

DUGWAY PROVING GROUND MISSION & CAPABILITIES OVERVIEW

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U.S. ARMY



Agenda and Purpose

- Mission and Vision
- Organization
- Quality of Life
- Location
- Test Center Capabilities
- Recent & Future Activities
- Discussion and Questions

Purpose: Provide an overview of Dugway Proving Ground's mission and capabilities.

DPG Mission

U.S. Army Dugway Proving Ground executes efficient testing and support to enable our nation's defenders to counter chemical, biological, radiological, and explosives (CBRE) hazards.

DPG Vision

Dugway Proving Ground provides unparalleled testing, evaluation, training, and technical support to the Department of Defense, inter-agency partners, and our Allies while maintaining a world-class workforce, facilities, and quality of life for our employees and their Families.

BLUF: Test Tube to Battlefield

Dugway Proving Ground is the nation's designated Major Range and Test Facility Base for Chemical and Biological Defense (C/B) Testing and Countering Weapons of Mass Destruction (CWMD) Support



Chem Testing

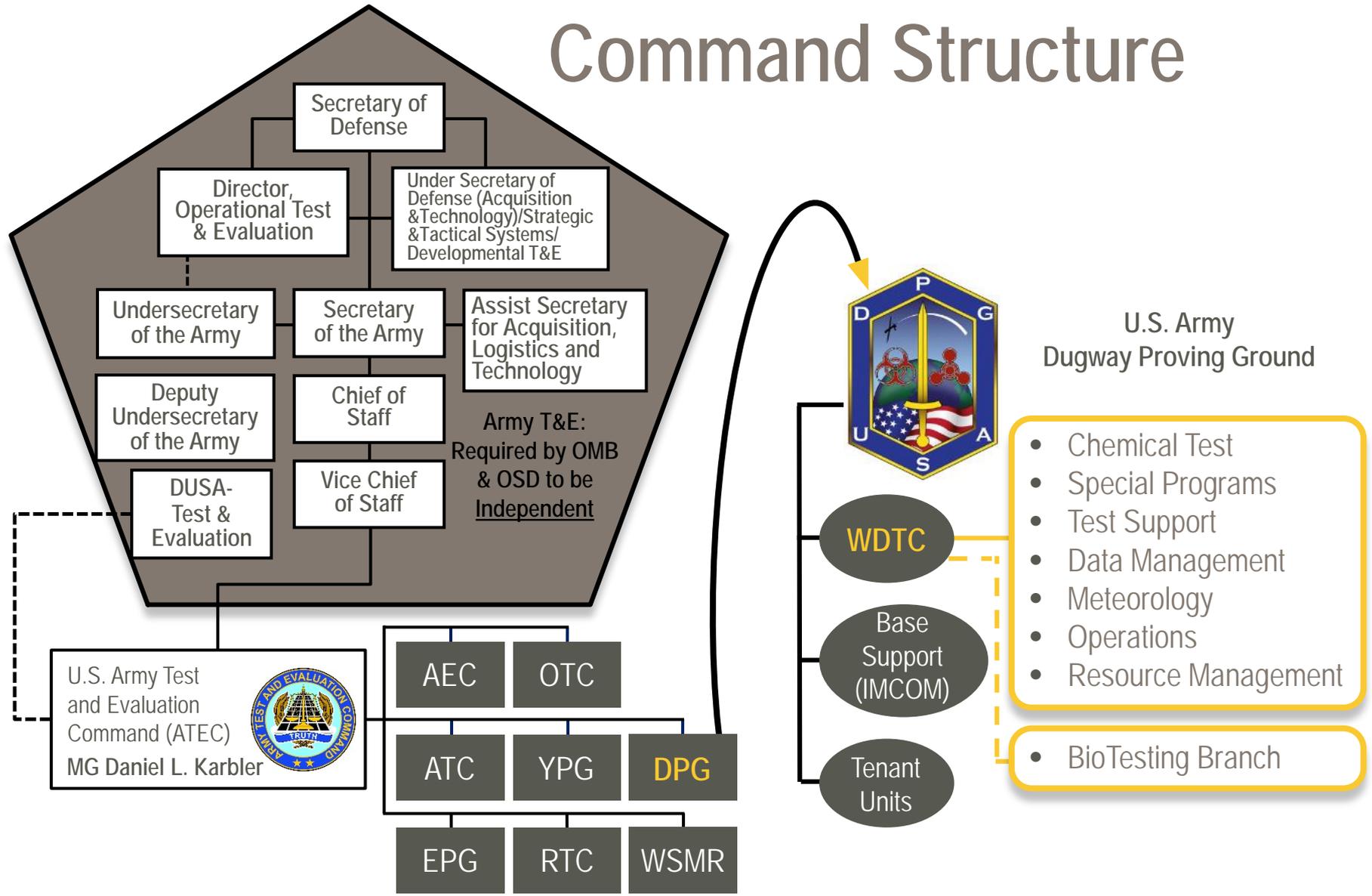


Bio Testing



CWMD
Support

Command Structure

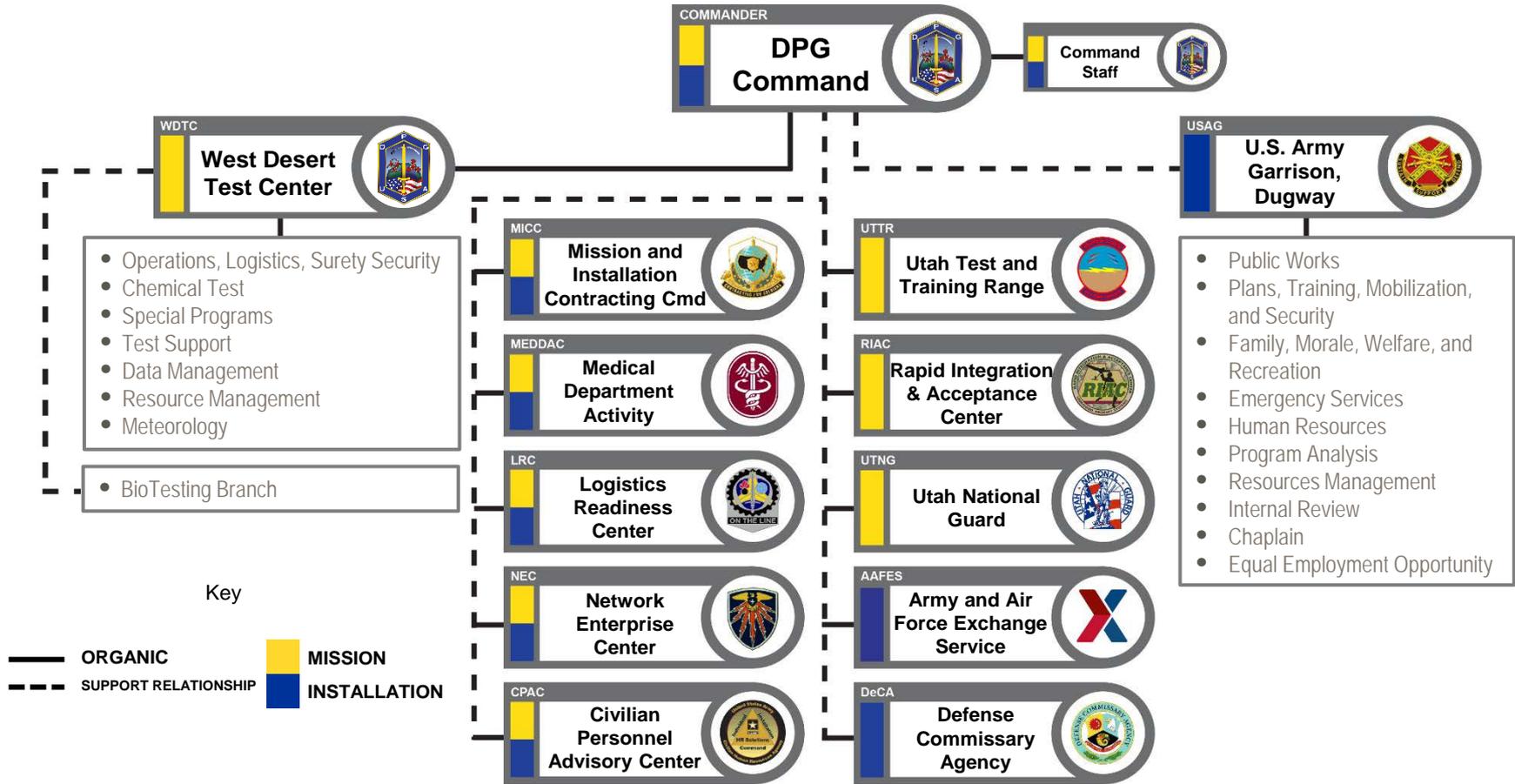


AEC – Army Evaluation Center
 OTC – Operational Test Command
 ATC – Aberdeen Test Center
 YPG – Yuma Proving Ground

EPG – Electronic Proving Ground
 RTC – Redstone Test Center
 WSMR – White Sands Missile Range
 WDTC – West Desert Test Center

OMB – Office of Management and Budget
 OSD – Office of the Secretary of Defense
 IMCOM – Installation Management Command

Dugway Proving Ground Organization



Team Dugway – working together to execute the mission and care for people

Installation – English Village



- On-Post Housing for Families and Individuals
- Visitor Lodging at Desert Lodge
- Occupational Health Clinic
- Commissary, Gas Station and Shoppette
- New School: Elementary - High School (K-12)
- Comprehensive Family and MWR Programs
 - Army Community Service (ACS)
 - Business and Recreation
 - Child and Youth Services (CYS)



Installation – Army Community Service & Child and Youth Services



- Diverse array of family services
- Life skills classes
- Financial readiness
- Employment readiness
- SARC/SHARP



- Quality child care for all ages
- Child Development Center
- School Age and Youth Center
- School Liaison Officer



Installation – Recreation & More

- Fitness Center
- Sports and fitness programs
- Outdoor swimming pool
- Community Club & Ditto Diner
- Library
- Sportsman's Complex
- Skeet Range
- Bowling Center
- Rock and Wood Shop
- Auto Craft Shop
- Outdoor Recreation
- RV Park and RV Storage Lot
- Leisure Travel
- Antelope Inn
- Community Special Events



Location & Airspace

Freedom to Test and Train

Dugway is Remote:

- Free from urban encroachment
- Acoustically & electronically quiet
- Salt flats extending 90 miles north
- Light pollution-free
- Surrounded on three sides by mountains and desert terrain

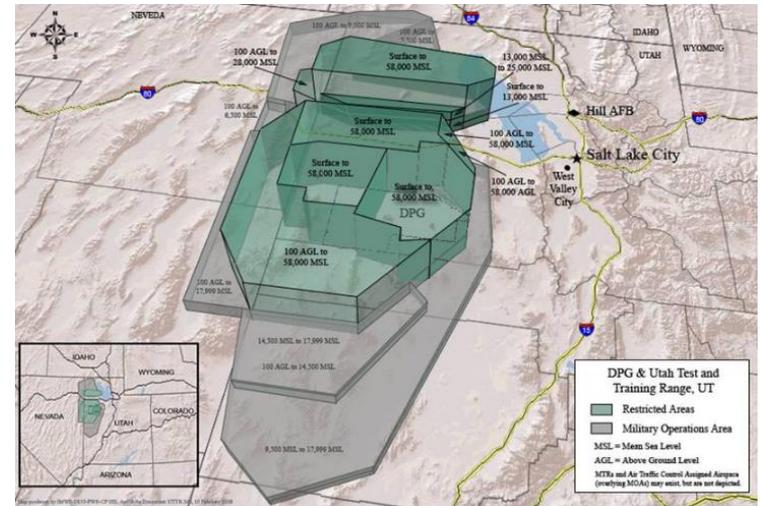
Dugway is Accessible:

- 78 miles from Salt Lake International Airport (I-80)
- 38 miles from Tooele
- 82 miles from Provo

Total Area	1,252 miles ²
Mountain Terrain	59,078 acres
Mixed Desert Terrain	279,768 acres
Playa (flats)	462,180 acres



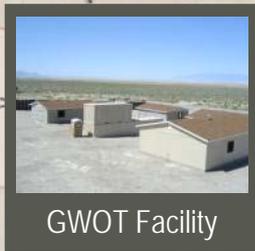
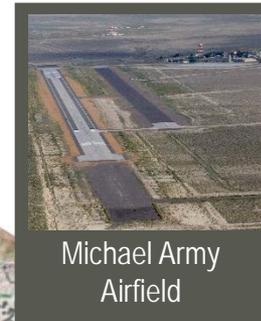
DPG is partnered with Utah Test & Training Range



Total Airspace Footprint	16,797 miles ²
Restricted Airspace	7,954 miles ²
Military Operations Area	10,004 miles ²
DOD Exclusive-use Land	3,078 miles ²
Government-owned Land	16,686 miles ²

Capability Map

Test ranges for all classes and sizes of chemical, biological, explosives and elite forces testing and training



Michael Army Airfield (MAAF)

Fully lighted 11,000-ft runway
capable of handling any aircraft in
DOD inventory

- Emergency landing site for distressed aircraft
- Aircraft decon pad
- 20,000 ft² hangar
- New 5,600 ft² hangar
- 495,000 ft² apron space

Operational Use:

- Unmanned Aerial Systems testing
- Shipment of surety materials
- C/B decontamination of aircraft
- Tactical air operations
- Air re-supply and logistics
- USAF emergency airfield
- Contingency Power Projection Platform for Tooele Army Depot (TEAD)



Unmanned Aerial Systems (UAS)

Onsite airfield facilitates UAS testing programs

- Rapid Integration and Acceptance Center for PM-UAS
 - Hunter
 - Shadow
 - Warrior
 - Gray Eagle
- Adjustable IR, Laser and EO targets
- High-speed optical data imaging
- Cloud characterization for C/B disseminations
- Hellfire range support
- Fabrication shops



PM-UAS – Program Manager Unmanned Aircraft System
IR – Infrared
EO – Electro-optical

CWMD Non-Materiel Evaluation and Support

Providing expertise and locations to evaluate procedures and equipment in realistic operational environments that is informed by test expertise

- Evaluate equipment effectiveness in new operational scenarios with similar rigor to materiel testing
- Support addressing the full range of countering WMD tasks and requirements – from prevent use or proliferation through managing the consequences of employment
- Deliver graduate level, hands-on training with real agents and simulants in threat-representative scenarios
 - Focus on chemical and biological detection, signature recognition and sampling
 - Enhance readiness to respond to domestic chemical or biological terrorist attack
- Provide realistic, practical exercises to test tactical skills in the detection, forensic sampling, and packaging of chemical/biological agents



Recent Accomplishments

Jackrabbit - Large-scale outdoor Toxic Industrial Chemical releases (10 to 20 tons)

- Capstone event of a multi-year effort (DTRA, DHS)
- Multiple government, academic & international participants
- Meteorological forecasting and modeling of conditions and dispersion characteristics prior to and during test events



- SK Challenge Field-test Week
- New Solar Field – 2 MW
- CALDERA and Iron Warrior
- Desert Ice Multinational C/B Event
- Air Force WSEP

SK – Sophos Kydoimos
DTRA – Defense Threat Reduction Agency
DHS – Department of Homeland Security
CALDERA – Crater Algorithm Designed for Explosive
chaRge Analysis
WSEP – Weapon System Evaluation Program

The Near Future

Test Capabilities Improvements

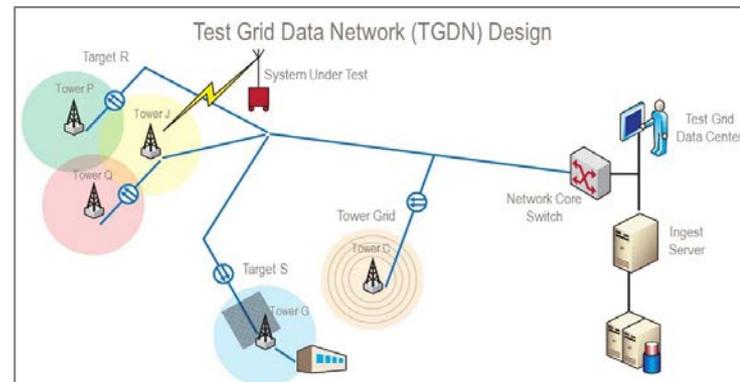
- Nontraditional Agents (NTAs)
- Modular test capabilities
- Replacement of air-handling for chemical laboratories

Infrastructure Improvements

- Wireless Test Grid
- Additional 2 MW Solar Field

Test and Training Events

- SK Challenge IV Field-test Week
- Desert Ice Multinational CB Event



Discussion and Questions



Supporting the Soldier



Vast remote areas for testing and training



Expert, Army Acquisition-certified work force



Infrastructure in place with state-of-the-art equipment



Environmental permits



On-site airfield



Quality of life



Positioned for future growth



Supporting DOD transformation



DPG – Viable today and preparing for tomorrow

TEAM DUGWAY – Empowering the Nation’s Defenders

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Back Up

Major Range and Test Facility Base (MRTFB)

"The DA MRTFB is an aggregation of T&E activities...designed to provide support capabilities based on DOD component requirements without unnecessary duplication. DA MRTFB activities are available to all users with valid hardware testing and test support requirements."

-Army Reg. 70-69, 1-6, a

"Capabilities....shall not be unnecessarily duplicated."

-DoDD 3200.11

Public Law 103-160, 30 Nov. 93: Directed consolidation of all CBDP funding; DPG MRTFB operating costs became responsibility of CBDP. Sec. Def. designated Army as Executive Agent to coordinate and integrate chemical/biological defense RDT&E

DoD MRTFB Locations



DPG is the Nation's designated MRTFB for Chemical and Biological Defense Testing and Training

Chemical & Emerging Threat Agent Test Complex

Surety facilities for chemical defense testing against CWAs, NTAs, TICs and TIMs

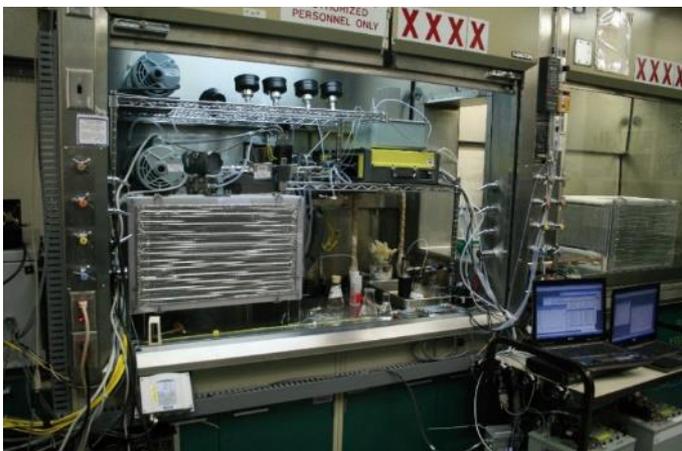
- From the test tube to the battlefield –
 - Scalable testing of C/B defense equipment
 - Live/actual chemical and biological agents
 - Chemical and biological simulants
- Full-scale testing – detection, protection and decontamination
- Testing of real-world, non-materiel solutions for chemical defense against threat-representative targets



CWA – Chemical Warfare Agent
NTA – Nontraditional Agent
TIC – Toxic Industrial Chemical
TIM – Toxic Industrial Material

Combined Chemical Test Facility (CCTF)

Chemical agent & simulant testing



Agents

- G Agents
- VX
- H-Series
- Lewisite
- Emerging threats

Simulants

- Army licensed simulants

Capabilities

- 35,000 ft² of multifunctional laboratories
- 47 agent-certified fume hoods in 27 surety-capable test suites
- Supports chamber and field testing of chem-bio defense systems
- Aerosol, vapor, and droplet testing with CWA, TIC/TIM, & emerging threats
- Developmental and operational testing

Material Test Facility (MTF)

DOD's largest CWA-certified test chamber

- Stainless steel multi-purpose test chamber (30'x50'x50')
 - Temperature: -40° to 60° C
 - Humidity: 10 to 90%
 - Rated for bio agent testing up to BSL-2
- Two (30'x25'x25) environmentally-controlled stainless steel test chambers
- Chemical vapors & aerosols
- Use full range of chemical agents and C/B simulants

Operational Use

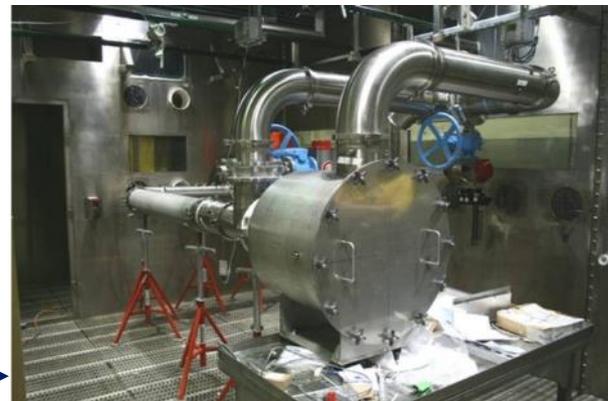
- Operationally relevant developmental and operational testing of C/B defense equipment
- Perform real decontamination operations
- Full-scale testing of large military hardware



Building 3445 Chemical Test Facility

Large-scale live-agent testing

- Two 2,210-ft² custom-tailored test chambers allow high concentrations of chemical warfare agents or chemical and biological simulants
- Chambers currently house ColPro test fixtures:
 - Advanced Air Purification Test Fixture ● →
 - Novel Closures Test Fixture ● →



Live agent filter testing



ColPro – Collective Protection



Simulant testing of closures and seams

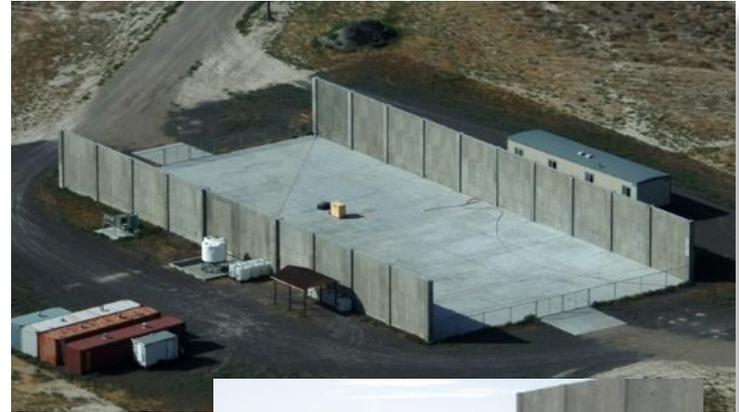
Decontamination Facilities

Full-scale decontamination testing

- All DPG permitted simulants and decontaminants allowed
- Steel-reinforced concrete pad (200' x 100')
 - 20-foot walls for overspray mitigation
 - 8 feet above grade
 - Can handle weight of armored vehicles
 - Sump, pump system, and holding tank for waste disposal
 - Multiple power ratings
 - Multiple water options

Operational Use

- Test effectiveness of contamination/decontamination cycles
- Decon operating procedure training
- Test accuracy of C/B point detectors
- Environmentally friendly



Test Materiel Conditioning Complex

MIL STD 810G testing support and special environmental testing

- Instrumented mobile and fixed conditioning chambers
 - Temperature & humidity
 - Altitude & precipitation
 - Salt fog, sand & dust
 - Physical & thermal shock
 - Slow cook-off
 - Water immersion
 - Solar radiation
 - High wind machine
 - Vibration
 - Fungus chamber
 - Shock & bounce
 - 60 ft. drop tower

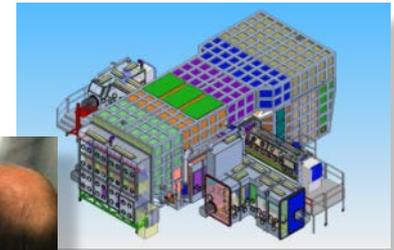


MIL-STD-810G – A United States Military Standard that emphasizes tailoring an equipment's environmental design and test limits to the conditions that it will experience throughout its service life, and establishing chamber test methods that replicate the effects of environments on the equipment rather than imitating the environments themselves. The MIL-STD-810 test series are approved for use by all departments and agencies of the United States Department of Defense (DOD).

Biological Agent Test Complex

Surety facilities for biological defense testing against BWA's and unconventional threats

- Largest US facility equipped to test with *aerosolized biosafety level -3 (BSL-3) agents*
- BSL-3 containment suites for testing with *Bacillus anthracis*, *Brucella abortus*, *Coxiella burnetii*, Venezuelan equine encephalitis, and other agents
- Whole system live-agent testing capability
- Aerosol testing with pathogens, toxins and simulants
- Testing real-world, non-materiel solutions for biological defense *against threat-representative targets*



BWA – Biological Warfare Agent

BioTesting Branch (BTB)

Certified to test with aerosolized biosafety level 3 (BSL-3) agents

Capabilities

- 32,000 ft² of multifunctional biological laboratories
- Biosurveillance testing
- Six BSL-3 containment suites
- Aerosol testing with pathogens, toxins and simulants



Test Agents & Simulants

Agents

- Up to BSL-3
 - Bacteria
 - Viruses
- Toxins

Simulants

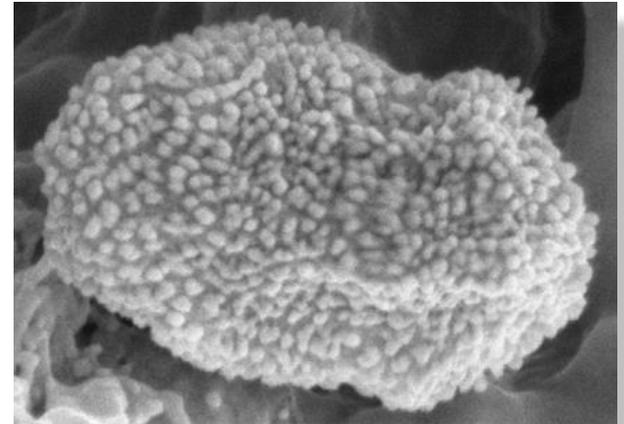
- 8 licensed simulants
- Agent-like Organisms (ALOs)



Containment Aerosol Chamber (CAC)

Nation's only acquisition-certified BSL-3 aerosol test chamber

- Engineered for aerosolization of BSL-3 organisms
- Full control of temperature (37°F to 105°F) and humidity



Baker Laboratory – Whole System Live Agent Test (WSLAT) Chamber

Whole-system testing with aerosolized BSL-3 agents

- Newly renovated 10,000-ft² surety laboratory
- Largest BSL-3 chamber of its type (4,000 ft³)
- Sized to handle parallel testing of 2 units and a full complement of referee instrumentation for side-by-side comparative testing
- Scheduled for validation in 2016



Joint Ambient Breeze Tunnel (JABT)

Dynamic simulant cloud

- Produces a controlled, *moveable* simulant cloud with user-defined size and concentration for detection system testing
- Variable-pitch fans create airflow up to 6 m/s and 900,000 cfm
- 170-meter permanent tent structure on an epoxy coated slab



Active Standoff Chamber (ASC)

Stationary simulant cloud

- Produces *stationary* aerosol or vapor simulant clouds that can be suspended for detection system testing
- Stainless steel chamber built to agent containment levels for chemical simulants
- Environmentally controlled chamber uses air curtains to hold C/B simulant cloud in place



Outdoor Range Multi-Use Test Grid Complex

Testing in operationally relevant chemical, biological, smoke, obscurant, and hazardous environments

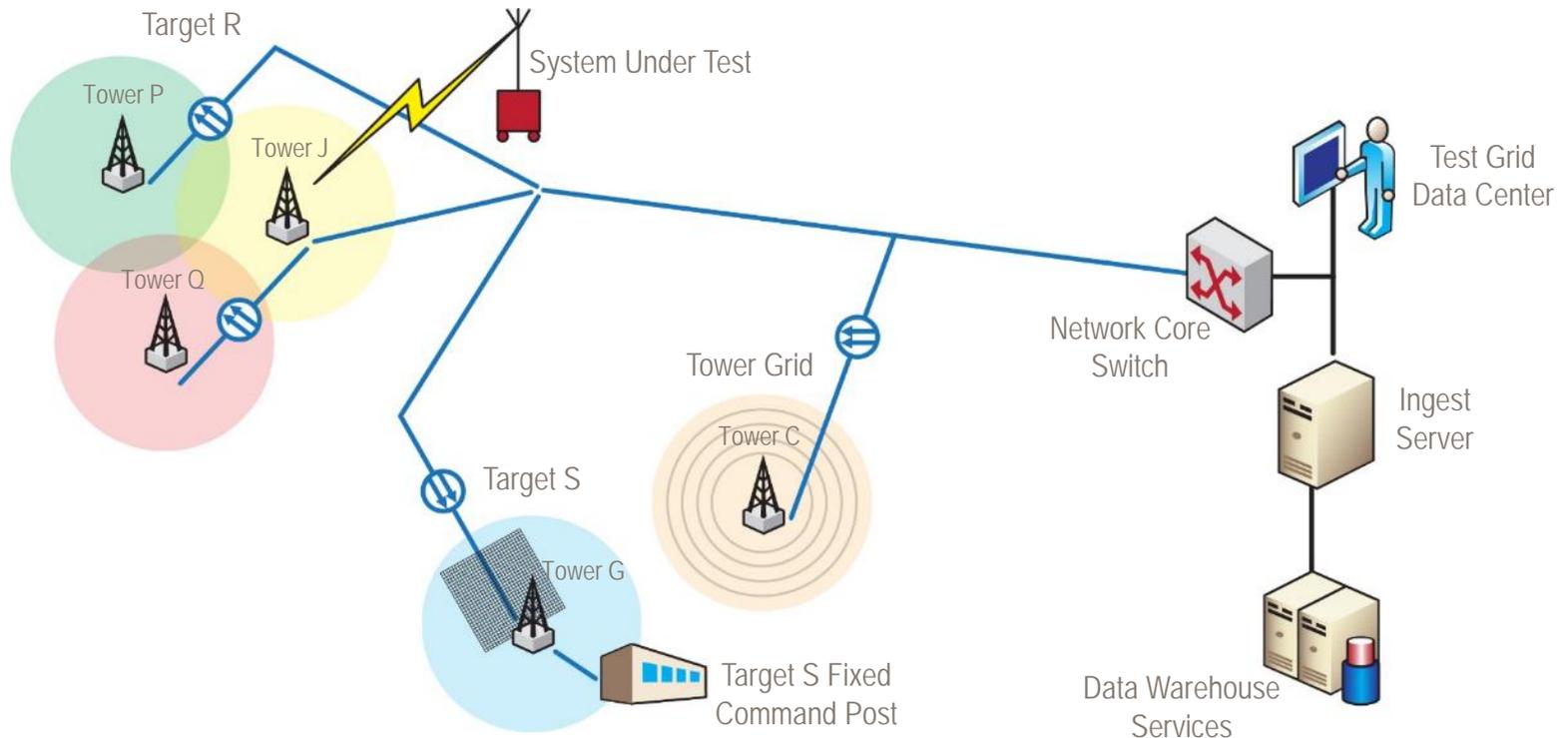
- A complex of 27 instrumented ranges, grids, test sites, and impact areas encompassing 900 miles² for field testing of C/B detection systems, Individual and Collective Protection equipment
- Provides:
 - Field representative performance
 - Realistic threat delivery systems
 - Permits for outdoor release of simulants/TICs



Test Grid Capability Upgrade

Secure, wireless, real-time, data management to reduce test cost and schedule

Test Grid Data Network (TGDN) Design



Data Sciences, Modeling and Simulation, and Distributed Testing Complex

Turning data into knowledge

- Combination of highly skilled professionals, advanced software, and state of the art hardware
- Provides
 - Data planning and analytical services
 - Test network programming and software development
 - Test network information assurance
 - Modeling and simulation to support C/B test programs
 - Ability to conduct live, virtual, and constructive (LVC) testing
 - Distributed testing with other test centers



T&E Range Instrumentation/Technical Upgrade Operational Systems Development

Maintaining capabilities to evaluate modern requirements

- Small/ mid-sized test equipment and instrumentation
- All core chemical and biological test capabilities
- Prioritization is:
 - safety and surety related system
 - capabilities that are too old to characterize current performance requirements for systems-under-test
 - Lack of compatibility with current data or communications protocol standards



DIAL LIDAR



Infrared Thermal Imagery



Applied Biosystems® ViiA™ 7 Real Time PCR System

DIAL – Differential Absorption LIDAR
LIDAR – Light Detection and Ranging or portmanteau of “Light and “Radar
PCR – Polymerase Chain reaction

Toxic Industrial Chemical (TIC) Field Testing

Large-scale outdoor TIC releases (up to 20 tons)

- Multiple TIC dissemination methods, including explosive
- State of the art laboratory for post-test analysis, including cloud concentration measurements
- Meteorological forecasting and modeling of conditions and dispersion characteristics prior to and during test events



Explosives & Dissemination

Experts in field, chamber & laboratory dissemination



- Dissemination of chemical and biological simulants for all tests
- Explosive and munitions handling and retrograde functions for all Dugway testing
- Testing of novel, threat relevant home made explosives



Smoke & Obscurants Testing

Weapon delivery systems for testing by direct fire, indirect fire or fog generation



- Radiometer data acquisition and complete suite of R&D analysis tools
- Open test ranges for full perspective of smoke characteristics

