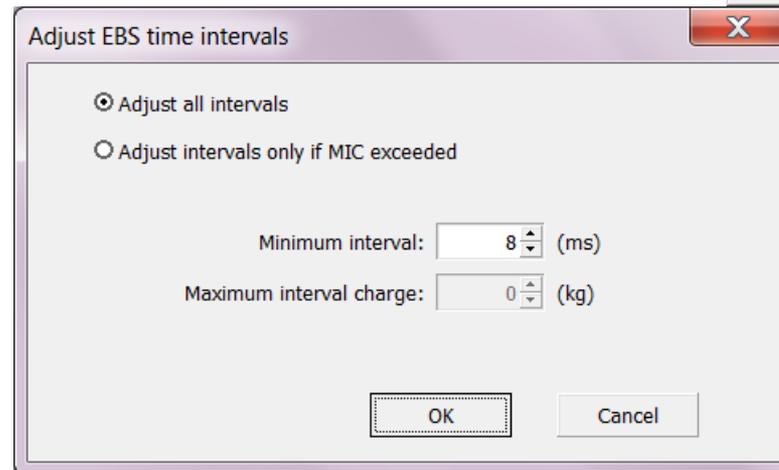
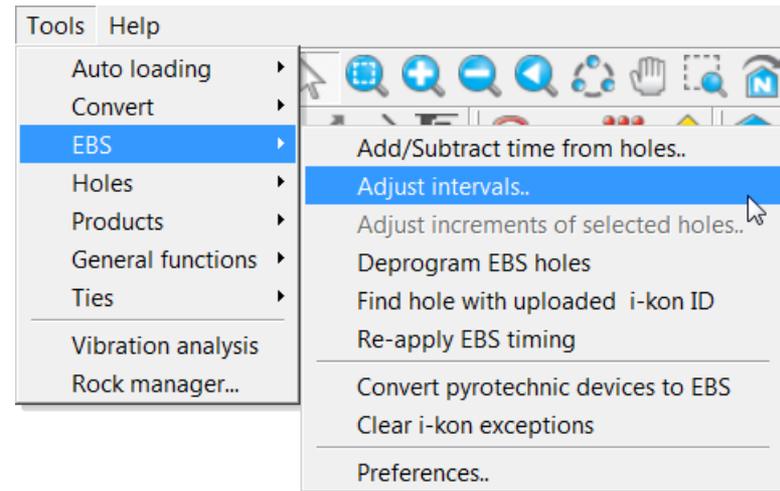
MATERIAL BOUNDARY

- Draw a polygon around the required timing zone
- Change polygon to **Material boundaries** layer



ADJUST INTERVALS

- Adjusts the timing intervals of a blast to a specified **time window**
- Adjusts timing intervals based on **charge weight**



EBS LEAD-IN TOOL

- Used to prepare logging plans
- Add to starting hole
- Select logger #
- Add description



Add new EBS lead-in

Logger 1
 Logger 2
 Logger 3
 Logger 4
 Logger 5
 Logger 6
 Logger 7
 Logger 8

Logger type: I-kon logger 1

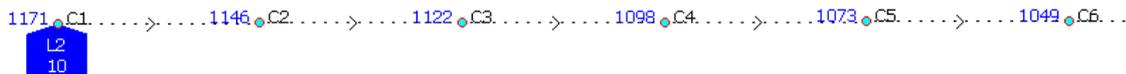
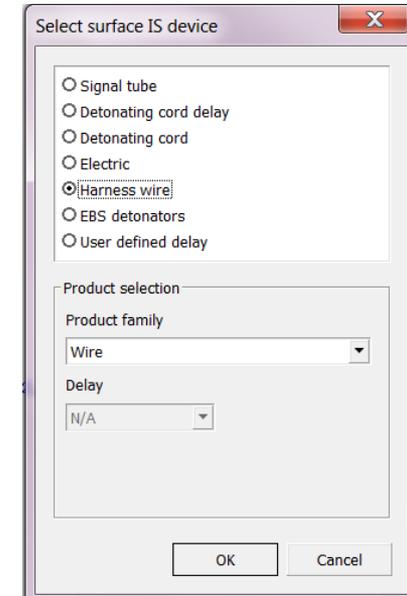
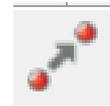
Description: Row A

OK Cancel

1171 C1	1146 C2	1122 C3	1098 C4	1073 C5	1049 C6	1024 C7	1000 C8	1024 C9	1049 C10
1193 B1	1170 B2	1147 B3	1123 B4	1100 B5	1077 B6	1054 B7	1054 B8	1078 B9	1103 B10
1257 A1 1247 A1	1234 A2 1224 A2	1210 A3 1200 A3	1187 A4 1177 A4	1164 A5 1154 A5	1141 A6 1131 A6	1118 A7 1108 A7	1095 A8 1085 A8	1118 A9 1108 A9	1142 A10 1132 A10

TIE-UP

- Adds ***Harness Wire*** to the plan
- Provides **hole allocation** to loggers
- Calculates detonators per logger
- Creates a **logging path** for Printout or Logger download



LOGGING PLANS

- Logging reports can be printed
- Logging tables can be downloaded to Loggers for SHOTPlus logging mode.

EBS logging summary

i-kon logger **L1** i-kon logger model **i-kon logger I** COM3 ... Export to Logger Import from Logger

#Logged dets 0 #Listed dets 30

#	Row	Hole	Det	Delay	Det ID	Status	Flag
1	A	1	1	1247	?	Not tested	Not Logged
2	A	1	2	1257	?	Not tested	Not Logged
3	A	2	1	1224	?	Not tested	Not Logged
4	A	2	2	1234	?	Not tested	Not Logged
5	A	3	1	1200	?	Not tested	Not Logged
6	A	3	2	1210	?	Not tested	Not Logged
7	A	4	1	1177	?	Not tested	Not Logged
8	A	4	2	1187	?	Not tested	Not Logged
9	A	5	1	1154	?	Not tested	Not Logged
10	A	5	2	1164	?	Not tested	Not Logged
11	A	6	1	1131	?	Not tested	Not Logged
12	A	6	2	1141	?	Not tested	Not Logged
13	A	7	1	1108	?	Not tested	Not Logged
14	A	7	2	1118	?	Not tested	Not Logged

Logger Report **Logger L1** 

file for sp training materials.spf (Rev. 120) Page 1 of 2

Number dets: 30	Harness length (m)	132.9		
Name	Date	Time	Start	End
Actual # dets logged	Leakage	Errors		
Harness wire used				
Comments				

Hole ID	Det	Delay (ms)	Incr	Position on harness	Verify delay	Comments
A1	1	1247				
	2	1257	+10			
A2	1	1224	-33			
	2	1234	+10			
A3	1	1200	-34			
	2	1210	+10			
A4	1	1177	-33			
	2	1187	+10			
A5	1	1154	-33			
	2	1164	+10			
A6	1	1131	-33			
	2	1141	+10			
A7	1	1108	-33			
	2	1118	+10			
A8	1	1085	-33			
	2	1095	+10			
A9	1	1108	+13			
	2	1118	+10			

EBSDownloadikon.en

LOGGING & BLASTING RECORDS



- Records can be up-loaded from Loggers
- Logger & records can be printed or saved with the file

#	Hole ID	Detonator	Delay (ms)	Det ID	Status	Exception
1	V1	1	1000	267C4E19	Det Programmed	
2		2	1067	25550E5E	Det Programmed	
3	V2	1	1076	267C59E4	Det Programmed	
4		2	1143	25550E60	Det Programmed	
5	V3	1	1149	267C4E2F	Det Programmed	
6		2	1216	25550E58	Det Programmed	

EBS firing summary

i-kon logger | L8 | #Connected dets 188 | Upload | COM3 | Preview | Print All | Close | Download | Upload

#	Row	Hole	Det	Delay	Det ID	Flag	Status
1	N	13	1		1192 3BAED	OK	Det Programmed
2	M	1	1		1190 347B2	OK	Det Programmed
3	M	2	1		1150 34B40	OK	Det Programmed
4	M	3	1		1120 3B133	OK	Det Programmed
5	M	4	1		1072 33C19	OK	Det Programmed
6	M	4	2		1070 34496	OK	Det Programmed
7	M	5	1		1064 33FF2	OK	Det Programmed
8	M	5	2		1062 34646	OK	Det Programmed
9	M	6	1		1009 34613	OK	Det Programmed
10	M	7	1		1004 347DF	OK	Det Programmed
11	M	8	1		1012 33C29	OK	Det Programmed
12	M	8	0		1014 34592	Extra Det	Det Programmed
13	M	9	1		1077 33C2E	OK	Det Programmed
14	M	9	2		1075 3545D	OK	Det Programmed

Abort always

Fired: 30.Nov.16 am 10:21:12
Loggers: 8 Total dets: 707

LOGGER ID: 1	DETS: 83	ERRORS: 0	Current: 1.1 mA	SN: 001254	Version: 05.22k
LOGGER ID: 2	DETS: 86	ERRORS: 0	Current: 1.3 mA	SN: 002925	Version: 05.22k
LOGGER ID: 3	DETS: 87	ERRORS: 0	Current: 1.1 mA	SN: 000831	Version: 05.22k
LOGGER ID: 4	DETS: 91	ERRORS: 0	Current: 1.3 mA	SN: 002952	Version: 05.22k
LOGGER ID: 5	DETS: 89	ERRORS: 0	Current: 1.2 mA	SN: 003153	Version: 05.22k
LOGGER ID: 6	DETS: 89	ERRORS: 0	Current: 1.8 mA	SN: 003152	Version: 05.22k
LOGGER ID: 7	DETS: 89	ERRORS: 0	Current: 5.6 mA	SN: 001653	Version: 05.22k
LOGGER ID: 8	DETS: 93	ERRORS: 0	Current: 4.5 mA	SN: 002768	Version: 05.22k

by ORICA

Finished upload

