STARFLEET MARINE CORPS

ARMOR
"The Arm of Decision"

STARFLEET MARINE CORPS

"Spearhead"

ARMOR BRANCH MANUAL

Revision 2005

LIMDIS

STARFLEET MARINE CORPS

Armor Manual

2005 Edition

Contents

If You Ain't Cav...

Sergeant Beylan always liked the early morning hours. It was always so quiet and calm. Even as a child, she would get up early to watch the sun rise over the purple mountains on her home planet. She'd often sneak out of the house and hide up on the hill, trying to catch the first few moments of daylight for herself before anyone else even knew the sun was up.

Maybe that's why she'd volunteered for the Scouts when she was assigned to the Armored Cavalry. She liked to be the first to see something. She liked knowing before everyone else did.

Being with a small team, out front of the main element and away from the lieutenant did have its advantages. The other members of the scout team had been up with her for the last hour or so as the first sun was just breaking the horizon line. They were ready for the day's upcoming mission—looking for the possible advancing enemy. The Brittaria almost always moved shortly after BMNT (Beginning of Morning Nautical Twilight).

That was part of the game SGT Beylan liked—to find them before they found her. Much like an adult version of hide-and-seek...with much more deadly consequences if you don't win.

"What time is it anyway?" one of the team asked.

"A lot later than..." Beylan didn't get a chance to finish her sentence before the outer markers went off, with their loud tones in each member's I-LINK earphone. Instead of finding the enemy, it had found them. The EQW-18 "Sentries" they'd planted out in the valley the night before were now demonstrating their functionality as early warning devices even as the scout team scrambled for the truck.

Even as the tone was dying in their earpieces, the team started hearing the Sentries begin supplying auditory data about the size and direction of the enemy force. It also told them which channel to call up on the Force Recon Tricorder System when they got to their vehicle.

As they moved as one and mounted their Hummer in their assigned positions, SGT Beylan, as team leader, squatted next to the MAPLIML controls at which her gunner sat. Loaded with two HE (high explosive) warheads and four HIVAPs (High Velocity Armor Piercing), the "Mapper" was more than a match for any obstacle they might find in their way. Practice had shown that the bigger the noise and smoke, the more the enemy was likely to keep their heads down. And that hesitation gave the team more than enough time to get out of danger and

move to its next firing point.

But the Mapper was for fighting your way out of trouble, it wasn't meant to go looking for it.

The reading on the Force Recon Tricorder System showed that a force of six Armored Personnel Carriers (APCs) and three armored vehicles were nearly in the forward lines of the Cavalry MSG. The Brittaria caught the MSG off guard by conducting a reconnaissance in force— something they almost never did— through an area no one thought they'd be stupid enough to use: a small, narrow pass that would have been a perfect choke point if anyone in the Group had thought the Brittaria would actually be coming through it.

With this incursion already being reported to HQ, the job of the team was now to try and slow the advance down to buy time for the MSG to shift forces along the forward lines. But how was a lone Hummer going to stop or slow a light company of armored vehicles without getting greased?

"Lets just hope that the Cavalry gets here in time, just like the Old-Earth videos. Otherwise, we're history."

Bringing up the vid link for the topo map of the area, Beylan spotted the choke point in the valley. It was the only way for the Brittarian armor force to move deeper into the MSG's OpArea. The trick would be to get there first and ready an ambush for them.

Speaking in a calm, even voice, Beylan told the driver the route to the point and outlined the plan for the rest of the team. Everybody knew their job and what would happen if they couldn't hold the Brittarian force. There was no idle chatter on the comm channel in route.

Neither was there any hesitation on anybody's part. They moved as one, fought as one, and, maybe, would die as one. But the advancing enemy would pay a heavy price for any advance into the valley at the hands of this scout team.

Positioning the Hummer behind a rocky outcropping, SGT Beylan made sure that the Mapper would have a clear field of fire into the narrow passage leading out of the pass. The driver and the gunner moved out to place SWS-270A3 Manpack Heavy Mines halfway into the choke point. The mines were more than capable of destroying the Brittarian vehicles if they came through on the ground. The Brittaria had a hard time with antigrav technology, and their vehicles were often confined to wheels or tracks not due to any technological or natural interference, but rather due to the Brittarian's own mechanical incompetence. Their vehicle AGs were almost perpetually broken.

Moving back, the team assumed their battle positions as waited. The plan was simple and centuries-old in armored warfare: the mines would take out the first several vehicles well within the choke point. Hopefully, the wrecked and burning vehicles would slow down their forward advance.

"Any that try to get by, we'll take them out with the Mapper," explained SGT Beylan. "We can't let any get by us. Not one! We are all

that stands between them and the MSG. We have to give the rest of the Group a chance to adjust to the attack and get some assets up here while we still have a natural obstacle. If they get through the pass they'll have all kinds of room to maneuver around our Group.

"Lets just hope that the Cavalry gets here in time, just like the Old-Earth videos. Otherwise, we're history." SGT Beylan saw heads moving up and down, as all agreed in unison. *Not quite the way I would care to spend this day or any day*, thought Beylan. But she knew that it had been just a matter of time before they would be put to the test.

Just don't let us screw up, prayed Beylan.

"Here they come!" shouted the driver as the first armored vehicle peaked into view. The SFMC went out of its way to avoid the use of the word "tank" in most official business, but the Marines loved the word anyway. So, a lead tank, three APCs, another tank, three more APCs, then the last tank were lined up in a neat column. This was a typical Brittarian formation for their equivalent of Armored Cav units. In observing the formation more closely, it seemed consistency and luck were on the side of the Marines this morning: every last enemy vehicle was grounded on wheels and tracks.

The next several seconds moved by ever so slowly.

Closer, just a little closer, thought Beylan as the lead vehicle inched forward. *Why don't they get here quicker?!*

The bright light of an exploding mine, followed by the loud roar of the blast reached the team. The tank was broken into pieces, the largest lay in the path of the column. So far, so good.

But the burning tank was already being pushed off to one side by the first APC. They were pushing to breach the pass and move out on the plain below. Obviously, their timetable didn't allow them to back off the obstacle and find a way around. That information could be critical, and Beylan included it in her contact report to the L-T.

BOOM! The first APC blossomed into flame as it hit another mine. APC number two erupted less than a second later. That was it for the mines. And yet, even with three vehicles burning out of control, they were still pushing to break through.

"Gunner, target a HIVAP on APC-3 and fire on command," ordered Beylan.

"Target sighted. HIVAP up!" shouted the gunner.

"Fire!"

The APC stopped in mid stride, with a small hole in its forward plating. It rolled forward for several meters and then seemed to come apart at the corners. Bright flames and explosions rocked the valley as the APC stopped, just past the first two which were still burning.

"Gunner, target a HIVAP on APC-4 and fire on command."

"Target sighted. HIVAP up!"

"Fire!"

The round hit dead center of the forward plate of the APC. This time the APC appeared to be lifted off the ground by the hit. Almost at the same time, the APC blew apart, leaving a smoking hole where it had once been. The middle tank was now blocked in the front and back by burning APCs.

Sarge sure knows her business, thought the gunner as he acquired the next target in his sights.

"Gunner, target Tank 2 with a HIVAP and fire."

"They now officially had more targets than they had missiles."

"Target sighted. HIVAP away."

The first round hit slightly below the mid line of the forward slope of the armored vehicle. Glancing downward, it impacted on the hard surface of the earth below. The round had missed the target and not stopped the advancing tank, which continued to attempt to move past the burning hulks of the APCs.

"Gunner, target Tank 2 with a HIVAP and fire."

"Target sighted. HIVAP away."   Not so much panic as legitimate concern began to creep into the voice of the gunner. They now officially had more targets than they had missiles. And if they missed now, they had only High Explosive rounds left. HE rounds might take out the APCs, but never the tanks. They couldn't afford to waste another missile. And the tank was getting too close for comfort.

The second round impacted center mass of the tank's forward slope. The bright, burning hole glowed mightily in the early morning light. The tank remained whole, but stopped dead in its tracks, fire spewing from the hole left by the HIVAP. As ammunition began to cook off inside the vehicle, its blowout panels served their purpose and exploded backward to unleash the force of the exploding ammunition outside the tank. It was an unpleasant experience for the APC behind them.

Before the scout team had a chance to pick their next target, though, the air was filled with the screams of incoming missiles. The rest of the Cavalry MSG had arrived to assist the scout team with the clean up of the once advancing armor threat. Within the choke point burned five APCs and two tanks. The remaining enemy vehicles were scattered about the far entrance to the pass like child's toys left carelessly about where they could be easily broken.

The attack had been blunted. The team had held.

Looking at her chronometer, Beylan saw that only twenty minutes had passed since they received the warning tone of the approaching attack.

Looking up, Beylan saw the fluttering red and white pennant of the Cav atop the Hummer. She smiled to herself when she remembered the quote on the First Sergeant's desk:

"If you ain't Cav, you ain't sh…"

Part 1 - Introduction

Welcome Aboard!

Welcome to the Armor Branch Guidebook of the STARFLEET Marine Corps (SFMC). This publication is intended primarily for members of the SFMC, which is a component of STARFLEET, The International Star Trek Fan Association, Inc. (SFI). However, anyone with an interest in our part of the Star Trek universe is invited to look and learn. This manual serves as a handy reference work for members of the Armor Branch, covering equipment, tactics, missions, and organization. It is a one-book source for the new member wherein they can get the information they need to role play as a member of the Armor Branch. The majority of this work is obviously fictional in nature, but the references to uniforms and insignia of the SFMC are accurate.

➥NOTE
Star Trek; Star Trek: The Next Generation; Deep Space Nine; Star Trek; Voyager; Star Trek: Enterprise; and Starfleet are registered trade marks of Paramount Pictures Corporation, a division of Viacom. Neither the author's copyright in this material, nor any part of the material itself, nor the use of Star Trek, are intended in any way to infringe upon any and all copyrights, trademarks or licenses held by Paramount Pictures or any persons or corporations.

Copyright and Disclaimer

Pronoun Disclaimer

The use of "he, his, him," etc., and in particular the term "man" as in "crewman", are used for convenience as the standard English-language convention for unknown-gender pronouns. Not very politically correct, perhaps, but grammatical… and a lot less awkward than "crewpersons". The point is, we don't mean anything by it.

Acknowledgments

This manual was truly a team effort. Thanks to Matt Copple, Jim Monroe, Bill Cooper, Erik Larson, Wade Olson, Chris Esquibel, Truman Temple, Jill Rayburn, Greg Franklin, & Sean Niemeyer who all contributed greatly to this manual and it's revisions. Additional information used for this manual came from: http://en.wikipedia.org, http://www.generalpatton.com, http://www.achtungpanzer.com/gen1.htm, http://www.spartacus.schoolnet.co.uk, *"Patton"* (1970 movie) directed by Franklin Schaffner; screenplay by Francis Ford Coppola and Edmund H. North (based on the books Patton: Ordeal and Triumph by Ladislas Farago and A Soldier's Story by Gen. Omar N. Bradley)

Reporting Authority

The governing authority for training information is the Commanding Officer, Training and Doctrine Command (COTRACOM). Send questions, comments, or suggestions to:
Tracom@sfi-sfmc.org

Part 2 - History & Traditions

Today, the word "Armor" is used to describe a branch of service which encompasses fields of service that have historically been considered separate combat branches (namely, artillery and cavalry). Therefore, this history covers not only armored warfare, but those other historical combat arms as well.

➥NOTE

Armor and artillery both had precursors on many planets in the UFP (particularly artillery). However, for this manual the focus of the historical references will be the planet Earth since that will be a common frame of reference for most students receiving this particular edition of the Armor Branch Guidebook.

History of Armor & Artillery

Although Armor did not debut on Earth until the 20th century, ancient humans made extensive use of artillery. The bow, sling and spear-thrower all qualify as artillery since they artificially extended the range and force with which a human can propel a missile. But as civilizations grew and cities were founded, military planners were confronted with an obstacle that primitive artillery had little effect on — the city wall. A new class of heavy artillery, known as siege artillery, had to be invented. The ancient Assyrians, famous for their siege tactics and equipment, invented powerful stone-throwers to use against city walls and keep the heads of defenders down while infantry made the assault. The Romans, however, are probably the best known artillerists of the ancient world. Building on their own ideas as well as the Greeks before them, their engineers came up with a bewildering array of stone-throwers and missile weapons.

The Post-Roman Period

One of the consequences of the fall of Roman power in Western and Southern Europe was the loss of much of the technological prowess of its military engineers. But the Eastern Empire (based in Constantinople) continued for several hundred more years, and engineers there preserved much of the knowledge their western counterparts had now lost. In the Classical period, Roman seigecraft made its way to the many kingdoms along the silk road, including those in China and India. These methods were passed on in the Middle Ages to Arab traders and warriors, who would later use them during the Crusades and subsequent conquest of the Byzantine Empire.

The Age of Gunpowder

In the late 14th century a new military innovation, gunpowder, made its explosive debut on the world scene. Originally developed in China, gunpowder had been used in military applications there for centuries. When Italian and Arab traders brought it to Europe, its military appli-

cation was immediately seen. In the late 1300s and early 1400s, siege engineers developed the first cannons — large guns which shot heavy lead or stone balls at fortifications. These early cannons suffered from an imperfect understanding of how to mix and refine gunpowder, and a lack of experience in smelting metal alloys strong enough to stand up to the massive stresses of explosion. As the centuries progressed, though, so did weapons technology.

As techniques for refining gunpowder and developing guns advanced, yet another revolution in artillery, the hand cannon, was introduced. Unlike the large, ungainly and hard-to-move siege artillery, the hand cannon could be carried (with some effort) and used by the infantry. At first, these weapons were slow, inaccurate, and expensive. But once the design of both heavy and hand artillery was sufficiently advanced and inexpensive, leaders were able to raise massive armies and train them quickly and inexpensively. During the 17th century, advances in metallurgy and engineering made mobile artillery pieces common. The hand cannon was replaced by the more reliable and inexpensive musket. By the 18th century, the bow had disappeared from the battlefield and the pike became a largely ceremonial weapon.

As the 19th century progressed, one of the most significant advances in artillery became the invention of the bursting charge, later named for its inventor, Henry Shrapnel. He packed bullets in a shell with a charge. When the shell burst, the bullets dispersed, killing and maiming anything in their path.

During the 17th century on Earth, field artillery pieces became a common sight on the battlefield.

Artillery also got steadily more powerful. At the beginning of the 19th century, only large, relatively immobile siege guns were capable of launching shells effectively at distances over a mile or so. Most mobile field pieces were only capable of accurate and effective fire within their line of sight. By the end of the century, however, artillerists never had to look their enemy in the eye to lay a barrage of shells on him. Using coordinates relayed by telegraph or runner, the artillery could fire shells capable of ranges of five miles or more.

The Civil War

Civil War artillery consisted of two distinct types of artillery units; Heavy (or Foot) Artillery, and Light (or Field) Artillery. The favorite artillery piece in both the Union and the Confederacy was the Napoleon, a smoothbore, muzzle-loading, 12-pounder "gun-howitzer" and a battery consisted, at full strength, of six guns. It was also classified according to its tactical deployment, including field, seacoast, and siege artillery. Cannon were made of steel, bronze, or iron, depending on the availability of material. Almost all Civil War cannon were muzzle loading; breech-loading models. Artillery ammunition included solid shot, grape, canister, shell, and chain shot. Solid shot and shell were used against long-range, fixed targets such as fortifications; chain

shot, consisting of two balls connected by a chain, was used primarily against masts and rigging of ships. Thanks to its superior industrial strength, the North had an overall advantage over the South in all types of artillery, as well as a higher percentage of rifled cannon to smoothbore cannon.

Cavalry during the American Civil war, was, at first used more effectively by the South and exercised a tremendous moral effect. One reason given for the early superiority of Confederate cavalry was that in the South the lack of good highways had forced Southerners to travel by horseback from boyhood, while in the North a generation had been riding in wheeled vehicles. One battle, in particular, Gettysburg, was exceptionally full of examples of the effective use of mounted troops. Under most discouraging conditions the Confederate cavalry disputed every inch of territory and won the sincere admiration of their opponents.

Cavalry after a few battles in conjunction with the infantry began cutting loose from their bases to destroy enemy communications and supplies. They burned bridges and stores, ripped out telegraph lines, and raided far behind the lines in attempts to keep the enemy so busy that he could apply only a part of his potential when battle was joined. The Confederate cavalry was dominant-a dashing, disruptive, and disconcerting force that kept many a Union commander off balance during the early months of war.

Some of the more recognizable names in the Confederate cavalry would be:

- "JEB" Stuart

- Robert E. Lee

- Nathan Bedford Forrest

- John Hunt Morgan

Some of the more recognizable names in the Union cavalry would be:

- John Buford

- George Armstrong Custer

- Philip Henry Sheridan

- William Tecumseh Sherman

World War I

It was during this war (from 1914 to 1918) that artillery got its nick-

name, "King of Battle." Although artillery was not new on the European battlefield, the purposes for its use were. The Germans were the first to discover the ability of artillery to terrify a populace, turning artillery into a weapon of terror. They designed mobile, extremely powerful railroad guns that fired shells weighing up to a ton on civilian populations in France up to 70 miles away.

Armor was also invented during this conflict and played a key role. For thousands of years, humanity had relied on the speed and endurance of horse cavalry to provide reconnaissance, encircle and cut off enemy formations, and use shock to break the enemy. And in 1914, the battle plans of each side had called for massive divisions of cavalry to quickly break through the enemy line, dash into the rear, and encircle and destroy the broken enemy. But as trenches snaked across the plains of France and Belgium, fixing the battle lines, the cavalry discovered that the only way it could maneuver was straight into the teeth of dug-in infantry with artillery support and automatic weapons. Within months of the opening days of the war, most of Europe's finest cavalry lay rotting in no-man's land. By 1916, the war in Europe had ground to a bloody stalemate. Desperate generals ordered charge after charge. Heroically, the young men of Europe threw themselves into mazes of barbed wire and land mines, braved deadly machine gun fire and massed artillery barrages, to take a dozen yards of trench. Millions fell, and the change in each day's battle lines was measured in inches, not miles. All sides looked for ways to break the stalemate, to force the grand war of maneuver and encirclement each had originally planned.

The Invention of the Tank

In England, Sir Winston Churchill, a member of the Admiralty and a future Prime Minister, staked his faith on a radical new weapon he called a "land battleship." It was intended to bring the punch of its naval counterpart to ground warfare, giving the British the breakthrough they desperately needed. Working in utmost secrecy, British engineers worked on prototypes for nearly a year before rolling the first group out of the factory in the summer of 1916. The Germans were caught flatfooted when 42 of these rumbling monsters were thrown into a twelve-division attack on the Somme in September of 1916. They must have looked terrifying — gigantic, iron boxes with caterpillar-like tracks. They belched exhaust fumes, made a horrendous racket, spat automatic weapon fire, crushed barbed wire, and literally crawled over trenches. Worst of all, they seemed impervious to gunfire. It is no wonder that the Germans threw down their weapons and fled to the rear! The Germans quickly recovered, however, and by the end of the war, had developed tanks of their own.

World War II

In June of 1940, the world watched in shock as German troops marched through the streets of Paris. In six weeks, the second-best

➥NOTE

Early tanks were impervious to German gunfire, and heavy artillery—which could crush a tank—was often needed elsewhere or was not precise enough. A new weapon was needed to counter the tank, and the antitank gun was born. Throughout the war, tanker and gunner played a continuous game of catch-up. Tank designers added extra armor, and gun designers ratcheted up the size and power of their weapons to punch through it. But when the WWI ended in 1918, the tank—and the anti-tank gun—were here to stay.

army in Europe had defeated the best. The whirlwind campaign was the result of careful planning and a radical new type of warfare — *blitzkrieg*, or lightning war — conceived by German General Heinz Guderian, and armor was its centerpiece.

In World War I, armor existed to support the infantry. Tanks were barely faster than an average infantryman and mechanically unreliable. But in the intervening years, engineers all over the continent worked to improve the reliability, speed, firepower and survivability of the tank—and largely succeeded. In Guderian's view, the infantry now supported the armor. Tanks would provide the firepower necessary to concentrate on and blast through enemy formations, while the infantry followed up and widened the gap. The effectiveness of Guderian's concept was proven in the conquest of France. His armored spearheads, consisting of tanks and mobile artillery supported by infantry in trucks and armored transport vehicles, quickly outmaneuvered the numerically superior but less mobile French forces.

But the rest of the world adjusted, and soon Allied generals in Russia, Britain and the United States were using Guderian's tactics against him. As a result, some of the greatest armor battles in history took place during this time:

The Eastern Front, where Soviets and Germans fought a struggle for survival, was the location of some of the largest tank battles in history. The flat, huge plains of the Russian steppe were ideal for armored combat, and thousands of vehicles fought over a fluid line of battle.

In North Africa, a student of Guderian's, Erwin Rommel, came within a hair's breadth of capturing the strategic Suez Canal with numerically inferior forces. Using lightning maneuvers and overwhelming concentrations of force on isolated enemy pockets, only a lack of supplies and the dogged generalship of Briton Sir Bernard Montgomery prevented the closure of the British lifeline.

Erwin Johannes Eugen Rommel

"The Desert Fox" is the best-known German Field Marshal of World War II. Rommel was the best-armored corps commander produced by either side. Utterly fearless, full of drive and initiative, he was always up in front where the battle was fiercest. Under his command of the Afrika Korps, he eagerly sought out the enemy's weakest points with that same "sixth sense" that he always seemed to possess. Rommel was well aware of the German Panzer units and the blending of artillery and air support, along with motorized infantry to achieve the desired Blitzkrieg results, which were the teachings of his mentor, Gen. Heinz Guderian. If he had a fault, it was that he tended to become so involved in some minor action that he failed to appreciate the general picture of the battlefield.

Rommel was one of those implicated in the "20th of July plot" to kill Hitler. He committed suicide to avoid public humiliations and secure

his family's safety. He was buried with full military honors. A man of the greatest personal bravery, he earned the deep respect of his adversaries for his brilliant achievements.

George S. Patton

Late in the war, legendary American General George S. Patton drove his 3rd Armored Division to the defense of Bastogne during the Battle of the Bulge. His epic drive saved this strategic point from German oc- cupation and prevented the Allied line from collapsing.

One of the most controversial armor commanders during the war, Patton graduated from West Point and originally won a commission in the horse cavalry, having served with General "Blackjack" Pershing. Patton was a strict disciplinarian, military historian and a great be- liever in re-incarnation. He insisted that his men shaved every day, wore a tie in battle and was considered by many to be a Prima Donna. His rivalry with Field Marshal Montgomery was well documented. He had a famous motto of"....not holding onto anything but to be con- stantly on the move" (paraphrased, of course). Patton launched the invasion of Sicily. Patton was placed in charge of the 7th Army, and to help prepare for the Normandy ("Operation Overlord") invasion. Later, the 3rd Army under Patton's command began to force the Germans back at what became known as the Battle of the Bulge. Segments of his army raced to Bastogne, well over 100 miles from their current battlefield to relieve the German surrounded 101st Airborne division, although many will dispute this. A day before he was due to return to the United States, Patton was severely injured in a road accident. Paralyzed from the neck down, George Patton died of an embolism on 21st December 1945.

Bernard Montgomery

Monty was not such a dashing, romantic figure as his opponent; nor would you find him leading a forlorn hope in person, for the simple reason that if he was in command, forlorn hopes did not occur. He had an extraordinary capacity for putting his finger straight on the essen- tials of any problem, and of being able to explain them simply and clearly. Monty displayed the brilliant leadership that firmly established his reputation as one of the greatest generals of the war.

After Montgomery was placed in command of the Eighth Army, Erwin Rommel attacked at Alam el Halfa but was repulsed by the Eighth Army. Montgomery responded to this attack by ordering his troops to reinforce the defensive line from the coast to the impassable Qattara Depression. Montgomery was now able to make sure that Rommel and the German Army was unable to make any further advances into Egypt.

Montgomery believed he was better qualified than General Dwight Eisenhower to have been given overall control of Operation Overlord. Montgomery was eventually made a Field Marshal and the Chief of the Imperial Staff.

Technologically, armored vehicles underwent many changes during the war. The Soviets introduced sloping armor, which allowed thinner skins on armored vehicles—minimizing weight while maximizing protection. The Germans introduced a low-profile silhouette that made their tanks much harder to see.

Artillery also underwent changes, most notably the development of the rocket. Like so many other wartime inventions, the rocket was not new to the battlefield, but until World War II, the rocket was not considered a particularly effective weapon. Their primary use was as an area effect weapon, and they were still relatively small, short-ranged affairs. Then the Germans came up with one of the most terrifying weapons of the war — the V-2 rocket.

V-2s were clumsy and inaccurate, but they flew faster than any plane, were too small to shoot down, and had a reach that spanned the English Channel. This made them more than adequate for aiming at large targets such as population centers. Londoners were terrified of them and the Allied High Command diverted a significant amount of resources at the end of the war to find and destroy the V-2 bases. The V-2 assured the further development of the rocket and guided missile as the new frontier of artillery.

The Late 20th Century

In the 1970s, it seemed antitank weapons would win out over tanks: gun bores upwards of 125 mm and antitank missiles were able to punch through the thickest steel armor. But late in the 70s, scientists and engineers in England and the US developed new armor consisting ceramic and metal bonded together to make stronger, composite ma-

terials. Also, the Soviets led the world in the development of reactive armor, which used shaped charges to blunt the kinetic energy of incoming rounds by sending an explosive blast in the direction from which the round came (slowing the round or stopping it entirely).

Artillery also underwent a revolution. Late in World War II, the first self-propelled artillery was introduced. Although the first models were unsuccessful due to poor handling of recoil, later versions were successfully introduced in nearly all the planet's major powers by the 1950s. Major changes were made to ammunition, as well — new shells were introduced with nuclear warheads, chemical delivery capabilities, multiple submunitions, and even laser guidance.

In the 1940s and 50s, the concept of "self-propelled" artillery took shape. Shown above is a 105mm M7 "Priest" self-propelled artillery piece.

Third World War and Eugenics Wars

In the early 21st century, a series of major wars brought the Earth to the brink of destruction. Technological advances during this period, however, made later advances possible.

In the 1970s, the industrial nations began experimenting with the idea of coherent light. By the 1990s, miniaturization had made the laser a common tool. During this period, however, another more sinister use was being researched — the Directed Energy Weapon (DEW). First conceived as part of a ballistic missile defense system in the 1980s, scientists were unable to convert their research into an actual weapon until the early 2000s. Deployment of DEWs caused enormous controversy, and contributed to the destabilization that would later produce the Third World War. Although the DEWs were too large and bulky to be installed on mobile platforms at this stage, the research that went into them would be useful to scientists a century later as they researched phaser technology.

Another technology with more immediate effect on the evolution of Armor was hover technology. Hovercraft had been in the world's arsenals for many years; the United States Marine Corps (USMC) and Army made extensive use of the technology for amphibious landing operations. During World War III, however, the uses of hover technology expanded. The major problems with hovercraft (the power required for lift and the amount of weight a hovercraft could carry) were solved by USMC researchers, resulting in the development of the first hovertank in 2017.

The first hovertank on Earth was fielded by the USMC in 2017. It was based on the aging M1A3 main battle tank already in the USMC inventory at the time.

The Colonial Marines

The merger of the world's armed forces into the Colonial Marine Corps

marked the beginning of a new era in the planet's history. No longer competing against one another for technological advancement, the nations of the world instead worked together to rebuild the scarred planet while the so-called MegaCorporations colonized the stars.

The Colonial Marines were fully mechanized, but they did not have an armor branch or even dedicated assault vehicles on the order of today's armored force. Because the Marines were primarily a policing and peacekeeping force, and because each MegaCorp controlled its own body of Marines, they were not organized to meet large-scale threats. They did, however, make extensive use of light hovercraft in Earth-like terrains as well as developing antigrav technology.

The lack of true armor was a severe handicap to the Colonial Marine contingents as they tried to beat back the Romulans. Although the Terrans often outnumbered the Romulans, Rhiannsu armored battalions were often able to use their superior firepower and excellent communications to outflank, isolate and destroy the lighter Corps vehicles. Worse yet, the MegaCorporations — concerned about losing profits and not yet convinced of the seriousness of the Romulan threat — were completely unwilling to upgrade Colonial Marine capabilities. Finally, in 2158, the United Nations federalized the Colonial Marines and the United Nations Peacekeeping Force (UNPF) was born.

The UNPF

The UNPF quickly worked to stabilize the deteriorating situation along the Romulan axis of advance. UNPF contingents were pulled back and entire planets evacuated in order to gain time for a total reorganization of the force. Among the first actions of the reorganization was the creation of the Armored Operations Directorate (AOD). This directorate was responsible for restoring heavy armor capability to the UNPF and developing doctrine for its use.

The AOD worked quickly to upgrade the capabilities of the UNPF, and within three months, had formed the first Regimental Combat Teams (RCT) to meet the Romulan ground threat. RCTs were self-contained units (about the size of a current SFMC Battalion) which contained infantry, armor and aerospace units designed to be rapidly and easily deployable.

The RCTs were used with great success when the UNPF went on the offensive in 2161, raiding Romulan supply depots and serving as rapid-reaction forces to protect colonies against Romulan foraging parties and raids.

Armor in the Early Starfleet Marine Corps

After the decisive defeat of the Romulans at Cheron, the five charter members of the United Federation of Planets formed Starfleet primarily for space defense and exploration; it was envisioned that most planets would supply their own ground forces in the event of trouble. Therefore, when the Starfleet Marine Corps was authorized, it was designed to only serve as a security and policing force, with a trained cadre that could be rapidly expanded in time of need.

The highly successful RCTs were ordered to stand down, their members reassigned to the militias and/or standing armies of their home planets. Much of the equipment was also transferred to these planets. SFMC ground units were now mostly mechanized infantry and combat engineering companies — armor and artillery support were expected from planetary forces. The last RCT, the 200th Border Dragoons, turned in its equipment and disbanded in 2168.

Unfortunately for the SFMC this revised ground force (known as Surface Tactical Command or SURTACCOM) was ineffective. In the wake of reconstruction after the Romulan war, funding and cooperation from planetary governments was difficult for SURTACCOM to obtain. Defense spending plummeted, readiness fell, and many wondered how the SFMC would fare.

The Four Years War

It would not be long before this new organization was tested — and failed. In February of 2195, less than thirty years after the last RCT turned in its tanks, tensions with the Klingon Empire turned to full-scale war. In a massive surprise attack, Klingon units hit worlds all across the border, and the SFMC ordered SURTACCOM to mobilize planetary forces to support SFMC operations.

Meanwhile, the Klingons rolled over SFMC Strike Groups on the border, overwhelming the small, 90-man units with division strength. The planetary militias never had time to mobilize; before they could even report, Klingon troops had landed and had destroyed all resistance.

A panic spread across the UFP, and many worlds, including Alpha Centauri, refused to allow their troops off planet, fearing they would be without protection when the Klingons came. This prompted the UFP to pass the Alpha Centauri Act, which federalized all planetary forces and declared that any member refusing to honor the Act would lose the protection and benefit of UFP membership.

Grudgingly, dissenting planets complied, at last giving Starfleet and the SFMC access to the pool of manpower promised when the UFP chartered. What Fleet and SFMC leaders found, though, did not help their confidence. The troops were poorly trained, inadequately equipped and badly led. Morale was low.

In one of the most controversial decisions in UFP history, Fleet Admiral Le'an Svetlin ordered that armor, artillery, aerospace and combat engineering units be culled out from the planetary forces and reserved. She then ordered the remainder of the troops to the front with simple orders - dig in and hold. Meanwhile the SFMC reactivated the AOD and it once again went to work, integrating the remaining planetary forces with surviving Marine units and training them to work together. Soon, the first Armored Strike Forces were ready for combat.

In October of 2296, the 1st Marine Division (1st, 5th, and 29th Armored Strike Forces, and 213th Infantry Strike Force), under the command of MGN Martin Canning, undertook the first Federation offensive operation of the war: to raid a Klingon supply depot on the moon of Arco and relieve pressure on the garrison of the nearby planet of Raitsclaw. Canning, with aero-space support, not only destroyed the Klingon outpost, but in a bold maneuver, ordered his transports to beam his Division into the heart of the Klingon forces besieging Raitsclaw. The surprise was complete, and the Klingons were quickly annihilated.

Although the war would go on for three more long, bloody years, the contributions of the AOD to the Federation war effort would help to insure final victory.

The Modern Armor Branch

Following the conclusion of the Four Years War, the SFMC was once again reorganized. SURTACCOM and its counterpart TACAIRCOM (Tactical Aerospace Command) were disbanded. The AOD was also ordered to stand down, replaced by the newly created Armor Branch. For the next 93 years, the Armor Branch helped keep the peace during the long period of hostilities between the Klingon Empire and the Federation. Armored units have acquitted themselves honorably in both the Cardassian and more recently, Dominion conflicts.

Traditions

The Armor Motto: "The Arm of Decision"

The presence of Armor on the modern battlefield can often be the factor that tips the scales in favor of the Corps. Therefore, the motto of the old US Army's Armor Branch "The Combat Arm of Decision" was paraphrased and adopted by the SFMC to adequately describe their own armored forces.

The Armor Slogan: "Spearhead"

Dozens of unofficial mottos and slogans are fielded by Armor Branch units and fields of service. This has been true throughout Armor's history. In fact, "Spearhead" was a unit motto in the 20th century — that of the old US Army's 3rd Armored Division. The slogan becomes more than a metaphor when one observes armored fighting vehicles in a wedge formation, engaging enemy forces.

Historical data on the 3rd Armored Division:

-        Activated April 15th, 1941.

-        They served 231 days in combat during World War II.

-        They were the first armored unit to capture a German city.

-        They were also the first to lose a US Army General, killed in combat. MGN Maurice Rose, who was an accomplished tactician.

-        Saw service during WWII, Korean Conflict, and more recently, Operation Desert Storm/ Desert Shield (as part of US VII Corps)

-        3rd Armored Division has been equipped throughout its history with: Horses, sabers, pistols, repeating rifles (actual cavalry) More recently they have consisted of the following vehicles. M1 Abrams, M2 Bradley fighting vehicles, MC Cavalry and MH-65 Apache helicopters.

The Armor Device: "The Tank"

For most of the late 2100s, the Armor Branch argued over a device for the Branch. Andorians (the only UFP charter member to have significantly developed mounted warfare besides humans) wanted to use the giglani (their equivalent to a main battle tank). Terrans were split between a tank and

crossed sabres (the sym-bol on Earth for Calvary). Eventually a compromise was reached, and the styl-ized "tank" was adopted. This bears enough resemblance to both an Old Earth tank and an Old Andor giglani that both sides were happy.

Tanker Boots

High-calved boots with buckling straps are a long-standing tradition in the Armor Branch. In the cramped confines of an armored vehicle, tying your boot laces can be a difficult proposition at best — hence the straps and buckles.

Cavalry Traditions

The Cavalry field of service has the most heavily ingrained traditions of any organization in the Armor Branch. Some can trace their origins back over 400 years.

The Handlebar Moustache

Members of the Cavalry who can grow facial hair often adopt the "handlebar" type of mous-tache that traces its history back to the Old Earth horse cavalry of the nineteenth century. In fact, it is this period of Cavalry history that has spawned all four of the traditions listed here.

The Stetson

Although the black beret is the official headgear of the SFMC, the "unofficial" headgear of the Cavalry is a black Stetson-style hat. Traditions being what they are, most commanders look the other way when the Cavalry shows up with their Stetsons and vehicle crew suits. When actually in dress uniform however, commanders do usually insist on the beret, even for the Cavalry.

The Pennant

The pennant has flown over Cavalry formations for centuries. Although the pennant is usually carried inside the vehicle in situations requiring camouflage and low visibility, it is immediately run up an antenna or improvised staff on a vehicle as soon as possible.

The pennant is red over white, with swallowtail. The regimental unit number is in the red section with the troop # in white section. The most famous cavalry unit, the 7th Cavalry, under the command of LTC George Armstrong Custer, was all but destroyed at the Battle of Little Big Horn.
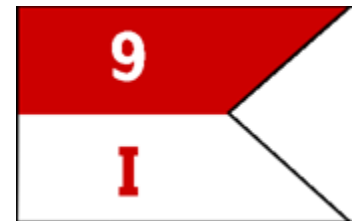
The Sabre

While in full dress uniform, swords can be authorized by local com-manders. The SFMC officer sword and SFMC NCO sword are the nor-mally-prescribed accessories. However, Cavalry officers and NCOs carry a traditional curved sabre when in full dress.
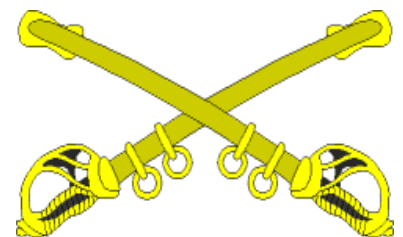
Part 3 - Organization

The basic elements of Armor Branch organization are known by different names according to which Field of Service they are from; however, most are constructed similarly as shown below.

Unit Organization

The smallest *maneuver* element of the Armor Branch is the platoon. Organized to fight as a unified element, the platoon consists of four or six vehicles organized into two or three teams, with two vehicles in each team. The Platoon Leader commands one team, the Platoon Sergeant another.

The basic *organizational* element of the Armor Branch is the company which is organized, equipped, and trained to fight pure. It can also be task organized by higher headquarters to fight with infantry as a company team. The company consists of a headquarters and three or four platoons. This is the most typical composition of the Marine Strike Group (Armor).

Fields of Service

The Armor Branch is composed of four Fields of Service based on basic mission roles and operational doctrine. The fields are incredibly interdependent, and train and fight together. It is not unusual to find a unit from one Field assigned to one from another; or to find a smaller unit from one field (like artillery) to be under the operational control (OPCON) of a larger unit from another field (like cavalry). The administrative lines so clearly drawn in the following section are quite blurry in the real world.

Surface Engagement

The majority of armored fighting vehicles (AFVs) serve this field of service in tank platoons and tank companies. The fundamental mission of the tank platoon is to close with and destroy the enemy. The platoon's ability to move, shoot, communicate, and provide armored protection is a decisive factor on the modern battlefield. The platoon may be cross-attached to a number of organizations, most commonly an infantry company, to create company teams. It may also be placed under OPCON of a light infantry battalion. A tank company usually consists of a headquarters and three tank platoons.

Mechanized Infantry

Despite its misleading name, this Field has no infantrymen. But it is the Armor field that works most closely with the Infantry—transporting them in IFVs and covering them with light supporting fires. Mechanized Infantry units are usually under OPCON of Light Infantry Battalions, and are often functionally closer to their Infantry Units

Armor Branch Table of Organization

```
                    ┌──────────────────┐
                    │ Branch Director, │
                    │      Armor       │
                    └──────────────────┘
                             │
              ┌──────────────────┐   ┌──────────────────┐
              │  Deputy Branch   │───│   Headquarters   │
              │ Director, Armor  │   │      Group       │
              └──────────────────┘   └──────────────────┘
                       │
    ┌──────────┬───────┴──────┬──────────────┐
┌─────────┐ ┌──────────┐ ┌──────────┐ ┌──────────┐
│ Surface │ │Mechanized│ │Artillery │ │ Cavalry  │
│Engagement│ │ Infantry │ │          │ │          │
└─────────┘ └──────────┘ └──────────┘ └──────────┘
```

Basic Organizational Element: Tank Company	Basic Organizational Element: IFV Company	Basic Organizational Element: Battery	Basic Organizational Element: Troop
Smallest Maneuver Unit: Tank Platoon	Smallest Maneuver Unit: IFV Platoon	Smallest Maneuver Unit: Gun Platoon	Smallest Maneuver Unit: Scout Platoon

than their Armor Branch higher headquarters. IFV Platoons operate in two-vehicle teams like Tank Platoons with each IFV carrying one squad of Light Infantry so that an IFV Platoon carries a Light Infantry Platoon. IFV Companies are quite similar to Tank Companies in composition with IFVs replacing the AFVs of the Tank Company.

Artillery

Modern artillery bears little resemblance to its ancestors. Gone are towed artillery pieces — except for light mortars and missile launchers carried by Infantry units, nearly all artillery pieces are self-propelled. Also gone are the old, heavy, loud and messy chemically fired guns of the old artillery. Modern artillery provides direct fires on occasion with phasers, and indirect fires with electromagnetic projectile weapons, missiles, microtorpedoes and torpedoes.

With much heavier weapons available to IFVs and AFVs today, artillery is not as numerous as it was on historical battlefields. But it is still a critical piece in the interlocking puzzle of Armor operations. The basic organizational element is the Battery. Its organization resembles the Tank and IFV Companies. The Battery is composed of three four-vehicle gun platoons. The gun platoon is relatively new in the artillery field, but was a natural extension of the move to automated and self-propelled artillery pieces.

Cavalry

The armored cavalry troop is organized, equipped, and trained to pro-

tect and conserve the combat power of other combined arms forces. While its primary missions are reconnaissance and security, the troop may be called upon to execute attack, defend, and delay missions as well. It is the Field of Service with the most colorful history and traditions, and its members are notorious for the extra flourish they nearly all possess.

serve with a Tank Company's Headquarters Section as Intelligence (S-2) or Administrative (S-1) Officers.

Inside a Marine Strike Group (Armor)

The MSG is a flexible package that varies in size and composition from post to post. As in other branches, there is really no 'standard' MSG. However, there is one Cavalry unit in the 12th Marine Brigade that is as close to textbook as you are likely to find in today's Corps.

The Border Dragoons

The 200th Marine Expeditionary Unit (a unit which is not assigned to a specific STARFLEET vessel as its Marine Detachment) is a Fleet Forces unit which exists to support strategic reconnaissance operations (i.e. - exploration). Being an MEU allows the 200th to retain a force which is much larger than the average Armor MSG (which is usually a company or reinforced company in size).

The 200th is a combined-arms task force of battalion strength—one of the few pure Armor battalions in the SFMC. It is a self-contained ground warfare unit which receives Close Air Support (CAS) from SFMC Aerospace units according to mission and OpArea. Below is a summary of the equipment and organization of the 200th, along with a diagram of combat vehicles and organization on the following page. For more information on the equipment listed below, see "Part 4 - Equipment." The MEU consists of:

- Headquarters Troop—Two "T'Var" Command Post (CP) IFVs, two "APC" personnel carrying IFVs, four "Samaritan" ambulance IFVs, Jeeps, Hummers, recovery vehicles, trucks, trailers and fuelers.

- Three Calvary Troops—Each troop has an HQ section with two T'Var CPs, a tank platoon with four AFVs, two scout platoons with six "Scout" IFVs each, and a support section with twelve vehicles of varying types.

- Tank Company—The battalion has a single pure tank company (which is never referred to as a troop) to provide an armored reserve for the battalion commander. It consists of an HQ section (two T'Var CPs) and three tank platoons of four

AFVs each.

- Artillery Battery—To give the battalion its own organic artillery support, it is assigned a battery of eight artillery AFVs (two platoons), with eight "Caisson" ammunition carriers in support (two platoons). At least one AFV in each platoon will be configured for Air Defense Artillery to guard against deep enemy attacks on the battery and other rear area support forces.

Other small auxiliary units are attached to the Headquarters Troop including a Support platoon, a Combat Engineer section, medics, and a Recon SpecOps team. These assignments are easily changed according to mission requirements.

Within the battalion, each troop or company is assigned a letter designation. By tradition, each troop adopts a name based on its identifying letter. For example, A Troop is "Ahn-woon" (a Vulcan weapon), and B Troop is "Bat'telh" (a Klingon sword). As the 200th deploys in the field, it is usually divided into smaller task forces according to mission and transportation available. It obviously takes a large starship to transport the entire MEU.

Military Occupation Specialisties (MOS)

The Armor Branch's Modular Vehicle System (MVS) leads to a very high degree of standardization and automation among vehicles, resulting in relatively few MOSs for vehicular operations. For more information on Armor & other MOS Specialisties, please refer to the MOS Manual.

Primary
Combat Equipment
and Organization

200th MEU
(Armor) "The
Border Dragoons"

2 **2**

Headquarters Troop

4
Tank Platoon

4
Tank Platoon

4
Tank Platoon

12
2 Scout Platoons

12
2 Scout Platoons

12
2 Scout Platoons

2
Headquarters

2
Headquarters

2
Headquarters

Cavalry Troop "A"

Cavalry Troop "B"

Cavalry Troop "C"

12
3 Tank Platoons

8
2 Gun Platoons (AFVs)

2
Headquarters

8
2 Gun Platoons (ammo carriers)

Tank Company "D"

2
Headquarters

Artillery Battery "E"
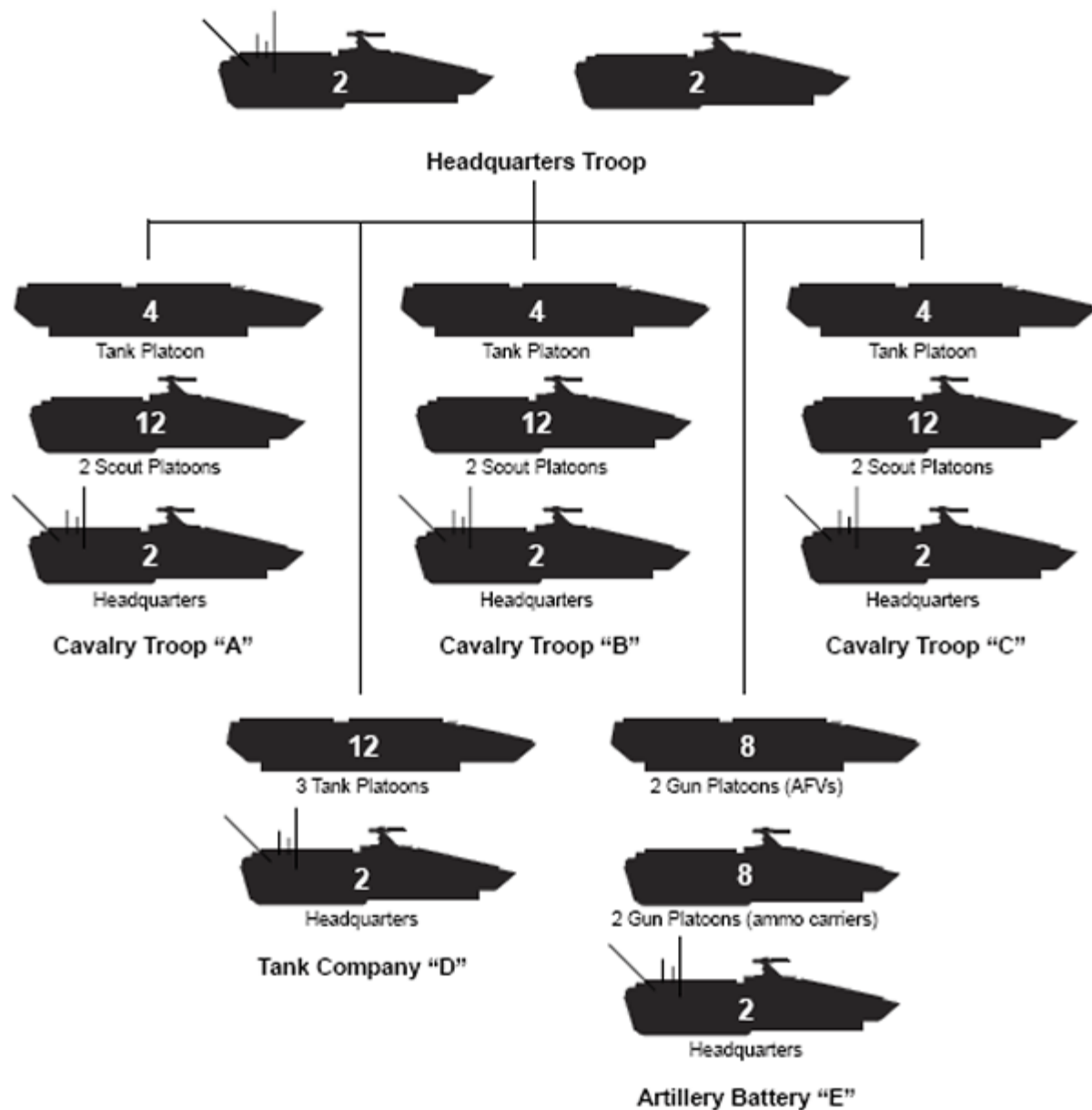
Part 4- Equipment

The equipment that most defines the Armor Branch are the vehicles which it fields. So it is only natural to start this section with a comprehensive examination of these "land battleships." The view of armored fighting vehicles as ships was at the heart of their creation, and so many terms associated with them are very nautical in nature: hull, turret, deck, periscope, etc. The term "tank", incidentally, came from a cover story generated by the British of Old Earth (the inventors of the tank). The British hid the development of this new weapon during the early 20th century by calling them water storage tanks or boilers.

First, let's take a look at some of the characteristics and systems the fighting vehicles in the Armor Branch all have in common.

Armor

Armor is the reason for the fighting vehicle's existence, not mobility or firepower. For although the latter will compete with armor in a vehicle's design, they would be meaningless without the protection of armor to keep the crew and weapons safe.

➥NOTE
Physical armor is frequently referred to as *static* armor, while energy armor is often called *active* armor.

There are two general categories of armor today. *Physical armor* is the actual material which comprises and protects the vehicle with a physical barrier. While today's heavy armor is formidable protection from most light weapons (and most all historical ones), today it is no longer enough. The introduction of phased-energy weapons, disruptors, matter-antimatter weapons, etc. have made many weapons a match for even the toughest physical armor. To combat these more serious threats, fighting vehicles now employ field manipulation technology to create *energy armor*.

Why Physical Armor?
With the impressive array of modern weapons, many wonder why we should bother with physical armor at all. After all, given the highly-touted performance of energy weapons, most average folk think you could punch through a starship hull with a hand phaser.

However, energy weapon performance standards are misleading. Take, for example, the impressive damage index posted for phasers. A tiny Type I hand phaser on setting 8 has a damage index of 120—meaning it can penetrate 120cm into a composite sample consisting of multiple layers of titanium, duranium, cortenite, lignin, and lithium-silicon-carbon 372. This sounds quite impressive. But while the performance of the phaser is definitely good, the damage index leads you to expect performance the weapon can't deliver on the battlefield.

What is not generally well known is that the composite sample used for phaser testing is nearly all rock—the layers containing metals are quite thin. And the metals chosen are not known for their energy refracting or absorbing properties. Fortunately, modern physical armor is composed with a little more foresight.

Layer labels (top to bottom):
- Polychromatic Coating
- Sensor Absorbent Coating
- Kelbonite Topcoat (Eloflage net embedded)
- Toranium (penetrator/phaser barrier)
- Nitrium (energy refractor)
- Rodinium (penetrator "blunter")
- Terminium Mesh (shock absorber/dissipator)
- Spaced Ceramic Composite (energy/plasma dissipator)
- Honeycombed NoFyre Resin (heat/plasma dissipator)
- Duranium (penetrator barrier)
- SIF Waveguide
- Spall Liner

PHYSICAL VH ARMOR SHEET

Physical Armor Composition

In addition to duranium and terminium (which provide substantial protection from physical armor penetrators), even the lightest SFMC armor uses spaced ceramic composites which can be quite effective at absorbing and dissipating energy to substantially counter phaser and disruptor beams. Heavier armor contains toranium, which is *highly* phaser resistant (hand phasers can't even cut the material efficiently with a solid beam and concentrated fire). Heavy armor usually also contains nitrium which is used to line EPS waveguides because of its excellent energy insulation properties. And finally, refractive crystals of kelbonite are embedded into the armor's topcoat, further refracting incoming energy beams and preventing much of the energy

An *actual size* cross-section of a sheet of very heavy armor gives you some idea of the reality of this protection. This is exactly what a core sample from the top or side of an AFV would look like. The principle properties of each armor layer are shown, although these materials have many other properties that make them desirable armor ingredients.

PHYSICAL ARMOR RATINGS

To simplify comparison of differing forms of armor composition, a standardized rating system has been adopted. Regardless of an armor system's actual make-up, the protection it offers is equivalent to the examples shown below (materials listed for each rating are in order from inside to outside layer):

Light (LT)

2 cm duranium base, 2 cm spaced ceramic composites, 1 cm terminium. Refractive crystals of kelbonite embedded in final topcoat.

Medium (MD)

3 cm duranium base, 2 cm spaced ceramic composites, 2 cm nitrium alloy bonded to 1 cm terminium. Kelbonite topcoat.

Heavy (HV)

4 cm duranium base, 1 cm honeycombed layer of NoFyre® foamed resin bonded to a 2 cm layer of spaced ceramic composites, 1 cm layer of rodinium, 2 cm layer of nitrium alloy bonded to 1 cm of toranium. Kelbonite topcoat.

Very Heavy (VH)

5 cm duranium base, 1 cm layer of honeycombed NoFyre® foamed resin bonded to a 2 cm layer of spaced ceramic composites, 2 cm layer of woven terminium mesh, 1 cm layer of rodinium, 2 cm nitrium alloy bonded to 2 cm of toranium. Kelbonite topcoat.

from making it into the deeper layers of the armor. Kelbonite has the additional advantage of scattering scanner beams and laser and maser beams effectively.

Along with the other layered materials in it, modern physical armor is capable of deflecting and/or absorbing quite a bit of punishment on its own. Most armor used in Armor Branch vehicles is rated at VH (very heavy), which means it can stand-up to direct momentary bursts of phaser energy up to setting 14 with little molecular degradation. The angle of the incoming fire is also important — if the incoming beam hits the armor at any angle shallower than 60°, much of the energy is scattered up and off the surface by the kelbonite.

Similar factors affect physical penetrators like long-rod kinetic penetrators and plasma-jet penetration from High Explosive Anti-Tank (HEAT) ordnance. Angle of attack is even more important against physical penetrators, which is why SFMC fighting vehicles have such low-profile, shallow angles in their outward design. The sandwiched armor package also helps dissipate plasma jets and absorb or deflect the kinetic energy of long-rod penetrators. Especially helpful is a layer of rodinium, which is so hard that it can actually blunt most rod penetrators, thus distributing their kinetic energy over a much large surface area and reducing their ability to penetrate. The drawback of extremely hard metals is that when enough kinetic energy is applied to actually break the material, it tends to shatter like glass. This is why hard materials like rodinium are sandwiched together with softer materials like terminium mesh to make effective overall protection.

In the rare circumstance when the physical armor is breached, pieces of armor can literally be torn off the interior surface and thrown around the inside of the vehicle causing damage to equipment and personnel. This process is called *spalling*, and the dislodged material is referred to as *spall*. To prevent this, a woven kevlex spall liner is applied inside the armor surrounding crew areas or other vital systems. While it provides little protection against a penetrator, it is able to catch surrounding spall before it can be thrown into the vehicle's interior.

All things considered, VH armor is capable of withstanding most light infantry weapons, and even many vehicular or emplaced weapons without further assistance from energy armor. However, many heavier weapons can still make short work of even the triple-layered VH armor found on the forward surfaces of today's fighting vehicles.

Energy Armor

Field manipulation technology has led to any number of advancements in military technology, but none more meaningful than in energy armor. Energy armor can take several forms, but we will concentrate on the two most extensively used in the SFMC: force fields and structural integrity fields (SIFs).

A force field differs from the more popularly known deflector shield in important ways, even though force fields are casually referred to as 'shields' in the vernacular. Deflector shields work by altering local

gravity (along a plane perpendicular to the incoming force) to extreme levels, bending energy waves away from the hull and completely destroying physical penetrators. On a planet, altering local gravity could have catastrophic results, so force fields are used by ground units and in-atmosphere aircraft. A force field is a barrier to incoming energy (kinetic, electromagnetic, heat, etc.) that distorts, absorbs or deflects that energy away from the unit generating the field.

Force fields can be projected a short distance from the vehicle, adding a superior outer-layer of defense to the armor system. The hull itself, in addition to being made from physical armor, is reinforced with an SIF. SIFs use a series of specially-calibrated forcefields to physically reinforce the armor's mechanical structure. The molybdenum-jacketed waveguides for the SIF fields run inside the vehicle's sensor-absorbent coating (the waveguides are actually located under the armor sheet), so it can be used without significant energy bleed which would reveal the vehicle's presence to sensors. This is important as it means the physical armor can still be reinforced even under strict energy-discipline.

When used with an SIF, the effectiveness of physical armor is nearly quadrupled. When force fields are added, the rating is increased nearly tenfold. Therefore, when a single sheet of VH armor—which measures 15cm thick—is reinforced with an SIF and a forcefield, it provides protection equivalent to 150cm of unreinforced VH armor! (That's a meter-and-a-half!) As you can see, when physical and energy armor are used together, they provide substantial protection. Better yet, the energy armor can be varied in intensity and concentration to provide an active defense against incoming weaponry.

Camouflage & Stealth

The shallow angles that help deflect away hostile weapons can do the same for scanning beams; thus most armored vehicles are already pretty stealthy as far as their sensor return goes. However, all modern fighting vehicles make use of several systems to further reduce their observability. Sensor absorbent coatings (SACS), polychromatic coatings, exhaust scrubbers, camouflage, eloflage and holoflage all play a part.

Polychromatic Coating

Polychromatic paint contains pigmentation particles in all visible light frequencies that can be selectively polarized to match the surrounding terrain. The result is a chameleon effect, with the exterior of the vehicle blending almost seamlessly into it's surroundings. Sensors all around the vehicle feed information to the paint controller so that it can constantly update the paint to match changes in the background. If a tree is lazily swaying behind the vehicle, the paint on the front of the vehicle will reproduce the swaying trunk to the last millimeter. As the vehicle moves, the paint controller instantaneously changes the color pattern to match the surrounding terrain. This makes it quite difficult to see a vehicle, and even when seen, it can be nearly impos-

FORCE FIELD RATINGS

As a measure of their relative strength, force fields are rated from zero to ten. As a guideline, the following general equipment ratings are given:

Zero - Slow leakage of gas , will not stop liquids or solids (used for tents, etc.).

One - Resists physical penetration, stops gases and liquids (used as a water barrier, maintenance areas, etc.).

Two - Limited ballistic shield, limited energy defense (personal diplomatic shields, standard confinement areas).

Three - Light defensive field (crew served weapons, light vehicles).

Four - Standard defensive field (heavy weapons, vehicles, powered infantry suits).

Five - Medium defensive field (explosive concussion, medium combat vehicles, heavy ballistic weapons).

Six - Heavy defensive field (heavy combat vehicles, some installations).

Seven - Installation Defense Screen (used for fortifications).

Eight - Light Orbital Defense Screen (medium fortifications, minimum defense for expected orbital bombardment).

Nine - Medium Orbital Defense Screen (hardened sites, heavy fortification).

Ten - Heavy Orbital Defense Screen (planetary defenses).

sible to discern enough of the outline to determine the vehicle's type.

Holoflage

Holoflage works on nearly the same principal as polychromatic paint, but it produces an even more convincing illusion by projecting a hologram around the vehicle. Drawbacks to this system include a significant energy signature, and an inability to successfully update the hologram "on the fly" as the vehicle moves. Too many computing cycles are required to keep the hologram updated and there is usually a characteristic lag when the vehicle moves at top speed.

Eloflage

Polychromatic paint and holoflage may trick the eye, but they won't do a thing for other types of sensors. That's where eloflage and SACs come into play. Eloflage for a vehicle is a relatively simple affair. A permanently-installed eloflage netting is embedded into the armor topcoat along with the kelbonite crystals, with several connector leads located around the vehicle for linking into the eloflage system. For a complete description of how eloflage functions, see the Infantry Branch Guidebook.

SAC

Sensor-absorbent coatings are highly classified paint-like substances that are layered on underneath the polychromatic paint (which is invisible to radio-frequency energy and tachyonic scans). These coatings absorb an impressive range and intensity of active scanning beams, as well as serving double-duty by suppressing the natural energy signature generated by and inside the vehicle.

Exhaust Scrubbers

Heat generated by maneuvering thrusters can make a vehicle a glowing target on an infrared (IR) display. Despite the ability of eloflage and SACs to mask the heat of the vehicle itself, the thruster exhaust must leave this protective envelope in order to work. Therefore, all nozzles are fitted with exhaust scrubbers which combine gas diffusers with a supercooling element which reduces the temperature of the exhaust and minimizes its IR signature. Similar supercooling elements are placed on the underside of propulsion modules to help keep the traversed terrain from showing signs of friction or residual vehicle heat.

Control Systems

Control Inputs

The control of armored vehicles is very similar to aerospace craft—a stick-and-throttle approach is used for control inputs. Most critical vehicle controls can be operated via buttons or switches located on the sticks or throttle so that the crew needn't take their hands off the controls to select a weapon, designate a target, etc. This philosophy is known as HOTAS (Hands On Throttle And Stick).

The HOTAS units are interchangeable "plug-and-play" modules, and

MARINES SAY

"I much prefer having a stick and throttle to the touch panels on most Starfleet vehicles. I have a much better feel for the vehicle, and no matter how much I get bounced around, my hands never leave the controls. It also helps not to have to look for the control I need. I can feel for the button and never take my eyes off the battlefield."
—SSGT Chris Devaroux
AFV Pilot

each crewmember has controls appropriate for their species' extremities and number of digits, as well as for their dominant hand (right handed pilots use right stick and left throttle for instance). The crew can carry their own controls with them and then simply plug them in to the control ports on any vehicle they may operate. This is very helpful when crews must change vehicles.
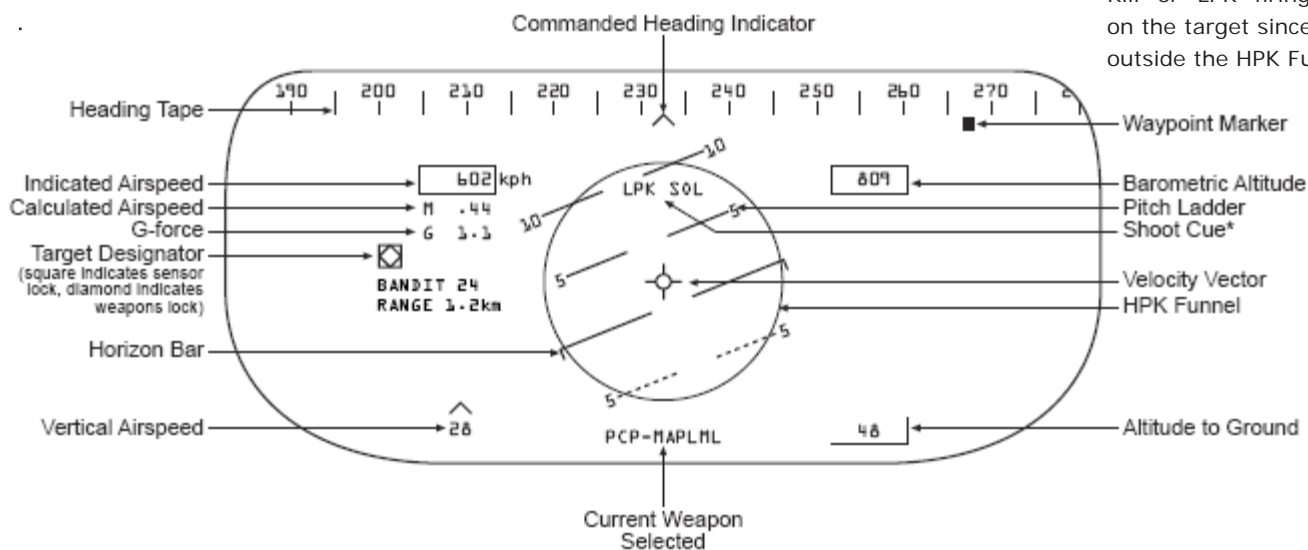
Voice inputs are also used extensively. The vehicle's computer is set to recognize the crew's voiceprint when the vehicle is first started up (which saves confusion when incoming audio signals are loud enough to be picked up by the crew's microphones). During flight, the pilot and SysOp can ask the computer to do any number of tasks. For instance, when carrying a 72mm EMPW (see "200-Series Weapons Modules"), the pilot can ask the computer to load a specific type of round for the gun from the turret's ammo store.

Visual Displays: the HM-10B "Eagle Eye" TVD

Very little of the exterior environment can be seen through the emergency periscope of an armored vehicle. In fact, barely enough to maneuver the vehicle. So the vehicle's sensors, computer, and displays combine to form a virtual picture of what's outside. This gives crews unparalleled visibility while safely inside their vehicles.

The Through-Visor Display (TVD) is nothing new to the SFMC. Projecting critical performance and target data on a helmet visor has been around for 100 years (and for 300 years before it was projected on cockpit glass or into the operator's eye). However, the HM-10 series is the first TVD system to incorporate an important new feature: The ability to look "through" the vehicle.

An example of the Eagle Eye TVD. Heading (in degrees) and altitude (in meters) baselines are usually calibrated to local magnetic pole and sea-level whenever possible. The HPK Funnel varies in size and shape according to the weapon selected. Once a target can be placed into the funnel, there is a "High Probability of Kill" or "HPK" if the weapon is fired. The shoot cue below currently shows a "Low Probability of Kill" or "LPK" firing solution on the target since it is outside the HPK Funnel.

Commanded Heading Indicator

Heading Tape — | 190 | 200 | 210 | 220 | 230 | 240 | 250 | 260 | 270 |

Waypoint Marker

Indicated Airspeed — 602 kph
Calculated Airspeed — M .44
G-force — G 1.1
Target Designator (square indicates sensor lock, diamond indicates weapons lock)
BANDIT 24
RANGE 1.2km

LPK SOL

809 — Barometric Altitude
Pitch Ladder
Shoot Cue*
Velocity Vector
HPK Funnel

Horizon Bar

Vertical Airspeed — 28

PCP-MAPLML

48 — Altitude to Ground

Current Weapon Selected

This is accomplished by linking into the vehicle's sensors to produce a holographic image of what is outside the vehicle. When the pilot puts the TVD on virtual mode, he can then look completely around him and instead of seeing the interior of the vehicle, he can actually see what he is flying or driving over or through, along with all his standard navigation information projected onto the image.

Normally, this view is only given in a wide swath that runs below the overhead controls and LCARS displays and above the forward and side control panels. This way, the pilot can still see and operate his instruments. However, by depressing a thumb switch on the throttle, the pilot can increase his view to a complete picture all around. When he releases his thumb, the picture returns to the smaller swath so that he can see his instruments when he needs to.

The principle complaint made by this system's critics is that if your sensors are being jammed, or your electrical systems are down, you have only the tiny periscope to see through. This is true to some extent, but consider the following. While the system uses all the sensors to form its hologram, it can supply a simple two-dimensional picture using only the optical sensors. These can only be "jammed" by smoke and other such measures that would render the periscope just as useless. And if your electrical systems have failed to such an extent that you no longer have optical sensors or display capability, your vehicle is likely not in any shape to fight or maneuver anyway!

The SFMC Modular Vehicle System

In the early 2200s, the SFMC Armor branch fielded no less than 52 separate types of fighting vehicles. Logistics, resupply, and maintenance were growing nightmares. It became nearly impossible to keep an armored division on the advance. The maintenance crew for one tank was twice the size of the tank's crew!

Something had to give. As the problem reached its zenith, SFMC Armor planners introduced a bold new scheme: It was to be a system of standardization that would drastically simplify logistics, while still leaving the flexibility to assemble a highly-specialized mission force. It was dubbed the Modular Vehicle System (MVS).

Under the MVS, 52 vehicles were reduced to two basic chassis. Each chassis can accept a variety of weapons and propulsion modules that could configure the vehicle for a specific role. On the next mission, a simple swapping of modules makes the same vehicle ideal for a new role.

MARINES SAY
"Implementing the MVS put at least a brigade's-worth of maintenance techs out of business. But only having two hulls to service now is an incredibly more efficient arrangement."
—GSGT Tanesha Williamson
AFV Pilot

After a few false starts, the program eventually took off, and within a decade nearly all of the old fighting vehicles had been replaced by the new MVS vehicles. Today, MVS vehicles rule the SFMC battlefield. The system has proven so successful that planners have sought a way to implement the same type of system in Aerospace. The idea has had a hard time winning support in the aerospace community, however, and will likely not catch on anytime soon.

Performance Requirements

When it decided to implement the MVS, the Starfleet Materiel Command (which handles procurements for the SFMC with the input of SFMC Research & Development Command) also made another crucial decision: for the first time in one hundred years, all SFMC Armored

Vehicles would have *identical* minimum performance standards. Finally, armored units would be able to truly maneuver as one, since all vehicles could negotiate the same terrain, maintain the same speed and altitude, and operate for the same period of time on one charge. Maximum performance of both chassis (with all their various and sundry module combinations) do vary greatly, but all configurations have the same *minimum* values.

Life Support
Since SFMC Armor often fight on non-Class M worlds, every vehicle must be capable of self-contained life support for 24 hours without re-gassing. Additionally, an overpressure NBC system in the vehicle can use outside air (when available) for life support. It scrubs the air of toxins (natural or of NBC origin) and maintains a slightly higher pressure inside the vehicle than outside it. This way open hatches can leak good air out, but won't let bad air in.

AFVs, IFVs and all IFV rear hulls have the capacity to "airlock" their crew compartments by suctioning out the interior atmosphere and storing it for later use, replacing the inside environment with the ambient so that the hatch can be opened without losing air. On crew reentry, the process is reversed.

Terrain Negotiation
On wheels or air-cushioned hover (ACH), all SFMC armored vehicles must be able to climb a slope of 75°, cross a transverse incline of 60°, and maintain minimum top speed of 120 kph (75mph). On antigravs (AGs), each vehicle must have a minimum NUCO of 100m, and a minimum top speed of 120kph (75mph). Both chassis can significantly better these figures to varying extents depending on their configuration, but the low minimums reflect the Corps' desire for them to be able to travel with other SFMC ground vehicles (most vehicles in the SFMC inventory can accomplish these basic values).

Range/Duration
All SFMC Armored vehicles must be able to maintain nominal operations for at least 24 hours without recharging. That being said, no one has yet discovered what "nominal operations" are. Sitting at minimal power in a revetment, an AFV can last for a week. On a full-speed movement-to-contact, 15 hours might be pushing it.

SFMC Armored Vehicle Systems
Vehicle Chassis

The two basic chassis of the SFMC Armor branch are perhaps unfortunately named, for they are not true chassis. Chassis implies that these items are merely basic frameworks when in fact they are complete vehicle hulls awaiting only propulsion and weapons pods. Nonetheless, the name has stuck.

Below are the standard performance characteristics listed for the two basic chassis. It should be noted that all speeds and altitudes are assumed to be

under antigravity (AG) propulsion with no weapons modules fitted. Performance characteristics vary widely with propulsion and weapons load-out choices, so a fair estimate of vehicle performance can not really be given. However, the data is useful for comaring the performance of the two chassis to each other.

100-Series Propulsion Modules

Each chassis in the MVS can accept any of the following propulsion modules. Each takes electrical power from the chassis, but those with thrusters carry their own supply of thruster fuel.

200-Series Weapons Modules

Each chassis can fit at least one 200 series module. The AFV can fit two. Not just any two, however: two turret-mounted weapons modules cannot be used simultaneously since the turrets would interfere with each other. Non-turreted weapons systems are designed to fit under rotating turret systems so there is no interference; however, the turret may have to be rotated into a specific position before all weapons can be launched from the secondary module. 250-series Artillery Modules take up both weapons module spaces on an AFV, so an artillery AFV fields only one main weapon system.

400-Series Special-Purpose Modules

Special Purpose modules cover one or two 200-Series module interfaces depending on the unit. They provide extra mission capabilities for the Armor Branch.

Personnel-Issued Weapons

Armored vehicle crews are lightly armed when one doesn't count the vehicle ordnance itself. By and large, vehicle crews are not expected to fight dismounted, and are issued and trained in a limited amount of personal or man-portable weaponry.

Personal Protective Gear

With the exception of dismounted scouts, Armor personnel generally fight from their vehicles, and so do not require a great range of protective garment options. Dismounted scouts have the option of wearing the standard Infantry garments for hazardous environments, and they of course wear the MIPPA personal armor system. Details on these garments and accessories can be found in the Infantry Guidebook.

Electronic/Datawarfare Equipment

Most of the EW equipment operated by Armor crews are vehicle-mounted sensors, scanners, and countermeasures. A few pieces of man-portable equipment are fielded by the Artillery. Dismounted Cavalry scouts generally use the wide array of equipment available to the Infantry.

Part 5 - Operations

This brief introduction into the missions and tactics of the Armor Branch should give the student a good feel for the complexity of the Armor role on the modern battlefield. It is barely possible to scratch the surface of Armor doctrine in a brief work such as this familiarization guide, but this should provide enough of an initiation to the Branch for the new recruit.

Capabilities and Limitations of Armor

As a leader, you must have a clear understanding of the capabilities and limitations of your equipment in order to win on the battlefield. Such an understanding will help you in evaluating transportability, sustainment, and mobility considerations for your own vehicles and for those with which your platoon may operate as part of a company team or troop.

Capabilities

Armored vehicles offer an impressive array of capabilities on the modern battlefield: excellent cross-country mobility, sophisticated communications, enhanced target acquisition, lethal firepower, and effective armor protection. In combination, these factors produce the shock effect that allows armor units to close with and destroy the enemy.

Armored vehicles can move rapidly under a wide variety of terrain conditions. On antigravs, they can clear nearly any non-automated obstacles, and terrain conditions are of little consequence. Even on wheels, AFVs and IFVs are capable of negotiating soft ground, trenches, small trees, and limited obstacles. In addition, modern navigation systems allow today's vehicles to move to virtually any designated location with greater speed and accuracy than ever before.

The wide, alpine vistas on planets like the green-skied Tranta are ideal landscape for armor operations.

Use of modern data and comm systems facilitates rapid and secure communication of orders and instructions. This allows vehicle crews to quickly mass the effects of their weapon systems while remaining dispersed to limit the effects of the enemy's weapons. On-board sensors enable the crews to acquire and destroy enemy armored vehicles, and fortifications using

the main weapons system, or to use secondary weapons to suppress enemy positions, personnel, and lightly armored targets. The vehicle's armor protects crewmembers from small arms fire, most artillery, and many antiarmor systems.

Limitations

Armored vehicles require extensive maintenance, proficient operators, and skilled mechanics, as well as daily resupply of electrical power, ammunition, and atmospheric gasses. They are vulnerable to the weapons effects of other tanks, aerospace craft, mines, missiles, anti-tank guns, and close attack aircraft. When armored vehicles operate in built-up areas, dense woods, or other close terrain, reduced visibility leaves them vulnerable to dismounted infantry attacks as well. Even on antigravs with the capability to cross over such areas, the threat of attack from below exists. In such situations, they are usually restricted to trails, roads, or streets; this severely limits maneuverability and observation.

Existing or reinforcing obstacles can also restrict or stop tank movement, especially when vehicles are equipped with only wheels or ACH modules. Even when equipped with antigravs, such obstacles can restrict unit movement as the vehicles become capable of outrunning their infantry and support elements, and so must coordinate movement in accordance with the lowest common denominator of maneuverability. Antigrav obstacles (which interfere with antigravitons themselves) are also employed by Threat forces.

MARINES SAY

Most people think that just because we have antigravs and a NUCO of 100 meters that we're impervious to obstacles. But let me tell you, there are a lot more ways to stop a hover vehicle than you think. Hell, I've even fought on planets where the TREES were higher than 100 meters!

—1LT J'Taad Kooliere
Mechanized Infantry
Platoon Leader

Missions of Armored Forces

Armor will use its unique capabilities to conduct combat operations, often in support of contingency plans, across the operational continuum (peacetime, conflict, and war). It will be required to operate in a wide range of political, military, and geographical environments. Its tactical missions include providing security, reconnaissance, and antiarmor firepower to the infantry, as well as standard armor operations to engage and destroy enemy forces using mobility, firepower, and shock effect in coordination with other combat arms.

While some Armor missions are unique (or at least more common) to certain fields of service (Recon/Cavalry, Fire Support/Artillery, etc.), any element of the Armor Branch may, at some time, engage the following common mission types. It should be noted that these are not specifically missions in and of themselves (a mission contains a specific objective, a task by which to accomplish it, time and logistical constraints, etc.), these are more the general operating modes under which missions may be carried out by SFMC Armor forces.

Movement to Contact

Movement to contact missions involving moving from a base camp to a line of departure in expectation of contact with enemy forces after

crossing the line of departure. Once across the line, contact can be expected at any time thereafter. These types of mission often result in what are known as *meeting engagements,* where enemy contact is made suddenly and engagement is spontaneous. These missions are typically offensive missions undertaken when exact enemy location is unknown, but general enemy operating area is known.

Hasty Attack

A hasty attack occurs when a surprise contact or a tactical opportunity occurs that forces or allows you to form an attack at a weak point along the line on the spur of the moment. A hasty attack is conducted with well-practiced tactical techniques that are selected and ordered as the situation warrants by the commander. Although a set plan of attack is not developed, it is not a free-for-all on the battlefield as one might expect from the name.

Deliberate Attack

As opposed to the hasty attack which is conducted on the fly, a deliberate attack is planned down to the last rounds needed to breach the enemy positions. This type of offensive mission is conducted when the locations and strengths of enemy forces are well known. Of course, no battle plan survives the first engagement, so contingencies are always considered and the deliberate attack plan is flexible enough to allow for sudden or unexpected changes in the tactical environment.

Exploitation

Exploitation is much like the hasty attack in that a weak point is discovered and capitalized on in order to take advantage for friendly forces. This may be a deliberate or hasty attack in execution, however, depending on how and when the weakness is discovered and how long it remains open to exploitation.

➥ NOTE

Remember that one mission type can rapidly turn into another during the course of battle. Forces should be organized and deployed with the flexibility to adjust to such changes as fast as they occur.

Pursuit

A mission to pursue fleeing enemy forces once they have disengaged from an attack is called a pursuit mission. Pursuit missions must be undertaken with care to avoid outrunning your own supporting elements and/or exposing your flanks to other enemy forces lying in wait.

Reconnaissance Operations

Reconnaissance Operations provide the commander and staff with information about the terrain and enemy. Recon verifies or refutes analyzed intelligence information. Any element assigned to or operating with a contingency force may be tasked to perform reconnaissance operations, but for mounted recon, this duty will usually fall to the cavalry. Cavalry performs three distinct types of reconnaissance:

route, zone, and area. Depending on the level performed, reconnaissance may be a separate mission or part of another operation.

Security Operations

Security operations provide information about the enemy and provide reaction time, maneuver space, and protection to the main body of friendly forces. When properly task organized, augmented, and supported, armor units (especially cavalry) may be tasked to perform four primary security missions:

Screen
A screen provides early warning. The screening force gains and maintains enemy contact, reports enemy activity, destroys or repels enemy reconnaissance, and impedes and harasses the enemy with long-range fires.

Guard
A guard force protects the main force from enemy direct fire, observation, and surprise attack. It reconnoiters, screens, attacks, defends, and delays as required.

Cover
A cover mission provides the main body with early warning, reaction time, maneuver space, and information about the enemy while deceiving the enemy regarding the location, size, and strength of the main body. A covering force is tactically self-contained and operates at a considerable distance to the front, flanks, or rear of a moving or stationary force.

Counterreconnaissance
Counterrecon includes combat action to destroy or repel enemy reconnaissance elements. It denies the enemy commander his eyes and ears in order to effectively conduct his operations against friendly forces.

Defend

The three purposes of defensive operations are to gain time while waiting for more favorable conditions to conduct offensive operations, to economize forces in one area so superior forces can concentrate elsewhere, and to maintain control or possession of an objective. Armor is not ideally suited for conducting independent defensive ops—it normally operates as part of a larger force. The armored vehicle enhances the overall defense of combined-arms units by providing infantry with a high degree of mobility and firepower.

Retrograde

Retrograde operations are movements to the rear or away from the enemy. The movement may be forced or voluntary, but it must be with the higher commander's approval. Units conduct retrograde op-

erations to gain time, preserve force strength, avoid combat under undesirable conditions, or draw the enemy into an unfavorable position. The three types of retrograde operations are delay, withdrawal, and retirement.

Delay

In a delay, units give ground to gain time. They inflict the greatest possible damage on the enemy while maintaining freedom of action. Delay is one of the most demanding missions any unit can undertake. It is also the most common retrograde mission for armor, which uses it to trade space for time. The ability to delay is essential to success on the battlefield when an enemy force outnumbers the contingency force or has superior armored forces. Success depends heavily upon firepower and mobility. The contingency force commander can use armor to delay when the force's strength is insufficient to attack or defend.

Withdrawal

In a withdrawal, all or part of a committed force disengages from the enemy voluntarily to preserve the force or free it for a new mission.

Retirement

In a retirement, a force not in active combat with the enemy conducts a movement to the rear, normally as a tactical road march.

Fundamentals of Offensive Operations

In the offense, armor forces should be assigned missions that capitalize on their maneuver and firepower capabilities. These include missions to destroy enemy forces, develop intelligence about the enemy, seize or control terrain, deceive and divert the enemy, deprive the enemy of resources to demoralize him, hold the enemy in position, and destroy and disrupt enemy command, control, communications and logistics facilities. Armor leaders must understand and employ the following fundamentals of offensive operations:

Fight as a combined arms team

Armor always fights as part of a combined arms team. Capabilities/limitations of armor, aerospace and infantry make them complementary when employed as a team.

Know the enemy

The armor leader must know and understand the capabilities of the enemy's weapon systems and defensive doctrine, including the enemy's capability to conduct ambushes.

See the battlefield

The leader must know and be able to identify key terrain. He should also learn to identify covered and concealed routes during movement. The armor leader must anticipate how the enemy will use the terrain and then determine how to counter their likely tactics.

Despite a myriad of modern sensors, scanners, and battlefield intelligence sources, sometimes the best way to "See the Battlefield" is to get out and look.

Use weapon systems to best advantage

The armor leader must know the capabilities and limitations of his own weapon systems. Knowing the best kill probability ranges of all weapons is a key. Leaders can improve kill probabilities by engaging enemy vehicle flanks.

Concentrate combat power

The armor leader must be able to control and concentrate weapon systems. To do this, he trains his unit to shoot, move, and communicate effectively under all conditions. The leader also makes maximum use of available indirect fires.

Use maneuver to best advantage

Light armor must move rapidly, strike first, and maintain the momentum until the enemy has been killed or captured.

Coordinate continuous support

Light armor leaders must always be aware of their logistical status. Logistics support is extremely difficult in the austere environment of deployed forces. Leaders must understand the procedures for critical support, such as evacuation of personnel and equipment or resupply of ammunition and fuel.

Be flexible

Armor leaders achieve flexibility by ensuring units are properly trained, by adhering to standing operating procedures (SOP) and battle drills, and by becoming tactically proficient. They must understand the commander's intent and anticipate changes in the situation that will help complete the mission.

Tactics

The effective accomplishment of the tactical techniques by which armor vehicles and units maneuver, initiate action, and respond to battlefield conditions are the key to the success of SFMC Armor. The primary tactical techniques detailed below provide an automatic response to orders and combat situations, while requiring minimal leader orders or actions to execute.

Movement - Formations

Formations are used to establish vehicle positions and sectors of responsibility during tactical operations. They facilitate control, alleviate confusion, and increase protection, speed, and the effectiveness of fires.

Formations are not intended to be rigid, with vehicles remaining a specific distance apart at every moment. The position of each vehicle in the formation depends on the terrain and the ability of the wingman pilot to maintain situational awareness in relation to the lead vehicle. At the same time, individual tanks should always occupy the same relative position within a formation. This will ensure that the

members of each crew know who is beside them, understand when and where to move, and are aware of when and where they will be expected to observe and direct fires. Weapons orientation for all tanks should be adjusted to ensure optimum security based on the position of the platoon in the company formation.

The following paragraphs and illustrations describe the six basic movement formations the platoon will use. (NOTE: In these examples, vehicle numbers are used to illustrate the wingman concept. In the field, the location and sequence of vehicles in the formation will be prescribed in the platoon SOP and/or the orders for the operation. The tactical situation will also influence vehicle location.)
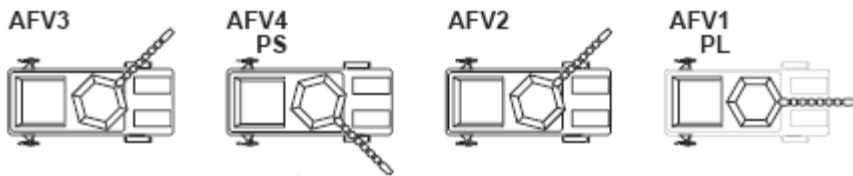
Column

The column provides excellent fire to the flanks, but permits less fire to the front. It is used when speed is critical, when the platoon is moving through restrictive terrain on a specific route, and/or when enemy contact is not likely. Vehicles maintain much more separation than shown in the illustration (this is true for ALL illustrations in this section.
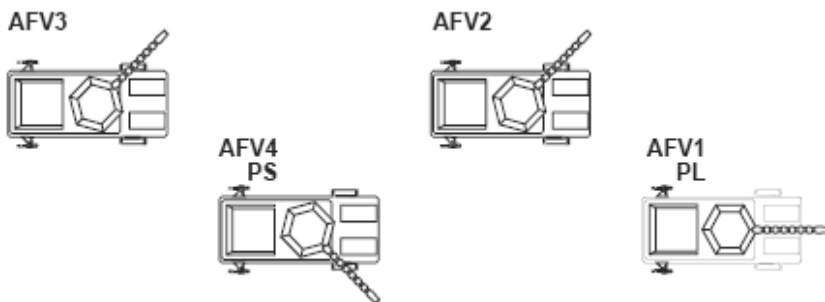
Staggered Column

The staggered column is a modified column formation with one team leading and team trailing behind to provide overwatch. The staggered column permits good fire to the front and flanks. It is used when speed is critical, when there is a limited area for lateral dispersion, and/or when enemy contact is possible. When travelling on AGs, the rear team will typically travel 20 or so meters higher than the front team in order to increase fire to the front.
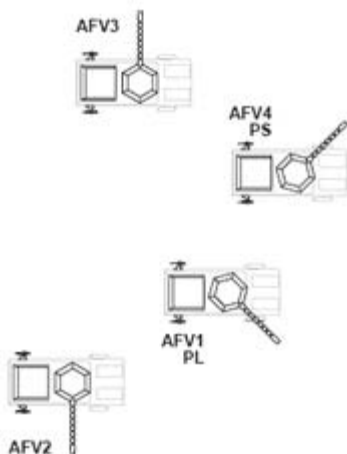
Wedge

The wedge permits excellent firepower to the front and good firepower to the flanks. It is employed when the platoon is provided with overwatch by another element and is moving in open or rolling terrain. Depending on the platoon location within the company formation, the platoon leader and platoon sergeant (with wingmen) can switch sides of the formation. When the platoon leader or platoon sergeant's vehicle is slightly forward, one flank has more firepower. On antigravs, vehicles can stagger their altitude according to company SOP in order to increase their fields of fire. A looser variation of the wedge is known as the vee and is designed more for rapid transit than for concentrated firepower. By placing one platoon in a wedge,

and other platoons on its flanks in opposing echelons (see below), the entire company can form a wedge, usually with the company commander and XO behind the wedge in overwatch positions. The formation then resembles an arrowhead with the CO and XO at the base.

Line

Were the tanks in the illustration above to move abreast of one another, they would be in the line formation. The line provides maximum firepower forward. It is used when the platoon crosses danger areas and is provided with overwatch by another element or when the platoon assaults enemy positions.

Echelon

The echelon formation permits excellent firepower to the front and to one flank. It is used to screen an exposed flank of the platoon or of a larger moving force. A company wedge is formed by a lead platoon in wedge formation, and flanking platoons in respective echelon formations to each side. As in the wedge, company SOP usually dictates an altitude stagger when operation on antigrav modules. This allows turreted weapons a 360° firing arc with limited declination and elevation according to other vehicles' altitudes. This reduces the limited firing angles to the unit's weak flank, thus making the echelon less vulnerable when enemy contact is expected.
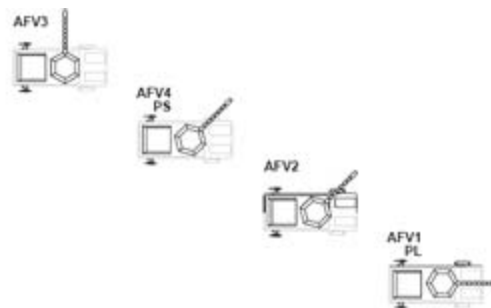
Coil

When it is operating independently, the platoon uses the coil formation to establish a perimeter defense during extended halts or lulls in combat. The lead vehicle, normally the platoon leader, will halt his vehicle in the direction of travel (12 o'clock) while the other vehicles position themselves to form a circular formation covering all suspected enemy avenues of approach.

Herringbone

The herringbone formation is used when the platoon must assume a hasty defense with 360° security while remaining postured to resume movement in the direction of travel. It is normally employed during scheduled or unscheduled halts in a road march. If terrain permits, vehicles should move off the road and stop at a 45° angle, allowing passage of vehicles through the center of the formation.

Movement-Techniques

The company operation order (OPORD) will normally specify company and platoon formations and techniques of movement. This allows the commander to position his elements where they will optimize the company's battle space and facilitate execution of his scheme of maneuver. The platoon leader has the responsibility to recommend a different formation or technique of movement if a change will allow the platoon to more effectively contribute to the accomplishment of the company mission and protection of the force. If no formation or technique of movement is given in the order, the platoon leader selects

the one that will make the most efficient use of his battle space and will best support the company scheme of maneuver.

The commander or platoon leader selects a technique of movement based on several battlefield factors:

- The likelihood of enemy contact.

- The availability of another element to provide overwatch for the moving element.

- The terrain over which the moving element will pass.

In open terrain, such as deserts, one company will normally overwatch the movement of another company. In close terrain, such as rolling hills or countryside, platoons will normally overwatch other platoons. In restrictive terrain, such as mountains, forests, or urban areas, a team will rely on another team or dismounted infantry to overwatch movement.

The platoon must be able to use any of the following techniques of movement:

Changing formation
Terrain and/or meeting engagements can necessitate a rapid change of formation on a moment's notice. A smooth transition from one formation to another should be constantly practiced with all types of formation combinations.

To accomplish this transition, each PVC and platoon leader must know the new formation, and the direction each vehicle will be moving to form the new formation. The company commander should assure that each platoon knows their relative positions in the new formation by always positioning the vehicles the same way when forming the new formation. Practice is the key to success.

Two-vehicle teams should always maneuver together using the wingman concept without halting or blocking other vehicles' movement, and without crossing other vehicles' fields of fire, or having theirs crossed as well. (See illustration on following page.)

Travelling
The travelling method of movement entails straightforward movement from point to point with no overwatch element. Characterized by continuous movement of all elements, traveling is best suited to situations in which enemy   contact is unlikely and speed is important. It is the most rapid method of movement in most cases.

**Company Formation
Change from Staggered
Column to Wedge**
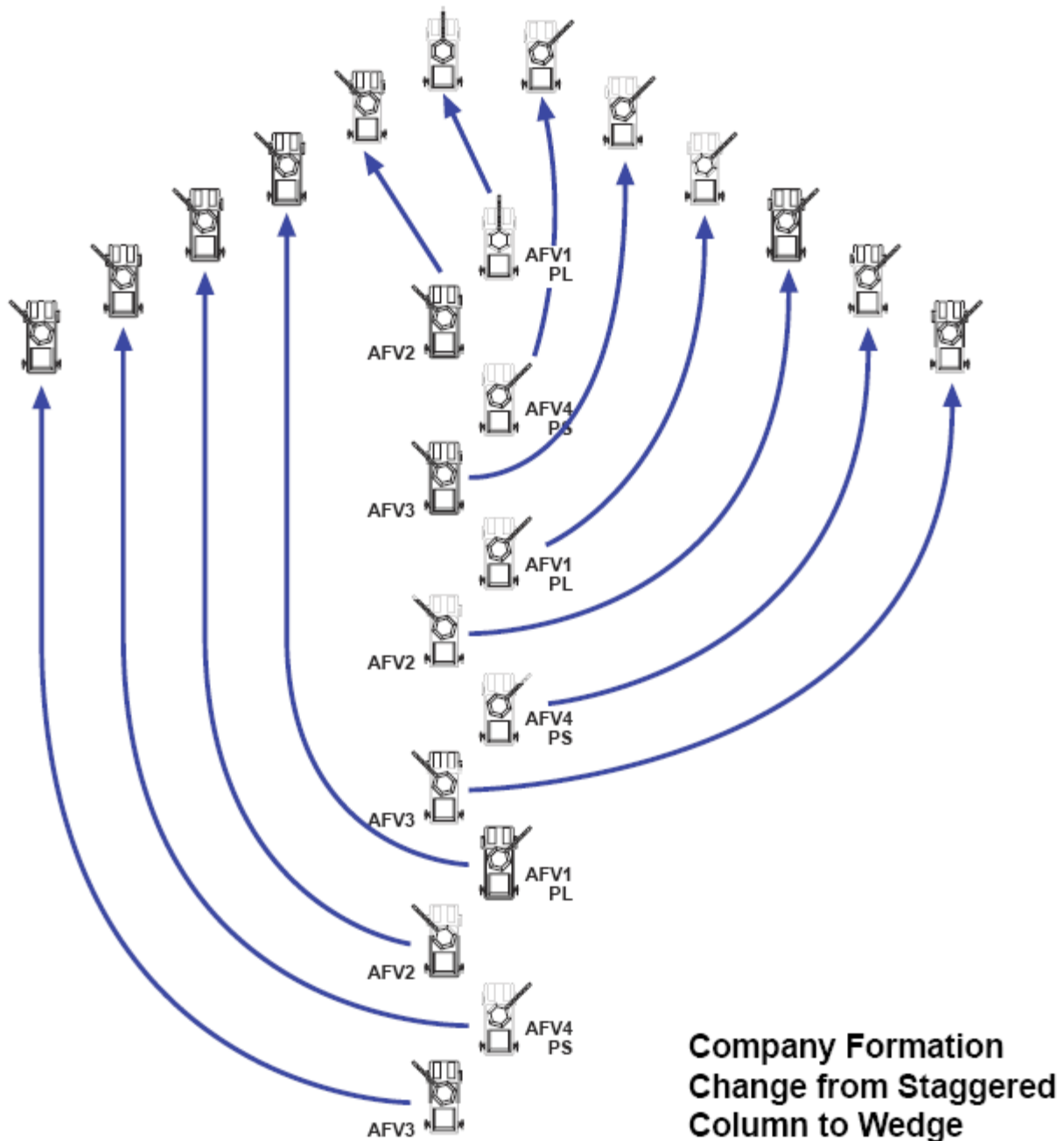
Travelling Overwatch

Traveling overwatch is an extended form of traveling that provides additional security when contact is possible but speed is desirable. The lead element moves continuously. The trail element moves at various speeds and may halt periodically to overwatch the movement of the lead element. The trail element maintains dispersion based on its ability to provide immediate suppressive fires in support of the lead element. The intent is to maintain depth, provide flexibility, and sustain movement in case the lead element is engaged.

Bounding Overwatch

Bounding overwatch is used when contact is expected. It is the most

secure, but slowest, movement technique. There are two methods of bounding:

Alternate bounds. Covered by the rear element, the lead element moves forward, halts, and assumes overwatch positions. The rear element advances past the lead element and takes up overwatch positions. The initial lead element then advances past the initial rear element and takes up overwatch positions. Only one element moves at a time. This method is usually more rapid than successive bounds.

Successive bounds. In this method, the lead element, covered by the rear element, advances and takes up an overwatch position. The rear element advances to an overwatch position abreast of the lead element and halts. The lead element then moves to the next position, and so on. Only one element moves at a time, and the rear element avoids advancing beyond the lead element. This method is easier to control and more secure than alternate bounding, but it is slower.

Movement-Rules

While moving, the platoon uses terrain to provide cover and concealment, employing the following rules:

Do not move forward from an overwatch position
Back away from your position and go around on the low ground.

Stay on low ground as much as possible
Moving on top of ridge lines and over hilltops will silhouette platoon vehicles. When flying on AGs, try to stay below surrounding ridges and hilltops.

Scan the ground for disturbed earth, out-of-place features, etc.
These are indicators of an obstacle or mine field. Also look for floating debris in the air that may indicate gravitic obstacles hidden in the area.

Moving on hilltops, ridge lines and other high ground can silhouette your vehicle and allow the enemy to find you.

Minimize gaps and dead space
Select the formation and movement technique that maximizes the platoon's battle space while minimizing gaps and dead space. An overwatch element cannot cover all of the platoon's gaps and dead space.

Stay within range of your overwatch
If the move is being overwatched, also keep in mind that the distance of each move (or bound) must not exceed the direct fire range of the overwatch element. If you are the overwatch element, communicate with the moving element if they begin to exceed your weapons range.

Always plan actions at danger areas
If necessary, direct the SysOp to dismount and either observe around blind spots or check the trafficability of a route or defile before the

vehicle moves over or through these locations.

Actions

Several tactical techniques exist for engaging the enemy and reacting to fires and attacks. Some of the most common are:

Initiate Action (left and right)

This technique is used primarily when moving in any formation by travelling or travelling overwatch. When the company encounters an enemy element to the front, left, right, or rear of the formation, or when the company encounters terrain that requires a rapid change in direction of movement, the company commander selects this action technique. This is one, but not the only, possible method of initiating action left or right.

After a contact report is given, the company commander chooses the action technique based on the enemy having antiarmor weapons, the company being on the move without immediate cover and conceal-ment from enemy fire, the company orienting its frontal armor toward the enemy to prevent possible flank shots, and the company massing its firepower and shock effect to overwhelm the enemy force.

The company commander chooses the direction in which the company needs to move and directs the action technique using voice com-mands on the radio and tactical graphics on the company coordinated LCARS.

At the direction, all vehicles come on line in the direction given and take evasive action as necessary to avoid enemy fire. They will then move to and occupy the nearest position of cover and concealment in the direction given where they will assume a hull-down position.

To simply change direction rapidly when no contact report is given, the vehicles will come on line in the direction given and then proceed in that direction until instructed otherwise. To return to the original formation, the company commander gives proper instruction via radio and LCARS, then uses the wingman concept to orient the company by moving his own vehicle in the new direction.

Execute Actions on Contact

This technique is used when the company is moving by travelling or travelling overwatch, or is providing overwatch of a moving force and an enemy element is encountered to the front, left, right, or rear of the company's position. This technique should be chosen when the enemy has no antiarmor weapons or has not yet identified the company's position. This technique allows the company to destroy or suppress the enemy while continuing with its mission.

The company uses a contact report to orient weapons systems and open fire on an enemy force immediately upon making contact. The actions on contact technique allows the company to continue to move without changing the direction, speed or method of movement, and
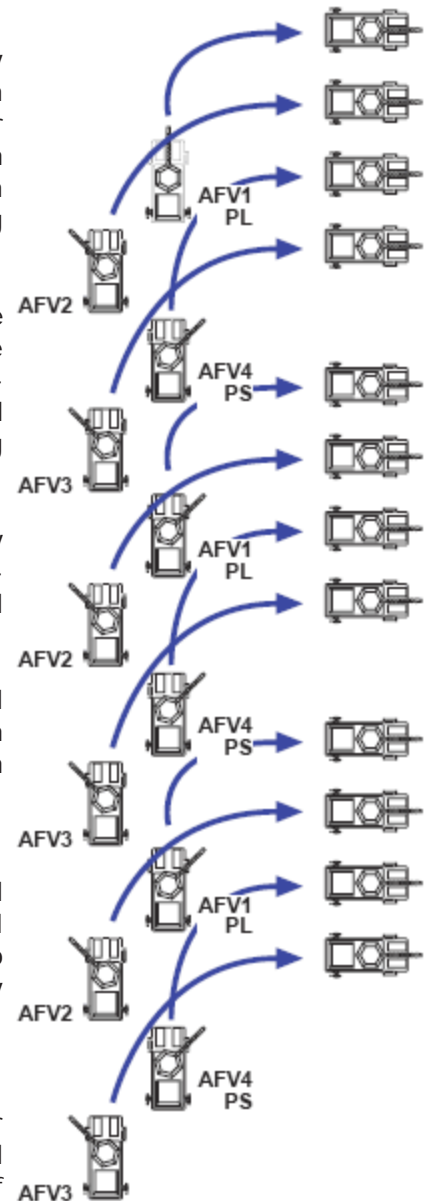
Company "Action, Right!" from a staggered column formation.

may be used when contact is made with small arms fire or when the company sights the enemy without being detected and the commander does not want to slow or stop movement. This technique may also be used to initiate overwatching fires in the offense. This is one possible method, but not the only method, to react to enemy contact.

After receiving contact report, the Company Commander chooses actions on contact technique based on the following information: the enemy threat does not require a change in the unit's mission (enemy does not have antitank weapons), the enemy has not identified the company and the commander wants to bypass their positions, the company has orders to bypass small-arms fire, the company commander does not want to change the company's direction, speed, or method of movement, and/or the company is in a stationary overwatch position and needs to return fire without moving.

The commander directs the actions on contact technique using voice commands on the radio and tactical graphics on the company coordinated LCARS.

The company executes the technique according to the illustration. If moving, they continue to move along the axis of movement and maintain proper formation and technique of movement. They fire to suppress or destroy the enemy using a fire pattern of *frontal* and a fire technique of *simultaneous*.

Actions on Air Attack

Armor units are particularly vulnerable to air attack, and should be part of a combined arms team with covering air support whenever
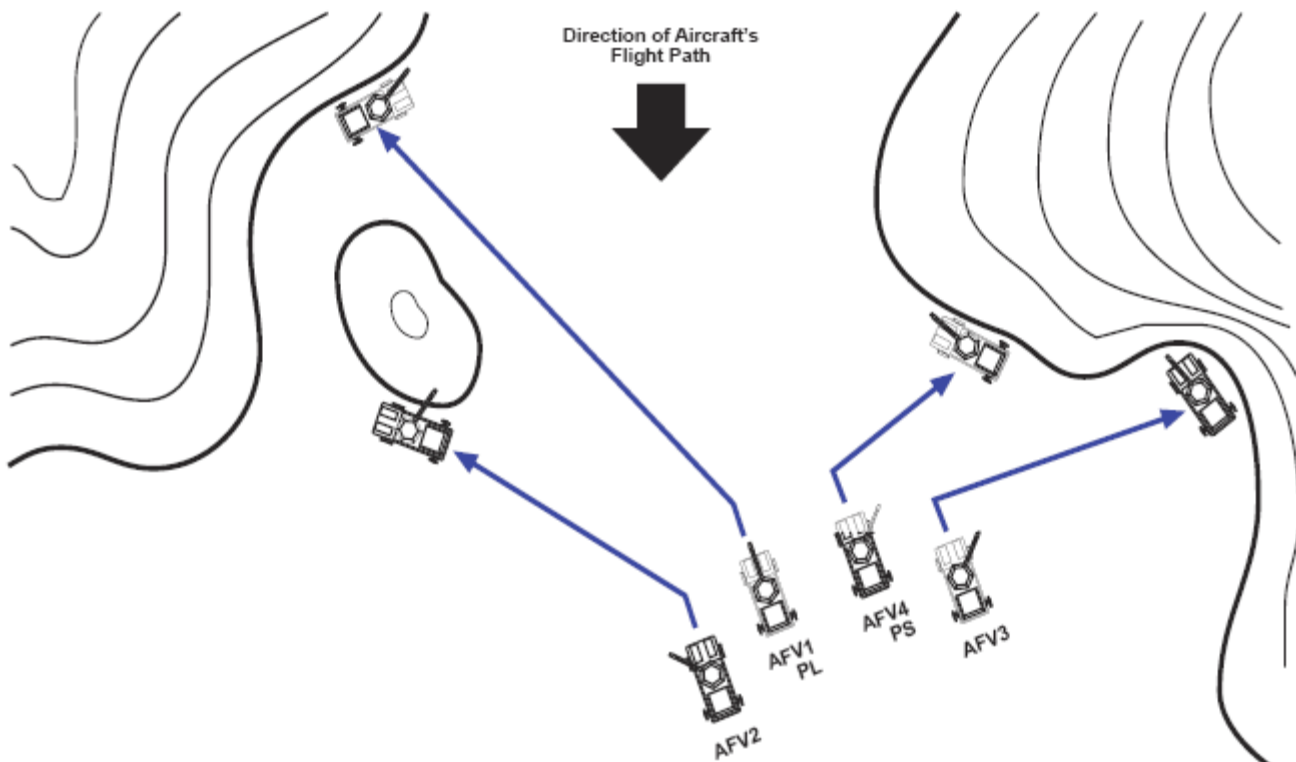
A platoon action on air attack. In this particular scenario, the platoon uses mounds and valley walls for cover and concealment against the attacking aircraft. The platoon will only be able to return fire if the vehicles still have a clear field of fire over the landscape. Obviously, aircraft altitude and flight path are critical factors in choosing your cover.

Direction of Aircraft's Flight Path

AFV1 PL

AFV4 PS

AFV3

AFV2

possible. When the company is operating in a tactical environment where air attack is possible or expected, the company commander may select this technique when an enemy aircraft begins an attack run on his position.

This technique is designed to disperse the company's vehicles away from the flight path of the enemy aircraft on an angle that will make it very difficult for the enemy pilot to correct his course and engage the company team without slowing or hovering (in which case he becomes a prime target for the vehicles' weapons). The technique is also designed to prevent a linear target from being formed by the company. This is one way, but not the only way, to respond to an air attack.

The vehicle or crew member that identifies the aircraft beginning its run at the company alerts the platoon with a contact report. For example, "Contacts, bandits, bearing 127 mark 4."

If the platoon leader determines that the platoon is in the direct flight path of the enemy aircraft, and if it appears that the company is the target of the aircraft's run, he alerts the company commander who orders the actions on air attack technique using voice commands on the radio and tactical graphics on the company coordinated LCARS.

Based on the tactical situation and the company's logistical condition, the company commander decides if the company should return fire at the attacking aircraft. If return fire is ordered, target tracking sensors will be uncaged and elevated to track the aircraft and direct fire.

All exposed vehicles in the direct flight path of the aircraft move away from the flight path as fast as possible along a 45° angle toward the attacking aircraft (see illustration). Vehicles should maintain at least 100m intervals and avoid a linear target to the direction of attack. They should proceed quickly to cover and concealment and assume a hull-down position, and should remain there for at least 60 seconds after the first attack run since it is Threat doctrine for air units to always operate in flights of two, four, six, or more.

React to Indirect Fires

When operating in a tactical environment where enemy contact is possible or expected, observing indirect fires near or on your position is quite likely. This technique is used to react to observation of artillery or smoke impacting near or on the company's position, or the sensing of laser or tachyon target illuminators on your position.

This technique enables the company to continue its mission while providing the maximum possible protection to vehicle crews. The company reacts upon the impact of the first round, or on forewarning of enemy attack. The react to indirect fire technique allows the company to perform a quick assessment and determine whether movement to alternate locations is necessary.

On observation of indirect fires or targeting signs, the company takes immediate evasive action to avoid impact area. If they have had any hatches or vents open, they immediately close them. Based on the expected use of NBC weapons, internal life support may be selected if it was not previously. Vehicles continue to move away from the impact area during this action.

If the company is stationary when reacting to indirect fires, the same "button up" of the vehicle occurs (after crews return to vehicles if they have been dismounted). If the indirect fire effectively suppresses the company and the mission allows, the company moves out of the impact area to adequate cover.

The commander sends a spot report to the unit assigned to counterbattery fire. Once indirect fire stops, the company continues with its mission.

A camouflaged IFV returns fire with a high-volume MAPLIML. This is a great weapons module for IFVs since the ammunition is interchangeable with the Infantry's missile launcher.

React to Direct Fire

When the company makes visual contact with or receives direct fire from an enemy force, it is critical to report the contact immediately to the task force commander so that the entire task force can be alerted to the presence of the enemy. At the same time, the company commander should direct action in such a way that he has time to develop the situation and fix or destroy the enemy. There are five basics steps to this technique. This is one possible way, but not the only way, to react to direct fire.

The Vehicle making contact returns or initiates fires to destroy or suppress the enemy. They also begin active or passive jamming measures as appropriate and take evasive action to seek cover or concealment or avoid enemy fires. They simultaneously alert the company with a contact report that includes identification, alert status, description of forces, and direction of forces. For example:

"Blackhawk One, this is Blackhawk Four..." (identification) "...contact..." (alert) "...enemy armored vehicles, infantry..." (description) "...bearing 120..." (direction-usually based on planetary magnetic north as 0° whenever appropriate) "...over." -OR- "...out." (based on unit SOP).

The remainder of the company, upon seeing the vehicle engage or hearing the contact report, orient their weapons systems to the contact bearing and return or initiate fire using a fire pattern of *frontal* and a fire technique of *simultaneous* to destroy or suppress the enemy. They should also scan for additional targets and employ jamming and evasive action as appropriate.

The company commander directs a tactical technique in order to mass the company's fires most effectively by choosing initiate action (left and right), execute actions upon contact, or execute actions on air attack as appropriate. He should simultaneously alert the task force commander with a contact report.

The company develops the situation through fire and movement to fix or destroy the enemy. To do this, the commander may call in indirect fires to supplement the company's fires and/or to screen the company's movement.

If the company is instructed to mount an attack or pursuit of the enemy, the company should use bounding overwatch to move out of the kill zone and seek cover and concealment, to reposition the company to gain advantage over the enemy, and/or to bring the company on line to provide a base of fire for the movement or assault. If the enemy is within 500 meters, the company should assault unless ordered otherwise. If the company is ordered to bypass the enemy, they should continue to suppress or destroy the enemy while on the move to bypass.

The company commander makes a complete spot report to the task force commander after the company gains control of the situation at their level, the enemy situation changes sufficiently to require an update of the contact report, the enemy has been destroyed, or the company requires assistance to destroy or suppress the enemy force.

React to a Reinforced Obstacle

This technique is employed whenever a vehicle discovers a reinforced obstacle in the company's route of movement without warning. The technique is designed to alert the company to the obstacle's presence before the entire company is trapped by the obstacle, extract the company from the obstacle and enemy fires while developing the situation to minimize company losses, alert the task force to the type and location of the obstacle and enemy elements, and to position the company to assist in reduction or bypass of the obstacle as part of the task force operation. This is one way, but not the only way, to react to a reinforced obstacle.

The vehicle in the company that encounters the obstacle without warning alerts the company to the type of obstacle and its location in reference to the company's movement. For example: "gravitic obstacle, front;" "wire, right front;" or "mines, direct front." If applicable, the vehicle should initiate jamming. They should also attempt a self-recovery from the obstacle along its original tracks if possible. If the vehicle that encounters the obstacle is not able to alert the company, the wingman or other closest vehicle to the downed vehicle alerts the company team.

If enemy overwatch elements are encountered, the company team halts all forward movement and executes actions on contact. If an obvious bypass is available, the commander orders a bypass and continues the mission. If no bypass is available, the commander orders the team to back out and away from the obstacle, along their same tracks, to positions of cover and concealment and establishes an overwatch position. The company then develops the situation.

If no enemy contact is made, the company reconnoiters the obstacle, and overwatches for the extraction of personnel on the downed vehicle in the obstacle as necessary. If enemy contact is made, the company attacks the enemy elements by fire from the overwatch position. The commander may call for indirect fires to suppress or destroy the enemy element.

The company commander sends a complete spot report to the task force commander. For example: "Kingpin Two-Seven, this is Blackhawk One. Spot report. Two enemy IFVs destroyed, grid 123456. Gravitic obstacle from grid 123456 to 123457, no bypass. Set in overwatch. Over."

If the obstacle cannot be bypassed, the company takes directions from the commander to assist in a reduction of the obstacle as part of a task force operation. In this role they may either be the breach force, assault force, or support force.

Initiate counterbattery fires

When an artillery battery is assigned area overwatch for a counterbattery mission, it is crucial that it respond quickly and accurately to enemy indirect fires. Rapidly suppressing or destroying enemy artillery enables friendly forces to complete their mission and conduct their advance. This technique is used to react to observation of artillery or smoke impacting near or on friendly positions, or the sensing of laser or tachyon target illuminators on friendly positions. It is one way, but not the only way, to initiate counterbattery fire.

Effectively suppressing enemy artillery is one of the most crucial missions for SFMC artillery units. This is known as "counterbattery" fire.

Indirect fire and/or targeting warnings are received either through radio communications with the unit in the target area, or by the battery's own early warning sensors. As soon as the first enemy round is launched, the battery's fire control systems will track the round to its point of origin. This point should be fixed within a few seconds of the firing of the first enemy round.

When a firing point has been fixed, the battery commander orders counterbattery fire to initiate on and around the firing point. If the battery is moving and counterbattery fire can be initiated without changing the direction, speed, or method of movement, the battery continues on its original mission. If the battery must change course, speed or method of movement, an action report is made to the task force commander. If the battery is stationary, counterbattery fire is initi-

ated directly.

When counterbattery fire is complete, the battery should continue moving on its original course, or should initiate movement out of the immediate firing area at once to prevent the enemy from initiating its own counterbattery fire. A spot report should be made to the task force commander which includes the battery commander's intended reassembly point if appropriate. A request should be made for remote intelligence of the firing point area for the purposes of battle damage assessment.

Other techniques

There are myriad tactical techniques for the various actions and reactions that Armor units must undertake. It is hoped that the few described above will offer the recruit some insight into the complexities of Armor operations. Much more in-depth tactical training will come with your attendance of Armor schools throughout your career.

Glossary

Here is a list of common terms, abbreviations and acronyms that appear in this manual. There may be some references to terms that are common to the SFMC, but are not listed in this glossary. Those terms should be listed in the Marine Force Manual or in other relevant Branch Guidebooks.

3rd Armored Division -
- Activated April 15th, 1941.
- They served 231 days in combat during World War II.
- They were the first armored unit to capture a German city.
- They were also the first to lose a US Army General, killed in combat. MGN Maurice Rose, who was an accomplished tactician.
- Saw service during WWII, Korean Conflict, and more recently, Operation Desert Storm/Desert Shield (as part of US VII Corps)
- 3rd Armored Division has been equipped throughout its history with: Horses, sabers, pistols, repeating rifles (actual cavalry) More recently they have consisted of the following vehicles. M1 Abrams, M2 Bradley fighting vehicles, MC Cavalry and MH-65 Apache helicopters.

Aerospace - 1. A planet's atmosphere and the space outside of it, considered as one continuous field. 2. Things that are designed for flight in aerospace. 3. The combat arm that deploys aerospace vehicles, such as fighters. 4. The aerospace vehicles of a combat force.

Air Defense Artillery - Artillery which provides fires to destroy enemy aircraft.

Amphibious - Relating to or organized for a military landing by means of combined naval and land forces. Historically referred only to operations from water to land, but now also refers to ops from orbit to planet-side.

Antiaircraft - Designed specifically to damage/destroy aerospace craft.

Antigrav/Antigravity - A method of propulsion or lifting that uses an antigraviton generator to counteract the normal effects of gravity.

Antipersonnel - Designed specifically to inflict death or bodily injury rather than material destruction.

Antishipping - Designed specifically to damage/destroy spacecraft/ starships.

Antivehicular - Designed to damage/destroy ground/water-based vehicles.

Armor - 1. A defensive covering worn to protect the body against weapons. 2. A tough, protective covering, such as metallic plates or composite panels on tanks or warships. 3. The combat arm that deploys armored vehicles. 4. The armored vehicles of a ground force

(includes tanks and self-propelled artillery in the case of the SFMC).

Armor Rating - A subjective numeric value assigned to a vehicle or suit's armor capabilities which indicates only its relative strength/weakness in relation to other like units. *See also "sensor rating".*

Armored Personnel Carrier (APC) - 1. Any of a series of wheeled, tracked, or hover-capable ground vehicles designed for transporting Infantry personnel on the battlefield. 2. A specific configuration of SFMC Infantry Fighting Vehicle which carries 12 Marines in a modular rear hull.

Battalion - In the SFMC, 3-4 companies plus HQ. Few pure Armor battalions exist.

Battery - A formation or unit of artillery pieces. In the SFMC Armor, a battery is equal in size to a company.

Branch - A group of related jobs within the Starfleet Marine Corps. There are eight branches of duty within the SFMC: Aerospace, Armor, Combat Engineers, Infantry, Mecha, Medical, Special Operations, and Support.

Brigade - In the SFMC, 3-4 battalions plus HQ. No pure Armor brigades currently exist.

Calibre - The diameter of the bore of a firearm, shown today in millimeters.

Camouflage - 1. The method or result of concealing personnel or equipment from an enemy by making them appear to be part of the natural surroundings. 2. The use of physical, as opposed to electronic or holographic, camouflage.

Carbine - A lightweight rifle with a short barrel.

Caseless - Ammunition requiring no attached casing of propellant.

Centimeter - One one-hundreth of a meter. There are about 2.6cm in an inch.

Charge Pack - Large power cells which provide electrical power for vehicles.

Choke Point - A terrain feature that restricts the movement of personnel and/or vehicles that pass through it.

Cloaking Technology - Any system designed to render persons or objects "invisible"; usually by selective manipulation of light rays.

Colonial Marines - One of several historical Marine organizations that evolved into the present day SFMC.

Combined Arms - Military term for operations that involve more than one branch type of unit (Aerospace and Armor, Mecha and Infantry, etc.). Also known as "composite" operations or units. Almost all SFMC Armor operations are part of combined arms operations.

Company - In the SFMC, 3 or 4 platoons plus HQ. This is the most common organizational element of SFMC Armor.

Deflector Shield - Standard defense field for starships, based on the ability to alter gravitational effects across a plane perpendicular to the

incoming threat. Deflector shields do not function safely or effectively inside a planetary atmosphere.

Differential Thrust - The process of maneuvering by disproportionately distributing thrust through nozzles which usually point in several directions. Commonly used by missiles. *See also "vectored thrust".*

Direct Fire - A method of weapon employment where line of sight must exist between the firing weapon and it's target.

Division - In the SFMC, 3-4 brigades plus HQ. No pure Armor Divisions currently exist.

Electronic Countermeasures (ECM) - Measure to counteract enemy sensing and targeting attempts through jamming, misinformation and distortion of their sensor signals.

Effective Range - In weapon systems, the distance at which the average operator can place the majority of shots on target. *See also "maximum range".*

Eloflage - Any type of electronic measures or countermeasures designed to camouflage something.

Entrenching - To dig or occupy a trench.

Essential Task List - The list of duties, standards, behaviors, tactics, etc. of which a Marine must have mastery in order to attain a certain MOS.

Eugenics Wars - Devastating wars that took place in Earth's history, as genetically engineered humans (who believed themselves superior to non-engineered humans) tried to conquer the world.

Exotic Atmosphere - Any non-Class-M atmosphere that is composed of hominid-toxic, corrosive or high pressure gases.

Field Artillery - Artillery which usually provides indirect fires on ground positions.

Field of Service- In SFMC organization, a group of related MOSs within a branch. Examples in the Armor Branch are Artillery and Cavalry.

Force Field - A defensive technology, consisting of an energized field that protects a target by deflecting, diverting or absorbing a certain amount of energy per millisecond. Sometimes inaccurately referred to as "shields".

Gravitic - Of or having to do with gravity; esp. the manipulation of gravity.

Hardened - Term used to describe a building or fortification that has been constructed to resist damage from enemy weapons. This can be done by improving the design, using stronger materials etc.

Heavy Weapons - Weapons designed to engage vehicles or equivalent hardened targets, or to affect a large area with a single attack. Often requires a special mount or firing platform and more than one person to operate.

Holoflage - The use of hologram generation for the purpose of camou-

flage.

Hominid - Historically, a primate of the family Hominidae, of which Homo sapiens is the only extant species. Today used interchangeably with "humanoid" to describe beings which are Terran-like in appearance.

Hovercraft - Usually refers specifically to a vehicle which uses a cushion of air for limited lift in negotiating terrain.

Humanoid - *See "hominid".*

Incendiary - Causing or capable of causing fire.

Indirect Fire - Fire from artillery, mortars, rockets, or similar weapons of a ballistic or semi-ballistic nature. The projectile does not travel a straight path and so a direct line of sight to the target is not needed.

Kilogram - Standard measurement for weight used in the metric system. One kilogram is 1000 grams, or about 2.2 pounds.

Kilometer - Standard measurement for distance used in the metric system. A kilometer is 1000 meters, or about 0.6 miles.

Kiloton - Standard measurement for explosive force. It is equal to the explosive force of 1000 tons of conventional TNT explosive.

Light Weapons - Man-portable weapons designed primarily to engage individual personnel targets or very small vehicles.

Man Portable - Something designed to be carried by one Marine.

Manpack - A man-portable system designed to be carried in a pack, usually on the back. It must usually be unpacked before use.

Marine Occupational Specialty (MOS) - The specific "job" or function to which the individual Marine is trained to do. Groups of related MOSs are called Branches.

Maximum Range - In weapon systems, the maximum distance a shot will travel if it hits nothing else in flight. For Infantry weapons, it is usually expressed in terms of a Class M atmosphere/gravity.

MegaCorporations - Huge industrial conglomerates of the 21st century, responsible for much of Earth's early colonization efforts and rebuilding of civilization after the Eugenics Wars. Funded the Colonial Marines.

Meter - Measure of distance, the standard on which the metric system is based. One meter equals 39 inches, or one yard plus three inches.

Millimeter - One one-thousandth of a meter. About the thickness of a 20th century U.S. dime.

Mission - 1. A special assignment given to a person or group. 2. A combat operation assigned to a person or military unit. 3. An aerospace operation intended to carry out specific program objectives.

Musket - A smoothboore shoulder gun used from the late 16th c. to the 18th c. on Earth.

Muzzle - The end of the barrel of a projectile weapon through which the projectile leaves. Also, the emitter crystal end of an energy

weapon.

Non-Commissioned Officer (NCO) - Refers collectively to pay grades E-4 through E-9 (corporal through sergeant major). These are enlisted personnel who lead other subordinate enlisted personnel.

Normal Upper Ceiling of Operations - The altitude at which vehicles can operate with no difficulty regarding power drain, control, and excess detectability.

Pike - A long spear formerly used by infantry, particulalry against cavalry.

Platoon - In SFMC Armor, four or six vehicles. This is the basic maneuver unit of SFMC Armor.

Portable - Designed to be carried from place to place by personnel as opposed to vehicles. *See also "man portable" and "crew portable".*

Power Cell - An advanced form of battery, used to power small electronic devices and weapons.

Sensor Signature - The signal or emissions that personnel or vehicles give off, which can be detected by enemy sensing devices. This can be heat, electromagnetic, acoustic or some other form of energy.

Special Operations - Any operation that is not considered routine, common or standard when speaking of the SFMC as a whole.

Spotter - One who observes friendly fire for fire control purposes.

Strategic - Important or essential in relation to a plan of action; essential to the effective conduct of war; highly important to an intended objective. Usually refers to a longer term plan or view of a military situation.

Tactical - Of, relating to, used in, or involving military operations that are smaller, closer to base, and of less long-term significance than strategic operations. Usually refers to the immediate plan and situation rather than the long-term goals and picture of the strategic operation.

Team - In SFMC Armor, a two-vehicle unit with a lead and a wingman.

Tracer - A weapon that, intentionally or unintentionally, marks the path of its fire (usually chemically or electronically) so that its operator can see it.

Track - A tractor-tread-type system used for ground vehicle propulsion over varying terrain.

Transatmospheric - Travelling from atmosphere to space or vice-versa.

Transponder - A transmitter-receiver activated for transmission by reception of a predetermined signal.

Troop - A unit or formation of cavalry forces or vehicles. In SFMC Armor, a troop is equivalent to a company

Truck - Generic term for ground vehicles other than fighting vehicles.

Vectored Thrust - The process of maneuvering by changing the orientation of a thruster nozzle while maintaining the level of thrust

through the nozzle. See also "differential thrust".

Wingman - The second vehicle of a two-vehicle team which maneuvers always in relation to the lead vehicle and with consideration of providing the lead with overwatch and/or cover.

Guide to Acronyms

Here is a list of commonly used acronyms in this manual. Entries followed by an asterisk have a separate glossary entry. Other terms are covered in detail in their respective manual sections.

ACH - Air-Cushioned Hover

AFV - Armored Fighting Vehicle

AG - Antigrav

ALSTTAR - Advanced Life Support for Trauma, Transportation, And Resuscitation

AMS - Artillery Missile System

AOD - Armor Operations Directorate

APC* - Armored Personnel Carrier

ARV - Armored Recovery Vehicle

BDA - Battle Damage Assessment

BDU - Battle Dress Uniform

BMNT - Beginning of Morning Nautical Twilight (first light)

C3 - Command, Control, Communications

CAS - Close Air Support

CQB - Close-Quarter Battle

CP - Command Post

cm* - centimeter

DEW - Directed Energy Weapon

ECM* - Electronic CounterMeasures

EMD - Emergency Medical Dispensing unit

EMPW - ElectroMagnetic Projectile Weapon

EPS - Energetic Plasma System

EXCHEG - Extreme Conditions Hazardous Environment Garment

FACTS - Forward Aerospace Control and Tactical Support

GOEIS - Ground Offensive Electronic Interdiction System (pronounced "goes")

HE - High Explosive

HEAT - High Explosive Anti-Tank

HIVAP - HI Velocity Armor Piercing (pronounced "hi-vap")

HOTAS - Hands On Throttle And Stick

HPK - High Probability of Kill

HQ - HeadQuarters

IDF - Inertial Dampening Field

IFV - Infantry Fighting Vehicle

I-LINK - Individual communications Link

IR - InfraRed

kg* - kilogram

km* - kilometer

kph - kilometers per hour

LCARS - Library Computer Access and Retrieval System

LPK - Low Probability of Kill

m*- meter

MAPLIML - MAn Portable Light Infantry Missile Launcher (called "mapper")

MIPPA - Marine Infantry Personal Protective Armor (pronounced "mippa")

MOS* - Marine Occupational Specialty

mm* - millimeter

MSG - Marine Strike Group

MVS - Modular Vehicle System

NBC - Nuclear, Biological and Chemical

NCO* - Non-Commissioned Officer

NUCO* - Normal Upper Ceiling of Operations

OIC - Officer In Charge

OpArea - Operational Area

OPCON - Operational Control

OPORD - Operations Order

OPSEC - Operational Security

PADD - Personal Access Display Device

PL - Platoon Leader

PS or PSG - Platoon Sergeant

PVC - Pilot/Vehicle Commander

R&D - Research and Development

RCT - Reginetal Combat Team

RF - Radio Frequency

SAC - Sensor-Absorbent Coating

SFMC - StarFleet Marine Corps

SIF - Structural Integrity Field

SOP - Standard Operating Procedure

SURTACCOM - Surface Tactical Command

TACAIRCOM - Tactical Aeropsace Command

THEOG - Thermal Hazardous Environment Overgarment (pronounced "thug")

TVD - Through-Visor Display

UFP - United Federation of Planets

UN - United Nations

UNPF - United Nations Peace Forces

UNPFMC - United Nations Peace Forces Marine Corps

US - United States

USMC - United States Marine Corps

XO - Executive Officer

References and Further Reading

Bits and pieces of information from this manual came from many sources, Army Field Manuals (via Jim Monroe) figuring prominently among them. Also of much help was Tom Clancy's, *Armored Cav* (Berkley Books, New York, 1994).

Also, thanks to the many, many web sites set up by US Army and Marine Corps units which continue to be a harvest of pictures and information to me.

About SFMC Academy

The Starfleet Marine Corps Academy was established by Commander Starfleet in 2164 when it was determined that Starfleet Academy could no longer adequately meet the needs of both services. The historical home of the United States' Navy and Marine Corps academies, Annapolis, was selected as the new home of the SFMCA. The head of the Academy, known as Director SFMCA (DCO - Academy), is still headquartered at the main campus in Annapolis.

The motto of the SFMCA is "Facta Non Verba" or, in Federation Standard, "Deeds not Words." This is reflected in the more informal academy slogan, "We lead by example… whether we mean to or not."

The Director SFMCA reports to the Commanding Officer of the Training Command (COTRACOM) who, in addition to the SFMCA, oversees branch schools, enlisted personnel training, advanced technical schools, and periodic skill re-fresher courses. Most of these courses are held either at one of the SFMCA facilities, or at one of the many training facilities in the New Valley Forge system which is home to TRACOM. These facilities, together with an Oberth-class spacedock serving as TRACOM headquarters, comprise Station Valley Forge.

Today, the SFMCA consists of 5 campuses, 8 training worlds, and 42 ranges and field courses throughout the UFP. Together with Station Valley Forge, the SFMCA comprises one of the largest and most advanced military training organizations in the known universe.