The mission of the field artillery is to destroy, defeat, or disrupt the enemy with integrated Fires to enable maneuver commanders to dominate in unified land operations. Field artillery Soldiers accomplish their mission by emplacing their assets in the best location in order to support maneuver forces. Field artillery requires stable platforms in order to provide an accurate unit location to calculate a firing solution and meet the requirements of accurate predictive fire.

During the Vietnam War, U.S. forces encountered terrain hostile to artillery operations while fighting in the Mekong Delta. The Mekong Delta is a marsh-land that, during the conflict, possessed few suitable roads, hundreds of small hamlets as well as thousands of rice paddies. The area also contained several rivers and countless canals. The high water table of the area also made the soil unreliable for artillery occupation due to near-constant moisture and proximity to water sources. When batteries were able to occupy positions, the terrain forced crews to perform inordinate numbers of safety checks, the howitzers also experienced cant during laying and the tubes were difficult to traverse. The terrain and inadequate road system also hampered the ground transportation of howitzers and their subsequent supply and re-supply. The bottom line was that utilizing artillery in the Mekong Delta was a near-nightmare.

In 1966, the 2nd Brigade, 9th Infantry Division
along with the U.S. Navy River Assault Flotilla 1, formed a riverine task force in order to bring the fight to the enemy in the Mekong Delta. Initially, fire support was provided solely from fixed locations. However, batteries were unable to maintain adequate tempo and proximity to maneuver. In December 1966, the 1st Battalion, 7th Artillery made the first attempt to solve this dilemma by placing its M110A1 howitzers onto Landing Craft, Medium (LCM-6). Unfortunately, this LCM did not provide a stable platform and its width prevented the howitzers trails to fully extend thus limiting its ability to completely traverse. The 3rd Battalion, 34th Field Artillery Regiment (FAR) then began to utilize barges instead of LCM-6s. The 3-34th FAR welded a base plate to the deck of the vessel allowing the howitzer to traverse a full 6,400 mils. In 1967, the 3-34th FAR, after fielding the M102 howitzer utilized Landing Craft Mechanized, Mark 8s (LCM-8s) in addition to barges. Their methods were effective and riverine artillery became a useful tactic. The successful riverine artillery operations in the Mekong Delta provided maneuver forces with much needed firepower to combat the enemy. After the Vietnam War, riverine artillery was nearly forgotten as the nation prepared to fight a Warsaw Pact enemy across the plains of Europe and as it fought insurgents in Afghanistan and Iraq.

**OPERATION GA TATOR**

In December 1966, the 1st Battalion, 7th Artillery made the first attempt to solve this dilemma by placing its M110A1 howitzers onto Landing Craft, Medium. In 2018, the 11th Transportation (TPT) Battalion, 7th Transportation Brigade (TBX) based out of Fort Eustis, Va., envisioned utilizing riverine artillery as a means to extend Fires into areas denied due to poor terrain thereby presenting the enemy with a new, additional dilemma. The 11th TPT BN contacted the Norfolk, Va., based 1st Battalion, 116th Infantry Brigade Combat Team, to assist in the exercise by delivering Fires in support of the Waterborne Artillery Mission. The 11th TPT BN chose the Virginia Army National Guard unit because of its proximity to its headquarters. In January 2019, the 1098th Transportation Detachment, a subordinate unit of the 7th TPT BN, and the 1-116th FAR loaded a M119A3 onto a Landing Craft Mechanized (LCM) vessel at Little Creek, Va. The purpose was to
assist the 1098th TPT Detachment configure their boats to accommodate the M119A3s and to devise a load plan.

On April 25, 2019, 17 Soldiers of the 1-111th FAR participated in a multicomponent live-fire exercise with members of the 11th TPT BN. The exercise was conducted aboard LCM-8 vessels. Throughout the exercise, Soldiers from both battalions collaboratively worked to identify issues, concerns and develop techniques and tactics to deliver Fires using modern artillery and communication systems. The LCM-8 was loaded with the M119A3 and M1097 prime mover along with a standard gun crew and a five Soldier boat crew. A second LCM (Mod 2, command vessel) was loaded with the fire direction center (FDC) Soldiers, M1152 vehicle, and boat crew. A third vessel served as a shuttle between LCMs so the beached boats could remain in place.

The M119A3 was initialized dock side using survey and dry fire verified under digital operations without incident or issues aboard the LCMs. Once underway, it is important to note the gun's Inertial Navigation Unit remained operational for the entire three-day exercise while on the water and traveling over 8 miles away from initialization. The gun fired a charge 8, low angle at target range of 5,100 meters, without the use of a baseplate. Meteorological data was applied throughout the operation. All missions were fired digitally and no degraded techniques were used. The unit expended 20 rounds of high explosive (DODIC C445, 2 Square).

The M119A3 was laid without a baseplate on top of a composite material mat (mobility matting) as it was laid flush on the LCM’s deck. Behind the spade, vessel crew placed a composite beam (8” x 8”) spanning the width of the LCM secured within the watercraft’s bulkheads, the beam included a reinforced seam in the middle of the beam in the area of the spade. The beam was reinforced with steel plates and bolts. Additional sand bags were placed between the beam and spade to absorb shock. Sand bags were also used as wheel chocks as well as powder and dunnage pits.

Reconnaissance was conducted prior to gun placement to verify water and bank conditions in areas where favorable conditions existed. The waterway used for this exercise was a closed section of
intercostal waterway near range G10 at Camp Lejeune to simulate river conditions. Once at the firing point, the chief of the gun and Coxswain carefully coordinated to “stab” the bank along the azimuth of lay. The vessel’s steel construction rendered lensatic compasses ineffective, so the vessel’s compass (calibrated) was used to initially position the gun along the azimuth of lay. The chief of section was required to convert mils to degrees since the vessel’s compass is only annotated in degrees. The Coxswain beached approximately the first third of the vessel on the bank in order to provide a stable firing platform for the gun. Little changes in deflection or gun location were observed while the gun was ready to fire. This method of employment was extremely favorable and rapid since the gun is carried in a firing configuration while on the LCM where, essentially, all that is necessary to fire is beaching the vessel along the azimuth of fire.

The LCM (Mod 2) carrying the FDC initially loitered in the immediate area along the intercostal waterway; however, it was discovered the digital communications traffic between the gun and FDC were consistently disrupted. After a number of additional communications tests and troubleshooting, it was determined that the digital communications may have been disrupted by the changing communications profile created by the loitering vessel’s numerous antenna masts and wheelhouse (steel construction). Once the LCM (Mod 2) and FDC were beached and stationary at a distance of 50 meters from the LCM containing the howitzer section, digital communications were maintained without interruption.

At 9 a.m. on April 25, 2019, two check round missions were fired using the gunner’s quadrant and were observed safe by the forward observers. Following the check round missions, six (three-round) fire missions were conducted over the course of two hours with no issues. Following all firing missions, the sand bags were removed to inspect the beam supporting the howitzer spade. The beam behind the spade demonstrated the ability to return to its resting position following flex from gun recoil; however, it appears the beam failed to return to its original position (no measurements were made). Considerable deformation was also observed in the beam along with some twisting caused by the recoil.

**RECOMMENDATIONS**

Riverine artillery tactics can be useful in littoral and riverine environments, especially considering the majority of the globe is covered by navigable waterways. As national security concerns continue to grow in Asia, the Middle East and South America, the ability to extend Fires along navigable waterways provides commanders the ability to deliver Fires in areas currently denied by ground movement. In order for riverine artillery to fully support maneuver

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at maximum range, a number of recommendations are required.

OPERATIONAL NEEDS STATEMENT

The first recommendation is to develop a stable firing platform to support low and high angle and the ability to fire a charge seven. Several options include the use of 8-12 inch thick composite mats that are shaped or molded to accept the M119A3 baseplate and spade attachment. The grove for the spade should allow the trails be articulated by the gun crew to maximize traverse. The matting would also require a system to secure it to the LCM or barge. Another recommendation is to use a beam and while incorporating additional shoring and reinforcement behind the gun’s spade. Such a design would require specific attention to design a mechanism to secure the spade to the beam for safety. The final recommendation is to use a firing platform similar to the ones discussed in the January 1968 edition of the Fires Bulletin as well as in the CMH Publication 90-12, Vietnam Studies: Field Artillery (1954-1973). This platform included a wood and steel-boxed platform welded to the boat’s deck and filled with sandbags in the areas of the baseplate and spade.

DIGITAL COMMUNICATIONS DISRUPTIONS

The unit also experienced a number of unusual digital communications challenges throughout the operation. These issues continued to plague TF GATOR until the LCM transporting the FDC was rendered stationary by beaching the craft. Based on the exercise observations, it appears the changing landing craft and communications profile may be disrupting short range digital communications. Additional research is recommended in order to verify the cause of the disruption.

METHODS UNDER DEGRADED CONDITIONS

Due to the design of the LCMs, the vessel’s port and starboard bulkheads blocked the line-of-sight between the gun and potential aiming circle location. Therefore, it is recommended that a taller Pan-
tel be designed in order to clear the vessel’s bulkhead in the event the gun must be laid under degraded operations. In addition, a taller telescope could clear the bulkhead to the left and right sides of the craft.

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Maj. Jonathan Fair serves as the battalion S3 for 1st Battalion, 111th Field Artillery Regiment. He deployed as a platoon leader in support of OIF in 2006 and previously served as battery commander, battalion fire direction officer, S3 for a recruiting and retention battalion, and commander of HHC, Maneuver Training Center and Fort Pickett.

Capt. Daniel Tarrant serves as commander, C Battery, 1st Battalion, 111th Field Artillery Regiment in Hampton, Va. He deployed as battalion fire support officer in support of Operation Spartan Shield in 2015-16. Other assignments include company fire support officer, fire direction officer, battalion S1, and battalion S4.