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LETTERS

In Regard to Wheeled versus Tracked Vehicles

Dear *ARMOR,*

I am both amused and pleased to see wheeled armored vehicles reintroduced into the U.S. Army's inventory; I think their absence was a religious thing. I would like to share a short story about wheeled verses tracked vehicles.

In the summer of 1958, my squadron, 3d Squadron, 8th (3/8) Cavalry Squadron, 8th Infantry Division, was stationed at Coleman Barracks near Mannheim, Germany. I was the commander of Charlie Troop. The squadron was ordered to go to Münsingen, Germany, to participate in an exercise with a French armor unit. We arrived to find a French cavalry unit, equipped with strange-looking armored cars, and light tanks (AMX 13), which were also strange looking. My older NCOs, veterans of World War II, joked about the French equipment and said armored cars were not worth the powder to blow them up. They particularly mentioned the U.S. Army M8 and M20 armored cars, which were issued to U.S. and British armored cavalry and reconnaissance units during World War II. In 1958, the 3/8th was equipped with M41 tanks, a beautiful machine with a powerful 76mm gun, as well as the M75 armored personnel carrier — a good reliable machine.

The exercise did not go well, mainly because of the language barrier. When it came time to road march our units back to Coleman Barracks, I noticed an old U.S. M20 command vehicle in the back of the French motor pool. It was rusted with flat tires and in very poor condition, but it had an engine. I asked the French motor pool officer if I could have it. He made several calls and 2 hours before our departure, he said, "yes." Without permission from my squadron XO or S3, I told my first sergeant to hook it up and tow it back to Coleman Barracks. (The tires did hold air when inflated.)

The M20 was basically a World War II 2½-ton truck chassis with sloped armor plates and six-wheel drive. The driver and co-driver/machine gunner positions were in front and a big Hercules 6-cylinder inline engine was in the rear. Its companion vehicle was the M8, which had a turret-mounted 37mm cannon (see September-October 2007 cover of *ARMOR*). After World War II, the M8 and M20 served with many foreign armies for years. I saw some in Korea in 1953, Turkey in 1963, and Vietnam in 1968.

Well, I got into trouble. The squadron commander wanted to know from where I stole the piece of junk. I told him the French gave it to me with no strings attached and with no paperwork. (Dumb!) I told the commander that I planned, after it was cleaned up, to put it on a concrete pad in front of the squadron headquarters. [Our S3 was a World War II veteran; he had served with the 81st Recon Battalion in France and Germany. He said the M8 and M20 were difficult to back up and turn around under fire. He said that the off-road mobility was terrible and the armor protection was unsatisfactory. He saw the aftermath of two M8s that had been hit by German tank gunfire; the results were catastrophic. He thought, like many World War II NCOs, that the wheeled armored vehicles were inferior to our tracked vehicles. This experience created for me personally a long-time study of wheeled verses tracked vehicles.]

Back to the M20, my maintenance section, the squadron maintenance, and others, I am sure, had a wonderful time making that old M20 run and look like new. After being sandblasted, painted, and outfitted with new tires (don't ask), it looked like it was ready for issue. I drove it over to the squadron headquarters and took the commander for a ride. He was thrilled. He decided that on our next aggressor duty (which was often for cavalry units), he would ride in it as "El Comandante" of aggressor forces. We took it to the field several times and it performed well. Then the ordnance people got into the act. I knew damn well that our rebuilt M20 was not currently in the U.S. Army's inventory. It had no serial numbers (WD number) so forth and so on, which resulted in it being permanently deadlined. The M20 recon and command vehicle of World War II vintage ended up on a concrete pad in front of 3/8th Cavalry Squadron headquarters where I intended it to go in the first place. If any reader remembers this particular M20 at Coleman Barracks, I would appreciate it if you would e-mail *ARMOR* at *knox.armormag @conus.army.mil* and let them know when you saw it.

In regard to wheeled verses tracked vehicles, I returned from Germany in 1959 and attended the Armor Officers Advanced Course. Armor students were asked to review a book on a technical subject and I chose *The Theory of Land Locomotion* by Dr. Gregory Bekker. The contents were over my head, but I was able, with my report, to snow my instructor.

Over the next 20 years or so, I wrote several articles for *ARMOR,* such as "Ground Mobility in Perspective," in the January-February 1982 edition, as well as other professional papers as part of my mobility studies. After a tour in Turkey, I was assigned to the Combat Development Command, Armor Agency, at Fort Knox, Kentucky. During my years with this command, I met many people knowledgeable on vehicle mobility, to include the engineers at Waterways Experimentation Station, Vicksburg, Mississippi. I also met Dr. Bekker and we became friends; he was on the design team that developed the wheels for the Lunar Rover.

After a tour in Vietnam and then squadron command, I was assigned to the Armor and Engineer Board at Fort Knox, where I served on the main battle tank task force for the XM1. I saw the great potential of track vehicle suspension. The XM1 could outperform almost any tracked or wheeled suspension in the world. Can you imagine a World War II tanker being inside this new tank? Today, tank units can outrun their trains with ease in the penetration and exploitation mode.

Later, as Chief of Armor, Testing, my staff tested many vehicles, both tracked and wheeled. The European armies were far ahead of the United States' wheel suspension systems, especially the French. Then, the U.S. XM808 vehicles with six or eight wheels or tracks were extensively tested. The eight-wheeled "twister" could just about outperform any suspension on any terrain until armor protection was added. The XR311 was also a superb wheeled vehicle.

Because of the Iranian hostage crisis in the 1980s, strategic mobility for armor units became a priority. The pros and cons of wheels versus tracks were discussed at the highest levels; it didn't seem important whether or not the studies and tests leaned in support of wheeled vehicles. The Marines purchased the light armored vehicle (LAV) while the conclusion in the armor camp was that wheels were vulnerable, inadequate, poorly protected weapons platforms. It seemed that the negative condition was passed on from father to son, or may be it was the "gospel of the tank god."

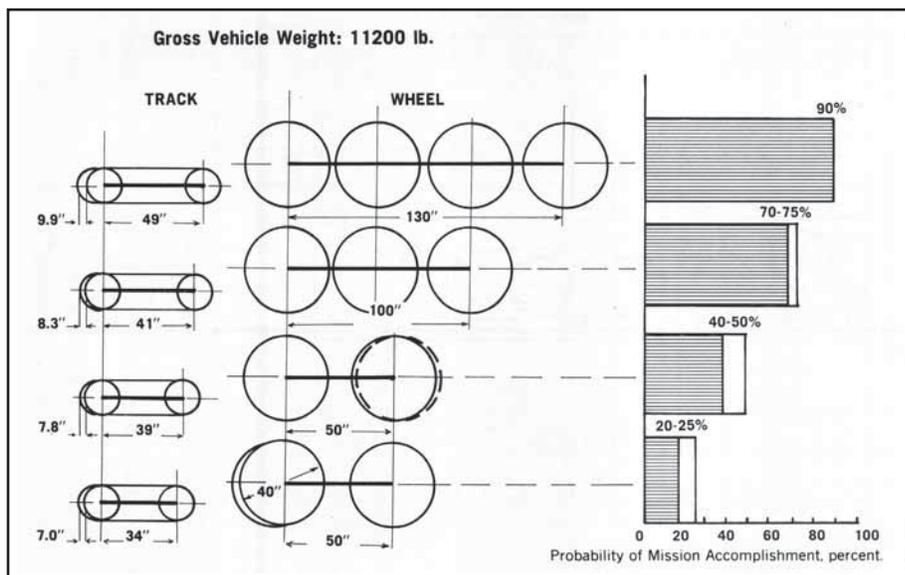*Continued on Page 51*

Figure 1. Dimensions of equivalent tracked and wheeled running gears which have the same soft ground and slope climbing performance. (Figure from "Wheels and Tracks" by Dr. M.G. Bekker, *ARMOR,* May-June 1976, p. 18.)

COMMANDER'S HATCH

BG Donald M. Campbell, Jr.
Commanding General
U.S. Army Armor Center

Strengthening the Armor Profession

As we continue to forge forward in this era of persistent conflict, it is important to remember our duty to the Armor force in sharing lessons learned with fellow Armor crewman and cavalry troopers. We must understand that the strength of the Armor branch is not tied directly to Fort Knox, but instead rests in the collective strengths of great armor leaders and their combined experiences both in training core competencies and deftly prosecuting the current fight. As a professional force that fights and wins our Nation's wars, we are an organization that continually learns from shared experiences. The ideal platforms to share lessons learned, discuss trends, solve problems, and develop standards to support the ever-changing environment are official forums and partnerships with other official forums.

The first forum is, of course, *ARMOR* Magazine, which is read throughout the world and is the official professional journal of Armor and Cavalry soldiers. Thumbing through the journal, you find article after article from Soldiers sharing ideas, methods they've used, problems they've solved, lives they've saved, lessons they've learned, and other best practices as they continue the fight against an ever-evolving threat. For example, this edition includes articles on modifying a cavalry squadron for operations in Afghanistan, planning and employing small kill teams in a tank platoon, the future of the battlefield surveillance brigade, adapting to heat in the current operating environment, and the brutal lessons of first contact. The point is, these articles represent relevant, invaluable information and should be read and critiqued with vigor.

Another forum for the exchange of ideas is the Mounted Maneuver Net, which allows mounted warriors to exchange ideas using the Internet and the Battle Command Knowledge System (BCKS). It is accessible through Army Knowledge Online (AKO) using the "knowledge net-works" tab under the "quick links" menu on your AKO homepage. The Mounted Maneuver Net contains a wealth of information, to include chat-style forums and articles. The vision of the Mounted Maneuver Net is to produce a mounted maneuver team capable of harnessing and applying collective experiences and skills of its members to outthink and outfight all enemies. Membership is free and I encourage you to subscribe.

The Army Warfighter's Forum is another method for sharing lessons learned; to access, click the Army Warfighter's Forum logo on the "knowledge networks" page. This page provides links to the infantry brigade combat team (IBCT), Stryker brigade combat team (SBCT), and heavy brigade combat team (HBCT) forums, each designed to provide a wealth of information sources to members of these brigade combat teams (BCT). Each forum is sponsored and hosted by Forces Command (FORSCOM). The HBCT Warfighting Forum is hosted and managed by Lieutenant General Rick Lynch and his staff at III Corps. This forum is used to enhance HBCT leader development and individual and collective training across the full spectrum of operations. It also serves as a training, doctrine, and force design conduit for the Army's HBCTs, helping them perform at higher levels of mission proficiency, and hosts bi-monthly symposiums to encourage leaders at the BCT level and above to share lessons learned and provide feedback to the force. Much like the Mounted Maneuver Net, the Army's Warfighter Forum aids greatly in shaping our future force. I invite you to participate in both of these forums as they provide a wealth of information.

The final venue for gathering information and feedback is the Armor School, which will host its Reconnaissance Summit on 13 and 14 November 2008, and its Armor Warfighting Conference from 11 to 14 May 2009. These events focus on brigade-level leaders and offer an opportunity for Armor and Cavalry warfighters to return to the home of Armor and share their fresh-from-the-fight experiences. It is also a great opportunity to provide feedback to the many contractors who provide material and services to our warfighters. Mark these events on your calendars and I challenge each brigade to send representation this year! Once the Armor School relocates to Fort Benning, the Armor and Infantry conferences will merge into one large Maneuver conference, which will showcase all of the facets of maneuver warfare.

Armor, and by extension, the profession of arms, is a noble profession and its leaders are charged with preserving its nobility! In an era of persistent conflict and full-spectrum operations, we must constantly adapt to ensure success on the battlefield and the efficiency and safety of our Soldiers. I encourage every Soldier and Leader to contribute to these forums and share their experiences; humans are the ultimate tool for preserving information!!! Remember information is a human construct — we define its value, its lifetime, and its importance; information shared and preserved today will be invaluable tomorrow. We have learned from the past that lessons learned, properly shared and preserved, remain relevant for years to come. We must remain committed to learning if we are to maintain our edge in the future and remain the combat arm of decision.

Forge the Thunderbolt!

DRIVER'S SEAT

CSM John Wayne Troxell
Command Sergeant Major
U.S. Army Armor Center

An Update on the Armor School's Move to Fort Benning

Greetings to all soldiers of Armor and Cavalry! In this issue I want to give an update on the Armor School's planned movement to Fort Benning, Georgia, and its merger with the Infantry School to form the Maneuver Center of Excellence (MCOE).

As a part of the 2005 Base Realignment and Closure (BRAC) decisions, the Armor School will move to Fort Benning, Georgia, and will be fully operational no later than 15 September 2011. This move will happen! We are already in initial stages of planning the execution phase of the move.

Once the Armor and Infantry Schools have aligned and are settled, the MCOE will be commanded by a two-star general and the Infantry and Armor Schools will be one-star subordinate commands under the MCOE. Additionally, the MCOE will have a one-star deputy commanding general; an integrated staff; directorates of training, training sustainment, training and doctrine, capabilities development and integration; and a noncommissioned officers (NCO) academy.

As of 1 October, the MCOE will have a virtual operating capability (VOC) for the majority of the staff and each directorate, including the NCO academy. VOC means that an activity or organization lead has been appointed and organizations are conducting and executing MCOE distributive operations prior to actual physical realignment. For example, Command Sergeant Major Ray Edgar, the commandant of the Armor School NCO Academy, has been appointed the virtual lead for the MCOE NCO Academy, which means he will be responsible for the transformation and merger of functions into the MCOE NCO Academy. In the meantime, however, the Infantry and Armor Centers are continuing to conduct the warrior leader course, basic NCO course, and the advanced NCO course both at Fort Knox and Fort Benning.

At full operating capability (FOC), the Armor School will consist of the 194th Armored Brigade, which will train 19D/K one-station unit training (OSUT) and 63-series advanced individual training (AIT); the 192d Infantry Brigade, which will conduct all basic combat training for the MCOE; and the 16th Cavalry Regiment, which will continue to train armor officer basic leadership courses, armor functional courses, such as master gunner and Army Reconnaissance Course, and will also train international military students.

The Armor School will begin its initial move in January 2010 and a big push of personnel and resources will move in the summer of 2010. As I stated earlier, the move will be complete by September 2011. Now having said all of this, the Armor Center and School will continue to function at Fort Knox until late summer 2010. The MCOE command group will be in position at Fort Benning by late summer/early fall 2010.

The most common question from the field is: "What will become of Fort Knox"? Fort Knox is the future home of the Human Resources Center of Excellence (HRCOE), which is scheduled to be in place by late summer 2010. The U.S. Army Accessions Command will move to Fort Knox from Washington, D.C. These two commands, along with the U.S. Army Recruiting Command, which is already at Fort Knox, will form the HRCOE. In addition to the HRCOE, Fort Knox will gain an infantry brigade combat team (IBCT) starting next summer.

There is plenty of construction underway at both installations to accommodate the new merger. Once the moves are complete, Fort Benning and Fort Knox will serve as models for Army transformation. Armor leaders must embrace this inevitable change; rest assured there will be no threat to our lineage, history, and traditions as an armor and cavalry force. We are already dedicating roads, buildings, and structures that are being constructed in the Harmony Church area at Fort Benning where the Armor School will be located.

As we continue to fight during this time of persistent conflict, more and more infantry and armor soldiers will be serving side by side in the contemporary operating environment. From the beginning of the war on terrorism, armor and infantry soldiers have been conducting similar operations and, in some cases, the exact same types of operations. For example, in my last article, I spoke of the mighty 2d Squadron, 3d Armored Cavalry Regiment, which, at times on the battlefield, could have been mistaken for a light infantry battalion.

We still have to be highly trained and functional in our primary mission role as the world's premier mounted force and we will continue to do so. The U.S. Army Armor Center and School will continue to provide the field with highly trained armor and cavalry officers, noncommissioned officers, and soldiers.

Forge the Thunderbolt!

Lessons from the 1941 Anglo-Iraqi Revolt:

An Analysis of the Writings of Iraqi Army Officer and Military Historian, Mahmood Al-Durrah

by Commander Youssef Aboul-Enein

Among the problems of the Saddam Hussein regime was the downfall of Iraqi scholarly thought and publications. Many Iraqi historians, political scientists, and writers within Iraq were reduced to publishing works that did not contain true analysis and discussions of the problems facing Iraq's modern history; instead, the focus was on slogans of Baathism and praising the regime. As a reader of Arabic books on military and political history, it is my earnest hope that among the fruits of Operation Iraqi Freedom is the re-awakening of the true scholarly potential of Iraqi intellectuals.

This article discusses the writings of the late Iraqi officer, Mahmood Al-Durrah, who served as an army lieutenant during World War II. Al-Durrah, an Iraqi military historian, shares his views on the 1941 Anglo-Iraqi conflict in his book, Al-Harb Al-Iraqiyah Al-Britaniah *(the Iraqi-British War, 1941). I have a passion for Arabic works of military significance and wish to share my analysis of Al-Durrah's works with* ARMOR *readers.*

When an American soldier or sailor hears "1941," they remember Pearl Harbor; for Iraqis, it is the invasion of Iraq by British forces to suppress the pro-Axis government of Prime Minister Rashid Ali, who was installed as prime minister in a military coup that swept aside the Iraqi Hashemite monarchy. Al-Harb Al-Iraqiyah Al-Britaniah *offers a comprehensive study of the strategy and tactics of British and Iraqi forces, and discusses how the British secured the port at Basra and fought their way to Baghdad.*[1] *Although in Arabic, Al-Durrah provides perspectives on operational and tactical decisions made by Iraqi senior officers in confronting new British combined armor, infantry, and air tactics. It also offers lessons on how the Iraqi military entered Arab political life.*

As U.S. forces become involved in the positive evolution of Iraq, as well as battling the Iraqi extremist insurgency, it is vital to study Arabic works written by Iraqis. These works not only should be read by American students of warfare, but need to be

rediscovered by Iraqi security forces, who have sadly endured 2 decades of devolution in Iraqi military thought.

The chief cause of the 1941 Anglo-Iraqi conflict lay in the very structure by which modern Iraq was created. After World War I, during the 1921 Cairo Conference, British officials, such as Winston Churchill, T.E. Lawrence, and the Hashemite family of the

Hijaz (western Arabia) that led the Arab revolt, gathered to stitch together modern Iraq from the Ottoman provinces of Mosul, Baghdad, and Basra.

After Prince Faisal was ejected by the French in 1920 and denied kingship of Syria, it was in Iraq that the British would find a convenient monarchy to install Faisal. It also provided the British with a method of giving their mandate in Iraq the veneer of Arab governance. The installation of Faisal as King of Iraq represented many negative images to average Iraqis, which included a Sunni ruling over a Shiite majority nation, a British-inspired monarch, and a western Arabian (Hijazi) with no connection to Iraq.

The Iraqi monarchy and constitution was created from 1921 to 1923 with British oversight. This was a time when many Arab officers demobilized or simply defected from the Ottoman armies and were experimenting with ideas of nationalism, self-determination, and even fascism. The Iraqi constitutional monarchy was created to primarily preserve British basing and oil interests in Iraq, which was further cemented by the 1930 Anglo-Iraqi Treaty that ensured favorable terms for the British and control of strategic military bases, primarily the Habbaniya air base, and valued oil fields. The terms of the 1930 treaty led to the suicide of Iraq's Prime Minister Abdel-Mohsen Saddoun, who could not endure the humiliation of the terms dictated by the British.

The 1930 treaty led to mass demonstrations, including an infamous riot orchestrated by General Yassin Hashimi, who would become Prime Minister in 1935. In this climate, Iraqi officers dreamed of being the next Kemal Attaturk or Reza Shah, both military officers; Attaturk founded modern Turkey and Shah founded the Pahlavi Dynasty in Iran. Other Arab officers in Iraq also saw solutions in the militant fascism of Hitler and Musso-

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"After Prince Faisal was ejected by the French in 1920 and denied kingship of Syria, it was in Iraq that the British would find a convenient monarchy to install Faisal. It also provided the British with a method of giving their mandate in Iraq the veneer of Arab governance. The installation of Faisal as King of Iraq represented many negative images to the average Iraqis, which included a Sunni ruling over a Shiite majority nation, a British-inspired monarch, and a western Arabian (Hijazi) with no connection to Iraq."

lini, who created a facade of order and industry using hidden vi-olence and suppression of civil and political life.

Among the most influential military officers that infused the army into Iraqi politics was not a field commander, but an in-structor in Iraq's military academy. Colonel Tawfik Hussein taught military history and injected ideas that inspired not only Al-Durrah, but a string of Iraqi military leaders who would or-chestrate a series of military coups. Hussein laced his history lesson with images of King Faisal betraying the aspirations of Iraqi, Syrian, and Palestinian officers who left the Ottoman ser-vice to fight against the Turks in the Arab Revolt in the hope of establishing an independent Arab state. He argued that the Iraqi army has a duty to undertake political action to realign the di-rection of the nation. In 1929, Hussein began teaching and, by 1934, he had influenced over 70 key officers and attracted the attention of the Muslim youth group, who yearned to reestab-lish the Caliphate in Iraq. Two of the four generals in charge of the army and who understood they held the key to maintaining internal order for King Faisal, were followers of Hussein's ra-tionale. In addition, Lebanon became a haven for Iraqi officers who published pamphlets, as well as anti-monarchy and anti-British articles in the Lebanese press. More importantly, Leba-non offered a location to hold meetings with Islamists, commu-nists, and nationalists, all committed on ridding Iraq of British influence.

The 1936 Bakr Sidqui Military Coup

It is important that all Arabs study what would become the first incidence in modern Arab political history where army offi-cers staged a successful military coup in October 1936. The cli-mate to create the perfect conditions for this military coup includ-ed the bulk of the Iraqi army being deployed on annual sum-mer maneuvers, the army chief of staff being out of the country in London for military talks, and the cooperation of a flight com-mander who controlled five bombers, all under the leadership of General Bakr Sidqui. Events, which unfolded around the night of 26 October 1936, began with a shock and awe of bombers, under the command of Ali Jawad, screaming over Baghdad at 11:30 p.m. They dropped four bombs in front of the council of ministers' building, the central post office, parliament, and the Dakhla River, leading to seven casualties, but more importantly, this was the first time aerial bombardments were used in a mili-tary coup.

The officers in revolt swore fealty to King Ghazi and sent a proc-lamation to the king indicating they were purging the corrupt ministers around him. Communists, led by lawyers in and around Baghdad, asked the people to rise up against the government. During the ensuing chaos, the war minister, Jafar Al-Aksary, was murdered by several officers sent by Sidqui. General Sidqui im-posed Prime Minister Hikmat Sulayman on King Ghazi and Iraq would be ruled by unconstitutional means for a year. *Al-Harb Al-Iraqiyah Al-Britaniah* laments the decision to execute Jafar Al-Askary, who dedicated his life to Arab nationalist causes and was a competent warrior having distinguished himself fighting the Ottomans in the Arab Revolt; he also fought the French in

Syria. General Sidqui's dictatorship would last less than a year and he would be killed in an assassination plot hatched by mili-tary officers.[2]

Iraqi politics after Sidqui would see the return of Prime Minis-ter Nuri as-Said, for his fourth time as prime minister. Prime Minister as-Said attempted to remove Iraq's chief of staff, Gen-eral Amari. Instead of having General Amari capitulate to the wishes of civilian authority, it was Amari and 30 senior officers who removed Nuri as-Said from power and imposed Rashid Ali al-Gaylani as prime minister. For added measure, the 30 senior officers, all yearning to return to the Sidqui dictatorship, de-posed the war minister, Taha Hashemi. Only one encampment, the Wishash Barracks, remained loyal to civil authority. The dic-tatorships of Generals Fawzy and Amari, along with Prime Min-ister Rashid Ali al-Gaylani, began in 1940 and would last until the end of the Anglo-Iraqi War in late May 1941.

World War II Iraq

During World War II, Iraqi officers and cadets saw a Britain that was on its last legs of empire. Many senior Iraqi generals and Arab nationalists assessed the situation and found that Britain stood alone; the Wehrmacht rolled over France, Poland, and Czechoslovakia; Hitler signed a nonaggression pact with Stalin; Iran's Reza Shah was pro-Axis; Turkey's Kemal Attaturk re-mained neutral; Haj Amin Husseini, the Mufti of Jerusalem, al-lied himself fully with the Nazis and was offering religious sanc-tion for Arab officers to throw off their governments that en-abled British colonization; and London requested Baghdad abide by the provisions of the 1930 Anglo-Iraqi Treaty and declare war on Italy and Germany.

Iraqi officers questioned why Iraq should continue its pro-Brit-ish policies and have British oversight in policy matters when it was losing to the Germans. In a compact with Prime Minister al-Gaylani and the senior generals, it was decided that Iraq's policy was to gain full independence for itself, Syria, Lebanon, and Palestine to form a Greater Arab State. These five countries also formed a government that favored militarism; however, they stalled on declaring war on the Axis because it recognized Arab self-determination; it declared no colonial ambitions in Egypt and Sudan and recognized their independence; it recognized the need for Arabs to be linguistically and culturally linked; and it was vehemently anti-Zionist.

There was a selective memory about Axis efforts to colonize Arab and African nations; for instance, the Italians colonized Lib-ya in 1911 and began an invasion of Ethiopia in 1935. From 1940 to the start of hostilities between British and Iraqi forces, a series of negotiations were undertaken to get Baghdad to first declare war on the Axis, then allow access through Iraq for Brit-ish forces, and lastly, react to London's request for extra Iraqi security in and around two strategic British air bases at Habban-iyah and Baghdad.

Al-Harb Al-Iraqiyah Al-Britaniah addresses American diplo-matic urgings for Iraq to cooperate with Britain as a means of asserting its right to full independence. This was the same line

of reasoning the United States urged with Morocco: that allied forces would, after World War II, work toward self-determination and independence of protectorates, mandates, and colonies.[3] The Iraqis, in turn, wanted Britain to assert the independence of Syria and Lebanon once it was liberated from the Vichy French, and demanded a just and lasting settlement of the Palestinian problem (then, as it is now, the Palestinian question was an agenda item of Arab governments).

The British were in no mood for negotiations and expected the Iraqis to abide by the provisions of the 1930 Anglo-Iraqi Treaty. Finer points of disagreement between the Iraqi and British governments dealt with unimpeded access to Iraqi facilities versus the landing of British forces only with the consent of Baghdad. Such Iraqi indecisiveness in times of war would lead to the May 1941 British invasion of Iraq. What gave Britain's Iraq policy a sense of urgency was the successful invasion of Greece by Nazi forces in April 1941, which made German bombers and transports within easy range of the Middle East.

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It is important to pause and understand the state of the Iraqi monarchy during 1940-1941. King Ghazi had died in a car crash in 1938, and in the world of conspiracies, the Iraqi street blamed his death on a British plot. In his place, the young King Faisal II was too young to assume the throne and regency under his uncle, Prince Abdal-Illah, was declared. Prince Abdal-Illah saw the controversy between Prime Minister al-Gaylani and the army, versus the British, as a means of wrestling more power for the monarchy with British support.

British and Iraqi negotiations became crucial when Nazi forces solidified their hold on Greece and were moving on strategic islands such as Rhoades and Crete. The government of Prime Minister al-Gaylani agreed to allow British forces to land in Basra, but attached many conditions as to the size and use of roads by these and follow-on forces. The issue of follow-on British forces would be the spark that ignited conflict in May 1941. In the last week of April, British air, land, and naval forces were making their way to Iraq from Bahrain, India, and Palestine. The bulk of these ground forces would land in Basra, regardless of what Iraqi generals and ministers thought about follow-on forces. The stage was set for conflict.

The Rashid Ali (al-Gaylani) Revolt or Anglo-Iraqi Conflict

Before delving into the tactics and operational aspects of this conflict, it is important to reflect on the choices that Iraqi leaders made versus how Morocco attained independence as a result of World War II. Iraq saw in British weakness, in the early years of the war (1939-1941), an opportunity to defy London and assert its sovereignty. Morocco, a French protectorate, and its monarch, King Mohammed V, chose to side with the allied cause, contributing troops in the hopes that the removal of its status as a French protectorate would be the natural outcome after the liberation of France and the victory of the free French. The outcome for Iraq would be a chaotic government after World War

II, leading to the demise of the monarchy in 1958; for Morocco, it would lead to independence in 1956, with small skirmishes with French forces and a relatively easier removal of its protectorate status. In Iraqi memory, the 1941 British landing would signify the second time English troops occupied Iraq, the first being 1914 to 1918. Little attention is paid to the reasons and geostrategic issues that drove London to send troops both times for the Iraqis, which is enough to say the British occupied Iraq twice during the 20th century without a real comprehension of the historic or millennial geostrategic background of Mesopotamia.

The Military Balance of Forces and Disposition

In 1941, Iraq commanded approximately 46,000 active and 280,000 reserve army officers and troops and had 13,000 policemen. The Iraqis possessed a mixed number of Italian, British, and American warplanes and transports, and one armored group composed of a mixture of antiquated tanks and armored personnel carriers. Unique to Iraqi forces is a riverine force of four armored patrol craft of 70 tons, armed with machine guns. Iraqi forces were divided into three security regions: the 1st and 2d Army Groups, headquartered in Baghdad with garrisons in Fallujah, Baquba, Ramadi, and Habbaniya air base (one of two in the country); the 3d Army Group, headquartered in Mosul; and the 4th Army Group, headquartered in Basra with garrisons in Nasiriya, Diwaniyah, Amarah, and Al-Shuayba air base (second of two in the country).

Why Iraq's Military Fate was Sealed

Despite the British landing, a superior force both technologically and militarily, the main reason Al-Durrah attributes to the total defeat of Iraq is what he calls "the governance of five" (the four military generals and Prime Minister al-Gaylani). The four senior officers, General Salah-al-din Sabbagh, Colonel Fahmy Said, Colonel Mahmood Suleiman, and Colonel Kamel Shabeeb, were each in command of an army group and had their own political ambitions and tribal groups to protect. As overall command and control of Iraqi forces was nonexistent, their military fate was sealed. An example highlighted in Al-Durrah's book is the Iraqi general staff drawing up contingencies for the defense of Basra, which was completely ignored by field commanders who took their orders from General Salah-al-Din Sabbagh, the military governor of Basra. The first wave of British forces were granted access into Basra by Prime Minister al-Gaylani and arrived on 18 April 1941. They were composed of the 20th Infantry Brigade, an artillery regiment, an antitank battery, an engineer company, and a civil affairs/humanitarian group. Their mission was to secure the port at Basra for follow-on forces that were to arrive 27 April.

It was this second British contingent to which Prime Minister al-Gaylani refused to grant access, adding that British forces could not exceed one brigade in Iraq. On 29 April 1941, the British considered this refusal an abrogation of the Anglo-Iraqi Treaty of 1930 and tantamount to war. London refused to tie in any political concessions on issues, such as Palestine and its manda-

tory status over Iraq, to the landing of British troops on Iraqi soil during a time of war and national survival against Axis powers. General Sabbagh of the Basra military district remarked that by allowing this initial force unopposed into Basra, the battle for this strategic port city had been lost. Another problem of the Iraqis was the only objective given to army group commanders was to be prepared to defend their regions. The British had clear objectives, which included first securing Basra and then the airfield at Habbaniya.

The Strategic Importance of Habbaniya Air Base

To demonstrate the importance of the Habbaniya airfield and its airport, Sin Al-Zuban, a secret communiqué from Berlin, was dispatched by Mufti Kamal Haddad to guarantee Axis support to Iraqi Prime Minister al-Gaylani should war break out with the British. It also stated that an air bridge of resupply from the island of Rhoades would be provided, but pressed for the Iraqis to occupy Sin Al-Zuban airport and Habbaniya airfield, as well as secure sources of highly refined airplane fuel for German transports and fighter escorts. This Axis air bridge offered an important supply option for Iraqi forces since they had no access to Basra.

Colonel Haqi Abdel-Karim commanded elements of the Third Army Group and took the initiative to lay plans for moving his group to secure Habbaniya air base. His forces would take positions around the base and attack once hostilities began with the British. Colonel Abdel-Karim worried about British air superiority in strafing his ground forces and breaking a siege of Habbaniya air base. His plan included a strategy to amass several artillery pieces across the Euphrates River overlooking Habbaniya air base and begin bombarding the base while conducting an infantry assault.

On 30 April, the British base commander of Habbaniya awoke to find a massing of Iraqi troops around the perimeter and occupying the strategic heights of Talul, overlooking the entire base. Immediately, the base was placed on alert and mobile armored vehicles, with mounted Vickers machine guns, began taking positions along the perimeter. The Iraqis pushed forward tank, armored, machine gun, and mechanized infantry companies that were supporting the 4th Infantry Brigade that arrived from Kirkuk. They also reinforced this assault force with anti-air and engineering companies. British reconnaissance patrols revealed that the 1st Infantry Brigade moved from Baghdad to Ramadi to cut British reinforcements from Jordan. The Iraqis also moved their 11th Infantry Regiment from Baghdad to Fallujah by train to act as a reserve force that could respond using the village's central location with its rail and river connections. The Iraqi generals and colonels then debated whether to make the first move and attack Habbaniya air base or wait for the British to strike first. The British continued their reconnaissance flights in Baghdad, Fallujah, and Habbaniya sectors.

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Capitalizing on Airpower: A New British Realization

The Anglo-Iraqi War of 1941 saw maximum use of airpower by British forces and their Iraqi counterparts, as well as their Axis allies. At 0500 hours on 2 May, British bombers took off from the Al-Shuayba air base near Basra and the surrounded Habbaniya air base in the center of Iraq. Their target was Iraqi units surrounding Habbaniya air base that were not within artillery range. The British had prioritized their target list in the following order: artillery, tanks, armored carriers, trucks, and infantry formations.

The Iraqis responded by shelling Habbaniya air base, beginning at 0550 hours, and sent up anti-air Flak directed at British warplanes. The British aerial attack lasted 19 hours and targets were drawn against Iraqi military assets in Baghdad, as well as Iraqi planes at the Rashid Ali airstrip and troop barracks in Qurna. Four Wellington bombers decimated Iraqi warplanes on the ground at the Rashid Ali airstrip.

Sensing an imminent attack, and by observing the mass take offs of British warplanes, the Iraqis sent up their own fighters and bombers, which downed one Royal Air Force (RAF) fighter at Salman Pak and attacked British-held Sin Zuban airport at Habbaniya before making an emergency landing at Fallujah. After the attack on the Rashid Ali airstrip, the Iraqis dispersed their planes to airstrips at Baquba, Khan Bani Saad, Dilli Abbas, and Mikdadiyah. However, good reconnaissance alerted the British to these other four airstrips and they attacked with aerial sorties, one of which scored a direct hit on the precious airplane fuel storage facility in Baquba.

By 4 May, only 7 out of 69 Iraqi warplanes remained and the only time the Iraqis would enjoy any air support was when Nazi Messerschmitt fighters and Henkel bombers flew to Iraq from bases in Rhoades and Syria (then controlled by the Vichy French). Iraqis and Germans could not coordinate Axis airpower with Iraqi ground operations against British forces. Instead, Axis warplanes stumbled on RAF fighters over Iraq.

The British employed a new tactic of keeping Iraqi units pinned in location using continuous aerial bombardment. Iraqis were unable to maneuver and support forces surrounding the British air base at Habbaniya. RAF planes located an infantry group traveling from Baghdad to Fallujah and strafed it. After almost 2 days of relentless RAF aerial bombardment against the Iraqis surrounding Habbaniya, a combined air and land force went to Talul Heights with infantry and armored Vickers machine gun regiments to mop up the concentration of Iraqi artillery and infantry forces surrounding the air base. Large British transports disgorged heavy artillery pieces at Habbaniya, which began shelling Iraqi artillery positions across the Euphrates River overlooking Habbaniya air base. On 6 and 7 May, a combined British and Indian expeditionary force, which made up two infantry brigades, landed in Basra; these forc-

es would be critical in bringing civil order in Basra.

The Axis Enters the Fray

One of the most important lessons to be learned from the 1941 Anglo-Iraqi conflict is the impact that outside powers have on the potential outcome of warfare in Iraq, whether Vichy French Syria, Germany, and Palestinian guerrillas in 1941 or Syria, Iran, and non-Iraqi Islamist extremist terrorist groups today. The Germans used Vichy French Syria to shuttle supplies and conduct air attacks in support of the Iraqis. These groups also used bases in Mosul, which offered the added benefit of access to fuel supplies. On 14 and 15 May, the British had had enough and launched air attacks on Mosul and Irbil in Northern Iraq, and struck at airstrips and air bases in Damascus, Halab, and Rayan, Syria. The British also maintained two remote fuel depots labeled H3 and H4 along the Jordan, Rabta, and Baghdad roads, which would aid General Glubb Pasha's Arab legions and British forces in Palestine to quickly access Iraq during this crisis in support of British units.

Another item eerily similar to the 2003 war in Iraq was the use of guerrillas to harass regular forces. In this case, the guerrillas and so-called "mujahideen" from Syria, Iraq, and Palestine joined the irregular force led by Palestinian leader Al-Kaukji.

From 19 to 22 May, British generals in Basra focused their efforts on Fallujah because the village offered a crossroads, as well as rail and river links, to Syria, Jordan, and Palestine. The British staged a diversionary attack on Ramadi to deceive Iraqis in committing forces in that sector while the main thrust on Fallujah began at 0500 hours on 19 May with bombardment from 57 fighter bombers. The Iraqis failed to stop an advance of combined artillery, infantry, and mobile armored vehicles mounted with Vickers machine guns, and Fallujah fell. An Iraqi truck, laden with dynamite to destroy the iron bridge linking Fallujah and Baghdad, was strafed by sheer luck by a RAF fighter.

Hitler realized the importance of unfolding events in Iraq and signed a directive on 23 May authorizing military aid, advisors, weapons, intelligence sharing, and communications with Iraqi resistance forces to bog the British in Iraq. Hitler's preoccupation with Operation Barbarossa and his eventual invasion of Russia sapped the effectiveness of Axis assistance to Iraq.

The Fall of Baghdad

Al-Durrah's book ends with a criticism of the way Baghdad fell. Iraqi generals and colonels did not overcome and adapt to British tactics in using combined air, ground, and artillery forces, along with the effective armored machine gun vehicles. Instead, Iraqi regular forces fought predictably a defensive action. Al-Durrah compares the plan for the defense of Baghdad as almost identical to the defense of Fallujah. The book describes how the defensive plans of Baghdad collapsed as soon as it came into contact with British regiments and aerial bombers. Generals and colonels, who were confident of British defeat and support of the Axis almost a year earlier, were now fleeing toward

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Mosul. Britain returned the regency of Prince Abdal-Illah and many of these generals and colonels were rounded up and subjected to an Iraqi military tribunal, thus ending the reign of Prime Minister Rashid Ali al-Gaylani and his four generals that ran Iraqi affairs for a little more than a year. These generals were replaced by Prime Minister Nuri as-Said, who would become prime minister for a fifth time. The war would assert the Iraqi monarchy's executive authority until the revolution of 1958 that violently ended Hashemite rule in Iraq and brought Colonel Abdel-Karim Qassem into power.

Al-Harb Al-Iraqiyah Al-Britaniah offers American military planners an understanding of why Iraqis mistrust foreign intervention; in particular, Iraqi leaders are highly sensitive to foreign basing rights, which is why routine agreements governing status of forces protections that enable a military exercise today are resisted and sometimes viewed with suspicion by many Arab governments.[4] The challenge is to understand the history and keep reassuring Arab friends that such agreements are not designed to impinge on sovereignty. Unlike European colonial, mandatory, and protectorate experiences that crafted documents to subjugate a region, current civilized nations and global powers in the 21st century are working together to empower Arab countries in dealing with security challenges that impact us all.

Just as America's military students spent much time studying Russian works during the cold war, today's conflict demands a comprehensive study of Arabic works like *Al-Harb Al-Iraqiyah Al-Britaniah*.

Notes

[1]Al-Durrah, *Al-Harb Al-Iraqiyah Al-Britaniah*, Dar-Al-Taleeah Printers, Beirut, Lebanon, 478 pp.

[2]Ibid.

[3]Ibid.

[4]Ibid.

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Heat Adaptation for Today's Battlefield

by Captain Russ Nowels, Captain Coley Tyler, and Dr. Phil Henson

On today's battlefield, soldiers frequently endure intense heat typical of the desert environments in the Middle East where temperatures routinely exceed 120° Fahrenheit. This extreme environment requires soldiers to endure intense daily heat while conducting dismounted patrols of 6 to 12 hours, covering 10 to 25 kilometers in urban areas, deserts, mountains, or broken and wooded terrain. In addition to the challenges posed by the regional climate, soldiers wear interceptor body armor (IBA) and the advanced combat helmet (ACH) to protect them from enemy hostility. Further, soldiers carry a weapon with a combat load of ammunition (usually 210 rounds for an M4 carbine), a Camelback or multiple canteens for proper hydration, a secondary weapon, first aid bags, casualty litters, and other miscellaneous equipment dictated by the mission. This carried equipment places an incredible amount of stress on the body by adding 50 to 75 pounds of weight and insulating heat around the core area. To mitigate the risks associated with severe environmental conditions and the weight that soldiers must bear, it is imperative that leaders and soldiers alike understand the importance of heat adaptation in surviving the current operating environment.

Heat Adaptation

Most Army units today routinely deploy to the Middle East in support of the ongoing combat operations in Iraq or Afghanistan. In preparation for deployment, these units make an effort to replicate every aspect of combat by using the newest training techniques and facilities available. The growing training resources essentially simulate every imaginable complex combat scenario to include hostile villages, detainee operations, and forward operating base procedures. As advanced as these training resources are, there is still one aspect of the Middle East that cannot be duplicated in the United States — the extreme heat. However, soldiers can overcome this challenge through successful heat adaptation preparation.

Heat adaptation occurs in response to repeated stress application factors such as solar radiation, temperature, humidity, work and exercise intensity, clothing, fitness, and so on.[1] Generally, heat adaptation works as a response to naturally occurring climatic changes in the environment (acclimatization), heat exposure in an artificial climate (acclimation), and training induced elevations in body temperatures.[2] Understanding this process is extremely important as heat adaptation is essentially the sum of acclimation and acclimatization, where the "former is induced experimentally in an artificial environment; whereas, the latter is induced by exposure to natural environments."[3] Thus, the objective of heat adaptation, as an outcome of acclimation and acclimatization, is to achieve three primary physiological changes: a heightened sweat response with an increased sweat output; a lowered heart rate; and a lowered core temperature. The body's sweat response is critical to support the body's cooling mechanism by maximizing evaporative

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cooling, which lowers the temperature of the peripheral blood prior to its return to the deeper tissues or the body's core. Likewise, a lower heart rate results from a more powerful stroke volume, which enables the heart to regulate more efficiently the body's plasma levels. As an outcome, the system is more stable when blood is pumped to the skin and muscles, or during a significant loss of fluids. These two physiological adaptations drive down the core temperature, which is the final objective of heat adaptation. Therefore, to achieve the physiological responses necessary to complete heat adaptation, an analysis of acclimation and acclimatization must be conducted.

Heat Acclimation

As previously stated, heat acclimation refers to the component of adaptation that can be induced experimentally while its purpose is to exercise the physiological mechanisms that facilitate adaptation. Physically fit subjects or highly trained individuals exhibit many of the characteristics of heat acclimation.[4] Researchers commonly refer to this as "partial acclimation," and credit the result to repetitive bouts of exercise.[5] Repeated exercise applications yield an elevation in the internal body temperature causing an increase in the sweat drive and the subsequent boost in evaporative cooling. The desired results of acclimation include: increased stroke volume, increased blood

flow to the working muscles and skin, and increased sweat response during exercise or heat exposure. These results mirror and directly relate to those physiological changes of heat adaptation.

The most important consideration of acclimation for military professionals, though, is that it can be developed in any environment, even cool climates.[6] This implies that acclimation can be controlled and achieved at any installation, or in any environment, across the Army prior to deployment. As a result, soldiers can acclimate through targeted physical training at home stations. Specifically, morning physical training and frequent road marches (foot marches) provide sufficient opportunities to exercise the acclimation responses. A more complete discussion of the desired acclimation outcomes and some physical training recommendations are offered below. These recommendations are given to ensure soldiers comprehend the simple training they can implement to achieve acclimation.

Increased stroke volume. An increased stroke volume is achieved through interval training. Conducted properly, interval training stresses the heart through exertion, but ultimately strengthens it during recovery. A stronger heart enables a more powerful heart stroke volume, which increases its efficiency with a slowed heart rate. Eight repetitions of 400 meters (at or below their established 2-mile

run pace) on a track using a 2- or 3-minute cycle is an entirely realistic option during the morning physical training period. This means that an entire platoon starts together every 3 minutes, but slower runners will get less recovery. A platoon conducting interval training at least once a week will quickly obtain an increased stroke volume.

Increased blood flow to working muscles and skin. An increased blood flow to the working muscles and skin is accomplished through longer durations of physical activity, which stress the aerobic system and cause the heart to push more blood to the working muscles and skin. In the muscles, more capillaries will open to generate greater blood flow within the muscle fibers. Likewise, larger quantities of blood pump to the skin and cool through evaporation. This process returns cooled blood to the inner organs and allows the core temperature to remain more stable. Most physiologists and researchers agree that 60 to 90 minutes of continuous physical activity during the warmest hours of the day sufficiently familiarizes the body to such a redistribution of blood.[7] Long, steady distance running throughout a physical training session or constant physical activity (a foot march at a pace greater than 15 minutes/ mile) for 60 minutes or longer satisfactorily achieves this result. In addition, some investigations indicate that the same ef-

fect can be achieved through shorter duration, moderately intense, continuous running for 30 to 35 minutes.[8] This method adjusts to the time constraint of morning physical training in the Army. There is no prescribed frequency or limit on long, steady distance, so platoons should incorporate this activity into physical training as frequently as possible.

Increased sweat response. Increasing the sweat rate during exercise allows for greater evaporation on the skin. Through evaporation, the subcutaneous blood cools and returns to the inner organs. This process cools and regulates the core temperature. Achieving the sweat response is the easiest of the acclimation responses because it is practiced during any activity that results in sweating. Therefore, most physical training sessions, or any of the recommended workouts listed above, will yield an increased sweat response. The body can attain an increased sweat response by training or working in the heat of the day or through exposure to a climate-controlled environment. Although more controversial, another method is wearing extra layers of clothes to create a microclimate, inducing a greater sweat response.[9] The concern over this method is the additional stress from thermal strain placed on a subject wearing additional layers. However, elite athletes, such as Meb Keflezighi, the 2004 Athens Olympic Games silver medalist in the marathon, advocate this method. In preparation for the 2004 Olympic Games, Keflezighi trained by wearing additional layers to prepare his body for the humidity of Athens, Greece.[10] This method supports continuous training in IBA since it creates a microclimate around the body's core area similar to wearing extra layers of clothing.

Again, it is important to remember that acclimation is primarily achieved through work or exercise. It is obvious, then, that physical training is paramount to acclimation. Still, it only represents a part of the adaptation process since repeated bouts of physical training are conducted to exercise the mechanisms for adaptation, not to allow physiological changes. More simply put, acclimation is analogous to a runner who trains for the 800-meter run, but then decides to run a marathon. The athlete worked the mechanisms to run, but is not fully prepared for the length of a marathon. To prepare for the longer duration of the marathon, the athlete requires considerably more en-

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durance training. Likewise, soldiers exercise the mechanisms for heat adaptation through acclimation training; however, soldiers still require exposure to the real elements of the regional environment over a longer, more consistent period of time to complete adaptation. This final phase in adaptation is known as "acclimatization."

Heat Acclimatization

Exposure to the natural environment induces heat acclimatization and results in improved heat tolerance and decreased physiological strain. The purpose of heat acclimatization is to efficiently transfer heat from the body's core to the skin and ultimately the external environment, and

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improve cardiovascular functioning to deal with the stressors of dehydration and a decreased blood volume from an increased skin blood flow.[11] The primary difference from heat acclimation is that acclimatization requires continuous, long-term exposure to heat. Subsequently, the desired results of acclimatization are somewhat similar to acclimation, yet even more critical (and more effective) for the adaptation process. Therefore, the desired results of heat acclimatization include an improved skin blood flow, a decreased heart rate, a decreased perception of work exertion, and an increased sweat output and more effective distribution of sweat. Similar to acclimation, these results reflect the physiological changes necessary for adaptation.

While heat acclimation can occur in any region or environment, given certain training conditions, heat acclimatization must take place in the region of interest. Therefore, the only way to truly achieve heat acclimatization is to live in the environment. Specifically, soldiers must experience the discomfort of the heat by training, exercising, and feeling the physiological strain. Physiologists and researchers recommend a minimum of 10 to 14 days of living, training, and exercising in the environment to acclimatize. The number of days is based on physiological adaptations during heat acclimatization (the

point at which approximately 95 percent of adaptation occurs) for variables such as a decreased heart rate, expansion of plasma volume, a decreased rectal temperature, a decreased perceived exertion, and an increased sweat rate.[12] Knowing this information explains why it is prudent for Army units to train in Kuwait for a few weeks prior to moving into Iraq.

Successful acclimation allows for more efficient acclimatization.[13] First, a higher level of fitness (acclimation) allows subjects to function at a lower heart rate while carrying a greater relative workload compared to unfit subjects. This enables fit subjects to use less energy to complete a greater amount of work while showing less cardiovascular strain during work in the heat.[14] Second, acclimation improves acclimatization efficiency because a fit subject arrives in the new environment with an already improved skin blood flow and decreased heart rate due to his exercise regime.[15] This suggests that the most important response during acclimatization is the increased sweat output and the distribution of sweat. It is true that the sweat mechanisms are exercised during acclimation, but only for short durations. Once introduced into the new environment, the body now requires the sweat system (as part of the cooling system) to work continuously — day after day, week after week. This is a

critical consideration because few locations in the Army can replicate this process. To acclimatize the sweat system, physiologists initially recommend light exercise during the coolest hours of the day, followed by subsequent daily increases in the intensity of the physical training (and Army training). In no more than 14 days, soldiers should be ready to conduct training at near normal levels.[16]

One decisive facet of heat acclimatization involves the importance of hydration and its relationship to sweat output. Although hydration is important during acclimation, it is not vital since repeated bouts of exercise rarely last longer than 90 minutes. Thus, once a subject cools down and the sweat system shuts off, lost fluids can be quickly replaced. Contrary to acclimation, acclimatization does not offer the opportunity to quickly restore lost fluids since the sweat system works continuously during the heat. The sweat response may be stimulated as a result of work, yet it does not stop once the work is complete due to intense heat and the body's efforts to cool itself through the evaporation process. In fact, sweat losses in extreme heat often exceed rehydration rates.[17] The effect is constant sweat output, which challenges the body's ability to maintain healthy plasma levels.

The body's plasma level (fluid levels) declines without adequate hydration (dehydration). This drop in the plasma level yields a less powerful heart stroke, which decreases the heart's ability to pump an ample quantity of blood to the skin. Subsequently, this cycle impairs the body's cooling system. The heart attempts to push more blood (from a lower total volume) to the skin by pumping more rapidly. In doing so, the heart rate increases, which consequently elevates the body's core temperature. Ultimately, this negates any previous advantages of acclimatization and can potentially lead to severe heat injury. Yet, even through continuous fluid intake, dehydration may be unavoidable. Recent studies conducted in Iraq indicate that "a threshold may exist for water consumption above which additional consumption may not help in preventing dehydration."[18] Still, the impacts of dehydration are so severe that constant hydration is imperative to remain functional in the new environment and also a necessity to complete acclimatization.

There may be no substitute for living, training, and fighting under hot conditions in the regional environment to improve performance in the heat. However, through heat acclimation, soldiers reap

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the benefits of intense home station physical training — especially endurance exercises — to develop the critical response mechanisms needed to improve heat tolerance and advance acclimation. Acclimatization then promotes a reduction in soldiers' physiological strain when they live in the environment; yet, it is critical to recognize that all soldiers acclimatize (and thus adapt) at different rates. Finally, soldiers gain confidence by embracing the discomfort while working in the heat and learning the value of hydration to complete the adaptation process. Properly conducted, these two steps complete heat adaptation, which ultimately enables soldiers to execute more safely their missions on the contemporary battlefield.

Notes

[1]Nigel A. Taylor and James D. Cotter, "Heat Adaptation: Guidelines for the Optimization of Human Performance," *International SportMed Journal,* Vol. 7, No.1, 2006, p. 36.

[2]E.R. Nadel, et al., "Mechanisms of Thermal Acclimation to Exercise and Heat," *Journal of Applied Physiology,* Vol. 37, No. 4, October 1974, pp. 517-519; and Carl Gisolfi and Sid Robinson, "Relations between Physical Training, Acclimatization, and Heat Tolerance," *Journal of Applied Physiology,* Vol. 26, No. 5, 1969, pp. 533-534.

[3]Lawrence E. Armstrong, *Performing in Extreme Environments,* Human Kinetics, Champaign, IL, 2000, p. 3.

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Planning and Employing Small Kill Teams in a Tank Platoon

by First Lieutenant T. Clay Groton IV

The war in Iraq has largely become a war with two separate insurgent groups, both with differing politico-religious aims. The insurgents in Iraq do not wear uniforms or identifiers, which allows them to blend in with the local population. Additionally, they tend to operate in small decentralized cells, which make them difficult to target using the tank platoon's conventional force doctrine. Insurgents take advantage of this by avoiding movement along main roads whenever possible and moving in small numbers through terrain that tends to be unsuitable for large vehicle traffic. This creates a potential problem because nearly all U.S. forces in Iraq operate from vehicles.

During Operation Iraqi Freedom (OIF) V's "troop surge," our unit, C Company, Task Force 1st Battalion, 15th Infantry, 3d Brigade Combat Team, 3d Infantry Division, maneuvered as an armor company team, organized with two M1A1 tank platoons and one mechanized infantry platoon, equipped with M2A2 Bradley fighting vehicles. To counter the insurgent's ability to simply avoid our vehicles, we developed a technique for employing small kill teams (SKTs), which are small covert teams employed to ambush the insurgent in an area with frequent activity. The SKT's purpose is to catch the enemy in the act of committing a terrorist act such as emplacing improvised explosive devices (IEDs) or retrieving weapons from a cache. Normally, the tank platoon is not suited for this type of dismounted work, but when properly organized for the mission, armored forces can be effective at capturing and/or killing dismounted insurgents by using the SKT technique.

Our company's area of operations in the Madain Province was historically an agricultural area with a few developed industrial areas. As such, the terrain was crisscrossed with irrigation canals and connected by narrow and poor quality roads, with the exception of the main supply routes (MSRs) located near the factories. The restricted terrain enabled insurgents to avoid coalition forces along MSRs, where our advantages were significant because of regular patrols and high-speed avenues of approach for heavy armored vehicles.

The northern-most sector of Crusader Company's area of operations was histor-

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ically a bad area that comprised many unknown challenges; however, intelligence soon confirmed numerous IED attacks, indirect fire attacks/points of origin sites, sectarian violence, and caches found in the area. In response to this, Crusader Company conducted multiple cordon and search operations on warehouses, factories, and garages in the area. During these missions, they found legitimate IED materials, weapons, and ammunition that the insurgents were using; however, the amount and the quality of the cache strongly indicated this was not the big payoff the company was out to find. Oddly, very few, if any, detainees were taken at these cache sites and terrorist attacks continuously began and ended in close proximity to our combat outpost (COP) before we could put troops on the ground. It was very frustrating knowing that the enemy was out there, and despite our efforts, we could not catch him. After some frustration in dealing with these problems, the primary focus became developing and employing SKTs.

When employing a tank platoon as an SKT, the platoon leader has four main considerations: location of SKT; vehicle manning/SKT composition; communications plan; and a quick reaction force (QRF). Employing a tank platoon as an SKT can be a difficult task with many hurdles to overcome. For example, lack of manpower is a major obstacle in planning and executing an SKT. A tank platoon at full strength is 16 soldiers, 17 if you have a medic assigned to your platoon. Due to considerations, such as environmental morale leave (EML) and emergency leave, a fully manned platoon is impossible. At least two to three soldiers are on EML at any given time, with the exception of the beginning and end of a deployment.

At full strength, our platoon consisted of 14 soldiers, one medic, and me, the platoon leader. During one of our SKTs, we had four soldiers on EML or emergency leave, leaving a total of 12, and out of those, 10 would be necessary to man vehicles, at the minimum manning requirement of three per tank and two per HMMWV. Operating with a 13-man platoon, additional personnel would be required to execute the SKT.

There are several places to look for more manpower within your company or battalion. First, seek help inside your company; specifically, the headquarters section. Soldiers in the headquarters section are usually experienced and senior to many of the other soldiers in the company. Furthermore, they do not conduct missions as frequently as line platoons and are usually eager to be included in the fight. If headquarters soldiers cannot support the mission, then drawing soldiers from the battalion is another option. Every battalion should have a sniper, scout, or fire support element included within its headquarters company, which is where we drew our strength in manpower. When selecting soldiers from other platoons/companies, choose those with a combat arms military occupational specialty (MOS) because they are more familiar and comfortable with conducting combat operations.

Location may seem like the easiest of the planning considerations because it is always dictated by enemy activity; however, when you determine where the enemy is conducting operations, it may be a large area, forcing you to narrow your choice of where you will emplace an SKT. Choosing an area that is not well illuminated is critical; however, it is a safe assumption that any building within 100 meters of a well-lit MSR will effectively silhouette your SKT and should not be chosen. The area in which Crusader Company conducted its SKTs was an industrial area that had many lights for security purposes. Lunar illumination is also a consideration; percent illumination between 20 and 50 percent is optimal. If the illumination is going to be below 20 percent, night vision devices (NVDs) will not be as effective. If the illumination is above 50 percent, there is a greater chance of the enemy seeing you with his naked eye. An excellent position to choose would be one that only exposes the uppermost portion of a soldier's head and still allows him to engage hostile targets. Selecting an unwalled, fully exposed rooftop increases the risk of soldiers being spotted, especially when there is a high percentage of illumination. Choose a rooftop or some type of structure that not only provides cover, but achieves good observation. Finally, select an area with trafficable routes on which your vehicles can travel should they need to respond to a situation.

Observation of the target area is the next consideration; think about how many people you can place on the ground and how you are going to achieve good observation of enemy routes, safe houses/structures, dead area/defilade, and the kill zone. A technique that Crusader exercised was placing two SKTs approximately 600 meters apart; each SKT, consisting of eight men, could clearly see out to 300 meters, achieving overall observation of 900 meters around the target area. This enabled the SKT to observe the rear areas of the factories where the ambush was set, as well as the MSR to the rear of the SKT.

The next detail of planning is how to assign units best equipped for an SKT. Our

"Another hurdle the platoon had to overcome was a lack of experience in dismounted operations. Our platoon had an abundance of soldiers with OIF I and II experience, who were very experienced with mounted combat operations. Finding soldiers within the platoon who possessed a light dismount-centric mentality proved to be a challenge. Because members of my platoon lacked the comfort and experience of light dismounted nighttime operations, more detailed and well-thought-out planning/preparation were imperative to the success of the mission."

platoon lacked some of the equipment that the infantry and sniper teams had at their disposal. For example, the platoon squad designated marksman (SDM) was on EML at the time of this mission. The SDM has more training, and the equipment, to accurately engage long-distance targets. Snipers, who possess precision optics, night vision capability, and accurized weapons systems, can be an easy solution to the problem, if they are not already tasked for another mission. Because the area we chose for an SKT was only open out to 300 to 500 meters, an SDM would have been nice, but was not mission essential.

About half of our platoon had the outdated PVS-7-series night vision devices instead of the preferred monocular PVS-14s. Even fewer soldiers had the PEQ2A, which could paint targets at night with the infrared (IR) laser, unseen to the enemy. Personnel chosen for the SKT portion of the mission all had PVS-14s and PEQ2As; those who did not were tasked to man vehicles. The SKT consisted of five members, a platoon leader, a fire support noncommissioned officer (FSNCO), crew-served weapon, a radio/telephone operator (RTO), and one additional soldier. Two HMMWVs were selected for transporting the SKT. The QRF element was comprised of two M1A1 Abrams tanks, with one four-man crew and one three-man crew. If the SKT needed the QRF, it would be better to have one tank fully manned, making violence of action

on the enemy easier. The QRF for an SKT is not limited to tracked vehicles, it can use HMMWVs. Units should not plan SKTs around using tracked vehicles; instead, use tracked vehicles if the terrain can support them.

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Prior to mission planning, we conducted a reconnaissance of the area and took photos and video to assist in planning and use as briefing aids for our soldiers. Leaders may also coordinate for OH-58Ds to take aerial reconnaissance photos of the area prior to the mission, which allows all platoon members to not only see the exact location of the planned SKT, but also the surrounding area, in detail, and the opportunity to review it multiple times. This also allows soldiers to view the SKT's position, the QRF route, and the target area, enabling everyone in the platoon to know exactly what the other is doing, thereby eliminating questions or

doubt. Rehearsals were also vital to successfully executing this operation. Rehearsing room-clearing procedures, walking at night with night vision devices, and moving stealthily at night instills in young soldiers the courage and comfort necessary for a successful mission. After your operations order, it is particularly important to conduct a back brief, especially if soldiers are unfamiliar with the mission and associated tactics, techniques, and procedures (TTP). Eliminating doubt or questions will serve to ease the execution of the SKT, especially for leaders, if they paint the picture as clearly as possible for their men.

The communications plan between the SKT and the QRF is as important as SKT placement and manning; always have a primary and secondary means of communications. Platoon leaders have a few choices that can be made when considering a communications plan. Some of our radios included the RT-1523 advanced system improvement program (ASIP) radio converted into a man-pack, the PRC-148 multiband inter/intra team radio (MBITR), and the PRC-150 Harris long-range radio. Using an ASIP or an MBITR is relatively easy compared to operating the Harris radio, which delivers at much longer ranges than the ASIP or MBITR, but only when in contact with another Harris, and it requires much more training to use effectively.

Emergency forms of communications, such as star clusters, are also needed. The SKT can use star clusters to alert the QRF if the radios are not working, and IR strobes, lasers, and chemlights are needed to ensure the team is visible to aircraft, especially if the QRF is the primary communicator to adjacent units. During execution of our plan, we used the M1151 HMMWV/M1A1 as a primary long-range means of communications between the SKT and the tactical operations center (TOC); the PRC-148 MBITR was used between the SKT and the QRF; and red star clusters and IR strobes were used for emergencies and marking positions. Each time an SKT was deployed, radio checks between the SKT and the QRF were conducted every 15 minutes to ensure communications were still good; failure to establish communications triggered the QRF to respond or the SKT to exercise its emergency plan of action.

If the platoon leader decides to incorporate Iraqi security forces (ISF) into the SKT, make certain each ISF member is trustworthy. This trust must be built over time and will take longer than just 60

days. Make certain you have good command and control of the ISF; keep them with the SKT team, do not send ISF out on their own. The SKT should have an interpreter to communicate efficiently with the ISF; they must be able to communicate clearly and quickly should they engage enemy combatants. Assign a soldier whose primary mission is to keep eyes on the ISF, which helps minimize fratricide incidents. Rehearsals and pre-combat checks/pre-combat inspections (PCC/PCI) of the ISF is important. It is important to ensure that the ISF does not compromise your position. If you choose not to incorporate the ISF, it is still important to keep an interpreter with your platoon, if not in the SKT, at least staged in a vehicle with the QRF.

QRF vehicle positioning is just as important as the SKT's location(s); these vehicles must be far enough away to fool the enemy into thinking no coalition forces are present. Keeping vehicles too close to the target area or next to residential structures may compromise the SKT. Keep in mind that the enemy may have a very intricate communications system in place — all it takes is one cell phone call to compromise your SKT. As mentioned earlier during the location discussion, ensure you choose a location that allows vehicles to travel in front of, or to, the SKT to mass fires with the main gun/crew-served weapons and serve as a casualty evacuation vehicle to retrieve injured/KIA personnel. Most importantly, the QRF needs the capability to quickly respond to any situation that arises.

Overall, SKT missions are successful; not only can the SKT deliver overwhelming firepower on an unsuspecting enemy, but it can gather valuable information through enemy observation that the battalion S2 can turn into intelligence to drive future operations. Following the execution of several SKT missions, Crusader Company noticed significant improvements in its area of operations.

Before planning, preparing, and executing an SKT, study the details in this article; thorough planning, common sense, and experienced noncommissioned officers will help execute a lethal and effective technique on a complex battlefield against a smart and agile enemy. Platoon leader rehearsals and back briefs are the single most important part of the planning/preparing phase and are the platoon leader's responsibility. When facing manning issues, seek help from other areas and always have a backup plan for every detail of your mission. Using the SKT technique will increase your platoon's effectiveness at limiting the enemy's ability to operate freely in your area of operation and will allow you to take the fight to the enemy, instead of just reacting to his attacks.

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Essentials of Company-Level and Below Reconnaissance and Security Planning

by Captain Ryan T. Kranc

Reconnaissance is defined as, "a mission undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or potential enemy, or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular area."[1] Reconnaissance organizations are designed to obtain information for the higher combatant commander to enable him to make informed and suitable decisions as to the application of future warfighting functions. The reconnaissance organization's ability to conduct these operations in a thorough and timely manner is imperative to mission accomplishment and success. As the armor community continues to develop and refine reconnaissance task organizations, certain components and specific parameters are required to ensure the commander is afforded the information and intelligence necessary to achieve his desired endstate.

The components described below must be driven and guided by two sets of fundamentals. The first set is the seven fundamentals of reconnaissance and is the linchpin of successful reconnaissance operations. If surveillance is the passive method, reconnaissance is the resultant active effect when information gathered during the surveillance period is analyzed and processed. The second set, the five fundamentals of security, is common to all security missions and provides essential elements required to provide the higher commander early warning, reaction time, and maneuver space. Maintaining these fundamentals during all reconnaissance and security operations ensures the fullest opportunities for mission accomplishment.

A quick review of the standing fundamentals of reconnaissance and security is necessary to fully understand the requirements of all components that must be present during the planning and execution process:

Fundamentals of Reconnaissance[2]

Below are the seven fundamentals common to all successful reconnaissance operations. Scout leaders must ensure that their plans adhere to these fundamentals during the execution of reconnaissance missions.

Maximize reconnaissance assets. Although noncontiguous operations may necessitate orientation of reconnaissance assets in multiple directions, reconnaissance units must seek to maximize assets (TUAS [tactical unmanned aircraft system], sensors, SIGINT [signal intelligence], IMINT [imagery intelligence], HUMINT [human intelligence], and observation) on objectives, checkpoints, points of interest, [named areas of interest] NAIs and [target areas of interest] TAIs.

Orient on the reconnaissance objective. A reconnaissance unit's scheme of maneuver is focused on reconnaissance objectives or series of defined objectives, which could be based on terrain, infrastructure, threat, or society. In noncontiguous operations, this could be a tribal meeting; bilateral engagement; assessment of sewage, water, electricity, education, trash removal, and medical services; or overall security in an area.

Report all information rapidly and accurately. Commanders base decisions and plans on battlefield information that scouts find and report during reconnaissance. A quick and accurate report is required for the commander to make an informed decision on the proper application of his forces. Just as bad news doesn't get better with time, neither does good news. The perfect report received 5 minutes late, although accurate, could spell disaster for the receiving commander.

Retain freedom to maneuver. Fixed scouts are ineffective scouts. Scouts must retain an ability of flexibility and maneuverability in their plan or they will not accomplish their mission. Scouts must seek contact at the lowest possible level and maintain the initiative and ability to maneuver other smaller units within their formation.

Gain and maintain threat contact. Scouts and reconnaissance formations actively seek contact through as many forms of contact as possible. The reconnaissance organization plans for and integrates the use of TUAS, ground sensors, and intelligence arms throughout the operation. Once contact is made, it is maintained until specific orders are given, a change of mission is dictated by specific instructions or engagement criteria, or the unit conducts either a battle handover or reconnaissance handover with other units.

Rapidly develop the situation. Scouts and reconnaissance formations determine priority information requirements (PIR) and answer other related instructions or criteria in a timely manner — time is of the essence. Larger formations rely on information gained to project elements of combat power in the appropriate method at the decisive point.

Ensure continuous reconnaissance. All missions embarked on by reconnaissance formations have the sole purpose of answering information requirements dictated by higher. No matter what a reconnaissance organization is tasked to do, by nature of their training and mission essential task list (METL), all reconnaissance formations continually conduct re-
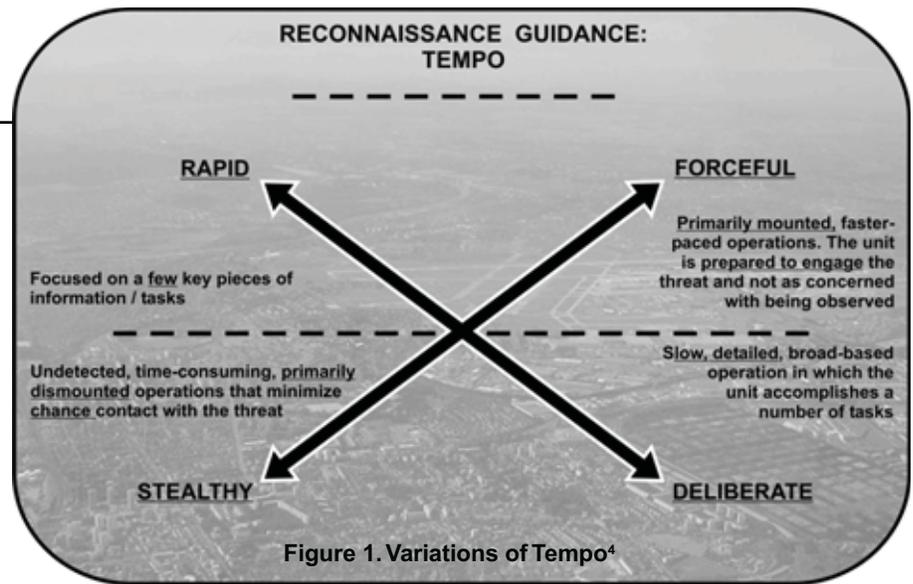

Figure 1. Variations of Tempo[4]

connaissance operations, seeking information that will be useful for the higher maneuver commander.

Fundamentals of Security[3]

Below are the five fundamentals common to all successful security operations; again, leaders must ensure their plans adhere to these fundamentals during the execution of security missions.

Orient on the main body. While reconnaissance operations (area, zone, route, urban) orient on the reconnaissance objective, security operations require the securing unit to understand and integrate into the larger main body's scheme of maneuver to properly conduct security operations.

Perform continuous reconnaissance. This mission uses the same definition as "orient on the main body" stated above. Although it is important to note that by adding this as a fundamental of security, it only strengthens the position that reconnaissance organizations always seek to gain information. Additionally, all security operations imply adherence to the fundamentals of reconnaissance.

Provide early and accurate warning. When enabling the main body commander to make a timely and well-informed decision for the proper application of the elements of combat power, it is essential that the reconnaissance unit detects, orients, and observes, as quickly as possible, threat forces that could influence the main body. In larger security operations, this fundamental pairs with "report accurately and rapidly," so the maneuver commander can make an informed decision that will enable success of the formation.

Provide reaction time and maneuver space. Much like "provide early and accurate warning," the ability for the reconnaissance unit to gain and maintain

contact, and report accurately and rapidly, further affords the main body commander the time and space to make an informed decision regarding the use of his combat power. This can be enhanced by using long-range surveillance equipment or indirect fires.

Maintaining threat contact. Real-time and accurate information affords the maneuver commander the ability to make correct decisions about the use of his combat power. Once contact is made, ensuring it is maintained is essential to enabling successful adherence to the fundamentals of security.

Tempo

Tempo refers to the level of detail and covertness required of the reconnaissance organization to best accomplish the mission. It is described by four terms: rapid, deliberate, stealthy, and forceful. Rapid and deliberate are levels of details and are mutually exclusive in all cases, as one cannot be rapid and deliberate at the same time. However, reconnaissance organizations can oscillate between the two from phase to phase, or even within sub-phases of an operation. Stealthy and forceful are levels of covertness and are mutually exclusive as well.

Rapid reconnaissance dictates to the tasked subordinate unit that the reconnaissance operation's level of detail is limited to a certain prescribed list of critical tasks or PIR related to the reconnaissance objective. Rapid reconnaissance tempo is appropriate when time is of essence and only a limited number of information requirements are necessary to accomplish the higher mission commander's intent.

Deliberate reconnaissance implies that all critical tasks of the reconnaissance mission are to be accomplished to ensure

mission success. It allows the organization more time to answer all information requirements for the higher commander. Detailed and thorough reconnaissance is required, which implies a time-intensive, comprehensive, and meticulous analysis of NAIs or areas of operation.

Stealthy reconnaissance requires the reconnaissance organization to remain as covert as possible while conducting operations. This often entails dismounted operations to ensure minimal opportunities for compromise during the mission. Additionally, use of cover and concealment, and identification of dismounted mobility corridors during intelligence preparation of the battlefield (IPB) is essential to guarantee maximum success and mitigate opportunities for exposure to the enemy.

Forceful reconnaissance is used when secrecy and stealth is not required or exposure is not detrimental to the mission. This is usually conducted in urban terrain and on occasions where threat contact can be mitigated through overwhelming combat power. Reconnaissance in force is a primary example of forceful reconnaissance tempo.

Focus

Focus defines the reconnaissance mission's area of emphasis, and is made up of four categories, which include threat, infrastructure, terrain and weather effects, and society. More than one focus may be given for a reconnaissance mission; however, the tasking element must understand that a broad spectrum of focus will dilute the quality of the reconnaissance and information gathered. As stated in U.S. Army Field Manual (FM) 3-20.98, *Reconnaissance Platoon,* "focus helps the reconnaissance element narrow the scope of operations to get the information most important to the higher element's operations."[5] Focus usually incorporates a number of commodity areas, such as obstacles, avenues of approach, key terrain, observation and fields of fire, and cover and concealment (OAKOC); area, structures, capabilities, organizations, people, and events (ASCOPE); and/or sewage systems, water procurement and distribution, electricity requirements and capacities, academic institutional opportunities and capabilities, trash and rubbish removal, medical service coverage and capabilities, and local services

(SWEAT-MS), to fulfill the given information requirements. Considerations related to focus include the following:

● *Threat* prescribes the organization conducting reconnaissance identify enemy locations, composition, disposition, and strength within a prescribed NAI or area of operation.

● *Infrastructure* dictates gathering information related to SWEAT-MS, as well as both the structures and capabilities subsegments of ASCOPE. Determining the locations and loyalties of sites, such as churches, mosques, national libraries, hospitals, cemeteries, historical ruins, religious sites, cultural areas, and other protected sites will paint the picture for the commander as to the disposition of his area of operation.

● *Terrain and weather effects* instruct the reconnaissance element to confirm step two of the IPB process (describe the battlefield effects) by analyzing and determining the influence OAKOC will have on follow-on forces. In the urban environment, this includes elements of area from ASCOPE, to include tribal boundaries, religious boundaries, political boundar-

"As the armor community continues to develop and refine reconnaissance task organizations, certain components and specific parameters are required to ensure the commander is afforded the information and intelligence necessary to achieve his desired endstate."

ies, social enclaves, criminal enclaves, agricultural, mining, labor regions, trade routes, government centers, police centers, military centers, and temporary settlements for displaced civilians.

● *Society* includes gathering information on organizations, people, and events from ASCOPE. This includes nonmilitary groups in the area of operations, such as tribes, political wings of insurgent groups, provincial reconstruction teams, nongovernment organizations, private sector companies, International Red Cross, other government organizations, contractors, and media. Gathering this information may require a census or similar local survey.

Engagement Criteria

Engagement criteria prescribe events and conditions that allow the reconnaissance organization to initiate or return direct and/or indirect fire. Discreet engagement criteria dictate restrictive rules of engagement (ROE), which may include reserving opportunities for direct fire only in cases of self-defense. Aggressive engagement criteria may allow for more permissive ROE, giving the reconnaissance organization a broader range of authority to initiate direct or indirect fire contact. Regardless of engagement criteria, it is not merely enough to state in the operations order (OPORD) that engagement criterion is aggressive or discreet; exact conditions or requirements must be stated to ensure complete guidance.

Disengagement Criteria

Disengagement criteria prescribe the events and conditions that necessitate disengaging from threat contact or temporarily break threat contact. Again, certain conditions must be stated in the operations order specifically outlining the events and conditions that require disengaging from threat contact. Although it is important to remember that "gaining and maintaining threat contact" is a fundamental of reconnaissance and the similarly termed "maintain threat contact" is a fundamental of security. However, scouts who are compromised or placed in positions of tactical disadvantage provide no intelligence or security value to the higher command. In these cases, it is prudent to temporarily break direct or indirect fire contact with the intent of reestablishing observation on the threat as soon as the tactical situation permits. In this case, specific and detailed disengagement criteria must be dictated within the OPORD to ensure the complete and thorough mission accomplishment in accordance with the commander's intent.

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Displacement Criteria

Displacement criteria define conditions and events that require reconnaissance organizations engaged in security operations to displace or retrograde from established mounted or dismounted observation posts. Much like engagement and disengagement criteria, the conditions and parameters set out in displacement criteria are designed to integrate the higher commander's intent with tactical feasibility. The conditions of displacement criteria may be event driven (associated PIR being met, threat contact not expected in the area, and observed NAIs or avenues of approach denied to the enemy); time driven (information-is-of-value time is reached in accordance with the intelligence, surveillance, and reconnaissance annex of the OPORD); or threat driven (observation posts have been compromised by threat or local civilian contact). As with engagement and disengagement criteria, failure to specifically and thoroughly dictate the conditions of displacement criteria in the OPORD may result in mission failure.

The prescribed criteria of tempo, focus, engagement, disengagement, and displacement criteria during the planning process and OPORD development phase of an operation are essential to the mission accomplishment of the reconnaissance organization. Failure of the higher commander or staff to dictate these five essential sub-elements of the scheme of maneuver sub-paragraph of paragraph 3, may cause less than desirable results. It is

the responsibility of the troop commander and platoon leader to ensure these five elements are dictated and methodically understood at the lower levels of the reconnaissance organization to ensure fulfillment of the commander's intent and comprehensive mission success.

Notes

[1]Headquarters, Department of the Army, U.S. Army Field Manual (FM) 1-02, *Operational Terms and Graphics*, U.S. Government Printing Office (GPO), Washington, DC, September 2004, p. 1-158.

[2]FM 3-20.98, *Reconnaissance Platoon*, GPO, Washington, DC, December 2002, paragraph 3-5 through 3-13, pp. 3-2 through 3-4.

[3]Ibid., paragraphs 4-8 through 4-13, pp. 4-2 through 4-3.

[4]FM 3-20.971 (DRAFT), *Reconnaissance Troop*, May 2007, Figure 3-1, p. 3-7.

[5]FM 3-20.98, *Reconnaissance Platoon*, paragraph 3-28, p. 3-7.

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Fighting in Built-up Areas

by Eric Chevreuil

The M1 Abrams showed its muzzle at the corner of the street; its assigned position was the next intersection overlooking the metro station of "Doughboy city." Friendly infantry elements were already on site, providing information, but they needed armored support badly. The street seemed clear of any threat other than the reported network of single barbed wires crisscrossing 2 feet above the roadway. The M1 roared forward, 1,500 horsepower spinning its steel tracks, and ground to a sudden halt, surprising both the crew and spectators. Eventually, on camera, the crew spent about an hour disentangling and cutting loose yards of wire and the metallic spokes that jammed the sprockets. Engineers 1 — Tank 0!

The place was the U.S. urban training facility in West Berlin, and the year, 1989. The good guys were a French AMX 30, a British Chieftain, an M1 Abrams, and an M88. The bad guys were the three allied engineer detachments tasked to design and implement antitank obstacles, any way they could imagine, and their resources were unlimited.

Many commanders have never commanded a tank, a platoon, or company at war or in military operations in urban areas, but Berlin was a good lab, a good place to confront the theory of manuals with reality. There, armored units had the unique opportunity to throw everything at their tanks in an effort to prove

many field manuals wrong. The allied exercise was the culmination of experimentation — saved on video, shelved, and never seen again!

Personally, I seized that unique opportunity to train my tank platoon in a very different way, to have them experiment with both sides of the armored hull. Incendiary devices were thrown from roof tops at speeding tanks, smoke grenades linked by rope with spreading hooks dropped on turrets, blinding those inside. Simulated sniper fire "killed" the tank commander or the driver, or destroyed the driver's periscopes; crews had to find a way out. We used small electrical sponge marker "cannons" from a training system to simulate mines, improvised explosive devices (IEDs), and rocket launchers. We set camouflage nets on fire with a simple incendiary bottle, fired a .50-caliber machine gun on an armored window, took a flak-jacket and a full backpack to the range and shredded everything with 5.56 and 7.62-mm bullets. Each time we reviewed the results, we came up with a "to do" and "not to do" list.

The "Doughboy city" exercises showed us that a simplistic combination of an obstacle and a trap could immobilize the most powerful tanks if the crew is not prepared for urban threats or just unaware of this type of warfare. Furthermore, the ability to train in an actual size mockup city, with its gas and metro sta-

tions, supermarket-like buildings, sewer systems, bell towers, wide and narrow streets, and high and low overpasses, was a blessing. One could order real cars and double-decker buses to crush, tires to burn, anything needed. And we recorded everything on day- and night-vision cameras.

Many issues were resolved, more than the length of this article will support; however, it does address issues related to the urban environment and the "traditional tank" strengths and weaknesses when fighting in built-up areas.

The Urban Environment

The urban environment is defined by its various physical zones, its multidimensional aspect, and its population.

Physical zones. The peripheral zone of a city (suburb, outer belt) is often modern and both industrialized and populated. Roadways are wide and straight, and many parks and open areas offer a high permeability. In offense, it is an area favorable for fast approach, observation, and infiltration. In defense, it is best used for observation, concealment, harassment, and canalization of the enemy. This is the "soft zone" of a city, offering good fighting ground for armored units.

The "hard zone," usually referred to as "the historic center or the old town," is a maze of small, narrow streets and old buildings interspersed with glass and steel high rises. It is often the historical political and commercial center of a town. It is a dense area favoring the defenders; it is the infantryman's kingdom, the land of close-quarter combat, ambush, autonomy, and initiative — it is the urban terrain often referred to as "the tank trap."

Multidimensional aspect. Contrary to conventional warfare in open battlefields, mostly taking advantage of surface infrastructure and three-dimension assets, urban operations make use of everything, including underground structures and waterways. Both friend and foe must map and list every single access, rate them, and plan offense or defense accordingly.

The surface road and railroad network. The main road network (MRoN) consists of freeways, highways, and other peripheral multilane, faster traffic boulevards. Like the main railroad network (MRaN) and its main multiple railroad lines, the MRoN avoids the downtown hard zone and links the soft peripheral zone to the outside. It marks the city's umbilical cord — allowing quick and easy bypass of the city. Armed units remain organic.

The secondary road network or railroad network (SRoN and SRaN) is a pre-filter to the city center. Composed of wide two-way streets, or railroads and other tramway or subway structures, it links the soft zone to the hard zone. Attacking units are canalized and must split into mixed battle groups in this area, which favors the defenders.

Finally, the tertiary road network often makes the city center a spider web of short and narrow streets that do not facilitate armored or mechanized engagement. In these streets, the attacking forces will be targeted by small mobile hit-and-run forces, booby traps, and other antitank ambushes. This area

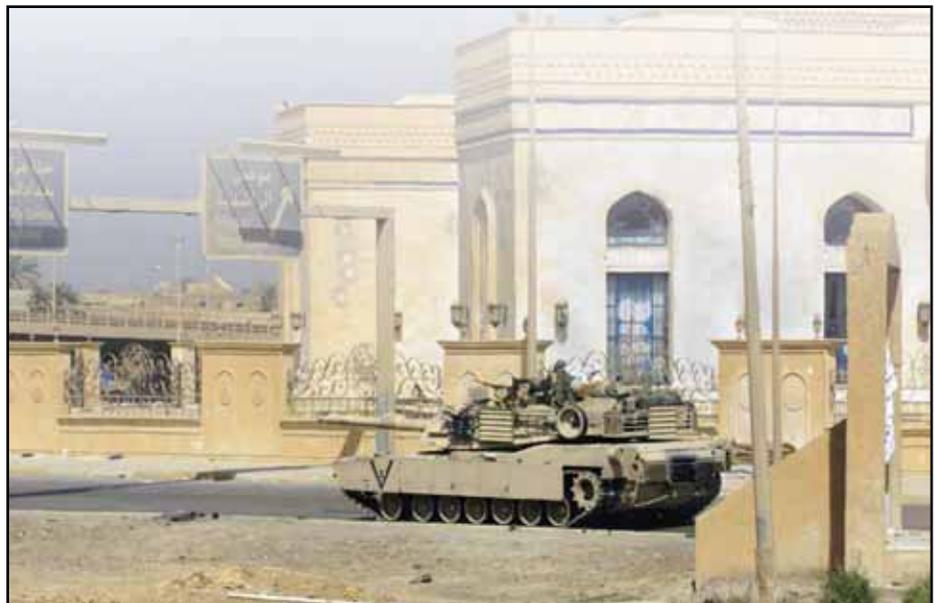is often the scene of the final confrontation between tanks and antitank forces.

The underground network. The underground network is a critical permeability factor that both attacker and defender must take into account, especially when fighting in a modern city. For example, Paris has about 1,000 miles of underground structures that are 5 feet high and taller; just think of it as a straight line linking Sacramento to San Diego! Imagine the subway, the tunnels, the underground roads and railroads, the basements, the sewers — it's a mind-boggling headache for planners on both sides. Furthermore, in modern cities, these subterranean areas are often large commercial places with easy access for hiding large numbers of troops and vehicles.

In Stalingrad or Berlin, hospitals, headquarters, refugee settlements, factories, communications paths, and more were underground in existing infrastructure. Allegedly, Hitler ordered the flooding of everything underground in Berlin to slow Soviet advances.

Tomorrow, much like yesterday, it is more than possible that surprise and tactical advantage will literally pop up from below the surface. Underground infrastructure could be used to infiltrate and withdraw forces, "mine" the foundations of a building by piling up and detonating large quantities of explosives. Underground infrastructures might revive the Vietnam War "tunnel rat" concept, thus creating the need for highly specialized close-quarter combat units.

The fluvial network. The fluvial network can add to the permeability of a city, but is mostly considered as an obstacle to cross, with bridges to hold, destroy, or protect. Often, these bridges are within the town boundaries, within the hard zone, and only the most recent are in the peripheral zone.

Along the French Loire river, between Tours and Ghien, one can find about 10 crossing points (100 tons/two-way traffic minimum) and about seven are in urbanized areas. If one chose to

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seize or destroy the bridges of Orleans, one must be ready to bomb, and possibly inflict major damage to that city of 170,000 souls, and prepare to accept heavy collateral damages.

In Baghdad, there are 13 main bridges across the river Tigris. Bridges could be painlessly destroyed from afar (smart weapons), but once the ground troops come to secure the city, they would end up with major obstacles to cross, likely under fire. The other alternative is the more traditional Remagen-type "bridgehead" of special forces, who are inserted by surprise to seize and hold objectives until heavier reinforcements arrive. A combination of these two options offers a third way of dealing with bridges. Therefore, the fluvial network would be a critical obstacle to bypass, if possible, or a critical asset to preserve or destroy, depending on the timing of the battle.

The third dimension. With the many high rises, bell towers, and other minarets, rooftop terraces, and uncountable windows that make the framework of a city, the antitank enemy coming from above will not always be airborne.

A simple burning or explosive device, antitank grenade, or missile fired from above through the thinner top armor of many older armored vehicles, could destroy or immobilize them. Stealthy snipers may target periscopes to blind the tanks or kill exposed crew members and accompanying infantry. A simple incendiary bomb or smoke screen might also blind and stop armored forces.

Tanks and other armored vehicles are blind and deaf when it comes to the third dimension, and without the guns, ears, and eyes of a support tank and the infantry, they are literally doomed, condemned to destruction.

Population. With 50 percent of the world's population living in urbanized areas, it is likely that the human factor will have a critical impact on the issue of combat operations. The simplest

"Modern armored vehicles are better protected, heavily digitized and comput–erized, more flexible, and component based. Threat detection sensors, video cameras, and battlefield awareness systems are some of the recent changes that have made them more effective and improved their urban survivability."

case would be that of a city that has been evacuated. Collateral damage would be limited and moral restraints limited to the rule of wars toward the enemy. Means of massive destruction could be used without restriction to defeat the opponent.

When a population has been trapped (Berlin in 1945, Beyrouth in the '90s, and now Baghdad), combat operations of civilized forces end up being greatly impaired by moral requirements, thus giving an edge to fanatics or other extremist forces that are not bound by any constraints, nor are they concerned with public opinion or polls. Protecting, evacuating, and feeding noncombatants, or providing medical help, ends up being a logistics headache disruptive of critical military operations.

On one hand, when humanitarian constraints are gone, military operations become quite simple. Depending on the goal, a city is either totally destroyed, populations included (Dresden, Tokyo, Hiroshima), or reduced, one street at a time, at a costly military and civilian price (Berlin, Warsaw, Beyrouth). On the other hand, caring for noncombatants may offer positive benefits such as gaining the sympathies of the population that may result in volunteered intelligence, supplemental forces, and labor. The anti-Nazi soviet propaganda was the main motivation for the rise of most of the partisan groups that opened a second front in the rear of the German forces.

To safeguard the civilian population is also to safeguard oneself — at least in the eyes of the future historians. To alienate the local population means to throw it into the opponent's arms to increase rear insecurity, to lose a battle even before it begins.

In this multi-zoned environment affecting communications and speed, the tank will be canalized and isolated, condemned to wide streets. It will have to preserve some sort of "range" in an environment where visibility and observation are limited. It will have to make the best of a hostile and multidimensional battlefield and survive a multiform and multidirectional threat.

The Tank in Built-up Areas

"Those who do not learn from the mistakes of history are condemned to repeat them," and those who forget the lessons of history are bound to make historical mistakes!

By the end of World War II, gigantic over-armored behemoths had been condemned by a new weapon, a light portable rocket launcher built around a tank killer — the shaped charge. It was born in Berlin, long after many famous armored battles had promoted heavier armor and bigger guns. Ferdinand Porsche's giant tank, "MAUS," suddenly became an obsolete monstrosity worthy only of the Russian museum it rests in today.

This major change in the race between the armor and the bullet did not mean the end of the "conventional" battle tank, but the end of the slow over-armored monsters of steel. The tank was originally designed to quickly bring its gun to the front and break through enemy positions under armored protection. It rapidly became the primary antitank weapon, but was never really designed for the specific requirements of military operations in urbanized terrain. However, from the squash head to the canister, and other "flechette" ammunition (developed at one point in Vietnam, abandoned for a while, and dug out again), composite

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and add-on armor, there are many historical and effective means to increase the urban lethality and protection of ordinary tanks.

If most traditional tanks lack urban capability, it is because they are generic battle tanks, as opposed to the few highly specialized machines, such as the latest Israeli Merkava, which has been urbanized with omnidirectional and movement-activated cameras, remote-controlled external machine guns, gun ports for rear protection, added body and turret kits, forward ram, extra belly armor, and mesh protection of optronics and engine openings. The urban battle ground is characterized by short distances of engagement and higher targets. The current main battle tank was never developed to deal with these two specific factors. The gun elevation is still limited on every known main battle tank. Unless the tank commander takes advantage of rubbles or wrecks to elevate the hull, thus increasing the main gun's elevation, there is not much that can be done against an enemy at close range and on higher ground in the hard zone of a city without using the external turret-mounted weapons. This is where tactics take over — a tank is never alone and must work within a self-supporting unit. The type of deployment and movement of the group should palliate the weaknesses of the individual!

I served 18 years with the AMX 30, and to my knowledge, the AMX 30 B2 was the only tank equipped with an "over-eleva-

tion" device. The automatic 20mm coaxial gun had its own mantel that provided a +40-degree elevation independently from the main gun. At a distance of 100 feet, the system allowed the crew to deal with targets located 80 feet high, while the main gun's elevation, at the same distance, only allowed the engagement of targets up to 30 feet high. This example shows why in recent urban warfare antiaircraft weapons and weapons systems have been extensively used against modern buildings (Russian-made twin or quad 14.5mm heavy machine guns or 30mm guns). Just imagine what a vintage Russian-made ZSU 23/4, a German Guepard, or even an M113 Vulcan could do for supporting infantry or tanks in urban areas!

The Traditional Main Battle Tank

The traditional polyvalent main battle tank will certainly remain the master of the soft zone in a city where long-range firing and observation are possible. But in the hard zone, highly adapted vehicles or tailored combat teams will be necessary to avoid heavy losses such as the 800 armored Russian vehicles that were destroyed in Berlin in 1945.

The common tank is composed of a hull and a turret, a main gun, and some secondary weapons, an engine compartment, and the tracks. Often, the armored vehicle is cluttered with tarps,

camouflage nets, backpacks, and other necessities. Tools, fire extinguishers, and spares are often located in outside storage compartments. During battle, tank crews fight from inside with a somewhat limited vision. The driver can only see the front, basically fender to fender, and must be guided by the tank commander for any reverse movement. Only the tank commander has a 360-degree view of his position. The tank must rely on others to provide close protection, support, and guidance. Modern armored vehicles are better protected, heavily digitized and computerized, more flexible, and component based. Threat detection sensors, video cameras, and battlefield awareness systems are some of the recent changes that have made them more effective and improved their urban survivability.

Past weaknesses. Older generation tanks are still highly vulnerable to side, rear, top, or bottom attacks. The multidirectional aspect of the threats in urban areas makes it easier for an attacker to target these weak points. Modern tanks, such as the M1, Leclerc, Challenger, and Merkava have seriously improved their protection with a whole array of highly efficient add-ons, which adapt to the threat and conflict level.

Optics. The periscopes and other optical devices are traditionally fragile. They can be targeted by snipers, damaged by shrapnel, occulted by dust, mud, or splashed water. I remember reading that during the Iran-Iraq conflict, 50- to 70-percent of tank optics were damaged daily. Nowadays, bulletproof glass, metallic deflectors, and mesh wire highly contribute to the survivability of optical systems.

Outside clutter. Personal equipment, tarps, camo nets, fire extinguishers, and various jerrycans are vulnerable to small-arms fire. Clutter that might pile up on the tank during long movements to contact can be kept during open terrain operations (as long as it does not interfere with the tank's operation), but must be cleared for military operations in urban areas.

Gun elevation. The main gun elevation is limited. Main battle tanks have been designed to find and destroy targets from within their combat range all the way out to 4,000 meters, not to crawl wall-to-wall in a compartmentalized terrain with a line of sight ranging from a couple of feet out to hundreds of yards. The average -10/+25-degree elevation could be a limitation for the urbanized terrain. Crews can palliate this potential technical

restriction with the use of remote-controlled superstructure weapons that are powerful enough for suppressive or most destructive fire. For heavier caliber tank platoon tactics, promote self-supporting tank movements at every level; only one tank moves forward when efficiently supported by the main gun and under observation of at least one supporting tank.

Traversing the turret. The horizontal movement of the turret can be impaired by walls, light poles, signs, and even manmade traps. The tank crew can avoid such problems by carefully planning a movement and final position, or by destroying the potential obstacles by fire or movement (using the tank to knock down obstacles).

Superstructure equipment. Cupolas, night-vision devices, sensors, antennas, and other external weapons systems may also be vulnerable. They can be sensitive to blast, shrapnel, falling debris, and shocks. They may also be impaired by attackers using low-tech weapons and techniques. Again, tactics and good judgment have been designed to remedy this threat; tanks should not be used as bulldozers and move through buildings, unless required for survival or an operation. A tank should not move without support!

Limited mobility. In urban areas, the movement of tanks is limited to the width of the streets. Fall-back positions are a luxury and street width may prevent the viable progression of two self-supporting tanks abreast. Furthermore, crashing through walls for infiltration or to take evasive action is not recommended because of possible damage to superstructure devices. Finally, antitank obstacles may immobilize them in the open, making them vulnerable to 360-degree and multidimensional attack. Again,

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At left, a Merkava Mark IV; above, a Challenger 2.

tactics, support, and common sense can prevent or minimize such threats.

Vision. At short distances in compartmentalized terrain, the common tank is literally nearsighted. Its optical system was designed to look, target, and shoot far and forward. This handicap can be greatly increased by dust, smoke, and other artificial visual impairments. Modern technology has highly minimized these old shortcomings and digital video, thermal imagery, and battlefield awareness systems now complement the eyes of the crew members and observations of the supporting tank(s).

Camouflage. Tanks are usually camouflaged with paint befitting of the nature of the open battlefields they were originally committed to; however, for long, sustained combat in urbanized areas, the camouflage should be adapted.

Assets and possible improvements. Protection, mobility, and firepower are the common assets of any main battle tank. Survivability, rusticity, fuel efficiency, reliability, and interchangeability are other sought-after qualities. Possible improvements include:

➤ Removing flammable material from the tank's superstructure (bags, nets, various oil, and grease); the tank should be invulnerable to any incendiary devices.

➤ Installing urban combat adapted add-on armor designed to defeat and/or deflect shaped charges, blasts, and grenades. Add-on armor should also fit the turret roof.

➤ Installing mesh over any opening, including exhaust pipes and bullet-proof grills in front of optics.

➤ Storing critical hardware spares (periscopes, radio antennas), tools, and supplies inside the tank so the crew does not have to risk exposure for access.

➤ Adapting camouflage schemes to the urban environment of engagement.

➤ Attaching in place and securing tow cables to the front and rear of the hull for quick access and use under fire.

➤ Studying the efficiency of various ammunitions against urban targets or threats. In self-defense, for speed, the crew quickly fires whatever type of ammunition is already loaded, whether or not it is adapted to the threat; the correct ammunition is loaded and fired afterward. The following ammunitions are recommended against specific targets/threats:

- Armor-piercing discarding sabot fin-stabilized (APDSFS), a high-velocity sabot, used against tanks and armored vehicles, bunkers, helicopters, and in self-defense.

- Antitank (shaped charge), used against tanks and armored vehicles, and bunkers, and in self-defense.

- Explosive, used against armored and soft vehicles, houses, buildings, and exposed infantry, and in self-defense.

- Squash head, used against tanks, armored vehicles, bunkers, and in self-defense.

- Canister (depending on load). Flechette canister is used against infantry, snipers, helicopters, soft targets (building

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or vehicle), for close-quarter protection of another tank being climbed over by enemy troops, and in self-defense against threatening armor or missile post; explosive canister is used against soft targets; chemical canister is used against exposed infantry or crews and buildings; and flash-bang canister is used against ambushes, missile posts, and snipers.

- Smoke is used against buildings, open areas, soft targets and vehicles, and as a incendiary device for self-defense.

- Coaxial is used against armored vehicles, soft targets, exposed infantry, and missile or sniper position; and a .30-caliber machine gun can be used to protect another tank being climbed over by enemy infantry.

The crew. The tank is an exhausting place to conduct combat: extreme confinement, noise, constant chatter over single or multiple radio networks, smoke, smell, a permanent 360-degree and multidimensional need for battlefield awareness, a constant state of alertness, battlefield stress, and a feeling of deafness and "blindness" are factors that can take their toll.

The tank will always be a prime target, and as early as World War II, infantrymen knew their chances of survival were actually higher in wooded areas or behind rubble rather than behind some "reassuring" armor. While a regular foot soldier can actually take a breather almost anywhere and anytime, unseen and protected by some artificial or natural shelter, the tank and its crew is, whether idling and safe in the rear or fully committed on the battlefield, deaf and literally blind, the encased crew relying on radio transmissions and the restricted field of view of periscopes.

During urban combat, the line of contact can be anywhere, front, rear, and sides, up and under. Therefore, armored units should not be committed for too long before being relieved and sent to a secure area for necessary resupply, maintenance, and rest. The crew should be cross trained and every member should be able to correctly perform the tasks of the others. Not only is cross-training a combat multiplier, it is a matter of survival, and every soldier should know how to perform every task from standard to emergency maintenance and recovery procedures, driving, firing, maintaining all weapons systems, radio procedures, and tactical basics.

The tank commander, regardless of rank, becomes a tank commander the first time he sits in the turret. Rank and responsibilities do not provide any added protection, but do require mastering more skills (platoon/company levels). Company and platoon leaders should be the best tank commanders in the field, during maintenance, and at the firing range. Again, they do not have to do it all, but must know how to do it all. Crew members should all be potential tank commanders — the crew should be a family and the tank its home.

Camouflage and protection. The urban environment offers many opportunities for good camouflage and increased protection. Tanks may use the urban infrastructure to hide from view, avoid being targeted, or infiltrate an area. Malls and supermarkets may have crossed underground infrastructures in which to park or avoid being seen; covered parking lots, garages, parks,

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and stadiums may facilitate the camouflage and protection of an armored vehicle or provide alternate concealed firing positions or infiltration paths. Echoes would also make it more difficult to locate a moving tank, and multiple residual fires would make thermal detection more difficult.

At the same time, however, cities can become a deadly trap for tanks unless they are accompanied, guided, and protected by infantry forces knowledgeable of its capabilities and the need to communicate with crews. Dead angles, street corners, upper floors, and infiltration routes should be scouted beforehand and given a green light before committing a tank. For example: could a tank cross a specific wall without destroying its superstructure equipment; could a tank climb stairs or a wall; enter a certain street and use its main gun; control this intersection without being exposed; push through an certain obstacle; turn around; or can that bridge sustain 50 tons? These are just a few of the questions that accompanying troops should be able to answer before leading tanks to locations that could be deadly traps.

In the 1980s, every French tank battalion had a company of armor personnel carrier-mounted mechanized infantry specialized in supporting armored units, which could be used organically, as a company, or split into platoons attached to the various tank companies. Tank units and mechanized units were living, training, and working together all the time. Their "mechanized" were all from the armor branch and not "punished" infantrymen transferred from another branch of service. They lived by, and for, the tanks they knew and supported. Unfortunately, budget restrictions eventually killed that concept, and tomorrow, the fate of a tank in an urban area may depend on a soldier with little or no knowledge of tank capabilities.

Liaisons. Liaisons include radio, vocal, and visual. If radio communications are not jammed, they may be impaired by the compartmentalization of the urban terrain and by damage to antennas and other exterior communications devices. The crews need to master the basic tactics adapted to urban combat and act in-

dependently without radio liaison, if necessary. Initial briefing must include accurate intelligence, detailed limits, well-defined objectives, alternate eventualities, and courses of actions encompassing events such as mechanical problems, loss of radio communications, new situation, fall-back line or position, meeting point, and alternate communications plan. The role of the accompanying infantry would be critical to palliate the eventual loss of electronic transmission. The existence of an external interphone device allows the foot soldier to communicate with the crew under the protection of armor, while avoiding the need for the tank commander to exit the shelter of his turret to communicate.

The tank is quasi-blind and its field of vision is limited to the size of its periscopes, the magnification of its sights, the rotation of its turret, the range of elevation of its main armament, and, of course, the distance from any view-obstructing obstacle. This is why the traditional main battle tank is more comfortable maneuvering in open terrain and engaging targets at the 1,000 to 4,000 meter range rather than dueling at close range in inner city streets. If direct hits, shrapnel, debris, smoke, or fluids reduce an already poor visibility, damage the firing sights, or impair the driver's ability to negotiate obstacles, the crew will have to rely on the few spares that are onboard, resort to rotating periscopes of similar types from one area to another, and engage enemies within the combat range of the selected ammunition. If the driver's periscopes have been hit and damaged, critical optics must be replaced.

Repair and salvaging. Everything that can be repaired should be repaired and everything that can be salvaged should be salvaged! Armored combat in urban terrain is tough on equipment; accordingly, prior to any engagement within city limits, procedures for recovery, destruction, and salvaging should be in place. At every level, from crew to battalion, imagination and resourcefulness are necessary to keep the maximum number of tanks in fighting condition. A thorough "cannibalization policy" will permit damaged vehicles to receive immediate maintenance.

A damaged tank may crawl its way back to a "cannibalization center" where crew members help themselves with necessary replacement hardware from piles of salvaged tank parts such as periscopes, road wheels, sprockets, tracks, antennas, and tools. Couriers might take orders, then pick up and deliver parts across the front; only major mechanical issues or repairs would require the use of a recovery tank.

The on-site destruction of a tank should be the last resort to prevent it from falling into enemy hands. Still, afterwards, whatever can be salvaged from the wreck should be salvaged. Crew members might also participate in this salvaging as a "shared" components mission; available gunners, drivers, or commanders might be centralized and dispatched on request, regardless of the original unit of attachment.

Logistics. The ability to efficiently support armored units is a key requirement in military operations in urbanized zones. Main battle tanks are gas guzzlers and cannot sustain day-long operations without filling up. Furthermore, regular maintenance is nec-

essary to avoid major mechanical breakdowns, and an ammunition shortage is likely since fighting tanks go through munitions faster than they do fuel.

The safe setting of an after-dark refueling/resupplying area for tank units operating in a forest or the suburbs of a city is fairly easy. Refueling and resupplying a tank unit fighting its way through the hard zone of a city is a bit more complex; the streets are partially cluttered with debris, fires are burning, and enemies could pop up anywhere at any time.

Ideally, entire armored units could be simultaneously relieved and moved to a safe place away from combat zones; however, this is not a likely scenario because a well-orchestrated in-place relief is impossible in an urbanized zone during combat. Delivering fuel and ammunitions to individual tanks could also be considered, but is not a realistic approach because of exposure and the amount of time it takes for crews to reload ammunitions and pump fuel from barrels.

The most realistic scenario is to deal with one tank or platoon at a time. Vehicles can be guided to a safe rear resupply point nearby. Ideally, fuel and ammunition should be transported by armored and tracked vehicles that can reach tanks anywhere, regardless of the conditions of the roadways; and infantry should provide close protection.

The Purpose of Victory

Caen, Stalingrad, Dresden, Moscow, Tokyo, Berlin, Nagasaki, Saigon, Beyrouth, Belfast, Budapest, Panama, Baghdad…

From close-quarter combat to nuclear weapons, resistance to terrorism, scorched earth to aerial bombing, every possible means of warfare — tanks, artillery, helicopters, and airplanes — have been used to conquer cities, destroy their economic hubs, or annihilate the will of their citizens.

It is common knowledge that about 70 percent of World War II battles took place in urbanized areas, and about 40 percent of those on the Eastern front. What was true 60 years ago remains true today. Areas, such as the Ruhr, the Donbas of Silesia and of Ural, the California coast, and the north of France, compose urban sprawls, which are 20 to 100 miles long and inhabited by 500 to 10,000 people per square mile. In Europe, there is an average of one 50,000-inhabitant city in every 40 miles. If war were to break out again in the European theater, it is a safe assumption that most of the fighting will occur in urbanized terrain and the tank will, once again, spearhead these battles.

The recent war in Iraq has once again proven that as long as cities are not pacified, wars drag on and casualty numbers increase. On the other hand, as shown in Afghanistan, controlling the cities and not the countryside fails to bring an end to violence. Cities are the high payoff objectives of wars, the prime targets armed forces cannot afford to lose. Without winning the cities, the war is lost; however, occupying cities and not controlling the countryside fails to achieve victory as well. It seems wars cannot be won with or without the cities!

For the purpose of victory, armies must prepare generic armored vehicles, crews, and tactics for this ever-changing environment, which is cursorily studied due to a lack of expensive realistic training infrastructure and the budget flexibility needed for the purchase of specialized weapons systems. Furthermore, at the human level, the emphasis during training for military operations in urban areas should emphasize initiative, decentralization, and inter-branch cooperation — skills that may seem outdated in these modern times where conflicts are micromanaged by poll-driven politicians from their capital cities.

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"The safe setting of an after-dark refueling/resupplying area for tank units operating in a forest or the suburbs of a city is fairly easy. Refueling and resupplying a tank unit fighting its way through the hard zone of a city is a bit more complex; the streets are partially cluttered with debris, fires are burning, and enemies could pop up anywhere at any time."

The Battlefield Surveillance Brigade
The Future of Division-Level
Intelligence, Surveillance, and Reconnaissance

by Major Jaren K. Price

On 17 March 2008, General William S. Wallace signed a directive transferring the proponency for the battlefield surveillance brigade (BFSB) from the Combined Arms Center (CAC) at Fort Leavenworth to the U.S. Army Armor Center at Fort Knox. This transfer represents an important next step in continuing the development of the BFSB into a fully operational support brigade designed to conduct multidisciplined intelligence, surveillance, and reconnaissance (ISR). As armor and cavalry officers and soldiers occupy key positions in this brigade, there is a pressing need to understand this organization and how it functions. It is also critical that lessons learned from the deployment to Iraq of the first interim-designed BFSB, the 525th BFSB, be debated and, as necessary, incorporated into other BFSBs as they are activated.

This article briefly discusses the mission, organization, and operational concept of the BFSB and the important role it plays in the modular Army, and makes recommendations to encourage debate on its future development.

Mission of the BFSB

As outlined in the BFSB Operational and Organization concept, the BFSB's mission is to "conduct ISR operations to enable the division commander to precisely focus joint elements of combat power and simultaneously execute current operations while preparing for future operations."[1] It is the primary organization in the division for conducting ISR. The BFSB does this by executing the ISR tasks assigned by the division headquarters, which answer the commander's priority intelligence requirements (PIR). This allows the commander to make informed and timely decisions to shape operations in the area of operations (AO). Unlike previous division- or corps-level military intelligence (MI) units, the BFSB's primary task is collection, not analysis. The structure to conduct analysis has been built into the division and corps intelligence (G2) sections. The focus of the BFSB is intelligence that lies outside the brigade combat teams' (BCT) AO or supports the higher level commander in shaping the entire AO.

Organization of the BFSB

The newly published U.S. Army Field Manual (FM) 3-0, *Operations*, lays out an operational environment that characterizes the future as an era of persistent conflict. Not only must the U.S. military be capable of defeating traditional militaries of nation states, such as North Korea or Iran, but also nonstate actors, such as terrorist groups and international drug cartels, that threaten U.S. interests. FM 3-0 calls for a military capable of executing full-spectrum operations that include offense, defense, and stability operations.[2] The BFSB was designed to operate across the spectrum of conflict and provide ISR in support of these operations. From 2004 to 2006, the CAC experimented with various designs for the BFSB, which were tested and refined through multiple simulations, studies, exercises, and reviews supported by the U.S. Army Training and Doctrine Command (TRADOC) Analysis Center, the Army's battle labs, U.S. Joint Forces Command (USJFCOM), and RAND Corporation. This led to the current design approved by the Vice Chief of Staff of the Army on 11 August 2006.

The BFSB was designed to be a responsive, adaptable, and multidisciplined ISR organization. Through the combination of traditional reconnaissance missions performed by scout/cavalry units, and the technical and human intelligence (HUMINT) operations performed by MI units, the BFSB was designed to provide the mix of ISR capabilities necessary to op-

Figure 1. Battlefield Surveillance Brigade Organization

erate in any contingency. The BFSB's organic organization consists of a brigade headquarters, an MI collection battalion, a reconnaissance squadron, a network support company, and a brigade support company. It was also designed to be tailored during Army Force Generation (ARFORGEN) for its specific mission or contingency by adding a variety of capabilities (see Figure 1).[3]

BFSB Headquarters

The BFSB headquarters' mission is planning, executing, and supporting ISR operations. It was designed with three command elements: a mobile command group, tactical command post (TACCP), and a main command post (MAIN). The MAIN is organized by warfighting functions with enablers and includes: an air defense and airspace management/brigade aviation element (ADAM/BAE); an Air Force tactical air control party (TACP); and a robust sustainment section designed to provide sustainment planning and coordination, due to the lack of a brigade support
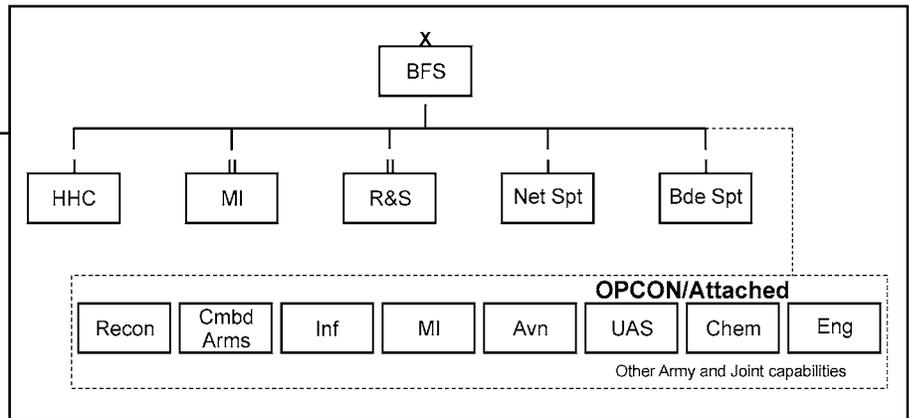
battalion (BSB). The BFSB is commanded by an armor, infantry, MI, or aviation officer with the XO and S3 from a different branch than the commander (see Figure 2).

MI Battalion

The MI battalion is composed of six companies (See Figure 3). The unmanned aircraft system (UAS) company provides organic aerial reconnaissance and surveillance with the Shadow UAS system

and links to the future Army extended-range multipurpose UAS. The technical collection company conducts signal intelligence (SIGINT) and contains six Prophet collection systems. The collection and exploitation (C&E) company and the counterintelligence (CI)/HUMINT company are designed to provide CI and HUMINT collection for the higher headquarters, as well as augment, or provide, HUMINT support to BCTs or support brigades.
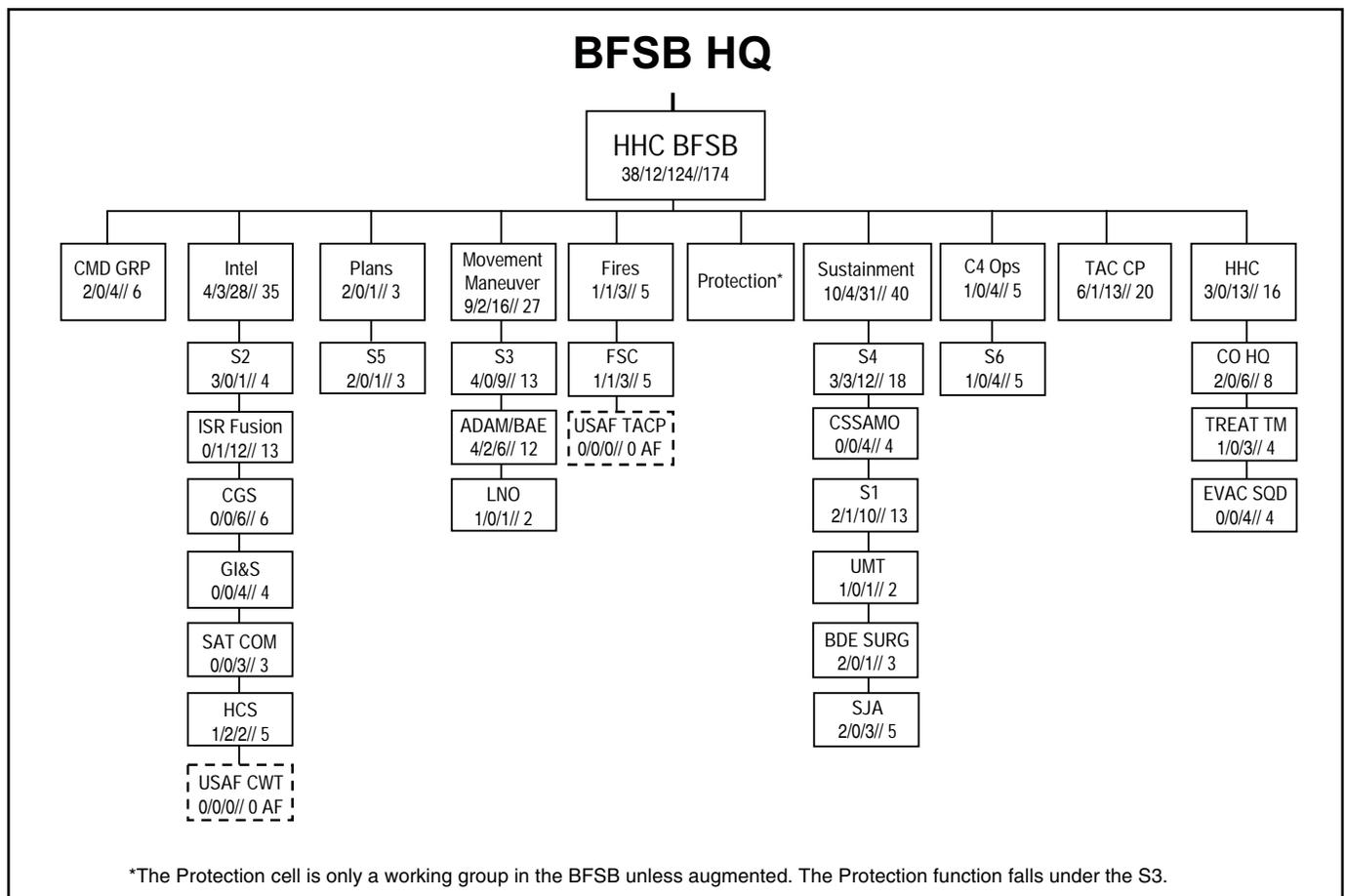

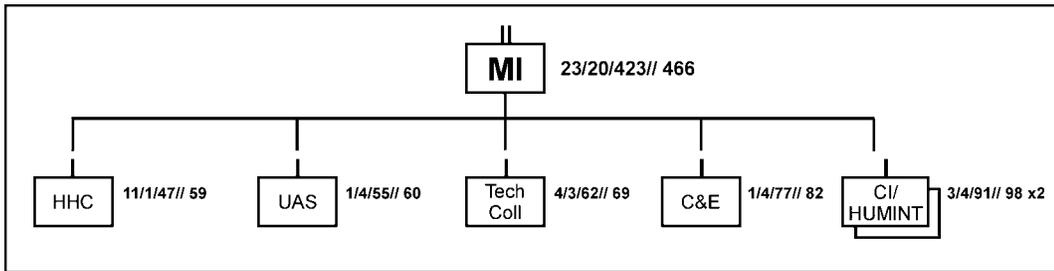**Figure 2. Battlefield Surveillance Brigade Headquarters**
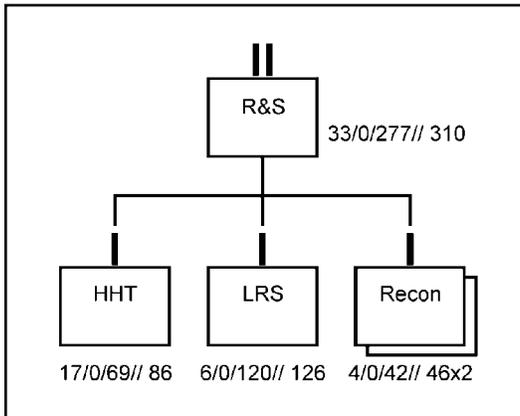
Figure 3. Military Intelligence Battalion

Figure 4. Reconnaissance Squadron

Figure 5. Intelligence, Surveillance, and Reconnaissance Process

Reconnaissance Squadron

The reconnaissance squadron is composed of a headquarters troop, two HMMWV-based ground troops and a long-range surveillance (LRS) company composed of 15, six-man teams (See Figure 4). The squadron includes fire support personnel and an Air Force TACP. Unlike previous cavalry squadrons, it is not intended to fight for intelligence against a robust conventional enemy; rather, it is designed to integrate the advantages of a scout on the ground, with all the technical and HUMINT capabilities of the MI battalion, to avoid decisive engagement and shape the battlefield by superior knowledge of the enemy.

Network Support Company

The network support company provides the communications structure for the brigade. It is based primarily on the satellite communications structure provided by the joint network node (JNN) system. The company is designed to provide both digital, voice, and video teleconference connectivity, along with automation support.

Brigade Support Company (BSC)

The BSC is designed to support the organic structure of the BFSB with field feeding, distribution, and maintenance support. It is designed to task organize into teams to support each battalion or can be organized as necessary to support the BFSB.

TOE versus MTOE

As in most cases with Army units, the modified table of organization and equipment (MTOE) differs from the design document in the table of organization and equipment (TOE). As currently fielded, the 525th BFSB includes a smaller headquarters, two smaller MI battalions, a LRS company, a network support company, and a brigade support company. The 525th has not been fielded key equipment such as the Shadow UAS and Trojan Spirit. Current plans are to first field Active Component BFSBs based on the MTOE and then transition them to full design following redeployment. Most Army National Guard (NG) BFSBs will be activated with the full design.

Operations

The BFSB is the primary organization tasked to collect PIR for the division or assigned headquarters. Its organic structure was primarily designed to meet the needs of a modular division, but it may be force tailored to support a corps, joint task force, or multinational force. Force tailoring is the assignment of additional capabilities to the organic brigade organization, based on the mission, during
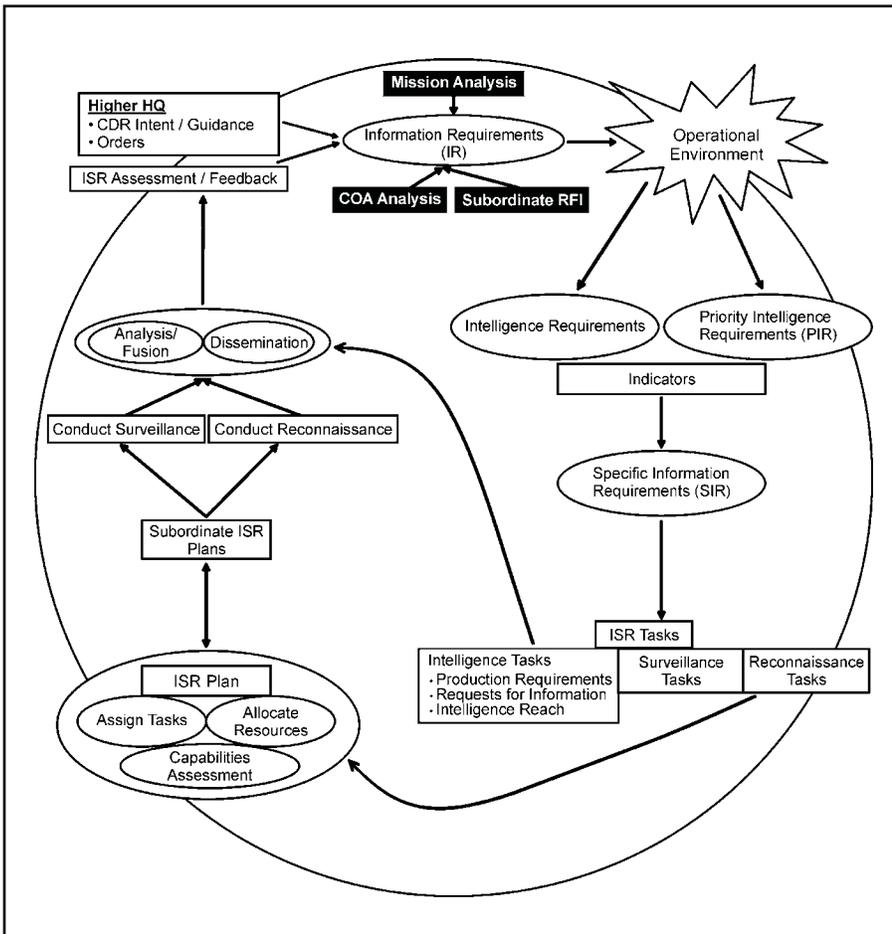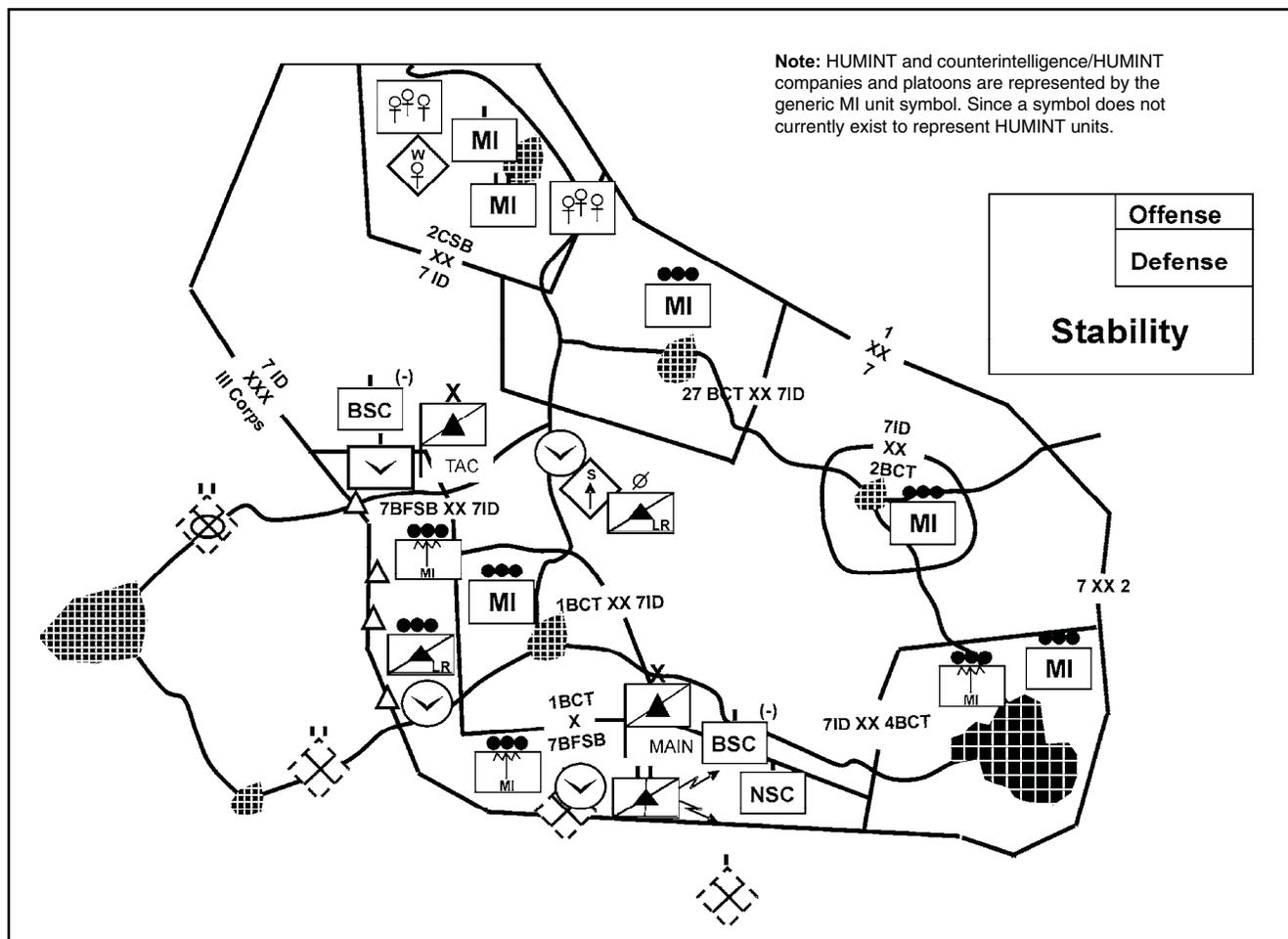
Figure 6. Battlefield Surveillance Brigade Operations

ARFORGEN. The higher headquarters conducts its mission analysis and determines PIR. Based on PIR, it assigns ISR tasks to subordinate units according to location and capabilities. The higher headquarters uses mission orders with a task and purpose and provides necessary resources. It is then up to the subordinate commander to determine how he will accomplish the mission. Once the required information is collected, it is analyzed and fused with other information to form intelligence. This intelligence is evaluated against the original requirement to ensure compliance. If the task is fulfilled, the higher headquarters begins the process again, which is focused on the next priority; if the task is not fulfilled, then it is adjusted to meet the original requirement. (See Figure 5).

The BFSB primarily operates for the higher headquarters in areas not assigned to other brigades or in an assigned AO for ISR operations. Its tasks should focus on allowing the higher headquarters to shape the AO for subordinate units. Additionally, the BFSB reinforces the ISR capability of BCTs or can provide this capability to other brigades. This is primarily done with the CI/HUMINT companies in the MI battalion.

Once the BFSB receives its task from higher headquarters, it conducts mission analysis and plans the best way to accomplish the mission. The BFSB commander task organizes the reconnaissance squadron and MI battalion as required. This allows for the use of cueing, mix, and redundancy. Task organizing company-sized elements of ground recon, UAS, SIGINT, and HUMINT capabilities has proved effective in developing intelligence of insurgent infiltration routes, training camps, and sustainment capabilities, particularly in the western areas of Iraq. This intelligence allows maneuver commanders to quickly and precisely target and destroy these insurgent capabilities.

Figure 6 depicts a division AO with both contiguous and noncontiguous AO focused on urban areas. The BFSB has been assigned an AO along the western border of the country, concentrating on a templated threat, and will use a mix of MI and reconnaissance assets. BFSB HUMINT and SIGINT assets have been task organized to some brigades to provide, or augment, their ISR capabilities. A LRS team and UAS are also tasked to find a sniper operating along a main supply route in the division control area.

Armor/Cavalry Officers in the BFSB

The BFSB provides a variety of opportunities for cavalry officers and soldiers. Currently, the Army plans to activate four Active Component BFSBs and six in the National Guard. The requirement for two additional Active Component BFSBs is currently under review. The BFSBs contain positions from private to sergeant major, and lieutenant to colonel, designated for scout and cavalry specialties. Soldiers or officers could actually spend their entire careers in a BFSB. The BFSB commander's position is coded as an O2B, which means it could be filled by an armor, infantry, MI, or aviation officer. Commanders of BCT recon squadrons, in addition to BFSB MI battalions and recon squadrons, should be the primary candidates for this command.

The key is developing commanders and staff officers that understand the various ISR disciplines and how to execute ISR operations and effectively integrate both joint and Army assets to provide timely

"The LRS company does not have a vehicle to support its teams and the recon troop vehicle would not meet the needs of the LRS company, which establishes the need for another type of light recon vehicle. The LRS company requires a light, all-terrain vehicle that would extend the range and speed of the LRS teams. Ideally, a six-man LRS team and its vehicles could be internally loaded in a CH-47 for insertion missions."

and accurate intelligence. While it is beneficial to understand and gain experience in various types of units; specialization of officers who "grow up" in BFSBs and recon squadrons should be encouraged.

Recommendations for Consideration

As with any new organization, many strengths and weaknesses are not evident until the unit is deployed to perform its actual mission. The 525th BFSB, in conjunction with the U.S. Army Center for Army Lessons Learned, has begun to identify some of these shortfalls. However, if a unit is not resourced or employed as it was designed, the unit and concept cannot clearly be evaluated. Currently, the 525th BFSB is neither resourced nor being deployed as designed. However, based on lessons learned from the deployment of various BCTs, the deployment of the 525th BFSB, and simulations and exercises involving the BFSB, I recommend several items for immediate consideration.

Deploy a Fully Resourced BFSB

The first recommendation is to fully resource the TOE design and deploy a

BFSB as soon as possible. In particular, the Armor Center must ensure that the reconnaissance squadron is fully manned, equipped, and trained, and also correct the shortages that exist in the BFSB headquarters between the MTOE and TOE. The BFSB should then be assigned to a headquarters and employed as a brigade to fully test its operational concept. The next available BFSB could be deployed to Afghanistan to work for the combined joint task force (CJTF)/U.S. division headquarters as Afghanistan provides a variety of terrain to test BFSB capabilities, as well as the need for ISR capabilities for the commander. As more BFSBs are activated, one should be assigned to each deployed division headquarters. The National Guard BFSBs should be included in this plan.

Reevaluate the MI Battalion Structure

The second recommendation is for the MI school, based on feedback from the 525th, to reexamine how the MI battalion should be structured; should it have two smaller MI battalions, as in the current MTOE, or one large battalion as approved in the TOE. The concept current-

ly being tested, with smaller deployed MI battalions, is to combine the HUMINT and SIGINT into multifunctional teams, instead of discipline-specific companies. The 525th has documented numerous advantages to this concept such as the teams' ability to develop intelligence and support BCTs. The MI school must look closely at the requirements for the MI battalion in full-spectrum operations and determine which design makes the most sense. If the school determines that two small battalions, with multifunctional teams are better, changes must be made to the support company for the BFSB.

Add a Brigade Special Troops Battalion

The third recommendation is to resource a unique brigade special troops battalion (BSTB) for the BFSB. In the original design, the BFSB had a BSTB, but was later removed to reduce personnel numbers. Based on observations from the 525th BFSB and the Stryker BCT (which does not have a BSTB or a BSB), and the other BCTs, BSTBs are critical to effectively employing the brigade's separate and support companies. These headquarters reduce the requirement for small unit-

level planning by the brigade staff and allow for better planning of operations and care of soldiers. Based on personnel and equipment numbers and the sustainment operations in the BFSB, adding a BSTB and BSB is likely excessive. A BSTB with an added support operations (SPO) section could meet the needs of the BFSB and provide command and control for the network support company, the sustainment company, and any additional company-sized units attached to the BFSB.

Develop Light Reconnaissance Vehicles

A fourth recommendation is for the Armor Center to reevaluate the needs of the Army for light reconnaissance vehicles and design and procure new vehicles. One critique that has resurfaced repeatedly in the BFSB design is using the HMMWV as a reconnaissance vehicle in both the recon troops and LRS companies.

For the recon troops, critics point out that the HMMWV lacks the protection, firepower, and the essential suite of cameras, sensors, and lasers required of a reconnaissance vehicle. While the standard 1025/26 HMMWV has advantages, such as off-road mobility and could be sling loaded by Army helicopters, the needed change to up-armored vehicles negates these advantages. The ideal vehicle for the BFSB and the infantry BCT (IBCT) recon troops would include the following options: be sling loadable by helicopter (also internally loaded on a CH-47); provide armor protection from small arms, up to 12.7mm and mines/IEDs; have an organic suite of sensors that could be used on the move; have a mast antenna for employment while stationary; be capable of mounting a variety of weapons (M2, Mk-19, M240); have high off-road mobility; carry a minimum of six soldiers (crew of two and four dismounts) and equipment; have a range of 350+ miles; and have the ability to run various electronic equipment from an internal power source.

The LRS company does not have a vehicle to support its teams and the recon troop vehicle would not meet the needs of the LRS company, which establishes the need for another type of light recon vehicle. The LRS company requires a light, all-terrain vehicle that would extend the range and speed of the LRS teams. Ideally, a six-man LRS team and its vehicles could be internally loaded in a CH-47 for insertion missions. At a minimum, it must be lightweight and small,

sling loadable, and able to carry LRS soldiers and their equipment without resupply for 5 to 7 days. The vehicle must be highly mobile and nearly silent, and would serve primarily as transportation to increase the LRS teams' mobility and not as a fighting or reconnaissance platform. The vehicle would carry between 1 to 3 people; the key is that the entire LRS team and vehicles are CH-47 transportable. They must also be transportable by medium tactical vehicles, either internally or on standard Army trailers.

Resource BFSB Air Force Tactical Air Control Parties (TACP)

The fifth recommendation concerns one of the most critical shortages currently in the BFSB — the unresourced requirement for TACPs in the brigade and recon squadron. The BFSB has no organic indirect or joint fires capability and must rely on outside resources. Due to the distances the BFSB was designed to operate, the support of Army indirect fires assets is likely to be limited. This provides a reliance on joint fires, especially for LRS teams. The lack of TACPs severely limits the BFSB's ability to plan and employ joint fires, especially close air support (CAS) in a timely manner. This capability is critical to protect BFSB soldiers and allow the BFSB to execute targeting. The Armor Center should ensure that the current Army/Air Force memorandum of agreement is modified to resource the required TACPs for the BFSB.

Explore Feasibility of a Single Scout MOS

Finally, the recon troops in the BFSB are currently composed primarily of 19D cavalry scouts, while the LRS company is composed of 11B infantrymen. All "scouts" in the BFSB recon squadrons, as well as the IBCT recon squadrons, should be 19Ds, as opposed to a mix of 11Bs and 19Ds; using 11Bs as scouts is inefficient and their training does not provide necessary entry-level skills for soldiers primarily focused on ISR. While many basic scout and infantry tasks overlap, there is a big difference between training focused on obtaining information while avoiding contact with the enemy and training focused primarily on killing the enemy and holding terrain. An 11B receives limited training on ISR and must be trained as a scout after arriving at his unit. Training for 19Ds is focused on ISR and soldiers arrive prepared to operate as both mounted and dismounted ISR soldiers.

Training for 19Ds leads to a different mind set focused on ISR, not offensive operations; 19Ds stay primarily in ISR units, while 11Bs are currently assigned between infantry and ISR units, degrading their effectiveness to perform either task. As the Armor and Infantry Centers consolidate into the Maneuver Center of Excellence, a single scout MOS makes sense.

The BFSB was designed to improve the commander's ability to understand the enemy and operational environment and make well-informed decisions. As the Armor Center continues the development of this organization, armor and cavalry officers need to understand how the BFSB is organized and operates. As lessons learned are developed from the deployment of the 525th BFSB, it only makes sense to examine the design and make necessary changes, just as the Army has done with the BCTs. While armor and cavalry officers and soldiers are key components of this organization, it is the development of "ISR" soldiers and leaders who understand both the muddy boots and technical aspects of ISR that will shape the battlefields of today and the future.

Notes

[1]U.S. Army Combined Arms Center, "Operational and Organizational Concept for the Battlefield Surveillance Brigade," Fort Leavenworth, KS, 1 May 2007.

[2]Headquarters, Department of the Army, U.S. Army Field Manual (FM) 3-0, *Operations*, U.S. Government Printing Office, Washington, DC, February 2008.

[3]"Operational and Organization Concept for the Battlefield Surveillance Brigade," Figures 1 through 6, 1 May 2007.

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Post Hoc, Ergo Propter Hoc (A Logical Fallacy)

by Sergeant First Class Phillip K. Trainer

Before any military operation, information is gathered on the enemy and the terrain on which the operation is to be conducted. Collecting this information is called reconnaissance, and almost every commander knows that the probability of mission success is greatly increased by successful reconnaissance.

Our Army senior leaders apparently think reconnaissance is important enough to create a battalion-sized reconnaissance unit for each maneuver brigade. Unfortunately, there is no single proponent within the Department of the Army wholly responsible for training and developing these soldiers — soldiers who develop the situation for the U.S. Army's maneuver brigades. The Armor School trains the armored reconnaissance specialist; the Infantry School trains select infantry soldiers to perform in the capacity of reconnaissance as a special skill; and the Military Intelligence School trains human intelligence collectors and numerous other occupational specialties to collect, analyze, and interpret information. Because of this decentralization of responsibility and authority, reconnaissance soldiers are ill-prepared to conduct wartime missions.

Deep-rooted tradition could very well be the largest contributor to this problem. The "Army Lineage Series, Armor-Cavalry" documents the history of cavalry and the birth of armor.[1] Prior to 1942, the Army had an Office of the Chief of Cavalry, which was responsible for the mission of reconnaissance. The last Chief of Cavalry, Major General John K. Herr, was unwilling to move forward into the mechanized age of combat and wanted to keep men on horses. Shortly after General Herr gave testimony to a Congressional committee regarding his viewpoints, his office was eliminated and his forces absorbed by the Armored Force. General Herr stated "[those] who wish to reduce cavalry to a purely reconnaissance arm, are entirely wrong, unless reconnaissance is the only mission which cavalry can perform."[2]

Oddly enough, this attitude is prevalent even today; nearly 66 years after General Herr's testimony, senior Army leaders still argue the roles of cavalry, armor, and infantry, and who gets to own which force and the distinction between armored mechanized and motorized. These debates rarely address the aspects of reconnaissance; no one is interested in developing the situation. There is no glamour in never being seen or heard. Real leaders do battle — they do not hand off the fight to another branch of the Army. And so perpetuates the lack of focus for the reconnaissance soldier's training and development.

The split between armor and infantry has driven a large proverbial wedge between the two branches. Many leaders want to bring the two together to smooth their differences, strengthen armor soldiers and improve their infantry skills, and improve the infantry soldier's concept of implementing armor into his fight.

Eventually, the two branches will merge and become one combat arms branch; ironically, it hasn't been that long since it was one branch. Every year, the Department of the Army

publishes its "Department of the Army Historical Summary," and as it turns out, the fiscal year 1977 edition summarizes some military occupational specialty (MOS) changes.[3] These changes would occur with the creation of a separate armor management field; for example, the previous 11D, armor reconnaissance specialist, would be assigned the new 19D series in the armor management field. Similar actions occurred for the 11E, armor crewman, except that this MOS was broken down into five different, and more descriptive, MOSs.[4] These actions were recommended by the chief of staff-established Tank Forces Management Group, which recognized that the tank force needed its own career management field to properly focus training and development of the tank force; and that the tank force was significantly different enough to merit separation from the infantry force. However, here we are today, about to merge the two forces together again, when it was only 29 years ago that the two were split from the same management field. While marrying the two forces to the same branch might end the dispute of awarding tankers the combat infantryman's badge, it does not address our shortcomings in reconnaissance, nor will it ever do so.

Today, our reconnaissance force is still divided, as it was back in General Herr's chief of cavalry days. We still have light and heavy reconnaissance and, of course, the same concerns persist: should the cavalry be able to fight while executing its reconnaissance mission; or do reconnaissance forces need to defend themselves during a chance encounter with the enemy? However, as we look to the future, we begin to see a change in the focus of reconnaissance. The Army is placing an even higher level of importance on reconnaissance. Take for instance this excerpt from a Future Combat System overview, "The hallmark of UA [unit of action] operations will be the ability to develop situations out of contact, engage the enemy in unexpected ways, maneuver to positions of advantage with speed and agility, engage enemy forces beyond the range of their weapons, and destroy enemy forces with enhanced fires and assault at times and places of our choosing."[5]

If you are unfamiliar with military operations, this concept is achievable today through detailed and deliberate reconnaissance. However, this is often unattainable due to insufficient training of appropriate soldiers in appropriate tasks, which is partially due to the fact that there is no general-level leadership with a direct responsibility in the development of these soldiers.

In closing, the future combat system will place a heavy burden on reconnaissance soldiers. Unfortunately, these soldiers will still be secondary efforts to either the infantry or armor forces. Until a pure reconnaissance branch is created and the proper focus given to the development of effective reconnais-sance soldiers and doctrine, the future combat system may take even more work to make work than did the old ways of yesterday.

Notes

[1]Mary Lee Stubbs and Stanley Russell Connor, *Army Lineage Series*, "Armor-Cavalry, Part I: Regular Army and Army Reserve," Office of the Chief of Military History, Washington, DC, 1969.

[2]Ibid., p. 70.

[3]United States Army, Center of Military History, "Department of the Army Historical Summary: Fiscal Year 1977," U.S. Government Printing Office, Washington, DC, 1978.

[4]Ibid., p. 19.

[5]BG (P) Charles A. Cartwright and Dennis A. Muilenburg, "Future Combat Systems – an Overview," Future Combat Systems, accessed online at *www.army.mil/fcs/articles/index.html,* 2006.

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"Today, our reconnaissance force is still divided, as it was back in General Herr's chief of cavalry days. We still have light and heavy reconnaissance and, of course, the same concerns persist: should the cavalry be able to fight while executing its reconnaissance mission; or do reconnaissance forces need to defend themselves during a chance encounter with the enemy?"

MAINTAINING THE EDGE

Soldier-Level Initiative and Ingenuity

by First Lieutenant Ashley M. Ritchey

Never tell people how to do things. Tell them what to do and they will surprise you with their ingenuity.

— George S. Patton

Unlike other professionals, military leaders cannot test or verify with exact certainty the effectiveness of tactics, techniques, procedures, and equipment short of actual combat. Leaders at every level of this hierarchical organization are constantly reviewing, analyzing, and adapting their operations to succeed. Failure is simply not an option we are willing to accept on the battlefield.

At the highest level, military leaders are faced with the challenge of validating operations in two distinct theaters. Although strategically faced with the same mission

in both Iraq and Afghanistan, defeating an extremist insurgency, the fundamental differences in these locations and the methods by which we fight are evident. Even within the narrower scope of operations in Afghanistan, there are a surprisingly diverse number of distinct tactical operating environments. Much of the scrutiny and emphasis in the analytical studies of how we are fighting in Operation Enduring Freedom (OEF) focus on adaptations in our tactics, techniques, and procedures; however, little formal analysis focuses on how we physically adapt our baseline equipment to increase

our ability to project combat power in a unique battlefield situation.

Department of the Army-level logistics agencies are constantly working to improve equipment in their inventory to ensure the warfighter is outfitted for success from the ground up. As the workhorse of ground maneuver elements, military vehicles are constantly being evaluated and improved in efforts to develop our fighting capabilities. Recent efforts in this area include augmenting vehicle armor; fielding the mine resistant ambush protective (MRAP) vehicle, which is specifically

designed to withstand improvised explosive devices (IEDs); and mounting heavy weapons on these stalwart vehicles so they may protect, as well as project, power.

While the goal for developing this equipment is to create a quality baseline product for replication and wide distribution to all theaters, it is unreasonable to expect vehicles with the same specifications to fight equally well in the streets of Baghdad and the mountains of Afghanistan. Therefore, there is an expectation that within each distinct tactical environment there will be further modifications to provide maneuver elements with vehicles capable of operating successfully in all situations. As the focus narrows to a distinct tactical area of operations, the shortcomings of standardized equipment becomes increasingly apparent. To achieve success at the tactical level, the burden of adapting not only tactics, but also physically adapting equipment, relies on the flexibility of first-line leaders and the ingenuity and initiative at the soldier level.

The challenge and all associated obstacles to physically alter vehicles for action in new environments are not unique to contemporary operations in OEF. There are instances of soldiers developing deceptively ingenious modifications to dominate the fight in nearly every major conflict in American military history.

During the Normandy campaign of World War II, American forces were faced with the daunting task of fighting their way through the Bocage country. Characterized by hedgerows, which are denser, thicker, and higher than any areas in which they trained prior to actual combat operations, the terrain of the Bocage was more formidable than the defending German army. The hedgerows were too steep to drive over, too long to go around, and provided excellent defensive positions for the enemy. Mother Nature nearly neutralized the same tanks that had raced easily and successfully across the open desert of Africa in prior campaigns. After attempts to blast through the hedgerows with dynamite and munitions failed to efficiently open the battlefield, Sergeant Curtis G. Culin developed a hedgerow-cutting device by mounting the remnants of a German roadblock on the front of a tank that cut through the hedgerows "as though they were pasteboard, throwing the bushes and brush into the air."[1] General Omar T. Bradley was so im-

pressed with the results that he ordered the First Army ordnance section to weld and mass-produce these hedgerow-cutting devices for installation on all available tanks; two weeks later, more than 60 percent of the First Army's tanks had these devices installed.

More than 60 years later, the breakout and pursuit from Normandy is a testament to soldier innovations and the undeniable fact that standard equipment must be adapted to meet specific needs in each area of operations.[2] Similar ingenuity and initiative are requisite for success in contemporary military operations.

For more than 6 years, anti-coalition military (ACM) forces in Afghanistan have continued to stave off arguably the greatest military ever by choosing to fight in locations that limit our ability to maximize superior combat power. Whether choosing to take a stand in the streets of Kabul, where soldiers must restrain weapons usage to prevent unacceptable collateral damage, or making a stand the mountainous terrain, where our weapons and vehicles cannot physically overcome the severity of the surrounding terrain features, the ACM maintain an undeniable positional advantage. While, enjoying the

benefits of a defensive posture, our enemies demonstrate a large degree of adaptability and resiliency.

As the main element of Task Force Saber, the 1st Squadron, 91st United States Cavalry, 173d Airborne Brigade Combat Team, took on the responsibility for controlling combat operations in the Konar and Nuristan Provinces along the Afghanistan-Pakistan border in May 2007. This remote northeast region of Afghanistan, dominated by the Hindu-Kush Mountains, is hardly ideal for staging mounted operations in bulky military vehicles loaded down with heavy armor and crew-served weapons statically mounted on top. The terrain is so severe that mine-resistant, ambush-protected vehicles (MRAPs) were deemed unsuited altogether for operations in this area because they could not effectively maneuver on the few trafficable roads and represented a risk for noncombat-related injury from vehicle rollovers.

In *The Art of War*, Sun Tzu touches on the importance of terrain in waging war.[3] He describes six types of terrain, accessible ground, entangling ground, temporizing ground, narrow passes, precipitous heights, and positions at a great dis-

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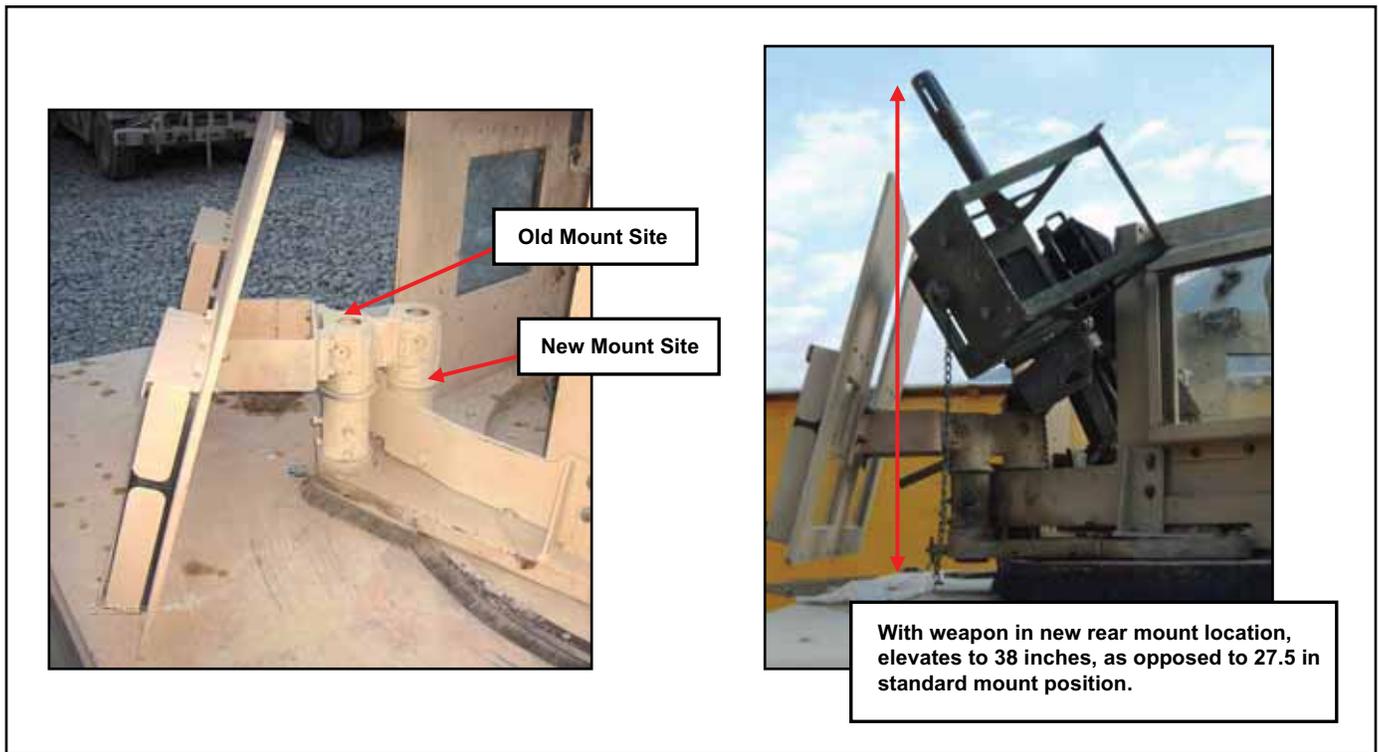
Figure 1. Left: the bare weapons mount showing the original location of the mount and the new location of the mount. Right: the mount with a MK19 automatic grenade launcher in the fully elevated position.

tance from the enemy, and their varying influences on the ability to successfully fight and win.[4] The rugged terrain of the Hindu-Kush Mountains presents challenges within the realm of each of these aspects. The most prevalent and battle-shaping feature in this area is perhaps the precipitous heights and the seemingly endless sea of mountain peaks. Sun Tzu's thoughts on precipitous heights were simple: if you reach the high ground before your enemy, you should occupy it and wait for your enemy to come; however, if your enemy reaches it first, you should not follow, but instead should try to entice him away.[5]

ACM fighters rapidly learned that by taking positions high enough on the slope face of the mountain, they could evade retaliatory fire by nothing more than our inability to shoot high enough. Even when the enemy was in the open, the direct fire weapons systems mounted on the vehicles could not physically elevate to a steep enough angle to engage ACM from their trucks located on the ribbon of road hugging the side of the mountain below. As prescribed by Sun Tzu, the enemy occupied the high ground and American forces were without a way to entice him from his vantage point without calling in support from indirect fires systems.[6] Facing an enemy force that relied on natural defenses that occupied the high ground while operating along a poor road network winding along the valley floors, the Airborne Cavalry literally faced an uphill battle.

"ACM fighters rapidly learned that by taking positions high enough on the slope face of the mountain, they could evade retaliatory fire by nothing more than our inability to shoot high enough. Even when the enemy was in the open, the direct fire weapons systems mounted on the vehicles could not physically elevate to a steep enough angle to engage ACM from their trucks located on the ribbon of road hugging the side of the mountain below. As prescribed by Sun Tzu, the enemy occupied the high ground and American forces were without a way to entice him from his vantage point without calling in support from indirect fires systems."

However, just as soldiers during World War II modified the standard Army tank to break through the Bocage, soldiers in Afghanistan devised a modification that would allow us to elevate heavy weapons and focus direct fire against enemy forces on the mountainside. Assigned to D

Company, 173d Brigade Support Battalion, Darkhorse Forward Support Troop, WO1 Charles Klein, Sergeant Carlos Enciso, and Sergeant Gary David exhibited the same determination and battlefield ingenuity in the remote mountains of Afghanistan that Sergeant Culin and others did during those desperate days in the French Bocage.

The gunner's protective turret, standard on the up-armored HMMWV (UAH)-series of vehicles, is constructed in such a way that crew-served weapons systems cannot elevate beyond 60 degrees because the front windshield impedes the ammunition can. Forward maintainers took on the challenge to modify the mount to allow greater range of motion without degrading the level of protection the turret provides the gunner. The first proposal was to push the front windshield forward; however, this modification changed the turret's basic form and exposed gunners to additional enemy fire from more angles. After several iterations of modification failed to achieve the stated intent, Darkhorse welders designed an acceptable solution for both MK19 and M2 machine guns.

The new mount was characterized by attaching an additional pintle mount offset to the rear of the standard mount location. This effectively moved the weapons system back to create a separation between the ammunition can and the windshield, allowing full-range motion. As an added value, it actually increased the gunner's protection by positioning him further into the vehicle's body when operating the weapon at increased elevation. After installation, these modifications increased the potential angle of elevation by more than 20 degrees, which allowed for near-vertical elevation. Near vertical is more than enough in this case, as the weapons systems would fail to properly function if fired from a true vertical position.

Prior to taking on the challenge of modifying the crew-served weapons configuration, the welders developed a swing-arm mount for the gunner's secondary weapons. The swing-arm mount includes a buttstock mount for stowage, and has the ability to traverse the weapon in a 360-degree pattern of horizontal movement and achieve vertical elevation with the light machine guns. While not nearly as intimidating as a .50-caliber machine gun or automatic grenade launcher, the swing-arm mount provided gunners with the critical ability to engage the enemy at any angle and disrupt their fighting tactics while primary systems modifications were still in development stages. The undetectable safety bubble previously enjoyed by ACM fighters suddenly disappeared!

Commanders took immediate notice of the innovation and the schematics and ideas rapidly made their way up to the commanding general of the U.S. task force in Afghanistan. Just as the plans for the hedgerow cutters became blueprints for mass-produced modifications during World War II, Darkhorse Troop's swing-arm mounts went into production on a large scale for distribution throughout Afghanistan.[7] Although they may never become "standard issue equipment" at the Army macro-level, they are making their way throughout theater to increase the combat posture of all forces involved in Operation Enduring Freedom. Eventually, like all new equipment, these swing arms will become commonplace for vehicles operating in northeastern Afghani-

Completed mount fully extended showing the 360-degree high-angle precision engagements.

Buttstock holder, used to secure the gunner's individual weapon can be moved to secure the secondary weapon during transport.

Stabilized weapon position during transport — out of the way of the crew weapon and easily accessible.
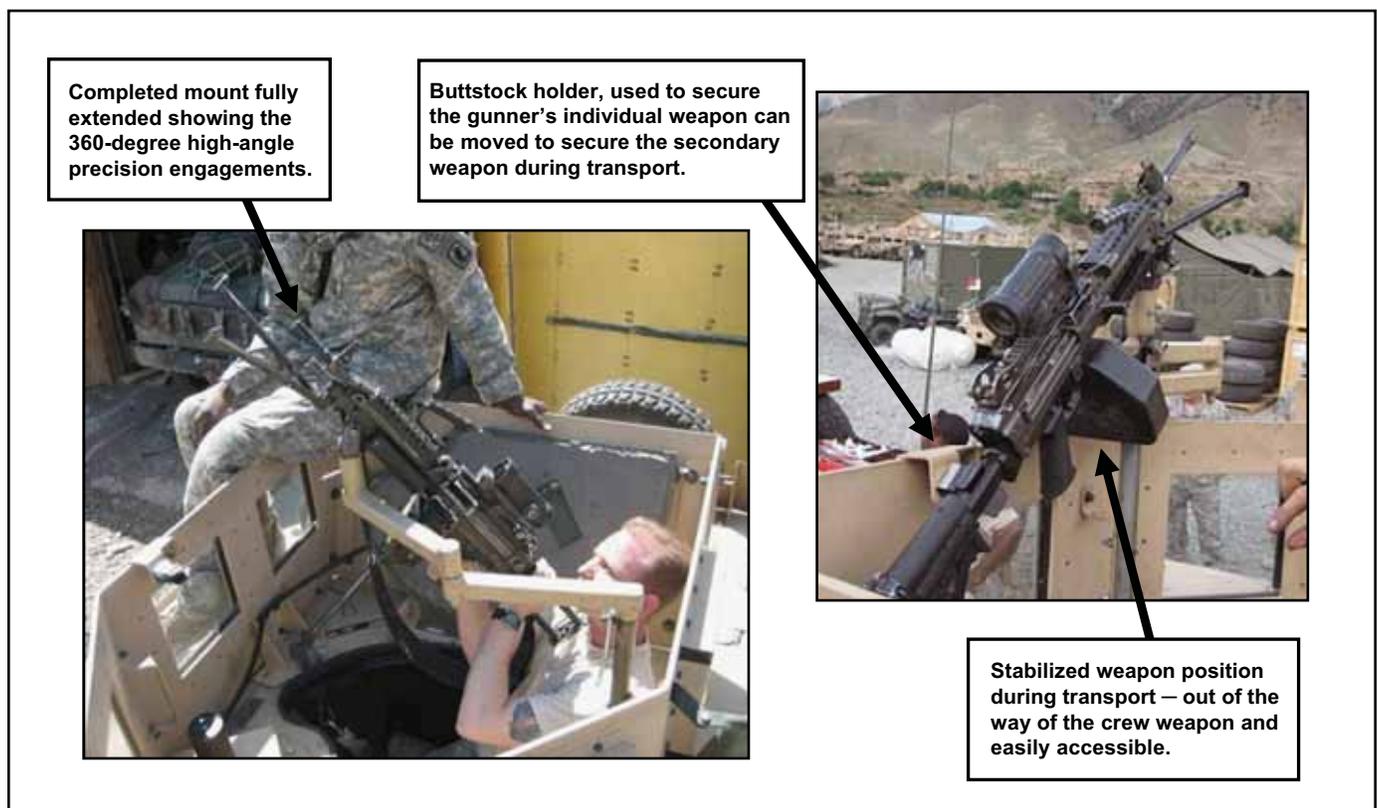
Figure 2. Left: the swing arm with M249 attached being used by the gunner at near-vertical elevation and unimpeded horizontal motion. Right: the M249 attached to the buttstock holder for stowage.

There are no secrets to success. It is the result of preparation, hard work, and learning from failure.

— Colin Powell

stan, and will undoubtedly become obsolete and ineffective, which will require future soldiers to physically adapt their equipment to meet the needs of the ever-changing battlefield environment in this volatile region.

Besides swing-arm and large-weapons mounts, the welders constructed gates, doors, and other force-protection measures, fabricated mounting systems for the tactical operations center's automation equipment, and worked creatively to make life better for everyone. During their tenure in Afghanistan, D Troop maintainers of every variety worked to keep the maneuver forces equipped to successfully complete their combat missions. In a region where roads are little more than dirt paths, generally free and clear of major obstacles, it is likely that a vehicle will roll out the front gate and return broken through no fault of the operator, but from the stress and damage of driving over the daunting terrain. While the contributions of support soldiers may not be glamorous and often go unnoticed, the vital role they played in physically adapting standard issue Army equipment to

meet the distinctive needs of the light cavalry squadron operating in the Hindu-Kush Mountains is undeniable.

Although we may spend months in the field training environment, whether it be the National Training Center in the California desert or the rolling hills of the Joint Multinational Readiness Center (JMRC) in Hohenfels, Germany, there is no simulated environment that can fully replicate the challenges endemic to the tactical constraints of Operation Enduring Freedom. Our ultimate success hinges on our ability to learn from our mistakes, adapt promptly to a new and unfamiliar environment, and be more adaptable than our enemy.[8] It is often said that "necessity is the mother of all inventions," and whether it be the Bocage region of France during World War II or the mountains of Afghanistan during Operation Enduring Freedom, necessity drove seemingly ordinary soldiers to do extraordinary things to regain the ability to fully use American military might.

Notes

[1]Martin Blumenson, "Breakout and Pursuit," *U.S. Army in World War II European Theater of Operations*, Center of Military History, U.S. Army, Washington, DC, 1961, p. 3.

[2]Michael Howard, "Military Science in an Age of Peace," *Journal of the Royal United Services Institute for Defence Studies*, March 1974, p. 3-9.

[3]Sun Tzu, *The Art of War*, Ralph D. Sawyer, trans., Basic Books, New York, 10 February 1994.

[4]Ibid.

[5]Ibid.

[6]Ibid.

[7]Walter S. Zapotoczny, "Breakout from the Hedgerows: A Lesson in Ingenuity," 22 August 2005, *Military History Online*, http://www.militaryhistoryonline.com/wwii/articles/hedgerowbreakout.aspx.

[8]Howard, p. 3.

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First Contact: A Brutal Teacher

by Lieutenant Colonel Patrick Donahoe

One night in late December 2005, our battalion, 1st Battalion, 67th Armor, was 2 days from assuming authority for its area of operations in Iraq. We had been in country for about 2 weeks and were conducting right-seat rides with the outgoing battalion. Our patrols had little, if any, representation from the departing unit. We were de facto in charge and soon learned that the enemy wasn't going allow us time to learn and adapt. Instead, he preferred to hit us hard, which is exactly what he did on the night of 28 December, striking with a devastating effect.

A deeply buried improvised explosive device (IED), detonated by pressure plate, destroyed the lead up-armored HMMWV in the engineer's patrol. The blast killed the HMMWV gunner and the local national interpreter. The patrol leader, a relatively new second lieutenant, and the soldier driving were both wounded and evacuated.

With all of our training behind us, we now found ourselves wrestling with the second- and third-order effects of what we knew were the outcomes of this conflict: dead and wounded soldiers and local nationals; the organization of the air medical evacuation (MEDEVAC); pursuit of a suspected triggerman through palm groves; security of the IED site and the *landing zone; employment of the explosive ordnance detachment (EOD); recovery of a shattered M1114 and our casualties; and the efforts to maintain morale of soldiers directly effected and the battalion as a whole.*

First Contact

The patrol began moving north, paralleling the Euphrates River, along a raised dirt road bordered by palm groves, through an area that had seen little contact over the past couple of months. The insurgents used the concealment of the palm growth and the canals to gain access to the roadway. The construction of the road provided easy emplacement of explosives. The shoulders of the loose soil that formed the roadbed were perfect for emplacing multiple-round IEDs under the center of the road, which allowed the enemy to employ greater destructive power directly beneath the body of targeted vehicles.

The sound of the blast reverberated back to the forward operating base; the radio call came in from the patrol that the lead vehicle was on fire after striking an IED. As the initial shock hushed the operations center, the battalion XO took charge in the tactical operations center (TOC) and began simultaneously coordinating with the patrol via FM command net and the brigade through voice over internet protocol (VoIP) line and internet relay chat (IRC). The battalion's first priority was to get a MEDEVAC aircraft to the patrol to move the wounded to the combat support hospital, which turned out to be a bit more difficult than our training courses led us to believe.

Getting the 9-line MEDEVAC request from the unit in contact is difficult under ideal conditions and these conditions were anything but ideal. This was the battalion's first real contact; it was cold and dark and one of the wounded was our patrol leader. The initial radio calls from the patrol reported direct fire contact, so we relayed line 6 of the request as "troops in contact," but even though the initial report of direct fire was either incorrect or the enemy had quickly broken contact, we never corrected the request. This caused a sizeable delay in MEDEVAC aircraft arriving at the scene, as it was required to wait for an AH-64 air weapons team escort. Had we been more aware, we would have corrected this report as soon as we confirmed no additional contact at the landing zone. We internalized this lesson and incorporated it into our standard operating procedure for the remainder of our deployment.

"The sound of the blast reverberated back to the forward operating base; the radio call came in from the patrol that the lead vehicle was on fire after striking an IED. As the initial shock hushed the operations center, the battalion XO took charge in the tactical operations center (TOC) and began simultaneously coordinating with the patrol via FM command net and the brigade through voice over internet protocol (VoIP) line and internet relay chat (IRC)."

We were also challenged to provide the specifics of the wounds to satisfy lines 3 and 5 to the degree requested, we responded with the number and a degree of urgency. In theater, we were often requested to provide details of the wounds to allow for special equipment to be placed on the aircraft if needed. These wound details are often difficult to get from units in contact, especially when leaders are killed or wounded, or the unit is inexperienced. We got much better at this as the deployment progressed; however, we should have been better from the start. Often, the TOC can provide details to assist with the 9-line request without explicitly requiring the private or specialist on the radio to provide the information, and the TOC must be ready to fill in the gaps to expedite the request.

After the helicopter lifted off with our casualties, there was confusion on the ground as to how many men remained in the vehicle and how many we sent with the MEDEVAC. This led to additional frustration as the vehicle was searched again for wounded, exposing more men to the remains of our two comrades. We then decided to ensure there was a dedicated leader to manage actions at the landing zone so we would know exactly who had been put on the aircraft. The landing zone manager was required to report on FM command net the number of casualties loaded on the aircraft with corresponding battle roster numbers.

As the aircraft departed from the landing zone, we arrived short of the site and spoke with the soldiers involved in the incident, who were, along with the command sergeant major and first sergeant, in the process of retrieving remains. We learned too late that due to continued exposure, it is not the best course of action for soldiers in the patrol to police the remains of their counterparts. We made every effort to ensure that the members of the patrol that had been attacked were returned to the forward operating base as quickly as possible to begin critical-event counseling — chaplains, counselors, leaders, and psychologists (if available) are critical to the success of this effort. Additionally, for long-term care, these events should be noted and soldiers should be required to do follow ups during the remainder of the deployment and after returning to home station.

Many leaders falsely believe they are helping soldiers by keeping them inside

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"As an armor officer, I was comfortable with commanding a formation mounted, but had given little thought to commanding a battalion while separated from my vehicle, and even less thought to maneuvering my "squad," my personal security division (PSD), in the dark of night to pursue a bad guy. So, when I dismounted my M1114 with my tank gunner, who headed my PSD, and my tank loader, another member of my PSD, we found ourselves without support and without the proper kit to effectively conduct our mission."

the wire for long periods following catastrophic events, which is counterproductive in the long run. After a short period to refit (3 or 4 days), the unit should be sent back out on patrol; any longer than that, the platoon will suffer and the specter of "outside the wire" will only become worse.

Our aerial weapons team in support sighted a figure moving suspiciously away from the road in short rushes. As the majority of our element at the site was securing the vehicle and setting up for vehicle recovery, I found the nearest element to conduct the pursuit and capture the man the Apaches had spotted. Unfortunately, I was (and remain) a prisoner of my experiences. As an armor officer, I was comfortable with commanding a formation mounted, but had given little thought to commanding a battalion while separated from my vehicle, and even less thought to maneuvering my "squad," my personal security division (PSD), in the dark of night to pursue a bad guy. So, when I dismounted my M1114 with my tank gunner, who headed my PSD, and my tank loader, another member of my PSD, we found ourselves without support and without the proper kit to effectively conduct our mission.

It was immediately apparent that my only weapon, the M9 pistol — no long-armed weapons — lessened my fire team's firepower and served as a clear indicator to the insurgents that I was seemingly important. (In Saddam's army, carrying a pistol is a symbol of higher-ranking officers, and by doing so, I marked myself.) Additionally, I had no paper map, no global positioning system (GPS), and no suitable communications; we searched for a man in a palm grove and were completely unprepared to do so.

After returning to the forward operating base that morning, we made some significant changes in our equipment and organization. First and foremost, my command sergeant major and I decided we would be on the ground away from our vehicles only when we were together. We also added an M4 carbine, with optic and aiming devices, to my kit, along with a map and GPS, and a multiband inter/intra team radio (MBITR) to my PSD chief's kit. The communications ensured that I could still command the battalion while dismounted, and the weapons and other accoutrement allowed me to fight dismounted, if necessary.

The night of 28 December was a singularly traumatic event for the battalion. It was a shock that we had lost our first men even before we completed our transfer of authority. The men reacted as professional soldiers do, but we found many shortcomings that needed to be fixed immediately because the enemy was not going to give us any time to adjust and learn. Not only did we find weaknesses in how we called in MEDEVACs at the point of injury, but also in how we tracked what we had reported from battalion to higher. We found that recovery of destroyed vehicles was a huge undertaking that needed to be thought through and resourced as a mission. As a battalion commander, I discovered that I was woefully unprepared to be separated from my vehicle and that issue was immediately remedied.

First contact is a brutal teacher; it's much better to internalize these lessons during training. Think through the full problem set and be prepared; the enemy will take advantage of the fact that you're new to the area of operations, don't have the right equipment, and haven't planned for the worst.

Lieutenant Colonel Patrick Donahoe is currently serving as Bronco 7, the brigade trainer, National Training Center, Fort Irwin, CA. He is a graduate of Villanova University and earned a Masters Degrees from the American Military University and the Naval War College. He has served in various command and staff positions, to include commander, 1st Battalion, 67th Armor, Fort Hood, TX, and Iraq; S3, 1st Battalion 34th Armor, 1st Infantry Division, Fort Riley, KS; and S3, 1st Brigade, 1st Infantry Division, Fort Riley.

REVIEWS

U.S. Intervention Policy and Army Innovation: From Vietnam to Iraq by Richard Lock-Pullan, Rutledge, New York, 2006, 291 pp., $150.00 (hardcover)

U.S. Intervention Policy and Army Innovation: From Vietnam to Iraq focuses on how the U.S. Army rebuilt itself in the aftermath of Vietnam. Lock-Pullan, a British scholar, conducts a systematic examination of the pressures on the Army from Vietnam to present time, decisions that were made during this time, and the unforeseen consequences of those decisions. This book is timely and we will soon have to take a deeper look at how our Army arrived in Iraq and how it will face the uncertain future of the post-Iraq pressures to rebuild our Army.

On page 1 of the book, Lock-Pullan signals the direction in which he will take his readers. He writes, "An overreliance on either the political aims or the military means can destabilize a strategy and ultimately be fatal for a state." The book's purpose is to conduct a critical examination of U.S. military intervention strategy based on lessons the United States should have learned from its extensive experiences in using force in a complex sociopolitical environment such as Vietnam.

The Army that entered Vietnam built its image on World War II successes, which tied a small professional regular Army to vast mobilization for a big war. As there was no mobilization for Vietnam, the spirit of the Army was called to question. General Abrams famously asked his staff to answer the question, "Why an Army," early in his tour of duty as chief of staff.

Lock-Pullan describes the decades of the 1970s and 1980s as an inward-looking time for our Army. He makes the case that the Army reformed from within as it was more than the Army that decided "no more Vietnams." The policymaking leadership of the country, irrespective of party, avoided strategic thought and how to use force. The Army of this time was questioning its purpose, the legacy of McNamara and management versus leadership, and how to cope with a volunteer Army. In this daunting environment, Lock-Pullan writes, "The complexities and confusion of Vietnam were not the priority; the need to rebuild was."

In these daunting days, the world saw the 1973 Arab-Israeli war. This was, in Lock-Pullan's view, a watershed moment for the traditional Army principles of reserve call-up and time for force build-up, the traditional American way of war. This short, high-intensity war expended more tank cannon ammunition than the U.S. Army had in reserve. This war caused the Army to think about fighting wars below the nuclear threshold with no time for reserve call-up. It was the time when those on active duty began to hear the mantra of fight outnumbered and win.

The Army, reviewing the depth of the Warsaw and Soviet forces in Europe, made the decision to focus on this form of warfare because it was the most devastating with the possibility of catastrophic outcomes for the Nation if the Army lost. The Army, in Lock-Pullan's view, was glad to focus on a war in Europe because it was, "run down spiritually and professionally in 1973."

The unintended consequence of this decision was not a disregard of the lessons of counterinsurgency, although this was true, but rather this decision laid the groundwork for the Weinberger-Powell doctrine. Lock-Pullan asserts that the Army walked away from a Clausewitzian view of the use of the Army as the means for use by the government to dictate what the Army could achieve and under what circumstances to apply force. A history review after this doctrine was announced shows how successful it was, but it changed the self-image of the Army.

Abrams tied the Regular Army to the Army Reserves by transferring essential combat support and service support elements to the Army Reserves, calling it the total force. The challenge was in a time of high-intensity war with little time for reserve forces to be called up; the Army was saying that while it needed public support for the total force and reserves, the reserves would not be necessary for actual short duration ground combat. Lock-Pullan's assertion is that Operation Desert Storm showed that the total force meant the combat role was for the professional Army, which was a shift from a citizens' Army to a professional force supported by the public. If this conclusion by Lock-Pullan has an element of truth, it is something else we will have to deal with in the aftermath of Iraq. How do we reconnect the Army to the greater American public beyond magnetized yellow ribbons?

Lock-Pullan concludes with a review of interventions from Panama, Haiti, Somalia, and Desert Storm. He determines that Weinberger-Powell gives insufficient policy guidance on how to approach these conflicts, these small wars that our Army will continue to face in the 21st century. In Lock-Pullan's conclusion, he also asserts that the lesson of Vietnam was the conduct of complex political-military warfare and this lesson was not studied sufficiently.

This is a very timely book because it is not too soon to start thinking about what we should learn from Iraq. Lock-Pullan outlines what our leaders in the late 1970s knew, what influenced them, and what the unintended consequences of these decisions were. We must study how we got into Iraq, how we will ultimately get out, and place these lessons into our doctrine and education to better prepare for the inevitable continuing conflicts we will face in the 21st century. The lines between making and executing policy are growing less clear and as the continuing lack of military experience among our political classes demonstrates, Army officers will have to cross into the realm of policymaking at their levels. Look no further than Lieutenant General Doug Lute's new role for evidence of this fact.

Lock-Pullan's opening, "An overreliance on either the political aims or the military means can destabilize a strategy and ultimately be fatal for a state," reminded me of the opening lines from Sun Tzu's *Art of War*: "War is a matter of vital importance to the State; the province of life and death; the road to survival or ruin. It is mandatory that it be thoroughly studied." Sun Tzu was not writing about victory, he was writing about survival, and Lock-Pullan suggests this very strongly.

The highest praise I can give a book is that it made me think; this book made me think. Professional soldiers should read and study this work. We are facing a period in which we will have to rebuild our Army to defend our republic. We will do this in straightened circumstances as historically our legislative branch and executive branch, irrespective of which political party is in power, try to reduce military spending in the aftermath of a war. This is historic fact. Another historic fact is that the enemies of our republic are still out there, and we will have to fight again.

<div align="right">KEVIN C.M. BENSON
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Cobra II: The Inside Story of the Invasion and Occupation of Iraq by Michael R. Gordon and General Bernard E. Trainor, Pantheon Books, New York, 2006, 512 pp., $27.95 (hardcover)

Highly entertaining and well written, *Cobra II* represents the first among a series of recent books that seek to detail the planning and execution of Operation Iraqi Freedom. *Cobra II* is a great combination of investigative journalism and historical research. Named in honor of the Operation Cobra breakout conducted by Patton's 3d Army during World War II, *Cobra II* represents a critical and sober analysis of the strategic and operational planning surrounding the initial invasion, tied together by a thrilling tactical narrative. The book's foreword details the authors' thesis: The Iraq War was a war of choice, not of necessity…and its planning was shrouded in secrecy. The purpose of the book is to show how a military campaign that was so successful in toppling Saddam Hussein sowed the seeds of the insurgency that followed. The authors argue that the current insurgency was not preordained, but a result of cultural ignorance, poor intelligence, and military and political blundering. The authors claim President Bush and his team committed five grievous errors, which include misreading the foe, the overreliance on technological advancement, the failure to adapt to developments on the battlefield, the dysfunction of American military structures, and the Bush administration's disdain for nationbuilding.

Misreading the foe, as the authors argue, was due to reliance on threat assessments of Iraqi military capabilities based on the first Gulf War, and in reality spoke to larger failures in intelligence collection at every echelon. Although the military invasion was successful, its success was not tied to accurate intelligence from any U.S. intelligence agency. Operational intelligence on enemy composition and disposition, relegated mostly to open-source intelligence (OSINT) and dubious Iraqi sources, proved mostly incorrect when ground and tactical aviation forces encountered Iraqi forces and defense plans. The most glaring omission in the overall threat assessment was the decisive role that paramilitary forces, namely the Fedayeen Saddam (FS), played in the overall Iraqi defensive plan. The FS, decentralized and supplied by thousands of caches, was not identified by

the U.S. intelligence community, and was dismissed by the CENTCOM Commander, General Franks, as a "speed bump." In actuality, the FS proved to be a far greater threat to the United States' long lines of communication (LOC) than the run-down regular forces, including the republican guard. Lacking adequate information on the enemy, the plan placed a tremendous burden on units in contact, and thus relied on the superior tactical capability of U.S. ground forces to achieve success. More difficult to effectively target and more ideologically inclined than the regular forces, the FS ultimately formed the initial hardened core of the insurgency after end of major combat operations.

In arguing that U.S. forces failed to adapt to advancements on the battlefield, the authors attempt to prove that senior military commanders and policymakers forced operational and tactical commanders into rigid adherence to a plan and timeline in spite of facing a new and dynamic enemy, namely the paramilitary FS as detailed previously. In military vernacular, rigid adherence to a plan in the face of new threats is called "fighting the plan, not the enemy." Operational and tactical commanders, from 3d Army and V Corps commanders on down, were afforded no such luxury and adapted plans, or authorized subordinates to change plans, to confront the threat. Yet, even when faced with mounting threats to long LOC and decisive engagements of irregular forces by the U.S. Army and Marine forces, rigid adherence to the operational plan was the status quo. The authors assert that General Franks, under pressure by the Bush administration, openly threatened commanders with relief if they impacted the operational timeline. The most notable example is the famous tactical pause by V Corps en route to Baghdad, which was caused by Fedayeen attacks to the coalition LOC, forcing U.S. forces to stop onward movement to secure vital roads.

The overreliance on technological advancement, the authors argue, in effect created a force incapable of securing the peace after the fall of the Ba'ath regime. The authors claim that Secretary Rumsfeld sought to prove that small numbers of well-trained conventional forces, including a robust Special Operations force (SOF) capability, supported by information dominance, air supremacy, and timely, precision fires could rapidly defeat an enemy superior in numbers. The defeat of the Taliban in Afghanistan proved the viability of this method, and thus represented a potential revolution in military affairs. Against the best advice from many senior military leaders and previous strategic wargame results for the occupation of Iraq, Secretary Rumsfeld, with the concurrence of General Franks, put continual pressure on the U.S. Army to cut numbers of forces to prove his concepts. The results of this method left a combat force, combined with a lack of post-war planning, wholly unprepared to secure the peace and the long borders of antagonistic countries such as Iran and Syria. This failure was apparent to the world when images of looting and anarchy hit TV screens and newspapers in April 2003.

The authors argue compellingly on the dysfunction of American military structures in Iraq by detailing the strategic and operational manifestations of that dysfunction experienced collectively by combat forces serving during the initial invasion. Clearly tying cause to effect, the authors shape the image of a military completely prepared and trained to fight conventional forces, but wholly unprepared and undermanned to stabilize and secure Iraq. Unity of effort, so decisive in achieving the rapid destruction of Saddam Hussein's military power, split and fractured due to the lack of a strategic plan, translated into effective orders to stabilize and secure postwar Iraq, which ultimately led to stumbling into insurgency. The authors clearly assign blame to President Bush, Vice President Cheney, Secretary Rumsfeld, and General Tommy Franks for the lack of a realistic post-war plan.

In arguing that the Bush administration's disdain for nationbuilding constitutes a grievous error, the authors shape the argument as one of deliberate choices versus unforeseen lapses in warplanning. The administration failed to heed recommendations from other executive cabinet agencies, and thus compartmented the postwar effort, including the political decisionmaking, to the Department of Defense. The administration, the authors argue, lacked a "focused and realistically derived commitment to Iraq's future." The plan shifted from rapidly transferring power to the Iraqis and employing the Iraqi military to delaying the transfer of power to the Iraqis and a formal disbanding of the Iraqi military. Such "wishful thinking," as the authors term the liberal assumptions used to justify the plan, constitutes a willful and deliberate disregard of the history and the costs associated with postwar occupations and reconstruction.

The only true weakness of the book lies in the anonymous sources cited in the notes, making it impossible for future historians to rigorously fact-check sources. The authors cite numerous unnamed "officials" in the notes, most likely to preserve the careers of those who continue to serve. In the short term, this somewhat weakens the integrity of the book and places the burden on the authors to rectify the lack of information at a later date when career-ending retribution is far less likely.

Cobra II represents the best of contemporary history books yet written on Operation Iraqi Freedom. It is detailed in analysis and astonishing in effect. For the military professional, one cannot avoid the conclusion of the dichotomy that existed between the absolute excellence in the tactical execution of the initial invasion and the amateurish, overly optimistic, and utter incompetence that marked the occupation upon the cessation of major combat operations. Securing the peace and restoring order after war is more complex and costly than destroying the enemy — and much more so when it is not given its due priority.

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During World Wars I and II, U.S. tank units historically did not have to go far to fight. During World War II, when U.S. tank units reached their combat effectiveness, they were left behind by fresh units. If the cold war became a hot war, the enemy was coming to fight U.S. units; mobility on the ground and armor protection were U.S. priorities; long-time endurance, operational costs, and maintenance requirements were not critical issues. We all know that land is made of dirt, sand, and rocks; the surface is hard or soft, depending on the weather; and it is flat or hilly. Many groups have studied the earth for years and arrived at a measurement of soil, a coefficient of friction. Tracked vehicles, of course, have a mobility advantage overall, but, on hard surfaces, durability and operational costs become a big differentiating factor between track and wheels. Track does not wear well on hard surfaces for long periods of time.

So the questions remain: What do you want the vehicle to do (see Figure 1); what is its mission; how far does it need to travel; and in what type of weather and terrain does it need to operate? An old soldier once said to me, "You cannot put a kinetic energy gun on a wheeled vehicle!" Well, the French and the Italians did it a long time ago; now, the United States "did" too.

In reality, an armored wheeled vehicle with the M1's armor protection would be a large and strange looking dude. In all likelihood, however, the U.S. Army and Marines will continue to face years of patrolling and convoy escort operations. The requirements for reliable, durable, operational cost effectiveness, and long life cycle demand wheeled armored vehicles that can fight — "war wagons," you might call them. The emotional issue should be over; the troops like the Stryker. The off-road and combat operational capabilities have come a long way since the M8/M20. We have only scratched the surface of the potential of unmanned combat and support vehicles and I will speculate that most will be on a wheeled chassis.

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CMH Requests GWOT Information

The U.S. Army Center of Military History (CMH) is seeking Global War on Terrorism (GWOT) information, to include personal experience monographs; oral interviews; operational plans and orders; battlefield update briefs; combined update briefs; tactical update assessments; key leader personal files, including e-mails (brigade combat team and above); operational summaries and significant activities reports; unit staff journals; after-action reviews; unit-level lessons learned; intelligence summaries and reports; special studies and briefings; individual award recommendations (ARCOM with V device and above); operationally related graphics; unit alpha rosters (without SSN); and combat photographs and other photographs with a good captions. These products will be used to fill the gaps in the Center of Military History's GWOT collection. For more information, please e-mail LTC Robert Smith at *Robert.Smith38@us.army.mil.*

Versatile, Hostile, and Mobile: The Army Way

by Second Lieutenant Joshua Kinsel

Standing face to face, eyes fixed on the other, two warriors stand waiting… waiting for the signal, waiting for battle, waiting for victory. They receive the green light and begin precision movements, hoping to out-think and outmaneuver the other. The older warrior sports his worn-out desert combat uniform, complete with combat patch that has obviously seen its fair share of action. His moves are both calculated and elusive, hoping to lure his opponent into a trap, but he isn't quite so lucky on this day.

His rival, wearing his fairly new advanced combat uniform (ACU), appeared younger, stronger, and a bit less experienced. However, both of these warriors have learned to never judge a book by its cover. As they circle, searching for the right angle, the right time, and the right move, the air fills with tension and excitement as spectators slide to the edge of their seats. Suddenly, like two beasts pouncing on prey, the two warriors attack, colliding together with extreme force, eager to deliver pain. This is a warrior's battle — one that will not end until a hand is raised in victory — this is modern army combatives.

It's no secret that when the U.S. Army goes to a fight, it arrives in numbers! Not only is it our goal to overwhelm the enemy, but it's part of our doctrine. We bring 3-to-1 odds to a fight — you bring 20, we bring 60. We prefer to overpower our adversary by using the element of surprise while maximizing violence of action. When you pick a fight with one of us, you'd better be ready to fight us all. Inside every soldier rests a warrior's spirit, a spirit that will "do all to win all," and when the time arrives, the warrior spirit will spring up within every soldier and he will do whatever it takes to obtain victory.

The U.S. Army has always taught hand-to-hand combat, but over the past few years, it has become increasingly more prominent. With the popularity surge of mixed martial arts (MMA), such as the Ultimate Fighting Championship (UFC), Pride, and other similar organizations, the Modern Army Combatives (MAC) program was born. MAC is the Army's most up-to-date hand-to-hand system and much of it parallels today's MMA training.

The MAC program begins with basic ground skills that stem from the popular ground sport of Brazilian jiu-jitsu (BJJ) and evolves into throws and take-downs from sports such as collegiate wrestling and the ancient form of judo. The MAC program continues to the next phase where it teaches soldiers to strike by punching, kicking, kneeing, and elbowing, and defense against attacks. If soldiers are fortunate enough to advance to the final stage, they engage in an all-out MMA fight, wearing only 4-ounce gloves, a foul protector, and mouthpiece. The program also teaches soldiers how to defend themselves from hand-held weapons the enemy may be carrying. Much like some martial arts where uniforms are worn, soldiers wear ACUs to make the training as realistic as possible.

Fort Knox realizes the importance in this type of training and has gone beyond the post to find the best instructor possible. They not only found an instructor, they found one of the most experienced fighters in this area, Jason Keaton, who has a black belt in BJJ and provides priceless experience in the ground category for his fighters. His years of experience in wrestling, boxing, and Muay-Thai kickboxing, make him one of the best and most experienced coaches in his field. The firsthand knowledge he has gained from his numerous fights, allows him to teach students realistically. Learning correct forms and techniques is one thing, but using those skills during a fight or in a combat environment is completely different.

The ultimate goal of MAC is to teach soldiers how to control dangerous situations in a battlefield environment. For example, some days soldiers train in ACUs, and other days, they train in "full battle rattle," which includes Kevlar helmet, ballistic vest, elbow and knee pads, and weapon. This load weighs upward of 50 pounds and significantly limits the soldier's movement and flexibility. The cadre instructs students in skills such as weapon control while securing hostile personnel, using a rifle as a weapon in a nonlethal manner, and general familiarity of the equipment they are wearing.

In August, the 16th Cavalry Regiment, Fort Knox, Kentucky, hosted its annual combatives tournament. The tournament brought in more than 50 competitors from various weight classes. The first-round matches were 6 minutes in duration and both competitors started on their feet; the round was strictly grappling with no strikes and only two ways to win — by submission or judge's decision. Once the soldier progressed to the second round, the rules changed; the competitors were allowed to kick anywhere on their opponent's body, knee from the waist down, and punch from the shoulders down while standing, all within regulations. Once the fighters reached the ground, only body punches and open-hand strikes to the head were allowed. The soldiers wore shin guards and knee pads to protect themselves and their opponents during the striking round.

As prepared as any fighter might be, when the punching begins, the fight plan changes — when you're getting hit and you're not trained to take it, you can't think

straight. When training for combat, soldiers are trained to think under fire; soldiers participating in the tournament, who were not accustomed to being punched, quickly adapted to the environment and overcame their situation. Some of these soldiers had only been part of the MAC program for less than a month and they were in the tournament banging away. You could see their confidence soar at the end of every match, win or lose.

"Army combatives brings out the inner warrior inside of all soldiers and gives them the confidence to conquer any obstacle," says Staff Sergeant Keith Gates. Gates, with an extensive background in wrestling and a few MMA fights under his belt, was one of the experienced fighters in the tournament and it showed during his matches. Gates squared off with Second Lieutenant William Pollard in the semifinals for one of the most exciting fights of the day. Pollard, a three-stripe blue belt, under Pedro Sauer, showed precise technique during all his matches. Pollard and Gates locked horns from the very beginning and didn't let up until the fight was over, resulting in Gates squeezing out victory at the very end by submission. After the fight, Pollard remarked, "Combatives is a great way to promote unity of team and confidence of self."

At the end of the day, when all was said and done, it was apparent what Modern Army Combatives was all about — guys squaring off in grueling matches, congratulating and laughing with each other, and proud of what they each had accomplished. "It's not about coming out here and beating up people; it's about spreading the program, representing your unit and inspiring soldiers to train," says Staff Sergeant Irving Franklin.

The true spirit of the tournament was very apparent between matches; less-experienced soldiers were crowded around warm-up mats while more-experienced soldiers offered pointers for the next match. Oddly enough, they were giving pointers to soldiers who might be their opponents in the next round. No doubt, these soldiers want to win, but the big picture is the team. While a soldier may feel the sting of defeat, he also feels a sense of pride knowing that the guy who beat him is a "battle buddy." These soldiers work together, train together, and bleed and sweat together; these soldiers are truly "brothers in arms," fighting together for the common cause. And while they are opponents in sport, they know they are comrades in arms who can trust each other to cover their six.

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