Engineers Working Smarter—Not Harder

By Major Anthony C. Funkhouser and Second Lieutenant Mabry Sumner

Every engineer who has ever driven pickets for hours on end has little affection for the cast iron, 40- to 50-pound driver. During countless repetitions, they pick it up over their head and drop it to drive pickets into ground that is often rocky and dense. The opposing force (OPFOR) engineers at the National Training Center (NTC) drive more than 3,500 pickets per rotation in some of the rockiest terrain at Fort Irwin, California. So the 11th Armored Cavalry Regiment set out to find a better way.

The Regimental Engineer Section's NCOIC contacted a commercial vendor for brochures on pneumatic post drivers of various sizes and capabilities. A local vendor came to the NTC to demonstrate a medium-duty post driver weighing 54.6 pounds and requiring a 42 cubic feet per minute (cfm) compressor set at 90 pounds per square inch (psi). It operated off the 58th Combat Engineer Company's (OPFOR) standard 250 cfm compressor and allowed us to connect two drivers simultaneously.

The demonstration was conducted in some of NTC's rockiest terrain known as the "Iron Triangle." By the end of the day, as a battle drill began to evolve, a squad with one post driver placed 300 meters of triple-standard concertina in 17 minutes.



Soldiers from the 58th Combat Engineer Company operate the two-man post driver.

Advantages

During the March 1997 Advanced Warfighting Experiment at the NTC, the 11th Armored Cavalry Regiment used the new post drivers, or "automatic picket pounders" as we call them, to build a motorized rifle battalion defense. During this defense, 1st Platoon/58th Combat Engineer Company (OPFOR) constructed 14 300-meter minefields with antifratricide fences and 14 300-meter triple-standard concertina fences in 12 hours. During the last 10 defenses before we had the new post driver, our average time for this work was between 16 and 17 hours. The automatic picket pounder operated similar to a pneumatic jackhammer and drove picket after picket.

A crew of four soldiers operated the automatic picket pounder. One soldier drove the 5-ton dump truck pulling the 250 cfm compressor, one carried the automatic picket pounder, one operated the throttle and untangled the hoses from bushes, and the fourth soldier held the pickets. The soldier operating the automatic picket pounder only had to guide the device on the picket. The weight of the device was sufficient to drive the pickets when it was operating. This crew drove pickets for a 300-meter triple-standard fence in less than 20 minutes. Installation time for a 300-meter minefield marking fence aver-

aged between 7 and 8 minutes. It took less than one second to drive a single picket.

The speed of the automatic picket pounder is only one of its benefits. It can also drive pickets in almost any type of terrain. When we had to build obstacles over broken terrain and on hard, compacted tank trails, the automatic picket pounder was extremely helpful. We did not put pickets across tank trails in the past, because we could not drive the pickets to the necessary depth with a manual driver. Even with the automatic picket pounder, soldiers had to increase the time the device operated and pull down on its handles to get the pickets into the ground.

On extremely rocky terrain, we only had to move the pickets around until we could wedge them between the rocks. Now that the picket crew was no longer exhausted from the endless pounding with the manual driver, they placed the pickets in deeper than normal, making it difficult to remove them. With the manual driver, we normally used 6-foot pickets and drove them an average of 6 to 8 inches deep. The average depth for the automatic picket pounder was 12 to 14 inches. The picket pounder ensured that there were no gaps in the obstacles and that the obstacles would not come out easily even in rough terrain.

Disadvantages

On the minus side, the hoses that connect the automatic picket pounder to the compressor seemed to catch on every creosote bush in the desert as we moved across the obstacle frontage. The hose would then pull back on the 55-pound driver that the soldier carried. After constructing obstacles for several kilometers, this became very irritating. To overcome the problem, we constructed a boom to hold the device and route the hose up and over the boom to keep it off the ground.

Another problem with the picket driver was that it drove the pickets too deep! When we policed the battlefield the day after a battle, it was hard to get the pickets out of the ground. We tried pulling them out using straps attached to a 5-ton dump truck, but the straps could not withstand the pressure without breaking. Then we tried using the winches on the 5-ton dump truck and the HMMWV and found that steel cables worked well in removing the pickets. In the future, we will not set the pickets so deep that we cannot remove them.

Conclusion

In light of our experience, we recommend units consider locally procuring picket pounders if auxilary power units are available. We also suggest that the Engineer School include hydraulic picket pounders as SEE attachments.

The automatic picket pounder has allowed us to increase the emplacement speed and effectiveness of obstacles. Its ability to drive pickets in all terrain and to any depth without exhausting the soldiers was a great benefit to the OPFOR. The post driver proved its usefulness during the Advanced Warfighting Experiment and will continue to be an integral part of OPFOR obstacle emplacement.

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Endnotes

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[3] John H. Bradley and Jack W. Dice, "Waltzing Matilda: The Early Carrier War" *The Second World War: Asia and the Pacific*, West Point, New York, Department of History, 1977, pages 161-195. Excerpt reprinted in U.S. Army Command and General Staff College, *The Evolution of Modern Warfare Syllabus/Book of Readings, Terms II and III*, Fort Leavenworth, Kansas, USACGSC, 1966, pages 332-366.

[4]Allan R. Millet and Peter Maslowski, *For the Common Defense, A Military History of the United States of America*, New York, The Free Press, 1984, page 433.

[5] Ibid, page 401.

[6] Larry H. Addington, *The Patterns of War Since the Eighteenth Century*, 2d edition, Bloomington, Indiana, Indiana University Press, 1994, page 260.

[7] Millet and Maslowski, page 464.

[8] T. R. Fehrenbach, *This Kind of War: A Study in Unpreparedness*, 1994, Fort Leavenworth, Kansas, The U.S. Army Command and General Staff College Press, pages 426-433.

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