

Adaptation and Impact

Mounted Combat in Vietnam

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The definition of what constitutes armor has from at least the close of World War II been complicated by the fact that there is a branch called “Armor” composed of some, but only some, of those elements that in the recent war had made up the armored force. Maj. Gen. Adna R. Chaffee Jr. described that force as “a balanced team of combat arms and services of equal importance and equal prestige.” Tanks, armored infantry mounted in half-tracks, armored field artillery, tank destroyer elements, and the whole range of what are now known as combat support and combat service support components were thus assigned or attached to the World War II-era armored divisions and armored cavalry groups.

The evolution of the armament and equipment of various elements of the armored force over the past half century, and of the doctrine for its employment—especially in terms of mechanized infantry and helicopters—has further expanded the envelope of what might be considered the armored force, while at the same time taking it perhaps even a little farther beyond what falls unequivocally within the narrower purview of the branch designated Armor.

For the purposes of this essay an inclusionary approach has been

chosen. Consideration will thus be given to a wide range of units and their equipment and operations, to include tank and armored cavalry, air cavalry, mechanized infantry, and a number of specialized systems. It goes without saying that, as proof of the enduring validity of General Chaffee's observation, all the participants in armored operations in Vietnam were critically dependent on every type of support, from logistics and medical services through quartermaster, transportation, maintenance, and more, all "of equal importance and equal prestige."

The Armored Force monument near Arlington Cemetery in Washington provides further perspective on the categorization of units, memorializing the Vietnam service of a U.S. Army armored cavalry regiment, three tank battalions and a separate tank company, six armored cavalry squadrons, ten mechanized infantry battalions, twenty-two armored artillery battalions, and four armored cavalry troops, along with two Marine Corps tank battalions, two amphibian tractor battalions, and an armored amphibian company.¹ The armored cavalry regiment and the divisional armored cavalry squadrons also had organic air cavalry elements, while ground armor and cavalry elements habitually operated with aviation elements under their operational control or in support.

Initially it appeared that armor would have little part in the fighting in Vietnam. Gen. William C. Westmoreland, commander of American forces there from June 1964 until the summer of 1968, was skeptical of armor's usefulness and ability to operate in the combat environment as he assessed it. An artilleryman himself, Westmoreland's service had been entirely in infantry and airborne units. Nor had he any theoretical knowledge of armor, for the Army's famous school system had almost entirely passed him by. So limited was Westmoreland's military education, in fact, that according to his biographer "the only service school he ever undertook in his Army career" was "the cooks and bakers school at Schofield" Barracks, Hawaii.²

General Westmoreland's duties in Vietnam included being senior adviser to the South Vietnamese military forces. Indeed, the designation of his headquarters—U.S. Military Assistance Command, Vietnam (MACV)—emphasized that role. Had Westmoreland been more observant in terms of the armored elements in the Army of the Republic of Vietnam (ARVN) he was charged with advising, he would have seen that they were able to function effectively in many parts of the country, terrain and weather notwithstanding.

But, lacking practical experience, theoretical knowledge, or observation of his ally, Westmoreland concluded that armored operations were not feasible in Vietnam. In a July 1965 message to Army Chief of Staff

Gen. Harold K. Johnson—at a time when the Army's massive buildup of ground forces in Vietnam was just getting underway—Westmoreland asserted that "except for a few coastal areas, most notably in the I Corps area, Vietnam is no place for either tank or mechanized infantry units."³ That outlook was probably reinforced by the preponderance of airborne infantry officers with whom Westmoreland populated his MACV staff. It was also reflected at Department of the Army, where General Johnson, an infantryman by background and experience, shared Westmoreland's views on the unsuitability of armor for the Vietnam battlefield.

The 1st Cavalry Division (Airmobile) was the first full division shipped to Vietnam. Given its specialized air cavalry configuration, the issue of ground armor elements did not arise, and the division's air cavalry squadron—the 1st Squadron, 9th Cavalry—was an integral part of its newly developed airmobile capability. But the next large outfit shipped, the 1st Infantry Division, had two tank battalions and two mechanized infantry battalions, along with a divisional cavalry squadron. Department of the Army stripped the deploying division of its tank battalions and dismounted the mechanized infantry, allowing only the cavalry squadron to retain its tanks and APCs. This was, General Johnson explained, a decision based on Korean War experience with mine warfare, on a lack of information concerning the use of armor by the South Vietnamese, and on a concern that "the presence of tank formations tends to create a psychological atmosphere of conventional combat."⁴ Such an atmosphere was destined to become far more than just psychological in the very near future, but in the meantime early deployment of armor was severely restricted.

Once on the ground, the 1st Infantry Division found even more inhibitions placed on use of its arbitrarily limited armor assets. There existed in MACV at that time a "no tanks in the jungle" attitude. "Because General Westmoreland saw no use for tanks," observed Gen. Donn Starry, the M48A3 tanks of the divisional cavalry squadron were withdrawn from the line cavalry troops and held at Phu Loi base camp. It took six months to convince Westmoreland that tanks could contribute to the division's combat operations.⁵

Once it became clear what armor could do, the accelerating buildup of U.S. ground forces was richly augmented with tank, mechanized infantry, and armored cavalry units. By the end of 1965 MACV had requested deployment of both the 25th Infantry Division and the 11th Armored Cavalry Regiment. Maj. Gen. Frederick C. Weyand, then commanding the 25th Division, overcame staff resistance and brought with him the division's tank battalion, a mechanized infantry battalion, and its armored cavalry squadron.⁶ As for the armored cavalry regiment,

Gen. Michael S. Davison, then serving as deputy to the Assistant Chief of Staff for Force Development, recalled, "we had a hell of a time selling that one, not only had difficulty in selling it, but difficulty in selling the use of tanks at all in any form in Vietnam, because General Westmoreland and Bill DePuy, who was his J3 in this period, couldn't conceive of tanks or armored cavalry being able to do anything in Vietnam." He further explained that "this is a factor of, really, their own lack of experience with armor."⁷

Once these and similar units in succeeding increments of the buildup got into combat, they quickly proved their worth. The assertion "you can't use armor in Vietnam" was quoted in an early segment of the Army's videotaped "Vietnam Training Report" series, along with the answer pounded out on the battlefield: "Like hell we can't!"⁸

The stubborn opposition to the deployment of armored force elements to Vietnam apparently stemmed from an overall impression that the operational environment was inhospitable to such forces. That outlook failed to consider the wide range of terrain conditions across the length and breadth of the country, and that seasonal weather patterns further affected the key consideration of trafficability at given times and places. Recalling the classic observation that there are only two kinds of terrain, good and bad, and that good terrain is tank country and bad terrain is not, it turned out that in Vietnam there were—depending on season and locale—many areas where tanks could operate and even more where the workhorse armored personnel carrier could make its way. It was never easy, but tankers and cavalry troopers used ingenuity, aggressiveness, and an enormous amount of labor to make it happen.

Two environmental factors, weather and terrain, were the primary determinants of when and where tracked vehicles could operate effectively in Vietnam. The weather in that part of the world is marked by very distinct seasonal variations. These in turn are a function of the prevailing monsoon winds. The southwest monsoon prevails during the summer months, typically bringing heavy rains to the lower part of the country, while in winter the northeast monsoon similarly drenches the northern sector. As might be expected, these alternating weather patterns had a dramatic effect on trafficability.

A detailed study conducted in the spring of 1967 determined typical conditions for the wet and dry seasons in each of the four corps areas into which South Vietnam was administratively and tactically divided. Results were reported separately for tanks and for APCs. The findings were in some respects surprising. In the IV Corps area, which included the Mekong Delta, APCs were found to have an 87 percent

“go-trafficability,” regardless of the season—and this despite the preponderance of waterways and inundated tracts in that region. In fact, APCs were found to be more mobile than foot soldiers during the wet season there. The APC’s flotation and swim capability was obviously an important advantage in such conditions. By contrast, the tank could manage a high of only 61 percent in the dry season in IV Corps, and that plummeted to *zero* in the wet season.⁹

The tank fared far better elsewhere. Its “go-trafficability” rating ranged from 92 percent in III Corps, the group of provinces surrounding Saigon, in the dry season—reduced to a still robust 73 percent in the wet season—to 44 percent dry and 36 percent wet in I Corps, which encompassed the northernmost group of provinces. In the Central Highlands region of II Corps, the tank surprisingly did virtually as well in the wet season, at 54 percent, as it did in the dry, when it could traverse 55 percent of the terrain. APCs were more mobile than tanks in all regions of the country. In III Corps APCs managed a 93 percent rating regardless of the season, and in I and II Corps 44 and 55 percent, also wet or dry. Overall it was calculated that tanks could traverse 60 percent of the terrain in the dry season, reduced to 45 percent when the monsoon rains descended, whereas APCs carriers could negotiate 65 percent regardless of season.¹⁰

These results, it should be emphasized, were achieved through the ingenuity, effort, and experience of the tracked vehicle crews. Much of the relevant experience was amassed by South Vietnamese crews operating M41A3 tanks and M113 APCs. As early as March 1966, the ARVN had distributed the draft version of its Field Manual 3-1, “Armor Operations in Vietnam,” containing a wealth of useful information. Developed in cooperation with U.S. advisers, then headed by Lt. Col. Raymond R. Battreall Jr., the draft contained much of value on how tracked vehicles could maximize their mobility in Vietnam. This included detailed descriptions of self-recovery techniques such as the use of capstan kits, a block and tackle, or long tow cables. Practical suggestions—obviously derived from hard experience—abounded, including the suggestion that vehicles move with tow cables already attached instead of trying to get them hooked up after a vehicle had sunk into the mire. American armor crewmen soon developed their own rules of thumb. “We were able to maneuver fairly well in this mountainous, overgrown terrain, providing we observed certain rules,” Sgt. Ralph Zumbro recalled of his service with a tank battalion in the Central Highlands. “The most important was not to tackle the steep slopes with tanks.”¹¹

Much useful material on driving techniques had also been amassed

by the South Vietnamese. "Momentum is vital to movement through soft ground," the draft ARVN armor manual observed. It also paid to look before leaping, since "areas of good trafficability are paddies with clear water and green reeds." However, "inundated areas where reeds are yellowish and water is cloudy usually have soft mud bottoms in which the armored vehicles will be unable to move." And there were yet other indicators that could tip off an observant driver to good trafficability, including "inundated areas where water buffalo are feeding (buffalo will not remain static long enough to graze if bottoms are soft)." Some young tankers may have been surprised to find they could learn something useful from the water buffalo, but ARVN soldiers had been doing so for a long time.¹²

American advisers with Vietnamese armor units took the initiative in passing this experience to deploying U.S. units by preparing an information packet covering terrain, tactics, and equipment. The latter point was particularly important, for it described modifications to the M113 devised by the South Vietnamese that made it a far more versatile and effective combat vehicle.¹³

In addition to weather and terrain, always the two primary factors affecting mobility, the load-bearing capacity, width, and condition of numerous bridges could be constraining factors. Finally, and of great significance, there was the unique combat environment. Vietnam was, as is widely recognized, a war without fronts. There were no established front lines, and thus no reliably secure rear areas. Terrain, with the exception of the base camps and certain major population centers, was seldom seized and held. Thus lines of communications were routinely insecure. That reality necessitated they be repetitively cleared, a time-consuming and dangerous job, and one frequently assigned to armored units.

Three U.S. Army tank battalions were eventually deployed to Vietnam, all equipped with the M48A3 Patton medium tank.¹⁴ A good, solid tank mounting a 90mm cannon for which it carried high-explosive (HE), high-explosive antitank (HEAT), white phosphorous (WP), canister, and beehive rounds, the M48A3 was also armed with a coaxial-mounted 7.62mm machine gun and a cupola-mounted .50-caliber machine gun. Powered by a 750 horsepower diesel engine, the 49.5-ton tank had a stated cruising range of three hundred miles. A very important accessory was the xenon searchlight, which could be employed in a white light or infrared mode. Selected tanks also mounted a useful dozer blade.¹⁵

Often used as mobile battering rams in "jungle busting" operations, these tanks took a beating in Vietnam, especially their suspension



The three tank battalions deployed to Vietnam were all equipped with 90mm M48A3s like these. They were also assigned to divisional cavalry squadrons and the 11th Armored Cavalry Regiment. National Archives.

systems, which also suffered frequent damage due to the enemy's extensive and effective use of mine warfare. One squadron executive officer, frustrated by trying to "piece together our fifteen-year-old tanks as best we could from the repair parts that we managed to 'expedite,' wondered at a policy that sent new tanks to Europe and old tanks with only inadequate repair parts available to the combat zone."¹⁶

However, the workhorse of armor in Vietnam was the M113 APC, and later the diesel-powered M113A1, to which the fleet converted by about mid-1968. The M113 performed a myriad of roles reliably and effectively, and, modified in ways pioneered by the South Vietnamese, it transformed armor doctrine governing the employment of armored personnel carriers. The subsequent developmental effort for such systems was redirected as a result of the Vietnam experience.

The M113/M113A1 was an aluminum-hulled tracked vehicle weighing 11.3 tons. Powered by a 215 horsepower engine, it had a cruising range of two hundred miles (three hundred miles for the diesel version) and possessed an amphibious capability. "The M113 APC," stated an Armor School publication at the height of American deploy-



M113 Armored Cavalry Assault Vehicles like these were the workhorse in U.S. Army armored cavalry squadrons and mechanized infantry battalions. National Archives.

ments, "enjoys the highest degree of mobility of any vehicle presently employed in Vietnam."¹⁷

As originally configured, the M113 mounted one .50-caliber machine gun at the vehicle commander's position. The significant innovation introduced by the South Vietnamese was the addition of an armored shield for the .50-caliber gunner (usually the vehicle commander) and two side-mounted 7.62mm M60 machine guns, also shielded. Thus reconfigured, the M113 was referred to as an armored cavalry assault vehicle (ACAV). So altered, observed John Albright, "the vehicle took on some of the characteristics of a light tank."¹⁸ Subsequent modifications provided thicker belly armor to protect crews from mine explosions, the relocation and strengthening of the fuel line to lessen the danger of fire, and stand-off side shielding designed to cause the premature detonation of the enemy's lethal rocket-propelled grenades (RPGs).¹⁹

Simon Dunstan has maintained that "undoubtedly the most significant innovation in the employment of armor in Vietnam was the use of the M113 as a fighting vehicle."²⁰ The modifications in armament, plus the provision of armor protection for crew members at their firing stations, made that possible. The more robust capabilities of the vehicle led in turn to revolutionary changes in its employment, transforming

what had been simply a protected means of transporting infantry into combat, where doctrine held that they were then to dismount and join the battle on foot, to a formidable armored fighting vehicle. No longer was the unlucky foot soldier obliged to abandon his armored protection at the point of greatest peril. Instead he could remain mounted, contributing significantly more to the fight with his new-found firepower, tracked mobility, and robust communications capability. In time, the wisdom of this approach having been conclusively demonstrated on the battlefield, doctrine was revised accordingly and reflected in the subsequent development of such systems as the Bradley Infantry Fighting Vehicle. Except for the helicopter, which of course came into its own during the Vietnam War, no vehicle underwent more of a combat metamorphosis than the humble armored personnel carrier.

Solid evidence of how well mechanized infantry units were performing soon led to a decision that a number of dismounted infantry units should be designated for in-country conversion to mechanized infantry, including the two formerly mechanized battalions of the 1st Infantry Division that had been dismounted before deploying to Vietnam. In this way, the armored force in Vietnam was dramatically augmented on the ground. At one point, tankers from the 1st Battalion, 69th Armor, provided drivers and mechanics to help soldiers of another divisional unit, the 2d Battalion, 8th Infantry, learn to drive and maintain their newly acquired APCs. That reconfigured outfit, said an armor officer who was one of its Commanders, "was almost like a cavalry squadron today because it had a self-propelled 155mm artillery battery, a tank company, and three mechanized infantry companies."²¹

Meanwhile, the versatile M113/M113A1 performed many, many other useful roles configured as a command post vehicle, mortar carrier, ambulance, cargo hauler, bridge launcher, flamethrower, and tube-launched, optically sighted, wire-guided (TOW) missile platform. By one estimate, more than forty thousand APCs saw service in Vietnam in some sixty variants.²²

In March 1967 the Army's "Evaluation of U.S. Mechanized and Armor Combat Operations in Vietnam" recognized that the M551 Sheridan armored system was about to become available and noted that there was a requirement for a light tank with the "going" characteristics of the M113. However, the "Evaluation" stated that the M551 in its present state had several significant deficiencies that precluded its use in Vietnam, such as a lack of a suitable antipersonnel round for the main gun, and the absence of night-fighting capabilities, a bulldozing kit, and additional armor. In spite of the problems, sixty-four Sheridans were deployed in January 1969. Officially designated an armored reconnais-



M551 airborne assault/armored reconnaissance vehicle with 152mm gun-missile launcher was introduced in Vietnam on a trial basis. Despite mixed reactions, it saw extensive service. National Archives.

sance/airborne assault vehicle, rather than a tank, this sixteen-ton tracked vehicle was armed with a somewhat flawed 152mm main gun capable of firing either antitank guided missiles or conventional rounds with combustible cartridge cases, although the missile-firing capability was never used in Vietnam. In addition to a multipurpose HEAT round, canister and beehive rounds were provided for the main gun. Two machine guns, a 7.62mm coax and a pedestal-mounted .50-caliber on the turret, completed the armament. Powered by a 225 horsepower diesel engine, the amphibious-capable vehicle had a cruising range of 373 miles and a maximum speed of forty-three miles per hour.²³

The first Sheridans to arrive in Vietnam were issued to the 1st Squadron, 11th Armored Cavalry, where they were substituted for ACAVs in the scout sections, and to the 3d Squadron, 4th Cavalry, the 25th Infantry Division's cavalry squadron, where they replaced M48A3 tanks. Initial evaluations noted both advantages and disadvantages of the new Sheridan, depending in part on what they were compared to. They obviously packed far more firepower than the ACAV, with the canister round fired by the main gun proving particularly devastating. They were also maneuverable and fast, although they proved to be more

vulnerable to enemy mines and RPGs than a tank. In addition, there were persistent problems with incomplete combustion of the main gun shell casings and with malfunctions of the electrical firing system, especially in wet weather. A number of common difficulties with the system's durability, such as overheated engines, turret electrical power failures, and failure of the gun's recoil system, were also encountered. These problems were very disturbing and offered little consolation to the crew. Of even more concern to crews were the facts that the 152mm combustible-case ammunition could be detonated by mines and that RPGs easily penetrated the hull's aluminum armor. Fear of these catastrophic events, coupled with the fact that the tankers had to fight in a hot, cramped crew compartment, caused significant fatigue. It is ironic to note that all the problems experienced in Vietnam in 1969 were identified years before the M551s were deployed. On balance, the Sheridan was judged to be a significant enough success that additional systems were fielded in Vietnam—a total of some two hundred by late 1970.²⁴

While the Sheridan proved deployable, another new system introduced in Vietnam was an undisputed failure. The M114 command and reconnaissance vehicle was tracked and lightly armored, weighing just seven tons. Powered by a 120 horsepower engine, it had a cruising range of 375 miles and a maximum speed of thirty-seven miles per hour. Armament consisted of two pedestal-mounted machine guns—a .50-caliber and a 7.62mm—with no shielding for the gunners.²⁵ When the M114 was introduced into South Vietnamese units, it soon became clear that it "could not move cross-country and had difficulty entering and leaving waterways," absolutely devastating failings in that environment. By November 1964 the M114 had been replaced by M113s and withdrawn from Vietnam.²⁶

Other armored vehicles employed in Vietnam included the M56 Scorpion self-propelled 90mm antitank weapon, sometimes called the SPAT, which was employed by Company D, 16th Armor, 173d Airborne Brigade. Armored vehicle launched bridges (AVLBs) with scissors bridges provided another important capability. The M60 AVLB (built on an M60 tank chassis) could span a sixty-foot gap, while an improvised lighter system mounted on an M113 could lay a thirty-foot bridge. The M578 light recovery vehicle and the superb M88 tracked recovery vehicle (VTR) proved indispensable. The M728 combat engineer vehicle (CEV), which mounted a 165mm demolition gun, a heavy-duty boom and winch, and a dozer blade, was both useful and versatile. Finally, there was the M42 Duster, a dual 40mm self-propelled tracked antiaircraft weapon recycled for ground support use, an aging system that never-

theless put out a high volume of very effective fire. All of these vehicles contributed significantly to the capabilities of the forces in the field.

No discussion of armor in Vietnam would be complete without at least some mention of the advisory effort. U.S. advisers were on the ground with South Vietnamese forces long before American units deployed and, as has been noted, they were instrumental in passing on to U.S. units important lessons learned by the ARVN in terms of mobility factors, tactics, and equipment modification.

Gen. Creighton Abrams devoted most of the year he spent as deputy commander in Vietnam to helping South Vietnamese forces improve their capabilities. When he succeeded Westmoreland as MACV commander in July 1968, he took seriously his responsibilities as senior adviser to the Vietnamese. General Starry, then a colonel, remembers having dinner with General Abrams on the night before he took command of the 11th Armored Cavalry. "He was very concerned by the fact that many U.S. commanders were still in the frame of mind that 'you little guys [meaning the South Vietnamese] get out of our way,'" Starry recalled. "He said to me after the change of command: 'Don't push yourself on the Vietnamese. They're going to have to learn to pick up the combat load, and you're going to have to help them learn that.'"²⁷

As the war continued for year after year, Vietnamese armored forces expanded and upgraded their capabilities. M24 tanks, left over from the days of French influence, were replaced by M41A3s. Eventually the number of armored cavalry squadrons expanded from four to eighteen, one with each ARVN division and seven separate. In 1971 three tank regiments equipped with M48A3s were also formed. The entire MACV Staff, said Maj. Gen. Stan L. McClellan, had been opposed to giving the South Vietnamese the M48A3. When General Abrams asked McClellan for his view, the latter recalls advising the MACV commander that he was "strongly in favor and gave a short analysis of RVNAF capability to use the M48 and the obvious need to up-gun their armored force." He says that Abrams, after briefly pondering his comment, said, "Okay, go ahead." That proved to be a crucial decision. "In this case," concluded McClellan, "the heroic stand of the RVN 1st Tank Regiment (M48) during the 1972 Quang Tri NVA invasion was the single factor which caused the attack to fail. The enemy would have taken Hue on the first day except for the determined and effective defense by Vietnamese-manned M48 tanks."²⁸ The decision also reflected the confidence Abrams had in the Vietnamese tankers, most of them people he knew personally. General Abrams, observed his aide, Maj. Tom Noel, "had good rapport with many of the Vietnamese armored commanders who did a helluva job

all over Vietnam.”²⁹ The American advisers who worked with those forces made an important contribution to the conduct of the war.

By the autumn of 1967, when a substantial armored force had been built up in Vietnam, the Army Chief of Staff noted that “the doctrinal missions of armored cavalry are reconnaissance, security, and economy of force.” In Vietnam, though, the 11th Armored Cavalry and the divisional armored cavalry squadrons were “performing the following additional missions: convoy escort, search and destroy (mounted and dismounted), cordon and search, search and clear, route clearing, and base defense reaction force.” Two tank battalions were by that time also in country and, observed the Chief of Staff, “tank units are often tasked to link up with airmobile infantry. Tank units with attached infantry are also performing search and destroy, convoy escort, and security missions similar to those assigned to armored cavalry units.”³⁰ Tank and armored cavalry units also provided protection for land clearing teams and supported the pacification program. On some occasions tanks were even employed in an indirect fire role, supplementing available artillery.

The tanklike role carved out by the ACAV has already been noted. Another important departure from established doctrine was that, with the advent of airmobile infantry, armored units—traditionally used as the exploitation force—were often used to fix the enemy while airmobile infantry deployed as the maneuver element.³¹ Later, as pressure increased to hold down American casualties during disengagement, more and more combat elements of whatever type sought to fix the enemy when contact was made while firepower of every description was used for exploitation. Doctrine was also developed where none had previously existed, notably for cooperation between air cavalry and ground units. Given the often extremely dense foliage, for example, units on the ground frequently relied on air cavalry to guide them to their objectives. When armored forces were available, insertions of airmobile infantry often included plans for an armor link-up. And air cover flown by air cavalry became an important security provision for armored convoys on the move.

While armor doctrine held that units should be employed intact, not broken up and parceled out piecemeal, that principle was widely and persistently violated in Vietnam. This was due in part to the early restrictions on the deployment of armored units imposed by Generals Westmoreland and Johnson, restrictions that resulted in only two divisions deploying with their tank battalions. Once it became clear that armor could operate effectively in Vietnam, everybody wanted some,

but there was just not enough to go around. Divvying up available armor forces thus became the norm. The 4th Infantry Division's 2d Battalion, 34th Armor, for example, arrived in Vietnam in September 1966 and was promptly split in three, with its individual tank companies being sent to widely separated areas. "The battalion," observed J.C. Pimlott, "never fought together during its period of service in Vietnam."³² Similarly, the 1st Battalion, 69th Armor, located in the Central Highlands, habitually deployed one tank company in the vicinity of Bong Son, all the way across the country on the coastal plain.

Such wide dispersion of limited armor assets, often far from their next higher headquarters, put enormous strain on a logistical support system that was at best only marginally capable of supporting them. While hard-pressed staffs worked to develop makeshift support systems, even those arrangements were continually being undermined by the frequent redeployment of the supported units. In one extreme case, a tank battalion near Saigon retained responsibility for supporting one of its tank companies deployed in the far reaches of Military Region 1, some 750 kilometers to the north. One key part of the problem became just finding the supported unit, which had often been further divided and dispersed to multiple locations.

The 3d Squadron, 5th Cavalry, while based at Bear Cat in Military Region 3, was ordered north to Da Nang in Military Region 1 to work with the 1st Marine Division. The move was made by LST and, upon arrival, one troop was sent still farther north to work with an Army brigade operating near Hue. By agreement, the Marines were to supply the squadron with only food and fuel, while repair parts had to come from the Army. Unfortunately, however, the supported Army brigade was an airmobile unit and thus possessed no capability to support an armored force. "The problems of supply and repair of vehicles that resulted," said the squadron's executive officer, "were a nightmare for us."³³ These difficulties were further compounded by the fact that the centralized inventory system for repair parts simply broke down.³⁴ Many battalion executive officers and motor officers were reduced to wandering through depots searching for—and often finding—tank parts that did not show up in the records.

Armored units were frequently assigned the mission of route security, a much more difficult and repetitive task in Vietnam than in a more conventional combat environment. When General Johnson was Army Chief of Staff a civilian defense official once proposed sending a partly trained unit to Vietnam anyway, arguing that it could complete its training in a secure rear area. "Mr. Secretary," Johnson patiently explained, "there are no secure rear areas in Vietnam."³⁵

Deployed units quickly adapted tactics and techniques, whether sanctioned by existing doctrine or not, for dealing with a determined and elusive enemy. The greatest threats to armor were enemy ambush—"a tactic in which he excels," admitted a U.S. Army report³⁶—and mines. Ambushers habitually employed recoilless rifles and RPGs, both very hazardous to light armored vehicles and even tanks.

Counterambush techniques were stressed, although time after time units paid a heavy price in initial casualties amongst men and vehicles, then sought vainly for the rapidly withdrawing enemy forces that had inflicted them. Units coming under attack were taught to "herringbone," meaning that alternating vehicles angled right and left so as to bring effective fire on the ambushers while providing some armored protection for those thin-skinned vehicles that could find shelter between the tanks and ACAVs. Instantaneous return of a high volume of fire was stressed.

Many units also sought to discourage the setting of ambushes and planting of mines along routes they were securing by conducting at irregular intervals, both day and night, what were dubbed "thunder runs." These involved sending out columns of armored vehicles that would, without warning, unleash all the firepower they possessed at some suspected or likely ambush or mining site, all the while continuing to march. The theory was that such unpredictable onslaughts would discourage would-be attackers from getting into position.

These and other battle tactics often resulted in substantial casualties being inflicted on the enemy, but it is also true that throughout the conflict enemy mines and RPGs continued to be effective. Some mine rollers were sent out for use with armored vehicles, but they had little success. The problem for the mine roller, Lt. Gen. John H. Hay Jr. observed dryly, "was to survive the mine it detonated."³⁷ So unsatisfactory were the systems tried in Vietnam that General Starry judged them "not as effective as some 1945 equipment."³⁸

A survey covering one six-month period at the height of the war found that throughout Vietnam some three-quarters of all tank and APC losses were caused by mines. These findings were duplicated by a similar survey conducted a year and a half later.³⁹ The fact is, throughout the war mines continued to be discovered and cleared by running over them with armored vehicles—a solution viewed as less than ideal by their crews.

Likewise, the enemy's RPG-2 antitank grenades, and later the more lethal RPG-7, continued to take a heavy toll, particularly of armored personnel carriers. Said General Abrams in August 1969, "the B-41 RPG-7 is the best hand-held antitank gun in the world."⁴⁰

"Although many measures to defeat these weapons were tried," acknowledged General Starry, referring to both mines and the RPGs, "no adequate means was ever found."⁴¹

Despite many innovations and the occasional repudiation of an existing doctrinal precept, a 1966 U.S. Army "Vietnam Training Report" concluded "armor doctrine has been reaffirmed in Vietnam," citing successful application of the classic attributes of firepower, mobility and shock effect.⁴²

The 1st Battalion, 69th Armor, was the first U.S. Army tank battalion deployed to Vietnam, arriving there in March 1966 as part of the 25th Infantry Division. Soon posted to the Central Highlands with the division's 3d Brigade Task Force, the unit there saw the 1st Platoon of Company B involved in a small but significant battle.⁴³ The action, later referred to as the Battle of Landing Zone (LZ) 27 Victor, took place in the western reaches of Pleiku Province, southwest of Duc Co and adjacent to the Cambodian border. There the tank platoon was assigned to assist in providing perimeter defense for a position occupied by a Republic of Korea (ROK) Army outfit, the 9th Company, 3d Battalion, 1st Cavalry Regiment, commanded by Captain Lee. There, on the night of 9-10 August 1966, an NVA battalion frontally attacked the dug-in infantry unit and its supporting tanks and, although repulsed repeatedly, kept attacking throughout a long, dark, and bloody night, suffering some 197 casualties in the process.

The platoon's five M48A3 tanks were stationed at strategic points around the perimeter of the position. At sunset the tankers—led by 2d Lt. Charles E. Markham—set a 50 percent alert, looked out over the single strand of concertina wire encircling the position at the heavy stands of elephant grass beyond, and gave a final check to the lay of their guns. Shortly before midnight, alerted by a member of the ROK 9th Company to the sound of digging nearby, S.Sgt. Wallace T. Ferneyhough's tank crew used its searchlight to illuminate the area and conducted a reconnaissance by fire with its coaxial machine gun. Within seconds, the entire tree line to the southeast erupted with heavy enemy automatic weapons fire. Although three tank crewmen were lightly wounded in this exchange, they managed to mount their tanks and return fire.

The volume of incoming fire continued to build, including heavy concentrations of small arms, mortars, and recoilless rifles in addition to the automatic weapons. Then came numerous assaults by small groups attempting to penetrate the defensive lines. It appeared that the defenders' initial recon by fire had served to disrupt a planned coordi-

nated attack. Despite an overwhelming advantage in numbers, the sustained enemy assault managed to get only a single soldier through the defensive wire, and he was killed with a bayonet by a ROK defender.

Nearly continuous illumination was maintained over the battle area throughout the night, first by the two tanks mounting searchlights, later by mortars fired from within the 9th Company's position, and finally by U.S. and ROK artillery and a U.S. Air Force flare ship. The tanks fired every type of main gun ammunition they had (with the exception of HEAT), but canister rounds and the coaxial machine guns were used most extensively. Coordination of fires between tanks was excellent, with the commander of one tank alerting the commanders of adjacent tanks when targets moved toward their sectors of fire. One tank flicked on its searchlight periodically to draw fire, while another tank engaged the enemy thus revealed. It was impressive teamwork, especially for soldiers in their first combat action. Meanwhile, U.S. and ROK batteries provided extensive artillery support. Some 105mm fire was called in to within thirty meters of the perimeter. Heavier artillery was also used to interdict probable enemy routes of withdrawal.

The engagement finally ended at 4:30 A.M. when the surviving enemy withdrew, leaving the ground outside the perimeter literally covered with dead. As the defenders swept the area they recovered some 350 RPG-2 antitank rockets, five 60mm mortars, a heavy machine gun, forty-five AK-47 rifles and nineteen SKS carbines, twelve antitank rocket launchers, several satchel charges, and a large quantity of ammunition, packs, and other individual gear. Enemy documents retrieved and prisoner of war interrogation reports indicated the operation had been a planned coordinated attack against the position by a battalion from the 88th NVA Regiment.

The enemy's system of passing on "lessons learned" must have been effective, for after LZ 27 Victor they generally avoided infantry assaults on positions occupied by U.S. armor.⁴⁴ Instead, most of the subsequent combat engagements involving American tanks, armored cavalry, and mechanized infantry resulted from meeting engagements, counterambushes, or the reinforcement of embattled friendly units in contact. Enemy appreciation for how effective the combined U.S.-ROK force had proven itself was mirrored by the U.S. leadership with the subsequent award of the Presidential Unit Citation to both the U.S. tank platoon and the ROK infantry company. "We'd not had our annual training test" when the 1st Battalion, 69th Armor, deployed to Vietnam, wrote Sergeant Zumbro, "but we were to find out that the Viet Cong and the NVA were more than willing to provide one."⁴⁵ At LZ 27 Victor, B Company's 1st Platoon passed the test.

While the bulk of 1st Battalion, 69th Armor, operated in the Central Highlands, concentrating on keeping open Route 19E, the main supply route from the coast, one company was dispatched to the Bong Son plain in the coastal region north of Qui Nhon, there to support elements of the 1st Cavalry Division. This was typical of the wide dispersion of units that was the lot of armor in this war, and it did not stop at company level. The A Company tankers were parceled out by platoon, and platoons often sent sections of two or three tanks to work with the airmobile infantry. In one operation toward the end of 1966 or early in 1967 this fragmentation process reached a new level.

The 3d Platoon, like the rest of the company, was shorthanded, working with three-man crews while supporting squad-size elements of the 1st Cavalry Division in somewhat helter-skelter operations against dispersed elements of Vietcong in the vicinity of LZ English.⁴⁶ Company A tanks all had nicknames—"Ape," "Assassin," and the like—and Tank Three-Three was called "A-Go-Go." Its driver, Sp5 Kellen Wilson, was somewhat of a celebrity in the company, and for good reason. His family was in the restaurant business, and growing up in the midst of that Wilson had acquired the ability to, as his fellow soldiers put it, "make C rations fit for human consumption," working with special cooking oils, herbs, and spices his family sent from home. On a given day Wilson was going to distinguish himself in another way.

Called in to help out a half platoon of pinned-down infantry fighting in an abandoned village complex, the "A-Go-Go" took fire from a concealed enemy machine gunner. Its tank commander was wounded, reducing the crew to two men. After the injured man was evacuated by helicopter, Wilson pulled into position to shield another tank while it repaired a mine-damaged track. There a sniper zeroed in on his loader, who in turn was "dusted off," leaving Wilson as the only crewman left. Just then an infantry squad leader called for a tank to take out a gun emplacement that was holding him up. To the surprise of others on the net, Wilson answered the call, got the infantry's location, and roared off in "A-Go-Go."

Wilson soon reached the squad's position, where he crawled from his driver's seat into the turret, loaded the main gun, and recharged the coax, then jumped into the gunner's position. Then he commenced methodically to fire the 90mm, get up to reload, return to the gunner's seat, fire again, and so on until he had neutralized that particular enemy position. Next, using the coax, he took out an enemy machine gun that had another squad pinned down. Then someone else called for help, so Wilson dropped back down into the driver's seat and drove to a new location, repeating his performance as a man for all positions. This went

on for four hours. In the process Wilson not only earned the Silver Star, but demonstrated the fragmentation of armor units carried to its ultimate extreme: a one-tank, one-man operation.

In the autumn of 1966 the Army, seeking definitive data on the performance of armored units in Vietnam, convened a study group headed by Maj. Gen. Arthur L. West Jr. to look into the matter. This was to be no academic exercise, but rather a firsthand evaluation on the ground. Underscoring how thoroughly that was the case, during the course of the study five members of the team were wounded, including West himself.⁴⁷

The study—called “Mechanized and Armor Combat Operations in Vietnam” (MACOV)—was to cover in depth all aspects of doctrine, tactics, techniques, materiel, organization, and force mix of all U.S. Army mechanized infantry and armor units in Vietnam. A huge team, including forty-eight field data collectors and an evaluation staff of fifty-one, was assembled for the study, which was carried out during the period January-March 1967.⁴⁸

The study team developed the trafficability data cited earlier, then turned its attention to operations and doctrine. “With the emergence of the M113 as a fighting vehicle,” stated MACOV, “armor, scout, and mechanized units are engaging the enemy in mounted combat, while current doctrine prescribes this form of combat only for tank units.” Also: “The employment of air cavalry has developed far beyond the limits of current doctrine.” These observations were made approvingly, and in effect MACOV codified the modifications of doctrine that armored forces had developed in the field. Those changes had, wrote Lt. Gen. John H. Hay, quoting the MACOV study in his monograph on tactical and materiel innovations during the war, “evolved due to the nature of the enemy in Vietnam, the concept of area war and the balanced combined arms structure of the armored cavalry squadron.”⁴⁹

During the course of the study, General West, an experienced and highly decorated soldier who had, until being very seriously wounded, commanded an armored infantry battalion in World War II, also formed some negative views of what he had seen in Vietnam—observations that were not confined to the armored force. “Currently,” he wrote while the study was in progress, “most battalion commanders and all brigade and division commanders command and control from the relative safety of a helicopter. We are teaching many bad habits that could cost us dearly in a war of the future where we do not have absolute control of the skies. Also Vietnam looks just a bit different from the air than it does from the ground.” General West was also critical of the failure to con-

tinue combat operations at night. "The bulk of the US operations and all of the ARVN regular unit operations are conducted during the hours of daylight," he noted. "At night, our units go into a tight perimeter defense. At first light they move out and, if it is a mechanized or armor unit, about the first thing that happens is that the lead tank and/or APC hits mines."⁵⁰

General West and several other members of the MACOV team had a chance to brief General Abrams, then the Army Vice Chief of Staff, when he visited Vietnam during the study. West and Abrams had commanded battalions side-by-side in the 4th Armored Division during World War II and maintained a close friendship afterward, so it was no surprise that the briefings took place in West's room at the Rex Hotel in Saigon and lasted until the small hours of the morning. Those briefings, West said later, "served as sort of a primer course for Abrams on Vietnam."⁵¹ Whatever the validity of that assertion, when Abrams later took command in Vietnam the tactics changed at once, including an emphasis on the conduct of multiple small patrols and ambushes, both day and night.

The completed MACOV study, forwarded to the Secretary of the Army and the Chief of Staff, had some beneficial effects. For one thing, General Starry later observed, it was the first means by which "the potential of armored forces was fully described to the Army's top leadership." Among the interesting things they were told by MACOV was that "armored cavalry was probably the most cost-effective force on the Vietnam battlefield."⁵² The capability of armored forces to operate throughout South Vietnam, weather and terrain notwithstanding, was also documented. Furthermore, and perhaps one of the most significant outcomes, "General Westmoreland . . . later commented that the study had prompted him to ask for more armored and mechanized units in troop requests."⁵³

In late March 1967, just as the MACOV study group was completing its work, a classic case of "cavalry to the rescue" was acted out at a place called Fire Support Base (FSB) Gold.⁵⁴ There, near Suoi Tre, south of the Fishhook in Tay Ninh Province, the 2d Battalion, 12th Infantry, was hit with a rare daylight attack mounted by five battalions of the 272d Vietcong Regiment. Assault after assault struck the isolated position, penetrating the lines in three places and forcing the infantry and the artillery manning the outpost to pull into a tighter and tighter perimeter. Ammunition was running low, and the artillerymen had leveled their tubes and were firing beehive rounds at point-blank range. The enemy had closed to within hand grenade range, and things looked pretty grim.

Just then tanks from 2d Battalion, 34th Armor, and ACAVs from the 2d Battalion, 22d Mechanized Infantry, burst from the wood line to the enemy's rear and began raking the attackers with the devastating fire of more than two hundred tank cannon and machine guns. Within minutes the siege was lifted and the enemy driven off, leaving behind the bodies of more than six hundred Vietcong. No account of frontier days in the Old West could offer a more thrilling example of mounted forces galloping to the rescue.

Armored forces played an important, even pivotal, role in defeating enemy attacks in the 1968 Tet Offensive. "Rapid movement was imperative in the early stages of the enemy attack," emphasized General Starry, "and the armored units were the first ground forces to reach the battlefield in almost every major engagement, although the winning of the battles eventually involved all forces."⁵⁵

Saigon was the enemy's primary objective. In the fierce fighting that raged in and around the capital, and especially "in the critical approaches, . . . cavalry and mechanized infantry decided the fate of the city."⁵⁶

A dramatic example was the fighting at Tan Son Nhut Airport. In the early morning hours of 31 January, three enemy battalions attacked a mixed force of defenders that included National Police, Vice President Ky's security guard, and paratroopers from a nearby base camp who were soon joined by two airborne companies fortuitously standing by at the airport terminal waiting to be airlifted to the north.⁵⁷ An emergency request for reinforcement was passed to Lt. Col. Glenn K. Otis's 3d Squadron, 4th Cavalry. Launching from their base at Cu Chi, some fifteen miles distant, elements of the squadron drove hard in another thrilling gallop to contact, this time in the dark of night. "On its way to Tan Son Nhut," wrote South Vietnamese J2 Col. Hoang Ngoc Lung appreciatively, "the U.S. armor column was guided by air-dropped flares and took cross-country short cuts, bypassing the embattled area of Hoc Mon and probably ambush sites. At daybreak, the column entered Tan Son Nhut and inflicted serious losses to the enemy force, which was compelled to fall back."⁵⁸

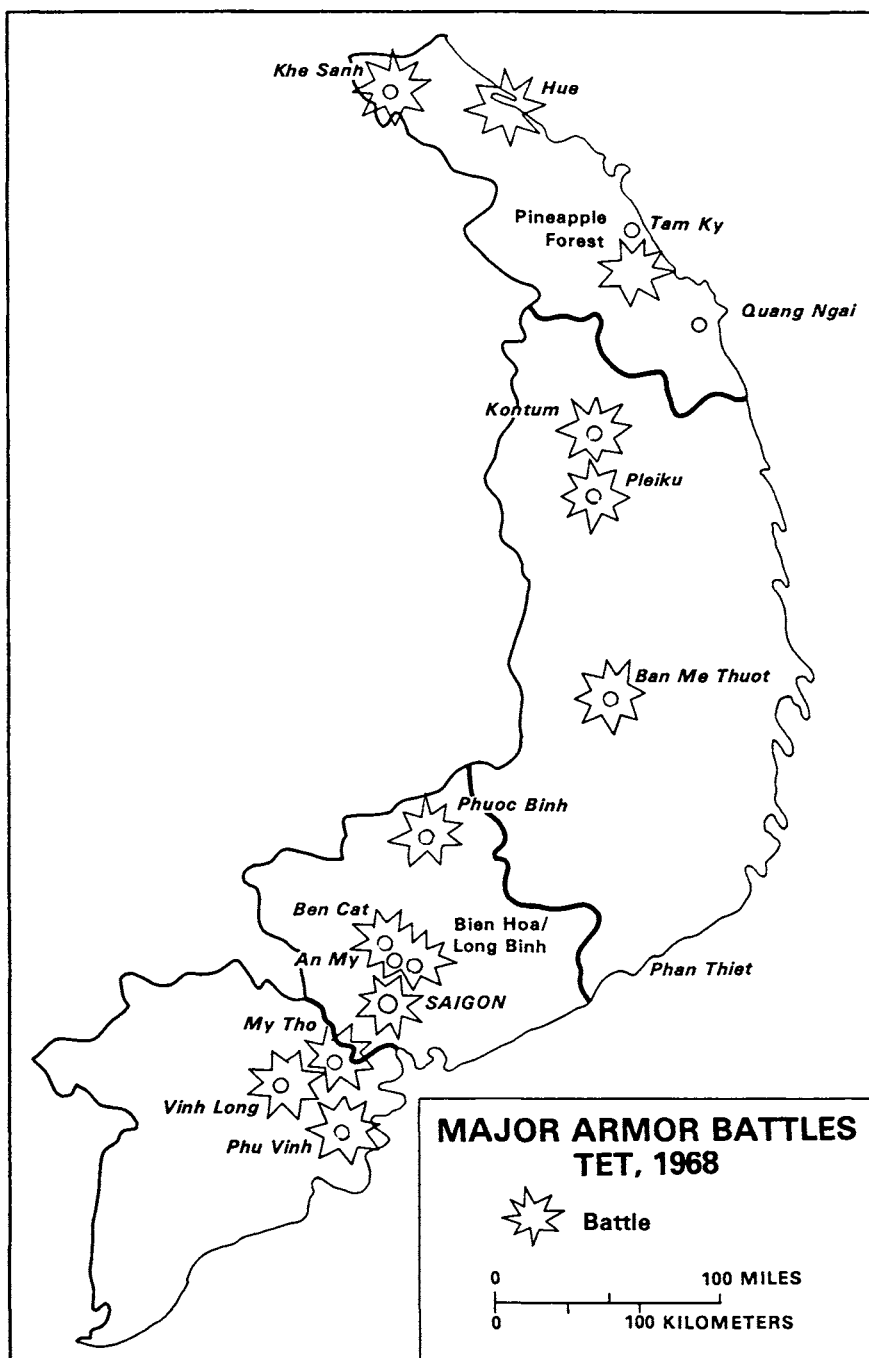
The next morning Lt. Col. Hugh J. Bartley, commander of the 3d Squadron, 5th Cavalry, was aloft in his command and control helicopter. From there he could see "that Saigon, Bien Hoa, and Long Binh were literally ringed in steel. . . . Five cavalry squadrons had moved through the previous day and night, converging on the Saigon area. When dawn broke, they formed an almost-continuous chain of more than five hundred fighting vehicles around the outskirts of the metropolitan area."⁵⁹

Armored units contributed significantly to turning back the widespread enemy attacks in every part of the country. The 3d Squadron, 5th Cavalry, galloped to the rescue at Bien Hoa Air Base, devastating a waiting ambush by taking it in the rear while en route to the objective.⁶⁰ The 11th Armored Cavalry executed a twelve-hour forced march to reach Long Binh as that vital base was under assault.⁶¹ At Kontum, in the Central Highlands, A Troop, 2d Squadron, 1st Cavalry, was assaulted repeatedly by an estimated three enemy battalions. The hugely outnumbered troop held its ground, fighting so courageously that it earned a Valorous Unit Award for the action.⁶² At Pleiku, also in the Central Highlands, tanks of the 1st Battalion, 69th Armor, helped drive enemy forces out of that city. On board some of the tanks were air force people who had been catching a ride back to their station at Pleiku Air Base. So urgent was the need to get into action that the tankers didn't have time to off-load their Air Force passengers, and in the ensuing fight one of them was even pressed into service as a loader. That airman came away from the experience with a new appreciation for the tank. "You can really express yourself with one of these things!" he exulted.⁶³

Meanwhile at Lang Vei Special Forces Camp, near Khe Sanh in the I Corps area, the enemy made his first use of tanks in this war when, on the night of 6-7 February 1968, an attacking force from the 304th NVA Division employing eleven PT-76 amphibious tanks overran the camp during a night of furious fighting. All but one of twenty-four U.S. personnel in the camp became casualties, including ten killed—one of whom was posthumously awarded the Medal of Honor. The indigenous forces also suffered heavily: 219 killed or missing and seventy-seven wounded. The Marines at Khe Sanh Combat Base, who had been tasked to prepare a contingency plan to rescue the small garrison at Lang Vei if it got into trouble, refused to help.⁶⁴

Within days of the onset of the Tet offensive General Westmoreland, quite obviously converted from his earlier skepticism about the ability of mounted forces to fight effectively in Vietnam, submitted an urgent request that an armored brigade be sent to augment his forces. "The Army is behind the power curve with respect to meeting demands for trained manpower," cabled back the Chief of Staff, General Johnson. Multiple, increasing, and short-reaction demands, he informed Westmoreland, constitute a "steady leak in the reservoir that sustains your forces." But, Johnson added, "my job is to replenish the reservoir. I am making all possible representations to do this."⁶⁵

Five months later, the 1st Brigade, 5th Infantry Division (Mechanized), arrived in Vietnam, bringing into battle the 1st Battalion, 77th Armor; 1st Battalion, 11th Infantry; 1st Battalion, 61st Infantry (Mecha-



nized); 5th Battalion, 4th Artillery (155mm self-propelled); and Troop A, 4th Squadron, 12th Cavalry.⁶⁶ Thus the last major U.S. unit to be deployed to Vietnam was a classic armored combined arms team.

Maj. Gen. George S. Patton, who as a colonel commanded the 11th Armored Cavalry in Vietnam, once observed that "nearly all actions in the war commenced with a classic movement to contact."⁶⁷ The 3d Squadron, 5th Cavalry, was involved in just such a meeting engagement on the coastal plain in Quang Tri Province in late June 1968.⁶⁸ In the pattern of wide dispersal that had become typical for armored units in this war, the squadron was operating far from its parent division, then based at Bear Cat, several hundred miles to the south. The squadron was itself further fragmented, with its command post and two troops operating out of Wunder Beach, on the South China Sea east of Quang Tri, and a third troop some eleven miles north providing security for Marine logistical operations at the mouth of the Cua Viet River.

To ease the logistical and maintenance problems inherent in such dispersal, the squadron commander, Lieutenant Colonel Bartley, rotated his troops through the assignment in the north, changing over about once a week. The troop being relieved was tasked to conduct area reconnaissance of the coastal strip traversed on the way back to the squadron base in the south. One day in late June 1968, A Troop was thus moving south, reconnoitering as it went. Approaching within about 150 yards of a village known as Binh An, the unit began taking small-arms fire, then the lead tank was struck by an RPG.

The platoon in contact deployed and returned fire while the troop Commander, Capt. Stewart McLaughlin, ordered his other two platoons to seal off the village by moving to blocking positions to the north and south of it. In the process, the three NVA soldiers who had fired the first shots were cut off and captured. During interrogation, one of the men revealed that a battalion some three hundred strong was positioned in the village.

Squadron headquarters put its light observation helicopter up over the scene of the contact and soon received reports of villagers streaming south carrying their possessions. Clearly they anticipated a destructive battle and were trying to get out of the way, expectations that were to prove very well founded. Lieutenant Colonel Bartley saw it the same way and ordered B Troop, conducting routine operations in the vicinity of Wunder Beach, to cease work there and move to Binh An at once. B Troop covered the half dozen miles or so quickly, moving along the hard sand at the water's edge until it encountered A Troop formed up in a semicircle facing to the southeast. B Troop joined the cordon and,



Col. George S. Patton (right), commander of the 11th Armored Cavalry Regiment, the largest mechanized unit in Vietnam, receives a commendation from Gen. Creighton W. Abrams Jr. (left) *ARMOR* magazine.



Donn A. Starry as a colonel in command of the 11th Armored Cavalry Regiment in Vietnam. He later served as the chief of armor and commanded V Corps in Germany before taking command of TRADOC. *ARMOR* magazine.

with the sea to the east, the village of Binh An was effectively surrounded. Soon artillery and naval gunfire from a cruiser and two destroyers on the gun line began pounding the village. The bombardment was interrupted only long enough for a loudspeaker team to broadcast a surrender appeal, to which there was no response. Meanwhile, two companies of infantry from the 1st Cavalry Division had arrived to augment the encircling forces and were interspersed with the cavalry.

In the late afternoon forces in the northern sector began sweeping south. Meanwhile, the armored vehicles at the south end buttoned up for protection against any machine-gun fire that might reach their positions. Once through the village, the assaulting elements reversed course and swept back to the north, resuming their positions in the cordon as the artillery resumed firing. As darkness came on, tank searchlights and night vision devices were used to watch for any enemy attempting to break out of the encirclement. Periodically during the night small groups or individuals were stopped or turned back by gunfire, while others were captured. As would later become apparent, the cordon was leak proof.

By morning the end was near. After a period of intensified artillery bombardment, buttoned-up armored forces from the north and south advanced toward one another, collapsing the cordon on the encircled enemy. They met, returned to the perimeter, and then repeated the process, this time with supporting infantry. Those enemy remaining alive came out with their hands up and were taken prisoner.

The operation was characterized by timely response to enemy contact, establishing and maintaining an effective cordon, the integration of armored cavalry, infantry, artillery, and naval gunfire, and a deliberate approach that saved the lives of friendly forces. In the process 233 NVA soldiers were killed in action and forty-four captured, along with a substantial number of individual and crew-served weapons. Among the enemy dead were the battalion commander and his staff and all of his company commanders. Friendly losses were one killed and nine lightly wounded.

Those were the immediate results. The larger effect of this and other operations in Quang Tri Province during the spring and summer of 1968, as later described by Col. Michael D. Mahler, "were quiet nights, infrequent contact with the enemy, and clear roads in an area that had been hostile territory for years." Highway 1 had been paved, SeaBees and Army engineers had built new and better bridges, "and local farmers and fishermen were out traveling those roads and bridges to market as they had not been able to do a year before." This was, testified Mahler, who had been there as executive officer of the 3d

Squadron, 5th Cavalry, “one accomplishment that could actually be seen and touched in a war where progress was not always easy to quantify.”⁶⁹

In March 1969 Ben Het Special Forces Camp, situated in a remote part of the Central Highlands near the Cambodian border, was the scene of a small but significant action—significant because for the first and only time in the war North Vietnamese and U.S. armored forces fought one another.⁷⁰ Company B, 1st Battalion, 69th Armor, was operating in the area in an effort to take some of the pressure off the small camp, which had been undergoing heavy and sustained shelling. Captain John P. Stovall, commanding the tank company, occupied strong points and staked out critical bridges along the ten kilometers of road that linked Ben Het with Dak To, and put one platoon of M48A3 tanks at Ben Het itself, where he eventually established his own command post. There they joined three companies of Civilian Irregular Defense Group (CIDG) troops, three 175mm guns, and two M42 Dusters, along with a twelve-man U.S. Special Forces A Team.



PT 76 tank destroyed 3 March 1969 at Ben Het Special Forces Camp, South Vietnam, by the 1st Platoon, B Company, 1st Battalion, 69th Armor, 4th Infantry Division. Enemy element believed to be from 202d NVA Armor Regiment. R.W. Wall Collection, Patton Museum.

Shortly after dark on the night of 2 March 1969, the tank platoon Sergeant reported hearing engine and track noises west of the camp. The next night, at almost the same hour, Ben Het began receiving recoilless rifle fire, followed by a heavy mortar bombardment. Soon engine sounds were heard again, and when something abruptly caught fire near a cluster of antipersonnel mines, "three tanks and some kind of open tracked vehicle were illuminated by the fire." Surprisingly, no infantry accompanied the enemy armor.

The U.S. tanks took these targets under fire using HEAT ammunition, while the camp's 81mm mortars put up illumination rounds. In the light from the magnesium flares at least two enemy tanks could be seen to take main gun hits. Both were on fire, with their ammunition and fuel going up, and the open tracked carrier was also burning. At that point Captain Stovall was standing on the back deck of one of his tanks, shielded by the turret, when a main gun round slammed into the vehicle's front slope. He and the tank Commander were blasted off the tank, and the driver and loader were both killed instantly. Other crewmen took their places and soon got the tank back into action. Meanwhile, the enemy withdrew without ever mounting a final assault. Ground patrols the next morning confirmed the destruction of two enemy tanks and one tracked carrier from what was later determined to be the 16th Company, 202d NVA Armor Regiment.

In late April 1970 U.S. and South Vietnamese commanders were given the green light to move forces across the border into Cambodia to interdict enemy lines of communications and clean out base areas adjacent to the boundary. Prohibitions on such operations had for years given the enemy a free ride, permitting him to operate from a secure base area and providing him a haven in which his forces could recuperate, refit, and retrain. Now, even though it was to be an incursion of limited duration and depth, the U.S. and ARVN forces had their governments' blessings to seek out and engage the enemy in his sanctuary. U.S. armor was to have an important role, and would operate in larger aggregations than had usually been the case during this widely dispersed war. On 29 April ARVN forces attacked into the Parrot's Beak, followed a day later by U.S. formations that entered the Fishhook. Both regions were riddled with enemy base areas.⁷¹

Brig. Gen. Robert M. Shoemaker, assistant commander of the 1st Cavalry Division, headed up an impressive task force rich in armor elements, including the 11th Armored Cavalry; 2d Battalion, 47th Infantry (Mechanized); and elements of the 2d Battalion, 34th Armor; as well as his own division's 3d Brigade (Airmobile) and the ARVN 3d Airborne

Brigade. This force was to drive north and west into the objective area. Subsequent attacks involved the 1st Battalion, 5th Infantry (Mechanized); 2d Battalion, 22d Infantry (Mechanized); and 3d Squadron, 4th Cavalry.⁷² The 1st Squadron, 9th Cavalry, 1st Cavalry Division, also played an important role, discovering what turned out to be the largest cache of the war. This find was so extensive that it was dubbed "The City," and "yielded more than 1,500 weapons, millions of rounds of ammunition, and tons of supplies" and "took several weeks to search and evacuate."⁷³

Lt. Gen. Michael Davison, commander of II Field Force, Vietnam, was in overall charge of the forces entering Cambodia. He said General Abrams had issued him a mission-type order—"I want you to go into Cambodia and clean out those supply points"—and then given him free rein to accomplish that mission. Abrams only asked him one question, Davison later recalled: "Are you really capturing all that crap they report in *Stars & Stripes*?"⁷⁴ Indeed they were. The final tally for the sixty-day operation, according to Lt. Gen. Phillip B. Davidson, a former MACV J2, included "23,000 individual weapons, enough to equip 74 full-strength NVA battalions; 2,500 crew-served weapons, 25 battalions' worth; 16,700,000 rounds of small-arms ammunition, the amount the Communists expended in one year; 14 million pounds of rice; 143,000 rounds of mortar, rocket, and recoilless rifle ammunition, and about 200,000 rounds of antiaircraft ammunition."⁷⁵

The settled view of the operations in Cambodia is that the enemy did not fight to defend his stockpiles, but rather withdrew deeper into Cambodia, taking with him what he could and abandoning the rest. However accurate that may be as a generalization, it is also true that the forces entering Cambodia continued to experience the ambushes and mine warfare so familiar to them in Vietnam. Time after time, advancing columns took casualties from unseen enemy who then melted away into the jungle. The stockpiles turned up in Cambodia were acquired the hard way.⁷⁶

The Cambodian incursion had been intended to deprive the enemy of his stockpiles of food and war materiel, disrupt his lines of communication, and buy time for Vietnamization to progress as American withdrawals continued. It did all of those things, and President Richard M. Nixon called it "the most successful operation of the Vietnam war."⁷⁷ Armored forces were a big part of that success.

By early 1969, with the change of administrations in Washington and the growing capability of South Vietnamese forces, it became clear that the time was approaching when U.S. forces could begin to withdraw. Planning for that eventuality was very closely controlled in MACV, with

a small task force headed by Col. Donn Starry reporting directly to General Abrams. The instructions issued by Abrams were clear and succinct: "Do it right, do it in an orderly way . . . [and] save the armor units out until last, [because] they can buy us more time." It was a totally asymmetrical situation. "The armor units," said Starry, "specifically excluded from the buildup until late 1966, would anchor the withdrawal of American combat units from Vietnam."⁷⁸ Indeed, Colonel Starry, a key player in the MACOV study, would later command the 11th Armored Cavalry Regiment and lead it into Cambodia in May 1970.

The first twenty-five thousand men were withdrawn—"redeployed" as the euphemism had it—in July and August 1969, and succeeding increments departed on a more or less inexorable schedule. Following General Abrams's guidance, from the beginning armored units—tanks, mechanized infantry, air and armored cavalry—were stripped out of departing units and held in country. When the 4th Infantry Division left the Central Highlands in December 1970, for example, the 1st Squadron, 10th Cavalry, remained behind, reassigned to control of I Field Force, Vietnam. Later it was placed under the operational control of the 173d Airborne Brigade and then, when that outfit departed in August 1971, went to work for the headquarters of Military Region 2, finally heading for home itself in November 1971. The same thing happened with other divisional units. Not until April 1970 did the first battalion-sized armor units pull out, so that by the end of 1971 armored units constituted more than half of the U.S. maneuver battalions still in country. The last tank battalion—the 1st Battalion, 77th Armor—left in August 1971. Almost all the air cavalry units remained until early in 1972. In April 1972 the last U.S. armored unit—the 1st Squadron, 1st Cavalry, an armored cavalry outfit that had served with Task Force Oregon, the 23d Infantry (Americal) Division, the 11th Infantry Brigade, the 101st Airborne Division, the 196th Infantry Brigade, and the 23d ARVN Division—left for home. For the armored force, the war had ended.⁷⁹

Eventually General Abrams, the quintessential armor commander, was about all that was left of the American armored force in Vietnam. He had in effect sent his Army home before him. Soon a new generation of armor leaders would emerge, many of them having practiced their trade under Abrams's tutelage. Among those who rose to four-star rank are Wallace H. Nutting, Glenn K. Otis, Crosbie Saint, and Donn Starry, all from ground cavalry outfits, and Robert M. Shoemaker from the air cavalry. Others who became prominent general officers include Julius

W. Becton, Frederic J. Brown, David K. Doyle, Richard G. Graves, Richard D. Lawrence, Paul S. Williams Jr. and John W. Woodmansee.⁸⁰

Individual soldiers in armored units had also distinguished themselves during the war, earning nineteen of the 155 Medals of Honor awarded. No one had a more difficult war than the infantry foot soldier, or risked more for the sake of others than the medevac crews, but much of what armored troopers were assigned to do was frustrating, dangerous, or just plain hard work, relieved by moments of triumph. They are remembered for their service and sacrifice by this inscription on the Armored Forces monument: "In the U.S. Army Vietnam, the air-mobility of helicopter-borne infantry was augmented by the ground-mobility and firepower of the mechanized infantry battalions, armored cavalry regiment and squadrons, tank battalions, and armored artillery. In hundreds of combat actions these armored units of the infantry divisions demonstrated again the importance of mobile armor-protected firepower."

NOTES

1. The Army units listed are: the 11th Armored Cavalry Regiment; Armored Cavalry Squadrons: 1/1, 2/1, 1/4, 3/4, 3/5, and 1/10; Mechanized Infantry Battalions: 2/2, 1/5, 2/8, 1/16, 2/22, 4/23, 2/47, 1/50, 5/60, and 1/61; Armored Artillery Battalions: 5/4, 8/4, 3/6, 8/6, 7/8, 3/13, 6/14, 7/15, 5/16, 3/18, 5/22, 1/27, 6/27, 2/32, 6/32, 2/35, 1/39, 1/40, 1/82, 1/84, 2/94, and 2/138; Armored Cavalry Troops: A/12, E/1, E/17, and F/17. Marine Corps units are: Tank Battalions: 1 and 3; Amphibian Tractor Battalions: 1 and 3; Armored Amphibian Company: 1.

2. Ernest B. Furgurson, *Westmoreland: The Inevitable General* (Boston: Little, Brown, 1968), p. 84. Presumably Westmoreland at some point also attended parachute school to earn the jump wings he always wore.

3. As quoted in Gen. Donn A. Starry, *Armored Combat in Vietnam* (New York: Arno Press, 1980), p. 56.

4. *Ibid.*

5. *Ibid.*, p. 57.

6. *Ibid.*, p. 58.

7. Gen. Michael S. Davison, Oral History Interview, USAMHI. Even after the decision was made to deploy the 11th Armored Cavalry, Westmoreland first tried to get its M48A3 medium tanks replaced with M41 light tanks and then, unsuccessful in that initiative, to get a mechanized infantry brigade substituted for the armored cavalry regiment. "He stated flatly he had no need for two more tank battalions, which the 132 tanks of the regiment in fact represented." In a compromise, the regiment's tank strength was reduced to fifty-one, with APCs substituted for the rest. See

Shelby L. Stanton, *The Rise and Fall of an American Army: U.S. Ground Forces in Vietnam, 1965-1973* (New York: Dell, 1985), p. 70.

8. U.S. Army, videotape: "Vietnam Training Report Number 5: Armor Operations," 1966.

9. Findings of the MACOV Report as per U.S. Army, videotape, "Vietnam Training Report Number 14: MACOV," 1967.

10. Ibid.

11. Ralph Zumbro, *Tank Sergeant* (Novato, Calif. Presidio Press, 1988), p. 180.

12. Army of the Republic of Vietnam, "FM 3-1 (Draft): Armor Operations in Vietnam," Mar. 1966.

13. Starry, *Armored Combat*, p. 64.

14. The Marine Corps also deployed two tank battalions, along with other armored elements.

15. *History and Role of Armor* (Fort Knox: U.S. Army Armor School, 1968), pp. 30-31.

16. Michael D. Mahler, *Ringed in Steel: Armored Cavalry in Vietnam, 1967-68* (Novato, Calif. Presidio Press, 1986), p. 103.

17. *History and Role of Armor*, p. 32.

18. John A. Cash, John Albright, and Allan W. Sandstrum, *Seven Firefights in Vietnam* (Washington: OCMH, 1970), p. 41.

19. J.C. Pimlott, "Armour in Vietnam" in J.P. Harris and F.H. Toase, eds., *Armoured Warfare* (New York: St. Martin's Press, 1990), p. 153. Also see Lt. Gen. John H. Hay Jr., *Tactical and Materiel Innovations* (Washington: Department of the Army, 1974), p. 133.

20. Simon Dunstan, *Vietnam Tracks: Armor in Battle, 1945-1975* (London: Osprey, 1982), p. 105.

21. Maj. Gen. Robert J. Sunell, as quoted in Maj. Steve D. Dietrich and Major Bruce R. Pirnie, *Developing the Armored Force* (Washington: CMH, 1989), p. 2.

22. James R. Arnold, *Armor* (New York: Bantam Books, 1987), pp. 9, 19.

23. *History and Role of Armor*, pp. 39-40.

24. Starry, *Armored Combat*, pp. 142-5. Also see "Why the Sheridans in Vietnam?" and "The Vietnam Tests" in House Committee on Armed Services, *Review of Army Tank Program*, Report: Armed Services Investigating Subcommittee, 91st Cong., 1st sess., 9 July 1969, (Washington: GPO, 1969), pp. 28-34.

25. *History and Role of Armor*, p. 39.

26. Starry, *Armored Combat*, p. 38. Unfortunately for the service," wrote General Starry, "the M114's lackluster performance was ignored by U.S. Army decision makers and the vehicle with all its inadequacies became standard issue for the Army everywhere but in Vietnam. It was not until 1973 that General Abrams, then the U.S. Army Chief of Staff, [acting on the strong recommendation of General Starry, who at the time was commander

of the Armor Center at Fort Knox] branded the vehicle a failure and ordered it retired from the Army."

27. Gen. Donn A. Starry, interview with author, 1 Sept. 1989.

28. "Recollections of Major General Stan L. McClellan on 4 September 1974," Enclosure to McClellan Letter to Mrs. Abrams, 8 Oct. 1974.

29. Oral History Interview, The Abrams Story Collection, USAMHI.

30. Chief of Staff's *Weekly Summary* (5 Sept. 1967), p. 31.

31. Starry, *Armored Combat*, p. 71.

32. In Harris and Toase, eds., *Armoured Warfare*, p. 152.

33. Mahler, *Ringed in Steel*, p. 125.

34. Starry, *Armored Combat*, pp. 183-84.

35. As quoted in David M. Barrett, *Uncertain Warriors: Lyndon Johnson and his Vietnam Advisers* (Lawrence: University Press of Kansas, 1993), p. 115.

36. Videotape, "Vietnam Training Report Number 5."

37. *Tactical and Materiel Innovations*, p. 134.

38. Starry, *Armored Combat* p. 223.

39. *Ibid.*, p. 79. The specific figures were 73 percent of APC losses and 77 percent of tank losses during the period Nov. 1968-May 1969, and 75 percent of all combat vehicles lost in Dec. 1970.

40. Comment in a 5 Aug. 1969 MACV briefing for visiting Ambassador G. McMurtrie Godley.

41. Starry, *Armored Combat*, p. 47. One innovation that provided some protection for tanks and APCs in stationary positions was the erection of a piece of chain-link fence in front of the vehicle to serve as an RPG screen, causing the shaped-charge warhead to detonate before it hit the vehicle. When the unit moved on, the sections of fence could be rolled up and hoisted aboard, ready for use when the next position was occupied. See Hay, *Tactical and Materiel Innovations*, p. 109.

42. Videotape, "Vietnam Training Report Number 5."

43. This account is based on the Presidential Unit Citation awarded the tank platoon and on after-action reports submitted by its parent battalion.

44. Two exceptions occurred during Operation Junction City in Mar. 1967. At Prek Klok on the evening of 10 Mar. the enemy launched a ground assault against a defending mechanized infantry battalion from the 1st Infantry Division, a rash action that resulted in nearly two hundred enemy deaths at a cost of three friendly killed. And, on the night of 19 Mar. at Ap Bau Bang, tanks and APCs of the 9th Infantry Division's 3d Squadron, 5th Cavalry, fought a hard battle against repeated enemy assaults and, with the help of a counterattack mounted by a nearby cavalry troop, drove off the attackers and accounted for 227 enemy killed at the expense of three friendly deaths and a number of APCs destroyed. See Jim Mesko, *Armor in Vietnam* (Carrollton: Squadron/Signal Publications, 1982), p. 31. Also see Arnold, *Armor*, pp. 60-61.

45. Ralph Zumbro, *Tank Aces* (New York: Pocket Books, 1997), p. 268.

46. This account is based on Zumbro, *Tank Sergeant*, pp. 60-63, and interviews with Sgt. Maj. Charles R. Hazelip, M.Sgt. Robert M. Kinzel, Sp4 Robert M. Holt, and Sergeant Zumbro.

47. Maj. Gen. Arthur L. West Jr., Oral History Interview, The Abrams Story Collection, USAMHI.

48. This discussion is, except where otherwise cited, based on the final report, "Evaluation of U.S. Army Mechanized and Armor Combat Operations in Vietnam," Headquarters MACV: MACOV Evaluation Team, 29 Mar. 1967. The MACOV report notes that four team members were wounded as a result of hostile action, differing slightly from the five mentioned by General West in his oral history.

49. Hay, *Tactical and Materiel Innovations*, p. 115.

50. Maj. Gen. Arthur L. West Jr., Response to Generalship Study Questionnaire, The Franklin Institute Research Laboratories, Feb. 1967, submitted in the form of a personal letter to Gen. Bruce C. Clarke, U.S. Army Command & General Staff College Library, Fort Leavenworth, Kans.

51. West, Oral History Interview.

52. Starry, *Armored Combat*, p. v.

53. *Ibid.*, p. 85.

54. This account is based on Mesko, *Armor in Vietnam*, p. 31; Starry, *Armored Combat*, p. 102; and Harry G. Summers Jr., *Historical Atlas of the Vietnam War* (Boston: Houghton Mifflin, 1995), p. 118. Summers's account differs in identification of both the friendly and enemy units involved.

55. Starry, *Armored Combat*, p. 115.

56. *Ibid.*, p. 118.

57. Col. Hoang Ngoc Lung, *ARVN: The General Offensives of 1968-69* (Washington: CMH, 1981), p. 60.

58. *Ibid.*, p. 61.

59. Mahler, *Ringed in Steel*, p. 116.

60. *Ibid.*, pp. 112-13.

61. Arnold, *Armor*, p. 76.

62. David B. Stockwell, *Tanks in the Wire* (Canton, Ohio: Daring Books, 1989), p. 85.

63. Zumbro, *Tank Sergeant*, p. 143.

64. Stockwell, *Tanks in the Wire*, pp. 143, 155.

65. Johnson to Westmoreland, message WDC 2526, 18 Feb. 1968, Box 142, Harold K. Johnson Papers, USAMHI.

66. Shelby L. Stanton, *Vietnam Order of Battle* (Washington: U.S. News Books, 1981), p. 77.

67. "Foreword" to Dunstan, *Vietnam Tracks*, p. 7.

68. This account is based on Mahler, *Ringed in Steel*, pp. 211-6; Ralph B. Garretson Jr., "The Battle of Binh An," *ARMOR* (July-Aug. 1969): pp. 25-28; and interviews with Brig. Gen. Hugh J. Bartley and Colonel Mahler. The memories of various participants differ on some particulars.

69. Mahler, *Ringed in Steel*, p. 216.
70. This account is based on Starry, *Armored Combat*, p. 153; Stanton, *Vietnam Order of Battle*, p. 93; Capt. Gerald R. Cossey, "Tank vs. Tank," *ARMOR* (Sept.-Oct. 1970): pp. 16-19; and Zumbro, *Tank Aces*, pp. 304-10, quotation from p. 307.
71. Lt. Gen. Phillip B. Davidson, *Vietnam at War: The History, 1945-1975* (Novato, Calif.: Presidio Press, 1988), p. 625.
72. Starry, *Armored Combat*, p. 174.
73. *Ibid.*, pp. 170-72.
74. Gen. Michael S. Davison, interview with author, 25 Feb. 1988.
75. Davidson, *Vietnam at War*, p. 627.
76. The realities of the Cambodian incursion as experienced at the troop level are graphically and brilliantly portrayed by Keith William Nolan in his book *Into Cambodia: Spring Campaign, Summer Offensive, 1970* (Novato, Calif.: Presidio Press, 1990).
77. Richard Nixon, *RN: The Memoirs of Richard Nixon* (New York: Grosset & Dunlap, 1978), p. 467.
78. Starry, *Armored Combat*, p. 164.
79. Stanton, *Vietnam Order of Battle*, pp. 124, 129; Starry, *Armored Combat*, pp. 164-65, 180; and Dunstan, *Vietnam Tracks*, p. 185.
80. Starry, *Armored Combat*, pp. 227-37.

SUGGESTIONS FOR FURTHER READING

The most authoritative single work is Gen. Donn A. Starry's volume in the United States Army's "Vietnam Studies" series of monographs entitled *Mounted Combat in Vietnam* (Washington: Department of the Army, 1978), later reprinted commercially as *Armored Combat in Vietnam* (New York: Arno, 1980). General Starry's is one of the few monographs in this series that was completed after the war was over and thus constitutes a comprehensive rather than truncated look at the topic it addresses. Interestingly, General Westmoreland, then serving as Chief of Staff, rejected recommendations that such a book be written and that Donn Starry should write it. When General Abrams succeeded Westmoreland as Chief of Staff, he directed Maj. Gen. William R. Desobry, the Armor Center commander, to write a history of mounted combat in Vietnam. Starry, who replaced Desobry in 1973, ultimately took on the task and finally produced the cited study five years later. At one point it was the best selling of all the Army's Vietnam Studies monographs and has been reprinted several times commercially. It has also been widely translated for study by foreign armies. Simon Dunstan's *Vietnam Tracks* (London: Osprey, 1982), while largely derivative, contains much useful material. Interesting and informative first-person accounts include Ralph Zumbro's *Tank Sergeant* (Novato, Calif.: Presidio Press, 1986) and Michael D. Mahler's *Ringed in Steel* (Novato, Calif.: Presidio Press, 1986).

Zumbro has also incorporated some Vietnam material in his more recent book *Tank Aces* (New York: Pocket Books, 1997). John A. Cash provides an excellent description of the Battle of Lang Vei, in which the enemy used tanks for the first time, in *Seven Firefights in Vietnam* (Washington: OCMH, 1970). Detailed information on the deployment, equipment, and service of individual units may be found in Shelby L. Stanton's comprehensive *Vietnam Order of Battle* (Washington: U.S. News Books, 1981).