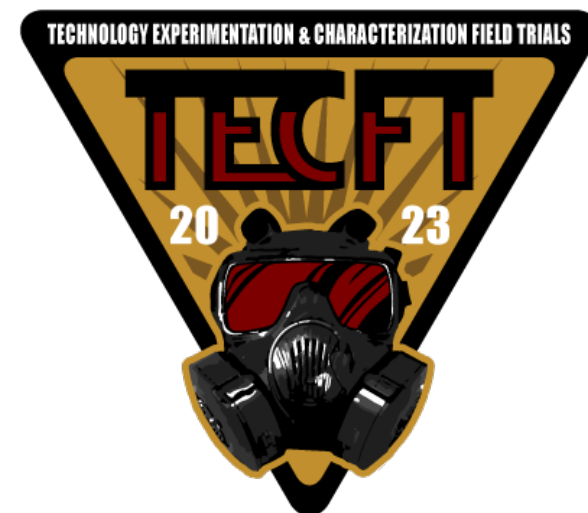




Technology Experimentation and Characterization Field Trials (TECFT) 2023 Dugway

"Technology Fit for the Warfighter"

Customer Briefing
TECFT Kickoff Calls
November 15 and December 6, 2022





Presentation Outline

- TECFT Introduction and Benefits
- TECFT 2020 and 2021 Dugway Summary
- Testing Environment
- Test Event and Daily Schedules
- Simulants Planned
- Technology types anticipated
- Participation Cost
- Important Dates



TECFT Introduction

- An enhancement to previous test events allowing expanded testing capabilities
- Conduct annually at alternating test environments (e.g., littoral, desert) providing a variety of operational conditions
- Support additional test protocols for other Chem, Bio and Rad domains, such as Protection and Decontamination
- Multiple-week field test event with several threat-relevant chemical and biological simulant releases and radiation scenarios to fulfill end-user needs

Benefits:

- Facilitate progression of technologies to fielded systems by generating critical test data
- Ability to use referee data to better understand and characterize their technology/system performance
- Enable cost sharing, earlier testing, faster development, and increased awareness of new and emerging technologies
- Provide opportunities for validating Tactics, Techniques and Procedures as part of technology deployment concept and requirements development



TECFT Background

- S/K Challenge events
 - Concept expanded and rebranded as TECFT
- TECFT 2020
 - Conducted chemical vapor and biological aerosol simulant releases
 - Dugway Proving Ground, UT: Two weeks in September/October 2020
- TECFT 2021
 - Added new chemical (*“spills”, surface contamination*) and radiation (*sealed sources*) scenarios
 - Briefed additional organizations (e.g., JPEO CBRND, RND Working Group) to identify potential new customers
 - Indian Head, MD: One week with Marine CBR expert users as operators in July 2021
 - Dugway Proving Ground, UT: Two weeks in September/October 2021



TECFT 2020



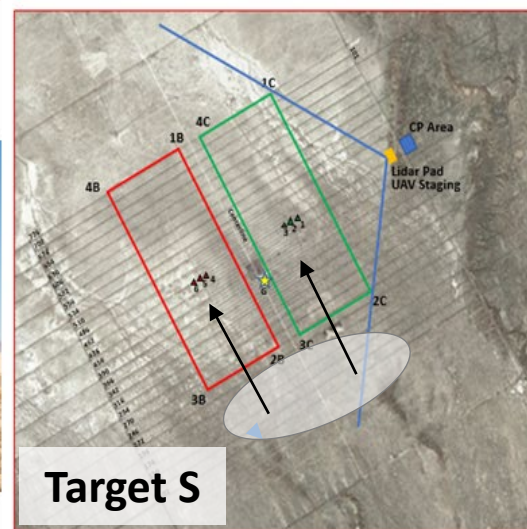
2020 Dugway



ASC



JABT



Target S

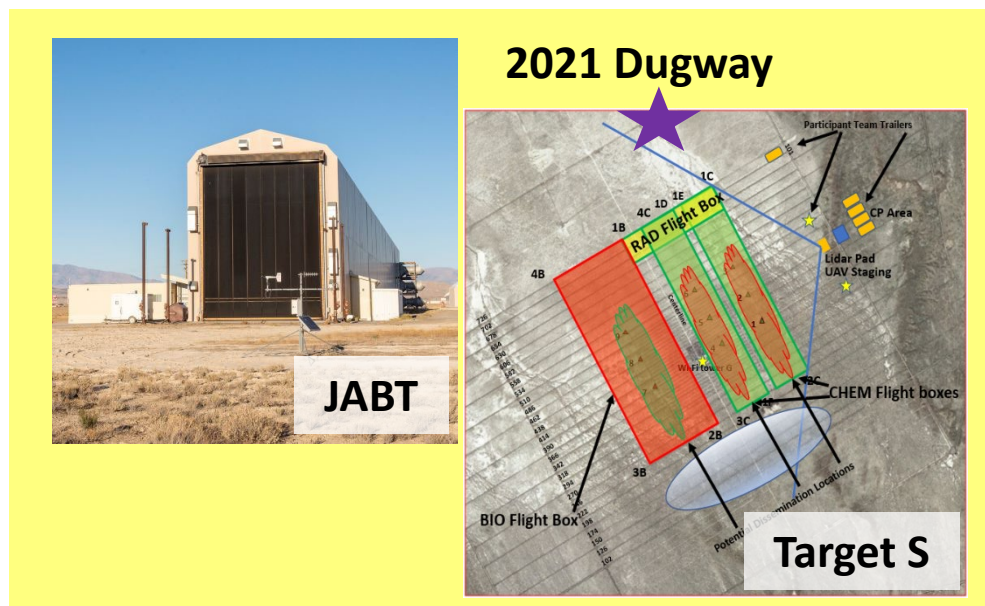
- Dry, high desert environment
- Outdoor chamber/tunnel and open field releases
- Two-grid system: biological and chemical scenarios
- Technology types: Standoff, fixed site/arrayed/networked, and UAS-mounted detectors



TECFT 2021



- Humid environment/confined spaces
- USMC CBIRF CBR expert operator-specific procedures
- Chemical and radiological scenarios
- Technology types:
 - UAS-, UGV-, and vehicle-mounted detectors
 - Handheld detectors
 - Wearable devices



- Dry, high desert environment
- Outdoor tunnel and open field releases
- Four-grid system: biological, chemical, and radiological scenarios
- Technology types:
 - Standoff detectors
 - Fixed site, arrayed, and/or networked detectors
 - UAS- and UGV-mounted detectors



TECFT 2023 Plans



TECFT 2023 Dugway:

- Dugway Proving Ground will host June 4 – 16, 2023
- Two weeks: Tunnels (JABT/ASC) and Target S
- Focus: Chem and Bio sensor tests using aerosol and vapor simulant releases during nighttime testing
- Exploring the possibility of including radiological scenario(s)
- Will continue to implement a test-fix-test paradigm that characterizes performance of technology solutions to ensure operationally-relevant capabilities are delivered
- Open to government/interagency/international partners; U.S. industry & academia



Dugway: Multi-use Test Range



- Complex of 27 instrumented ranges, grids, test sites & impact areas
- Chemical and Biological, munitions, smoke & obscurants, and illumination testing
- Outfitted with dissemination, referee, meteorological sensors and communication technology
- Environmental permits for outdoor open-air testing with all appropriate Chemical and Biological simulants
- Four major impact areas, nine drop zones, 91 artillery firing point





TECFT 2023 Dugway Significant Dates



Planning activities

- Customer web/teleconference calls:
Biweekly starting Tuesday, January 10, 2023
Logistics calls with customer teams as needed
- Site Visit: *optional (a few months ahead of time)*

Onsite activities

- Customer Setup Week 1 (ASC/JABT): **June 4, 2023**
- Execution Week 1: **June 5 – 9, 2023**
- Customer Setup Week 2 (Target S): **June 11, 2023**
- Execution Week 2: **June 12 – 16, 2023**
- Customer Teardown: **June 16, 2023**



Sunday Setup Day schedule



Sunday, 4 and 11 June 2023

1200-1230	Meet at the Holiday Inn Express lodge on Dugway
1230-1330	Safety/UXO Brief. Depart English Village enroute to JABT/ASC or Target S
1330-TBD	Customer equipment set up
TBD-2300	Conduct Chem/Bio trials (If time allows)
2300-2330	Collect data
2330	Depart JABT/ASC or Target S

*For those without a DoD CAC, we can prearrange to have personnel at the main gate to help participants with visitor passes and for those showing up outside designated times.



Anticipated Daily Schedule:

Monday, Tuesday, Wednesday and Thursday



TIME	EVENT
NLT 1800 hrs	Mustering point (English Village)/Drive to Range
1830-1900 hrs	Show up at Range, Sign for Radios
1900-1930 hrs	Safety Brief and Operational Brief (Command Post)
1930-2100 hrs	Daily Setup and Checks
2100-2130 hrs	Final Checks and Corrections
2130-0400 hrs	Test Operations
0400-0500 hrs	Data Collection and Daily Retrograde
0400-0500 hrs	Turn in Radios
0500-0530 hrs	All Personnel Off the Range No Later Than

NOTE: All times are Mountain Time (MT) and subject to change



Proposed Trials (Week One)



- **Breeze Tunnel and Chamber Releases (JABT & ASC)**

- Up to 40 ea Chemical Simulant Trials
 - Methyl Salicylate (MES)
 - Triethyl Phosphate (TEP)
 - Sulfur Hexafluoride (SF6)
 - Syloid/TEP
 - *Isopropanol (IPA) – end of night/optional*
- Up to 40 ea Biological Simulant Trials
 - *Bacillus subtilis Var Niger (BG)*
 - *Bacillus thuringiensis subsp kurstaki (Btk)*
 - *Erwinia herbicola (EH)*
 - Ovalbumin (OV1)
- Interferents/Contaminants
 - Burning rubber
 - Burning diesel
 - Burning brush
 - Road dust



NOTE: Weather Dependent



Release Types

- **Breeze Tunnel and Chamber Releases (JABT & ASC)**
 - Up to 40 ea Chemical Simulant Trials
 - Wet Chemical Simulants
 - Dry Chemical Simulants
 - Vapor Chemical Simulants
 - Up to 40 ea Biological Simulant Trials
 - Wet Biological Simulants
 - Dry Biological Simulants





Proposed Trials (Week Two)

- **Outdoor Field Releases (Target S; two-grid configuration)**

- Up to 10 ea Chemical Simulant Trials
 - Methyl Salicylate (MES)
 - Triethyl Phosphate (TEP)
 - Sulfur Hexafluoride (SF6)
 - Syloid/TEP
 - *Isopropanol (IPA) – end of night/optional*
- Up to 10 ea Biological Simulant Trials
 - *Bacillus subtilis* var. *niger* (BG)
 - *Bacillus thuringiensis* subsp *kurstaki* (Btk)
 - *Erwinia herbicola* (EH)
 - Ovalbumin (OV1)
- Interferents/Contaminants
 - Burning rubber
 - Burning diesel
 - Burning brush
 - Road dust



NOTE: Weather Dependent



Release Types

- **Outdoor Field Releases (Target S)**

- Up to 10 ea Chemical Simulant Trials

- Wet Chemical Simulants
- Dry Chemical Simulants
- Vapor Chemical Simulants
- Explosive* Chemical Simulants

- Up to 10 ea Biological Simulant Trials

- Wet Biological Simulants
- Dry Biological Simulants
- Explosive* Biological Simulants





Dugway Referee Instrumentation



- Bio Simulant Releases (Aerosol)
 - Aerodynamic Particle Sizer (APS)
 - Wideband Integrated Bioaerosol Sensor (WIBS)
 - Light Detection and Ranging (LIDAR) System
- Chem Simulant/TIC Releases (Vapor and Liquid)
 - Gasmet Gas Analyzer System
- Meteorological
 - Portable Weather Information Display System (PWIDS)
 - Meteorological Towers
- Dugway standard referee data provided to all participant teams via DoD SAFE
- Recent upgrade to test management system: Open Architecture Data Management System (OADMS)



Scenarios & Technologies Anticipated



Scenarios

- Tailored Chemical, Biological and Radiological scenarios
- Possibility of characterizing Tactics, Techniques, and Procedures (TTPs) with operators

Examples of Technologies:

- Point and/or handheld detectors
- Wearables
 - Pending IRB approval, if required (customer team responsibility)
- Standoff detectors
- Unmanned Ground Vehicles (UGV)
- Unmanned Aerial Systems (UAS)
 - Waiver-to-fly will be required (customer team responsibility)
- Contamination Mitigation or Protection technologies
- Other suggestions, requests, etc.



Teams & Technology Types

Entity	Organization	Technology Type
2020 Dugway		
U.S. Govt/DoD	DARPA/Sigma+ Bio	Point Detectors/ Array/Biological
U.S. Govt/DoD	DARPA/Sigma+ Chem	Point Detectors/ Array/Chemical
U.S. Govt/DoD	JPEO CBRND/JPM CBRN Sensors/Joint Biological Tactical Detection System (JBTDs)	Point Detectors/ Biological
U.S. Govt/DoD	CCDC BioTest Division (BTD)/ Environmental Background Aerosol Collection System (EBACS)	Point Detectors/ Biological
U.S. Govt/DoD	JPEO CBRND/JPM CBRN Sensors/NBCRV Sensor Suite Upgrade (SSU)	UAS/Biological
U.S. Govt/DoD	JPEO CBRND/JPM CBRN Sensors/CBRN Sensory Integration on Robotic Platforms (CSIRP)	UAS/Chemical
U.S. Industry	Alliance Solutions Group, Incorporated	UAS/Chemical
2021 Indian Head		
U.S. Govt/DoD	JPEO CBRND/JPM CBRN Sensors/CVCAD	Handheld Detectors/Chemical
U.S. Govt/DoD	JPEO CBRND/JPM CBRN Sensors/Wearables	Wearable Personnel Device
U.S. Govt/DoD	JPEO CBRND/JPM Protection/RFID	Asset Tracking
U.S. Govt/DoD	Defense Threat Reduction Agency (DTRA)	Portable Radiation Detectors
U.S. Govt/DHS	Countering Weapons of Mass Destruction (CWMD)	UGV/Chemical, UGV/Radiation
2021 Dugway		
U.S. Govt/DoD	JPEO CBRND/Environmental Air Monitoring	Point Detectors/Array/Biological, Point Detectors/Array/Chemical, Radiation Detectors
U.S. Govt/DoD	JPEO CBRND/JPM CBRN Sensors/CSIRP	UAS/Chemical
U.S. Govt/DoD	JPEO CBRND/JPM CBRN Sensors/CSIRP	UAS/Chemical, UAS/Biological
U.S. Govt/DoD	JPEO CBRND/JPM CBRN Sensors/CSIRP	UAS/Chemical, UAS/Radiation
U.S. Govt/DoD	JPEO CBRND/JPM CBRN Sensors/NBCRV SSU	Standoff Detectors/Biological
U.S. Govt/DoD	JPEO CBRND/JPM CBRN Sensors/Integrated Early Warning	Standoff Detectors/Chemical & Biological
U.S. Govt/DoD	JPEO CBRND/JPM Protection	Protective Covers
U.S. Govt/DHS	Science & Technology (S&T) Directorate	Standoff Detectors/Chemical
U.S. Govt/DOE	Lawrence Berkeley National Laboratory	UAS/Radiation
U.S. Industry	Physical Sciences Incorporated	Standoff Detectors



Participant Expectations

- Utilize current COVID-19 safety mitigation measures
 - Be prepared to wear facemasks, clean/wash hands, practice social distancing, clean work surfaces, etc., if required
- Participation fees
 - Estimate ~ \$25K/team for DoD teams
 - Estimate ~ \$30K/team for interagency, international, and U.S. industry and academia
 - One technology and up to 7 team members; limit teams to mission essential personnel only
 - Cost is dependent on number of technologies and logistics footprint
- Logistics form – information for DPG from customer teams regarding support needs; NLT than April 3, 2023 (earlier is better) – discuss during routine customer calls
- Payment will need to be made to Dugway Proving Ground by April 17, 2023
 - Invoice and payment process will be presented at a later date



Important Dates: Information Sessions



- **Kickoff calls:**

Tuesday, November 15 and December 6, 2022

- 1000 ET/0800 MT (International: Europe/ Scandinavia/ Canada)
- 1300 ET/1100 MT (US)
- 1900 ET/1700 MT (International: Asian-Pacific)

- **Customer Planning calls: Every other week starting Tuesday, January 10, 2023**

- 1000 ET/0800 MT (International: Europe/ Scandinavia/ Canada)
- 1300 ET/1100 MT (US)
- 1900 ET/1700 MT (International: Asian-Pacific)



Important Dates: Other Details



Registration Dates:

- **International Participant Teams register no later than February 3, 2023**
 - Foreign Visit requests must be received at Dugway no later than May 1, 2023
- **U.S. Participant Teams register no later than March 31, 2023**
 - All participants must submit a Dugway visit request no later than May 1, 2023, *except DoD CAC holders*
- **Each individual team member that plans to attend a portion or all of the event must also register for TECFT 2023**

Other Deadlines:

- Payment must be received by Dugway no later than Thursday, April 17, 2023
- **If any team is bringing an UAS, a copy of the approved waiver-to-fly must be submitted to DUSA-TE by May 3, 2023**
- Any customer technology must be onsite at Dugway by no later than Thursday, June 1, 2023
- Have technology packaged and ready to ship from Dugway no later than Friday, June 16, 2023



TECFT

Points-of-Contact



- **Federal Lead**

Megan Holste

Office of the Deputy Under Secretary of the Army – Test and Evaluation (DUSA-TE), CBRN Defense Division

Office: 001-703-545-1081

E-mail: megan.j.holste.civ@army.mil

- **Contractor Support**

Kathleen Hickman, PhD, JRAD, Inc supporting DUSA-TE, CBRN Defense Division

E-mail: kathleen.m.hickman.ctr@army.mil

Brad Setser, JRAD, Inc supporting DUSA-TE, CBRN Defense Division

Office: 001-703-795-6927

Email: bsetser@jrad.us



Questions?



Backup Slides



Simulants and Sources

Chemical simulants/TIC

- Methyl salicylate (MeS)
- Triethyl phosphate (TEP)
- Isopropanol (IPA)
- Ammonia (liquid or anhydrous)

Biological simulants

- *Bacillus subtilis* var *niger* (Bg)
- *Bacillus thuringiensis kurstaki* (Btk)
- *Erwinia herbicola* (Eh)
- Ovalbumin (OV)

Radiation sources (sealed)*

- Cobalt-60
- Cesium-137
- Cobalt-57
- Barium-133
- Californium-252

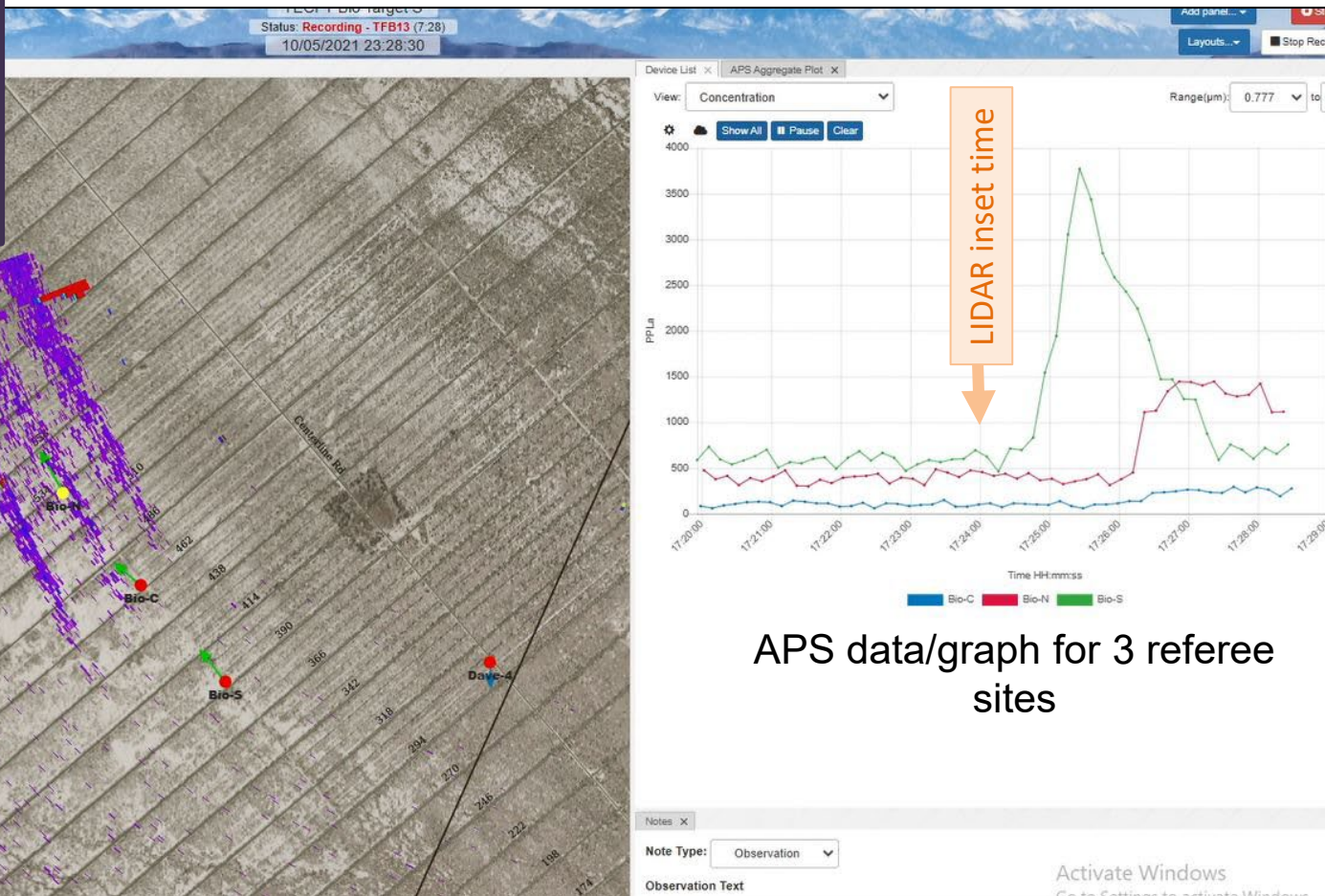
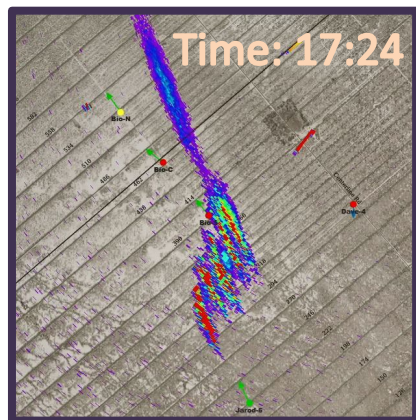
Test Material	2020 DPG	2021 IHD	2021 DPG
MeS	X	X	X
TEP	X		X
IPA	X		
Ammonia		X	X
Bg	X		X
Btk			X
Eh	X		X
OV	X		X
Co-60		X	X
Ce-137		X	X
Co-57		X	
Ba-133			X
Cf-252			X

*Collaborated with DTRA for radiation sources



Referee Data Example - Bio

- Dry *Bg* using air cannon (5 shots) to simulate artillery rounds
- OADMS screen showing LIDAR views and APS data

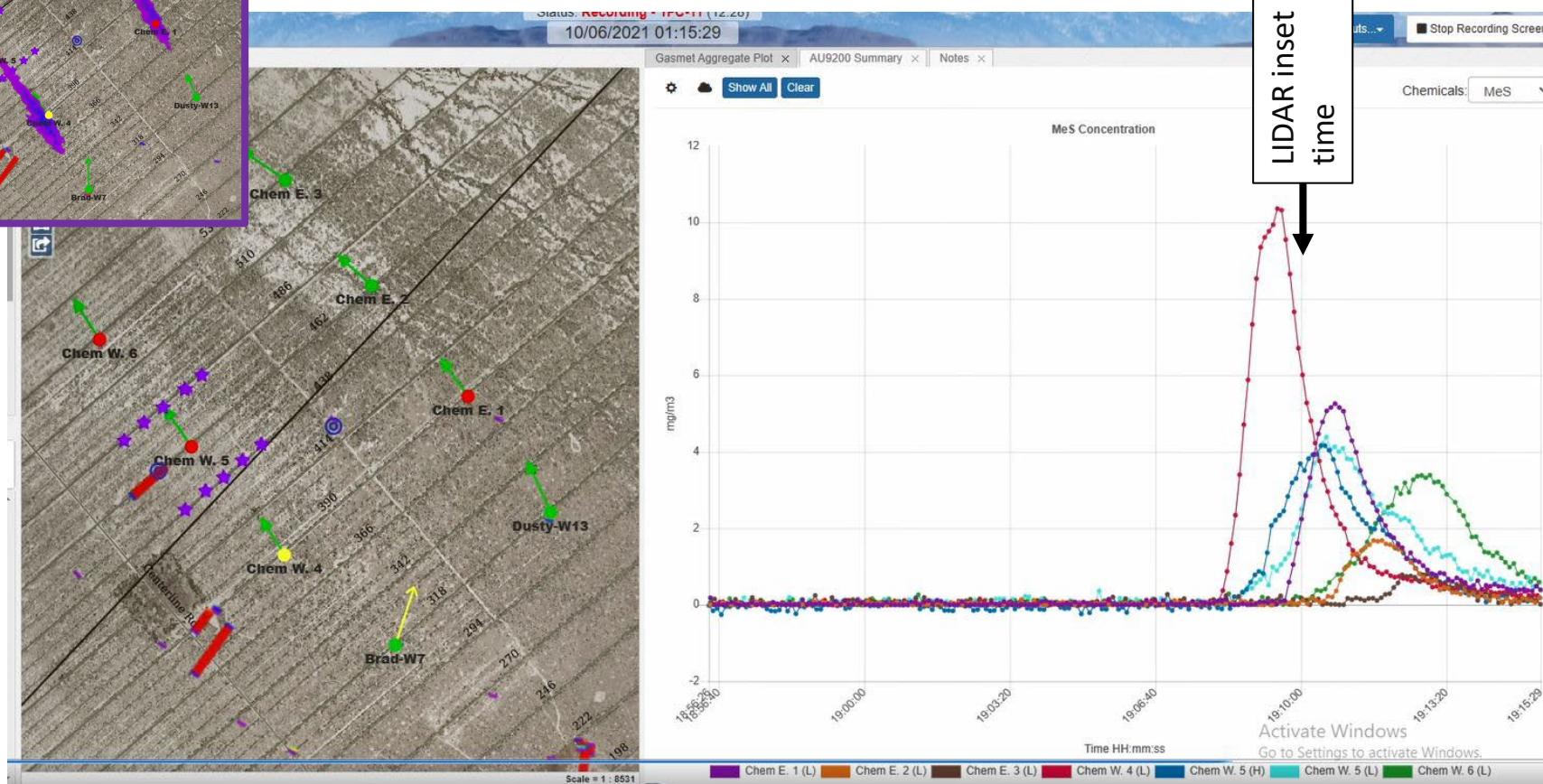
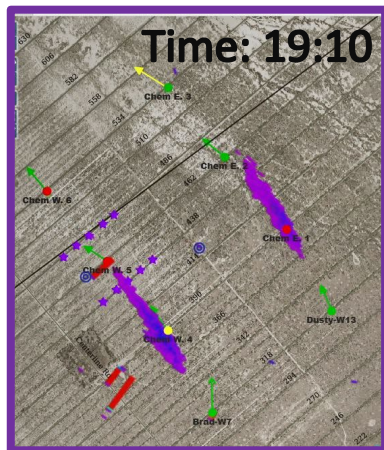


APS data/graph for 3 referee sites



Referee Data Example - Chem

- Two MeS releases – West chem grid, then East chem grid
- OADMS screen showing LIDAR views and Gasmet data
- 7 sampling points at 6 referee locations





Background

- S/K Challenge: CBDP enterprise field test event, initiated through 2013 POM guidance
- First S/K Challenge held in 2014, followed by events in 2015, 2016 and 2018
- Conducted at U.S. Army Dugway Proving Ground (DPG), Utah
- S/K Challenge I – IV were two-week field tests for detection technologies
 - Involved participants from DoD CBDP enterprise, multiple foreign nations, other U.S. government agencies, and U.S. private industry
 - First week: Outdoor chamber testing using the Active Standoff Chamber (ASC) and Joint Ambient Breeze Tunnel (JABT)
 - Second week: Field testing at Target S with a fully instrumented Test Grid using real-world scenarios



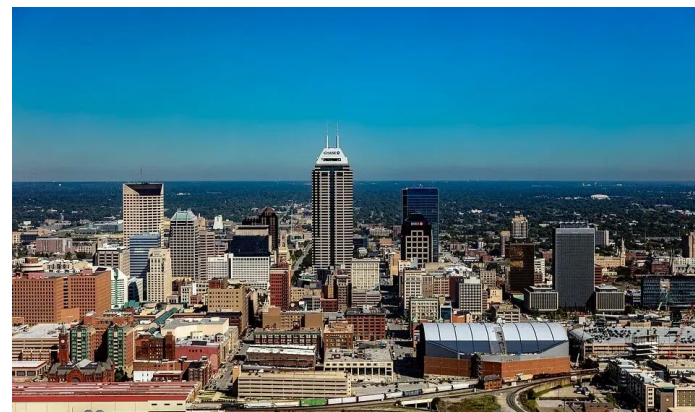
Future Opportunities

- TECFT 2023 Dugway
 - Two-week event: June 4 – 16, 2023
 - *Week 1: JABT/ASC, Week 2: Target S*
 - Chem and bio simulant releases (and possibly rad sources)
- Exploring other event locations
 - Indianapolis (April 2023) – *possible one-week event w/DARPA and DEVCOM*
 - Urban/industrial environment; chem/bio simulant releases
 - Potomac River-Dahlgren (July 17 – 21, 2023) – *one-week event w/NSWC-Indian Head*
 - Littoral/humid environment; chem/bio simulant releases
 - Savannah River Site (FY2024) – *possible one-week event w/DTRA*
 - Humid environment/foliage; chem/bio simulant releases and radiation sources; multiple venues/sites
 - Communications network installed



Indianapolis (*tentative*)

- “Sigma+ Field Trials in Indianapolis” ongoing activity – detection on-the-move
- Environment: Urban/Industrial
- Multiple venues (possible):
 - Downtown
 - Motor Speedway
 - Industrial area(s)
- Scenarios in development:
 - Small biological aerosol simulant releases
 - Patrol/search for and/or surveillance of chemical/biological simulants
- Dates (tentative): April 24 – 28, 2023
- Need input from teams interested in participating

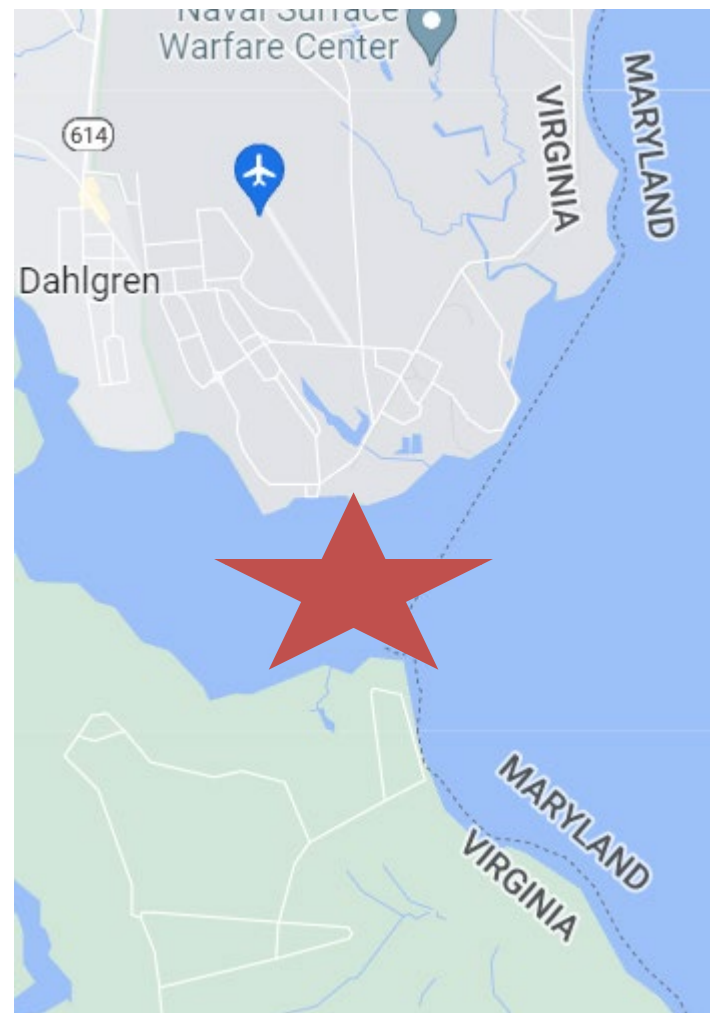




Potomac River – Dahlgren, VA (tentative)



- Environment: Littoral/maritime
- NSWC-Indian Head: Demo of referee/detection systems in likely environment
- OADMS/Referee/Releases
- Locations:
 - Over portion of river/creek
 - Field adjacent to river
- Scenarios in development:
 - Large/small chemical vapor simulant and/or biological aerosol simulant releases
 - Moored target
 - Choke point
 - Offshore attack
- Dates: July 17 – 21, 2023
- Need input from teams interested in participating





Savannah River Site *(tentative)*

- Environment: Humidity and foliage
- Multiple venues:
 - Open field (The Shire)
 - Railyard and Depot
 - Disabled Pump House Station (3 stories)
 - L Lake
- Scenarios in development:
 - Large/small chemical vapor simulant and/or biological aerosol simulant releases
 - Patrol/search for chem/bio simulants or rad sources
- OADMS/Referee/Releases

