



# NEWS RELEASE

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## FUDS tech ‘fingerprints’ unexploded ordnance

By James Campbell

The U.S. Army Engineering and Support Center, Huntsville, is capturing and cataloging what may best be described as the fingerprints of munitions items such as bombs, mortars, artillery projectiles and fuzes in an effort to improve how work is done at Formerly Used Defense Sites.

The Center’s Environmental and Munitions Center of Expertise has begun to put together a library of ordnance signatures, and to help with Corps of Engineers cleanup work at the former Kirtland Bombing Range, N.M., a team of experts traveled to two Florida museums in September.

The National Naval Aviation Museum in Pensacola, Fla., and the Air Force Armament Museum at Fort Walton Beach, Fla. had what the team needed – inert bombs from the WWII era with fins, fuzes and metal intact. Since the museums couldn’t release the exhibit pieces to the Center, the equipment to capture their fingerprints went to the bombs.

A central challenge when remediating sites where military live-fire training took place is properly classifying anomalies, or signatures from high-end metal detection equipment, said Andrew Schwartz, geophysicist, from the Center’s Environmental and Munitions Center of Expertise.

“It’s the difference between unnecessarily excavating an area and finding junk metal or being certain of what’s down there,” Schwartz said. The newest sensors have the potential to reduce excavation on some sites by more than 75 percent.

That’s one reason the team went to the museums in Florida where the team collected advanced electromagnetic induction signatures for various bombs and bomb fuzes using MetalMapper and the Time-domain Electromagnetic Multi-sensor Towed Array Detection System (TEMTADS), Schwartz said.

The specialized equipment gathers complex geophysical data about the objects – data Schwartz said he likes to call metal detector fingerprints. It’s still metal detection, but the specialized equipment can determine metal types, thickness and symmetry.

The bombs in question are 100-pound general purpose, practice bombs and spotting charges last dropped at what was then a U.S. Army Air Corps bombing range, last used for this type of training in 1947. Trent Simpler, project manager and Mark Phaneuf, geologist, representing the U.S. Army Corps of Engineers Albuquerque District, joined the team from Huntsville Center collecting the bomb data in Florida.

The former range is part of an area where an airport expansion is scheduled, and the Albuquerque District is managing the remediation project.

Once complete, this will be the first use of the technology on a FUDS project, Simpler said.

The trip to the museum to gather the old bomb's data fingerprints was funded by the Albuquerque District project, but it also benefits a library the team hopes will grow to be a standard classification for subsurface items that may be unexploded ordnance (UXO).

It's said that human fingerprints are unique, but in the case of ordnance, multiple data sets are needed for one type of munitions. Schwartz said the current library has roughly 300 ordnance signatures that cover about 25 different pieces of ordnance and related clutter.

The EM CX is also working within the DoD community of experts to standardize how the data is structured, Schwartz said.

"The library needs to be specific. For example, there are over a dozen different types of 81mm mortars, each with unique signatures, but if the library doesn't have the signature for the one you're looking for, you might not get a match," he said .

These fingerprints or signatures will help the Corps investigate sites where ordnance was used and determine which pieces of metal can be safely left in the ground, freeing up more resources so the FUDS program can get to more sites sooner, said Amy Walker, a geophysicist on the team from the Center's Engineering Directorate.

"In the larger sense, these new sensors provide advanced classification capabilities that weren't there just a few years ago," Walker said. "We're still in initial stages, building up the library so we can understand what these items look like to the new sensors, but this is what's next in munitions response. It's an exciting time for the industry."

Another member of the team, Nick Stolte, an environmental engineer with the EM CX said he thinks the long-term benefits of a detailed signature library can provide improvement at multiple levels, including planning, reporting and more efficient remediation of UXO-contaminated sites.

From helping with a project involving a WWII-era bombing range in New Mexico to building a library that can help at locations everywhere, the Center team is counting on developing these complex fingerprints as one way to meet the multiple challenges of mitigating the risk from UXO and MEC at current and former military sites.