Blast Log Expectations Blaster Responsibility

OSMRE

Best Practices and Evaluation Tools

November 19,2008

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Nobel Insurance Services

Shot Reports used for this talk:

- From insured as part of claim
- During an office visit
- Blast review
- From a prospect prior to quoting

Information modification

- Some information such as names, locations, and permit numbers have been covered or removed to sanitize some of the shot reports, some reports have been retyped to better project for this talk.

Shot report information

- Report should be completed as if it were going to be used in a court case or claim tomorrow.

- To provide a detailed record to recreate the exact blasting parameters, location, and seismic results

How detailed is detailed?

- Significant digits
- How accurate can you measure on the shot bench
- GPS Coordinates—enough numbers-dd.ddddd

The claim process scenario #1

- Notification by Fire Marshal or authority
- Set up first report of claim
- Notify insured
- Hire engineer, review data and records, inspect property

The claim process scenario #2

- Notification by property owner
- Set up first report of claim
- Notify insured
- Review data, hire engineer, inspect property

The claim process scenario #3

- Suit papers arrive at insured's (20-25%)
- Time critical—MUST RESPOND
- Contact insured describe process
- Review lawsuit
- Pleadings-Complaint
- Contact attorney
- Attorney files answer
- File discovery request (both parties)
- Identify experts
- Deposition
- Mediation or trial

The claim process scenario #4

- Subrogation
- First report of claim
- Request engineer's records from homeowner's insurance carrier
- If homeowner's insurance carrier can not prove cause, normally denied-due to lack of engineering.
- We may hire engineer to inspect/compare

Records requested of the blasting firm

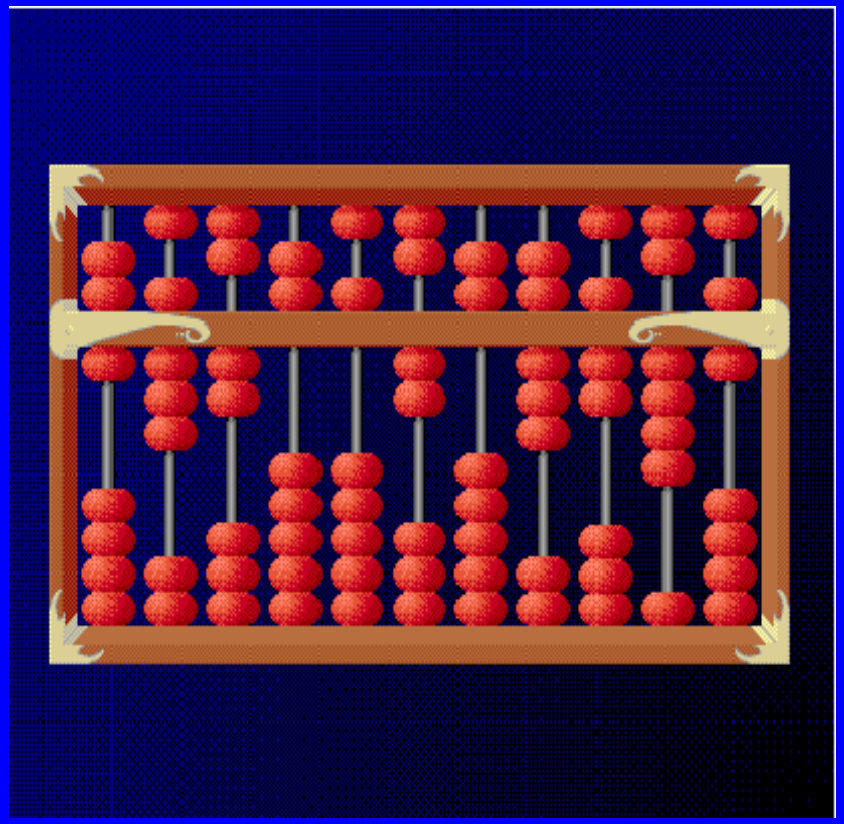
- ALL RECORDS
- Shot reports
- Seismograph records
- Preblast surveys
- Bid specifications, contracts, agreements (Hold Harmless)
- Plans, photos
- Complaints, violations, citations

Shot report problems

- Math
- Locations
- Format
- Definitions/ Usage of terms
- Contradictions
- Neatness/Legibility

MATH PROBLEMS

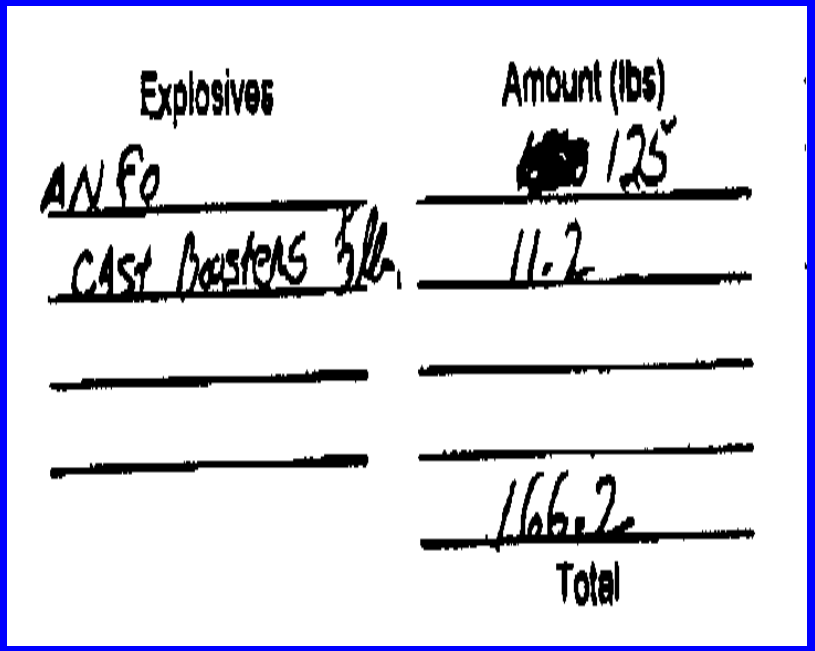
- Arithmetic
- Significant numbers
- Inconsistency
- Timing
- Holes per delay



Simple arithmetic

- Note a Shot report section was removed

Multiplication



Simple addition

Significant numbers

- How can the weight be to the nearest 1/100th of a pound?

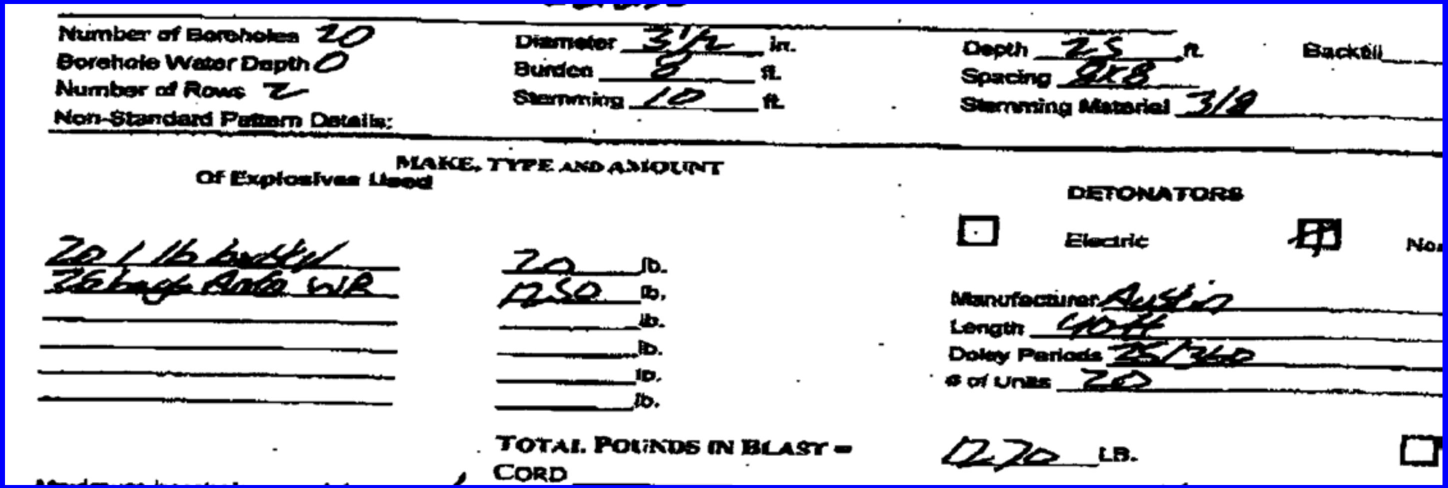
NOTE a shot report section was removed

Inconsistency significant numbers

- Weight to nearest 1/100th of a pound, Distance to nearest 50 ft??

Consistency

- 10 shots, reports show "Consistency"?



Number of Boreholes 20
Borehole Water Depth 0
Number of Rows 2
Non-Standard Pattern Details:

Diameter 3½ in.
Burden 8 ft.
Stemming 10 ft.

Depth 25 ft.
Spacing 8x8
Stemming Material 3/8

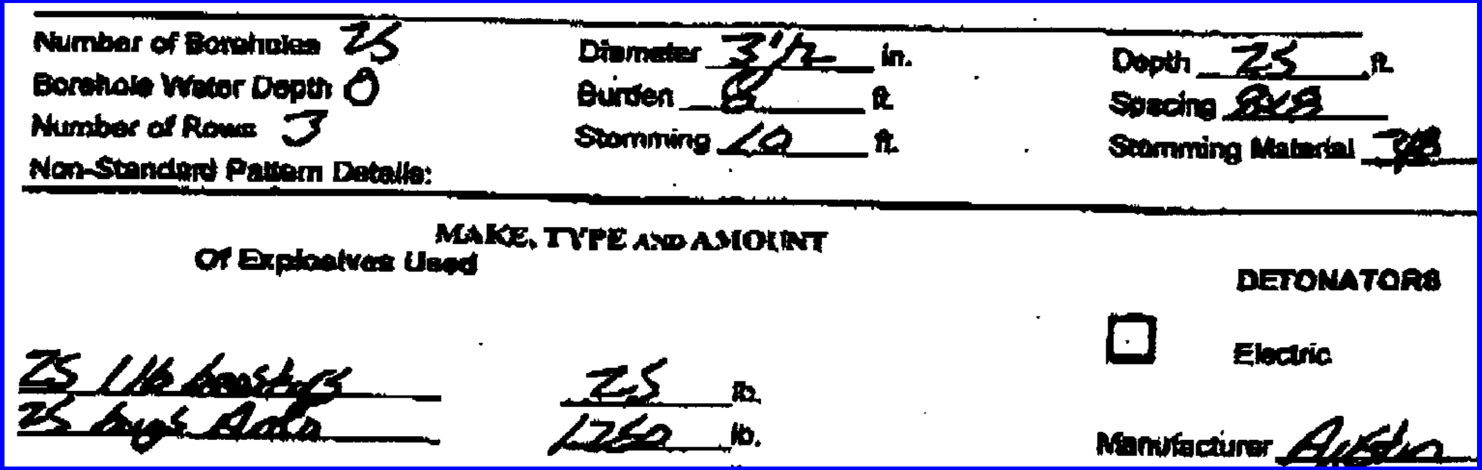
Backfill

MAKE, TYPE AND AMOUNT
Of Explosives Used

20 / lb boostr — 20 lb.
26 bags Anfo WR — 1250 lb.

DETONATORS
Electric
Manufacturer Austin
Length 40 ft
Delay Periods 25/360
# of Units 20

TOTAL POUNDS IN BLAST = 1270 LB.
CORD



Number of Boreholes 25
Borehole Water Depth 0
Number of Rows 3
Non-Standard Pattern Details:

Diameter 3½ in.
Burden 8 ft.
Stemming 10 ft.

Depth 25 ft.
Spacing 8x8
Stemming Material 3/8

MAKE, TYPE AND AMOUNT
Of Explosives Used

25 1 lb boosters — 25 lb.
25 bags Anfo — 1250 lb.

DETONATORS
Electric
Manufacturer Austin

Consistency ?

# Holes	Weight	Depth	Stemming	Max	Average W/#H	Deviation Av-Max	Deviation	Actual Vol	True Stemming
25	1275	25	10	50	51	1	2%	53.	>10
20	1270	25	10	55	63.5	8.5	***16%***	53.	7
37	2537	25	10	65	68.6	3.6	5%	53.	***4.5***
35	2285	25	10	60	65.3	5.3	9%	53.	6.7
25	1275	24	10	57	51	-6	***10%***	49.7	8
30	2030	25	10	57	67	10	***17%***	53.	6.2
10	760	25	10	65	76	11	***17%***	53.	***3.6***
30	2030	25	10	55	67	12	***22%***	53	6.2
41	2040	25	10	47	50	3	6%	53	>10
20	1010	20	10	50	50.5	0.5	1%	35.5	5.8

From shot report

Using loading density table

Consistency ?

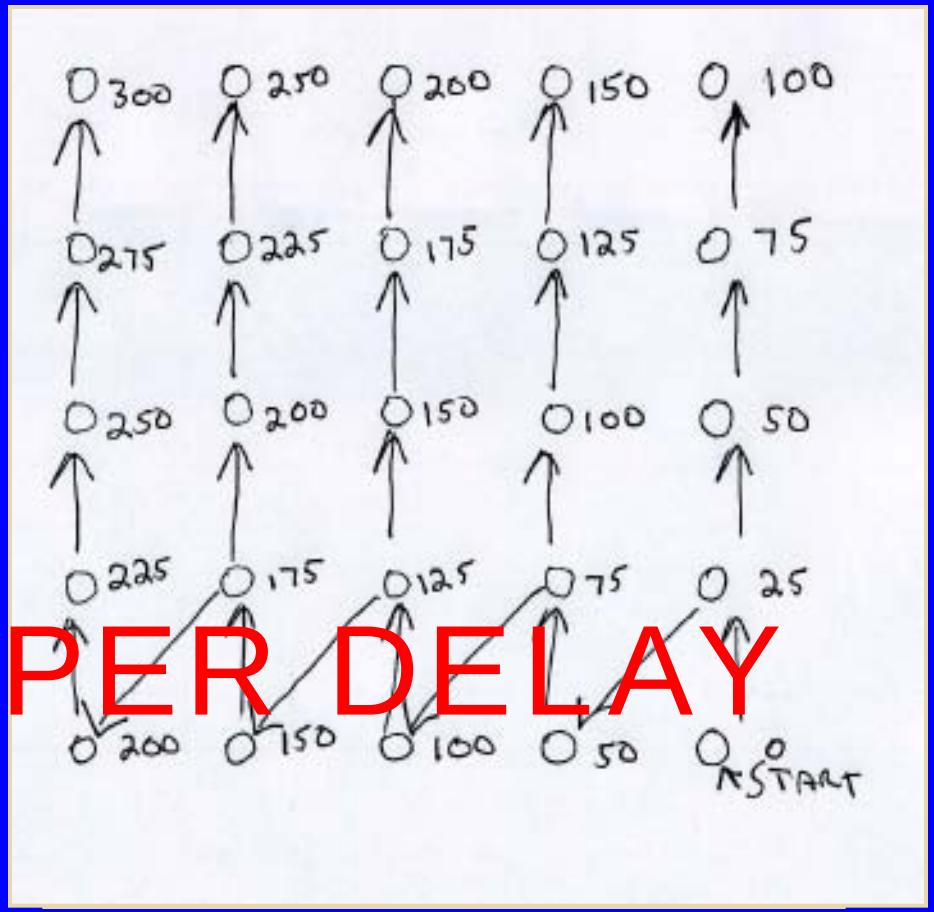
- The reports for those previous 10 shots were most likely completed at the end of the week and the blaster tried to reconcile the inventory and drill logs.

Consistency

- Why are reports completed differently by the same blaster?
- Why do different blasters on same job complete records so much differently

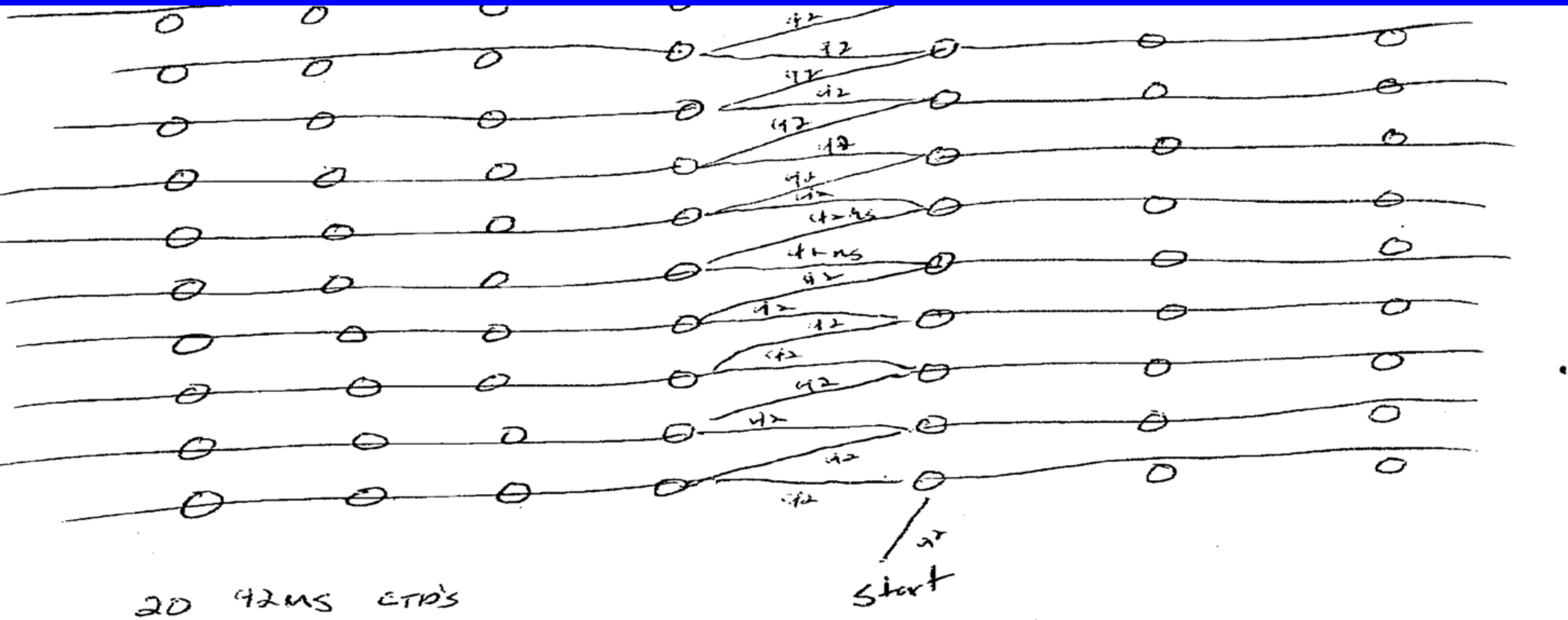
Holes per delay

- Max holes per delay
- Weight per delay
- Timing must be determined



3 HOLES PER DELAY

Timing



20 42MS CTD's

70 25/500 MS CAPS HANDIDETS

70 Holes 6' GRANITE 40" x 40" (3.5' x 3.5')

175 lb TOTAL WEIGHT

2.5 lb per hole POWERDITCH 1000 2"x16"

Timing

NOTE A SHOT SKETCH WAS REMOVED

Timing

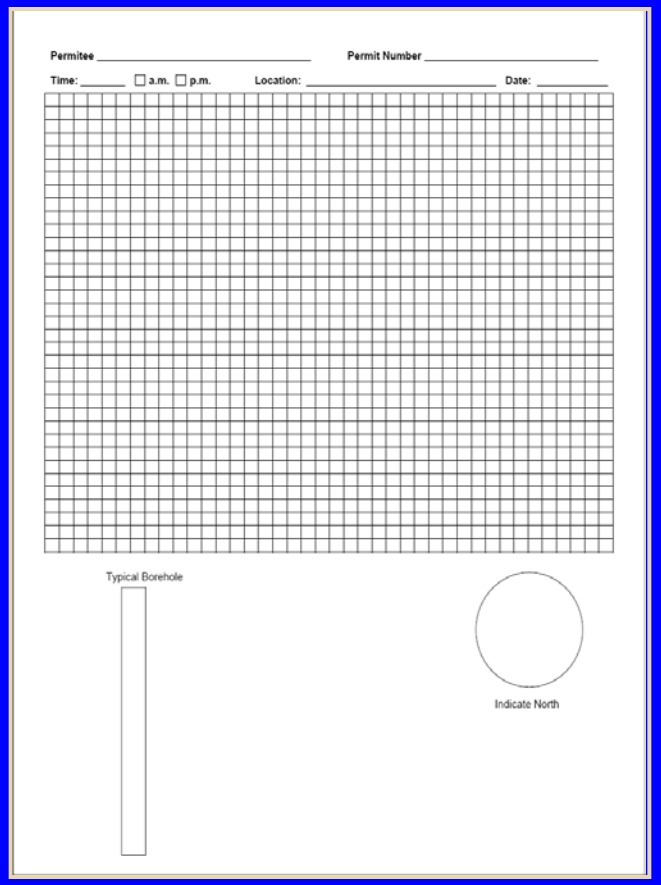
- Must be known prior to firing
- Row 2 is 25ms ahead of row 1 at last 3 holes

FLYROCK

Enlarged area

Sketches and Locations

- Pattern
- Timing
- Exposures
- Reference points
- Borehole Cross-section



Sketches and Location

NOTE A SHOT SKETCH WAS REMOVED

Sketches and Locations

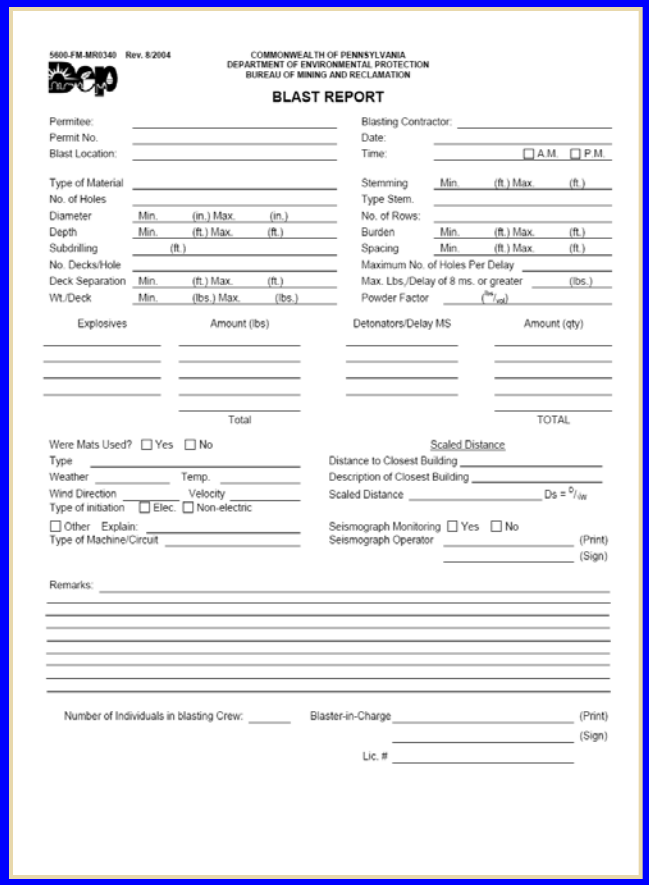
- Identify Location
- Use Measuring Tools: GPS, Rangefinder, Tape
- Maps
- Software
  - Topofusion
  - Google Earth

Google Earth

Line is 473 ft

Format

- Most states have a list of items required in the regulations
- Some States have a mandated format
- Some states must give OK to your format
- OSMRE required items



5600-FM-MR0340 Rev. 8/2004

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF MINING AND RECLAMATION

BLAST REPORT

Permitee: _____ Blasting Contractor: _____
Permit No. _____ Date: _____
Blast Location: _____ Time: _____ ☐ A.M. ☐ P.M.

Type of Material _____ Stemming Min. (ft.) Max. (ft.)
No. of Holes _____ Type Stem. _____
Diameter Min. (in.) Max. (in.) No. of Rows: _____
Depth Min. (ft.) Max. (ft.) Burden Min. (ft.) Max. (ft.)
Subdrilling (ft.) Spacing Min. (ft.) Max. (ft.)
No. Decks/Hole _____ Maximum No. of Holes Per Delay _____
Deck Separation Min. (ft.) Max. (ft.) Max. Lbs./Delay of 8 ms. or greater (lbs.)
Wt./Deck Min. (lbs.) Max. (lbs.) Powder Factor $(lbs/_{cy})$

Explosives	Amount (lbs)	Detonators/Delay MS	Amount (qty)
	Total		TOTAL

Were Mats Used? ☐ Yes ☐ No
Type _____
Weather _____ Temp. _____
Wind Direction _____ Velocity _____
Type of initiation ☐ Elec. ☐ Non-electric
☐ Other Explain: _____
Type of Machine/Circuit _____

Scaled Distance
Distance to Closest Building _____
Description of Closest Building _____
Scaled Distance _____ $Ds = {}^{D}/_{\sqrt{W}}$

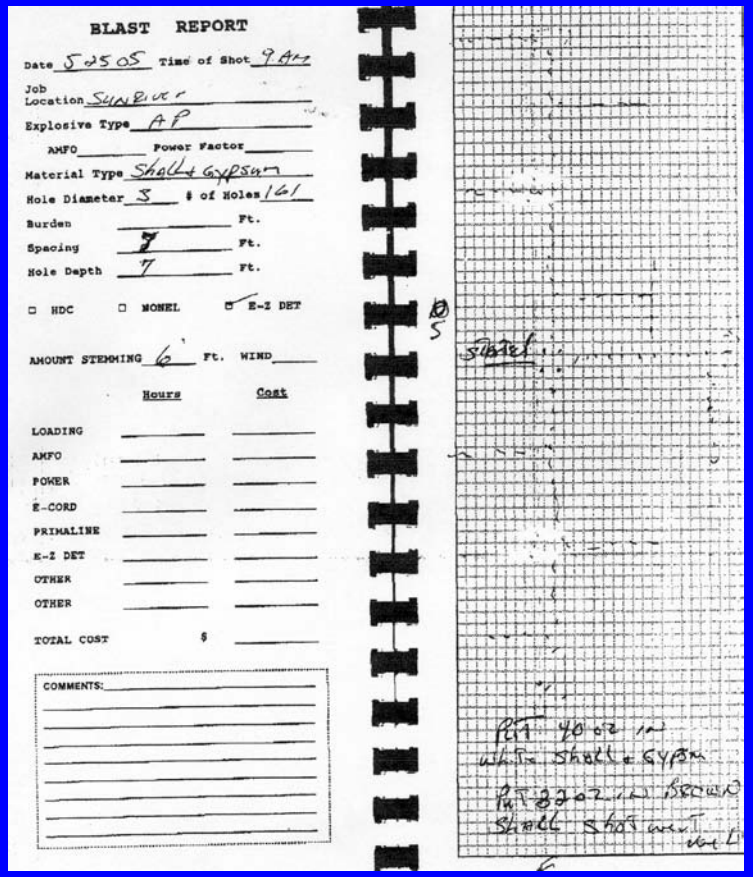
Seismograph Monitoring ☐ Yes ☐ No
Seismograph Operator _____ (Print)
_____ (Sign)

Remarks: _____

Number of Individuals in blasting Crew: _____ Blaster-in-Charge _____ (Print)
_____ (Sign)
Lic. # _____

Format AND Content

- A weak format, and missing info make document nearly useless



BLAST REPORT

Date 5-25-05 Time of Shot 9 AM

Job Location Sunriver

Explosive Type AP

AMFO _____ Power Factor _____

Material Type Shale + Gypsum

Hole Diameter 5 # of Holes 161

Burden _____ Ft.

Spacing 7 Ft.

Hole Depth 7 Ft.

☐ HDC ☐ MONEL ☑ E-Z DET

AMOUNT STEMMING 6 Ft. WIND _____

	Hours	Cost
LOADING		
AMFO		
POWER		
E-CORD		
PRIMALINE		
E-Z DET		
OTHER		
OTHER		
TOTAL COST		$

COMMENTS:

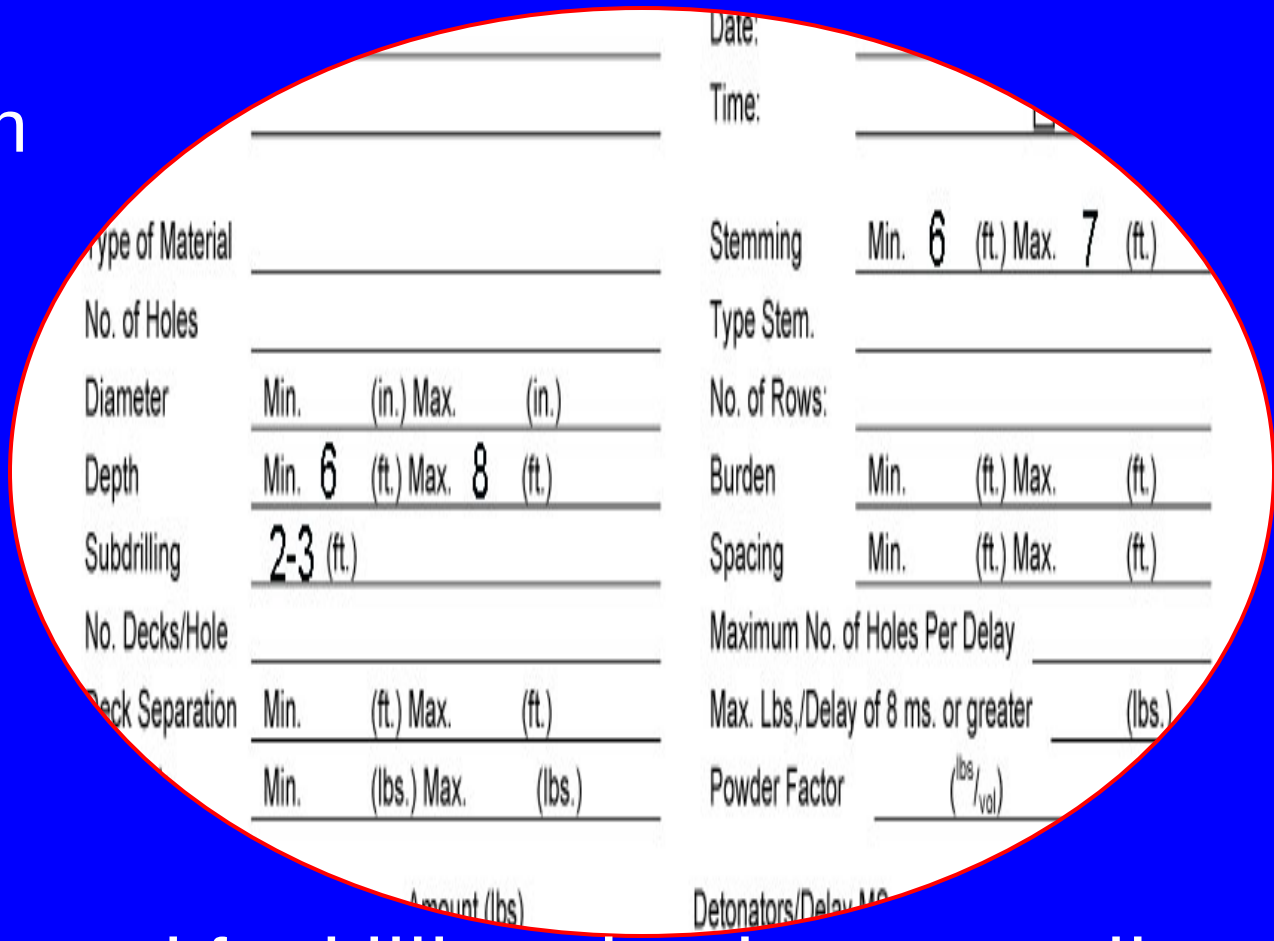
Format AND Content

- Even a good format becomes nearly useless when incomplete
- Fill In ALL lines
- Answer ALL questions

- NOTE A SHOT REPORT WAS REMOVED FROM HERE

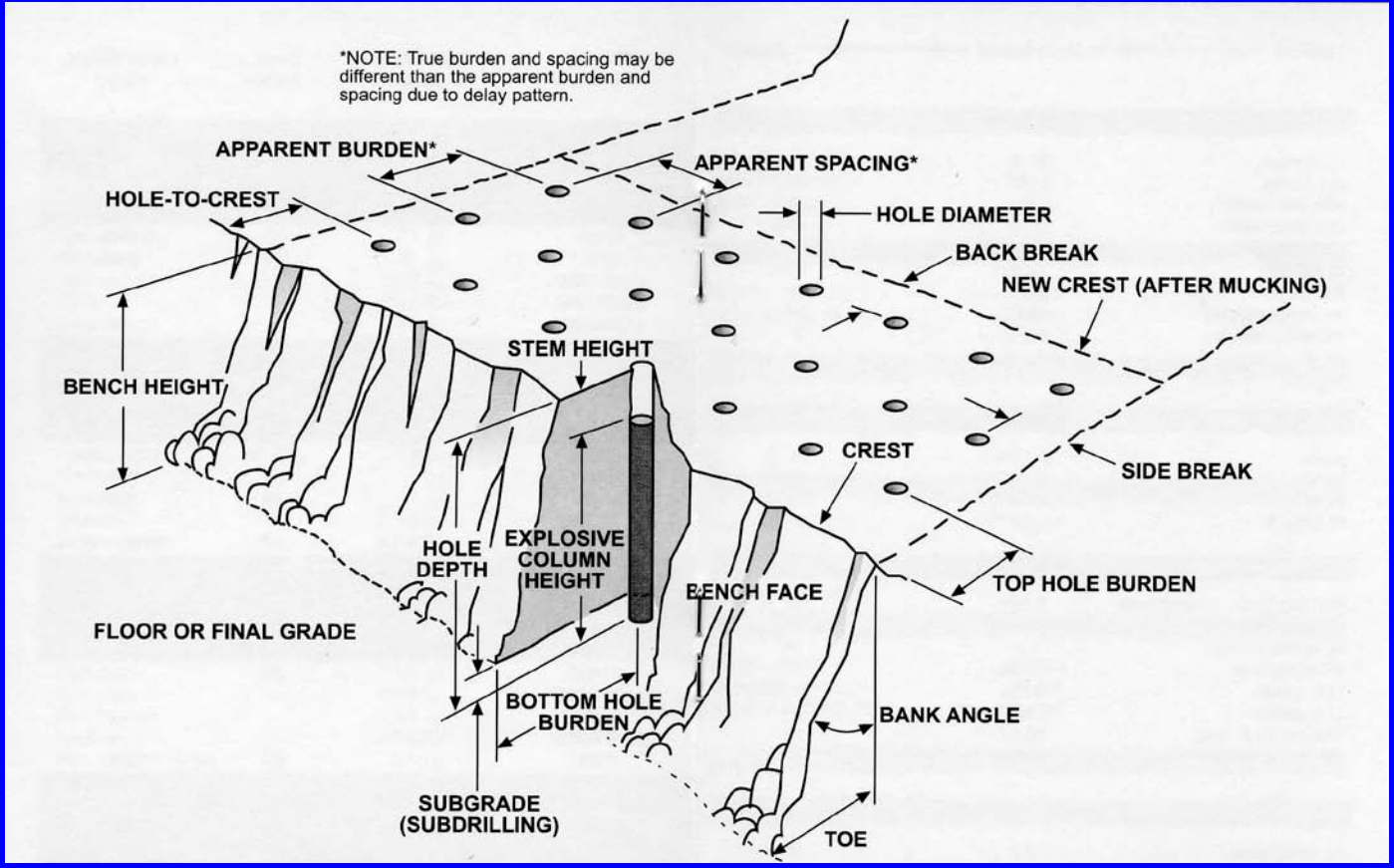
Usage of terms

- Hole depth



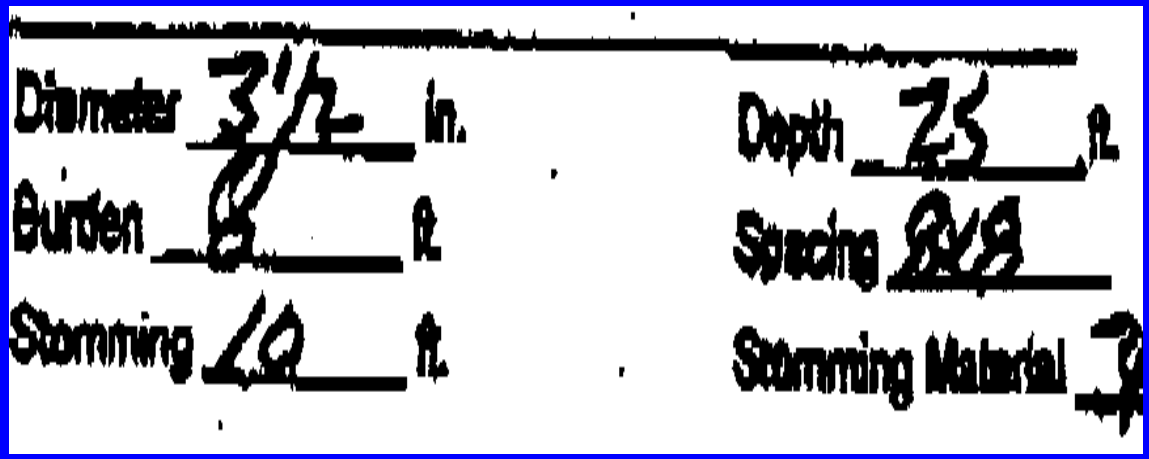
Shot record was used for billing, depth was pay line

Terms and Definitions



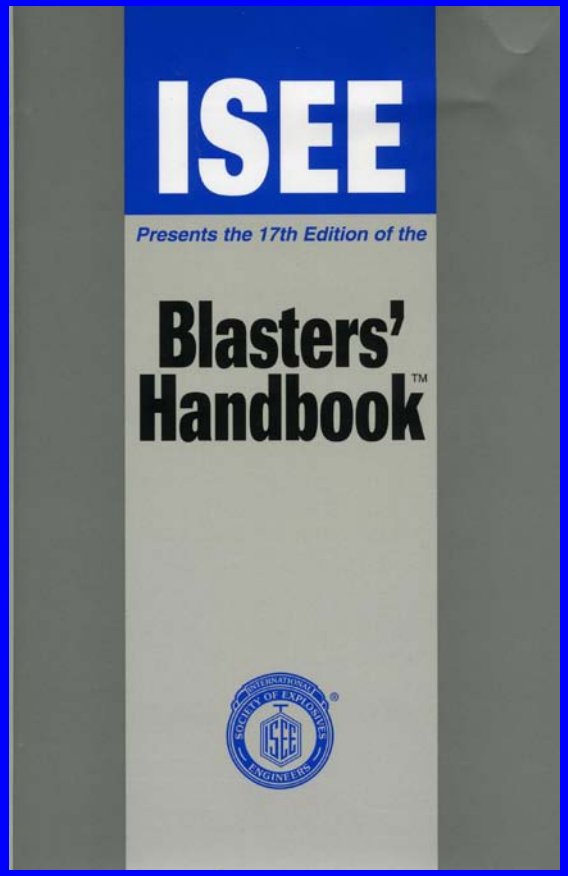
Usage of terms- Misunderstood

- Burden
- Spacing



No. of Holes	129	No. of Rows	3	Burden	0-2'
Spacing	6x5	Depth	12	Face Height	57
Back fill depth	0	Sub-Drilling	3	Length of Stemming	8¼ to 8½'
Type of Stemming	3/8 Crush				

Terms and Definitions



- IME and ISEE publications
- Various training manuals
- Suppliers pamphlets
- State and Federal guidance and pubs.
- Web sites: ISEE, suppliers

Contradictions

- Form info must be same as sketch info
- Holes or lbs/delay
- Total weight vs. delivery or inventory
- Drill log vs. blast log
- Distances vs. GPS or map

Contradictions

- Times on seismograph
- Seismograph location
- Legal or permit requirements
- Information on other documents
- Anything that can be recorded-including weather

Neatness and Legibility

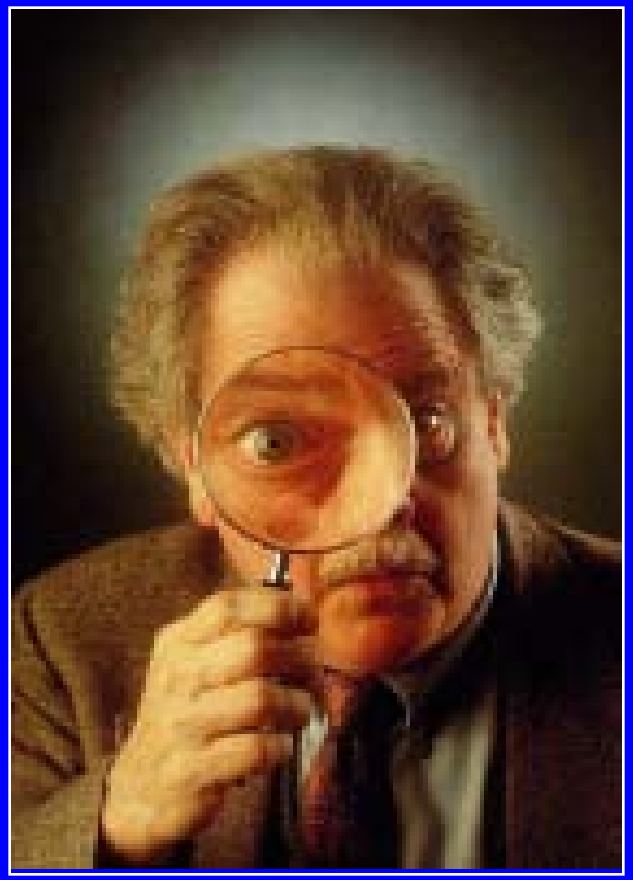
- If the shot report info can not be read and is sloppy what opinion does that give of the blaster.

Completing the shot report

- Should be done prior to leaving the job site
- Make it legible
- Leave nothing blank
- Answer questions properly and correctly
- Update format if it is outdated
- Use comment section
- Sketch
- Review math and proof read the report
- If you can not read it, how can someone else?

Audits

- Compare to other documents
- Look for averaging and rounding of numbers
- Check hole capacity using loading table
- Inventory:remember starter caps and surface delays
- Peer review: another set of eyes
- If you were on shot does it match what you saw



OSMRE Audit tool

- Blast Log Evaluation Program (BLEP)
- http://www.tips.osmre.gov/tips_html/downloads.asp
- Technical contact: Ken Eltschlager (412)937-2169

Professionalism

- What you write
- What you say
- How you say it
- What you wear
- Bumper stickers

NOTE A PICTURE WAS REMOVED FROM HERE

Record Retention

- Suggested Min. of 7 years
- Some states have requirements of 3, 5 or 7 yrs
- Electronic shot report backup
- Seismograph record retention and backup
- Offsite electronic storage
- Keep originals if claims dept. requests a copy
- Shipping papers have retention times
- Business discontinuance

Goal of the shot report

- To provide a detailed record to recreate the exact blasting parameters, location, and seismic results
- Should be completed as if it were going to be used in court tomorrow or in claim defense

Thank You