Stay Hot, Shoot Fast:

An Evolving Concept in MLRS Tactics

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Desert Storm clearly demonstrated the destructive combat power that the multiple-launch rocket system (MLRS) brings to the modern battlefield. Moreover, it pointed out that fire support systems capable of ranging the depth of the battlefield can effectively destroy a potential enemy before he can bring the full weight of his combat power to bear on our forces. The Iraqis learned this lesson firsthand. Other potential enemies US and allied forces may face also have noted the power of MLRS.

While these potential adversaries find it difficult to match the technology of MLRS, they can and have improved their fire support systems designed to challenge our fire support system and the tactics we employ. In particular, they've sought to increase the range of cannon and rocket systems not only to reach deep into our side of the battlefield, but also to ensure they can remain out of MLRS' deadly range.

More importantly, they have sought to develop tactics to decrease their dwell time—their exposure time—at a particular firing point. Consequently, we're pressed to develop tactics, techniques and procedures (TTP) to ensure we can bring destructive fire on targets before the enemy systems can displace to new firing points. The challenge is to design TTP to take down enemy fire support systems shortly after they're detected.

Five-Minute Response

Setting a rigorous response standard, we assume an enemy system can emplace, fire and displace in five minutes. Our superior target acquisition means can acquire the enemy's fire in less than a minute. With hustle, it takes two minutes to process the fire mission within our own system. Once the mission has been transmitted to the launcher, another one to two minutes may be consumed by the launcher's moving from a hide position to a firing point. At the firing point, the launcher requires at least one minute and 15 seconds to elevate and traverse to the target. Assuming a range-to-target of 20 kilometers, the time of rocket flight will be at least another minute. Total response time for this hypothetical mission is seven minutes and 15 seconds—well within the mission training plan (MTP) standard of 16 minutes without travel time from the hide area.

But that excellent time is two minutes too slow to engage a five-minute target. While some will argue that we can save time by shooting rockets over the cab (a capability for targets beyond 19.5 kilometers with Version 6.06 launcher software) and employing sensor-to-shooter shortcuts, we still will be pressed to attack the target in less than five minutes.

Fortunately, there are some capabilities in the Versions 6.05 and 6.06 software that permit us to lay our launchers on predetermined targets and fire them as soon as targets are acquired. To do so, however, the launcher must *remain* in a "hot" status on a firing point—more exposed to enemy attack than when the launcher is concealed in a hide area waiting for a fire mission.

Stay Hot, Shoot Fast TTP

The 6th Battalion, 37th Field Artillery assigned to the 2d Infantry Division Artillery in the Republic of Korea has recently tested a technique now known as "Stay

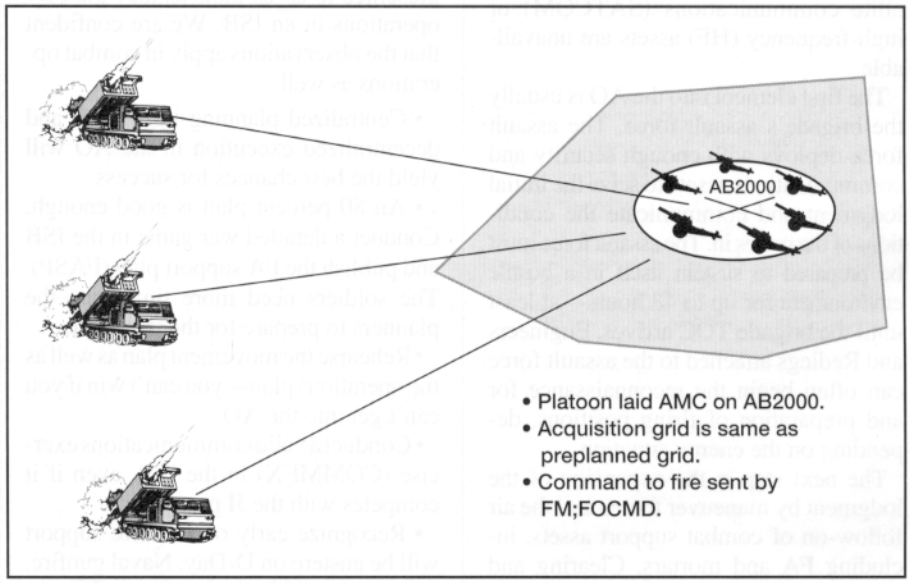

Figure 1: Fire mission Using FM;FOCMD.

Hot, Shoot Fast." This technique places a launcher on a firing point and laid—launcher-loader module (LLM) elevated—on a target grid of an expected enemy system. The method of control is at-my-command (AMC).

Fire Mission Using FM;FOCMD. When an enemy target is acquired firing from the expected grid, the battery operations center (BOC) uses its fire direction system (FDS) to send a fire order to the launcher(s) to engage the preplanned target(s). This is accomplished by executing an FM;FOCMD (fire mission; forward observer command) sent from higher or by calling up an FM;FOCMD from the message index, entering the original target number and FIRE in the CONT (control) field, then pressing execute. MLRS;CFFs (MLRS; calls-for-fire) are displayed and then transmitted using the XMIT key for each launcher assigned the mission. The launcher receives the command to fire and fires the number of rockets specified in the original fire order.

In tests conducted in the field, the total time required to execute this technique was about 21 seconds. If you add this time to the time to acquire the target and select the right unit to fire and the flight of the round, MLRS can engage a target in less than three minutes. (See Figures 1 and 2.)

However, our enemies won't always be cooperative enough to use the firing points we've templated. Suppose they elect to vary their firing points? Again, our current software permits us to meet this challenge using Stay Hot, Shoot Fast TTP.

Fire Mission Using Amendment Fan (Shift Zone). Instead of firing the preplanned target grid, the fire mission is shifted, or amended, to the new target grid acquired by our systems. The launcher will accept amended missions up to 200 mils on either side of the direction of fire to the preplanned target for a total shift fan of 400 mils (Figure 3).

The BOC can plot the amendment fan, or shift zone, on its operations map for all launchers laid on a potential target. This is done by plotting the launcher location and target location, drawing the azimuth to the target and then plotting azimuths 200 mils left and right of the azimuth to the target. When you add the minimum and maximum ranges to this fan, the result is a shift zone where the launcher can engage targets using amended mission procedures.

When an acquisition source sends the target location to the BOC, fire direction personnel determine which launcher or launchers can engage the target and then send an amended CFF to the unit(s) to fire. This procedure requires the FDS operator to use the FM;CFF of the preplanned mission (recalled from the database or sent by higher) and modify it for the new (or actual) target location. (The operator verifies that the target number remains the

1. FDC receives FM;CFF with "AMC" in the CONT field from higher.
2. FDC verifies the grid and the following information—
   a. TGT field enter target block number.
   b. CONT field enter AMC.
   c. SH field enter JED.
   d. SIZE field enter (dictated by higher).
   e. UFFE field enter PLT to fire.
   f. OVRIDE field enter X.
3. FDC executes FM;CFF.
4. FDC transmits MLRS;CFF for each launcher (fields are protected).
5. Launcher crew acknowledges alarm.
6. Initial firing data appears on FCP.
7. Gunner transmits WILCO to FDC.
8. Launcher moves to correct heading.
9. Gunner pushes launcher lay.
10. Ready-to-fire message is transmitted automatically to FDC.
11. FDC receives MLRS;STATUS of READY from launchers and executes.
12. FM;FOCMD with READY is generated after third launcher is ready.
13. FDC transmits FM;FOCMD to higher.
14. FDC receives FM;FOCMD from higher with FIRE in the CONT field.
15. FDC executes FM;FOCMD.
16. MLRS;CFF is generated with FIRE in the CONT field.
17. FDC transmits MLRS;CFF to launchers (do this for each launcher).
18. Launcher receives MLRS;CFF.
19. Launcher crew acknowledges alarm.
20. Gunner transmits WILCO to FDC.
21. Gunner arms and fires according to prompts.
22. MLRS;MFR is automatically sent to FDC.
23. FDC executes the MLRS;MFR.
24. OPSTAT is automatically sent to higher.

Figure 2: Fire Mission Processing Using FM;FOCMD.

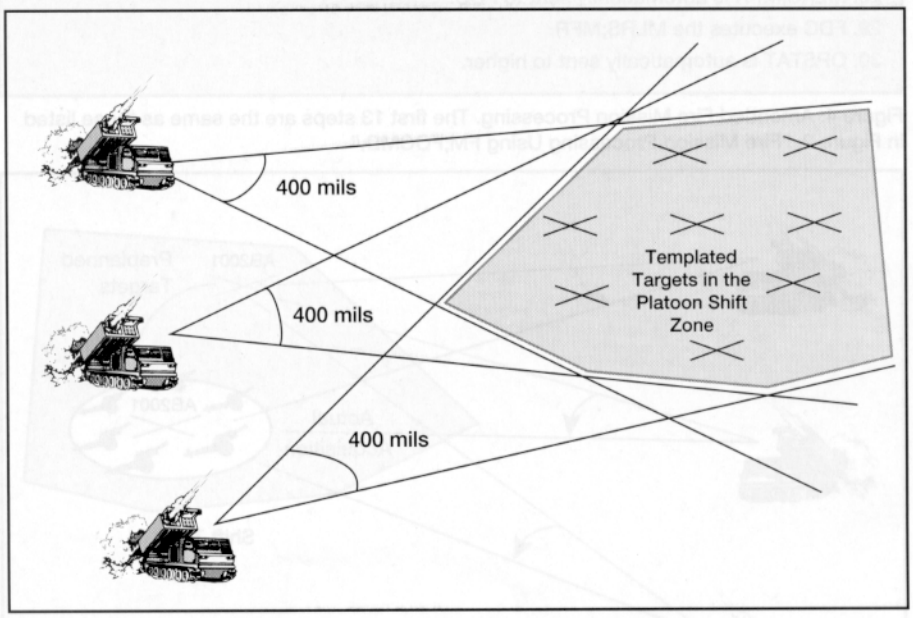

Figure 3: Amendment Fan (Shift Zone).

same as the preplanned target and enters the new target location and an X in the OVRIDE field.) The operator executes this FM;CFF and then transmits the MLRS;CFF(s) to the launcher(s). These MLRS;CFFs will have an A in the ACT field. The launcher receives the new CFF with a prompt indicating that it has received an amended CFF from the BOC.

During this sequence, the launcher transmits to the BOC an MLRS;STATUS message with CANCOM (can't comply) in the MSTAT (mission status) field because it already has a mission assigned with the same target number. The FDS operator should ignore this message, delete it and continue with the mission.

The gunner presses the alarm acknowledge key then launcher lay key on the fire control panel (FCP) and the LLM traverses to the new target location without first having to stow the LLM. When the prompts appear, the gunner then arms and fires rockets.

Depending on the amount of shift, the launcher can respond to the new grid and fire in about 45 seconds. The total mission time for an amended mission is about four minutes, including acquisition time, actions in the BOC and a time of flight of about one minute. This is more than enough time to engage a target exposed for five minutes. (See Figures 4 and 5.)

14. FDC receives FM;CFF from higher with WR in the CONT field.
15. FDC verifies the grid and the following information—
    a. TGT field verify the same target number as AMC mission (change as necessary).
    b. CONT field has WR.
    c. SH field enter JED.
    d. SIZE field enter (dictated by higher).
    e. UFFE field enter PLT to fire.
    f. OVRIDE field enter X.
16. FDC executes FM;CFF.
17. MLRS;CFF is generated with A in the ACT field.
18. FDC transmits MLRS;CFF to launchers (do this for each launcher).
19. Launcher receives MLRS;CFF.
20. Launcher crew acknowledges alarm.
21. FDC receives MLRS;STATUS with CANCOM in the MSTAT field. ***Delete*** this message.
22. Amended target data prompt appears on FCP.
23. New firing data appears on FCP.
24. Gunner verifies launcher heading.
25. Gunner transmits WILCO to FDC.
26. Gunner pushes launcher lay.
27. Gunner arms and fires according to prompts.
28. MLRS;MFR is automatically sent to FDC.
29. FDC executes the MLRS;MFR.
30. OPSTAT is automatically sent to higher.

Figure 4: Amended Fire Mission Processing. The first 13 steps are the same as those listed in Figure 2, "Fire Mission Processing Using FM;FOCMD."

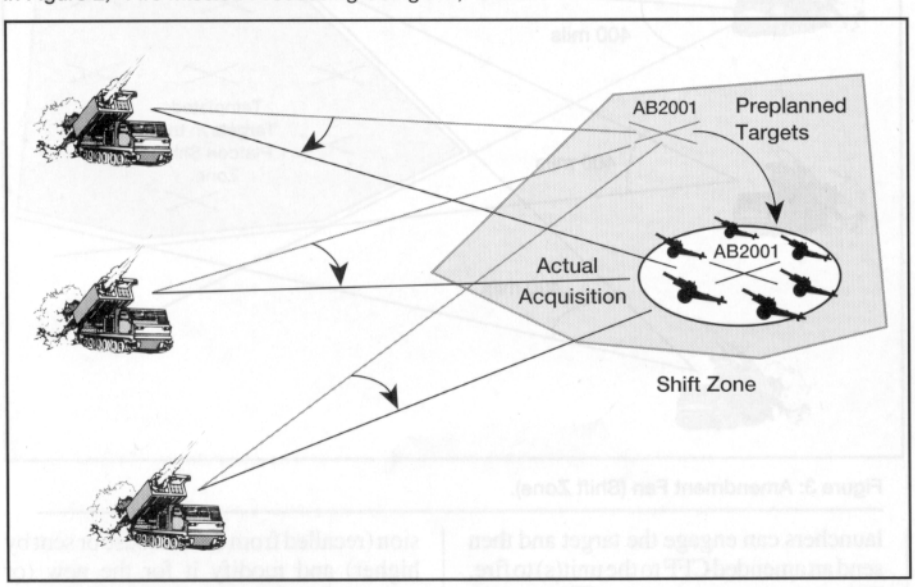

Figure 5: Amended Mission.

Processing and Firing Challenges. There are distinct challenges to an MLRS unit using Stay Hot, Shoot Fast TTP. First, the BOC must closely monitor the status of launchers and the data base associated with them. The Stay Hot, Shoot Fast procedures require the precise location and status of each launcher to work properly. Any error that goes undetected until the fire mission is processed simply adds more time to correct the error and execute the mission when we can least afford the time to do so.

Secondly, Stay Hot, Shoot Fast requires clean digital communications from the BOC to launcher. First time acknowledgement of messages is crucial. Any non-acknowledgements or no acknowledgements adds more time to the processing. Thirdly, the launcher and fire direction crews must be well rehearsed in the battle drills associated with the Stay Hot, Shoot Fast TTP. (See Figures 6 and 7.) Quick trigger fingers ensure we can beat the rigorous time challenge imposed by the enemy.

Last, the launcher must park on or as close to the park heading as possible. Any mils sacrificed by not parking on the parking heading may take mils away from the shift fan and cause the launcher to reject the mission.

Assuming the Risk

The final challenge is breaking the paradigm that launchers must operate from hide areas as our current doctrine states. We recognize the launcher's vulnerability on a firing point as opposed to the relatively better security of a hide area.

Given that our enemies will try to acquire our launchers as rapidly as possible to end our devastating fires, we must be willing to "up the ante" by assuming greater risk on firing points. This may be very unsavory to those who feel our system was designed to work from hide

1. Receive AMC mission from higher.
2. Make corrections, if needed.
3. Put unit to fire in UFFE field of FM;CFF.
4. Put X in OVRIDE field of FM;CFF.
5. Execute the mission.
6. Transmit MLRS;CFF to the launchers.
7. Wait for MLRS;STATUS message of READY from all launchers and transmit to higher.
8. While the launcher is laid on the target, receive FM;CFF with current or new target number and new grids with WR in CONT field.
9. Call off new grids to the operations officer and plot the new grids.
10. Verify all information in FM;CFF and make any changes needed for amended missions (number of rounds, target number, platoon for fire, size, etc.); the target number is changed to the target number the launchers are currently laid on.
11. Put X in OVRIDE field and execute.
12. MLRS;CFF is generated for transmission to all launchers assigned the mission.
13. Verify that an A is in the ACT field of the MLRS;CFF message for the amended mission and transmit to the launchers.
14. Receive MLRS;STATUS message with CANCOM in the MSTAT field. ***Delete*** this message. If executed, an EOM will be transmitted to the launcher, cancelling the mission.
15. Wait for the MFR from each launcher and execute all of them.

Figure 6: Amended Fire Mission Processing—BOC Battle Drill.

1. Receive AMC CFF from FDC.
2. Push alarm acknowledge.
3. Initial data will be displayed.
4. Transmit WILCO.
5. Park on heading.
6. Push LCH LAY.
7. Ready-to-fire message is transmitted automatically.
8. Await amended mission.
9. Receive WR CFF.
10. Push alarm acknowledge.
11. Amended Target Data message appears.
12. Transmit WILCO.
13. The amended data will be displayed.
14. Press LCH LAY.
15. Arm and Fire.
16. STOW the LLM.

Figure 7: Amended Mission Processing—Launcher Battle Drill.

Quick reloads with ammunition prepositioned at the firing point are an essential part of the Stay Hot, Shoot Fast TTP.

positions under all circumstances. However, the alternative of permitting the enemy to escape our grasp by his scooting before we can shoot is unacceptable.

Nevertheless, by selecting well concealed firing points, nestled in hillside cuts, valleys or stream beds, units can minimize launcher vulnerability to observation by enemy ground forces, particularly special operations forces (SOF). Additionally, after each fire mission, the launcher should scoot to another firing point, reload with ammunition prepositioned there and lay on the next preplanned target.

Clearly it would be better if we had faster processing software for both the FDS and launcher. Without a doubt, the most important change we can make to our system is the improved launcher mechanical system (ILMS) that will reduce launcher lay time to about 15 seconds. But even with the ILMS, Stay Hot, Shoot Fast TTP are needed to ensure we can "outdraw the bad guys"—when the time comes.

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