

IMAGE SYSTEMS **TRAPPS**



WHAT IS A TRAPP?

- For cases when TrackEye functionality is needed/wanted, but full TrackEye capability is not necessary
- Specialised for specific applications of analysis, scoring, or tracking
- Can be installed on multiple computers to allow simultaneous users
- Custom-built from customer specifications, or modified from existing TrApps
- TrApps offer the same high degrees of accuracy as TrackEye, but in a reduced platform
- Intended to be used in the field, or by those with little to no TrackEye experience

APPLICATIONS

- Ballistics
- Explosive Testing
- Trajectory Analysis/Attitude
- Pitch and Yaw
- Firearms
- Automotive

- Basically **Anything** for which TEMA/TrackEye is used, that needs to be simplified for one reason or another

EXISTING TRAPPS

- **POM:** (Projectile Orientation Measurement). The introduction of TrApps. Designed as a stand-alone TrackEye functionality to analyze projectile orientation, impact angles, and 3D position of a projectile, without needing full TrackEye capability.
- **Vertical Target:** Simplified scoring technique for analyzing “hits” of fired rounds at a target, through the use of simple clicks on the image.
- **Height of Burst:** Simplified scoring method for object height at a given time, aided by the use of terrain/geographical models.
- **Fuze Delay:** Simplified method of measuring delay time between penetration and detonation of an explosive.
- **Pitch and Yaw:** Simplified system for measuring the angle of a projectile as seen in two image sources. Similar to POM, but as-specified by the customer.

LICENSING

- Single licenses can be purchased
- Standard, dongle, or network/floating
- **DOES NOT** require, but can run concurrently with, an installation of TrackEye license

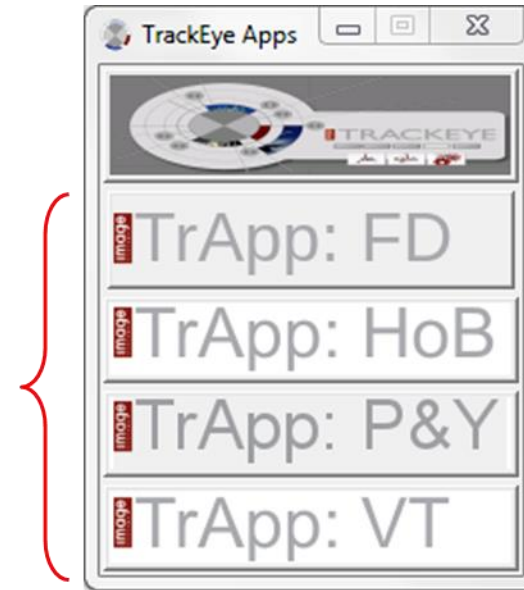
IMAGE AND DATA IMPORT/EXPORT

- All TrackEye and TEMA supported image and data types are supported in TrApps
- Customer-specific file types/formats can be implemented, as this is a **custom** development for the customer
- Imagery, MET, terrain/geographical, gun/projectile parameters, survey data, etc...
- Analyzed data is exported into a customer-specified format, or a standard format such as .xls, .csv, etc...

TRAPPS USER INTERFACE SPLASH SCREEN

- Your configuration code allows display of all purchased TrApps in a single splash screen

Purchased
TrApps



Fuze Delay

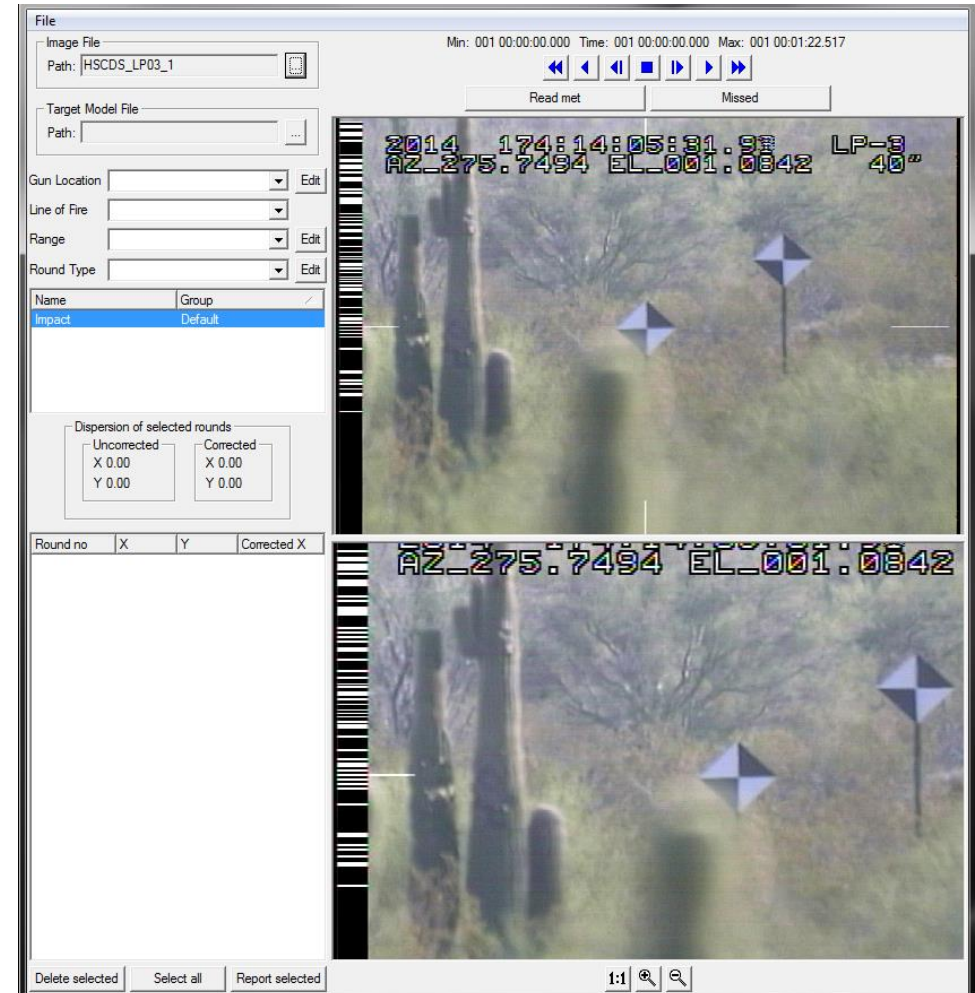
Height of Burst

Pitch and Yaw

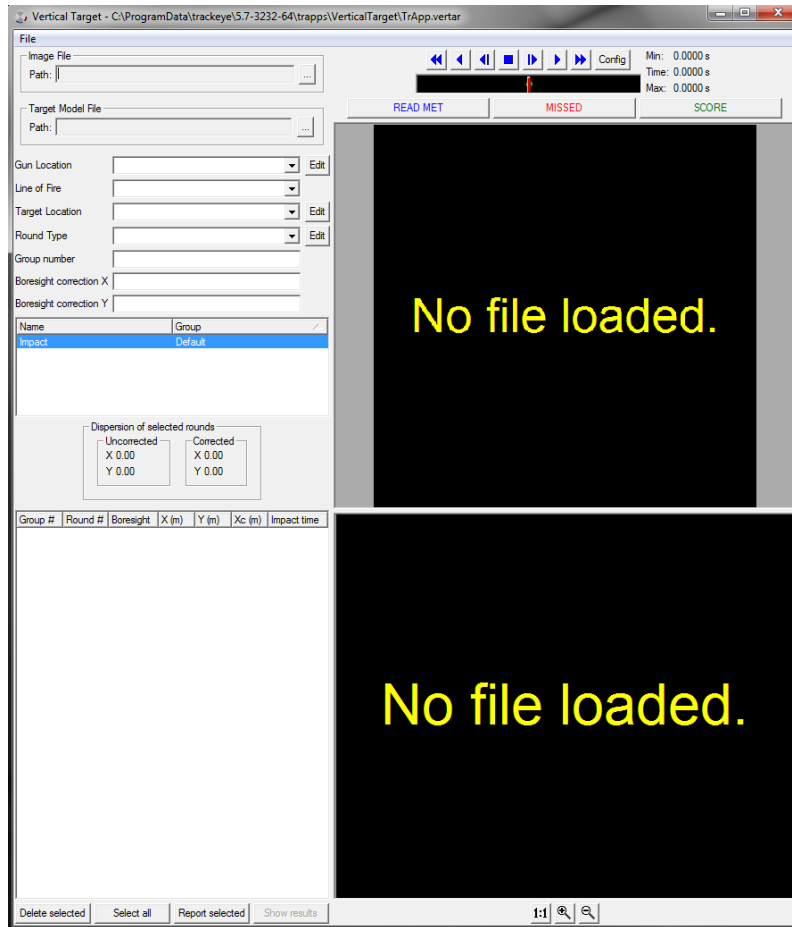
Vertical Target

TRAPPS USER INTERFACE MAIN WINDOW

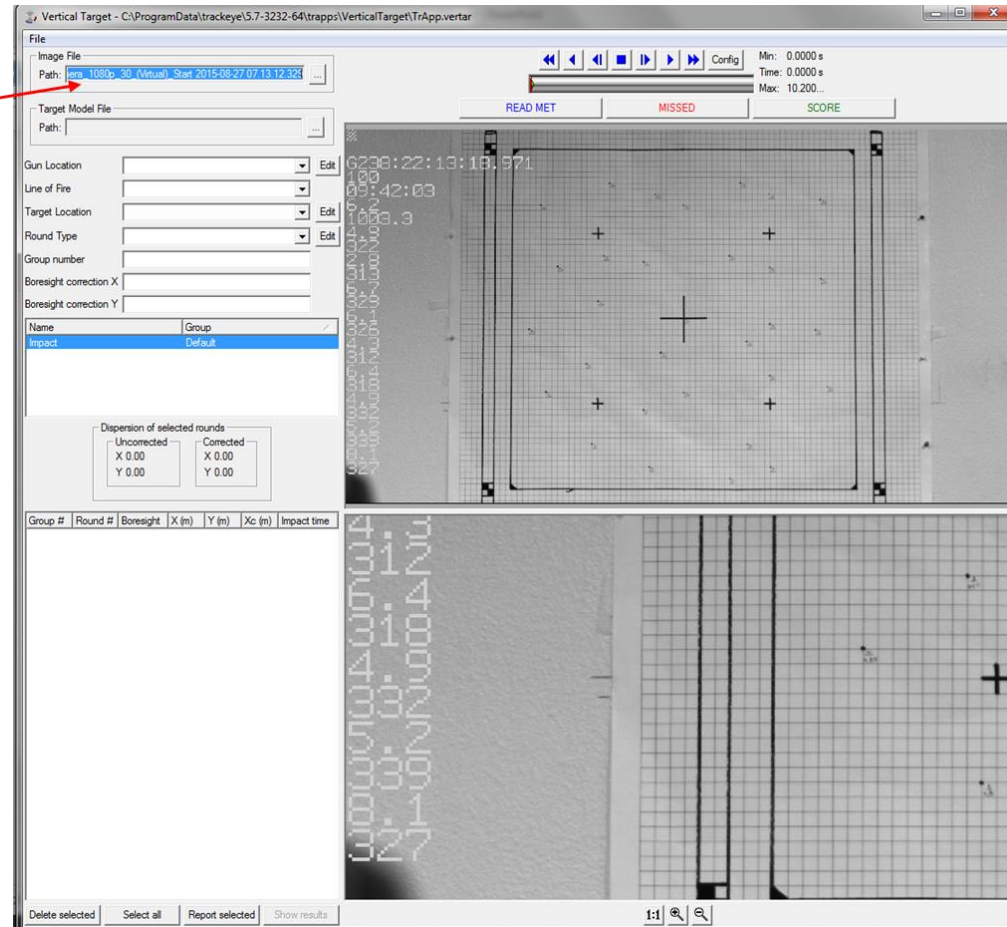
- Everything functions inside of a **single** window
- Load images, target models, and any other desirable data
- Zoom functionality
- Playback/VCR buttons
- Generate reports and data quickly
- Export functionality, as in TrackEye/TEMA, but application-specific



TRAPPS EXAMPLE VERTICAL TARGET



Step 1:
Load Image

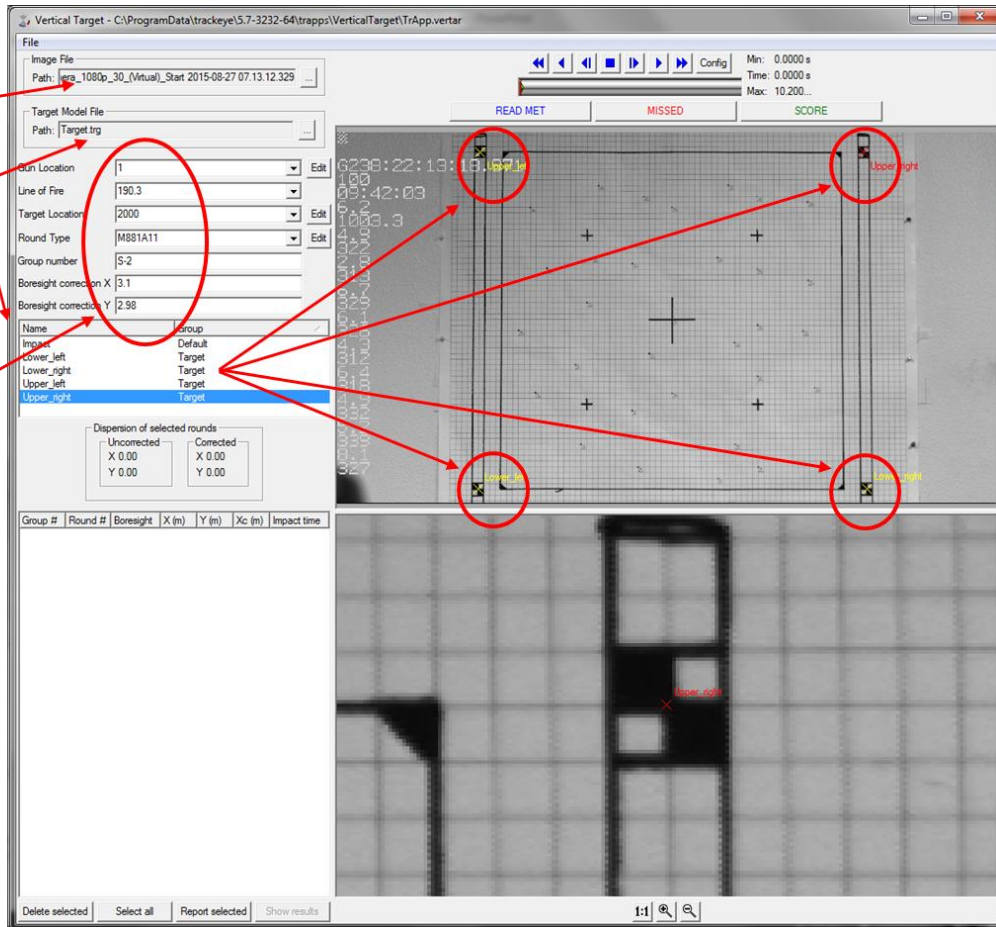


TRAPPS EXAMPLE VERTICAL TARGET

Step 1:
Load Image

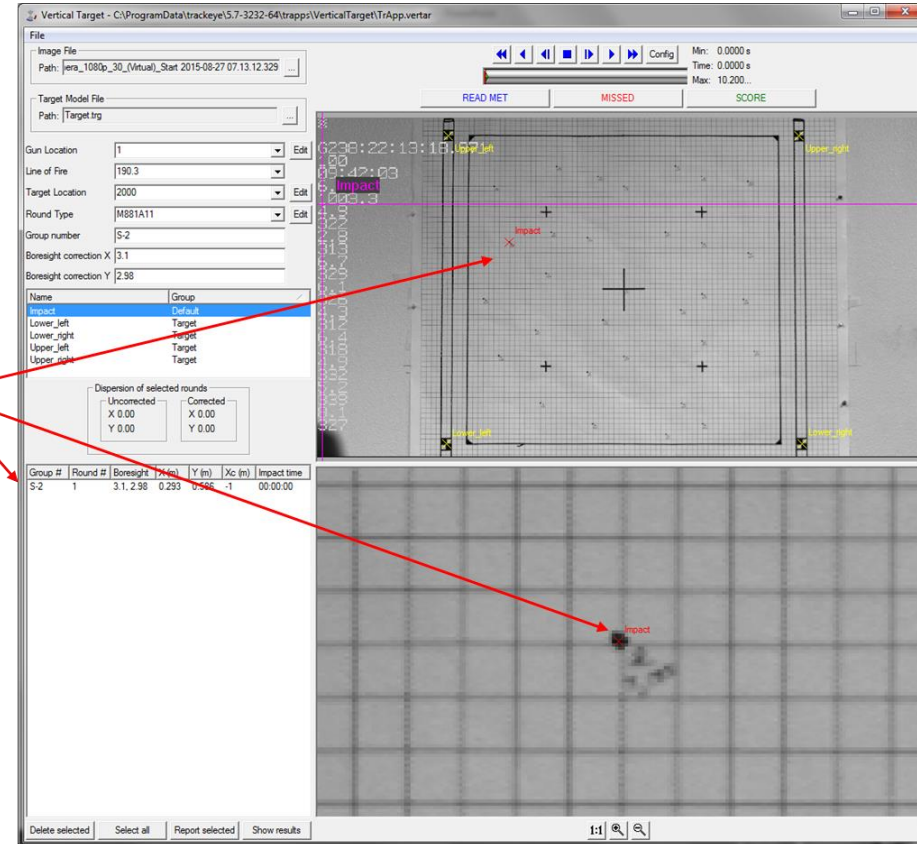
Step 2:
Load Target
Model

Step 3:
Enter Test
Info



Step 4:
Score
Target
Model
Points

Step 5:
Score
Rounds



TRAPPS EXAMPLE VERTICAL TARGET

Step 5:
Score
Rounds

Vertical Target - C:\ProgramData\trackeye\5.7-3232-64\trapps\VerticalTarget\TrApp.vertar

File
Image File Path: jers_1080p_30_(Virtual)_Start 2015-08-27 07.13.12.329
Target Model File Path: Target.trg

Gun Location: 1
Line of Fire: 190.3
Target Location: 2000
Round Type: M881A11
Group number: S-2
Boresight correction X: 3.1
Boresight correction Y: 2.98

Unconnected: X 0.00, Y 0.00
Corrected: X 0.00, Y 0.00

Group #	Round #	Boresight	X (m)	Y (m)	Xc (m)	Impact time
S-2	1	3.1, 2.98	0.293	0.586	-1	00:00:00
S-2	2	3.1, 2.98	0.577	0.604	-1	00:00:00
S-2	3	3.1, 2.98	-1	-1	-1	00:00:00
S-2	4	3.1, 2.98	0.372	0.373	-1	00:00:02
S-2	5	3.1, 2.98	0.454	0.796	-1	00:00:02
S-2	6	3.1, 2.98	0.416	0.535	-1	00:00:05
S-2	7	3.1, 2.98	0.287	0.263	-1	00:00:07
S-2	8	3.1, 2.98	-1	-1	-1	00:00:07
S-2	9	3.1, 2.98	-1	-1	-1	00:00:07
S-2	10	3.1, 2.98	0.599	0.278	-1	00:00:09

Step 6:
Export
Results into
Report

Vertical Target - C:\ProgramData\trackeye\5.7-3232-64\trapps\VerticalTarget\TrApp.vertar

File
Image File Path: jers_1080p_30_(Virtual)_Start 2015-08-27 07.13.12.329
Target Model File Path: Target.trg

Gun Location: 1
Line of Fire: 190.3
Target Location: 2000
Round Type: M881A11
Group number: S-2
Boresight correction X: 3.1
Boresight correction Y: 2.98

Dispersion of selected rounds
Unconnected: X 0.70, Y 0.74
Corrected: X 0.00, Y 0.74

Group #	Round #	Boresight	X (m)	Y (m)	Xc (m)	Impact time
S-2	1	3.1, 2.98	0.293	0.586	-1	00:00:00
S-2	2	3.1, 2.98	0.577	0.604	-1	00:00:00
S-2	3	3.1, 2.98	-1	-1	-1	00:00:00
S-2	4	3.1, 2.98	0.372	0.373	-1	00:00:02
S-2	5	3.1, 2.98	0.454	0.796	-1	00:00:02
S-2	6	3.1, 2.98	0.416	0.535	-1	00:00:05
S-2	7	3.1, 2.98	0.287	0.263	-1	00:00:07
S-2	8	3.1, 2.98	-1	-1	-1	00:00:07
S-2	9	3.1, 2.98	-1	-1	-1	00:00:07
S-2	10	3.1, 2.98	0.599	0.278	-1	00:00:09

Export results dialog: Select file: RESULTS, Generate reports, Cancel

TRAPPS EXAMPLE VERTICAL TARGET

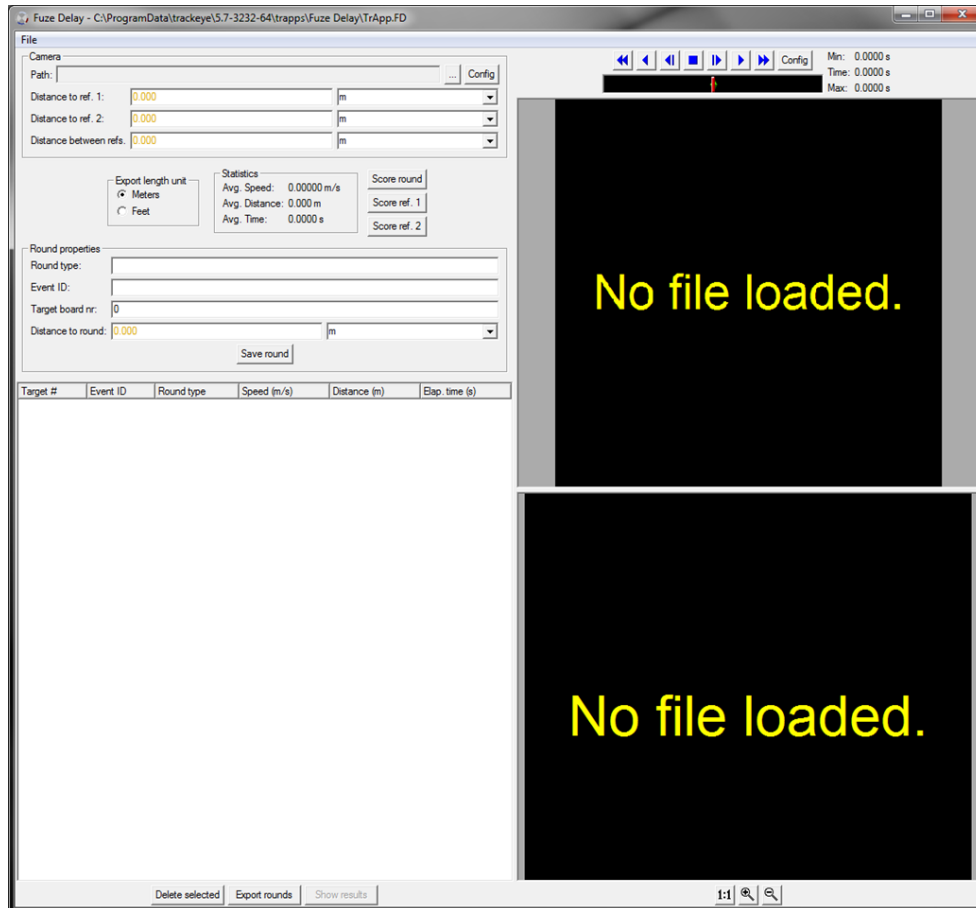
- Resulting data provides columns for all user-defined test data with corresponding location and MET values (if available)
- This test can be repeated many times very quickly, to allow for rapid analysis that may otherwise take much longer in TrackEye

Group Number	Round Number	Impact Time	Bore sight X	Bore sight Y	video Impact corr.	video Impact uncorr.	Location X	Location Y	Met. corrected
S-2	1	00:00:00	3.1	2.98	0.293	0.586	-1		
S-2	2	00:00:00	3.1	2.98	0.577	0.604	-1		
S-2	3	00:00:00	3.1	2.98	-1	-1	-1		
S-2	4	00:00:02	3.1	2.98	0.372	0.373	-1		
S-2	5	00:00:02	3.1	2.98	0.454	0.796	-1		
S-2	6	00:00:05	3.1	2.98	0.416	0.535	-1		
S-2	7	00:00:07	3.1	2.98	0.287	0.263	-1		
S-2	8	00:00:07	3.1	2.98	-1	-1	-1		
S-2	9	00:00:07	3.1	2.98	-1	-1	-1		
S-2	10	00:00:09	3.1	2.98	0.599	0.278	-1		

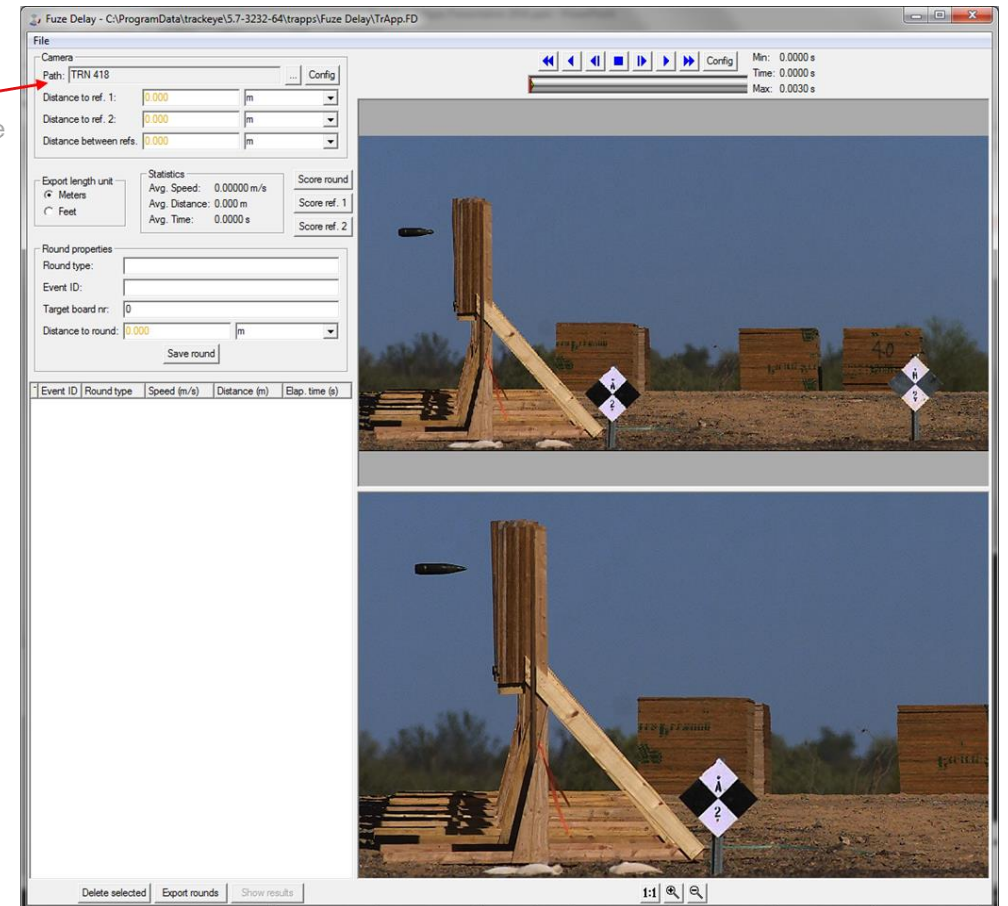
Tube Rnd No.	Impact Time (hh:mm:ss)	Air Temp (°C)	Anemometer Press. Vel (mbars)	Location Dir. (mps)	Location Vel (°)	Location Vel (mps)	401 Dir. (mps)	700 Vel (°)	985 Dir. (mps)	985 Vel (°)	1400 Dir. (mps)	1400 Vel (°)	2000 Dir. (mps)	2000 Vel (°)	2500 Dir. (mps)	2500 Vel (°)	3000 Dir. (mps)	3000 Vel (°)
			0		202	401												

TRAPPS EXAMPLE

FUZE DELAY

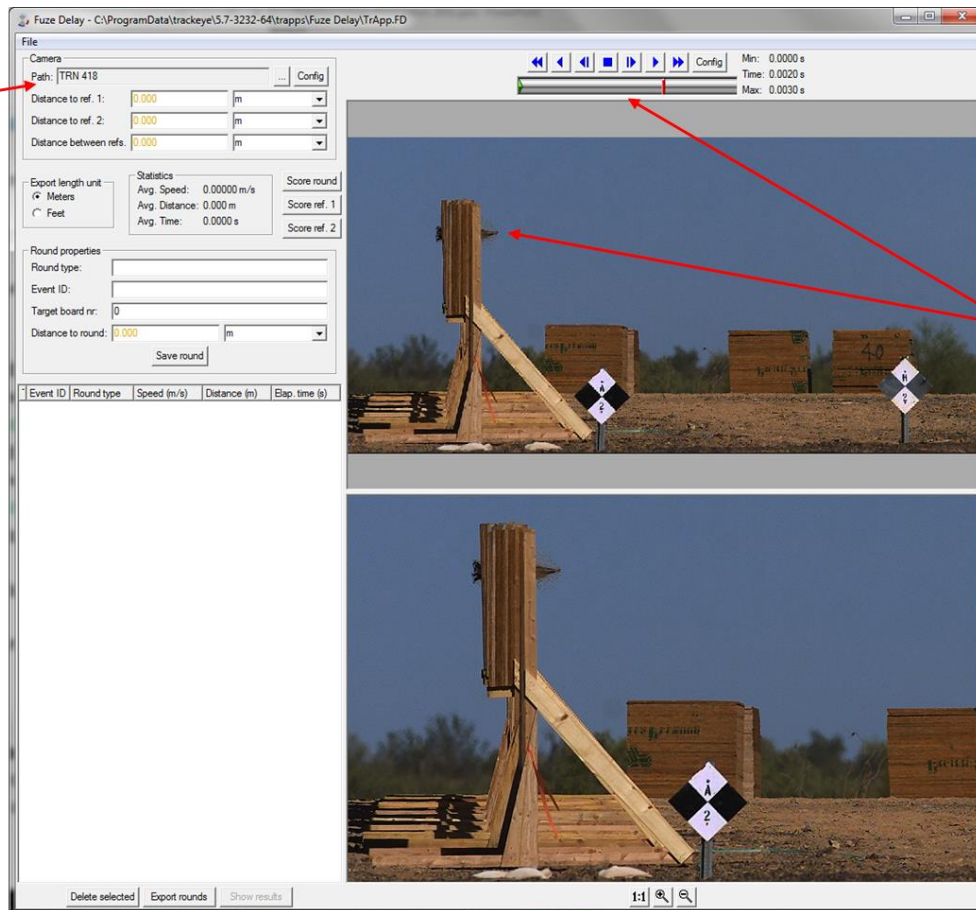


Step 1:
Load Image

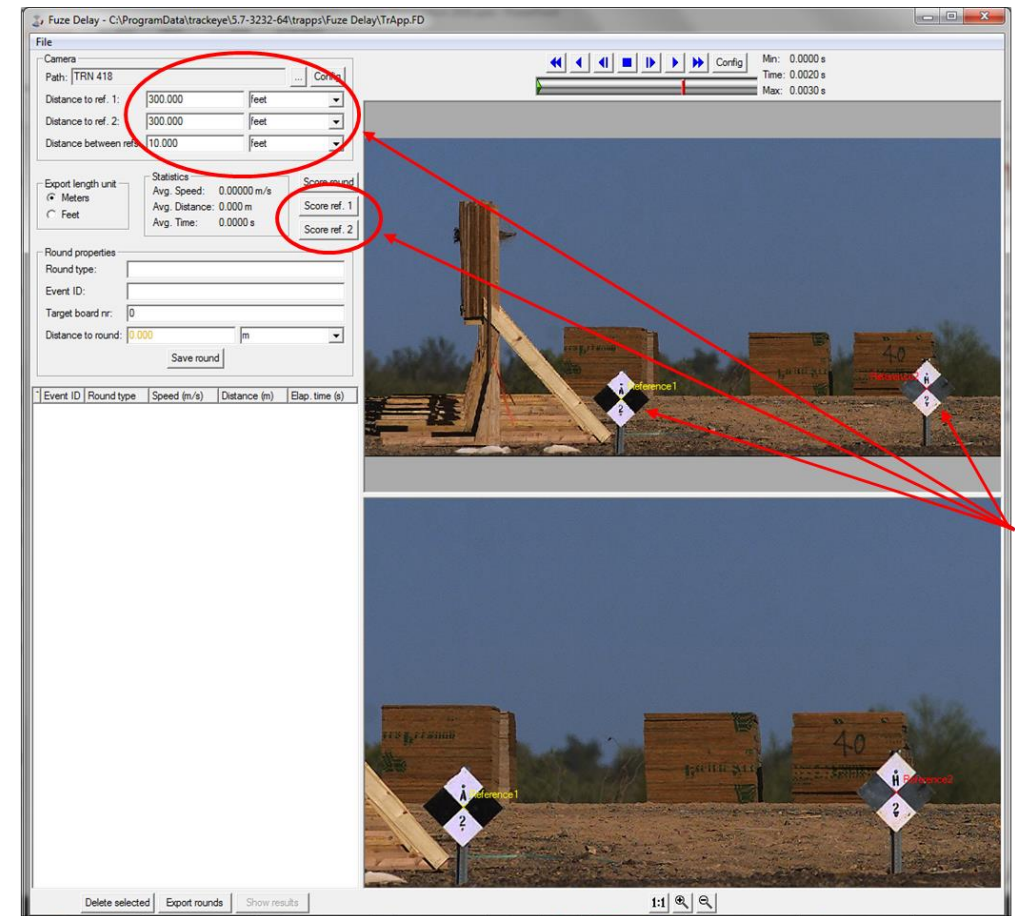


TRAPPS EXAMPLE FUZE DELAY

Step 1:
Load Image



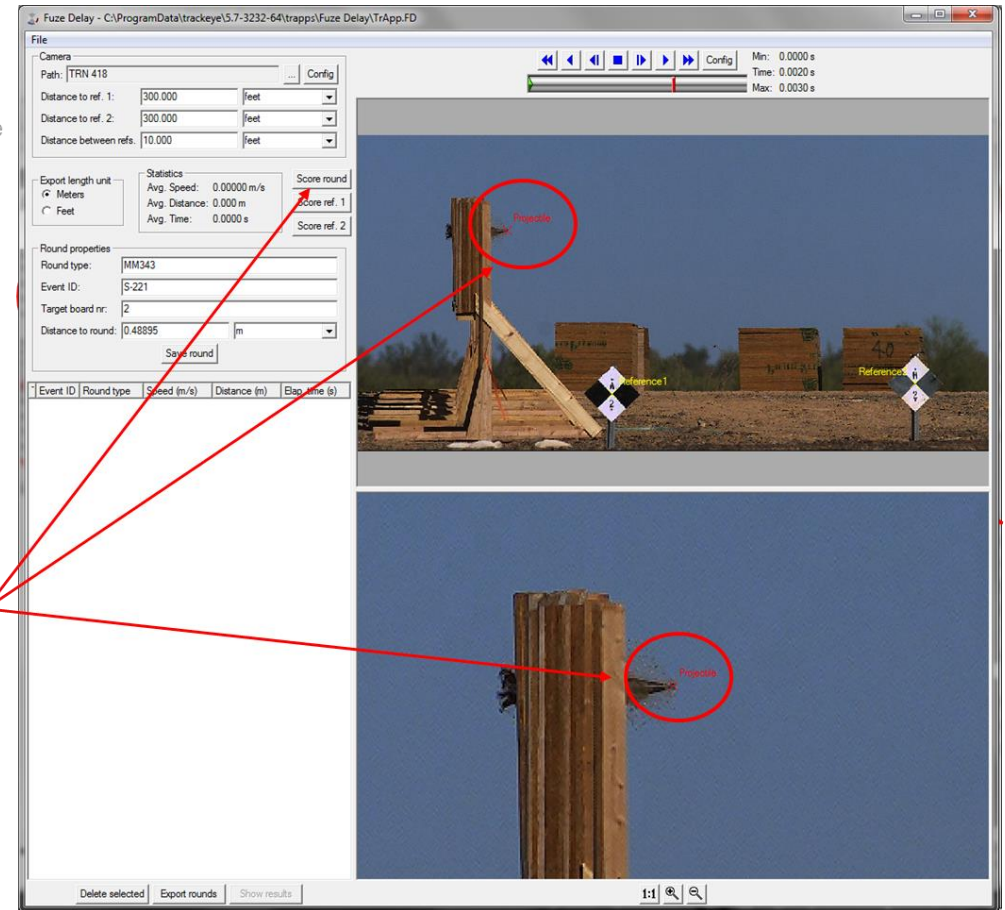
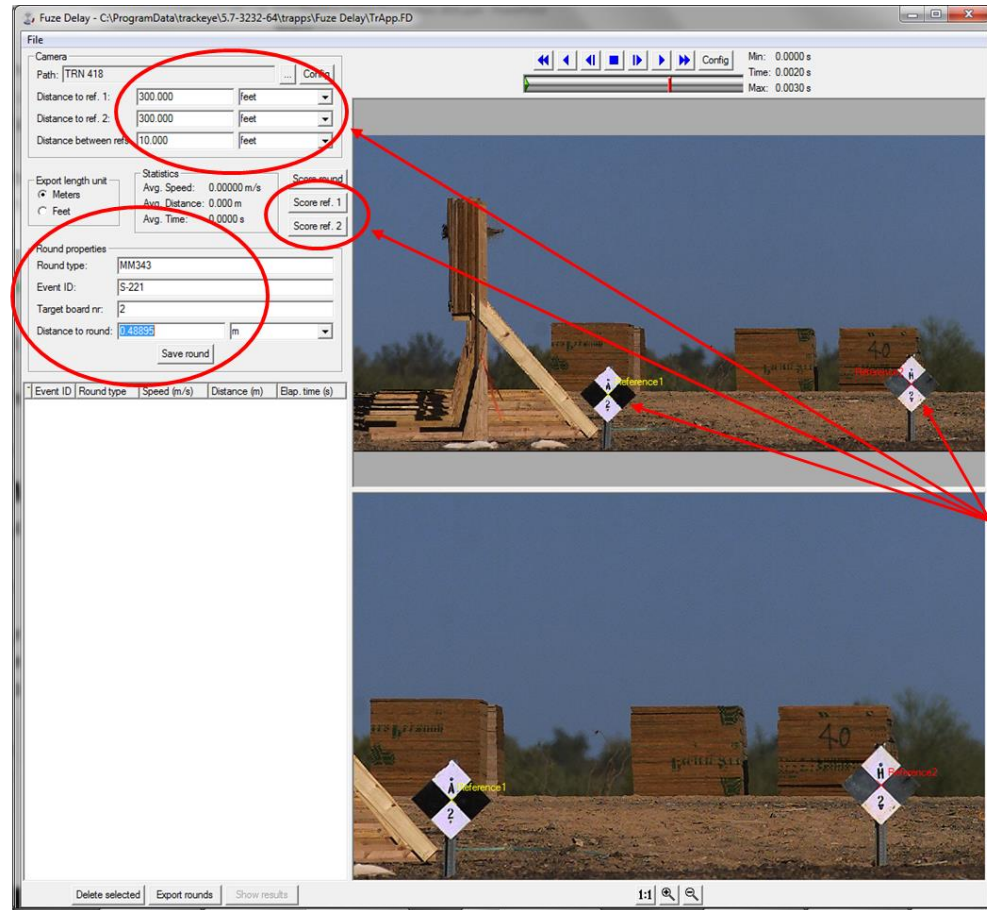
Step 2:
Advance
video to
first frame
of projectile
penetration



Step 2:
Advance
video to
first frame
of projectile
penetration

Step 3:
"Score"
reference points by
clicking their
locations and
entering the
survey data for each

TRAPPS EXAMPLE FUZE DELAY

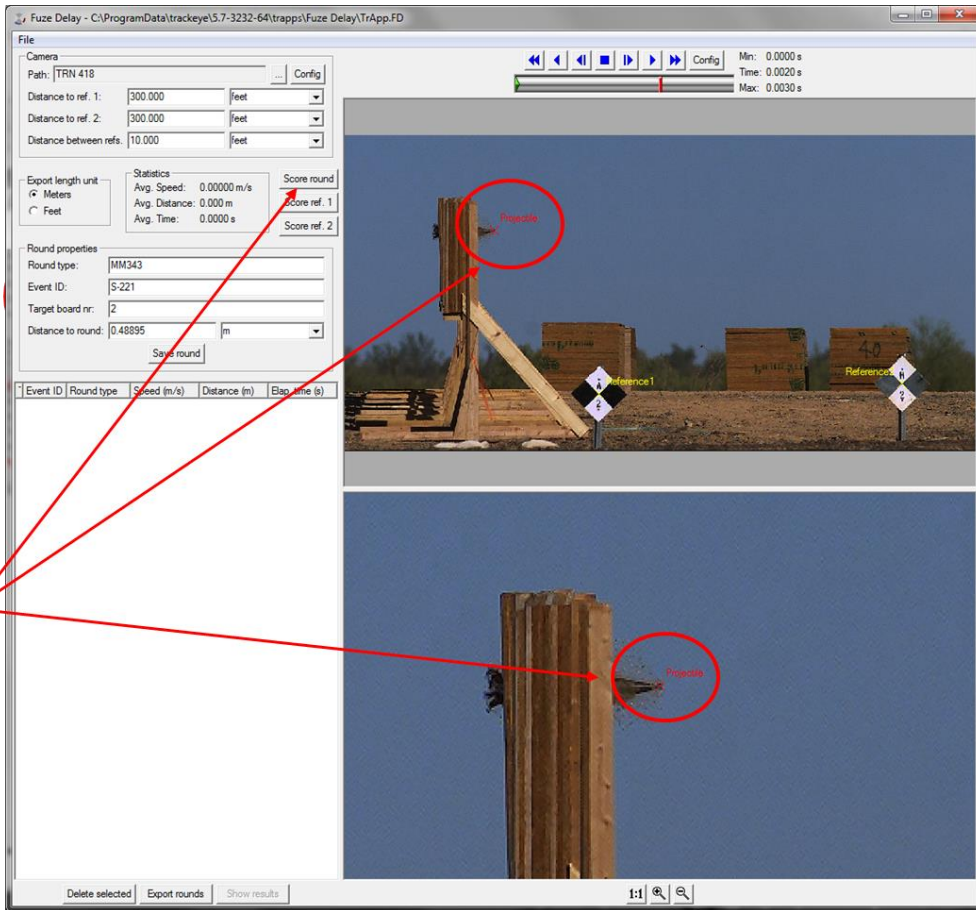


TRAPPS EXAMPLE FUZE DELAY

Step 1:
Load Image

Step 4:
Enter Test
Data

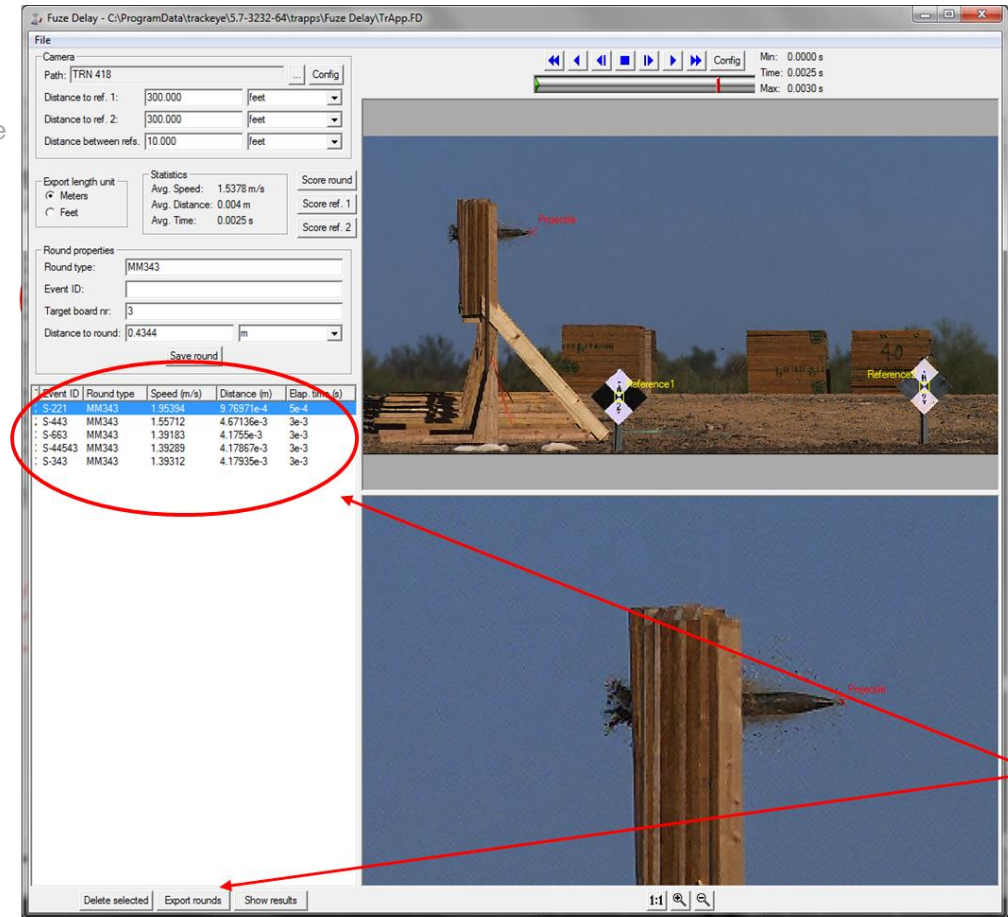
Step 5:
Round is
"Scored" by
clicking on
first frame of
penetration
and then last
frame before
detonation



Step 1:
Load Image

Step 4:
Enter Test
Data

Step 5:
Round is
"Scored" by
clicking on
first frame of
penetration
and then last
frame before
detonation



Step 2:
Advance
video to
first frame
of projectile
penetration

Step 3:
"Score"
reference
points by
clicking
their
locations
and
entering the
survey data
for each

Step 6:
Repeat for all
rounds, and
export data

TRAPPS EXAMPLE

FUZE DELAY

- Resulting data provides columns for all user-defined test data with corresponding speed, distance, and time data
- This test can be repeated many times very quickly, to allow for rapid analysis that may otherwise take much longer in TrackEye

The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D	E	F	G
1	Average Speed (m/s)	1.53778					
2	Average Distance (m)	0.00363637					
3	Average Time (s)	0.0025					
4	Event ID	Round Type	Target number	Distance (m)	Speed (m/s)	Elapsed time (s)	
5	S-221	MM343	2	0.000976971	1.95394	0.0005	
6	S-443	MM343	2	0.00467136	1.55712	0.003	
7	S-663	MM343	3	0.0041755	1.39183	0.003	
8	S-44543	MM343	3	0.00417867	1.39289	0.003	
9	S-343	MM343	3	0.00417935	1.39312	0.003	
10							

FUTURE TRAPP DEVELOPMENT

- TrApps will soon be used as the stepping-stone to create the new TrackEye platform, serving as a testing process before TrackEye is completely built in the new platform
- The idea is to make TrApp development “modular”, so future customer requests can be more easily handled using previously-built TrApps
- Other standard TrackEye features for presentation and analysis will likely be implemented regularly; such as 2D and 3D diagrams, Motion Planes, etc.
- There are already more customer-driven TrApps being conceived and developed
- The use of TrApps will help to broaden the TrackEye market, and introduce new users to the Image Systems product line

Image
SYSTEMS

MOTION ANALYSIS