

# Engineer Rally Point



## Terrain Shaping at the CTC: A View From The ENG Company

### Key Terrain Shaping Questions

- Has EA DEV and obstacle integration changed or is it the same with new tools?
- What type of tools/munitions do we need to properly shape terrain in LSGCO?
- How do we shape terrain in open and rolling terrain like NTC given current obstacle capability? What about heavily wooded terrain?
- How effective are we at integrating obstacles for a defense?

### Desired Endstate

- ✓ Junior and mid-level leaders gain insight on effective terrain shaping TTPs and multi-compo interoperability best practices.

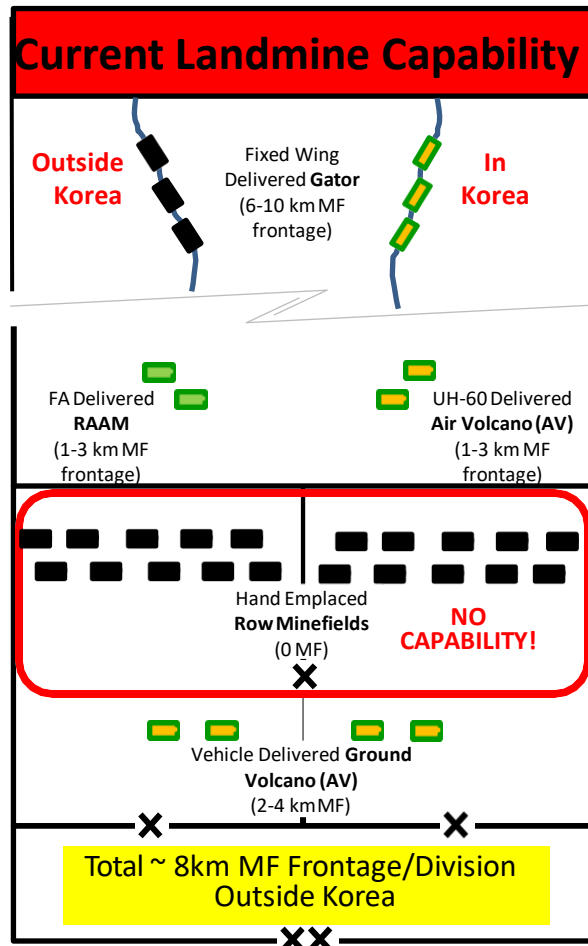


# Terrain Shaping: A Complex Function

LTC David Stalker, 23 BEB Commander



Throughout history, forces have attempted to turn, fix, block, disrupt and deter others through ever-evolving obstacle solutions. Successful defensive operations in military history have led to operational success and are characterized by applying the 7 Steps of Engagement Area Development.



Civil War  
Landmines - 1867



Row Minefields  
WW II - 1944



Volcano - 1990



SAVO – Interim  
Solution

## 7 Steps of EA Development

1. Identify all likely enemy avenues of approach.
2. Determine likely enemy scheme of maneuver.
3. Determine where to kill the enemy.
4. Plan & Integrate obstacles. \*
5. Emplace Weapons Systems. \*
6. Plan & Integrate indirect fires (CAS/CCA)\*
7. Rehearse execution in the engagement area.

"In a fight between a bear and an alligator, it is the terrain which determines who wins."  
– Jim Barksdale

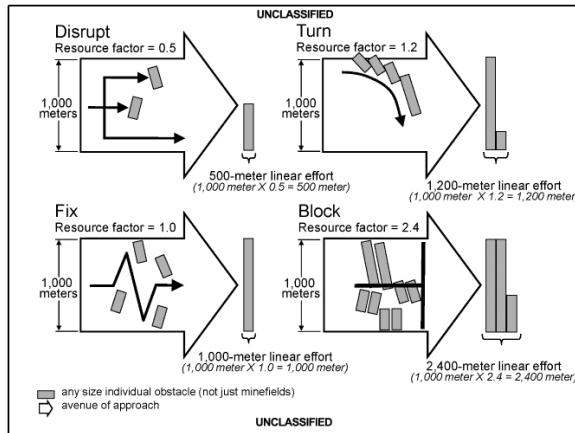


- = 1km Non-Persistent Minefield (MF) Frontage, full cap
- = less than full capability (due to munitions reliability &/or delivery platform vulnerability)
- = no capability

**Obstacle Integration** – “The actions that commanders and staffs apply to ensure that the employment of obstacles supports the commander’s intent and concept of operations.” *ATP-3-90.8 – para 3*

(Art Meets

## 1. Obstacle Design (Art)



## 2. Obstacle Resourcing (Science)



## 3. Obstacle Siting (Science)



### Anticipating Offensive-Defensive Transitions:

- Top-down Planning requires Bottom-up Refinement
- Early integration of TF ENGs (ENG have seat at Table)

### Countermobility Operations are Resource-Intensive:

- Must identify early to facilitate timely execution
- Open and rolling terrain requires obstacle systems to cover large areas rapidly

### SBCT in the Defense

#### Advantages

- Ability to maneuver & rapidly reposition
- Ability to dismount infantry
- ATGM assets
- Organic mortar assets
- Ability to mass fires
- Digital communication systems
- Defense in restricted terrain
- Sustain for 72 hours

#### Limitations

- Stryker survivability
- Defense of an open area
- Max effective range of weapons systems
- Limited standoff
- Limited engineer assets
- Vulnerability to Indirect Fire

**How do we mitigate these?**

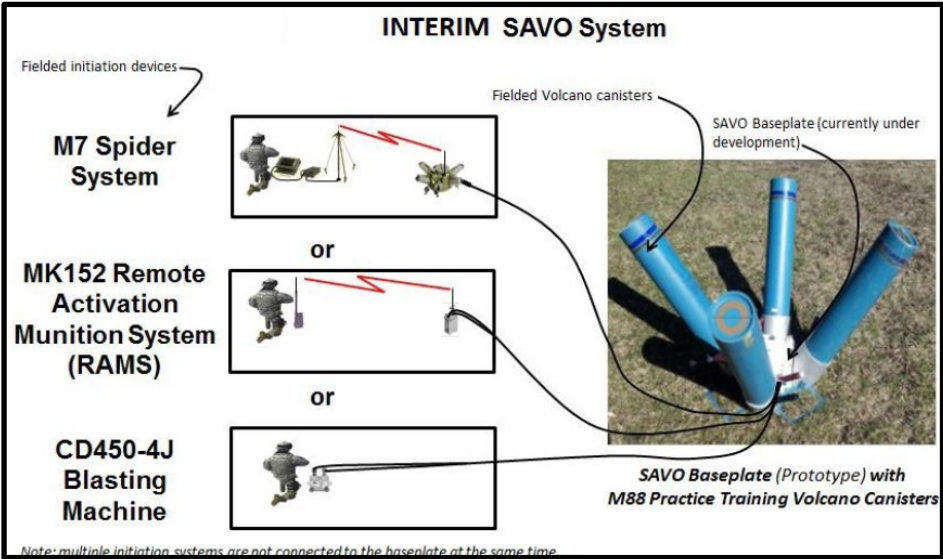
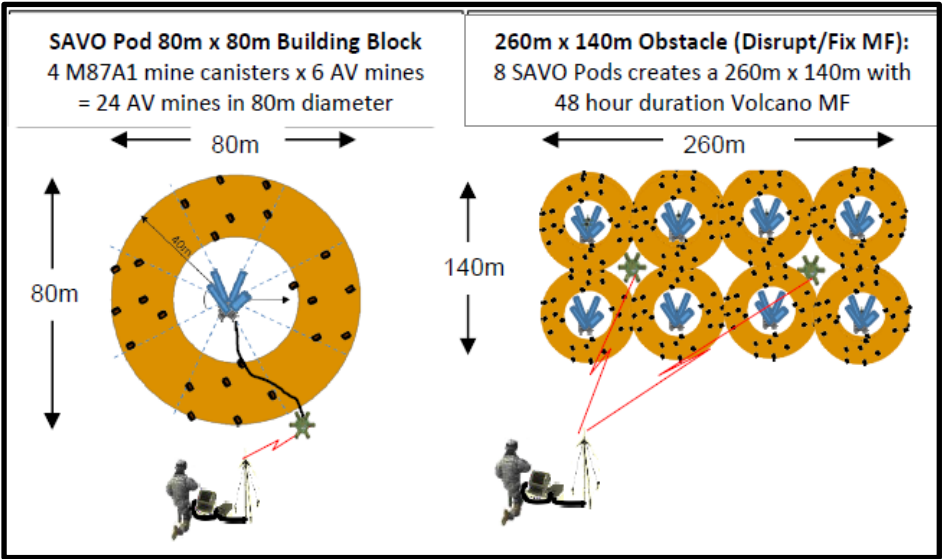
**How do we capitalize on these?**



# Standoff Activated Volcano Obstacle (SAVO)

MAJ Brad Laux, 23 BEB XO

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### Terrain Shaping Challenges:

- National Policy and Global Norms
- Current systems approaching obsolescence

### SAVO fills critical gaps in Directed Tactical Obstacles:

- Increased portability providing more flexibility in minefield employment
- Still requires “man in the loop” activation
- Can be recovered and reused prior to mine deployment



**ARDEC ARMAMENTS**

*Always a Step Ahead*

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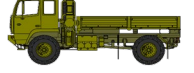
### SAVO Interim Training Packet:

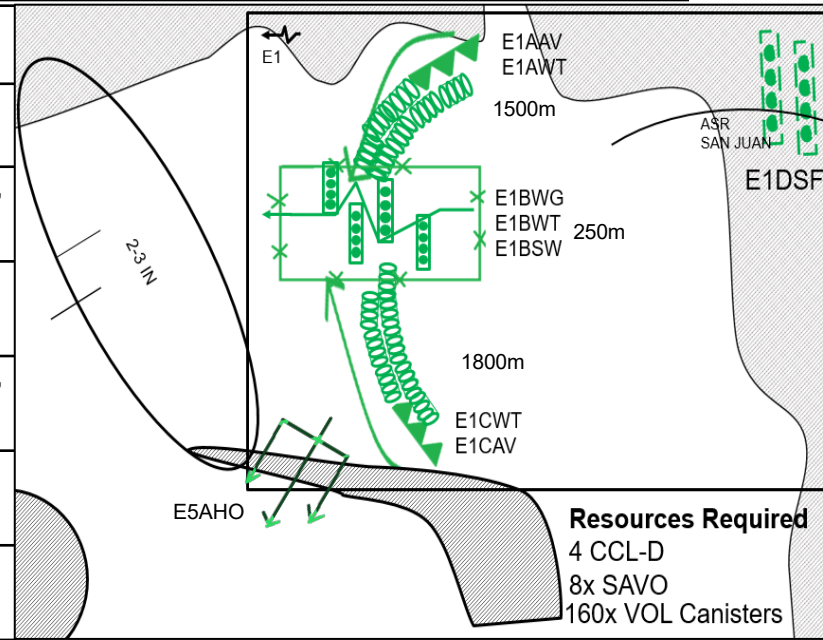
<https://www.milsuite.mil/book/docs/DOC-1088405>

# Company: NTC Northern Corridor

CPT Matt Schultes, CEC CDR



MTOE Vehicles	Combat Load
	2x SAVO, 8x Canister, Marking Material, CD450J Blasting Machine
	2x SAVO, 8x Canister, Marking Material, SLAM, RAMS-RF
	2x SAVO, 8x Canister, Marking Material, CD450J Blasting Machine
	2x SAVO, 8x Canister, Marking Material, SLAM, RAMS-MI
	80x Can VOL, CCL D (300m TSC)
	12x SAVO, 48x Canister, Marking Material, Specialty Equipment



## Lessons Learned

- Map recon does not reflect ground conditions for terrain shaping.
- Able to leverage SAVO + Volcano to mitigate impacts of wire shortage.
- SAVO excellent for uneven terrain and can be set up during RPOL.
- SAVO adds flexibility, but all available assets should be leveraged for achieving Combined Arms

### ISO 2-3 IN TF Patriots (Drinkwater)

	Proposed	Executed	% Complete
AVD	540 m	650 m	120% m
Berm	0 m	283 m	283% m
TSC			
DSC	3530 m	2228 m	63% m
SSC			
Frat Fence	250 m	2793 m	1117% m
HDP	0 ea	9 ea	ea
TDP			
VFP			
Crew Served			
	Planned	Executed	
VOLCANO	1 ea	1 ea	100% ea
RAAM	1 ea	0 ea	0% ea
SAVO	1 ea	1 ea	100% ea
CRATER	2 ea	2 ea	100% ea
SLAM	0 ea	2 ea	ea



### SAVO Employment Considerations

#### Selection of Terrain:

- Level the base plates (+/- 15 degrees)
- Micro-terrain (“Walk the ground”)
- Complementary Obstacle Emplacement

#### Space Management:

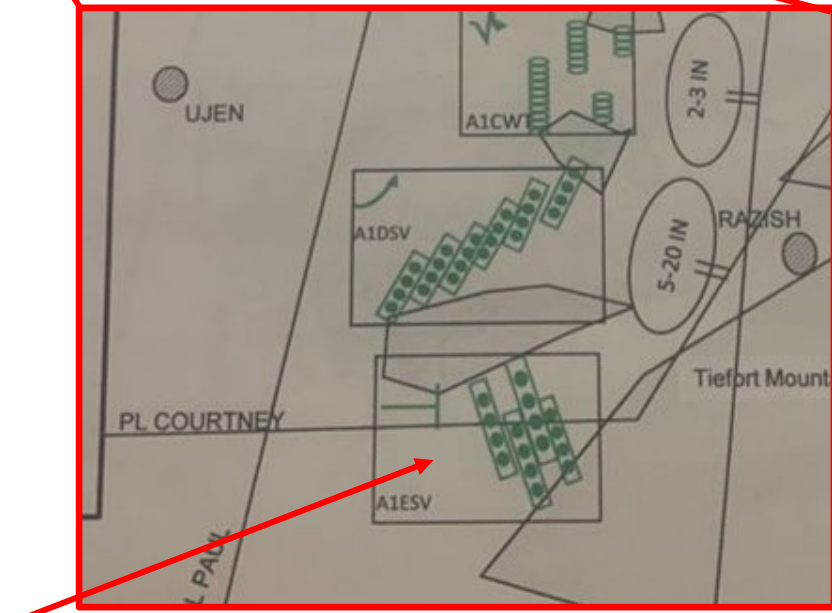
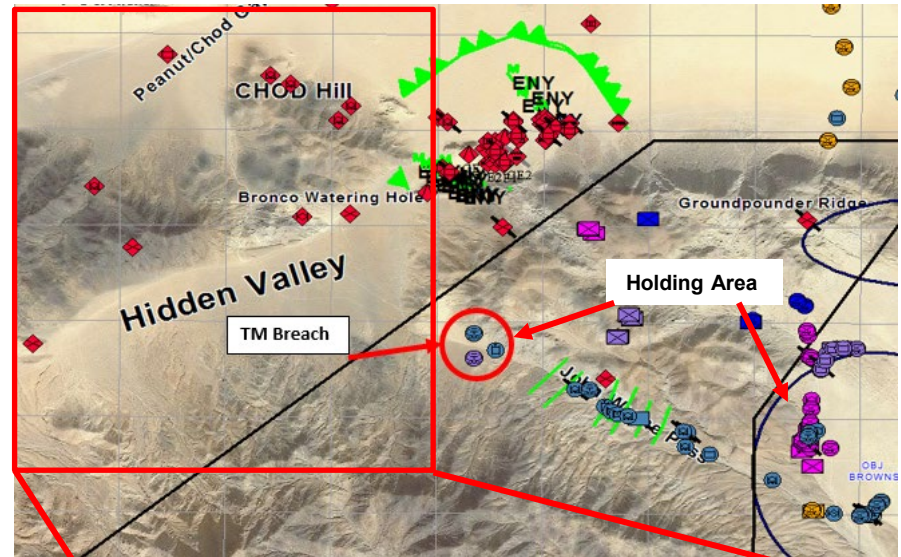
- Transportability: Plan for and rehearse load plans
- Terrain manager to “own the space”
- Creative management techniques

#### Time Horizons per Task:

- SAVO Emplacement (Day vs. Night)

### Lessons Learned

- Train as you Fight
- Train on Basics – 10 level (STT)
- Breadth – Qualified Alternates



# Multi-Component Interoperability

SFC Leake, Sapper PSG; SSG Madriz, S3 NCO



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## Active Duty and Reserve Component Interoperability

### Human Dimension:

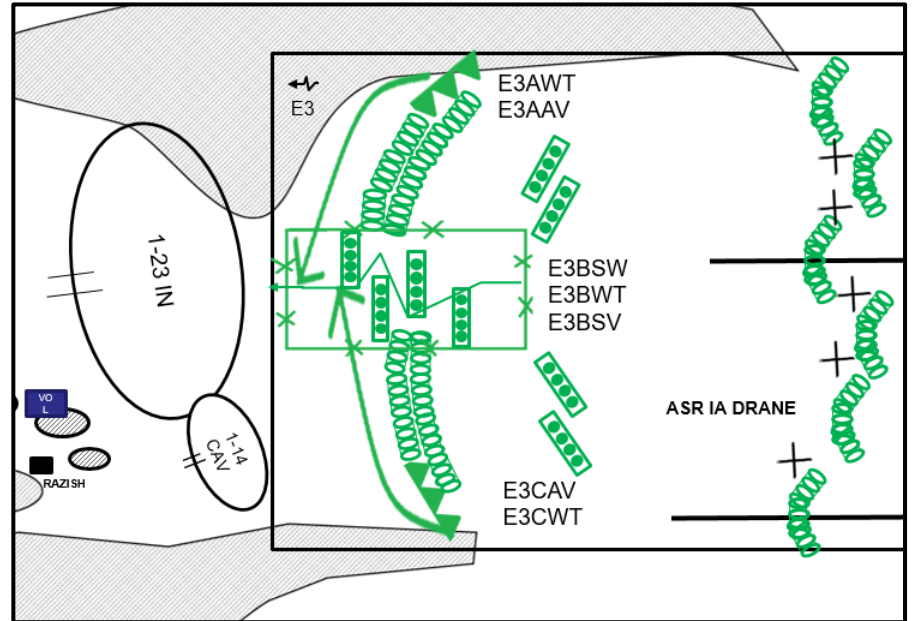
- Build the Team Early (Virtual IPRs, CDR Dialogue, Integrate PLTs into Annual Training)
- Implement LPDs to achieve common visualization and understanding of capabilities

### Procedural Dimension:

- TACSOP and TTP Integration
- Apply trained NCO's to "on the job" teach

### Technical Dimension:

- Ensure proper systems for secure communications (Right Personnel – Equipment - Location)



## Terrain Shaping Interoperability TTPs

1. Baseline Training for all Components
2. Leader Certification and Company Crosstalk
3. Embed Talent
  - NCO's on Ground
  - System Experts (JBCP)



# How do we train this?

CPT Matt Schultes, CEC CDR



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## How do we train for defense?

- Early integration with maneuver forces. Ensure shared understanding in capability and limitations of Engineer Force.
- Leader Development Programs that assess real-world events for effectiveness in shaping terrain for maneuver force.
- Ensure Leaders incorporate terrain shaping in training scenarios.

## Develop Training Plan

- Build Leader Expertise EQT I
- SAVO/SLAM Sergeants Time Training EQT II
- EQT III-VI Scenario Inclusion/Reinforcement
- Early Integration with Supported Maneuver Units

## Recommendations

- Increase TADS availability + quality at Home Station/CTCs.
- Add more Mobile Training Team (MTT) support.

Mission	FY Training Week	1PLT (Sapper)	2PLT (RCP)	3PLT (MS)	HQ
➔ Engineer Qualificaiton Table I	TW 15				
Driver's Training	TW 16				
Buddy Team LFX	TW 17				
➔ Team Leader Academy	TW 18				
REBS MTT	TW 19				
Panther NET/NEF	TW 20				
➔ Weapon Qualification Density	TW 21				
➔ Engineer Qualificaiton Table II	TW 22				
➔ Urban Breaching Demo Range	TW 24				
➔ Company FTX	TW 25				
➔ Squad LFX	TW 27				
7ID Obstacle Course Construction	TW 28-30				
Change of Command Inventories	TW 31-34				
➔ Cadet Summer Training	TW 35-46				
REBS Technical Manual Verification	TW 46				
➔ Stryker Gunnery	TW 47				
Wildland Firefighting PTDO/Training	TW 48				
Wildland Firefighting - Dixie California	TW 49-52				
➔ Brigade Training Cycle	TW 01-04				
NTC 22-03 Outload	TW 07-12				



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# What does the Regiment need to Focus On

LTC David Stalker, 23 BEB Commander

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- **How certain are you that we would win if we went to war with a near-peer threat?**
  - Azerbaijan's drones owned the battlefield in Nagorno-Karabakh (2020)
  - Ukrainian / Russian War (2022)
  
- **Do we need to change the way we think about terrain shaping operations?**
  - Importance of masking
  - Deception ISO terrain shaping



# Q&A Session

# CLOSING REMARKS

# Speaker Contact Information

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