THE DISPATCH
U.S. ARMY DUGWAY PROVING GROUND

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INSIDE YOUR DISPATCH

CIDAS spray test uncovers chemical agent, decontaminant

By Al Vogel
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Testing of a spray that indicates the unseen presence of chemical agent or a decontamination solution on hard surfaces is underway at Dugway Proving Ground. The Contamination Indicator Decontamination Assurance System (CIDAS) consists of two reservoirs on a plastic backpack, dry chemicals that are mixed with water in each reservoir, and a spraying wand.

"The purpose is to give the Warfighter a system that will indicate the presence of a chemical agent on hard surfaces like vehicles, weapons, radios," said Aaron Rogers, project scientist for the CIDAS test. "It can also be used, after decontamination to show that no agent remains."

During the test in a walk-in sealed chamber, 14-inch square tiles were contaminated with tiny droplets of diluted chemical agent. The operator then sprayed the panel with the CIDAS

♦ CIDAS spray test Page 2.

A tester fills each of the CIDAS applicator's two tanks with powder, then adds water and mixes well. When sprayed, the two liquids mix to reveal a chemical agent or decontaminant on a hard surface. CIDAS (Contamination Indicator Decontamination Assurance System) undergoing a large panel study at Dugway Proving Ground. Photo by Al Vogel, Dugway Public Affairs

Command perspective

By Ryan W. Harris
Director, West Desert Test Center

As 2019 comes to a close, I would like to take this opportunity to highlight a few of the significant accomplishments we've completed this past year. For several years we've been working on a multitude of strategic initiatives to ensure we continue to provide innovative solutions to support the Warfighter and the defense acquisition community. For example, we brought our Non-Traditional Agent testing capability online and executed testing for both the Contaminated Humans Remains Transportation System (CHRT) and the Multi-Phase Chemical Agent Detector (MPCAD). We expect to finish acceptance this month of the new Test Grid Safari Instrumentation and Data Management System (TGSI) that will modernize and significantly improve efficiency and reliability of our ability to collect, analyze, and report data collected in the field. Within only one year, we designed, built, and tested a novel chemical agent on-the-move fixture in our chambers that is currently executing testing for the Stryker Chemical Surface Detector (CSD) program. After several years of dedicated work and process development, the Test Center and the Chemical Test Division received ISO 17025 Accreditation. This is a significant accomplishment toward improving our quality management system and will allow the Test Center to consistently produce scientifically valid results for our customers.

Not only have we brought new capabilities online this year, we also continue to support a myriad of test and training customers throughout all of DoD. It would be impractical to mention all of the critical support we've provided to over 146 active projects, but I would like to acknowledge the following: We continued our biological detection testing support for the Joint Biological Tactical Detection System (JBTDS) led by the BioTesting Division (BTD) with support from the Test Center. We brought out of moth-ball status our Smoke and Obscurant Test Capability and executed both performance and reliability testing for the XM75 Smoke Obscuration Module (SOM). We continued our chemical agent defeat testing for SOCOM and DTRA with the Portable Agent Defeat System (PADS), which will culminate with an outdoor field test this month in the Czech Republic. We conducted the first phase of Dust-Off, a unique aircraft and light vehicle contamination study for SOCOM that assesses how contamination is transferred between surfaces. We also supported RIAC with the Future Tactical Unmanned Aerial Systems (FTUAS) demonstration

♦ Command perspective Page 2

Command perspective . . .

Continued from page 1.

in support of Army Futures Command efforts. We continue to see increased international interest for advanced CB training support to include the German Bundeswehr Unit DEU 750 ABC Defense Battalion. Additionally, we've conducted several field testing events and early user demonstrations for the Stryker Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV) Sensor Suite Upgrade (SSU). Lastly, I'm glad to report Test Center workload has increased by 25% in FY19 compared to the previous year.

Looking forward, FY20 is expected to be a very busy year and will most likely exceed FY19 workload expectations. We are expecting a ramp-up for the testing of chemical agent detector systems (MPCAD, AVCAD, NBCRV CSD and SSU) and individual protection testing for Uniform Integrated Protection Ensemble (UIPE) Family of Systems (FoS).

In closing, I want to thank all of you for the extraordinary work that you continue to provide to this great Nation. Your dedicated service enables DPG to provide premier chemical and biological (CB) testing and training support to the Warfighter. Your contributions to the mission are greatly appreciated, and I'm very proud to be serving with you. I'm certain we will have a successful FY20 test season that will ultimately provide critical solutions to our Soldiers, Sailors, Airmen and Marines.

CIDAS spray test . . .

A panel is sprayed with the portable applicator to reveal the presence of agent (diluted for this test). CIDAS was created to indicate the type of chemical agent or decontaminant when sprayed on a hard surface. Photo by Al Vogel, Dugway Public Affairs Specialist.

Continued from page 1.

solution, indicating whether agent or decontaminant had been applied to the square earlier.

The CIDAS solution is specific to what type of chemical agent is sought. In this test's case, nerve agent. When the solution encounters a chemical agent on a surface, it produces red if it contacts chemical agent, and blue if it contacts decontamination. The operator then uses a color card to ensure that what the monitoring camera shows is consistent with what the operator sees.

Testing of the CIDAS at Dugway proving Ground will ensure that the system functions as intended, with a high degree of reliability, to reveal chemical agent contamination to American and allied Warfighters.

A tester points to the reaction left on the panel, indicating that agent was not fully decontaminated. The color of the agent is compared to the color panel, to indicate its type. Photo by Al Vogel, Dugway Public Affairs

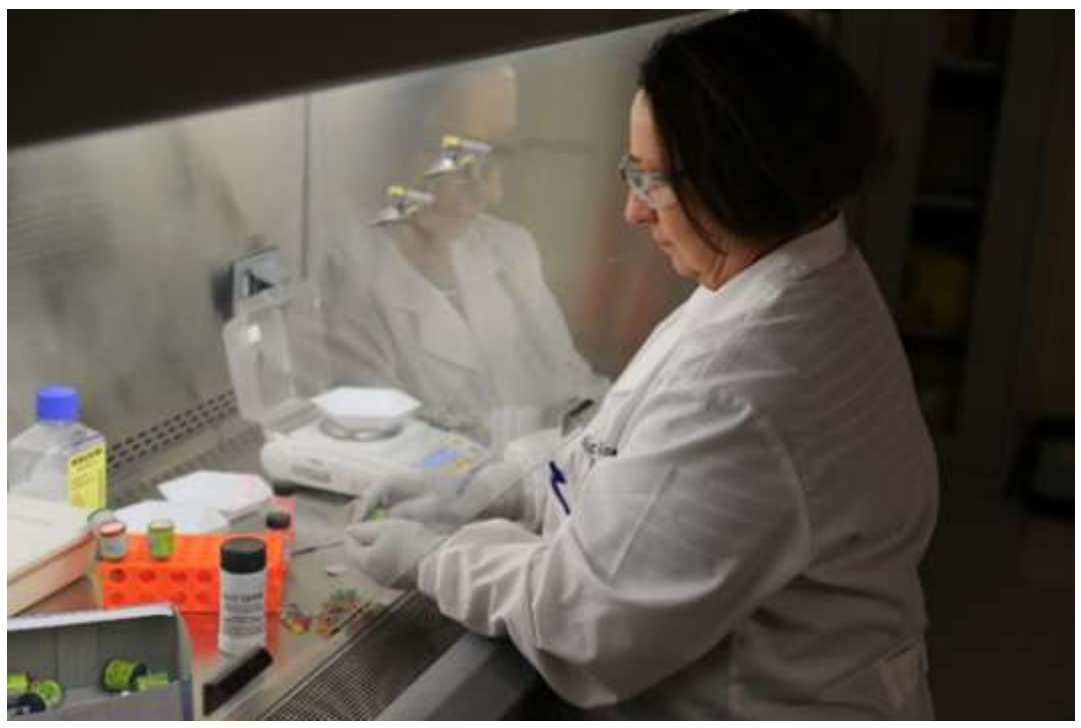
SPECIAL TO THE DISPATCH

Biologists Develop Rad Plan to Test Protective Suits

By CCDC Chemical Biological Center Public Affairs Office

Necessity is the mother of invention. When the U.S. Army Chemical, Biological, Radiological and Nuclear (CBRN) School's Joint Experimentation and Analysis Division (JEAD) needed to find a way to get more mileage out of the expensive protective suits worn by Army civil support teams in radiological environments, they looked for answers from what seemed like a peculiar source – a team of biologists in the Utah desert.

But according to Division Chief Brian Bennett of the U.S. Army Combat Capabilities Development Command's (CCDC) Chemical Biological Center's BioTesting Division, it's not as strange as it sounds.



Patty Low, BioTesting Division microbiologist, prepares Glow-Germ simulant for the test by loading it into party poppers. Photo by Jack Bunja

In order to answer this question, the team developed a novel plan that was based on an approach they often use in testing biological aerosols, and tailored it instead to this radiological application. The plan involved simulating the radiological fallout through controlled release in their Aerosol Simulant Exposure Chamber of a fluorescent dust known as Glo Germ.

BioTesting Division Microbiologist Scott Jonas activates a party popper filled with Glo Germ dust within the Aerosol Simulant Exposure Chamber as three Soldiers from the Alabama National Guard's 690th CBRN Company wait in protective suits for the dust to disperse. Photo by Jack Bunja

"Our sole function here," he explained, "is to evaluate new technologies and techniques for Soldiers. Our area of expertise here is handling aerosol clouds, because that's how you launch a biological attack. Because radiological fallout consists of aerosolized particles, testing the radiological decontamination techniques fit well within the division's capabilities."

JEAD's Tom Murphy is counting on the BioTesting Division's expertise. "Right now these suits are one-and-done. Given that the suits are hot, and that the work conducted while wearing them is typically strenuous, civil support teams members work/rest cycle requires at least two suits per day per team member."

At $2,000 a pop, the costs add up fast. So the BioTesting Division was asked by JEAD to devise a test to determine whether the protective suits could be decontaminated and reused, and if so, how many times.

"Initially, we're looking at how well the decontamination procedures work," BioTesting Division Microbiologist Scott Jonas explained. "We'll provide that data back to the customer, who may use the data to make some changes to their procedures. Once they have a validated procedure, then we'll be looking at how that procedure impacts the integrity of the suit, and how many times the suit can be subjected to the procedure before it begins to degrade."

"The key to this test is our ability to create

♦ Rad testing Page 3.

Pulsing laser tested as chemical agent detector

By Al Vogel
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An S3 pulsing laser chemical agent detector is undergoing more than 2,000 trials in a new test chamber that replicates the detector mounted on a vehicle, scanning the ground for chemical agent contamination.

The 30-foot-long rectangular, Lexan containment chamber contains a narrow, 15-foot-long track, upon which samples of chemically contaminated concrete, asphalt, soil and sand are placed.

Each trial begins with rectangular hatches opening along the top of the main chamber, creating a 20-foot-long opening directly over the sample-filled track. Below the track, a powerful fan draws air away from the open hatches, preventing agent from escaping the containment chamber. Drawn through redundant, industrial filtration, the purified air is returned to the chamber.

A few feet from the end of the containment chamber, the laser-based chemical detector is affixed to a moving mount that follows a track above the containment chamber's open hatches. The mount's height and speed are adjustable, to replicate ground height and speed.

The trial begins and ends suddenly. The detector zips over the open chamber hatches of the main chamber, attempts to detect agent on the samples below, reaches full stop, and then zips back to its starting position for the next trial.

To change samples or check the main chamber's track, personnel outside the chamber use swing-down panels along the main chamber's side.

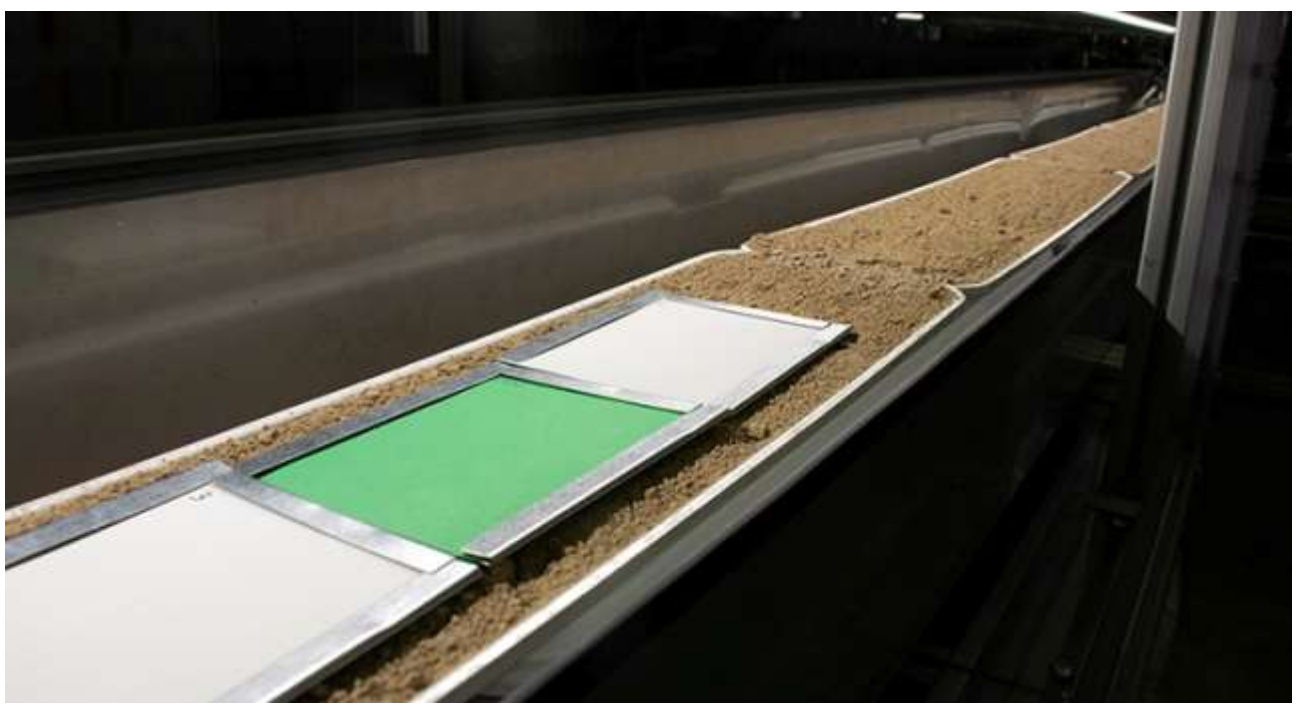
Trials differ to promote authenticity: different speeds over the track, chemical agent at different concentrations, replicated day and night conditions, different test surfaces, etc.

"The test is going into probably March of next year," Test Officer Charles Walker said. "This is the final prototype. This information will be used to improve algorithms and functionality of the system, to integrate it into a working chemical surface detector that will be worked into the improved Stryker."

The detector rides on an overhead track, replicating its use on reconnaissance vehicle, and is challenged to visually detect chemical agent on dirt, concrete, asphalt and other sample surfaces inside the 30-foot chamber. Rectangular openings in the top of the chamber allow the detector to view directly below, without interference from plastic or glass walls. Chemical agent is kept from escaping the chamber by strong air suction and filtration. Photos by Al Vogel, Dugway Public Affairs

The S3 pulsing laser is part of a suite of NBC (Nuclear, Biological, Chemical) detectors on the improved Stryker NBC Reconnaissance Vehicle, a 33,000 pound, eight-wheeled armored vehicle. The improved vehicle has more capability than the preceding Stryker NBCRV initially tested in the early 2000s at Dugway Proving Ground.

Tested hands-on by Soldiers last summer at Dugway Proving Ground, the newer NBCRV Stryker has numerous features to protect America and its allies from chemical or biological attacks or incidents throughout the world.



Samples in the tracked chemical detection chamber, awaiting contamination with a diluted chemical agent, prior to testing the detector. The green coupon more easily shows the spray pattern of the agent to testers. The white coupons are scrutinized by the detector as it passes overhead. Chemical agent is kept from escaping the chamber by strong air suction and filtration. Photo by Al Vogel, Dugway Public Affairs

CHAPLAIN'S CORNER

By Chaplain (LTC) Shawn P. Gee

"Peace on Earth, Good Will To Men" Luke 2:8-14

In 2016, I experienced the Christmas blues. Deployment coupled with grieving my grandfather's death weighed heavily on me, so much so, that I often longed for peace. To lift my spirits, I would listen to Christmas carols. One in particular, Burl Ives' version of "I Heard the Bells on Christmas Day" always turned my blues into a resolute serenity. This Christmas carol is based on the 1863 poem "Christmas Bells" by American poet Henry Wadsworth Longfellow. The song tells of Longfellow's despair upon hearing Christmas bells that "hate is strong and mocks the song of peace on earth, good will to men." The carol concludes with the bells carrying renewed hope for peace on earth and good will to men.

Here's the rest of the story behind "Christmas Bells." During the American Civil War, Longfellow's oldest son, Charles Longfellow, joined the Union cause as a soldier without his father's blessing. Charles soon got an appointment as a lieutenant but in November he was severely wounded in the Battle of New Hope Church (in Virginia), during the Mine Run Campaign. Combined with the recent loss of his wife, Frances, who died as a result of an accidental fire, Longfellow was inspired to write, "Christmas Bells."

May we be inspired by Longfellow's "Christmas Bells" and may our hope be rekindled as we await the coming of the Christ child anew. For during the Christmastime blues, it is my prayer that we would experience Christ's peace and sing, "And in despair I bowed my head; 'There is no peace on earth,' I said; 'For hate is strong, and mocks the song of peace on earth, good-will to men!' Then pealed the bells more loud and deep: 'God is not dead, nor doth He sleep; the wrong shall fail, the right prevail, with peace on earth, good-will to men.'"

Rad Plan . . .

Continued from page 2.

a sustained, measurable cloud of particulates for the Soldiers to move around in," said Kallie Thevenot, a physical sciences technician with the BioTesting Division. "We do that with an initial forceful simulant dispersal and then we sustain the cloud with air currents generated by fans."

"We used party poppers to disperse threat particles into the air," said Patty Low, a BioTesting Division microbiologist. "Activating the [simulant filled] popper within the test chamber produced a cloud of dry simulant which we were able to sustain with air currents."

Evaluators examined the suits under a black light and removed samples from the suits to determine their level of contamination. They further examined and photographed the samples under a fluorescing microscope to provide a more accurate and permanent record of the results.

The researchers then put the Soldiers through decontamination procedures intended to remove the fallout from the protective suits. They inspected the suits again under a black light and resampled, for a second time examining and photographing the samples under a fluorescing microscope. The test was performed five times with dry decontamination procedures and five times with wet decontamination procedures.

Sgt. 1st Class William Anderson was one of the Soldiers participating in the test, and said he values the opportunity to be part of the tactics, techniques and procedures (TTP) development process. "It gives us an opportunity to provide input and make recommendations," he explained.

Andrew Reichert, a physical scientist with the Homeland Defense/Civil Support Office at the Maneuver Support Center of Excellence, said that TTPs that allow for reuse of the protective suits would give commanders more flexibility in mitigating risk while reducing the consumption of personal protective equipment.

"The BioTesting Division's adaptation of their existing technique is a great example of the contributions made to the Army by the Combat Capabilities Development Command," said Paul Tanenbaum, Ph.D., director of operational applications at the Center. "Our scientists and engineers create innovative, cross-disciplinary solutions, not only in materiel, but to support the TTPs and training, as well."

Test challenges gas mask with new decontaminant

By Al Vogel
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Will a considered decontaminant damage the protective mask a Warfighter wears while washing off chemical or biological agent from vehicles and equipment?

That's the crux of a test going on at Dugway Proving Ground, conducted for the Joint General Purpose Decontaminant for Hardened Military Equipment (JGPD-HME) program.

For years, the Department of Defense has sought a single decontaminant effective against chemical and biological agents for decontaminating tactical vehicles, ship surfaces and weapons. Requirements included compatibility with current applicators, direct application to the contaminated surface and effectiveness within 30 minutes of applying.

One requirement is that the current M50 gas mask, in use by all services, not be affected by the JGPD-HME decontaminant under consideration.

"We expose the M50 to JGPD-HME because of the requirements that the decontaminant not degrade the equipment worn by the user to an unacceptable level," said Andrew Neafsey, test officer.

Because decontamination of vehicles and large areas is by nature messy, there is concern that Warfighters will have their mask hit by overspray.

To test the M50's exposure to the considered decontaminant with authenticity, Dugway uses the Simulant Agent Resistance Test Manikin (SMARTMAN) test fixture. A replicated human head, complete with computer-replicated breathing through mouth, SMARTMAN wears an M50 mask within a small, industrially filtered chamber.

An M50 protective mask is affixed to a SMARTMAN (Simulant Agent Resistance Test Manikin) in a small testing chamber. The test was conducted to learn whether a relatively new decontaminant would degrade the mask. Photo by Al Vogel, Dugway Public Affairs

"The M50 provides outstanding protection against a variety of challenges," Neafsey noted. "Masks will be monitored after initial exposure, and throughout the trial duration to confirm that no degradation takes place."

Using SMARTMAN, a crucial test fixture at Dugway for decades, realistic challenge of the M50 gas mask will help protect American Warfighters and their allies should JGPD-HME become a widely distributed decontaminant.

An M50 protective mask is affixed to SMARTMAN (Simulant Agent Resistance Test Manikin) prior to challenging then mask with Joint General Purpose Decontaminant for Hardened Military Equipment (JGPD HME). Photo by Al Vogel, Dugway Public Affairs

SOM Chamber Testing

Sand is blown at a Screening Obscuration Module (SOM) for 30 minutes on each side as part of the sand blowing test at the West Desert Test Center (WDTC), Dugway Proving Ground. Photos by Brittani Yale, Dugway Scientific Technical Photographer

By Becki Bryant
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Blowing sand, high humidity, and extreme hot and cold temperatures. Those are some of the tough conditions SOM units have recently faced at the West Desert Test Center (WDTC), Dugway Proving Ground (DPG).

The SOM, Screening Obscuration Module, is a compact smoke-generating unit that offers multiple benefits over the Army's current capabilities. Earlier this year, DPG conducted cloud-size and field testing to verify the SOM units could produce quality smoke, enough to obscure ground forces.

In mid-November, chamber testing started, which consists of exposing SOM units to extreme conditions for a specified amount of time detailed in U.S. Military standards MIL-STD 810G, and then starting the units and running them for several minutes.

"The SOM units have gone through the blowing sand testing, extreme hot and cold temperatures, as well as high humidity," shared Project Test Officer, Mike Capp.

Further testing will start in January, according to Capp, and will include blowing dust, salt fog, and drop testing, which consists of numerous release methods (back, front, corners, upside down) from approximately 42 inches off the ground.

If all field and chamber testing goes as expected, the SOM could provide U.S. forces with the first new medium area, medium duration obscuration capability in more than 70 years.

"It's been a fulfilling opportunity to test the SOM here at Dugway Proving Ground," shared Capp.

Technicians pour sand out of the SOM unit after the sand blowing test.

After the sand is poured out of the SOM unit, technicians start it up and let it run for several minutes to verify it works after being exposed to harsh conditions such as a simulated sand storm.

Visit to ancient site emphasizes Native American heritage

By Al Vogel
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On Nov. 14, Dugway Proving Ground's five archaeologists led 40 workers 2,000 years into the past at two Native American sites. The tour was conducted to recognize November as being Native American Heritage Month.

This 2,000-year-old sherd of pottery is distinctive for the wavy lines on its exterior; other sherds have different patterns. This may indicate each group of women that made pottery had its distinctive mark, rather like an ancient trademark. Five archaeologists from the Cultural Resources Office led the tour. Photo by Al Vogel, Dugway Public Affairs

At both ancient sites, with a little instruction, workers were soon spotting pottery sherds and tiny flakes from making arrowheads. They eagerly examined each artifact, then replaced it – it is illegal to keep artifacts found on federal or state land.

"I like doing the tours because it gives people an opportunity to see the history of Dugway," Cultural Resource Manager Rachel Quist said. She oversees the four other archaeologists who survey Dugway's 800,000 acres to prevent the loss of history: Ellyse Simons, Nate Nelson, Nate Anderson and Jenni DeGraffenried. Each has more than one specialty, and they represent a wealth of expertise.

A pottery sherd, a small arrowhead with a broken tip, and rock are ancient companions on the desert floor. The manmade items are approximately 2,000 years old. Photo by Al Vogel, Dugway Public Affair

Throughout Native American culture, pottery was made by women. The exterior of many sherds often have designs, pressed into the wet clay before firing. Archaeologists speculate this may be more than decorative, it may be the signature of each pottery making group.

One decoration is practical, and remarkably high-tech: raised waves over the pottery's surface, resembling corrugated roofing. This provides a greater surface area for campfire heat, without significantly increasing the size or weight of the pottery (a critical feature, when your only pack animal may be a midsized dog).

Archaeologist Rachel Quist looks over a pottery sherd during the Native American site visit at Dugway Proving Ground. The Cultural Resources Office led the tour that showed chips of pottery and other artifacts dating back 2,000 years. Photo by Al Vogel, Dugway Public Affairs

"Pottery is expensive to make and takes days and days," DeGraffenried said. "If you can source the pottery, and find which came from distinct clay sources, you can begin to track the movement of specific groups of women."

In other areas on or near Dugway, some sites approach 13,000 years old. First occupied after the last ice age, they are among the oldest sites in Utah. Workers did not visit them. Archaeologists remain secretive about the very old sites, to prevent theft or damage of the rare, valuable Native American heritage.

THE DISPATCH

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What to do if someone emails you classified information on an unclassified system

Immediately:

- Stop what your are doing, shut down the computer and disconnect from the network.
- If you printed the information, unplug the printer and do not allow anyone to use it.
- If you have a government issued phone, turn it off.
- Using a desk/office phone call the NEC or the Security Management Branch.
- If you forwarded the information before realizing it was classified, phone all the recipients and instruct them to do steps # 1 through 4.