

At Bundeswehr Test and Evaluation Facilities, a Window onto Possible U.S.-German Cooperation

Michael Cast

In April 2010, representatives from the U.S. Army Aberdeen Test Center (ATC) and the U.S. Army Evaluation Center (AEC) at Aberdeen Proving Ground (APG), MD, visited Germany to get a close look at how the German Bundeswehr [Federal Defense Force] conducts its test and evaluation programs and to meet with German officials. Together, the U.S. and German officials discussed the potential for information and engineering exchanges that could benefit both countries. The visit provided valuable insight into how Germany marshals its resources to test and procure technologies designed to protect German troops from today's battlefield threats, said COL Jeffrey Holt, ATC Commander.

COL Jeffrey Holt (left), ATC Commander, and Brendon Webb, Chief of AEC's Tactical Mobility Division, ride in a German Leopard 2 tank. (Photo courtesy of Eberhard Kloeckner, German Liaison Officer at APG.)



“Each of the German test centers we visited provided something significant for ATC to consider,” Holt explained. “The German army operates under much tighter constraints of test funding. As a result, they have invested wisely in equipment and facilities that can bring down overall test costs. As resources become tighter for our Army, we need to make similar investments.”

During the trip to Germany, Holt and one of ATC’s test managers, Daniel Terek, were joined by Brendon Webb, Chief of AEC’s Tactical Mobility Division, and Eberhard Kloeckner, German Liaison Officer at APG. The group visited the Bundeswehr Technical Center for Weapons and Ammunition in Meppen; the Federal Ministry of Defense’s Directorate General of Armaments, Army Equipment and Technology in Bonn; the Federal Office of Defense Technology and Procurement in Koblenz; the Bundeswehr Technical Center for Automotive and Armored Vehicles in Trier; and the Bundeswehr Technical Center for Information Technology and Electronics in Greding. Officials of these German defense agencies provided their American visitors with tours and briefings.

Focus on Soldier Protection

Among the most important topics of the trip were the development and testing of systems that protect Soldiers from improvised explosive devices (IEDs) and explosively formed penetrators, and the development and testing of vehicles needed in the combat theater, Kloeckner said.

Holt was especially interested in the Target Simulation Dome at the Technical Center for Information Technology and Electronics. Upgrading the Moving Target Simulator at ATC is on Holt’s to-do list, and he would like to achieve this with technical support from the Bundeswehr test center.

Kloeckner said the visitors from ATC also focused on Germany’s development and testing of technologies that provide command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capabilities. “On the subject of C4ISR, ATC especially posed questions on the themes of network data models and critical network performance criteria,” Kloeckner said. “They wanted to know, ‘How does the Bundeswehr determine the effectiveness and suitability of a network system?’ There were also many points of discussion about cooperative efforts and an information exchange between German and American testers.”

Opportunities to Learn

Holt said a long-term engineer exchange program could benefit both Germany and the United States in the long run. “I would very much like to put a long-term program in place to exchange engineers between each of our test centers,” he said. “Several years ago, we were able to send one of our young automotive engineers to the Technical Center for Automotive and Armored Vehicles in Trier. Tim Hoy learned a great deal from the exchange and has put those skills to use as one of our critical leaders on the MRAP [Mine

Resistant Ambush Protected vehicle] program. I would like to leverage similar opportunities for live-fire and electronics engineers.

“One major challenge we face is access,” Holt continued. “When we send a U.S. engineer to Germany, he or she is provided with almost completely unfettered access. The barriers to equal access for German engineers working at APG are far more difficult to overcome.”

Hoy’s 13 months at the German test center in Trier prompted him to raise the issue of instrumentation on MRAP vehicles operating in the combat theater that could benefit coalition partners by collecting data. The idea is to install sensors, such as the black boxes in aircraft, on MRAPs in Afghanistan to collect data that can be used to assess vehicle survivability and automotive performance on the battlefield and to make improvements in vehicle design and acquisition strategy.

“Especially after an IED hit, one can evaluate valuable data, which provide conclusions about the vehicles’ improvement potential,” Kloeckner explained. “The Bundeswehr has similar systems,



Wolfgang Vollmar (left), director of the Bundeswehr’s Technical Center for Information Technology and Electronics, and COL Jeffrey Holt, ATC Commander, shake hands before exchanging coins. (Photo by Erika Jordan.)

and we want to compare these technologies with each other. The data themselves are not so interesting in this case, as our vehicles are different, but the technologies used and their implementations are interesting themes for our engineers.”

Holt said he was particularly impressed with the survivability test fixtures at the Bundeswehr Technical Center for Weapons and Ammunition. “We rely primarily on full-up vehicle blast events, while the [center] leverages an array of specialized test fixtures,” he said. “Our approach provides great data, but it is expensive in terms of vehicle repair and instrumentation.”

Testing Protective Equipment

Terek, Chief of the Light Armor Operations Branch in the Weapons Facilities Division of ATC’s Firepower Directorate, has been involved with testing personal protective equipment (PPE) for the past 3 years. He is responsible for six ranges at ATC where these systems are tested. Holt tapped him for the visit to Germany because he thought Terek could learn something valuable about German test equipment, ranges, and processes for PPE systems.

Terek said the overall test process of the Bundeswehr appears to be similar to that of the U.S. Army, with a few notable differences. “Their test centers incorporate the research centers all on the same installation, I assume because they have less real estate than the U.S.,” he said. “For example, we visited their automotive test facility, where they have similar courses as we have here, but they also test engines and transmissions on dynamometers, whereas we typically do those tests at our research centers.”

While in Germany, Terek saw a test fixture that could shed light on the formation of explosively formed penetrators, special types of shaped charges designed to penetrate armor at stand-off distances. “This test

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fixture is designed to contain most of the blast and debris while allowing the penetrator to form and be filmed without the excess debris obstructing the view of the formation,” Terek said.

The test center that interested him the most was the Technical Center for Weapons and Ammunition in Meppen because it conducts the type of PPE testing for which he is responsible at ATC. “It would behoove ATC to see how the German army tests PPE and possibly incorporate their medical research data into evaluating U.S. armor effectiveness,” he said.

An Integrated Process

Webb said that exchanging technical information between the Bundeswehr and the U.S. Army is important because both nations are pursuing the development of protected vehicles such as the U.S. military’s MRAP and the Bundeswehr’s Dingo, a mine-resistant vehicle that German troops are using in Afghanistan.

“We are both pursuing the same capabilities for our protected trucks, and it just makes sense to try and share information,” Webb said. “It saves time and resources for both countries to share the expertise that has been developed in addressing our shared concern of under-vehicle attacks.

“In addition, they are significantly involved in the early engineering of systems,” he said of the Bundeswehr. “For vehicles, they test new technologies in models, then in test rigs, then on vehicles. While our vehicle development system is similar, it is on a much larger scale, so these steps would typically be split between ATEC [U.S. Army Test

and Evaluation Command], the Army Research Lab, and the program manager shop or TARDEC [U.S. Army Tank-Automotive Research, Development, and Engineering Center]. So the German process is much more integrated, and their test and evaluation centers take a lead role in developing, testing, and modeling new technologies very early in the acquisition process, even at the subsystem level.

“This is something the U.S. Army has also been working toward,” Webb said. “It is good to see the payoff [the Germans] have achieved in the quality and performance of their vehicles.”

Holt said he hopes this trip to Germany will be the basis for the renewal of cooperation between the Bundeswehr and the U.S. Army. Since Sept. 11, he explained, the scale of cooperative efforts has dropped significantly when compared with the 1980s and ’90s, mostly because of the tremendous workload for both the U.S. and German test centers. “I hope this visit serves as a jump start for regaining the deep technical relationship we used to share with key allies,” he said. “We have superb test liaison officers in place here at APG, but I think it is critical to take things to the next level and have a continuous rotation of engineers and technicians between U.S. and allied test centers.”

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