

# Lessons-Learned for a Tank Company at Joint Readiness Training Center

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This article's purpose is to review a few lessons-learned from a tank company in support of an infantry brigade combat team (IBCT) at the Joint Readiness Training Center (JRTC). These lessons-learned were observed from Troop D, 1<sup>st</sup> Squadron, 1<sup>st</sup> Cavalry Regiment, 2<sup>nd</sup> Brigade, 1<sup>st</sup> Armored Division, during JRTC Rotation 16-07 in support of 3<sup>rd</sup> Brigade, 101<sup>st</sup> Airborne Division. When I served as the team senior and guest observer/coach/trainer (O/C/T) at JRTC, several other 19K-series guest O/C/Ts and I observed various challenges and the developed tactics, techniques and procedures (TTPs) that were established to help mitigate them.

A tank company at JRTC faces challenges that vary drastically from those faced at the National Training Center (NTC) such as vulnerabilities exacerbated by the local terrain, integration as an enabler unit, protection from enemy air assets and security against enemy anti-armor capabilities. Mitigating the negative effects of these challenges helps to maintain combat power and maximize the lethality provided to the supported IBCT.

## Understanding vulnerabilities

Employing a tank company in the restricted JRTC terrain presents several vulnerabilities the tank company and supported IBCT must anticipate and subsequently mitigate. Tanks are vulnerable to enemy anti-armor capabilities in situations where there is reduced visibility.<sup>1</sup> Reduced visibility occurs when tanks have closed hatches and when operating within restricted terrain; both of these instances occur constantly throughout operations at JRTC.

Closing hatches is a measure taken to ensure crew survivability within urban areas, in contaminated environments and when potential sniper threats are in the area of operations. When hatches are closed, situational awareness surrounding the tank is significantly degraded.<sup>2</sup> Commanders need to enforce operating with closed hatches and in mission-oriented protective posture conditions to ensure crews gain confidence when operating under this restriction. These training objectives should be trained more often than just in Gate III, Gunnery Table VI training;<sup>3</sup> they should be included in Gates IV-I training events.<sup>4</sup>

Restricted terrain is prevalent in environments such as Fort Polk, LA; this includes wooded areas, urban terrain and avenues of approach throughout. These areas significantly reduce one of the advantages tanks have in open terrain: the ability to use terrain to gain and maintain 360-degree observation and to reach out and immediately influence areas or targets thousands of meters away. Yet in restricted terrain, this advantage is nullified and enables inferior armor elements and dismounted anti-armor capabilities to leverage these conditions to initiate ambushes and develop refined engagement areas (EAs). This is why platoon leaders and section sergeants need to understand how to develop and implement intelligence preparation of the battlefield (IPB) at their echelon and have a detailed understanding of military terrain analysis as shaped by an effective company common operational picture.<sup>5</sup>

Another significant vulnerability tanks face is enemy air assets. Enemy air catastrophically destroyed seven of D/1-1 Cav's tanks throughout the operation at JRTC. The IBCT has inadequate air-defense enabler support, and a tank company has limited organic anti-air capabilities. Due to these factors and the lack of realistic training for active measures, the primary method for enemy air capabilities is taking a passive approach.<sup>6</sup> At JRTC that means finding concealment within the trees and wooded areas, and dispersing tanks during both offensive and defensive operations.

However, when tanks move further into woodland or vegetation areas to provide concealment from enemy air, they increase their vulnerability to enemy anti-armor. The restricted terrain at JRTC forced crews to realize that their lines of sight, engagement lines and EAs are significantly reduced due to the micro-terrain (intervisibility lines and tree density), often limiting sectors of fire to no more than 500 meters. This allows enemy anti-armor teams to maintain standoff while employing their weapon systems.

Another vulnerability presented in this context is the limited ability for an IBCT to mass all tanks during an operation. This typically leads to the tank company being task-organized among several different echelons, which

leads to the unintentional mitigation of a company command post, Bradley fire-support team (BFiST) and command team. Therefore junior leaders must be developed at the platoon and section level to enable them to effectively communicate and operate with other organizations. Although infantry-platoon leaders and commanders have a general understanding of armor, they must still rely on armor leaders' in-depth armor skills, knowledge and proficiencies during the planning and execution phases of an operation.

The next two sections analyze each of these vulnerabilities in more detail and provide examples, insights and observations on how to mitigate these concerns to ensure the success of future tank companies at JRTC and in similar operating environments.

## Integration

Tank companies are task-organized across an IBCT formation at JRTC or similar operating environments, so they must be prepared to operate among the battalions and/or with sections attached to other companies.<sup>7</sup> However, the IBCT must determine the battalion in which to establish the initial task-organization to create accountability for the tank company.

This accomplishes three things:

- It ties the company to a particular battalion S-1 shop for all personnel and administrative functions;
- It ties the company to a specific battalion's maintenance system, either the Standard Army Maintenance System-Enhanced or Global Combat Support System to streamline ordering of parts; and
- It ties the company to a specific battalion with respect to operations and receipt of information.

Based on my observation, I recommend that the tank company be task-organized to the brigade engineer battalion (BEB) or the infantry battalion that will more often serve as the decisive operation. This task-organization initially facilitates the tank-company commander's involvement in the military decision-making process at brigade level. The BEB is also the most experienced battalion when it comes to preparing subordinate companies and units to be attached to other battalions. However, if there is one infantry battalion that will consistently serve as the decisive operation, task-organizing the tank company to them can help build the operating relationship between the two. From our observations throughout, the transition of the tank company from one battalion to another led to the parent battalion no longer providing acceptable sustainment and administrative support with respect to human resources and maintenance support (personnel-accountability reports and Form E5988s).

Another task-organization consideration is the distribution of sustainment resources specifically designed for the tank company across multiple units within the brigade. The IBCT is already limited with M1098 fuelers (2,500 gallons), and it has zero recovery assets capable of recovering the tanks or even the BFiST from the tank company.<sup>8</sup> Tank companies are task-organized with one combat-readiness team equipped with only one M88A2 Recovery Vehicle and no M1098 fuelers. To alleviate these constraints, 1-1 Cav provided the tank company with two more M88A2s from the forward-support company (FSC) recovery section and three M1098 fuelers that are organic to the squadron's FSC. These vehicles were recently added to the squadron's FSC modified table of organization and equipment (MTOE)<sup>9</sup> to support the addition of a tank company to the cavalry squadron.

Careful consideration should be put toward the task-organization of sustainment assets for a tank company assigned to an IBCT. For example, in the given scenario where each platoon is attached to a different company in support of offensive operations, one M88A2 and one M1098 fueler could be task-organized to each supported company trains to ensure the requisite support is available during operations.<sup>10</sup> However, commanders can assume risk by not doing this, but the risk limits hours of tactical employment of the tanks without being able to efficiently refuel. This limits their effectiveness when having to conduct self-recovery. During the JRTC rotation, there were several instances when task-organizations separated the tank platoons by only a few kilometers, allowing the tank-company trains to remain consolidated and still provide the requisite support by the executive officer and first sergeant via logistics release points.

Another important circumstance to consider is that when a tank platoon or section is task-organized to another company, they need to be proactive in troop-leading procedures (TLPs). The receiving organization must understand the necessity of incorporating the armor leaders (the platoon leader, platoon sergeant and/or section sergeants) from that platoon or section into the TLP process. Platoon leaders and section sergeants must be subject-matter experts (SMEs) when it comes to the employment of platoons and sections, respectively.<sup>11</sup> Many, if

not most, infantry commanders have never employed armor assets outside of a Maneuver Captain's Career Course (MCCC) experience. It is even more likely for infantry-platoon leaders to be new to the employment of armor assets because they have received very little exposure to the tactical employment of tanks at this point in their careers. They have a general understanding yet lack the experience in armor tactics.

Tank-platoon leaders and section sergeants should be encouraged and allowed to provide detailed information on their own capabilities, limitations and vulnerabilities. They can offer valuable input on tactical considerations. Even more important, these leaders understand the current conditions unique to their platoon or section, such as current maintenance issues affecting capabilities, who their best or most lethal crew is, ammo distribution and type/effects of main gun rounds on hand. They can also bring operational armor experience to the planning process. Based on my observation, I recommend that leaders ensure development programs are instituted within the tank company that focus on IPB, direct-fire-control measures and tank capabilities to include limitations / vulnerabilities and tactical employment.

## **Protection and security**

As mentioned in the vulnerabilities section of this article, the two significant threats against tanks at JRTC are enemy anti-armor and air capabilities. The disposition of enemy insurgents rarely fits within a unit's contiguous boundaries when operating in a complex and dynamic environment. Therefore, the tank company must constantly plan security and anticipate enemy attempts at probing tactical assembly areas (TAA).

We know the terrain at JRTC significantly impacts the range effectiveness of our thermal-optic capabilities and enables enemy anti-armor systems to get well within range of tanks. This allows them to take keyhole shots with anti-tank guided missiles (ATGM) or rocket-propelled grenades (RPG), and then subsequently displace. Regardless of the echelon of tanks (section, platoon or company), they must maintain 360-degree security and security patrols at all times. Providing internal security, security patrols and observation posts (OPs) at each of those echelons is a limitation inherent within tank organizations. However, to deter enemy anti-armor capabilities, tank organizations need to conduct local security, particularly as dispersion increases.<sup>12</sup>

The most effective method observed in TAAs is to attach dismounted infantry or scouts to the tanks or vice versa. This ensures the tank crews can maximize the weapon systems and capabilities on the tank, and implement priorities of work such as more security measures (sector sketches), maintenance, lube orders, resupply and planning. Tanks return the favor for infantry by providing immediate and overwhelming precision direct-fire support.<sup>13</sup>

When employing dismounted elements, armor leaders need to consider several factors with respect to defensive direct-fire-control measures (DFCM). First, to maintain unrestricted sectors of fire for the main gun, they should maintain dismounts 70 meters left and right of their front-line trace and not within one kilometer forward.<sup>14</sup> This prevents friendly dismounts from the possibility of being injured from the discarding sabot petals, but it also prevents maximizing security functions from the infantry support. To counter this, infantry OPs should be forward and in between tanks with rear cover or positioned on the other side of an intervisibility line, yet still far enough away to prevent blast overpressure. DFCMs such as establishing target-reference points (TRP) to keep OPs outside of surface danger zones (SDZs) should also be emplaced to prevent fratricide. This all goes back to the tank-platoon leader and section sergeants being involved in the supported company's TLPs.

However, when infantry or dismounted support is not available, tanks must be able to provide internal local security. The motto of "death before dismount" should be left in the past, regardless of the culture shift back to getting tanks out of the motorpools. When tanks occupy a TAA or a defensive position, the first priority of work should be establishing security and developing sectors of fire. Tank crews must develop their sector sketches and tie in with adjacent tanks (or dismounts when available). The tank-platoon leader then dismounts and adjusts tank positions as required to develop the platoon sector of fire while developing the platoon sector sketch.

Also, the platoon must have dismounted elements that maneuver to clear dead space and identify any more terrain features that could influence EA development (such as trails or intervisibility lines). Without setting a pattern, these dismounted patrols must routinely occur to deter the enemy from using the micro-terrain to get within range for anti-armor weapons. It was observed that whenever the tank company failed to conduct these

patrols, enemy dismounts were able to sneak up to tanks and cause several catastrophic mobility and/or firepower kills.

The commander assumes risk with these patrols coming into contact, yet these patrols preserve the combat power provided by the tanks. To mitigate this risk, I recommend that dismounted patrols consist of three to four crewmen armed with M4s and at least one M240. The M240 should be one of the loader's M240s that is modified with the loader's dismount kit (which adds the buttstock and trigger assembly). If feasible, tank companies should add team or live-fire exercises during their integrated weapons-training strategy planning to ensure crewmen understand dismounted fire and maneuver.

Tank crews should also ensure use of the local foliage to conceal the front of each tank. This foliage should be cut down from areas behind the tank to maintain consistency in concealment. Tanks should also never orient in the same direction without rear security; a common enemy TTP with insurgency forces is to disable tanks by any means necessary since catastrophically destroying them is typically outside their capabilities. This includes satchel charges, rudimentary RPGs, improvised explosive devices or other explosive devices to disable the tracks or significantly damage the engine. As demonstrated in combat, tanks have great survivability against these attacks,<sup>15</sup> but repair times can become long enough to affect operations. Also, if the logistical support is not in place, repair times become even more extensive.

Another protection concern is the threat of enemy air. It is assumed that most enemy commanders place friendly tanks on their high-payoff target list, and tanks in the open present a target of opportunity for the enemy's Russian-made MI-24 Hind helicopters or their variants. During JRTC, the enemy battalion commander tends to focus more on destroying combat power, particularly tanks, rather than sustainment or mission-command infrastructures. Therefore, tank companies need to prepare for this and continuously train passive and active air-defense measures.

The description of passive and active measures can be found in Army Technical Publications (ATPs) 3-20.15 and 3-90.1. Concealment and staying mobile is key. To prepare for the threat of enemy air, tank commanders should identify enemy air avenues of approach when in TAA or defensive positions. If feasible, two tanks can orient on a specific point above the woodline along that air avenue of approach to create a "wall of steel."<sup>16</sup> Also, another tank should orient a sector of fire along that same air avenue of approach and battle-carry the multipurpose antitank (MPAT) round set on "air" mode. The commander establishes a clearly understood weapon-control status and the DFCM needed to determine a passive or active approach.<sup>17</sup> In addition to this, commanders must ensure that tank commanders plan for and understand that SDZs are not just left and right. They are three-dimensional, meaning up and down as well.

The distribution of rounds from an area-effect weapon (the M2 and M240s) follow a slightly different trajectory, forming a pattern of rounds called the cone of fire.<sup>18</sup> Therefore, firing weapon systems, including the main gun, over the heads of other tanks (depending on the elevation of the target point) could put friendly personnel and platforms at risk for injury or damage.

The commander must balance the risk and operating-environment considerations to determine whether to take a passive or active approach. It is best to maintain the passive approach if the terrain or context does not allow an effective active approach (i.e., massing machinegun fire and MPAT air rounds) against enemy air, as it will just give away your position with a very low probability of effects. By not taking an active approach, tanks risk being identified and attacked first – yet if well concealed, they remain undetected, or at least enemy air is forced to have to take another pass after tanks are identified to effectively engage.

Even if the commander determines a passive approach is best, tanks must always prepare active measures against enemy air within the TAA position, short halt or battle position, to mitigate, deter or destroy enemy air. Taking an active approach can be effective if an EA is developed effectively along the enemy air's likely avenue of approach. It's also more effective if the tanks are securing a key piece of terrain or infrastructure the enemy knows friendly forces have secured. Taking an active approach is also an effective deterrence against enemy air. Even if firing a volley of machinegun fire at enemy air does not cause effects, pilots will refrain from flying within that vicinity or air corridor but will also report your general position. Nevertheless, if your tanks are in the open, an active approach is recommended and should be more feasible because of the open fields of fire.

## **DFCM**

This topic requires its own article, but based on JRTC observations, a few points should be mentioned. First, armor leaders from section sergeant and higher must understand the effects of their weapon systems. Most units train on standardized ranges in open terrain and without integrating dismounts. Unfortunately, this does not reinforce the meticulousness required to be truly proficient and lethal while maximizing dismounted support. On ranges at home station, due to range limitations or restrictions, the key to a successful platoon live-fire (Gate II, Table 6) is staying on-line as you maneuver a platoon downrange.

Also, NTC's open terrain typically only requires a simple maneuver in which the only DFCM required is TRPs established from a specified attack or support-by-fire position. However, at JRTC and similar operating environments, tank commanders must understand principles of direct-fire control<sup>19</sup> to maximize weapon capabilities while also mitigating friendly fire, particularly when operating with friendly dismounted infantry.

Employing multiple DFCM while maneuvering and considering effects on friendly dismounts is very complex. It requires education and training. Yes, it's a skill taught at MCCC, but students typically only demonstrate basic proficiencies with implementation of direct-fire control. There are four weapon systems on each tank that tank commanders must consider. They must also understand the various effects of the different main-gun rounds available to them. As tanks maneuver, commanders must understand their position in relation to TRPs as the angles for SDZs shift. The tank commander must also consider the weapon-control status of each weapon system with respect to TRPs assigned for each weapon, and those effects with respect to maneuvering or repositioning of local friendly dismounts.

## **More recommendations**

The training environment JRTC provides presents unique terrain challenges that replicate potential combat theaters that are different from those that NTC replicates. NTC still serves as the most effective and proficient method of evaluating armored brigade combat teams (ABCT). However, there is value in increasing the number of tank companies that attend JRTC in support of Stryker BCTs (SBCTs) and IBCTs; only two or three tank companies currently attend JRTC per year.

I propose that a tank company attends every rotation for two purposes:

- It increases the operational learning and knowledge gained by military-occupation specialties 19K and 19A Soldiers across the ABCTs as discussed in this article; and
- It provides an enabler to SBCTs and IBCTs that can compellingly increase protection and lethality during offensive and defensive operations.

The capabilities of hybrid threats, prevalent in our current and future operating environments, will employ main battle tanks (MBTs) in such terrain, which consequently befits us to support our IBCTs with enablers such as tank companies to counter the advantages enemy protective firepower presents in combat. To ensure success at JRTC under these two propositions, JRTC should set conditions by creating an O/C/T team under one of the O/C/T task forces that consists of permanent-party 19Ks. The only 19-series Soldiers who currently serve as permanent-party O/C/Ts at JRTC are 19Ds. The 19Ks who serve as O/C/Ts when tank companies are at JRTC are guest O/C/Ts from varying ABCTs who most often have little experience at JRTC. This doesn't mean that the guest O/C/Ts are not successful – yet having a team of 19Ks permanently stationed at JRTC ensures there are SMEs who have continuity to pass lessons-learned from one tank company to another during each rotation. It also ensures that the team senior (a post-command tank-company commander) has the ability to develop and mentor his team of 19Ks through each rotation to maximize O/C/T proficiencies, increasing the value of feedback provided to the rotational-training-unit tank companies.

## **Look into future**

New technology will also shape security and protection TTPs. Currently the Israeli Defense Force uses the Trophy, which is an active-protection system emplaced on the Merkava Mk4 MBT. This system uses radar to detect incoming ATGMs, RPGs and even high-explosive anti-tank rounds. It then immediately deploys multiple explosive-formed penetrators in a similar manner to buckshot to destroy the incoming round.<sup>20</sup> Of note, these systems will

not prevent any sort of tungsten armor-piercing, fin-stabilized, discarding sabot-tracer rounds. This system was already proven in combat, during Operation Protective Edge in Gaza, while equipped on the Merkava tanks.<sup>21, 22</sup>

The U.S. Army and several civilian companies are currently assessing the Trophy system. Civilian industry has also developed and is currently testing a similar system called Quick Kill.

While these systems can provide 360-degree security against anti-armor weapons, they pose harm to nearby dismounted infantry or scout support. Quick Kill claims to minimize the effect on nearby dismounts by blowing the initial blast upward so that it then targets the incoming projectile in a downward motion – unlike Trophy that just blows out laterally.<sup>23</sup> Shrapnel from the blast is still a concern to consider. Nevertheless, either system could potentially alter small-unit tactics when it comes to the employment of tanks in restricted or urban terrain equipped with these systems.

I hope some of these lessons-learned are added to tank-company tactical standard operating procedures to ensure current and future tank companies are that much more lethal at JRTC. There are several other lessons-learned I captured, including DFCM, breaching tenets and sustainment TTPs. If you would like to know more, find me on global e-mail and ask away.

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## Notes

<sup>1</sup> ATP 3-20.15, **Tank Platoon**, Department of the Army, December 2012.

<sup>2</sup> Ibid.

<sup>3</sup> Training Circular (TC) 3-20.31, **Training and Qualification, Crew**, March 2015.

<sup>4</sup> TC 3-20.0, **Integrated Weapons Training Strategy**, June 2015.

<sup>5</sup> Field Manual (FM) 3-21.10, **The Infantry Rifle Company**, Department of the Army, July 2006.

<sup>6</sup> ATP 3-90.1, **Armor and Mechanized Infantry Company Team**, Department of the Army, January 2016.

<sup>7</sup> FM 3-90.1, **Tank and Mechanized Infantry Company Team**, Department of the Army, Dec. 9, 2002, Appendix C (Note: superseded by ATP 3-90.1, yet still provides valuable information not included in the updated doctrine.)

<sup>8</sup> Maneuver Center of Excellence Supplemental Manual 3-90, **Force Structure Reference Data, Brigade Combat Teams**, January 2015 (IBCT).

<sup>9</sup> Brigade-support battalion (ABCT) MTOE, <https://FMSweb.army.mil>, prepared June 10, 2016.

<sup>10</sup> 1LT Anderson, U.S. Marine Corps, **USMC Tank Operations in Afghanistan**, after-action report, Sept. 14, 2011.

<sup>11</sup> ATP 3-20.15.

<sup>12</sup> Ibid.

<sup>13</sup> Anderson.

<sup>14</sup> ATP 3-20.15.

<sup>15</sup> Anderson.

<sup>16</sup> ATP 3-90.1.

<sup>17</sup> ATP 3-20.15 and ATP 3-90.1.

<sup>18</sup> FM 3-22.68, **Crew-Served Machine Guns**, Department of the Army, July 2006.

<sup>19</sup> ATP 3-90.1.

<sup>20</sup> Sydney Freedberg, "Missile Defense for Tanks: Raytheon Quick Kill vs. Israeli Trophy," **Breaking Defense**, March 9, 2016, <http://breakingdefense.com/2016/03/missile-defense-for-tanks-raytheon-quick-kill-vs-israeli-trophy/> (accessed June 9, 2016).

<sup>21</sup> 1LT Kier Elmonairy, "The Tank is Dead! Long Live the Tank!" **ARMOR** magazine, January-March 2015, [http://www.benning.army.mil/armor/earmor/content/issues/2015/JAN\\_MAR/Elmonairy.html](http://www.benning.army.mil/armor/earmor/content/issues/2015/JAN_MAR/Elmonairy.html).

<sup>22</sup> Barbara Opall-Rome, "Israel to Equip Troop Carriers with Trophy APS," **Defense News**, Jan. 28, 2016, <http://www.defensenews.com/story/defense/land/vehicles/2016/01/28/israel-trophy-active-protection-system-aps/79460018/>.

<sup>23</sup> Freedberg.