



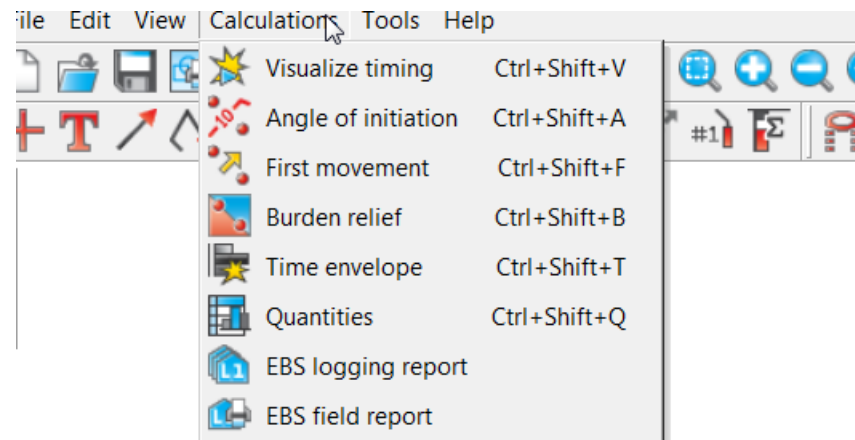
SHOTPlus™

SHOTPlus Standard
Calculations

July 2017

CALCULATION OPTIONS

- **Calculations** are found under the calculations menu.
 - Visualise timing
 - Angle of initiation
 - First movement
 - Burden relief
 - Time Envelope
 - Quantities
 - EBS logging report
 - EBS field report



VISUALISE TIMING

- Allows the sequence of the blast to be played
- to check **firing sequence**
- check **burning front**
- sequence **step through** using the space bar
- viewing at 5 different **speeds**



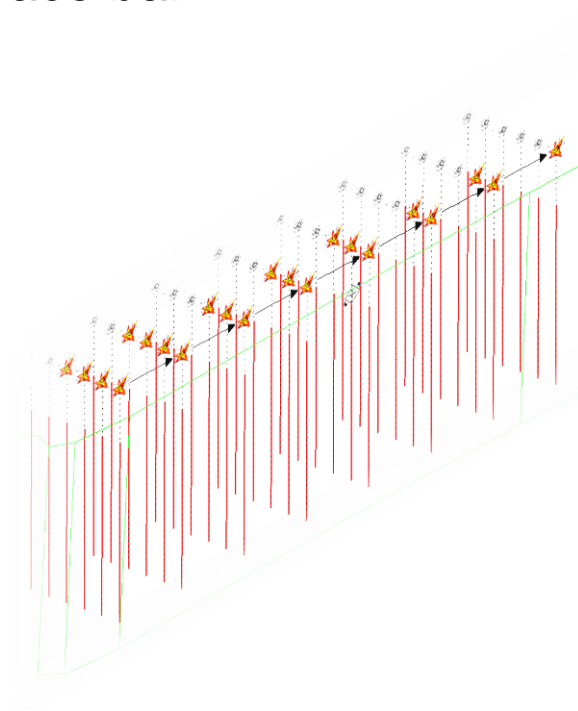
Visualise timing



= surface initiation firing



= hole firing at collar



VISUALISE TIMING OPTIONS

Play Controls



- Play and pause buttons
- Time bar and current **blast duration indicator**
- **Space bar** to pause and **jog** blast forward
- **Jog value** depend on play speed selected
 - **Speed** 1 = 5 ms
 - › 2 = 10 ms
 - › 3 = 20 ms
 - › 4 = 50 ms
 - › 5 = 100 ms



Visualise timing

VISUALISE TIMING OPTION

Viewing and volume controls



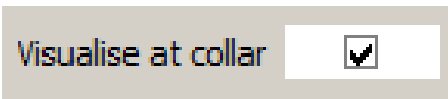
Visualise timing



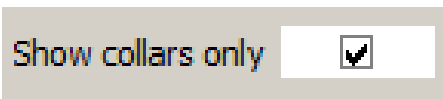
- Shows same view as **Design Window**



- Toggle play back **sound ON / OFF**



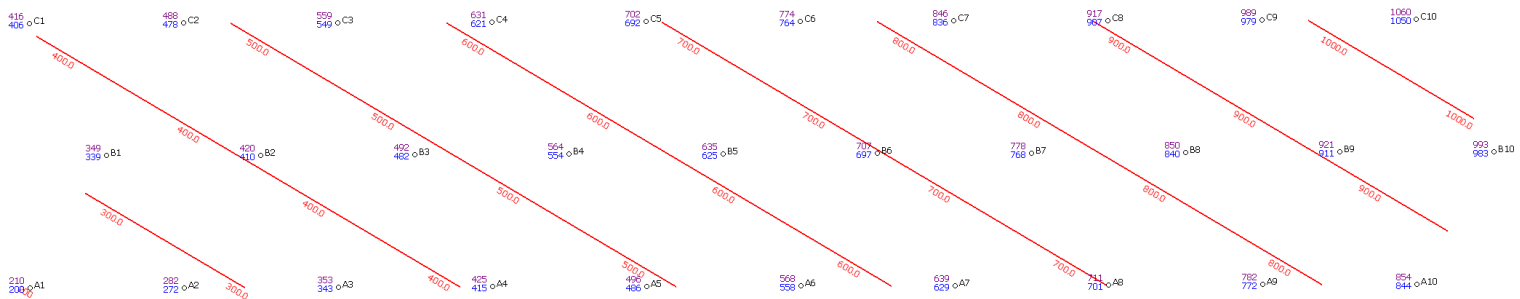
- Shows **hole flashes** at collar or charge track



- Shows either **blastholes only** or other detail from the **design screen**

ANGLE OF INITIATION

- Shows **time contours** on the design
- time contours are drawn through points of equal time
- used to indicate **poor** or **out of sequence** initiation design
- used to indicate firing direction and material movement
- used to indicate time relief within the blast



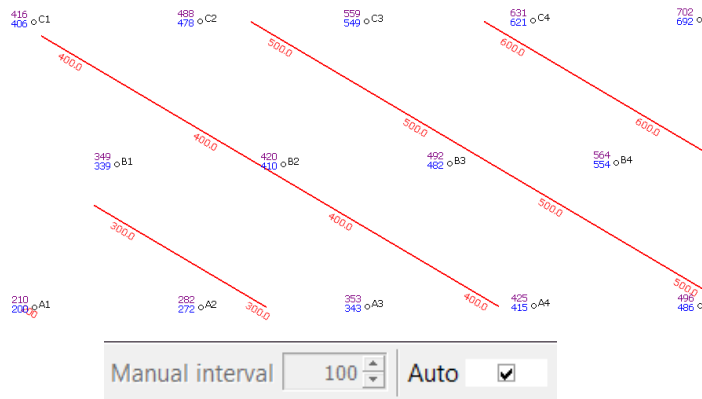
ANGLE OF INITIATION

- Contour intervals can be set either Manually or Automatically

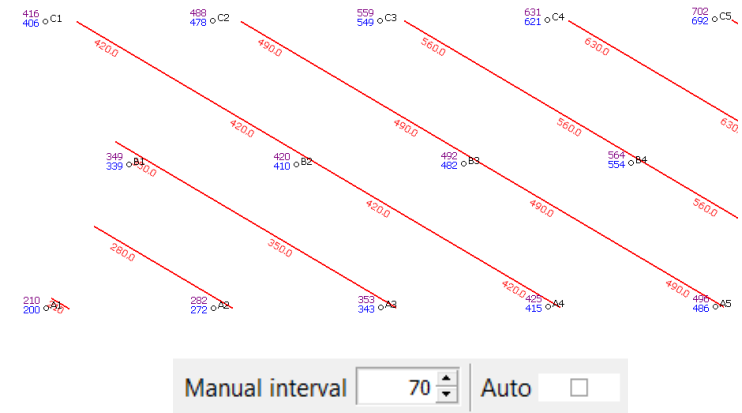


Angle of
initiation

Manual



Auto

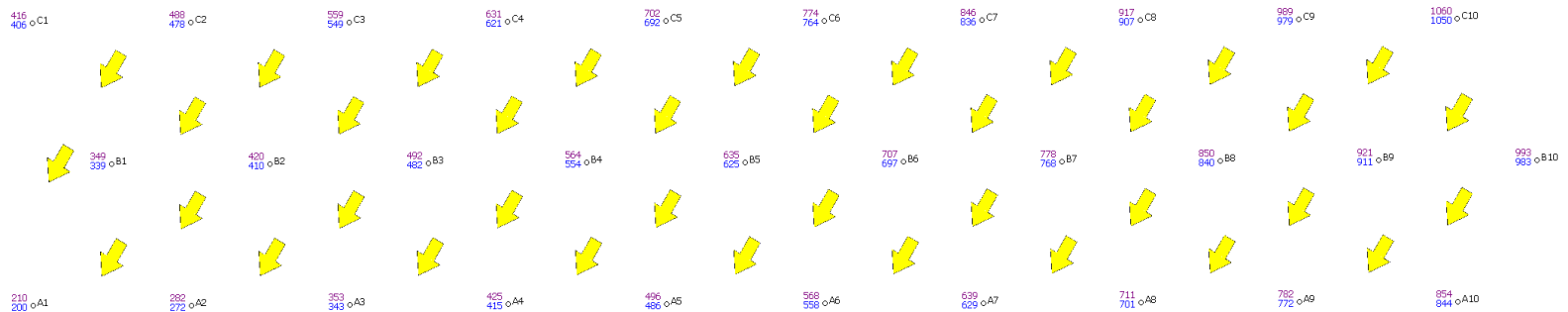


FIRST MOVEMENT



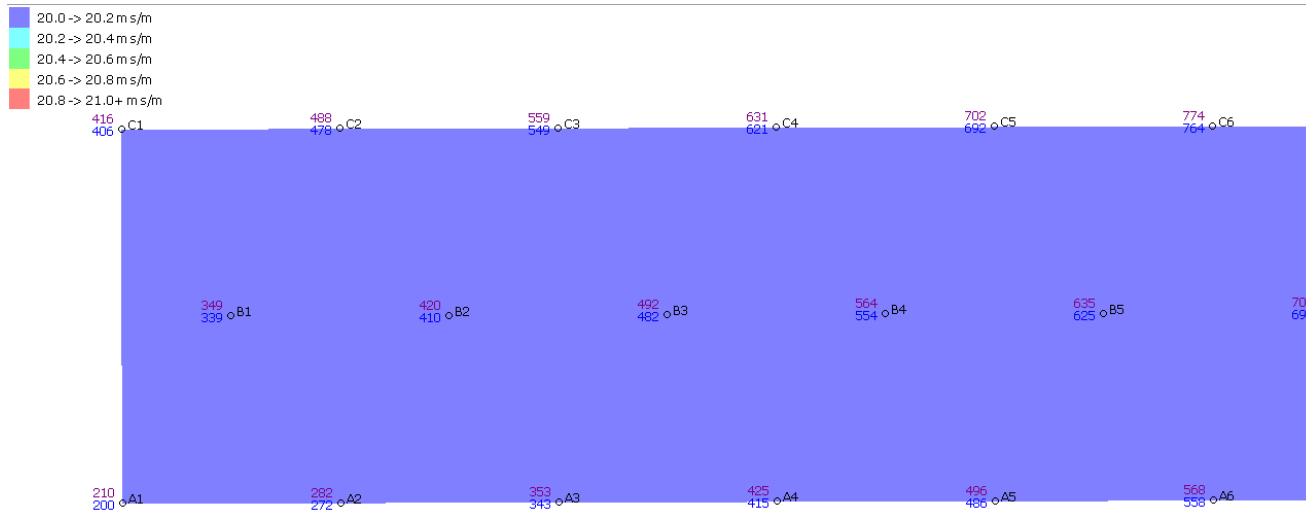
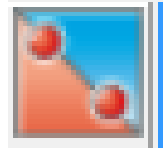
First
movement

- Calculates notional direction of blast movement perpendicular to time contours



BURDEN RELIEF

- Calculates burden relief in the firing direction
- Burden relief is shown in milliseconds per metre of burden (ms/m)
- Used to highlight any anomalies in the initiation sequence or poor relief

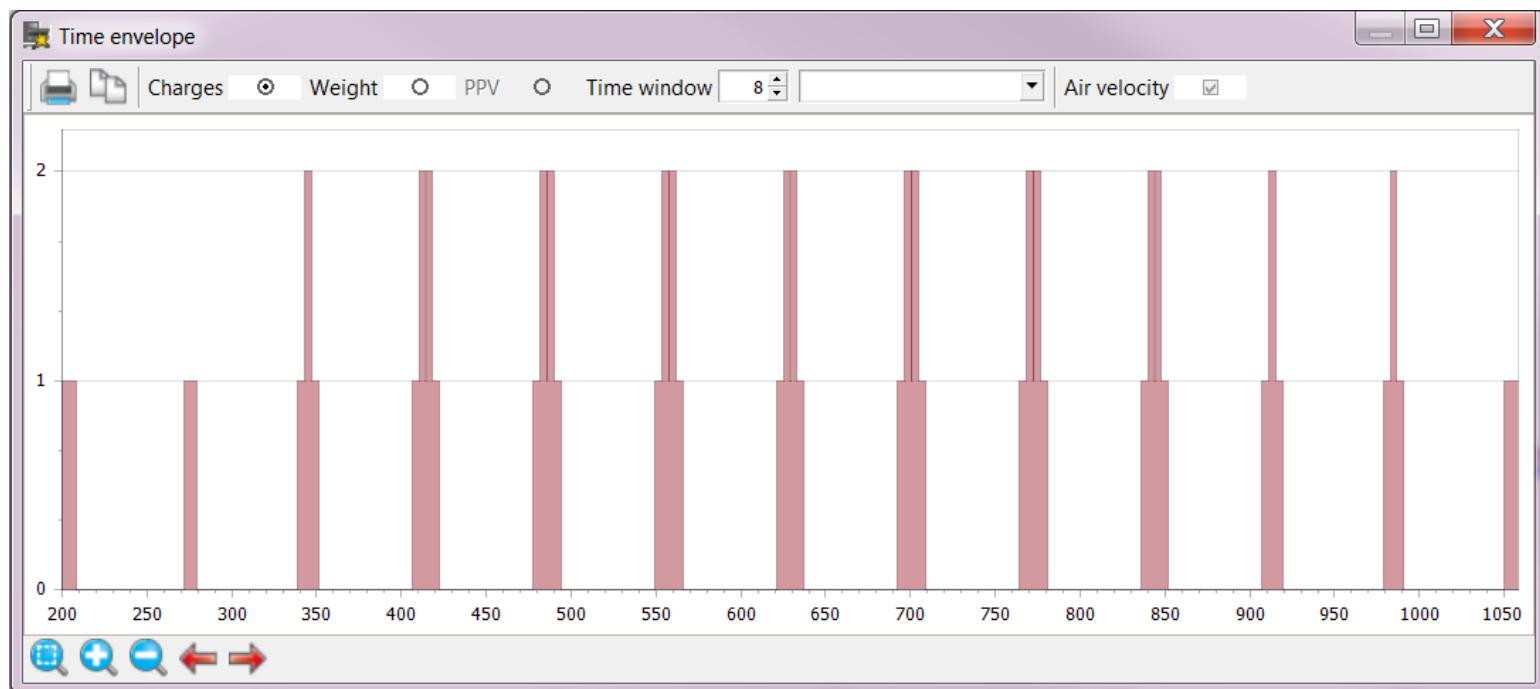


TIME ENVELOPE



Time envelope

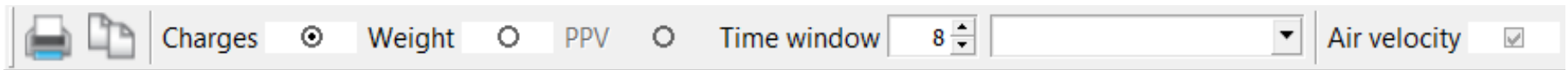
- Shows the number of charges or explosive weight firing within a specified time window



TIME ENVELOPE



Time envelope



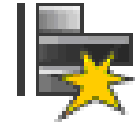
- Time window can be **adjusted** to user requirements
- Viewing can be by **charges** (decks) or **total weight** firing within the specified time window



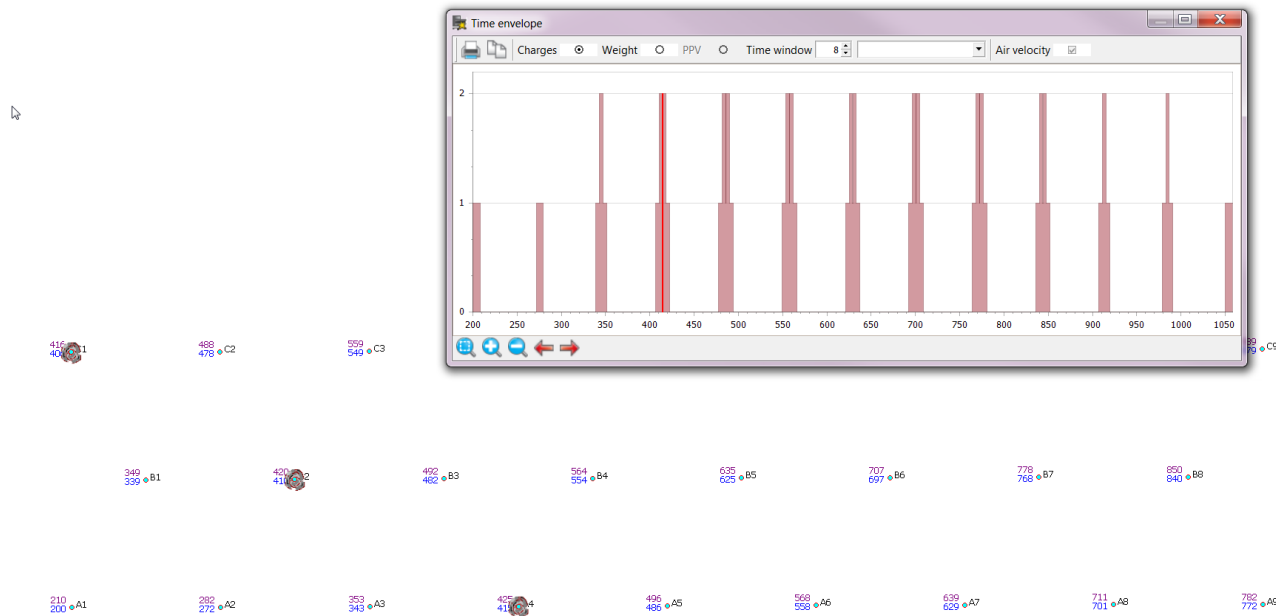
- Time window can be **zoomed** and **scrolled**

TIME ENVELOPE

- Drag across the time envelope to highlight firing holes on the design screen



Time envelope



QUANTITIES

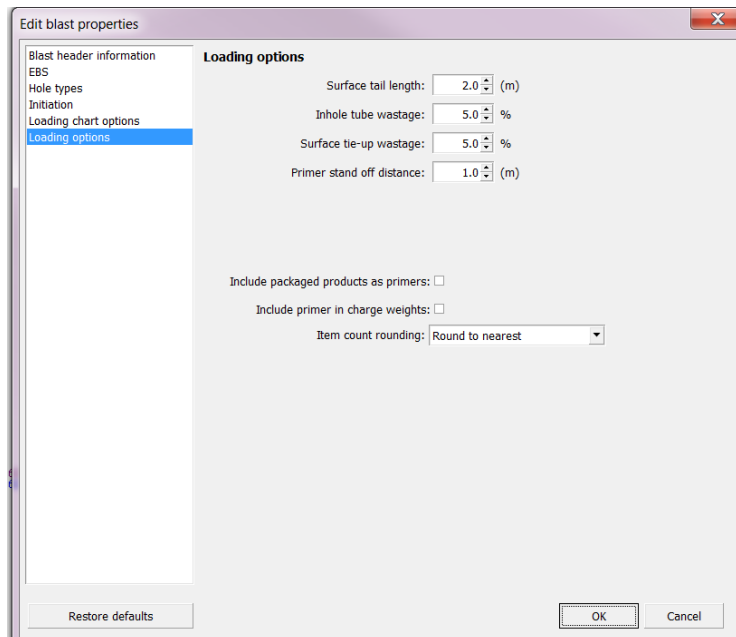
- Reports quantities of products used in the blast design
- Calculates lead length requirements for detonator products



Explosives			
ANFO 0.8 CS	0.80 g/cc Bulk	16507.8 kg BANFC	
Pentex PPP	Packaged	60 items PPE	24.00 kg
Stemming	Bulk	5.6 m ³ QSTEM	
Initiating Systems			
I-kon RX detonator	30 (30.0 m)	30 (20.0 m)	
Drilling			
Generic	229 mm	636.0 m	
Hole Summary			
Dummy	0		
Electronic Blasting System	30		
Misfired	30		
Not connected	30		
Other	0		
Total holes	30		

Quantities will calculate based on:

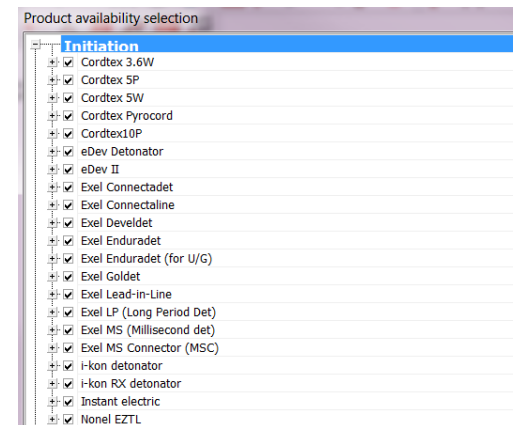
- **Tail length** and **'wastage'** factors input to **loading options**
- Products selected in **availability selection**



The 'Edit blast properties' dialog box is shown with the 'Loading options' tab selected. The left sidebar lists: Blast header information, EBS, Hole types, Initiation, Loading chart options, and Loading options (highlighted). The main area contains the following settings:

- Surface tail length: 2.0 (m)
- Inhole tube wastage: 5.0 %
- Surface tie-up wastage: 5.0 %
- Primer stand off distance: 1.0 (m)
- Include packaged products as primers: ☐
- Include primer in charge weights: ☐
- Item count rounding: Round to nearest

Buttons at the bottom: Restore defaults, OK, and Cancel.



The 'Product availability selection' dialog box is shown with the 'Initiation' tab selected. The list of products and their availability status is as follows:

Product	Availability
Cordtex 3.6W	✓
Cordtex 5P	✓
Cordtex 5W	✓
Cordtex Pyrocord	✓
Cordtex10P	✓
eDev Detonator	✓
eDev II	✓
Exel Connectadet	✓
Exel Connectaline	✓
Exel Develadet	✓
Exel Enduradet	✓
Exel Enduradet (for U/G)	✓
Exel Goldet	✓
Exel Lead-in-Line	✓
Exel LP (Long Period Det)	✓
Exel MS (Millisecond det)	✓
Exel MS Connector (MSC)	✓
I-kon detonator	✓
I-kon RX detonator	✓
Instant electric	✓
Nonel EZTL	✓

EBS LOGGING REPORT



- Manages the creation of **Logging Plans** and the download and upload of logging data with **i-kon™** loggers

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 60

Export to Logger

Preview Print All Close

#	Row	Hole	Det	Delay	Det ID	Status	Flag
1	A	1	1	200	?	Not tested	Not Logged
2	A	1	2	210	?	Not tested	Not Logged
3	A	2	1	272	?	Not tested	Not Logged
4	A	2	2	282	?	Not tested	Not Logged
5	A	3	1	343	?	Not tested	Not Logged
6	A	3	2	353	?	Not tested	Not Logged
7	A	4	1	415	?	Not tested	Not Logged
8	A	4	2	425	?	Not tested	Not Logged
9	A	5	1	486	?	Not tested	Not Logged
10	A	5	2	496	?	Not tested	Not Logged
11	A	6	1	558	?	Not tested	Not Logged
12	A	6	2	568	?	Not tested	Not Logged
13	A	7	1	629	?	Not tested	Not Logged
14	A	7	2	639	?	Not tested	Not Logged
15	A	8	1	701	?	Not tested	Not Logged
16	A	8	2	711	?	Not tested	Not Logged
17	A	9	1	772	?	Not tested	Not Logged
18	A	9	2	782	?	Not tested	Not Logged
19	A	10	1	844	?	Not tested	Not Logged
20	A	10	2	854	?	Not tested	Not Logged
21	B	10	1	983	?	Not tested	Not Logged
22	B	10	2	993	?	Not tested	Not Logged
23	B	9	1	911	?	Not tested	Not Logged
24	B	9	2	921	?	Not tested	Not Logged
25	B	8	1	840	?	Not tested	Not Logged
26	B	8	2	850	?	Not tested	Not Logged
27	B	7	1	768	?	Not tested	Not Logged
28	B	7	2	778	?	Not tested	Not Logged
29	B	6	1	697	?	Not tested	Not Logged
30	B	6	2	707	?	Not tested	Not Logged
31	B	5	1	625	?	Not tested	Not Logged
32	B	5	2	635	?	Not tested	Not Logged

EBS FIELD REPORT



Three tabs allow EBS firing records to be stored with the design file

1. **Logger report** allows recording of detonator numbers, harness wire quantities any leakage associated with loggers
2. **Comments** allows any notes associated with the blast to be recorded
3. **Blaster Printout** allows the print function of the i-kon blaster to send to the SHOTPlus5 file. This allows for a record of any leakage at blasting voltage or errors encountered.

The screenshot shows a software window titled "EBS field report" with three tabs: "Logger report", "Comments", and "Blaster printout". The "Logger report" tab is active. It contains a table with columns for Logger, Design #Dets, Harness, Actual #Dets, Leakage, Errors, Time, Leakage, Errors, Time, Current, and Errors. The table is titled "Blaster1600 (max 8 loggers)". The data shows 8 loggers (L1 to L8) with various values for Design #Dets, Harness, and Actual #Dets. The Leakage and Errors columns are all 0. The Time, Current, and Errors columns are also 0. A "Totals" row at the bottom shows a total of 60 Design #Dets, 202.9m Harness, and 0 for all other categories.

Blaster1600 (max 8 loggers)			Tests after wiring			Tests prior to firing			Blasting		
Logger	Design #Dets	Harness	Actual #Dets	Leakage	Errors	Time	Leakage	Errors	Time	Current	Errors
L1	60	202.9	0	0	0		0	0		0	0
L2	Not in use	0.0	0	0	0		0	0		0	0
L3	Not in use	0.0	0	0	0		0	0		0	0
L4	Not in use	0.0	0	0	0		0	0		0	0
L5	Not in use	0.0	0	0	0		0	0		0	0
L6	Not in use	0.0	0	0	0		0	0		0	0
L7	Not in use	0.0	0	0	0		0	0		0	0
L8	Not in use	0.0	0	0	0		0	0		0	0
Totals			60	202.9m	0	0		0		0	0