ARMOR

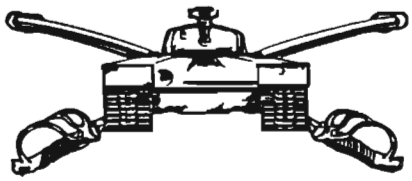
50 Years Ago:

DECISION ON THE RUSSIAN FRONT — PROKHOROVKA

PB 17-93-3

May-June 1993

I was sitting in the dayroom of C Company, 2/9 Cavalry at Fort Stewart, Georgia, one warm October day back in 1977. Our platoon leader (and I confess to have forgotten his name) had all his scouts spread across the plastic VOLAR furniture — the kind that sticks to you and makes you sweat anytime of the year. We were having a Warsaw Pact vehicle ID class, and the image of those slides thrown up against an off-white concrete wall is as clear as if it were yesterday. Divided into teams, we competed to see who could spot the T-62s, BMPs, BRDMs, or whatever else he placed before us. Every once in a while, the LT would mention some characteristic of Soviet soldiers and compare them to us. As best I can recall, my team came in second in the vehicle ID, but I can specifically remember thinking that we were probably underestimating our potential adversary, as we are wont to do in our martial history.



Just how much the world has changed came through loud and clear to me this past month as we were preparing this issue of *ARMOR*. Our managing editor, Jon Clemens, contacted the Russian Embassy in search of some additional photo support for COL (Ret.) Turner's story on Prokhorovka.

"What do you think about writing the Russians to see what they've got," he said one day.

I shook my head. "I don't know, Jon. Do you really think they'd furnish anything? I mean, they're pretty close-hold even now."

"What would it hurt to try?"

"Okay," I said. "I guess it's worth a shot."

To our delight and surprise, a Mr. C. Tarasov, the assistant military attache of the Russian Embassy in Washington responded within in a few weeks. From his archives, he provided us the terrific photos that you see in this issue. He even took the time to hand-letter the envelope and write us a brief, but courteous, note.

Imagine that.

If someone had walked up to us in that dayroom 16 years ago and told us we would receive a personal, hand-lettered response from our nation's new international partner — a democratic Russia — who among us would not have ordered that person a psych-eval? Isn't it great to be trading photos and information, instead of sabot and air-bursts? Mr. Tarasov's letter was even postmarked with an Elvis stamp. Who'd a thunk it?

— J.D. Brewer

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

Milton H. Hamilton

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
03890

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LETTERS

Bring the Blues Back

Dear Sir:

Captain Brace E. Barber's article, "Bring Back the Blues," Jan-Feb 93 issue, is a lot more than an emotional plea or a note of nostalgia. The mission of the "Blues"/ARPs (Aero-Rifle Platoon) was rarely understood by many armor officers who had no cavalry experience. Its capabilities were understood even less by many other combat arm novices. The loss of this small force to pay manpower bills in other organizations is a tragedy. It was a result of the professional ignorance of the Army's leadership of the day. The divisional cavalry squadrons and the regiments need an aero-rifle platoon. Commanders could greatly enhance their mission performance on future battlefields with this unique force.

The need can be stated simply — four rifle squads and four UH-60 Blackhawk helicopters made organic to the cavalry squadron's air cavalry troop. About 40 highly trained scouts/riflemen led by the best lieutenant available, supported by a lift platoon of tough, superbly qualified aviators, crew chiefs, and door gunners, are the basic starting blocks.

The realities of the Army's force structuring will make a comeback difficult; note, I didn't say impossible! The tear down of the armored cavalry squadron, both divisional and regimental, was done without regard to the mission effectiveness of the organization concerned. Armor leaders are correcting part of that reorganization by the replacement of tanks in the divisional squadrons.

The creation of an Aviation branch makes the Aero part of any "new" force difficult.

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The helicopters have long been absorbed in some other mission of "greater" importance. The highly suspect Long Range Recon Patrol forces should be the source of the "Blues"/ARPs.

There are a few active duty senior officers who understand the value of an aero rifle platoon in both the division and the regiment. That fact is the best hope I can see for bringing the blues back; yet after enough time, smart young minds will again see the advantages of an organic, air-mobile, dismountable scout and will invent something new!

JOHN C. BAHNSEN
BG, U.S. Army (Ret.)
Yorktown, Va.

"Human Eyeball Recon" Still a Critical Need

Dear Sir:

My compliments to Captain Brace Barber for his article, "Bring Back the Blues," in the January-February 1993 issue. It was refreshing to see that there are still a few officers on active duty who understand that there is a critical need for "human eyeball reconnaissance" on the "hi-tech battlefield."

The Blues, as Captain Barber points out, were cut from the divisional cavalry squadrons, beginning in the mid 1980s when the Army's senior leadership was swept away by the "Hi-Tech and More Division Flags" mania. While a few of us argued for retaining the Blues, as well as robustness within all our divisional TO&Es, our arguments fell on deaf ears. Other factors, like time and distance from an active battlefield, as well as the fact that few officers ever do really understand the true value of reconnaissance, particularly the human eyeball kind, resulted in the Blues being eliminated.

For all those reasons Captain Barber points out, plus many more, the Blues were a highly cost effective battlefield force. While I would love to see them reconstituted and put back into the divisional cavalry squadron, the issue may be a moot point for argument given the current reductions that are taking place across our Army.

However, if those few officers and NCOs who still remember the value and need for the Blues believe the effort to reconstitute them is worth the fight, then they had better muster quickly. And get probably the only two senior commanders still serving today who also appreciate the value of reconnaissance and the need for the human eyeball kind on the future battlefield to lead the charge — namely MG Paul Funk and MG Dave Robinson. Maybe, just maybe, they can "Bring the Blues Back!"

Good Luck!

CLARK A. BURNETT
COL, Armor (Ret.)
Former Commander,
1/9 Air Cavalry Squadron ('69-'70)

Why We Administer the TCGST

Dear Sir:

In reply to SFC Duezabou's letter "TCGST Needs Revision," which appeared in the January-February 1993 issue, we will begin with the question; Why do we administer the TCGST?

The TCGST is administered to evaluate the tank crewman's basic gunnery skills and as a SAFETY CHECK to ensure that the individual is qualified to participate in live-fire training. The commander also uses the TCGST results to assess his unit's proficiency of basic gunnery skills, safety, and it allows him to do his risk assessment prior to live-fire exercises. AR 385-63 also requires personnel participating in live-fire exercises to be weapons systems qualified. The TCGST is the only tool we have at the present time to meet this requirement. These are the reasons that the TCGST is required prior to firing.

The TCGST is not directly related to the METL tasks of the unit. However, SAFETY is considered the most important METL task of all!! And the TCGST, as said before, is a SAFETY CHECK for the commander to ensure that an armor crewman can perform his duties during a live-fire exercise. Proficiency of basic gunnery skills relates directly to the unit's METL, and TCGST is the only present way to test these skills.

And finally, addressing the issue of who takes what task on the TCGST. FM 17-12-1 with changes 1-3, page 9-4 under the heading "Crew Skills Training," states; "...all crew members must know the duties of the other crewmen, so the loss of one does not destroy the fighting effectiveness of the tank."

Additionally, it must be remembered that gunners in "our" Army are not "school trained" as in many armies throughout the world. Becoming a gunner is a process of crew progression from loader to driver to gunner. These skills are acquired by osmosis; from being around the tank, from observing actual gunners in action and through training by the tank commander, both on the tank and in the COFT. The TCGST is the "test instrument" that helps us assure ourselves that the loader and driver, who are prospective gunners, have at least the minimal "gunner knowledge" and that each is safe to perform in that capacity as he gains experience. If and when "our" Army schooling system develops a course to train "gunners" in a formal course, it may be time to revise testing procedures of the TCGST.

Advanced Tactical Gunnery Branch
U.S. Army Armor School
Fort Knox, Ky.

TCGST Training to Standard Is Baseline Training

Dear Sir:

In response to SFC Duezabou's letter, should TCGST be rewritten? (Jan-Feb 93), I submit that the TCGST IS MISSION ESSENTIAL. Furthermore, SFC Duezabou appears to be concerned about the time element. TIME is an acronym for Training Is Mission Essential.

Battle focused training is peacetime training derived from wartime missions. Critical to the battle focus concept is understanding the linkage between the collective mission essential task and the leader and soldier tasks.

It appears that SFC Duezabou believes that we train to attain the TCGST, not that it is baseline training! As a successful tank commander and master gunner at the state level, I would argue that the TCGST is baseline training.

A tank crew is only as proficient as its weakest member, therefore, AR 385-63 states that we must pass the TCGST within six months prior to live fire. This is a safety consideration.

There are other duties that tankers perform, other than just gunnery. We are also LP/OPs, therefore, it is critical that we know armored fighting vehicle identification, just as it is critical that the loader know the inside of the turret. When on the range or in a field environment, we perform functions that take us away from our assigned duties. When this happens, someone must know how to perform these critical gunnery-related duties.

Yes, we have time if we manage **our** time wisely to train and maintain our TCGST skills. However, if we are not good stewards of this time, we are not giving our soldiers the training that they not only deserve but desire. The tank crew is a family,

one that lives by what **they** know and dies by what **they** don't know!

SFC STEPHEN A. BOOKER
Mississippi Military Dept.
Plans Operations and Training
Master Gunner
Jackson, Miss.

The Gas Turbine is NOT The Tank Engine of the Future

Dear Sir:

I read with interest Major Crawford's thoughtful article in the January-February 1993 issue, "The Main Battle Tank: Future Development — A British Perspective." I must, however, take issue with his contention that the turbine is the powerplant of choice for the next generation of MBTs.

As a tank company XO in Germany, and later DESERT SHIELD/STORM, I was confronted daily with the severe shortcomings of the gas turbine. Though simple in design, it exhibits a high susceptibility to damage from dust ingestion (as well as failures due to the starter, electro mechanical fuel system, etc., ad nauseam). A more serious flaw was the extremely high fuel consumption. Eight hours of run/idle time is unacceptable in a combat situation.

The severe endurance problems of the turbine are illustrated by comparing the fuel and range figures for the M1 and Leopard 2, as quoted in *Jane's.* The Leopard 2 weighs 600kg more than the M1 and is powered by a 1500-hp turbocharged 12-cylinder diesel. It has a maximum range 10 percent greater than the M1 (550km to 498km) while carrying 37 percent LESS fuel (1200 liters to 1907 liters). This range difference is surely magnified if engine idle time is figured into the equation.

We cannot afford the massive logistical tail required to fuel and maintain turbine powered MBTs in this era of shrinking defense budgets. The operational shortcomings that would occur should we be faced by a serious military threat are obvious. These considerations should force MBT designers toward a goal of 24 hours run/idle time using conventional diesels. There is still much room to improve these engines by using ceramic components, which allow increased operating temperature (thus efficiency), eliminate the need for liquid cooling, and cut powerplant weight. Exhaust noise could be reduced or eliminated by using an electronic muffler that cancels out sound and eliminates back pressure (enhancing horsepower).

Acceleration for conventional diesels will probably never be as good as for a turbine. But any tanker would trade a little acceleration for the constant fear of running out of fuel in combat.

WILLIAM J. MCCANNA, JR.
Hoover, Ala.

Good Equipment Today Beats Perfect Equipment Tomorrow

Dear Sir:

ARMOR's recent articles on future tank design have been intriguing and thought-provoking. While advances in armament and armor powerplants and projectiles are fascinating and necessary, there's a technological revolution occurring that seems all but ignored.

Colonel Dobbs, in his prescient article on technology leaps and robotic "crews" (Jan-Feb 93), states that, "Improvements in weaponry have dictated trends toward greater separation of forces and lower force density on the battlefield since warfare began." While separation of forces has been proscribed by greater weapons effectiveness, command and control has kept pace only as communication technology has progressed to permit commanders to receive information about, process, analyze, and respond to events on the battlefield.

Small, on-board radios permitted implementation and coordination of armored units, and hence were crucial to the revolution that was mobile armored warfare. Radio communication was the greatest leap forward for tactical command and control since the introduction of the battle standard. Commanders could have information reported, and make adjustments, within the time it took to receive, process, and send radio messages.

Today, another revolution is taking place in communications. Added to the voice transmission capacity of radio is digital data transmission capacity. Already, salesmen and other remote agents of corporations link with home offices, download files, access changing information, and communicate with others through digital transmissions. It seems shameful that a software developer like myself should have more information accessible in a laptop computer than a battalion commander has available in his TOC.

While I don't propose that platoon leaders be issued laptops just yet, I do think that existing technology can be harnessed to improve command and control markedly. Operations orders should be issued on disks — hand-written orders consume time at every level. Maps can be stored on CD-ROM. Overlays can be generated that are accurate and identical for every leader. A GPS link can show current location on the displayed map. Map updates can be distributed to the field within days, instead of years. Maintenance records can be recorded electronically, and entire libraries of field manuals, technical manuals, and all other publications can be stored on CD, being readily available wherever needed. (Actually, publishing manuals on CD is commonplace in many organizations, including the U.S. Navy). I don't need to elaborate on the advantages to combat effectiveness such advances portend.

For National Guard and Reserve units, remote data access would offer a tremendous improvement in all areas. Bulletin boards could disseminate the latest information, training schedules could be annotated, maintenance records evaluated and reviewed, and correspondence courses made interactive. The greatest hindrance to M-Day leader involvement in unit activities is distance to the armory. Remote data access and communications could help reduce many lost hours currently spent traveling.

While these helps seem less than revolutionary, they would still save countless hours of unproductive time. While "The Old Ways" can't be abandoned entirely, neither can we accept the argument that we cannot rely on technology. If that were the case, we'd still be training gunners in "Kentucky windage!"

I'm not the first (by far!) to see the advantages of the digital age. My only question is: Will the Armored Force wait until all specifications are drawn before designing the perfect digital solution (and wait to make it an integral part of the next generation tank), or, will current off-the-shelf products be purchased and implemented to advantage today? To paraphrase General Patton, "A good piece of equipment available today beats a perfect piece available tomorrow."

2LT WILLIAM D. MCCORMACK
Pennsylvania ARNG
Lancaster, Pa.

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COMMANDER'S HATCH

MG Paul E. Funk
Commanding General
U.S. Army Armor Center

Advanced Warfighting Demonstration of Battlefield Synchronization (AWDBS)

The Right Technology at the Right Time

On the 25th of March, the Mounted Warfighting Battlespace Lab coordinated the efforts of units and agencies from across the Department of Defense to provide key members of the Army's leadership an important glimpse of a battlefield of the future. The Battle Lab's demonstration provided our leadership a baseline look at the potential of digitally linking elements horizontally across the battlefield.

The task force involved in this demonstration was made up of armor and mechanized infantry elements, along with air cavalry and indirect fire support assets. The task force executed a hasty attack, consolidated and reorganized on the objective, and located, engaged, and defeated an attacking enemy force. Information was sent and received with far greater accuracy and speed than ever before possible. Yet, a Threat force eavesdropping on the unit FM net before, during, or after the fight would have heard only the TF commander's "Assault!"

IVIS, or Intervehicular Information System, was the key element in this achievement. It uses digital technology, passed through SINCGARS radios, to enable the task force commander to send information in bursts to his subordinate elements. IVIS also exchanged information horizontally across the battlefield with indirect fire support's Digital Message Device (DMD) and Aviation's Improved Data Modem (IDM).

The demonstration of this technology was a resounding success even before the guests arrived on the 25th. Last December, Phase I of the Battlefield Synchronization Demonstration was run in the simulated environment of the Mounted Warfare Test Bed. The findings of that demonstration provided ample evidence that horizontal digital communication can dramatically help solve many of our most pressing battlefield shortcomings, such as fratricide, situational awareness, and dissemination of information, to include overlays, in a timely manner. The Battle Lab took the December demonstration one step further by placing the technology in the hands of real soldiers in real equipment, specifically on M1A2s, M3A1s, the OH58D, and FIST-V, and demonstrating it under field conditions. The outcomes on 25 March were perhaps more significant because of the absolute realism of the demo and 10-day rehearsal period.

What this system really does is move information across the battlefield more efficiently than we have ever moved it before. In these days of diminishing resources and variable threats, manipulation of battle command information, and the flexibility inherent in that capability, is likely to spell the difference between winning and losing on future battlefields.

Intervehicular communication systems, like IVIS, that pass information quickly across the combined arms will provide us with a battle command

Continued on Page 35

PROKHOROVKA

The Great Russian Tank Encounter Battle with the Germans

by Colonel (Ret.) Frederick C. Turner

Fifty years ago this July, the Soviets met the Germans in a fierce tank battle during the Kursk Campaign, a battle which was to shape events for the rest of World War II on the Soviet-German front. The story of this dramatic and decisive battle and the events leading to it are worth remembering as they describe Russian offensive and defensive techniques which manifested themselves not only at this turning point in the fortunes of war (after which the strategic initiative passed into the hands of the Russians for good), but which have continued to be cited by the Russians as outstanding examples to be studied and emulated in the warfare of the nuclear age.

After the German defeat at Stalingrad in the winter of 1942-43, both the Germans and Russians began to make plans for the forthcoming summer. Although the Germans considered a possible strategic defensive operation designed to wear down the Russians and encourage them to be receptive to a negotiated settlement, the final decision was for a limited offensive on the central front, a pincer movement against the Kursk salient to encircle about a million Russians believed to be concentrated in that area. If successful, the operation could then swing north toward Moscow or south toward the Ukraine, Caucasus, or Volga areas. This operation was to be called "Citadel," and it would be followed by an operation to seize Leningrad.

After Stalingrad, the Soviets were ready to plan and undertake their first major summer offensive. By early 1943, they considered that they had superiority, both in manpower and equipment, and their units had developed an operational capability which would permit them to defeat the Germans in summer as well as winter. The Soviet Russians learned in February, through a German officer of Slavic parentage stationed in Rome, that a high-level German-Italian strategy meeting had discussed a major summer offensive to take place in the center of the front, probably between Orel and Kharkov. Likewise, in April, within three days of the issuance of Hitler's order on the Kursk offensive, the Russians had a copy and knew of the detailed German plans for the offensive, including concept, probable axes of advance, units to participate, personnel and equipment strength, probable reserves, and the approximate time-frame for the operation — at that time, June.

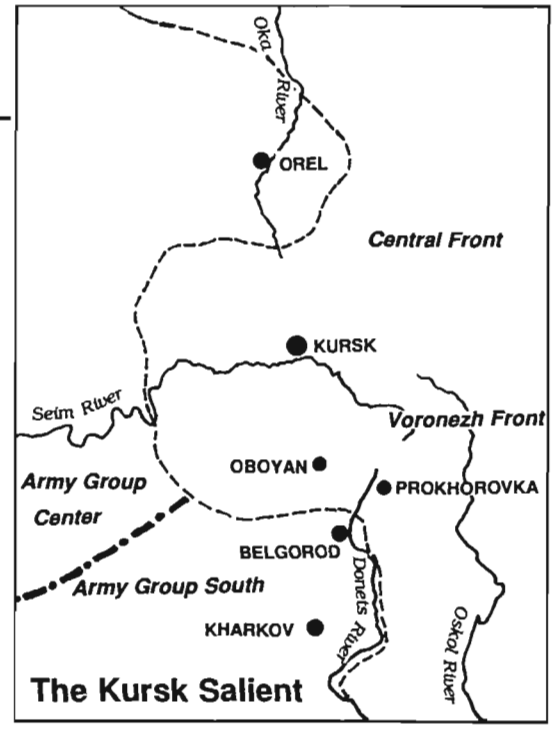
The Soviet Supreme High Command (VGK) decided to prepare to repulse

the expected mass tank attacks from the direction of Orel and Belgorod toward Kursk, wear the Germans down through a series of deeply echeloned antitank defenses, and then launch a counteroffensive to seize Orel and Belgorod and recover parts of Belorussia and the Ukraine. A key element in the plan was the creation of a new front (army group), the Steppe Front, in the rear along the Don River. This newly created front soon became the strongest reserve formation of the entire war, with six armies as well as five independent tank and mechanized corps. For the 5th Guards Tank Army, the principal armored striking force of the new front, the VGK assembled new tanks and some of the most experienced armored commanders and tank crewmen.

The area for the forthcoming operation was an open steppe with a few ravines and gullies. Front defenses were organized along three defensive lines: a main, a secondary, and a rear, with each line fortified to a depth of about three miles with antitank strong points, mines, demolition obstacles, and five lines of trenches connected by communication ditches. The Central and Voronezh Fronts had armies echeloned in depth, and the Reserve Front had two defense lines, the second behind the Don River. This totaled eight defensive lines throughout a depth of 150 to 180 miles. The troops and the civilian population started construction of the defensive positions in late April and continued until the German attack commenced. Fortified villages, artillery emplacements, earth pillboxes and breastworks, trenches, roads, railroads — all were constructed and developed to facilitate defense. Some 400,000 mines were laid, with the expected axes of approach receiving more than 2,400 antitank and 2,700 antipersonnel mines per mile of front. The Central and Voronezh Fronts received 92 artillery regiments from the strategic reserve, thus providing the two fronts with over 20,000 artillery pieces and mortars, including 6,000 antitank guns. Some 920 rocket launcher battalions with "Katusha" rockets increased the firepower even more.

As the time for the German attack was postponed, the Soviets considered launching their planned offensive operations, but finally decided to wait until August to see if the Germans would attack. On July 2, 1943, the Soviets learned that the attack would probably be launched during the following four days. On July 4th at about 1800 hours, a soldier from a German combat engineer unit that had been clearing minefields and wire entanglements crawled into Soviet Voronezh Front positions and surrendered. He was a Slovene (Yugoslav), and he said that the tentative time for the attack was set for the following morning — July 5th. Later that same evening on the Central Front, to the north, a captured POW told his interrogator that the units were in the attack positions and the attack was to commence at 0300 hours, after a 30-minute artillery barrage. The Soviets preempted this artillery preparation, knocked out much of the German control and communications facilities, and delayed the northern pincer attack for three hours.

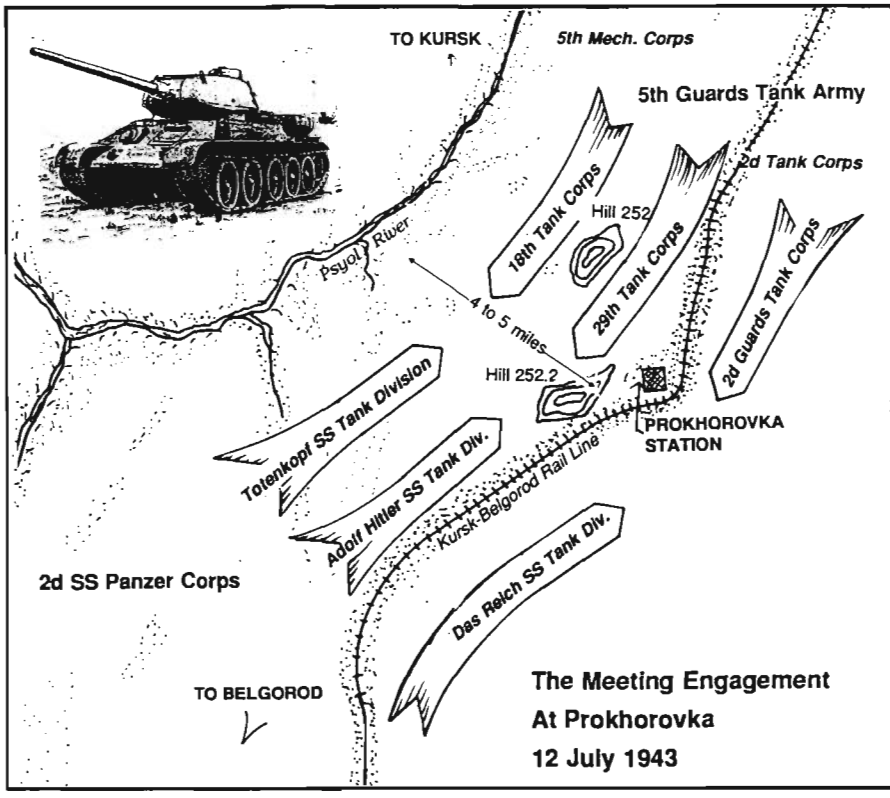
For the next five days, hundreds of German tanks attacked toward Kursk from the north and the south. Soil trafficability in the area was unfavorable during rain, and it rained considerably during the first week of the offensive. In the north, the panzers progressed about five miles on the road axis and nine on the rail axis while suffering heavy tank losses. In the south, the II SS Panzer Corps opened an 18-mile-wide breach in the Russian second line of defense, approaching on the main road axis to within 15 miles of a key river-crossing site at Oboyan.



The Kursk Salient

By the end of the fifth day (July 9th) of this titanic struggle, the Russians had decided to commit the strategic reserve of the Steppe Front in a flank attack. The 5th Guards Tank Army started a 200-mile night march toward the Prokhorovka area with a mission to counterattack westward through the four-to-five-mile-wide corridor between the Psyol River and the Belgorod-Kursk railroad embankment. The attack was to penetrate to a depth of 18 miles with two or three tank corps abreast. The Russians thought that a strong flank attack by this tank army might catch the Germans by surprise, impede a river crossing at Oboyan, and prevent further movement toward Kursk. German records of the II Panzer Corps on July 9th stated that resistance on the main road axis had now become so great that no further progress could be made, and heavy rains were affecting trafficability.

On the sixth day (July 10th), as the rains continued, German air reconnaissance reported that the river was flooded at Oboyan. The marshy, swampy area would now be extremely difficult, if not impossible, to cross.



As the Germans watched the river-level rise, they searched for another way to reach Kursk, one which wouldn't involve an opposed river crossing in which the Soviets held a town and high ground overlooking a flooded marshy approach. German spirits were further dampened by the news of the Allied landing in Sicily, and a decision was made to launch one final major effort to break through the Russian positions using an alternate southern approach to Kursk along the rail axis. Although somewhat longer in distance, the use of this axis would avoid an opposed river-crossing, hopefully surprise the Soviets, and allow the Germans to break into the open country to the northeast of the rail station at Prokhorovka where they could encircle and trap the Russian forces at Kursk. The 4th Panzer Army turned the road axis over to the 48th Panzer Corps and redeployed the II Panzer Corps to the eastern shoulder of the salient. There it began to conduct probing attacks to the northeast along the rail axis with the Adolf Hitler Division just north of the railroad line and the Totenkopf and Das Reich Divisions on its left and right flanks. The plan was to launch the new attack on Kursk early on the 12th of July. POWs captured during the initial probing attacks reported the arrival of a tank army and orders that front line positions were to be held until a counterattack was launched. A new Soviet combined arms army (5th Guards Army) was also identified in the area.

The stage was now being set for a head-on tank encounter along the narrow corridor between the Psyol River and the railroad embankment along which ran the Belgorod-Kursk rail line. Neither adversary knew of the other's specific attack plans, although in retrospect each had indications of the presence of large numbers of tanks and key units in the area from POW interrogation, signal intelligence, and aerial reconnaissance. German Luftwaffe operations at Kursk employed 1,000 first-line aircraft, 50 percent of the aircraft available on the Russian Front. These were concentrated at the point of the main effort. Despite this enormous air activity (with 3,000 sorties per 24 hours and dive bombers flying as many as 5-6 sorties per day), the Russians matched it, and the German Luftwaffe could not, at any stage, secure decisive air superiority.

On July 11th, the Germans moved toward Prokhorovka from the west (II SS Panzer Corps) while the XLVIII Panzer Corps kept up pressure on the road axis toward the river-crossing site at Oboyan. In the Prokhorovka area, the Adolf Hitler Division attacked at 0450 to seize the higher ground (elevation 252.2) just west of the rail station. The division broke through the Russian infantry positions, overran artillery, repulsed a tank counterattack, and caused heavy casualties. A message to corps headquarters reported that the division had taken Knoll 252.2 overlooking Prokhorovka by late afternoon, that 99 enemy tanks had been destroyed, and that 245 POWs were captured and 114 deserters picked up. The German corps commander (Hausser) concluded that a major attack through the Prokhorovka Corridor, with elements of the Totenkopf (Death's Head) Division on the left, the Adolf Hitler Division on the right, and Das Reich (Empire) Division echeloned in reserve on the right flank south of the rail embankment, was needed to seize Prokhorovka and open the way for the German panzer troops to reach Kursk. With this limited success (an advance of about two miles) on July 11th, Hausser decided to commit all his forces, go for broke, and launch the all-out attack on the morning of July 12th.

The Russians had been pushed back July 11th and had lost both their artillery and the planned line of departure for the counterattack. Nikita Khrushchev, the political officer responsible for that sector of the front, was reported to have warned, "The next two

days will be terrible. Either we hold or the Germans will take Kursk." The Soviet attack order for the morning operation on July 12th was issued at 1800 hours on the 11th and a supplementary map order was given at midnight. The 5th Guards Tank Army attack through the corridor was to be made with two tank corps abreast (each with two tank brigades forward, followed by a mechanized brigade). Each tank corps (XVIII and XXIX) would have about a two-mile front with a density of about 70 combat vehicles per mile.

Thus, after an entire week of continuous combat, the stage was now set for a decisive battle. At 0400 on the morning of July 12th, the Russian commanders met at the 5th Guard Tank Army (5GTA) observation post where the front commander (Vatutin) and the political commissar (Khrushchev) confirmed the planned operation and ordered the 5GTA to attack and destroy the enemy.

Shortly after first light, aerial combat commenced as German and Russian aircraft attacked each other's armor. These attacks did not cause serious damage to either side. Nevertheless, the tanks of the panzer corps had been in combat for a week, were in need of maintenance, and faced the ever-increasing danger of battlefield breakdowns from mechanical failure, whereas the 5th Guards Tank Army was fresh, rested, and in a good state of maintenance and training.

At 0600, the leading Soviet tank brigades were in attack positions. Because of a shortage of supporting artillery, the loss of the artillery observation posts, and the threat of a German link-up on the south flank, the time of the Russian attack was moved forward from 1000 to 0830 hours and the artillery preparation was reduced from 30 to 15 minutes. It was hoped that this change would also facilitate surprise.

According to the commander of the 5th Guards Tank Army (General and later Marshal Rotmistrov), the Soviets had 850 pieces of armor, including two units of SU-85 SP guns on T-34 chassis, the excellent T-34 medium tanks, and a large number of light tanks; he gave the German armor strength as 700. German figures listed the Panzer Corps strength before the battle as 500 tanks and Ferdinand SP guns (including 100 new King Tiger heavy tanks) and estimated the Soviet 5th Guards Tank Army strength as 800-850 tanks and SPs.

That July morning, on the narrow four-mile-wide strip of land lying west of the rail station of Prokhorovka (sometimes called Andreyevka), between the Psyol River on the north and the Belgorod-Kursk railway embankment on the south, the two steel armadas stood poised to conduct a massive tank attack. The corridor was generally flat, except for gullies where the ground sloped down to the river in the north and where several villages extended along the river bank. There was one knoll (252.2) which the Germans now held west of Prokhorovka and another knoll north of the rail station which served as the Russian OP. The soil in the area dried easily and quickly, resulting in an unusually dusty area when crossed by numerous tracked vehicles.

At 0830, the countryside around Prokhorovka resounded to the sound of moving tanks that sent huge clouds

of dust into the air. Neither adversary knew of the other's specific attack plans and timetable. With the XVIII and XXIX Tank Corps abreast across the corridor from north to south, and the II Guards Tank Corps south of the railway embankment, and with the II Tank Corps and V Mech Corps in reserve, the 5th Guards Tank Army started to move southeast. Meanwhile, the German II SS Panzer Corps, with the Totenkopf and Adolf Hitler divisions on a line from north to south across the corridor and the Das Reich Division south of the railroad, began an advance northwest. In the corridor, the two Russian tank corps and the two German panzer divisions approached each other in combat formation like lines of jousting knights. Two approximately equal forces of armor were on a collision course, each advancing in a tremendous dust cloud. The sun in the east behind the Soviet tanks helped illuminate the leading German tanks and blinded the German gunners. As the armored waves thundered toward each other, both hoping and planning to surprise its adversary, the XVIII Tank Corps was approaching the Totenkopf Division head-on in the north and the 29th Tank Corps moved toward the Adolf Hitler Division in the south near the rail embankment. Never, in the 27 years since the introduction of the first tanks in combat in September 1916 in France, had there been a charge of armor on such a massive scale.

The Russian tanks were initially on slightly higher ground and were

faster, but the German panzers had thicker armor, larger guns, and high-velocity ammunition. Some of the German Tiger tanks and Ferdinand self-propelled (SP) guns stopped and took the Soviet tanks under fire. A number of Soviet tanks were knocked out, but the rest rolled forward, firing on the move and closing the gap rapidly. As the two masses of tanks closed the final several hundred yards, the Russians had two tank corps, each with two tank brigades abreast, battalions in columns of companies in line. Behind the leading tank brigades followed a mechanized brigade. By Soviet calculations there was a density of 70 tanks and SPs per mile of front (not including the second echelon forces to the rear). The Germans, with major elements of two panzer divisions abreast, moved forward with line after line of tanks and SP guns.

The two phalanxes closed the gap and smashed into and through each other, literally and figuratively. Combat formations dissolved once the leading elements had entered each other's advancing lines. The heavy German Tiger tanks lost the advantage of heavier armament and greater range as the lighter and faster Russian tanks fired at close range from the flanks and rear. Command and control were lost, and a series of individual and small unit tank battles began as each force poured into the rear of the enemy. With the river on one side and the rail embankment on the other, there was little room for maneuver. Fire was point blank. Any hit by a German Tiger tank or Ferdinand SP gun was usually a kill, but the more maneuverable Russian T-34s often fired from the flank and rear of the heavier German armor. In the blinding storm of choking dust, acrid black greasy smoke, roaring engines, blazing tanks, and exploding ammunition, a wild and confusing melee ensued. Tanks burst into flaming torches as armored vehicles faced, fired, and moved in all directions. The firing was so intense that, according to one surviving veteran with whom this author spoke during a visit to the battlefield in the late 1970s, "the earth here on the edge of the Chernozem (Black Earth Region) was literally on fire and turned black from the explosions of shells and bombs."

Through the smoke, fire, and haze, armored units milled around in confusion. No quarter was given, shown, or expected as dismounted tank survivors were machine-gunned and run down by tanks, and strafed and bombed by aircraft that couldn't tell friend from foe amid the smoke covering the battlefield and the aerial dogfights above.

During the morning, the Russians initially pushed back the Germans. About noon, the Adolf Hitler Division reported to II Panzer Corps that a breakthrough near knoll 252.2 had been repulsed by 1115. II Panzer records show the Adolf Hitler Division calling at 1100 hours for an emergency delivery of ammunition and reporting that by 1000 hours some 100 enemy tanks had been knocked out; at 1130 came a second feverish call for ammo. At 1400, the Totenkopf Division reported an urgent need for ammo resupply.

The battle seesawed back and forth throughout the day as both sides com-

mitted reserves, attempted to reorganize, and tried to seize the initiative. Stalin ordered Marshal Zhukov to fly from the Bryansk sector to the Prokhorovka area where the fierce tank battle was in progress. He was directed to study the situation and coordinate the operations of the Voronezh and Steppe Fronts.

"This day-long battle of the titans 50 years ago had proved to be the "swan song" of German armor and the high water mark of the last German strategic offensive on the Eastern Front; after Prokhorovka, the Germans went on the tactical and strategic defensive, and the strategic initiative passed into the hands of the Russians for good."

Initially, in the early morning, the battle involved almost no infantry as it expanded to a depth of two to three miles (across four miles of front) with the fast Russian T-34 tanks streaming over the battlefield. There was no opportunity to reform ranks or reorganize companies and battalions, and groups of Russian and German tanks combined into "rat packs" to attack and defend against similar marauding bands. Later, about noon, as heavy rain showers lessened the dust, German and Russian infantry entered the battle in the north along the river and the built-up strip where the XVIII Tank Corps battled the Totenkopf Division. Meanwhile, troops of the XXIX Tank Corps, supported by an SP artillery regiment and units of the 9th Guards Airborne Division, were slugging it out with the Adolf Hitler Division in the southern sector of the corridor.

The German Luftwaffe and the Red Air Force were unable to help their tankers on the ground. The air battle degenerated into a series of aerial dogfights and attacks on the enemy rear to prevent reinforcements from moving up and ammunition from being delivered to the combatants. Once the battle had been joined and the formations mingled, supporting artillery could not fire except on the flanks and against reserves and supplies in the rear.

Amid this kaleidoscope of blazing guns, roaring engines, flaming tanks, smoking hulks, and exploding ammunition, the Panzer Corps received reports that ammo couldn't be delivered to the front because of the battle in progress, that German Stuka dive bombers were bombing and strafing Tiger tanks, and German antiaircraft artillery was shooting at German reconnaissance planes. The II SS Panzer Corps commander also severely criticized his subordinate commanders for poor reporting and emphasized the need for rapid situation reports.

In the afternoon, the Adolf Hitler Division reported that several Russian tank-infantry and tank attacks, together with heavy rain, were affecting the battle. In the north, where the Totenkopf Division and the XVIII Tank Corps were squaring off, the tank corps, after committing its second echelon about noon, made more progress as the tank, infantry, artillery, and mortar units fought in, over, and around the gullies and built-up strip along the river. Part of the V Mechanized Corps was committed to help XVIII, while other elements were committed to secure the flanks. Das Reich Division, engaging the II Guards Tank Corps south of the embankment, reported Russian tank attacks about midday and a local breakthrough which had been repulsed by a counterattack. Whereas the Russians had advanced during the morning attacks against the Totenkopf Division in the north, the Germans advanced in the afternoon in the south as the Adolf Hitler and Das Reich Divisions committed reserves.

After a day-long battle of attacks, counterattacks, ambushes, and heavy fighting over, through, and around the open countryside and collective farms and villages, night fell across a battlefield illuminated by the fiery hulks of tanks and planes destroyed during the day-long battle, and the line of contact was finally stabilized. The Adolf Hitler Division had more than held its own against the XXIX Tank Corps in the south, while to the north the Totenkopf Division had been forced to give ground south of the river and pull back about a mile to the west.

As both sides licked their wounds, assessed their losses, and took up defensive positions, the mission given to the II Panzer Corps for 13 July was to continue the attack on Prokhorovka. II Panzer Corps reported that the enemy attack had involved elements of at least nine tank and mechanized corps — an attack which had been repulsed; but the attack to the east to seize Prokhorovka could not be carried out. Field Marshal von Manstein, the commander of Army Group South, "thanked and recognized the divisions of the II Panzer Corps for the great success in the battle." Both Soviet and German records and accounts are replete with acts of individual heroism, and innumerable examples of daring exploits were chronicled by the Russians in the years and decades to follow.

As losses were compiled, it became evident that the panzer corps had lost between 350 and 400 tanks, and the

surviving armor was in poor mechanical condition and short of ammo and supplies. In addition, there had been heavy losses in supporting infantry and aircraft. The Soviets claim to have shot down more than 20 German planes. According to Rotmistrov, his 5th Guards Tank Army had knocked out 400 tanks (including 70 of the 100 new Tigers), 88 guns, 70 mortars, 300 vehicles, and had caused about 10,000 casualties.

Soviet losses were estimated at 300 to 350 armored vehicles and the 5th Tank Army was unable to carry out its mission to reach and seize Yakovlev and Pokrovka. At the conclusion of their day-long encounter, the Germans still had about 350 tanks in operation and the Russians about 500. The Germans were a little further east than where they had started that morning along the railroad embankment, but the Russians had gained ground in the north along the river. Like the encounter between the *Monitor* and the *Merrimac* in Chesapeake Bay during the Civil War, neither side was defeated in the battle, which had been practically a stand-off. Both sides had sought decisive results, but had ended up doing little more than stopping the enemy attack.

In the aftermath of this epic battle, on the following day (13 July), Hitler relieved the SS Corps commander, ordered an end to the attack and "Operation Citadel," and directed a redeployment of the SS panzer divisions westward in response to the Allied landing in southern Europe. The panzer corps moved to Italy in late 1943, and to France in 1944 (where the Adolf Hitler Division became better known for its role against U.S. forces during the Battle of the Bulge that December).

This day-long battle of the titans 50 years ago had proved to be the "swan song" of German armor and the high water mark of the last German strategic offensive on the Eastern Front; after Prokhorovka, the Germans went on the tactical and strategic defensive, and the strategic initiative passed into the hands of the Russians for good.

ARMOR wishes to thank C. Tarasov, the Assistant Military Attache of the Russian Embassy, Washington, D.C., for his help in locating the photographs that were used to illustrate this story.

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Screen in Depth

by Christopher D. Kolenda

FM 17-98 covers screening operations at the platoon level, but it only covers the basic platoon deployment for a mission requiring observation on three avenues of approach. A lot of platoons get into trouble when they receive a mission to cover one or two avenues, a type of mission prevalent at the CMTC and NTC, where the terrain restricts the enemy. While this mission may seem easier, many platoons fail to take advantage of the narrower frontage by adding depth to their screen.

I have had the opportunity to watch several platoons execute screen missions at CMTC and on ARTEPs, and I have seen the same improper decisions with nearly every platoon when screening one or two avenues of approach. The most common decision when screening two avenues is to use the two section configuration, with one section on each avenue, in an attempt to employ the concept of maximum reconnaissance forward. Likewise, when the platoons only screen one avenue, they use the two section configuration with both sections covering the same avenue. While this may be acceptable by FM 17-98, it is often not the best decision, because the scouts invariably sacrifice the advantage of a stationary observation post during displacement.

The most dangerous task for a scout on a screen line is displacing. Maintaining continuous surveillance along an avenue of approach is extremely difficult during displacement. Often, the displacement causes the scout to sacrifice either surveillance or security. The ideal displacement route is covered and concealed, and allows the scout to occupy the next observation post undetected. Realistically, this causes problems. The displacement route is usually longer than the route the enemy has to travel, which often causes the scout to arrive late. Second, the scout is often forced to lose observation along the avenue of approach until he arrives at his subsequent observation post.

By deploying the scouts so they can maintain continuous observation along the depth of the avenue of approach, they don't have to sacrifice surveillance or security by displacing in front of the enemy.

If the scout opts for a route which allows him surveillance along the route during displacement, he sacrifices security. If the scout can see the enemy, the enemy can see him, especially if the scout is moving. Although this may seem simplistic, it happens too frequently to go unmentioned.

When the platoon has the mission to screen only one or two avenues of approach, it makes better sense to use a screen in depth. By deploying the scouts so they can maintain continuous observation along the depth of the avenue of approach, they don't have to sacrifice surveillance or security by displacing in front of the enemy.

Figures 1 and 2 illustrate a screen in depth using terrain similar to that found at CMTC along the avenue of approach leading to the "Baldy Bowl." In each case, the platoon deploys along the depth of the avenue of approach. This gives the platoon and the main body several advantages. First, the platoon can report on the location and movement of the enemy along the entire avenue of approach without moving. One observation post identifies the enemy, then passes the enemy to the next observation post. The scouts remain undetected, which inhibits the enemy's ability to template the location of the main body.

Second, the scouts can report the location and movement of subsequent echelons before they can influence the battle. This gives the commander the opportunity to structure the ongoing fight, while simultaneously bringing his combat multipliers to bear on the next echelon using early and accurate information from the scouts, rather than having to rely solely on doctrinal templates and rates of movement. This synchronization is the key to fighting outnumbered and winning.

Last, a screen in depth will dramatically enhance the scouts ability to survive. The observation posts are virtually undetectable due to their static nature. The scouts are not forced to displace in front of the enemy. Instead, the scouts can displace between echelons if they need to collapse the screen line with a minimum security risk.

Some will argue that a screen in depth will violate the principle of maximum reconnaissance forward. I disagree. The intent of the principle is to provide maximum reconnaissance forward of the main body and render timely and accurate information to the commander. A screen in depth is certainly in keeping with this principle. It

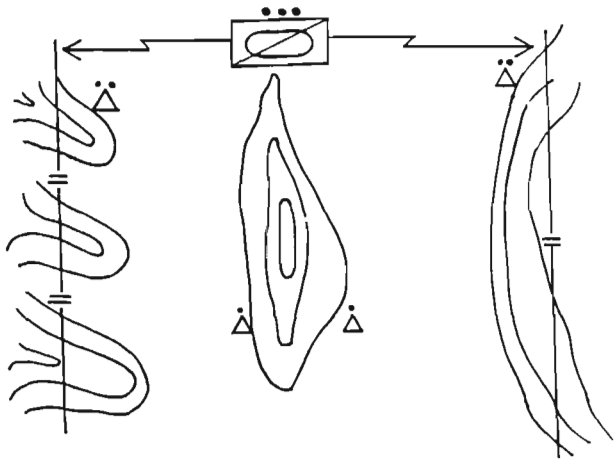

Figure 1. A platoon screens two avenues of approach for a battalion. A and B sections are forward, with C section in depth and capable of observing either or both avenues of approach. Once the enemy moves past the forward observation posts, the A and B sections pass the enemy off to the C section.

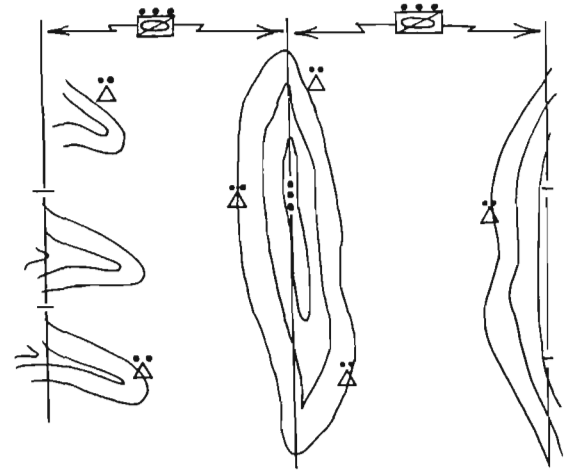

Figure 2. An armored cavalry troop is screening two avenues of approach, with one platoon on each avenue. Each platoon has one section forward and two sections deployed in depth. As in Figure 1, each section passes the moving enemy to the next section, then reorients observation forward to pick up the next echelon.

provides depth to the reconnaissance effort, rather than maintaining a strictly linear screen.

Our doctrinal manuals are designed to provide a foundation to our reconnaissance efforts. They cannot attempt to cover all circumstances. A screen in depth is consistent with our doctrine. It merely adds depth to our otherwise linear reconnaissance efforts. I highly recommend platoons and troops use a screen in depth whenever they are faced with reduced frontages and fewer than three avenues of approach per platoon.

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Army's Safety Challenge For Fiscal Year 93

Fiscal Year 1992 (FY92) was the Army's safest year on record. The payoffs to the Army as a whole were substantial in lives saved, higher state of readiness, and reductions in overall accident costs. In the November 1992 issue of *Countermeasure,* the U.S. Army Safety Center highlighted the tremendous savings to the Army during FY92: 20 percent fewer accidents, 112 fewer fatalities, and more than $100 million savings in accident costs over FY91. The FY92 accident record presents the Army with the challenge of making FY93 even better, educating soldiers at all levels regarding the FY92 highlights, as well as shortfalls, identifying specific problem areas and associated corrective actions, and stressing to soldiers that **they** are the vital link in any further accident reductions.

Some specific problem areas that directly impact Armor soldiers were highlighted:

•Wearing Jewelry, Especially Rings. The number of injuries to soldiers wearing wedding, school, and other rings is frightening. During Operation DESERT STORM, this accident category proved to be one of the most serious areas of concern. Soldiers suffered amputations because of rings being caught on equipment. During FY92, 14 soldiers lost fingers because of this. The Safety Center states, on average, one soldier per month loses a finger while wearing jewelry on duty.

•Fatalities. There have been seven Armor soldiers killed during FY93 compared to six during all of FY92. The major cause was wrecks involving privately owned vehicles (POV). This is not only an Armor Force problem, because POV accidents kill and injure more Army soldiers each year than all other accidents combined.

Safety Notes for the Abrams-Series Main Battle Tank:

•Halon tubing on the Abrams is located on the floor of the engine compartment and can get clogged or covered by leaves, dirt, sand, etc. It is essential for the tubing to be free from debris for the fire suppression system to function. Inspect halon tubing to ensure that it is free from debris, especially on tanks coming from Southwest Asia.

•A lesson learned the hard way from Operation DESERT STORM is that whenever an Abrams is towing another Abrams, a heat shield **must** be used on the towing vehicle. The intensity of the heat is so high that the vehicle being towed has caught on fire.

An M1A2 rolls out of the C5B that carried it to Kuwait for evaluation as the desert nation's new main battle tank.

M1A2 Abrams Tank Trials In Southwest Asia

by Major John C. Paulson

The first production M1A2 tank rolled off the line at Lima Army Tank Plant on 1 December 1992, the first of 62 production tanks for the U.S. Army. The Army also plans to upgrade over a thousand M1 (105-mm) versions to the newer M1A2 (120-mm) configuration beginning in 1994. The M1A2's outstanding performance makes it the main battle tank of choice for Saudi Arabia, which will purchase 315, and Kuwait, which will buy 236 M1A2s. At the time, the United Arab Emirates and Sweden were also looking at the M1A2 for their future main battle tank.

Technical testing is ongoing at Aberdeen Proving Ground and Yuma Proving Ground. The initial Operational Test and Evaluation (IOTE) will evaluate a company of M1A2 tanks in an operational environment this fall at Fort Hood, Texas. The First Unit Equipped (FUE) for the U.S. Army is currently slated for the third quarter of FY 95.

The M1A2 retains the best features of the Abrams family: 120-mm main gun, reliable and powerful drive train, and the heavy armor package. Some of the major enhancements on the M1A2 are the InterVehicular Information System, 1553b Data Bus, Commander's Independent Thermal Viewer, Improved Commander's Weapon Station, a position navigation system, and Built-in Test and Fault Isolation. These major improvements, along with other enhancements, make the Abrams even more fightable, and bring the tank into the 21st Century.

A team composed of soldiers from the Abrams Project Manager's Office and the U.S. Army Armor School, along with personnel from General Dynamics Land Systems, recently took two M1A2s through a grueling series of desert trials in Southwest Asia at the request of Saudi Arabia, Kuwait, and the United Arab Emirates. The purpose of the exercises was to provide tankers of the three Arab nations the opportunity to put the M1A2 through a series of mobility, firepower, and maintenance trials on their home turf to see just how well the tank would perform.

Two M1A2 tanks were flown by C5B aircraft to Saudi Arabia and Kuwait in July for month-long performance exercises. In October, both tanks were shipped via merchant vessel from Kuwait to the United Arab Emirates for the final leg of the desert tour.

The M1A2 posted great results in all three desert regions. In Sharourah, Saudi Arabia, soldiers from the Fort Knox M1A2 New Equipment Training (NET) team trained the Saudi crew members using the tank, and table top trainers. Using the tank's Po-

sition Navigation (POS/NAV) system, the crews completed a challenging 148-kilometer navigation course consisting of 15 way points. The U.S. and Saudi crew members fired a total of 102 main gun rounds during the demo. The exercise was a huge success. The Saudi soldiers and leaders were very impressed with the overall performance of the tank.

The Kuwaiti trial pitted the M1A2 against the British Challenger II. Throughout the month of August, with temperatures routinely ranging between 125 and 132 degrees Fahrenheit, the M1A2 went head-to-head against Challenger II to help determine which tank the Kuwaiti Army would buy. The M1A2 acheived superb results during the trials. The exercises were performed primarily by Kuwaiti crews. The Fort Knox M1A2 NET team trained the Kuwaitis on the Abrams.

During the mobility trials, the Abrams repeatedly outran the Challenger on the flat desert sands of the Kuwaiti countryside.

During the hilly cross-country mobility run, the Challenger failed, after several attempts, to take a soft sand slope of 30-40 percent, 25m in height. When the Challenger finally backed off, the M1A2 took the hill on the first try with power to spare. The Kuwaiti evaluators were extremely impressed.

During the gunnery portion, both tanks fired for accuracy at various cants, pitches, and distances. Using a full Kuwaiti crew, the M1A2 performed well, hitting six out of six targets at 1500m. The Challenger II's performance was less impressive.

The British and U.S. crews each fired their own tanks at a 3810m target (an Iraqi T-55 shell). I observed both tanks fire and went downrange to inspect the results. The M1A2 hit one out of two with M829 SABOT. The Challenger fired High Explosive Squash Head (HESH) in an indirect fire mode, and after a series of ten shots, placed a three-round shot group within 20m of the target.

Above and at right, the Abrams tackles the soft sand slope test in its mobility demonstration. The competing British Challenger II had difficulty in this test. Below, the Abrams demonstrates its speed racing across the desert in another evaluation of the tank's mobility. Kuwait, Saudi Arabia, and the United Arab Emirates are all in the market for new main battle tanks and are evaluating the British DESERT STORM veteran and the improved version of the U.S. tank. The UAE recently indicated it may choose a third contender, the new French Leclerc MBT.

Desert Duel

Challenger II, foreground, and M1A2 in Kuwait gunnery trials, where the Abrams hit 83 of 94 targets.

Below left, demonstration crew loads two-piece ammo on the Challenger II.

Far right, the M1A2 in Kuwait mobility trials.

Particularly impressive was the U.S. crew's hunter/killer performance with the M1A2 using the Commander's Independent Thermal Viewer (CITV). The M1A2 hit four out of four hard targets in 32 seconds. The Challenger was timed at approximately 30 seconds longer.

In all, based on my observations, and checking the Kuwaiti evaluators preliminary results, the M1A2 hit 83 out of 94 targets at ranges between 1000 and 3000m. The Challenger II did not fare as well at the same distances.

The maintenance portion of the trial was more instructional than competitive. The Kuwaitis were impressed by the ease of maintenance, Built-In-Test diagnostics, and that no Line Replaceable Units (LRUs) were replaced due to failure from high temperature.

The U.A.E. demo was notable for the tanks' superb automotive performance in the wide variety of desert terrain found there. The U.A.E. terrain varies from hard flat desert sand like Kuwait, to a green desert with scattered trees, shrubs, and low level vegetation, to rocky cliffs. There are also high desert dunes composed of extremely fine sand that gives way with minimal pressure. With the exception of one thrown track when negotiating a 300-m high dune, the M1A2 power train and suspension handled the ground well. The T-158 track proved very strong and durable, allowing the U.S. tank team to walk the thrown track back on the tank and continue on a 60-km road march the following day.

Other great performances by the tank in the U.A.E. included sending an overlay for a 100-km road march via the Intervehicular Information System (IVIS) between the two tanks. The Position Navigation (POS/NAV) system worked extremely well on a 35-km course with varying terrain ranging from flat ground to small and medium-high sand dunes. The course consisted of six survey points given to the tank commander to set as way points in his Commander's Integrated Display (CID). The U.S./U.A.E. combined tank crew was right on the money, navigating accurately to all six points.

The U.A.E. exercises concluded with an exceptionally impressive firepower demonstration viewed by many of the top military and civilian leaders of the Emirates' armed forces, and the U.S. Ambassador. The demo scenario called for stationary and high speed moving engagements with multiple targets. The M1A2 and U.S. crew again shot extremely well, with the tank hitting four for four on the Hunter/Killer portion of the demo.

In mobility, firepower and maintainability, the M1A2 proved itself in a world class tank competition. More importantly, the U.S. Army and its Arab allies found that the tank's performance exceeded expectations in three distinct, harsh desert environments.

Major John C. Paulson is a 1981 graduate of the U.S. Military Academy. He received his commission in Armor, and after AOB and Ranger School, was assigned to 2-64th Armor in Schweinfurt, Germany, where he served as an M1 tank platoon leader and company XO. After the Advance Course, he served in the Maintenance Dept., USAARMS; brigade staff, 194th Armored Brigade; and as company commander, A Troop, 2-10 Cav. He is currently serving as chief, PM Abrams Field Office, Aberdeen Proving Grounds, Md. He has been working with the M1A2 since it began Technical Test in March 1991. He also participated in the M1A2 Early User Test and Evaluation (EUTE) and the Southwest Asia 1992 tank trials.

The Aviation LNO — What You Should Expect

by Major George E. Hodge

As the modern battlefield becomes more lethal, and the need for fast moving, hard hitting, flexible forces becomes necessary, it is readily apparent that aviation forces will undoubtedly play a significant role in this design. One of the key players in assisting the ground maneuver commander and his staff is the Aviation Liaison Officer (LNO). This officer represents his commander and his unit capabilities. He should be a valuable asset to the ground commander's staff and an integral part of the planning process. The LNO, under ideal conditions, will be a former aviation company commander with considerable combined arms operations experience. Due to personnel shortages and other requirements, quite often the LNO is a senior lieutenant who has not yet commanded, but is still one of the aviation commander's "first-round draft choices" and is of company command caliber nevertheless.

The LNO will join the ground maneuver headquarters and integrate with the staff as part of the estimate and planning process. The TF commander can expect him to recommend methods of employing aviation forces to best support the scheme of maneuver. The LNO should be aware of the aviation unit's status and continuously update the ground maneuver commander on its current and projected status.

Each aviation unit should have established SOPs for liaison activities. The SOP should address areas such as:

- Unit organization, capabilities, limitations, and status (aircraft, combat crews, vehicles, and personnel).
- Aviation operation employment roles, employment principles, and missions.
- Aircraft capabilities and limitations (by type of aircraft).
- Aviation staff estimates.
- Specific checklists (AASLT, deep attack, air movement tables).
- Common equipment weights.
- Safety briefing checklist.
- Class III/V (FARP) operations, capabilities, and limitations.
- Class V configurations.
- Maintenance status and considerations.
- Crew availability (day/night/specific mission profile).

The LNO will also make recommendations on any control measures that might be necessary to ensure safe aviation operations, and be responsible for ensuring that the exchanges of information, such as call signs and frequencies, occurs.

The primary function of the LNO is to coordinate the accurate and timely employment of the aviation forces. This coordination allows the commander to ensure that the aviation force is synchronized to support the scheme of maneuver and can concentrate its forces at the proper place and time.

Major George E. Hodge was commissioned an Armor officer in 1979 from North Georgia College and served as a platoon leader, scout platoon leader, and company XO with the 4th Bn (ABN), 68th Ar, 82d ABN Div prior to attending flight school. Other assignments include asst. opns officer, platoon leader, and CO, 229th Atk Hel Bn, 101st ABN Div prior to serving as the battalion XO, 2-229th AH Regt (AH-64) during DESERT SHIELD/STORM and then subsequently as the S3. He is currently serving as a tactics instructor at the U.S. Army Command and General Staff College, Ft. Leavenworth, Kan.

Find The Enemy

by Lieutenant Colonel Michael A. Kirby

As a senior task force observer/controller, I am often asked, "What is the one thing you would change during a rotation?" My answer is simple. **Find the enemy.** The Battlefield Operating Systems cannot be brought to bear effectively until the OPFOR is found, and once found, stays found. Reconnaissance is the first essential step successful units take. This article will chronicle some salient observations, gathered from a variety of rotations, employing a variety of reconnaissance assets. These observations apply to tank and mechanized infantry task forces, cavalry squadrons, and light infantry battalions. While not attempting to prescribe a recipe for successful reconnaissance operations, I will propose some techniques that work.

The involvement of the scout platoon leader in the reconnaissance and surveillance plan is critical. Too often, scout platoons are sent on missions without knowledge of the task force scheme of maneuver or commander's intent. They receive a radio FRAGO to conduct a screen or perform a zone recon, are given some phase lines, a limit of advance, and maybe a few Named Areas of Interest (NAI) for orientation. They launch off without the benefits of TF Intelligence Preparation of the Battlefield products or fire support plans. They report on the Operations and Intelligence radio net to a TOC consumed with preparing an operations order and are relegated to talking to an RTO with limited understanding of their mission, requirements, or importance of the operation. That's a description of the typical scenario in which the TF is unlikely to receive timely, accurate, and meaningful reports from their R&S effort.

Successful reconnaissance operations call for face-to-face coordination with the scout platoon leader. Albeit hastily arranged, this meeting between the chief prosecutor of the R&S plan and its developers (TF Commander, S3, S2, Engineer, and Fire Support Officer) need not produce the final R&S plan or TF scheme of maneuver. However, by including the scout platoon leader in the initial wargaming sessions, he is party to, and versed in, the TF plan. It also affords the commander the opportunity to personally communicate his intent for the operation. The time spent in establishing his initial R&S posture is more than made up for in knowledgeable scouts able to do those things the commander needs them to do to provide the critical points of information upon which he will make his tactical decisions. This initial communication between commander and scout platoon leader establishes a relationship for the operation. The commander must talk directly to his scouts periodically before contact with the enemy and habitually upon contact. A successful reconnaissance effort can fail to achieve its purpose if the information gained does not make it to the commander. Circuitous reporting does not work; direct reporting does. The commander must talk to his scouts. The most effective net is TF command. A disciplined command net will allow the key players in the organization to monitor the products of the R&S effort as they evolve. A commander unable to talk to his scouts should be nervous.

So, a successful R&S effort entails knowledgeable scouts in communication with their commander. Now, let's dig a little deeper into what they've been told to do. The key feature of the R&S plan will be the network of NAIs designed to answer the commander's Priority Intelligence Requirements (PIR). The assignment of NAIs to the executors (scouts, GSR, COLTs, or line units) must flow directly from the PIR and commander's intent. Generic PIR, measle-sheeted placement of NAIs, and failure to task and prioritize NAI coverage are the most common shortfalls I see in the

process. Ideally, the S2 should write the spot reports that will confirm or deny the enemy activities he envisions at a specific NAI. The commander should prioritize NAI coverage with back-ups, and back-up to back-ups assigned. The TOC should periodically audit the status of coverage to ensure compliance with the priorities and assignments. Successful R&S efforts incorporate all of these features. They provide a disciplined, discernible framework to collect and report information critical to the execution of the TF plan. They are resourced, checked, and rechecked.

Another aspect of the R&S plan that characterizes intelligence gathering operations is depth. Doctrinally, depth can be described in terms of time, space, and resources. Time is a relatively straightforward imperative; the sooner you know what the enemy is up to, the better. Moreover, the longer you are able to maintain the ability to monitor him, the better. Successful R&S efforts are established as soon as possible, commensurate with the trade-offs discussed earlier concerning dissemination of the plan and intent to the executors. They are also characterized by an insatiable appetite for information throughout the course of the battle, from pre-contact, contact, and the fight, to consolidation and reorganization afterwards. Too often, a breakdown occurs after gaining initial contact. The old cavalry tenet, "gain and maintain contact," applies to every combat unit. Once the enemy's found, keep him found, or pay the price in a greatly constrained decision cycle to find him all over again.

The R&S effort must be planned and executed from the Line of Departure to the Limit of Advance or No Penetration Line. The space for worthy R&S plans then is the unit's entire area of operation. Likewise, the resources available consist of everyone in the task force. All parties, from scouts to the Unit Maintenance Collection Point, and everyone in between, are potential R&S executors. Again, NAIs assigned must be clearly understood, audited by the responsible headquarters, and prioritized. Such proliferation of R&S executors allows the commander to redirect his intelligence assets once resolution of the enemy course of action is obtained.

There, then, are three key elements of successful attempts to find the enemy.

- The R&S plan is the commander's plan. He must communicate it to the executors, particularly to the scout platoon leader. Thereafter, he must stay personally involved in it's prosecution.
- The R&S plan must be inextricably linked to the scheme of maneuver. This synchronization is the first and most critical step in synchronizing the TF fight.
- The R&S plan must address the entire depth of unit operations in terms of time, space, and resources.

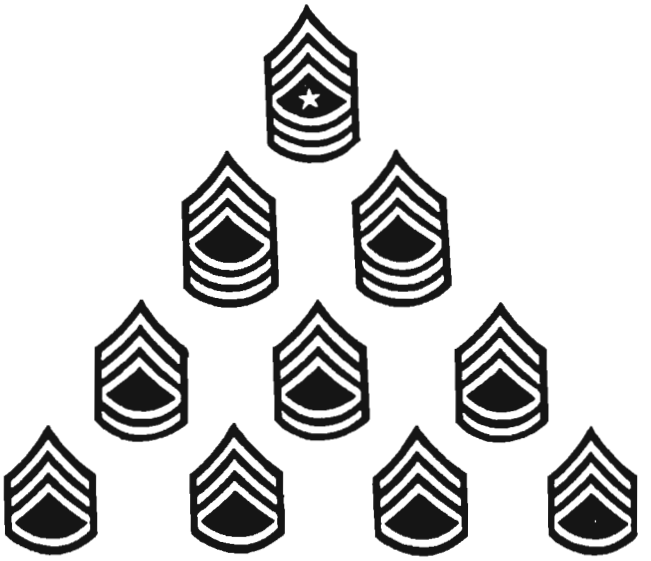
This is not an exhaustive list, nor does it do justice to the myriad of other aspects essential to a successful intelligence gathering effort. The IPB process, scout platoon survivability and reconstitution, fire support integration, and TF-level command and control are just a few topics that deserve articles on their own merits in terms of their importance to the intelligence gathering effort. However, the activities described form the core of my observations for the rotational year just ended.

Find the enemy and our warfighting doctrine can be applied to defeat him. If not found, the initiative we seek to seize or retain is up for grabs. We all understand the importance of this imperative. We must, therefore, put forth the effort its accomplishment requires.

Lieutenant Colonel Michael A. Kirby is a 1974 graduate of the U.S. Military Academy. He attended the Armor Officer and Basic Courses and the Armed Forces Staff College, and earned an MBA from the Harvard Business School. He served in the Office, Chief of Staff, Army and armor units in Korea and Germany. He recently commanded 3-77 Armor in Germany and Southwest Asia. He is currently a senior task force observer/controller at CMTC, Hohenfels, Germany.

STRIPES

On Getting Promoted: How It Is Done, Who Does It, And What You Can Do To Enhance Your Chances.



by Colonel Gary M. Tobin

Having had the opportunity to serve as panel chief for two Career Management Field 19 (CMF 19) noncommissioned officer promotion selection boards, I'd like to present some facts to dispel rumor, and to better prepare you for promotion consideration, selection for schooling, and even selection for retention. I'll also pass along some less obvious information which comes from my experiences and from my interaction among others who have served on promotion boards. Most of what I tell you is open information contained in other official sources. My purpose is to make certain that all Armor soldiers have the information from our professional journal. Also, I want to make certain that leaders have the facts which will enable them to better serve as raters, senior raters, and reviewers in the NCOER process and to advance the truly deserving to ranks of greater responsibility.

How Boards are Organized

Department of the Army enlisted selection boards are organized in panels which correspond to a CMF or a grouping of CMFs. For example, CMF 19 is combined with the engineer CMFs 12, 51, and 81 to make up panel B of the promotion board. The combination of CMFs to comprise a panel is an attempt to even the workload of the board members working on the panel. Composition of each of the panels will normally include a colonel, as panel chief, who has commanded or is commanding a brigade, a lieutenant colonel who has commanded or is commanding a battalion, and at least one command sergeant major for each CMF. For the CSM/SGM/SMC selection board, usually three of the panel chiefs will be brigadier generals and the board president will be a major general. For other selection boards the board president will be a brigadier general. In selecting command sergeants major for service as promotion board members, various major commands (MACOMS) are tasked to provide a command sergeant major who has served in a position to rate or senior rate the soldiers in the zone of consideration. Therefore, if the board is selecting soldiers for promotion to command sergeant major and sergeant major, the command sergeants major serving as panel members will be command sergeants major of senior commands, usually division level and higher. The panels having the most soldiers in the zones of consideration will have the most members. The Infantry CMF, for example, will normally have more members than the Armor and Engineer panel, based upon the size of the zone.

How Boards are Prepared

Each DA enlisted selection board is well prepared for the task at hand. The DCSPER or his delegated representative will personally brief each selection board on the personnel system and the force structure impacts upon advancement and retention. A PERSCOM representative briefs the board on the NCOER. During this briefing, panel members are reminded of regulatory requirements of the NCOER preparation and use. Usually, members come away from this briefing with a realization that there may have been personal shortcomings with the understanding of the NCOER and how to preserve its quality as a tool to serve personnel decisions.

Finally, each CMF proponent provides a detailed CMF information packet for the members of the panel bringing them up to date on the latest CMF-particular information. The information packet normally covers career patterns for the CMF 19 soldier, the different duties a CMF 19 soldier will characteristically perform, and information on matters which affect the opportunities for soldiers to seek and get assignment to critical CMF 19 jobs.

As the board convenes, members swear to an oath acknowledging the serious nature and the integrity of their assignments.

What Tools Boards Use

Here we finally reach the heart of the matter, what you must do to improve your chances for selection.

All of the information available on a soldier in a zone of consideration will appear before the board members in a file folder called the Individual Board Record (IBR), a color folder batched by social security number. Each IBR is configured in the same manner, containing all authorized documents received by the Enlisted Records and Evaluation Center (EREC). On the outside of the folder is a plastic pouch which contains the Official Military Personnel File (OMPF) on microfiche. On the inside cover will be another plastic pouch which contains the official, 3"x11", full-length photograph (hard copy). In the folder itself are a Personnel Data Sheet, the PQR (DA form 2-1 and 2A), and any hard copy documents which have not been at EREC long enough to be copied to microfiche.

The Microfiche. Most soldiers are aware that their records are filed on microfiche. Not all soldiers are aware that separate microfiche records may be held on any one soldier. All administrative data determining pay grade and enlistment data will be contained on what is commonly known as the S-fiche or service computation data fiche. A second fiche for all soldiers is the P-fiche or performance data fiche. It is broken into two areas. The top area will contain performance information, in the form of filmed NCOERs, SEERS, and the older EERs. The second area is at the bottom of the P-fiche and it contains commendatory and disciplinary data which have been directed for filing on the OMPF and not on the third possible fiche, the restricted data fiche or the R-fiche. Not all soldiers are aware that they may have a R-fiche. Most assume that only negative, derogatory information is contained on the R-fiche. Not so. Some soldiers may have most of their entire career on a R-fiche. These soldiers may work in sensitive, classified positions and have their NCOERs on the R-fiche. Many soldiers have had background investigations for security clearances performed. The results of the investigations may be filed on the R-fiche. However, the most commonly understood use of the R-fiche is for filing results of Article 15 UCMJ proceedings which have been filed in the restricted data file at the direction of commanders.

All soldiers have heard from time to time about the use of the R-fiche in personnel actions, such as the selection board process. But rarely are soldier R-fiche data made a matter of record for a board. In the normal process, board members review the commendatory and disciplinary data on the P-fiche. If no indication of indiscipline is evident, the board member has no reason to ask to see if R-fiche data exist for that soldier. Should there be some indication within the P-fiche information that R-fiche data may exist at a particular career point, the board member may request to see specific R-fiche data, limited to only the specific time period in question. For example, a board member may note that a good conduct medal award has been revoked for a soldier and the revocation is not an administrative adjustment. The board member might reasonably suspect that there is evidence of indiscipline and request to see if any R-fiche data exist for the time period corresponding to the revocation. If such data exist, the president of the board may request that DCSPER release only those specific data to the panel for review. Upon DCSPER approval, hard copy is made of the information to ensure that nothing else in the R-fiche is seen by the board members. A letter is filmed on the soldier's R-fiche letting him know that the specific part of his R-fiche was reviewed by the board. This R-fiche review is rare in the context of the overall board proceeding.

Another exception to the exclusivity of the R-fiche data is the rule concerning R-fiche data in the selection process of command sergeants major. After development of the Order of Merit List (OML) (the ranking of scores after voting is completed), R-fiche data are screened for all the soldiers selected in the best qualified category. Derogatory information pertaining to actions in the first three years of the soldier's service is protected, but the rest is released to the panel which developed the OML. That panel will determine then if there should be an adjustment to the vote for any individual. In this case, such R-fiche data might lead to a revote upon the file of the soldier, this time with the R-fiche data taken into consideration. Ultimately, this might mean an adjustment to the OML.

In my experiences, it is evident that most soldiers understand what the fiche is, and what they must do to make certain that it reflects their careers in the best light. The records of those who don't understand are very evident to the panel members and usually do not compare well to those of conscientious soldiers. The lesson is clear: Every soldier must frequently review his OMPF. He should do so by writing the Commander, USAEREC ATTN: PCRE, Fort Benjamin Harrison, Indiana 46216, to request a copy of the his fiche. Soldiers may also call the Interactive Voice Response System (IRVS) by dialing DSN 699-3714 and make the same request. Any corrections and entries required must then be submitted through the local personnel activity, or in person at USAEREC. So, for all soldiers within driving distance, call for an appointment. Get to Ft. Ben Harrison and review your OMPF in person, and make the necessary corrections or additions.

The photograph is a very important item in the file, and you should make certain that it represents you in the best way possible. Remember, only a paper representation of you and your capability and potential appears before the board. I won't go into needless detail about how to get the best photo. Enough information is available already, but despite this, it amazes me

that many soldiers have outdated or substandard photos. I'll examine one area with you which puts a different spin on the importance of the photograph. Many — in my opinion, too many — of our soldiers appear to be overweight, yet fall within body fat standards as delineated in Army Regulation 600-9. No problem, right? Not if the photo is a positive representation of a soldier who meets the Army standard. If not, the soldier suffers. When there is a question, the only choice for the board member is to initiate an inquiry and cause the soldier's chain of command to re-weigh and retape the soldier to certify that he meets the standard. It is especially important for soldiers who "ride the fence," that is, those who are consistently over the DA screening weight, to have a very current and good photograph.

Surprisingly, though, there are a number of photos that are six or seven years old. An old photo says a lot about the soldier to board members. One thing it will not say is — "Promote me." A 'promote me' photo is one which is of good quality and is very recent — I suggest less than two years old, if possible, regardless of the definition of current by Army standard. Those who will argue that the Army standard is good enough must realize that personalities sit as members of the board and that my definition of recent is representative of the understanding of many board members.

A copy of the locally maintained 2A and 2-1 is available to the board member as he or she reviews a particular file. Upon verification by the soldier that the information in the 2-1 and 2A (known as the PQR) is correct and complete, the servicing PSC forwards it to EREC for inclusion into the board file. If the soldier is available to review the PQR, the PSC is required to forward it with a statement to that effect.

The most important thing the soldier must do is make certain that all the information contained in the form is correct. Sounds terribly self-evident, but the number of soldiers who allow their records to appear before the board containing obvious errors and/or omissions consistently amazes board members. Even more startling is the number who authenticate such errors or omissions by signature. Either those individuals don't care about themselves and their promotability or they just don't know what they are authenticating. The 2A contains information that is important to the board members as they consider a soldier's record. Probably the single most important area, in my opinion, is the assignment history. The board member uses this to see the soldier's level of challenge and responsibility in his career history. The board member who opens or "breaks" the file will do a very deliberate appraisal of the job or assignment history. He will make evaluations of his appraisal and will note those on the Personnel Data Sheet (PDS) provided by EREC for the board mission. Each member will also review the awards section and will note the awards authorized, making another assessment. He may comment upon the level or number of awards, taking quality and substance into account, as either being consistent or inconsistent with a soldier's career at that stage. The member who first reviews the file will normally compare the awards authorized for wear with those worn in the official photo. Obviously, soldiers with up-to-date photos will have records more consistent with the photo than those whose photos are not current. In this case, documentation for the awards will be reviewed on the performance fiche.

Education is another important area documented on the 2A. Completed courses, military and civilian, are shown in the education summary blocks of the form. Civilian education not completed will be shown in other sections of the form after being authenticated by personnel officers. Attained semester hours leading toward degree completion may be entered onto the 2A. Soldiers must present official transcripts, with raised institutional seals, to the personnel officer. Soldiers may also receive college hour credit for NCOES courses completed, and should have the credit hour correlations entered on the 2A as well. In any case, the record of an individual's attempts to improve his or her educational status will be a matter of interest to boards. The 2A is a very important source of information concerning that effort.

My recommendations are very straightforward. Know how boards might use the PQR. Make certain that your PQR is accurate and reflects the most current information. Enter all education improvements on the form. When honoring the appointment to review the PQR, make good use of the time. Have documentation available to substantiate needed entries. Most importantly, read and understand what you authenticate with your signature.

The Board Voting Process

Each panel of the board develops standards which will be used by the panel members to assist them in voting individual records. The standards are usually developed on the first work day of the board. Each panel considers such areas as performance, potential, military and civilian education, awards, discipline, and other areas that the panel members deem important, and will write specific standards for each area to apply in determining how to vote a file. The standards are necessarily specific to discriminate between files. Board members will award each file a vote from 1 to 6 points, with plus (+) and minus (-) as possible modifiers. The table at Figure 1 will illustrate the correlation between vote and value. Remember, the objective standards of each panel will determine the objective vote of each member.

At least three members of the panel must vote each file. The three voters are randomly selected by computer and, therefore, may or may not be of

Correlation Between Vote and Value

Score	Word Picture	Meaning of Vote
6+/6-	Exceptional Performer	Select Now
5+/5-	Excellent Performer	Definitely Select
4+/4-	Strong Performer	Should Select
3+/3-	Fully Qualified Performer	Select if Room
2+/2-	Qualified in Current Grade	Retain in Grade
1+/1-	Substandard Performer	Refer to QMP

Figure 1

the same CMF as the soldier being considered. CMF 19 soldiers are considered by a panel composed of armor and engineer voting members.

The votes in the figure above right are used to determine the fully qualified and best qualified files. Fully qualified files are those that accrue a minimum of 21 absolute points. Absolute points are taken from the "raw" score value, which is the vote of the panel member. The "raw" score is converted to the absolute value by computer which uses the table below (Figure 2).

For example, a soldier receiving three votes of 6+ receives an absolute score of 54 points (3 votes x 18). The absolute score determines the ranking of the file in what is known as the Order of Merit List (OML). The higher the absolute value score, the higher the placement on the OML. The OML is ordered in descending order 1 through N (the file having the highest score being at 1 and N being the total number of soldiers in the zone of eligibility). Depending upon the needs of the Army and future strength projections, HQDA establishes the 'select objective.' The 'select objective' will be the number of selections permitted from the OML only out of those that are fully qualified for promotion.

Given the number of files that are considered by each panel, it is obvious that some soldiers will receive the same absolute score. These soldiers fall into what may constitute a 'gray zone.' Should the 'select objective' fall in a 'gray zone' of the OML where it is impossible to determine the cutoff through comparison of absolute scores, it is likewise impossible to select the files to meet the HQDA objective. To rectify this situation, the instructions to the board will necessitate a revote of all of the records in the 'gray zone.' In the case of a revote, all of the panel members will vote each file, rather than just the three members required for the initial vote. The revote score takes the place of the initial vote score, and the OML is reworked to determine the select zone. Now, once the initial votes have been OML-ordered, the board recorder will also issue recommendations to each panel chief concerning the Department of the Army equal opportunity goals for his particular CMF(s) to ensure that all soldiers are given equal opportunity for selection. For example, should the zone of eligibility be made up of 100 soldiers and 50 of the eligibles are white, 30 are black, 10 are Hispanic and 10 are "other" (our example keeps the math simple to both reader and me) the select zone should represent the zone of eligibles in terms of racial and ethnic distribution. If the select objective were to be 10, ten soldiers would be recommended for promotion. Ideally, this select objective would equal the goal to promote 5 white soldiers, 3 black, 1 Hispanic and 1 "other." The 'gray zone' must give opportunity to revote files of sufficient ethnic and racial diversity to allow the recommended EO goal to be met, if this is possible within those fully qualified for promotion. As an example, should the 'gray zone' consist of 30 files, all having an absolute score of 51, but which does not include sufficient files of Hispanic soldiers to give that ethnic group a fair opportunity, the next three highest scoring files of Hispanic soldiers with less than 51 points might be included for revote. The effort here is to ensure that the negative effects of racial or ethnic prejudice in the rating process are countered by a fair and balanced opportunity for consideration for promotion. However, in no way may quality be sacrificed in application of the EO procedures.

Recognize that the focus of the entire article to this point is upon promotion selection and that each board that is convened to select soldiers and to recommend their promotions will also perform several other key personnel functions. Selection boards for promotion to sergeant first class will also select the best qualified staff sergeants for Advanced Noncommissioned Officers Course schooling. Additionally, all selection boards will convene a QMP board to consider all files recommended for QMP during the promotion selection process, and will vote Special Category files for QMP as well. In the case of the sergeant first class board, for example, the Special Category files will include all staff sergeants with one year in grade, among others. Focus upon this last point! Most soldiers have a habit of preparing their files as they enter into one of the zones of eligibility. The point they miss is that their re-

Continued on Page 48

Raw Score/Absolute Value Conversion Table

Raw Score	Absolute Score	Raw Score	Absolute Score
6+	18	3+	9
6	17	3	8
6-	16	3-	7
5+	15	2+	6
5	14	2	5
5-	13	2-	4
4+	12	1+	3
4	11	1	2
4-	10	1-	1

Figure 2

Nomonhan: Prelude to World War II

by Gregory J. Samson

Japan's field army fighting in Asia was primarily an infantry force, dependent on horses and boot leather for mobility. Japan had not stressed tank development and lacked mobility, while the Soviets had assembled the largest armor force in the world. The result was a rout.

At 5:45 a.m. on August 20, 1939, massed formations of Soviet bombers and fighters flew east across the Halha River in Mongolia. Their bombing and strafing attacks on Imperial Japanese Army (IJA) positions were followed by a Red Army combined arms offensive on the ground. During the next ten days, the Soviets virtually annihilated the Japanese ground forces. Overshadowed by the German invasion of Poland on September 1, the series of battles that took place around the obscure village of Nomonhan was to have a direct impact on the course of World War II in Europe, as well as Asia. Russian troops, under the command of General Georgi Zhukov, destroyed two Japanese divisions, paralyzed the Imperial Japanese military hierarchy, and caused a fundamental shift in Japanese strategy for the balance of the war. Zhukov's use of tanks, combined with artillery and mechanized infantry, established the model for Russian victories at Moscow and Stalingrad.

Tank Characteristics
Nomonhan, August 1939

TYPE	Japanese TYPE 89-OTSU	Japanese TYPE 95-HA-GO	Russian BT-7	Russian OT-130 Flame
FUEL	Diesel	Diesel	Gasoline	Gasoline
DESIGN	Vickers	Vickers	Christie	Vickers
WEIGHT	12.7 tons	7.4 TONS	13.8 tons	8.5 tons
CREW	4	3	3	3
MAIN	1 x 57mm	1 x 37mm	1 x 45mm	Flamethrower
SECOND	2 x 6.5mm	2 x 7.7mm	2 x 7.62mm	1 x 7.62mm
ARMOR	10-17mm	6-12mm	6-22mm	6-15mm
SPEED	15.5 mph	25 mph	45 mph	22 mph

TYPE	TYPE 89-KO	TYPE 97 TE-KE	BT-7M	T-38 Amphib
FUEL	Gasoline	Diesel	Diesel	Gasoline
DESIGN	Vickers	Carden-Lloyd	Christie	Carden-Lloyd
WEIGHT	12.7 tons	4.7 tons	13.8 tons	3.3 tons
CREW	4	2	3	2
MAIN	1 x 57mm	1 x 37mm	1 x 76mm	1 x 7.62mm
SECOND	2 x6.5mm	1 x 7.7mm	2 x 7.62mm	None
ARMOR	10-17mm	4-16mm	6-22mm	4-9mm
SPEED	15.5 mph	25 mph	40-69 mph	28-40 mph

Table 1

Data Source: *Pictorial History of Tanks of the World 1915-45,* Peter Chamberlain and Chris Ellis, 1972.

Tank Development

The Russians had been extremely active in armored fighting vehicle technology during the 1920s and '30s. By 1936, the Soviet Union had the largest tank force in the world. The Soviets possessed over 10,000 armored vehicles, ranging in size from the tiny, two-man MS Light Tank to the huge, multi-turreted T-35 with its 11-man crew. They had purchased examples of other countries' vehicles, to include Vickers from Great Britain, Renaults from France, and Christies from the United States. They adopted the best features of all these systems, and mixed them with uniquely Russian requirements to come up with their own breed of vehicles. Soviet tanks featured high-velocity cannons, sloped armor, and long-range diesel engines. They were organized as inde-

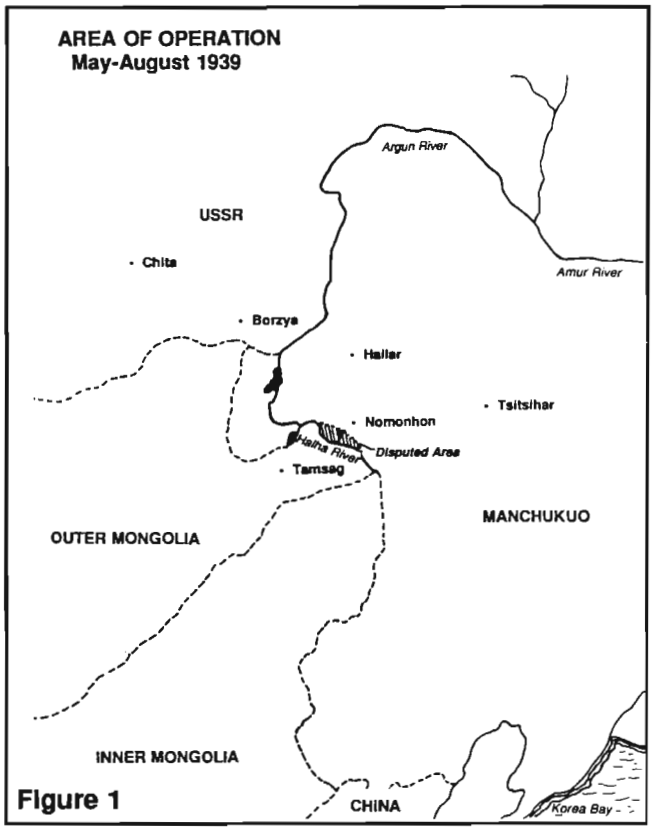


Figure 1

Japanese Medium Tank Type 89-OTSU. Below, the Soviet BT-7.

pendent tank brigades, thus maximizing their shock effect and mobility. The Russians continually updated their designs, improving their vehicles through an evolutionary process. The BT-7 used at Nomonhan was to become the direct predecessor of the T-34. Japan also purchased tanks from other countries, but chose to make direct copies. As a result, the Imperial Army developed a fleet of vehicles based on World War I designs, which were intended to support the attack of the infantry. They were equipped with low-velocity guns, riveted armor, and were intentionally slow. Tank development was crippled by the Imperial Army's foot soldier orientation, and by competition with the Navy and Air Force for raw materials. Japanese vehicle and engine production always suffered as a consequence. By the end of 1940, the Japanese had built a total of only 573 vehicles.[1]

The characteristics of some of the vehicles that each country used in 1939 are shown in Table 1.

Initial Engagements

On May 11, 1939, Manchukuoan horse cavalry, with IJA advisors, conducted patrols into the area east of the Halha River, or as it was known to the Mongolians, Khalkin Gol. Along this river, in an area approximately 60 miles long and 20 deep, was the territory claimed by both the Mongolian People's Republic (MPR) and Japanese-backed Manchukuo. Mongolian patrols had been reported in the vicinity of the border village of Nomonhan, and the regional Japanese command had ordered a reconnaissance. Local Japanese commanders were encouraged to be aggressive, and to respond "by completely destroying"[2] any enemy forces in areas where the border was ill-defined.

The western border that Manchukuo shared with the Soviet Union and Mongolia was just such a place with vague boundaries. (Figure 1)

Not only were the Japanese intent on acquiring new territory at the expense of the Russians, they also hoped to disrupt the military aid Chiang Kai-shek was receiving from the Soviet government.

The terrain in this area was barren grassland with few trees growing in the sandy soil. The landscape had few distinguishing features, and in some cases, different hills were identified solely by their elevations. The Halha was the major source of water for the villagers and herders, and was large enough to provide for a local fishing industry. Summers were extremely hot and mosquito-infested. Winters were severe, with low temperatures and high winds. The road net was minimal and the only large-scale means of transportation was provided by the railroads.

The Manchukuoan patrol crossed the Halha into Mongolia, but was chased back over the river by MPR border cavalry. By May 28, the 6th Mongolian Cavalry Division, supported by Russian regulars, armored cars, and artillery had taken up positions on the east bank of the river, and were digging in. The Japanese attacked several times, trying to push the Soviets and Mongolians back into the river, but were unsuccessful.

The size of the skirmishing units increased as the days went on. Patrols were replaced by companies, companies by battalions, until, by mid-June, regiments supported by artillery, tanks, and aircraft were joining battle. The number of reinforcements turned from a trickle to a flood as each side

became more determined to crush the opposition.

Initially, due to their superior railroad network, the Japanese were able to strengthen and concentrate their forces more quickly than the Soviets. During July, they launched several attacks combining infantry, artillery, and tanks. The actions, however, were poorly coordinated. The tanks sometimes outdistanced their supporting infantry, or the artillery preparation was inadequate to suppress the Russian defenses, and heavy losses were the result.

By the end of that month, the IJA had expended most of its limited supply of armored vehicles. The Soviets had successfully engaged the Japanese tanks with heavy artillery and direct fire weapons from well-camouflaged, reinforced ground emplacements, as well as using dug-in tanks. "Japanese tank guns were outranged decisively by those of the Russian tanks, which had an effective range of 2,000 meters... Whereas Japanese cannon shells sometimes bounced off enemy armor, Soviet shells — even ricochets — could penetrate the belly of IJA tanks at even a "flat" angle of only 15 degrees."[3]

Without supporting armor, the Japanese infantry was forced to fight Soviet tanks with "human bullet units." These troops fought with gasoline-filled bottles and antitank mines attached to ten-foot bamboo poles. When they disabled a Russian tank, they attacked the crew by pushing their bayonets and swords through the vision slits. In addition to barbed wire, the Russian troops used entanglements of piano wire as antitank obstacles. This wire was used low to the ground and hard to see. It was impervious to artillery fire and did not break when the Japanese tanks rolled over it. Instead, it wound itself around the sprockets and tracks, jamming or cutting into the moving parts of the vehicles. It was very effective in separating the tanks from their supporting infantry; the footsoldiers passed through while the tracked vehicles became hopelessly entangled.

On one occasion, the IJA was able to penetrate the Russian defenses on the east bank, and cross to the west side of the Halha. The Japanese hoped to continue the attack south to trap the Soviet forces on the east bank. However, a swift Soviet counterattack employing a tank brigade from the north, mechanized infantry from the west, and armored cars from the south threatened to trap the Japanese against the river, and the IJA forces were forced to retreat.[4]

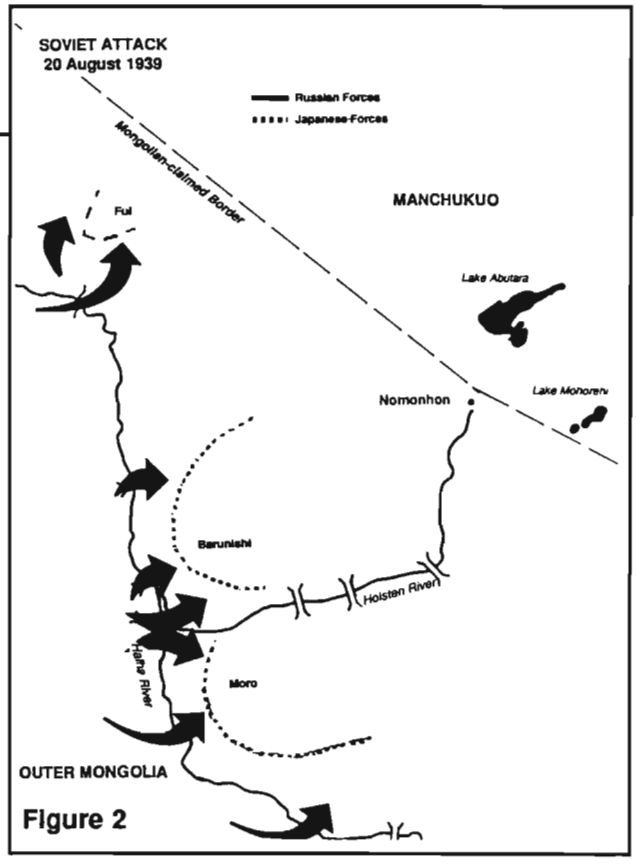


Figure 2

In the early part of August, the Japanese launched a series of piecemeal attacks to dislodge the Russians. The Soviets responded aggressively with numerous counterattacks along either side of the Holsten River.

The Soviet Response

The Soviet government in Moscow had been watching the events in Asia with great concern. They had no intention of being caught simultaneously between hostile forces in Europe and Asia. The decision was made to teach the Japanese a lesson in mechanized warfare they would not soon forget. The Defense Ministry sent General Georgi Zhukov to take charge of the situation.

Zhukov, who was then 43 years old, was a rising star among the Soviet Army officers who had survived the purges of 1937-38. A Red Army cavalry squadron commander during the Russian Civil War, he was to become a favorite of Stalin. "Zhukov was tough and self-willed, with a flair in strategy that switched from the darting protection of the Soviet jugular in defense to onerously planned battering of the enemy torso in offense. He had a direct and brilliant impact on operations in the field. He could be ruthless and cruel, ordering a division commander he thought slow and nervous to be sent to a penal company, ill-mannered, indifferent to casualties."[5] In his new assignment, he was directed to use whatever resources he deemed necessary to smash the Japanese.

Upon his arrival in Tamsag, Zhukov found a confusing command situation and a scarcity of up-to-date tactical intelligence. He ordered immediate and extensive ground, air, and signal reconnaissance. He requested that the 57th Corps, of which he had now taken command, be provided with three additional rifle divisions, a tank brigade, heavy artillery units, and 100 more combat aircraft.

To support this build-up in the wilderness of Mongolia, Zhukov's staff commandeered anything with wheels and a motor. They assembled a fleet of 3,500 cargo and 1,400 tanker trucks (such an assemblage was unheard of in what was still an era of foot infantry and horse-drawn artillery). The round trip from the railhead at Chita was almost 900 miles, and took five days. "Soviet truck usage dwarfed IJA capabilities and thinking at that time; the Japanese regarded 60 miles as 'far' and 200 trucks as 'many'... In any event, IJA intelligence experts remain awed to this day by the amount of men and materiel moved so ruthlessly." Even firewood for the troops' cooking fires had to be trucked in.[6]

As their stockpiles for the coming offensive grew, the Soviets set about deceiving the Japanese as to where and when the blow would fall. Russian forces on the eastern bank of the Halha were intentionally kept to a minimum; only enough to contain the Japanese attacks. On the western side of the river, however, large numbers of men and vehicles were carefully assembled. All major movement took place at night; units were camouflaged and dispersed during the daylight hours. Loudspeakers were set up to broadcast the sounds of jackhammers and other construction equipment to give the impression that the Russians were digging-in. Lone bombers would harass the Japanese positions after dark, denying them a full night's sleep.

The armored and infantry units moved to their assembly areas in small groups, along different routes. The degree to which the Soviets had mechanized their forces allowed them to assemble for the offensive at the last possible moment. The Russian BT-7 tanks were able to move to their jump-off points quietly and at high speed, running on only their powered roadwheels. True to their Christie-type design, the Soviet vehicles could move on the roads on wheels, and mount their treads just prior to the attack.

On August 19, four additional Soviet regiments and five brigades took up their assault positions, crossing the river on bridges that had been laid just under the surface of the water, in order to avoid detection. The Russians had approximately 80,000 men facing 60,000 Japanese; 500 tanks versus 180; 500 artillery tubes to 300.[7]

The Battle

At dawn on August 20, hundreds of Red Army bombers and fighters attacked. Interceptors swept the IJA Air Force from the sky while bombers assaulted troops, supplies, and artillery throughout the depth of the Japanese position. When the fighters ran out of aerial opponents, they strafed targets of opportunity on the ground. After the air attacks, Russian artillery of all calibers opened a stunning barrage on the Japanese emplacements. The effect was so devastating that "for 75 to 90 minutes, the Japanese artillery could not even respond."[8] When the Russian fire shifted to targets behind the front line, hundreds of Soviet tanks and a company of armored flamethrowers appeared with supporting infantry (Figure 2). By the evening of August 21, the Soviet's 6th Tank Brigade had turned the Japanese southern flank and had cut their supply and escape routes to the east. In the north, the Russians had isolated and were steadily reducing the regiment that guarded the Japanese right flank at Fui. To add to the IJA's predicament, all their major forces were drawn up along the line of the river; there was no depth to their array. Once the Soviets got behind the main line of defense, there were no units between the Halha and Nomonhan that could stop them.

The Japanese infantry bore the brunt of the Soviets' combined arms assault. The Japanese reaction to this onslaught was based on their firm belief in the power of cold steel and bushido, the warrior spirit. Time and again they had seen the Chinese run when IJA units had closed for hand-to-hand combat. They were convinced the Russians would do the same. Mechanization and firepower were not considerations in the Japanese estimate of the situation.

Most Japanese artillery was horse-drawn, and so many animals were killed in the first two days, that the fieldpieces were practically immobile. Also, none of the artillery units had prepared for a 360-degree defense. When Soviet tanks and troops began to appear behind them and to their flanks, the Japanese had to move their howitzers by hand.

On August 23, the Soviets overran the regiment at Fui, the northernmost Japanese outpost. They then turned south along the Mongolian-claimed border line, and raced for Nomonhan to complete the encirclement of the 23rd Division and all its supporting units.

The Japanese were trapped, but continued to fight with tremendous bravery and ferocity. The 6th Army command (the 23rd Division's next higher headquarters) told their troops along the river to hold on; a counteroffensive was being planned. Orders were issued for a combined attack of units from the 23rd and 7th Infantry Divisions against the Soviet southern pincer. Priority of fires, transportation, and supply was to go to this operation.

The Japanese counterattack began on August 24 (Figure 3). It was a disaster. Foot infantry with inadequate indirect fire support were caught on the rolling, wide open terrain and cut down. Whole battalions were wiped out. By attempting to use some of the 23rd Division units already engaged

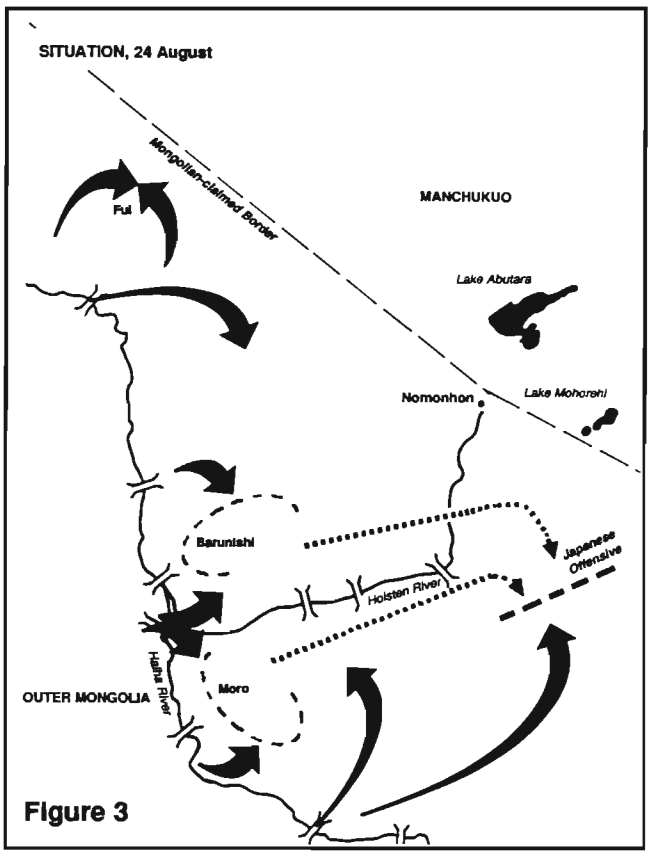


Figure 3

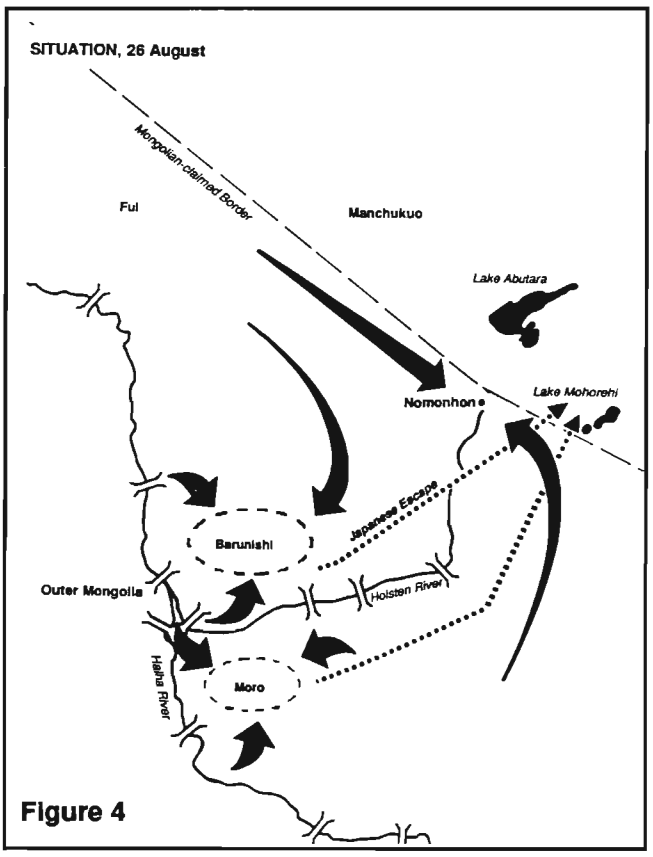


Figure 4

along the river and throwing them into the southern sector, the 6th Army planners had unwittingly uncovered their remaining artillery units. Marauding Soviet tanks swept in and devastated the Japanese gun positions.

By August 26, the Japanese counteroffensive was over (Figure 4). Soviet tank units completed their sweep when the 9th Armored and 6th Tank Brigades met at the village of Nomonhan. Most of the Japanese units had been without food and water for two to three days, and ammunition was running low. The troops were reduced to licking the morning dew from ground cloths and metal surfaces. The 6th Army was unable to fight through the Russian encirclement to provide supplies or reinforcements.

Zhukov then proceeded with the next phase of his plan which was to dismantle the 23rd Division. "The most effective way to overpower the Japanese defenses was to drive wedges into the supporting network, dismember separate sectors, seal off and then eventually destroy individual pockets of resistance. Single artillery pieces, up to 15cm in caliber, were used to lay down precise fire and cover the advance of tanks, which were in turn followed by infantrymen operating at close quarters and throwing grenades."[9]

Isolated, and without hope of relief, the Japanese infantrymen and artillerymen fought on. Individual units attempted to battle their way out, moving east toward Lake Mohorehi under the cover of darkness. The pursuing Russians used searchlights to hunt for the survivors and ran them down with tanks.

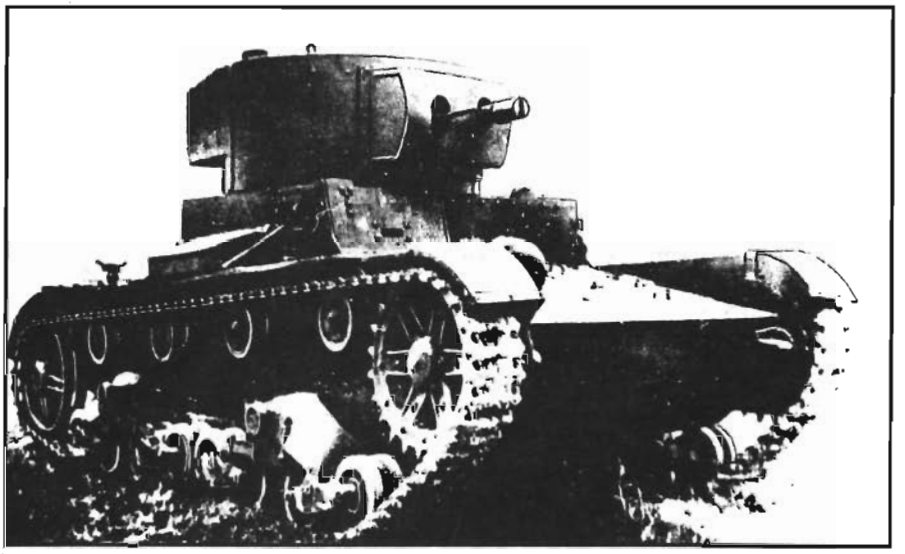
Those IJA troops that stayed in their positions along the river were given special attention by the Soviet artillery. "The tactics of the Russians soon became apparent: isolated Japanese positions were mopped up, one after another, by 'pillars' of fire massed against individual targets for about two days. After wiping out one strongpoint, the (Russians) moved to the next."[10]

The last Japanese stronghold to be overcome was Barunishi Heights, which overlooked the junction of the Halha and Holsten Rivers. On August 31, the 24th Regiment of the Soviet 36th Infantry Division reported that the mopping up was complete, and there were no longer any IJA troops west of Nomonhan that had not been killed or captured.

The Kwantung Army rushed reinforcements to the area in early September, but the Soviets had already stopped at the border line previously designated by Moscow. The battle at Nomonhan was over, but its effect on world events was just beginning.

The Aftermath

The military establishment in Japan was stunned by the outcome, as well as the cost, of the battle. In the Russo-Japanese War of 1904, a particularly bloody conflict, the IJA infantry losses had been 17 percent; 28 percent during the heaviest fighting.[11] Of the 60,000 Japanese involved at Nomon-



"Very few Japanese prisoners were taken. Large numbers were killed by the Soviet artillery, while others died facing the flamethrowing OT-130s or in hand-to-hand combat."

At left, an OT-130 flamethrower tank, a variation of the then-obsolete T-26. Unlike the BT-7 and later T-34, which were derived from the American Christie tanks, the T-26 was based on the British Vickers designs.

han, the overall loses were an astounding 76 percent. Some IJA infantry battalions lost over 90 percent of their effective strength. By comparison, the Russian losses were 11 percent.

Japanese officers investigating the disaster were forbidden to speak of it in public; surviving units were not allowed to return to Japan. The wounded were dispersed to quarantined facilities throughout Japanese-occupied China.

The outcome of the battle at Nomonhan had a direct impact on the political relationship of Imperial Japan and the Soviet Union during World War II. In March 1941, Japanese Foreign Minister Yosuke Matsuoka was in Berlin to sign the Tripartite Pact with Germany and Italy. On his way home, he stopped in Moscow to sign a neutrality pact with the Soviet Union. The Japanese were convinced they could not win a land confrontation with the Red Army. At the Moscow railway station, Stalin embraced the Japanese minister and assured him "We are both Asiatics. Japan can now turn south."[12] Thus the stage was set for a direct confrontation between the Japanese and the Allied Powers in the Pacific.

In November 1941, when the German armies stood at the approaches to Moscow and requested that Imperial Japan lend its support with an offensive in Asia, the Japanese respectfully declined. Japan continued to honor its neutrality pact with the Soviets throughout the war, and as a result, the Russians were able to transfer 1,700 tanks, 1,500 aircraft, 15 rifle divisions, three cavalry divisions, and eight tank brigades to the beleaguered European front.[13] With all his other reserves gone, Zhukov, now commander of the defense of Moscow, was able to use these seasoned Siberian troops to cripple the German offensive and save the Russian capital.

By February 1943, Zhukov, applying the concepts he had developed at Nomonhan, successfully destroyed the German 6th Army in the battle for Stalingrad. In this, and subsequent victories, his formula was the same: hold the enemy in the center with minimal forces, conserve his strength; then attack with overwhelming mechanized forces on the flanks, scattering the covering forces, driving deep into the enemy's rear area.

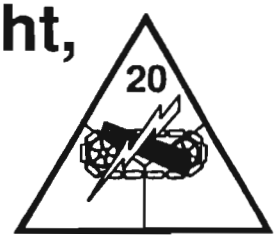
The climactic battle that occurred around the village of Nomonhan is important to the overall history of World War II and represents a significant stage in the development and use of armored forces. The Russians gained the upper hand through their superior use of maneuver, technology, logistics, and detailed operational planning. They did it so convincingly that the Japanese never attacked them again.

Notes

[1]Coox, Alvin D., *NOMONHAN: Japan Against Russia, 1939*, 1985, p. 1024.
[2]*Ibid*, p. 186.
[3]*Ibid*, p. 400.
[4]Glynn, Gary, "Shadow On The Rising Sun," *WORLD WAR II*, May, 1988, p. 46.
[5]Moynahan, Brian, *Claws Of The Bear*, 1989, p. 113.
[6]Coox, p. 580.
[7]Hogg, Ian V., *ARMOUR IN CONFLICT*, 1986, p. 68.
[8]Coox, p. 663.
[9]*Ibid*, p. 999.
[10]*Ibid*, p. 757.
[11]*Ibid*, p. 917.
[12]Moynahan, p. 97.
[13]Clark, Alan, *BARBAROSSA: The Russian-German Conflict, 1941- 1945*, 1965, p. 170.

Gregory J. Samson was commissioned in Armor from the United States Military Academy in 1975. He attended the AOBC and the motor officer course. He served with the 1st Armored Division as a tank platoon leader, support platoon leader, company XO, and brigade maintenance officer. After attending AOAC, he was assigned to the Directorate of Training Developments at Fort Knox. He currently works for a major defense contractor.

The 20th AD Trained Others to Fight, Then Joined the Battle in Europe



The 20th Armored Division, formed at Camp Campbell, Ky., in March 1943, trained armor replacements for a full year before preparing for its own deployment to the European Theater. The division supplied more than twice its original strength to replace casualties suffered by the other armored divisions fighting in Europe.

Introduced late in the war, the 20th AD still managed to get in on the fight, including a hellacious, bitter struggle at an SS training camp in the Munich suburbs, as the Reich crumbled and fanatical Nazis shot their final bolts.

Reaching Salzburg, Austria, as the war ended in Europe, the 20th redeployed to the U.S., and were poised at a camp in California for the invasion of Japan as the atomic bomb brought the second and final front of the war to a sudden close before the division's services were needed.

The troopers of the 20th had always considered themselves the luckiest division in the Army, and they were, in terms of casualties.

They lost only 46 killed in action and 134 wounded, compared to KIA/WIA totals of 1,810 and 6,963 for the 3d Armored Division and 1,143 and 4,551 for the 4th AD. Of course, they were in contact a much shorter time, arriving in Europe only about 80 days before the war ended, and preparing to go to the front part of that time.

Many of the tank veterans that the 20th troopers met in Europe had once been themselves members of the 20th when they trained stateside. They joked at the new arrivals, "Well, the 20th has finally arrived, so I guess the war must be close to over."

Not quite. The bitter fighting before Munich, and the horrors of the Dachau concentration camp still lay ahead.

The division had quite a reputation at Camp Campbell, with a high degree of esprit, buoyed by a strong sports program. The 20th AD's baseball team was of semi-pro quality, and its basketball team was good enough to get invited to the world professional championships at Chicago in 1944. A 20th AD engineer, a Native American named Chief Blackcloud, held the Army record for speed in the 25-mile march with full pack. The 20th was the smartest division in the Army, with an average IQ of 110. They trained hard, too — one Campbell joke was that any man who requested overseas assignment to get out of the 20th AD was a coward.

But in the Fall of 1944, a new sense of purpose inspired the men of the 20th. They were to train up for their own deployment, with an emphasis on urban fighting. The Army rightly predicted that the end of the war was in sight, and fully expected the Nazis to resist to the end, fighting block by block, cellar by cellar. This prediction wasn't far wrong.

So, as the 20th boarded trains to leave Fort Campbell in the bitter winter of 1944-45, they left behind a practically empty post. Campbell had trained three armored divisions and an infantry division during the course of the war. Now, hundreds of German prisoners swept the snow from the streets of the Kentucky camp.

Staging at Fort Miles Standish, near Boston, the men of the 20th AD embarked on three ships — a luxury liner, the sister ship of the ill-fated Morro Castle, and a banana boat — for the 11-day Atlantic crossing. They arrived at the French Channel port of Le Havre and saw for the first time the devastation of the war — the sunken ships, blasted piers, and shattered buildings. The division moved inland and waited.

At the end of March, 1945, the 20th received orders to move up, leaving its staging area near the French coast for Germany and the front. They passed through scores of war-torn villages in France, Belgium, and Holland before arriving in Germany north of Aachen. The division's 33rd Cavalry was the first subunit involved in combat, on April 3 near Horren, on the west bank of the Rhine. The 33rd also was called to help break up a riot of 500 freed prisoners who had gone on a looting and killing revenge spree against their former captors.

The division's artillery was also detached for a time to support the 82nd

20th AD WWII Commanders

MG Stephen G. Henry
March 1943 - October 1943

MG Roderick R. Allen
Nov 1943 - September 1944

MG Orlando Ward
October 1944 - August 1945

MG John W. Leonard
August 1945 - April 1946

and 101st Airborne Divisions in fighting near Cologne.

On April 10, the division crossed the Rhine near Bonn and moved south and east toward Bavaria.

Turned loose late in the war, the soldiers of the 20th AD arrived in time to see a side of the conflict that had remained hidden until Allied forces finally pierced the German heartland. The dark secrets of the Nazi regime were rapidly unraveling, and the rioting displaced refugees were only a part of it. Stunned by the destruction of war they saw around them, the troopers were even more aghast at the inhumanity they uncovered. What seemed a quiet hospital for the insane near Haldemar was in fact the site of Nazi experiments in death by injection. Again and again, they came upon groups of slave laborers kidnapped to work in Germany — one group was of Hungarian children nine to 13 years old. Rolling through farmland and flowering orchards, the tanks shared the roads with pathetic wagons and carts, pulled by refugees. These people in rags carried all their belongings with them as they trudged along, trying to walk out of hell and back home.

On April 28, the division crossed the Danube on the approach to Munich. The Bavarian capital had been the cradle of the National Socialist Movement and heavy fighting was expected. In fact, the war would last only six more days, but the tankers could not know that, nor did the SS.

In the pattern of fighting that developed, the tank-infantry teams fought short, sharp engagements against delaying German troops, racing for bridgeheads over the small streams that lay on the outskirts of the city. At Schrobenhausen, attempting to secure the bridges over the Parr, D Co. of the 20th Tank Battalion was attacked by die-hards firing from cellars. The battalion overran two military hospitals and took 100 prisoners. Another 400 surrendered as the unit crossed the Gerols River at Gerolsbach. At a bridge over the Glonn, near Petershausen, Polish and French prisoners cheered their liberators and told them of a German column ahead. The column was attacked and destroyed, and 150 survivors surrendered. At the Amper River crossing, a fast-moving column secured the bridge before its demolition.

This 20th AD Sherman was knocked out by 88-mm AT gun fire in the attack on the SS barracks near Munich, one of the costliest battles in the war's final days.

Moving into Bioerbeck to seize another Amper River bridge, white flags flew from the building, but the SS fired on the column anyway. The town was destroyed with high-explosive and phosphorus shells.

Each rapid move held the potential for sudden tragedy, as happened at the woods near Neuherberg, where three hidden 88-mm guns quickly destroyed four tanks. An SS ambush at Lohhof sniped infantrymen off the tanks' back decks. The commander of CCB, Colonel Newton Jones, lost his life to a sniper holed up in a building. His tank crew fired the building and killed its inhabitants.

Still ahead were two major military installations, the largest SS barracks in Germany and the Wehrmacht's antitank school. Defending the SS complex were 1,500 troops, with 88-mm AT guns and AA guns on ground mounts. The building itself was six stories high, 300 yards long, and made of thick, reinforced concrete. Around it was a thick, concrete wall ten feet high. The grounds were riddled with trenches, ditches, and hardened, multilevel underground bunkers. From the upper stories of the SS building, observers could see the American tanks forming up for the assault a mile away.

The tankers in the first wave found little to shoot at, with so much of the defense hidden and at ground level. Artillery fragments bounced off the hulls, rifles and machine gun fire rippled from the 500 windows of the barracks, and panzerfausts squittered through the air like deadly footballs. Tanks fell to the flat-shooting 88s and to electrically-detonated ground mines. Losing two or three tanks here, three or four there, the division attacked, regrouped, attacked again. Artillery moved up, including a 240-mm mortar that began to punch large gaps in the tall concrete fortress.

Hiding in the multileveled bunkers, the defending SS would remain in the lower levels during each bombardment and then spring back to their guns as the attacks went in. Dozer tanks were brought up to seal the embrasures. One by one, the bunkers fell silent. By evening, the day-long fight was over.

Accompanying the 45th and 42nd Infantry Divisions, the tankers brought them to the gates of Munich, where the infantry took over. By then, resistance was cooling; in one case, a German medic on a bicycle led a column of tanks to the sites of hidden AT guns. The city's residents seemed relieved. As the division history de-

The Attack on the SS Barracks

Excerpts from the 20th AD Unit History, *The 20th Armored Division in World War II*

"The attack was scheduled for 0700 in conjunction with the 180th Regiment of 45th Infantry Division after a 45-minute artillery preparation by the 413th. The line of departure was the woods north of Neuherberg, where "C" Company had had trouble the day before. "C" Company was to attack on the left, "A" on the right, with "D" astride highway 13 in the middle.

The prospect was formidable. The enemy estimated strength, 1,500 or more, was solidly entrenched in width and depth in underground emplacements with overhead cover. In addition to the elaborate bunkers and emplacements, the ground was broken by series of trenches, World War I style. Some of the emplacements were two levels underground, having concealed exits as much as 50 yards from the emplacements. Others were linked with connected trenches and most had communication with the forward side of the SS barracks..."

"All [the SS] troops were young, and had lived almost an entire lifetime under Hitler indoctrination. They were pledged to die in defense of the city. The 700 in the outside emplacements did..."

An 88-mm AT gun knocked out of action in front of the SS barracks.

"The fast light tanks of "D" Company advancing on the left of the road dodged, turned, backed up, stopped, and went to throw off the accuracy of 88 gunners, and still they fired..."

"...Another tank was lost to an 88, while "C" lost three more to 88s. This force, withdrew to the comparative safety of narrow woods 500 yards to the rear to reorganize and rearm.

"Meanwhile "A" and the rest of "D" moved out at 0930. They ran into the same intense defense. Small arms and automatic fire came from the 500-odd windows in the SS Barracks. It was hard to know where to go, where to shoot, where to start. Firing was everywhere. This force also lost three tanks."

"Armored doughboys moved out behind the tanks with their tracks. Assault gun and mortar platoon acted sometimes as infantry, firing point blank down the mouths of the deadly bunkers. Infantry followed with grenades. Many didn't follow far. ...Tank dozers were hauled in to cover the entrances of the bunkers. That was one way to silence 'em. The tanks were still leading, still dodging panzerfaust.

"Slowly the defending fire died down, as bunker after bunker was permanently silenced. Men died with a look of incredible surprise, but others kept fighting. Slowly the following infantry found them all..."

20th AD History (Cont'd.)

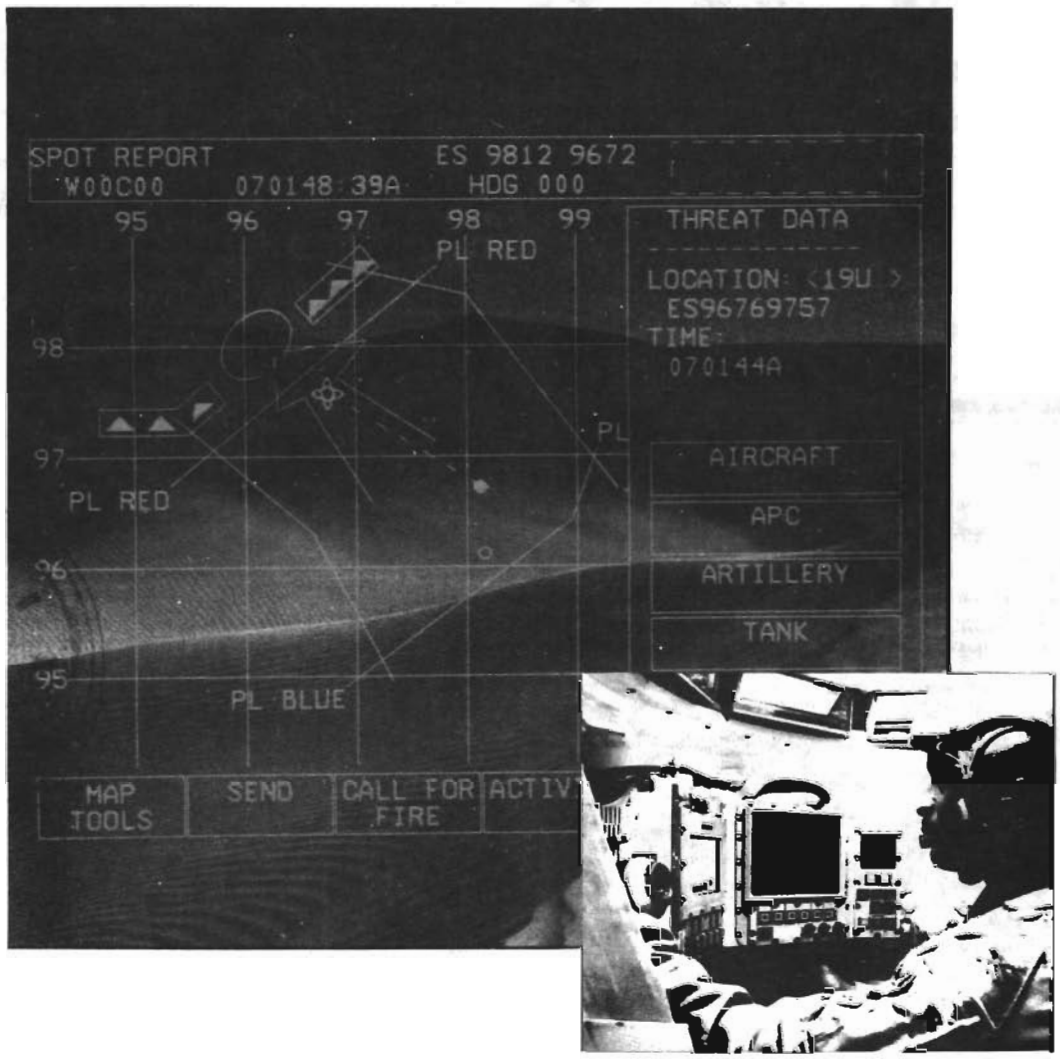
scribed it, "It was crazy. It was more like a liberation than a conquest."

Racing around Munich, the fast-moving tankers came upon Dachau suddenly, "catching it in the middle of its macabre, ghastly work." Only recently abandoned, the concentration camp looked a bit like a campus from the outside, but appearances concealed a factory for the mass production of death. On the railroad siding nearby, a train of 40 boxcars held hundreds of dead. Hundreds of others, stacked like cordwood, awaited the crematory ovens. A few prisoners still alive were too weak to walk and too sick to eat. Among them, too, were the SS dead, skulls bashed in. The bullet-riddled corpses of once-vicious guard dogs littered the kennels. Shocked, the tankers heard those few survivors recall the horror that had happened there.

The last few days of the war were anticlimatic for the 20th, now rushing toward Austria, where the Allies feared the Nazis would make a last stand in the Austrian Alps. They were just outside Salzburg when the war in Europe came to a close. They were glad of that: "Nobody had wanted to crack the Alps open. It could have been rough. The strain of impending combat was gone. It was like the first spring day, with a warm wind from the south."

"overmatch" against potential adversaries. This overmatch is as significant as the overmatch that we now enjoy in firepower, mobility, and survivability.

The Enhanced Mortar Fire Control System represents that overmatch in the fire support arena. Since the advent of the M1-series tank, battalion level mortar support has been literally left behind. The EMFCS demonstrated on 25 March returns the mortar to its place as the commander's initial indirect fire weapon of choice. With EMFCS, the mortar FDC receives a call for fire from IVIS. A modified mortar ballistic computer determines firing data and sends it digitally to a mortar gun track equipped with POS/NAV and modernized fire control which fires the mission. When M1A2 capability for far target designation is added to the precision of digitally transmitted firing data of EMFCS, the result is set up and firing time of less than a minute. The addition of this kind of technology puts the mortar back in the task force commander's hip pocket.



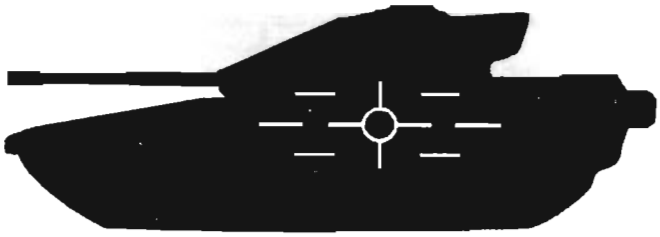
Any of you who have been in combat know firsthand about the "fog of battle" and how that affects a commander's ability to know what's going on. It's more difficult still to know in detail exactly where the enemy — or, for that matter, friendly elements — are located. IVIS greatly alleviates that problem, increasing situational awareness and the ability to communicate with friendly elements.

With the commander's ability to know precisely where his elements are located comes the additional capability to disperse forces while massing firepower. IVIS facilitates synchronization of all available assets, to include precise coordination of placement and timing of direct and indirect fire.

It is one thing to develop a complex plan of attack. It is quite another to communicate that plan quickly and accurately to elements so as to ensure that each player is given the information he needs to successfully carry out that complex plan. Up to this point, it has been impossible to create and transmit that plan "on the fly." Digital communication of data, both words and graphics, via IVIS makes that possible — and then goes one step further. IVIS allows the commander to monitor the progress of that complex plan as it unfolds.

Is IVIS the answer to all the problems of battle command? Nope. But in these days of dwindling assets, digital communications technology goes a long way to providing solutions to some of our most pressing combat deficiencies. It gives us the ability to more efficiently coordinate those dwindling assets and gain control over a battlefield that will likely prove to be more changeable, challenging, and hazardous than any we have encountered in the past.

The MSG Kouma Tank Gunnery Competition



by Sergeant First Class Robert L. Dycus and Captain Kevin L. Watson

As an Active Component (AC) gunner, you've been sitting in your tank on Blackwell/Pilot Knob Range at Fort Hood thinking, "I know that mine is the best tank platoon in the Army, much better than those guys on Range 301 at Grafenwohr anyway..." Of course, there's no way that you can ever determine whose platoon is best. Or, possibly, you're a reservist sitting in your tank on Range 44 at Fort Drum, about to qualify distinguished, and you're thinking, "All I hear about is how great those guys are at Gowen Field, firing their TT VIII on Range 1. I know my platoon average is higher than theirs." Many of us have often wondered exactly where our platoon stood in the big picture. Now, thanks to an initiative of the Chief of Staff of the Army, General Gordon R. Sullivan, you will get a chance to know which are the top platoons in the total armor force.

The Armor Center announces the initiation of an exciting new tank platoon competition, the Kouma Tank Platoon Gunnery Excellence Competition. The initial competition window will include February 1993-95 scores from units. The Kouma Competition is named in honor of Master Sergeant (Ret.) Ernest R. Kouma, an Armor NCO and World War II veteran who won the Congressional Medal of Honor for his exploits during an action near Agok, Korea, on 31 August and 1 September 1950.

General Sullivan directed that a competition be developed to honor the top platoons in the total armored force. The competition emphasizes the "train-to-fight" guidance of General Sullivan as units are evaluated on their annual qualification gunnery tables. This competition will reward units that maintain tough, demanding, and realistic training of their soldiers, crews, and platoons.

AC units will be evaluated based on the Tank Table XII (TT XII) contained in the recently fielded FM 17-12-1-2, which contains the standardized score sheets for reporting purposes. The new TT XII contains both tactical and gunnery tasks, many evaluated simultaneously. The focus on training both maneuver and gunnery tasks simultaneously reflects the Chief of Armor's guidance to integrate tactical and gunnery training.

One of the more exciting aspects of the Kouma Competition is the fact that Reserve Component (RC) units will be competing alongside their AC counterparts. The difference, however, is that RC units are evaluated on the FM 17-12-1-2 Tank Table VIII (TT VIII), Crew Qualification results. RC crews are required by STRAC to maintain a TT VIII proficiency prior to mobilization and are not required to qualify their platoons on TT XII.

Winners of the Kouma Competition will be determined based on annual qualification gunnery, using normal battle-rostered crews. The competition window is 24 months, since RC non-roundout (RO)/roundup (RU) units have a 24-month training cycle. The RO/RU units and AC units will report their scores for the last 12 months of the 24-month cycle.

Each division, regiment, and separate brigade will determine their winners by 1 April of the competition window and report their winners to their CORPS (AC units) or Continental United States Army (CONUSA) (RC units). CORPS and CONUSAs will report their top platoons to the United States Army Armor Center and Fort Knox (USAARMC) not later than 15 April. USAARMC will determine the top AC and RC platoon by 1 May, and present the awards during the Armor Conference.

While MACOMs may develop their own selection procedures, USAARMC will use the following criteria.

TT VIII (RC)	**TT XII (AC)**
High score (Individual TT VIII scores summed and divided by 4 for platoon average.)	Total Score (Gunnery & Tactical)
Tiebreakers	**Tiebreakers**
1. Crew cuts 2. Hit times 3. Ammo conservation	1. Gunnery score 2. Tactical score 3. Ammo conservation
NOTE: All TT VIII criteria are based on platoon average.	

Trophies for the Kouma Competition winners will be presented during the Armor Conference. USAARMC will pro-

Continued on Page 38

MSG Ernest Kouma's Medal of Honor

MSG (Ret.) Ernest R. Kouma was born on 23 November 1919 in Dwight, Nebraska, and joined the Army on 16 June 1940. His first assignment was with the 14th Cavalry Regiment at Fort Riley, Kansas, with whom he was patrolling the Mexico/Arizona border when the United States entered World War II. He was reassigned to the newly formed 9th Armored Division as a tank crewman on an M3 Stuart. He went to California for desert training with the 9th AD and participated in the Louisiana maneuvers. At the completion of the Louisiana maneuvers, the 9th AD moved to a staging area in England, where MSG Kouma was assigned as a tank commander of an M24 Chaffee tank. The 9th AD landed in Normandy, France, in October 1944 as other Allied forces were fighting in Italy and Luxembourg. His unit was sent to Belgium and fought in the German Ardennes counteroffensive (Battle of the Bulge) in 1944. MSG Kouma's unit continued to push into Germany and captured the Ludendorff railroad bridge at Remagen, Germany, on the Rhine River in the spring of 1945. At the conclusion of hostilities in Europe, his unit was in Czechoslovakia.

MSG Kouma returned to the United States and reenlisted for armor. He had assignments with the occupation forces in Korea, the 35th Infantry Regiment, 25th Infantry Division in Japan, and then he was assigned to the 17th Cavalry Regiment, 2d Infantry Division, Fort Lewis, Washington, in 1947. The 17th Cavalry Regiment was changed to the 72d Armor during his assignment at Fort Lewis.

The 2d Infantry deployed to Korea for combat in August 1950 and participated in the landing at Inchon, Korea. At this time MSG Kouma was the tank commander of an M26 Pershing tank in 3d Platoon, A Company, 72d Armor, 2d Infantry Division. It was with this unit that he distinguished himself and was awarded this nation's highest honor — the Congressional Medal of Honor. Offered a battlefield commission after his actions at Agok on the Naktong River, MSG Kouma turned it down because he did not want to be removed from the real action. After being awarded the Congressional Medal of Honor, he was assigned to recruiting duty in Omaha, Nebraska, in 1951, and later as a tank gunnery and tactical instructor at Camp Irwin, California. Returning to recruiting in 1955, MSG Kouma was selected to be the noncommissioned officer in charge (NCOIC) of the pallbearers at the ceremony honoring the unknown soldiers of World War II and the Korean War, and he presented the flag to President Eisenhower.

He was then assigned to the 68th Armor, 9th Infantry Division, Camp Carson, Colorado, followed by an assignment to the 70th Armor, 4th Armored Division in Germany. In 1959, he returned to the United States and the United States Army Armor School at Fort Knox, Kentucky. In 1963, he was assigned to the 24th Infantry Division in Germany, returning to Fort Knox after that tour. He applied for a combat tour to Vietnam, but was disapproved on the grounds that his capture could be used for propaganda purposes. After 31 years as a soldier, he retired from active duty. He now lives on Rough River lake in the quiet town of McDaniels, Kentucky.

Citation

MSG (then SFC) Kouma, a tank commander in Company A, distinguished himself by conspicuous gallantry and intrepidity at the risk of his life above and beyond the call of duty in action against the enemy. His unit was engaged in supporting infantry elements on the Naktong River front. Near midnight on 31 August, a hostile force estimated at 500 crossed the river and launched a fierce attack against the infantry positions, inflicting heavy casualties. A withdrawal was ordered and his armored unit was given the mission of covering the movement until a secondary position could be established. The enemy assault overran two tanks, destroyed one and forced another to withdraw. Suddenly MSG Kouma discovered that his tank was the only obstacle in the path of the hostile onslaught. Holding his ground, he gave fire orders to his crew and remained in position throughout the night, fighting off repeated enemy attacks. During one fierce assault, the enemy surrounded his tank and he leaped from the armored turret, exposing himself to a hail of hostile fire, manned the .50 caliber machine gun mounted on the rear deck, and delivered pointblank fire into the fanatical foe. His machine gun emptied, he fired his pistol and threw grenades to keep the enemy from his tank. After more than 9 hours of constant combat and close-in fighting, he withdrew his vehicle to friendly lines. During the withdrawal through 8 miles of hostile territory, M/Sgt. Kouma continued to inflict casualties upon the enemy and exhausted his ammunition in destroying three hostile machine gun positions. During this action, MSG Kouma killed an estimated 250 enemy soldiers. His magnificent stand allowed the infantry sufficient time to reestablish defensive positions. Rejoining his company, although suffering intensely from his wounds, he attempted to resupply his tank and return to the battle area. While being evacuated for medical treatment, his courage was again displayed when he requested to return to the front. MSG Kouma's superb leadership, heroism, and intense devotion to duty reflect the highest credit on himself and uphold the esteemed traditions of the U.S. Army.

Kouma Competition (continued from page 36)

vide a fund cite for travel and per diem, along with billeting, for one representative of the top platoon in each CORPS and CONUSA to attend the Armor Conference. Platoon representatives will participate in all Armor Conference events as guests of the Armor community. Permanent trophies will be presented to the top platoon in each CORPS and CONUSA while the top overall AC and RC platoons will be presented with the rotating Kouma trophy. Plaques listing the winning platoons will be permanently mounted on the rotating trophy. Additionally, each member of the top platoons in each CORPS and CONUSA will receive a certificate signed by the Chief of Armor. The July-August issue of *ARMOR Magazine* will name the AC/RC finalists and winners of the Kouma Competition.

The Kouma Competition was the brainstorm of the Army Chief of Staff, General Gordon R. Sullivan, who was searching for a method to emphasize realistic training and reward those units that excelled. The Kouma Competition was designed to be a low-cost procedure for identifying the Army's top Armor platoons while providing every platoon within the Total Armor Force with an equal opportunity to be the winner. Including RC units is vitally important because over half of the armored force will be in the RC at the conclusion of the drawdown.

By focusing on STRAC-required annual qualification results (TT XII for AC and TT VIII for RC), General Sullivan pointedly emphasizes the need to train to maintain combat-ready units. The low-cost features of the Kouma Competition are attractive as we determine our top platoons without any special training required. The Kouma Competition winners will truly reflect the "come as you are" quality of our armor force, the force that will be required to rapidly deploy for various contingency missions around the world. Standardization among armor unit training will be further enhanced by the Kouma Competition as all armor platoons will be evaluated against a common criteria — the tank gunnery tables in FM 12-12-1.

Maintaining our combat training focus is what the Kouma Competition is all about. Named in honor of an armored warrior, the Kouma Competition will reward those soldiers, crews, and platoons that best emulate the example set by MSG Kouma on that dark, dangerous night in Korea.

Competition Deadlines

First Competition Covers March 1993-March 1995
(Competition Repeats Every Two Years)

1 April 1995 - RC non-RO/RU divisions, regiments, and separate brigades determine their top platoons based on the previous two-year qualification cycle. Report winners to their parent CONUSA.

- RC RO/RU divisions, regiments, and separate brigades determine their top platoons based on previous year's qualification cycle. Report winners to their parent CONUSA.

- AC divisions, regiments, and separate brigades determine their top platoons based on previous year's qualifications and report winners to their CORPS.

15 April 1995 - CORPS and CONUSAs determine their winning platoons and report them to USAARMC. CORPS and CONUSAs will forward the original score sheets from the respective TT VIII and TT XII qualification runs. Only first-run data is acceptable for the Kouma Award. CONUSAs need only forward the original TT VIII score sheets while CORPS must forward the original TT XII score sheet plus a platoon roster with name, rank, SSN, and duty position of each platoon member. This data is required for the certificates.

1 May 1995 - USAARMC determines top AC and RC platoon.

May 1995 - Armor Conference — winners announced and trophies presented.

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Sergeant First Class Robert L. Dycus is currently the M1A2 project noncommissioned officer (NCO) within the Gunnery Training and Doctrine Branch, Specialty Training and Simulation Division, 16th Cavalry Regiment, U.S. Army Armor School (USAARMS). Prior to his current assignment, he was a master gunner instructor at USAARMS and was a company master gunner in Europe. He has held various leadership positions within tank battalions and cavalry squadrons throughout USAREUR, CONUS, and Korea. He is a graduate of the Advanced Noncommissioned Officer Course (ANCOC) and the Master Gunner Course.

The Churchill Tank Mirrored the Challenges Of Two World Wars

by John Cranston, Armor Center Historian

Produced at the start of World War II, the Churchill tank commanded the respect of both friend and foe. First employed in combat early in 1943, the Churchill surprised its enemies, and even its crews, by fighting on terrain where tracked combat vehicles had never previously tread.

After the German-Russian invasion of Poland in September 1939, British military authorities concluded that three kinds of tanks — light, cruiser, and infantry — would be necessary for modern warfare. The Churchill fell into this last category. The British anticipated (mistakenly) that the Second World War would involve trench warfare very similar to the conflict of a quarter-century before. Hence the need for an infantry tank, such as the Churchill — heavily armored, capable of spanning wide trenches, while traveling at foot soldier speed.

The Churchill tank ably fulfilled the role of the supporting infantry tank in World War II, while also proving adaptable for other quite different uses. In September 1939, the Belfast (Ireland) shipbuilding and engineering firm of Harland and Wolff began work on the tank, then named the "A20," as a successor to the Matilda tank. Harland and Wolff was best known for building the *Titanic*. The hull of the new tank had reached a nearly-complete pilot model stage when the Germans invaded France in May 1940. As the new Prime Minister, Winston Churchill pleaded for a heavy tank by 3 March 1941. The contract for the A-20 (now the A-22) went to Vauxhall, the British automotive division of General Motors Corporation, at Luton, England.

The A-22's most distinctive feature was the 11 (earlier 14) small bogey wheels on each side, enabling the tank to crawl over many formidable obstacles on or off the road. The small wheels, located outside the hull, allowed a roomier crew compartment inside. In many ways, the tank resembled the leader for whom it was to be named, with its squat, "bulldoggish" appearance, giving a feeling of security to those inside or behind it, and presenting a formidable face to enemy soldiers on the receiving end. Weighing more than 38 tons, with a five-member crew, and powered by a 350-horsepower Bedford twin-six (12-cylinder) engine, the tank's top speed was only 17 mph — adequate for infantry. Like many World War I tanks, its tracks curved around the entire hull, the return span at the height of the hull deck. Actual production lagged far behind schedule, with Vauxhall producing only fourteen pilot models of the Mark I by June 1941. After the completion of the prototypes, the Mark I was designated the first of the Churchill tank series.

There were to be seven different versions of the Churchill. The Mark I (303 tanks) employed a 40-mm main gun and a coaxial Besa machine gun in the turret, with a narrow traversing 3-inch (76.2-mm) howitzer in the hull. The Mark II (1,127 tanks) substituted a machine gun for the howitzer. The mechanically superior Mark III (627 tanks) used a 57-mm main gun; the Marks IV and Vs (1,627 tanks) had improved main guns, with a higher muzzle velocity and improved armor penetration.

Marks I and II experienced the mechanical problems plaguing any complex vehicle produced in a hurry. Engines, clutches, suspension, and gearboxes all gave trouble. By May 1942, however, the older tanks had been systematically improved. The Mark III, which first came on line in March 1942, was the first series of mechanically reliable Churchills. They were well liked by their crews and feared by their enemies.

The first models of the Churchill took part in the abortive, cross-Channel Dieppe Raid of August 1942. The raid failed, leaving the Churchills, which had been equipped for amphibious landings, unable to move inland due to the loose, stony characteristics of the beach at the French port. One lesson learned from the Dieppe failure was the need for better reconnaissance prior to landing and for strong engineer support as an attack went in.

Two months later, however, six Mark III Churchills did go on to serve with distinction at the British offensive at the Battle of El Alamein, which opened on the evening of October 23, 1942. The tanks were hit 105 times by tank rounds of up to 75 millimeters, and only one Churchill was knocked out. What was surprising, however, was that the Mark IIIs, essentially designed for European warfare, proved capable of surviving in the quite different desert terrain. The numerous small bogey wheels, which spread the tank's weight and lowered its ground pressure, provided increased traction off the road in desert sand.

By early 1943, the British War Cabinet had come to believe that the Churchill's high level of armor protection had cost it too much mobility and speed, and almost halted production. Then, in Tunisia, early in April 1943, at the so-called "Battle of the Peaks," the Churchill experienced its hour of glory.

On April 8, the 25th Army Tank Brigade, using Churchills, was supporting the 36th Brigade on the Beja-Medjez road. Advancing toward Chaouach, the tanks were supposed to take the low ground while the infantry took the heights. The Churchills easily crossed the wadis, or ravines, their heavy armor resisting German Stuka dive bomber attacks, but the Stukas took their toll on the accompanying infantry. For the first time, the Churchills then mounted the hilly slopes, finally reaching the lower reaches of the last peak, where they were halted by a deep ravine. Enemy forces, terrified by the spectacle of tanks climbing hills, evacuated their headquarters in the ravine. The Churchills also served well in tank-to-tank combat later that month at Longstop Hill, near Medjez el Bab.

Just one month later, on May 8-9, 1943, U.S. Army tanks duplicated the feat, successfully scaling mountainous terrain and again surprising the enemy. Led by LTC Hamilton Howze, commanding 2d Battalion, 13th Armored Regiment, the U.S. tanks negotiated steep hills near the Bizerte-Tunis road in one of the last actions of the Tunisian conflict.

Originally designed for European fighting, the Churchill had proved itself in Tunisia. In climbing mountains, the Churchill had added a new dimension to armor doctrine. Without infantry support, the Churchill, last of the infantry tanks, had proved itself capable of surviving tank-to-tank combat in a country quite different from the European terrain for which it had originally been designed.

In Britain, 1,622 Mark IVs were produced beginning in mid-1942. This model incorporated a specially cast turret, while retaining the 57-mm main gun. At this point in the war, a total of approximately 4,000 Churchills had been fielded. Less than two weeks after the Churchill's success at the Battle of Twin Peaks, the British War Cabinet approved a plan for Vauxhall to continue producing the Churchill, at least through 1944. The Cabinet ordered approximately 1,000 more tanks (the Mark VI), with a 75-mm main gun replacing the 57-mm. Production began in November 1943. Increased armor meant more weight (40 tons) and reduced speed (13 miles per hour). The Mark VI 75-mm gun was the maximum which could be fitted in a tank built to match the British railroad gauge. Unfortunately, the gun was no match for the new German Tiger tanks, making the Churchill, in a sense, obsolete by early 1944. This shortcoming was offset to some extent by the thicker armor (152mm maximum) on the Mark VI. Another Chur-

chill model, the Mark VII, mounted a 95-mm howitzer.

The Mark VII proved a versatile tank indeed. In October 1943, production began on 800 Churchill flamethrowing tanks, called "Crocodiles." Fuel for the flamethrowers was carried in separate trailers, towed by the tanks. If damaged, the trailers could be cut loose. Also, by D-Day (6 June 1944), 180 Mark III and IV Churchills were converted to AVREs (Armoured Vehicle, Royal Engineers). The AVRE was fitted (in the 75-mm mount) with a "Petard," 290-mm spigot mortar, capable of firing a 25-pound demolition charge (the so-called "Flying Dustbin") up to 80 yards, for clearing minefields and removing obstacles. Selected in place of the Sherman because of its roomier interior compartment and its ample side escape doors, the Churchill AVRE could be fitted with fascines to cross ravines, with the Canadian Indestructible Roller Device to clear minefields, with Small Box Girder (SBG) bridges for crossing trenches and ravines, or with Bailey Bridge components for river crossings. After D-Day, 564 additional Churchills were converted to AVRE requirements.

With these new configurations, the Churchills fought well in northern Italy and in northwest Europe. The first 180 AVREs were deployed with the 1st Brigade, 79th British Armoured Division, to GOLD Beach in the Normandy Invasion. Armor preceded infantry in the original plans, the Churchills performed excellently, with the British pushing forward at GOLD Beach more successfully than did their American counterparts at OMAHA Beach. In March 1945, the Crocodiles also served with the British 21st Tank Brigade, the 2d Armoured Brigade, and with the 4th New Zealand Brigade in British Eighth Army stream crossings in Northern Italy.

Imperial War Museum

A Churchill Crocodile flame tank suppresses targets for infantry advancing on Shulberg, Germany, in January 1945.

All of the Allied tanks experienced problems in the Normandy hedgerows; the Churchill, even with the 75-mm gun, was no exception. However, the Churchill Crocodiles and AVREs, in combination with the Sherman "Crab" tank (equipped with special flails to disable mines) did serve together with distinction in taking the port city of Boulogne, France, on September 17, 1944. After a wave of bombers hit the target, follow-on waves of infantry and three armored columns were to attack in sequence. Using the Petards, the Churchills smashed the main gates; French underground resistance fighters let infantry through a secret entrance; the Churchill AVRES replaced one bridge destroyed by the enemy, and laid down fascines for crossing where another bridge had been demolished. As in Africa, the Churchills traversed hilly areas well — better than did the Shermans.

The Churchill (more than 5,000 were produced) functioned well in many assignments for which it had not been originally designed — especially with engineers in combined operations. Not only was it well-liked by infantry and — after initial mechanical "teething problems" — by its crews (for its spacious interior), but it also proved itself in bridging, mine-clearing, and fighting tank-to-tank in hilly terrain — fighting where tanks had not originally been intended to be used.

The Churchill served throughout WWII and was used, on a limited scale, in Korea. The AVRE served as a bridgelayer into the 1960s, when, early in the decade, the Centurion replaced it.

For all of its accomplishments, however, the Churchill constituted the last of a vanishing breed. Armor protection had been increased at the expense of speed and mobility. The already slow tank then traveled ever more slowly. The Churchill lacked the mobility of the Sherman and was slower than the Royal Tiger. Additionally, the Churchill, adapted to the British rail gauge, was too narrow to accommodate any gun heavy enough to knock out the German Tiger tank. The "Black Prince," essentially a refined Churchill with a 17-pounder high velocity gun, arrived too late to serve in World War II.

The Churchill was a special tank for special requirements and it also wrote the opening chapter for armor in mountainous terrain. The Churchill prolonged the theory that different classes of tanks could be used for different functions. But in terms of meeting the requirement for a single main battle tank, the Churchill sacrificed speed and mobility for armor protection and, after 1945, proved outmoded and obsolete.

John Cranston, the historian at the Armor Center, Fort Knox, since 1983, received his bachelors degree in history from Pomona College, Claremont, Calif., his MA at Columbia University, New York, and his doctorate from the University of Wisconsin at Madison. Prior to his service at the Armor Center, he taught at Rust College, Holly Springs, Miss., and at West Texas State University at Canyon, Texas.

Applying the Battlefield Operating Systems at Platoon Level

by Sergeant First Class C. R. Johnson

Like most NCOs in the Army, I invested some time studying for the new Self Development Test (SDT) during the past year. One field manual I was required to know — FM 25-101, *Battle Focused Training* — discusses making assessments of a unit using the battlefield operating systems (BOS). This process, done at both the company and battalion levels, results in ratings of Trained, Needs Practice, or Untrained. The purpose of this article is to illustrate some of the techniques I have used as an observer/controller at the National Training Center to explain how the seven BOS categories may be applied at platoon level.

I was introduced to the BOS several years ago while attending an informal unit After Action Review (AAR) led by my squadron commander. He made no attempt to explain what he was talking about, and I found it somewhat confusing as he ran down our unit's good and bad points in terms of each of the seven systems. Needless to say, the comments I retained after the AAR were limited at best.

Since becoming an OC, I use the BOS almost daily when observing the operations of tank platoons. The experience level of most platoons in using the BOS is minimal, and usually includes only the platoon leader and platoon sergeant. So, prior to using the BOS categories in an AAR, I take a few minutes to explain what they are and give some examples of how they apply to the platoon.

First, I list them so that they are easier to remember. Both FM 25-100 and FM 71-2 start off with the maneuver system and carry on from there. Instead, I list them in the following order, which mirrors how they are addressed in a platoon operations order (OPORD):

Intelligence . . . . . Para. I Situation
Manuever . . . . . Para. II & III
Fire Support . . . . . Mission/Execution
Mobility/Countermobility/Survivability . . . . . .
Air Defense . . . . . .
Combat Service Support . . . Para. IV Service Support
Command & Control . . . . . Para. V Cmd & Signal

This makes them just a little easier to remember and ensures that none get left out of a discussion.

The next step is to find specific examples of tasks performed at the platoon/soldier level that fall into one of the seven systems. Intelligence is usually somewhat intimidating at first, since most soldiers think that intelligence is something done by that officer who gives out maps and conducts arms room inspections back in garrison. So, I talk about spot reports generated by the platoon, which become intelligence when passed back up the chain of command. Also, I mention how the platoon leader usually gets an intelligence update prior to the start of a mission and passes this information out to the tank commanders. By this time, most people begin to realize that intelligence does apply at platoon level. Before I move on to the next system, I talk about how good noise, light, and litter discipline keep the platoon from becoming an enemy spot report (counterintelligence).

Of the seven BOS systems, maneuver is probably the easiest one for the platoon to apply. Examples in this

BATTLEFIELD OPERATING SYSTEMS

1. Intelligence
(Spot reports, noise & light discipline, intel updates)

2. Maneuver
(Movement techniques, formations)

3. Fire Support
(Employing as combat multiplier, All personnel able to call for fire)

4. Mobility/Countermobility/Survivability
(Employ ENG assets, breach obstacles, crew drills, NBC tasks)

5. Air Defense
(Passive vs. active, react to air drill)

6. Combat Service Support
(Casualty evacuation, LOGPAC operations, vehicle maintenance)

7. Command and Control
(Communications, TACSOP, EW plan, rehearsals)

Figure 1. Chart used to introduce the BOS to the platoon.

SYSTEM	TASK/AREA	% OF PLTS
S/INTEL	Dissemination of Intel	41.7%
I/INTEL	Spot Reports	41.7%
S/MANEUVER	Formations	66.6%
I/MANEUVER	Movement Techniques	25.0%
S/FIRE SUPPORT	Employment	33.3%
I/FIRE SUPPORT	Call for Fire	41.7%
S/MOB-CNTR SURV	Use of Engr. Assets	25.0%
I/MOB-CNTR SURV	NBC Skills	58.3%
S/AIR DEFENSE	Active Reaction	50.0%
I/AIR DEFENSE	Fire Control	33.3%
S/CBT SERV SPT	Casualty Evacuation	41.7%
I/CBT SERV SPT	Logistics Reporting	33.3%
S/CMD & CTL	Operations with No Commo	33.3%
I/CMD & CTL	Establish or Revise PLT SOP	75.0%

Figure 2. "S" indicates a sustain area and "I" indicates an improve area.

system are vehicle formations and movement techniques. I use anything that involves how the platoon moves across the battlefield as an example. However, some events are more suited to analysis within other systems. For example, very often an issue will surface that affects the maneuver of the platoon, but was actually more of a command and control problem.

Most platoons have little or no control over fire support. The examples I use here are planning for employment and calling for indirect fire before getting into physical contact with the enemy. I also discuss the use of smoke during obstacle breaching. Given the opportunity to employ artillery, do all personnel in the platoon know the basics of calling for fire?

The next system, mobility/countermobility/survivability (M-C-S), is usually found in that portion of the OPORD that deals with work priorities for the engineer effort. I tie this in with platoon-level operations by discussing it in two parts. Mobility and countermobility examples are obstacle breaching, especially when the platoon has tanks equipped with mine plows, and employing hasty protective minefields. Once we discuss these areas, I explain that survivability includes all the tasks that help them to survive on the battlefield. These include NBC skills as well as the battle drills that are supposed to be "second nature" to any tank crew. Construction of fighting positions is another essential subject.

Usually, when I talk about survivability, I qualify things ahead of time and do not discuss those skills which fall under the air defense system. Examples for this category generally fall under one of two subjects, passive or active air defense. Early warning dissemination within the platoon is another area that applies at their level.

Combat service support is an area that is usually quite familiar to the platoon, although it normally takes a serious shortfall in maintenance, LOGPAC, or emergency resupply before its importance hits home. This is also a system where it is easy to point fingers at the support assets, so I make every attempt to use examples where the platoon has direct control. These include logistics reporting, crew level maintenance, and dissemination of paragraph IV information to the platoon.

The last system, command and control, overlaps with all the other systems because a breakdown here can have severe effects on mission accomplishment. At the platoon level, I use communications with and without radios as an example. Another major point in this system is that a well written SOP can assist when command and control is either difficult or lost completely. This helps to emphasize why all tank commanders need to have all the operational graphics posted on their maps.

Now that the platoon has some solid examples of how the BOS apply to them (See Figure 1), the next logical step is to determine what they are doing well and where they need to concentrate extra effort. During the last half of the platoon's final AAR, they use the BOS to determine at least one skill or task in each system that they need to sustain and one they need to improve. This self-evaluation is strictly at platoon level and has a majority consensus among those soldiers present. The end result is kind of a report card of their NTC experience, and, hopefully, they put it to use when they return to home station.

Figure 2 shows some of the tasks identified by the tank platoons since I began using this system. Some of the tasks are individual in nature and others are collective tasks. Even though I have used this process with only 12 platoons, there are some trends in certain areas. Considering the random way in which OCs are assigned to platoons, this data could represent what might be found in a typical armor battalion.

In conclusion, I realize that, in some instances, I have oversimplified the BOS in order to adapt it to platoon operations. As stated earlier, all NCOs are now familiar with it because of the study requirements for the SDT. Applying the BOS to the lowest levels should help to reinforce its use and understanding. Use of BOS assessments from battalion through platoon level can also assist in tracing training deficiencies back to their roots.

Sergeant First Class Christopher R. Johnson entered active duty at Ft. Knox in 1975. Since then, he has served with the 33d, 68th, 73d, and 35th Armor Regiments. His last TOE assignment was with G Troop, 2/11 ACR. He is presently assigned as a tank platoon observer/controller at the National Training Center.

Armor School Reorganization

Raising the 16th Cavalry Regiment

by Major Michael I. Prevou

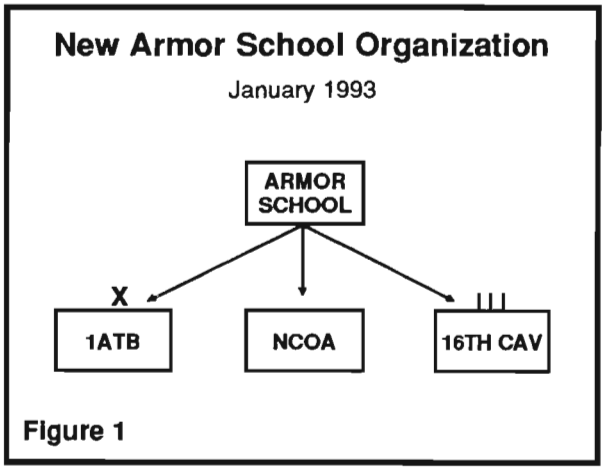

Figure 1

In January of 1993, Fort Knox and the Armor School reorganized to more efficiently and effectively train soldiers and leaders for the Armor Force. The colors of the 16th Cavalry Regiment were unfurled in February 1993 and stand alongside 1st Armor Training Brigade (1ATB) and the Nonconmissioned Officers Academy (NCOA) as the third leg of the Armor School triad (Figure 1).

The 16th Cavalry Regiment is responsible for leader training in 18 Armor School courses. This directorate-level organization replaces the Command and Staff, Weapons, and Maintenance Departments and the 12th Cavalry Regiment. Combining the responsibility to provide for cadre and students alike, in all areas of training, administration, logistics, and command and control, the 16th Cavalry Regiment now oversees the leader training instruction, doctrinal development, integration of simulation, and future training strategies under a single commander. Its numerous missions include:

- Teaching 18 Armor School courses (Figure 2).
- Doctrine development for mounted warfare from platoon through brigade.
- Providing equipment, personnel, and vehicular support for the professional development courses taught by the 16th Cavalry Regiment and the NCOA.
- Providing for the administrative and logistical needs of the cadre and students assigned to the Armor School.
- Serving as the focal point for Armor School simulations.
- Developing future strategies to integrate new equipment and doctrine into the Armor Force.
- Producing high-quality instructors and mounted warfare leaders, prepared for combat.

16th Cavalry Regiment Courses

Armor Officer Basic Course	AOB
Armor Officer Advanced Course	AOAC
Battalion Motor Officer Course	BMOC
Cavalry Leaders Course	CLC
Scout Platoon Leaders Course	SPLC
Dismounted Armor Scout Course	DASC
Tank Commander Certification Course	TC^3
Scout Commander Certification Course	SC^3
Master Gunner Course	MG
Senior Officer Logistics Management Course	SOLMC
PreCommand Course	PCC
Armor Orientation Course	AOC
Reserve Component Armor Basic Course	AOB(RC)
Reserve Component Armor Officer Advanced Course	AOAC(RC)
Armor Officer Advanced Course (RC) Phase II	AOAC(RC)PHII
Senior Instructor Operator Course	SIO
Separate Armor Brigade Refresher	SABR
New Equipment Training	NET

Figure 2

Regiment headquarters

16th Cavalry Regiment headquarters is located in Building 1468A at 3rd and Old Ironsides Avenues.

Regimental Squadrons

The 16th Cavalry Regiment is comprised of six subordinate units designated as the 1st, 2d, 3d, 4th, and 5th Squadrons of the 16th Cavalry and the Combined Arms Training Strategies Division (CATS). Each squadron is designed and responsible for training a specific group of mounted warfighting leaders or supporting their training with equipment and simulators (Figure 3).

Combined Arms Training Strategies Division

The CATS Division, located on the 3rd floor of Bldg 1468A, develops an overarching training strategy for the Total Armored Force and identifies the resources required to conduct unit, institution, and soldier training in an integrated and relational manner. CATS provides guidance on how the mixture of training resources (ammunition, OPTEMPO, ranges, maneuver areas, combat training centers, and training aids devices, simulators, and simulations) will be used to train and sustain the Armored Force across the operational continuum. CATS ensures the training integration of heavy, light, and special operations forces of Active, National Guard, and Reserve Components. CATS identifies emerg-

16th Cavalry Regiment Training Responsibilities

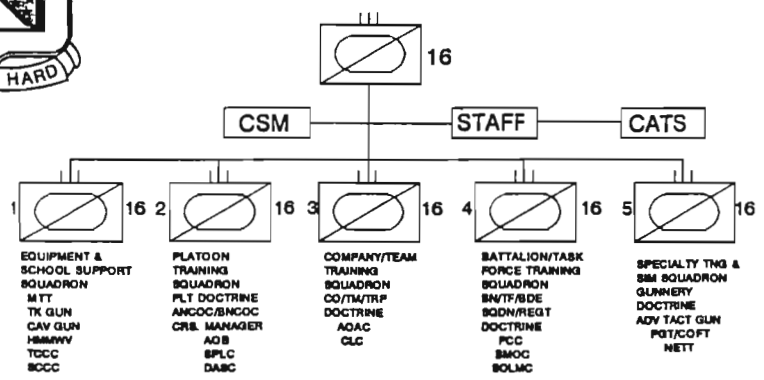

Figure 3

ing training technology, force structure, and equipment changes (e.g. from a personal water heater to a new tank) for integration into armored training, and plans for and coordinates the training requirements for the new technology and equipment.

1st Squadron, 16th Cavalry

The 1st Squadron, 16th Cavalry headquarters, located in Building 1467D, is the equipment squadron. This organization is comprised of six troops that provide the equipment (M1s, M3s, and HMMWVs) used by the Armor School. By structuring the equipment squadron as one organization, the regiment can accomplish its mission with improved command and control and scheduling efficiencies. The squadron is also responsible for training TCs and BCs in the Tank Commander and Scout Commander Certification Courses (TCCC/SCCC).

2d Squadron, 16th Cavalry

The 2d Squadron, 16th Cavalry headquarters, located in Building 1468B, is the Platoon Training Squadron. The squadron trains and supports the Armor Officer Basic Course (AOBC), Scout Platoon Leader's Course (SPLC), and the Dismounted Armored Scout Course (DASC). The squadron is divided into three branches: AOBC, Specialty Training, and Doctrine and Training Development.

- The AOBC Branch is comprised of the instructors that teach all armor lieutenants their basic armor training.
- The Specialty Training Branch is responsible for the implementation and instruction of SPLC, DASC, and Tank Gunnery.
- The Doctrine and Training Branch is responsible for writing and updating platoon doctrinal manuals, course development for the Basic and Advanced Noncommissioned Officers Courses, and participates in the design, development, and validation of tank platoon training for the M1A2 tank.

3d Squadron, 16th Cavalry

The 3d Squadron, 16th Cavalry, located in Skidgel Hall, Building 1734, is the company/team training squadron. This squadron conducts the Armor Officer Advanced Course (AOAC), and is responsible for the implementation and instruction of the Cavalry Leader's Course (CLC). The squadron is also responsible for the development of all doctrinal publications and training materials (MTPs) for company/team-level operations. Cavalry Branch is located in the 3d Squadron and is responsible for all cavalry instruction and doctrinal development.

4th Squadron, 16th Cavalry

The 4th Squadron, 16th Cavalry, located in Boudinot Hall, Building 2010, conducts instruction, doctrinal development, and other matters pertaining to tactical operations at battalion/task force/squadron and brigade levels, to include the integration of combat support, combat service support, and professional development instruction. The squadron is responsible for the implementation and instruction of the Separate Armor Brigade Refresher Course, Pre-Command Course (PCC), Armor Orientation Course, Battalion Motor Officer Course (BMOC), Senior Officer Logistics Management Course (SOLMC), and Training Set Forward Observation (TSFO) training and scheduling.

5th Squadron, 16th Cavalry

The 5th Squadron, 16th Cavalry headquarters, located in Steele Hall, Building 2426, is the special training and simulation squadron. The squadron is responsible for the implementation and instruction of the Advanced Tactical Gunnery Course (formerly Master Gunner), Senior Instructor Operator Course (SIO), and New Equipment Training Team (NETT). The Gunnery Training Doctrine Branch develops and publishes all gunnery-related publications. The squadron is also the heart of the Armor School's simulation training. The Combined Arms Tactical Training Center (CATTC), the Unit Conduct of Fire Trainer (UCOFT), and the Platoon Gunnery Trainer (PGT), are operated by 5th Squadron and provide armor leaders a cost-effective method of maintaining proficiency from the crew through the brigade level. Active and Reserve Components alike now have the opportunity to share these simulation resources as part of the Fort Knox Reserve Component Center of Excellence.

The 16th Cavalry Regiment — A focused effort, is a self-supporting organization under one commander, dedicated to producing the highest quality mobile armored warriors in the world.

Major Michael I. Prevou served as platoon leader and XO of Co F, 40th Armor, Berlin Brigade, and commanded an antitank (ITV) company, motorized infantry company, and a tank company with the 9th ID. He served as a tank co/tm and battle staff observer controller on the NTC live-fire team. Currently, he is the 16th Cavalry Regimental S3.

The After Action Review:

The link between training and the Army Standard

by Captain Mark Alan Eastman

"These are hard times in which a genius would wish to live. Great necessities call forth great leaders. . . therefore it is said that one may know how to win but cannot necessarily do so." (Leaders, Sun Tzu)

Battles are won because of successful engagements at the platoon and company level. Many mistakes in planning battles at higher levels can be overcome by aggressively executed fundamentals. Our success on the modern battlefield depends on executing basic tactics to standard. The purpose of this article is to provide the combat leader/trainer with doctrine, techniques, and ideas for conducting an After Action Review (AAR). My intent is not to restrict the combat trainer in the conduct of AARs, but, to supplement existing references.

Our success depends on performing to the Army Standard. In order to assess our training and performance we must conduct an AAR following each training event. The AAR is the critical process that links training and standards. The AAR is a review of the training event that allows the soldiers to "discover" for themselves what happened during training, and most importantly, why. The AAR is a professional discussion that includes all members of the training unit and focuses on established objectives for training. The AAR gives soldiers the opportunity to identify strengths and weaknesses and to "discover" solutions to correct weaknesses and maintain strengths. The AAR is not an evaluation. An AAR should not judge success or failure. It should not be a lecture or a critique. The AAR must not humiliate or embarrass soldiers, undermine the chain of command, or become a loose discussion/bull session. The AAR must have structure and must focus on training objectives. This process is key to learning our strengths and weaknesses, and we, as trainers, must not place unrealistic expectations on performance and outcomes that cause the AAR to become a "bloodletting" session.

Who attends the AAR? At platoon level, the entire element attends. But, depending on the level at which the AAR is conducted — for example, at company or task force level — it may be necessary to limit the AAR to leaders. Attendance may be limited during continuous field operations or to preserve the individual soldier's confidence in the chain of command when the unit performs poorly. Regardless of the circumstances, all expected attendees must be present and an AAR must be conducted after each mission without exception. The focus of AARs at platoon and company level must be the junior leaders, squad leaders, sections sergeants, tank commanders, and their equivalents. The individual soldier attends the AAR for several reasons. First, to satisfy his natural curiosity and need to know what his platoon, company, and task force accomplished during the engagement/training event. Secondly, to discuss his contribution. Finally, to serve as a participant whose comments help his platoon leader discover how to improve the performance of those he leads and the overall effectiveness of his unit. The platoon sergeant, platoon leader, company commander, staff and task force commander attend AARs at each level for much the same reasons. The AARs at company and task force level serve to satisfy the leadership's need to know the battle outcome or results from a major training event. The attendees discover, by their participation, what can be done to improve the performance of their subordinate leadership and their entire element, at platoon, company, or task force level.

There are some general guidelines and suggestions for preparing and presenting the AAR. The combat leader conducting the AAR must look sharp and wear the proper uniform (in the field environment by unit SOP, full field uniform with Kevlar). He must maintain eye contact; avoid wearing sunglasses. He is the center of attention and focus, and must not allow distractions such as eating, smoking, or sleeping to occur during the AAR. He sets the standard for conduct of the AAR and sets the tone for learning. The AAR should last no longer than one hour and be conducted as soon after the event as the situation allows to avoid distraction from follow-on missions. An AAR which lasts longer than one hour tends to wear on the attention span of the participants and reduces the training value. The combat leader must keep in mind that he is not only training the unit tactically and technically, but he is also teaching the unit "how to train." The trainer must be aware that his methods may be imitated by those he is training, so set and demonstrate the standard. To enhance the presentation, consider holding the AAR where most of the action occurred, where the participants can "see the battlefield." For example, hold the AAR at an obstacle where the unit attempted or succeeded at breaching, or on a platoon/company battle position overlooking the en-

gagement area, or in the unit training room. The actual area can be a very effective training aid. In the AAR, the combat leader uses training aids to facilitate discussion. Examples of commonly used training aids are: charts displaying defensive planning steps, actions on contact, formations, or reverse planning schedules; the use of a terrain model or sand table with micro armor; butcher paper, or chalk on the side of a vehicle to display key information from the training event. Training aids, along with an agenda or format, can greatly enhance the organization and content of the AAR. Besides site selection, training aids, and content organization, ensure the AAR setting provides reasonable comfort. If possible, get the unit out of the elements, allow the participants to take off their gear and relax. The goal is to facilitate their ability to concentrate, participate, and learn.

The responsibility for how the AAR is conducted, the format used, and the AAR site is up to the professional judgment of the combat leader/trainer. Consider the following as basic guidelines in a field environment (focusing on individual, collective and leader skills):

- What was the outcome of the engagement at company/team and task force level?
- What was the enemy plan/observations (Briefed by an OPFOR leader, if available)?
- What was my unit's contribution to the outcome of the battle?
- What did we fail to do? What were our weaknesses?
- What are our strengths, and how can we improve for the next mission?
- Refight the battle on a sand table, reinforcing the lessons learned... Keep the battle focus!

Several formats for organizing the content of AARs are available for both field and garrison training events. Most importantly, the AAR must be structured in a manner to encourage learning. The plan-prep-execute format is a logical sequence. Listing skills to sustain and improve at the beginning of the AAR is an effective technique and good "ice-breaker." The use of key events, chronological sequence, and the seven battlefield operating systems are all effective techniques for structuring the content of your AAR. Despite the method used, the trainer must structure the AAR so that the participants "discover" key points about their performance and how to improve.

During the conduct of the AAR, the combat leader/trainer should identify, up front, the key issues/training objectives (task, conditions and standards) to be discussed during the AAR. Additionally, the trainer should ask questions in a way that encourages participation from the attendees, avoiding questions that give the opportunity for a "yes" or "no" answer. The AAR must always end with comments on safety. The focus of the AAR at platoon/company level should be centered toward execution of the mission. Soldiers are usually more excited about what they did to the enemy, and vice versa, than the planning and preparation phases of the operation. But, in the early stages of the training event, focus on preparation and planning can help identify deficiencies in PCIs and op orders so as to enhance future performance. During the latter portions of the training exercise, the focus should shift toward mission execution. The ultimate goal of distributing the time allotted for the AAR is as follows; 25 percent plan, 25 percent prep, and 50 percent execution. Again, the combat leader/ trainer ultimately decides what the most critical aspects of the mission were, and allocates his time and efforts accordingly. His focus is on issues that will "make the most money" for future missions.

The most important part of the AAR at any level is the "discovery" of corrective actions and training that can solve the problems identified by the training unit. The key question in the learning process is, how can we do this better next time? The combat trainer is the subject matter expert and must have a firm grasp of Army doctrine. He must guide the questions so that answers lead to the desired solution. This is the "heart and soul" of the After Action Review.

The AAR process, by its nature, often focuses on the negative aspects of performance. Where outstanding performance is observed, it should be brought out. Always end the AAR on a positive note. If done properly, your unit will look forward to the AAR and will be a better trained unit because of their participation. "This is called winning a battle and becoming stronger." (Griffith 56)

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Personal Experience-37 rotations as an Observer/Controller at the NTC preparing, conducting, and participating in over 300 After Action Reviews.

Captain Mark A. Eastman is currently assigned as the S3 Air, 4th Battalion, 37th Armor, 1st Infantry Division (Mechanized), Ft. Riley, Kan. He is a 1986 Distinguished Military Graduate of the University of Louisville and received a Master's Degree from Chapman University, Orange, California in 1992. He served as a tank platoon leader, executive officer, and scout platoon leader for 2-72 Armor, Camp Casey, Korea, and as an observer/controller for the Armor Task Force Training Team (Cobras), Operations Group, National Training Center.

cords may be reviewed at other than expected times for very important reasons, and that all soldiers should keep their files in continuous readiness.

Voting of the records is a very serious business and one that is not taken lightly by board members. It is impossible for any one board member to advance the chances of any individual for selection. Each member must vote each file in accordance with the standards developed by the panel. Each member is sworn to perform the duties in a manner which precludes "talking out of school" or influencing other panel members and their vote on any file.

The NCOER

Panels have their own personalities and idiosyncrasies. But, because of the checks and balances, some generalities may be made about their performance from board to board. One of those generalities concerns the treatment of the NCOER and its value to board members in the selection process. In my opinion, the most important areas which will enhance the chance for promotion or school selection are performance and potential. Where does the board member see information which deals with these two very important areas? The answer, obviously, is in the NCOER. Consequently, I have several observations and/or recommendations to make which may help all involved in the rating, senior rating, or reviewing process understand just how critical their understanding of the NCOER is to the Army and to the individual soldier.

Job description. Since promotion boards dealing with selections for SFC, MSG or CSM/SGM are recommending soldiers for key leadership positions, members of these boards will look for evidence of sound leadership, full success in positions requiring leadership, and for success in demanding leadership roles. Why? Sergeants first class are platoon sergeants and will be expected to perform as leader trainers. Master sergeants may be first sergeants responsible to lead and to supervise leaders of company-sized organizations. The rationale continues for those eligible for consideration for sergeant major/command sergeant major. Soldiers with the best potential are those who have excelled in leadership positions. In preparing the job description, raters must focus upon the leadership aspect of the rated duty. NCOs must be leaders, no matter what the duty position and its special, often technical requirements. Often, raters neglect this very important fact when the traditional duty description is for a staff or administrative function. Raters and senior raters must focus on the leadership required of an NCO while serving in these roles. Evaluate how well the NCO has served as a leader, no matter what type of organization.

Values/NCO Responsibilities. This is an area which is often taken for granted or ignored, probably because counseling is not where it should be in many organizations. Boards often see evidence of misconduct of a serious nature in other areas of a file but, see no reflection of any acknowledgment of that misconduct in the rating process. Although no direct statement concerning UCMJ Article 15 action is allowed on the NCOER, patterns of misconduct should be captured in the Values section. When the poor behavior is not reflected, it is probably because the soldier has not been counseled through performance counseling that misconduct is a breach of the corps NCO values. Raters miss the opportunity to send a clear picture to the board about the performance of the soldier. Or, raters send a message that such misconduct is really not an indication of poor performance. Although we cannot refer to action taken as a result of UCMJ, clear unambiguous comment may be made about the performance characteristics which cause the need for a 'NO' mark. Any mark of 'NO' in the values portion of the NCOER must be substantiated by clear and understandable reasons as bullets.

Anything less than EXCELLENCE block checks means I won't get promoted, right? Wrong! In fact, if you receive all EXCELLENCE ratings and don't deserve them, your NCOER will have marginal and, perhaps, a negative impact upon your chances. It is my experience that board members treat unsubstantiated EXCELLENCE ratings as SUCCESS (meets standard) at best. When soldiers deserve EXCELLENCE ratings, raters must check the EXCELLENCE block and substantiate that rating by giving clear and irrefutable evidence of that rating in the bullet comments. The evidence must come from the counseling record and must be specific and clear. Vague, general, and trite comments will usually be ignored by board members and the unsubstantiated ratings, most probably, will be mentally thought of as SUCCESS. The most successful soldiers have clear patterns of excellence yet have most of their ratings in SUCCESS.

Part Va&b (Overall Performance and Potential). The most competitive files were of soldiers who were consistently rated as AMONG THE BEST by the rater. What board members look for is a consistent pattern of performance while reviewing the NCOER. No one NCOER will make or, necessarily, break the chances for any NCO. However, demonstrated excellence in a variety of challenging jobs will enhance those chances. I can say, though, that those NCOs who are selected are almost always rated as being AMONG THE BEST by different raters in different units or rating chains.

The rater's evaluation of potential is one area that is probably the least effectively used by raters. Reading the fine print on the NCOER form tells the rater to list three positions in which the rated NCO could best serve the Army at his/her current or next higher grade. Most raters dutifully do just that. After taking pains to properly rate the NCO and trying to portray that NCO as one of the best in the Army, raters often fail to continue

that effort. Raters dutifully list the current duty assignment of the NCO as the first recommendation for his best contribution to the Army. What the rater is doing is sending a mixed signal to the board members. Board members wonder if the rater has inflated his rating or if he just doesn't understand the system. Raters, don't leave your intention unclear. Don't leave any interpretation up to the board member. List as the first duty the most significant at a higher grade. For example, list platoon sergeant of an M1A1 tank platoon as the duty recommendation for a staff sergeant 19K as the first position recommended. Should that staff sergeant be serving with excellence as a tank commander or section sergeant and the first recommendation is for tank commander, the board may misinterpret and decide the NCO needs more maturation as a 19K tank commander before recommendation for promotion.

The Senior Rater Performance and Potential Block Checks. Use of this area of the NCOER is probably the least well-used of all areas because there is not sufficient guidance to senior raters on how the blocks should be used. Senior raters should develop a consistent senior rating "philosophy" that they adhere to in senior rating all NCOs within their responsibility. One such philosophy might be to distribute all senior rated NCOs over a bell curve. Those on the lower left third would be all who should be promoted before anyone else and would receive a 1 block rating from the senior rater. Those in the middle third, clearly the majority of the NCOs, are highly recommended for promotion and would receive a 2 block rating. To the right of the bell curve are those who should be promoted if there is room. These NCOs would receive a 3 block rating. Any NCO not recommended for promotion but recommended for retention in grade would receive a 4 block rating, and an NCO recommended for dismissal under QMP provisions would receive a 5 block rating. As a philosophy, this system is practical and will probably work for the senior rater. The problem is that there is no such guidance to the community as a whole, and resultingly, there is no standard for a system. The important point to a senior rater is that he must develop a personal system and be consistent in its application.

The senior rater must use his bullet block to describe the rated NCO's potential. A rule of thumb might suggest that 60 percent of the comments should be upon potential. If the senior rater uses five bullets, three ought to deal with potential. The most important function of the senior rater is to describe the potential of the rated NCO. Officers tend to take a more critical view of the senior rater's responsibility in the preparation of the NCOER because officer OERs and ratings are heavily impacted by the senior rater portion. Since one-third of the panel members normally dealing with CMF 19 selections are officers, all NCOs should realize that those officers may place a heavier weight on the senior rater portion of the NCOER than their NCO board member counterparts.

Where to Go From Here

Most of the information which you have just read is neither new nor secret. It is available in official publications and now in the journal of our specific profession. In our profession of arms, all of our training effort is directed toward increasing combat proficiency — in short, our warfighting ability. Consistent with that effort, leaders, commanders, and individual soldiers must advance those soldiers who possess the most favorable characteristics of the warrior ethic to positions of greater responsibilities and challenge. Raters, senior raters, and reviewers are encouraged to understand the use of the NCOER during promotion board proceedings and to benefit from the observations concerning its value and importance. Individual members of the Armor community's great NCO corps are encouraged to take the appropriate actions I have suggested. What you should do is review your own standing as a soldier who is both a participant in the NCOER rating and reviewing process and as a soldier who is rated. I've touched upon information that is important to you in each of the categories. Use the advice. Review your file. Correct the problems you discover. Let no obstacle stand in your way. Counsel your soldiers. Focus upon leadership. Understand how promotion boards work, and be serious about your service. In the coming months, these efforts will have a telling impact upon our branch and Army as a whole as we adjust to the realities of the new world and fiscal environments.

Colonel Gary M. Tobin was commissioned in Armor in the Regular Army out of ROTC. He has commanded tank and cavalry units, most recently the 3rd Squadron, 7th Cavalry in Schweinfurt, Germany, and has commanded a Training Brigade at Ft. Knox, Ky. His assignments have been to air cavalry, attack helicopter, and armor units and have included positions as armor battalion executive officer, armored division brigade S3, French War Plans officer on the CENTAG war plans staff, and division chief of Combat Maneuver Division, Force Development Directorate, ODCSOPS, HQDA. He has served twice as panel chief for the Armor and Engineer panel of senior NCO promotion selection boards. He has attended the Armed Forces Staff College, the Command and General Staff College, and the U.S. Army War College.

LETTERS

Traces Remain of Union Forts That Guarded the L&N

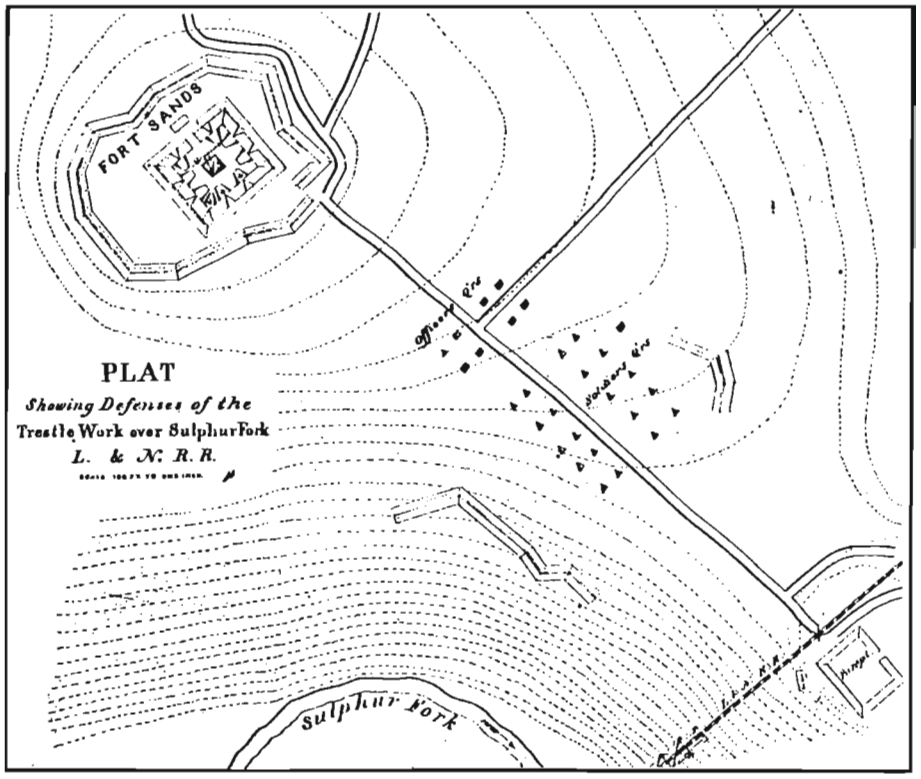
Dear Sir:

I enjoyed your article in the March-April issue on Morgan's Christmas Raid. Your readers might be interested to learn that one of the Federal positions attacked and taken by Morgan's men — that guarding the L&N trestle over Sulphur Fork (later known as Fort Sands) — has lately been in danger of succumbing to progress. Fort Sands remains in excellent condition, with the main fort and outer works clearly evident; perhaps the best preserved Civil War fortification in Kentucky today. The site was long thought to be on private property, but the deed was recently declared unclear in court, the land was sold at auction, and the loggers went to work on it.

The logging operation is now concluded, and fortunately, there was almost no damage done to the fort itself. However, the land is once again for sale (Anyone want to own a Civil War fort for $27,000?) and we can only hope that a buyer sympathetic to preservation can be found.

Fort Boyle, the work guarding the Broad Run trestle, is in similar shape (although not as well defined as Fort Sands). The main body of the fort is on top of the hill, about 200 meters behind the point where the photo in your article was taken. I have enclosed copies of an October 1863 map showing the defenses of Muldraugh's Hill. Apparently, these two forts were only built to this configuration in early 1863, and Fort Boyle was later enclosed completely. An August 1863 Federal report indicates that Forts Sands and Boyle were successful in defending against Confederate attack earlier that year.

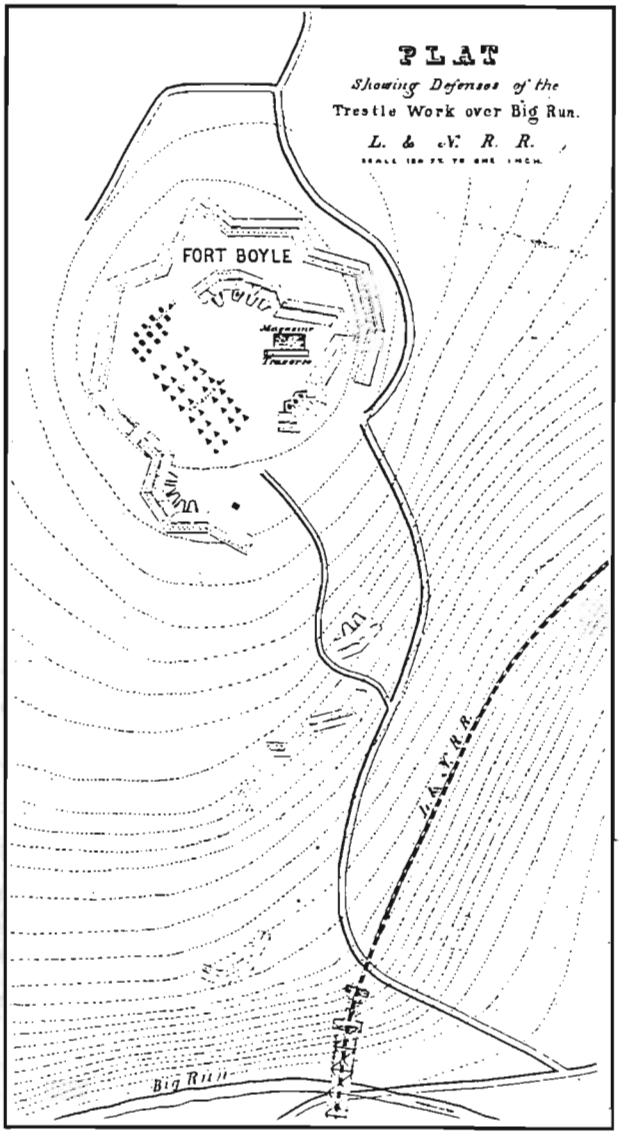
Geoffrey R. Walden
Elizabethtown, Ky.



Mr. Walden's letter included copies of two maps of Fort Sands and Fort Boyle, above and right.

A photo of the remains of Fort Boyle ran with the story and is reprinted below. It was taken from a point on the map near the junction of the two roads that meet in a "Y" uphill from the railroad line. The camera was pointed toward the trestle at bottom of map.

The parapet and trench seen in the photo are shown on the map near the "Y" junction.



New Solutions To Mine Clearing

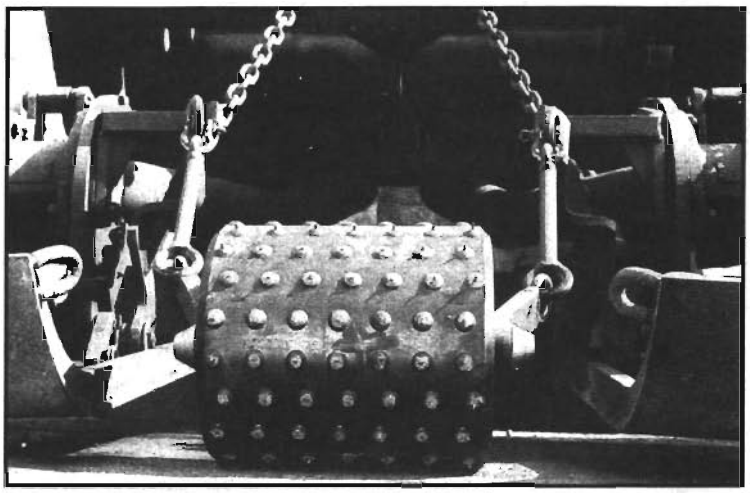
by Colonel Frank E. Varljen (Ret.)

As a squadron commander of the 11th ACR in Vietnam, the author gained a first-hand appreciation of the mine threat. He is currently a consultant to IAI-RAMTA, the Israeli firm that produces plows and countermine equipment. He is responding to several points in Major Lawrence Steiner's story, "Preparing to Breach" (Nov-Dec 92 ARMOR) -Ed.

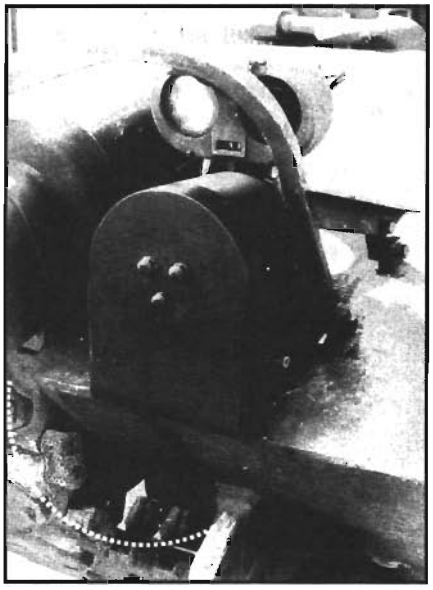
In covering some peculiarities of the breaching equipment...the author discussed the "roller dogbone" or anti-magnetic roller. I would like to correct, clarify, and expand on some of the points made in that discussion.

First, he stated that the anti-magnetic roller needed to travel at least 12 mph to operate effectively. This is incorrect. Detailed testing was conducted by the U.S. Army Belvoir Research, Development, and Engineering Center (BRDEC) and the U.S. Marine Corps prior to the purchase of the equipment and shipment to Army and Marine Corps units for Operation DESERT SHIELD and DESERT STORM. ...Multiple tests were conducted at 10, 7, and 4 miles per hour. All tests resulted in 100-percent effectiveness in detonating the magnetic fuzes. The manufacturer of the device — IAI-RAMTA — claims that the device is effective at any speed, as long as the device is rolling/turning. The above-described test results are available from either the BRDEC or IAI-RAMTA.

Second, the author discussed the problem of the rolling anti-magnetic dogbone hanging too low and bouncing on the ground, even when the plow was not in use, i.e., when the plow was raised to the travel position. This may sound like a problem; however, it must be understood that the device was purposely designed this way to provide protection against magnetically-fuzed mines for the plow-mounted tank, even during non-plowing modes. Since scatterable mines, which are almost all magnetically fuzed, can be spread quickly and easily by artillery and helicopters, they are a significant threat to unit mobility at any time and place on the battlefield. The rolling anti-magnetic dogbone provides a capability to defeat such a threat as a unit moves around the battlefield. As the dogbone touches the ground frequently during tank movement, the device rolls and creates the magnetic field that simulates the tank and explodes the mines forward of the tank, rather than under it. I believe that tank crews appreciate this feature.



Above, the IAI-RAMTA Anti-Magnetic Mine Actuating Device (AMMAD) roller, compared with the newer on-board type, below, which resembles a headlight on the tank's front slope. The on-board type can be added to any vehicle to help neutralize the threat of scatterable mines.



A related problem that was created with the bouncing, rolling dogbone was that the linkage would, under some circumstances, become tangled and, therefore, cause it to hang at a cocked angle. When that happened, there was a remote possibility that it would prevent one of the plow moldboards from pentetrating the ground when lowered. This problem has now been corrected. Over the past year, IAI-RAMTA provided an improved version of the arms and stoppers that effectively prevents this tangling of the linkage on the rolling dogbone...

Third, a next-generation anti-magnetic mine actuating device has been developed by IAI-RAMTA and is now being tested and evaluated by the U.S. Army and USMC. This new version is mounted on the vehicle, and it does not need to roll. It is electrically operated and can be mounted on any vehicle threatened by scatterable mines.

This on-board device weighs only about 250 pounds, looks like an additional set of headlights, is survivable in a combat environment, draws less than 20 amps on a 24-volt system, does not cause electromagnetic interference with vehicle systems, and is relatively inexpensive.

It appears to be a great improvement over the VEMASID system the Army and USMC have been trying to develop for many years at great expense.

BOOKS

Panzer Leader by Heinz Guderian. Ballantine Books, New York, Eighth Printing 1987, 400 pages, paperback, $3.95.

"Nothing can alter my inner soul: I shall pursue my own straight course and shall do what I believe to be right and honorable." Thus Colonel-General Heinz Guderian quotes Frederick the Great and sets the theme for a succinct yet rich chronology of his experiences as one of the principal architects of German armored doctrine during World War II. An outstanding book, Guderian's *Panzer Leader* masterfully blends German military operations during World War II with personal vignettes. The result is a narrative of his memoirs that reads like a novel, but with the details of a chronicle.

Tactically, Guderian has few equals. He was a disciple of B.H. Liddell Hart's theories regarding armored warfare and incorporated them into German Panzer principles. His breadth of warfare incorporated strategic considerations as well. Guderian's knowledge of the German National Strategy was simplistic, yet thorough. He understood the problems of completely defeating France, and the strategic ramifications in allowing the Allied forces to evacuate Dunkirk. He also provides some strategic discussions of the Mediterranean theater and German dealings with the Italians, as well as the problems with partisans in the Soviet Union.

Guderian is quite candid in describing meetings with senior officers throughout his military career. He was a fanatical and competent armor officer, but his visible disgust with incompetence resulted in Guderian having enormous difficulty conveying the importance and utility of armored warfare to higher officials. This communication difficulty followed him as he progressed through the ranks of the German Officer Corps during World War II, particularly after he was rehired as Inspector General of the Armored Force and had to work directly for Adolf Hitler.

His personnel vignettes are instructive and often amusing. Through these experiences, Guderian demonstrates an important characteristic of a successful commander — leadership from the front. During Guderian's three campaigns as a ground commander during WWII (invasion of Poland, invasion of France, and invasion of the Soviet Union), he felt it necessary to constantly move from front-line unit to front-line unit in order to get a full assessment of the campaigns. Oftentimes, this resulted in his being further forward than his front-line units (an idiosyncrasy of Erwin Rommel) though Guderian avoids several possible catastrophes.

The one flaw in this book is the maps. They are not very clear, use German WWII symbology, and are too few in number. This makes it difficult to follow Guderian's battle descriptions. If the publisher could correct these minor problems, then the reader could devote more time studying the tactics and absorbing the flavor of Guderian's experiences.

Military historians will enjoy this book. Those persons of the profession of arms, particularly armor officers, should continually study *Panzer Leader* in order to completely gain the insight Guderian provides regarding tactics and leadership. Guderian's wisdom is as much applicable today as it was in 1945.

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(Most of the Armor officers I know who study history will tell you this is a "must read" book, and though a few years old, it still makes a worthwhile addition to your professional library. — Editor)

First Recon — Second to None: A Marine Reconnaissance Battalion in Vietnam, 1967-1968 by Paul R. Young. Ballantine Books, New York, 1992, 246 pages, paperback, $4.99.

Despite the come-on of the title, *First Recon — Second to None* is not about a Marine reconnaissance battalion in Vietnam. There are no major battles, no recognized characters, few familiar places, no maps to orient the reader and no grand strategy, operational art or tactics. This book will not be a classic. It is generally unremarkable, a typical airport paperback.

It is, however, an interesting series of vignettes about a Marine reconnaissance platoon, led by the author as a Marine lieutenant during his one year combat tour in Vietnam, 1967-68. This is Paul Young's first book; he is a school teacher in California, with an incredible memory for color and detail. His book is well written in an engaging, matter-of-fact style, combining humor and insight with tension and excitement.

It appears that Young has written this book, not so much as a message to others, but more likely as a message to himself. Like so many Vietnam books recounting personal experiences, the author's motivation seems to be a cleansing of his own memory. Nonetheless, there is good value and wisdom in his tales. His focus is on the actions of his small recon platoon and the many small recon patrols he led, so naturally his scope is quite narrow. The author's own character is the only one fully developed, the other Marines and sailors in the book are usually just passing through. But there is no bravado here, no obvious self-serving display by Mr. Young. Instead, you will find a young officer faced with uncertainty, fear, and the heady responsibility for his Marines' lives.

Mr. Young has many adventures leading reconnaissance patrols deep into enemy-controlled areas, looking for Viet Cong and North Vietnamese Army units. He relates the excitement and joy of springing successful ambushes, as well as the tension and then the sudden fear of unexpected enemy contact. Most candidly, Mr. Young tells of his failures, his lapses of leadership — getting a Marine shot by friendly fire because of a poorly placed overwatch team, giving away his position by carelessly discharging his weapon while on patrol, and getting lost in the dark and then reporting false patrol positions to higher headquarters to hide his error.

Despite his mistakes, Mr. Young was a good lieutenant who cared for his men and who led by example. He did more things right than wrong and certainly carried his weight in the war. As a paperback, *First Recon — Second to None* is an inexpensive, quickly read, entertaining book, but don't expect much more than that.

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The Odyssey of a U-Boat Commander, Recollections of Erich Topp by Erich Topp, translated by Eric C. Rust. Praeger Publishers, Westport, Conn., 1992, 242 pages, $49.95.

Originally published in Germany in 1990 under the title "Fackeln uber dem Atlantik," this book was likely of more significance there than in the English version. Admiral Topp divides his book into three parts: Before the War, World War II, and After the War. He uses his diaries, personal correspondence, and remembered experiences to produce these recollections of his life. The first two parts cover Topp's youth, his

early years in the German Navy, and wartime service as a submariner; the third part his struggle to become a successful certified architect and his return to the Navy — the West German Navy — and his military career until his retirement in 1969.

The book is largely a personal history, played against the background of current history. His theory is that only one who has lived and struggled during a period of history can really understand that history. He tries to impart an understanding to his reader of Topp's period of history, in particular of the traumatic German history of the years 1933-1959. Great portions will be better understood by a German reader, and in fact disagreed with, in many cases, by American readers. For example, he explains that he could accept Hitler's National Socialism because he could see that Germany "was moving forward economically, in domestic matters, and in foreign affairs." He was also among the Germans who did not learn of National Socialism's excesses and crimes until after the war. He rejects the idea of collective guilt for the excesses of Germany in the war; each individual should assess his own share of the guilt, if any.

The Admiral's only conflict between duty and conscience arose after 1943, when the U-Boat war continued with great loss and little prospect of success. That can be easily understood from his statistics of the loss of 30,000 of 39,000 crewmembers sent to sea during the war. In his opinion, the "hubris" of her leaders was most responsible for the defeat of Germany. That is taken to mean the arrogance and exaggerated self-confidence of the leaders.

The pages covering his study for his architectural degree and work as an architect continue to be interspersed with numerous references involving National Socialism. By the late 1950s, Erich Topp had become a very successful architect, with his greatest interest in building theaters. He evidently had developed his own hubris a bit, as he indicates he did not desire to spend any time in "arguments with presumptuous and insolent patrons."

In early 1958, architect Topp and other selected personnel attended an orientation course with the choice of selecting or refusing integration into the West German Navy at the end of the course. Despite some depressing times during the course, he selected the Navy. In July 1958, he arrived in the United States where he served in Washington until November 1961 on the staff representing West Germany on the NATO Military Committee. Subsequent to that, he served in increasingly important Naval positions, becoming Deputy Commander-in-Chief of the Navy from which position he retired in December 1969. His West German Navy career is placed in the context of contemporary history.

Admiral Topp considered Germany had achieved, in becoming part of NATO, something her leaders for 50 years before that had not succeeded in doing. By joining the major Atlantic powers, she had made safe the German dependence on access to the sea and the defense of that access. His efforts to increase the understanding of history in his time may serve to bring about a better understanding of how that great achievement came about. Not a historian, his recollections may assist future historians in understanding his era of German history.

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Hidden Ally: The French Resistance, Special Operations, and the Landings In Southern France, 1944 by Arthur Layton Funk, Greenwood Press, Westport, Conn., 1992. 368 pages, $45.00.

In this book, Arthur Layton Funk concentrates on the exploits of Resistance and Special Operations personnel in southern France after Allied landings along the French Riviera in August 1944. Though a portion of the book deals with preparations prior to the landings, the author places his greatest emphasis on the military campaigns that follow. By linking the activities of the Resistance with those of the American army, the author provides much new information about an important and complex subject.

Funk makes it clear that the Maquis brought substantial assistance to the regular forces. The 117th Reconnaissance Squadron explained that "strong support was received from the local Maquis who were well organized in this vicinity by the OSS.... Their deeds will live forever in the memory of the squadron." Other American commanders also offered praise and thanks to the Maquis for providing important information and guide assistance. Problems, nevertheless, appeared. Some Allied commanders did not understand the capabilities of the Maquis and asked them to perform missions that only well-trained and equipped infantry could accomplish. Others assigned the Maquis missions (such as guarding prisoners) that caused grumbling and failed to take advantage of their capabilities.

A strong theme that emerges from the book concerns the difficulty of coordinating military campaigns with the activities of indigenous guerrillas or of recognizing how such forces can assist an invading or intervening force. Given the increased likelihood of such operations in the future, Armor officers should carefully consider how these complexities have been addressed in the past and should prepare themselves to address them in the future. Funk's admirable analysis of operations by the Resistance and Special Operations forces in 1944 is a fine place to begin such preparation.

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Call to Duty by Richard Herman Jr., William and Morrow Company, Inc., New York, N.Y., 1992. 380 pages. $20.

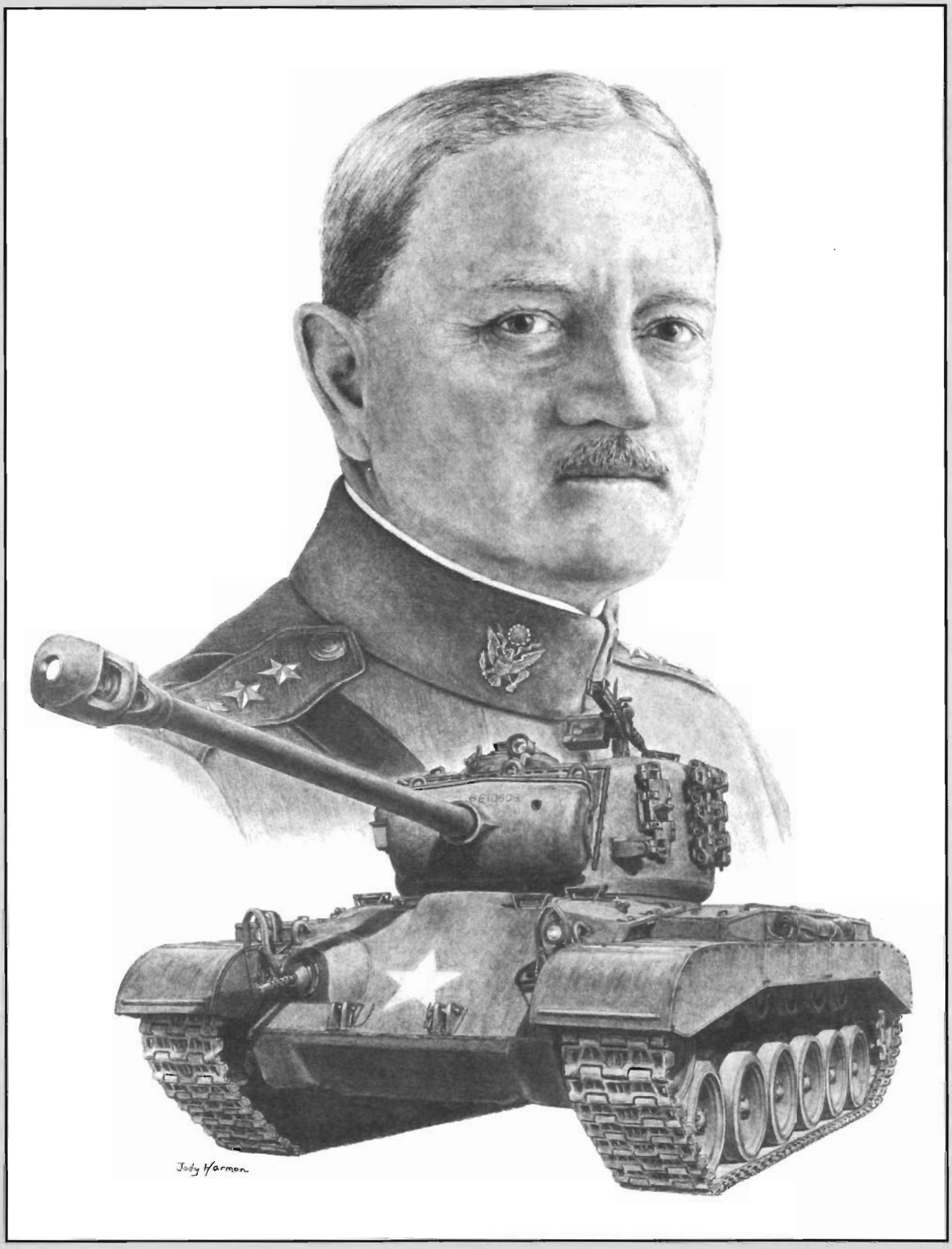
This book has a plot within a plot and centers on the fictional character, Matthew Zachary Pontowski. As President of the United States, he is confronted with the kidnapping of four United States citizens by modern-day pirates off the coast of Malaysia. One is the daughter of a U.S. senator who is also Pontowski's most powerful enemy in Washington. As President Pontowski contemplates whether or not to order special operations forces to rescue the hostages, he also recalls how he also faced danger as an RAF Mosquito bomber pilot in World War II.

The book goes back and forth between these plots to good effect. Once the beginning sets the stage for the characters from Pontowski's experiences in World War II and the present, the action accelerates and never slows down. The World War II plot is written in vivid historical detail. The rescue plot is written with an insider's view for detail into the machinations at the National Military Command Center in Washington, the closed walls of the Delta Compound near Fort Bragg, and the Golden Triangle in Burma.

But this book is more than an adventure story; it also attempts to answer why soldiers, sailors, and airmen go on the most perilous of missions without reservation. The author believes that they go simply to answer the call to duty, for they are strongly committed to a professional values and ethics. I happen to agree with him.

I would recommend this book as an addition to your library. When you tire of reading doctrinal manuals, take this book off your shelf, settle in a comfortable chair and simply read it for enjoyment.

MAJ ARMOR D. BROWN
Ft. Leavenworth, Kan.



"The Namesake Series"

This portrait of General John Pershing and the M26 medium tank that later bore his name is another in the new series by *ARMOR* Contributing Artist SPC Jody Harmon. The portraits are in color and will be available through the U.S. Armor Association.

PIN: 071247-000