TOUGH STUMP
TECHNOLOGIES

MESH networking,
Multi-Casting & Drone
Operations

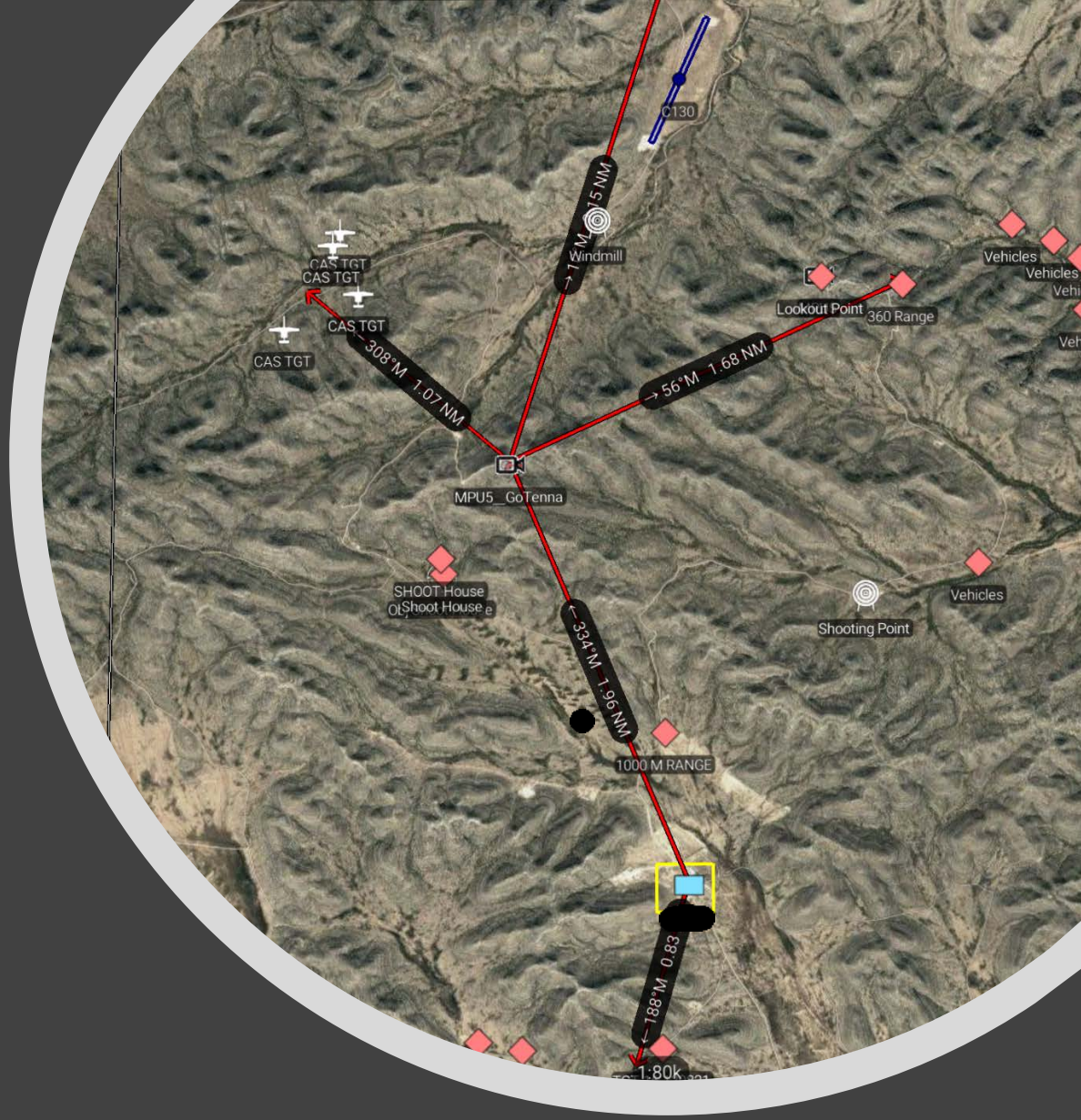
UAS Tool Kit

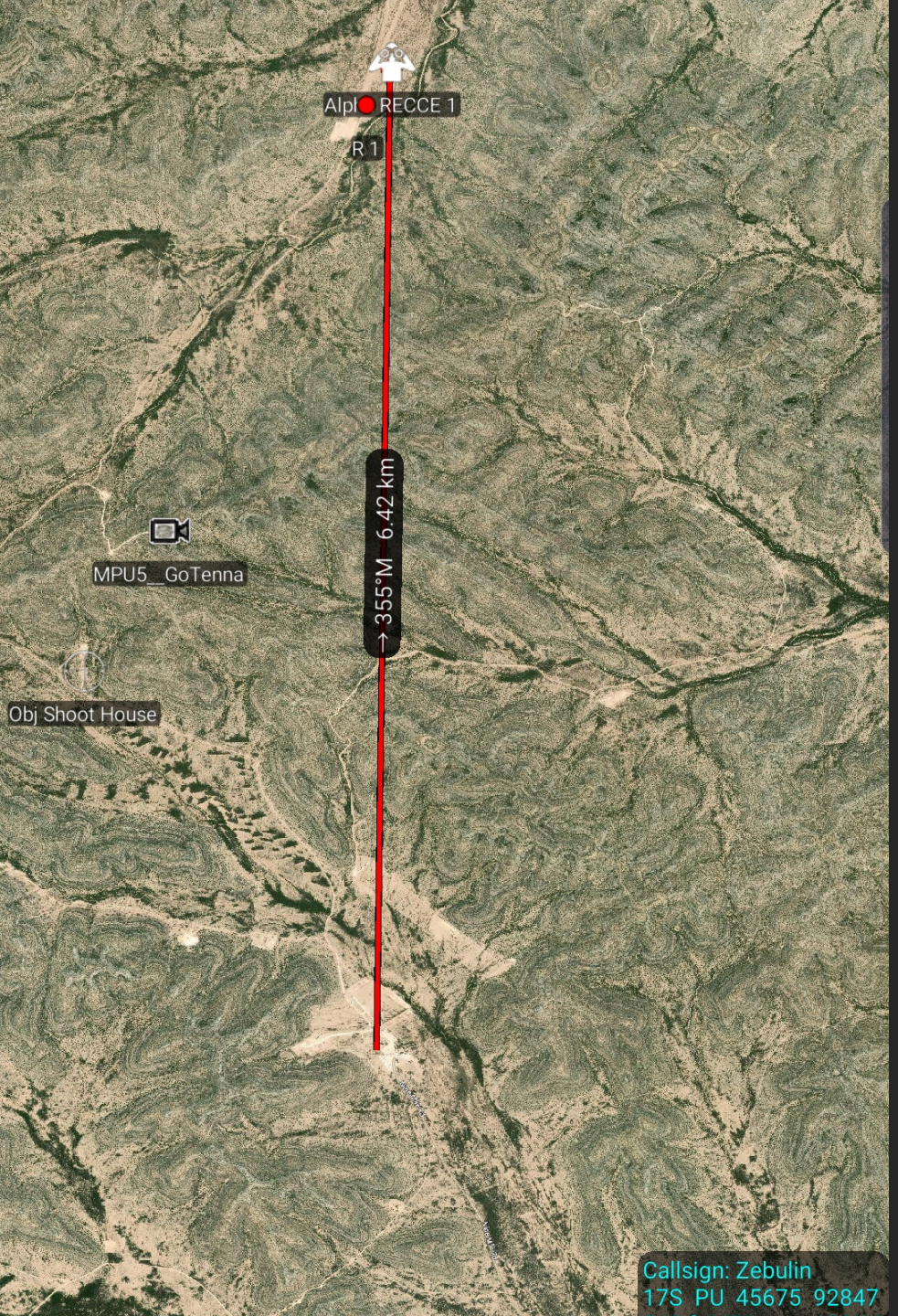
•Task: Use the UAS Tool through ATAK to control and cast images to other users on a MANET.

•Condition: Establish a reliable BLOS MANET via MPU-5 & GoTenna. Operate a DJI SUAS and cast/share images & SPI.

•Standard:

- Successfully track devices BLOS from the TOC through the MANET (MPU-5 & GoTenna)
- All users in the network receive messages
- Fly a single SUAS and cast to all users
- Fly multiple SUAS and cast to all users
- Transfer ARTEMIS imagery through MANET for TOC processing. Then receive orthomosaic to upload to ATAK.

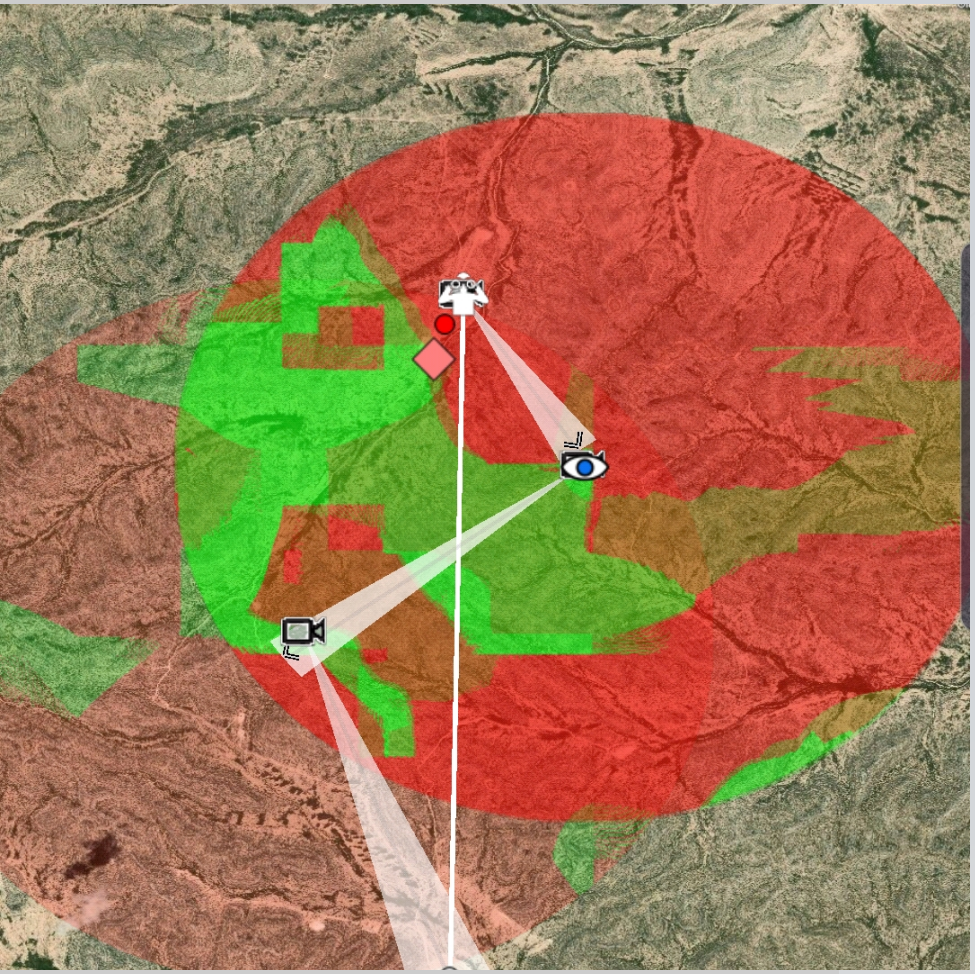




UAS Tool Kit

Successfully track devices BLOS from the TOC through the MANET (MPU-5 & GoTenna)

From the TOC the objective was the airfield, North 6.4 km.



UAS Tool Kit
Successfully track devices BLOS from the TOC through the MANET (MPU-5 & GoTenna)

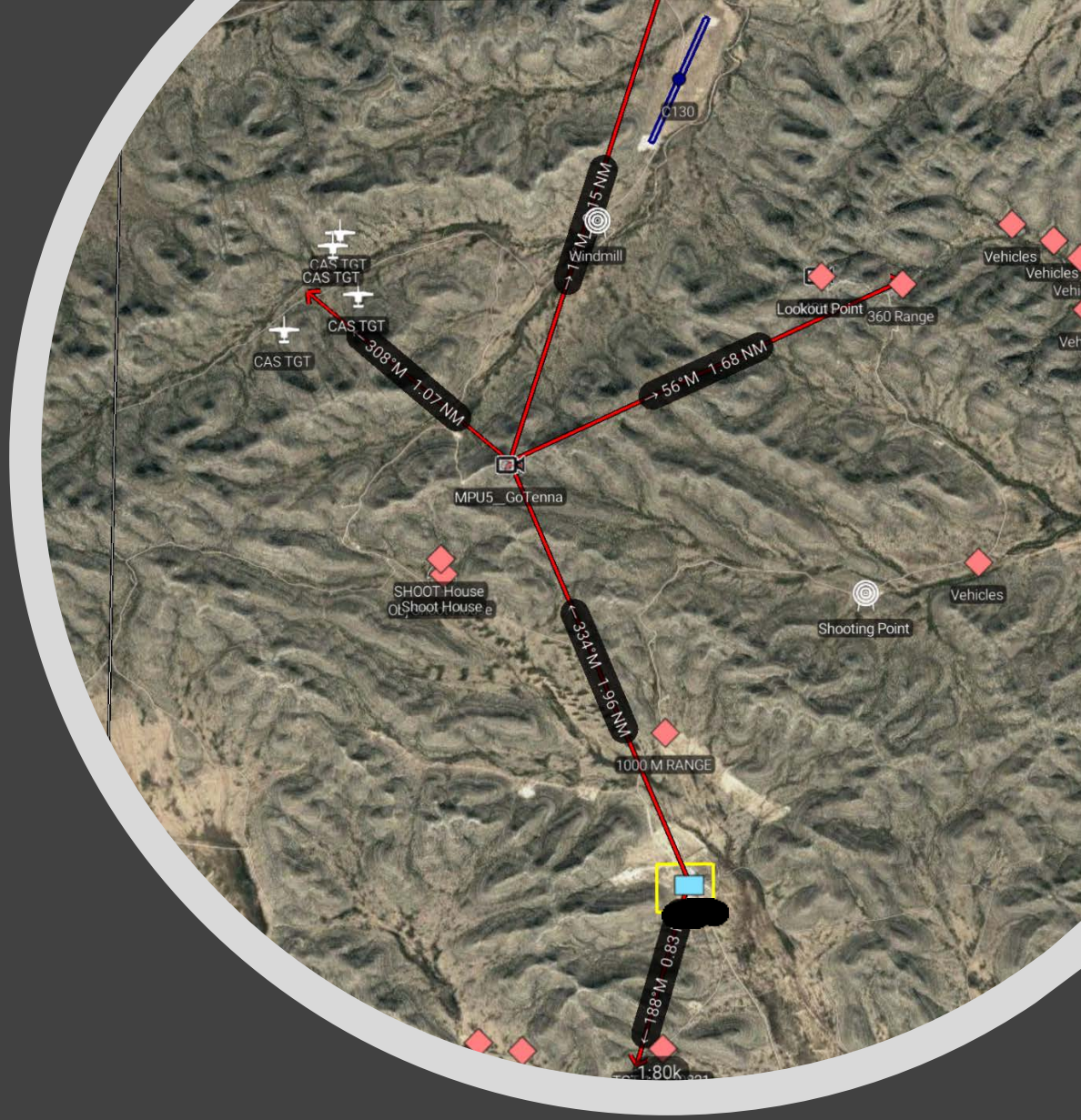
- There was significant LOS obstructions. We emplaced two relay system locations to tie the TOC to the airfield.
- Using ATAK as method to PDSS the elevation of an AO. Then using Viewshed to analyze the LOS.

UAS Tool Kit:

All users in the network receive messages

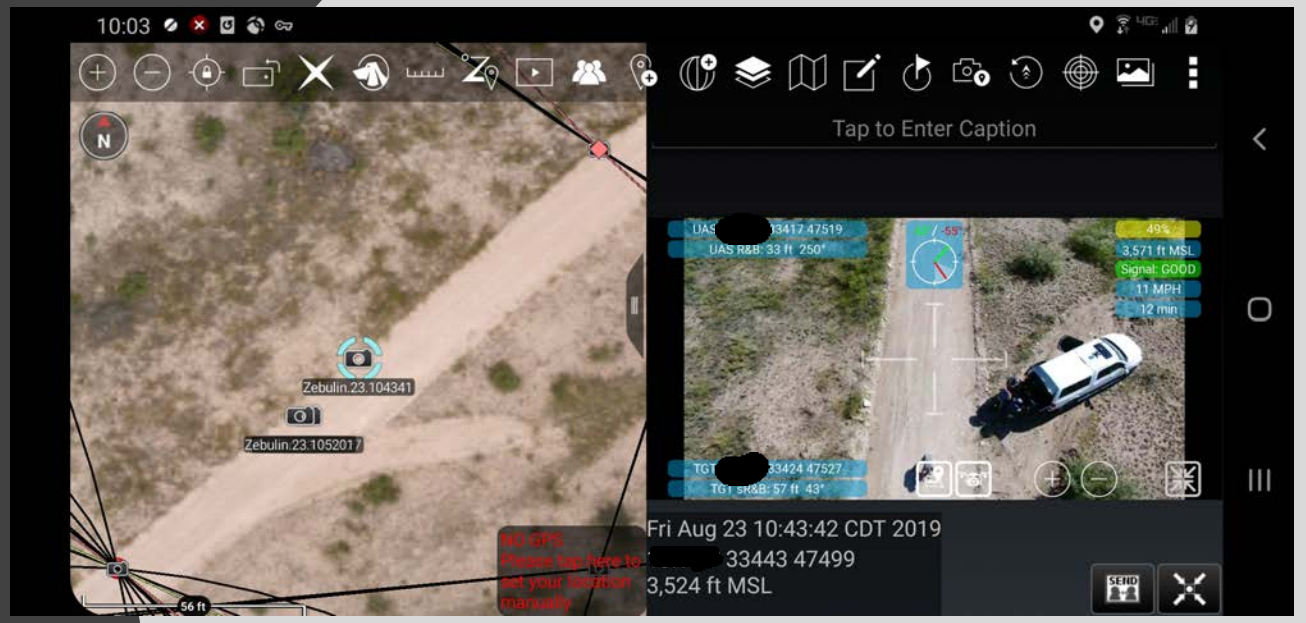
•With good analysis and placement of relays, all device with good LOS had no issues communicating either through GoTenna or MPU-5 with each other and the TOC.

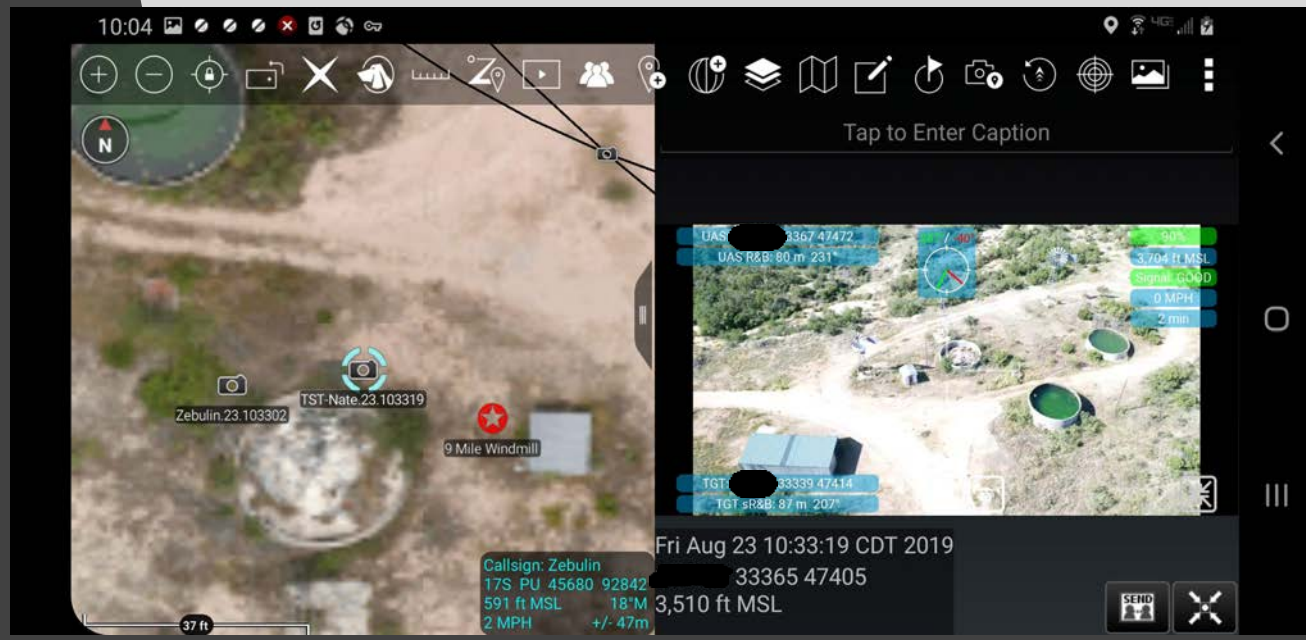
•One network would supplement the other with regards to receiving messages.



UAS Tool Kit: Fly a single SUAS and cast to all users

- Single casting was a success pushing the feed through the UAS Tool kit plug-in with ATAK v. 3.12.
- TST flew a single DJI Mavic Pro 2 using a Samsung S 10. All ATAK users could follow the cast through the MANET, MPU-5.
- The TOC (tactical operations center) battle tracked the SUAS using WINKTAK. The TOC could see the SPI, SUAS and receive video, cast and photos thought the UAS Tool Kit plug-in.



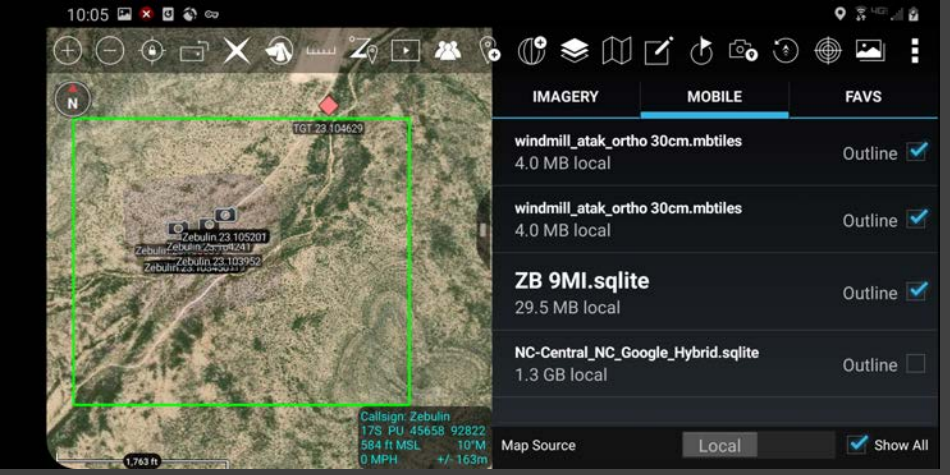


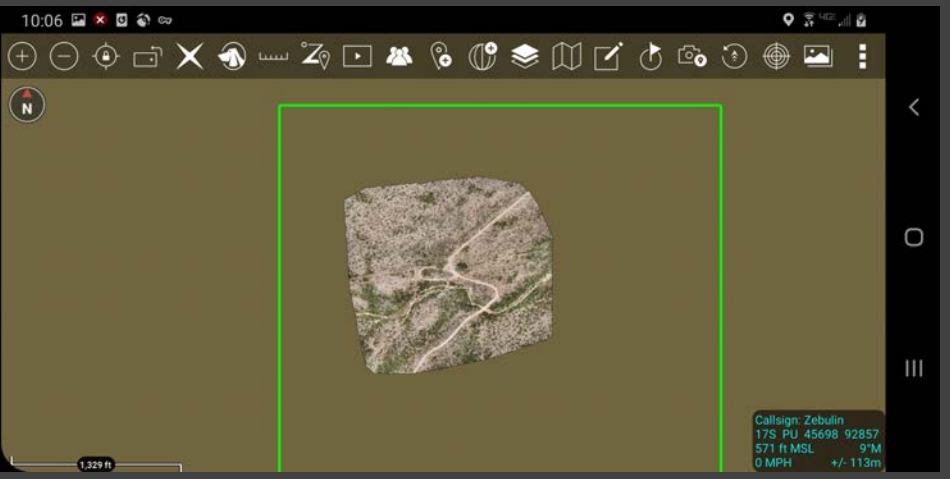
UAS Tool Kit: Fly a single SUAS and cast to all users

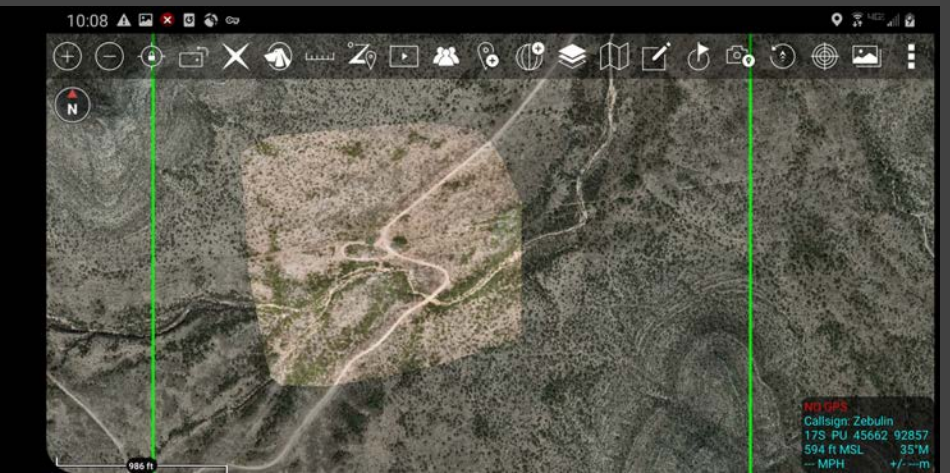
- TOC video of the single cast feed.

UAS Tool Kit: Fly multiple SUAS and cast to all users

- TST flew 2 Mavic 2's and attempted to Multicast to all users in the MANET.
- TST was only successful single casting from one EUD. Reason is thought to be a mismatch of ATAK and UAS tool kit.
- TST was using both ATAK v 3.11 & 3.12 on our S10
- Unsuccessful Multicasting.







UAS Tool Kit: Transfer ARTEMIS imagery through MANET for TOC processing. Then receive orthomosaic to upload to ATAK

- TST flew an ARTEMIS system 6.5km from the TOC
- Sent the collected data over the MANET by establishing an FTP (file transfer protocol) on a device to allow the TOC to process the data.
- The ARTEMIS imagery was sent back to the field team via the MANET which was imported to ATAK as a map layer.
- Endstate: the field team deployed, mapped terrain, transmitted & received ARTEMIS data to have 2-hour old imagery to plan a SUAS mission from. Mission Success.

QUESTIONS?

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"Own The Terrain"

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