

by COL "SCOTTY" R. SHRADER

HEAVY-EQUIPMENT TRAINING in TODAY'S HIGH-TECH ENVIRONMENT

THE 416TH THEATER ENGINEER COMMAND (TEC) is leading the Army in 21st-century training practices with the purchase of heavy-equipment simulators for the horizontal engineer units across the Army Reserve.

The command purchased more than 120 Cat® Simulators last year. Each horizontal engineer unit in the 416th and 412th TEC received four next-gen simulators—a hydraulic excavator, small wheel loader, track-type tractor, and

an M-Series motor grader, along with a manager's workstation.

The simulator systems not only train soldiers to become tactically and technically proficient but also to boost critical thinking skills for heavy equipment operators. Furthermore, the technology-enabled training empowers unit leaders to undertake training while reducing soldiers' direct exposure to hazardous risk, which is ultimately beneficial to the soldier and the government.

TACTICAL AND TECHNICAL PROFICIENCY

Prior to stepping foot on a machine, soldiers are immersed in a cab environment that features original equipment manufacturer (OEM) parts and a spatial layout of controls identical to the actual machine. This, coupled with realistic and immersive training simulation experience, ensures their learning transfers directly to the heavy equipment at the work site.

The simulator training environment is completely

independent of the surrounding area and weather conditions. Weather events can cause massive variation in the scheduled training for soldiers. During winter months, lightning strikes, or the muddy spring season, soldiers can continue to train on the simulator, as training is not affected by the weather. Soldiers are able to maintain aggressive training tempos and instructors are able to provide better training oversight to both novice and experienced equipment

operators, developing key technical skillsets, that build experienced, proficient, and experienced operators. Over the years, organizations such as the U.S. Air Force have greatly relied on simulator training to hone their operators' craft with a very high level of success. Today's Army Reserve Engineers are looking to capitalize on these vital lessons learned by training a new generation of soldiers using simulations, enhancing the individual soldier's capabilities to operate this technically complex heavy earth-moving machinery.

HEIGHTENED CRITICAL THINKING

Critical thinking is a key component of every mission. Soldiers can work through complex construction scenarios enhancing the learning environment through the exceptional realism of audio and video graphics in the custom software, along with the fully articulated seat and hand controls. Training exercises are based on input from subject-matter experts with this data used to establish benchmark information. Unit leaders and instructors can provide instant feedback throughout the training exercises as the soldiers' results are recorded and made available for immediate use. Instructors, soldiers, and unit leaders can review the data and apply the lessons learned to future exercises and missions. Soldiers progressively refine their critical thinking skills as this activity improves their ability to conduct after-action reviews



"MY OPINION only got stronger on the need for the simulators. They are an excellent training tool as well as a great source of sustainment training." — JOE TARCZYNSKI, GRADER INSTRUCTOR

and refine standard operating procedures to ensure mission success.

**INCREASED SAFETY;
DECREASED EXPOSURE TO RISK**

Through increased "stick time" safety checks and operating procedures become second nature. The iterative training, building confidence, developing experience, on the simulators develop strong motor skills and muscle memory in soldiers, helping them to understand the complex equipment and what must be done to operate the equipment under severe conditions experienced in combat construction. By the time soldiers hit the job site, skills and safety procedures have become an intuitive reflexive memory.


The simulators can replicate catastrophic incidents, allowing soldiers to face the challenge of operating equipment under stress. By understanding the equipment's capabilities, soldiers gain confidence, mitigate risk, and become safer operators. This, in turn, leads to accomplishing the mission in less time, limiting the potential exposure to enemy fire. Through this training, unit leaders are ensuring mission success and the safety of their soldiers.

**DECREASED COSTS;
MAXIMIZED RESOURCES**

Integrating the simulator training into the existing Army Reserve's "one week-end per month, two weeks per year" training schedule is already saving a quantifiable amount of taxpayer dollars. Increased "stick time" results in significant reduction of wear and tear on equipment, with the added benefit of considerable savings in fuel costs. In the face of increas-

ingly diminishing resources, reserve units are maximizing every opportunity to train soldiers year round, independent of environmental conditions and equipment maintenance schedules.

CONCLUSION

The Army Reserve engineers are leading the way with the use of Cat® Simulators. By creating a successful learning environment and setting conditions in which challenging situations are met head-on in a virtual environment, the simulators enable soldiers from the 416th and 412th TECs to become tactically and technically proficient in the use of heavy equipment, executing construction missions in both CONUS and combat construction. Soldiers master the functions, features, and capabilities of their equipment before they step foot inside the actual machine. Unit leaders can mitigate considerable safety risks on the job site through the regular use of simulator training and applying lessons learned. Simulation training quickly pays for itself when quantifying the costs of the alternative: fuel, maintenance, and time, plus the potential damage to property or injury to soldiers. Simulator training is a smart use of time and tax-payer dollars in the face of diminishing resources. The implementation of Cat® Simulators by the 416th and 412th TECs are a training enabler to continually build training and readiness in our soldiers. 

COL "SCOTTY" R. SHRADER

graduated Utah State University in 1987 with a bachelor of science degree in business administration, production management,

and graduated the Command and General Staff College. He enlisted into the Utah National Guard as an artilleryman in 1985 and soon after entered the Reserve Officer Training Corps at Utah State University. He was commissioned in the field artillery branch in 1987. He has served the Engineer Regiment since 1994, starting as a first lieutenant and serving in positions of increasing responsibility from the company, battalion, brigade, Regional Support Command, USARC, OCAR, and DA Staff levels.

A skilled and versatile engineer, he capably served as Engineer Force/Organizational Integrator for the Chief, Army Reserve, with two deployments to the Iraqi Theater of Operations as an engineer, one with the 353rd EN GP, 1st CAV DIV, and the second time to serve as the Military Police Brigade Engineer for Task Force MP North under Task Force 134, Multi-National Force-Iraq during Operation Iraqi Freedom (OIF). In the latter assignment, Shrader was responsible for three of the largest detention facility construction projects in Iraq, amounting to more than 850 million dollars.

Upon returning from OIF, Shrader assumed the dual role of the Engineer and Logistics Management Officer, G-4, of the 416th TEC. He conducted a strategic regiment-level DOTMLPF process application to upgrade the force from the inside out. The 416th and 412th TECs afford him the ability to cross the spectrum of operations from DA/DOD to all supporting agencies. Additionally, he has done work to facilitate



a much better relationship between both Engineer Commands at the G-4 and Operations levels of command.

In his senior assignments, Shrader has held key roles, such as the Acting Chief of Staff, 416th TEC, and Director, Army Reserve Engineer for Integration. He has been the catalyst to implement and execute the de-modularization of the Army Reserve Engineer force structure, advising DA and OCAR staffs on the initiative to right size and shape the future Army Reserve Engineer Structure, designing the architectural rewrite and development of the Regiments Sets Kits and Outfits as well as cultivating vital partnerships with Tank-automotive and Armaments Command (TACOM), U.S. Army Maneuver Support Center of Excellence (MSCoE), United States Army Training and Doctrine Command (TRADOC), and the United States Army Engineer School in order to bring the optimal engineer resources to focus in pursuing our national interests.

COL Shrader's awards and decorations include the Bronze Star Medal, two Meritorious Service Medals, and five Army Commendation Medals.

