LETTERS

Key to Improve Accuracy: Tighter Gun Tube Specs

Dear Sir:

Major Held's article, "Zeroing In," from the May-June 1995 issue, has done a good job of highlighting the issues the Armor community must consider when selecting or modifying tank gun calibration procedures. A key element of Total Quality Management is continuous improvement, and improving hitting probability certainly is a worthwhile goal. This policy decision is ultimately one to be made by the user, within the constraints of cost and complexity, based on the best information available.

The performance of the 120mm gun system during Desert Storm would appear to provide a measure of effectiveness of the current policy. There is always the question "Can we do better?" As Major Held suggests, to make rational decisions one must know the relative magnitude of the individual error sources and the cost of correcting that error.

Current calibration policy has its genesis in a pioneering series of user tests and experiments carried out by the Armor and Engineer Board during the 1970s. The principal investigators were (then) Captains Jim Brown and Bob Kloecker with analytical support by Dr. Charlie Leake. The effort began with a complete analysis of various boresighting schemes and progressed through the characterization of boresight/zero relationships.

These tests, and subsequent tests involving the 120mm gun, clearly demonstrated that *the major source of tank-to-tank variability is the gun tube.* The variance is most pronounced when firing the more energetic rounds. Two of the possible alternatives proposed by MAJ Held (Surrogate Zero and Silent Zero) deal exclusively with gun-to-gun variabilities.

As an alternative to producing guns which have operationally significant variances in point of impact and requiring the user to compensate, I would suggest that the variances be addressed directly by the addition of an accuracy performance or acceptance specification for the gun tube.

For a number of years, the procurement specification for tank gun ammunition has included a performance requirement in terms of allowable round-to-round dispersion. Each lot of ammunition is required to demonstrate that it meets this requirement.

The specification for the tank gun is stated only in terms of manufacturing requirements. Tolerances, hardness, and finishes are specified, but there is no stated performance requirement. More importantly, scientific relationships between manufacturing specifications and fall of shot are essentially unknowns.

A performance specification which required all guns to shoot uniformly would ensure that the user can continue to use the simple and effective fleet zero policy. This sort of requirement places demands for uniformity of manufacturing on the producer. Given the number of years of U.S. 120mm gun manufacturing, it is entirely reasonable to expect that this level of process repeatability is achievable.

The following is offered as a strawman criteria. "The gun in a fixed mount will be boresighted using the troop issue boresight at a target placed at 1000 meters. After boresighting any ammunition-unique corrections will be applied, i.e., superelevation and jump. Five rounds of service APFSDS (normally the most energetic round) fired at the target shall demonstrate a mean center of impact (MCI) not more than .35 mils from the expected point of impact.

MAJ Held has done real service to the community by presenting the issues. Hopefully, the Armor community and its developer friends can work together to accomplish continuous improvement.

RICHARD F. PELL
COL, Armor, Retired

A Few Thoughts About the Digital Battlefield

Dear Sir:

As the Army transitions into the 21st Century, there is an exponential increase in the senior commander's access to battlefield information. In the 1st Cavalry Division, the division commander can locate every platoon leader using his Enhanced Positioning Location Reporting System (EPLRS) situational awareness terminal (SAT). The POSNAV system on the M1A2s in the 1st Cavalry Division provides leaders the locations of their tanks via Intervehicular Information System (IVIS). The availability of Global Positioning System (GPS) devices at the squad level enables leaders at the lowest levels to know their location within ten meters. Tactical Satellite Communications (TACSAT), once found at the highest command levels or with Special Forces units, are now available for use by heavy maneuver brigade commanders. The senior commander's ability to have almost immediate information on a unit's whereabouts and the enemy disposition facing them, implies that division commanders could begin very shortly to control the tactical employment of platoon-sized elements. Therefore, the question of "detailed control" versus "directive control" of forces becomes the centerpiece in the debate over how we may use this technology and fight in the next century.

The British doctrinal term "directive control" (often confused with the German concept of *"Auftragstaktik,"* means to give subordinates a mission and allow them to determine the best way to synchronize battlefield operating systems. The advantage of this method is that the commander closest to the fight, with the most information, has the freedom to make decisions. Directive control traces its development from infiltration tactics in WWI, through WWII, to the writing of the US Army's FM 100-5, *Operations.* The Army's concept of giving subordinates the freedom to exercise initiative and make decisions led to the often-used maxim, reinforced by lessons learned at the National Training Center, that battles are won at the platoon level.

"Detailed control" gives subordinates specific instructions on what to do and how to do it. This type of command and control is usually associated with the former Soviet Red Army. Although it ensures a unity of command and effort, there is a minimal amount of tactical flexibility at the lower levels of command. The National Training Center has also shown us that detailed control often fails at the company and platoon level, where the fog of war is most pervasive and a correct assessment of the situation is difficult to determine until the battle is over.

Potentially, senior leaders' access to information provides them with a more complete picture of a particular tactical situation than the platoon leader. The division commander will not only see where a particular platoon leader's tanks are on his SAT terminal, he can utilize the intelligence gained through many other sources to see the enemy disposition throughout the battlefield. This will enable him to literally see whom the platoon leader is fighting, as well as whom his AH-64 Apaches are attacking in the deep fight. He will also see whom the Tactical Combat Force (TCF) is fighting in the rear from his command vehicle. The division commander is able to dispatch commands via TACSAT, or send a message via EPLRS almost instantaneously. Will digital capability make the division commander less likely to allow the platoon leader to exercise initiative? Has technology changed our doctrine already? How do we train leaders to process all the information that is available on the digital battlefield?

These questions and others confront the Army as it continues to modernize at a rapid pace. In fact, the Army is at a point where the units of Force XXI have the same or less of a digital and technological capability than the two heavy contingency divisions. While Force XXI units conduct testing to meet both the Army and contractor test requirements, the two heavy contingency divisions must leverage digital technology for today's battlefield requirements.

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During the Vietnam War, commanders struggled with the role of command and control helicopters. Some battalion commanders flew over their company commanders fighting on the ground, directing their every move, while brigade and division commanders flew above the battalion commander, giving him the benefit of their experience. This environment left very little room for the company commander to apply the latest battlefield information and accomplish the battalion commander's mission and intent. Similarly, enemy tanks firing sabot rounds look quite different to soldiers on the ground than they do as icons on a SAT terminal. If deliberate control does become the standard for command and control on the digital battlefield, then how will the second lieutenant learn the lessons that will prepare him to be a division commander?

There is a great deal of excitement across the Army as it becomes more digital and fields new systems. While the focus presently is to gain seamless conductivity between systems that were seemingly developed in a "stovepipe" fashion, there remains a need for equal emphasis on preparing the doctrine, tactics, and leader training necessary to fight in the information-laden environment of the digital battlefield.

ROSS A. BROWN
CPT, Armor
Ft. Hood, Texas

Ratings Should Be Tied To Tank Qualification

Dear Sir:

I think that this letter will start some controversy within the Armor community. This subject has been avoided for a good number of years.

I want to ask one very simple question: Should a tank commander's rating (OER or NCOER) be more closely tied to the qualification of his tank?

Twenty or more years ago (before the M1 and master gunners) tank commanders took a great deal of pride in the fact that they knew their weapons, that those weapons worked, and that their crew could shoot. Today, I see tank commanders who blame their tank for their poor performance. There are tanks that require constant "tweaking" to make them work properly. I see units where it is much more important to pull months of red (duty) cycle, than it is for the unit to properly train and conduct gunnery.

This all leads to the tank commander's yearly report card. I wonder, how can a rater honestly give an excellence rating in competence and leadership to a tank commander who cannot qualify his tank. I ask this because I feel that one of the primary duties of the tank commander is to fight his tank and win. One of the traditional measures of that primary duty is Tank Table VIII.

I know that there was a conscious effort to de-emphasize Tank Table VIII in the late 1970s. I wonder if that has really served us as well as it should have. I remember in 2-81 Armor in 1973 tank commanders like Platoon Sergeant Cables and Sergeant Hardy, who really knew their tank and crew. They put lots of time and effort into training and preparing their crews to fight the M60 tank and to qualify the first time on Tank Table VIII.

These tankers did that in a spirit of friendly competition within the company and battalion. Those few who could not qualify had to suffer through a lot of reminders about "boloing," on Tank Table VIII. You can surely bet that they did the work required to train their crews up to a fight-and-win standard.

Should crews who cannot qualify be allowed to re-fire specific engagements from Table VIII until they can meet the standard? Should a tank commander who consistently fails to qualify his tank be considered for promotion to sergeant first class?

I would submit that if he cannot train his crew and fight his tank, he just might not be able to train his crew, fight his tank, and mentor other tank commanders to train their crews and fight their tanks.

As I said at the beginning of this letter, this might start some controversy within the Armor community. If it does, good! I really feel that a better tank commander can come out of a discussion of this issue.

CSM HALFORD M. DUDLEY
1-66 Armor
Fort Hood, Texas

Computers Won't Solve Combat Development Problems

Dear Sir:

As usual, your July-August issue was chock-full of fine articles, and what was especially nice to see was the number of articles written by company grade officers, the individuals who, when the fat is in the fire, have to put the fire out.

They provided some great observations and experiences based on real day-to-day life as a tanker that I hope are being read, heard, and understood by our current technologists and acquisition czars. A case in point was the fine letter by 1LT Brannon of C/112 Armor, TXARNG, written in response to an earlier article on tank main gun autoloaders. His point was very clear, and that was that four crewmen on a tank have many tasks to perform in order to keep their tank operational 24 hours a day, 7 days a week, for however long it is in combat. It is not just a matter of loading the main gun. More importantly, 1LT Brannon provided us with a most important part of the development process for any new equipment — user input.

Unfortunately, it appears that the Army has been caught in the trap, that if we automate and digitize everything, we can win the next war from the CP with four soldiers and a computer. Ah, if this were only true. But, it appears that many in uniform today do believe it to be true. I do not mean to imply that automation and digitization is all bad; but as with every new idea or technology, one must understand how that idea or technology fits into the larger picture as well as many smaller ones.

When TRADOC was formed back in July of 1973, its first commander, General William DePuy, understood the need to have the field soldier's input in the development process. Therefore, he put the responsibility for combat developments (CD) at a level in the chain-of-command where such input would be most visible and effectively applied — at the individual branch level.

From that year until Desert Storm, the TRADOC combat developers modernized the U.S. Army. If you do not believe that, walk around any tank park, motor pool, airfield, supply room, or arms room and count the percentage of things that predate 1973. Desert Storm was witness to the success of General DePuy's decentralized combat development process to the branch level. The ultimate user, the soldier, had direct input to the end product. And those working directly in the CD process at the individual branch centers were green suiters who also had lots of field and hands-on experience. Communication lines hummed in all directions, and coordination from center level to individual action officers within the DA staff took place on a daily basis. The same communication opened between industry and the various Army laboratories.

But the lessons of history are soon forgotten, and that appears to be what is happening today within the Army, and particularly TRADOC. Downsizing over the past four-five years has about destroyed the Combat Developments functions at each branch level. It almost seems as if no one at the senior leadership levels understands the development and acquisition process.

Our future needs will not be solved with a computer, nor by a half dozen battle labs which are actually doing nothing more than what was done in the past under the combat developer's charter, the only difference being that the battle labs have more computers and simulation to assist them in their studies. But the acquisition process is still guided by DOD's 5000-series regulations. Any proposed new program must still comply with these regulations, and the HQ DA, DOD, and Congressional questions, con-

cerns, and biases must be answered before funding will be forthcoming. Likewise, industry still needs to understand the environment of the soldier in the field, and the soldier in the field needs to have a handy conduit to what is being proposed by industry. That proven conduit is, and has been, the branch combat developer, the user's representative with industry, DA, DOD, and the Congress.

Abolishing combat developments, or consolidating all CD functions at a higher level than the individual branch level, is a lose-lose proposition. Lost is the individual branch interface and understanding with industry and the technology being proposed by industry and the laboratories. Lost, too, is the capability of close, routine coordination, interface, and understanding between the ultimate user in the field and his representative, the combat developer, and his boss, the individual branch chief.

Lieutenant Brannon's comments concerning industry and the technologists needing to understand the working environment of the soldier, before trying to solve a problem with technology where a problem may not exist, needs to be raised to the top of the flagpole. We may save a lot of personnel positions on our TO&Es by great technological ideas on paper today, but the real question remains to be answered, and that is: Will it really save us on the next battlefield or cause us to be less effective? The Army and TRADOC under General DePuy's foresight saw that the Army was not developing the right equipment to win on the next battlefield because the user and his branch chief were not directly involved in the process until the item under development was ready for testing or fielding. Hence, many of those soon-to-be-fielded items never were, because they did not meet the operational needs of the real users in the field. Today, our military museums are filled with many of those great ideas for new military equipment that never made it — because in the end it was not the item that the soldier wanted or needed to accomplish his mission on the battlefield.

CLARK A. BURNETT
COL, Armor, Retired

Adding Vehicles Would Deny Light Forces Their Mobility

Dear Sir:

In "Making the Case for an Airborne Infantry Fighting Vehicle" (September-October 1995), Stanley Crist echoes the views of many "heavy" proponents in arguing to "heavy up" the Army's principal force projection forces — its airborne units. In so doing, he reveals the same overreliance on our experiences in the Gulf War that has captured not only the Army's mechanized/armor communities but much of our senior leadership as well. We should be very careful about drawing lessons from a desert war — which showcased and highlighted our heavy forces in conditions which optimized their awesome capabilities — and then applying them to the force as a whole in conditions which do not.

If Crist is right, then our doctrine and our senior leadership is wrong in stressing heavy-light and light-heavy operations. Light and heavy forces can work well in many kinds of terrain despite the significant mobility differential. The experience of 3-325 Airborne Battalion Combat Team during its recent CMTC rotation is one example.

During the rotation, the ABCT fought a pure tank battalion with attached artillery, motor rifle, antitank, and engineer units. 3-325 controlled two tank and two Bradley platoons, as well as its organic heavy weapons company (with 20 TOWs) and a mechanized engineer platoon. In rolling terrain interspersed with wooded and built-up areas, 3-325 killed 60% of the opposing force in its movement to contact and 70% (including 24 of 29 tanks) in the defense. In the attack, the ABCT seized all four of its assigned assault objectives. In each engagement, the combat team's rifle companies or HMMWV-mounted TOWs accounted for more than 75% of its kills. 3-325 was not supported by any CAS or Army aviation.

These results are significant because the OPFOR, in addition to its inherent advantages, fielded a force with vastly greater firepower and mobility. 3-325 offset these advantages by moving infantry on helicopters and trucks when out of contact and by denying the OPFOR freedom of movement with obstacles, pre-planned fires, good use of terrain (including natural choke points), massed fires in pre-selected engagement areas, and extremely aggressive close combat antitank tactics.

Crist states that "infantry needs the same degree of mobility as tanks," and cites COL Donald Elder's view that "anything less than the mounted combined arms team" provides "by no means the most capable combat force." These are veiled : and not very thinly veiled — calls for the mechanization of the Army's force projection forces.

Those of us who have made a career in those forces are less enthusiastic, for two reasons. First, we know that we can fight heavy forces successfully in all but the most open kinds of terrain, and that means most of the world. Fighting with our standard task organizations, which includes Apaches, field artillery, engineers, and air defense — all supported by CAS — airborne and air assault forces, which field large numbers of TOWs and Dragons, are formidable tank killers. Second, we know that giving us mechanized vehicles robs us of the very thing that makes us strategically useful, and that is our strategic mobility. I know of no one who thinks that mechanized airborne forces can realistically deploy by air given the current or projected state of our airlift fleet.

Few units are more aware of their limitations than the Army's airborne forces. We require the same approach to combined arms warfare as any other force and the same kind of intelligent application of METT-T as anyone else. But we are more than riflemen with rocket launchers. Come visit us on the German plains and you'll see what I mean.

MAJ R.D. HOOKER, JR.
Deputy Commander
3-325 ABCT

Key to the Assault: Suppressing AT Weapons

Dear Sir:

The July-August 1995 edition of *ARMOR* had an extensive and informative article, "Crisis in Battle" by MAJ David Lemelin, describing techniques for assaulting a platoon position. Many excellent points were brought out in this article, but I think a major one was missed.

The "crisis" of an assault is not so much in the actions against the enemy infantry position being assaulted as against enemy AT weapons and tanks around the objective that can engage the assaulting force — they must be destroyed or suppressed to isolate the objective. If this precondition is achieved, the assault can be relatively easy.

A competent defender sets up a combined arms defense. Against an armored force, a defense is built around tanks and AT weapons sited in depth to continuously engage the attacker from multiple directions. Obstacles, infantry positions, and artillery support this defense by protecting AT weapons and by driving and holding the attacker in areas where AT fires are effective. AT weapons are the key to this defense, not the dismounted infantry.

More attacks fail because of a failure to successfully deal with mutually supporting enemy AT weapons, rather than an inability to deal with the defending enemy infantry and BMPs being assaulted. "Tunnel vision" or "target fixation" is a common problem, where the attention of the attacker is focused inward on the position being attacked and all-around security is not maintained.

In the scenario presented in MAJ Lemelin's article, a tank-heavy company team was given the mission of assaulting a forward enemy BMP infantry platoon. In such a situation, adjacent elements of the task force could probably suppress adjacent enemy positions that would engage the team as it initially approached the enemy posi-

tion. However, as the assaulting team closes with the enemy position, fires from in-depth enemy AT reserve, company, and battalion second-echelon and adjacent company AT weapons, moved to "switch" positions, can catch the attackers in cross fires. Because many of these fires would come from reverse slope, keyhole, and in-depth positions, initial support by fire positions become less and less effective in dealing with them, and the assaulting force itself becomes more and more isolated.

This aspect of effective protection of the assaulting force from surrounding AT fires is critical, but difficult to achieve. The concept and execution of the operation must focus on this aspect, and it deserves emphasis as the key to successful assault.

As a final point, I agree with MAJ Lemelin that better training on assault techniques is needed. Once the attacker is in the enemy position, the fight often breaks down into small, close-range fire fights. These are like "dog fights" and close tank-infantry cooperation, and "quick-draw" type reaction fighting skills in close terrain are needed but can be gained only by focused, frequent practice.

JAMES C. CROWLEY
LTC (Ret.), Armor
Peachtree City, Ga.

Once a Master Gunner, Always a Master Gunner

Dear Sir:

I went to Master Gunner School, Class 5-81, as a young hard-charging SSG. At least that's what the 1SG told me was the reason I was selected. I graduated and returned to Germany, ready to defeat Graf. Whether I did well or not, two years later, I was a master gunner instructor at Fort Knox, the best job in the world for a master gunner with the ability to share his knowledge. A short three years later, I am on the border in the 2ACR as a SFC platoon sergeant — not a master gunner, a platoon sergeant. We had a young hard-charging SSG master gunner, who felt like I did six years earlier.

For the next seven years, I filled those positions talked about in promotion guides, platoon sergeant, first sergeant, and operations sergeant — and yes, the promotions came. Because I worked hard at being good at those jobs, I didn't have time to be a master gunner also. Then came the surprise. After seven+ years of letting those hard chargers do their jobs as master gunners, while I did mine, I arrived at Ft. Hood at USASMA, class 43 graduate, MSG, and was told I was going to be a battalion master gunner! When I went to see the division CSM for my interview, I told him the last tank I was a master gunner on was an M1, and I wasn't prepared to be a master gunner again. I wasn't snivelling, I was being honest. Needless to say, I was talked to like a private, and told if I didn't want to be a master gunner, I should have dropped my ASI years ago! Get your #!@ down to that unit and do your job! So I became a master gunner again. That was a year ago. Now I am the division master gunner (new division CSM). Thanks to some young hard-charging NCOs, I am almost current again.

The meaning of this story: After three years as a drill sergeant or a recruiter, both of which get you extra money and a badge (for life), nobody expects you to do that job again unless you want to. As a master gunner (no money, no badge), you have a lifetime commitment, no matter where your career takes you! Attempt to stay current, or you can try to have your ASI removed. The choice is yours — think about it.

SGM JAMES S. SPURLING
Division Master Gunner

Author Seeks Information On Tank Qualification Patches

Dear Sir:

I am writing in the hope you may help me. I am seeking information on initial use of armor pocket qualification patches. I am trying to determine when early TCQC patches were worn, and hope some Armor Association members might be able to help me.

I am researching the history of qualification badges and awards so I might use the information in a book I am writing on these prizes. While most of the awards I am researching concern individual marksmanship badges and prizes from 1880 to the present, I would like to include some information above the TCQC and similar pocket patches. During World War II, the 10th Armored Division had a pocket patch to show tank crew proficiency, and in 1951, then Major General Bruce C. Clarke introduced a green and yellow TANKER diamond for wear on the HBT's in the 1st Armored Division. I have seen photos of 3d Armored Division members wearing green, black, and yellow pocket patches in about 1961. I know of no other awards for tank crew proficiency being worn on fatigue uniforms until these 3d Armored Division patches. I am seeking information on when, why, and how the pocket patches commonly worn in the 1960s and 1970s came into use. Any information you might provide me would be greatly appreciated.

I hasten to assure you that I am a serious writer and researcher. My book on the history of U.S. Army chevrons was published by the Smithsonian Institution Press in 1982, and my current book on U.S. Army branch insignia will be published by the University of Oklahoma Press in the spring of 1996. I have published over 60 articles on U.S. Army uniforms and insignia in various magazines over the past 25 years, and have been a Fellow in the Company of Military Historians since 1972.

Any assistance *ARMOR* readers might give me concerning the early wear of TCQC patches would be greatly appreciated. Thank you for your time.

WILLIAM K. EMERSON
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Madison, Alabama 35758
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Dashes and Slashes...

Dear Sir:

I was a bit disappointed that the back cover of the September-October 1995 issue contains the glaring error in 'military grammar' of listing our cavalry units as if they were companies in battalions or brigades in divisions instead of the proud squadrons of storied regiments as they should be. Separating the squadron from its parent regiment by a '-' vice the '/' is, of course, the correct way to designate units which are affiliated under the Combat Arms Regimental System, according to FM 101-5-1.

GREG GARDNER
LTC, GS
ACofS, G3
25 ID(L)

LTC Gardner is correct as far as non-regimental cavalry goes. However, a careful reading of the bottom paragraph on page 2-73 of FM 101-5-1 indicates that cavalry squadrons of a regiment are designated with the "/," e.g., 3/3 ACR indicates 3d Squadron, 3d Armored Cavalry Regiment. 1-4 Cav is the proper notation for the 1st Squadron, 4th Cavalry, which is a divisional cavalry unit, and 1-8 Cav is the proper designation for the 1st Battalion, 8th Cavalry, a tank battalion assigned to the 1st Cavalry Division. We regret the errors on the September/October 1995 back cover. - Ed.

Dutch Author Seeks Info on Marmon-Herrington Light Tanks

A Dutch author seeks to correspond with former U.S. Army personnel who had experience during World War II with Marmon-Herrington light tanks. The series included the CTLS-UTAY (T14) and UTAC (T16), CTMS, and MTLS, some of which were used by the Dutch. He's interested in former crewmen, testing and arsenal personnel, and shipping personnel.

Anyone wishing to share information may get in touch with Hans Heesakkers at Akkerstraat 2, NL-5061 DE Oisterwijk, The Netherlands.