Establishing the Foundation of Success – The Gunnery Training Program

by LTC Chuck Bies and CSM Gary John Kurtzhals

In his contribution to the 1992 ***Military Review*** issue focused on the impact of leadership, Lewis Sorley wrote his article on GEN Creighton Abrams. He highlighted the positive changes Abrams made in the 3rd Armored Division as the assistant division commander, specifically: "The primary training activities in an armored division are field maneuvers and tank gunnery."[1]

The same can be said today of our armored brigade combat teams (ABCTs), and more specifically the combined arms battalions (CAB) within them. The central purpose of a CAB is to meet the enemy on any ground and destroy it. If the CAB cannot effectively and efficiently destroy the enemy in contact, then little else the CAB does matters. The building blocks of this lethality for the CAB are tank and Bradley crews and infantry squads. While field maneuvers, maintenance, and other readiness drivers always remain relevant, for the purposes of this article, we focus our discussion solely on Abrams tank and Bradley Fighting Vehicle lethality.

Since the central purpose of a CAB is to maneuver and destroy the enemy with direct fires, it therefore stands to reason that all the CAB's efforts must be directed towards supporting the gunnery training program. A gunnery training program and successful gunnery are not events that occur in isolation; rather they are the output that highlights the efficacy of a unit's supporting activities. If a command cannot maintain its warfighting and supporting equipment at a high state of readiness, the result will be evident in gunnery performance. If a command cannot synchronize staff and leader efforts to plan and resource training, the result will be evident in gunnery performance. The highest operational readiness rate and effective maneuver means little if crews cannot hit what they are shooting at. Gunnery is the dipstick that we can use to effectively measure the readiness of a CAB.

By executing a focused gunnery training program detailed in this article, the 1st Battalion, 68th Armor Regiment "Silver Lions" out of the 3rd ABCT, 4th Infantry Division, experienced dramatic success between 2021 and 2023. This article highlights the best practices used by the Silver Lions as a recommended way forward for the armor force as we seek to increase our lethality and proficiency in preparation for future large-scale combat operations.

Background

The fall 2021 gunnery density had not gone well for the Silver Lions. The first tank company to go through the gunline was plagued with problem after problem. On the maintenance side, the company dead lined five tanks by the time it completed Gunnery Table (GT) III, had dropped to just one full mission capable (FMC) tank for the last day of GT VI, and by the end of the gunline the company had no FMC tanks remaining. The second tank company fared only slightly better Both companies discovered widespread deficiencies and failures in their tank fire control systems. By the time both companies were through, 12 of the 27 firing crews were "Q2 (status)," or unable to achieve seven of 10 qualified engagements with a total score more than 700/1000. The infantry company experienced more success, but the volume of issues on the bushmaster guns kept the few master gunners and armament repairers up for days on end. Though the battalion was able to claim the top Bradley crew in the brigade, six of the 20 firing crews were also Q2.

This poor performance required introspection and a thorough postmortem to identify why the battalion had performed so badly. There were several causes that were long festering left of execution that caused the battalion to fail, but in short, the battalion did not have a culture of lethality or a coherent gunnery training program to unite its activities. Therefore, creating an effective gunnery training program became the battalion's number one priority as we prepared to deploy to Europe in support of Operation European Assure, Deter, and Reinforce. We identified several supporting lines of effort to "turn the ship around." Those lines of effort were platform preparation, skill training, simulator usage, and Master Gunner development. Essential to this was defining success and understanding what metrics and activities are critical to success.

Through deliberate execution of the identified lines of effort, the Silver Lions experienced a dramatic turnaround of its Gunnery Training Program and success in gunnery as seen below. The number of tank crew Q2s dropped from 12 in October 2021 to four in June 2022 and two in July 2023. Similarly, the number of Bradley crew Q2s dropped from six in October 2021 to three in June 2022 and July 2023. In total, the number of qualified (Qualified, Superior, and Distinguished) increased by 87 percent for tank crews and 29 percent for Bradley Crews.

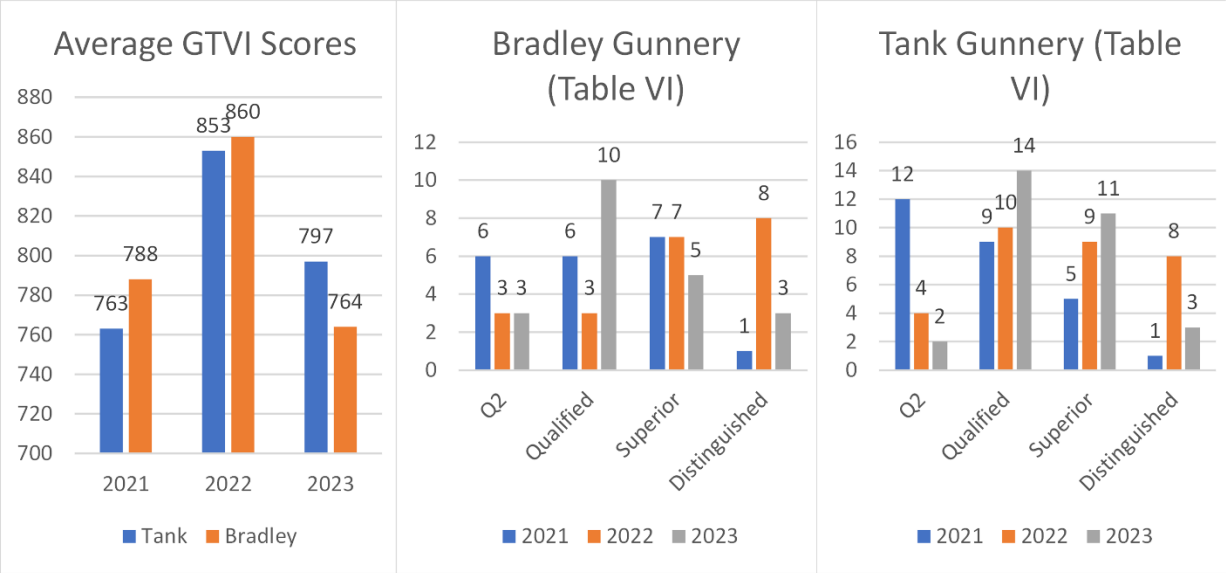


Figure 1. 1-68 Armor Gunnery Performance from 2021 through 2023. *(U.S. Army graphic by LTC Chuck Bies and CSM Gary John Kurtzhals)*

Platform Preparation

You can't mass against the enemy when you are slant zero. In short, it is more important to be 10/10 qualified with a score of 901 than it is to be 9/10 with a score of 969. Similarly, it is more meaningful for a combat formation to have 0/29 Q2 crews and 1/29 distinguished crew than it is for a formation to have 12 distinguished crews and 1/29 Q2 crews.

The single most important indicator of a crew's capacity to achieve high scores, which translates to the ability to kill on the battlefield, is the ability to achieve first round "target" sensing. Conduct of fire trainers (COFTs) like the Advanced Gunnery Training System (AGTS) and Bradley Advanced Training System (BATS)/Conduct of Fire Trainer – Situational Awareness (COFT-SA) both measure crew performance measures, specifically time to target identification, time to fire, and system management. However, the key metric that commanders need to pay attention to is the percentage of first round targets. With this metric in mind, armament accuracy checks (AACs) on the tank and prep to fire checks (PtFCs) on the Bradley take on supreme importance.

In many CABs, AACs and PtFCs are typically only executed immediately prior to a gunnery density. Unfortunately, doing so fails to exercise the fire control system and line replaceable units/line replaceable modules routinely, increasing the probability of faults going undetected. Additionally, there is less time available for unit maintenance to remedy failed AACs and PtFCs, putting platform readiness at risk for training.

In 1-68 Armor we found this to be deficient and implemented a standard of AACs and PtFCs to be executed and reported monthly. This requirement was tracked and monitored by bumper number and reported at battalion training meetings. After initially implementing this practice, we identified several platforms that were deficient. We also identified a training and education gap throughout the formation from private through sergeant first class. The practice of executing AACs and PtFCs every month increased crewmember proficiency and understanding of their platforms.

In terms of guaranteeing accuracy, AACs and PtFCs are essential and require routine execution. The tank AACs consist of six checks that ensure the fire control system is fully operational and verifies special inputs to the ballistic solutions are implemented properly for all fire control components and main gun ammunition. A tank that fails any one of the six AACs may fire erratically, may require a discrete computer correction factor, and it loses the probability of sustained accurate fire regardless of a correct boresight.

The Bradley PtFCs are less intensive but important nonetheless in terms of ensuring that the sights and the gun remain aligned, reducing sight backlash, and ensuring key components of the fire control system, such as the equilibrator, are functioning properly. What we found was that most Bradley crews were following the instructions in the Bradley Commander's Display but were unaware of the additional tasks found in Appendix B of Field Manual (FM) 3-20.21, ***Heavy Brigade Combat Team (HBCT) Gunnery***.

Ensuring that crews are executing AACs and PtFCs regularly and to standard requires command emphasis. This is not a master gunner problem, it is a command problem, and it requires engagement from commanders at echelon to correct.

Skill training

"Everyone doing his best is not the answer. It is first necessary that people know what to do," said W. Edwards Deming.[2]

In terms of preparing crews better for live fire training and combat, 1-68 Armor took a two-prong approach centered largely around how feedback is provided during training coupled with basic crewmember skills. In practice, this forced the team to re-evaluate our execution of Vehicle Crew Evaluator (VCE) certification, and Gunnery Skills Testing (GST).

The first issue we attacked was -VCE training and certification. Previously, VCEs were trained and certified only prior to gunnery densities using the VCE Exportable Package (VCEEP) from the Maneuver Center of Excellence. While the VCEEP remains an effective teaching tool and we were meeting the standard of annual recertification, we found that the frequency of instruction was too low to maintain proficiency for certified VCEs to provide quality feedback and ensure consistent scoring. Further, the challenges with scheduling ranges in Poland often resulted in training being scheduled and conducted on relatively short notice (two weeks out as opposed to six or more weeks out). To provide flexibility to respond to training opportunities and sustain VCE proficiency, 1-68 Armor adopted a quarterly VCE recertification model.

The battalion's VCE certification and recertification process was maintained at the battalion level in which the battalion master gunners executed the program. All gunners and vehicle commanders were required to be VCE certified on their respective craft; tanks, IFVs, and mounted machine guns. The program of instruction was held and maintained at the battalion level, executed by the battalion master gunner team. The program of instruction matched the VCEEP and candidates were held to the VCEEP passing standards; there was no check the block. In addition to the practical exercises provided with the VCEEP, additional scoring practical exercises using actual range footage from previous battalion gunneries were included to increase the rigor of the course.

To improve the value of the feedback provided by our VCEs, the battalion master gunner team also built a unique after-action review (AAR) slide deck for use in every AAR for gunnery tables III through VI. The deck was built to outline overall tasks, conditions, and standards for each engagement and clearly state the targetry, ranges and modifiers for each engagement of the table. Each engagement's video was embedded to allow viewing on projector or television before showing a digital version of the engagement score sheet. Hyperlinked throughout the slide deck were links to a directory of reference slides that provided details on various elements of gunnery. They included scanning techniques, methods of target engagement, processes and penalties, and master gunner tips for each crew position. Having this library equipped the VCEs and the crews with immediate access to references to facilitate discussion and provide solutions to solving problems in the vehicle.

By executing a challenging program of instruction every quarter and building our own AAR slide deck, we found that our VCEs were more confident and competent in the feedback they provided on gunnery tables III through V. We also noticed better performance within crews as they progressed from table to table, and that performance was reflected on our Table VI scores and distribution.

In terms of preparing the crews themselves for training, GST (Gunnery Table I) is non-negotiable. All personnel on the crew, regardless of rank and experience, must execute GST to standard and execute all tasks within GST to standard with no tasks omitted due to time or convenience. To ensure this happened in 1-68 Armor, we made GST a battalion-level training and certification event. The S-3, supported by the master gunners, planned, and resourced GST as a full training event. Lane evaluators were selected, trained, evaluated, and certified weeks prior to the main GST event. The battalion commander, command sergeant major, and S-3 personally validated each instructor and the setup of the testing to ensure all stations and evaluators were prepared and certified for testing.

In terms of the execution of GST, three days were allocated for training and two days were allocated for testing. To ensure throughput, we scoped the number of vehicles to be higher for tasks that tend to take longer, allocating three platforms for dropping breach on the M1 and M242 disassembly/reassembly on the Bradley. All machinegun tasks were executed on the vehicle platforms, not on folding tables. Finally, two tanks and two Bradleys were set aside as retraining stations as crewmembers cycled through testing.

The result of this deliberate effort was evident on the gunline. On the Bradley ranges crews were expected and able to remedy gun malfunctions on their own without having to pull master gunners from the tower to assist. On the tank ranges we saw the near elimination of range downtime due to prolonged machinegun malfunctions and misfires.

Simulator usage

"There is an epidemic failure within the game to understand what is really happening … People who run ballclubs think in terms of buying players. Your goal should not be to buy players, your goal should be to buy wins. And to buy wins, you need to buy runs … what I see is an imperfect understanding of where runs come from … Baseball thinking is medieval, and they are asking all the wrong questions…," said Peter Brand*, "Moneyball" (2011).*[3]

While in Europe, the battalion took a hard look at the use of BATS/COFT-SA and AGTS and how we provided feedback to crews. The BATS/COFT-SA and AGTS are a finite resource and are even more finite and constrained in deployed environments such as Europe. Currently, the 7th Army Training Command does not have enough simulators to provide the same level of coverage as home station for multiple ABCTs in theater. In practice, this means that some units may have to "commute" to send Soldiers to execute Gunnery Table II, and others must share a single simulator with other organizations. Simulation time becomes a precious commodity.

Effective use of the AGTS and BATS/COFT-SA will result in better performance in combat and on the range. The Army standard for simulation utilization is four hours per crew per month. While this metric is a good start point, it neglects the relative value of each hour spent in the simulator. Conventional wisdom suggests that more time spent in the simulator yields better performance, however time is a limited an irreplaceable resource. This is particularly true in Europe as previously discussed, so generating more time in the simulator outside of minimum requirements may not be a feasible course of action. Therefore, the question we sought to answer was "How do we increase the value of the time spent in the simulator by crews?"

Our hypothesis was that while time spent in the simulator grows expertise, professional and in-depth feedback will amplify the value of that time. In essence, provide better feedback so that four hours in the simulator has the effect of six or more hours in the simulator. Looking at how 1-68 Armor was executing AGTS and BATS/COFT-SA in August 2021, we found the current standard of training to be deficient. While our crews were spending the required four hours in the simulator every month, the quality of feedback varied greatly. Some crews had seasoned platoon sergeants and master gunners working as instructor operators, while others had young Soldiers (drivers, loaders, etc.) with limited platform experience running the simulator. These younger Soldiers were generally incapable of providing detailed feedback and did little more than run scenarios and move the vehicle in and out of battle positions; we immediately elevated the requirement for instructor operators to experienced vehicle commanders only, while we delved into the challenge of certifying instructor operators through the MCoE.

Unfortunately, the Simulation Instructor Operator (SI/O) Course for the Abrams platform is no longer a program of record at Fort Moore, GA. The Army National Guard (ARNG) maintains an Instructor Operator Course at Fort Moore but that course is limited to the Bradley platform only. With the sunset of the Abrams course, proponency for instruction and certification was moved to the divisions, however not every division has a program in place at this time.

To remedy this shortcoming the battalion master gunners developed an SI/O Course to train and certify AGTS and BATS/COFT-SA instructor operators at the battalion level. We modeled the course after the ARNG Instructor Operator Course at Fort Moore, with the program of instruction extended to cover AGTS as well. The battalion SI/O course provides detail on the structure of the AGTS and BATS/COFT-SA matrix progression system, baselined standards for AARs following exercises in the simulators, and provided instruction on how to better coach vehicle crews and gunners to improve performance.

Next, we sought to understand what skills to focus on while in the AGTS and BATS/COFT-SA. On the battlefield, first round targets underwrite a CAB's success. At the crew level, a first round target coupled with low target identification and time to fire ensure that the enemy platform is destroyed before the U.S. crew can be identified. A first round target reduces the time of the Detect, Identify, Decide, Engage, and Assess (DIDEA) cycle, and the ability to execute multiple DIDEA cycles faster than the enemy allows U.S. crews to fight outnumbered and win. Failure to hit a target on the first round increases the time of the DIDEA cycle and exposes the U.S. crew to enemy fires. At the collective level, more first round targets decrease the number of enemy guns pointed at you, increasing your formation's survivability.

To better understand the correlation between engagement times and performance, we turned to statistical analysis of main gun performance data in AGTS for tank main gun. We assessed the performance of 15 tank crews in AGTS GTVI by taking a mix of six crews who scored below 800 on GTVI (Live) and nine who scored above 900 on GTVI (Live), and specifically looked at average times to identify a target and average times to fire in AGTS.

We identified that the crews that shot over 900 had an average time between identification and firing of .98 seconds with an average main gun engagement score of 93. Crews that shot below 800 had an average time of 3.33 seconds and an average engagement score of 81. The difference in time to kill from identification for both categories respectively was 6.97 seconds and 10 seconds. Statistically, there was a strong correlation coefficient of -0.84 between the crew's average time to fire and the AGTS Gate score within AGTS. In short, the better gunners are the ones who can quickly achieve a proper center mass reticle lay and quickly establish a good track before quickly squeezing the trigger.

	1st rnd hit % in AGTS	Live GT VI Score	AGTS GTVI score	Average Time to ID (AGTS)	Average Time to Fire (AGTS)	Average Time to Kill (AGTS)	Reticle Aim Error Average (AGTS)	Avg Engagement Time (Live GTVI)	Main Gun Avg Engagement Score (x/100)	Sum of Live Main Gun Engagement Scores (GTVI)
Crew 1	100%	905	943	7.82	10.44	15.73	0.35	6.73	87	953
Crew 2	100%	936	939	8.90	9.16	16.18	0.42	2.55	94	1039
Crew 3	91%	910	930	10.12	14.46	17.91	0.54	-1.27	97	1071
Crew 4	82%	700	918	15.16	14.78	27.90	0.62	15.91	68	748
Crew 5	100%	970	929	11.75	11.46	18.27	0.44	-0.82	99	1087
Crew 6	100%	920	927	11.70	12.40	18.83	0.43	3.27	94	1030
Crew 7	92%	924	914	15.99	13.18	25.17	0.37	3.82	93	1026
Crew 8	83%	942	913	9.30	10.38	17.00	0.36	-3.36	100	1096
Crew 9	100%	957	974	9.97	11.49	15.17	0.38	3.00	95	1040
Crew 10	100%	789	944	9.24	14.26	19.18	0.40	16.73	67	742
Crew 11	92%	758	941	11.08	12.28	19.18	0.75	5.55	87	956
Crew 12	92%	791	735	15.17	23.16	27.18	0.43	6.73	88	973
Crew 13	100%	927	957	9.65	10.99	13.64	0.41	12.64	75	822
Crew 14	92%	760	957	10.03	10.29	18.00	0.32	3.45	90	985
Crew 15	91%	760	945	9.15	15.02	18.36	0.44	5.55	88	969

Figure 3. Raw Data Set of Gunnery Performance. *(U.S. Army graphic by LTC Chuck Bies and CSM Gary John Kurtzhals)*

	1st rnd hit % in AGTS	Live GT VI Score	AGTS GTVI score	Average Time to ID (AGTS)	Average Time to Fire (AGTS)	Average Time to Kill (AGTS)	Reticle Aim Error Average (AGTS)	Avg Engagement Time (Live GTVI)	Main Gun Avg Engagement Score (x/100)	Sum of Live Main Gun Engagement Scores (GTVI)
1st rnd hit % in AGTS		0.50	0.27	-0.41	-0.29	-0.56	-0.35	0.05	0.05	0.05
Live GT VI Score	0.50		0.20	-0.24	-0.45	-0.53	-0.44	-0.57	0.61	0.61
AGTS GTVI score	0.27	0.20		-0.58	-0.84	-0.66	-0.04	0.00	-0.05	-0.05
Average Time to ID (AGTS)	-0.41	-0.24	-0.58		0.58	0.90	0.26	0.16	-0.10	-0.10
Average Time to Fire (AGTS)	-0.29	-0.45	-0.84	0.58		0.71	0.20	0.26	-0.21	-0.21
Average Time to Kill (AGTS)	-0.56	-0.53	-0.66	0.90	0.71		0.30	0.29	-0.26	-0.26
Reticle Aim Error Average (AGTS)	-0.35	-0.44	-0.04	0.26	0.20	0.30		0.18	-0.22	-0.22
Avg Engagement Time (Live GTVI)	0.05	-0.57	0.00	0.16	0.26	0.29	0.18		-0.98	-0.98
Main Gun Avg Engagement Score (x/100)	0.05	0.61	-0.05	-0.10	-0.21	-0.26	-0.22	-0.98		1.00
Sum of Live Main Gun Engagement Scores (GTVI)	0.05	0.61	-0.05	-0.10	-0.21	-0.26	-0.22	-0.98	1.00	

Figure 4. Correlation Matrix of Data Set. Values approaching denote no statistical correlation; values approaching -1 or 1 denote perfect correlation; values approaching -0.5 or 0.5 denote moderate correlation.
(U.S. Army graphic by LTC Chuck Bies and CSM Gary John Kurtzhals)

When it comes to gunnery, success is rooted in the number of qualified versus unqualified crews. Scores do matter, as do distinguished and superior ratings, however the benchmark of success is first time qualification. This is tied to how the standard for qualification of seven of 10 qualified engagements and 700/1000 points is developed. The goal should be to have no crews Q2 as opposed to having several Q2s alongside crews with higher scores.

The 7/10 engagement and 700/1000 is derived from combat analysis. Gunnery assumes the U.S. force is fighting against an enemy force at 70 percent manning, 70 percent readiness and 70 percent morale. An unqualified engagement, or an engagement with a score less than 70 points, means that the U.S. tank was destroyed by the enemy during that engagement. A Q2 crew isn't just a crew that had to fire additional engagements to get over the 700-point threshold, in real terms it is a dead crew. A Q1 crew is a crew that most likely survived. A 10/10 crew is a crew that survived to fight again another day: a land ace.

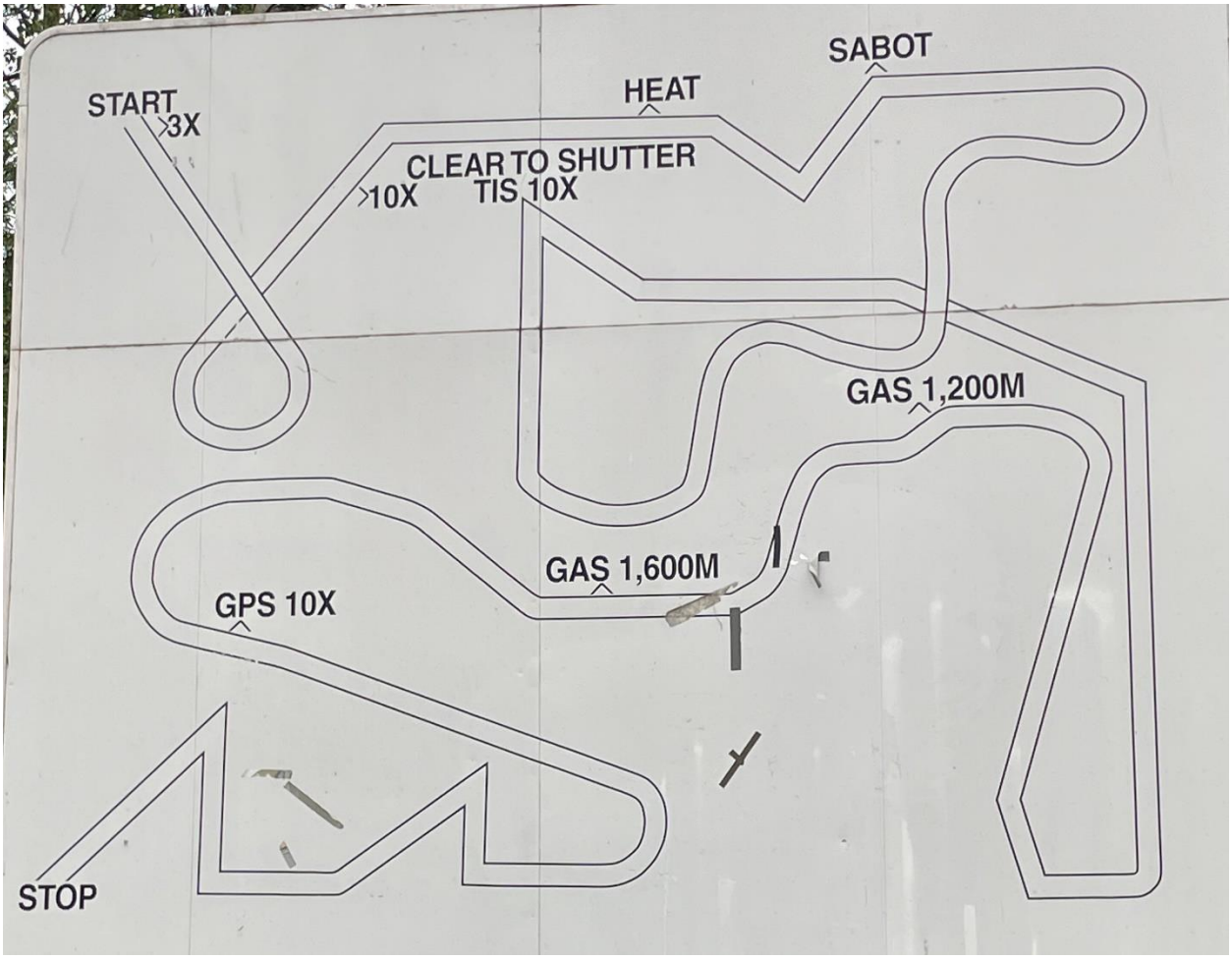
In summary when looking at a distinguished rating, it is more important to be 10/10 qualified with a score of 901 than it is to be 9/10 with a score of 969. Similarly, it is more meaningful for a combat formation to have 0/29 Q2 crews and 1/29 distinguished crew than it is for a formation to have 12 distinguished crews and 1/29 Q2 crews. The first formation will likely have no dead crews, whereas the second will have one. Therefore, a gunnery training program must attack development as a progression. Step one is to train to eliminate all the incidences of Q2. Once that foundation has been achieved, step two is to train to get all crews to 10/10 qualified engagements. It is only once you have reached 10/10 that the end score is worth talking about.

We identified another correlation that drove training focus after looking at training and gunnery scores. When main gun performance is assessed against GTVI scores, there is only a moderate correlation of 0.61. The ability to hit with main gun isn't a great predictor of success on the range; the complication that causes this, and is also difficult to measure, is proficiency with the coaxial machinegun. The difference between a distinguished crew and a merely qualified crew is the gunner's ability to hit targets with the machinegun, which introduces considerably more variables for consideration. Does the crew have the gas port on the correct setting? Is there any play with the mounting with the machinegun? How old are the barrels? Is the coaxial port perfectly straight? Is the ammunition belt cleaned, lubricated, and fed properly? Whether or not machinegun engagements count for too much in scores on a platform with the mission to destroy enemy armored vehicles is a separate and philosophical discussion. Rather there are two important takeaways about machineguns. First, machinegun engagements are more dependent on crew maintenance and equipment preparation than main gun engagements; this is something that cannot be assessed in AGTS. Second, given an FMC coaxial machinegun, the gunner's fine motor control of the power control handles is essential in engaging small troop targets; something that can be developed and assessed in AGTS.

Therefore, while training in the AGTS, SI/Os must focus their coaching on improving the gunner and tank commander's ability to perform fine manipulation of the controls to achieve center mass lay and track. That's fine

for the AGTS, but with limited simulator time, how can crewmembers develop those motor kills outside of the simulator? Moreover, live performance introduces multiple variables such as machinegun maintenance and vehicle maintenance status that frustrate statistical analysis. The path to improvement depends on practice and muscle control on the actual platform, and the best way to practice that muscle control is through use of worm/snake boards.

1-68 Armor also identified that the "worm boards" or "snake boards," that used to be commonplace are largely absent from gunnery ranges and motor pools (see figure below). These boards should be procured and used more than crews have become accustomed to in recent years. In terms of Abrams statistics, there is a moderate correlation between first round target performance in AGTS and live Table VI performance.[4] Many installations' Training Support Centers only carry very rudimentary tracking boards, if at all. However, we found that the Training Support Center at Fort Knox, KY, is still capable of producing field deployable canvas worm boards. Units may purchase them by request. Until these boards become permanent fixtures in motor pools and at gunnery ranges, we recommend units procure sets of worm boards for each company to use at home station, in the field or while deployed.



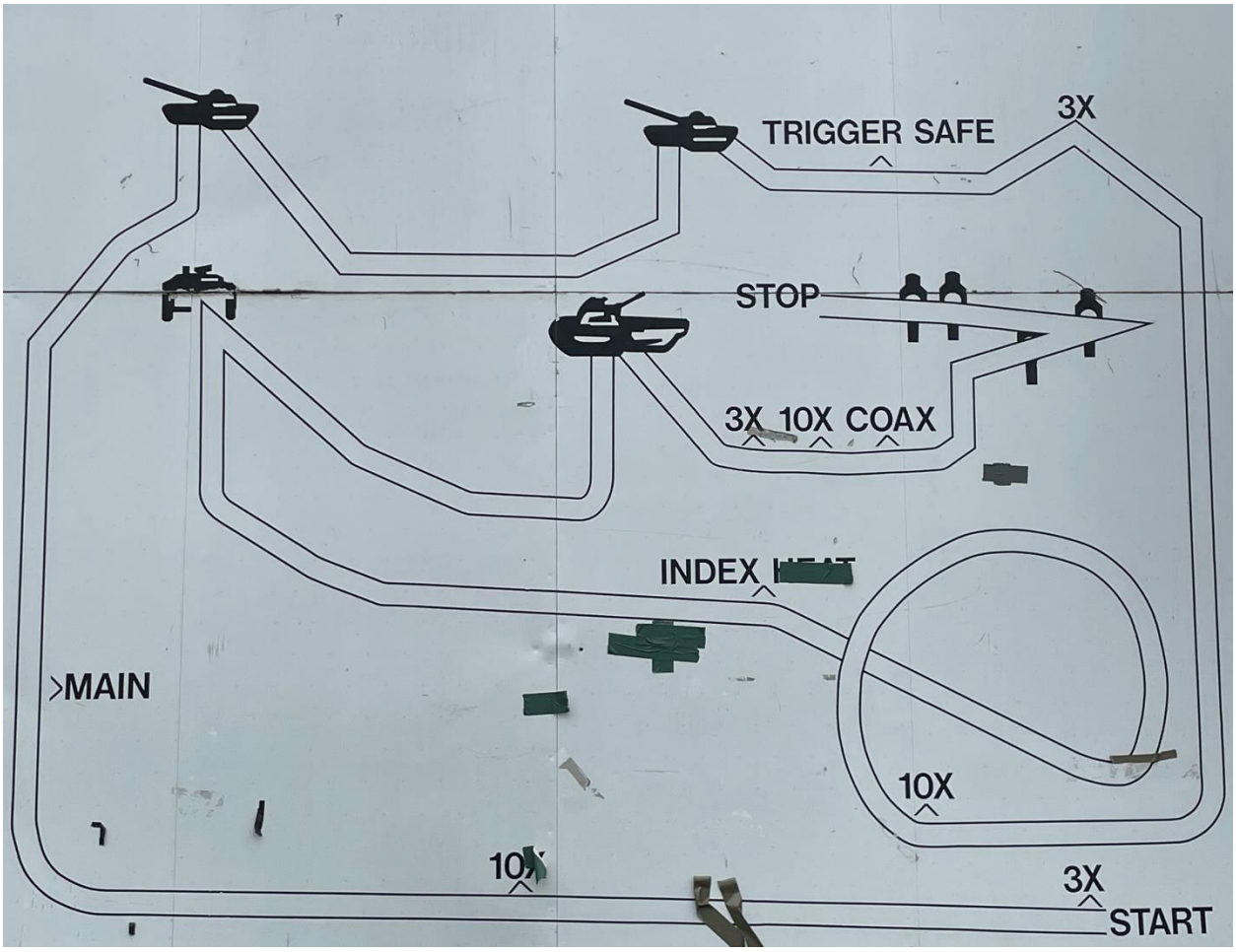


Figure 5: Photos of worm boards located at Range 132, Grafenwohr Training Area. *(U.S. Army graphic by LTC Chuck Bies and CSM Gary John Kurtzhals)*

Master gunner development

Master gunners are the keepers of lethality in the ABCT community … period! The true success of a gunnery training program hinges on buy-in and the hard work of our NCO Corps, and those NCOs depend on the leadership and knowledge of our master gunners to guide their efforts. Moreover, officers require their expert counsel in planning and executing training and managing crews.

In the fall of 2021, 1-68 Armor was not in a good place with its master gunner population. The guidance from IIIC was for units to reach a 100 percent fill rate of master gunners; for tank (K8) that meant three master gunners and for Bradley (J3) six master gunners for a total of nine in the battalion. The Silver Lions had two K8s, one being a first sergeant and the other being the new command sergeant major, and one J3, who was serving as the battalion master gunner, with one NCO in school for J3. In short, we had less than half of what we needed. We had a problem.

Exacerbating the problem was that many NCOs within the formation were reluctant to attend Master Gunner School. What they saw were good NCOs being sent up to battalion to be the battalion “Mike Golf,” where they were relegated to the menial tasks of requesting land and ammo. At gunnery, they saw one NCO who spent days without sleep, bouncing between running the radio in the tower and fixing deficiencies (particularly with the Bushmaster) out on the line. Soldiers saw the Mike Golf as a competent but overworked NCO who hated his/her thankless job. Who in their right mind would want to leave their platoon and go to a notoriously difficult school for such a “reward?”

The culture had to change, and fast. We had to generate a lot of master gunners quickly. In the Airborne community, the analog to the master gunner is the jumpmaster, and I witnessed several similarities. When a unit didn't have a robust jumpmaster population, the few that it did have become overtasked; paratroopers saw that and became reluctant to attend that challenging school. When units had an excess of jumpmasters, duties were easily shared and none of them had to put in too much extra work. Finally, there was the mindset that if you had to be a jumpmaster to be a leader, otherwise you were "just another jumper." Our task was to create the culture where to be a mechanized leader, you had to be a master gunner, otherwise you were just another crewmember. We did so through three efforts.

• **We incentivized the position.** Any NCO who passed "gun school" but was not a vehicle commander would be immediately moved into a vehicle commander position. For platoon sergeant billets, master gunners to include promotable staff sergeants would jump the queue and be slotted in platoon sergeant billets ahead of other sergeants first class. All master gunners would receive unfettered access and no-knock/no-appointment/walk-in privileges to both the command sergeant major and battalion commander at any time and for any reason. Within the battalion headquarters we established a lounge area, off limits to all personnel except for master gunner and Ranger qualified personnel.

• **We removed some of the onerous tasks associated with being a master gunner.** The battalion master gunners would no longer be the land and ammo NCO. Land requests and Range Facility Management Support System would be managed by an assistant S-3 officer, with the master gunners retaining access. Master gunners would assist with identifying ammunition requirements, but the burdensome task of ammunition requests and documentation would be handled by an assistant S-3 officer. Instead of performing menial administrative tasks, the master gunners were broadly empowered to prepare NCOs for Gun School and to plan and build maneuver live fire training scenarios given training objectives issued by the battalion commander.

• **We established policy and targets.** Every quarter, each company was required to have at least one NCO in Master Gunner School. Companies were required to look at their population, project their four candidates for the year, and allow the battalion master gunners to start their preparation. The scout platoon and each tank and infantry platoon were to have at least one master gunner. Each company was to have a company master gunner serving in the headquarters, and there would be both a tank and Bradley master gunner at battalion.

Our efforts bore fruit, not just for the battalion but for the armor community and the Army. Between fall 2021 and the summer of 2023 the Silver Lions created 11 master gunner graduates. Exceeding the standard of nine, the Silver Lions had 7/3 K8 and 7/5 J3 master gunners. On the range, the effects of a healthy master gunner population were readily apparent beyond the improvement in gunnery scores. The battalion master gunners were able to assume a supervisory and mentorship role for crews and VCEs rather than be wedded to the radio. Instead of common delays during Bradley gunnery where crews wait for a master gunner to diagnose gun faults, we were able to post a master gunner at the ready line to quickly assess gun malfunctions. On tank ranges, we had sufficient master gunners to run the tower as well as run Live-Fire Accuracy Screening Test, oversee VCE operations, and spot check equipment. In short, life for the master gunners became a lot easier, and the rest of the formation was able to gain more benefit from their expertise and counsel.

At the time of this writing, the Army doesn't have enough master gunners in the force to man both the schoolhouse and U.S. Army Forces Command deploying units. Our advice to the force is to continue to send quality NCOs to Master Gunner School, and when the time comes to pay the bill to the generating force, send them to Fort Moore to run the Gun School and continue to build the bench across the force.

Conclusion

The 1-68 Armor Silver Lions experienced a 12-percent improvement in crew gunnery performance in less than a year through the execution of fundamentals and education. While we had many talented crewmembers in the battalion, the battalion's systems and training were not correctly oriented to prepare platforms and train fundamental skills. Once in Europe, units that do little more than "shoot the range the Army gives them" will find their training to lack rigor.

For our precision systems to deliver precision results, it is imperative that our vehicle commanders understand the connection between AACs/PtFCs and lethality. Regardless of how good a boresight is, if a crew does not regularly

execute AACs and PtFCs, that crew will struggle to live up to its potential. Similarly, crews need quality coaching to improve and develop; that quality coaching requires VCEs and SI/Os who have the training and in-depth knowledge to provide expert feedback.

Lethality is central to what a CAB is and does. Given this importance, commanders need to assess their formation and take steps to ensure that certifications are held at the level commensurate with that importance. 1-68 Armor experienced success in holding GST certification at the battalion level and executing VCE certification on a quarterly basis. With limited AGTS and BATS/COFT-SA resourcing in Europe, certifying SI/Os to maximize value of simulator time is key. Commanders, command sergeants major, S-3s, and master gunners must push hard to gain the most value from training prior to movement to the range.

Nothing that the 1-68 Armor Silver Lions did to prepare for gunnery or turn their gunnery training program around in Europe was revolutionary. Commanders will find that they can maintain an effective gunnery training program through exercising fundamentals and holding the line on standards.

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Notes

[1] Lewis Sorley, "Creighton Abrams and Levels of Leadership," ***Military Review***, August 1992.

[2] Deming, W. Edwards, ***Out of the Crisis***, Cambridge: MIT Press. 1982.

[3] Jonah Hill, ***Moneyball***, Directed by Bennett Miller. Sept. 23, 2011.

[4] We found that the correlation coefficient between AGTS Table VI and Live Table VI is weak, only 0.20 on a scale of -1 to 1. While AGTS is essential to developing proficiency with the conduct of fire and the platform, building confidence, and developing individual skills, the scores in AGTS in themselves are not good predictors of actual gunnery performance.

Acronym Quick-Scan

AAC – armament accuracy checks
AAR – after-action review
ABCT – Armored Brigade Combat Team
AGTS – Advanced Gunnery Training System
BATS – Bradley Advanced Training System
CAB – combined arms battalion
COFT – conduct of fire trainers
DIDEA – Detect, Identify, Decide, Engage and Assess
FM – Field Manual
FMC – full mission capable
GST – Gunnery Skills Testing
GT – Gunnery Table
MCoE – Maneuver Center of Excellence
PtFCs – prep to fire checks
SI/O – simulation instructor operator
VCE – Vehicle Crew Evaluator
VCEEP – VCE Exportable Package