

Adjusting the Minimum Separation Distance with AGC

John Jackson
USACE EM-CX

8 December 2021

Ground Truth	Analyst's Type				Total
	Non-TOI	Small TOI	Medium TOI	Large TOI	
Non-TOI	372	4	144	17	537
Small TOI	0	0	0	0	0
Medium TOI	2	0	10	2	14
Large TOI	2	0	2	33	37
Total	376	4	156	52	588

TOI events = true TOIs detected and correctly classified



"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."



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BRIEF HISTORY



- Environmental Security Technology Certification Program (ESTCP)
 - Live site demonstration program looked at size estimation ~2011-2015
 - DDESB representative on advisory panel
 - Summary of results on following slides
- USACE
 - Contracted several projects ~2014-2016
 - Primarily two uses
 - Is it a 100-lb bomb or not?
 - Did not use an exclusion zone for validation digs
- DDESB rescinded ability in December 2018
- USACE responded in May 2019



STATUS SINCE 2019-DARAD



- Memorandum is currently under review at DDESB
- Recommendation is for Army project teams to utilize DARAD
 - DA PAM 385-30 Risk Management provides DA FORM 7632
 - DA FORM 7632 -> Deviation Approval and Risk Acceptance Document (DARAD)

DEVIATION APPROVAL AND RISK ACCEPTANCE DOCUMENT (DARAD)					
For use of this form, see DA PAM 385-30; the proponent agency is DAS.					
SITE INFORMATION					
1a. Country:	1b. State:	2. Service:	3a. Installation Type:		
3b. Installation Name:			3c. Type of Site:		
DEVIATION INFORMATION					
4. Deviation #:	5a. Effective Date: <small>(Not auto populated from block 18.)</small>	5b. Expiration Date:	6. Deviation From:		
7. Type of Deviation:	8a. Number/Title and Paragraph of Requirement:				
8b. What we need to do that deviates from 8a. <small>(Synopsis of block 24)</small>					
8c. Operational, Strategic or Compelling Reason for Violation:					
9. Potential Consequences of Deviation from Approved Standards:	9a. # Fatalities:	9b. # Injuries:	9c. Equip/Fac Loss \$:	10. Date Deviation Initiated:	
11. Residual Severity:	12. Residual Probability:	13. Residual Level of Risk:		14a. Safety Professional/Analyst (POC Info):	
14b. Analyst Signature:	14c. Submitter (POC Info): <small>(If different from 14a.)</small>			14d. Submitter Signature: <small>(If different from 14a.)</small>	
14 e. REVIEWED BY:					
DATE	CONCUR <small>(YES/NO)</small>	ORGANIZATION	PRINTED NAME/TITLE	Attachment	SIGNATURE
				Attachment? <input type="checkbox"/>	
				Attachment? <input type="checkbox"/>	
				Attachment? <input type="checkbox"/>	
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- Army Memorandum #1 May 2021
- Army Memorandum #1 (rev) December 2021???



IDA & ESTCP ANALYSIS



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Ground truth	Prediction	Number
Large	Small	1
Large	Medium	67
Medium	Small	88

Size	Caliber or Diameter (mm)
Small	<50
Medium	>=50 and <100
Large	>=100

Overall unweighted averages:

- 89.85% (5,065/5,637) of TOI size predictions matched ground truth
- 7.38% (416/5,637) of TOI size predictions were larger than ground truth
- 2.77% (156/5,637) of TOI size predictions were smaller than ground truth

Target ID	Category	Dig Decision	TOI Size
XX-2003	Cannot Analyze	Excavate	N/A
XX-2013	Cannot Analyze	Excavate	N/A
XX-2030	Cannot Analyze	Excavate	N/A
...
XX-2323	Training Set	Excavate	N/A
XX-2338	Training Set	Excavate	N/A
...
XX-2413	Likely TOI	Excavate	Large
XX-2504	Likely TOI	Excavate	Medium
XX-2665	Likely TOI	Excavate	Medium
XX-2503	Likely TOI	Excavate	Small
XX-2278	Likely TOI	Excavate	Large
...
XX-2677	Cannot Decide	Excavate	Medium
XX-2364	Cannot Decide	Excavate	Small
XX-2616	Cannot Decide	Excavate	Small
...
XX-2674	Likely Clutter	Leave Unexcavated	N/A
XX-2058	Likely Clutter	Leave Unexcavated	N/A
XX-2274	Likely Clutter	Leave Unexcavated	N/A
XX-2054	Likely Clutter	Leave Unexcavated	N/A
XX-2541	Likely Clutter	Leave Unexcavated	N/A
...

Courtesy: Cazares, Fisher, IDA



SIGNIFICANT DISCUSSION POINTS



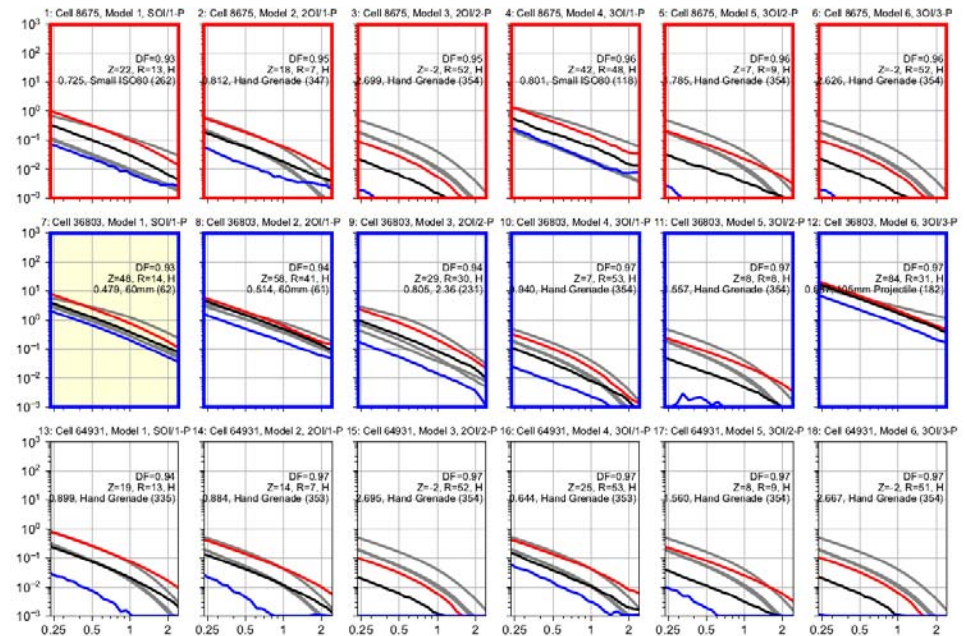
- DDESB's initial request was 90% accuracy, which has been exceeded.
- "97% correct" is good, but not perfect.
 - We must expect and prepare for a certain number of failures
 - Degree of which depends on project needs
- Critical failure was result of an inexperienced processor incorrectly classifying a 155mm as small when all other analysts stated "inconclusive."
- Some munitions (i.e., hand grenades) were incorrect binned by size
 - Will work with IDA and UXO experts to better define sizes



NEW POLICY EXCERPTS



- QAPP already required 100% accurate predictions, otherwise -> RCA/CA
 - And all MQOs, MPCs, DUAs, etc. completed
- Data collected with DAGCAP validated hardware and processed with DAGCAP validated software
- Project must have a single management system and QC Geophysicist identified
- Site specific SOP for size estimation
 - Don't make it harder than it needs to be (e.g., do you only care about 100-lb bombs?)
 - Needs to lay out a procedure for “conservative TOI selection” –vs- correct size
 - Submitted as part of ESS

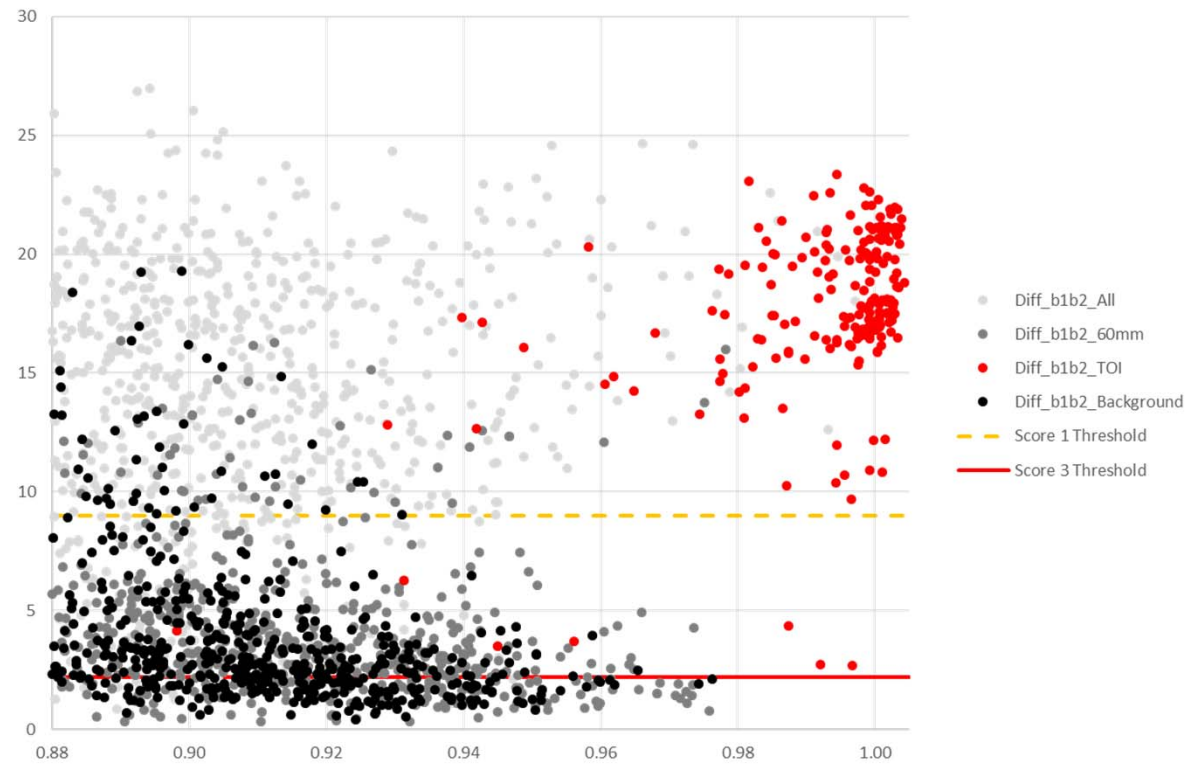




WHAT IF THERE'S A MISTAKE?



- The MSD applied for the remainder of the response actions will be based on the DDESB-AMGFD
- OR
- QA Standdown
 - RCA/CA review and approval
 - Army Technical QA Representative
 - Army OESS
 - Army Geophysicist
 - Contractor personnel
 - **USATCES**
 - **DAGCAP**





PATH FORWARD



- This is not a “process document”
- Coordination with DDESB and other DOD Agencies
 - Navy is mirroring this policy
 - Air Force is currently “wait-and-seeing”
- Set up process with Districts->EMCX
- Coordination with US Army Technical Center for Explosives Safety (USATCES)
- Get that signature!
 - Please see Mr. Bryan Frey

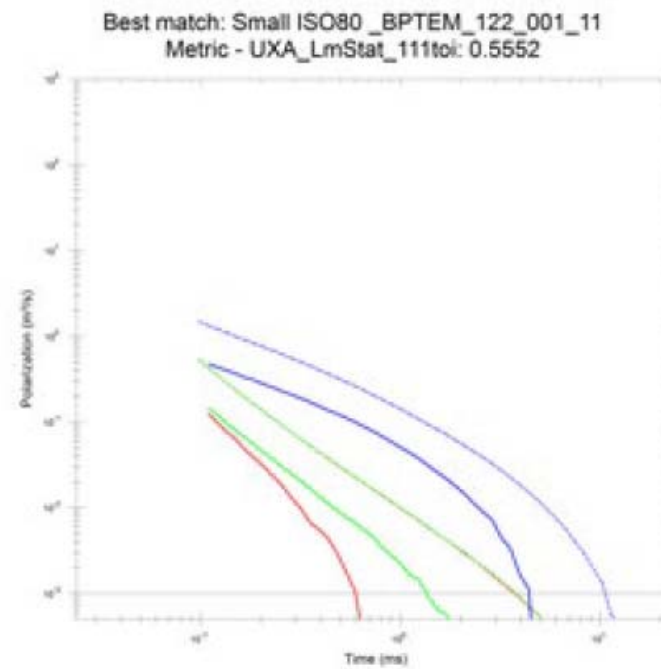
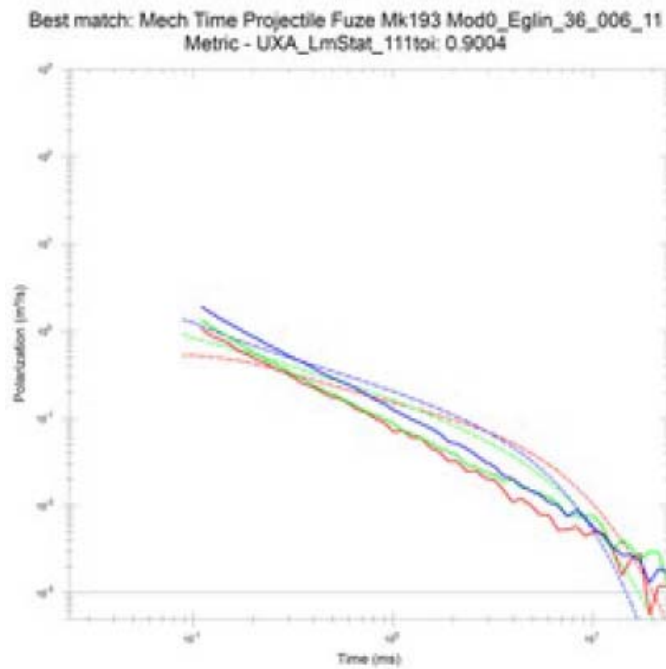


QUESTIONS?



2 sources

DTSCUC(1)



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Slide 10

DTSCUC(1 Image is blurry would recommend using a different one.

Doven, Tori S CIV USARMY CEHNC (USA), 12/7/2021