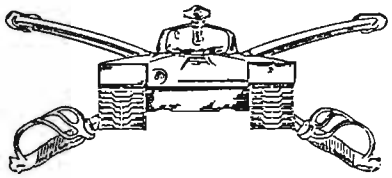
ARMOR

The Magazine of Mobile Warfare

November-December 1986

SCHWERPUNKT



All too often, we in Armor tend to concentrate our thinking on operations and training in Europe or in the desert. I suppose that's natural, given where our forces are and our national interests. But in doing so, we forget that armor and armored cavalry have been, and continue to be, extremely effective in other sorts of terrain — even in the mountains.

The cover story of this issue, "Armor Operations and Training in Korea," by **Lieutenant Colonel Oleh B. Koropey,** shows us how to train and fight in terrain we have often believed too rough for tanks. The feature's companion article, "The Tank Battalion of the North Korean People's Army," by **Joseph S. Bermudez, Jr.,** describes the armor threat in Korea and is an informative view of two types of North Korean fortifications. I commend both of these features to you.

Over several years of dedicated service to *ARMOR,* **Mr. Bob Rogge** has written many pieces for the magazine. In this issue you will see his most recent one: "Tiger, Tiger, In My Sight." The article is an informative, interesting, and enjoyable look at a tank that brought no enjoyment to the Allies of WW II.

Analysis of the battles waged by the ground units of the Israeli Defense Force has deeply affected the way we train. In 1967 and in 1973, all participants in the land battles of the Middle East learned, and then relearned, lessons in combined arms warfare. **Lieutenant Colonel Sewall H. Menzel,** in "Zahal Blitzkrieg" shows how the Israelis conducted their "lightning war" in 1967 and looks at how combined arms tactics relate to the operational level of war.

Few men have so continually supported armor better or with more intensity than **General Bruce C. Clarke.** He was one of the first armored engineers, and his biography reflects service as a commander at all levels of the Army and Armor. He has been, and continues to be, a hard-charging advocate of our force, but more importantly of strong, meaningful, and effective leadership in whatever branch of service. I strongly recommend his "Estimate of the Armor Situation." General Clarke asks some very relevant questions in this feature. I sincerely hope that we, as professionals, have the answers.

ARMOR and its predecessor, *The Journal of the U.S. Cavalry Association,* have never backed away from controversy and new ideas for the professional. In "Armored Infantry — The Real One," by **Dr. Azriel Lorber,** we certainly have a controversial idea: The Armored Individual Combat Vehicle. Just before I began to write this column, I noted in *Army Times* that the Defense Advanced Research Projects Agency (DARPA) has begun a $400 million program to develop one-man fighting vehicles. Perhaps what Dr. Lorber suggests isn't too far off.

Before I conclude, I want to give you a "heads up" on the January-February issue of *ARMOR.* Most of you probably believe that Armor just naturally grew out of Cavalry. You're wrong. With the first issue of 1987, we begin a serialization of "The Ten Lean Years" by **Major General Robert Grow.** As there is sometimes now, there was "back then" intense and unprofessional in-fighting between branches of our Army. "The Ten Lean Years" is the story of the fight to give birth to Armor and of those people who fought to keep that from happening.

To all of our readers, we at *ARMOR* wish you the best for the holidays and the new year. —GPR

ARMOR The Magazine of Mobile Warfare

FEATURES

DEPARTMENTS

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LETTERS

Why Not a Badge?

Dear Sir,

I am writing about an emotional issue which has been with the armor and cavalry community for a number of years. That issue is a distinctive badge or insignia to identify a soldier as a mounted warrior.

I read a recent article in the July-August 1986 *INFANTRY* magazine in which a lieutenant from Fort Ord was proposing a number of new insignia to identify the light infantrymen assigned to the 7th Inf Div (L). He quoted General John A. Wickham, U.S. Army Chief of Staff, in his White Paper on the light infantry division as writing "accoutrements to foster the elite image of the soldiers in the light infantry division also must be designed and provided."

I say that enough is enough. The infantry has a badge, cord, hat, or tab to recognize nearly every facet of infantry service.

As the other member of the U.S. Army's ground-gaining forces, we in armor have nothing to set us apart except the tanks we ride in. I do not suggest an interbranch rivalry with our sister branch. All I ask is the recognition our soldiers have earned and deserve.

Several years ago, I read an article in *ARMOR* Magazize written by then USAARMS CSM, CSM Gillis, in which he proposed an Armored Forces badge based on the old Armor School beret badge. A point he made in the article was that this proposal marked the 100th anniversary of the cavalry and armor branch trying to get such a badge. I propose that the Army adapt badges based on existing designs, not a new idea at all.

When I was a company commander, a question frequently asked of me by my tankers was why they didn't have shoulder cords and branch disk backgrounds like the 11Bs billeted next door and why they were no longer allowed to wear tank gunnery qualification patches. I didn't have an answer for them then and I still don't.

JAMES E. HANDLEY
CPT, AR
MS IV Instructor
Marion, AL

The Black Beret, Round 2

Dear Sir,

First, I would like to say that it is about time somebody spoke out about the injustice armor personnel have been dealt by the removal of the black beret. The wearing of distinctive insignia for armor crewmen has been banned for no logical reason. Today's armor crewmen not only have to be proficient in all 19E or 19K tasks, but also must be qualified in many of the same areas that infantry tests to earn their EIB. To say that an armor crewmen is not a specialty or as demanding as infantry is ludicrous.

Today's armor crewmen must be skilled in tactics, indirect fire, NBC, communications, mine warfare, etc. A definite need exists for an Expert Armor Badge and to bring the black beret back home to armor forces everywhere.

I totally agree with SFC Kennedy's viewpoints and opinions. If armor everywhere were to stand up, I think we can get back what is rightfully ours. Armor personnel through history and today's tankers earned the right to keep their beret.

CARL W. ZABEL
PSG, TXARNG
Training NCO
Denton, TX

Black Beret — A Cav Issue Too

Dear Sir,

In the July-August issue of *ARMOR* Magazine, there was an article titled "Bring Back the Beret." The author brought out some interesting facts that we as soldiers must consider. He mentioned the fact that other NATO members who are in the Armor branch of their respective countries wear black berets. This is indeed true, as is the fact that our Infantry brethern wear distinctive badges, i.e. the Expert Infantry Badge (EIB), Airborne wings, and Ranger tabs, if so qualified.

What we must ask ourselves is, do we really need the same to show the ability and importance that we know we have? Are we not secure in the knowledge that we are the "Combat Arm of Decision?" Do we really require a symbol on our uniforms to prove to everybody else that we are indeed a vital part of the combined arms team? If that is true, should every other branch in the Army wear badges of their own importance? If finance clerks are the best in their field, should they wear a distinctive badge? These are questions that will no doubt arise when considering "Bringing Back the Beret." Others include the fact that we aren't prohibited from earning Airborne and Ranger qualification.

No, I do not disagree with the author; in fact, I support his desire. The reasons are simple. If we as soldiers in the United States Army are going to wear uniform items to signify our roles in combat, then we need to base this on the specific importance of our jobs. When a soldier has entered a specialty that requires him to risk his life in combat, on the front lines, he needs to have something to show that he has been assigned such a critical task in our Army organization. Consider it a small form of remuneration for the fact that he stands a great chance of losing his life for his country. And the Infantry *does not* run the highest risk in combat. For example, my unit is a divisional cavalry unit and if we go to combat, one of our primary missions is to go out in front of the entire division and find out where the enemy is. Being the first element to encounter the enemy, we run a higher risk of casualties than the Infantry, which comes up after we've reconned the area of operation.

Yes, as Armor soldiers, we need something to show that we have taken the ultimate challenge. Besides, as the author pointed out, the black beret belonged to us first...it never should have been taken away.

We know our ability and importance to the successful completion of a combat mission, but it seems that others have forgotten. It isn't that we need something to cling to, it's just that we need to show the rest of the Army that we have a vital role to play and we run just as much of a risk, if not more, than our Infantry brothers.

When considering if we should have our beret restored to us, perhaps our superiors should consider why they have allowed the other branches to wear distinctive badges and berets, and then weigh that against our cause.

MARK L. RENFROW
2LT, Cavalry
Tac Intel Ldr
Ontario, CA

How Do You "Erase" Smoke?

Dear Sir:

We in Smoke Division at the Chemical School read with interest the article written by Captain Mark J. Reardon, "Countering Soviet Smoke," in the May-June 1986 issue of *ARMOR*. We would like to offer comments on some of the technical points of the article.

In the opening scenario, we are somewhat confused as to when the friendly forces were first subjected to enemy artillery fire. In actual Soviet exercises described in *Soviet Military Herald* the smoke-HE artillery barrage is delivered on the enemy well before the Red forces enter ATGM range (about 4,000 meters). The smoke mixture in the artillery will be a mixture of toxic agents and plasticized white phosphorus (PWP), which is WP and powdered butyl rubber. PWP is an excellent obscurant well into the far infrared range of the spectrum, and depending on path-length, thermal sights would experience difficulty, if not impossibility, seeing through it.

Captain Reardon uses the term "bi-spectral" to describe thermal-obscuring smoke. "Bi-spectral" more accurately describes smoke which obscures visible and near infrared only. "Multi-spectral"

would be the correct term to describe visible, near, and far infrared (thermal) obscuring smokes.

The Soviets plan to place so much thermal-obscuring smoke on future battlefields that they even forego the employment of thermal sighting systems with their ground forces, as the systems would be rendered useless in such an environment.

Captain Reardon presents some interesting countermeasures to Soviet smoke employment, which we may incorporate into our lesson plans. But he does mention the use of 4.2-inch mortar smoke to "erase" Soviet smoke lines. We at the Smoke Division have as yet never been able to figure out how to "erase" existing smoke. Please elaborate on how this is done!

KEVIN W. KILLE
CPT, CM
Ft. McClellan, AL

Missile Loading "Implausible"

Dear Sir,

I enjoyed Captain Villahermosa's article on the T-80, though I do not agree at all with his description of the loading and firing configuration of the missile, which I believe to be totally implausible. Also, the tank pictured at the lead of the article is not a T-80, but a T-64A. The T-80 has the searchlight on the other side of the barrel, and a number of other small changes. My drawing that accompanied the article was done in the spring of 1986 when only a handful of unclassified photos of the T-80 were available. Since then, a number of new photos have appeared at an unclassified level which make it clear that the identifying feature of the T-80 (if you can't see the wheels) is the location of the searchlight to the right of the gun tube (when viewed from the commander's station). If viewing the tank from the front, the T-80 has the searchlight on the left, the T-64A on the right.

STEVEN ZALOGA
Greenwich, CT

(Mr. Zaloga is the author of numerous books on armor, particularly Soviet armor development. — Ed.)

Notes and Comments on the T-80

Dear Sir,

I would like to congratulate Captain Villahermosa on his interesting article "T-80: The Newest IT Variant Fires Laser-Guided Missiles," which appeared in the July-August 1986 issue of *ARMOR*. I would, however, like to offer some comments, as well as a correction, to the material presented in the article.

The first of these comments concerns the loading system for the AT-8 KOBRA "Tank-Launched Guided Missile." Captain Villahermosa described a manual loading procedure that requires the missile to be loaded externally by hand, "from the muzzle end." This system, while being a possibility, is highly unlikely. Western antitank guided missiles (ATGMs) have been designed and fielded incorporating a two-stage propulsion system for many years. One motor is used to boost the missile out of its launch tube, and the second is used to carry the missile to the designated target. It seems very possible — based on the amount of time that has passed since the development of American and French tube-launched ATGMs — that the Soviets have taken a technological step "backwards." That step would be to separate this two-stage propulsion system into two individual units. This design would result in a missile that consisted of a guided projectile (with the warhead) and a separate boost motor or charge, thus allowing for a two-piece, separately loaded missile. This would not only have allowed the Soviets to field a much less expensive and sophisticated weapon, but would also allow the AT-8 KOBRA to be loaded by the T64 and T80's automatic loading system.

Secondly, the article briefly mentions the possible deployment and operational concept of these "destroyer tanks." The author failed, however, to discuss exactly what these missiles are intended to kill. With the increasing deployment of modern main battle tanks fitted with composite or special armor, the effectiveness of a 125-mm HEAT-armed missile must be in doubt. While one unclassified source suggested that the AT-8 KOBRA is intended as an anti-helicopter weapon, the much more likely primary targets of this missile are the large number of ATGM vehicles deployed by NATO. These vehicles, including the M901 ITV, the JAGUAR 1 and 2, and the M2 IFV/M3 CFVs, are much more within the capabilities of a small ATGM like the AT-8. With the supporting ATGM vehicles destroyed, the Soviets would be allowed to concentrate on NATO main battle tanks with 125-mm APFSDS-T ammunition.

Finally, I would like to make a correction to the caption of the photograph used in the article. The tank pictured is not a T-80. It is, in fact a variant of the T-64B. This tank, first seen by the public on 7 May 1985 on parade in Moscow, is (according to *Jane's Defense Weekly*) a version of the T-64B that is not fitted with the guidance equipment for the AT-8 KOBRA missile. While the family resemblance between the T-80 and the T-64 is very strong, the two tanks are different. Some of the distinguishing identification features of the T-80 (based on the examination of released unclassified photographs) include; main IR searchlight mounted on the *right* of the main gun, large cast T-72 type road wheels, and modified rear "grille-doors" for a new gas turbine engine. It should also be pointed out here that, so far, no pictures have been released of T-80 without the missile guidance equipment for the AT-8.

JAMES M. WARFORD
CPT, Armor
FRG

The Christie Biography: Conflict Revisited

Dear Sir,

I agree with Colonel Leo D. Johns' review and comment, and the comments made by Phil Dyer, and especially, Fred Crismon. *Steel Steeds Christie* is a sorry memoir loaded with emotional bias, altering history in order to fit the would-be imperative of the past, and, at the same time, expunge embarrassing facts. However, it needed to be published, because not only does it stimulate a reaction and dialogue, it can be used as an example on how not to write a memoir. I agree with the book's editor, Dr. Robin Higham, in letting J. Edward Christie say what he thinks, even if the book is distorted.

True, there has never been a book on the life and contributions of J. Walter Christie. Nevertheless, a number of extensive studies have been published reflecting considerable research and oral interviews. "The Ordnance Department Planning Munitions for War" by Constance McL. Green, Harry Thomson, and Peter Roots, (Washington: OCMH, 1955) is an extremely well-documented study, especially the chapter on research and development. Other studies: "The Demise of the U.S. Tank Corps and Medium Tank Development Program" (*Military Affairs,* February 1973); "A Yankee Inventor and the Military Establishment: The Christie Tank Controversy" (*Military Affairs,* February 1975, and reprinted in *ARMOR,* March-April 1976); "A Self-Made Automotive Engineer Finally Convinced the Military That an LVT Existed in the 1920s" (*Marine Corps Gazette,* September 1977); "The United States' Contribution to Soviet Tank Technology" (*RUSI,* March 1980); and the "Troubled History of the Christie Tank" (*ARMY,* May 1986) are all based on a comprehensive examination of archival material. These articles — especially the *ARMY* article which was primarily written to refute *Steel Steeds Christie* — were not composed in a vacuum nor were they based on inaccurate documentation, as maintained by J. Edward Christie. Thousands of original documents can be found in the Ordnance Office General Correspondence Files and Ordnance Committee Minutes, Record Group 156, Washington National Record Center, Suitland, Maryland. Correspondences between Christie and the U.S. military, including letters to and from the Office of the Secretary of War, are located in the former. The

Records of the Chief of Arms, RG 177; the G-2 Intelligence Files, RG 165; and the Adjutant General's Office, RG 407, all located in the National Archives, contain excellent material on the Christie affair. In addition, Christie documentation can be found in Decimal File, 1930-39 (861.2422/5-6), Department of State, RG 56, NA.

The material from Record Groups 56 and 165 contain considerable documentation covering Christie's duplicity in regards to his preference for dealing with the Soviet Union's GRU and the Polish Government rather than the U.S. Army in 1930. Also, there are numerous highly respected contemporaries of Christie — including Generals L. H. Campbell, Jr., John Christmas, and Joseph Colby; and Colonels Robert Icks and George Jarrett —who had viewed with trepidation Christie's exclusive personality and various machinations. Even General George S. Patton, Jr. had reservations, which he expressed as Christie's "histrionic inclinations." The late Colonel Robert Icks summed up the situation when he appropriately stated: "J. Walter Christie's personality antagonized those with whom he came in contact...the vehicle itself was very fragile...overshadowed his good ideas."

GEORGE F. HOFMANN, PhD
Cincinnati, OH

A Difference of Opinion

Dear Sir,

Thank you kindly for publishing the major edited portion of my letter of March 15, 1986, in the July-August issue of *ARMOR* Magazine. *(Mr. Christie in his letter took issue with ARMOR's review of his recent book, "Steel Steeds Christie." — Ed.)*

I am enclosing herein six Zerox copies of various letters which I received, concerning "Steel Steeds Christie," which are self-explanatory. I received a number of others, in the similar characteristic vein, and shall be glad to furnish copies if you wish to have them.

Your biased and opinionated reviewers are only cognizant of their own limited views, and their blinders will keep out any streak of enlighted light. There is no "emotional fiction" in the book, as Major Crismon, a retired ordnance officer, has claimed, and that it was inaccurate and naive. He merely reflects the standard ordnance dogma to alibi ordnance's atrocious treatment of J. Walter Christie. The documented research on the life of J. Walter Christie certainly is minimal, and mostly incorrect. What need did I have for the incorrect documentation, when I had the recital directly from my father as well as my daily personal contacts with him and his historical projects?

Furthermore, these so-called reviewers have never produced a shred of official evidence to confirm their verbose attacks on me and my book. If they showed more truthful emotions, they wouldn't act like programmed humanoids.

J. EDWARD CHRISTIE
Bonifay, FL

(Editor's Note: Included with Mr. Christie's letter were complimentray letters from U.S. Senators Lawton Chiles and Alfonse D'Amato; J. R. Sculley, Assistant Secretary of the Army for Research, Development and Acquisition; L. Scott Bailey, publisher of Automobile Quarterly; William E. Baumgardner, director of the Antique Auto Club; and Charles M. Province, president of the George S. Patton Society.)

What If...?

Dear Sir,

My intent in writing is to excite thought and comment on possible innovations to increase the effectiveness of the Armor Force.

First is the use of flares as an ATGM countermeasure. The majority of current ATGMs that make use of a SACLOS guidance system feature some form of flare as a part of the missile. While in flight, this flare is used by the guidance system to indicate the position of the in-flight missile in relation to the launcher-target line in order to generate commands to the missile to return it to the line of sight.

It would seem to me that once the flare's frequency of light is known, it would be possible for the target to launch a more powerful flare in the same frequency range. If launched directly overhead, the guidance system would interpret this more intense light as belonging to the in-flight missile. A down command would then be generated, based on the position of the flare, which would cause the premature grounding of the missile.

A version of this might also be of use against first generation guidance systems, where the intent would be to confuse the ATGM gunner as to which flare belonged to his missile.

A similar approach is already successfully in use with several of the world's air forces where a flare is launched to produce a more intense thermal signature, thus decoying heat-seeking missiles away from their intended target.

The preferred solution would involve a roof-mounted projector that could be loaded and fired while buttoned up. An interim low-cost solution could take the shape of either a hand-held flare pistol, similar to those currently in use for signaling purposes, or an expansion of our current family of star clusters/parachutes.

This device would have to save very few megabuck tanks in order to prove cost-effective.

Another idea is a bit further out in left field. It was sparked by an event that took place during a recent squadron gunnery at Grafenwoehr. During an engagement, one of the tank commanders used his cal .50 sight to lay his gunner on target, without realizing that his cupola was not aligned with the main gun. His gunner, using the TIS, engaged the hottest target in his field of view. A first-round target hit was inflicted on a Hotchkiss tracked recon vehicle. This, however, was not TCETT's concept of the operation, and the tank was subsequently disqualified. During the scheduled down-time that day, we took the opportunity to examine the victim of this instance of bermicide. From a range of approximately 1000 meters, a TPDS-T fired from an M68E1 cannon went in the front and out the back of the vehicle, taking with it various internal parts. My thought here is that the next battlefield is going to have significantly more lightly armored vehicles than tanks and HEAT-T is going to be at a premium. In the event of a shortge of HEAT-T ammunition, I would prefer to go PC-busting with TPDS-T rather than APFSDS-T. My question here is — has anyone done a study on the armor-piercing capability of our current training ammunition? If it proves feasible, we would then have a low cost alternative to spending precious stocks of DU penetrators on what amounts to compressed C-ration cans. Being lighter, it would also be easier to attain a higher rate of fire when exposed to a lightly armored target-rich environment.

I am also curious to know if the Armor-Engineer Board has looked at expanding the current inventory of 105-mm ammunition. A possible route would be to examine the feasibility of taking projectiles currently manufactured for the 105-mm howitzer and combining them with the cartridge case used with the M68 cannon. Minimal modification of the tank would be needed and could probably be restricted to replacement of selected circuit cards within the fire control system.

We now have a fire control system in the Abrams that is fully capable of taking the cal .50 out to the limits of its ability to maintain a meaningful cone of fire. We no longer need to expend hundreds of rounds of ammunition to get infantry to duck. We no longer need to dump 100 rounds at a truck to ensure its destruction. Why have we once again given the M2HB to the guy least able to effectively use it? If we were to mount it in a coaxial mount, not only would the gunner be able to reach out and touch troops with something other than the main gun, we would also have our subcaliber device right at hand. Loaded with some form of SLAP ammunition, we would have another alternative to the main gun for numerous light vehicles at short range.

I can supply two answers to limited ammo supply. First: the fire control is sufficiently accurate that volume of fire can take a back seat, since we have greater control over where that volume is going. Second: it isn't strictly necessary that the coax ammo move with the main

gun and once we have crossed that conceptual hurdle, the ammo storage under the radios can be linked to the coax by means of a flexible chute like that used in the cupola of the 60-series tank. The length of the chute shouldn't pose a problem: photographs of the interior of several of the bombers used by the Army Air Corps in WW II show that feed chutes measuring in the tens of feet were usable without a power belt drive.

Taking the cal .50 away from the TC also would serve to bring his mind back to the subject at hand: keeping his tank alive and putting his gunner where he can do the most damage.

I would also like to cast my vote in favor of drop-kicking the loader's machine gun as it currently exists. It would be of more use if it was in its original MAG 58 ground-mounted configuration. The stock, sight, and usable trigger group would all combine to make the weapon something better than a garden hose for the front slope. A quick-release mount like that used on MP gun jeeps and the bipod would free the weapon for use in LP/OPs and as a confidence builder in the event the crew has to exit the tank.

As a parting thought, it would be nice to have a crew switchable, multimode laser rangefinder. It would have three operating modes:

1. Low power pulse that would be eye-safe and usable for training.
2. High power pulse that would be the normal operating mode.
3. High power continuous that would be used for target illumination in conjunction with "smart" munitions.

On training, I believe that the three-man crew engagement, as it currently exists, is not addressing a need. Experience has shown that if a tank is placed in a position where it needs to operate short handed, it is generally because the TC stared at the target too long and paid the price, thus forcing the gunner to take over and continue the mission. It would seem to me that the three-man crew engagement needs to be fired by the gunner from the TC's position.

At least in Europe, the Armor Force has to plan for a 'come as you are' war. This means that if you only have sufficient crewmen to fully man three tanks and man one tank with a three-man crew, then that is how they should train and that is how they should shoot TT VIII. I'm not going to be able to hijack my wingman's loader in combat, and I shouldn't be able to do it in GTA.

In closing, I would just like to express my congratulations on the continuing high quality of *ARMOR* Magazine and my hope that I have at least provided some food for thought.

SFC JOHN S. ALLISON
Troop Master Gunner
FRG

Are Villages Safe Enough For TOCs?

Dear Sir:

In reference to LTC Wallace's article, "Professional Thoughts, Tactical Operations Center Site Selection," *ARMOR*, May-June 1986, page 49, I would sincerely like to know the source of LTC Wallace's information concerning the reluctance of the Soviets and their allies to arbitrarily attack villages.

Is "the likelihood of the Soviets firing on civilian communities unless they receive direct fire from the village...remote"? Readings of the typical Soviet tactics used or exported to allies in Germany (WW II), the Ukraine (1950s), the Middle East (1960s, 1970s), Cambodia (1970s, 1980s), and Afghanistan (1980s), indicate something else.

I imagine many readers in the mentioned countries might also have casual interest in LTC Wallace's reply.

EDWIN K. SMITH
LTC, IN
FRG

The Author Replies

Dear Sir:

My observations were based on several discussions with Russian Foreign Area officers, U.S. Artillery officers, fellow commanders, and William P. Baxter's book, "Soviet Air-Land Battle Tactics."

My use of the word "remote" is probably a bad choice — "less likely" is no doubt more accurate and more appropriate. I'm sure LTC Smith can find examples throughout history where Soviet artillery fire has fallen, or been fired, on villages and towns. My point is — and I stand firm — that there is less likelihood of being targeted by Soviet artillery, prior to detection, if you plan your CP in a town, village, or city, vice a wooded hilltop.

I appreciate LTC Smith's interest.

LTC Stewart W. Wallace
Commander, 4/69 Armor
FRG

Comments on "Italian Armor"

Dear Sir,

I am writing to offer some corrections as well as some comments with regard to the article entitled "The Role of Italian Armor in the Spanish Civil War," published in the May-June 1986 issue of *ARMOR Magazine*.

- The first commitment of Russian T-26 tanks in Spain occurred on 29 October 1936, in the Sesena-Esquivias-Illescas area, not on the 24th as stated.
- The Italian tank companies had a nominal strength of 13 tanks apiece, not 10 as stated.
- The Russian tanks facing the Italians in the so-called "Battle of Guadalajara" —a misnomer — in March 1937 were certainly not BT-5s. In fact, the Russian BT-5 tanks were not delivered to the Republicans in Spain before mid-1937, and they entered into battle for the first time some months later. The Russian tanks deployed at Guadalajara were all of the T-26 one-turret model, as opposed to the twin-turret (arranged side-by-side) model of the drawing on page 41.
- The point of maximum Italian penetration towards Guadalajara was at half of the distance between the two small villages of Trijueque and Torija (km.77), located on the highway from Barcelona to Madrid, i.e. beyond the group of buildings known as the "Palacio de Ibarra."
- The Italian tanks took no part in the occupation of Bilbao on 19 June 1937. It was the Spanish Nationalist PzKw I tanks (perhaps with some German crews) who entered first into the city.
- The first parent unit of the Spanish Armored Force was the "Argel" Infantry Regiment, not "Angel" as stated in the article.
- The armored brigades formed by the Republicans in late 1936 and in 1937 were not tactical units, but rather they were administrative and training organizations.
- Such statements as "The Republicans were heavily influenced by the Soviet practice of massed armor attacks "is completely wrong. In fact, Republican armor often failed because it was committed in piecemeal engagements, invariably in an infantry support role.

There is a considerable amount of confusion about the designations of the armored vehicles deployed by the Republicans and the Nationalists during the Spanish Civil War. The thousands of books devoted to this conflict are filled with mistaken designations for the tanks and armored cars used there.

The armored vehicles of Russian origin used by the Republicans were:

- the T-26 Model 1933 light tank. It was a single-turret tank developed in the USSR from the British Vickers 6-ton tank. The Germans designated it as the T-26B, while the twin-turret model was known to them as the T-26A.
- the BT-5 Model 1933 fast tank, developed in the USSR from the US wheel-cum-track Christie, Model 1931. It was often and wrongly designated as T-28 or R37 at the time.
- the BA-3/BA-6 six-wheeled armored cars, based on the GAZ/Ford AAA chassis and wrongly designated as BA-32 in the article and in other sources.
- the FA-1 four-wheeled armored car.

The armored vehicles used in Spain by the Italian CTV expeditionary corps were:

- the CV-33/CV-35 "tankettes".
- the Lancia 1Z/Lancia 1ZM four-wheeled armored cars (not 17M as stated in the article), the latter being a modernized form.

The tanks of German origin used in

Spain by the Nationalist Armored Force were:

- The PzKw Ia (Krupp diesel-engined) and PzKw Ib (Maybach gas-engined) light tanks, popularly called "Negrillos" in Spain.

R. SURLEMONT
Tilff, Belgium

Gaps in History

Dear Sir:

I am glad you are getting to the National Guard with your on-going back cover lineage and honors series. However, the information on the 102d Armor (July-August *ARMOR*) is at least 15 years out of date.

In 1971, the 1st, 2d, and 3d Battalions of the 50th Armor, part of the 50th Armored Division, were made part of the 102d Armor as the 3d, 4th, and 5th Battalions, respectively. As a result, their history should be made part of the regimental history, if only as an Annex.

The 3d Battalion 102d Armor is actually the oldest tank battalion in the New Jersey Army National Guard and the second oldest in the entire National Guard, having been federally recognized in 1946, when the National Guard was reorganized following World War II.

The description of the arms of the 102d omitted some details. The shield is yellow, as was noted. The fleurs-de-lys are red and the horse's head blue. The lion's head crest is common to all New Jersey Army National Guard units, evoking both the British and Dutch heritage of the State.

STEPHEN B. PATRICK
LTC, Armor, NJARNG
Vineland, NJ

Seeks Tips on Thermal ID

Dear Sir,

Having just read Captain Keith E. Blakeman's article on vehicle marking at night to prevent fratricide, July-August 1986, *ARMOR,* I was surprised he didn't mention the problems associated with marking a vehicle so it can be identified with thermal sights. I commanded a tank company at Fort Stewart, Georgia, and this was a recurring problem for which we never developed a practical solution.

The 24th Infantry Division (Mech) field SOP gives a good uniform marking scheme which enables vehicle identification by unit. This is useless, though, when using thermal sights, because the flashlights used for marking don't give off the heat required for an image.

My NCOs and officers came up with several ideas on how to mark the tank with a hot or cold marking which would make a distinctive image. Some of the ideas were: a thermal target blanket trimmed into the marking shape and plugged into the tank, similar to the way an "Autobahn light" is hooked up; placing dry ice into tubes and positioning them in the desired pattern on the bustle rack (this would not be an easy commodity to replace on the battlefield); different types of heating devices were suggested such as hand warmers and medical heat pads which would be affixed to the vehicle like a flashlight. Local sources which make tactical vehicle marking boards were unable to help; we had hoped they could add a heating element to the existing marking system.

The ability to mark a vehicle so that it could be readily identified through thermal sights would greatly reduce the chances of fratricide, particularly in passage of lines missions where the meeting of two different elements takes place. I hope someone out there has worked up a practical solution and will let us all know how they did it.

JAMES E. HANDLEY
CPT, AR
MS IV Instructor
Marion, AL

Recognition Quiz?

Dear Sir,

As training NCO of a National Guard armored cavalry unit, I am very interested in teaching my soldiers to correctly identify armored vehicles. I am having problems with the new Soviet T-80, as different sources identify what appear to be different vehicles as this elusive MBT.

In Captain Gilberto Villahermosa's article "T-80: The Newest IT Variant Fires a Laser-Guided Missile" (July-August 1986 *ARMOR*), there is a photo labeled as a T-80. This is not the same vehicle shown and described in FM 1-402 (August 1984) as a T-80. Captain Villahermosa's photo shows an MBT with IR searchlight to the left of the main gun and large boxes mounted on the left side of the turret, very similar to a T-64. FM 1-402 shows an MBT more closely resembling a T-72, with searchlight to the *right* of the main gun, different box configuration and snorkel stowed to the left side of the turret. To further confuse the issue, the new Armored Vehicle Recognition Deck (GTA 17-2-13) shows the FM 1-402 T-80 as a T-72 Model 1980/1 or M1981/3! Can either your staff or Captain Villahermosa help me resolve this discrepancy?

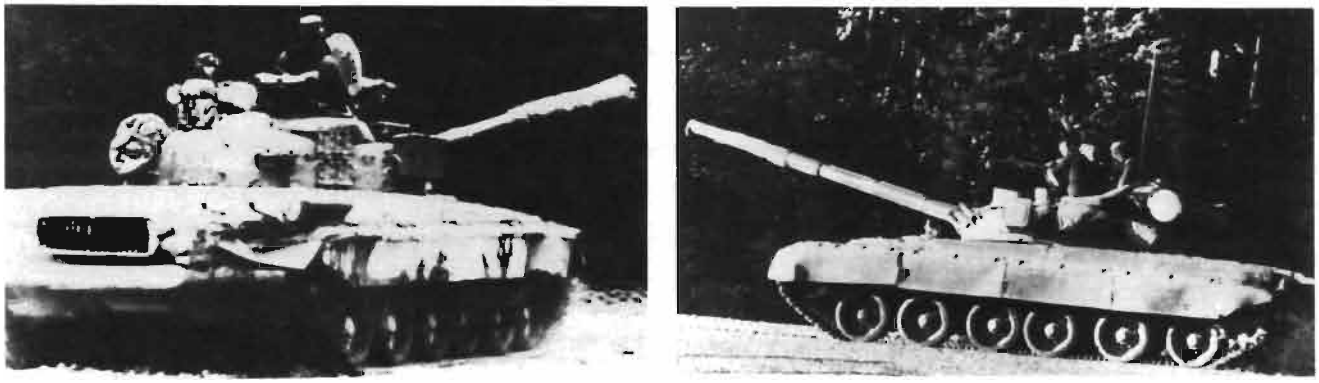
By the way, there is an excellent photo of an IT-configured MBT (also reported to be a T-80) on page 68 of *Soviet Military Power 1986* published by DOD. It shows the apparently over-long gun tube covered by a canvas shroud as described by Captain Villahermosa.

JOHN M. DUEZABOU
SSG, MT ARNG
Unit Training NCO
Dillon, MT

Threat Division, Directorate of Combat Developments, was asked to comment and to clarify the T-80 situation. The branch also supplied the accompanying photos.

The article, "T-80", (July-August 1986 *ARMOR*), by CPT G. Villahermosa, raises more questions than it answers. At the onset, it was confusing, since the author incorrectly presented a photograph of a T-64B mislabeled as the T-80. Secondly, the data presented pertaining to the "KOBRA" ATGM missile and the missile firing capabilities of the T-80 tank are misleading and to some degree, illogical. Specifically, the missile is radio-guided, not laser-guided as the author stated, and the penetration is 700-800M RHA. The muzzle-loading characteristic is at best questionable. I would recommend that anyone who is interested in clarifying, in their own mind, this thought provoking and yet confusing article should contact their S2/G2 office. I would also urge any future authors to properly research and staff their articles prior to presenting them for publication.

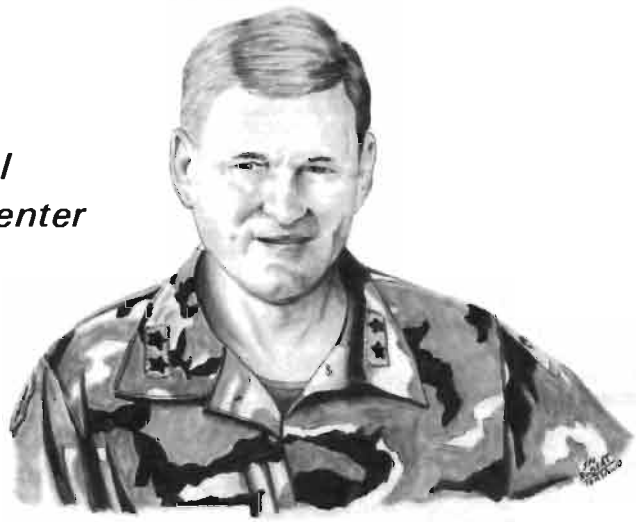
JOHN K. BOLES III
MAJ, Armor
Chief, Threat Division



Two recently declassified views of the Soviet T-80 tank.

COMMANDER'S HATCH

MG Thomas H. Tait
Commanding General
U.S. Army Armor Center



Teamwork

Not too long ago, I had the pleasure of spending a couple of hours with COL (Ret.) Dandridge "Mike" Malone at the Fort Knox Infantry Ball. We discussed leadership and all that involves and also had an interesting discourse regarding teamwork.

As is usually the case in today's America, when making comparisons, we often compare something to an athletic team or event, and our military jargon is interspersed with all kinds of sporting terminology. Mike and I did the same. When discussing teamwork at the platoon or company level, it is useful to make comparisons to athletic teams with which we are all familiar. If one examines track or tennis, with the exception of relays (stretching the point) and doubles, both sports are individual and there is no overarching requirement for teamwork. In baseball, there is a collection of individual skills that blend together to form a team. However, if a baseball team has several three-hundred-plus hitters who can also smack home runs and has good pitching, teamwork in its truest sense is not as important as the individual skills of the team's players. Basketball, in my mind, is the ultimate team sport. Here, a collection of superstars who do not play together can and will be defeated by a team with less talent but which knows how to play together. Each player must know what the other players are going to do — it must be a sixth sense — when and where to release the outlet pass after a rebound; when and where to cut; knowing where the open man is and how he might cut to the basket. The knowledge of how to play as a team can wring victory from an almost certain defeat.

As we review the forces aligned against us, we see that we are heavily outnumbered. In order to win, we must fight as a team. On the tank, the commander has to be able to count on the driver to select hull down positions without being told. Drivers, gunners, and loaders must all search for targets, and sense rounds as part of a team. If they don't, they will not survive.

At the platoon level, we also fight as a team. Wingmen must know what the platoon leader and platoon sergeant expect of them. This can only be achieved through practice — on sand tables, in the tanks, through discussions, etc. One of the most demanding platoon tests — and I do not use this term lightly —faced by our tankers is the Canadian Army Trophy competition conducted in USAREUR. Here, the platoons are trained as teams and are tested as teams. If one member of the team does not pull his weight, the entire team will do poorly. The stress is tremendous, and those units that practice and understand teamwork excel.

At the company level, teamwork is also essential. Here, the commander must count on the platoons being at the right place at the right time. The commander has a number of means at his disposal to accomplish this: simulations (Dunn-Kempf, Pegasus) where he can get his ideas across; participation in fire coordination exercises enabling him to train his subordinates in fire distribution, fire control, and target acquisition and engagement; and other follow-on exercises such as a TEWT, STX, or Command Field Exercise (CFX) where time-distance factors can be addressed, along with terrain navigation and map reading.

At the battalion level, we begin to pull together the combined arms team. And although we will not have the same feeling of precise teamwork that can be experienced at the platoon level, it is essential that we know what our combined arms brethren can and will do for us without excessive communication.

Teamwork is the result of detailed planning and practice. It helps to know who your players are and what they are capable of doing. We cannot win alone; we must weld ourselves into a fighting team that is comparable to the Boston Celtics — one that only knows how to win.

My message may seem quite basic. However, when reviewing the tactical exercises conducted over the past several years, teamwork has not necessarily been one of our strong points.

Treat 'Em Rough!

Thomas H. Tait

DRIVER'S SEAT

CSM John M. Stephens
Command Sergeant Major
U.S. Army Armor Center

Ensuring That a Unit's New Leaders Are Really Ready to Lead

Hardly a day has passed over the last few months that I have not been involved in a discussion on the subject of the leader's training responsibility.

We have invested a number of resources to assist in ensuring that new soldiers, reclassified noncommissioned officers, officers, and noncommissioned officers who are assigned out of their MOS, are trained or retrained to a competent level before being assigned or reassigned to the field.

Quality programs, such as the Tank Commander Certification Course and Scout Commander Certification Course, greatly assist the Armor Force in retraining those who have been assigned out of their MOS, or others who are being assigned to new equipment. However, none of the programs were intended to eliminate the leader's responsibility to ensure every subordinate leader is capable of leading and fighting with the equipment for which he is responsible.

Every leader has the responsibility to ensure newly-assigned leaders are competent trainers and to train those who are not. Simply said, within the noncommissioned officers corps, platoon sergeants train and test tank commanders, section sergeants, squad leaders; first sergeants train and test platoon sergeants; and command sergeants major train first sergeants.

There is a lot to be said about evaluating newly-assigned leaders. How much time are you going to give a leader to become proficient? That decision depends on how inefficient he is; however, I would recommend writing counseling statements in case you need to do an inefficiency board or follow up with administrative action. But generally, the only problems you will have are standard problems.

Where do you find a hands-on test for a specific MOS? Hands-on tests are already available for some MOSs. Armor MOSs 19E and 19K have a proficiency test called the Tank Crew Certification Test (TCGST). With the exception of the driver's station, it is a good test for equipment proficiency. The 19D certification test will soon be fielded for the M3 Bradley.

However, there are a lot of MOSs without an MOS proficiency test (particularly hands-on tests); and for MOSs that do not have a hands-on test, you will need to develop one. The simplest way to develop a test is to put two to four NCOs behind closed doors for two or three days with the missions and manuals. They will develop a test that will check leader proficiency. Every battalion or squadron has the expertise to satisfy these requirements.

There are MOSs in the unit that don't have an NCO supervisor in the same MOS. Therefore, you may feel you cannot evaluate and train all your soldiers. Wrong! Every leader must be proficient in their subordinates' job-related skills. If they don't know those skills, require them to learn them!

TCGST does not cover all the requirements of the MOS. However, if a leader reports into an organization and successfully completes the TCGST *to standards* with little or no problem, it's a good indicator that he is fairly competent in the other areas associated with the MOS. You might include some perishable skills in the evaluation. A map reading/land navigation test is a good subject to add, because we all need to periodically refresh ourselves in order to stay proficient. Physical training is another area — a borderline score with a 60-90 day layoff of physical training in most cases equals a physical readiness test failure.

Let me now put all of this in the right order for evaluation and training.

There is a lot to be said about evaluating newly assigned leaders. I personally would rather be evaluated and stamped "go" or "no go" than have someone going around questioning my competence level for months on end. If a new tank commander is stamped "no go," the platoon sergeant has a problem. He must either train the tank commander or recommend reduction. I don't mean that the platoon sergeant spends all his time retraining. The problem is basically an individual one, but leaders do need to follow some standards in training and reevaluation.

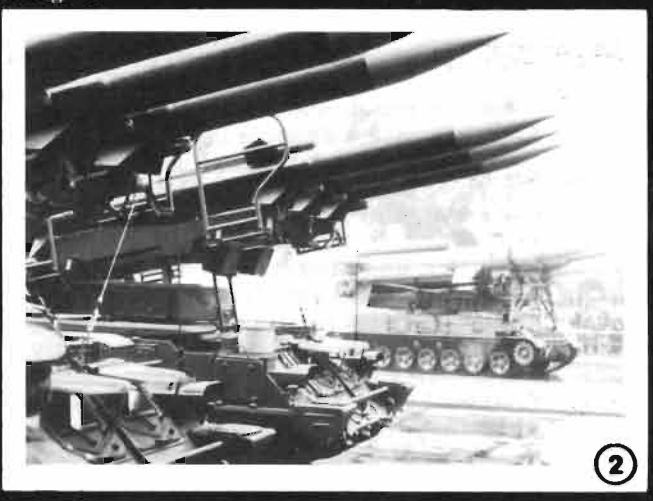
If the platoon sergeant is not available for training, his responsibility is to ensure that the platoon NCOs observe the training and assist where possible. Although I am using the platoon sergeant and tank commander as examples, remember that the rules are applicable at all levels.

(Continued on Page 48)

RECOGNITION QUIZ

This Recognition Quiz is designed to enable the reader to test his ability to identify armored vehicles, aircraft, and other equipment of armed forces throughout the world. *ARMOR* will only be able to sustain this feature through the help of our readers who can provide us with good photographs of vehicles and aircraft. Pictures furnished by our readers will be returned and appropriate credit lines will be used to identify the source of pictures used. Descriptive data concerning the vehicle or aircraft appearing in a picture should also be provided.

Answers on Page 46



Armor Operations and Training in Korea

by Lieutenant Colonel Oleh B. Koropey

Enemy armor, and our inability to stop it, was a decisive factor in the 1950 Communist plunge down the Korea peninsula to the Pusan Perimeter. Our own armor was a key element in the defense of that perimeter, and later in the United Nations (UN) counteroffensives to win back the lost real estate. Tanks provided mobile, powerful direct and indirect fires, protecting the infantry by day and being protected by the infantry at night. Much has changed during the ensuing 30 years, but armor remains a critical ingredient in the defense of South Korea, especially in light of Air-Land Battle concepts.

This article discusses some practical aspects of combined arms in Korea, based on experience and experimentation by 2d Infantry Division and associated Republic of Korea (ROK) tank units. The lesson that stands out in Korea is not new, but the types of terrain and enemy there make it especially important — that tanks, in order to survive, need to be part of a combined arms team.

Geography

Korea is dramatically different from most countries where U.S. armor is stationed, but bears some similarity to other places in which U.S. armor may have to fight, like parts of Southwest Asia. It's like the West Virginia hill country in topography and climate — very mountainous with steep slopes often rising to 800 meters or more. The slopes are sparsely vegetated, generally covered with short brush, and in the winter are practically bare. Most of the people live in the river valleys and flood plains and this is where most of the roads are. Tank movement is usually limited to these low areas. Almost all flat areas and many of the lower slopes are cultivated, usually with rice paddies. You get the impression (through all your senses) that every inch of land on a slope less than forty-five degrees is intensively fertilized and farmed. The paddies are considered too soft for tank movement during much of the year; they are trafficable by tanks only during the coldest months of the winter. (This will be discussed in more detail later.) Except during the summer monsoons, the weather is predominantly clear. The frequent fog and mist of Germany are not prevalent in Korea.

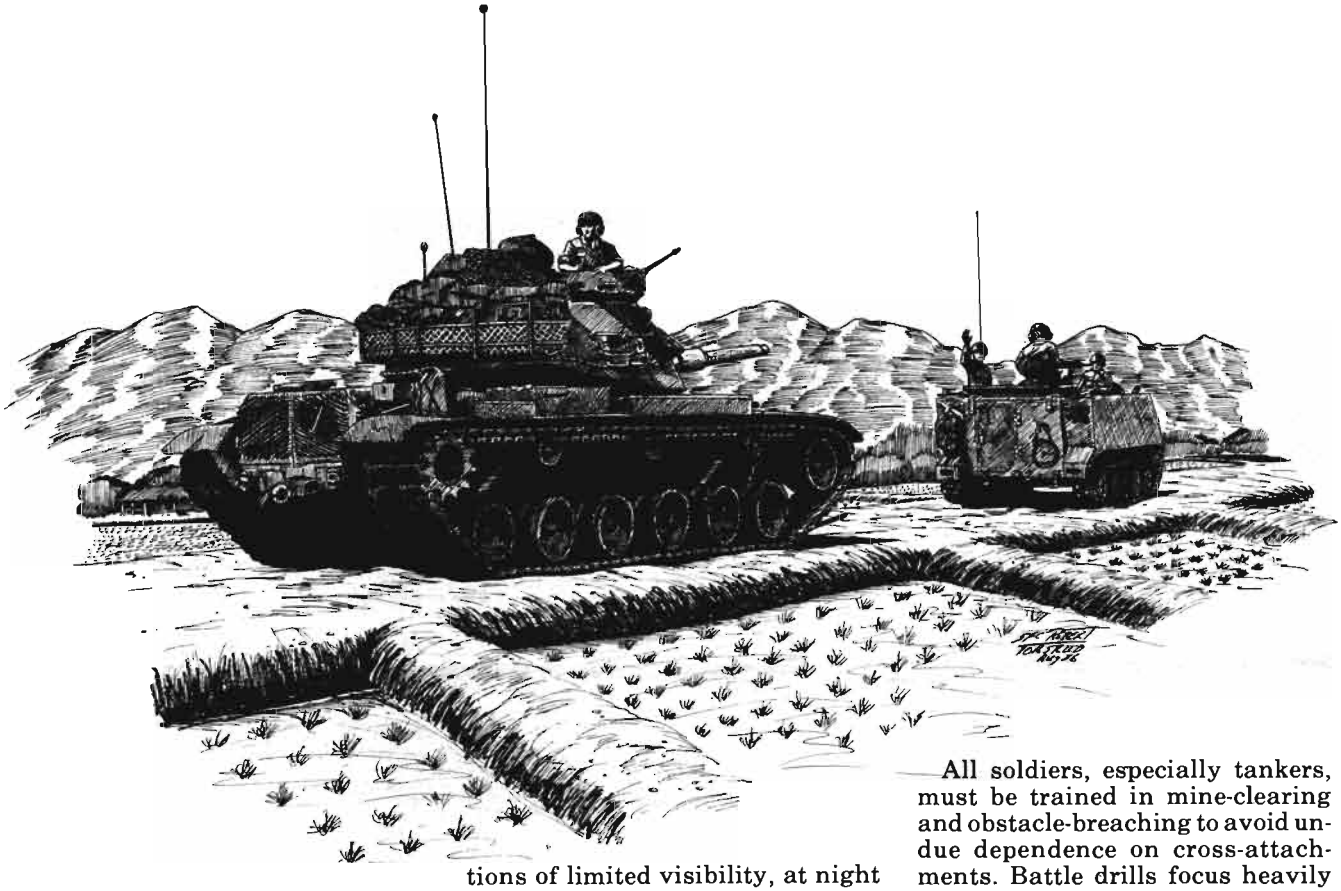
The Defile Problem

The biggest challenge of attacking with armor in Korea is coping with defiles. Tanks must move along narrow valleys with steep, high slopes, often on a one-tank front. Although certainly not easy, the defile problem was not critical during the Korea War because the enemy lacked lethal, highly portable antitank weapons. But today's enemy — operating from those same superior vantage points, hidden and dug in (granted, it's tough to dig in those rocky hills) — has 3,000-meter antitank guided missiles, numerous antitank guns, recoilless rifles, and rocket propelled grenade launchers. He can make the defiles into effective tank killing grounds, unless armor columns skillfully employ combined arms and a few other tricks.

One answer is to clear the slopes ahead of vehicles in the defile with infantry walking along the ridges. In this combined arms approach, the armor provides direct-fire support to the infantry clearing force. This is thorough, but awfully slow. A faster variation is to send an armor vanguard ahead of the main armored column, reconnoiter by fire, and send infantry up to clear the hills only when and if the vanguard draws effective antitank fire. Movement by bounds, with one element always in position to observe and instantly return fire, further enhances security, at the price of slowing things down.

Helicopters can be a great help. During decent flying weather they can comb the hillsides ahead of armor columns, search out the enemy, and allow plenty of reaction time for using smoke, working the area with artillery and/or air, or sending up the infantry. The use of scout helicopters in this role, coupled with gunships to make the kill, was an effective technique in exercise Team Spirit 83. Helicopter usefulness obviously drops off in bad weather or darkness, but so does the enemy's ability to shoot long-range antitank weapons. Helicopter crews now train to fly with night vision goggles, improving their night capability somewhat; but even with this aid, the ability to observe at night remains limited. (If the enemy gets attack helicopters in Korea, our defile problem will become much more difficult).

The defile problem demands smooth teamwork between tanks and infantry down to the lowest level. To achieve this, 2d Infantry Division light infantry soldiers frequently practiced the seemingly simple actions of mounting, riding on top of, dismounting, and communicating with tanks. Tankers were conditioned to such hazards as traversing a turret while carrying externally mounted infantry, and firing sabot ammunition over friendly troops. The "Legs" became potentially as mobile as mechanized infantry (albeit with considerably more vulnerability). The general idea was to transport them rapidly and, as the first shot was fired, to dismount them to maneuver against the enemy on the slopes in coordination with tank fire. Properly trained, and employing



available artillery and air support, such a team can neutralize the enemy on the hillsides.

Despite the recognized need for tank-infantry teams in a defile situation, I feel it quite likely that a tank company will have occasion to move through defiles without the necessary infantry attachments. There may be cases where the pure "bold mounted thrust" through the defile without the hill-clearing precautions is successful; but when effective antitank fire stops the column and the tankers can't neutralize it with mounted weapons, the tankers themselves must be trained and ready, in both a physical and psychological way, to respond. One possibility is to dismount the rear two platoons with submachine guns and M60D machine guns (when equipped with M48A5s) to clear the hillsides and allow mounted elements to move through. Thus, in Korea, tankers must be capable as infantry fighters, as well as expert users of their tank armament. This places a heavy premium on physical fitness and toughness, and adds the dismounted training requirement to an already packed training program.

Another technique to reduce the potential effects of long-range antitank fires while moving through defiles — or anywhere else for that matter — is to move under conditions of limited visibility, at night or using smoke. This lesson was repeatedly confirmed in MILES force-on-force exercises. The tradeoffs are that night maneuver is invariably slower and more difficult to control, and smoke is subject to the whims of the wind, and can blind you as well as the enemy. With M60A3 tank thermal vision devices, we can move better under these conditions than ever before without being seen by the enemy. Only noise gives away our movement.

Communications are difficult in this kind of terrain. It's hard to talk over the hills. This situation forces frequent use of relay stations and radio retransmission.

Barrier Obstacles

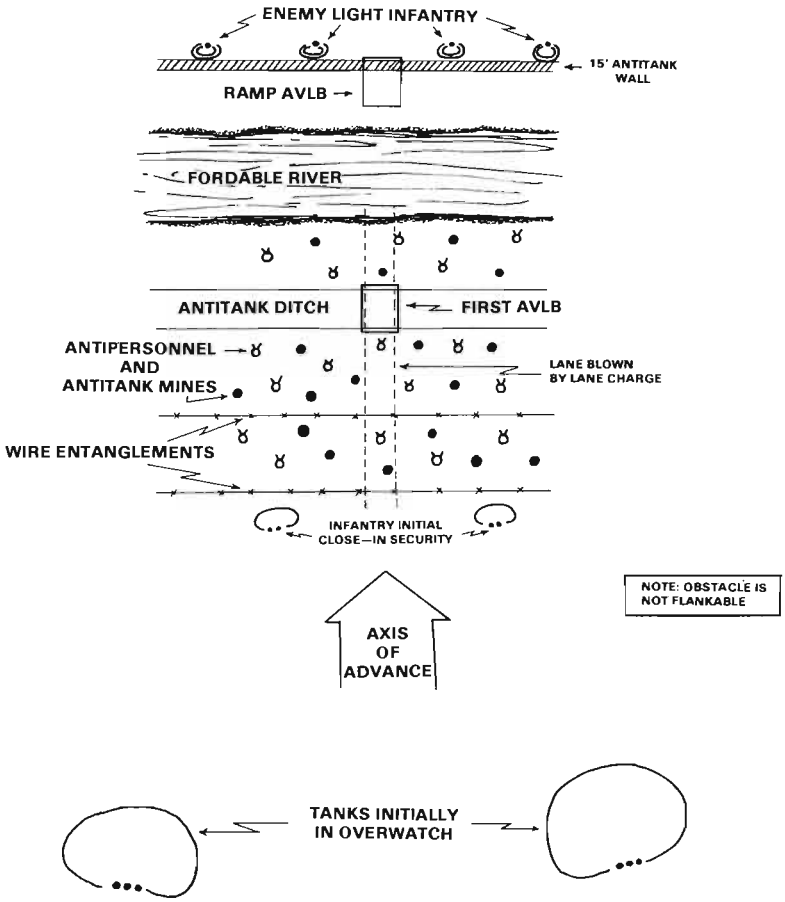
The defiles and other armor avenues are well-known by both friend and foe and are blocked as a matter of course. Obstacle breaching operations are therefore *de rigueur*. Engineers must be well forward in every column, or they will not be able to get around the traffic to do their job. They often travel in the vanguard, in the personnel carriers of attached mechanized infantry, or are sent far ahead with scouts to find and clear obstacles. Armored vehicle-launched bridges (AVLBs) and combat engineer vehicles (CEVs) are also prudently placed near the column front in a narrow defile.

All soldiers, especially tankers, must be trained in mine-clearing and obstacle-breaching to avoid undue dependence on cross-attachments. Battle drills focus heavily on breaching operations involving close teamwork among tanks, infantry security teams, and engineer equipment and personnel. Tanks equipped with bulldozer blades, an albatross in most units due to reliability problems, are at a premium in Korea. AVLBs are used not only for spanning ditches, but also to build ramps to the top of obstacles such as tank walls.

AirLand Battle Doctrine in Korea

The AirLand Battle emphasizes the offensive. If this opportunity arises for U.S. ground forces in the defense of South Korea, it may involve breaching extensive complex obstacles like those found in a primary defensive line. To succeed in such operations we must know exactly what the obstacle belt consists of, and then plan carefully, rehearse, and execute the breaching operation with the full "orchestra" of engineers, armor, infantry, smoke, artillery, and air. Much will depend on the specific sequence of obstacles encountered. 2d Division engineers have developed an obstacle breaching course that tactical units use every year.

As an example of the training for such operations, consider the following situation presented to company teams of 1st Brigade, 2d In-



Complex Obstacle
Breaching Exercise
1st Bde, 2d ID
Company ARTEPs
January, 1983
Figure 1

fantry Division, during the attack phase of their January 83 ARTEPs. The complex obstacle is sketched in Figure 1. It consisted of mined wire entanglements, followed by an antitank ditch, more mines, then a water obstacle, and finally a 15-foot high antitank wall. A platoon of enemy light infantry defended the team's objective area.

One tactical solution to the problem was as follows: Tanks initially went into overwatch positions. A platoon of mechanized infantry moved in near the closest wire entanglements, dismounted, and established close-in security. At the same time the area was smoked. An obstacle-breaching line charge was pulled into position by an armored personnel carrier and it blasted a 70-foot-long, 15-foot-wide strip through the wire and mines. Next a mineroller tank advanced through this lane up to the antitank ditch. Its task was to confirm that the line charge had cleared a safe lane for the first AVLB which followed. The first AVLB then pulled up and spanned the antitank ditch. The mineroller tank then crossed this AVLB and continued across the ford to the base of the tank wall. Mechanized infantry then followed in APCs to the base of the tank wall where they climbed from the tops of their vehicles on each other's shoulders to seize the top of the wall, clear off enemy infantry, and provide local security for the crossing. (Wall-scaling ladders had been tried in rehearsals, but rejected as too cumbersome.) A second AVLB followed the infantry to the base of the tank wall where it extended its bridge to the top of the wall, forming a ramp.

Meanwhile, the lead tanks were leaving their overwatch positions. As soon as the ramp was in place they drove up it, crested the tank wall, and drove down the relatively gentle slope on the other side, to establish a foothold on the far side of the complex obstacle. One problem encountered was water freezing on the ramped AVLB from the vehicles exiting the water, making it slick, but this was solvable with sand. The keys to such an operation have to be well-rehearsed; *speed* and timing are necessary to avoid a column of tanks in the open, queued up at the obstacle.

The Light Infantry Brigade Problem

Enemy commando-type light infantry brigade (LIB) forces pose a unique challenge to U.S. armor in Korea. North Korea has invested heavily in light, mobile, elite troops who could be air-dropped, infiltrated, or amphibious-landed behind friendly lines to wreak havoc in conventional formations, command posts, logistics facilities, and bases. Because of the large number of these troops, close-in security becomes a major challenge for tank units. There will never be enough infantry available to provide sufficient attachments for adequate close-in security. So, in Korea, tankers must be capable of providing their own close-in security. Tank crews must be able to man their own observation posts and listening posts, and must be able to patrol and fight dismounted if necessary. They must be at home on the ground. A significant part of training during the poor-tank-trafficability summer season was devoted to dismounted small unit operations by tankers armed with submachine guns and the loader's M60D machine guns on M48A5 tanks.

One technique for close-in security of armor which proved effective in exercises is called "the old in and out." During daylight and good-visibility conditions, tanks are spread out to the maximum while maintaining visual contact (50 to 100 meters as a rule of thumb). This reduces vulnerability to enemy artillery (of which he has much) and air support (of which he has less). Observation posts are put out on commanding ground to maintain security. During darkness and lim-

ited visibility, vehicles are pulled in much tighter (10 to 30 meters). This is done just at dark, and timing is important. A fine-tuned surveillance plan ties together night vision devices, platoon early warning systems, ground surveillance radars, patrols, and listening posts into a tight-knit 360-degree perimeter.

The enhanced night vision features of the M60A3 tank improve our capability to observe and shoot at night, but the limited field of view makes them far from a total solution. Constant alertness against infiltrators remains a major challenge.

The LIB threat and the likelihood of ambush by infantry makes antipersonnel flechette (APERS) ammunition very useful in Korea. Consequently, this ammunition is retained in the tanks' stowed load and crews are trained in it use.

Camouflage of Tanks

U.S. Tankers in Korea are probably among the best in the world at camouflaging their vehicles. This is probably a spin-off from the ROK Army, who are masters of the art. The idea is to do more than go through the motions to "camouflage" tanks; the key is to make them *invisible.* These camouflaging techniques can be broken down into categories of "moving" and "stationary." Moving camouflage is necessary when the tanker knows he will have to displace instantly. It involves attaching rice straw, branches, brush or other matter in such a way that the tank can move, traverse the turret, and shoot instantly.

The second category is stationary camouflage in which the need for instant movement is not as critical as the need for thorough concealment. This involves extensive use of camouflage nets, along with other means. Whenever do-able, tanks are positioned next to hillsides so that the net-covered vehicles look like an extension of the hillside. Rice straw, branches, or other appropriate vegetation is placed over the net to further blend the visual image into the terrain; openings are left to allow sighting and shooting the guns.

In the winter, depending on the completeness of the snow cover, either white or regular camouflage nets are used. These can be further enhanced by weaving other colors of cloth strips into them and capping with brush or vegetation as appropriate. These covering techniques for snow conditions are more practical and effective than painting the tank with a white flour-water solution. Whether moving or stationary, special care is necessary to break up those distinct outlines (like gun tubes) which assist the enemy in target acquisition and coincidence ranging.

Fording and River Crossing

Tanks in Korea often drive along river beds and cross rivers with and without the use of bridges. In training, we used fords whenever possible to reduce safety risk to civilian traffic and to avoid wear and tear on bridges. This also makes tactical sense, since bridges will most likely be targeted by enemy artillery and air. When we had to cross a bridge and were not sure of its classification, we often reinforced it by laying an AVLB over it. Wide ford sites which exceeded maximum allowable fording depth (4 feet) were lined by our engineers with multiple AVLBs. The engineers placed overlapping sections in the water, end-to-end, across the too-deep part of the ford. In Exercise Team Spirit 82, we emplaced six AVLBs in this way to get a tank battalion across the Han River, which had a depth of 5½ feet at its deepest point at the fording site.

Tank movement in and along stream beds is not only possible but frequently the only way to go. The beds are generally rocky bottomed and offer a firm base, (unlike in many other parts of the world, where getting near a stream bed runs a high risk of a tank miring down). During most of the year, most streams and some rivers are shallow enough for continuous movement of tanks along them. Since the roads often parallel streams along the bottom of valleys, a tank unit often advances down a valley on a two-tank front, one column on the road, the other in the stream bed. An uninitiated aggressor may not be aware of the armor trafficability of a river bed; as was demonstrated in Team Spirit '85, this movement technique offers an attractive opportunity for surprise.

Tankers and their combined arms teammates must be attuned to the special demands of frequent movement through water. This includes frequent changing of grease in suspension systems; and care to ensure availability and proper functioning of all hull access plates, drain plugs, escape hatches, and seals. A thorough reconnaissance of the river's depth and bottom conditions prevents surprises such as sink holes. Scouts or engineers in hip boots with a strong rope tied around them are a good way to do this. The simple matter of marking the reconnoitered fording lane for a night crossing requires a bit of forethought to ensure adequate poles and flashlights with filters.

During peak monsoon rainfall (maybe once a year), the shallow streams fill up very rapidly and can become literally raging torrents in a matter of hours. During heavy rain, water levels need constant watching, and units in stream beds must be ready to move quickly. Unfortunately, many assembly and laager areas have to be in stream beds because they are the only flat areas large enough to hold the unit.

Tank Driving

Driving a tank in Korea requires unusual skill, alertness, guts, and adaptability in today's environment. Due to the clogging of roads by refugees, we will require these qualities in quantity in war. Korean civilian drivers are either ignorant of the hazards of sharing a road with tanks, have little regard for their own safety, or both. When driving on roads, tankers must take extraordinary measures to protect civilian traffic and pedestrians from the tanks. Narrow, bumpy

roads and heavy civilian traffic — mostly crowded buses, overloaded trucks and taxis — combine to demand an unprecedented level of defensive driving from tankers.

Off-road conditions vary with the season. from March through November the paddies are soft, and driving a tank over them risks bogging in the mud. But totally avoiding paddies during this time means writing off some significant maneuver opportunities. Commanders should be prepared to mire a few vehicles in order to learn the full extent of tank trafficability at any given time or place. Drivers must be given opportunities to experiment with off-road mobility and develop the skills to negotiate semi-dry paddy areas.

Moving over paddies may require a dismonted reconnaissance of the route, or even ground-guiding vehicles over difficult spots, sometimes for miles. It helps to avoid "tracking," that is, tanks should cut separate paths through soft areas rather than follow in the tracks of the tank in front of them. During the cold weather months, there is little excuse for not maneuvering over the paddies other than consideration for maneuver damage to paddy dikes and wear-and-tear on the vehicles and crews from cresting over, then dropping down off a dike. Well-trained drivers can traverse most of the flat land in Korea during the winter months and, given their heads, could probably traverse much more terrain than they are allowed to try in the warmer months.

It is probably worth mentioning that taking more risks in terrain trafficability will demand well-trained, properly-equipped recovery crews, both in the M88s and in the tanks.

Tank Gunnery in Korea

The Korean battlefield requires a versatile tanker capable of employing all his weapons in all directions against a variety of targets. Enemy tanks, in themselves, will probably constitute a manageable portion of the overall target mix because North Korean armor, like ours, is quite limited in its avenues of approach; and because, although formidable, North Korean tanks are not the most capable in the Communist bloc.

The limited avenues of approach simplify defensive planning. The defile problem becomes the enemy's problem, and our challenge becomes one of positioning our tanks for maximum standoff, dispersion, and cover. Up to 4,000 meters line-of-sight can sometimes be obtained with careful reconnaissance (usually dismounted) of firing positions and routes to get a tank up into them. Range cards and accurate ranging skills pay a premium in these long standoff situations. (The M60A3's laser rangefinder will be a big plus here.) More typical engagement ranges are 1,000 to 2,000 meters along valleys, and from 0 to 1,000 meters in built-up areas and other restricted terrain. Increased urbanization and a national emphasis on tree planting will contribute toward reducing these engagement ranges in the future.

Since the enemy will have long-range antitank weapons, we must be able to suppress or kill these weapons at the same or longer ranges. A 2,000 to 3,000-meter HEAT, APERS, or HEP engagement to knock out an enemy ATGM on a hillside is quite likely; and target acquisition skills will be very important. At the closer ranges, it will be possible to engage effectively with machine guns. We tailored our gunnery ranges to this type of situation and emphasized fast, accurate machine gun fire to both point and area targets, often high up on hillsides. The loader's M60D machine gun offers an additional weapon for this purpose.

During the Korean War, the enemy used the night to his strong advantage; but today, our superior night observation equipment, used by properly trained crews, should give us a distinct upper hand in the dark. Now we need extensive night gunnery training to learn to exploit the last iota of utility from this new equipment. One training challenge is learning to transfer target information from other members of the tank crew to the gunner. This requires some careful thought and experimentation.

In the event of a breakthrough into the enemy's rear areas, a great smorgasbord of targets would appear. Machine guns, APERS, and HEP would be the workhorses against personnel, buildings, and materiel. Thus, gunnery training must retain a good balance between tank targets as well as other types.

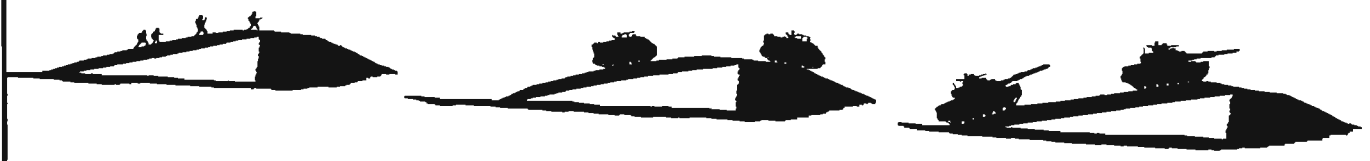
Indirect fire was a frequent role for our tanks during the Korean War. This capability should be retained if possible, but not at the expense of the previously mentioned gunnery skills. The necessary references and equipment should be kept available, and, if time and ammunition allowances permit, then classes and dry fire, followed by live indirect fire, should be conducted. (We, frankly, couldn't find time to practice indirect-fire.)

The M494 (APERS) Cartridge

During a visit to Egypt after the Yom Kippur War, the Army's development engineer for the M494 was told by an Egyptian general that the APERS rounds used by the Israelis were very effective against Sagger antitank guided missile teams.

Actual firings of the same round in Korea in the early 1980s did not impress our tankers. They did not seem to put very many holes in the targets. This is due to a lack of understanding of what the round is designed to do, inadequate training with the round, and possibly some shortcomings in the rounds themselves due to very low turnover and consequent long storage.

The round was originally designed for countering human wave attacks. It dispenses 5,000 match-sized steel darts (flechettes) at a designated range in about a 20-degree fan. Dispersion patterns are such that you can expect to see only one or two flechette holes per 10 square feet of target area (about a 3 by 3 foot square. Cranking the correct target range into the fuze before firing is critical because the



round is designed to disperse about 75 meters before the target, and the flechettes spread out to an optimal pattern in those last 75 meters. Setting too long a range can mean the round disperses after it passes the target, while setting it too short means too much dispersion on target with the possibility that no flechettes hit.

The design engineer emphasizes the following:

- Crank in proper range. (This should be much easier with the M60A3 laser rangefinder.)
- Do not adjust for standoff. (The round does this automatically.)
- Turn the fuze only clockwise to set the range. If you pass the desired range setting then continue around again clockwise until you get it right. (If you turn the fuze counterclockwise you induce backlash into the gears and get an inaccurate setting.)
- A more subtle point is that the density of flechettes is highest about 18-20 feet left or right of the point of aim, so the experts might consider a little aimoff to get maximum density on target.

The main message is that APERS requires quite a bit of training to ensure effective use, but the capability should be worth the effort.

Maintenance

Before closing, it is important to pass along some of the maintenance-related idiosyncrasies of operating armor in Korea. The cold Korean winters, with temperatures dropping occasionally below zero degrees Fahrenheit, and averaging in the teens and low twenties during the coldest month, January, demand heavy emphasis on cold weather starting procedures. Heaters are a necessity in every fighting vehicle. Serviceable maintenance tents and Herman Nelson heaters can materially affect vehicle availability, especially in semi-static situations. Antifreeze for water-cooled systems is at a premium. Periodical starting of vehicles is important when temperatures remain below freezing for more than 24 hours. A rule of thumb which proved satisfactory is to run tank engines at 1,200 RPM for 90 continuous minutes during every 24-hour period. This allowed adequate battery charging. If a tank has been parked in mud or moved through mud prior to a freeze, the tank should be moved a few feet back-and-forth frequently to prevent the freezing of the track to the ground or of the mud in the suspension system. Support rollers, in particular, freeze up due to mud and will not rotate. A sudden hard freeze can immobilize a tank unit for hours if these types of precautions are not taken.

The very rough, rocky conditions in the stream beds tear up tank track at extraordinary rates. A track lasting more than 700 miles is rare in Korea. Frequent fording and travel in stream beds results in frequent burn-up of road-wheel and compensating-idler wheel hubs, because water and sand get into them despite frequent wheel grease changes. For the same reasons, the spindles on road-wheel arms and compensating-idler wheel arms burn up and require replacement arms. When the paddies are trafficable, tank suspensions take a beating climbing over dikes which are typically located every 50 feet and are from 6 inches to 4 feet high. Serviceable shock absorbers, especially in the front and rear, are important in preserving the life of the suspension system. Torsion bars still break often and need replacement.

Conclusion

Many of the ideas presented here in a Korean framework have potential application in other areas where the Army may be called to fight. The defile problem will surface in other locales with similar topography, such as some of the mountainous country in Southwest Asia or the middle East. The "LIB problem" exists wherever we encounter lightly armed troops. In each case, we see the importance of combined arms. The tanks need infantry and infantry needs tanks (and both benefit tremendously from artillery, air, and engineer support). If assets are not available from outside the tank unit to provide these capabilities, then the tanker himself must be physically fit enough and trained to get on the ground and "hump."

Credits

The author would like to thank the tankers of the 2d Infantry Division who provided help or encouragement for this article: Captain Doug Zanders, Lieutenant Colonel E. G. Fish, Lieutenant Colonel Larry Medley, Lieutenant Colonel John Palmer, Lieutenant Colonel Tom Surles, Colonel Tim Grogan, and Colonel Ron Griffith.

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North Korea's new light tanks parade in Pyongyang, the capital. Note Sagger missiles mounted on turrets above gun mantlets.

The Tank Battalion of the North Korean People's Army

by Joseph S. Bermudez Jr.

Preface

Until quite recently, there has been very little reliable 'open source' information available concerning North Korea's armor force, and what little as been available tended to be highly speculative. However, there are now a small number of reliable documents which allow a preliminary examination of this force. It is this body of information, which provides the basis for the following article. Readers are still cautioned that the information provided here should be regarded as provisional in nature.

Introduction

Despite commonly accepted ideas which conclude that the Korean Peninsula is unsuitable for extended armored operations, the North Korean People's Army (NKPA) has long held that armor has a major role to play in any conflict, and has held large tank formations as strategic assets. In fact, the impressive gains that North Korea has made during the past 15 years in increasing its offensive capabilities are, perhaps, best typified by the improvements made to its armor force. In 1970, the NKPA possessed a force of only 1,000 armored vehicles, the majority of which were obsolete SU-100 assault guns and T-34 tanks. Though some armored personnel carriers (APCs) were in service, none were considered organic to tank units. By the end of 1976, this armor force had grown to 2,000+ vehicles, with its mainstay being the T-54/T-55/Type-59 medium tank. In addition, a sizable fleet of APCs had been fielded, with the majority of these being assigned to the mechanized infantry units organic to the armored regiments and divisions. Today, The NKPA armor force consists of 3,200+ vehicles, while the fleet of APCs consists of 2,200+ vehicles, which are primarily assigned to armored and mechanized divisions, and the armored brigades/regiments.

Subordination

Within the peacetime NKPA there are primarily three types of tank formations: the armored division, the armored brigade/regiment, and the division level tank battalion.[1]

The tank battalion within the armored division is first subordinate to its brigade headquarters, and then to division HQ, which in turn is subordinate to the General Staff Department (GHQ). Within the armored brigade/regiment, the tank battalion is subordinate to its brigade headquarters, which in turn is subordinate to either a corps HQ or GHQ. The division-level tank battalion is directly subordinate to the division HQ. Additionally, there are a very small number of light tank battalions (amphibious), which are apparently directly subordinate to GHQ but attached to the I and II 'DMZ' Corps to support amphibious operations along the east coast and Han River estuary respectively, and the III Corps for anti-invasion operations along the western coast.[2]

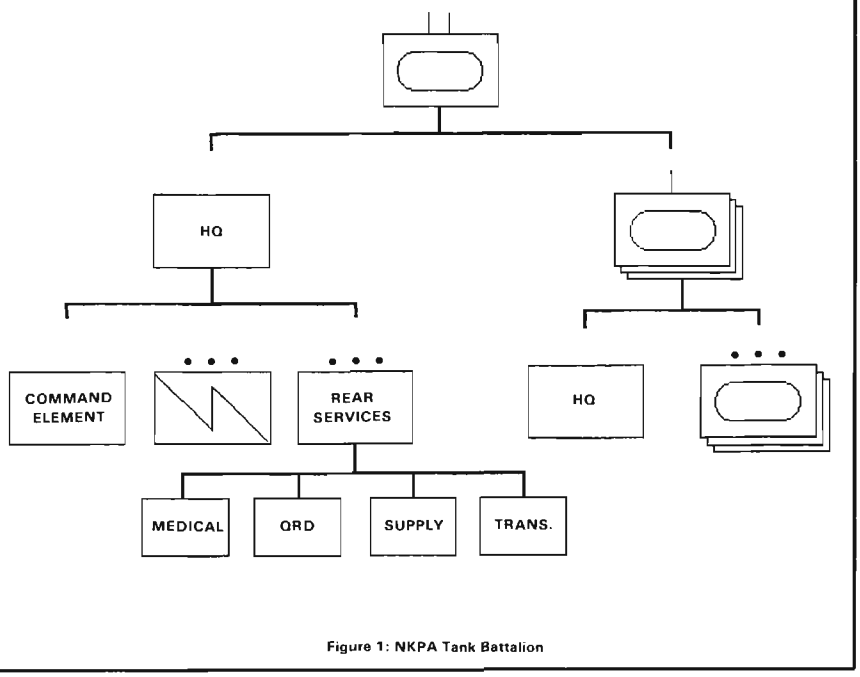

Figure 1: NKPA Tank Battalion

Organization

The structure of the NKPA tank battalion (figure 1) is quite similar to both the 'standard' Soviet and other COMCON tank battalions. It is organized into:

a. Headquarters
   Command Element
   Rear Services Platoon
b. 3 Tank Companies
   Headquarters
   3 Tank Platoons

The battalion is typically commanded by a lieutenant colonel, with companies commanded by a major or captain. It has a strength of 192 (29 officers and 163 enlisted men) and is assessed as having 31 T-34, T-54/T-55/Type-59, or T-62 medium tanks, 1 APC, and 10-15 trucks.[3] The 31 tanks are distributed as follows: one for the battalion commander, and three companies of ten tanks each. Each tank company has one tank for the commander, and three platoons of three tanks each. The actual type of medium tank a battalion is equipped with is apparently dependent upon its parent unit's type, location, and importance within NKPA operational plans.

Numerous changes have taken place within the tank battalion during the past 15 years. Most significant of these was the receipt of 1,000+ T-54/T-55/Type-59 medium tanks from China and the Soviet Union, during the period from 1971-1977. This enabled the assault guns in all armored formations to be replaced with tanks and the standardization of the armored battalion's organization. The previous standard armored battalion was frequently a composite unit of assault guns and tanks, often including more than one type of each. This situation resulted in significant logistic problems within the same battalion. The acquisition of the T-54/T-55/Type-59 tanks considerably simplified these problems.

Priority for these changes went first to the armored divisions and regiments, then to the 'DMZ' divisions, and finally to the 'rear area' division.[4] So, as the number of available T-54/T-55/Type-59-equipped battalions increased, those equipped with the T-34s were transferred to the 'rear area' divisions and GHQ infantry brigades (i.e. combined arms brigades). By 1977, approximately 22 percent of the NKPA's tank battalions were still equipped with the T-34. However, these battalions were now equipped solely with T-34, thereby easing logistic problems. Additionally, 18 percent of the NKPA's tank battalions still had only two subordinate tank companies, or a total of 21 tanks per battalion. This was especially true for the infantry/motorized infantry divisions within the 'rear area' corps.

Five years later, in 1982, this situation had changed significantly, with the T-54/T-55/Type-59 and current organization being accepted as 'standard' in the NKPA. While the T-62 is believed to be 'limited standard', and the majority of the T-34s are now assigned to the Armor Command's School Bureau, GHQ level independent brigades, and paramilitary units.

The structure of the light tank battalion (amphibious) is uncertain; however, it is believed to be similar to the 'standard' tank battalion, but has 31 PT-76/Type-63 light tanks and a personnel strength of 20 officers and 132 enlisted men.[5] Of considerable interest within the realm of NKPA light tank operations is the fielding of a new, indigenously produced, light tank during the past 2 years. This vehicle is possibly based upon a heavily modified PT-76 chassis, and mounts a variant of the Chinese 85-mm tank gun in a conical 'PT-76-type' turret. Mounted above the gun tube (a la' BMP) is a 9M14 "Malyutka" ATGM (AT-3 "Sagger").

Combat Operations

NKPA armor doctrine is based primarily upon their limited Korean — 'Fatherland Liberation' — War experiences, with additional influence being exerted by Soviet WWII experiences. They have blended these experiences to meet their own unique requirements. Additionally, it is believed that the role of armor in NKPA combat doctrine is currently undergoing revision, due both to the increasing size and capa-

Armor of the NKPA

Type 62 light tanks

Type 63 light amphibious tank

Type 63 armored personnel carriers

bilities of the armor force, and possibly due to the study of armor employment during Soviet operations in Afghanistan, the Syrian operations in Lebanon, and the Iran-Iraq war.[6]

Offensive Operation: During offensive operations, the tank battalion will be employed either as a single unit, or in companies, to exploit any breaches; establish a breach through which infantry units can penetrate; or provide direct support to attacking infantry units.

Tank assembly areas will typically be 10-15 km from the FEBA, with the 'line of departure' for an attack being 1-4 km from the FEBA. During movement to combat, tank speeds will be highly dependent upon terrain conditions and the tactical situation. Approximate daytime speeds of 15-30 km/h will be achieved while traveling on roads, and 10-20 km/h when moving cross-country. Night-time movement rates will be approximately one-half that of the daytime rates.

Standard NKPA operational doctrine calls for the employment of three echelons (first, second, and a reserve). This three-echelon organization provides a tactical depth that allows for a fair degree of flexibility in exploiting any penetration. Depending upon the tactical situation, the tank battalion can be employed in any of these echelons.

When attached to an infantry brigade/regiment, the tactical employment of the tank battalion is determined by the infantry brigade/regiment commander, according to the tactical situation and terrain conditions. The commander will typically detach a "reserve force" consisting of approximately one tank company (-) and one infantry company (-). This 'reserve force' is used for rear area and flank protection, to repel counterattacks, for penetration and exploitation, and to intensify the attack. The remainder of the tank battalion will be employed in company-sized elements, in support of the first echelon infantry battalions.

Prior to an attack, 'clearance teams' of combat engineers, equipped with mine detectors and probes, will clear a path in front of the lead tanks. These teams will also conduct engineer reconnais-

"...During the Korea War, the NKPA was able to employ small tank units in terrain considered to be impassable..."

sance, and seek out enemy troop dispositions, warning devices, or obstacles. Upon receipt of the attack order, a tank company will advance with a frontage of 200-400m, a depth of 200-1,000m, and a distance of 30-50m between each vehicle. The main body of infantry will then advance 300-500m to the rear of the tanks. If instead, the attack is supported by mechanized infantry, the APCs will advance 100-200m behind the tanks. The tanks will attempt to suppress enemy forces while the infantry maneuver to the flanks and envelop the enemy position. As an alternative, the infantry will first advance 500-1,000m, and then tanks will come on line, taking up 'hull down' positions. From these positions, the tanks will provide direct fire support to the attacking infantry. During the attack, tank crews will typically fight "buttoned up". Additionally, it is believed that a tank battalion/company will not "breakdown" its platoons, as was frequently done during the Korean War.

When operating as part of a armored brigade/regiment attack, the tank battalion will typically be employed as a single unit. Its mission will be to penetrate the enemy's defenses and exploit all breaches to the maximum. The tank battalion will normally be supported by elements from the brigade/regiment's mechanized infantry battalion. One of the primary missions of this supporting infantry will be to suppress and destroy enemy antitank teams. A tank battalion, or company, will advance using "fire and maneuver" tactics. With one company/platoon being assigned to provide "covering fire", while the remaining two move to attack a flank. It is believed that "fire and maneuver" tactics are not usually practiced below company level.

It is presently unknown to what degree the NKPA intends to engage in traditional armor vs. armor operations. Nor is it known to what extent they train for such eventualities. It is probable that the current doctrinal developments will address this point.

Defensive Operations: During defensive operations with the infantry division, the tank battalion will be employed as a mobile reserve or for counterattacks. It will not normally be tasked with the static defense of terrain. The battalion will be fully integrated into the division's defensive fire plan, both in the direct and possibly indirect fire support roles. The tank battalion within a rear area infantry division is usually garrisoned at a single installation, with site selection evidently being based upon access to good roads for flexible commitment, and on proximity to the main threat area within the division's area of operation.

When deployed in defensive positions along the DMZ, an infantry division's tank battalion is garrisoned at a single installation along a route leading into North Korea. Previously, it was believed that these tank battalions were garrisoned in company echelon near the infantry regiments they were likely to support. However, this is no longer the case, though some 'DMZ' divisions do have one or more tactical armor sites which are temporarily occupied by a tank company each, from time to time.[7] These sites include the heavily fortified 'Type-400' and 'Type-500' bunkers for storage, and specially prepared firing positions (see NKPA Bunkers).

When conducting defensive operations as part of an armored division or brigade/regiment, the tank battalion will be deployed as a mobile reserve, or counterattack force.

Camouflage and Movement: In light of the North's deep concern over ROK/US air preemption/air superiority, and the proliferation of ROK/US antitank weapons, NKPA tankers will make extensive use of night movement (using secondary roads and trails), and camouflage. Although the employment of tanks in Korea is heavily dependent upon road and terrain considerations, it should be remembered that during the Korean War the NKPA was able to employ small tank units (1-3 tanks), in terrain considered to be impassable to tanks. Camouflage methods employed are likely to follow the tactics developed during the Korean War. During that conflict, NKPA tanks employed camouflage in 84 percent of all tank vs. tanks battles; and available evidence suggests that in terms of camouflage techniques and discipline, the North Koreans were the equal of the very able German Army of World War II. When aircraft approached, the tank crews lit smudge pots or oily rags near the tanks to give the impression that the tanks were burning. Tanks were crashed into a house, or thatched roofs were used as concealment. Tanks were parked beside destroyed trucks or tanks. And some tanks were painted with U.S. markings. Additionally, NKPA commanders will fully utilize the extensive network of underground bunkers to conceal and protect their tank assets.

Conclusions

The NKPA tank battalion is well organized and apparently well trained in sound combat doctrine. Whether employed on the offense or defense, its mobility and firepower endow it with the potential to be one of the principal NKPA instruments for influencing the course of battle. Whether the tank battalion will fully realize this combat potential is difficult to predict. Possible shortcomings include a rigid command structure, and the age and effectiveness of its equipment. The age of its equipment will become more evident with the deployment of the new South Korean XK-1 tank. However, with regards to these shortcomings, it should be pointed out that during the Korean War, NKPA commanders allowed subordinates a certain degree of flexibility in achieving their objectives, so long as the objectives were achieved. Additionally, the age of its equipment may not be that significant a factor, due to the tactical restrictions imposed upon all armored combat by the terrain.

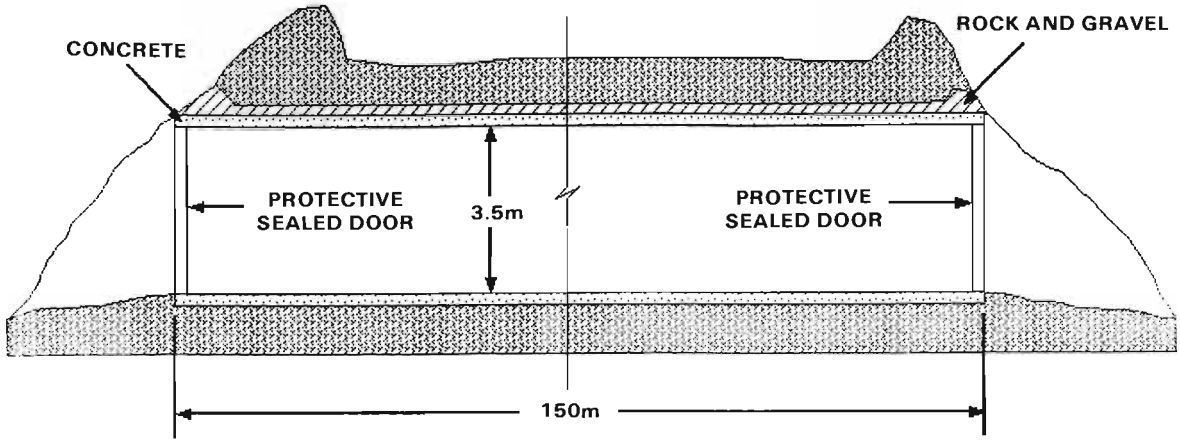

Figure 2: NKPA 'Type-400' Tactical Bunker

NKPA Bunkers

A major tenet of North Korean defensive doctrine is the extensive use of elaborate underground bunkers. These bunkers not only provide concealment and protection from conventional munitions, they also limit the effectiveness of an NBC attack. There are presently two types of tactical bunkers employed for use with armor, the 'Type-400' and 'Type-500'. (The 'Type' designator reflects the width of the bunker in centimeters.)

The 'Type-400' bunker (figure 2) is concrete lined and measures 4 meters wide, 150 meters long, and 3.5 meters high. It is designed to accommodate light tanks, assault guns, and artillery, allowing them to fire from inside without being detected. This emplacement consists of two entrances with sealed, steel protective doors, spaces for the emplacement of weapons, firing embrasures, and an exhaust pit extended to the outside for removal of fumes. The two entrances of the bunker are designed so the weapons can be towed into the bunker through one entrance and towed out the other. This position is not usually interconnected with any other bunker, but may be located near such a defensive position.

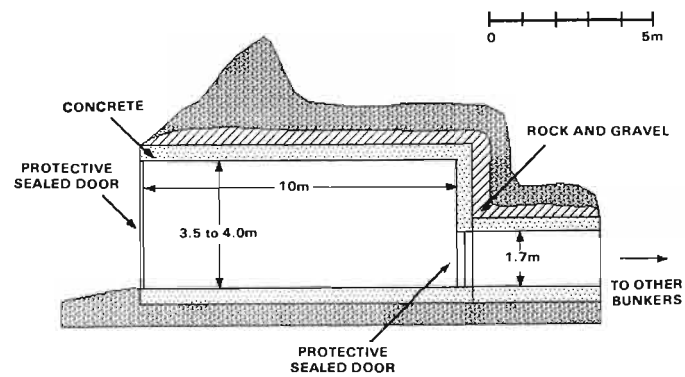

Figure 3: NKPA 'Type-500' Tactical Bunker

A 'Type-500' tactical bunker (figure 3) measures 5 meters wide, 10 meters long, and 3.5-4 meters high. It is completely lined with concrete, airtight, and designed for the emplacement of tanks and special-type artillery (antitank weapons). The position includes sealed, steel protective doors, spaces for placement of tanks or artillery pieces, firing embrasures, and a pit extended outside to remove exhaust. This position is always interconnected with another bunker system.

Both these bunker systems are frequently combined with either obstacles such as barbed wire fences, or anti-vehicle barriers such as ditches or 'dragons teeth'.

Footnotes

[1]Medium tank battalions also exist within several GHQ level independent brigades, most notably the 'Combined Arms Brigades'.

[2]The western sections of the III Corps are characterized by extensive rice paddies and the Taedong River. The amphibious capabilities of the PT-76/Type-63 light tanks would be of great value in such terrain.

[3]The T-54 and T-55 are Soviet-manufactured medium tanks while the Type-59 is essentially a PRC-produced copy of the T-54. Due to the close similarities in the physical and performance characteristics, the three types are lumped together throughout this report. The T-62 is believed to have entered 'limited' North Korean production in 1978.

[4]In this report 'DMZ' refers to any division deployed within the I, II, IV, or V Corps along the 'DMZ', while 'rear area' refers to all other divisions with the exception of those located within the III Corps.

[5]The Type-63 is essentially a PRC-produced copy of the PT-76, mounting a 85-mm gun in a new turret.

[6]North Korea has both sold weapons and had advisors/observers in these countries for a number of years.

[7]While no specific pattern has been discerned, the more likely explanations for ths type of deployment include:

a. A defensive precaution triggered by a perceived increase in enemy activity.
b. Phase of the moon 'stand-to'.
c. Training related mobility exercises.
d. Area familiarization.

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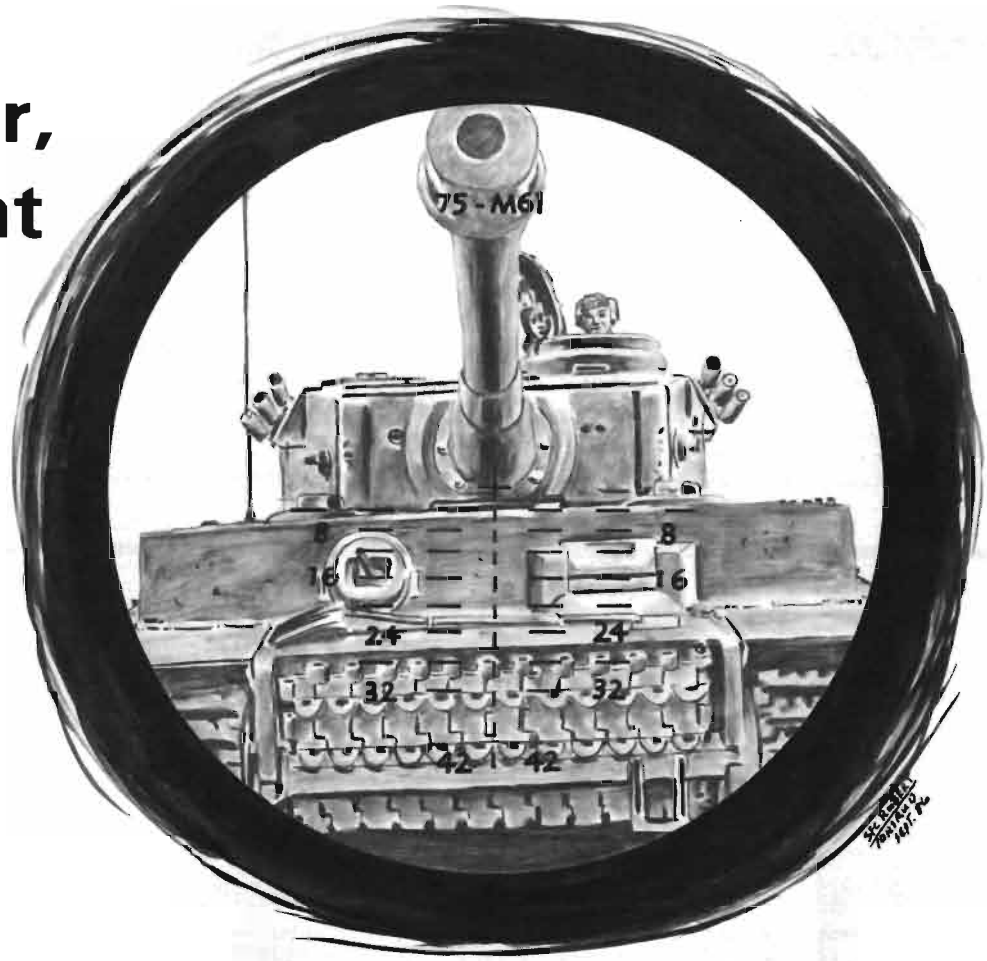
Tiger, Tiger, In My Sight

by R. E. Rogge



The most fearful sight picture ever seen by an Allied tank gunner in Western Europe in 1944-1945 was undoubtedly that of the 56-ton armored box of a PzKpw VI Tiger I tank as its gun traversed toward him. The sure and certain knowledge that the Tiger's KwK 43 L/71 88-mm main gun could punch through any Allied tank in Europe, coupled with the equally sure and certain knowledge that his own 75-mm shot would bounce off the Tiger's frontal armor, must have frozen many a gunner to his sight in that instant before the 88 arrived.

Despite its massive armor and its tank-killing 88-mm gun, the Tiger was not invincible. The Tiger I of Hauptsturmfuehrer (Captain) Michael Wittman, who was credited with the destruction of 138 tanks and assault guns and 132 AT guns in less than two years of combat in Russia and France, was blown to bits by the concentrated fire of *five* Shermans, several of which were "Fireflys" armed with 76-mm high-velocity guns.

Even so, the Tiger I was a formidable opponent and earned the awed respect of all tankers who faced it in battle.

The Tiger's massive frontal armor enabled it to deflect Allied AP shot without harm and its main gun could kill Allied tanks out to 2,000 yards. The Tiger's 88 sent its tungsten-cored, 20-pound AP shot on its way at 3,340 ft/sec and that shot could penetrate 130-mm of armor at a 30-degree slope at 2,400 yards. The Shermans and Cromwells of the U.S. and British armored forces had 75-mm guns and 75-mm frontal armor.

The Tiger was a formidable opponent matched only by its companion, the PzKpw V Panther, whose high-velocity 75-mm gun could butter knife through a Sherman's armor at 1,000 yards or more.

What made the Tiger such a fearsome opponent was that Shermans and Cromwells had to get within 700 yards to get a shot through the Tiger's side or rear armor. Attacking from the front was suicidal. In tests fired against a captured Tiger I by various British and U.S. tank and AT guns, "In no instance was the frontal armor penetrated."[1]

The Tiger I fought with distinction in Russia, Tunisia, Normandy, and in Germany. Its success in battle was enhanced by excellent construction and equipment. The Tiger's greatest disadvantages lay in its low operating range; it consumed fuel at the rate of 2½ gallons per mile and had only 125-gallons on board. Its great width required the fitting of special, narrower, tracks for rail shipment, and the Tiger's weight and size were drawbacks to its strategic mobility. The Germans called it the "furniture van."

(Note. The technical data herein on the Tiger I comes from two publications, except where noted. These publications originated from the detailed technical examinations of a Tiger I Model H captured in Tunisia by the British: "Preliminary Report No. 19 PzKw VI (Tiger)" and "Report on PzKw VI (Tiger) Model H." Both were produced by the Military College of Science, School of Tank Technology, Chobham Lane, Chertsey, England, and were official publications of the British War Department. These reports are not complete (i.e., Part II of the main report is missing as are Parts V, VI, VII, and VIII). They are, however, the most extensive technical reports in English extant at this time. (See BOOKS section, this issue.)

The Tiger I in battle order weighed 56 tons. By comparison, the U.S. Sherman (M4A3E8) weighed 35 tons, and the British Cromwell, 28 tons. (The Tiger's battle companion, the Panther, weighed 45 tons.) Most of the Tiger's weight was in its immensely thick armor plating, which varied from 26 mm on the turret top to 110 mm on the gun mantlet and 102 mm on the front vertical and nose plates. The hull sides were cased in 63-mm armor and the top rear hull plates and engine cover plates were 26-mm thick.

The Tiger was a boxy tank with little sloped armor, although the front glacis plate was sloped at 80 degrees, the front nose plate at 24 degrees, and the front vertical plate at 10 degrees. The degree of slope translates into the angle of impact for horizontal fire. All armor plating was welded. The turret traversed on a very large 70½-inch ring and was armored with 82-mm armor on its sides and back and 100-mm armor in front. The hull belly plate was 26-mm thick.

Power to move this 56-ton behemoth and to operate its systems came from a Maybach water-cooled V-12 gasoline engine rated at 642 British HP at 3,000 rpm. The 20-ton turret drive was hydraulic, but could be operated by hand, although hand operation required 720 turns of the gunner's traverse wheel and 595 turns of the commander's wheel.

The Tiger's suspension was unique in that it employed torsion bars and interleaved road wheels, 24 on each side. This wheel arrangement was the Tiger's visual distinguishing recognition feature. To meet European standards for rail transport, the outer four wheels on each side had to be removed and narrow, 20½-inch wide tracks fitted. The battle tracks were 28½-inches wide, giving a ground pressure on the order of 14.7 pounds per square inch.

The first 495 Tigers, produced by Henschel u. Sohn GmbH, Kassel, were fitted for total submersion to a depth of 15 feet. Inflatable rubber rings and fittings sealed the hull openings, and a 13-foot snorkel air intake was fitted. Succeeding Tigers were not equipped for total submersion but could wade 4½-foot deep streams. In all, Henschel produced 1,350 Tigers in two years.[2]

The Tiger had a five-man crew: commander, gunner, loader, driver and hull machine-gunner/radioman. The huge main gun required a lot of room inside the turret for its 24-inch recoil and this gave turret crew members rather more room than British or American tankers.

This superb fighting vehicle was both time-consuming and expensive to produce. Estimates say that 300,000 man hours and 800,000 reichsmarks (about $200,000 U.S. dollars at the time) were spent on each Tiger I.[3].

Organization

Tiger I's were valuable assets to the German armored force, but there was never enough of them to fill panzer unit TOEs. Original planning had called for entire panzer divisions equipped with Tigers, but the actual numbers available required more realistic thinking. Tigers were allocated to special "heavy" battalions within selected elite (SS) panzer divisions. Theoretically, each such heavy battalion consisted of a battalion headquarters equipped with three Tigers, and four companies, each with three, four-Tiger platoons for a total of 51 Tigers. In actuality, the heavy battalions considered themselves lucky if they had enough Tigers to form the headquarters and three tank companies, or 39 Tigers.[4]

Because of the chronic shortage of Tigers, the tanks were allocated only to elite panzer divisions. Such units as the 1st SS (Leibstandarte Adolf Hitler) and 2d Panzer Grenadier Division (Das Reich), were the principal recipients of the awesome vehicles. Later, the SS divisions formed three independent heavy battalions of Tigers. They served where needed with the SS Panzer Korps in a roving-commission role.[5]

The Tiger units were purely volunteer units and there was never a lack of men. Rewards were plentiful, and at least 50 Tiger commanders wore the Knight's Cross to the Iron Cross. Seven of them added the Oak Leaves, a further distinction, and Wittman was one of 71 officers in the entire German armed forces to add the highly-coveted Swords and Diamonds to his Ritterkreuz.[6]

The honorarium "tank ace" became almost passe in Tiger units and was the cause of some resentment in the less spectacular branches of the *Panzerwaffe*. The Allies viewed the 'ace' system with some aspersion, holding that tank kills by Allied tanks (and especially Tiger kills) were the result of crew teamwork rather than the result of one crew member's efforts. The term, however, served a useful propaganda purpose for the Germans.

Operations

In WWI, the British made the tactical error of sending the first tanks into battle dispersed in 'penny packets' at Flers in 1916. The Germans followed suit in WWII in 1942 in its first employment of Tigers on the Russian Front. The 1/502 Tank Company had only four Tigers and went into action on the Leningrad Front, at Hitler's insistence, on 29 August 1942. Not only did the company suffer because too few Tigers were employed, but the four tanks were committed to battle along a narrow forest path that denied them the chance to deploy. The Russian AT gunners stood their ground, shot off the Tigers' treads and then pounded them with AP shot up to 122mm in caliber. The Tiger crews escaped, but returned that night to recover three of the four vehicles, blowing up the fourth to prevent its falling into Russian hands. None of the AP shot had penetrated the Tigers' hulls.[7]

The Tiger and Panther tanks were built to defeat the Russian T-34. The first time the Tigers met that formidable enemy tank, they destroyed 12 of the 24 attacking T-34s in weather of 28 degrees below zero. From 12 January to 6 April 1943, the seven Tigers of 1/502 Tank Company destroyed no fewer than 40 Russian tanks, including T-26s, T-34s, KV-Is, KV-IIs, and SU-122s. On 11 February, this same company destroyed 32 of the 46 Russian tanks lost on the Leningrad Front that day.[8]

The few Tigers available in North Africa were equally impressive. In their initial engagement, they defeated the British Crusaders and the U.S. Lees of the 17/21 Lancers and the U.S. 2/13 Armored Regiment at Tebourba, near Tunis, on 1-3 December 1942. On 18 January 1943, Tigers defeated the French XIX Corps at Hamra (or Robaa). However, the French had only obsolete WWI 75-mm field guns, hardly a suitable weapon for fighting Tigers. At Kasserine Pass, a U.S. Sherman was destroyed at a recorded range of 2,700 meters.[9]

The Tiger proved its superiority in slugging, tank-on-tank battles, but when it could be lured into a prepared 'killing ground,' it could be defeated. Such a trap was set up at Hunt's Gap in the British sector in Tunisia. There, the British had emplaced Churchill tanks (6-pounder main guns), 17-pounder AT guns, field artillery (25-pounders), and

"The Tiger burst into view on a parallel track and its first shot destroyed the lead halftrack..."

medium artillery (5.5-inch), and employed Hurri-bombers, converted Hurricane fighters with two 40-mm cannon and two 500-pound bombs. Seven of the 14 Tigers that attacked Hunt's Gap were destroyed, and the Germans called the place the Tiger Graveyard.

The battle at Kursk, on the Russian front, proved that Tigers could be defeated if AT gunners and tank gunners could hold their fire until the Tigers were within point-blank range. More than one hundred Tigers were destroyed, some by ramming.

Tigers fought throughout the campaign in France and Northwest Europe, and it is well to single out one battle and study the Tiger's use and tactics.

One Tiger in Action

The British 7th Armored Division (the "Desert Rats" of North African fame) were tasked to take Villers-Bocage on D-Day and advance south to occupy Mt. Picon.[10]

Villers-Bocage lay some 19 air miles south from the beaches at Arromanches and was an important road center. Bayeaux lay to the north, Caen to the northeast, Flers to the south, and St. Lo to the west. Mt. Picon was several miles south, but Pt. 213, an important terrain feature, lay only a mile east on the Caen road from Villers-Bocage.

The D-Day objective was not taken, and it was not until 0800 on 13 June that the British were in the village. The lead formation was the 22d Armored Brigade, commanded by Brigadier Robert Hindes. The 22d was the main fighting element of the 7th Armored Division and consisted of the 4th County of London Yeomanry (the Sharpshooters), two tank battalions of the Royal Tank Regiment, and the motorized 1st Infantry Battalion of the Rifle Brigade. Altogether, the brigade fielded some 190 medium tanks (Cromwells and Shermans) and 33 light tanks, mainly de-turreted Stuarts used for reconnaissance. Brigadier Hindes believed in leading from the front and had little regard for staff and administrative work — a la Rommel.[11]

Hindes saw the importance of Pt. 213 and ordered A Squadron, 4 CLY, and the motorized A Company of the Rifle Brigade to occupy the terrain feature and secure the east flank of Villers-Bocage. (Pt. 213 was not 213 meters above the surrounding terrain, but above sea level. Pt. 213 was perhaps 10-12 meters higher than the surrounding terrain.)

Two troops (eight tanks) of A Squadron, and a portion of the infantry deployed on the high ground and the remaining motorized infantry and tanks were parked on the road between Villers-Bocage and Pt. 213, awaiting further orders.

Lieutenant Colonel (Viscount) Arthur Cranley, commander of 4 CLY, wanted a reconnaissance beyond Pt. 213 before committing his entire brigade. He left four Cromwells of his regimental HQ in Villers-Bocage and went forward in a scout car to check his unit's deployment on the high ground.[12]

The British move to occupy Pt. 213 was observed by a German tank crew whose gunner complained to his commander, "They're acting as if they've won the war already."

The commander replied, "We're going to prove them wrong."[13]

The British had dismounted along the road as they awaited further orders. They knew the Germans were nearby and had tanks, but their intelligence reports had "asolutely no suggestion that these (German armor) included Tiger or Panther tanks."[14]

Four Tiger I's and one PzKpw IV, armed with a high-velocity 75-mm gun, of 2 Company, 501st Heavy Tank Battalion, Captain Michael Wittman commanding, were on their way to occupy Pt. 213 when the British were sighted and the gunner's caustic comment passed, and the commander's equally terse reply returned.

Without waiting for his four accompanying tanks, Wittman — who had noted that the main road was too narrow for tank maneuvering — went into action.

The Tiger burst into view on a parallel track and its first shot destroyed the lead halftrack in the

British column, effectively preventing any vehicle movement. Halftracks, carriers, and tanks were methodically destroyed by the lone Tiger as it prowled parallel to the road. The Tiger's 88 and its two 7.92-mm machine guns blew the column to bits. Then Wittman lunged up onto the road and thundered into Villers-Bocage.

He arrived unannounced, and with three 88 rounds blasted three of the Cromwells parked there. The fourth escaped by reversing down a side street and watched helplessly — its gunner was not on board — as Wittman's Tiger passed by within yards, exposing its flank.

The savaging Tiger was unopposed as it passed through the village, but met B Squadron 4 CLY head-on at the western crossroads. After a quick exchange of shots, Wittman retired into the village, where he destroyed the fourth Cromwell. "Within the space of five minutes, a single Tiger had devastated Cranley's force,"[15] the leading element of the 22d Armored Brigade.

There was more to come. That afternoon, Wittman with all four of his Tigers and the PzKpw IV, with infantry, overwhelmed A Squadron on Pt. 213. Only one man escaped death or capture. Colonel Cranley was captured.

From Pt. 213, the German force returned to Villers-Bocage, but by now the British AT gunners (6-pounders) were ready. The PzKpw IV and three Tigers, including Wittman's, were destroyed. The crews escaped.

The materiel damage done to the British was staggering: "at least 20 Cromwell tanks, 4 Fireflys (Shermans), 3 light tanks, 3 scout cars, 1 halftrack and many soft-skinned vehicles were destroyed. There were more than 80 infantry casualties. A Company, 1st Battalion, Rifle Brigade, and A Squadron, 4 CLY, had ceased to exist as fighting units."[16]

"The Germans were greatly relieved by Wittman's stunning accomplishment."[17] He was awarded the Swords to his Knight's Cross. On 8 August, while attacking seven Shermans of the 4th Canadian Armored Division, and after having shot up two of them, Wittman and his crew were killed by the point-blank fire of the five surviving Shermans.

The Tiger I was so formidable that it was *de rigueur* to send five Shermans and expect to lose three of them when Tiger hunting.

Following the German defeat at the Falaise Gap and the subsequent retreat to the Seine River which forced the abandonment of hundreds of armored vehicles — Tiger tanks were in even shorter supply than before. By December, 1944, however, production at the Henschel plant had given the heavy tank battalions sufficient Tiger I's for them to take a role in the Ardennes Offensive (the Battle of the Bulge). A cursory count gives a total of 52 Tiger I's in addition to a smaller number of Tiger II's (King Tigers).[18]

The small number of Tiger I's and their dispersal among the attacking units, prevented their use *en masse* in any phase of the Bulge. They were, however, highly respected and whenever possible were engaged by multiple Shermans and with artillery assistance when available.

Conclusion

The Tiger I was regarded as the best tank to face the Western Allies, and the few extant examples show why when it is compared with British and U.S. tanks. Despite its disadvantages, noted above, the Tiger I prompted the Americans to accelerate the development of the M26 Pershing with its 90-mm main gun to counter the Tiger's armor and armament.

Footnotes

[1] *The Tiger Tanks*, p. 10.
[2] *PzKpfw VI Tiger & Tiger II (King Tiger)*, p. 17.
[3] Ibid, p. 4.
[4] Ibid, p. 18.
[5] Ibid, p. 19.
[6] Ibid, p. 19.
[7] *The Tiger Tanks*, pp. 21-22.
[8] Ibid, p. 24.
[9] Ibid, p. 26.
[10] *Decision in Normandy*, p. 175. Hereafter *"Decision."*
[11] Ibid, pp. 175-176.
[12] Ibid, p. 178.
[13] *Invasion, They're Coming!*, p. 159.
[14] *Decision*, p. 178.
[15] Ibid, pp. 180-181.
[16] Ibid, pp. 182.
[17] Ibid, p. 183.
[18] *Battle of the Bulge: Then & Now*, pp. 39-45.

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[4] *PanzerKampfwagen VI Tiger I (H);* Profile Publications, Ltd., Great Bookham, Surrey, England; 1967.
[5] *Panzerjager Tiger (P) Elefant;* Profile Publications, Ltd., Great Bookham, Surrey, England; 1967.
[6] *PzKpw "Tiger" Ausf E;* Bellona Military Vehicle Prints; Bellona Publications, Merberlen, Ltd., Hawthorn Hill, Bracknell, Berks., England; 1967.
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[11] *The Tiger Tanks;* Bryan Perrett, Osprey Publishing, Ltd., London, England; 1985.
[12] *Fighting Tanks;* Ian Hogg; Phoebus Publishing Co./BPC Publishing, Ltd., London, England; 1977.
[13] *Panzers In Normandy: Then and Now;* Eric Lefevre; Plaistow Press, Ltd., London, England; 1983.
[14] *Decision in Normandy;* Carlo D'Este; E. P. Dutton and Co., Inc., NY; 1983.
[15] *Invasion, They're Coming!;* Paul Corell; E. P. Dutton and Co., Inc., NY; 1963.
[16] *Battle of the Bulge: Then and Now;* Jean P. Pallud; Plaistow Press, Ltd., London, England; 1984.

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Zahal Blitzkrieg

The Sinai Campaign of 1967 Exemplified Modern Warfare

by Lieutenant Colonel Sewall H. Menzel

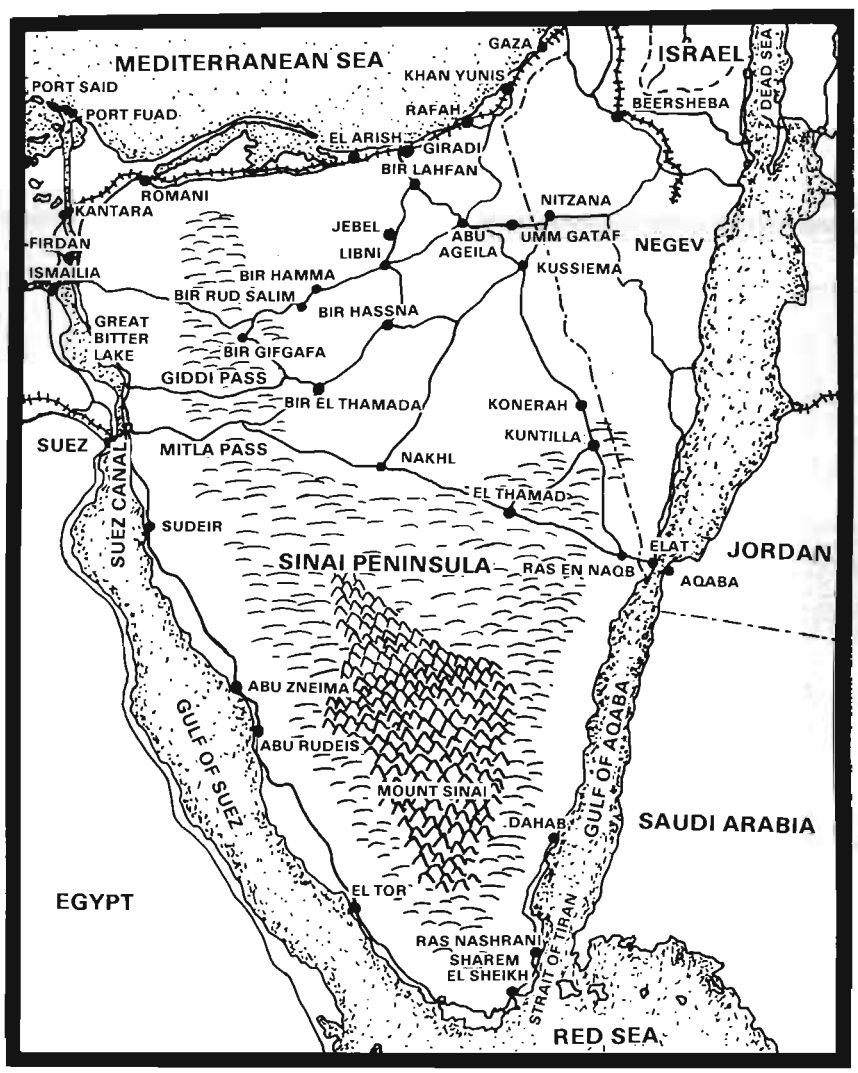
The Israeli Sinai campaign, 5-8 June, 1967, reaffirmed certain tactical and strategic truths of long standing but sometimes scoffed at in this present age of modern technology. This campaign, carried out with precision and blinding speed, still serves as a valuable study and review of the strategic aims and principles of modern warfare. All the elements of modern day warfare played their part. Combined arms techniques, using all the combat arms, were paramount, as were all forms of deception and attack. It was truly an *armor* war where the mobile-mindedness of the field commanders was the deciding factor in the outcome of the campaign.

Probably most important, the campaign demonstrated that an army is much more than a mechanical machine, whereby a mere pushing of a button produces a preconceived chain of events or actions. No, an army is human, if only because it is made up of human beings and the interaction of these beings ultimately determines the success or failure of that army. The human element has been and will continue to be the most important factor in war.

The eminent British military historian, Major General J.F.C. Fuller, commented on the study of military history:

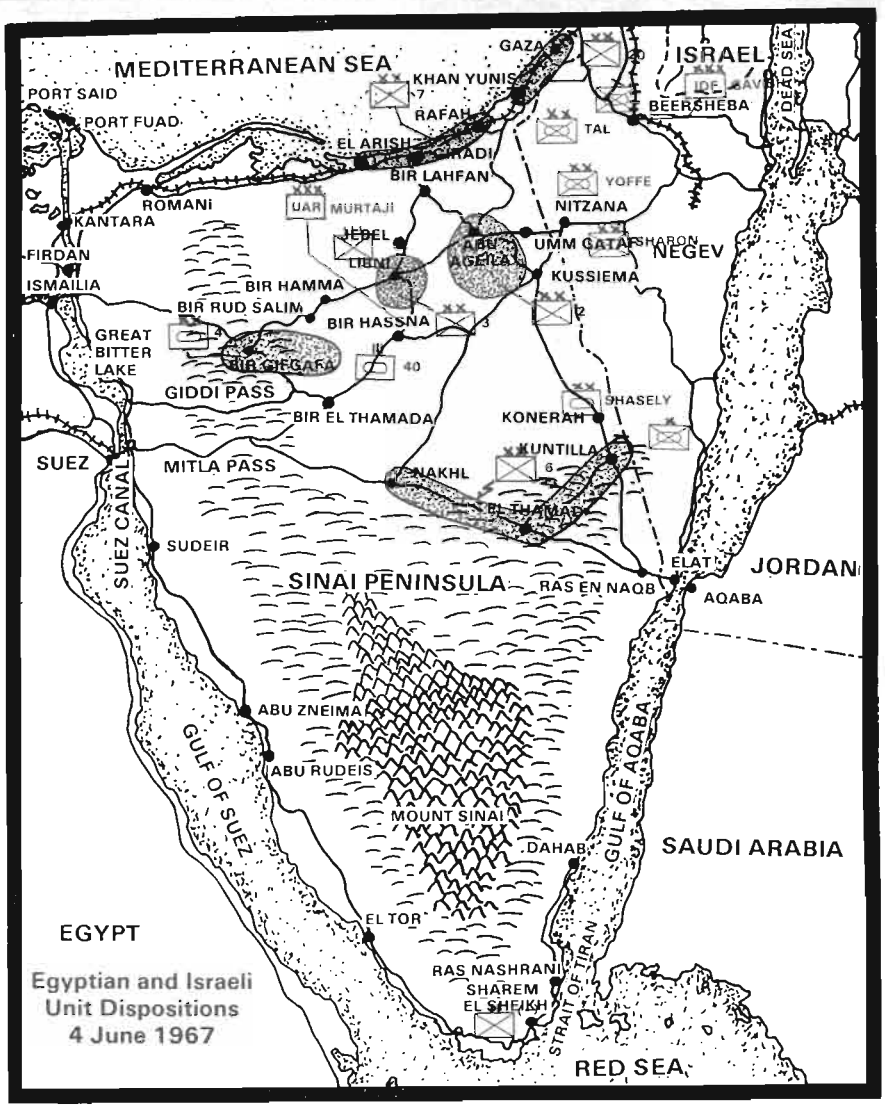
> "It does not really matter much what a certain general did at a certain date, but what *is* of importance is — *why* he did it in a certain set of circumstances. The object of education is not so much to discover 'what to think', as to learn 'how to think'."[1]

Because the intent of this article is to review some of the more important strategical and tactical concepts as they influenced the conduct of the Sinai campaign, the political situation will be touched upon only as it applied to the particular strategy involved. In order to appreciate the *why* of this campaign, it would be well to set it off as to its setting and major events; followed by a discussion of the concepts and ideas that influenced the conduct of the campaign.



Map A The Sinai peninsula is a rugged wasteland, bisected north and south by a mountainous ridge and crisscrossed by desert tracks.

During the twenty years preceding 1967, the Sinai peninsula (Map A) had been a focal point for the animosities of Egypt and Israel. Its northeastern corner is the start of the 180-kilometer-long Egyptian-Israeli border. In 1967, the Sinai's 24,000 square miles were bounded by the Mediterranean Sea in the north, Israel to the east, the Gulf of Aqaba to the south, with the Gulf of Suez and the Suez Canal forming the western boundary. Tactical maps of the area show it to be rugged wasteland, with little or no cultivation and a population consisting mainly of nomadic Bed-



Map B As the Six-Day War approached, the Egyptians had garrisoned the Sinai with 90,000 troops and 950 tanks, many occupying 3-5-mile deep defense belts.

ouins. Small villages are located at a few critical road junctions. The mountain ranges, steep ridges, deep wadis, and sand dunes tend to canalize vehicular movement.

The northern, coastal region of Sinai consists of large, open stretches of rolling sand dunes, sometimes trafficable but often impassable even for tracked vehicles. Further inland, numerous wadis and sand hills are encountered, with the rugged central mountains forming up some fifty miles inland.

This central section of Sinai is characterized by a series of steep hills and terrain compartments forming a mountainous ridge running north to south and connecting with the southern mountain group which dominates the southern half of the peninsula. This central ridge line and its series of outlying hills dominate the several east-west routes of communication. The Mitla, Giddi, and Gifgafa passes are the key passage points through the central ridge.

The southern half of the Sinai consists of terrain ranging from sea level up to 3,000 meters. A coastal road circumventing the mountains is the only good communication route linking the northern reaches of the peninsula with Sharem El Sheikh, a village on the southern tip overlooking the Straits of Tiran. The mountains are too rugged for even tracked vehicles to negotiate without prohibitive amounts of engineer work.

In late May, 1967, after the United Arab Republic closed the Straits

"...Based on his government's decision to attack on the morning of 5 June, General Gavish had three objectives to accomplish..."

of Tiran, effectively blocking the Israeli port city of Elat, Israel mobilized her army for the inevitable conflict. By the eve of 4 June 1967, the Egyptian Army had garrisoned the Sinai with a force of some 90,000 men and 950 tanks[2] to oppose an Israeli force approximately one-half that size in both men and tanks.

The Egyptian order of battle, (Map B), was as follows: Gaza - 20th Palestinian Infantry Division; El Arish - 7th Infantry Division; Abu Ageila - 2nd Infantry Division; Jebel Libni - 3rd Infantry Division (and one armored regiment); Kuntilla - 6th Infantry Division; Bir Gifgafa - 4th Armored Division, and Konerah - 1st Armored Division (Task Force Shasely).[3]

The Egyptian infantry division consisted of three infantry regiments, each with three infantry battalions and an antitank battalion equipped with 36 self-propelled guns (Soviet *SU 100s*). An artillery regiment (72 guns) and one armored regiment (100 tanks) was a normal complement to the division.

The armored division consisted of approximately 300 tanks divided into three separate regiments, with a supporting mechanized infantry regiment and with some organic artillery.[4] Armored fighting vehicles generally consisted of Soviet *T-34, T-54/55,* and *JS*-series tanks. Soviet equipment made up the majority of the Egyptian vehicles and artillery.

Captured Egyptian documents indicated that Egypt intended, with the cooperation of Jordan and Syria, to destroy the Israeli Air Force in a coordinated surprise attack and then strike across the Israeli Negev Desert to link up with Jordan, thus cutting off the city of Elat from the rest of Israel. The 20th Egyptian Infantry Division had been given the mission of harassing the Israeli forces in the vicinity of Gaza to distract the latter's main forces away from the intended area of attack by the 4th Armored Division in the vicinity of Nitzana. The 6th Infantry Division, in conjunction with armored Task Force Shasely, was to seize the city of Elat.[5]

From a defensive viewpoint, the Egyptians, guided by their Soviet advisors, had fortified and blocked all the principal avenues of approach from Israel into the Sinai. These positions consisted of fortified works and trenches in depths of from three to five miles. Minefields protected the frontal avenues of approach, while antitank guns, artillery, and armor protected the position in depth and covered the rearward approaches. This type of defensive system followed Soviet doctrine and generally consisted of three belts.

The first belt was the outer position, providing early warning, and was designed to delay and disorganize an attacking enemy force. It consisted of some minefields and interlocking trenches. The second belt, or the principal defensive position, consisted of trenches and antitank guns developed as strong points to destroy or contain any enemy penetrating the first belt. The third belt contained artillery and an armor reserve to destroy the enemy absorbed by the first two belts. The entire defensive position was normally flanked where possible by an artificial or natural obstacle obstructing vehicle and troop movement.[6]

With all Israeli avenues of approach apparently blocked by positions constructed in the Soviet manner, the Egyptians appeared to have a very formidable and invulnerable array of defenses. The only disadvantage to the Egyptian Army was its long lines of communication stretching from the Israeli border to the Suez Canal. This was to be offset by the Egyptian Air Force, consisting of more than 500 combat aircraft, which could provide aircover for convoys traversing their way through the Sinai. Any Israeli penetration of the forward Egyptian positions was to be thrown back by a mobile reserve consisting primarily of the 4th Armored Division. The Egyptian forces in Sinai were commanded by Lieutenant General Abdul Mushin Kamal Murtaji.

The Israeli Army had allotted to what was known as its Southern Command one armored and two mechanized divisions and two other independent brigades with which to conduct operations (Map B). This force was commanded by Brigadier General Yeshazahou Gavish. Each of the three divisions was commanded by a brigadier general and named after its respective commander. Because the division headquarters in the Israeli Army at that time was a tactical headquarters containing a series of administratively self-contained brigades, each division differed slightly in composition from the other: Division Tal - two armored and one mechanized infantry brigades; Division Yoffe - one armored and one mechanized infantry brigades, and Division Sharon - one armored and two mechanized infantry brigades.

Each brigade had a mix of armor, artillery, infantry, and engineer troops.[7] Division Tal had approximately 200 of the 450 tanks in Gavish's command, with the remainder being evenly distributed to the remaining divisions and brigades. The tanks were American *M4 Shermans* and *M48 Pattons,* British *Centurions,* and French *AMX-13s.*

Based on his government's decision to attack on the morning of 5 June, General Gavish had three objectives to accomplish. He had been ordered by Major General Itzhak Rabin, his commander in chief, to destroy the Egyptian forces in Sinai; capture Sharem el Sheikh, and occupy all of the Sinai from the Israeli border to the Suez Canal. Gavish planned to accomplish this through a three-phase operation. First, he would pene-

trate the Egyptian easternmost front with his three divisions; second, destroy the Egyptian reserve forces with an exploitation; and, third, conduct a pursuit aimed at seizing the whole of the Sinai and capturing or destroying any remaining Egyptian forces therein.[8]

General Rabin knew that success for such an undertaking would be determined to a large degree by air superiority over the battlefield, which would facilitate freedom of movement of the ground forces. Destruction of the Egyptian Air Force was to be carried out on the morning of 5 June in conjunction with the coordinated attacks by Gavish's three divisions. At 0800 that day, an 80-minute surprise air attack was initiated against selected Egyptian airbases in the Sinai and in Egypt. Brigadier General Mordechai Hod's Israeli Air Force destroyed some 400 of the 500 Egyptian planes.[9] The Egyptian Air Force had now been temporarily eliminated as an effective fighting force which could influence action on the battlefield.

While the air strikes were hitting their targets, General Gavish sent his divisions into the attack. Division Tal, commanded by Brigadier General Israel Tal, had been given the threefold mission of penetrating the Egyptian defenses in Gaza on the Mediterranean coast and destroying all the enemy encountered; striking southwest along the coastal road from Rafah to the Suez Canal; and being prepared to exploit in any direction on order, from the coastal town of El Arish through the north central Sinai.

Division Sharon, commanded by Brigadier General Ariel Sharon, was to penetrate the Egyptian positions in the vicinity of Abu Ageila; then link up with either Division Yoffe or Division Tal; and be prepared to exploit southwest toward Nakhl or the Mitla Pass.

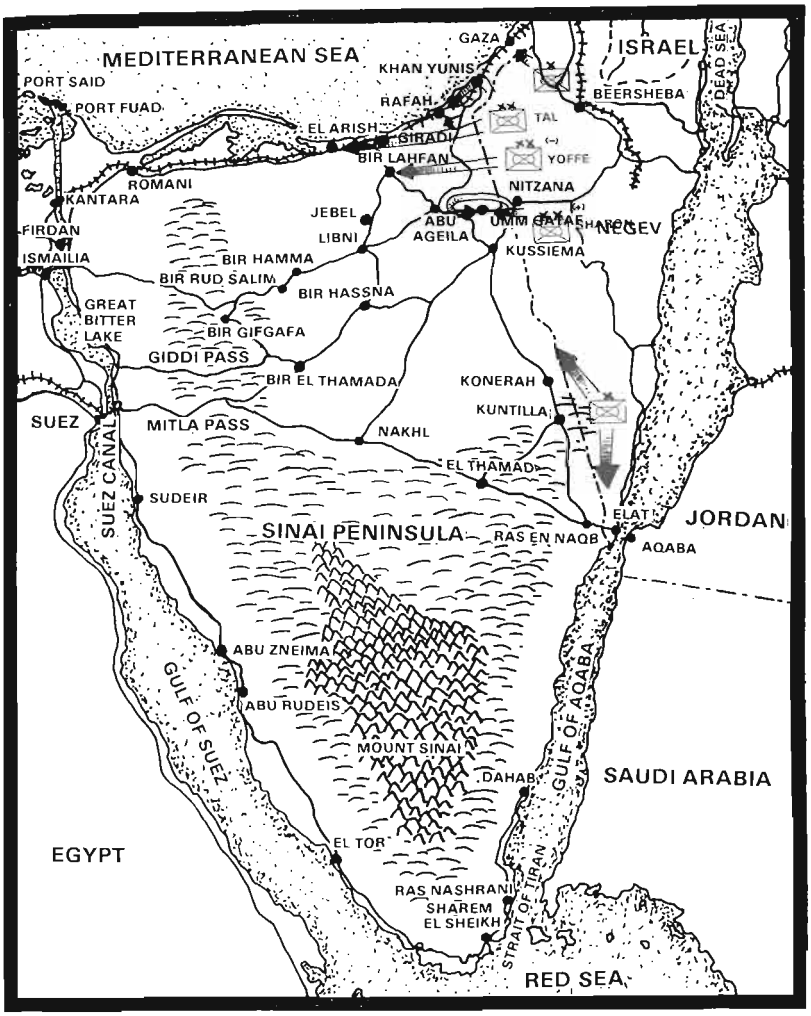
Division Yoffe, commanded by Brigadier General Abraham Yoffe, was to strike through the central Sinai between Divisions Tal and Sharon; conduct an exploitation to the Suez Canal via Gifgafa or Giddi Pass; and then turn back to the Mitla Pass striking that key terrain feature from the west or rear, as the situation warranted.

The independent brigade near Kuntilla, in addition to preventing an Egyptian breakout into Jordan across the southern Negev Desert, was also to place pressure on the Egyptian forces to its front in order to deceive the latter's commanders as to the true Israeli intentions in the other zones of attack.[10]

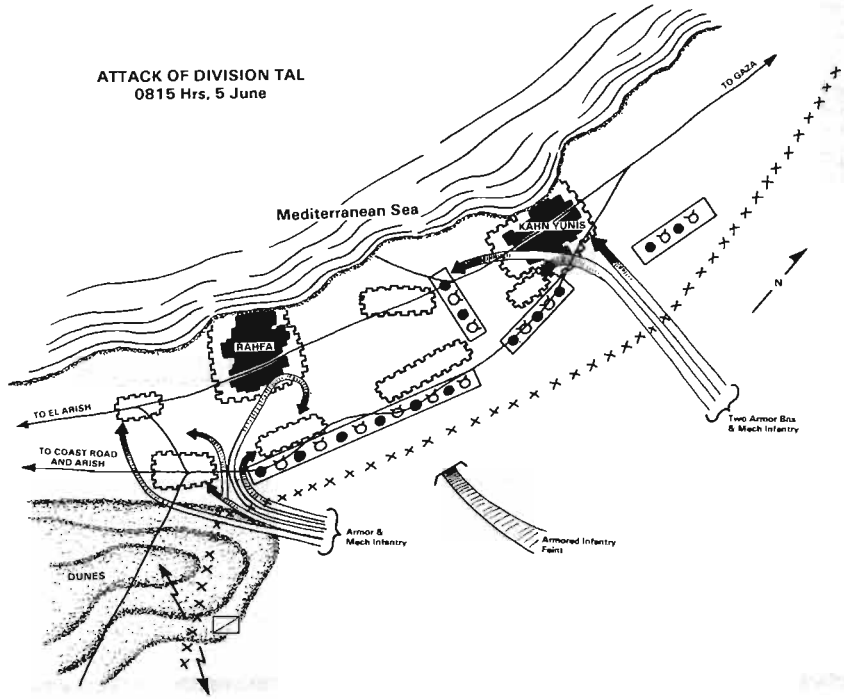
The other independent brigade near Gaza would assist Division Tal in clearing the Gaza area. Airborne and amphibious forces were held in reserve to exploit any initial successes with landings at Sharem el Sheikh in the south. General Gavish had planned as flexibly as he could, and on 5 June, he began to execute his plan. (Map C).

At 0815 on 5 June, Division Tal began its attack to seize the critical Rafah road junction which dominated the coastal route to El Arish. The Egyptian defenses at Rafah and in Gaza were manned by the 20th and 7th Divisions. These defenses were based on the previously noted Soviet prototype and consisted of a series of strongpoints, fronted by minefields, and backed by artillery, dug in armor and antitank guns.[11]

General Tal used a combination of penetration and envelopment (Map D), with armor and mechanized infantry battalions flanking the Egyptian positions by traversing the sand dunes to the southwest of Rafah and rolling up the Egyptian position from the rear. Another similar force of brigade size penetrated what had been determined to be a weak point in Egyptian dispositions at the village of Khan Yunis. This brigade struck the Egyptian positions from the



Map C The Israeli plan was to neutralize Egyptian air power while three powerful divisions attempted to penetrate the Egyptian ground force and exploit any opening in a run for the Suez Canal.



Map D General Tal's force attacked to seize the Rahfa road junction.

northeast and rear.[12] While the remainder of his division mopped up the Egyptian remnants, Tal immediately exploited his successful attack by sending an armor battalion along the coastal road towards El Arish.

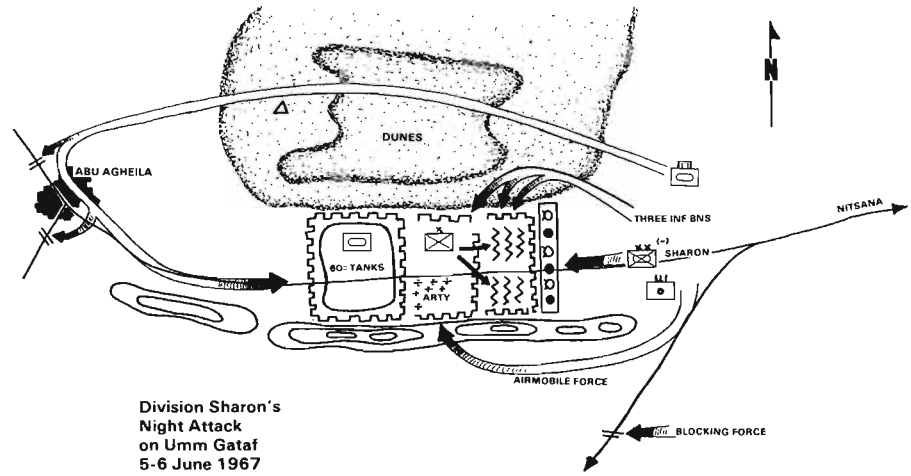
The speed of advance of this attacking battalion was so great that it was able to pass through the strong Egyptian defenses at the Giradi defile and overrun the 7th Infantry Division headquarters at El Arish before the latter was fully aware of the success of Tal's initial attack. While the Egyptians at Giradi were able to recover from their initial surprise and reconstitute their defenses, causing considerable delay to the rest of Division Tal, the decisive damage had been done and the two Egyptian divisions at Gaza and Rafah were no longer fit to fight. By the morning of 6 June, General Tal was in El Arish and in a position to exploit his success. Division Tal had advanced 70 kilometers in eight hours and destroyed six enemy regiments.[13]

Division Yoffe, with one brigade (the second brigade had been directed to follow Division Sharon), struck through what the Egyptian high command considered impenetrable sand dunes north of Abu Ageila. It reached Bir Lahfan late on the afternoon of 5 June and cut the road linking El Arish with Abu Ageila. That evening it blocked and destroyed a brigade sent by the Egyptian 4th Armored Division to relieve the unexpected pressure on the 7th Division at El Arish.[14]

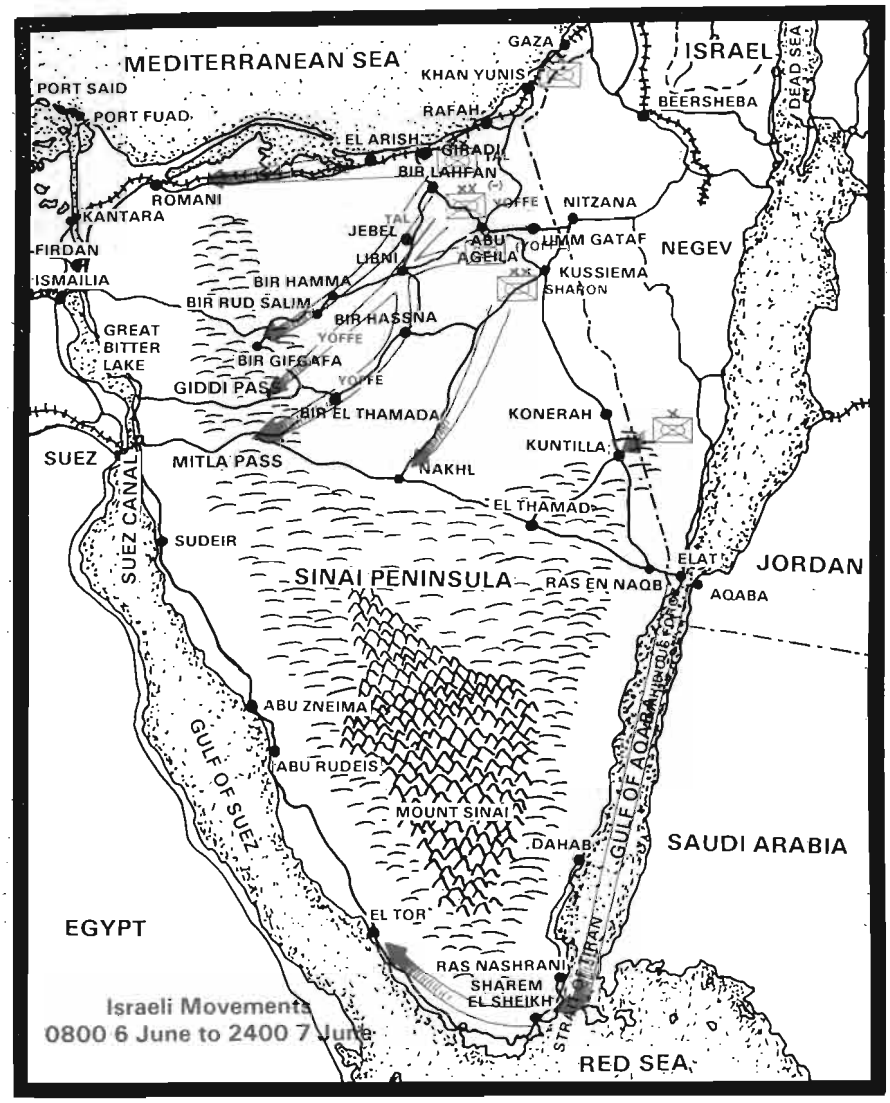
Division Sharon's route of advance into Sinai was blocked by the Egyptian position at Umm Gataf, ten kilometers to the east of Abu Ageila and the forward position of the Egyptian 2nd Infantry Division's defenses. Abu Ageila was important because anyone controlling its road junction could attack in any direction into western Sinai. The position at Umm Gataf met all the requirements of the standard, three belt, Soviet defensive system and sat astride the main route of approach from Israel to Abu Ageila. Its south flank rested on a high ridge consisting of a series of steep hills running the length of the position. Its northern flank rested on a series of sand dunes considered by the Egyptians to be impassable to both man and vehicle. The position, four kilometers wide and seven kilometers long, was organized with the usual minefields to the front, interlocking trenches, and strongpoints. A regiment of infantry (3,000 men) occupied this position. More than 60 tanks and as many artillery pieces supported the regiment with the mission of destroying any force penetrating into the two forward belts.[15]

Realizing the high cost in lives and the expenditures of a grinding frontal attack into a position of this nature, General Sharon decided to execute a night attack during the night of 5-6 June, using armor, infantry, airmobile forces, engineers, and artillery in a series of coordinated attacks, intended to overwhelm the Umm Gataf position from not only the front, but from the flanks and rear. The detail of the attack is worth noting as it employed the combined arms attack concept in its fullest sense (Map E).

Sharon sent an infantry brigade around the north flank on a 16 kilometer forced march through the sand dunes to reach a position whereby the brigade's three battalions could attack and enfilade the trench systems of the Egyptians. After an intense artillery preparation, this attack jumped off at 2245 on 5 June. Simultaneously, an airmobile operation was carried out by an infantry battalion, which landed on the high ridge overlooking the Egyptian artillery emplacements. From this position the battalion would infiltrate on foot down into the artillery position and destroy the guns. While these two



Map E General Sharon's attack on Umm Gataf was a combined arms strike.



Map F Successful in their first phase, the Israelis raced to gain control of the mountain pases to prevent Egyptian withdrawal west to Suez.

attacks were taking place, a battalion-size armored task force was sent on a still wider flanking march north of the flanking infantry brigade and through the sand dunes north of Umm Gataf. After extremely hard going and brushing aside several Egyptian outposts, the task force swept past Abu Ageila and onto the rear of the Umm Gataf position. Its attack was delivered at 0100 on 6 June and caught the bulk of the Egyptian armor as it was preparing to counter the successful Israeli infantry attacks which had overrun most of the Egyptian artillery and infantry positions. At 0230 on 6 June the remainder of Division Sharon, led by combat engineers, breached the forward minefields and entered the Umm Gataf position. By 0400 on 6 June, Egyptian resistance was finished.[16] The remaining brigade of Division Yoffe was pushed through to link up with its parent unit. Division Sharon lost 40 men killed while destroying approximately 60 Egyptian tanks and 1,000 soldiers.[17]

By the morning of 6 June, all of General Gavish's divisions had completed the first phase of the planned operation and were prepared to exploit their initial successes. To prevent an orderly Egyptian withdrawal to a second defense line near the central ridge, Gavish changed his original plan slightly and pushed his divisions forward (Map F).

Division Tal was ordered to continue not only the attack along the coastal road, but also to conduct operations to destroy Egyptian forces concentrated along the Jebel Libni-Bir Gifgafa-Ismailia road. Division Yoffe was ordered to seize the Giddi and Mitla Passes by the most direct route to prevent any Egyptian forces from escaping west to the Suez Canal[18] Division Sharon was ordered to reorganize and drive south, across country, in order to cut off and destroy the Egyptian 6th Division and Task Force Shasely, which up to this time had been effectively held in place by the harassing attacks and feints of the Israeli brigade near Kuntilla. For Division Sharon, this would mean marching over broken desert terrain and would take two and one half days to accomplish. The division arrived in the vicinity of Nakhl on the 8th of June.[19]

With the situation confronting the Egyptian Army deteriorating rapidly, General Murtaji intended to withdraw the bulk of his forces to a line running from Bir Gifgafa to Bir—El Thamada. Units still intact at Jebel Libni and Bir Gifgafa (4th Armored and 3rd Infantry Divisions) were ordered to hold their positions and conduct counterattacks as appropriate. Unfortunately for the Egyptian Sinai command, the pace of the Israeli attack and the rapidly changing situation caused considerable confusion and, frequently, orders transmitted by higher headquarters were not appropriate to the situation confronting the commander on the ground. At any given moment General Murtaji could not explain precisely to his commander in-chief, Field Marshall Abdul Hakin Amer, what the situation actually was.[20]

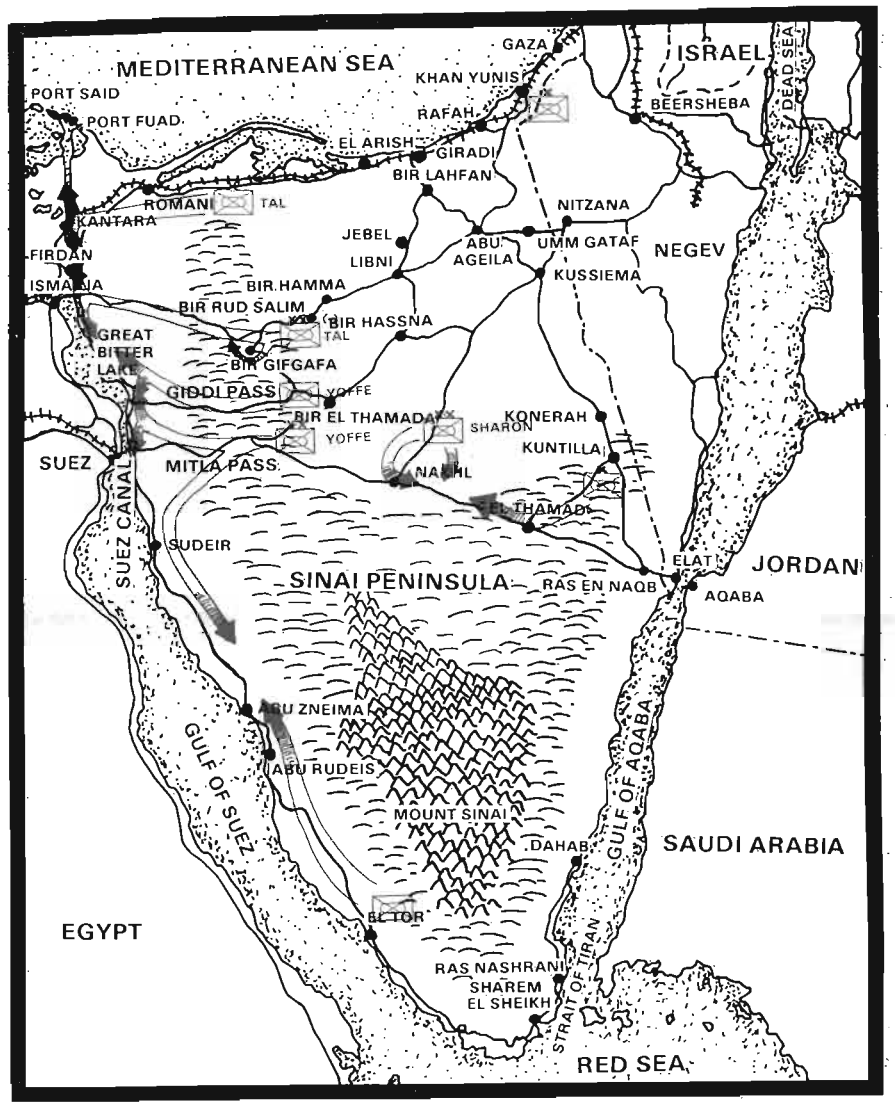
The highly accurate shooting of the Israeli tank gunners and the mobile, flanking tactics employed by the companies and battalions overcame Egyptian resistance with relative ease, and the attack was able to keep up its momentum. The Israeli Air Force interdicted and harassed Egyptian ground formations with devastating effect. Counterattacks by the Egyptian 4th Armored Division and 40th Armored Regiment were broken up before they could develop momentum.[21] An Egyptian regiment at Abu Ageila fell victim to Israeli air attacks in its assembly areas and never entered the battle.[22] It was apparent that the Egyptian Sinai Army was on the verge of complete collapse. Its commander had lost control of his formations, and General Gavish held the initiative. The Egyptian division commanders were virtually left to fend for themselves as best they could.

Division Tal's attack, 6-7 June, followed two axes of advance, with the southern axis carrying the main weight of the division (Map F). During the period 7-8 June, this portion of the division met and destroyed the remaining elements of the 4th Armored Division in a series of brigade-level flanking attacks which caught the Egyptian commanders by surprise.[23]

On 6 June, Division Yoffe became involved in destroying elements of the Egyptian 3rd Infantry Division in conjunction with Division Tal. When ordered to move toward the Mitla Pass, General Yoffe could only break away a small company team consisting of a tank company, two platoons of mechanized infantry, and three heavy mortars.[24] This division vanguard, small as it was, was able to reach the 25 kilometer-long Mitla Pass on the night of the 7th. Its presence there (nine tanks in firing condition) and a tenacious resistance acted like a cork in a bottle and slowed down the retreating Egyptian columns, causing huge traffic jams and a bottleneck of trucks and tanks which became the targets of Israeli air strikes.[25] Israeli planes eventually destroyed 1,400 vehicles of the withdrawing Egyptian army in the approaches to Mitla Pass.[26] The remainder of Division Yoffe finally reached the pass just in time to relieve its company team, which had been reduced to about half its original size and was on the verge of exhaustion. Another small force was sent to secure the more remote Giddi Pass.

On 8 June, Divisions Tal and Yoffe continued their pursuit of the Egyptian forces to the Suez Canal and linked up with a small infantry force which had moved up the western, coastal road after having been landed at Sharem el Sheikh to secure the Straits of Tiran (Map G).

Meanwhile, Division Sharon had pressed its advance to the south, closing on Nakhl just in time to cut off the Egyptian 6th Infantry Division and Task Force Shasely retreating toward Mitla Pass. Sharon maneuvered one brigade into a hasty ambush position blocking the road to Nakhl and, with the remainder of his division, waited to catch his opponent in the flank (Map H).[27]

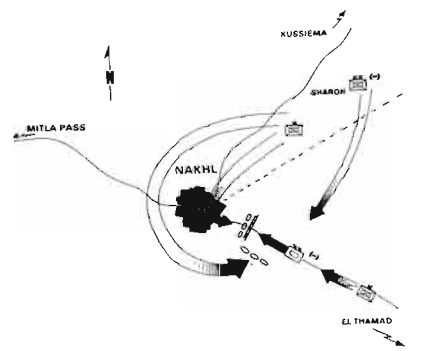


Map G As Egyptian troops attempted to retreat via the Mitla Pass, Israeli air power came into play while a strong, stubborn blocking force caused the Egyptians to jam up on the bottlenecked route.

Without aircover and unaware of the force blocking its path, the retreating Egyptian forces, harassed from the rear by the Israeli Kuntilla brigade, blundered into a perfectly executed trap and were destroyed. After mopping up this enemy force, Division Sharon proceeded on to the Suez Canal via the Mitla Pass.

In the short space of four days, an Israeli force, outnumbered by more than two to one, had outmaneuvered and overwhelmed an opponent equipped with some of the most modern fighting equipment of the day. Egyptian losses in personnel were estimated at 25,000 killed and captured; while of 950 tanks employed, 850 were either destroyed or captured by the Israeli forces.[28] Israeli losses were 275 killed and 61 tanks destroyed.[29] Such was the effectiveness of the Israeli blitzkrieg.

Many reasons exist for this phenomenal Israeli success. Superior training, especially in the field of tank gunnery, *esprit de corps,* aggressive leadership, and the tremen-



Map H

Sharon's "perfect trap" at Nakhl.

dous personal initiative displayed by the junior leaders were all factors relevant to success. Also significant was the Israeli philosophy and approach to modern warfare. From the earlier campaigns of 1948 and 1956 to that of 1967, Israeli doctrine has been greatly influenced by certain strategic theories and concepts formulated by the British military analyst and historian B.H. Liddell-Hart. Liddell-Hart also had significant influence on the thinking of such successful military commanders as Heinz Guderian, Erwin Rommel, and George S. Patton, all of whom professed to being students of his ideas.

In September 1949, Israeli General Yigael Yadin wrote an article in *Bamachaneh,* the Israel Forces' Journal, in which he noted many of the strategic ideas and concepts of Liddell-Hart. Based on these ideas and concepts, Yadin made a series of recommendations as to the aim that should be sought by the battlefield commander:

°To cut the enemy's lines of communication, thus paralyzing his physical build-up.

°To seal him off from his lines of retreat, thus undermining the enemy's will and destroying his morale.

°To hit his centres of administration and disrupt his communications, thus severing the link between his brain and his limbs.[30]

The paralyzing dislocation — both physical and psychological — of the enemy's military organization by these three aims would tend to produce a favorable situation, which, if by itself did not produce the desired result, would guarantee success if fighting continued. Fundamentally, the dislocation pulled down the *fog of war* over the enemy to the degree that he could not recover his cohesiveness and was overtaken by events. It was, in effect, the essence of today's deep attack approach to fighting outnumbered and winning.

Liddell-Hart wrote that striking the enemy along a line of least resistance or line of least expectation, while maintaining the possibility of alternate objectives to further confuse, was one method of mystifying and misleading the enemy. Speed and surprise were considered essential and complementary to each other, as well as driving deep into the enemy's rear areas to increase the crippling physical and psychological effect of the attack.[31] A usually dispersed advance against multiple objectives, in order to have the opportunity of seizing an objective, was also a basic fundamental of the Liddell-Hart strategy. Sometimes called the "strategy of the indirect approach," it was based on doing the unorthodox or at least the unexpected.

Soviet-built tanks, like the T-54, were employed by the Egyptians, who had more than twice as much armor.

In 1964, General Rabin restated many of these precepts which he considered to be based on the element of surprise. He said that the condition of surprise worth working for is a " 'surprise which confuses and misleads top enemy military leadership till the very end of the operation.' "[32] His concept called for attempting something new and unexpected at every possible opportunity. Overcoming natural obstacles which the enemy considers impenetrable or striking swiftly into an area the enemy considers secure, but where he has let his guard down momentarily, were deemed methods worth following. Modifying Liddell-Hart's ideas slightly the doctrine was codified:

°Unconventional and unorthodox thinking, planning, and execution.

°Following the line of two alternatives so that top enemy command will not be able to decide, until the final and decisive stage, what are the real strategic-operational aims of the attacking forces.

°Preparing two or more alternative sets of plans so that if something goes wrong or the offensive slows down, the attacking forces can be switched over to the alternative track without any delays or confusion.[33]

The disruption and breakdown of the enemy's forces was expressed as:

"....ultimate disintegration of enemy armed forces. This disintegration can be achieved by physical and/or moral damage inflicted upon the enemy army. Moral blows (panic, confusion, chaos, a stunned and shocked state of mind) are considered just as important as physical blows on the battlefield...."

"....never attack frontally, always infiltrate around the flanks and strike from the rear."[34]

These ideas formed the basis for what armor calls *mental agility,* or the ability to adapt oneself to a rapidly changing situation and — most important of all — to be able to think at least one step ahead of one's adversary. Israeli planning in 1967 followed these concepts quite closely.

The Israeli Defense Force general staff knew that the Egyptians would anticipate a repetition of the successful operations conducted in the Sinai by Israeli forces in 1956. Initial Israeli attacks in 1956 had been conducted in the south-central Sinai, as well as in the north. An obstacle confronting the staff was the requirement to destroy, rather than merely disrupt, the Egyptian forces in Sinai so that they would

not be reconstituted as an effective fighting force for some time to come.

Recognizing the importance of paralyzing the enemy's command and control capability as a prelude to destroying his army, the Israeli Air Force was called upon to strike the initial blows designed to prevent Egyptian aerial interference with Israeli ground operations. The surprise gained and shock effect achieved by the continuous close air support of the Israeli Air Force contributed greatly to the serial aims of cutting Egyptian communications, sealing off the lines of retreat, and disrupting command and control capability.

It was further reasoned that the enemy must never be allowed to hold the initiative in order to conduct coordinated operations, thus overwhelming the Israeli Defense Force by sheer weight of numbers of men and weapons. General Moshe Dayan, the Israeli Minister of Defense, contributed to the element of surprise needed to gain the initiative by issuing numerous placid statements to mislead the Egyptian leaders into believing that an attack was not imminent.[35] Surprise on the morning of 5 June was total.

The Israeli commanders knew their opponent, studied the best method of attacking his psychological and physical freedom of action, and, through a Zahal blitzkrieg, achieved total victory in the Sinai campaign of 1967.

M4 Shermans, many rebuilt with powerful new guns, were the backbone of the Israeli armored units.

Footnotes

[1]Major-General J. F. C. Fuller, *Generalship Its Diseases and Their Cure.* (Harrisburg: Military Service Publishing Co., 1936), p. 78.

[2]Shabtai Teveth, *The Tanks of Tammuz.* (London: Weidenfeld and Nicholson, 1968), p. 252.

[3]Leo Heiman, "Infantry in the Middle East War, Part II." (*Infantry,* March-April 1968), pp. 19-20.

[4]*Ibid.,* p. 21.

[5]*Ibid.,* pp. 19-20.

[6]Teveth, *The Tanks of Tammuz,* p. 114.

[7]Randolph S. Churchill and Winston S. Churchill, *The Six Day War.* (Boston: Houghton Mifflin Co., 1967), p. 105.

[8]W. Byford Jones, *The Lightning War.* (New York: The Bobbs-Merril Company, Inc., 1968), p. 106.

[9]Brigadier General USAR (Ret.) S. L. A. Marshall, "The Army of Israel." (*Military Review,* April 1968), p. 5.

[10]Heiman, "Infantry in the Middle East," pp. 18-19.

[11]Brigadier General USAR (Ret.) S. L. A. Marshall, *Swift Sword: The Historical Record of Israel's Victory, June, 1967.* (New York: American Heritage Publishing Co., Inc., 1967), p. 41.

[12]*Ibid.,* p. 42.

[13]Teveth, *The Tanks of Tammuz,* p. 206.

In an interview with the author, Lieutenant Colonel Baruch "Pinko" Harel, the commander of this particular battalion in its dash to El Arish, stated that he realized that the Egyptians would more than likely have the road open for expected Egyptian units moving towards El Arish. The speed of his advance and Egyptian lack of knowledge of what was happening caused the latter to be completely taken by surprise when Harel's force rushed through and by-passed the Giradi defenses. This battalion, consisting of British *Centurian* tanks, after overrunning the Egyptian 7th Infantry Division headquarters, was on the verge of running out of ammunition and fuel when it was finally relieved by Division Tal.

[14]Dan Bawly and David Kimche, *The Sand Storm,* (New York: Stein and Day Publishers, 1968), p. 185.

[15]Marshall, "The Army of Israel," p. 9.

[16]Churchill, R. and Churchill, E., *The Six Day War,* pp. 120-121.

[17]Marshall, *Swift Sword,* p. 61.

[18]*Ibid.,* p. 79.

[19]*Ibid.,* p. 61.

[20]Jones, *The Lightning War,* p. 64.

[21]Bawly and Kimche, *The Sand Storm,* p. 179.

[22]*Ibid.,* p. 185.

[23]Churchill, R., and Churchill, W., *The Six Day War,* p. 173.

[24]Teveth, *The Tanks of Tammuz,* p. 230.

[25]Marshall, *Swift Sword,* p. 84.

[26]Churchill, R., and Chruchill, W., *The Six Day War,* p. 80.

[27]Yael Dayan, *Israel Journal: June, 1967.* (New York: McGraw-Hill Book Company, 1967), p. 84.

[28]Teveth, *The Tanks of Tammuz,* p. 252.

[29]Jones, *The Lightning War,* p. 128.

[30]B. H. Liddell-Hart, *Strategy,* (New York: Frederick A. Praeger, Inc., 1954), p. 387.

[31]*Ibid.,* p. 337.

[32]Leo Heiman, "Surprise and Conquer." (*ARMOR,* July-August 1964), p. 51.

[33]*Ibid.,* p. 51.

[34]*Ibid.,* pp. 51-52.

[35]Jones, *The Lightning War,* p. 34.

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An Estimate of the Armor Situation

by General Bruce C. Clarke (USA, Ret.)

I believe that today's Regular armor officer career structure still suffers from the pre-WW II 'branch clubs' that characterized Regular officer career structures of that era. There is no place, no requirement, in today's armor force structure for such career structure imprudence. The need in today's armor force is for armor generalists, not armor specialists (armor, cavalry).

Allow me the privilege of telling you how it was; how we faced WW II without proper staff training; how we overcame those difficulties in the midst of war — and how things have reverted since that war.

During my tenure a a student at the Command and General Staff School from 1939 to 1940 (our class was graduated early because of the war in Europe), our entire training syllabus focused on the provisions of the Monroe Doctrine (i.e., defense of the Western Hemisphere with that of the Philippine Islands thrown in as a sort of an afterthought). There was nothing in our curriculum that encouraged — or even countenanced — the study of the role of armored forces of that day or in the future. We studied armor as it had been used in WW I — solely as an infantry support arm. As good as those tactics were in 1918, Hitler's panzer divisions were writing a whole new book as they stormed through Europe. We largely ignored that book.

In 1940, General Marshall reorganized the U.S. armed forces. He created an Armored Force, the Army Air Corps, eliminated the horse as the prime mover, and took armor away from the infantry. Each of these changes had a profound effect on how we fought WW II, but none was so dramatic as the creation of the Armored Force that served with such distinction in all theaters of that war.

In 1948, I was selected to chair a board to recommend a new Army branch. We called it Armor and devised the distinctive insignia still in use — the tank and crossed sabers.

The post-WW II decades saw our country become a part of the NATO defense structure of Western Europe. We also became committed to the defense of South Korea. Today, our potential military commitments range from Central and South America to the Mediterranean and southwest Asia, in addition to our European and Korean agreements. We maintain an Army of more than 300,000 troops in West Germany alone, and have substantial forces in South Korea.

These forces now require extensive sea and airlift support facilities, and that requirement will be vastly increased in the event of war.

My immediate concern, however, is our armor force — how perceived global situations will affect its on-site operations and how we will fare in providing logistical support.

A close look at some presumed scenarios may well prevent a recurrence of the shortcomings in planning and organization and the near-disastrous early armor battles we fought in WW II. The key, of course, lies in the training of armor generalist officers and not in 'branch specialists.'

While the foregoing represents a very broad estimate of the global situation, let me focus on how it applies only to armor. It is obvious that strategic transportation problems are magnified by the size and weight of armor weapons and equipment, and the modern mechanized force's tremendous requirements for fuel, maintenance, parts, and logistics. But, how should training, logistics planning, tactics, research and development, and our school courses — especially at the Armor School and at the Command and General Staff College — address the situation confronting us?

These general considerations seem applicable:

- Our laws, policies, and severe penalties for failure require us to be prepared to receive and cope with an enemy offense in strength — heavy in armor in NATO, especially.
- The situation which found our Armored Force pursuing a defeated enemy across France in 1944 will not soon be repeated (i.e., we are commmitted by policy to the strategic defensive).

These *specific* questions need consideration:

- Is it probable, or even possible, that an armored division will be employed in Korea?
- Will it be employed in the Mediterranean area, or in Central America?
- Will armor continue to be the backbone of NATO's defense?
- Will the Warsaw Pact Forces continue to be strong in armor?
- Can a Warsaw Pact attack be halted and defeated without NATO strength in armor?
- How effective will AirLand Battle tactics be against a first-class enemy?
- Will we be able to quickly augment and support our troops in NATO in face of a first-class enemy naval threat?
- What will be our losses in personnel and equipment during the first month of a Warsaw Pact attack? Can we replace these losses? Can we sustain the fight? The following is a brief history of how my armored commands in World War II dealt with the problem of sustaining combat. I offer it as food for thought to today's planners and organizers:

When General Chaffee issued his directive for the TO&E of an armored division in 1940, he specified that there be two combat commands and a reserve command. He visualized that there needed to be a rotation of tank and armored infantry battalions from combat commands to the reserve command after two, three, or four days of continual battle, to do vehicle main-

tenance, personnel rehabilitation, and such things. The reserve command could be employed rather promptly in case of an emergency, but was not normally used in this manner.

The 4th Armored Division was organized, trained, and operated in battle along the lines of General Chaffee's concept. It was highly successful. When I went from the 4th Armored Division to the 7th Armored Division on 1 November 1944, General Hasbrouck and I replaced generals who were relieved, reduced to colonel, and ordered home. We found a division that had been under the command of a former infantry officer who did not understand this employment of armored forces. He had three *fixed* combat commands (CC "A", CC "B", and CC "R"). Their composition was never changed. All three were normally engaged in an operation in the classic "two up, one back" formation. There was little flexibility and the battalions were poorly maintained, physically and mentally depleted, and about 50 percent effective. Both General Hasbrouck and I had served in the 4th Armored Division in training at Pine Camp, New York. General Hasbrouck reorganized the unit to operate under the Chaffee concept of organization and deployment. This served us well in the Battle of the Bulge at St. Vith six weeks later.

When Montgomery replaced Bradley in command of the 1st and 9th U.S. Armies at noon on 20 December 1944, he is reputed to have said at once: "There comes a time in any battle when you take time out to tidy up the battlefield." In other words, he was ensuring long-term success of his operations by bringing some organization to the confusion of the battlefield. Montgomery had learned well the lessons of armored combat from his experience defeating Rommel in North Africa.

Today, our armored divisions are organized for training and for battle as was the 7th Armored Division on 1 November 1944. Is it the correct way to do it? Does it facilitate sustained operations in a prolonged battle?

The inexperienced do not understand the effects of claustrophobia on troops who spend long hours in battle inside of an armored fighting vehicle.

- How would the problems differ if the Russian main effort is against NORTHAG instead of CENTAG?
- When we begin to employ the air-ground concept early in the fight, what support from the Zone of the Interior will we need at once to sustain the level of intensity necessary to win?
- Will not our armored cavalry units in Germany have to fight defensively at first? Are they equipped to do that? (During the first two days of the Battle of the Bulge, the 14th Armored Cavalry Group was destroyed as an effective fighting force by an enemy whose mobility, equipment, tactics, and intensity was strikingly similar to the enemy we now confront.)
- What is the likelihood of using tactical nuclear weapons in the defense of NATO? Will we be the first to use them if enemy success with chemical weapons threatens to break our resistance? Can we secure their release from national command authority in a timely manner?
- Undoubtedly, we expect our attack helicopters to play a key role in defeating the Russian attack on NATO. Will the Russians be able to defend against them?
- Logistics will play an even more important part in the next war — especially in armor units. Do our planners incorporate realistic logistics requirements into contingency plans.
- Early warning in Korea and NATO is especially important. Will our intelligence branch be able to do that? Conversely, will our commanders and staffs put too much reliance on these G-2s at the expense of their own judgment?
- The battlefield of any future war will be fluid. It will call for leaders and commanders, at the battalion level and below, to exercise initiative and imagination and to act quickly in a crisis. Command and staff operations must be able to cope with those situations. The main job of a commander in modern battle, especially in a defensive one, *is to prevent the confusion from becoming disorganized.* Does our training encourage young leaders and commanders to do this? Is our school system functioning in a manner to promote this? (Please read my article on the purpose of our Army school system in the May 1986 *Military Review.*)
- When I was a student at the Command and General Staff School in 1939, its motto was: *"Staffs talk while soldiers walk — do not slow them down."* The tempo of modern battle may be many times the speed of marching soldiers. Can our modern commanders and staffs *in battle* cope with the modern tempo of operations? Can we really operate in an efficient enough manner to work inside the enemy commander's decision cycle?
- I found as a brigade commander — in both offensive and defensive battles in World War II — that command and staff actions could not keep up with a speed of movement of 15 mph.

Command and staff inertia is the cancer that eats away at the effectiveness of a command. It is bad in times of peace, but it is often fatal to the command in war.

The Chief of Staff and G-1, G-2, G-3, and G-4 staff organization was originated in World War I when there was little mobility in trench warfare. It is not particularly efficient in operations at 2½ miles an hour, and is inefficient in mobile warfare at 15 miles an hour, or faster.

I found that the use of an Operations Section (containing G-2, G-3, and the commander) and a Logistics Section (under the Chief of Staff with the rest of the staff) provides a prompt and balanced action organization for handling the requirements of battle. We had no trouble coordinating the two.

In the Battle of the Bulge, all of our corps, Army and Army group commanders were infantry officers trained in the old school. They had never considered armored *divisions* in Army schools and colleges, and were not aware of its tactics, organization, command structure, logistics, and mobility. This cost the Army dearly in casualties the first few weeks of the battle. Do we continue to provide education for our general officers throughout their careers? Even 4-star generals have things to learn.

A general officer in command of troops must be a general officer (little g) and not a general of a branch if he is to handle his military unit as a balanced *team*. This also applies to general staff officers of division and higher units. Have we worked to eliminate the "branch clubs" from our general officer ranks?

If we have to repel a Warsaw Pact attack as a part of NATO, our enemies will have many advantages. Only a very high order of commandership, generalship, training, morale, motivation, leadership, and logistical support will win. *We cannot afford to be mediocre in any of these.* Are we emphasizing these aspects of successful units today?

The proposed division and troop basis of the Total Army is planned as 372 combat battalions organized into 28 divisions (15 infantry or mechanized infantry divisions, five armored divisions, one airborne division, one air-assault division, one cavalry division (actually an armored division), and five light divisions — counting Regular Army, Reserve and National Guard forces). Is this spread what we need as a result of our estimate of the 1990 situation?

We now teach that the basic combined arms combat battalion consists of a tank company or companies, mechanized infantry company or companies, an armored engineer platoon or company, and a field artillery battery or more, with some air support. The battalion commander of this composite battle unit will be an armor or an infantry lieutenant colonel. The tanks and mechanized infantry must be coached in close teamwork. Is this being done in our armor and infantry schools? In our units?

The Payoff

If we can successfully address each of these specific considerations, the payoff will be success on the battlefield with fewer American casualties. The American people have been conditioned by the media to scrutinize all military operations closely, and will demand striking results with low casualty lists. We can deliver this only if we have correctly estimated the situation with respect to our forces, and then act accordingly. We must have the courage to do this.

The Disadvantage of Two "Branches" in Armor

I recently received a letter from Fort Knox stating that it was the Home of Armor and Cavalry. This followed a letter from a major of armor who signed as a major of cavalry.

This indicated to me there is a concept at Fort Knox, and in our armor units, that there is — for all practical purposes — a split in armor into two branches.

Some checking of the careers of Regular Armor officers indicates that they often have a series of repeat experiences in only tank or only cavalry units. Many have been assigned to only one of these types of armor units in their career.

This, I firmly believe, is a detriment to the careers of Regular Armor officers, and to the Army in case of expansion upon mobilization. In such an event, the Regular Armor officer should be able to perform with distinction in a tank unit, a mechanized reconnaissance unit, or on the staff or in command of an armor division. He should be qualified to be on the staff of a corps or to be a corps commander. He should be qualified to be on a high level planning staff. The Army at that time will need and promote armor generalists over armor specialists.

GENERAL BRUCE C. CLARKE was commissioned in the Corps of Engineers upon graduation from West Point in 1925, but made his name as an Armor commander in an illustrious 44-year career. Clarke is best remembered for his valiant stand at St. Vith, Belgium, during the Battle of the Bulge in 1944, when units under his command deflected and then stopped German spearheads racing for the Channel. General Clarke commanded at every level of the Army, including CG, USAREUR; CG, Continental Army Command; CG, USARPAC; and CG, Seventh Army. He now resides in McLean, VA.

What Would You Do?
(Second of Three Parts)

The Regimental Armored Cavalry Troop

Delay in Sector

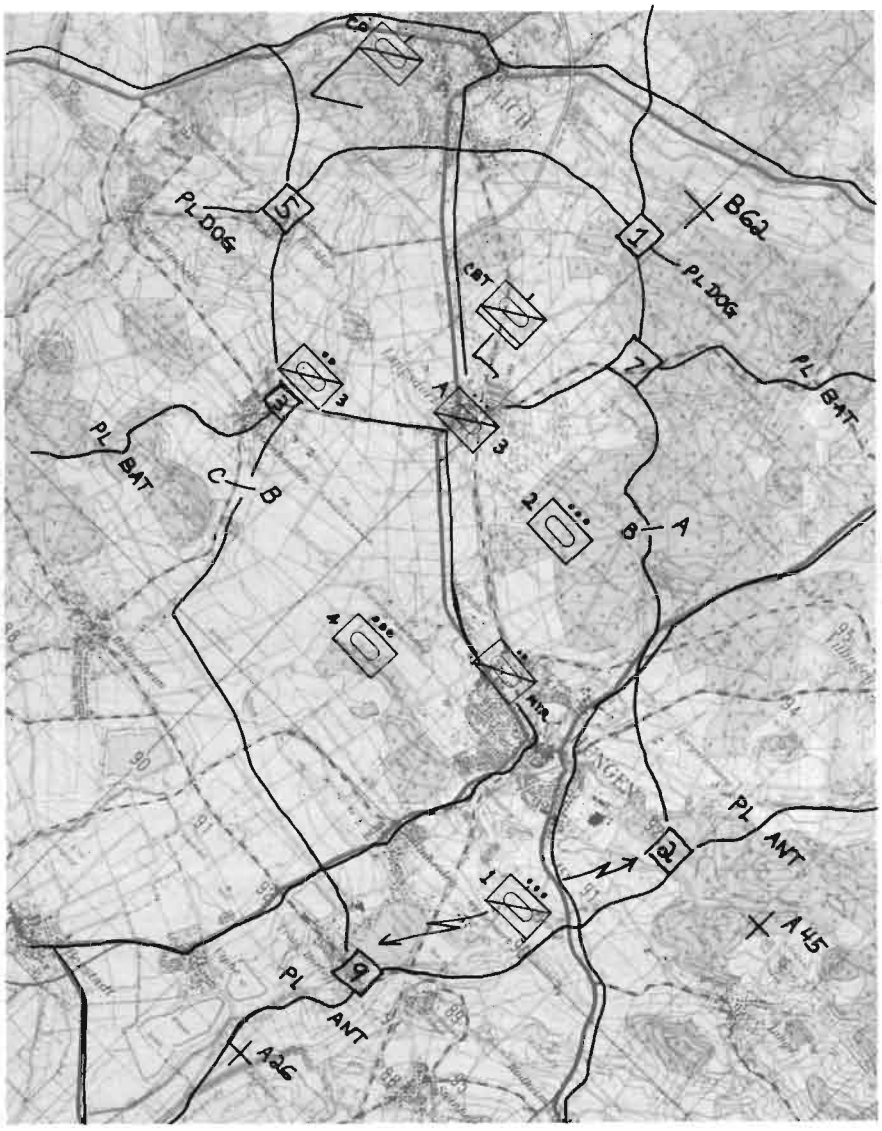
(This is the second part of a three-part problem which began in the September-October issue. Some reference to that first part may be necessary.)

As troop commander of Troop B, 1/208th Armored Cavalry Regiment (J-Series), you are conducting a delay in sector. You expect reinforced motorized rifle battalions to move along the high-speed avenue of approach (Highway 457) between Hungen and Lich in an attempt to secure crossing sites along the Wetter River at Lich.

In the first part of this problem, you studied the terrain and deployed your units to create an L-shaped ambush on a large scale. (See Map 1)

One scout platoon is screening along Phase Line ANT, and observation posts there allow continual surveillance of the major highway. Two to three kilometers behind the screen line, between PL ANT and PL BAT, you have established engagement areas in open country, bounded by wooded areas north and south of the highway. Your 2d and 4th platoons, tank units, are straddling the route and emplaced in hide positions where they will be able to attack by fire, on call, into the flanks of the enemy canalized within the engagement area. Your mortar unit is on the western edge of Hungen in a position to support the screen line and move northwest to continue its support as the battle develops. Your troop command post is on the south side of Lich, and the combat trains are at Langsdorf, about half-way between Lich and Hungen.

At first, you positioned yourself with the 4th Platoon so that you could observe the progress of 1st Platoon in its screening mission. Now you are prepared to move, with your FIST, toward Langsdorf as the battle develops.



Situation

The time is 0330. Your troop is set in initial positions in accordance with your troop operations order. Visibility is good to 4 km. Your engineer platoon is still working on emplacing barriers and obstacles. The squadron commander updates the squadron that the Regimental Aviation Squadron (RAS) has destroyed or repelled a divisional recon platoon vic Nidda 10 km southeast of Hungen. The squadron should anticipate additional recon elements, most probably regimental recon, within 30 minutes.

The time is 0400. The GSR team identifies vehicle movement vic grid 958888.

Problem No. 1

As the troop B commander, what are your actions?

Solution

Ensure your troop leaders know the enemy situation. Instruct your 1st Platoon leader to anticipate one, maybe two, BMPs, to approach his screen line. The patrol will most likely be moving on or along the flanks of Hwy 457. 1st Platoon's mission has not changed: He provides early warning and destroys or repels enemy recon patrols.

Problem No. 2

About 800 meters forward of the screen line, the 1st Platoon scout elements unmask and quickly destroy the patrol with cannon fire and mortars. One scout squad quickly searches the enemy vehicles for intelligence information and captures two wounded prisoners.

After updating the squadron commander, what should you expect to happen next in your troop sector? What are your actions?

Solution

Applying the doctrinal threat template, you should inform the troop that attacking forces may arrive in 30 to 60 minutes. You should expect to see a BTR combat reconnaissance patrol (CRP) consisting of a motorized rifle platoon of 3 BTR 70s, an NBC recon team in a BRDM-2 rkh, and an engineer recon squad in a BTR 60. The CRP will most likely be moving on either side of Hwy 457.

The 1st Platoon scout screen line may have been compromised after it destroyed the recon patrol. One of the other two regimental recon patrols may have identified 1st Platoon's presence. You should instruct 1st Platoon to occupy alternate positions along PL ANT, be prepared to receive enemy artillery, and to expect the CRP approaching in attack formation on the positions which destroyed the recon patrol.

During this intermediate lull you should displace the mortars to a subsequent position (vicinity 908932) to assist in your next phase of the fight. From this position they can still support your scouts as they deploy off the initial screen line and can be used in the CRP fight.

The rest of the troop stays in hide positions away from terrain most likely targeted by enemy artillery units.

Situation Continued

About 45 minutes later, heavy concentrations of artillery and rocket fire begin falling along areas of high ground which dominate the avenue of approach near Hungen. Troop elements button up, and then immediately test for chemical agents when the suppression lifts. No chemicals are detected. The TCs remain unbuttoned.

The time is now 0500 hours. 1st Platoon identifies 2 BTR 70s and a BRDM 2 rkh deployed, moving cross country parallel to Hwy 457. The CRP appears to be attacking the dominant ground (vicinity 9491) from which the regimental recon patrol was destroyed.

Problem No. 3

As the Troop Commander, what should you do? Should you destroy the CRP with 1st Platoon, or pull 1st Platoon back? Where do you want to destroy the CRP?

Solution

1st platoon hasn't identified the complete CRP, only a portion of it. The CRP is deployed ready for a fight and is not an easy target now. Instruct 1st Platoon to fall off PL ANT. They must maintain contact with the CRP and report its activity. 1st Platoon should not get involved in a firefight with the CRP. If you allow the CRP to continue its movement unimpeded, they should return to march column for increased speed of their mission to recon Route Hwy 457. With 1st Platoon reporting the CRP's movement, it should clue you to the intentions of the battalion following.

You want to know if the CRP will go through Hungen, or will they go north or south of Hungen?

You and your two tank platoon leaders should be in turret defilade to see the battlefield around Hungen and provide overwatch, if necessary, for 1st Platoon. Your FIST must also be in a good position to observe forward with you. Once satisfied on the intentions of the CRP and its follow-on parent units, you must destroy him, ideally before he enters your initial engagement area and reports your obstacles and barriers.

Situation Continued

With the CRP moving rapidly once again in column around the south side of Hungen, punch out 4th Platoon tanks to conduct an armor ambush. Together with cannon fire from several of 1st Platoon CFVs and the mortar section, you are able to destroy two BTR 70s, one BTR 60, and the BRDM 2 rkh. The remaining BTR 70 has taken up a hasty defensive position on the southern side of town.

Problem No. 4

As the troop commander, what should be your next course of action? What is the Threat's next course of action?

Solution

First, how about updating the squadron commander on the enemy situation in your sector? Be sure to keep him, and your troops, informed on the success of your battle plan.

Now you must prepare for the arrival of the Forward Security Element (FSE), or perhaps even an entire motorized rifle battalion.

"Your intent is to slow their rate of advance and keep them buttoned up..."

How will you know when he will come, in what strength, in what composition, and in what direction?

Applying the doctrinal template, you should anticipate the arrival of the FSE into your sector within the next 20 minutes. The FSE will consist of 10 BTRs, 4 tanks, 6 120-mm mortars, and 6 122-mm howitzers. Actions of the FSE, moving in column behind the CRP up to 10 kilometers, are to advance at maximum speed, engage you with all his weapons, develop the fight by maneuvering around the CRP, and seize and hold a position until arrival of the advance guard main body.

If you take advantage of the time and space between the CRP and FSE you should be able to get at least two of 1st Platoon's sections back out to PL ANT and re-establish your screen line. This provision for early warning will allow you to confirm your doctrinal template of the attacking threat. One section of 1st Platoon must fix the lone BTR remaining from the CRP.

Fourth Platoon must return to its hide position and prepare for the FSE fight. You should move your mortars to the back side of Langsdorf to be in position to support your engagement area as the FSE approaches.

Problem No. 5

Within minutes after reporting set on PL ANT, 1st Platoon identifies the FSE moving in company pre-battle formation with tanks leading. The FSE is traveling paral- to Hwy 457, moving at 20 kilometers per hour. The FSE will hit your screen line in 5 minutes. Artillery fires, HE and smoke, begin to fall on the high ground southwest of Hungen. What response do these activities require of the troop commander?

Solution

First, instruct the 1st Platoon leader to have his scout sections continue to observe and report the activity of the FSE without being identified and engaged. You instruct the FIST to continue giving 1st Platoon priority of fires. You need to know how the FSE is going to respond to the loss of its combat reconnaissance patrol. The enemy artillery may be causing problems for 4th Platoon tanks. If you are not in a position to observe them, give them a call to see if they need to adjust their hide position out of the impact area. Give the squadron commander a quick update and continue to monitor the activities of the Cavalry Troops A and C on your flanks. Are their defenses holding up, allowing you to still pull off your plan?

Situation Continued

The platoon sergeant of 1st Platoon contacts the FIST Chief. Using the technique of "fire at my command," the platoon sergeant times the impact of artillery to coincide with the arrival of enemy formations at preplanned target reference points. Enemy formations are disrupted; several vehicles sustain suspension damage; and the advance slows down. Enemy leaders scramble to restore order; platoon attack formations are formed; and the advance continues. The 1st Platoon does not engage the advancing force, but maintains contact, reporting the enemy's location and activity to you as it withdraws off PL ANT on the flanks.

First Platoon reports that the FSE has elected to maneuver in attack formation through and around the north side of Hungen. You suspect that they are trying to take advantage of available cover and concealment to avoid the suspected enemy positions which destroyed the CRP on the southwest side of town. The FSE moves through and secures the western edge of town, expecting a fight. Having encountered no obstacles, direct or indirect fires, the FSE returns to company pre-battle formation as it leaves the town. A platoon column of BTRs led by tanks moves on either side of Hwy 457. It appears that the FSE command group is traveling on the route slightly to the rear. You can't identify the mortars or artillery; they are probably in firing positions on the edge of Hungen. The FSE should hit your obstacles in about 4 minutes.

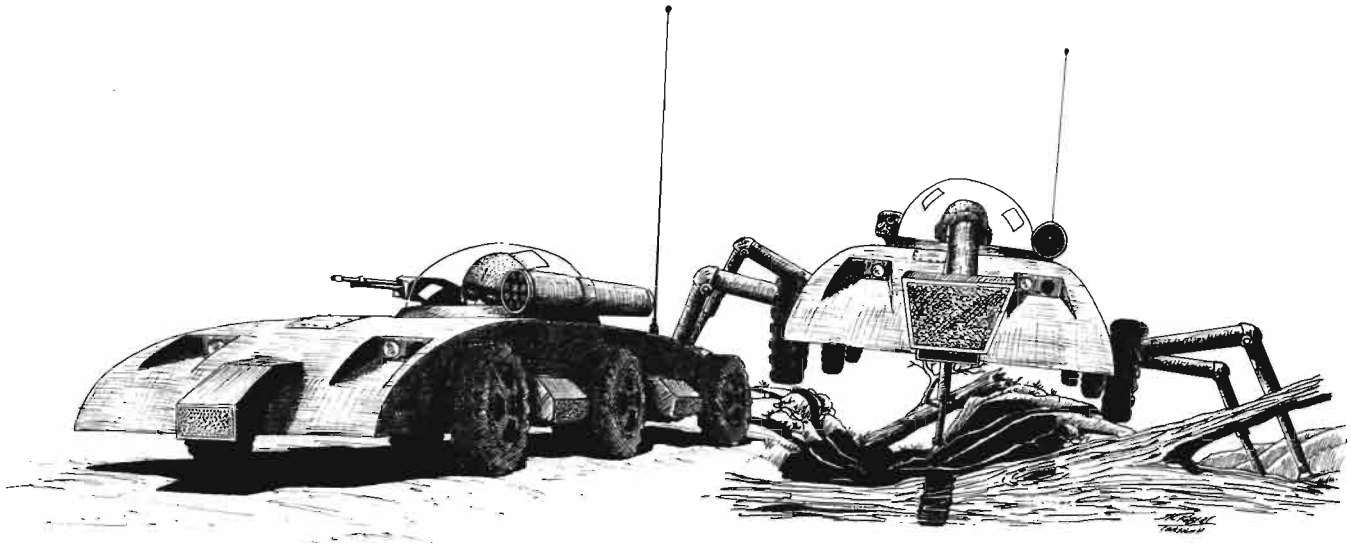
Problem No. 6

You now have an excellent opportunity to destroy the entire FSE while it is in platoon columns. How are you going to do it?

Solution

You and your platoon leaders should have moved into turret defilade positions to observe the enemy approach. Have the FIST prepare a suppression mission to be fired at your command. Your intent is to slow their rate of advance and keep them buttoned up. Immediately after the mortar rounds impact, you will want to engage the enemy tactical formations from one or both flanks before the units move from prebattle to attack formations. Mass the available firepower of the troop within the engagement area. Order 2nd Platoon tanks to move into firing positions and prepare to fire at your command. Keep 3rd and 4th Platoons in hide positions, but have their platoon leaders stay up and continue to observe. Order 1st Platoon scouts to continue working the forward flanks handing the enemy off to the troop.

(The third part of this three-part problem will be published in the next issue of ARMOR.)



Armored Infantry — The Real One

by Dr. Azriel K. Lorber

Introduction

The APC is in trouble; deep trouble. If you do not believe this, you have not ridden one into combat on the modern battlefield. Those who have, on both sides of the line in the '82 war in Lebanon, for example, will attest to the fact that while an APC does provide reasonable protection against shell burst fragments or sporadic small arms fire, it cannot withstand a direct attack by any hollow charge weapon, an aimed heavy caliber machine gun, or small caliber cannon fire.

Curiously enough, in contrast to Mark Twain's famous remark about the weather, in our case the subject is not even discussed. Partially, this is due to reluctance on the part of vested interests, manufacturers and the clients; partially, it may be due to the fact that up to now no suitable solution to the problem has been found. Historically, such an attitude is not new. During the Russo-Japanese war of 1904-5, when the effect of the entrenched machine gun against infantry in the open was revealed, everybody clucked their tongues and nodded sagely; but when 1914 came along, only the French had any suggestion for a solution — "ELAN"! As far as the APC is concerned, the situation is getting to be very similar, with the top-mounted light cannon replacing Elan, and we are getting the same results.

The problems of the armored infantry are really more complicated than the mere question of protection during the mounted phase of combat. In this article we will try to present some new technological solutions to the classical woes of the infantry. We will start by trying to analyze the role of infantry on the modern battlefield, and by looking at some aspects in the evolution of the APC.

Historical Notes

The original concept of the APC, developed by the Germans prior to WWII, was nothing more than an armored truck which was supposed to enable their infantry to stay with their panzers. The armor was supposed to provide the shock and the cutting edge of the assault, but the real work was to be done by the infantry, after dismounting. High mobility was necessary so that armor and infantry did not get separated if things went well, as was the case too often with the Russians, for example. There was some capability of fire from the vehicle, but with bolt-action rifles, or the occasional machine gun on a makeshift pedestal, this was not taken too seriously. The U.S. Army copied this concept, and not until the "Kangaroo" (a modified Sherman tank of 1944), was there any departure from this way of thinking.

We should stop here and visualize (or remember, as the case may be) the combat atmosphere of those days, which spawned the original APC. An army — even the German, French or American — consisted mostly of infantry. Admittedly there were also artillery and armor and even aircraft, but most of the soldiers were typified by the foot-slogging doughboy with the rifle and the bayonet.

The average WWII infantry squad had a BAR, an MG-34, or a Bren gun for fire support. Antitank weapons were comprised of a battery or two of 37- or 57-mm (in the battalion), with an effective range of 500-800 meters. Only towards the end of WWII did the PIAT, the Panzerfaust, and the Bazooka (2.36-inch) appear. Mass-employed guided weapons were a gleam in the designers' eyes. Actually they were about 15 to 20 years in the future. This environment, it should be added, prevailed from about 1937 until the end of the Korean War.

After some false starts came the M-113 APC. This was the epitome of the armored bus. The infantry, or most of them, were not required to contribute anything to the fighting until dismounting. But beginning in the 1960s, they found themselves in an entirely new ball game. Between the light automatic weapons that now predominate on the battlefield, the heavier automatic guns, the mortars, and the various antitank weapons (all of these in steadily growing numbers) the chances of the infantryman going in against prepared positions, or fighting in open terrain even when riding in an APC, are very slim. The prophets of doom were many, but the infantry is still with us. The real question, however, is not whether the infantry remains with us, but how many of them will remain after the battle.

In the years after WWII and Korea, in fighting in the Middle East and in Vietnam, modern armies experimented with equipment and doctrine simultaneously. The

Israel Defense Force (IDF), flushed with the success of '67, relegated the infantry (except for elite units) to secondary roles on the assumption that casualties would be minimized. Along came 1973 and the Yom Kippur War. The IDF learned its lessons the hard way, and the "combined arms team" came back to the battlefield, but without any real improvement in its equipment. This was not because of lack of funds, or because of problems with quartermaster corps; there simply were no new answers.

Role of the Mechanized Infantry

Although it sounds trivial, we believe it is worthwhile to reiterate why the infantry is *necessary* on the battlefield. On the face of it, it may sound funny. The tank, it may be remembered, was invented to extricate the infantry from the mess it had gotten itself into in WWI, and here we are with a steel monster, weighing forty to sixty tons, with a very accurate big gun and various other weapons. And this wonder of modern technology needs the help of the puny infantry?

Well, the truth is that under certain conditions, the firepower and visibility of the tank are severely limited, especially at short ranges. In built-up or wooded areas, it may have difficulty in traversing its gun, and sometimes it can't provide enough elevation or depression of the gun. In addition, in certain types of terrain it may have mobility problems. And in spite of all its protection, it is extremely vulnerable to certain specialized types of attack. Finally, the workload of the crew is becoming heavier and heavier and if the trend of reducing the crew to three goes on, this workload will only get worse. All these are essentially technical problems, and it seems that additional improvements barely keep pace with increases in tank size and complexity.

This is where the infantry comes in: armor and the infantry will work as a team. The armor protects the infantry by keeping enemy armor off their backs, and by providing "heavy" fire when needed. The infantry shields the armor from threats it can't take care of, especially tank hunters.

The trouble is that there is too great a discrepancy in the individual protection given to the tank crewman, with his several inches of steel, and the foot soldier with his shirt or even body armor. This discrepancy quickly manifests itself in performance, performance that deteriorates as we add heavier weapons and body armor to the soldier's load.

So the question remains, how do we introduce the infantry into the modern battlefield without it being ground to mincemeat in the process? As mentioned before, the IDF, ever so mindful of casualties, tried an extreme which did not work. So, what will?

The sad fact is that in the last hundred years or so, the infantry has not directly benefited from the advances in modern technology. True, we gave him lighter shoes and a better rifle, but apart from these, the infantryman of the Rapid Deployment Force (RDF), for example, is indistinguishable from Bismarck's finest, except in the mobility provided by the APC. Let us concentrate for a moment on the various features of the APC.

If we examine the various APCs fielded in the last 30 or 40 years, we will see that their most prominent features, and most desirable ones, are their mobility, and to some extent the armor. We will remind the reader that "mobility" may be interpreted in many ways. Preventing exhaustion, for example, even when moving at a slow pace, may be no less important than high-speed movement. So we should try to retain the better features of these vehicles and minimize the other, less desirable ones; like crowding. Some attempts were made recently to design a light combat vehicle, lightly armed and without any armor, which may partially bridge the gap between the walking and running infantryman and the one riding in the APC. This is not a new idea: Two examples readily come to mind. During WWII, there were "Popsky's Raiders"; (Lieutenant Colonel Vladimir "Popsky" Peniakoff was a maverick British army officer who commanded a sort of a commando unit in the Western Desert and later in Italy). Later, there were "Samson's Foxes" in the Israeli army during the War of Independence of '48. Both units were equipped with jeeps, each carrying two machine guns, and both units fulfilled similar roles. The idea was later discarded, (except for very special cases), probably because of too many opposing automatic weapons. However, such departures from the old way of thinking do point the way to a possible solution.

The Individual AICV

Ideally, what is needed is an "Armored Individual Vehicle" (AICV) — a suit of armor, or a similar contrivance — which will carry and move the *individual* soldier and his weapons; provide reasonable protection; retain the foot soldier's agility in all kinds of terrain, and do all this within the present technological state of the art.

Such a vehicle can be designed. But before going into preliminary description of the concept, let us try to write a set of very general specifications for it.

It will be a single-seater capable of moving on flat terrain at speeds approaching those of conventional motorized vehicles, say forty to fifty kms per hour. It should be able to move over any terrain which is passable to infantry, including broken terrain, with the same speed and agility as a soldier on foot. Specific speed has no meaning in this context, so we will not specify one, and assume that anything from one to five km/hour will be acceptable. It should carry a basic infantry weapon, preferably two, with an extended load of ammunition. Finally, it should have a reasonable armor, capable of stopping at least all types of small arms fire at short range, and provide good protection against shell fragments.

The infantryman riding this vehicle should be able to fulfill all the functions of his foot-borne colleague, namely moving and fighting in the open or in built up (and destroyed) areas, including the ability to squeeze (literally speaking) into tight corners, taking cover and even digging-in while vehicle-borne. It should be emphasized that the soldier will stay in this vehicle during all phases of combat and leave it only when disabled or when fulfilling other duties.

This will be a small, wheeled vehicle, probably with a set of six hydrostatically-powered wheels. However, to enable this vehicle to be a true cross-country vehicle, it will be equipped with two or three pairs of legs. While this sounds like something out of "Star Wars," we

suggest that this is not a new idea, but was originally tried back in the fifties, but proved to be somewhat uncontrollable. The main reason for the problems encountered at that time was very simple: it takes about two years to learn to walk, using only two legs. The human operator, using mechanical controls and with practically no feedback, had no chance of mastering those mechanical legs and the project was dropped. With the emergence of computers and microprocessors as powerful tools, the idea was revived and there are now several experimental vehicles using this kind of locomotion. The inclusion of these legs will also explain the preference for the hydrostatic drive mentioned earlier.

The exact weapon load is not a critical factor and could be mission-adapted, but a good general choice will be some combination of a machine gun and an automatic grenade launcher, or some medium range, fire-and-forget, antitank weapon. These weapons, or a similar combination, will be mounted on the right and left of a rotatable bubble canopy and controlled in slew and elevation by helmet mounted sights, and including designating equipment and night vision devices. Driving and firing controls will be similar in configuration to aircraft controls, either of the conventional type or side mounted. Sights will be computer adjusted, according to weapon type. Switching from one type of locomotion to the other (wheels to legs) can be accomplished manually or automatically.

A vehicle as described, and including the proper power plant, either a diesel or a gas turbine, will weigh in, empty, at about 700-800 kgs depending on choice and configuration of armor. Fully combat loaded, it will probably weigh approximately 1,100 kgs. Estimated approximate dimensions will be: Length - 85 inches, Height - 44 inches, and width - 40 inches. These may sound like a lot for a single infantryman, but we will return to a brief analysis of the cost effectiveness of such a weapon later. Let us discuss for a moment one more interesting possibility.

One of the biggest problems of any fighting force is its mobility in really poor terrain. Infantry, in particular, suffers from this, especially in terms of speed, and several attempts were made to alleviate this problem, notably the "jet belts" and various other personal vehicles. While the above proposed vehicle has the advantage of combining both mobility and "fightability", it still lacks one feature which really may round off the capabilities of such a device, and this is the ability to jump. Since a fairly advanced stability and control system has to be incorporated anyway, for use with the legs, then for a relatively small weight penalty the ability to jump may be incorporated too. This is to be done by a small, liquid fueled, rocket motor. A preliminary calculation has shown that about 100 kgs will suffice for a motor and enough fuel for 10 to 15 jumps of about 10 meters height, up or down. While this may not seem to be much, it should be remembered that this additional capability is not intended as the primary mode of travel, but only as an emergency measure under specific tactical conditions.

Another interesting aspect of the problem is the quality of the required manpower. Some form of "Right Stuff" will be needed. While we do not believe that these infantrymen need to be jet pilots, they will need to be highly trained, intelligent, and capable of individual initiative.

No discussion of a new weapon system, whether actual or futuristic, will ever be complete without some discussion of the financial question, and of course of the more subtle criteria of cost effectiveness.

Any attempt, at this stage, to estimate the price of such a vehicle is, of course, completely without merit or justification. Suffice it to say that at various informal discussions, price tags of $500,000 to $1,000,000 were mentioned. This in itself is useless as a measure of cost effectiveness, since at this stage it will be hard to *calculate* the usefulness of such a vehicle on the battlefield.

We may, however, compare it to the average tank. Put in simplistic terms, we may say that a price tag of more than $2 million is attached to a vehicle which carries a big gun, a couple of machine guns and four crewmen to serve them, and which still requires additional means to be really functional on the battlefield. Breaking this unit into four subunits (because, after all, the crew is the deciding factor) will make for a more adaptable fighting force with all its inherent advantages. While admittedly without the tank's big gun, the combination of numbers and agility will more than make up for it, even when fighting conventional tanks. While not exactly analogous, we may remind the reader that a similar trend started about twenty-five years ago in the world's navies, when the big battleship was completely abandoned in favor of smaller units armed with missiles.

Conclusion

We have tried to analyze the difficulties of the infantry on the modern battlefield, particularly in view of the modern weapons in use. The conclusion is that up-to-date modern technology was not used to redress the imbalance between the infantryman and the weapon systems he has to face. What was done has proven either too cumbersome or not really effective in addressing the real problems of the infantry. These, in essence, may be said to be trying to achieve better results with less casualties by employing the right combination of mobility, firepower, and protection, while trying to maximize all.

While admittedly the proposed vehicle and its occupant are not "infantry" (in the classical sense) anymore, we still use the term because this "armored infantry" can fulfill almost all the roles of present day infantry, and in particular the one of supporting and aiding the armor.

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Fixing Something That Ain't Broke

The U.S. Army is once again thinking about "fixing something that ain't broke." Fiery-eyed reformers are advancing the thesis that artillery battalions could be made more responsive if they were assigned or attached to divisional maneuver brigades. To adopt such an approach would, in fact, violate the cardinal tenets of AirLand Battle doctrine, cause artillery units to be less responsive to the total combined arms force, and create needless turmoil and confusion in an already much confused and frustrated Army.

The Background

History makes clear that the innovative use of field artillery is essential to achieving tactical and operational success in combat. Our AirLand Battle doctrine demands that all maneuver commanders — especially those at the echelons above corps, and at corps and division levels — attempt to see deep into the enemy's "follow-on" units or his defensive formations, and then preempt the employment of those forces by striking with artillery, air power, and ground forces. Each of these friendly commanders must also ensure that sufficient combat power supports the forces conducting the close-in fight and the rear battle.

Of course, operating in such depth is a tall order, but nobody ever said that war was going to be easy! At the division level, the principal means of realizing many AirLand Battle objectives is through the wise and prudent use of the field artillery organizations and, to a much lesser extent, offensive air support. The artillery has long been the most flexible and destructive force on the battlefield. Today, shifting combat power across the front and well beyond the forward line of own troops (FLOT), or into rear areas, requires a simple call for fires by the leader in need. Technically speaking, virtually all divisional artillery weapons are "on call" to the commander who needs them most. The characteristics of the field artillery which provide this very attractive feature are the inherent range of the weapons and the manner in which the artillery and maneuver communities assign tactical missions to fire support units. Support of the combined arms team usually involves the assignment of one of four standard missions to divisional artillery battalions.

- **Direct Support** — When assigned this mission a field artillery unit answers calls first from the supported unit, then from its own observers, and finally from the higher field artillery headquarters.
- **Reinforcing** — This mission requires the unit to answer calls for fire first from the field artillery unit that it is reinforcing, then its own observers, and finally from the force field artillery headquarters.
- **General Support Reinforcing** — Units with this mission answer calls for fire in priority from the force field artillery headquarters, then the reinforced unit, and finally its own observers.
- **General Support** — This artillery unit answers calls in turn first from the force field artillery headquarters and then from its own observers.

(For a more detailed explanation of each of the above standard artillery missions see pages 1-12 of FM 6-20, *Fire Support in Combined Arms Operations.*)

These standard field artillery missions stand in stark contrast to the "command relationships" under which maneuver leaders operate, relationships which can be permanent or semi-permanent.

- **Organic** — A unit designated as organic is a part of the parent organization by tables or modified tables of organization and equipment. It is an integral part of the parent organization.
- **Assigned** — A unit assigned becomes a part of the parent organization on a rather *permanent* basis, and its command and control arrangements are the same as organic units. The parent unit is totally responsible for administration, logistics, and training support.
- **Attached** — A unit designated

attached is placed in the parent organization on a *semi-permanent* basis. The receiving command is responsible for administrative and logistic support. The command and control arrangements are the same as for organic and assigned.

• **Operational Control (OPCON)** — This relationship is normally *temporary*. The gaining command is simply in control of the OPCON unit for operational purposes, but it has *no* responsibility for administration, logistics, or training.

The Analysis

A field artillery battalion given the mission in direct support of a maneuver brigade is as responsive to the supported unit as a field artillery unit that is organic, assigned, attached, or OPCON to a maneuver force. One doesn't need a lot of field experience to reach that conclusion. A direct support artillery battalion provides a full complement of fire support teams down to company and platoon level, not to mention fire support coordinators at the battalion and brigade headquarters. What's more, these dedicated teams normally stay with the supported unit, without regard to subsequent tactical missions that might be given to their parent artillery battalion. The character of support provided by direct support artillery is complete and unequivocal.

In actual practice, many artillery battalions habitually receiving a direct support mission to a particular maneuver brigade feel as much a part of the supported brigade as an assigned unit. Many division commanders today recognize the wisdom of fostering this habitual, rather than command, relationship. They require various fire support teams to live, work, and train in their habitually supported maneuver battalion areas; but they leave artillery units under the watchful, highly capable eye of the division artillery commander.

If one carefully compares the standard tactical mission of direct support to any one of the command relationships discussed above, one realizes that the maneuver command gains absolutely nothing in terms of responsiveness as a result of designating an artillery unit as organic, assigned, attached, or OPCON. Yet, when one gives even passing thought to the additional burdens that a permanent and semi-permanent relationship would thrust upon the maneuver brigade, such options loom as unworkable, and cumbersome. Let's consider just a few of the disadvantages.

Support — A maneuver brigade receiving an artillery battalion designated as organic, assigned, or attached, is responsible for the total administrative, logistics, and training support of that artillery unit. Neither the heavy maneuver brigade nor its light counterpart is equipped, trained, or inclined to assume the tasks of supporting a 155- or 105-mm artillery battalion. Consider the ramifications of a 155-mm self-propelled battalion operating in your brigade area. The SP battalion not only has 18 or 24 howitzers, but also more than 70 other track-laying and wheeled vehicles; 570 officers, warrant officers, and enlisted men; a vast amount of communications gear; and literally thousands of other end items. The unit has an enormous appetite for ammunition, fuel, oil, lubricants, spare parts, food, and water. Its requirements for training and administration are gargantuan. Not so obvious, perhaps, is the need for the Field Artillery community, in the form of the division artillery headquarters, to be responsible for that training and support. The true expertise for getting "steel-on-the-target" in an accurate and timely fashion and supporting a field artillery unit in the field resides at the division artillery headquarters. Maneuver commanders who believe themselves capable of fulfilling such roles simply haven't grasped the complex nature of today's fire support system.

Span of Control — A divisional maneuver brigade commander may control up to five maneuver battalions as well as various aviation, engineer, signal, military police, and other combat and combat support slices. The brigade commander and staff are already hard-pressed to command and control this organization, accepting additional training, support, and employment responsibilities that accompany the various command relationships.

Flexibility — A fundamental principle of fire support is the retention of flexibility. Artillery is now — and will remain for the foreseeable future — a very limited battlefield commodity. That all divisional artillery be centrally controlled by one artillery headquarters is imperative. Only that arrangement guarantees true flexibility of fires. Only that approach allows the division and brigade commanders to "maneuver fires" by rapidly shifting huge volumes of combat power. The last thing that a maneuver leader wants to experience in the heat of battle is a debate over to whom the various artillery tubes and launchers "belong." On the contemporary battlefield, every maneuver commander is going to believe that his fight is the most critical part of the battle. He's unlikely to be forthcoming about his attached artillery, but that's exactly what he must be if the whole combined arms force is going to win.

Doctrinal Instability — Our Army must quit changing doctrine when it is unnecessary! One doesn't have to look far to see many examples of manuals that are obsolete before the ink dries, or of service school instructors using handouts still warm from the copier. Doctrine, tactics, techniques, drills, and procedures are a language with which all military practitioners must have total familiarity. But gaining such familiarity takes time. In fact, it requires years of careful study and months of application in exercises for doctrine to really sink in. We are paying a high price in today's Army for changing "the way we do business" when change is really unwarranted. The price is in poor communication, longer orders and plans, longer radio transmissions, confused sister services, and quizzical looks, if not downright befuddlement, among our Allies.

Our present artillery doctrine allows for semi-permanent command relationships when unusual situations make them necessary. Most of the Army's operational and tactical leaders understand that when maneuver brigades or separate task force-sized elements engage in independent operations — such as deep attack maneuvers, exploitation, pursuit, or a covering operation — that they should consider attaching or "OPCONing" field artillery units to the maneuver force. They take such extraordinary steps in full light of practical considerations about the range of the guns and launchers, support, communi-

cations, and command and control. But such an esoteric approach would prove disastrous if adopted at the beginning of every battle.

Conclusion

The U.S. Army should perfect its present artillery doctrine. After all, it's a doctrine which has stood the test of time. We ought not be too quick to advocate changes based solely on isolated examples of poor execution or personality clashes.

Preparing for the next war is too serious a business. Let's not "fix something that ain't broke."

JIM HOLLIS
LTC, Armor (Ret.)
Lawton, OK

(Mr. Hollis is a recently retired Armor officer whose Army career included assignments as doctrine writer and maneuver tactics instructor at the U.S. Army Field Artillery School, Fort Sill, Oklahoma, and the Command and General Staff College. He is now a systems analyst with LB&M Associates in Lawton, Oklahoma.

Make It Happen!

The Catchy Phrase Masks an Abdication of Leadership

"Make it happen!"

I will never forget the first time I received that direct order.

I had been a platoon leader for about three months, so I had some idea of what was and was not possible, but I had not yet learned how to conjure miracles out of thin air.

I was in the troop commander's office and he had just given me one of his typically reasonable orders like: "Have a dozen circus elephants on the parade-field not later than 0430 hrs tomorrow."

As might be expected from the junior platoon leader in the squadron, I was making ignorant objections like: "Where am I supposed to get a dozen circus elephants this time of night;" or "USAREUR supplement No. 7, dated 12 November 1981 to AR 725-10 says 'woe unto he who brings circus elephants onto the parade-field for he shall be drawn and quartered on said parade-field'."

In response to these irrelevant concerns, my commander bellowed, "make it happen, Lieutenant!".

Being an exceptionally bright lieutenant, I figured out — all by myself — that I was not supposed to say anything else. It took me only another thirty seconds or so to realize that, since I was not supposed to say anything and my commander was not saying anything, maybe I should leave. So I saluted, sounded-off with the unit motto, and left. As I stepped into the hallway I was puzzling over whether or not "make it happen" was grammatically correct, but as I got farther down the hallway, it gradually dawned on me what "make it happen" meant.

"Make it happen" meant "real officers can accomplish this mission with ease." Thus I could not win, because mission accomplishment was not considered an achievement, but I could certainly lose, because mission failure indicates gross incompetence.

"Make it happen" also means "don't even think about asking for help." By the time I reached the CQ desk I knew that I had been given a pointless and impossible task, and that I could not hope for any assistance or any rewards for success — but I faced severe punishment for failure.

What were the results of this order? As I recall, I was severely chastised because I only produced eleven circus elephants and one of them developed serious digestive troubles. More important than the extent to which this particular mission was accomplished was the effect of this leadership technique on developing lieutenants. Some succeeded, and having consistently accomplished seemingly impossible missions without guidance, support, or assistance, they developed enormous self-confidence and independence. Some failed too often and became insecure and ineffective. The one thing they all shared was the conviction that they were much better off without their commander because he gave neither rewards nor assistance, merely punishments and bizarre taskings. As the platoon leaders came to despise their commander more each day, the strong ones led their platoons off on their own, ignoring the commander as much as possible, and the weaker ones simply sat in stunned silence, no longer responding to punishment.

So why did this captain resort to the "make it happen" leadership technique? Did he want to alienate his lieutenants? What was he thinking when he said "make it happen"? Part of the explanation is that we all love to hear "Yes, sir," and we all hate to hear "But, sir."

"Make it happen" instantly turns "But, sir" into "Yes, sir," and the commander need not give the task any further thought, other than to inspect and judge the final result. With those three words, the captain washed his hands of any responsibility for those difficult questions, "why" and "how." The natural result of this attitude was that, when the troop failed, this same commander fumed, "it's all my platoon leaders' fault." He had succeeded in his own mind, in delegating all of his responsibility and none of his authority. But what he had really done was abdicate his position as leader and act merely as a message center between the squadron headquarters and several independent platoons.

I have seen too many "make it happen" leaders to underestimate the seductiveness of delegating responsibility and giving taskings, rather than guidance and assistance, but all of us in leadership positions must try to resist these temptations. Remember that "make it happen" is not a sign of forceful, results-oriented leadership, but rather a cowardly avoidance of thought and responsibility.

CPT Thomas R. Searle
Fort Knox, KY

Helpful Hints To a Good Boresight

A Piece of Tape and a Pinhole May Provide a Winning Edge

Tank gunnery is continually becoming more and more of an exercise in precision adjustment. The exercise of precision applies to both the tank crew and the tank's fire-control system.

Precision enters into the three prerequisites for successful gunnery qualification: maintenance, crew drill, and boresighting. If any one of these three qualifiers is in error, the crew will not qualify. Conversely, if all three are met, the crew will qualify — and the crew that is most precise will qualify highest.

Through continuous fine-tuning, we've developed an even more precise method of using our boresighting equipment, a method that has led to improvement in qualification scores.

The procedure slightly modifies the use of the Pye Watson In-Bore Boresighting Device, a device that has already tremendously improved the accuracy of tank fire-control systems. But like many technical components, the Pye Watson can also be improved.

Because of the precision needed in the boresighting process, it is extremely important to eliminate any possibility of error in using the device. One source of possible error is the presence of parallax in the right-angle eyepiece which projects the precision aiming dot on the 1,200-meter target selected. Crew members who use this device are often unsure of the precise lay of the aiming dot because of the parallax problem.

This problem can be eliminated by covering the eyepiece of the Pye Watson with a piece of dark-colored adhesive tape. A small hole — about the size of a pencil lead — must be punched in the center of the tape.

We have discovered that, with this change, the observer can maintain a steady and confident observation of the aiming dot and boresight target. The procedure eliminates both the parallax problem and the excessive ambient light in the sight picture.

With the technology available today, this improvement could probably be made at the factory with something more appropriate than a piece of tape.

CPT PHILLIP S. SPERLING
Co C, 1st Bn, 33d Armor
FRG

Recognition Quiz Answers

1. **RPG-7 Portable Rocket Launcher (USSR).** Caliber (projectile) 85mm; weight (grenade) 2.25 kg (4.96 lbs); muzzle velocity, 300 meters/sec.; range (moving target), 300 meters, (stationary target), 500 meters; range to self-destruct, 920 meters; penetration, 320mm. (Shown with American crew.)

2. **GAINFUL (USSR).** Surface-to-air; guidance, ground command and semi-active radar; propulsion, integral rocket-ramjet; warhead, HE 40 kg (88 lbs); launch weight, 550 kg (1,212 lbs); range (high altitude), 60 km, (low altitude), 30 km; speed, Mach 2.8.

3. **CHAPARRAL (U.S.).** Surface-to-air; guidance, optical aiming, infra-red homing; propulsion, solid propellant rocket motor; warhead, HE; launch weight, 84 kg (185 lbs); speed, supersonic.

4. **MLRS (U.S.).** Crew, 3; loaded weight, 24,564 kg (54,163 lbs); maximum road speed, 64 km/hr; maximum road range, 483 km; number of rockets per load, 12; warhead, 644 M77 dual-purpose, shaped-charge bomblets per rocket; armor penetration, 100mm; range, 30+ km

5. **M1977 ARV (USSR).** Crew, 3-4; weight, 36,000 kg (79,380 lbs); length, 6.4 m; height, 3,438 m; width, 3,352 m; maximum road speed, 50 km/hr; maximum road range, 500 km; engine, V-12 water-cooled 580-hp diesel.

6. **VISMOD (OPFOR U.S.)** Simulated T-72 MBT; crew, 4; M551 Sheridan chassis; false front decking, false main gun and lights.

BG Samuel D. Rockenbach

The "Great-Grandfather" of the Armored Force was a man of many talents, chiefly administrative. He also owned a wry sense of humor. When General Pershing led the Punitive Expedition into Mexico in 1916, it was Major Rockenbach, quartermaster, who commanded the first motorized supply train used in a military force. But he did not accept the job without complaint and said to a friend that his job "suspends me from rank and command, sentences me to hard labor, and forces me to pay an annual fine of $2,000." (In those days, quartermaster officers had to post a surety bond to hold their jobs.)

Rockenbach was born in Lynchburg, Virginia, on 27 January 1869. His mother was a descendant of Colonial Virginians, and his father had served as an officer in the Confederate Army of Northern Virginia. Young Sam Rockenbach grew up in a military atmosphere and entered Virginia Military Institute in 1885. In 1889, he stood third in his class and was an honor graduate with a degree in civil engineering. He was commandant of the Kemper Military School in Missouri and was appointed captain in the Missouri militia. In June 1891, he passed the competitive exam for a commission and was appointed second lieutenant of cavalry and was assigned to the 10th Cavalry Regiment, the Buffalo Soldiers. In 1894, he attended the Cavalry Troop Officers School at Fort Leavenworth, Kansas, and that same year returned to VMI to become commandant of cadets and professor of applied mathematics. He was asked to resign from the Army in order to remain at VMI, but refused and rejoined his regiment. It was during the campaign against the Cree Indians that he met and formed a lasting friendship with John J. Pershing.

He served in Cuba and Puerto Rico during the Spanish-American War and rejoined his regiment in 1898 as adjutant and quartermaster.

In 1904, he was ordered to the Philippines and was promoted to captain during his tour there. On his return trip to the U.S. in 1911, Rockenbach traveled through Siberia, Russia, Germany, France, Italy, Japan, and England, studying the organization of these nations' armies. He attended the Army War College and was assigned to the 11th Cavalry in Colorado.

When WW I broke out, Rockenbach was assigned as an observer with the German Army, a position he held until 1915, when diplomatic relations prompted his return to the U.S. There, he was promoted to major, detailed to the Quartermaster Corps, and assigned to Pershing's staff. Rockenbach organized and prepared Base Section 1, in France, prior to the arrival of the first American combat troops. In 1917, General Pershing was seeking a qualified officer to head the newly-organized American Tank Corps, and he chose Rockenbach because of his administrative talents, his ability to improvise, his ability to cooperate with the Allies, and his experience with the motorized supply column of the Punitive Expedition.

Because Rockenbach was tied up with the administrative work of his new command, he selected Major George S. Patton, Jr., to train the men of the Tank Corps' 20 light tank battalions. In addition to his other duties, Rockenbach was the U.S. representative to the Inter-Allied Tank Committee and was Pershing's personal advisor on tanks. In August 1918, he was named Chief of the Tank Corps, First American Army.

Rockenbach's tanks fought in the battles of St. Mihiel and the Meuse-Argonne, winning the praise and admiration of many senior Allied officers. On 20 February 1919, General Pershing wrote to BG Rockenbach as follows:

".....I desire to express to you, and through you to the officers and enlisted men of the Tank Corps, my appreciation of the work that the Corps has accomplished.....From the beginning its history has been a consistent uphill fight for accomplishment against almost insurmountable difficulties in the way of obtaining tanks for training or for fighting....Its history in active operation, though short, is a bright and glorious one...It gives me great pleasure to thank all officers and enlisted men of the Tank Corps and, in the name of their comrades of the American Expeditionary Forces, to convey our appreciation and admiration of their splendid work and gallant record."

General Rockenbach returned to the U.S. in June 1919 and reverted to his permanent rank of colonel. He retained his position as chief of the Tank Corps until June 1920, when Congress merged the tanks with the infantry. Rockenbach transferred to the infantry and assumed command of the Tank School, Fort Meade, Maryland. He was promoted to brigadier general in January 1924.

General Rockenbach commanded the Military District of Washington from 1924 until July 1927 when he was transferred to command of the 2d Cavalry Brigade. A year later, he assumed command of the 2d Artillery Brigade at Fort Sam Houston, Texas, and held that post until his retirement in 1933. General Rockenbach died on 26 May 1952 at Washington, D.C.

A visionary of some stature, General Rockenbach returned to the U.S. after WW I, hoping that the Tank Corps would remain a separate branch of the Army. He worked hard to achieve that end, but Army tradition, the national economy, and the National Defense Act of 1920 all were against him. In his final report as chief of the Tank Corps he wrote: "the successful development and value of the arm (tanks) in the future depends upon the sympathy and support it is given."

General Rockenbach's dream was finally fulfilled in 1940 when the Armored Force was created. He is revered today as the first commander of a U.S. Army tank force — "The Great-Grandfather" of the Armored Force.

Ensuring That Your New Leaders Can Really Lead

For example: A tank commander is on orders to your unit, and a sponsorship letter is sent to the NCO. Contained in the letter is an outline of the upcoming evaluation, listing the references on which the evaluation is based. Upon the tank commander's arrival, the platoon sergeant assigns an evaluation date (make sure it does not interfere with in-processing). The tank commander reports to the training site and takes the test under the direct supervision of the platoon sergeant (do not substitute someone else for the platoon sergeant or first-line supervisor).

If the tank commander is successful — and generally he is — then he reports to his assigned vehicle competent and ready. You have stopped the age-old notion that everyone who reports to a new unit is incompetent.

The problem comes when you have an incompetent leader on your hands. In such cases, there are definite steps I would recommend. First, counsel the tank commander and identify the weak areas to him. Then assign another tank commander to assist him during other-than-prime training time, and give him new test data for reevaluation. Remember that the time between evaluations will depend on the degree of failure. Make sure you document everything on a counseling statement and remember to brief the 1SG.

For the reevaluation, ensure all stations are tested by the same tester, the platoon sergeant. If the tank commander is successful, then assign him to a vehicle.

If the tank commander fails again, conduct follow-up counseling procedures and continue training. Should the tank commander fail to reach proficiency level within a reasonable time (60 days), introduce the records to the commander for board action for reduction for inefficiency, reclassification into another MOS, or elimination from the service. Do not assign the nonproficient NCO to a leadership position!

Practically speaking, there are few, if any NCOs against whom you will ever have to take action. Probably the most notable advantages of this procedure are:

- The NCO knows where he stands right from the start.
- Bad-mouthing of competent NCOs is eliminated.
- A solid foundation between the crew and its leader is established.
- The situation of good soldiers serving with incompetent leaders is eliminated.
- The leader's capability of evaluating and training is also evaluated.

These procedures are simple, cost effective, and impact greatly on the proficiency of the unit. I would recommend the same procedures for those officers who have to fight from the vehicle.

Required Manuals for Armor/Cavalry Leaders

Every Armor/Cavalry leader has certain official publications he must read and study to train for combat. The Directorate of Training and Doctrine, USAARMS, Fort Knox, has compiled a list of these publications. They include Field Circulars, Field Manuals and others and are presented as required at the various command levels.

Battalion/Brigade Commander

FC 71-3 (Coordinating Draft), The Armor and Mechanized Infantry Brigade, Oct 85.
FM 71-2J (Coordinating Draft), Tank and Mechanized Infantry Battalion/Task Force, Dec 84.
FC 71-1J (Coordinating Draft), The Tank and Mechanized Infantry Company Team, Dec 85.
FM 17-12-1 (Approved Final Draft), Tank Combat Tables, M1, Dec 84.
FM 17-12-2 (Approved Final Draft), Tank Combat Tables, M48A5/M60A1, Apr 85.
FM 17-12-3 (Approved Final Draft), Tank Combat Tables, M60A3, Feb 85.
FC 71-11, The Armor Task Force Training Plan, Apr 84.
FC 71-4, Combined Arms Live Fire Exercise (CALFEX), Jul 85.
ARTEP 71-2, Army Training and Evaluation Program for Infantry/Tank Task Force, 23 Nov 81, w/C1.
FC 71-6 (Preliminary Draft), Command and Control, May 84.
FC 71-10, Movement and Coordination Exercise (MCX), May 86.

Squadron/Regiment Commander

FM 17-95, Cavalry Operations, Feb 86.*
FC 17-102 (Coordinating Draft), Reconnaissance Squadron (LID), Mar 85.
FC 17-102-1 (Coordinating Draft), Reconnaissance Squadron (LID) ARTEP Mission Training Plan, Sep 85.
FC 71-3 (Coordinating Draft), The Armor and Mechanized Infantry Brigade, Oct 85.
FM 71-2J (Coordinating Draft), Tank and Mechanized Infantry Battalion/Task Force, Dec 84.
FC 71-6 (Preliminary Draft), Command and Control, May 84.
FC 71-10, Movement and Coordination Exercise (MCX), May 86.

Company Commander

FC 71-1J (Coordinating Draft), The Tank and Mechanized Infantry Company Team, Dec 85.
FM 17-12-1 (Approved Final Draft), Tank Combat Tables, M1, Dec 84.
FM 17-12-2 (Approved Final Draft), Tank Combat Tables, M48A5/M60A1, Apr 85.
FM 17-12-3 (Approved Final Draft), Tank Combat Tables, M60A3, Feb 85.
FC 17-16-1, Div 86 Tank Heavy Co/Tm ARTEP Mission Training Plan, May 84.
FC 71-5, Fire Coordination Exercise, Jan 85.
FC 71-7, Situational Training Exercise (STX) for Logistics, Apr 84.

FM 17-15 (TEST), Tank Platoon Div 86, Oct 84.
FC 17-15-1, Tank Platoon ARTEP Mission Training Plan, Jan 84.
Division 86 Tank Company SOP, May 83 (will be published as FC 71-1-3 in Mar 87).
FC 71-6 (Preliminary Draft), Command and Control, May 84.

Troop Commander

FC 71-5, Fire Coordination Exercise, Jan 85.
FC 71-7, Situational Training Exercise (STX) for Logistics, Apr 84.
FM 17-95, Cavalry Operations, Feb 86.
FC 17-101 (Coordinating Draft), Light Cavalry Troop, Sep 85.
FC 17-101-1 (Coordinating Draft), Light Cavalry Troop ARTEP Mission Training Plan, Sep 85.
FC 17-97, The Regimental Armored Cavalry Troop, Mar 86.
FC 71-6, (Preliminary Draft), Command and Control, May 84.

Tank Platoon Leader/Platoon Sergeant

FM 17-15 (TEST), Tank Platoon Div 86, Oct 84.
FC 17-15-1, Tank Platoon ARTEP Mission Training Plan, Jan 84.
FC 17-15-2, Tank Platoon Leader's Notebook, Jan 84.
FC 17-15-3, Tank Platoon SOP, May 85.
FC 71-1J (Coordinating Draft), The Tank and Mechanized Infantry Company Team, Dec 85.
FM 17-12-1 (Approved Final Draft), Tank Combat Tables, M1, Dec 84.
FM 17-12-2 (Approved Final Draft), Tank Combat Tables, M48A5/M60A1, Apr 85.
FM 17-12-3 (Approved Final Draft), Tank Combat Tables, M60A3, Feb 85.

Scout Platoon Leader/Platoon Sergeant

FM 17-98 (Approved Final Draft), Army 86 Scout Platoon, Nov 85.
FC 17-98-2, Scout Platoon Leader's Notebook, Apr 85.
FC 17-98-3, Scout Platoon SOP, Apr 85.

All commanders and leaders should have SOPs and references for echelons one level above and one level below themselves.

Those publications denoted with an asterisk (*) are DA printed and must be secured from AG Publications Center, Baltimore, MD. All other manuals are available in limited quantities from the Armor Center and can be ordered by calling The Army Wide Training Support Branch, Non-Resident Training Division, at AUTOVON 464-2914 (commercial) (502)624-2914 or by writing: Commander, U.S. Army Armor Center, ATTN: ATZK-DPT-NRT-AWTS, Fort Knox, KY 40121-5200. Inquiries about publication of future manuals should be directed to the Armor Hot Line, AUTOVON 464-TANK (commercial) (502)624-TANK.

REGIMENTAL REVIEW

Texas ANG Tankers Qualify 75% With M60s

The 2d Battalion, 112th Armor, 49th Armored Division, TXARNG, qualified 75 percent of its tank crews on Tank Table VIII recently at Trapnell Multiuse Range, Fort Hood, using M60 tanks. Captain James B. Phipps, commander of D Company, said that "It's the crew that makes the difference, not necessarily the weapon system."

The crews fired their excellent scores during Annual Training '86 and, in addition to shooting well, the unit came out on top in the supply management area, said Captain Phipps.

Blackhorse News

The 11th Armored Cavalry Museum is searching for items of historical interest that are connected to the history of the Blackhorse Regiment. These items will become part of the Blackhorse Museum located with the Regimental Headquarters at Fulda FRG. The museum is interested in any relevant items such as battle maps, guidons, photographs, etc.

For more information, contact MAJ Glynn Pope, Regiment Adjutant, 11th Armored Cavalry Regiment, APO New York 09146. By the way, MAJ Pope reports that only about 75 of the Blackhorse beltbuckles remain available for purchase from the Regiment. After these are gone, there will be no more.

NCO Records Check Proposed For Master Gunner/ANCOC Students at Ft. Knox

The 2d Armor Training Brigade, Fort Knox, KY, has proposed a record check and update service for all NCOs attending the Master Gunner and ANCOC courses here that will save the Army and the NCOs time and money and ensure that records are current in all respects.

The proposal would bring a two-man team of personnel specialists from the Enlisted Records Branch at Fort Benjamin Harrison, IN, to Fort Knox for three-day periods during each course instead of sending NCOs from Fort Knox to Fort Benjamin Harrison for two-three days.

All NCOs attending the Master Gunner and ANCOC courses should bring with them the supporting documents that they desire to be included in their official MPRS during the review at Fort Knox.

Alma Mater Honors MG Harmon

Major General Ernest N. Harmon, commander of the 1st and 2d Armored Divisions during WW II, and past president of Norwich University, CT, has been memorialized at that institution with a granite bas-relief sculpture set near Webb Hall and White Chapel. The backdrop for the sculpture will be a memorial wall upon which the names of deceased Norwich alumni will be listed.

Members of the 1st and 2d AD associations, as well as Norwich alumni, are asked to contribute to the memorial that commemorates General Harmon's tenure as a student (Class of '17) and as President of Norwich University from 1950 to his retirement in 1965. Checks may be mailed to: Mr. David Whaley '76, Director, Alumni Affairs, Norwich University, Northfield, VT 05663.

Cavalry Christens the M1A1

The 2d Squadron, 3d Armored Cavalry Regiment marked the beginning of crew training on the M1A1 Abrams Tank with a christening ceremony on 5 September at Fort Bliss, TX. As the first unit in the Army to field the new tank, the squadron marked the occasion with appropriate Cavalry panache.

To the strains of Tchaikovsky's "1812 Overture" — with the smoke of salute cannon wafting in front of the assembled spectators — the H Company command tank sprang from its "hide position" in a motor pool bay. LTG Crosbie Saint, the III Corps Commander; Mrs. Donald Infante, wife of the Fort Bliss commanding general; and CPT John Suprin, commander of Heavy Company, cracked a bottle of champagne on the tank's front glacis and christened it "Hunter." General James H. Polk, Honorary Colonel of the Regiment, and Mrs. James M. Lyle, wife of the 61st Colonel, were on hand to christen "Hammer," the second of H Company's fourteen M1A1s.

The 2d Squadron will complete M1A1 New Equipment training by mid-December, with the other squadrons following immediately thereafter. By the summer of 1987, when fielding is complete, the Regiment will have 123 trained M1A1 crews.

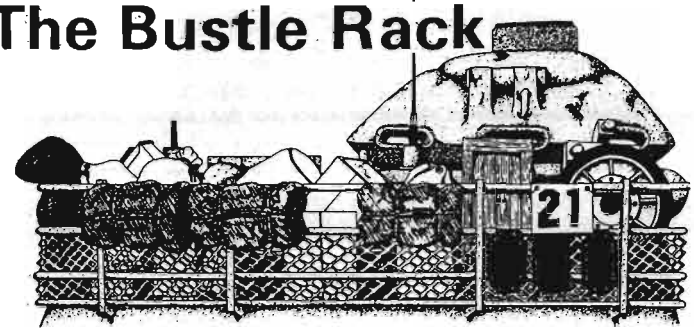
1st of the 1st of the 1st Wins Flynn Cup

Six months of excellence in every facet of its border surveillance operations won for the 1st Squadron, 1st Cavalry, 1st Armored Division, the 2d Armored Cavalry Regiment's prestigious Flynn Cup. It marked the second time in two years that a cavalry unit assigned to the 1st Armored Division has won the cup.

The Flynn Cup is awarded on the basis of six-month running inspections by 2d ACR of all border units under its control: its own three squadrons; 1st Squadron, 1st Cavalry from 1st Armored Division; and 3d Squadron, 7th Cavalry from 3d Infantry Division. Competition is based on the best border camps, the best border surveillance along the Czechoslovak-West German border, and the best overall operations.

The Flynn Cup is steeped in Cavalry tradition — it first appeared in 1913 as an award for troop-sized units that excelled in operations on horseback. "It was redesignated in 1980 as an award for squadron-sized units that excelled in border operations," said Sergeant First Class Kenneth E. Morrison, HQ, 2d Armored Cavalry Regiment.

The Bustle Rack



Author Seeks Cav, Infantry, Airborne Help

Keith W. Nolan, author of three books on Vietnam, is engaged in research for a fourth volume on that war. Specifically, he needs information on the actions of 29 March - 1 April 1970, when 2/7 Cav was attacked in their LZ, 2/8 Cav was overrun at LZ Illingworth, and the CG, 199th Inf Bde was killed. Also, he is researching the 1 May - 30 June 1970 incursion into Cambodia by elements of the 4th, 9th, and 25th IDs, 1st Air Cav Div, 101st Abn Div, 11th Armd Cav Regt, and the 199th Inf Bde.

Veterans who were involved in these actions are requested to write or call anytime to arrange an interview: Mr. Keith W. Nolan, 220 Kingsville Court, Webster Groves, MO 63119. Phone (314)961-7577.

Ex-Motorcycle Development Officers Sought

Bruce Palmer, III, author of numerous articles and a restorer of antique Harley-Davidson motorcycles, is researching a new volume on the venerable two-wheeler once used by the Army. He asks that any former officers who served with either HQ, Armored Force Center, or with the Requirements Division, Army Ground Forces, between 1943 and 1945 and who have personal knowledge of the shaft-driven motorcycle standardization program of that era, please contact him at: P.O. Box 2063, Seffner, FL 33584.

Anniston Depot Hot Line Ready

Soldiers and units with maintenance problems on combat vehicles, small arms, and missile guidance and control systems may now call the Anniston Army Depot in Alabama for speedy solutions on a 24-hour, 7-day a week telephone hotline.

Colonel William R. Crawford, Director of Maintenance at the Anniston Depot, said the hotline is answered by on-duty personnel from 7 a.m. until 3:30 p.m., Central Standard Time, with an answering device recording messages during off-duty hours.

Some missile guidance and control systems problems that can be handled include Land Combat Support Systems, ground TOW, TOW Cobra, TOW 2, Dragon, Lance, and Shillelagh.

When calling, provide name, Autovon number, unit identification and location, and a complete description of the maintenance or operational problem.

The Hotline number is: AUTOVON: 694-6582 or commercial (205)235-6582.

Armor Branch Notes

Tour Extensions

Apart from voluntary tour extensions mandated under the recent DCSPER PCS initiatives, Armor Branch is dealing with an increasing number of extension requests. Commanders must consider extension requests based on the needs of the command as well as the long-term professional development of the individual officer.

Tour extensions can have a negative impact on such things as timing of CGSC attendance (if selected), functional area development, fully-funded advanced civil schooling, troop time during years as a Major and service in joint or combined staff assignments. Commanders and officers must "map out" — year by year — a career plan that takes into account the impact of an extension. The bottom line is that a tour extension now must be evaluated in terms of the officer's long-term career development.

Violations of Officership

Armor Branch has noticed a growing number of what may be termed as violations of officership among Armor fellow officers. Each month a false official statement, signature, or ammunition turn-in problem affects one of our officers. A review of such cases often reveals a degree of misguided mission accomplishment or loyalty playing in the justification. Our professional ethics and standards of conduct need to be reemphasized at the unit level.

1987 ROTC Requirements

Assistant PMS openings for the academic year beginning in July 1987 have been announced by HQ, Cadet Command. Armor Branch has a large group of positions which require officers with masters degrees. These schools include:

Captains

University of Connecticut
Boston University
University of Georgia
Providence College
Wofford College
Arizona State University
University of Alaska
University of Southern California
Los Angeles Goldminer Team
University of Hawaii
University of Illinois-Chicago
University of Illinois-Champaign
Michigan State University
Ohio University
University of Utah

Majors

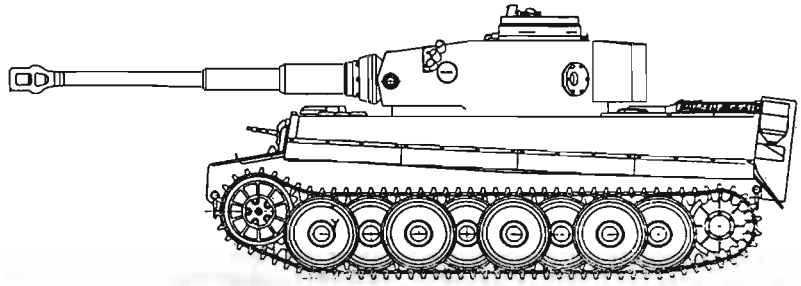
Norwich University
Bucknell University
Siena College
Florida State University
John Carroll University
Los Angeles Goldminer Team

Officers interested in serving in these ROTC positions should contact their branch assignment officer at AV 221-9696/9658/6340/6341 or write to Armor Branch indicating preference and providing graduate transcripts.

BOOKS

An Encyclopedic Book on the German Tiger

British Book Is Based On Wartime Research



TIGER! The Tiger Tank: A British View, edited by David Fletcher. Her Majesty's Stationery Office, London, England. 264 pages. $45.00.

It has been said that few legends survive unscathed. Time and again a heroic tale has been shown to have been woven of whole cloth, with little to substantiate the legend's theme. There are always exceptions, and one of the most notable of all is the continuing legend of the Panzerkampfwagen VI — The Tiger Tank.

The legend of this armored behemoth was born in battle and has survived undimmed through four decades. Not even studied efforts to disparage the Tiger's physical limitations (for it did have limitations), have succeeded in dimming its war-born image. The Tiger tank stands as the most famous of all armored fighting vehicles to emerge from WW II, including the U.S. Sherman, the British Churchill, and the Russian T-34.

TIGER! is the first definitive volume in English on this most famous of all tanks. The result of a number of years of research and documentation, *TIGER!* is the professional armor soldier's mine of information and the layman's source of heretofore unavailable facts and data.

The Tiger appeared in 1942 and the intervening 44 years have provided an almost inexhaustable source of information on the tank and its derivatives, several of which, including the Sturm Tiger with its 15-inch mortar, are briefly covered.

This is the complete technical evaluation of the Tiger tank, an evaluation conducted on a captured model and halted only at the war's end. The evaluations were made by the School of Tank Technology and the Military College of Science in Britain and later were extended to determine which of the Tiger's many technical asets should be incorporated into future British tank production.

The book is divided into four sections: a brief introduction; a section on Allied messages, signals, etc., showing Allied forces' reactions to this monster of the battlefields; a complete copy of the thoroughly detailed evaluation reports made by the above two organizations; and ancillary battlefield reports on the Tiger's internal arrangements and some post-war evaluations. The Sturm Tiger is briefly covered at the end.

To those who can recall the deep-throated cough of the Tiger's engine starting up in the early morning, *TIGER!* will evoke a lot of memories, few of them pleasant. Those who have survived the 88-mm AP shot of the Tiger will have even fewer pleasant memories. To every tanker who faced the Tiger, the gut feeling remains — there was a tank to be respected. Four or five Shermans to one Tiger was the rule of thumb when facing that 56-ton behemoth that dominated battlefields from Russia to North Africa to Northwest Europe — the Tiger tank.

R. E. ROGGE
Armor Staff

RULES FOR LEADERSHIP: Improving Unit Performance, by LTC Jon W. Blades, USA, National Defense University Press, Washington, D.C. 112 pages.

Students and practitioners of leadership will find this a valuable book. The author presents ten original rules for leadership that an officer can apply to determine the best style to use when in command. The interrelationship of unit-member motivation, leader competence, unit-member skill, etc., is explained and proven mathematically. The author uses the scientific method and supporting data to present concepts, or rules, for leadership. Equally important, this mathematical presentation is easily understandable, being presented in tabular form. The major topics discussed are leader actions, group skills, group initiative, and group bonding.

The style a leader chooses should be based upon the ability, enthusiasm, and motivation of a group. Colonel Blades, using data gathered from actual units, demonstrates that both the directive and non-directive leadership styles can produce excellent performance. Neither style is stronger — indeed, there are situations in which both have no effect upon a group. To be effective, a directive leadership style requires the leader to be talented and enthusiastic about his duty. An unskilled leader practicing the directive style is very ineffective.

Success in using the non-directive style of leadership depends upon the skill and motivation of the unit members. If unit members are unskilled or incompetent, the non-directive leader will be ineffective. The leader's style also has a great effect upon group cohesion.

Group cohesion, defined by the author as the extent that unit members display teamwork and cooperative support, is related to member motivation and group performance. Cohesion is assisted when the members have confidence in their individual and group strengths. Efforts are focused toward mission accomplishment. The leader who has the opportunity to command a COHORT unit will find that he can increase cohesion by doing his own job well, assigning meaningful tasks, enforcing high standards of performance, and taking an interest in member opinions on how to accomplish a mission. Group cohesion, then, is dependent upon the leader and the unit members.

When reading this book one will think that he is reading nothing new. All of the rules for leadership feel as if they are intuitive, yet have never been addressed in print. Most importantly, these rules are supported by survey data. This book is an important addition to the field of leadership research. Leaders are indeed made, and an application of these rules will make good leaders and good units.

KEVIN C. M. BENSON
Captain, Armor

NOMENKLATURA: THE SOVIET RULING CLASS, by Michael Voslensky. Doubleday and Co., Inc., Garden City, NY, 1985. 445 pages. $19.95.

He is a fanatic for power, which does not mean that he is indifferent to everything else. By nature he is not ascetic. He likes drink, in large quantities and of good quality, Armenian brandy in particular. He also likes food — caviar, sturgeon, salmon — all of which are available in the Kremlin restaurant and at the Central Committee buffet. His hobby is the one that is "in" at the moment among his fellows; once it was football or hockey; recently it was fishing; now it is hunting. He orders Finnish furniture for his apartment and buys books that are unobtainable on the market, through the Central Committee book department — books that are officially accepted, of course. But his real passion is sitting at his desk, with the government telephone (the *vertushka*) within his reach, vetting Central Committee draft resolutions that may affect the lives of millions.... He is subject to neither election nor rejection by the people but decides their fate and lays down their political line.

Thus Michael Voslensky, a prominent Soviet historian and director of the Institute of Contemporary Soviet Research in Munich, West Germany, describes a typical member of the *nomenklatura,* the privileged class that runs the Soviet Union. Numbering 750,000 (three million when wives and children are included), its members lead lives of insulated luxury while extolling the People's State. While the average Soviet worker earns a meager 181 rubles a month, his counterpart in the *nomenklatura* may earn eight times as much, although the salary of the *nomenklatura* is top secret.

As a member of the elite class, the *nomenklaturist* is entitled to thirty days of paid vacation a year, plus traveling time to and from a vacation resort where he will stay free of charge. In comparison, the average worker is authorized two weeks of leave each year. The *nomenklaturist* receives free coupons which can be redeemed for luxury food items not normally available to the average worker, and which may be worth an additional 300 rubles a month. He is allowed additional allowances based on the number of languages he speaks. Based on his position within the *nomenklatura* hierarchy, he may be provided with free transportation, servants, and a summer home. He wears western clothes and shops at special shops to which only the members of his class have access. It is no surprise that Voslensky describes it as "the invisible aristocracy whose reign is more oppressive than that of the czars."

Voslensky's book examines the face of Soviet power and reveals the rhetorical masquerade of Soviet propaganda. It exposes the corruption and intrigue that are an integral part of the system.

GILBERTO VILLAHERMOSA
Captain, Armor
HQ, XVIII Airborne Corps

Evolution of U.S. Military Presented in Clear, Readable Style

AGAINST ALL ENEMIES, ed. by Kenneth J. Hagan and William R. Roberts. Greenwood Press, CT. 373 pages. $18.50 paperback.

It is always a welcome surprise to come upon a book that seriously addresses those other facets of the military than tactics, strategy, campaigns, equipment, or personalities. *Against All Enemies* is one such volume, and its style, content, and presentation make it a candidate for the personal library of every seriously professional military person. Eighteen essays cover the evolution of the U.S. military services from pre-Revolutionary militia to today's vast land, sea, and air forces.

Each author, an authority in his or her own sphere of military specialization, presents an interpretation of American military history in a non-doctoral style that is easily assimilated. The editors have accomplished a great deal in the arrangement of the essays and their content. The chapter notes, and the lists of suggested additional reading that accompany each essay, leave the reader with a mine of information to be explored.

From "Armed Force in Colonial North America: New Spain, New France, and Anglo-America," to "The Army After Vietnam," this volume is highly informative and, what's more, is readable.

Only one real sour note imposed itself upon this reviewer's senses. Ms. June I. Gow, a member of the faculty of the History Department of the University of British Columbia at Vancouver, Canada, wrongly defends in her essay, "The Old Army and the Confederacy 1861-1865," those U.S. officers who denigrated their commissioning oaths to "defend the Constitution against all enemies foreign *and domestic*" (emphasis mine) and resigned their commissions to take up arms against the document and country they had sworn to defend.

The essays make serious note of such typically American military-civilian concerns as the citizen-soldier, civilian control of the military, the blending of standing forces and reserves in wartime, and how national priorities have affected the rise and fall of the military status. These writings are not meant solely for the military professional who seeks a more lucid understanding of the background of the services in order to serve more fully today, but also for his intelligent and concerned civilian counterpart who desires to give a more knowledgeable support to our nation's armed forces.

There are enlightening glimpses into the minds, characters, actions, and reactions of such military luminaries as Washington, Scott, Grant, MacArthur, Eisenhower, Marshall, and armor's own Creighton Abrams. These provide a leavening of insight into the whys and wherefores of these men.

Hindsight, of course, is the historian's greatest asset, and the authors of these essays have applied that valuable adjunct with a perception not often found in the recounting of the U.S. military's varigated history.

ROBERT E. ROGGE
ARMOR Staff

UP FRONT KOREA: An Autobiography, by Allen Bryon Wilkinson. Pilot Books, New York, NY. 1984. 440 pages. $3.95 (paperback).

Up Front Korea is the autobiography of a combat infantryman serving a tour of duty with the Second Infantry Division during that division's first year in Korea. The author vividly describes his experiences as an infantry private and later a corporal in an open and candid account.

This is not to say that Private Wilkinson was an ideal soldier. By his own admission, he was a problem soldier in constant conflict with Army discipline and involved in infractions of regulations.

Of most interest is the author's account of his tour with Company L, 3rd Battalion, 23rd Infantry Regiment. This period covered mobilization, movement to Korea, the Naktong River Line defense, the pursuit to near the Yalu, the November Chinese Communist Counteroffensive, the Battle of Chip-yong-ni, where the 23rd Infantry was surrounded, and the hill fights as the line stabilized.

Do not expect a discussion of small unit tactics *a la* S. L. A. Marshall's works, or Gugeler's *Combat Actions in Korea.* Wilkinson's account of infantry combat is on the personal level, involving members of his squad and platoon without any detailed analysis. The narrative is of brutal, bloody fighting, with high casualty rates, in difficult and trying conditions. While it is not the author's intention, the reader receives a direct view of the importance of the buddy system, small unit cohesion, and unit esprit, and how it functioned in his unit.

Like some combat veterans, Wilkinson had difficulties in readjustment to civilian life. The conclusion ends with his own experiences with the mid-1950s counterculture, and his time on "skid row" before he reentered general society.

This book will appeal to readers interested in soldier's experiences of combat in Vietnam and Korea. I would not recommend it for those seeking a technical or professional work on infantry combat in Korea. It is a needed addition to the sparse literature on combat infantrymen in Korea.

2LT JACK C. THOMAS
Hershey, PA

CAMPAIGN IN RUSSIA, The Waffen SS on the Eastern Front,
by Leon Degrelle. Institute for Historical Review, P.O. Box 1306, Torrance, CA 90505. 353 pages. $17.95.

Leon Degrelle rose from private to colonel in the Waffen SS based on his combat exploits and his brave survival on the Eastern Front during WWII. This is a soldier's story with all the color and gore of the battlefield mixed extremely well. Although you will have trouble following the unit movements because of a lack of maps, you can live the intimate details of close combat fought by brave men. The anti-communist theme is the driving force behind this patriot's story. He wears rose-colored glasses in regards to the Nazis and Hitler from start to finish.

Politics aside, this story tells about a legion of Belgian volunteers who fought bravely with Germany to the bitter end of WW II. The Wallonian Legion of volunteers, from all writings, had a sense of duty and a sense of humor in equal amounts. Based on the extraordinary losses suffered in combat, you cannot doubt their idealism. (Wallonian is a dialect spoken in most of the French-speaking parts of Belgium.)

This story covers 76 months of combat on the Eastern Front by Belgian volunteers. Thousands of Belgians enlisted in the German Army according to their languages — in a Flemish legion and a Wallonian legion. At first, two battalions; then, in 1943, two brigades; lastly, in 1944, two divisions, the Wallonian Division and the Flemish Langemarck Division.

An excellent example of Degrelle's graphic writing can be found in the following excerpt, describing escape from the Cherkassy cauldron. Eleven German divisions were encircled in the Cherkassy zone in January 1944:

> "We had a moment's respite while the Soviet tanks, bottlenecked in the pass, tried to untangle themselves from the tangle of the hundreds of broken carts under their treads. We skirted a wood, a beautiful russet and violet wood, and reached a little valley.
>
> "We were scarcely starting up the slope when, turning back, we saw hundreds of cavalry racing down a hill to the southeast. We thought at first that it was German Uhlans. Looking through my binoculars, I could clearly make out the uniform of the cavalry. They were Cossacks. I recognized their nervous little brown horses. They were rushing up behind us, swarming in every direction.
>
> "We were stupified. The Soviet infantry was machine-gunning us. The Soviet tanks were following us. And now the Cossacks were storming in for the kill.
>
> "When? When would the German Panzers coming to meet us from the southwest show themselves?
>
> "We had already gone at least ten kilometers and seen nothing. We would have to go forward still faster.
>
> "Like many of the wounded, I couldn't take any more. The fever was sapping my strength. But the race had to be run at all costs. With my Walloons I hurried to the head of the column to urge our comrades on.
>
> "The hillside was steep. At our left an enormous crevasse opened, four meters wide, fifteen meters deep. We got almost to the top of the hill.
>
> "Then we saw three tanks drive toward us at high speed. We had a second of unspeakable joy. 'It's them! Finally! The German Panzers are here!' But a volley of shells swooped down on us and mowed down our ranks. They were Soviet tanks.
>
> "The enemy tanks were on our heels. The foot soldiers were killing us on the flanks. Their Cossacks were driving into our ranks. And now instead of salvation, other Soviet tanks were surging up in front of us. We couldn't wait any longer. Caught napping on this naked slope, we were going to be swept away in a few seconds."
>
> "I looked at the ravine and cried out to my companions. 'Do as I do!' Then I let myself fall from fifteen meters high.
>
> "There was a meter of very compressed snow at the bottom of the crevasse. I buried myself in it like a torpedo. All my comrades tumbled in one after the other."

The pace of the writing is fast; the action is graphic, and a warrior can learn things from reading this book. I recommend its reading by students of the art of war. It is well worth the price.

JOHN C. BAHNSEN
Brigadier General, USA
Norfolk, VA

109th Armor Unit History

(Continued from back cover)

Campaign Participation Credit

World War I
Somme offensive
Ypres-Lys
Flanders 1918
World War II
Normandy
Northern France
Rhineland
Ardennes-Alsace
Central Europe
New Guinea
Leyte
Luzon
Southern Philippines

Company C, 4th Battalion (Milan), additionally entitled to:
Korean War
First UN counteroffensive
CCF spring offensive
UN summer-fall offensive
Second Korean winter
Korea, summer-fall 1952
Third Korean winter
Korea, summer 1953

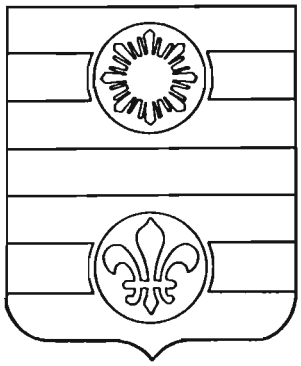
Decorations

Company C, 4th Battalion (Milan), entitled to:
Meritorious Unit Commendation, Streamer embroidered KOREA (2998th Engineer Company cited; DA GO 95, 1953)
Republic of Korea Presidential Unit Citation, Streamer embroidered KOREA 1950-1952 (2998th Engineer Company cited; DA GO 33, 1950, as amended by DA GO 41, 1955)
Republic of Korea Presidential Unit Citation, Streamer embroidered KOREA 1951-1954 (2998th Engineer Company cited; DA GO 82, 1954)

ANNEX 2
Constituted 19 December 1942 in the Army of the United States as the 114th Coast Artillery Battalion. Activated 10 February 1943 at Fort Bliss, Texas. Redesignated 28 June 1943 as the 114th Antiaircraft Artillery Gun Battalion. Inactivated 9 July 1946 in France. Allotted 1 July 1951 to the Tennessee National Guard. Organized and Federally recognized 23 August 1951 in eastern Tennessee with Headquarters at Knoxville. Redesignated 1 October 1953 as the 114th Antiaircraft Artillery Battalion.

109th Armor

Unleashed Lightning



Symbolism

The colors yellow and green are those associated with armor; blue, representing water, symbolizes service overseas. The green areas allude to the green fields of Europe and, with the fleur-de-lis, represent service in France during World Wars I and II. The yellow areas and the Philippine sun refer to combat service in the Asiatic-Pacific Theater during World War II.

Distinctive Insignia

The distinctive insignia is the shield, slightly modified, and the motto of the coat of arms.

Lineage and Honors

Constituted 30 June 1916 and allotted to the Tennessee National Guard as a Squadron of Cavalry. Organized in May 1917 as the 1st Separate Squadron of Cavalry from the following troops: Troop A (organized 16 May 1917 at Nashville); Troop B (organized 4 October 1901 at Chattanooga); Troop C (organized 10 August 1916 at Athens); Troop D (organized 27 August 1916 at Knoxville). (Troops B, C, and D mustered into Federal service July-October 1916 for service on the Mexican border; mustered out 14-19 March 1917.) Squadron called into Federal service 25 July 1917; drafted into Federal service 5 August 1917. Converted and redesignated 14 September 1917 as the 114th Machine Gun Battalion and assigned to the 30th Division. Demobilized 10 April 1919 at Fort Oglethorpe, Georgia. Reorganized during 1920-1921 as the Tennessee Cavalry Squadron. Reorganized and Federally recognized 30 June 1920 - 6 September 1923 as the 109th Cavalry (less elements), an element of the 23d Cavalry Division. (All elements of regiment allotted 26 February 1938 to the Tennessee National Guard.)

Converted and redesignated 1 October 1940 as the 181st Field Artillery and relieved from assignment to the 23d Cavalry Division. Inducted into Federal service 24 February 1941 at home stations. Regiment broken up 1 March 1943 and its elements reorganized and redesignated as follows: Headquarters and Headquarters Battery as Headquarters and Headquarters Battery, 181st Field Artillery Group; 2d Battalion as the 947th Field Artillery Battalion (1st Battalion as the 181st Field Artillery Battalion — hereafter separate lineage).

After 1 March 1943, the above units underwent changes as follows:

Headquarters and Headquarters Battery, 181st Field Artillery Group, reorganized and redesignated 15 March 1944 as Headquarters and Headquarters Battery, 34th Field Artillery Brigade. Inactivated 16 November 1945 at Camp Patrick Henry, Virginia. Headquarters, 34th Field Artillery Brigade, converted and redesignated 31 July 1946 as Headquarters and Headquarters Company, 173d Armored Group (Headquarters Battery redesignated as Headquarters and Headquarters Battery, 30th Division Artillery [Tennessee part] — hereafter separate lineage). Headquarters and Headquarters Company, 173d Armored Group, organized and Federally recognized 1 August 1947 at Jackson.

947th Field Artillery Battalion inactivated 1 January 1946 at Camp Stoneman, California. Converted, reorganized, redesignated, and Federally recognized 1 August 1947 in central Tennessee as the 775th Tank Battalion with Headquarters at Nashville.

Headquarters and Headquarters Company, 173d Armored Group, and the 775th Tank Battalion consolidated 15 September 1949 with the 183d Tank Battalion (organized in 1947 in central Tennessee with Heaquarters at Murfreesboro) and the 765th Tank Battalion (see Annex 1) to form the 173d Armored Cavalry.

Regiment broken up 27 October 1954 and its elements reorganized and redesignated as elements of the 30th Armored Division as follows: Headquarters and the 1st Battalion as the 173d Tank Battalion; 2d Battalion as the 175th Tank Battalion; 3d Battalion as the 230th Reconnaissance Battalion (Headquarters Company as Headquarters and Headquarters Company, 30th Armored Division Trains — hereafter separate lineage).

173d and 175th Tank Battalions, the 230th Reconnaissance Battalion, the 174th Tank Battalion (organized in 1947 in western Tennessee as the 2d Battalion, 117th Infantry, with Headquarters at Trenton; converted and redesignated 27 October 1954 as the 174th Tank Battalion), and the 114th Antiaircraft Artillery Battalion (see Annex 2) consolidated, reorganized, and redesignated 1 March 1959 as the 109th Armor, a parent regiment under the Combat Arms Regimental System, to consist of the 1st Reconnaissance Squadron and the 2d, 3d, 4th, and 5th Medium Tank Battalions, elements of the 30th Armored Division. Reorganized 1 April 1963 to consist of the 1st, 2d, 3d, 4th, and 5th Battalions, elements of the 30th Armored Division (1st Reconnaissance Squadron concurrently reorganized and redesignated as the 1st Squadron, 230th Cavalry — hereafter separate lineage; new 1st Battalion, 109th Armor, organized). Reorganized 1 February 1968 to consist of the 4th and 5th Battalions, elements of the 30th Armored Division.

ANNEX 1

Constituted 3 December 1941 in the Army of the United States as the 775th Tank Destroyer Battalion. Activated 16 December 1941 at Camp Forrest, Tennessee. Allotted 21 February 1942 to the Tennessee National Guard. Converted and redesignated 15 April 1944 as the 728th Amphibian Tractor Battalion. Inactivated 15 December 1945 on Luzon, Philippine Islands. Converted and redesignated 31 July 1946 as the 765th Tank Battalion. Reorganized and Federally recognized 6 February 1947 in central Tennessee with Headquarters at Cookeville.

ANNEX 2

Constituted 19 December 1942 in the Army of the United States as the 114th Coast Artillery Battalion. Activated 10 February 1943 at Fort Bliss, Texas. Redesignated 28 June 1943 as the 114th Antiaircraft Artillery Gun Battalion. Inactivated 9 July 1946 in France. Allotted 1 July 1951 to the Tennessee National Guard. Organized and Federally recognized 23 August 1951 in eastern Tennessee with Headquarters at Knoxville. Redesignated 1 October 1953 as the 114th Antiaircraft Artillery Battalion.

(Continued on Inside Back Cover)