

Getting Left of Launch: Guided Missiles and the Threat to Our Force

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During the conflicts in Iraq and Afghanistan, the Department of Defense (DoD) and the U.S. Army expended massive amounts of capital to mitigate the threat of the improved explosive device (IED). The demands placed on teams such as the Joint Improvised Explosive Device Defeat Organization yielded frustration, endless trials of various risk-reduction techniques and, fortunately, an immeasurable amount of lives saved, both civilian and military.

With that said, what if we could rewind the clock to study IED emplacement and attack techniques while refining maneuver-based countermeasures before the first IED attack against coalition forces ever occurred? What if we had current and real-time information on an effective enemy weapon system, used asymmetrically, that through study we discovered ways to mitigate its threat through maneuver?

Such an opportunity exists today with a close examination of the anti-tank guided missile (ATGM) threat posed by non-state organizations.

The ATGM is not a new concept on the modern battlefield. Following the moderate success of unguided rockets against armored targets in World War II, the Germans developed the X-7, or Rotkappchen, specifically designed for the anti-armor role. The concept of the X-7 was simple: deliver a formidable warhead, capable of penetrating armor, with increased range, accuracy and lethality.¹ The X-7 has inspired 70 years of guided-missile innovation to date, leading to development and proliferation of ATGMs in an estimated 130 countries and various non-state groups, including Jabhat al-Nusrah and the Islamic State in Iraq and Syria.



Figure 1. The 9M133 Kornet, a tripod-mounted ATGM of the Russian ground forces. (Photo from Wikipedia; used under license)

ATGMs are now widely proliferated, highly lethal and, much like the IED, their simplicity, availability and effectiveness make them a tactical weapon system with strategic implications. Also like the IED, the ATGM comes in many forms, making a singular, uniform response to this varied threat a difficult and improbable proposition.

Syrian conflict

The Syrian Civil War began in 2011 with a popular uprising in response to President Bashar al-Assad's oppressive government. Following the onset of hostilities between the Syrian government's Arab Army (SAA) and the Syrian opposition, weapons captured by the opposition included various types of Russian- and European-made ATGMs. The opposition began posting ATGM firings as propaganda and training aids in early 2012 and continues postings to the present day.²

Perhaps the most applicable explanation of the current ATGM proliferation in Syria dates back nine years to the 2006 Israel-Hezbollah war. Following cessation of hostilities, the Israeli Defense Force was aware of the requirement to develop its manpower, training and anti-ATGM protection.³ Learning from experience that small, mobile teams equipped with anti-tank weapons are a decisive force against a heavily armored adversary, they increased the armor balance within their front-line units.⁴ As a result of this increased threat from Israeli armor, the Syrians focused on importing the latest ATGM technology, largely favoring ATGMs produced in Russia.⁵

With the experience gained from conflicts with Israel and the huge stockpile of ATGMs within the country, the perfect combination of factors was present to see an introduction of ATGM use in Syria. The current tactical employment of ATGMs by non-state groups in Syria demonstrates very clearly that potential. It also demonstrates how adversaries use asymmetric tactics, techniques and procedures with advanced weaponry.

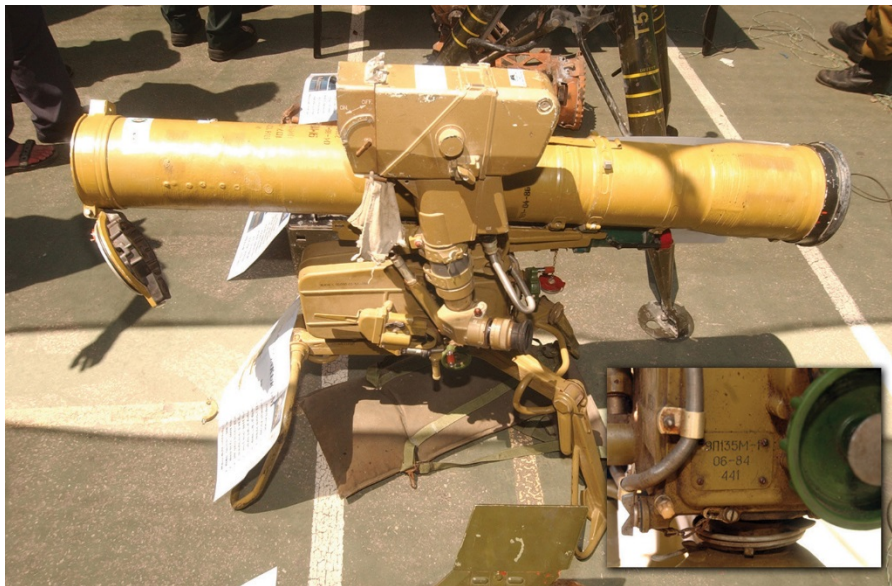


Figure 2. This Konkurs, a Russian-made anti-tank missile launcher, was captured by the Israeli Defense Force in southern Lebanon in 2006. It belonged to Hezbollah. Pictured in the lower right are Russian serial numbers on the weapon. (Photo by Israeli Defense Force)

ATGM in Syria

There are several competent organizations within DoD, and more specifically the intelligence community, providing real-time and real-world analysis on foreign ATGM systems. The Short-Range Missiles Branch of Defense Intelligence Agency's (DIA) Missile and Space Intelligence Center (MSIC) is the intelligence community's center for excellence for analyzing development, proliferation, performance and mechanics of foreign ATGMs.

Through analysis of the more than 1,000 videos from open sources, MSIC determined there are eight ATGM systems currently in use by non-state groups operating in Syria. The top three most frequently used ATGM systems

in Syria are the Russian Konkurs, Chinese Red Arrow-8 and the U.S. tube-launched, optically tracked, wire-guided (TOW) system.⁶

Although not the most technologically advanced or frequently used ATGM (by the Syrian opposition), the Russian Kornet-E system is probably the world's most dangerous ATGM due to its wide deployment.⁷ The system has an effective range of 5.5 kilometers and a penetration into rolled homogenous armor, having defeated explosive reactive armor of 1200mm.⁸

Unlike rockets and rocket-propelled grenades (RPGs), ATGMs provide the operator with the ability to guide the missile onto the target after launch, thus improving accuracy. Also, ATGMs provide the user excellent standoff from his intended target. The Russian Konkurs/-M ATGM, for example, provides the user four kilometers of standoff from his target. (However, increased range equates to a potential for decreased accuracy, as the user may lose sight of the intended target.)

All eight active systems in use by non-state groups in Syria provide the gunner with semi-automatic, command to line-of-sight (SACLOS) guidance. SACLOS guidance simply means that wherever the user's optical crosshairs rest is where the ATGM will strike. All the active systems in Syria require very little operator training, and – due to the effectiveness of the link between missile and launcher – the user builds proficiency very quickly.⁹

Target selection

The non-state use of the ATGM serves a multitude of tactical purposes, making it more of an “all-purpose tactical guided missile.” Although firing trends demonstrate a clear preference for engaging Syrian army tanks, there are many examples of the ATGM's effectiveness against other high-profile targets. In September 2014, the opposition successfully engaged a Syrian MI-8 helicopter with a Kornet ATGM shortly after landing at an airbase in Northern Aleppo.¹⁰

Analysis of open-source ATGM firings in Syria shows tank engagements only represent half of ATGM attacks in the open source, with the other 50 percent representing attacks on military positions, armored personnel carriers and large-caliber cannons (artillery pieces and anti-aircraft weapons).¹¹

Non-state ATGM tactics, techniques and procedures

Perhaps the greatest advantage of the ATGM is the standoff inherent in the system design, which makes it harder for the target to detect an engagement. The ATGM system works to increase security through distance between gunner and target. In many cases, the target of a non-state ATGM attack in Syria has no indication or warning an attack is about to occur (much like the IED of past and current conflicts).

The tactical advantage of the ATGM over the IED, however, is the distance between gunner and target. An ATGM gunner can engage his target from several thousand meters away, outside of direct-fire contact. Following the attack, the gunner can either retrograde or reposition for an exploitation attack.

In all the attacks observed in the open source, the ATGM team's preparation of the kill zone probably only involves a map recon, launcher set-up and tactical patience in the ambush position. There is no burial of an explosive or preparation of sensors and initiators.

Although the ATGM offers increased security to the ATGM team through standoff, max ranges vary depending on the system used.¹² Non-state groups recognize that system choice depends very heavily on system availability and thus favor launch locations that mitigate the risk of counterfire yet provide good long-range shot lines. Rooftop attack positions account for most non-state ATGM launch points; firing positions that offer an elevated attack profile compared to the intended target are also commonly used.¹³

Implications for current, future warfare

DoD's and the Army's response to the IED threat was nothing short of professional and life-saving. The IED's rapid evolution and increased attacks against our warfighters forced reactive instead of active solutions. SAA is experiencing a similar scenario against the non-state ATGM threat. After almost four years of attrition of Syria's armored force, there are signs that this conventional force understands the threat and is adapting. In one recent attack on an SAA tank platoon, a destroyed tank's wingman recognized the ATGM attack and implemented

appropriate maneuver-based countermeasures to mitigate – and in this case, eliminate – the effectiveness of a second ATGM attack. Through maneuver and concealment, the wingman was able to force the ATGM gunner to lose line-of-sight and therefore fail to achieve impact during a second ATGM launch.¹⁴

The continued proliferation of both ATGM systems and ambush techniques among non-state groups is an absolute certainty. The combination of lethality and effectiveness makes the ATGM a clear threat to both armored and unarmored formations, including low-flying and parked aircraft.



Figure 3. The Baktar-Shikan ATGM, a licensed-manufactured variant of the HJ-8 (or Hongjian-8, translated as Red Arrow-8), is a second-generation TOW anti-tank missile system originally deployed by the Chinese People’s Liberation Army. Pakistan produces this missile system under license as the Baktar-Shikan. (Photo from Wikipedia; used under license)

Training for threat

It is essential that we model our training and tactics, techniques and procedures (TTPs) against the current use of these highly deployable weapon systems. The Army’s Combined-Arms Training Strategy (CATS) is a highly useful tool for leaders within our formations as they design their mission-essential tasks list (METL), unit tasks list (UTL) and supporting individual tasks. The use of CATS is decisive in the development of a highly effective and efficient training plan that prepares an organization for its assigned mission. Although it’s nearly impossible to assign a task against all scenarios that our Soldiers and leaders face in combat, it’s important to identify training opportunities based on the high probability of encounter with a specific type of enemy weapon system.

As an example, the UTL for a tank company provides the user a consolidated list of 97 recommended tasks. Each entry includes the requisite tasks, conditions and standards required for training and evaluation. The measures required for combined-arms maneuver and wide-area security are clear, with inclusions such as “Secure Civilians During Operations (07-2-4054)” and “Conduct an Attack in an Urban Area (07-2-1261).” Also, and in recognition of the persistent IED threat to our force, there are two separate tasks for preparation and response to IED attacks.¹⁵

Within our combined-arms training strategy, there is an opportunity to implement and evaluate ATGM risk-reduction measures with minor adjustments to the UTLs. One could very easily argue that ATGM threat mitigation through training should occur as a part of a unit’s development of TTPs through such prescriptive documents as a unit tactical standard operating procedure (TACSOP). Although this is certainly true, it does not afford the emphasis required in the face of this growing threat. The Army and the training and doctrine-development community go to great lengths to analyze and predict the best practices for training against current and future threats. Part of the recipe for success is evaluation criteria during culminating training exercises. If maneuver

against current threats is not part of the Army-wide evaluation criteria for training, the threat is essentially ignored.

Back to basics

Tankers and cavalrymen reared before 9/11 remember a battle drill called the “Sagger Drill.” The drill carries the name of the Russian-made Malyutka (AT-3) ATGM that, in its original design, used manual command to line-of-sight (MCLOS) guidance. MCLOS guidance simply means the ATGM gunner uses a joystick to manually control the flight path of the missile as it approaches its target. The “Sagger Drill” used several measures, including smoke and varied maneuvers, to force the MCLOS gunner to lose sight of his target, thus decreasing the hit probability.

Although all the current ATGM systems posing a tactical threat to our formations use SACLOS guidance, which is more accurate, the Sagger Drill is still an effective means of ATGM threat mitigation. Any quick snap maneuver or concealment technique causes the ATGM gunner to lose sight of his target and thereby decreases hit probability. Our senior noncommissioned officers (NCOs) can easily integrate this drill (or a variation, depending on the vehicle formation) into field-training exercises or home-station training.

Unit deployment METL

At a minimum, a unit’s deployment METL should include counter-ATGM maneuver tasks regardless of regional alignment. A two-day working group – in concert with ATGM analysts from DIA/MSIC and representatives of the doctrine and development community – is enough for development of the specificities and components of these tasks.

Temporary-duty costs are eliminated through videoteleconferencing; however, face-to-face is ideal for this type of working group. This working group includes representatives from each control branch and must include senior NCOs and officers (current or retired) from Infantry Branch and Armor Branch with experience in high-intensity conflict training, which characterized the Army’s AirLand Battle concept before the beginning of counterinsurgency operations in Iraq and Afghanistan.

Replication at combat training centers

Modern ATGM systems and employment techniques are not accurately replicated at our combat training centers (CTCs). As an example, opposing-force anti-tank weapons targeting rotational training units (RTU) at the Joint Multinational Readiness Center (JMRC) replicate the effects of RPGs. The vehicle-mounted AT-4 Spandrel (Russian Konkurs) represents the only semi-modern ATGM the opfor at JMRC replicates. Non-state groups employ ATGMs from both mounted and dismounted platforms, but very rarely are these platforms military in design. Also, the average engagement range of an ATGM ambush in Syria is significantly further than the maximum range of any RPG. Although non-state groups use non-tactical vehicles for mobility of heavier ATGM systems, dismounted ATGM teams represent the vast majority of ATGM attacks against conventional targets in Syria.¹⁶

This replication gap does not require development of a brand-new Multiple Integrated Laser Engagement System (MILES). Because the reality of fiscal constraint provides us the opportunity to exercise creativity in training, short-term adjustments to the training and evaluation techniques suffice. All pre-rotational operations orders provided to the RTU should include ATGM threat types with associated their range rings. During the beginning of the military decision-making process, the RTU’s intelligence officer needs to account for this additional threat layer in the modified combined-obstacle overlay. Early phases of the operation involving the use of reconnaissance assets must account for potential ATGM launch locations (based on the characteristics and capabilities of the system being replicated). The RTU’s S-2 recommends prioritized named areas of interest based on potential ATGM launch locations, and through approval of the operations officer, chief of staff and task-force commander, supporting assets are tasked against the most probable launch locations during movement and maneuver.¹⁷

The requirement for a signature during MILES engagements is a reality of training at a CTC. We recommend the use of existing opfor MILES systems (such as the Spandrel) in a dismounted configuration at ranges no less than two kilometers (where possible). We fully recognize the limitations of laser ranges for certain types of MILES. In light of this constraint, observer/controller/trainer adjudication is required. Replication of dismounted ATGM ambush teams and the associated attrition of successful attacks provide real-time feedback for analysis by the RTU’s S-2, enabling development of counter-ATGM TTPs for inclusion in the RTU’s TACSOP.

Much like the IED, the non-state use of dismounted ATGM teams provides another layer of complexity to the asymmetric battlefield. Our training centers offer world-class training to RTUs and have the opportunity to increase the realism through inclusion of non-state ATGM ambush techniques.

Existing products

At the tactical level, units with no ATGM threat mitigation TTPs can implement simple measures with an understanding of ATGM basics. MSIC developed several products for widest distribution to the warfighter. These products include guidebooks, smartcards and defense intelligence reports.

Guidebooks provide a system digest of all ATGMs in use, with physical descriptions, proliferated locations and range and warhead capabilities.

MSIC maintains three smartcard products, already digital and ready for distribution to the force, including recommendations for ATGM countermeasures (maneuver-based) and vehicle-load-plan techniques. Also, legacy products from Armor/Cavalry officers assigned to MSIC maintain relevancy as they revive pre-9/11 techniques for ATGM mitigation.

These products are ready and available for any maneuver or support formation. Provision of these guidebooks and smartcards are available at little no cost to the receiving unit. Leaders within our maneuver formations need only to contact the authors for all current and relevant data relating to worldwide ATGM proliferation and use.

Conclusion

The Army has an opportunity to train against a current threat before staring it down on the battlefield. The ATGM is an effective, easy-to-use weapon system that deserves our respect and attention as professional warfighters. We need tactical and operational leaders to emphasize the ATGM's high potential against our force and to respond through replication in the training environment and education of our Soldiers and leaders. The cost of saving our Soldiers' lives and shaping a decisive victory is but a slight modification to the Army's training concepts and the return to the basics of counter-ATGM maneuver. The benefit is substantial.

If you are a tactical-level leader reading this article, you've taken the first step to increasing your formation's proficiency against this threat, and more importantly, saving your Soldiers' lives.

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Notes

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