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Headquarters,
Department of the Army

ARMY COMMUNICATOR

Voice of the Signal Regiment PB 11-10-2 2010 Vol. 35 No. 2

UNITED STATES ARMY SIGNAL CORPS

GETTING THE MESSAGE THROUGH!

FOUNDER OF THE SIGNAL CORPS,
FIRST CHIEF SIGNAL OFFICER

For a century and a half, we have provided ready and relevant communications capabilities and leaders of character for the Army's future challenges across the full spectrum of military operations.

COMMEMORATIVE EDITION

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Chief of Signal

Significant accomplishments behind, challenges ahead

We have certainly come a long way over the past 150 years. Beginning in 1860 with the inventor of the very first formal visual signaling system for the Army, Major Albert J. Myer, our first Chief of Signal, to the advanced information technologies we have today; it has been a tumultuous climb for all those who served in our Signal Regiment.

Significant changes have coursed throughout the world during the past three years as we orchestrated communications in two combat theaters and advanced American interests globally. We are downsizing our military forces in Iraq where elections have taken place twice, demonstrating that this country is well on its way to establishing democracy and becoming a stabilized nation in the Middle East. As the threat in Afghanistan continues to grow, we are anticipating an increased military presence in that country for the foreseeable future. Natural disasters continue devastating areas of the United States and other parts of the world. The hybrid nature of the threats to our nation are forcing us to become more agile and adaptable as we learn to operate in complex, uncertain environments. The way our young Soldiers and leaders learn today is very different from the way our senior members of the force learned 10 or 20 years ago. The dramatic growth of information technologies fielded to our forces has placed unprecedented demands on our Regimental Soldiers at all echelons.

For us, all these changes in our world demand change within our Regiment and institution. Over the past three years we continued modifying our enlisted force structure to ensure we have the right MOS to meet the requirements of a modular force. Our Signal warrant officer corps doubled in size and we are in the midst of transforming our WO Corps to address the need for increased expertise in cyber operations. With the help of many others, we created a world class training environment – both institutionally and virtually - for our Signal Soldiers of all ranks to become better equipped with the skills necessary to support our modular brigade-focused force. We established education programs for our civilian IT work force. Signal forces continue deploying throughout the world, providing world class support to our warfighting and nation building entities. Our PEOs and PMs continue equipping our forces with tremendous capabilities. Our FA 24 and 53 officers continue providing significant impact for our Army. They offer the required expertise in the most complicated networked environment ever. We continue assessing and executing changes in our signal force design and structure incorporating our lessons learned supporting the modular, expeditionary Army. The Reserve and National Guard signal forces are providing ready forces deploying alongside our active forces throughout the world. Our families continue loving, supporting and sacrificing for us.

As your 34th Chief of Signal, I remain so very proud to have been a small part of this history for the past three years. My wife Beth and I extend to you all our thanks for your tremendous leadership and patriotism. Your selfless actions and sacrifices enable our Army to be a better place to serve and our nation a better place to live.

BG Jeff Foley
Chief of Signal

U.S. Army Signal Center of Excellence
fort gordon

Command

Chief of Signal
BG Jeffrey W. Foley

Regimental Command Sergeant Major
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Army Communicator

Voice of the Signal Regiment

Table of Contents

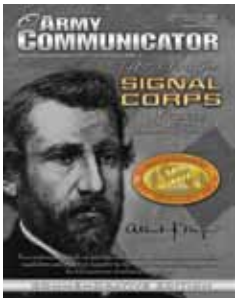
150th Anniversary Special Edition

The U.S. Army Signal Corps

This is the continuing story of U.S. Army Signal Corps Soldiers, who have forged an honorable legacy of selfless duty in periods of conflict and in times of peace for 150 years. The Signal Corps began in a chaotic time of crisis to accomplish a vital mission. Throughout the Corps' glorious history, Signal Soldiers at great personal risk, have repeatedly risen to meet the challenges of battlefield communications with innovative techniques and the best tools available. Today the quest continues unabated as Signal Soldiers strive to maintain digital technology meeting command communication needs and ensuring superiority that consistently allows warfighters to "get the message through."

"Watchful for the Country"

The Regimental crest, or distinctive insignia, is the symbol of Regimental affiliation for Signal Soldiers worldwide. The motto "Pro Patria Vigilans" (Watchful for the Country) was adopted from the Signal School insignia and serves to portray the cohesiveness of Signal Soldiers and their affiliation with their Regimental home. The gold laurel wreath depicts the myriad achievements through strength made by the Regiment since its inception. The battle star centered in the wreath represents formal recognition for participation in combat. It adorned a Signal flag and was first awarded to Signal Soldiers in 1862. The battle star typifies the close operational relationship between the combat arms and the Signal Regiment. The design of the eagle holding in his talons a golden baton, from which descends a Signal flag, originated in 1865 as a symbol of faithful service and good fellowship for those who served together in the Civil War and was called the "Order of the Signal Corps."



Cover by Billy Cheney

Cover:
Army Communicator ***Summer 2010 highlights the Signal Corps' sesquicentennial beginning with Albert J. Myer in June of 1860. Also shown on the cover is a logo designed by Billy Cheney in commemoration of the 150th anniversary of the Signal Corps. It features a Signal orange shield with 150 Years of Excellence emblazoned in gold and white in the center. The years 1860 and 2010 are imprinted in white with a Soldier waving the wigwag flag on the left behind the 1860 and a modern day Soldier erecting a satellite dish on the right behind the 2010. Signal flags are set on the outer edges with the motto, "Voice of Command" and "United States Army Signal Corps."***

Signal History

"Signaling the Assault on Fort McAllister"

13 December 1864

A Don Troiani painting depicting a scene from the Battle of Fort McAllister, Georgia, commissioned by the Signal Corps Regimental Association in 2010 and donated to the Army.

(See page 11 for more on the Fort McAllister assault.)

Painting by Don Troiani, Southbury, Conn.

Command Sergeant Major

Happy Birthday Signal Corps...150 years and counting!!

On 21 June 1860, President James Buchanan signed the bill into law and the U.S. Army Signal Corps was born. That same year, Albert J. Myer was appointed as Chief Signal Officer on 27 June. The U.S. Army became the first in the world to establish a separate communication branch with the appointment of a signal officer to the army staff in the War Department. Meyer's signaling system was based on a unique equipment kit which consisted of flags, staffs, torches, a torch case and a wormer to extract the wick if it became lodged inside the torch. The canteen was filled with ½ gallon of turpentine to fuel the torches. The haversack contained wicks, matches, pliers, shears, a funnel, two flame shades, and a wind shade. Soldiers also needed to carry binoculars or a telescope in order to read the signals from afar. Compasses were used for reconnaissance and locating signal stations. Notebooks were a must in order to log the messages sent and received.

The need for competent and dedicated Soldiers is the one requirement that has remained constant for the Signal Corps. Beginning with Albert J. Myer's vision of a group of technical specialists and leaders trained to provide communications capabilities to enhance the commander's ability to command and control, the Soldiers of the U.S. Army Signal Corps have been dedicated to that mission. The technologies have changed and continue evolving to meet the escalating challenges of providing continuous relevant communications support that is essential to successful military operations.

More important than technology however, it has been the people – the men and women, Soldiers and leaders--who have made success on the battlefields of our history possible. For me, one of those extraordinary people was my friend and brother, CSM Ray D. Lane who lost his battle with cancer 4 March 2010. He lived life with his foot pressed hard on the gas pedal. He loved being a Soldier. He loved his fellow sergeants major, his commanders, his service members and his family. He was a true example of what made our Signal Corps great. Ray and people like him, their stories, their camaraderie, and their dedication to the mission should be honored and remembered even as the Signal Corps is fully engaged in current operations. Their legacy is the foundation for those serving today as Signal Soldiers striving to "get the message through." Happy birthday to our Signal Corps.

CSM Thomas J. Clark
Regimental Command Sergeant Major

My name is Clark and I'm a Soldier.

Regimental Chief Warrant Officer

Warrant Officers share 150-year legacy of pride

Signaleers,

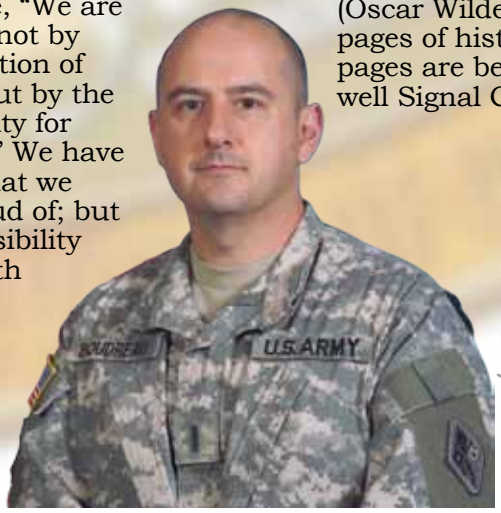
The edition of the Army Communicator that you are holding in your hands commemorates the 150th year anniversary of the Signal Corps. Friend, if the average length of service for a career Signal Soldier is 22-25 years, that represents 6 to 7 career generations! While 150 years is a legacy to take pride in, you and I are only separated from our founder by 6 career generations. But note how far we have traveled in those generations.

Over these few generations we have moved from waving flags and winking lights to Coston signals and cipher disks. Telegraphy and telephony signals traveled across the backs of LOS and BLOS systems as we got the message through further and faster than ever in the past. Analog to digital, AM to FM, switched networks to EoIP, our Regiment has captured, mastered and leveraged technology to our advantage and ensured our fellow Soldiers maintained the technological and tactical advantage over our adversaries.

Almost two thirds of this history included the Army warrant officer. The rank of warrant officer has a long history that may date back as far as Napoleon. The British Navy established the Royal Warrant as a special designation, designed to set them apart from other sailors. Ultimately, the Act of July 1918 established the rank and grade of warrant officer as the Coast Artillery Corps created the Army Mine Planter. More will be said on the historical background of the warrant officer corps in a later edition of the Army Communicator, but suffice it to say that our Signal warrant officer cohort has a rich history inseparable from our Regimental history.

As you look through the pages of this Army Communicator, you will no doubt note the changes in technology, doctrine, organizations, techniques and equipment. However, YOU represent the constant that knits all of this together. YOU and I are a part of the fabric woven into our legacy past, present, and yes – future. George Bernard Shaw wrote, "We are made wise not by the recollection of our past, but by the responsibility for our future." We have a history that we can be proud of; but our responsibility remains with today and tomorrow.

Since assuming the position of Regimental Chief Warrant Officer, I have had the privilege of traveling and meeting members of our Regiment in a number of locations. As I write this I am visiting our Soldiers at Fort Bragg. When this edition goes to print I will be standing in the same soil as our deployed Signaleers. Commanders at every level from brigade, through division and corps with one consistent voice acknowledge how critically essential your work is in the successful accomplishment of our combat operations. I cannot begin to put into words how proud I am of each and every one of you. You are great Americans and world class cyber Soldiers. I leave you today with one final thought I am confident you will fulfill. "Anybody can make history. Only a great man can write it." (Oscar Wilde). The ink on the pages of history has dried. Our pages are being written. Write well Signal Corps. Write well.



CW5 Todd M. Boudreau
Regimental Chief Warrant Officer



150th Anniversary of the United States Army Signal Corps

Congratulations to the United States Army Signal Corps on your 150th birthday. Since June 21, 1860, when MAJ Albert J. Myer was appointed as the first Chief Signal Officer of our Army, Signal Soldiers have provided the Army unique skills and equipment to ensure reliable, rapid and secure communications for commanders, from Bull Run to Baghdad.

Your contributions have gone far beyond the battlefield. From the telegraph, to the National Weather Service, to the 1907 Aeronautical Division – the forerunner of today's Air Force – many of your technological and institutional advances have become part of the fabric of our Nation. Throughout your 150 years, the Signal Corps has led our Army and our Nation in innovation to meet the challenges of a complex present and an uncertain future.

As we recognize your past contributions, we remain cognizant that your resolve and readiness to serve will continue to be essential to meeting the challenges of this era of persistent conflict.

To the Soldiers, Civilians and Families of the United States Army Signal Corps – congratulations on 150 years of unsurpassed excellence. Thank you for your continued service and sacrifice for our Nation.

Kenneth O. Preston
Sergeant Major of the Army

George W. Casey, Jr.
General, United States Army
Chief of Staff

John M. McHugh
Secretary of the Army

From Bull Run to BAGHDAD

A History of the UNITED STATES ARMY SIGNAL CORPS 1860 - 2010

by Steven J. Rauch
Command Historian
U.S. Army Signal Center
of Excellence

MAJOR MYER'S SIGN

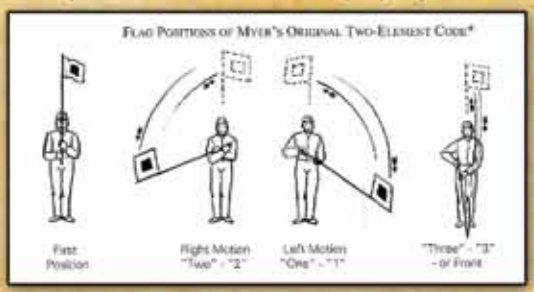
For thousands of years humans have attempted to communicate information over long distances in a variety of ways. Some methods sought a technology to increase the speed of carrying a message, cause a noise to be louder, or a visual sign to be seen more clearly. Effective communications have always been vital to military success. Commanders must maintain command and control over their forces, often at extended distances. When military units fought in close combat, a commander's voice was adequate to transmit commands. Over time armies adapted musical instruments, flags, and even animals, to pass important messages. During the American Revolution, Baron von Steuben instituted the US Army's first system of drill procedures, which included standardized signals to maneuver troops. The US Army did not, however, adopt more modern communications methods until the invention of the electric telegraph in the 1840s, which was unsuitable for quickly-changing tactical situations. In the mid-1850s one innovator unlocked the solution to the challenge of controlling military forces on an extended battlefield. That innovator was Albert James Myer.

Birth of the Signal Corps

The idea that specialists should be trained to enable communications is attributed to Dr. Albert James Myer. While a medical student, Myer worked in a telegraph office and became familiar with the Bain electrochemical telegraph system. Myer used this experience to devise *A New Sign Language for Deaf Mutes*, the subject of his dissertation. Myer proposed a "system of sign writing" based upon the Bain telegraphic alphabet. In 1854, he received an appointment as an assistant surgeon in the U.S. Army Medical Corps. While serving in Texas, Myer's interest in military signaling began. He proposed the War Department consider a system of military signals using flags based on concepts of sign writing. Secretary of War John Floyd asked Myer to present his system to an Army review board and on 3

Albert J. Myer - "Father of the Signal Corps" joined the Army in 1854. He developed a military signaling system based on his medical dissertation, which was based on a sign language for those who couldn't hear or speak. He converted his sign language into a code for sending messages with flags and torches. The Army adopted his "wigwag" system in 1860 and made Myer the first Chief Signal Officer. This marked the birth of the Signal Corps.

The oldest flag system associated with the U.S. Army Signal Corps - wigwag - reflects the concept of back and forth movement as a means of signaling through motion.



Soldiers often constructed special towers as signal platforms. Church steeples and other tall buildings also made good stations.

IAL CORPS 1860-1865

March 1859, Myer appeared before the board headed by LTC Robert E. Lee, where he demonstrated his "wigwag" system of flag signaling. The board found Myer's system useful, but asked for more operational testing.

In April 1859, Myer began testing various materials to determine the best equipment and design for the wig-wag system. This system used flags for daytime signaling and a kerosene-fueled torch for nighttime signaling. The standardized flags consisted of one red and one white flag, a white center in the red flag and a red center in the white flag. Which flag was used depended upon atmospheric and visual conditions. Only one flag or torch was used at a time and field telescopes were employed to read the messages. The operators of the wig-wag could typically send three words a minute over an average distance of ten miles between stations. One of Myer's assistants during these tests was E. Porter Alexander, who would later take Myer's system and use it in the Confederate Army.

The testing completed, the War Department accepted the wigwag system, but needed to have personnel positions authorized and money appropriated to purchase wig-wag equipment. After intense lobbying by Myer and others, Congress voted to approve legislation on 21 June 1860 to appoint one signal officer at the rank of Major and $2,000 to purchase signaling equipment. Myer was appointed as the Signal officer on 27 June thus becoming the first Signal officer in the U.S. Army.

Myer tested his wigwag system during operations in New Mexico during the 1860-1861. Myer, who considered signalmen to be Soldiers as well as communications specialists, believed that all Army officers should be trained in signaling; making it a user-owned and operated system. However, he would soon seek the establishment of a separate force structure, or branch, to implement signal capability.

Trains - or more specifically, light wagons - were used to carry telegraph sets and other necessary items, such as reels of insulated copper wire and iron lances, for stringing temporary field lines, called "flying telegraph lines".

The magneto-electric telegraph, invented by George W. Beardslee generated current by turning a set of cranks to revolve magnets. The Signal Corps employed this machine because it did not require operators trained in Morse code.

Although the Signal Corps' military role and mission remained largely undefined when the Civil War ended in 1865, the foundation for its future achievements had been laid.

Signal Corps Camp of Instruction, Georgetown, D.C.

The Signal Corps in Combat

With the outbreak of the Civil War, Myer was ordered to Fort Monroe, Va. where he organized a signal camp of instruction for Soldiers detailed for signaling. The wigwag system received its first test in combat when it was used in June 1861 to direct the fire of a harbor battery against Confederate positions at Sewell's Point opposite Fort Monroe, Va. Until 1863, Signal operations were conducted by Soldiers detailed from other branches in a temporary capacity. On 3 March 1863 Congressional legislation was passed which authorized a separate force structure for the Signal Corps for the duration of the war. The act provided for a Chief Signal Officer with the rank of colonel and other officers and enlisted personnel. Some four hundred officers and about 2,500 enlisted men served in the Signal Corps during the course of the Civil War.

In response to commander's desire for a mobile field telegraph train, Myer introduced the Beardslee magneto-electric telegraph into the Signal Corps. By 1863, the Signal Corps operated 30 telegraph trains. Myer's efforts however, challenged those of the U.S. Military Telegraph Service which ran electric telegraphy using civilian operators. Myer overstepped his responsibilities and incurred the wrath of Secretary of War Edward Stanton who removed Myer as Chief Signal Officer in November 1863. This did not hinder Myer from continuing what he viewed as his duties as founder of the Signal Corps, including writing *A Manual of Signals*, the first doctrinal manual for Signal operations, in 1864.

During the Civil War, Signal Soldiers deployed in treetops, on rooftops and on signal towers to locate enemy troop movements and pass messages. Signalmen were dispatched on reconnaissance missions and attempted to read enemy signal messages. This led to the development of various encryption methods to provide information assurance and safeguard orders during operations. Signal personnel were employed in joint operations with the navy and it became routine to station Army signalmen aboard naval vessels supporting ground operations. As Myer predicted, the integration of trained signal specialists with commanders at the tactical level resulted in faster and more reliable transfer of information and orders to units.

Gettysburg – July 1863

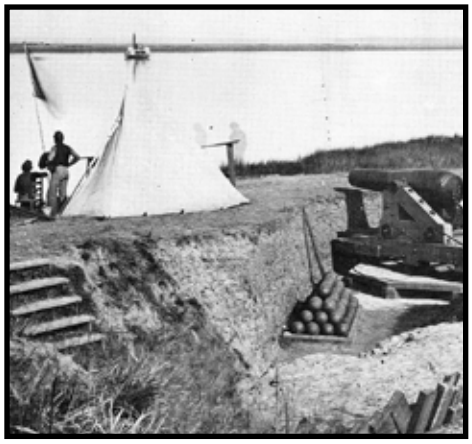
By the time of the battle of Gettysburg in July 1863, Army leaders had come to depend on the capabilities provided to them by Signal Soldiers. During the battle, enhanced information timeliness enabled Union commanders to seize several tactical and geographic opportunities before the Confederate army could react. CPT Lemuel Norton served as the Army of the Potomac chief signal officer and worked closely with MG George G. Meade, throughout the battle. Signal teams were positioned in accordance with Norton's concept which resulted in a fully integrated wig-wag network. Norton established a critical signal station on Little Round Top at the extreme left of the Union line to report the enemy's movements. The Signal Corps station deterred Confederate tactical movements, especially an attempt on 2 July by LTG James Longstreet's men to outflank the Union left. Ironically, Longstreet's chief of artillery was Edward P. Alexander, who referred to "that wretched little signal

station" as a reason the attack failed at Little Round Top.

March to the Sea (November-December 1864)

In fall 1864, MG William T. Sherman began a march with over 60,000 men from Atlanta, Georgia to the seaport of Savannah, Georgia, a distance of about 300 miles. As the army made its way closer to Savannah, Sherman began planning to establish contact with elements of the U.S. Navy carrying much needed supplies. By mid-December, one of the remaining obstacles to be overcome was a small Confederate fort located on the Ogeechee River, southeast of Savannah. Fort McAllister had to be seized so that U.S. naval ships could safely navigate the river and link up with the army.

Coordination for this



Fort McAllister, Ga., - December 1864

mission was enabled by the embedded signal teams within the Union command structure. CPT James M. McClintock, Chief Signal Officer, Army of the Tennessee, reported, "On the 11th [Dececember] [we] established a station of observation at a rice mill on the Great Ogeechee two miles and a half north of Fort McAllister….A strict watch was kept [for] any vessel that might be…near the mouth of the river."

BG William B. Hazen's division was selected to attack Fort McAllister on 13 December 1864 and Hazen's signal team established communications with the rice mill to receive orders. Sherman directed McClintock to, "Signal Hazen that he must carry the fort by assault." That message launched 4,300 men into a violent attack which lasted about 15 minutes and the fort secured in Union hands. While the battle unfolded, a navy ship was spotted in the river. McClintock's signal team immediately exchanged messages with the vessel, enabling joint communications between the Army and the Navy. During a span of about 30 minutes, signal teams had demonstrated how Myer's wigwag system could provide combat commanders long range, line-of-sight command and control to support both ground combat and joint communications. A new era in military communications and modern warfare had begun.

U.S. Army Signal Museum Director Robert Anzuoni demonstrates the wigwag signaling system.

THE SIGNAL CORPS TAK

Since its beginning, the Signal Corps found that its scope of missions included any technology that enabled a clear line of sight, such as a signal tower. A technology that provided the benefits of a tower, enabled a greater line of sight and mobility came in the form of aerial platforms such as balloons, dirigibles and aircraft. As a result, the Army saw the Signal Corps as the branch with the most need and technical knowledge to pursue aeronautical technologies. From early work with balloons, to experimentation with aerial photography and finally the harnessing of powered flight, the Signal Corps served as the aviation center for US military forces into World War I. As military aviation grew, many aviation personnel, such as William "Billy" Mitchell, sought to gain an independent air organization and divorce themselves from Signal Corps control. That occurred in 1918 with the formation of the Army Air Service, a forerunner of the US Army Air Corps, the US Army Air Force and in 1947, the US Air Force.

An Inauspicious Start - July 1861

During the first major campaign of the Civil War in July 1861, the Signal officer of the Army, MAJ Albert J. Myer, found himself involved in an incident which caused him great embarrassment. The U.S. Army had contracted with John Wise of Pennsylvania for the use of silk fabric aerial balloons to be used for reconnaissance. In early July, Wise had provided the U.S. government a 20,000 cubic – foot balloon for $850 and he agreed to serve as a contract military balloonist.

On 21 July, the first balloon was delivered to Washington and assigned an observation mission for the impending battle of Bull Run. As Union and Confederate armies maneuvered near Manassas, Va., a ground crew walked the inflated balloon up Pennsylvania Avenue to Georgetown, then up the Chesapeake and Ohio Canal, and then across a Potomac River bridge to Fairfax Road. There Myer took control of the balloon in his capacity as Army signal officer and ordered it fastened to a horse-drawn wagon to get it to the battlefield more quickly. As Myer, Wise and the balloon party made their way closer to the battlefield,

Civil War reconnaissance balloon, 1861

Signal Corps dirigible, 1908

Wright Flyer test, Fort Myer, 1908

it became increasingly difficult to maneuver the bobbing gas bag around trees and telegraph wires.

Myer's impatience to reach the battle, the din of which could be heard clearly, led him to order the horses whipped to increase their speed. Almost immediately the balloon snagged in the branches of a tree and when Myer tried to force it free, huge holes were torn in the bag and the balloon deflated. Myer then ordered Wise to take the crippled balloon back to Washington, repair it and bring it back to the battle. Myer was somewhat bitter about the incident and when the opportunity came for the Signal Corps to take control of balloon operations later in the war, he refused on grounds that he did not have the money or men to operate such a system. But this was just the beginning of the association of the Signal Corps with all things aeronautical for the next several decades.

The Signal Balloon Service is formed

The Signal Corps resumed its interest in military balloons after having lost the weather service function in 1891. In 1892, Greely directed that a balloon section be a part of each telegraph train. The first balloon obtained for this mission was named the *General Myer* in honor of the branch founder and was demonstrated at the World's Columbian Exposition held in Chicago, Ill. in 1893. In 1896, Greely established the first Signal Corps balloon facilities at Fort Logan, Colo.

In a related development, Greely was appointed to the War Department's joint Army-Navy board investigating the military usefulness of the heavier-than-air-flying machines in 1898. Greely especially looked at the experiments of Professor Samuel P. Langley of the Smithsonian Institution who had previously served as a civilian weather specialist for the Signal Corps. Based on Langley's experiments, Greely recommended the Army pursue building a flying machine and sought Army funding grants to

35,000 cubic-foot balloon, 1910
Fort Omaha, Nebraska

Aerial photograph, Fort Omaha, 1911

Signal Corps Flying School, Augusta, Georgia, 1912

Langley for his research. The Army directed Greely to monitor Langley's progress and though the Langley project ultimately failed, the experiments with the flying machine were a harbinger of events to come.

Balloons in the Spanish-American War

During the Spanish-American War, the Signal Corps used a tethered balloon in Cuba to provide reconnaissance for the attack on the Spanish defenses at San Juan Hill. The balloon was the responsibility of LT Joseph Maxfield. On 1 July 1898, Maxfield and an observer from the engineers, LTC George F. Derby, ascended near the American position at El Pozo. Derby wanted to get closer to the fighting and ordered the balloon moved forward by the ground crew. As the balloon moved forward, it gave away the location of U.S. troops and provided the Spanish an excellent target. When the guide ropes became entangled in the brush the balloon was completely immobilized. When the Spanish opened fire, shrapnel and bullets rained down upon the troops causing numerous casualties. The balloon was torn apart in the fusillade but the two men were not hurt. Luckily, the officers did locate a previously unknown trail through the woods that helped speed the deployment of troops toward San Juan Hill.

The Aeronautical Division and Signal Corps Aircraft No. 1

In 1906, Greely's successor, BG James Allen, placed considerable emphasis on aviation. His assistant, MAJ George O. Squier, had been following the progress of two bicycle makers from Ohio, Wilbur and Orville Wright. After their successful flight at Kitty Hawk, N.C. in December 1903, the Wrights had tried to interest the Army in their invention, but after the Langley experience, the Army was reluctant to invest in another experiment.

However, pursuit of balloons and aerial photography continued and the Signal Corps purchased a new balloon in 1907. It was the ninth balloon since the Civil War and, therefore, dubbed Signal Corps Balloon No. 9. Allen directed the establishment of a balloon house and hydrogen plant at Fort Omaha, Neb. in 1908. But, ballooning activities soon became dormant when the Army leadership understood more clearly the importance of the Wrights' achievement.

Balloon House, Fort Omaha, Neb.

On 1 August 1907, the Signal Corps established a small Aeronautical Division led by CPT Charles deForest Chandler to take "charge of all matters pertaining to military ballooning, air machines, and all kindred subjects." On 23 December 1907, Allen issued a bid for a flying machine that could fly at a speed of forty miles per hour and could carry two people a distance of 125 miles. It had to be managed in flight from any direction, stay aloft for a one hour endurance demonstration, and land at the takeoff point undamaged. It had to be easily disassembled and transportable. The Army received forty-one bids by 1 February 1908 but only three met the specifications. Of those three, the Wright brothers were the only contractor to deliver an airplane. On 10 February 1908, the Wright brothers and the Signal Corps entered into a formal contract that provided for the delivery of heavier-than-air flying machine to be delivered at Fort Myer, Virginia.

On 20 August 1908, Orville Wright delivered the airplane. The Army's review board consisted of MAJs George O. Squier and Charles S. Wallace; and LTs Frank Lahm, Benjamin D. Foulois, and Thomas E. Selfridge. Test flights began on 3 September and continued until tragedy struck. On 17 September, LT Selfridge became the first airplane crash fatality. The

Army directed the Wrights to reexamine their aircraft and flights were not resumed until June 1909.

Wright Flyer crash, Fort Myer, Va. 1908

The Wrights made minor modifications to their flyer and tests began on 27 July. On that day Orville Wright flew for one hour and twelve minutes, thereby fulfilling the endurance specifications. On 30 July, the speed requirement was surpassed. Three days later, on 2 August 1909, the Army accepted the Wrights' airplane at a cost of $30,000 and designated it Signal Corps No. 1.

Signal Corps Flying Schools

Four years after the Signal Corps took charge of air matters, Congress appropriated funds for Army aviation in the amount of $125,000 for fiscal year 1912. By the close of October 1912, the Signal Corps had purchased eleven aircraft from the Wrights and their competitor. In June 1911 the Signal Corps opened a flying school at College Park, Maryland. Two of the new pilots, 2LTs Henry H. ("Hap") Arnold and Thomas Milling, had received training at the Wright Company in Dayton. Training on a Wright machine, however, did not prepare a pilot to fly a Curtiss plane, and vice versa. The Wrights controlled their planes by means of the wing-warping method and the Curtisses used movable ailerons between rigid wings. With the onset of winter weather, and aviation being a fair weather activity, the Signal Corps sought a location in the south to continue training. CPT Chandler conducted a tour of the southeast seeking a suitable location, visiting Aiken, Camden, Columbia, and Greenville, South Carolina and Augusta, Georgia. In Augusta, Chandler examined a farm owned by George T. Barnes on Sand Bar Ferry Road that had clear open fields and close proximity to the railroad, suitable attributes for an airfield.

Flying School - Augusta, Ga, 1912

On 11 November, BG James Allen, Chief Signal Officer announced that the Signal Corps would use the Barnes Farm for winter aviation training. The hangers for the aircraft were made of canvas, and appeared much as circus tents. Since Barnes had harvested the hay, the field was level, unobstructed and provided a two mile long, one mile wide area for the planes to use. On 28 November, five officers, 20 enlisted men, four airplanes, motor vehicles, wagons and horses left College Park for Augusta. The four planes included two Curtiss models and two Wright models.

On 7 December, one of the Wright planes made the first flight from the field to the delight of awestruck Augustans. Those pilots not flying provided ground commentary and answered questions such as, "Did you ever fall out of a plane?" As luck would have it, the whole idea of moving the school to Augusta was hampered when a snow storm hit the area on 13 January 1912. The challenges didn't end there when excessive rainfall caused the Savannah River to flood in March. Between the bouts of bad weather the pilots managed to fit in some practice. By March, the school finished training and prepared to return to College Park. The pilots made 436 flights during the 58 flying days they had available out of 124 days. Flying resumed at College Park in April 1912 with several new planes. These more powerful "scout" planes (Wright Type C) had been designed to perform reconnaissance and could carry radio and photographic equipment in addition to two men. Experimental

activities conducted at College Park during this time included night flying, aerial photography, use of the radio, and the testing of the Lewis machine gun from the air.

In early 1913, the Army ordered its aviators to Texas to take part in maneuvers. At Galveston on 3 March, the Chief Signal Officer designated the assembled men and equipment as the "1st Provisional Aero Squadron," with CPT Chandler as squadron commander. On 8 December 1913 the unit was formally activated as the 1st Aero Squadron, the first official aviation unit of the U.S. Army. Since then the unit has remained on continuous active service and today perpetuates the lineage as the 1st Reconnaissance Squadron, U.S. Air Force. On July 18, 1914, as a result of congressional legislation, the Army established the Aviation Section of the Signal Corps to improve control of its fledgling flying capabilities.

Hunting Pancho Villa - 1916

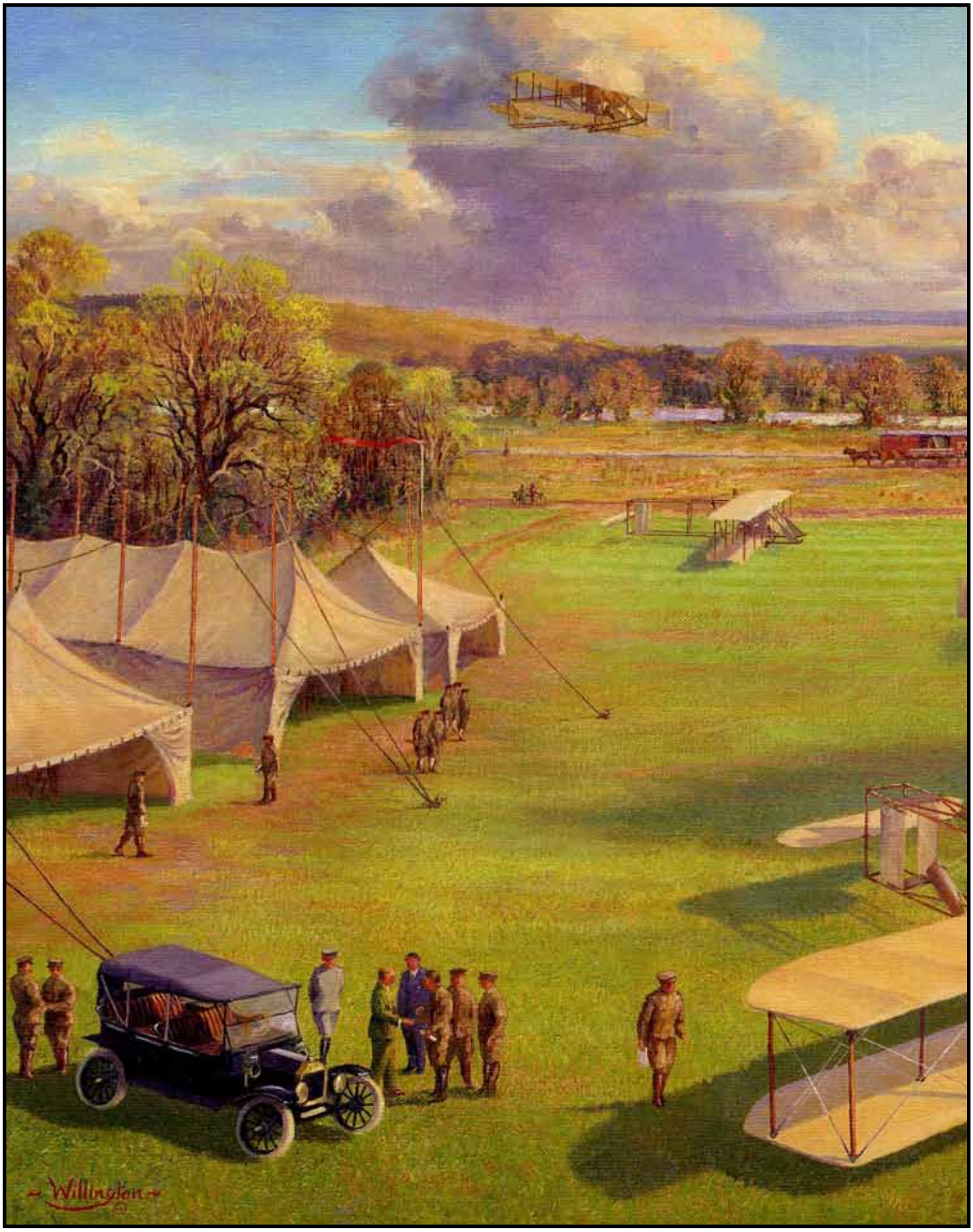
Following the raid on Columbus, New Mexico on 9 March 1916 by guerilla forces of Francisco "Pancho" Villa, the Signal Corps 1st Aero Squadron was employed to help during the Punitive Expedition into Mexico. Now led by CPT Benjamin D. Foulois, the Curtiss JN-2 aircraft performed reconnaissance in the search for Villa. GEN John J. Pershing often used the planes to carry messages from forward locations back to headquarters or to other commanders. However, the fragile machines could not cope with the high altitudes and strong winds encountered in the Mexican mountains. Within a short time, most of the aircraft had been damaged in accidents, but fortunately no men were killed or seriously injured.

By 20 April 1916, only two of the squadron's original eight aircraft remained intact, but they were no longer serviceable. Without suitable equipment, the squadron remained effectively grounded for the remainder of the campaign. During the operation the 1st Aero Squadron had flown 540 missions and provided valuable training for the Army in air-ground operations.

World War I

By April 1917, when the United States entered World War I on the side of the Allied Powers, each of the major combatants had developed aircraft industries far superior to those of the United States. At the beginning of the war, the Signal Corps Aviation Section included fifty-two officers and 1,100 men. In 1917, the Signal Corps developed small aircraft radiotelephones. These voice or telephone-operated sets were freed from the limitations of telegraph. Two early sets were the SCR-68, an airborne radiotelephone, and the ground set, the SCR-67. By the middle of 1918 these sets were in France and although not without the problems of new technology, the new radios marked a revolution in radio communications.

Responding to criticism of the American aircraft effort, President Woodrow Wilson created the Army Air Service and placed it directly under the War Department on May 24, 1918, officially ending responsibility for air matters by the U.S. Army Signal Corps. By the time aviation was removed from Signal Corps control it had grown to 16,084 officers and 147,932 men.



Barnes Field, Home of Augusta Flying School circa 1912 was located near present day Sandbar Ferry Road in Augusta, Ga.

THE STORMY YEARS

Following the Civil War, legislation was passed in 1866 providing for the postwar force structure of the US Army. General Ulysses S. Grant recommended that Albert J. Myer be restored to his position as Chief Signal Officer, a post he resumed in 1867. Myer then set out to rebuild and refocus a much smaller Signal Corps for postwar missions. During a period sometimes known as the "dark ages" of the Army, due to cutbacks and isolated frontier operations, Myer faced multiple challenges, one of which was to justify once again why the Army even needed a Signal Corps. During this period one of the officers detailed to Signal duty was Second Lieutenant Adolphus W. Greely. Unknown to Myer, this would be the beginning of Greely's long and illustrious career with the Signal Corps from 1887 to 1906. Myer's Signal Corps remained in very good hands.

Joint Operations

During the course of the Civil War, the U.S. Army and Navy had conducted numerous joint operations along the U.S. coasts and major rivers to enable transportation of troops and supplies; ship-to-shore fires capability; and command and control. The success of these wartime field associations inspired Myer to institutionalize and standardize signal training within the education systems of both services.

In his annual report for 1867, Myer enthusiastically reported about a project to incorporate instruction of visual signaling and telegraphy at the U.S. Military Academy. In this regard, the Army was somewhat behind the U.S. Navy which had already adopted signaling instruction at the Naval Academy during the Civil War based upon Myer's wigwag system. Myer hoped during the coming years to synchronize Signal equipment, doctrine and training between the two institutions to ensure standardization during future joint operations. Myer stated, "It will be cause for congratulation when it shall be carried into effect, and it can be claimed for the Naval and Military Academies of the United States that they have been the first to secure… intelligent co-operation on which, in time of war, the fate of grand operations may depend." Referring to joint operations during the Civil War, Myer concluded that, "commands of the Army and the vessels or forces of the Navy can always be put in communications under any circumstances in which the use of aerial [visual flag] and electric telegraphy is practicable." This shows how Myer was not only a great Army

Signal Corps Headquarters - Washington, DC

The Signal Corps adapted the "vibraphone" for military communications after its commercial introduction in 1877.

Myer meteorological instrument, patented June 10, 1879

signal officer, but one of the first joint warriors seeking to solve greater issues of interoperability even in his time.

The telegraph finds a home in the Signal Corps

In 1867 in addition to its visual signaling duties, all electric telegraphy for the Army became the responsibility of the Signal Corps. This was a triumph for Myer as this was the issue which had cost him his job as chief signal officer in 1863. Without the constraints of war, nor much attention from Army bureaucracy, Myer was able to supervise the development of a more effective and reliable field telegraph train using batteries and sounders.

U.S. Army wired telegraph key patented circa 1881

Another post Civil War responsibility assigned to the Signal Corps in 1874 was the task for constructing, maintaining, and operating telegraph lines along the southwestern frontier and later along the northeast. The Corps had already completed some five hundred miles of telegraph line along the east coast. In 1875, Greely completed a line across Texas, in 1877, built telegraph lines from Cape Hatteras to Cape Henry, and in 1877, built a line from Santa Fe to San Diego. Greely became known as the Signal Corps "trouble-shooter" in the area of military telegraph line construction. By 1879, the Signal Corps had completed some 4,000 miles of telegraph lines.

Meteorological Service

In 1868, further reductions were imposed on the Army, which was being reduced to a skeletal force for the mission of policing the remaining western frontier. Many Army organizations sought to protect themselves from further cuts by pursuing activities more civil than military in nature. For example the Corps of Engineers focused on harbor and waterway improvements as well as topographical and geological expeditions.

One civil pursuit focused on meteorology and how that science could be harnessed to improve the agriculture and general daily life of America. By 1869 many agricultural interests were urging Congress to create a national organization to observe and forecast the weather. A bill was proposed in Congress that these duties be assigned to the War Department because "military discipline would secure the greatest promptness, regularity and accuracy required in observations." During the period when the Army was questioning whether or not it needed a Signal Corps, Myer took the initiative to seek new missions to keep the branch in existence. He called upon Congressional supporters who later stated he had "a most intense desire that the execution of the law be entrusted to him." On 15 March 1870, the Secretary of War assigned these new weather duties to the Signal Corps.

From 1870 to 1891 the Signal Corps operated the nation's first modern weather service using both commercial and military telegraph lines to report weather observations to Washington

Weather Station in Pike's Peak, Colorado (1880)

Members of the Greely Arctic Expedition (1881)

Signal Corps telegraphers at work, circa 1890.

D.C. The observation stations were located after consultation with the meteorologists based on previous courses of storms and availability of telegraph service. In October 1870, an observer-sergeant was sent to each of 25 stations between the Mississippi Valley to the Atlantic and Gulf coasts. Each station was equipped with a barometer, thermometer, hygrometer, anemometer, anemoscope (wind vane) and pluviometer (rain gauge). After readings were collected, they were sent via telegraph to the Signal office in Washington D.C. where the data was compiled and analyzed to reflect the weather for the United States. At least 1/3 of American households received the Signal Corps weather information in some form, mainly through the newspapers. By 1878 there were 224 Signal Corps weather observation stations making eight reports daily. By the time BG Myer died as Chief Signal Officer in 1880, the weather service was world renowned.

Arctic Expeditions

In 1880 and 1881, the United States participated with other nations in establishing and maintaining circumpolar stations for the study of Arctic weather and climate. The Signal Corps headed by Chief Signal Officer BG William B. Hazen dispatched two parties. One party led by LT Phillip H. Ray went to Point Barrow, Alaska. Greely led the second party. Interested in climatology along with other aspects of scientific geography, LT Greely volunteered for the expedition to the station planned for Lady Franklin Bay. The Greely Expedition spent four harrowing years in the arctic because relief parties were unable to reach them. When they were finally rescued in 1884 the Greely expedition was reduced to six survivors out of the 22 men who had made the journey. However, they did accomplish their mission and the scientific data they collected provided valuable knowledge of the earth's climate and tidal patterns.

Adolphus W. Greely

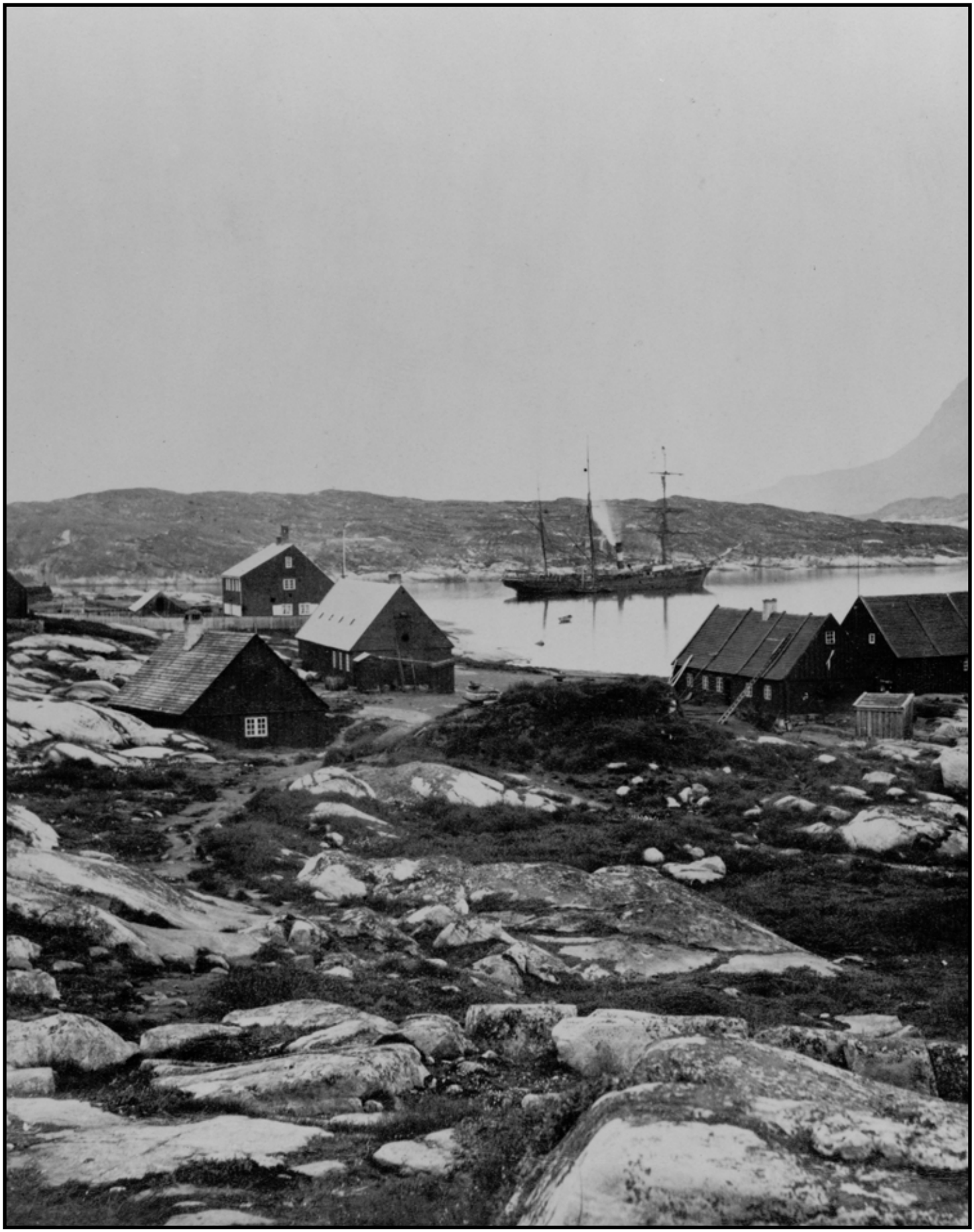
When BG Hazen died in 1887, Captain Greely was promoted to brigadier general and appointed Chief Signal Officer. Greely renewed emphasis on tactical signaling for the Army. In the face of inadequate training, reduced funds, and a congressional effort to abolish the Signal Corps, Greely managed to introduce new modes of communication into the Army. In 1890, he equipped some Signal Corps units with the first heliographs in the Army, which used mirrors to reflect sunlight over long distances. Greely also sponsored experiments leading to the Signal Corps' first field telephones. By 1890, he placed telephones in lighthouses and lifesaving stations along the Atlantic coast. In 1892, approximately one half of the country's Army posts were equipped with telephones. An avid scientist, Greely supported CPT James Allen's experiments and announced the development of a new Army field telephone in 1897.

Photography was another peacetime interest of Greely and the Signal Corps. In fact, the Army's first photographer, SGT George W. Rice, had accompanied Greely on his Arctic expedition. From that experience Greely realized the informational value of photography. He added a course in photography to the Signal Corps curriculum at Fort Riley, Kan. In 1896, the Government Printing Office published the Signal Corps' initial *Manual of Photography.*

The Storm Passes - A New Mission and Focus

In the 1880s, there was growing dissatisfaction on part of both civilian and military officials with the Army funding and managing a function that was essentially civilian in nature. In 1884 a congressional committee concluded that, "the Signal Service is now a Weather Bureau with a corps of men performing this civil service while they are enlisted in the Army. The Army gets no benefit from this Signal Corps, and places no reliance upon it for military service."

In 1889, Congress ordered that the weather service be transferred to the Department of Agriculture. The formal transfer took place on 1 July 1891 when Professor Mark W. Harrington of the University of Michigan became the first civilian chief of the U.S. Weather Bureau. All of the equipment, stations and personnel were transferred from the Army, resulting in a tremendous drop in personnel strength for the Signal Corps, whose role once again became focused on military applications of communication technology.



The expedition ship *Proteus* moored in a harbor during the Greely Arctic Expedition

AMERICA'S RISE TO WO

Having transferred responsibility for meteorological duties, the Signal Corps returned to its original mission of providing military communications for the Army. During the previous decades, the Signal Corps had fallen behind its European counterparts in this arena. But it soon embraced emerging technologies such as wireless telegraph, the telephone, and aeronautics. The outbreak of the war with Spain in 1898 provided challenges for communications on a scale never before imagined. Persistent conflicts across the waters in the Caribbean and the Pacific required long-range, secure communications. The Signal Corps met these challenges of providing electrical communications at both the tactical and strategic levels.

The Cutting Edge of Technology

As Chief Signal Officer, Adolphus W. Greely, placed renewed emphasis on combat signaling. In the face of inadequate training, reduced funds, and a congressional effort to abolish the Signal Corps, Greely managed to introduce new modes of communication into the Army. In 1873 the Signal Corps heard of the success the British had with the heliograph, a device which used mirrors to reflect sunlight and could be manipulated to make a flashing signal. By 1877 signalmen started practicing with the heliograph at Fort Whipple, Virginia and flashed signals up to 30 miles distant. In 1886 the army used heliographs in for the first time in operations when BG Nelson A. Miles requested them for command and control during the campaign against Geronimo in the Southwest. This region proved to be an ideal environment and helped with understanding needed improvements.

In 1888, a new heliograph was developed that was strong, portable, and used a square rather than round mirror offering more surface space. In May 1890, the army conducted an extensive test in Arizona where

White House Communications Room, 1898

Telephone tent in Cuba, 1898

Washington-Alaska Military Cabling and Telegraph System (WAMCATS)

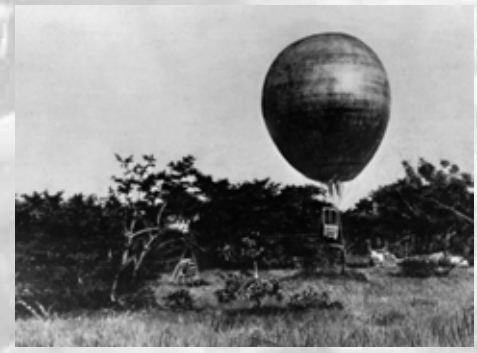
Signalmen relayed messages up to 125 miles away. A new record was set in 1894 when a signal sent by heliographs supervised by CPT William A. Glassford sent messages a distance of 183 miles.

Heliograph

Greely sponsored experiments leading to the Signal Corps' first field telephones. By 1890, he placed telephones in lighthouses and lifesaving stations along the Atlantic coast. By 1892, approximately one half of the country's Army posts were equipped with telephones. An avid scientist, Greely supported CPT James Allen's experiments and announced in 1897, the development of a new field telephone.

Power Projection: The Spanish American War - 1898

In 1898, the United States went to war against a decaying Spanish empire. The orientation of the Army changed overnight, from concern with frontier constabulary operations to projecting power far across the water. In April 1898, the Signal Corps had a force structure of eight commissioned officers and 50 enlisted men but Greely and the Signal Corps responded to the challenge. To expand quickly, Congress authorized the raising of volunteer units, including the creation of the Volunteer Signal Corps. Eventually the VSC would consist of seventeen companies, a balloon company, and a field telegraphs train.



Signal Corps balloon in Cuba, 1898

The Caribbean expedition's chief signal officer was COL James Allen. Allen's first mission was to cut the Spanish cables, thereby, debilitating the enemy's communications. Allen received the Distinguished Service Cross for doing this under fire from the Spanish batteries in Morro Castle. The Signal Corps eventually established 2,500 miles of wire in

Signal car at San Francisco earthquake, 1906

Signal Corps Flying School - College Park, Maryland, 1911

1st Division Photo Detachment in France, 1917

Cuba in a grid of nine lines running north and south and one east to west trunk. Perhaps the most dramatic accomplishment of the Signal Corps occurred on 19 May 1898 when Greely located the Spanish fleet which for a time had eluded the U.S. Navy. This intelligence led to eventual defeat of that fleet and U.S. Naval superiority.

In the Philippines, Signal Corps units participated in the capture of Manila and the defending fortifications. While an infantry regiment advanced, a Signal unit occupied the beach on the left flank of the troops. SGT George S. Gibbs (later Chief Signal Officer) and SGT Henry F. Jurs used wigwag flags to signal ADM Dewey's fleet, to both adjust naval gunfire and identify the friendly forces positions. This event was photographed by SGT Harry Chadwick, marking the first instance of combat photography.

Manila Bay, Philippines, 1898

The Spanish American War was a testing ground for the Signal Corps new endeavors. With an improvised telegraph switchboard the Signal Corps switched messages through an office in Puerto Rico and established direct communications between Washington and the front lines in Cuba. Greely had foreseen the military value of telephones and this use of telephones in combat proved him right. The Army's reliance on wire however required signalmen to expose themselves to perilous conditions.

Counter-insurgency in the Philippines – 1899-1902

The end of the war with Spain marked a new era of American involvement overseas. The United States had acquired the former Spanish territories of Cuba, Puerto Rico, and the Philippines, making the nation a world power. With these possessions came increased duties and responsibilities for the Army and the Signal Corps, including operating the telegraph and telephone lines formerly run by the Spanish government. However, Philippine leader Emilio Aguinaldo had hoped to win independence for his country at the end of the war. When that did not occur, he led an insurrection against the Americans on 4 February 1899. The next day, a signal officer, 1LT Charles E. Kilbourne, Jr., became the third Signal Corps Soldier to earn the Medal of Honor. Under enemy fire at Paco Bridge, in a suburb of Manila, he climbed a telegraph pole to "coolly and carefully" repair a broken wire that reestablished communications with the front.

Working in a tropical climate presented many signaling challenges. To facilitate transportation through jungle and swamps, signalmen used water buffalo as pack animals. Wooden poles required constant repairs because they rotted in the humid and intense heat or were destroyed by ants. Insurgents constantly sabotaged the lines and ambushed the men sent to fix them. Thus, armed escorts often accompanied the signal parties to provide protection.

In addition to building and operating land lines, the Signal Corps received the mission to construct, maintain, and operate a communication system linking the major islands of the Philippine archipelago. By the end of 1899, the Signal Corps had connected the islands of Leyte, Cebu, and Samar by underwater cable. Though fighting continued, organized Filipino resistance gradually declined, especially after Aguinaldo's capture in March 1901. The Philippine war officially came to an end on 4 July 1902, in part due to the role of the Signal Corps in supporting counter-insurgency operations.

Alaska Communication System

In the wake of the Alaska gold rush and the increasing population of that remote territory, the

War Department created the Military Department of Alaska. It became a Signal Corps mission to build a telegraph network connecting the headquarters at Fort St. Michael with five garrisons and the garrisons with each other. In 1900 Congress appropriated $450,000 to build the Washington-Alaska Military Cable and Telegraph System. Greely approached this demanding task by drawing upon his experience in pole line construction in North Dakota and Texas.

1LT Billy Mitchell in Alaska, 1901

In the summer of 1901, he sent 1LT William L. "Billy" Mitchell to Alaska to investigate conditions there. Mitchell suggested that work continue throughout the winter when supplies could be easily transported over the ice and snow. When spring came, the material would be in place to begin work. Infantry and artillery troops assigned to Alaska performed much of the construction, with signal Soldiers handling the technical aspects. The Army's only cable ship, the *Burnside*, began installing underwater lines.

By 1903, the Signal Corps had constructed a network of telegraph lines and cables connecting all the Army's principal garrisons. Departmental headquarters at Fort St. Michael was placed in contact with several other posts and via Canadian wires with Fort Seward, Skagway, Juneau, and Washington.

Upon completion, WAMCATS comprised 2,079 miles of cable, 1,439 miles of land lines, and the wireless system of 107 miles—a total of 3,625 miles. Greely referred to the accomplishment as "unique in the annals of telegraphic engineering" and a monument to skill and courage of the Signal Corps.

Natural Disaster Relief - 1906

On 10 February 1906, President Theodore Roosevelt promoted Greely to major general and assigned him to San Francisco as commander of the Pacific Division. On 18 April 1906, San Francisco was hit by a great earthquake and the army immediately assisted with firefighting, helped maintain law and order, and undertook emergency relief. The earthquake knocked out the city's phone system and destroyed almost all of the telegraph lines. For a time, the only communication to the city was provided via by one or two wires operated by Western Union and the Postal Telegraph Companies from their shattered offices. Later that day fires destroyed these tenuous connections and the city's half million residents found themselves isolated from the rest of the country.

San Francisco earthquake, 1906

The Signal Corps immediately stepped in during the emergency. CPT Leonard D. Wildman, the departmental signal officer, established a field telegraph line between the Presidio and the outskirts of the fire within 5 hours after the quake. With this help, the commercial telegraph companies were gradually restored to operational capability. Wildman set up a system of 42 telegraph offices and 79 telephone offices that connected all of the military districts, federal buildings, railroad offices and depots, the offices of mayor and governor, and other needed agencies. One of the four

on the first day traveled over 200 miles carrying messages, signal equipment, medical supplies, food, sick and wounded.

The Punitive Expedition 1916-1917

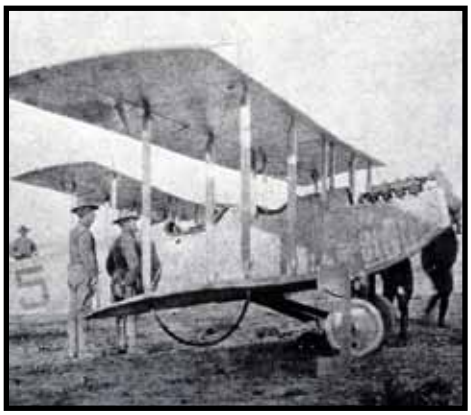
Shortly after midnight on 9 March 1916, a guerilla band of approximately 500 men led by Mexican revolutionary Francisco "Pancho" Villa attacked the border town of Columbus, New Mexico. The raid was in retaliation for U.S. support of Mexican president Venustiano Carranza. The attackers inflicted two dozen American casualties and destroyed thousands of dollars worth of property. This hostile act prompted President Woodrow Wilson to mobilize forces along the Mexican border. Wilson directed BG John J. Pershing to lead over 12,000 men on a punitive expedition into northern Mexico to capture Villa.

Telephone tent in Mexico, 1916

CPT Hanson B. Black was the signal officer for the expedition. In addition to advising Pershing on communication matters, he coordinated the operations of three field signal companies and the 1st Aero Squadron, a total of eighteen officers and 284 men. The Signal Soldiers employed a variety of technologies, including both wired and wireless communications, cameras, pigeons and, for the first time on campaign, airplanes. Early in the expedition, the two wireless (radio) wagon sets in service at Columbus and Colonia Dublán proved too heavy to keep up with the rapidly advancing cavalry columns. Consequently, almost all messages were sent via wire.

As Pershing moved deeper into Mexico, he was never out of communication with his base at Columbus, almost 400 miles away. A major problem, however, was the lack of insulated wire. Unprotected field lines shorted out when they became wet due to rain or morning dew. Even after insulated wire became available, breakage caused by animals and sabotage by enemy guerillas continued to compromise connectivity. To alleviate these problems, the Signal Corps established maintenance stations at twenty-five- mile intervals along the length of the line. Signalmen traveled on horseback and in light trucks to repair any breaks and were able to keep Pershing in contact with detachments located along his extended line of communications.

The Signal Corps' most unique contribution was the first use of airplanes to support military operations. Commanded by Capt. Benjamin D. Foulois, the airplanes of the 1st Aero Squadron performed reconnaissance in the search for Villa. The fragile and underpowered machines could not cope, however, with the high altitudes and strong winds encountered in the Mexican mountains. Within a short time, most of the aircraft had been damaged in accidents, but no men were killed or seriously injured. By 20 April 1916, only two of the squadron's original eight aircraft remained intact, but they were no longer usable.



Signal Corps airplane arrives in Mexico, 1916

Unable to capture Villa and hoping to avoid a general war with Mexico, Pershing's punitive expedition returned to the United States in February 1917. Despite the unsatisfactory outcome, the expedition had provided the United States Army with valuable training for its imminent entrance into World War I.

U.S. Army recruiting poster by James Montgomery Flagg 1917

WORLD WAR I AND AFTER

For years the US had managed to avoid involvement in the European war that began in 1914. However, its status as a world power and trading giant brought it into conflict with the belligerents on the oceans. In April 1917, Germany's resumption of unrestricted submarine warfare led Wilson to ask Congress to declare war against Germany. The US committed the largest American army ever sent into war, the American Expeditionary Forces (AEF), led by General John J. Pershing. During World War I, casualties suffered by Signal Corps soldiers were second only to the infantry. Signal soldiers earned 55 Distinguished Service Crosses and 40 Distinguished Service Medals. Pershing commended the Signal Corps stating "I desire to congratulate the officers and men of the Signal Corps in France on their work, which stands out as one of the great accomplishments of the American Expeditionary Forces" By the time the Armistice was signed in November 1918, the Signal Corps serving with the AEF comprised 50 field Signal battalions and 19 Signal companies totaling 1,462 officers and 33,038 enlisted men.

Expansion and Training

Although poorly organized, trained, and equipped at the beginning of the war, the Signal Corps once again met the challenge now under the leadership of MG George Owen Squier. Upon mobilization, the ground component of the Signal Corps grew from 55 officers and 1,570 enlisted men to 2,712 officers and 53,277 men. The Aviation Section initially had fifty-two officers and 1,100 men and by the time it became the Army Air Service in May 1918, it had grown to 16,084 officers and 147,932 men.

To train the influx of Soldiers, several training and mobilization camps were established in 1917, such as Camp Alfred Vail, New Jersey; Camp Samuel F.B. Morse, Texas; Fort Leavenworth, Kansas; and Monterey, California. Special schools were established such as the Signal Corps Radio School at College Park, Md. and the Signal

LTC Garrett, 42nd Division, tests a telephone left behind by the Germans after their retreat from France (1918).

Manpower provided the mobility for laying wire when other forms of transportation were not available. A Soldier could carry about a half-mile of cable on his back.

During World War I, approximately 200 women served as telephone operators for the Signal Corps, freeing men for service at the front. They were fluent in English and French and were known as the "Hello Girls".

Corps Buzzer School at Fort Leavenworth. In addition, special courses in subjects such as radio, telephony, telegraphy, photography, and meteorology were offered at civilian colleges and technical schools.

Adapting to 20th Century Warfare

The nature of combat during World War I proved extremely challenging for communications due to the increased size of battlefields and lethality of weapons, such as machine guns. At the tactical level, trench warfare posed different challenges and required many adaptations to be made. Traditional lance poles for telegraph wires were not suitable, so wires were strung on short stakes or run along trench walls. Major trunk lines were often buried several feet underground to provide protection from enemy shelling and from foot and vehicular traffic. Telephone switchboards were installed in underground dugouts where they could withstand artillery bombardment.

On the frontlines, the Signal Corps employed ground telegraphy, or TPS (from the French "*telegraphie par sol*") which worked by driving iron poles into the earth and transferring electrical energy from the transmitting to the receiving station by induction and conduction of electricity through the ground instead of through the air. TPS was not very secure, however, and could be easily tapped by the enemy.

Given these conditions, COL Edgar Russel, chief Signal officer of the American Expeditionary Forces, was forced to install and operate an extensive network of telegraph and telephone wires extending from the seacoast to the American battle zone. The Signal

1917–1937

Corps constructed a total of 2,000 miles of pole lines, used 32,000 miles of French poles, installed about 40,000 miles of combat lines, and established 134 permanent telegraph offices and 273 telephone exchanges, excluding combat zone stations.

Early Radio – Heavy and Immobile

While laying the extensive telegraph and telephone network, the Signal Corps experimented with radio. Before the war, radio transmission was limited to Morse code, either by means of spark transmitters or by continuous wave oscillations

A Soldier operating field wireless equipment of the World War I era.

A Signal Corps classroom in Fort Monmouth, New Jersey, circa 1920.

Signal Corps Soldiers, in the 1930s, operating a superheterodyne radio receiver, which amplified weak signals and enabled more precise tuning.

generated by triode tubes. The first spark sets were heavy and cumbersome. The Signal Corps provided two types of field radios which were large high-powered quenched-spark transmitters. The SCR-49 pack radio set could be disassembled into several components and transported by two or three Army mules. The SCR-50 was even larger and required several trucks or tractors to move.

By this time, the European Allies were replacing the spark equipment with radiotelegraph equipment using vacuum tubes. Some in the Signal Corps were convinced that vacuum tubes were the key to superior military radio. Among them was MG Squier, who had a doctorate in electrical engineering. As Chief Signal Officer, Squier spearheaded cooperation with the commercial communications industry to perfect radio tubes. Six months after the military radio tube program began; American factories were producing standardized, interchangeable, and rugged tubes.

Striving for even better equipment, Squier established a laboratory at Camp Alfred Vail and increased the army radio program from a few personnel in 1917, to several hundred by 1918. Other World War I developments in radio included the master-oscillator power amplifier circuit, and CPT Edward H. Armstrong's super heterodyne circuit.

The latter came too late for use in World War I but made a pivotal contribution to radio in the postwar period.

The Signal Corps in Combat

During 30 August to 3 September 1918, the US Army II Corps began an offensive under command of British and Australian forces. The two divisions of II Corps, the 27th Infantry and 30th Infantry fought over a series of heavily defended ridges near Ypres, including a critical point called Mount Kemmel. The divisional signal battalions had enormous challenges to maintain communications.

On 31 August, the 105th Field Signal Battalion of the 30th Division laid over 15,000 feet of communications cable to support a forward command post. This was because the German defenders closely watched for runners carrying messages back to the rear and attempted to kill them. One Soldier wrote of this communications method, "That generally means six or seven men with the same message and if one gets there it is considered a success." On 1 September, the 102nd Field Signal Battalion faced the same situation, but used both pigeons and dogs to send messages under heavy fire.

When the 1st Battalion, 105th Infantry Regiment requested artillery support so it could continue an attack, it received no response because the telephone lines had been cut by enemy artillery fire. To restore communications, CPL Kenneth M. McCann from the 102nd Field Signal Battalion spent over seventy-two hours replacing the forward lines even while being attacked by enemy gas and machinegun fire. McCann was later awarded the Distinguished Service Cross for his actions.

Another Soldier kept a diary during his service and he often wrote to his loved ones. Private George A. Morrice of the 102nd Field Signal Battalion wrote, "You ask what the signal corps does in modern warfare. I wish you had asked what we don't do. That would have been easier. The main idea is to keep communication as perfect as possible under all conditions. It doesn't matter how it is done, as long as it is done." Morrice and his fellow Signalmen were recognized for their work through commendations from the division commander, MG John F. O'Ryan who stated, "The success of the operation was in no small measure due to the determination, resourcefulness, valor and endurance of the officers and men of the [102nd Field] Signal Battalion."

A Diversity of Missions – Photography & Pigeons

The Signal Corps mission expanded into other areas by order of General Pershing. COL Russel established four new organizations responsible for combat photography, pigeons, meteorology, and radio intelligence. Although photography had been a Signal Corps responsibility since 1881, Pershing's order made photography an official mission. Field photography consisted of both ground and aerial. Ground photography, comprised of still and motion picture, was assigned to the Signal Corps in August 1917. Aerial photography was of paramount importance to the intelligence service. A total of 54 officers and 418 enlisted men constituted the photography personnel in France. After the war,

Mobile pigeon loft, circa 1930

all aerial photography and ground photography relating to aviation activities was transferred to the Air Service. The Signal Corps function was to maintain the historical files of still and motion pictures, produce training films, and manage ground photography not already under another service's control.

The Pigeon Service's mission was to create and maintain a frontline communications network using pigeons as the means to transfer information. By November 1917, two detachments of pigeoneers were in France. Pigeons were used during several battles including the St. Mihiel and Meuse-Argonne offensives. During the later campaign, the pigeon Cher Ami earned the Distinguished Service Cross by delivering a message to the 77th Division headquarters to halt friendly artillery being dropped on the "Lost Battalion." Pigeons successfully delivered about ninety-five percent of the messages assigned them. Many were shot down by the enemy or suffered severe wounds.

Message sent with "Cher Ami" to 77th Division Headquarters.

A Diversity of Missions – Meteorology and Intelligence

The Meteorological Service was responsible for providing weather information to support Signal aviation, Coastal Artillery, and the Gas Warfare Service. MAJ W.R. Blair, a former member of the U.S. Weather Bureau, travelled to France in September 1917 to organize the AEF Meteorological Service. In May 1918, the first American meteorological station was established in France. By October 1918, 22 stations were operating. Among other activities, they supported aviation and artillery training stations, combat units, railway guns, and depots. Front line stations transmitted radio reports of weather conditions opportune for gas attacks and supplied information critical to aerial and artillery warfare. By war's end the AEF Meteorological Service was unequaled in providing military meteorological assistance. The Radio Intelligence Service was responsible for locating enemy transmitters, monitoring Allied transmissions, intercepting and decoding enemy transmissions, and breaking the enemy's code.

Women at War – The Hello Girls

In October 1917, Pershing asked the War Department for special units of skilled women switchboard operators in order to release male operators to serve at forward positions near the front. Because the AEF had to communicate with the French armies on its flanks and the Allied Headquarters Paris, it was important for operators to speak French as fluently as they spoke English. The War Department turned to the commercial telephone companies to help identify, recruit and train physically fit, French speaking, American women for this task. Out of 7,000 applicants, over 450, affectionately known as "Hello Girls," completed training in signal duties and 223 of them were sent overseas in Telephone Operating Units. During the war, six TOUs were formed and sent to France where they were assigned to headquarters offices in

Paris, Chaumont and Tours. Some smaller units of women served at the First and Second Army headquarters.

Grace Banker is awarded a Distinguished Service Medal

Grace Banker's service as chief operator, First Army Headquarters during the St. Mihiel and Meuse-Argonne offensives earned her the Distinguished Service Medal. Because of her experience as a switchboard instructor at AT&T, Banker was placed in charge of 33 women of Telephone Operating Unit No.1. On 25 August 1918, Banker and six other operators were ordered to First Army Headquarters about five miles south of St. Mihiel. When the St. Mihiel offensive began, Banker and the other women operated the switchboards during the intense opening artillery bombardment. When First Army HQ moved to Bar-le-Duc, Banker and her operators displaced as well.

Banker, center, at awards ceremony receiving a Distinguished Service Medal

While there, Banker and the other women endured aerial bombardment from German planes. On 11 November the Armistice ended all combat operations. Banker was sent back to Paris where she was assigned to work for President Woodrow Wilson, a duty she described as "not particularly exciting." When given a choice to remain there or go to the Army of Occupation at Coblenz, Germany, Banker chose to leave Paris. While at Coblenz, Banker was presented with the Distinguished Service Medal during a ceremony recognizing her,

> "For exceptionally meritorious and distinguished services. She served with exceptional ability as Chief Operator in the Signal Corps Exchange at General Headquarters, American Expeditionary Forces, and later in a similar capacity at First Army Headquarters. By untiring devotion to her exacting duties under trying conditions she did much to assure the success of the telephone service during the operations of the First Army."

Upon their return from the war, the Hello Girls did not receive a formal discharge certificate as they were considered to have been civilian volunteers and not members of the military. In 1977 Congress finally passed legislation that granted them status as veterans. Grace Banker did not live to receive this recognition as she died in 1960.

Post War and Draw-down

In April 1919, General Pershing convened a committee to examine the lessons learned from the war. The review concluded that Signal Corps responsibility for communications should extend only down to the division level. Below division, units should be responsible for their own internal communications and for connecting themselves to higher echelon lines above the division established by the Signal Corps. This meant that the Signal Corps no longer controlled an integrated network from the front lines to Washington as it had during the war. The Chief Signal Officer strongly objected to this change, but his protest fell on deaf ears and the Army's revised *Field Service Regulations*, approved in 1923, reflected the doctrinal modifications.

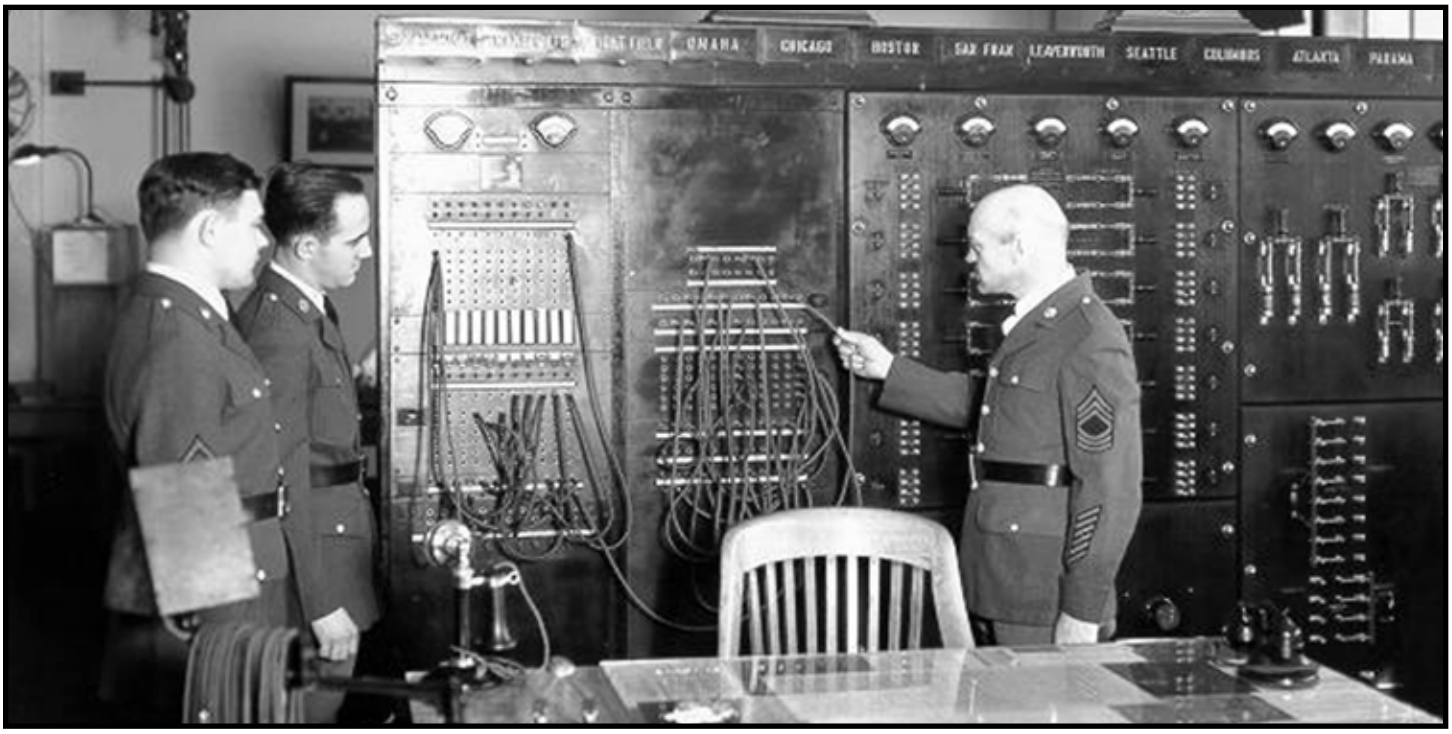
During the postwar era the Signal Corps suffered personnel and budget cuts while still trying to meet the escalating demand for telephone and other signal services. Signal training was adversely affected as well, as most training camps were closed after the war. One exception was Camp Vail, N.J., which became the home of the Signal School in October 1919. There training would be conducted for both officers and enlisted men, along with Students from foreign armies. In 1925 the post's name was changed to Fort Monmouth, in commemoration of the Revolutionary War battle that had occurred nearby in June 1778.

One of the major accomplishments during this period was the

Washington-Alaska military cable and telegraph system. By 1924, the Signal Corps had replaced some 1,607 miles of cable with more durable gutta percha cable. With 44 officers in 1925, the Signal Corps operated 20 radio stations and 840 miles of land telegraph lines. By 1930, radio circuits replaced all telegraph stations, except for a telegraph line along the Alaskan Railroad. With the conversion to radio in 1936, the system was renamed the Alaska Communications System.

By the mid-1930s, the Signal Corps became responsible for the operation of the War Department message center. The timely and proper routing of all radio, telegraph, and any other messages became the center's responsibility. This experience with routing, processing and coordinating message and telephone traffic would pay huge dividends even as the next war loomed ahead.

Fort Monmouth, N.J., Signal Development Lab, in the 1920s



War Department Message Center, 1934

BUILDUP AND WORLD WAR II

Throughout the 1930s, the world situation grew unstable due to the rise of Nazism in Germany, Fascism in Italy, and Japanese military aggression against nations in the Far East. When war broke out in Europe in 1939, the United States recognized the possibility of future involvement, though the nation officially remained neutral. In preparation, the Signal Corps needed thousands of men to provide a wide variety of services. As in World War I, the Signal Corps tapped the large pool of trained civilian communicators. The influx of recruits quickly outgrew the existing training facilities at Fort Monmouth, which expanded Signal training to Camp Crowder, Missouri; Davis, California; and Camp Murphy, Florida. The impact those Soldiers had on ensuring successful communications set the standard by which the Signal Corps would forever be judged - an organization of skilled Soldiers capable of providing immediate global communications.

Despite limited budgets of the 1930s, the Signal Corps continued research and development efforts for new technology. One significant development was the teletypewriter. Although it was too large for tactical use at the time, teletypewriters soon replaced telegraph equipment as the standard means for conducting fixed station administrative communications such as at the War Department.

Engineers at the Signal Corps Laboratory also developed a break-through tactical communications device - the walkie-talkie. The walkie-talkie was an amplitude-modulated radiotelephone transceiver which weighed about 25 pounds and had a range of up to five miles. Walkie-talkies could provide combat units a portable means of battlefield communication that allowed increased ability to maneuver and contact units that were beyond field telephone lines.

Development of RADAR

Perhaps the most significant postwar development in technology was the development of radar, an acronym for **ra**dio **d**etecting **a**nd **r**anging. In May 1937, COL William Blair, Director of the Signal Corps laboratories, conducted experiments in sound ranging to locate approaching enemy aircraft from the noise of their engines. From these experiments the Signal Corps began production of two radar sets, the SCR-268 was designed to direct searchlight beams upon aircraft for targeting antiaircraft fires, while the SCR-270 was a mobile, long-range, aircraft early warning set. These developments enabled the army to join together timely detection and reaction to an impending aerial threat using Signal air warning units equipped with radar to defeat an attack on U.S. territory.

Signal Corps Operations at the Battle of Hürtgen Forest

Laying wire at Bougainville Island in the South Pacific, 1943

Signal Corps photographer in Belgium

Development of Frequency Modulation - FM

Another innovation that provided new capability for future warfare was the invention of frequency modulation radio by Dr. Edwin H. Armstrong. In the late 1930s, with Armstrong's assistance, the Signal Corps laboratories produced the first pushbutton, crystal-controlled, FM tactical radios, which did not have to be tuned using a dial. When the Army began experiments with motorization and mechanization, the need for mobile communications became critical as without radios, tankers had to communicate using line of sight flag and hand signals. FM radio technology made vehicular radio feasible as it eliminated noise and static interference, and could transmit over a wider range of frequencies.

"This is not a Drill" – 7 December 1941

Meanwhile, the Signal Corps efforts to modernize its strategic communications had meet resistance in some quarters of the Army. Unable to build more powerful transmitters; it was not able to extend the range of its radio network to the West Coast. On 6 December 1941, the Signal Intelligence Service in Washington intercepted a dispatch from Tokyo. The message indicated the Japanese government was going to break diplomatic relations with the United States. The Signal Corps, unable to get the message through to Hawaii with its own equipment, had to use commercial telegraph to San Francisco where it could then be relayed to Hawaii. By the time the message was delivered, it was overcome by other events.

In Hawaii, two Signal Corps Soldiers manning the SCR 270B radar at the Opana Point station on Oahu had ended their shift. While waiting for transportation they continued to monitor the radar to become more familiar with the system. At 0702 on 7 December 1941, PVTs George A. Elliott and Joseph L. Lockard saw an echo on their scope indicating a large formation of aircraft about 130 miles away. At first they thought the radar was malfunctioning, but after rechecking, they determined it was a flight of aircraft approaching at about three miles a minute.

At 0720 they notified the air warning center at Fort Shafter. The officer on duty, 1LT Kermit A. Tyler, told them, "Don't worry about it." Tyler assumed they were a flight of B-17 bombers or U.S. carrier planes returning to Pearl Harbor. He did not question Elliott or Lockard as to the direction, speed or time of arrival of the unknown planes. Since they were off duty and their reports of incoming planes had been ignored, Lockard and Elliot returned to their billets for breakfast. The Signal Corps equipment, training and aircraft warning procedures had worked perfectly and Signal Soldiers had ensured the message had gotten through in a timely manner. The poor situational awareness and inability of leaders to connect the dots of information resulted in 7 December 1941 becoming a "day of infamy."

Cable Dawgs in Italy, circa 1944

SCR-536 and SCR-300 in the 1940s

Lineman in the European Theater, circa 1945

The Master Trainer of Monmouth – Reuben Abramowitz

Under the leadership of Chief Signal Officers MG Dawson Olmstead and MG Harry C. Ingles, the Signal Corps responded to the call to arms. The Signal Corps grew from 27,000 to 350,000 Soldiers supporting the U.S. Army in theaters around the world. Training this many Soldiers in common procedures and techniques required a sound training program of instruction. master sergeant, later LTC Reuben Abramowitz was a Soldier, trainer, and athlete who dedicated his life to the US Army Signal Corps. The outstanding Signal Corps performance during World War II can be directly attributed to the superb efforts of Abramowitz, who one Signal Corps general officer claimed, "taught us how to be generals."

LTC Reuben Abramowitz

The son of Russian-Jewish immigrants, Abramowitz joined the New York National Guard in May 1916. During World War I, he served with the 37th Anti-aircraft battalion in France and with the 1st Field Signal Battalion. Abramowitz arrived at Fort Monmouth in October 1926 where he began a 15 year career an instructor at the U.S. Army Signal School. A master technical trainer and innovator, Abramowitz sought ways to streamline instructional techniques. He reduced the program of instruction time for code operators from 200 hours to 100 hours by combining the skills of typing and coding in simultaneous instruction.

By the time he was promoted to major in 1943, Abramowitz was known as the "Dean" of Signal training and had already perfected the instruction techniques required to expand Signal Corps training. Over 30,000 officers graduated from some 50 courses while almost 400,000 enlisted men were trained in communications-electronics.

An Explosion in Technology

Accompanying the personnel expansion were continued developments in the ever increasing sophisticated elements of modern communications-electronics. The FM radio proved its worth not only in tank warfare, but in amphibious assaults, and for ship-to-shore use. In tactical combat, Armored Force and Artillery operators benefitted from the static- and interference-free FM sets that plagued the amplitude modulation sets and their users. Infantrymen profited too from the walkie talkie SCR-300. A veteran of Siegfried Line combat reportedly wrote: "I know the fighting would have lasted longer if we hadn't had FM on our side. We were able to shoot fast and effectively because we could get information quickly and accurately by voice, on FM. FM saved lives and won battles because it speeded our communications and enabled us to move more quickly than the Germans, who had to depend upon AM."

The worldwide nature of war necessitated worldwide strategic communications over long-range, transoceanic, multichannel circuits to handle the extraordinary flow of message traffic. This made it possible to transmit several telephone or teletype communications simultaneously over a single circuit. The Signal Corps developed new enciphering and deciphering machines which were synchronized with the teletypewriters at both ends of the circuits. In addition the Signal Corps' constructed the Army Command and Administrative Net, a vast global system, headquartered in the Pentagon employing powerful, long range, multichannel, radio-teletype circuits.

10th Mountain Division Soldier using a walkie-talkie

Team 7, 594th Joint Assault Signal Company

Joint Operations - JASCO

During late 1943, the Joint Chiefs of Staff ordered a new organization formed to improve communications between land, sea, and air forces during amphibious operations. The Joint Assault Signal Company, or JASCO, was formed by adding the naval shore fire control and Army Air Force air liaison parties to Army signal companies. A signal corps major commanded a JASCO because it was much larger than a normal signal company, with an authorized strength of about 500-600 Army, Navy and Army Air Force signal personnel. The JASCO was to implement common communications procedures for use during an amphibious assault, to include planning for joint radio frequencies, message transmission procedures, close air support, and naval gunfire.

During WWII, 11 JASCOs served in all theaters of operations. Three JASCOs operated during the landing on Normandy beaches in June 1944. At Kwajalein Atoll, a JASCO attached to the 4th Marine Division improved artillery, air, and naval coordination to a great extent. On hotly contested beaches, such as Saipan, JASCO casualties were often very high, mainly because the men focused on their communications missions instead of providing for their own protection. The Signal Corps JASCOs had proved indispensable in linking air, ground and naval communications during complex joint operations during World War II.

Native American Code-Talkers at Normandy

The Allied invasion of Normandy stands as one of the most famous military operations in history. Over 2,700 ships – from battleships to landing craft – carried, escorted and landed over 130,000 troops on five beaches along fifty miles of Normandy coast. Overhead, Allied aircraft controlled the skies and over 1,000 transports dropped paratroopers to secure the flanks and beach exits of the assault area.

The U.S. Army's 4th Motorized Infantry Division, the "Ivy division" was one of the divisions selected to land at Utah Beach. The 4th division was an experimental division that contained new technology as the prototype for the "motorized" division concept. The 4th Signal Company had the task of integrating and training this cutting edge communications equipment. It also had a distinct capability that no other Army signal unit possessed and that was the assignment of 17 Comanche Indian "Code Talkers" to the division.

The Comanches were chosen because their language proved valuable for passing messages in a native code that could not be broken by the enemy. They practiced laying communications lines and agreed on Comanche code words for particular military terms. According to one of the code-talkers, "We talked Indian and sent messages when need be. It was quicker to use telephones and radios to send messages because Morse code had to be decoded and the Germans could decode them. We used telephones and radios to talk Indian then wrote it in English and gave it to the commanding officer." Two Comanche's were assigned to each of the divisions' three infantry regiments. They could send coded messages from the front line to division headquarters, where other Comanche's decoded the messages.

Comanche Code Talkers

On 6 June 1944 at 0630 hours, the division splashed ashore at Utah Beach to storm the German beach defenses. However they landed 2,000 yards south of the planned beach, a more heavily defended area, compared to the light defenses encountered on the new beach. In a short time the 4th Division poured ashore and quickly moved armor and engineer units into the battle. One of the first radio messages was sent by a code talker on the beach to another on an incoming boat. After translation, the message said, "Five miles to the right of the designated area and five miles inland, the fighting is fierce and we need help."

None of the Comanche's were killed, but two were seriously wounded during the landings. Within 15 hours the entire division had landed on Utah beach and the next day broke through enemy defenses to link up with elements of the 82nd Airborne Division at St. Mere Eglise.

Women's Army Corps Soldiers operate Image Transmission Device, 1944

Women and Minorities in the Signal Corps

Both at home and overseas, members of the Women's Army Auxiliary Corps later designated the Women's Army Corps, replaced men in message centers and switchboards. They also worked in film libraries and laboratories, and performed signal intelligence duties such as cryptography. The Signal Corps employed more WACs than any other technical service except the Chemical Warfare Service. All told, about 5,000 of these women worked for the Signal Corps.

African-American Signal Soldier, 4th Signal Service Company, 1941

African-American Soldiers also played an important role in the wartime Signal Corps, although the Corps remained below its proportionate share of black troops throughout the conflict. Many black units performed construction duties, such as the 275th Signal Construction Company. This unit deployed to Panama in December 1941 to build pole lines. It later served in four campaigns in the European theater.

Filming the War

On every battlefield Signal Corps cameramen were "shooting the war" using both still and motion photography. Their work provided an outstanding visual record of the conflict. In addition to covering combat operations, the Signal Corps produced training and orientation films to explain the war to the public and Soldiers who were fighting it. Hollywood directors such as Frank Capra and John Huston received commissions in the Signal Corps to produce documentaries. Capra's series of, *Why We Fight*, films received an Oscar from the Academy of Motion Picture Arts and Sciences, and he received the Distinguished Service Cross for his work.

One member of Capra's film crew was Theodor Seuss Geisel, who later became famous as the beloved children's author, Dr. Seuss. Another famous artist was SGT Stanley M. Lieber, known more commonly as Stan Lee, the creator of Spiderman, who served as a playwright and illustrator supporting the visual information program.

Related to the photography mission was V-Mail which used photography of mail in order to save cargo space in ships and aircraft. A Soldier filled out a special V-Mail form which was then transferred to film to reduce its size and make it easier to transport.

At the receiving end, the film was developed and printed into 41/2 by 5-inch reproductions, which were then forwarded to the recipient. The service began in the summer of 1942 and grew quickly, from June 1942 with 53,000 letters to over 63 million letters processed in April 1944.

Army Pictorial Center Film Studio Astoria, N.Y.

The Most Important Message – Cease Fire August 1945

During the closing hours of WWII, the signalers at Headquarters, U.S. Army Forces, Pacific in Manila, became part of a radio drama that would bring an end to war. Through Swiss intermediaries, the Japanese government agreed to surrender and be subject to orders of the Allied Supreme Commander, GEN Douglas McArthur. However, diplomatic words had to be translated into military action to stop the death and destruction throughout thousands of miles of Pacific and Asian battlefields and oceans.

At 0900 Manila Time on 15 August 1945, the Signal officer in charge of the teletype room read a stunning incoming, in the clear message, for McArthur from the War Department that stated,

"YOU ARE HEREBY OFFICIALLY NOTIFIED OF JAPANESE CAPITUALTION. YOUR DIRECTIVE AS SUPREME COMMANDER FOR THE ALLIED POWERS IS EFFECTIVE."

At that point, the circuit failed and the OIC and operator froze in disbelief. A moment later, the teletype operated again, repeating the message, followed by instructions for McArthur to contact Tokyo directly to coordinate an immediate cease-fire. Knowing the grave urgency to stop further bloodshed, signalers throughout the Pacific theater and in Washington began extraordinary efforts to open communications with Japan on any frequency be it meteorological, financial, military, or civilian to get McArthur's

message through. The office of the Chief Signal Officer in Washington relayed the message to commercial radio companies 13 Stockholm Sweden; and Madrid, Spain.

The signalers at station WTA in sweltering hot Manila were drenched in sweat having been at their teletype keys or radio earphones during 10 hours of frantic effort to contact a Japanese station. Finally, a commercial station, KER in San Francisco, got the attention of Japanese station JUM who responded, "GO AHEAD. SEND 40 WORDS PER MINUTE." The signalers in Manila had monitored the transmission and shortly after, JUM was directed to talk to WTA in Manila. Suddenly messages began to pour into the Signal Center as stations everywhere had been listening in on one of the greatest radio dramas in history and they wanted to make sure WTA had heard the response. With the circuit established, important messages began to flow between McArthur and the Japanese government. On 16 August the Japanese government sent word,

"HIS MAJESTY THE EMPEROR ISSUED AN IMPERIAL ORDER AT 1600 O'CLOCK ON AUGUST 16TH TO THE ENTIRE ARMED FORCES TO CEASE HOSTILITIES IMMEDIATELY."

The message that ended the war had gotten through and the U.S. Army Signal Corps personnel and equipment had made it all happen.

Victory!

During WWII the Signal Corps produced, installed and maintained communications equipment for the Army's ground forces and the Army Air Forces. GEN Omar Bradley, commander of the 12th Army Group, testified to successful communications by referring to his telephone system as, "the most valued accessory of all." He said, "From my desk in Luxembourg I was never more than 30 seconds by phone from any of the armies. If necessary, I could have called every division on the line. Signal Corps officers like to remind us that 'although Congress can make a general, it takes communications to make him a commander'." The wartime achievements of the Signal Corps ushered in a new age in electronics technology and set the stage for even greater success.

THE STARS AND STRIPES

WAR ENDS

Truman Announces Total Surrender

WASHINGTON, Aug. 15 (AP)—The United States, Britain, Russia and China announced today that Japan had surrendered unconditionally.

The job of disarming millions of Japanese soldiers still had to be accomplished, but it seemed that peace had returned to the world for the first time since 1937, when Japan invaded central China.

President Truman, who announced the surrender for the U. S. at 7 p. m., EWT (1. a. m., Central European Time), revealed that Gen. Douglas MacArthur had been named Supreme Commander in charge of occupation forces and would receive the surrender. Mr. Truman started his dramatic announcement by saying that he had received "full acceptance of the Potsdam Declaration, which specifies unconditional surrender of Japan." He said that arrangements had been made for the formal signing of the surrender at "the earliest possible moment."

In the meantime, he continued, the terrible atomic bomb attacks, the Superfortress raids and the fleet bombardment that had brought Japan to her knees had been ordered suspended.

The President said this note had been received from Japan through the Swiss legation:

"The Emperor is prepared to authorize and insure the signature by his government and Imperial Headquarters of the necessary terms for carrying out the provisions of the Potsdam Declaration.

"His Majesty is also prepared to issue this communication to all military, naval and air forces under their control, wherever located, to cease active resistance and to surrender their arms."

About the same time, Prime Minister Clement R. Attlee of Great Britain and representatives of the Soviet and Chinese governments—the powers that had signed the Potsdam Declaration—were announcing the surrender.

Radio Tokyo started the U. S. and the world on a celebration yesterday by announcing at 1:40 a. m., EWT (7:40 a. m., Central European Time) that "The text of an imperial message accepting the proclamation will be forthcoming soon."

At 3:51 a. m., EWT, Charles G. Ross, White House secretary, announced that the Japanese reply was "in the hands of the Swiss."

This was quickly denied by Byrnes. The misunderstanding seemingly arose from the receipt by the Japanese diplomats in Berne of other communications from Tokyo. The Swiss legation here issued a memorandum that "the Japanese legation reports that code cables it received this morning do not contain the answer which was awaited by the whole world." Ross then made public the memorandum without further comment.

Ross had said that when the official reply arrives here it would be delivered first to Secretary of State James F. Byrnes and then to the President.

Radio Tokyo's announcement was heard by monitors on both the East and West Coasts. But as the hours went by, it failed to read the proclamation that it had advertised would be forthcoming "momentarily."

Adm. Halsey's 3rd Fleet men may be first to enter Japan

(Continued on Page 8)

Front Page of *Stars & Stripes* newspaper announcing the end of WWII

World War II Victory Medal

COLD WAR COMMUNI

Increasing tensions with the Soviet Union and Communist China gave rise to what became known as the Cold War and the world faced the abyss of Atomic warfare. On occasion, the Cold War heated up during the Korean War, Cuban Missile Crisis, and Vietnam War during which the Signal Corps was called upon to provide command and control capability. Following withdrawal from Vietnam, the Army relocated the Signal School from Fort Monmouth and consolidated training at Fort Gordon, Georgia. During the 1980s, the Signal Corps focused on its role in supporting the Air Land Battle doctrine for opposing the Warsaw Pact in Europe. This doctrine required a completely new family of tactical communications technology known as Mobile Subscriber Equipment, or MSE. Beginning with the implementation of the U.S. Army Regimental System in 1986, the commandant of the U.S. Army Signal School was designated as the Chief of Signal and the branch proponent for all Signal Soldiers and organizations in the U.S. Army.

Beyond the Earth – Project Diana

Following World War II the Signal Corps shrank from 350,000 personnel to an active strength of about 50,000. This reduction however did not curtail the Corps' scientific studies. On 10 January 1946, Signal Corps scientists, using a modified SCR-271 long range radar antenna succeeded in bouncing radar signals off the moon. Project Diana, named for the Roman goddess of the moon, demonstrated that very high frequency radio waves could penetrate the ionosphere encircling the earth and into space. After Project Diana, the Signal Corps broadened its space-related activities and participated in postwar atomic bomb tests. In 1949, the Signal Corps provided electronic support for guided missiles, an effort which grew into the United States Army Signal Missile Support Agency. With the development of Army missiles came the Signal Corps mission of providing combat surveillance and target acquisition.

Project Diana, 1946

13th Signal Company - Korea, 1950

Korean War Photographer, 1952

An Integrated Army – First Sergeant Percy D. Ricks, Jr.

In June 1946, Percy D. Ricks, Jr. became the first African-American to serve as first sergeant of a racially integrated unit at the Signal Corps Photographic Center, Astoria Studios, Long Island City, N. Y. During WWII, Ricks served in a transportation unit where he supervised the shipment of supplies from the ports to the front. Following VE Day, Ricks was discharged from the Army but quickly reenlisted in the Army in the Signal Corps. He was assigned to the Signal Corps Photographic Center where he served as first sergeant for the 9440th Technical Support Unit. This action occurred two years before President Truman signed Executive Order 9981 that ended segregation of the Armed Services.

In 1953, Ricks was assigned to the 304th Signal battalion in Korea where he was the NCOIC of the Photo Platoon. He returned to the SCPC in 1957 where he became chief of quality control. Ricks final assignment was as the lab representative where he coordinated with motion picture industry and commercial manufacturers for the growing use of color photography. This milestone was just one of many during the life of a "man of quiet dignity" who was dedicated to serving his nation and the military profession.

First Sergeant Percy D. Ricks, Jr.

Cable repair, Vietnam

Black Virgin Mountain Communications Site
Vietnam, 1969

U.S. Army Signal School - Fort Gordon, 1970

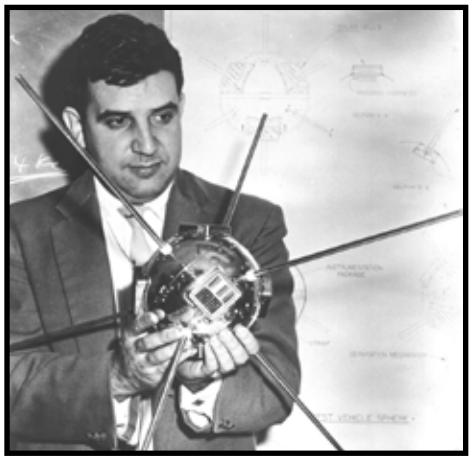
Cold War Turns Hot - The Korean Conflict 1950-1953

Under the leadership of MG George I. Back, the Signal Corps underwent another wartime expansion when North Korea invaded South Korea in June 1950. Signalers were needed to operate communications from Japan to Korea. Signal units like the 8035th Signal Service Company established the Eighth Army's communications system and connected it with the Far East Command's Signal troops operating across the theater and in Japan. For the most part the equipment and methods of communications were similar to those used in World War II. But, the nature of warfare in a mountainous Asian country proved different when Signal Soldiers learned they had to fight as infantry in order to preserve communications and their lives. One infantryman commented: "Here they [the enemy] are shooting all over, and those crazy Signal Joes are going on laying lines like nothin's happening."

The mountainous terrain and inadequate roads restricted the use of wire and telephone circuits. The rugged hills hampered radio relay teams and relay trucks were targets of guerilla warfare and sabotage. One solution was use of very high frequency radio which proved more dependable than wire as the primary method of communication. One signaler believed VHF was the backbone of the communications network and was "so flexible that it could keep up with the infantry in the rapid moves that characterized the fighting in 1950-1951." VHF operated using line of sight which required the equipment be positioned on high terrain and could provide communications over mountains, across rivers, and ship to shore. VHF radio communications in Korea often surpassed expectations. For example, the 304th Signal Operations Battalion used AN/GRC-3 and AN/GRC-4 sets at ranges beyond the twenty-five mile line of sight specifications.

The Atomic Battlefield and Outer Space

The concepts of nuclear warfare required a command control system that could cover an extended and dispersed battlefield. Any system had to be highly reliable, have redundant capability and enable rapid communications to all units regardless of their wide dispersion. The Signal Corps had to abandon the more traditional single axis method of communications as in the event of an atomic attack and destruction of any signal center on the axis, communications would be completely severed. In response, the Signal Corps developed the Army Area Communications System. The AACS featured mobility, self containment, alternate routing capability, and broad coverage to widely dispersed units. This system provided a reliable multi-axis and multichannel network which increased assurance of command control on potential atomic battlefields of the future.



Replica of Vanguard 1 Satellite, circa 1958

The Signal Corps was a pioneer in the satellite and space age. With the launch of Vanguard I on 17 March 1958, it carried a satellite powered by a solar cell developed at the Signal Corps Research and Development Laboratory. The first communications satellite, Project SCORE (Signal Communications via Orbiting Relay Equipment), launched on 18 December 1958 carried a Signal Corps-developed communications package. SCORE, a project of the Signal Corps Advanced Research Project Agency,

demonstrated that voice, teletypewriter, and multiple teletypewriter signals could be received, stored, and then retransmitted by an orbiting satellite.

1962 Army Reorganization

The growing authority of the Department of Defense reached a critical point Robert S. McNamara was appointed Secretary of Defense. In 1962 McNamara directed a complete reorganization of the Army that included the break up the stove-piped technical services, including Signal Corps. This reorganization placed the Chief Signal Officer under the general staff supervision of the Deputy Chief of Staff for Operations. The Chief Signal Officer title was discontinued and became the Chief of Communications-Electronics and no longer held duties as branch proponent for the Signal Corps.

The functions of training, equipment, doctrine, and operations were divided between different major commands. Almost immediately frustrated signal officers voiced their view that the Army Staff lacked "a proper understanding of Army communications and electronics and the role of the Chief Signal Officer." The actual signal missions were to be performed by signal units under tactical commanders in the field, or in the case of strategic communications, the newly established Strategic Communications Command.

MSG Kenneth M. Roraback

A New War - Vietnam

As early as 1950 the Signal Corps sent advisors to Vietnam to establish an Army Command and Administrative Network station in Saigon. After the French withdrew from Indochina, a U.S. advisory group remained behind to assist the South Vietnamese and signal advisors were assigned to each of the country's military regions to provide training and other support.

One of those advisors was MSG Kenneth M. Roraback, who distinguished himself on 24 November 1963, when a large Viet Cong force attacked Special Forces Camp at Hiep Hoa, Republic of Vietnam. Working in the radio room, he notified higher headquarters of the situation before heavy enemy fire damaged his equipment and knocked out a portion of the radio room. SGT Roraback remained at his station and attempted to repair his radio. When it became apparent that this was not possible, he destroyed what was left of the equipment, maneuvered through hostile fire, and manned a light machinegun to cover the withdrawal of friendly forces as long as he could until captured by the Viet Cong.

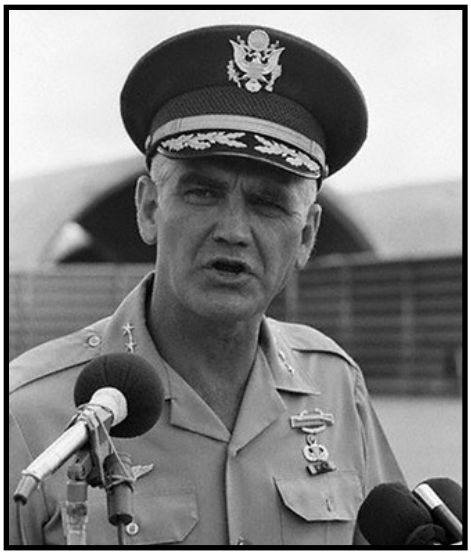
Roraback strictly adhered to the Code of Conduct and proved defiant and verbally combative with his captors. These acts brought harsher treatment upon him but diverted attention from the others. On Sunday, 28 September 1965, "Liberation Radio" announced the execution of Kenneth Roraback in retaliation for the deaths of 3 terrorists by South Vietnamese officials in DaNang. The technical proficiency of Master Sergeant Ken Roraback personifies the training and dedication of the American combat communicator.

Communications in Vietnam

By 1960, a private firm began building a 7,800 mile tropospheric scatter system from Hawaii to the Philippines. From there the ACAN system made the final jump to Indochina where troposcatter equipment in South Vietnam provided the

Billboard antennas

which reflected them back to earth. To provide command and control for signal operations in Vietnam, the 1st Signal Brigade from the US Army Strategic Communications Command served as headquarters for more than 23,000 soldiers and became the largest signal organization ever deployed, with six Signal groups and twenty-two Signal battalions.



GEN W. C. Westmoreland

In 1966, GEN William C. Westmoreland, commander of Military Assistance Command, Vietnam, remarked, "The communications system... has responded brilliantly. No combat operation has been limited by lack of communications. The ingenuity, dedication, and professionalism of the communications personnel are deserving of the highest praise." During the war, an experimental satellite ground terminal was employed which provided one telephone and one teletype circuit to Hawaii. Signals were transmitted from Saigon to Hawaii through a communications satellite launched into a stationary orbit over the Pacific. The experimental synchronous communications satellite system known as SYNCOM marked the first use of satellite communications in a combat zone. It supplied the first reliable communications of high quality into and out of Vietnam.

AN/PRC-25 transistorized radio

TET and Vietnamization

During the celebration of the lunar New Year, known as Tet, in January 1968, the North Vietnamese and the Viet Cong launched a general offensive hoping to defeat the United States. During this attack, many signal sites came under attack and signal troops suffered hundreds of casualties defending their positions, proving they could both shoot and communicate. While the communists did not achieve the decisive victory they had anticipated, it fueled antiwar sentiment back in the United States.

When President Richard M. Nixon took office in 1969 he directed significant troop withdrawals and implemented "Vietnamization" where the Army conducted an extensive training and modernization program for the South Vietnamese Army. Within 1st Signal Brigade, the "Buddies Together" program matched American signal units with their South Vietnamese counterparts to help prepare them to take over operation of the fixed-communications system.

As the war closed the 1st Signal Brigade decreased in

Fort Gordon, Signal Corps' new home

size to less than 2,500 men. In the cease-fire agreement of January 1973, the US agreed to terminate all direct military support to South Vietnam. The 39th Signal Battalion, the first signal unit to arrive in Vietnam, became the last to leave, and departed in March 1973. Although Vietnam was a highly controversial war, it demonstrated the extraordinary communication capabilities of the U.S. Army.

Post Vietnam Rebuilding and Air Land Battle

In July 1973 the Army placed all of its branch schools under the newly created Training and Doctrine Command. The Army decided to consolidate its signal training at one installation and on 1 October 1974, Fort Gordon, Ga., became the U.S. Army Signal Center and Fort Gordon, the new "home of the Signal Corps."

In response to the growing Soviet threat, the United States began a massive military buildup. Improving and strengthening the Army's capability to command and control comprised a fundamental requirement of the new Air Land battle doctrine. This included modernization of communications systems at division and corps level leading the Army to adopt a new tactical communications architecture known as Mobile Subscriber Equipment, or

MSE Shelter

MSE. At battalion level and below, the Army introduced new VHF-FM combat net radios, the Single Channel Ground and Airborne Radio System.

MSE was first field in February 1988 to the 13th Signal Battalion, 1st Cavalry Division. As one signalman described it, "MSE is the equivalent of an advanced telephone system with stationary telephones and mobile radio terminals, as well as facsimile devices and the capability to accommodate data terminals." By dialing a phone number using fixed directory numbers, the MSE system automatically located the party on the battlefield and connected the call. In the event of damaged or busy systems, MSE redirected the call using search routing. Other features of the system included user owned and operated facsimile and data terminals, call forwarding, digital nonsecure voice terminal telephones for static users, and mobile subscriber radiotelephone for mobile users.

In May 1989, the Signal Center opened the new Mobile Subscriber Equipment Resident School. The first three classes offered were the Nodal Operations Management Course, the Transmission Systems Operator course, and the Network Switching Systems Operator course. During 1989, over 500 students trained at the MSE and the number doubled to over 1,000 in 1990.

Signal Regimental Crest

The U.S. Army Signal Regiment

To improve unit cohesion and esprit, Army Chief of Staff GEN Edward C. Meyer approved implementation of the U. S. Army Regimental System in 1981. As originally conceived, Soldiers would affiliate with specific regiments for the duration of their military careers. Within the combat support/combat service support branches, the system was implemented as a "whole branch" regiment,

Signal Corps regiment. In June 1986 Fort Gordon was designated as the home of the Signal Regiment and the Commanding General of the Signal Center became the Chief of Signal, thereby reviving the position of branch chief that had been lost in the 1962 reorganization.

The Information Mission Area

The steadily evolving marriage of automation (computer) systems and communications systems led the Army to designate the Signal Corps as proponent for the Information Mission Area in 1988. This included responsibility for integrating IMA doctrine, organization, training, materiel and leadership for TOE units in the theater/tactical environment.

The Signal Corps IMA Integration Office was established with personnel experienced in the five IMA disciplines: communications, automation, visual information, records management and printing/ publications.

Especially perplexing was the responsibility for records management and printing/publications on the battlefield, which traditionally had been performed by the Adjutant General Corps. This issue of records management remained unresolved for sometime as the Signal Corps began to implement doctrine that increased the user's obligation to implement their own information systems and services, including installing, operating and maintaining their own terminal equipment.

Visual information on the battlefield was categorized as COMCAM and Functional VI. COMCAM was performed by Signal units organic to the theater Signal command. Units, such as psychological operations, medical and public affairs, owned and operated their own VI equipment and systems in support of battlefield operations.

Berlin Wall comes down, 1989

End of the Cold War

In November 1989 the unthinkable happened - the Berlin Wall came down and the borders were opened for East European nations that for so long been adversaries of NATO and the U.S. This tectonic shift in the geo-political world changed almost overnight U.S. military posture and strategy. Two years later saw the unexpected economic and political collapse of the Soviet Union, which had been weakened by a prolonged campaign in Afghanistan and growing unrest of people long denied freedom. Soviet leader Mikhail Gorbachev championed *glasnost* (openness) and *perestroika* (restructuring) which led to discussions with the West about the limitations of arms and force reductions between the Warsaw Pact and NATO. With the changed geo-political environment, the United States began to reconsider its military forces as it tried to ensure it was ready for a future war with an unknown enemy with unknown capabilities.

Mikhail Gorbachev

Army Combat Cameraman documents the invasion of Panama in December 1989

SIGNAL IN THE INFORM

Rapid advances in computer technology brought forth the Information Age during the 1990s. When the United States went to war with Iraq in 1990-1991, the Gulf War became the first to be witnessed by Americans in real time. Instead of miles of wire, arrays of antennas and satellite dishes dotted the desert landscape. Though short in duration, operations Desert Shield/Desert Storm showcased the extent to which military communications had entered the digital era. The final decade of the twentieth century saw the United States engaged in humanitarian efforts in such diverse locations as Northern Iraq and Turkey, Somalia, and Haiti. In the late 1990s, the Army became increasingly focused on stabilization operations in the former Yugoslavian Republic states of Kosovo, Bosnia-Herzegovina and Croatia. During it all, the Signal Corps adapted and embraced some of the most significant technological advances in communications history.

As the U.S. prepared to potentially fight the Soviets and Warsaw Pact in central Europe, the U.S. Army had invested in the modernization of all of its major combat systems. Improving the Army's capability to command and control was a fundamental requirement of this effort which was oriented on the new AirLand battle doctrine. Throughout the last decade of the cold war, the U.S. Army had trained and prepared for high intensity conflict with a peer nation. Instead that well trained, equipped and led U.S. Army was put to work in a wide variety of operations during which time the operational tempo increased to a level the volunteer army had not witnessed since its inception in 1973.

Operation Just Cause – Panama 1989-1990

Since the building of the Panama Canal the US had maintained a military presence in that country. When GEN Manuel Noriega rose to power, tensions between the United States and Panama had intensified and several Americans were killed and injured in various acts of violence. To protect American lives, uphold the Panama Canal treaties, and restore democracy to the country, the United States resorted to a quick military strike called Operation Just Cause on 20 December 1989. Its success stemmed in part from the close integration of Signal planners who helped develop joint communications-electronics operating instructions and

Tactical Fax Machine, 1990

Communications site - Bosnia-Herzegovina, early 1990s

Defense Satellite Communications System (DSCS), 1991

leveraged interoperability between services. The Signal Corps used man-portable tactical satellite radios which operated on a single-channel; however the signals could be easily detected and jammed, thus limiting their usefulness. As the technology improved, however, satellites would come to play a leading role in military communications. By 31 January 1990, the United States had captured Noriega, stabilized Panama, and withdrew its forces.

Operation Desert Shield 1990 – Theater Level Signal Challenges

As the Army struggled to understand a political world without the Cold War, Iraq invaded the oil-rich nation of Kuwait on 2 August 1990. The United States moved quickly to protect its strategic interests in the region. As the United States rushed forces to defend Saudi Arabia against potential attack, the Signal Corps became part of an accelerated buildup for Operation Desert Shield.

The first stage of the communications campaign involved supporting the logistical buildup and the 11th Signal Brigade installed a state-of-the-art communications network in Saudi Arabia. In the featureless desert, satellite communications proved essential as they provided information about weather, terrain, and the Global Positioning System network which made navigation possible.

The communications campaign moved to the next stage when the 6th Signal Command (Theater) (Provisional) was activated to manage the communications network for ARCENT. The 6th Signal Command assumed responsibility for all of the echelon above corps Signal assets in the theater that included one signal brigade, five signal battalions, a communications-electronics maintenance company and a light troposphere company. Transmission links included tropo-scatter, satellite, line-of-sight and cable to link into the tactical communications of the XVIII Airborne Corps and the VII Corps.

One major challenge for signal operations at this level was proper communications planning. The Joint Communications Electronic Operating Instructions were not issued until January 1991, over four months after troops had been deployed. Other challenges included need for more trained TRITAC/DGM personnel, contractor maintenance support, and precedence abuse.

Signal Corps assisting with relief efforts after Hurricane Andrew, 1992

"Spitfire" TACSAT Radio Terminal

Satellites are the backbone of tactical and strategic communications

To conduct initial defensive operations during Desert Shield, the Army deployed the Fort Bragg based XVIII Airborne Corps, supported by the 35th Signal Brigade. Because the corps had mechanized, light infantry, and air assault infantry units, the 35th Signal Bde faced unique communications challenges. The Corps Commander, LTG Gary E. Luck would remark, "I am a big believer in the Signal Corps, always have been. It was a crucial part of our business in Southwest Asia, and it worked perfectly."

Operation Desert Storm 1991 – Triumph of MSE

When the VII Corps began deploying from Germany in November 1991 two things became clear. The cold war in Europe was really over, and operations in the gulf were about to transition into an offensive mode. Supporting the VII Corps was the 93rd Signal Brigade which deployed 1,700 items of equipment and 2,500 soldiers who would eventually install a network over 75,000 square kilometers.

One of the most challenging aspects of deployment was the different generations of signal equipment that needed to interface with each other. One thing was certain according to one signal officer, "The thirst for communications could not be supported." The VII Corps had two MSE equipped divisions and two with IATACS (AN/TRC-145 and AN/TTC-41) equipment. In addition, the British 1st Armored Division had to be integrated into the US structure, leading another signaler to state, "whatever works is doctrine".

When offensive operations began on 24 February, the true test of the signal network began. At the division level, the 143rd Signal battalion provided the 3rd Armored Division a well planned and executed support plan for using MSE. It designed a two node base and a chain of node centers 30 kilometers apart along the axis of advance, a distance of over 150 kilometers. This "daisy chain" method was used for the movement to contact upon which the 143rd would revert to its normal MSE configuration. Plans however changed rapidly as the attack began 13 hours earlier than planned, challenging the division signalers to keep up with the forward brigades. To add pressure, the Corps Commander, LTG Franks spent a lot of time in the division's TAC but was able to maintain contact with ARCENT throughout the advance. Franks later stated, "3rd Armored Division had the best communications in the Corps." MSE had been proven and the Signal Corps had performed admirably, prompting MG Paul E. Funk, CG of 3AD to say, "During Operation Desert Storm, the division Signalers truly earned their combat pay."

Revolution in Military Affairs and Digitization

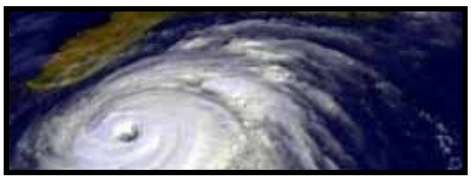
Though Desert Storm was a resounding success, it merely validated the AirLand Battle doctrine and organization that had been designed to fight an enemy who no longer existed. The U.S. military would struggle trying to discern who a future enemy might be and what type of force structure would be needed to deal with them. When the United States suffered an economic recession in the early 1990s, there was pressure to obtain a "peace dividend" by reducing the Army's force structure from sixteen divisions to ten. Army doctrine also shifted toward projecting power from U.S. bases, rather than maintaining large overseas forces.

The Army began transforming into smaller, lighter, and more agile forces. Reduction in force structure could be offset by using the latest digital and micro-chip technology, particularly in the realm of communications. The result was the digitization of the tactical force, known as Force XXI. The 4th Infantry Division at Fort Hood, Texas, became the test bed for experiments using digital technology oriented toward obtaining information dominance over future adversaries. Digitization would also enable joint operations and the Army participated in fielding the Secret Internet Protocol Router Network, a

classified network similar to the Internet for exchanging operational plans and information. The Non-Secure Internet Protocol Router Network was used to exchange less sensitive information. Together with the Joint Worldwide Intelligence Communications System, these networks comprised the Defense Information Systems Network.

Contingency Operations and Humanitarian Support

Crises in several regions during the 1990s prompted U.S. leaders to intervene with American forces. These included Operation Provide Comfort in northern Iraq and southern Turkey, where aid was provided to Kurdish refugees driven from their homes. In Somalia, the United States conducted Operations Provide Relief and Restore Hope in 1992, to help victims of famine caused by a devastating drought. In September 1994, U.S. troops deployed to Haiti to restore a democratically elected president in Operation Uphold Democracy. At home signal units responded to a series of natural disasters including Hurricane Andrew in Florida and Louisiana in August 1992 and Hurricane Iniki in Hawaii the following month.



New Technology and New Missions – The Balkan Quagmire

One concern from Desert Storm was the avoidance of friendly fire, as several casualties had been caused by fratricide. To address this issue, technology called Blue Force Tracking allowed commanders nearly real-time situational awareness and the ability to view the disposition of friendly forces on a computer screen. BFT improved upon the GPS available during Desert Shield/Storm. In addition to friendly locations, BFT provided Soldiers with information on terrain and danger zones, such as mine fields.

Other equipment included the Enhanced Position Location Reporting System. EPLRS became a critical component of the Army's tactical signal network and could be carried on a Soldier's back, mounted in vehicles, or installed in aircraft. Its automatic relaying capability extended the radio's range. Because EPLRS was compatible with sets used by the other services, joint interoperability was achieved.

In Eastern Europe, long-suppressed rivalries between ethnic groups in the former Yugoslavia grew as the totalitarian state disintegrated. Between 1991 and 1992, four of the nation's six republics declared independence: Slovenia, Croatia, Macedonia, and Bosnia-Herzegovina. The most violence occurred in Bosnia-Herzegovina, an area with a Muslim majority where a grisly campaign of "ethnic cleansing" began. The United States joined other members of NATO to enforce peace accords signed at Dayton, Ohio, in the fall of 1995.

In a land ravaged by years of civil war, the U.S. Army's Signal units proved essential to the restoration of communications. The violence continued when a massive Muslim majority in Kosovo desired greater autonomy and the Serbs began ethnically cleansing the Kosovars. NATO launched a successful air campaign in 1999 that was followed up with a U.S. ground stabilization force. Although U. S. Army Signal units did not participate in large numbers, Signal Soldiers nevertheless supplied critical communications infrastructure. After nearly ten years of providing support to the region, the U.S. stood down its contingent and a stabilization force from the European Union remained on duty to ensure the peace.

J-STARS wide-area surveillance system developed by the Army and the Air Force

SUPPORTING TODAY'S

Today's Signal Corps supports the nation's warfighters wherever they are serving in the world. In the aftermath of the terrorist attacks on September 11, 2001, the United States has been engaged in a Global War on Terrorism. Using state-of-the-art technology, Signal Soldiers provide communications that enable full-spectrum operations by joint and coalition forces. Since its beginnings in 1860, with MAJ Albert J. Myer's appointment as the Army's first Chief Signal Officer, the Signal Corps has accomplished a great deal. The Corps can look back with pride on a long history of achievement and ahead with anticipation to a future of new challenges.

The War on Terrorism

The unthinkable occurred when terrorists attacked the United States on 11 September 2001. One of the lessons learned from the response to this attack was the poor state of emergency communications within the United States. Interoperability was not just a military problem - it extended to the civilian realm as well. The Signal Corps quickly found their capability and expertise in demand as one Signal non-commissioned officer working in the White House Communications Agency stated, "It seemed like the switchboard just caught on fire, all the phones just started to ring at once.... Our NCOIC had come in to the switchboard to help the supervisor out because he was talking on three different phones at once. For many departments of the Government 9-11 was a wakeup call. It was our job to ensure their procedures were equal to our standards and that department heads and cabinet members could communicate to the White House."

In the aftermath of 9/11, the United States embarked on what became known as the War on Terrorism. Al Qaeda, an Islamic extremist group, organized the September 2001 attacks. Its leader, Osama bin Laden, had a base of operations in Afghanistan, where the repressive Taliban regime helped shelter terrorist training camps.

Aftermath of terrorist attack on World Trade Center, New York City

The Pentagon after the attacks on 9/11

The tactical "hub" terminal of the Joint Network Node

Soldier tests an Unmanned Aerial Vehicle

Operation Enduring Freedom – Afghanistan

An American air and missile campaign against the Taliban on 7 October 2001, marked the start of Operation Enduring Freedom. It was followed by the insertion of Joint Special Operating Forces teams who joined forces with the loosely organized Northern Alliance. Not only was the topography challenging, Afghanistan was a primitive and impoverished country with little existing communications infrastructure. Because line of sight signaling was severely hampered by the rugged landscape, satellite-based communication was essential.

Elements of the 11th Signal Brigade began deploying to the region in November 2001 to install satellite terminals, data networks, and other necessary equipment. The urgency of the mission was reflected by one NCO from the 54th Signal Battalion who stated, "I prepared two TACSAT teams for the mission. Without knowing what they were to expect once they got there, we prepared our teams the best we could with what little information we were given. Looking back, the only thing we did not take into account was that the climate in Afghanistan was a lot different. . . Our teams were sent with very little cold weather gear, and since Camp Doha had none to send, we had to ship it to our teams from the States." The success of Operation Anaconda in March 2002 led to the collapse of organized Taliban resistance. Most of its forces dispersed into the mountains on the Afghanistan and Pakistan border. By eluding capture, they could return to fight another day.

Operation Iraqi Freedom

The victory in Afghanistan encouraged the United States to initiate further military operations in the war against terrorism. Iraqi dictator Saddam Hussein's ties to international terrorism represented a continuing threat to the stability of the Middle East. In March 2003 the United States, with support from Great Britain, invaded Iraq in what was named Operation Iraqi Freedom. American ground forces, aided by precision air strikes, advanced toward Baghdad.

For Signal Soldiers, the focus was on moving, survival and providing uninterrupted communications to combat Soldiers. A series of sandstorms hit the advancing 3rd Infantry Division posing challenges to communications. An S-6 officer in an armor battalion

A 25E Soldier monitors the electromagnetic spectrum on the battlefield

Warfighter Information Network-Tactical (WIN-T) - The future of Signal Corps communications

Future Combat System (FCS) - joint, interoperable and collaborative

Dust storms in Iraq make military operations difficult

our enemy; sand storms were devastating at times without the use of RETRANS in place. During our battle of the Al Kifl Bridge on 24 March through 27 March 2003, the sand storms were so fierce that our FM communications capabilities were decreased to eight kilometers using our power amplifiers." One NCO from the 123rd Signal Battalion recalled, "Many times during the initial push I thought that I just might die but we pushed on and we all survived. Our mission was to supply the DTAC [Division Tactical Headquarters] element with flawless line of sight and satellite communications. It really gave me a sense of purpose to know that our brothers and sisters on the battle field were counting on us in order for them to communicate."

By 7 April the 3d Infantry Division had captured Baghdad and the Signal Soldiers of the division had played a critical part in that success.

Lessons Learned – Joint Network Node

Operation Iraqi Freedom provided some important lessons for the Signal Corps. From Desert Shield/Storm, Signal Soldiers understood that environmental factors such as heat, sand, and high winds would present challenges for communications equipment. During OIF they discovered that MSE and TRI-TAC equipment that relied on terrestrial radio relay could not keep pace with fast-moving forces operating over huge distances. Moreover, the voice switch network could not handle the huge amounts of digital data being transmitted.

To overcome these obstacles, the Army quickly developed and fielded the Joint Network Node system into its architecture to provide needed satellite links and data transport. The JNN was mounted inside of a shelter mounted on a HMMV and included a series of routers, call-managers, a media converter, TACLAN, and encryption devices to provide secure and non-secure voice and data capabilities. The data was transmitted through a KU band satellite, standard issue with JNNs and the Command Post Node, or via line of sight. The CPN is a smaller package of the JNN equipment and used at battalion or lower levels. This system allowed units such as an infantry company at an outlying site to now make phone calls via voice over internet protocol and send emails through the use of their CPN, connected to the JNN via the KU satellite link. As one Signal warrant officer remarked, "The move from MSE to JNTC was equivalent to graduating kindergarten and going straight to college. The lack of knowledge was not just in operating the equipment, but understanding the architecture. Even I, who should be the technical expert, had difficulties in grasping some of the concepts".

Joint Network Node shelter

Transformation during Wartime – Division and Below

In 1999, Army Chief of Staff GEN Erik K. Shinseki had initiated transformation of the Army's force structure to convert it into a lighter, more agile, brigade-based organization. This approach allowed it to tailor its units to fit the mission rather than adhere to a fixed organizational model, such as a division. In fact, the

brigades would contain combat, combat support and combat support capability that had once been held at division level. This concept would evolve into "modularity" or the modular brigade combat team.

For the Signal Corps, the transition to "modular" units resulted in significant changes. The traditional division signal battalion was inactivated and the signal companies were incorporated into the new brigade special troop's battalion. Newly created maneuver enhancement brigades included an embedded signal company as did some sustainment brigades. Signal companies were also placed within the new battlefield surveillance brigades.

The first division to convert to the new "modular" organizational concept was the 3d Infantry Division. It underwent transformation in 2003 after its first tour in Iraq during 2003. In accordance with the new modular configuration, the 123d Signal Battalion was inactivated at Fort Stewart on 15 March 2004.

Echelons Above Corps Transformation

At the theater level, the Signal Corps created a new unit, the Signal Center, to perform network operations and security management. The Army activated the 2d through the 6th Signal Centers, at locations around the world during 2005 and 2006. The 7th Signal Center activated at Fort Gordon, Ga., in 2007. A seventh center, located at Fort Belvoir, Va., designated the 1st Signal Center, performed similar functions at the army level and coordinated with other Army and Department of Defense agencies. These centers would provide regional hubs for the Army's information network and link each region with DOD's Global Information Grid, to establish a joint, integrated, and secure network. The Army's portion of the GIG, known as LandWarNet, will bring voice, video, and data to tactical formations, down to the individual Soldier.

Meanwhile, some EAC Signal battalions underwent a transformation to an "expeditionary" configuration. These units were capable of employing network assets to support the increasing number of medium and small command posts. While primarily a theater asset, these battalions could be employed to provide direct support to a corps, division, or a brigade combat team. Organized as modular organizations, such units could be tailored to meet specific mission requirements.

Combat Camera – Documenting the War

The Signal Corps regained its historical photography mission on 16 November 1993 when the 55th Signal Company was activated at Fort George G. Meade, Md. Although photography had long been a Signal Corps function, the Army had not had any separate photographic companies since World War II. One NCO of the 55th explained the challenges of this unique Signal mission, "We don't get a lot of opportunity to train with the units we support down range . . . but we train with as many as we can to try and educate them on Combat Camera as much as possible… [We] have to come in as seamlessly as possible. And if you don't come in seamlessly, you're not going to be included on the missions. Pretty much, if you're not a battlefield asset then you're going to be a liability and you're not going to go. Point blank. I mean they're not there to baby sit you. If they were, we'd be Public Affairs."

This was demonstrated when one 55th Soldier, Specialist Michael Carter, received the Silver Star for heroism in Afghanistan. While attached to a Special Forces unit in the Shok Valley during April 2008, Carter helped repel an enemy ambush, rescue and evacuate the wounded, and assist with the reestablishment of communications with higher headquarters after the communications specialist was shot. For over six hours, SPC Carter fought alongside his comrades and successfully prevented the

position from being overrun. Since 2003, five of the company's members have received the Purple Heart and more than thirty have earned the Bronze Star.

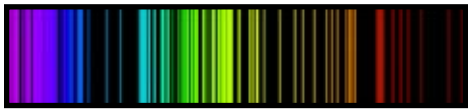
SPC Michael Carter, 55th Signal Co., Combat Cameraman and Silver Star recipient

Humanitarian Aid – Support to Civilian Authorities

Though deployed around the world, the Signal Corps still provided vital support at home. When Hurricane Katrina ravaged the Gulf coast in August 2005, it destroyed the communications infrastructure from telephone lines to cell phone towers. In response, the Army deployed some of its newest communications technology to the region, to include the mobile satellite terminals of the Joint Network Node. National Guard units responded to the emergency in great numbers, but were hampered by a lack of communications gear. Much of their equipment had been left behind in Iraq and Afghanistan at the end of their tours. Fortunately, by the time Katrina struck, most states had organized civil support teams that possessed satellite communications capability.

Spectrum Management

The proliferation of personal electronic devices has profoundly changed the modern battlefield. Weapons such as improvised explosive devices, often detonated via cell phones, make control of the electronic spectrum a critical issue. In recognition of the need for better bandwidth control, the Signal Corps in 2007 created a new military occupational specialty 25E, electromagnetic spectrum manager. With competition for use of the spectrum so fierce both within and among the services, the Signal Corps has had to find ways to use it more wisely, such as with the new Warfighter Information Network-Tactical. When completed, this network will connect units across all echelons with high-bandwidth voice, video, and data systems.



Electromagnetic Spectrum

Change and Continuity

Today, the Signal Corps' communicators have become such an integral part of the Army's combat effectiveness that it is hard to imagine warfare without them. One thing that has remained constant for the Signal Corps has been the need for competent and dedicated Soldiers. Beginning with Albert J. Myers' vision of a group of technical specialists and leaders trained to provide communications capabilities to enhance the commander's ability to command and control, the Soldiers of the U.S. Army Signal Corps have been dedicated to that mission.

Though the technologies change and transform, the challenges to provide communications have remained constant. More important than technology have been the people — the men and women, the Soldiers and leaders —who have made success on the battlefields of our history possible. From Bull Run to Baghdad unless the message gets through — whether by wigwag or WIN-T — the battle is lost. Thus, in June 2010 the Signal Corps celebrates 150 years of ensuring that the message always gets through!

In this photo, a Signal Corps Soldier erects a satellite dish, 2010

Signal Corps MEDAL of HONOR Recipients

By Steven J. Rauch
Command Historian
U.S. Army Signal Center of Excellence

During the course of its 150 year history, the U.S. Army Signal Corps has had five individuals recognized for acts of personal bravery or sacrifice above and beyond the call of duty through award of the Medal of Honor. The Medal of Honor is the highest U.S. military award and since its inception in 1862, it has been awarded to approximately 3,400 individuals out of the millions who have served in the U.S. Armed Forces.

Second Class Private Morgan D. Lane (1866)

Pvt Morgan D. Lane was the first Signal Corps Medal of Honor recipient. He achieved this distinction in the last days of the Civil War during the Confederate retreat to Appomattox.

Morgan Lane [redacted] and worked as a farmer before his enlistment in the US Army. He was his mother's only living son, as six others had died as young boys. Lane's military service began when he enlisted on 22 August 1862 in Company I, 5th Michigan Cavalry regiment at Allegan, Michigan. During his service in the cavalry, Lane rose to the rank of sergeant. In March 1864, he transferred to the newly created Signal Corps and was appointed as a second class private on 1 April 1864. He served as a signalman in the V Corps, Army of the Potomac, beginning in November 1864. By April 1865, near the war's end, he was working as an orderly for LT P.H. Niles, a Signal Corps officer. Lane served in the Army of the Potomac throughout the Civil War and was honorably discharged on 24 June 1865.

Lane achieved recognition in

Pvt Morgan D. Lane's grave in Kansas

April 1865 at a small village called Jetersville, Virginia, midway between Petersburg and Appomattox during the pursuit of GEN Robert E. Lee's army. The Confederate naval forces on the Appomattox River also attempted to escape capture and tried to burn the CSS *Nansemond*, an 80-ton wooden steamer armed with a battery of two guns. Lane, Niles, and an engineer captain were then manning a small signal station atop a house in Jetersville, when they observed the *Nansemond's* crew attempting to flee. Niles provided a description of what happened next to CPT Charles L. Davis, Chief Signal Officer of the Army of the Potomac, on 20 April 1865:

> *On the 6th of April 1865, near Jetersville, Virginia, in company with Captain Benyaurd, U.S. Engineers, and my orderly, Private Lane, and in advance of the army, we pursued and captured 7 rebels, viz, 2 naval officers, 1 engineer, 1 acting signal officer (all of the rebel gun-boat Nansemond), and 3 enlisted men. The flag of the gun-boat Nansemond was secured from one of these enlisted men by Second-Class Private Morgan D. Lane, U.S. Signal Corps.*

In early 1866, Lane sent a slightly different version of the events from Nile's official report to Congressman Charles Upson of Michigan. Lane stated:

> *On the 6th day of April 1865, on Lee's retreat from Richmond at Jetersville, Virginia, I had the honor of capturing the Commanding Officer of the rebel gunboat Nansemond... (He) blew up his boat, put its flag on his person and left with the Army. I took him prisoner and secured his flag. Captain Chas L. Davis...took the flag from me, gave me a furlough of thirty days from the 22nd of April until the 22nd of May, promising to forward the flag to the War Department and secure for me a Gold Medal. I have never seen or heard anything of the medal. If you can find any reason why I have never received the same reward others did I would like to have you do*

so if it can be done at a reasonable expense.

Upson forwarded Lane's letter to the War Department, which tried to locate Nansemond's flag to substantiate Lane's claim, but the flag could not be found. In March 1866, Lane's letter reached the Chief Signal Officer, COL Benjamin F. Fisher. Fisher endorsed it using Captain Davis' April 1865 report but with the correction that Lane had secured the flag from an enlisted man and not the *Nansemond*'s commander as Lane had stated. Fisher's endorsement was all the evidence the War Department needed to award the Medal of Honor to Lane on 16 March 1866. On 17 April 1866, a letter of notification was forwarded to Lane informing him that he received that honor.

After Lane's discharge from the Army, he returned to Michigan and later spent much of his life as an insurance salesman. As a veteran, he sought compensation for various ailments such as rheumatism and heart disease. Since he had never been officially hospitalized, he was unable to convince the Pension Office that his disability was service connected, although testimony on his behalf agreed that exposure in the field was to blame. A bill was introduced to Congress on his behalf and an examining board found him,"badly disabled with rheumatism and heart disease." The Senate concurred and the bill became law on 22 February 1891 awarding Lane a pension of $17.00 a month. Less than a year later, Morgan Lane died on 19 July 1892. He is buried in the Mount Vernon Cemetery in Atchison, Kansas.

Pvt Morgan D. Lane was a common Soldier who preformed his duty faithfully and effectively during his service in the U.S. Army and the Signal Corps. His moment of glory resulted in the award of the highest honor the nation could bestow and the distinction as the first Signal Corps Soldier to receive the Medal of Honor. He was inducted as a distinguished member of the Signal Regiment in 1997.

SGT Will Croft Barnes (1882)

Will Croft Barnes received the nation's highest award for his action during the conflicts on the American western frontier. In addition to being a Soldier, Barnes became a prominent Arizona rancher, a legislator, a conservationist, and a recognized writer.

Will Croft Barnes [redacted] and spent his earliest years in Gold Hill, Nev., a mining camp. Barnes' father, Enos Rollins Barnes, died when Will was seven, and for the next eleven years, he and his mother lived in LaPorte, Indiana, then, Lake Calhoun, Minnesota and finally settled in Indianapolis, Indiana. Barnes' formal education consisted of only a few years of sporadic schooling.

On 1 July 1879, when Barnes was twenty-one, he enlisted in the Signal Corps for five years. He attended Signal School at Fort Whipple (now Fort Myer), Virginia, where he studied flag, torch, and telegraph signaling. He also learned the rudiments of meteorology, weather observation and reporting, which were then functions of the Signal Corps. On completing his course, Barnes was certified as a telegrapher and assistant weather observer and was sent to help construct a section of the Atlantic coastal telegraph lines that ran from Lewes Delaware to Chincoteague, Va.

In December 1879, Barnes was assigned to a divisional headquarters in San Diego, Calif. While enroute, he was promoted to first-class private. Upon reaching San Diego, he received orders assigning him to Fort Apache, Ariz. When he

SGT Will Croft Barnes

arrived at Fort Apache in February 1880, Barnes found it hardly a fort at all, but more of a camp and not well equipped. There Barnes conducted duties as the post telegrapher and weather observer. During 1881 Barnes sent over 4,000 messages and four daily meteorology reports to the Office of the Chief Signal Officer in Washington, DC.

The 1880s were punctuated by Indian uprisings throughout the American West, and Arizona had its share of turbulence. Trouble with Apaches in the area surrounding Fort Apache in late August and early September 1881, not only tested the garrison but also demonstrated the courage of Will Barnes. When an Apache medicine man called "Nock-aye-de-Klinny" began predicting the defeat of the white men and the return of Indians to power, conflict erupted.

On 29 August 1881 the Fort Apache commander, Colonel Eugene A. Carr, set out with 117 men to arrest the Indian leader who was at a village on Cibeque Creek. Barnes remained behind at the fort with about 70 other Soldiers and civilians, who had been cut off from wire communication by the Indians. Uncertain about the status of Carr's expedition, which rumor reported had been destroyed, Barnes volunteered to go atop a 2,000 foot mesa alone and use his signal flags to alert the post to any threatening Indian activity. Instead of Indian

movements, however, Barnes was able to signal the return of Carr's column, which had defeated Nock-aye-de-Klinny.

During further operations, Barnes found himself involved in several skirmishes while continuing to get messages through via mounted courier. He also went out on 8-9 September 1881 with an armed escort to repair the telegraph line. Barnes' abilities as a Soldier and signalman impressed his superiors for being, "prompt and unhesitating in the discharge of all duties assigned to him, more than once being exposed to great danger." These actions were mentioned by Carr in a dispatch in which he recommended that Barnes receive the Medal of Honor for:

> *His gallantry in action in the attack by Indians on the post September 1st 1881. Besides this particular act of gallantry Pvt Barnes is entitled to great credit for good conduct & attention to duty during the trying period, from Aug 29th to Sept 10th, as well as at all times while on duty here, and particularly for going out with one man to repair the line, when it was supposed that Indians were lurking near the road.*

On 8 November 1882, GEN William T. Sherman, Commanding General of the Army, approved the award. The authorized inscription on the medal read:

The Congress to 1st Class Private Will C. Barnes, Signal Corps, for bravery in action, September 1st 1881, at Fort Apache, A.T.

In the spring of 1883 Barnes, who by then had been promoted to sergeant, received the medal in a retreat ceremony at Fort Apache. Barnes remained at Fort Apache until he contracted a serious eye ailment, which led to his discharge from the Army on 15 September 1883.

He became a cattle rancher near Holbrook, Arizona until the turn of the century, when the cattle market declined. In 1900, Barnes moved to New Mexico where he served in the territorial legislature and in 1906 gave up ranching. Between 1906 and 1930, Barnes became interested in land conservation and became an inspector of grazing management in the National Forests. Among Barnes's accomplishments were the preservation of wild game, forest management, and winning Congressional approval for a program to prevent the extinction of longhorn cattle.

After retiring in 1928, Barnes served as secretary for the United States Geographic Board and worked for two years in the board's offices including the Map Division of the Library of Congress. He left government service entirely on 1 July 1930. During retirement, Barnes gained recognition as a writer, publishing songs and books. His crowning achievement was publication of *Arizona Place Names* in 1935. Barnes's memoirs, *Apaches and Longhorns: The Reminiscences of Will C. Barnes* were published posthumously. Barnes died at age 78 in Phoenix, Arizona on 18 December 1936. Several resolutions were passed by the Arizona legislature in his honor recognizing him as one of Arizona's most eminent and outstanding citizens. In 1937, his ashes were interred at Arlington National Cemetery.

Will Croft Barnes was esteemed by thousands for his active, energetic, and enthusiastic personality, a man who was always interested in people and public service to which he dedicated his life. He once said, "When you hear that I am dead, do not shed any tears. I have had the best life a man ever lived." Barnes was inducted as a distinguished member of the Signal Regiment in June 1998.

MG Charles E. Kilbourne Jr. (1905)

Charles Evans Kilbourne Jr. is the only Signal officer to win the Medal of Honor while performing a combat communications mission. A Signal Corps officer's son, born at Fort Myer in 1872, Kilbourne spent most of his boyhood years at Army installations and eventually graduated from Virginia Military Institute in 1894. He became an observer with the U.S. Weather Bureau until the war with Spain in 1898.

When America went to war, Kilbourne joined the Volunteer Signal Corps, an expansion of the regular Signal Corps tasked with providing tactical communications to the rapidly expanding Army. Kilbourne was assigned to First Company, VSC and shipped out

MG Charles E. Kilbourne, Jr.

with MG Arthur MacArthur's expedition to the Philippine Islands, where he participated in the campaign against Spanish forces that resulted in the seizure of Manila. When the Philippine Insurrection began in February 1899, Kilbourne earned a place in history by winning the Medal of Honor for his actions where he:

> *Within a range of two hundred and fifty yards of the enemy and in the face of rapid fire climbed a telegraph pole at the east end of the [Paco] bridge and in full view of the enemy coolly and carefully repaired a broken telegraph wire, thereby reestablishing telegraphic communication to the front.*

Kilbourne later applied for and was accepted as an infantry officer in the 14th Infantry Regiment of the Regular Army. During 1900 he found himself helping suppress the Boxer Rebellion in China by leading his platoon in the assault that captured the Imperial City Gates in Peking. He later transferred to the artillery and rose in rank in various assignments, including the establishment of an elaborate defensive-fortifications system on Corregidor Island. During World War I he served in France as the chief of staff of the 89th Infantry Division and was wounded by a mortar shell. His performance at

the battle of St. Mihiel earned him the Distinguished Service Cross. In October 1918, he was promoted to brigadier general and commanded both the 36th Artillery Brigade and the 3rd Infantry Brigade of the 2d Division. His performance of duty in these assignments earned him the Distinguished Service Medal. He was the only Soldier at that time to hold the nation's three highest awards.

Upon the postwar reduction of the Army, Kilbourne reverted to his permanent rank of major in the Regular Army, attended the Army War College in Washington, D.C. and later became a course director at the college. Kilbourne ended his military career in 1936 as a major general and later served as the superintendent of the Virginia Military Institute for nine years. Kilbourne died in November 1963. He is buried in Arlington National Cemetery, not far from his birthplace at Fort Myer.

COL Gordon Johnston (1910)

Gordon Johnston, was born in Charlotte, North Carolina, the only son of former confederate general Robert Daniel Johnston. He graduated from Princeton University in 1896 where he had excelled at football, then went on to be the head coach of the University of North Carolina football team that year, attaining a record of 3-4-1 wins, losses, and ties. A short stint in the insurance business held no appeal for him so when the conflict with Spain arose; Johnston quickly enlisted to serve in the Spanish-American War. He served with Troop M, 1st U.S. Volunteer Cavalry (better known as the Rough Riders), where both Leonard Wood and Theodore Roosevelt came to admire his military skills during battles such as Las Guasimas and San Juan Hill. In 1899, Roosevelt recommended that Johnston be offered a commission as a second lieutenant and he eventually served in the Philippines where he won the Distinguished Service Cross while fighting insurgents in 1901.

In October 1902 Johnston became a first lieutenant and graduated from the Army's infantry and cavalry school as the honor graduate. However, in September 1903 he was detailed to the Signal Corps due to a law that provided for officer vacancies to be filled by line officers for four years. As a cavalry officer, Johnston was not happy with this turn of fate and soon found himself back in the Philippines, this time as a Signal officer. However, he did his duties and was noted for his "zeal and intelligent interest in laying the Lake Ianao cable" by the chief signal officer of the Department of Mindanao. On 7 March 1906, he distinguished himself at Mount Bud-Dajo where, according to a report by Major Omar Bundy, Johnston "voluntarily joined me on the trail at daybreak ... before the advance began and accompanied me to the last trench below the cottage. When the charge was ordered, while gallantly raising himself up to gain a foothold to climb up in advance of the others, he was severely wounded. For this especially brave action, which distinguished his conduct above that of his comrades, I recommend that he be given a medal of honor."

Bundy's recommendation that Johnston be awarded the Medal of Honor was approved by the commanding general of the Philippines Division. Johnston did not receive his medal, however, until 7 November, 1910. In December 1906, Johnston was restored into the cavalry and began rapidly advancing in rank. Following brief duties serving in the New York national guard as a regular officer, Johnston was given a commission as an infantry officer. Johnston served as chief of staff for the 82d Division in October 1918 and his leadership during the Meuse-Argonne operations garnered him award of the Distinguished Service Medal in 1919. In July 1920 he became a lieutenant colonel in the Regular Army, was promoted to colonel in 1929.

COL Gordon Johnston

Johnston died at age 59 from injuries suffered during a polo accident at Fort Sam Houston, Texas on 7 March 1934. Camp Gordon Johnston, a 155,000-acre World War II training installation in coastal Franklin County, Florida, was named for him.

MG Adolphus W. Greely (1935)

Adolphus Washington Greely served most of his long Army career in the Signal Corps. Greely was unique in that his Medal of Honor was awarded by special act of Congress for service, joining the elite ranks of Richard Byrd, Floyd Bennett and Charles Lindbergh as the only people to receive a Medal of Honor as a "special legislation" award.

Greely, [redacted], enlisted in 1861 in the 19th Massachusetts Volunteer Infantry. He saw action on some of the Civil War's bloodiest battlefields where he was wounded three times. After rising to sergeant, Greely accepted a commission in 1863 with the 81st U. S. Colored Troops. By the end of the Civil War, Greely was a brevet major and from 1866 to 1867 he commanded black troops during the occupation of New Orleans.

In 1867 Greely was commissioned as a second lieutenant in the Regular Army and assigned to the 36th Infantry. In 1869 he was detailed into the Signal Corps and served during the campaign against the Cheyenne Indians. In 1870 he was assigned to the Signal Office in Washington, D.C where his duty was to help COL Albert J. Myer organize the meteorological service. In 1881 Greely volunteered to lead an Arctic weather expedition to Ellesmere Island in northern Canada.

MG Adolphus W. Greely

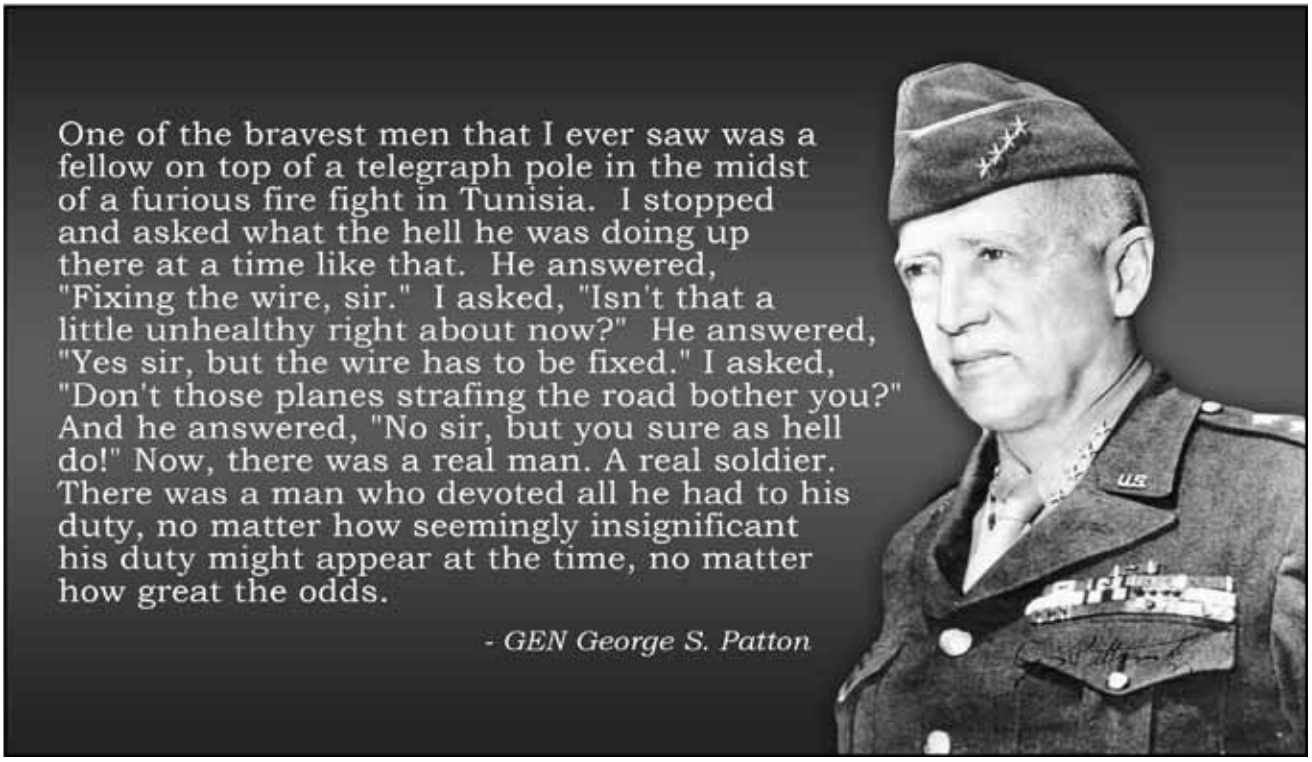
Greely's party amassed a great deal of data on Arctic weather but was devastated by starvation when relief ships failed to reach them for two successive summers. Of the original twenty-five members, only Greely and five others survived the ordeal. While in the Arctic, Greely was promoted to captain. In March 1887, following the death of Brig. Gen. William B. Hazen, President Grover Cleveland advanced Greely from captain to brigadier general and appointed him as Chief Signal Officer. Greely served as Chief Signal Officer for the next 19 years, the longest tenure of any person in that post.

Greely fought political battles to save the Signal Corps' existence, including the transfer of the Weather Bureau to the Department of Agriculture in 1891. Under Greely, the Signal Corps was a leader in technological innovation including use of wireless telegraphy, the airplane, the automobile and other modern devices. After directing the Signal Corps through the Spanish-American War, he was promoted to major general in February 1906. Greely was assigned to command the Pacific Division where he coordinated relief activities during the San Francisco earthquake of 1906.

MG Greely retired in 1908, but he remained active in public life. He was a founding member of the National Geographic Society and the first president of the Explorers' Club in New York City. Greely lectured frequently and wrote a number of articles and books, including his memoir, Reminiscences *of Adventure and Service: A Record of Sixty-five Years*, published in 1927. On his 91st birthday, 27 March 1935, he was presented with a special Medal of Honor which read:

For his life of splendid public service, begun on March 27, 1844, having enlisted as a private in the United States Army on July 26, 1861, and by successive promotions was commissioned as a major general February 10, 1906, and retired by operation of law on his sixty-fourth birthday.

Greely died later that year at his home in Washington, D.C. Fort Greely, Alaska, now bears his name.



Signal song enhances esprit de corps

By Daniel A. Brown
Historian/ Archivist
U.S. Army Signal Center of Excellence History Office

Members of the 434th U.S. Army Band, also known as the Signal Corps Band perform at the First Baptist Church in Augusta, Ga.

Editor's Note: The following is an abbreviated account about the origins of the "official song" of the U.S. Army Signal Corps. Much of the research is based on a more comprehensive account written by LTC USA (Ret) Gustave E. Vitt, in a two-part article in previous editions of the Army Communicator. Vitt was a former leader of the Signal Corps Band and an acquaintance with many of the personalities identified in the following story. Vitt's articles, "The Legend of the Song of the Signal Corps" appeared in the fall 1980 and winter 1981 editions of the Army Communicator. In commemoration of the 150th anniversary of the Signal Corps and to ensure the current generation of Signal Soldiers is aware of the facts, this summary has been compiled.

Throughout the history of the Signal Corps, many songs and marches have been composed, often by amateur songwriters, to honor the exploits of the men and women who have ensured the message got through. However, only two musical compositions have ever received the designation "official."

The story of the first official song began in 1923 when Secretary of War John W. Weeks. announced his desire that regimental commanders and chiefs of branches adopt a song to enhance esprit de corps. He stipulated that the song should reflect past exploits and achievements of their organization in Army history.

In response to Week's request, Chief Signal Officer MG Charles McKinley Saltzman, published a call for submissions in the monthly Signal Corps Bulletin No. 24, issued on 1 February 1924 followed by a CSO letter to all geographic Army corps area and Department Signal officers in search of a suitable song. When these efforts did not provide the desired result, MG Saltzman called upon trained musician, Beth Heath Olmstead, wife of COL Dawson Olmsted of the Signal Corps, to compose a song, On 8 January 1927 Olmstead sent a radiogram to Saltzman containing the words and music of the proposed Signal Corps song composed by his wife. Saltzman then forwarded the Olmstead piece titled "Song of the Signal Corps" to the U.S. Army Music School which had been designated as the review authority for the official songs program

Mrs. Olmstead's song debuted in public in March 1927 during a Signal Corps dinner in Washington, D.C. A dance orchestra played the "Song of the Signal Corps" while the entire gathering sang the words from mimeographed handouts. The orchestral arrangement was credited to Warrant Officer T. Darcy of the U.S. Army Music School. MG Saltzman critiqued the song as having "pep and swing, and better still, its own distinctive charm."

Before making a final decision, however, MG Saltzman wanted the song to be tested by the entire Corps. In a letter to all Signal Corps officers, he forwarded the song along with a request to send in impressions and suggestions. By the end of 1927, responses to Saltzman's letter had been received and, without revision, Olmstead's composition was adopted by the Signal Corps as its official song.

In October 1930 the Signal Corps Band was activated at Fort Monmouth, New Jersey. This generated the need for an arrangement of the official song in a march tempo to be performed by a complete military band. Mrs. Olmstead visited Fort Monmouth to meet with the bandleader, Warrant Officer Wheeler W. Sidwell, and others to discuss how to meet these objectives.

After several months of hard work and a revision of the lyrics by Mrs. Olmstead, Warrant Officer Sidwell completed the new arrangement early in 1931. The march quickly received the chief signal officer's approval.

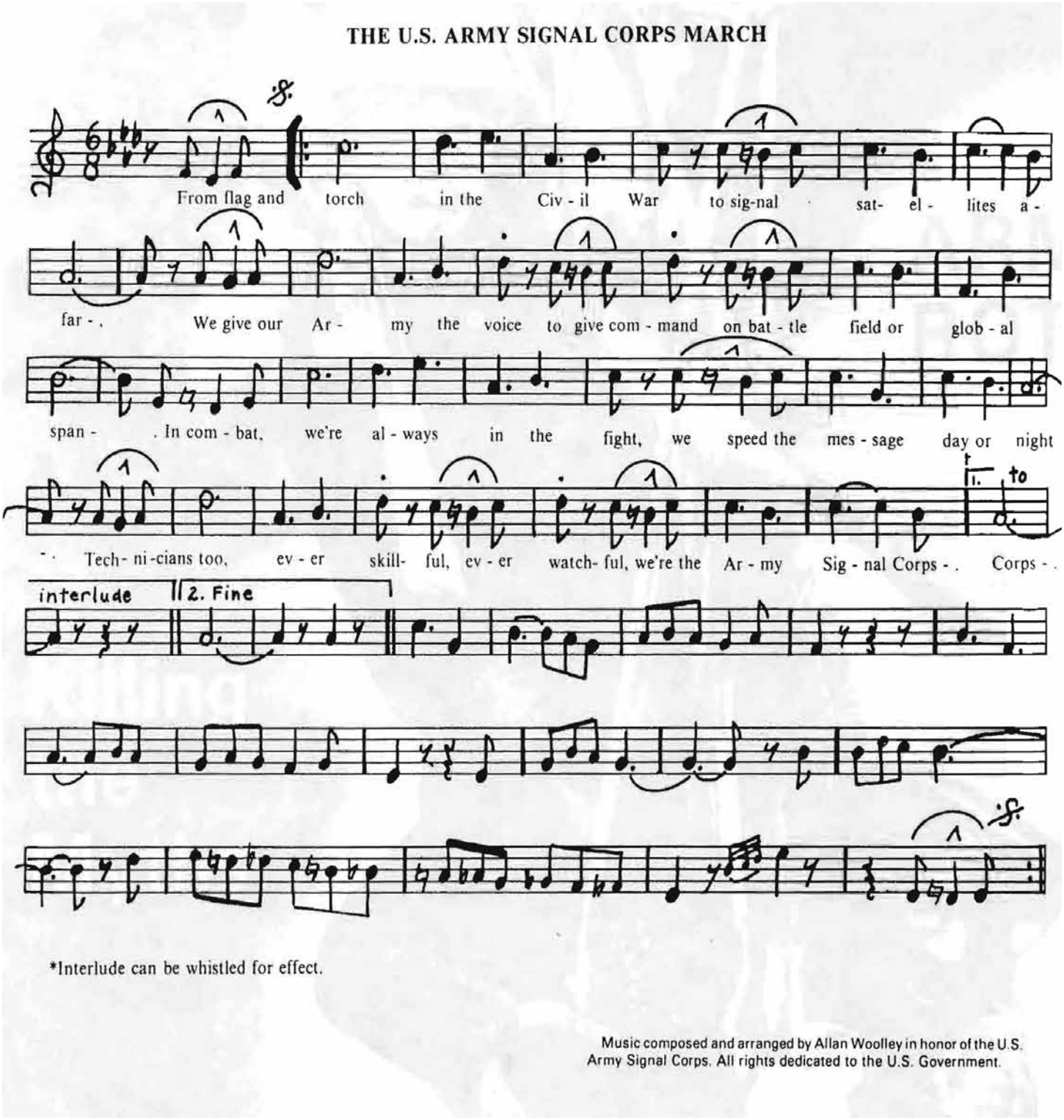
Between 1931 and World War II, the song changed little except for the addition of one verse. During the war several new arrangements and some slight variation in lyrics were made in an attempt to update the piece. The "Song of the Signal Corps" appeared in the 1941 Army Song Book published by the Army Music School and distributed throughout the Army. The expansion of the U.S. Army in 1940 and the subsequent mobilization after 7 December 1941 brought many talented persons into the ranks. During the course of the war a number of unofficial songs and marches were composed by signal soldiers and a few were performed by Army bands. In 1943 Mayhew Lake wrote a particularly stirring unofficial march arrangement of the Olmstead song. The fact remains, however, that no other composition received the designation the "official" song/ march of the Signal Corps other than Mrs. Olmstead's 1927 composition.

The years following World War II saw dramatic changes in the Army. The Korean War and the

tensions of the Cold War dominated the attention of the Signal Corps leadership. Little thought was given to songs or marches in those years, until a significant milestone in the history of the Signal Corps approached, its 100th Anniversary in 1960. In honor of the centennial it was decided to promote a contest for a new official Signal Corps song/march. Eight compositions were submitted for selection and the winner of the contest was announced by MG Ralph T. Nelson, Chief Signal Officer in 1961. The composition selected, titled "U.S. Army Signal Corps March," was written by Alan Woolley, the husband of a civilian employee at Fort Monmouth, New Jersey.

Since its release and approval as the "official" song for the U.S. Army Signal Corps, the "Woolley March" as it is referred to has been played at all important events and ceremonies.

Some confusion as to this piece being titled a "march" as opposed to a "song" has perpetuated during the years. In short, the official "song" is a "march." Another aspect of confusion concerned the words to the song, as oftentimes those are not included on the sheet music. Below for all Signal Soldiers to know are the words to the "U.S. Army Signal Corps March," the current official song of the U.S. Army Signal Corps.



Distinctive insignia identify Signal Corps members

By Robert Anzuoni
Director, U.S. Army Signal Corps Museum

Military insignia have long been used to distinguish units and leaders. Classical Hellenic hoplites painted symbols of their polis upon their bronze shields. Roman Soldiers wore crests upon their helmets to indicate rank. When the U.S. Army Signal Corps was established in 1860, no distinctive insignia was authorized. However, that would soon change with the expansion of the Corps during the Civil War.

Model 1872 uniform Model with Signal Corps insignia authorized in 1884

By 1862, Signal Corps Soldiers were wearing an unofficial shoulder patch with crossed wig-wag flags, the primary implement of communication. On 16 August 1864, the Secretary of War approved the wearing of badges for the Signal Corps. War Department General Orders Number 36 dated 22 August 1864 described the insignia for enlisted men as "Device on Arm: Crossed signal flags, red and white, on dark blue cloth."

A Signal Corps cap badge designed for the model 1896 cap

For officers, there was a hat and cap badge which was the "Same as for other officers, with the following ornament: a gold embroidered wreath in front, on black velvet ground, encircling crossed signal flags, with lighted torch, and supported by the letters 'U.S.' in silver. The color of the flags was one red with a white center, and one white with a

Their own words

"My name is Clark and I'm a Soldier. Nearly 150 years ago a man named Myer could have made the statement that my name is Myer and I'm a Signal Soldier. Beginning during the Civil War, continuing through operation Iraqi Freedom and on to New Dawn, the Signal Corps has always been about its exceptional people valiantly defending freedom and the American way of life."

CSM Thomas Clark
Regimental Command Sergeant Major

red center. Thus was born the branch insignia of the Signal Corps.

In 1872, the Signal Corps was granted orange as its distinctive branch color. During that same year, the Army adopted a new uniform which was adorned with the color of a Soldier's respective branch. In 1884, the flaming torch was added to the crossed flags for cap insignia and buttons. However, the shoulder patch of the enlisted men remained unaltered until 1891 when the torch was finally added. Signal Corps Soldiers continued to wear the branch insignia on their sleeve until 1919.

New Army uniforms regulations of 1902 added white piping to the orange of the Signal Corps. In 1907, additional changes to the enlisted uniform created collar devices consisting of dull-finished bronze metal buttons one inch in diameter. One button contained the letters "US" while the other contained the branch insignia. For Signal Soldiers, it was to be the crossed wig-wag flags with flaming torch.

One of the most unique insignia of the Signal Corps was for the World War I telephone operators known as the Hello Girls. On the left sleeve was worn a light blue armband with a scale surrounded by a wreath in silver bullion. On the right sleeve they wore a chevron to indicate rank. The chief operator insignia consisted of a telephone mouthpiece surrounded by a wreath with five sparks above. The supervisor insignia was similar, but without the sparks. Operators wore only the mouthpiece insignia.

Model 1896 cap with Signal Corps insignia

Flag of the U.S. Army Signal School at Fort Leavenworth Kan., 1905 to 1914

Changes to the uniform in 1926 led to changes in insignia once again. The collar insignia for both officers and enlisted men were to be of a gold finish. The insignia for officers, one and a quarter inch wide by one inch high, contained enameled flags of red and white. The enlisted insignia consisted of the crossed wig wag flags and torch superimposed on a one inch diameter disc.

Today's Signal Corps Branch insignia has not changed since 1926. In the first few decades following the creation of the branch, the insignia changed just as the branch evolved.

Signal Soldiers of the 21st century, using computers and satellites, can take pride in their branch insignia that represent an innovative, yet simple beginning in which flags and torches were the primary means of communication.

Signal History

"Signals from Little Round Top"

2 July 1863

A Don Stivers painting depicting a scene from the Battle of Gettysburg, commissioned by the Signal Corps Regimental Association in 1996 and donated to the Army.

(See page 10 for more on the Battle of Gettysburg.)

Painting by Don Stivers, Superior, Wis.

Chief Signal Officers & Chiefs of Signal 1860 - 2010

BG Albert J. Myer 1860-1863, 1866-1880 *

LTC William Nicodemus 1863-1864

COL Benjamin Fisher 1864-1866

BG William B. Hazen 1880-1887

BG Adolphus W. Greely 1887-1906

BG James Allen 1906-1913

BG George P. Scriven 1913-1917

MG George O. Squier 1917-1923

MG Charles Saltzman 1924-1928

MG George S. Gibbs 1928-1931

MG Irving J. Carr 1931-1934

MG James B. Allison 1935-1937

MG Joseph Mauborgne 1937-1941

MG Dawson Olmstead 1941-1943

MG Harry C. Ingles 1943-1947

MG Spencer B. Akin 1947-1951

MG George I. Back 1951-1955

***Albert J. Myer served two separate terms as Chief of Signal. Therefore there are 33 individuals representing 34 administrations.**

These are the official Signal Corps branch chiefs since the establishment of the Signal Corps on 21 June 1860.

A major reorganization of the Department of the Army on 1 August 1962 placed the Chief Signal Officer under the general staff supervision of the Deputy Chief of Staff for Operations (DCSOPS). According to Department of the Army General Order 28 dated 28 February 1964, the Chief Signal Officer became the Chief of Communications-Electronics under DCSOPS and no longer held the duties as branch proponent for the Signal Corps.

Beginning with the implementation of the U.S. Army Regimental System in 1986, the Commandant of the U.S. Army Signal School was additionally designated as the Chief of Signal and the branch proponent for all Signal Soldiers and organizations in the U.S. Army.


LTG James D. O'Connell 1955-1959


MG Ralph T. Nelson 1959-1962


MG Earle F. Cook 1962-1963


MG David P. Gibbs 1963-1964


MG Thurman D. Rodgers 1986


MG Bruce R. Harris 1986-1988


MG Leo M. Childs 1988-1990


MG Peter A. Kind 1990-1991


MG Robert E. Gray 1991-1994


MG Douglas D. Buchholz 1994-1996


MG Michael W. Ackerman 1996-1998


MG Peter M. Cuviello 1998-2000


MG John P. Cavanaugh 2000-2002


MG Janet A. Hicks 2002-2005


BG Randolph P. Strong 2005-2007

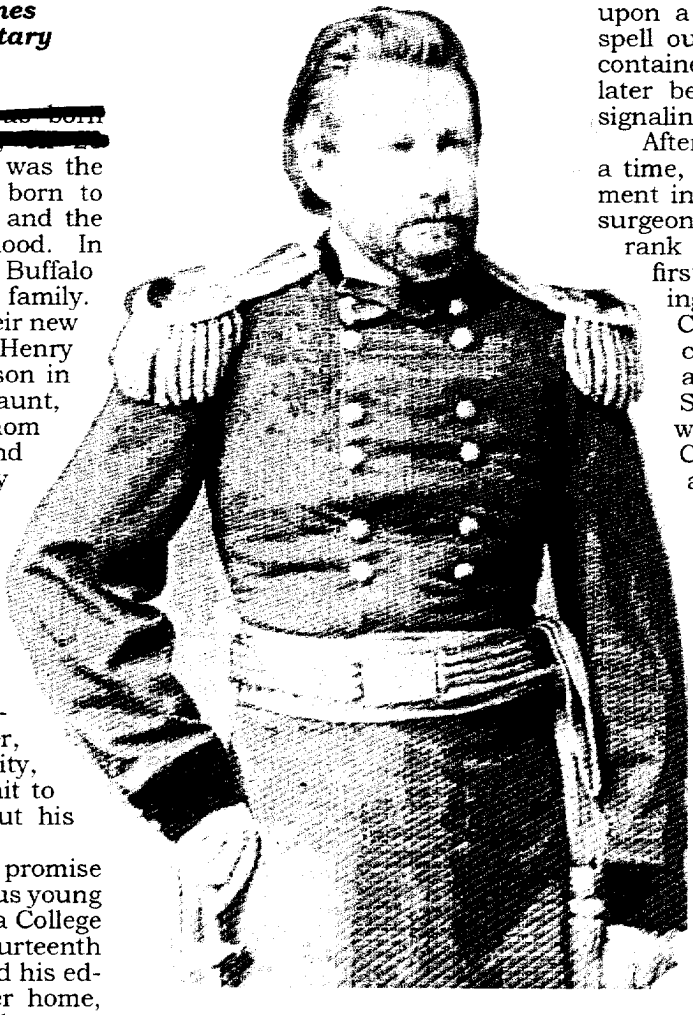

BG Jeffrey W. Foley 2007-Present

A.J. Myer founder of the Signal Corps

By Rebecca Robbins Raines
U.S. Army Center of Military History

Albert James Myer [redacted] Albert was the youngest of six children born to Henry and Eleanor Myer, and the only one to live to adulthood. In 1835 the family moved to Buffalo to be closer to Eleanor's family. Shortly after arriving in their new home, Eleanor Myer died. Henry placed his six- year- old son in the care of his maternal aunt, Serena McClanan, with whom Albert formed a close and loving relationship. Henry Myer, a talented silversmith, eventually remarried and moved to Cleveland where he raised a second family. He and Albert maintained a strained and somewhat distant relationship throughout their lives. Albert shared with his father, however, the gift of creativity, and he would use this trait to good advantage throughout his life.

Albert Myer showed promise from an early age. A studious young man, he enrolled at Geneva College in 1842, just shy of his fourteenth birthday. His aunt financed his education by mortgaging her home, a debt that Albert would later repay. At Geneva, Myer pursued the college's four-year classical course which, given his young age, was undoubtedly difficult. After taking a year off, he graduated in 1847.



From an undated portrait of BG Albert J. Myer taken by photographer Mathew Brady. Some of the uniform items seen here are on display at the U.S. Army Signal Corps Museum. Library of Congress Prints and Photographs Division, Washington, D.C. Courtesy Mr. Robert Gilbert.

Catherine "Kate" Walden Myer, (1828-1893) circa 1876, depicted by artist George Peter Alexander Healy. As an Army wife, Kate endured many separations from her husband and served as a gracious Washington hostess. National Portrait Gallery.

Back in Buffalo, Myer began to study medicine, apprenticing with prominent physician, Dr. Frank H. Hamilton. During this period he took a job with the Buffalo office of the New York State Telegraph Company, probably to pay for his studies. He also enrolled in the newly opened University of Buffalo from which he received his medical degree in 1851. For his dissertation he developed a sign language for deaf mutes, based on his work in the telegraph office. Myer devised a means of manual communication by tapping on a person's check or upon a table or other surface to spell out words. His dissertation contained the seeds of what would later become his famous wigwag signaling system.

After practicing medicine for a time, Myer received an appointment in the Army as an assistant surgeon in 1854. As such, his rank was equivalent to that of first lieutenant. Before leaving Buffalo, he proposed to Catherine Walden, whom he called Kate, the daughter of a prominent Buffalo family. She accepted, and the two were married in 1857. When Catherine's father died soon after their marriage, Myer became the manager of the Walden's' considerable family fortune.

Myer's first duty station was at Fort Duncan, Texas, near the border town of Eagle Pass on the east bank of the Rio Grande River. Although the young doctor soon discovered that Army life on the frontier was hard, he found it rather exciting. He enjoyed the warmer climate where, unlike stormy Buffalo, the skies were clear and the sun shone for weeks at a time. In his letters home he declared that "I am already quite a Texan." Myer soon found himself moving further west, to Fort Davis on the Big Bend of the Rio Grande, where he served for about a year before returning to Fort Duncan. On the Texas frontier, Myer ministered to the medical needs of the soldiers despite rather primitive conditions and the difficulties of receiving adequate supplies of medicine and competent helpers. One of Myer's duties as a physician was to make daily weather observations, another harbinger of his later career.

While stationed in Texas, Myer wrote what would prove to be one of the most fateful letters of his life. In a letter to Secretary of War Jefferson Davis, dated 1 October 1856, Myer offered for the War Department's consideration a system

of military and naval signals based on his dissertation. He did not describe the mechanics of his system to Davis, perhaps because he had not yet fully worked them out. But he did envision a means "to communicate between detachments of troops, marching or halted, or ships at sea in motion or at rest." Despite a favorable endorsement from COL Joseph A. Totten, the Army's chief of engineers, Davis was not receptive to Myer's plan.

Myer's time would soon come because the world of communication was changing. During the 1850s, the Army still depended upon voice commands, musical signals, and mounted messengers to communicate. Out on the frontier, Myer had recognized the Army's need for a mobile means of communication, especially where troops ranged far from their home stations. Although more than a decade had passed since Samuel F. B. Morse had invented the electric telegraph, its application to military operations remained minimal.

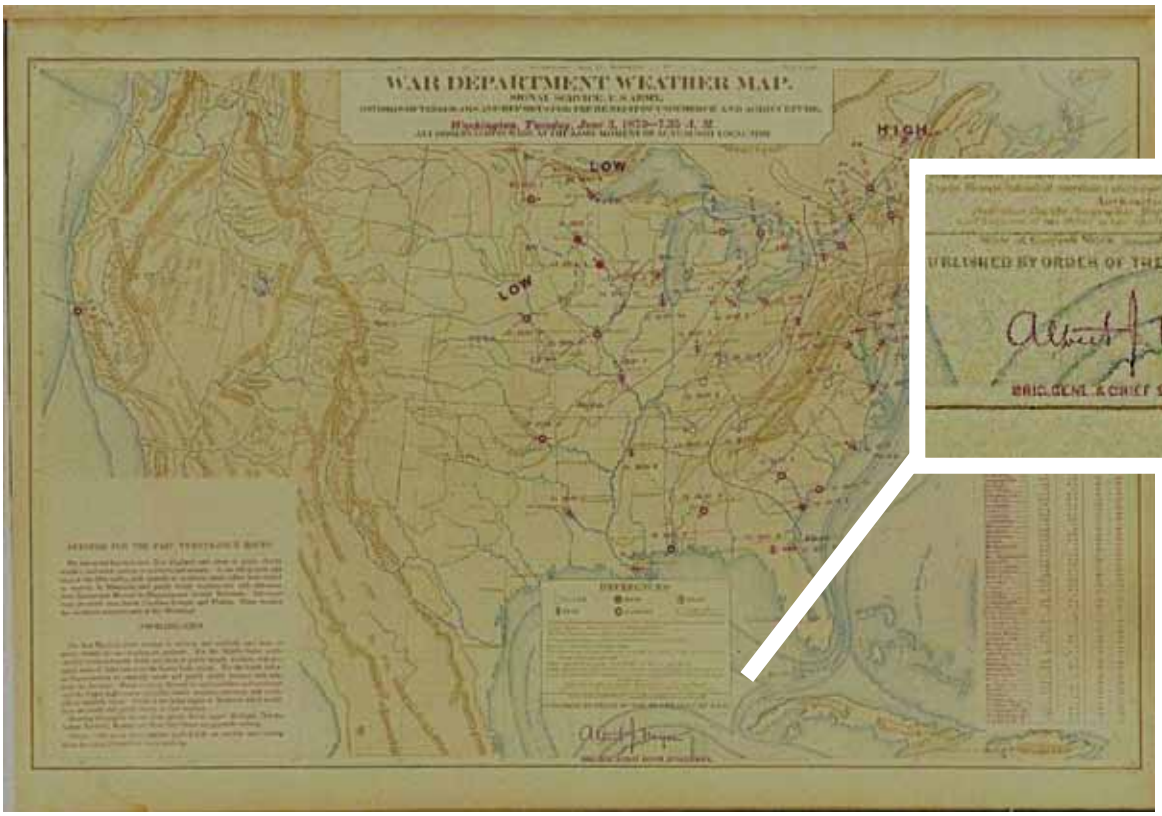
During the Crimean War (1854-1856) European nations had used the electric telegraph in battle for the first time. Three American Army officers had been sent to observe the conflict, one of whom was CPT George B. McClellan. They noted the use of the telegraph in their official reports and recognized its potential for command and control. When John B. Floyd became Secretary of War in the administration of James Buchanan, Totten reintroduced Myer's plan. Unlike Davis, Floyd proved supportive and ordered Myer to come east to present his system to a board of officers headed by LTC Robert E. Lee. After receiving the board's endorsement, Myer tested and developed his signaling system with assistance from 2LT Edward P. Alexander, a recent West Point graduate. Through trial and error they determined the best sizes, colors, and materials to use for the signal flags, poles, and torches and worked out the two-element code by which messages were sent and received.

After three months of testing, Myer reported to the War Department in November 1859 that the results had exceeded his expectations.

Myer received further encouragement from Secretary Floyd who devoted two paragraphs of his annual report for 1859 to Myer's system, stating that "the plan proposed appears to be ready and reliable." He subsequently recommended that Congress add a signal officer to the Army staff. Despite opposition from Jefferson Davis, now a Senator from Mississippi, Congress included a provision for a signal officer in the annual War Department appropriations bill for fiscal year 1861. Signed into law by President Buchanan on 21 June 1860, this date became the Signal Corps' birthday. A few days later Myer was appointed signal officer with the rank of major.

With the outbreak of the Civil War the following year, Myer found himself facing the daunting task of creating a Signal Corps from scratch. The legislation had not provided him with any personnel. He thus sought out and trained soldiers in signaling himself until a school of instruction could be opened in Georgetown, D.C. late in 1861. Ironically, the Confederate, rather than the Union, Army initially used Myer's wigwag signals in combat. At the battle of Bull Run on 21 July 1861, Edward P. Alexander, now a major in the Confederate Army, used wigwag to warn of a Union attempt to turn the Confederate left. Myer, meanwhile, with no trained signal soldiers available, tried to take an observation balloon to the battlefield. In his haste to reach Manassas, the balloon became damaged and had to be returned to Washington, D.C. for repairs. Myer went on alone and eventually reached the field where he served as a volunteer aide to one of the Union's division commanders, BG Daniel Tyler.

For the first two years of the war, Myer wore two hats: that of Chief Signal Officer of the Army and of the Army of the Potomac. As such, he broadly interpreted



Here is an 1873 War Department weather map bearing the signature of BG Albert J. Myer, whose efforts led to the development of the National Weather Service.

his mission to include authority over all forms of communication. He thus sought control over electric telegraphy in addition to flags and torches. This brought him into conflict, however, with an organization known as the U.S. Military Telegraph. Despite its name, this organization was composed of civilian telegraphers. The supervisory personnel received commissions in the Quartermaster Department in order to disburse funds and property. In reality, however, Secretary of War Edwin M. Stanton controlled the Military Telegraph. As a former director and attorney for a telegraph company, Stanton possessed considerable knowledge about telegraph operations. He placed the telegraph office next to his own in the War Department and considered it to be his personal domain. President Lincoln frequently visited there to receive the latest news from the front. Although Myer was an excellent lobbyist and bureaucratic infighter, he would find Stanton to be a formidable adversary.

MAJ Albert J. Myer, standing at the opening of his tent flanked by two staff officers at Harrison's Landing, Virginia, during the Peninsula Campaign in 1862. Library of Congress Prints and Photographs Division, Washington, D.C.

Working with a telegraphic engineer, Myer developed another innovative concept in communications. He devised a telegraph "train"—actually a set of wagons that carried telegraph equipment into the field. Because Myer opted for a telegraph machine that did not require operators trained in Morse code, any literate soldier could spell out messages using a dial indicator. These magneto-electric telegraphs were the invention of George W. Beardslee whose son, Frederick, joined the Signal Corps as a telegraph operator. The train saw some use during the Peninsula campaign, but needed further improvements to make it battle worthy. Myer personally supervised signal operations on the Peninsula and later in the Antietam campaign. After the fighting ended in Maryland in the fall of 1862, Myer decided to devote his full attention to running the Signal Office in Washington. He needed to be close to the corridors of power to concentrate on getting the Signal Corps established on a more permanent foundation.

To make his case, Myer appeared before congressional committees and solicited testimonials from important officers on the value of signals. His efforts met with success in March 1863 when Congress authorized the formation of a Signal Corps for the duration of the war and President Abraham Lincoln signed the bill into law. Myer received a promotion to the rank of colonel, and the future for himself and the Signal Corps looked bright. Later that year, Myer made a pivotal decision when he chose to convert his telegraphs from Beardslee to Morse. He thus needed to hire telegraph operators who were trained in Morse code. The technical limitations of the Beardslee machines had been causing problems for the Signal Corps. After they had performed poorly at the battle of Chancellorsville in the spring of 1863, Myer felt compelled to act. In doing so, however, he incurred the considerable wrath of the notoriously cantankerous Secretary Stanton. Stanton responded by relieving Myer from his duties as chief signal officer and removed the telegraph trains from the Signal Corps' control. Furthermore, he banished Myer to duty in Cairo, Illinois, far from the front lines. Despite his exile, Myer succeeded in completing a significant project during this period. In A Manual of Signals, first published in 1864, he codified signal doctrine for the first time. Subsequently revised and expanded, it remained the basis of signal doctrine for many years to come.

Myer's military career remained in eclipse as he battled to win reinstatement to his position as the head of the Signal Corps. Thanks to support from GEN Ulysses S. Grant, who became commanding general of the Army in 1864, Myer had a powerful champion for his cause. But Myer's fate became caught up in larger political events. Stanton remained as Secretary of War into the postwar period, and as long as he was in office, Myer kept a low profile.

Even after Grant urged Stanton to reappoint Myer as chief signal officer, it took an order by President Andrew Johnson for Stanton to comply. Myer accepted the appointment on 3 November 1866, but he did not return to his duties for several months. Events culminated when President Johnson, at odds with Stanton over Reconstruction policy, suspended the war secretary from office in August 1867. This act resulted in Johnson's impeachment. When Grant stepped in as acting secretary of war, Myer returned to the signal office as chief on 21 August 1867.

Having finally regained what he believed to be his rightful position, Myer still had a lot of work ahead to establish the Signal Corps as a fully functioning military specialty, both respected and utilized by the rest of the Army.

The Corps' fate was uncertain because many Army officers did not yet appreciate the value of a separate branch for communications, and no other Army in the

world yet had one. Although Congress authorized personnel for the Corps, they would have to be obtained by detail from the engineers, a practice similar to that used by the British Army.

Myer found a peacetime mission for the Corps in the operation of the nation's weather bureau. Congress delegated this responsibility to the War Department in 1870, and Secretary of War William W. Belknap, in turn, assigned it to the Signal Corps---but not without some help from Myer on the sidelines. Over the next two decades, the Signal Corps established a nationwide weather reporting system, earning Myer the nickname of "Old Probabilities."

Although the weather duties dominated the work of the Signal Corps during this period, Myer did not abandon its original mission. He opened a Signal School at Fort Whipple, Virginia, where soldiers learned both signaling and weather reporting duties. By Congressional directive, the Signal Corps constructed military telegraph lines in areas where commercial service was not yet available, such as in Texas, Arizona, and New Mexico. These lines thus served a dual purpose: to provide communications and to extend the reach of the weather system. Myer also pursued improvements in signaling equipment, such as the telegraph train, and remained abreast of new developments in communications technology and practices. Following the commercial introduction of the telephone in 1877, for example, the Signal Corps ran experimental lines between the Signal office in Washington and Fort Whipple, across the Potomac River. The Corps also pursued the use of other novel signaling methods to include the heliograph, which used mirrors to reflect sunlight, and the carrier pigeon.

Albert and Catherine Myer raised six children and played a prominent role in Washington, D.C. society. Thanks to Albert's skillful management of the Walden estate, the couple could afford to entertain lavishly. The Myers became friends of President Rutherford B. Hayes and his wife, Lucy, and were frequent guests at the White House. In 1877 the Myers moved into an elegant mansion just off Lafayette Square in downtown Washington, now the site of the Army-Navy Club.

Myer's successful career was cut short by his sudden death in 1880. Although Myer had experienced some health scares as a young man, he had weathered the rigors of military service in the field fairly well.

While traveling in Europe in 1879, he had become very ill. His health improved after he returned home, but by the summer of 1880 he felt the need to consult his old friend, Dr. Hamilton. Hamilton advised Myer to return to Buffalo for rest and relaxation. Myer apparently did not realize how sick he really was. After checking into the Palace Hotel in Buffalo, his condition deteriorated rapidly. Myer had developed Bright's disease, a kidney disorder, and probably also suffered from a chronic heart condition. Surrounded by his family, he passed away on the morning of 24 August 1880, just a month short of his fifty-second birthday. Congress had approved his promotion to brigadier general just a few weeks earlier.

An elaborate military funeral was held at St. Paul's Episcopal Church in Buffalo, and Myer was buried in the family mausoleum in Forest Lawn Cemetery. The Adjutant General issued general orders announcing that the chief signal officer had been Astruck down at the meridian of his usefulness," and that "the country has lost a most distinguished and promising officer, and the Signal Service an able, efficient, and zealous chief." Myer had gained national recognition for his work, and he was widely eulogized in newspapers and magazines throughout the country. The Washington Post, for example, described him as "a valuable and wide-thinking officer." Myer's hometown paper, the Buffalo Commercial Advertiser, said he would be remembered as a "cultivated, honorable man—noble, generous, of exemplary habit, brave, loyal, and patriotic." In 1881 the Army honored Myer by renaming Fort Whipple as Fort Myer.

Albert J. Myer was the proverbial self-made man who, from humble origins, rose to national prominence and earned an international reputation as head of the weather bureau. Myer enjoyed a military career that was both extraordinary and unique. An inventive man, he held three patents, including one on his wigwag system.

His greatest legacy is, of course, the U.S. Army Signal Corps, the first branch of its kind in the world.

Although signaling methods have changed radically since Myer's day, he would be enormously proud that the Signal Corps he founded one hundred and fifty years ago is still getting the message through in the 21st century.

The granite Walden-Myer Mausoleum in Forest Lawn Cemetery designed by Buffalo architect Richard Alfred Waite in 1885. Capped with a globe symbolic of the international weather service which General Myer advocated, this structure is the final resting place for the general and his wife, his father-in-law Mayor Ebenezer Walden, and most of their family members.

THE SIGNAL CORPS AT THE OSCARS

The Army recognized its lack of trained film crews, directors and producers early during World War II and contracted with the Academy of Motion Picture Arts and Sciences for assistance. The Army also recognized the quality of its early training films left much to be desired, so it commissioned many of Hollywood's leading directors, writers and producers to ensure the films were effective. In addition to Frank Capra, other talent commissioned out of Hollywood included producer Darryl F. Zanuck, John Huston and Theodore Seuss Geisel, later known as children's book author "Dr. Seuss".

Frank Capra, maker of such classic motion pictures as "It Happened One Night" and "It's A Wonderful Life" received a commission as a Major in the Signal Corps in 1942. As commander of the 834th Signal Service Photographic Detachment, Capra created a series of seven orientation films to help Soldiers understand the war. The first film in the series, "Prelude to War" won an Oscar for Best Documentary.

Two post-war documentaries were awarded the golden statuette in 1946 and 1948. "Seeds of Destiny", a film designed to urge Americans to back the Marshall Plan won in 1946. It showed poverty-stricken children in the fallen European countries and left viewers with the message that if America didn't help rebuild war-torn Europe, the climate would be ripe for further fascism and dictatorship. "Toward Independence", a film highlighting medical care for Soldiers returning from World War II, won in 1948.

"Operation Blue Jay" is the story of the building of one of our northernmost outposts - the huge air base at Thule, Greenland. Signal Corps cameramen captured on film one of the most spectacular engineering feats in recorded history.

In 1953, this documentary became the fourth Signal Corps film to be nominated for an Academy Award.

Signal Corps Produces Academy Award Winners

By Robert Anzuoni
Director
U.S. Army Signal Corps Museum

With the entry of the United States into WWII in December of 1941 the Army began to expand rapidly. Greater demands were placed upon all facets of Signal Corps operations, especially on the creation of orientation or special training films. Orientation films were desperately needed to inform millions of new Soldiers about why they were needed to fight for their country.

The Army Chief of Staff, GEN George Marshall, was already interested in the use of motion pictures for training films and wanted to apply the same technique to orientation films. The great demand for photography and motion led to the expansion of the Photographic Division of the Signal Corps into the Army Pictorial Service. In February 1942, the Paramount Studio in Astoria, New York, was purchased by the Army and became the Signal Corps Pictorial Center. By May it had been renovated and had become operational.

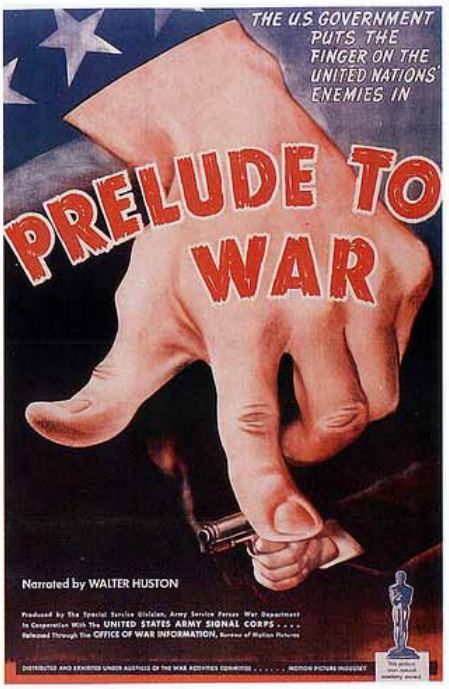
One of the first missions assigned to the SCPC was the creation of a series of orientation films known as the ***Why We Fight*** series. To produce the films, top Hollywood talent was sought. Frank Capra, the noted film director, was commissioned as a major in the Signal Corps to lead the project. The 834th Signal Service Company was activated to produce the films. It contained many technical experts from the film industry and was commanded by MAJ Capra. The first episode in the series, ***Prelude to War***, was released in October 1942 and won an award from the Academy of Motion Pictures Arts and Sciences for best documentary. It was to be the first of three Oscars won by the studio.

Other notable Hollywood talent at the SCPC included Theodor Seuss Geisel, better known as Dr. Seuss. Working with Capra, Geisel created a cartoon character known as Private Snafu. Twenty-six short films, about three minutes in duration each, were produced during WWII. They generally had Snafu show Soldiers what not to do to stay alive and were popular with the Soldiers. The well-known creator of Spiderman, Stan Lee, also served at the SCPC.

Following WWII, the Signal Corps would go on to produce two more award-winning films. ***Seeds of Destiny***, the 1946 documentary short subject Oscar recipient, demonstrated the need for a commitment to rebuild war-torn Europe. The film helped inform the public about what became known as the Marshall Plan which was instrumental in the postwar recovery of Europe. ***Toward Independence***, the 1948 documentary short subject Oscar winner, depicted the realities of Soldiers recovering from their wartime injuries. The film promoted the new advance in medical technology which made return to civilian life possible for many Soldiers with spinal injuries. A third film, ***Operation Blue Jay***, was nominated for a documentary short subject Oscar in 1953, but it did not win the award. It should be noted, however, that just receiving a nomination is a high honor in itself.

Also during the postwar era, a television series was produced to inform the public about the Army. Some episodes were more historical in nature, looking back at WWII. Other episodes showed the modern Army of day as it stood prepared to defend the U.S. during the uncertain years of the Cold War. The series, introduced in 1951, was called The Big Picture. It outlived the Astoria studio which was closed in 1970. The last episodes were filmed at Redstone Arsenal, Alabama, in 1971.

Two of the Oscars (Seeds of Destiny and Toward Independence) are currently in the collection of the Signal Corps Museum at Fort Gordon, Ga., along with the certificate of nomination for Operation Blue Jay. *The Prelude to War* is on special exhibit at the Pentagon.



Network Enterprise Command evolved

By Vince Breslin
9th Signal Command Historian

On 1 March 1964, the Army activated U.S. Army Strategic Communications Command in Washington, D.C., to exercise full command and control over worldwide strategic communications.

The organizational structure of STRATCOM quickly expanded with the establishment of STRATCOM-Europe in July 1964, STRATCOM-Pacific in September 1964, and STRATCOM-Pacific subordinate agencies in Hawaii, Vietnam, Okinawa, Taiwan, and Thailand in November 1964.

As the United States became embroiled in the war in Vietnam and the conflict in Southeast Asia committed more and more American forces and services, the mission of STRATCOM in Vietnam grew proportionately; however, signal groups and battalions were fielded to the various Corps tactical zones without the benefit of centralized command and control. To fill that command and control void, STRATCOM established the 1st Signal Brigade.

Formed in 1966 in Vietnam, the 1st Signal Brigade assumed command and control over all Army communications-electronics resources in Southeast Asia. Scattered among 200 sites in Vietnam and Thailand, the brigade became the largest combat signal unit ever formed.

EPLRS is an integrated C3 system that provides near real-time data communications, position/location, navigation, identification and reporting information on the modern battlefield. EPLRS provides a means for data distribution and position/navigation both vertically and horizontally.

By 1968, STRATCOM numbered some 49,000 personnel stationed in 30 different countries. On a strategic level, several separate communications systems, or networks, functioned effectively, providing rapid, dependable, secure communications to military and civilian users around the world. These networks, part of the Defense Communications System, reflected STRATCOM's considerable impact on communications and electronic data collection in a matter of four short years.

AUTOVON and AUTODIN had modernized voice and digital military communication capabilities and STRATCOM engineers had started construction on a network for classified voice communications called the Automatic Secure Voice Communications System for some 1,850 subscribers. The command had also introduced improvements to an Integrated Wideband Communications System in Southeast Asia and had begun the establishment of the Defense Communications Satellite System.

The War in Vietnam continued into the early 1970s and, as STRATCOM personnel and equipment became more and more supportive of tactical operations and the war

Soldiers of the U.S. Army STRATCOM's 9th Signal Battalion provide food for the children of a local orphanage in Bien Hoa, South Vietnam

from Strategic Communications Command

in Vietnam blurred the distinction between strategic and tactical communications, STRATCOM leaders moved to modify the command's designation to better suit its changing mission by dropping "strategic" from its organizational title. On 1 October 1973, the Army renamed STRATCOM as the U.S. Army Communications Command.

In the wake of the War in Vietnam, the U.S. Army, particularly USACC, shifted its focus away from tactical communications development and began to look closely at the possible relevance of emerging computer applications to the business of strategic military communications, particularly data collection and data transmission in a global environment. While the Army had been working with big computer technology since the early 1950s, the introduction and rapid proliferation of automatic data processing equipment mounted on personal workstations enabled the department at every level to collect and transmit data much more quickly and in much greater quantity than ever before.

Throughout the Army of the early 1980s, automation focused primarily on the development of myriad ADPE hardware and software suites relative to many and varied ADPE programs and processes such as: force development, personnel, supply, payroll, medical, maintenance, and troop support. All projects were of multi-million dollar and multi-year consequence, and all seemed very much communications dependent. The enormity of such capability on a service-wide scale moved the Army to look to USACC to develop a strategic concept of information systems management and a consequent consolidation of five information disciplines: communications, automation, records management, printing and publishing, and visual information. That concept and consolidation saw USACC evolve into the U.S. Army Information Systems Command on 1 May 1984.

Meanwhile, as the Army moved into the mid to late 1980s, ADPE Word Processors began to give way to desktop personal computers and the emergence of the worldwide web and email systems. As the age of information management dawned, the first tactical application of email as an Army communications enabler came in 1984 during Operation Uphold Democracy on the island of Haiti. A short time later, Operation Desert Storm in Southwest Asia featured the first combat application of whole new families of tactical and strategic communication systems including Single Channel Ground and Airborne Radio System, Mobile Subscriber Equipment, the Joint Tactical Information Distribution System, the Enhanced Position Location Reporting System, and Tactical Satellite Systems. Organizationally, ISC orchestrated the communications battle piece from its remote desert location in Arizona. At the local level, ISC established the 6th Signal Command to manage the regional complexities of moving large numbers of signal Soldiers and large amounts of signal equipment into, out of, and around the theater, just as STRATCOM had established the 1st Signal Brigade for much the same purpose in Vietnam.

Army downsizing and organizational review in the post Desert

Cable dawgs of U.S. Army STRATCOM's 69th Signal Battalion effect communications cable repairs following a fire fight on Plantation Road in Saigon, South Vietnam in April 1969

The AN/TSC-85 & AN/TSC-93 TACSAT terminals contained equipment to receive, transmit, and process medium and high capacity multiplexed voice, data, and teletypewriter circuits.

Storm era focused a critical eye on ISC organizational structure and functionality. A general perception in the 1990s among Major Commands and theater Commanders-in-Chief held that Information Systems Command's central management of the five IMA disciplines deprived them of needed command and control over regional and theater information systems, computer system acquisitions, and signal assets. The Department of the Army agreed and moved to dismantle ISC, relegating the organization to major subordinate command status under U.S. Army Forces Command, and redesignating it as Army Signal Command in September 1996. Upon transition, ASC divested all of its IM responsibilities, returned DOIMs to garrison control, dissolved its IM field offices worldwide, and downsized to less than 12,000 personnel. For the following six years, the command focused its energies on the management of its subordinate Signal Commands and Signal Brigades around the globe, and rededicated itself to the provision of global, strategic signal services for Army combat units.

Meanwhile, Army MACOMs and theater CINCs worked independently to resource their own Information System requirements. This decentralization and deregulation led to a proliferation of non-standardized command, control, communications, and computer systems and an unacceptable level of incompatibility among Army-wide IS equipment and support networks. That, coupled with the growing complexity of and security threats to the Army's portion of the worldwide web, compelled DA on 1 October 2002 to again centralize global C4 and many aspects of information systems management and security under one Army command: today's U.S. Army Network Enterprise Technology Command.

Headquarters, Department of the Army General Order #5, dated 13 August 2002 (as amended by HQDA GO-31, dated 16 October 2006), established the U.S. Army Network Enterprise Technology Command/9th Signal Command (Army)) as the "single authority to operate, manage, and defend the Army's enterprise level infostructure." As such, NETCOM was ordered to deliver seamless, enterprise level, command, control, communications, computers, and information management common user services and signal war fighting forces in support of Army Service Component Commanders and Combatant Commanders. By virtue of GO-5, NETCOM/9th SC (A) forces engineered, operated, sustained, and defended the Army's portion of the Defense Department's Global Information Grid, otherwise known as the LandWarNet, enabling force projection and the delivery of decisive combat power via the advantages of superior network technologies. To accomplish their mission, NETCOM/9th SC (A) leaders exerted their mission authority to (1) transform and sustain strategic and theater/tactical communications forces; (2) engineer, install, operate, manage, and defend C4IM systems and networks; (3) operate & manage the Army's infostructure at the enterprise level via the development of the Army's LandWarNet; and (4) provide global C4 network operations at the enterprise level as dictated by the complexities of Army transformation and modularity during wartime.

NETCOM/9th SC (A) rapidly evolved into a direct reporting unit to become a global C4 enterprise reporting directly to the Chief Information Officer on the Army Staff. At the beginning of the new century, Army Signal Command had managed disparate signal assets around the world founded on a range of C4 technologies and driven by theater preferences rather than system commonality. The command's transformation to NETCOM/9th SC (A), however, began a shift toward whole army technological synchronization, increased economic stability, and C4 superiority.

Even as NETCOM/9th SC (A)'s star began to rise, the events of 9/11 plunged the command, and indeed the entire Army, into a Global War on Terrorism. In 2002, a mighty coalition of allied armies, supported by a signal task force, advanced into Uzbekistan and Afghanistan to inflict a crippling blow on the Taliban and Al Qaeda terrorists. On a strategic level, signal Soldiers of the 11th Signal Brigade provided C4 services for Combined Joint Task Force-180 and Coalition Forces Land Component Command and established Technical Control Facilities and Ku-band Earth Terminals for long-term area operations; simultaneously, deployed signal teams established strategic

network communication satellite packages in Uzbekistan, Pakistan, Qatar, Kuwait, and Jordan in support of a multi-staged Global War on Terrorism orchestrated by U.S. Central Command. On a tactical level, they afforded battlefield support to the 10th Mountain Division as kill teams conducted search and destroy missions against terrorists in Operation Anaconda.

Later, as the GWOT escalated and invasion forces assembled for the push into Iraq, NETCOM/9th SC (A) Signal forces established communication services for staging areas in Kuwait and Qatar as well as the strategic backbone to support the war with the emplacement of Triband-143s (providing major HQ elements with C-, Ku, and X-band capabilities), light and heavy troposcatter systems, multi-channel tactical satellite systems, and a host of voice and data switching systems. With the advent of GWOT, NETCOM/9th SC (A) enabled the Army to graduate from a communications platform dominated by telephone and radio systems to a computer/satellite-based platform, replete with classified and unclassified email, messenger and voice, and video telecommunications.

Soldiers of the 44th Signal Battalion raise an A-1339 antenna during an annual NETEX training event near Mannheim, Germany, in preparation for their 2007 OIF deployment to Iraq. Modern Signal Soldiers participate in field exercises to train as they fight to deliver a full array of communications services in hostile environments to ensure strategic control over digital networks.

Next, as the Coalition moved against Iraq, NETCOM/9th SC (A) sent signal forces into battle, equipped with light and heavy data packages, various TACSAT systems (including Tri-bands), and several troposcatter systems to establish strategic communication services at logistic support areas along the entire invasion route and for CENTCOM, CJTF, and CFLCC early entry command posts. Signal satellite terminals expanded V Corps long-range extension capabilities while voice and data packages afforded Corps commanders a broad spectrum of highly mobile satellite-telephone, Internet-email, and video-teleconference services.

As the dust of the Operation Iraqi Freedom opening campaign began to settle, invasion operations gave way to stabilization and commercialization operations. NETCOM/9th SC (A) Soldiers and civilian engineers supervised the painstaking and often perilous strategic commercialization of communications services to help the peoples of Afghanistan, Iraq, and other regional states in their recovery from the destruction and destabilization of war.

Additionally, NETCOM/9th SC (A) established a Theater Signal Brigade to assume SWA network management control and command and control of rotational units engaged in the 'operate and maintain' C4 mission for the fixed-site, strategic commercialization communications infrastructure throughout the SWA Theater of Operations.

As was the case in Vietnam and Desert Shield/Desert Storm, NETCOM/9th SC (A) instituted a theater signal brigade to manage the regional complexities of moving large numbers of signal Soldiers and large amounts of signal equipment into, out of, and around the theater.

Beyond the physical battlefields of SWA, NETCOM/9th SC (A) also remained engaged in a great Cyber war, a strategic battle for control over the digital networks, the Internet, and the worldwide web. For most of the 21st Century's first decade, the vast majority of Army communications took place on some form of government e-mail, and much of it was sensitive or classified. It therefore fell to NETCOM/9th SC (A) to ensure the security and integrity of all Army network elements. To accomplish that goal, NETCOM/9th SC (A) employed a worldwide network of operations and security centers, strategically positioned around the globe, domestically in Arizona, Georgia, and Washington, D.C., and abroad in Germany, Korea, Kuwait, and Hawaii. These NOSCs formed the regional communication hubs of the Army's Global, Internet-based digital network – the LandWarNet.

The LWN established, NETCOM/9th SC (A) – now shortened to 9th SC (A) – next set to work on making the global enterprise operational beginning in early 2008. "In our quest to establish what will become a Global Network Enterprise Construct," wrote MG Susan S. Lawrence, commanding general of 9th SC (A), " we will create and integrate a complex of five fixed regional hub nodes, six theater NetOps & Security Centers, 10 or more Area Processing Centers, and six Network Service Centers." Conceptually, FRHNs facilitated world-wide, network satellite communications; provided independent Information Assurance and Tier 2 router configuration capabilities; and afforded joint support to U.S. Marine Corps, Army National Guard, and Stryker Brigade on-the-move Mobile Battle Command. TNOSCs afforded global information assurance and security; APCs provides Net-centric operations while reducing and hardening network entry points; and NSCs made the network operational, enabling war fighting units network access to a full spectrum of network services (including portals, instant messaging, chat, whiteboards, audio, and video) during movement between theaters.

At the point of the spear, Expeditionary Signal Battalions afforded network planners flexibility in configuring resources to precisely meet user requirements.

In keeping with modularity principles, ESBs and ESB companies, platoons, and teams were tailored and task organized to ensure that only the precise package of capabilities needed to satisfy a given mission were deployed.

The Communications Electronics Command/Life

By Melissa Ziobro
Command Historian
U.S. Army CECOMLCMC

Secretary of Defense Robert S. McNamara began to transform the structure of the Army and the other military services in 1961 by applying organizational principles drawn from his experience in industry.

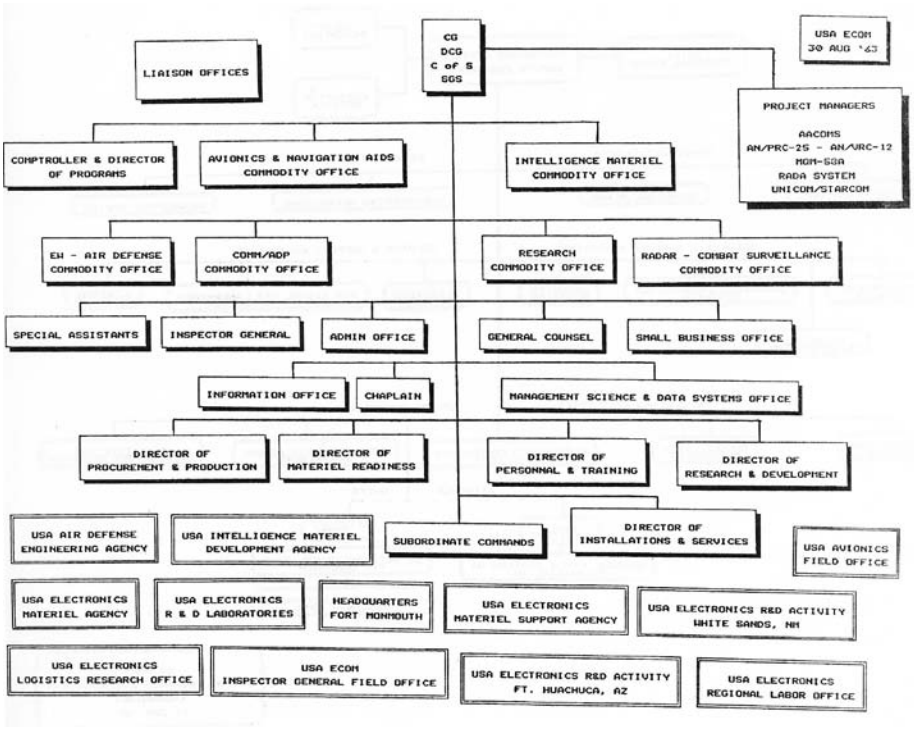
Bettie Morden of the Center of Military History wrote that he "began by consolidating common functions and giving them to one service or agency to control-the single manager concept. For example, the Defense Supply Agency was created to centralize the purchase and distribution of food, uniforms, gas and oil products, medical and automotive supplies for the armed services. The Defense Intelligence Agency coordinated and centralized certain military intelligence operations. The Defense Language Institute controlled foreign language training for military and civilian personnel."

At McNamara's direction, the Army developed a reorganization plan known as Project 80 that followed the new concepts.

Participating in the 1982 change of command ceremony are *(left to right)* MG Lawrence Skibbie, GEN Donald R. Keith (AMC commanding general) and MG Donald Babers. MG Skibbie was the 30th commanding officer of Fort Monmouth and the second commanding general of the Communications-Electronics Command. He served in this position from October 1982 to June 1984. MG Babers was the first commanding general of the Communications-Electronics Command when it was established in 1981.

Former U.S. Army CECOM Command Historian Julius Simchick's 1988 monograph Command and Command Structure, 1962-1988 explains that one of the major consequences of this reorganization was the 1962 abolishment of the Army's Technical Services, which included the Signal Corps. The Chief Signal Officer was retained as a special staff officer, but functional commands took over most of his duties: Continental Army Command (for training); Combat Developments Command (for organization and doctrine) and the Army Materiel Command (for material support). Though it retained its distinction as the "Home of the Signal Corps" for another decade, as of 1 August 1962 Fort Monmouth, New Jersey was no longer a Signal Corps installation. Fort Monmouth now belonged to the Army Materiel Command and became the home of its newly-organized subordinate component, the U. S. Army Electronics Command.

Simchick explains how ECOM assumed responsibility for oversight of those organizations charged with the development, procurement, and support of Army signal equipment and materiel. These organizations included the Signal Corps Laboratories and the Signal Materiel Support Agency at Fort Monmouth, and the Signal Supply Agency in Philadelphia, Penn-



Pre-1962 Signal Corps activities.

Cycle Management Command tied to Signal Corps

sylvania. Specifically, the new command was responsible for research, design, development, product and maintenance engineering, industrial mobilization planning, new equipment training, wholesale inventory management, supply control, and technical assistance to users of Army commodities involving communications, electronic warfare, combat surveillance, automatic data processing, radar, and meteorological materiel.

In December 1963, military personnel accounted for just 16.6 percent of ECOM's 12,059 employees. The Command, and those that came after it, became increasingly "civilianized" over the years.

ECOM was relatively short-lived. Secretary of the Army Howard H. Callaway established the Army Materiel Acquisition Review Committee in December 1973 to find ways to streamline the Army's materiel acquisition procedures. The Committee's report, released in April 1974, said in essence that the commodity command structure of the Army, with its emphasis on "readiness," limited the Army's flexibility and impeded the acquisition process. The Committee recommended that recearch and development functions be separated from "readiness" functions within the Army Materiel Command.

Command and Command Structure describes how the AMARC's proposals entailed a two-for-one split for most major subordinate commands of AMC. For ECOM, an organization which the post newspaper reported had 8,654 civilians and 1,244 military in August 1974, it proposed the establishment of four new organizations: the Communications-Electronics Materiel Readiness Command, the Communications Research and Development Command, the Electronics Research and Development Command, and the Avionics Research and Development Activity, a component of the new Aviation Research and Development Command.

AMARC insisted on periodic reviews of the new structures that it had created, according to Simchick. The review of the Army electronics community, (CORADCOM, and ERADCOM) began formally in August 1980 and concluded that while emphasis on research and development had increased as desired, there was also much duplication of effort. Each Command had to maintain a separate administrative staff and management structure that diverted valuable manpower resources from mission related activities. Overlapping responsibilities created confusion.

The review team decided there was a need for greater economy and greater flexibility in the use of existing manpower resources. This could be achieved by pooling the resources of the two commands headquartered at Fort Monmouth, a move which would eliminate duplication. Control could be assigned to one commander with the authority to move personnel as required to meet the most pressing needs. A decision was announced in December 1980 that CERCOM and CORADCOM would merge and become the Communications-Electronics Command effective in May 1981, with headquarters at Fort Monmouth.

According to Command and Command Structure, CECOM had a unified command group, a dozen consolidated management and support activities, a Research and Development Center that encompassed three laboratories, the Army Communicative Technology Office, and six technical support activities, nine chartered development offices and project managers, and ten organizations charged with the Command's Readiness mission. A new Software Development and Support Center was established in October 1983, according to the fiscal year 1985 CECOM Annual Command History. The formal opening ceremonies occurred in October 1984. The SDSC's mission was to provide the single Command focal point for the development, maintenance, and production of the software of battlefield automated systems that provided the communications links among battlefield functional areas. Systems supported included Mobile Subscriber Equipment and the Position Location Reporting System.

Information Systems Information Command distinctive unit insignia

In 1985, the Department of the Army reorganized ERADCOM to form the Army Laboratory Command. The CECOM R&D Center acquired a new laboratory, Signals Warfare, and regained three of the five laboratories ERADCOM had taken from ECOM in 1978: Night Vision at Fort Belvoir, Virginia; and Combat Surveillance/Target Acquisition and Electronic Warfare, both at Fort Monmouth. Concurrently, CECOM acquired ERADCOM's project managers, its Flight Test Activity, its Technical Support Activity, and its Tactical Software Support Center.

The fourth AMARC creation, AVRADA, returned to CECOM on 1 October 1991, where it constituted the "Electronics Integration Directorate." One year later, this organization merged with elements of the Command, Control, and Communications Systems Directorate to form a new "Command, Control, and Systems Integration Directorate."

CECOM was greatly affected by the Defense Reorganization Act of 1986, which required restructuring of the Army's organizations for acquiring materiel. The Department of the Army created the Army Acquisition Executive and the Program Executive Offices in fiscal year 1987. The creation of the AAE/PEO removed the Headquarters, Army Materiel Command and its Major Subordinate Commands from acquisition- related decision making and review processes.

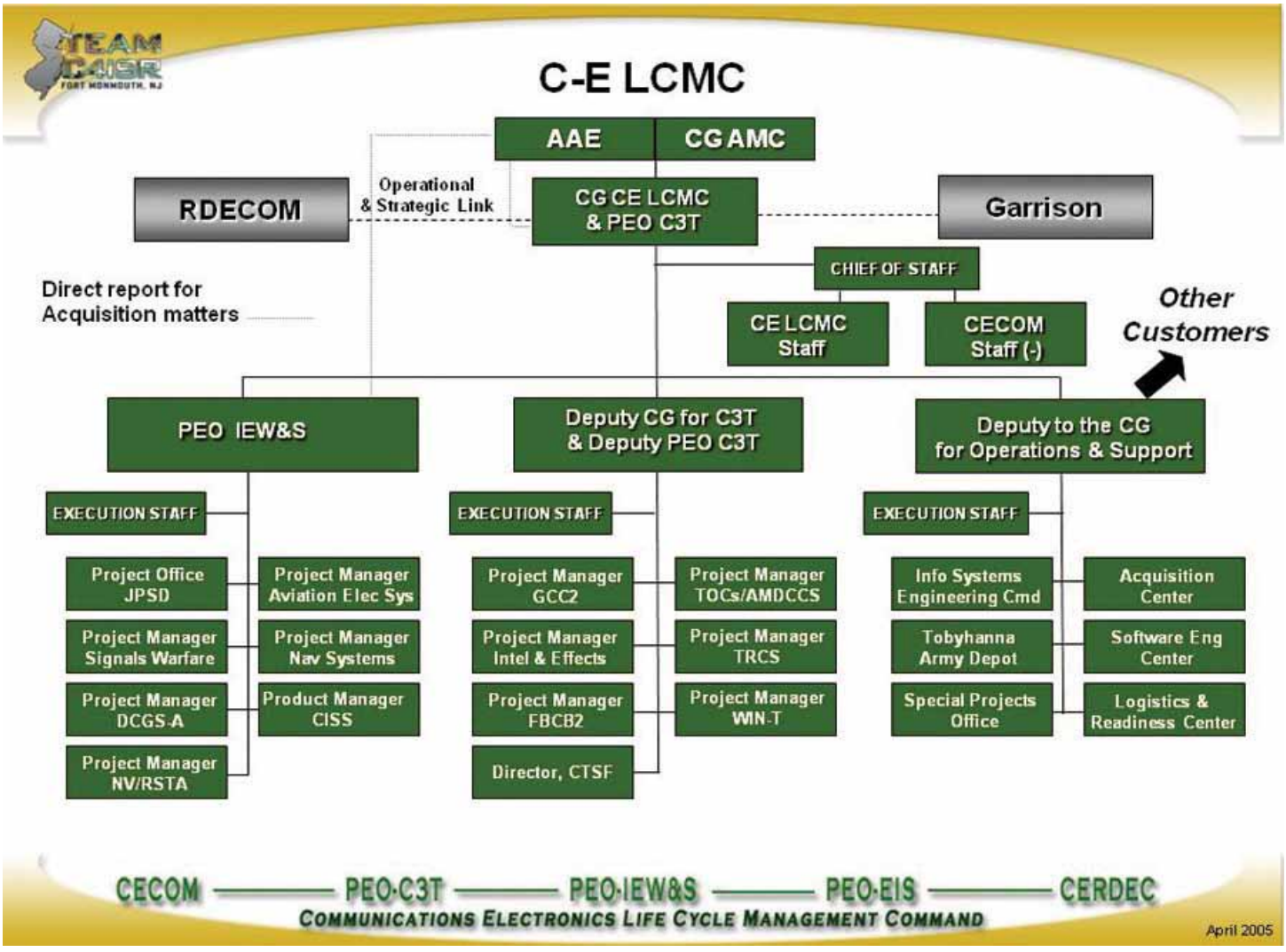
This created a new chain of command in which Program Managers reported through the PEO to the AAE. The MSC continued to provide support to the PM/PEO because the PEO had only small organic staffs, according to the fiscal year 1987 CECOM Annual Command History. Mission accomplishment would be achieved through the use of the matrix concept, where functional services and expertise were supplied by supporting functional commands.

CECOM supported three of the newly created PEOs: PEO Communications Systems (PEO COMM; authorized strength of 7 military and 25 civilians as of 30 September 1987), PEO Command and Control Systems (PEO CCS; authorized strength of seven military and 25 civilians as of 30 September 1987), and PEO Intelligence and Electronic Warfare Systems [PEO IEWS (stet); authorized strength of 3 military and 27 civilians as of 30 September 1987]. Fiscal year 1988 represented the first full year that the PEO functioned as separate organizations.

The Program Managers comprising these PEOs included the PMs Mobile Subscriber Equipment; Single Channel Ground and Airborne Radio System; Advanced Field Artillery Tactical Data Systems; Guardrail; Trailblazer; JSTARS; Firefinder; and TACJAM; to name a few.

PEO CCS merged with PEO COMM on 1 July 1995 to form the PEO for Command, Control and Communications Systems (later C3T). This merger combined their similar missions, or, more formally, sought "to integrate acquisition management of C3I Systems for the digitized battlefield, Force XXI, and warfighters" from the laboratory to the foxhole.

The reorganization of the PM spurred the CECOM commander to create a CECOM Command, Control, Communications, and Intelligence Logistics and Readiness Center to integrate all the command's logistics and readiness elements based on support of the weapon system and the Soldier, rather than on a functional basis. The C3I LRC was provisionally established on 10 November 1987. Today, the LRC continues to support Warfighters by managing a wide range of communications and electronic equipment, providing full service to include acquisition of major items and spare parts, new equipment training and fielding, depot maintenance (including repair, overhaul and reset), logistics assistance representatives in the field, Army equipment publications, technical assistance and life-cycle support for international customers.



C-E LCMC Organizational chart. Note that the first CG C-E LCMC also served as the PEO C3T.

The "civilianization of the workforce" continued throughout the 1990s. As of 30 September 1993, military personnel represented less than eleven percent of a work force of 7,728 people.

The U.S. Army Information Systems Engineering Command at Fort Huachuca, Ariz. was realigned as a subordinate command of CECOM on 1 October 1996. ISEC provides systems engineering, installation, integration, implementation, and evaluation support for communications and information technology systems worldwide providing capabilities to Army Organizations, Combatant Commanders, DOD agencies, and Federal agencies in support of the Warfighter.

The CECOM RDEC Software Engineering Directorate gained significant new assets and missions between 1996-1997. The Directorate was elevated to a center and officially became the CECOM Software Engineering Center on 1 October 1997 (having existed provisionally since 1 October 1996). Today, the SEC's mission is to provide life cycle software solutions and services that enable Warfighting superiority and information dominance across the enterprise. The Center produces and releases new software; develops training products for software; changes and fixes existing software and release new versions; produces technical data for software and systems; helps other organizations acquire custom software products; makes software work where it is being used; conducts software and systems testing; and provides training services for software.

AMC assigned CECOM control of Tobyhanna Army Depot in Pennsylvania on 1 November 1997. This action, a response to the Quadrennial Defense Review, served as a test of a concept that consolidated in the commodity commands responsibility for both the life cycle management and depot maintenance of assigned weapon systems.

At the time of the transfer, Tobyhanna Army Depot had nearly 2,500 employees, including approximately thirty Soldiers

Today, TYAD is the largest, full-service electronics maintenance facility in the Department of Defense. It is the largest employer in the Pocono Northeast region of Pennsylvania. Total employment at the installation, including tenant activities and contractors, is about 5,600.

Information Systems Information Command insignia

In addition, TYAD employs an additional 300 personnel who permanently work at Forward Repair Activities here and overseas.

TYAD's mission is total sustainment, including design, manufacture, repair and overhaul of hundreds of electronic systems that include satellite terminals, radio and radar systems, telephones, electro-optics, night vision and anti-intrusion devices, airborne surveillance equipment, navigational instruments, electronic warfare and guidance and control systems for tactical missiles. TYAD is the DOD's recognized leader in the areas of automated test equipment, systems integration and downsizing of electronics systems. The Army has designated Tobyhanna as its Center of Industrial and Technical Excellence for C4ISR and Electronics, Avionics and Missile Guidance and Control. Additionally, the Air Force has designated TYAD as its Technical Source of Repair for command, control, communications and intelligence systems.

The CECOM lost its R&D Center when AMC Commander General Paul J. Kern directed the establishment of a Research, Development, and Engineering Command. RDECOM stood up, provisionally, on 1 October 2002. The mission of this new Command was to field technologies that sustained the U.S. Army as the premier land force in the world. Operational control of the MSC R&D activities (such as the CECOM Research, Development, and Engineering Center) transferred to RDECOM effective 1 May 2003. The command became official 1 March 2004 when the Department of the Army approved the RDECOM concept plan. The CECOM Research, Development, and Engineering Center became the RDECOM Communications-Electronics Research, Development, and Engineering Center.

With the formation of the Installation Management Agency in 2002, CECOM lost control of its Base Operations Support functions at Fort Monmouth. The Department of the Army mandated that all Base Operations Support functions be transferred to IMA. As a result of this decision, all CECOM personnel performing BASOPS functions and the vacancies associated with those functions would be transferred to IMA on 5 October 2003.

To ensure successful implementation and to accomplish a smooth transition to the IMA, all BASOPS support functions and CECOM personnel associated with those functions were placed under the Operational Control of the U.S. Army Garrison Fort Monmouth effective 19 May 2003.

Approximately 418 positions were identified for transfer to IMA and the Network Enterprise Technology Command, which had been created to consolidate the Army's Information Technology functions. The CECOM Directorate for Information Management came under the operational control of IMA while technical control resided with NETCOM. There were no geographical relocations of employees as a result of this action.

Under the Army's Life Cycle Management Initiative, the PEO reunited with CECOM on 2 February 2005 as the U.S. Army Communications-Electronics Life Cycle Management Command. This move formally aligned PEO IEW&S, PEO C3T, and CECOM under one leadership. A "strategic and operational" link remained with the RDECOM

This aeriel view of Tobyhanna Army Depot, Tobyhanna, Penn., shows the central complex of the 1,296 acre Army site which is a center of industrial and technical operations for command, control, communications, computer intelligence, surveillance and reconnaissance, electronics, avionics and missle guidance control. Opened on 1 February 1953, it is the largest, full-service electronics maintenance facility in the Department of Defense.

CERDEC. The mission of all organizations remained the same: to develop, acquire, test, field and sustain effective, suitable and survivable command, control, communications computers, intelligence, surveillance, and reconnaissance capabilities from the Soldier in the combat zone all the way back to the national leadership.

According to the 2 August 2004 Memorandum of Agreement Between the Assistant Secretary of the Army for Acquisition, Logistics and Technology and the Commander, U.S. Army Materiel Command, the Army intended the Life Cycle Management initiative "to integrate significant elements of the Army Acquisition, Logistics and Technology communities in order to provide products to the Soldier faster, make good products even better, and minimize life cycle cost, and enhance the synergy and effectiveness of the Army Acquisition, Logistics and Technology communities." It was intended to integrate significant elements of ALT leadership responsibilities and authority to enable a closer relationship between the Army Materiel Command Major Subordinate Commands and the Program Executive Officers. The PEOs would be able to work as an integral part of the AMC MSCs, while continuing to report directly to the Army Acquisition Executive; likewise, logisticians in AMC would have enhanced input into acquisition processes to influence future sustainment and readiness. The life cycle management initiative would provide an integrated, holistic approach to product development and system support.

The concept of operation was to create Life Cycle Management Commands by aligning AMC systems oriented MSCs (AMCOM, CECOM, JMC, and TACOM) with the PEOs with whom they already worked. As outlined in the MOA, the following commands and PEOs listed bellow would form the LCMCs.

Following discussion with AMC Commander General Benjamin S. Griffin AMC, the C-E

Their own words

"Reflection on the past is necessary to ensure success in the future!"

MG USA (Ret)Dennis C. Moran

LCMC was designated the CECOM LCMC in October 2007 to capitalize on the name recognition of CECOM.

The CECOM LCMC assumed control of the Central Technical Support Facility at Fort Hood, Texas, on 9 July 2007. Organized by PEO C3T in 1996 to provide a location for the rapid development and test of the then Army Battle Command Systems, the CTSF is today the Army's premier test, integration, and certification facility for its LandWarNet/Battle Command systems and a growing number of other Army and Joint Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance Systems.

In 2007 the Secretary of the Army formed an independent commission on Army Acquisition and Program Management in Expeditionary Operations, also known as the Gansler Commission, to review recent lessons learned and recommend ways to improve future military operations.

In compliance with these recommendations, the AMC Concept Plan to establish the U.S. Army Contracting Command was approved on 15 July 2008. Roughly 400 personnel assigned to the CECOM LCMC Acquisition Center realigned to the ACC as a result of this decision. The effective date of the mission transfer was 1 October 2008.

Today, the CECOM Contracting Center's mission is to provide its customers value-added, acquisition business solutions that support the joint Warfighter. It primarily acquires research, development, production and support services of complex, state-of-the-art command, control, communications, computer, intelligence and reconnaissance systems and components for the Army, Joint Services and Coalition forces.

Major commodities include aviation communications, manportable radios, radar systems, computers, satellite communications, night vision equipment, command and control systems, sensors, information management systems, battery and power sources, intelligence/electronic warfare systems, mines/countermines, facilities supplies and a host of technical services that support its various customers' mission responsibilities. Annually, the CECOM Contracting Center executes over seventeen thousand (17,000) contract actions and obligates over $19 billion dollars.

As a result of the DoD Base Closure and Realignment process, the CECOM LCMC is currently relocating its headquarters from Fort Monmouth to Aberdeen Proving Ground, Maryland. This includes the move of some 5,000 jobs and, by one count, over 80,000 pieces of equipment. Some personnel are already on APG working in temporary facilities (to include Mr. Edward Thomas, CECOM deputy to the commanding general, and the CECOM Chief of Staff, COL William H. Montgomery III). Occupancy of newly constructed facilities is scheduled to begin in October 2010. Fort Monmouth will close 15 September 2011.

Much has happened since the 1962 formation of ECOM at Fort Monmouth took the place of the Signal Corps organizations that had been located on the installation since 1917. There have been reorganizations, fracturing, and consolidations. The workforce has become increasingly civilian. But the nucleus of the mission has remained at its heart unchanged- to provide superior communications-electronics equipment and support to the joint warfighter.

Construction of the new CECOM LCMC facilities at Aberdeen Proving Ground, Maryland.

Throughout its history, many distinguished officers have served as the commander of the CECOM LCMC and its predecessor organizations. Two of them went on to become Chief Signal Officer: COL James B. Allison, commander from 1925 to 1926, and BG Dawson Olmstead, who served at Fort Monmouth from 1938 to 1941. MG Walter E. Lotz, Jr. became CECOM's commander in 1969 after having served as the Army's Chief of Communications-Electronics and Assistant Chief of Staff for Communications-Electronics. More recently, MG Otto J. Guenther, commander from 1992 to 1995, left Fort Monmouth to become the Director of Information Systems for Command, Control, Communications, and Computers in the Pentagon. The current commander is MG Randolph P. Strong, former Chief of Signal at Fort Gordon.

This pyramid marker helps Soldiers and visitors find the Central Technical Support Facility on Fort Hood.

A Brief Overview of Signal Corps

By Daniel A. Brown
Signal Center of Excellence History Office

In 1859, Assistant Surgeon Albert J. Myer was granted permission by the War Department to test his proposed wigwag visual signaling system. Myer and a few handpicked assistants arrived at Fort Monroe, Virginia in April to begin testing their system to determine the best design for the equipment and develop training techniques.

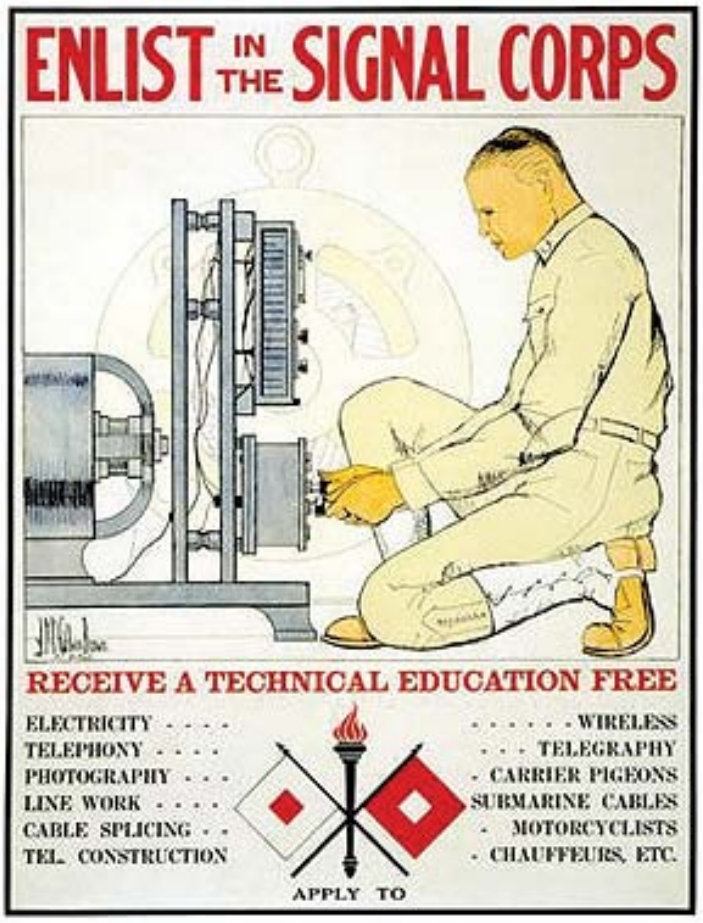
Later experiments were conducted around New York Harbor, West Point, N.Y. and Washington, D.C. Upon acceptance by the Army and approval by Congress in 1860, Myer was appointed as the army signal officer to supervise the manning, equipping and training of Soldiers in wigwag operations. With the outbreak of the Civil War, a temporary signal school was established at Fort Monroe in June 1861 to quickly train men in the skills of visual signaling.

As the organization for war improved, a permanent signal school was established at Red Hill, Georgetown, D.C. in August 1861. There officers and men detailed from combat arms branches were trained by the small cadre of acting signal officers, who themselves had been recently trained.

The instructional methodology was for collective training of "sets" or teams, of officers and flagmen, with two officers and four enlisted men to a team. Signal training focused on both technical and tactical skills, including sending and reading wigwag messages, horsemanship, and other Soldier skills to survive on the modern battlefield. In 1862 instruction included operation and maintenance of the Beardslee electro-magnetic telegraph system designed as a "flying telegraph" with horse-drawn wagons carrying the equipment to get to key battlefield locations quickly.

After the Civil War, Myer struggled to maintain the existence of the Signal Corps as political leaders questioned the need to retain the branch in peacetime. The Signal School at Georgetown closed at the end of the war and for a brief time training was conducted at the Signal Office in Washington. In September 1868 Myer moved the training school to Fort Greble, an abandoned fortification in southeastern Washington D.C.

Circa 1865 officers quarters at the Georgetown, D.C. Signal Camp of instruction



Circa 1930 recruiting poster emphasizing technical training in the Signal Corps

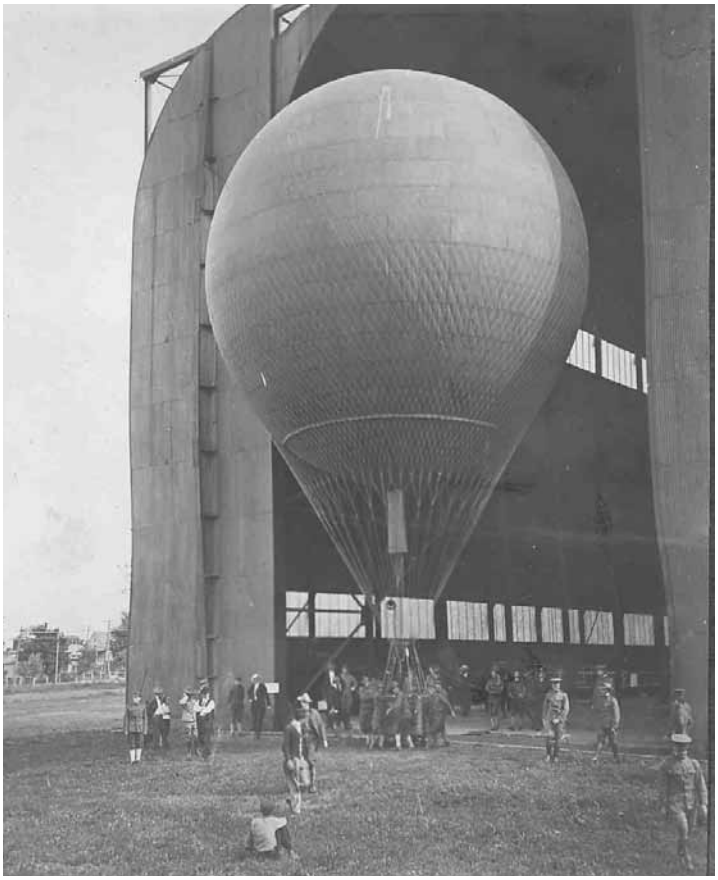
Fort Greble proved to be unsatisfactory due to its low elevation and lack of space for pole line and signal telegraph train maneuvers. In September 1869 Myer had the school moved to Fort Whipple, another Civil War-era fortification built on the grounds of Arlington plantation on the heights overlooking the Potomac River. It offered a larger and better maintained facility with ample maneuver space in the surrounding countryside. The training curriculum remained the same as in wartime and in 1870 meteorological information gathering methods and technology were added when the Signal Corps gained that mission. On 24 August 1880, shortly after his promotion to brigadier general, Albert J. Myer died. In 1881, the Army renamed Fort Whipple to Fort Myer to honor the legacy of one of the Army's most distinguished innovators.

Schools and Training Centers

Signal Soldiers stand in front of the Fort Whipple, Va., enlisted barracks, circa 1880

Training Struggles

Myer's successor was BG William B. Hazen, a straight talking, hard fighting and outspoken Civil War veteran. Unfortunately, GEN Hazen's combative and controversial nature often resulted in fractured relationships with peers and superiors. A long-standing dispute between Hazen and LTG Philip H. Sheridan, stemming from the Civil War, may have led Sheridan, the commanding general of the Army in 1885, to discontinue signal training at Fort Myer and replace it with a school for Cavalry. Signal training thus became the responsibility of the military commanders at their home stations, a method that proved to be less than successful. Although there was no official Signal School from 1885 to 1905, signaling did become part of the curriculum at other Army schools. In 1881 the School of Application for Cavalry and Infantry had opened at Fort Leavenworth, Kansas. Signaling became part of its curriculum in 1888. Three years later, the newly established Cavalry and Light Artillery School, at Fort Riley, Kan., offered signal training from its beginning. The Signal courses taught at these locations compensated in part for the loss of a separate Signal school.



Taking out a 35000 cu. ft. balloon at Fort Omaha, Neb.

The lack of resources for training caught the Signal Corps short at the outbreak of the Spanish-American War in 1898. To fill the urgent need for manpower, the Volunteer Signal Corps was created to bring in skilled technicians, such as telegraphers, linemen and telephone workers from commercial industry. Thus began an arrangement that would continue into the 1950's known as the "Affiliated Plan." Under this plan, communication companies, like the Bell Corporation, Western Electric and other firms formed all or part of Signal units. During both World Wars I and II, communications company technicians and employees were the nucleus of many signal units.

Inadequacies in national military policy, made apparent by the overseas expeditions in 1898 and the acquisition of new U.S. territories, reinforced the need for modern, long-range communications as well as trained Signal Soldiers. Technological advances made training especially important as wireless telegraphy, better known as radio, began to be used for military operations.

Signal training returned to its roots when Fort Myer once again became the home of the Signal Corps in 1899. Training was again centralized at this location where recruits learned the fundamentals of telegraphy, telephony, line repair, and visual signaling. Officer-level instruction was also conducted on a limited basis. Fort Myer additionally became the home of the Signal Corps aerial operations, and a balloon house was constructed on its grounds.

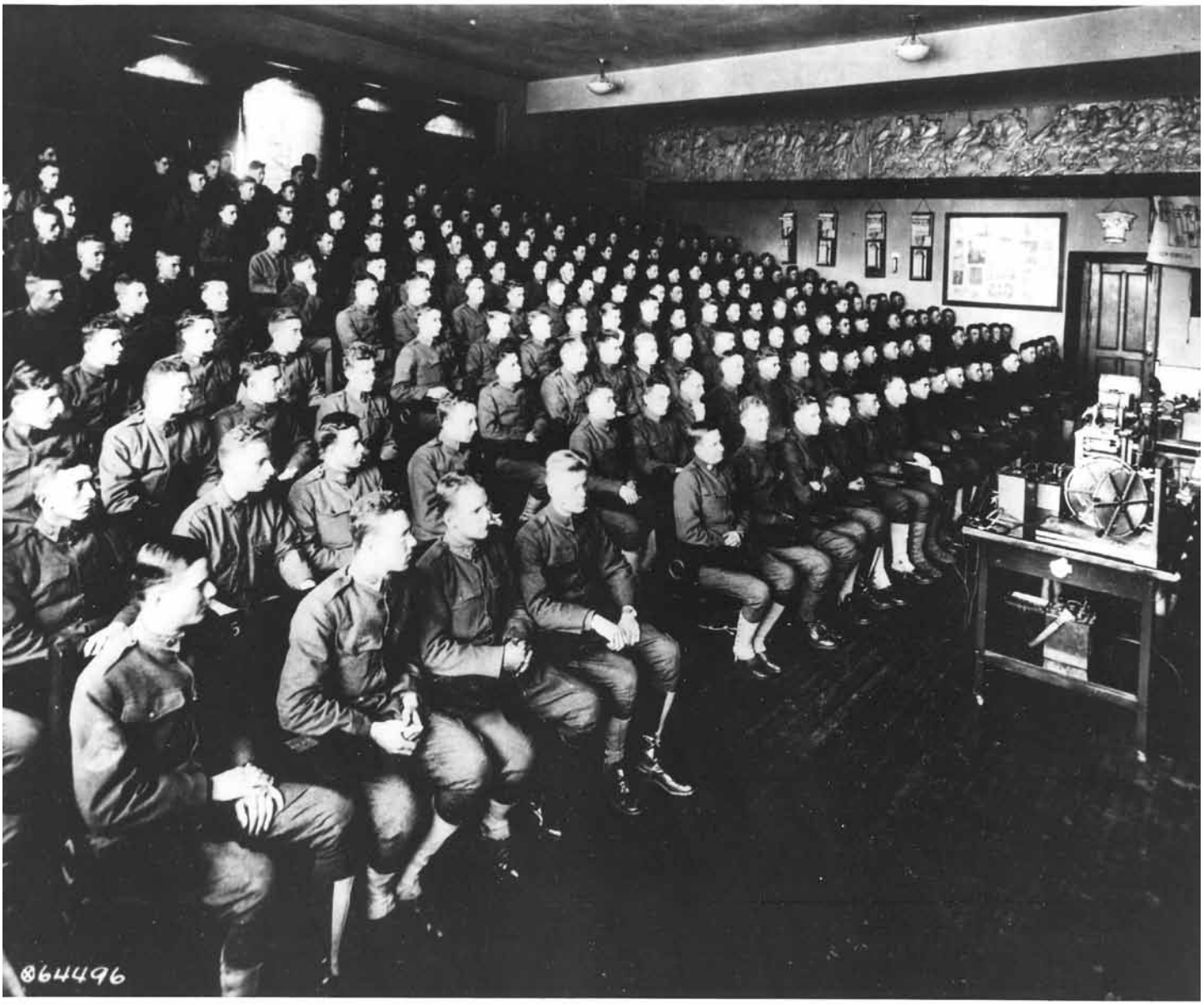
As part of the reforms instituted by Secretary of War Elihu Root in 1903, the Army launched efforts

to modernize and standardize its educational system. Beginning with the establishment of the Army War College in 1901, the War Department created a tier of service schools. As part of this new system, the Army established the U.S. Army Signal School at Fort Leavenworth, Kansas on 27 June 1904 in accordance with War Department General Orders number 115. The Signal School was one of what became known as the "Leavenworth Schools."

Although the Signal Corps had been conducting work with balloons since the 1890s, the successful flight of the Wright Brothers in December 1903 spurred the development of military aviation. In 1907 the Signal Corps established an Aeronautical Division within the Office of the Chief Signal Officer to coordinate its aviation actitivities. The Army purchased a Wright flyer in 1909. Under their contract with the Army, the Wright brothers were responsible for training the first pilots, but after that, the Signal Corps took on this mission. Because Fort Myer did not offer adequate room for flying, the training, moved to College Park, Md. During the winter months the training school went south to Augusta, Georgia, and San Antonio, Texas. In June 1911 the Signal Corps officially opened a flying school at College Park. Signal Corps aircraft were first deployed in combat during the 1916 Punitive Expedition in Mexico, proving the success of the training. As Army aviation expanded, it soon outgrew the Signal Corps, and all aircraft, training and operations were transferred to a separate Army Air Service in 1918.

World War I

On 6 April 1917, the United States declared war on Germany. Because Fort Leavenworth could not accommodate the large number of recruits, additional facilities had to be opened. One of these was Camp Alfred Vail, near Little Silver, N. J. Its curriculum focused on telegraph, telephone and radio operation. At the time, there was a pressing need for telegraph operators in France, so an inten-



Students participate in a lecture at Fort Monmouth, N.J. circa 1920

sive six-week training course was initiated, with an emphasis on foreign codes and languages. Carrier pigeon breeding and training also became part of Camp Vail's mission. In addition to Camp Vail, the Signal Corps opened Camp Samuel F. B. Morse in Texas and a facility at the Presidio of Monterey in California. Many of the nation's colleges and universities also offered technical training for prospective Signal Corps personnel.

Most training focused on operation of two basic signal units: the Field Signal Battalion and the Telegraph Battalion. The Field Battalions operated communications within front line divisions; the Telegraph Battalions maintained communications above division level. Wire, which carried both telephone and telegraph signals, was the basis of most communication training. Wireless telegraph saw limited use, but radio sets were very bulky, heavy, and thus less mobile than wire-based methods.

Moreover, their signals were less secure than those carried over wire. In 1918, signal training activities at Fort Leavenworth were shifted to the new radio school at Camp George G. Meade in Maryland. This move ended Signal training in Kansas. In 1919 the Signal Corps School was relocated to Camp Vail, which in 1925 was renamed Fort Monmouth.

World War II – The Biggest Job, the Greatest Challenge

War burst on the United States on 7 December 1941. In response to the worldwide conflict and advancing technology, a bewildering array of Signal unit types were activated and created. Some units filled needs for combat operations and construction as in previous conflicts, but new types were needed for the new technologies. Aircraft-warning battalions and radio-intelligence companies were just a couple of these specialized signal units. Joint Assault Signal Companies, called JASCOs, were developed to meet the unique communication needs of joint amphibious operations and included army, navy, marine and army air force personnel.

As the war progressed, operational requirements became so pressing that students were sometimes taken out of schools to provide fillers for deploying signal companies and battalions.

During World War II, Fort Monmouth hosted the Eastern Signal Corps Unit Training Center. The installation had space for 1,559 officers and 19,786 enlisted personnel undergoing training. The Training Center consisted of the Eastern Signal Corps Schools (for enlisted, officer candidates, and officers) and the Replacement Training Center at nearby Camp Charles Wood. The post included the Pigeon Breeding and Training Center. One of the largest training activities was the Officer Candidate School which graduated 21,033 new Signal Corps second lieutenants from 1941 to 1946.

Camp Crowder, Mo., hosted the Central Signal Corps Training Center and the Central Replacement Training Center. Named for Enoch Crowder, a Missouri general who helped develop the Selective Service in World War I, the camp opened in July 1942 with a capacity for 6,000 Soldiers. Camp Crowder received most of the Army's Signal recruits. Here the new Soldiers spent three weeks learning the basics of Soldiering after which they moved on to the unit training center or other schools for specialized training.

Camp Kohler, California was established 28 July 1942 and hosted the Western Signal Corps Training Center and the Western Signal Corps Replacement Training Center. Kohler specialized in training Signal Soldiers for the unique conditions of the Pacific Theater of operations.

At Camp Murphy, Fla., the Signal Corps established a top-secret radar training school in 1942. Located between the towns of Stuart and Jupiter in southeastern Florida, the camp comprised over 1,000 buildings and housed more than 6,000 officers and Soldiers. The camp was deactivated in 1944. In 1943, Camp Holabird, Md., near Baltimore, was renamed Holabird Signal Depot and offered specialized training in Signal supply operations.

Even with this massive training effort there was still a nagging shortage of trained Signal Soldiers, particularly in Europe. An expert trainer, LTC Ruben Abramowitz was given the task of establishing Signal training facilities in Europe. The 47-year-old former NCO had served as a master teacher at Fort Monmouth and was commissioned at the outset of the war in 1942. In July 1945 he was directed to establish the European Theater Signal School at Ansbach, Germany.

This excellent school brought acclaim and honors from senior commanders for Abramowitz's untiring efforts to produce technically and tactically trained Soldiers.

Post World War II Training

Following the outbreak of hostilities in Korea in 1950, mobilization of the 40th Infantry Division and support units of the California National Guard, required the Army to lease Camp San Luis Obispo. It was there that the Southwest Signal Corps Training Center was located from 1950 to1953 to support the requirements of the Korean conflict.

Meanwhile, in September 1948 the Signal Corps Training Center had been established at Camp Gordon, Ga. This post was redesignated as Fort Gordon on 21 March 1956 in honor of Confederate officer, LTG John B. Gordon, who also served as governor of Georgia and a United States senator.

In June 1962, all activities of the Signal Corps Training Center were reorganized under the U.S. Army Southeastern Signal School. On 30 November 1967, Headquarters, U.S. Army School/Training Center and Fort Gordon was organized to direct overall operations, service school and advanced individual training.

In 1974 the Army consolidated all Signal training at Fort Gordon by relocating the Signal School from Fort Monmouth, N. J. The new school, designated the U. S. Army Signal Center and Fort Gordon on 1 October 1974, formed the largest communications-electronics training facility in the world. In 1986 the Signal Corps became part of the U. S. Army Regimental System, instituted to improve unit cohesion and esprit. The Signal Corps and other combat support/combat service support branches implemented this system on a "whole branch" basis. The commander of the Signal Center thus became known as the Chief of Signal and the proponent for the branch. Fort Gordon accordingly became the designated home of the U.S. Army Signal Corps. In 2009, the activity was redesignated as the U.S. Army Signal Center of Excellence and continues the proud tradition of training and educating Signal Soldiers, officers and NCOs, for the challenges of the 21st Century battlefield.

U.S. Army Reserve Component began

By COL Jeffrey J. Lepak
Senior Army Reserve Advisor
U.S. Army Signal Center of Excellence

The formal establishment of today's Army Reserve dates back to the early years of the twentieth century when Congress created the Medical Reserve Corps on 23 April 1908. This organization provided a pool of trained personnel who could be called to active duty in an emergency. Eight years later, with war already raging in Europe, Congress passed the National Defense Act of 1916 that authorized a gradual increase in the size of the Regular Army. Of particular importance for the Signal Corps was the creation of an Enlisted Reserve Corps for the recruitment of technical specialists, such as telephone and telegraph operators.

Under this authority, the Signal Corps constituted its first enlisted reserve battalions in 1916. These units would be crucial to enabling the Signal Corps to provide communications in the coming world conflict. The first of these units, the 1st Reserve Field Signal Battalion, was organized from March to October 1917 in New York. The unit was ordered into active service on 5 October 1917 at Camp Upton, New York and assigned to the 77th Division as the 302d Field Signal Battalion. This unit fought honorably in the Oise-Aisne, Meuse-Argonne, Lorraine 1918, and Champagne 1918 campaigns. Another Signal unit constituted in the Enlisted Reserve Corps during this time was the 13th Reserve Field Signal Battalion. It was organized in September 1917 at Camp Gordon, Georgia as the 307th Field Signal Battalion and assigned to the 82d Division, with which it served in France. At the end of the war, the reserve divisions, along with their signal battalions, were demobilized.

During the 1920s, the Army saw the need of having a permanent cadre of unit officers and enlisted men that could be quickly mobilized. Hence many of the wartime divisional signal battalions were reconstituted in the Organized Reserves as signal companies.

According to Army protocols, the divisional Signal companies were redesignated so that their numerical designations matched that of the divisions they supported. The 302d Field Signal Battalion became the 77th Signal Company, for example, while the 307th became the 82d Signal Company. These units were joined by others that had been formed in the National Army during the war and allotted to the Organized Reserves afterward. The 96th Signal Battalion, formerly the 621st Field Signal Battalion, was one of these units

The strategy of having signal companies that trained in preparation for mobilization was put to the test on 7 December 1941. The Reserve divisions and their organic signal companies were ordered into active service in the summer of 1942 and filled with draftees, thus earning the nickname, "Draftee Divisions."

The signal battalions trained and deployed from numerous mobilization sites, such as Camp Crowder, near Neosho, Missouri. Originally intended to be an armored training center, the Army selected the Neosho site for the base because of its proximity to water, railroads, and highways. While under construction, the post was re-designated as a U.S. Army Signal Corps training center, and it swelled to nearly 47,000 Soldiers at its peak. The post also served as an infantry replacement center and had a small German prisoner of war detention facility. Cartoonist Mort Walker was stationed there and used it as the model for Camp Swampy in his cartoon strip, Beetle Bailey.

Signal reserve units deployed to both the European and Pacific theaters where they became seasoned veterans, participating in some of the war's bloodiest campaigns. Providing communications by wire and radio, these units landed on the beaches of Normany and on the shores of remote Pacific islands. Not only did they earn campaign battle streamers,

A Signal lineman working in the European theater in 1945

during early years of the 20th century

A radio operator of the 1st Signal Brigade moves out on jungle patrol with the 1st Infantry Division from Landing Zone "Lorraine," five miles northwest of Lai Khe in January 1968

they won numerous American and foreign decorations.

When peace was achieved, these units were again inactivated as the Army quickly demobilized. They soon returned to the active rolls, however, as the Army grew to face the challenges of the Cold War. When the Army reorganized under the Pentomic Division concept during the 1950s, the divisional signal companies expanded to become battalion-size elements. Although the Army Reserve was not called upon to serve in Korea or Vietnam, its units stood ready to defend the nation as they always had.

During Operation Desert Shield/Desert Storm in the early 1990s, the Army Reserve's signal units were called to active duty, but only in limited numbers. The Army used an early form of modularity by creating detachments within a unit and mobilizing only the detachment. Although the Third Army did not call up its Army service components, personnel from the Reserve's 335th Signal Command were used to support the 6th Signal Command (Provisional), a Regular Army unit.

With the twenty-first century, the Army Reserve has played a much larger role in the nation's defense. Elements of the 335th Signal Command have been on active duty since 2001. The command has supported Third Army's operations in Southwest Asia as part of Operations Enduring Freedom in Afghanistan and Iraqi Freedom in Iraq since 2003. Members of the command deployed to Kuwait to help set up the theater's signal network, and they remain on duty there today. As a multiple-component ("multi-compo") unit, the 335th is comprised of Soldiers from both the Army Reserve and the Regular Army.

During the war on terrorism, the Reserve's signal units have been scheduled in the ARFORGEN process—making it truly, "one team one fight." The reserve signal units receive modernized equipment based on the ARFORGEN cycle, not their compo status. Almost all the USAR's signal units have deployed one or more times. The 35th Signal Battalion, based at Fort Allen, Puerto Rico, has not yet deployed, but it has contributed tremendously to the war effort with its highly skilled and dedicated Soldiers. The 842d Signal Company of Milton, Florida, earned the Meritorious Unit Commendation (Army) for its service in Iraq during 2005 and 2006.

The Army Reserve also has one of only two combat camera companies in the entire Army. These professionals continue to support the war fighter mission.

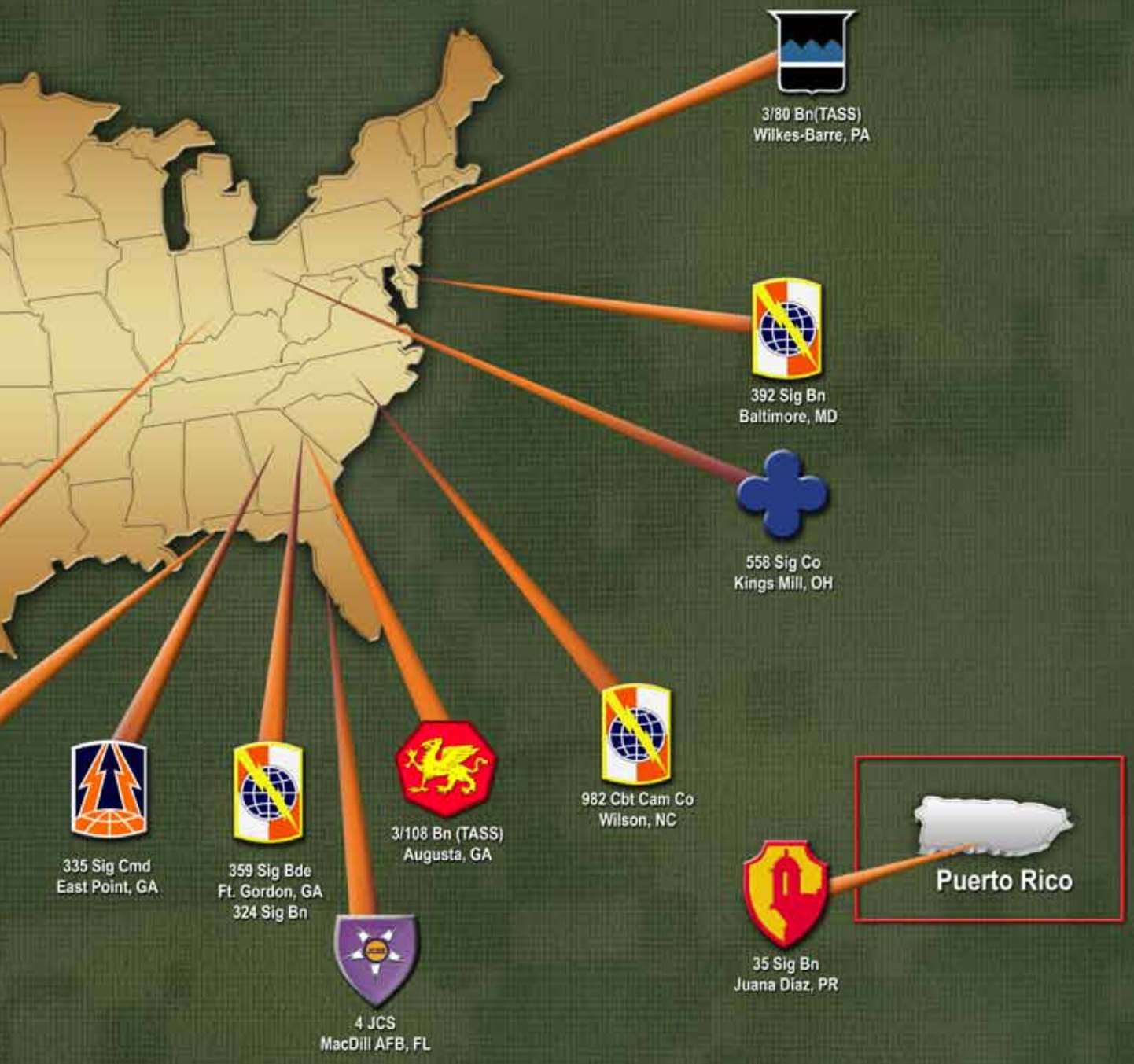
Over the past decade the Army has transformed the mission of the Reserves from a strategic reserve to an operational reserve force. The 311th Signal Command, also a multi-compo unit, was the first Army Reserve unit to convert to this new concept and become fully mission capable. The 311th relocated from Fort Meade, Md., to Fort Shafter, Hawaii to better support its war time mission in the Pacific theater on a daily basis.

The Army Reserve's citizen-Soldiers have defended this nation from its inception, participating in every crisis whether war or natural disaster as part of the Signal Regiment's team. These warriors are ready and relevant for Signal Corps' next 150 years!

THE UNITED STATES ARMY SIGNAL REGIMENT

As of April 2010

Reserve Component



The Army National Guard continues

By MAJ Lesley Kipling
Acting Chief, Tactical Branch,
Networks Division U.S. Army
National Guard

The Army National Guard has a long and distinguished Signal history and Army National Guard Signalers have served the nation from the Civil War to the present day. In addition, Army National Guard Signalers have provided support to the States/Territories during periods of natural disasters and civil disturbance.

The 101st Signal Battalion (New York Army National Guard) traces its lineage back to the Civil War and is credited with participation in several historical campaigns to include the Battle of Bull Run, Fredericksburg, Gettysburg and the Wilderness .

The 133d Signal Battalion of the Illinois Army National Guard was originally organized as a signal company in 1897. In that same year nearly a dozen states reported having Signal Corps personnel within their militia structure. In 1892 Andrew Carnegie's attempt to break the iron and steel workers union at his plant in Homestead, Pennsylvania, resulted in a violent strike, and Governor William Stone called up the militia to restore order. Although the Pennsylvania National Guard had no organized signal corps several of its companies had signaling experience, and Company H, 12th Pennsylvania Infantry, provided communications during the riots. As assistant adjutant general MAJ William J. Volkmar reported: Signal stations were soon established on both sides of the Monongahela River and communication constantly maintained between the separated forces by flag, heliograph, and lantern. It is true there is no regular Signal Corps in the Guard, but various officers have voluntarily taken interest in signaling.

When dense smoke rising from the chimneys of the Carnegie works rendered signaling with flags impossible, the penetrating power of the heliograph flash enabled troops on opposite sides of the river to maintain almost constant communication by day. Lanterns were used by night and a telegraph line was built to division headquarters upon the hill, connecting with commercial lines.

During the Spanish-American War, the signal units in the National Guard provided a significant source of experienced personnel as well as a supply of much-needed equipment. Upon enlistment, these men reported to Washington Barracks, D.C., for training in signal techniques and military drill. There they were organized into companies of approximately four officers and fifty-five men each. Despite the wording of the legislation setting up the volunteer corps, the companies were not assigned to divisions, but were consolidated at corps headquarters (generally three to a corps) for distribution as the commanding general saw fit.

In 1906 California National Guard units responded to the San Francisco earthquake and fire. Due to the new stationing plan, the Signal Corps had storehouses and two companies (E and H) located at Benicia Barracks, only 36 miles away. Local National Guard units, to include the 2d Company Signal Corps, assisted in the relief efforts. These National Guard Signalers laid telegraph lines connecting the city's Guard headquarters with subordinate units and assisted in supporting civil authorities' relief efforts across the city.

World War I was the first conflict in which the National Guard was deployed under the divisional scheme and each division had a signal battalion. In April 1917 the 26th and 42d Divisions arrived in France and the 37th Division served in Belgium. In all, 21 Signal Corps battalions served in World War 1. These consisted of 10 depot units, 8 telegraph units, and 3 construction units. Additionally, the Signal Corps maintained the "Carrier Pigeon Service" which was the "Pigeon Section" for the Army. The final report submitted by General John Pershing in 1919 did not differentiate between National Guard Units and Regular Army Units an early indication of the integration of the Army National Guard into the force structure.

The 101st Signal Battalion (New York Army National Guard) remained active throughout the interwar period and, in May 1940, was the only National Guard Signal Battalion in the nation. With the entrance of the United States into WWII, the 101st was called into Federal service for the third time, and inducted on 13 January 1941. During the war, the battalion served in the Pacific, where it participated in two of the hardest-fought campaigns of that theater. On 21 December 1941, the battalion arrived in Hawaii where its duties included operation of telephone and telegraph

The Signal Corps communication ship Apache operated in the Southwest Pacific Area during World War II

long tradition of Signal Corps service

installations, in addition to the operation of a radio station at departmental headquarters, Fort Shafter. The battalion also performed cable-laying missions and underwent amphibious warfare training in preparation for the assault landing to be made on Leyte. The Battalion left Oahu on 11 September 1944 and proceeded to Manus Island where troops were gathered for the Leyte invasion. On 21 October, the 101st landed on Leyte's eastern coast, near Dulag. While on Leyte, the battalion installed, operated and maintained communications for the XXIV Corps of 6th Army. After the battle ended in July, the 101st remained in Okinawa until August, while mopping-up operations were conducted.

The 101st Signal Battalion would be called upon again for the Korean War. During the Korean War, the 101st Signal Battalion participated in the numerous campaigns. The battalion was awarded a Meritorious Unit Commendation for the period 1 December 1951 to 30 June 1952 during which its members were cited for consistently carrying out their complex assignments with a standard of excellence that evoked the highest praise from all those cognizant of their fine work. A Republic of Korea Presidential Unit Citation was awarded to the IX Corps and its attached units, including the 101st Signal Battalion, for their services.

South Carolina and Florida Signal Soldiers deployed in support of Desert Shield/Desert Storm and on Tuesday, 11 September 2001, after terrorists attacked the World Trade Center in New York City, two signal companies from the New York Army National Guard were called into State Active Duty to provide support to New York City. They worked tirelessly with the New York Police Department and New York Fire Department in the aftermath of the terrorist attack.

The participation of Army National Guard Signal units and Soldiers in support of operations in Iraq and Afghanistan has been the most extensive in history.

BG Scott Chambers, 261st Signal Brigade commanding general, and CSM Donald Catalon, 261st Sig. Bde. command sergeant major, case the brigade's colors during the transfer of authority ceremony at Camp Victory, Iraq on 19 September 2009.

Florida National Guard

The 146th ESB, headquartered in Jacksonville, Fla., deployed over 400 Soldiers to Iraq in OCT 2008 to provide Theater communications support. According to SGM Reese Lindsey, operations sergeant major for the 146th, the unit provided voice and data communications for U.S. forces at 27 locations in Iraq. He said their mission was to make sure everyone had connectivity throughout the theater, and were able to communicate back to the United States and Europe. The 146th supported a diverse group of units including military police, Iraqi soldier training teams, and even a veterinarian clinic. The largest mission the 146th Signal specialists performed was providing communications support for Camp Victory in Baghdad.

LTC Matt Johnson, 146th ESB commander, stated the deployment "was extremely rewarding because we provided communications for the entire Iraqi theater of operations, from all the way north from the border of Turkey stretching south to the Persian Gulf. It was rewarding because as a National Guard unit we did our job - that is providing data and voice communications to the warfighter."

Delaware National Guard

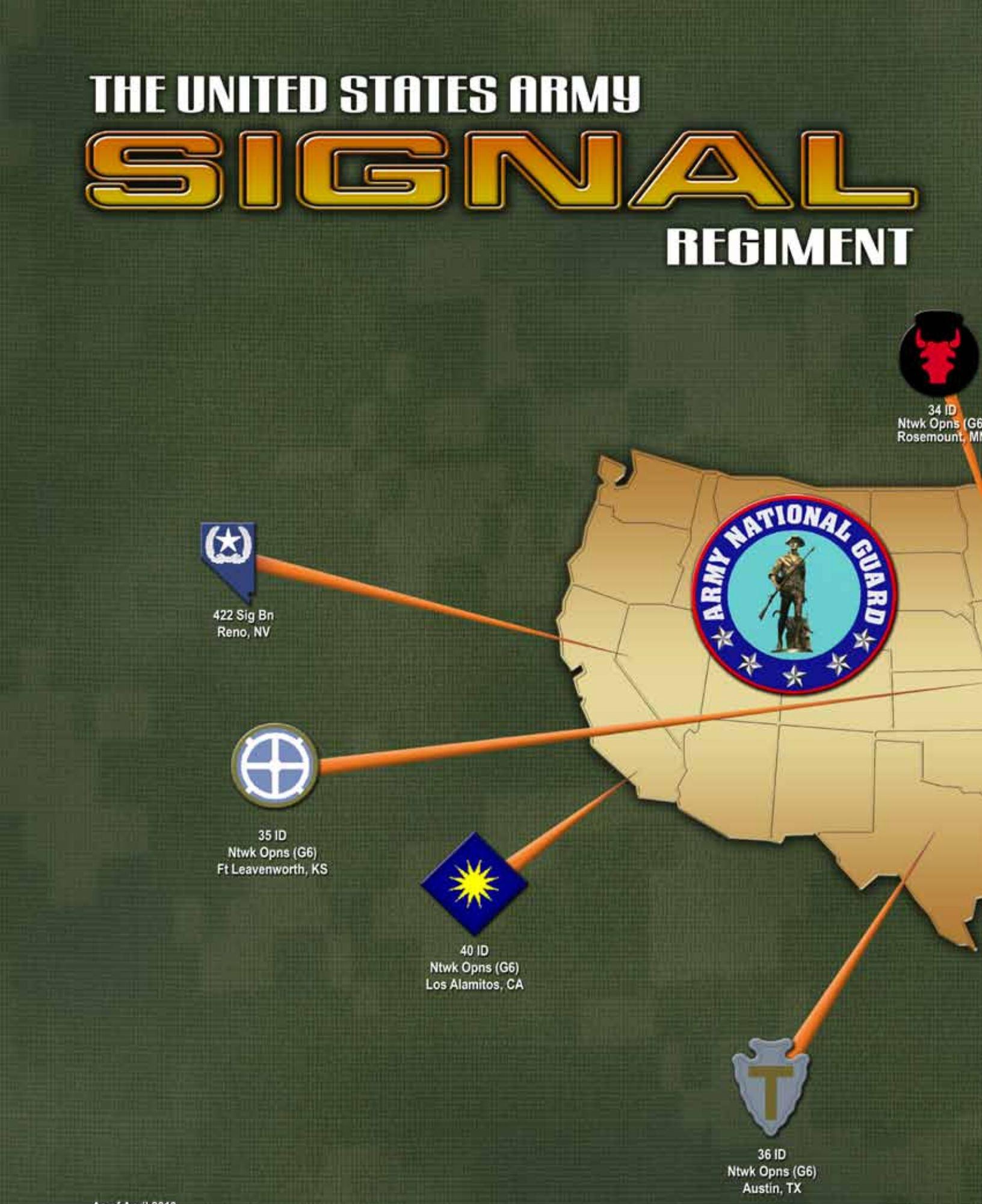
The Headquarters and Headquarters Company, 261st TTSB was activated for federal service in support of Operation Iraqi Freedom on 1 October 2008. The unit formally accepted the tactical signal mission for the Iraqi Theater of Operations from 11th Signal Brigade on 20 December.

During the deployment, 261st was the headquarters element of "Task Force Diamond," with command and control over the 146th Expeditionary Signal Battalion, Florida Army National Guard, the 51st Expeditionary Signal Battalion, Fort Lewis, Wash. and the 72nd Expeditionary Signal Battalion, Frankfurt, Germany. The Task Force had personnel and equipment assets at over 50 locations throughout the Iraqi Theater of Operations. The 261st transferred authority for the theater signal mission to the 35th Signal Brigade in mid-September and returned home to Delaware 1 October.

Their mission was to run the communications network for the theater [Iraq]. They were responsibile for secure and non-secure voice communications and electronic communications. They also ran Bagdad Signal University which trained other forces and Iraqis so that the Iraqis can eventually take over.

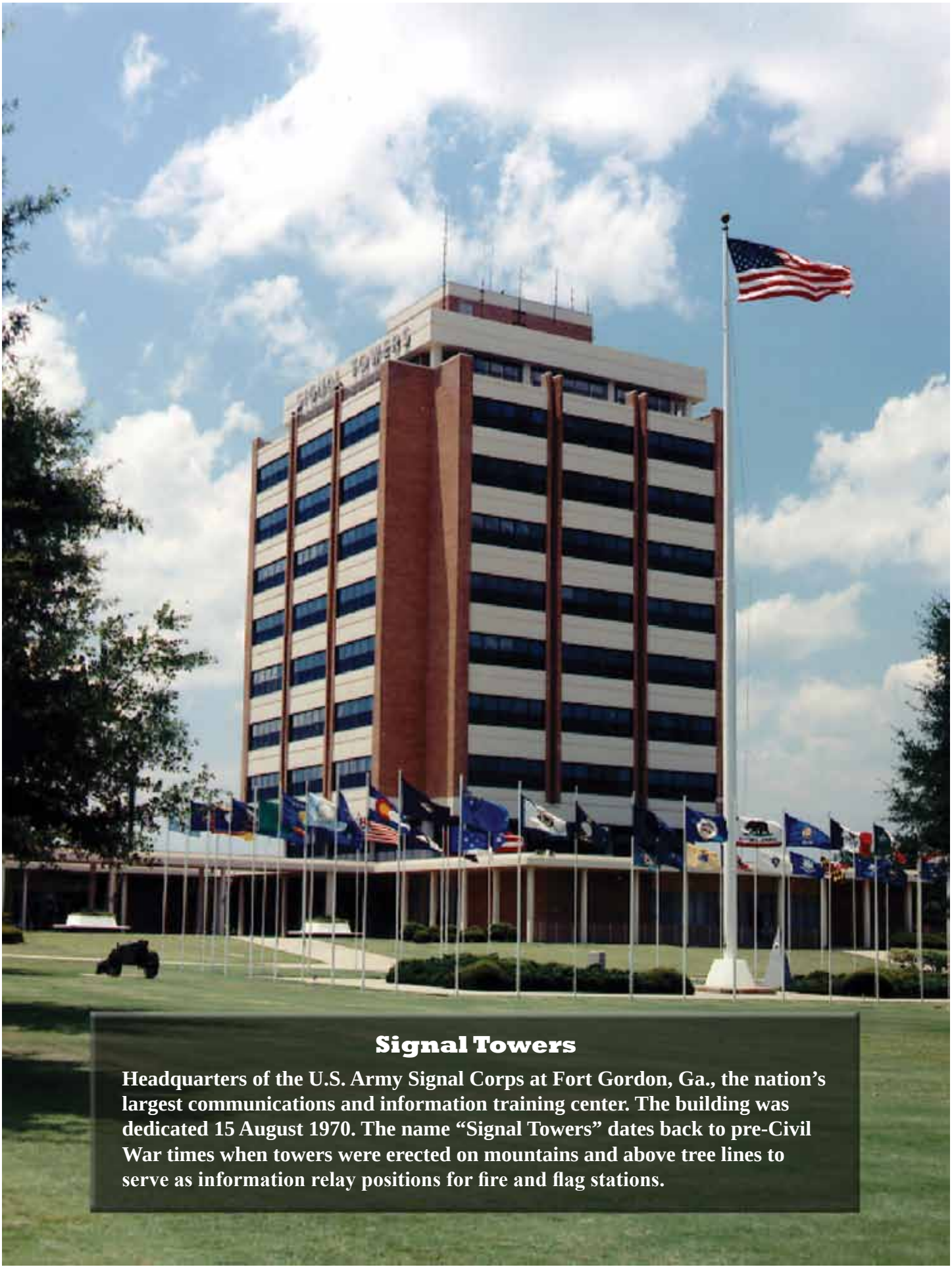
The 198th Signal Battalion also served in Iraq from 2006 to 2007.

THE UNITED STATES ARMY SIGNAL REGIMENT



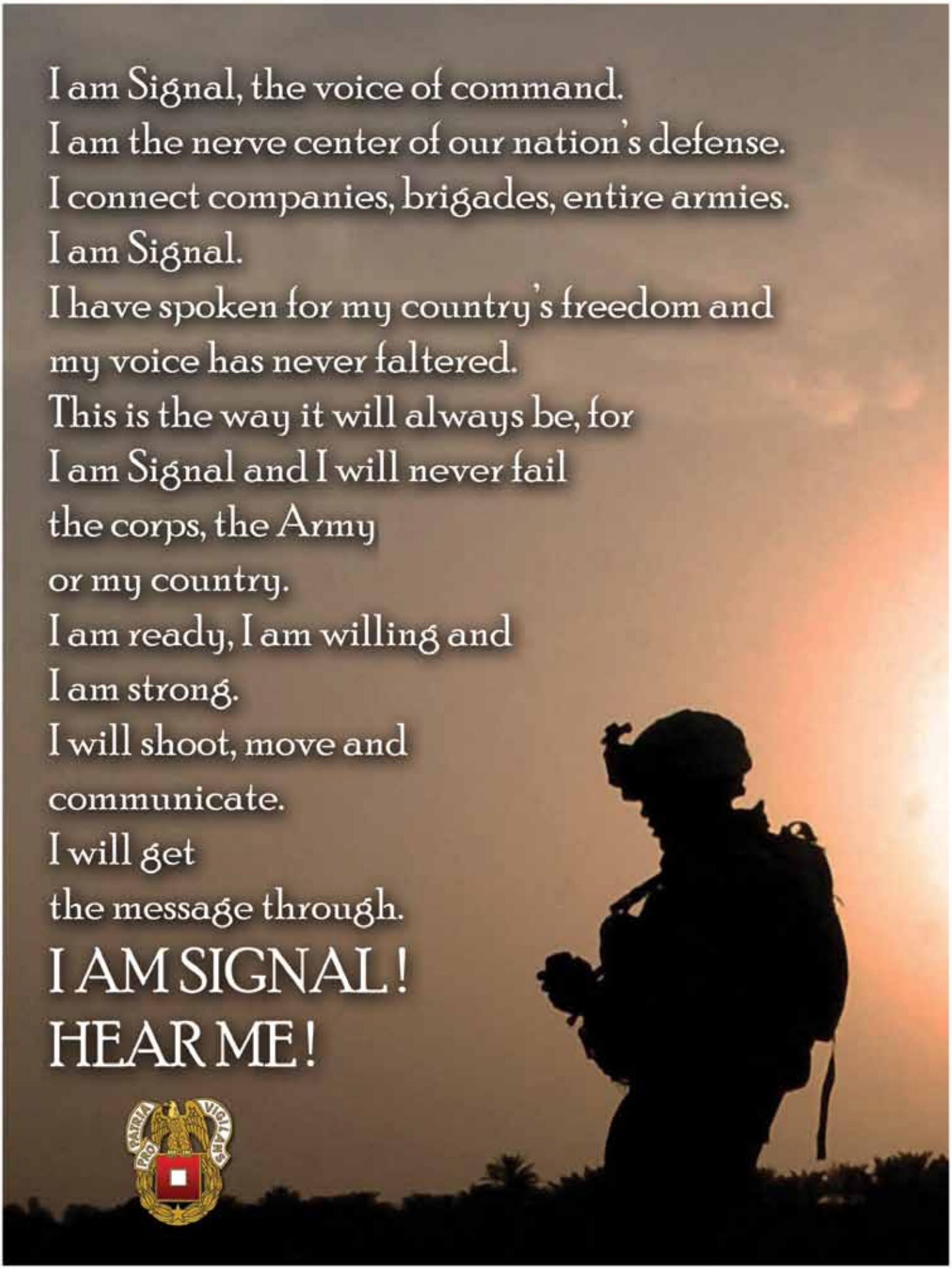
As of April 2010

National Guard Component



Signal Towers

Headquarters of the U.S. Army Signal Corps at Fort Gordon, Ga., the nation's largest communications and information training center. The building was dedicated 15 August 1970. The name "Signal Towers" dates back to pre-Civil War times when towers were erected on mountains and above tree lines to serve as information relay positions for fire and flag stations.


I am Signal, the voice of command.
I am the nerve center of our nation's defense.
I connect companies, brigades, entire armies.
I am Signal.
I have spoken for my country's freedom and
my voice has never faltered.
This is the way it will always be, for
I am Signal and I will never fail
the corps, the Army
or my country.
I am ready, I am willing and
I am strong.
I will shoot, move and
communicate.
I will get
the message through.
I AM SIGNAL!
HEAR ME!
PRO PATRIA VIGILANS

THE UNITED STATES ARMY

SIGNAL

REGIMENT

As of April 2010

Active Component

Modern Signal Corps opportunities abound

The U.S. Army Signal Regiment is leading the nation's defense into the 21st century with rapid and reliable information systems and services. Signal officers, warrant officers and enlisted Soldiers work hand in hand to attain information dominance to the fullest extent. Members of the Signal Regiment lead the world in information technology management. With the exponential growth of computer technology, Signal Soldiers are constantly evolving skills in the World Wide Web, multimedia, distance learning, and other IT-based capabilities that transform methods of delivering information.

Regimental officers are trained to manage networked information and telecommunications systems. They can specialize in engineering and management of information systems and communications networks. The 21st century presents tremendous challenges for the Signal Regiment because the Regiment is leading the Army into the Information Technology Age.

Today's Signal Soldiers encounter unpredictable challenges that test their tactical and technical abilities. Along with these challenges, however, are tremendous opportunities for advancement and personal satisfaction. From the fox hole to the White House, Signal Soldiers plan, install, integrate, operate and maintain the Army's strategic, operational and tactical information-systems infrastructure. This includes communications and computer systems and networks, as well as information services and resources supporting both wartime and peacetime operations.

As members of the Signal Regiment, Signal officers can serve as Functional Area 24 telecommunications systems engineers and FA 53 information systems management officers to provide seamless, secure, continuous and dynamic information systems at all levels--from the fighting platform to the sustaining base--supporting Army, joint military and coalition warfighting missions. The Regiment's enlisted Soldiers and warrant officers are also essential to the Regiment's success.

Signal officers command Signal units engaged in installing, operating, administering and maintaining wide-area networks and information systems, supporting tactical, theater, strategic and sustaining base operations. As commanders, Signal officers plan, coordinate and supervise training, administration, operations, supply, maintenance, transportation, security activities and resource allocation for Signal units and facilities.

Signal officers also serve as technical advisers by providing detailed technical direction and advice to commanders, staffs and other command, control, communications and computer users at all echelons on installing, operating and maintaining distributed database systems, teleprocessing systems and data communications supporting battlefield automated systems.

Signal officers are typically assigned to Maneuver units, such as Infantry or Armor battalions and brigades, as Signal platoon leaders and as primary staff and technical adviser (S-6) to the commander. With technological advancements and Army initiatives--such as the digitized division, network-centric operations and the Army's transformation--the S-6's role has become increasingly critical in providing the right information to the right individuals at the right time.

Department of the Army Pamphlet 600-3 says the Signal warrant officer, "is a self aware and adaptive technical expert, combat leader, trainer and advisor. Through progressive levels of expertise in assignments, training, and education, the warrant officer administers, manages, maintains, operates, and integrates Army systems and equipment across the full range of Army operations. Warrant officers are innovative integrators of emerging technologies, dynamic teachers, confident warfighters, and developers of specialized teams of Soldiers. They support a wide range of Army missions throughout their career."

Signal warrant officers are enlisted Soldiers who average about nine years of service time and demonstrate exceptional potential in information technology and meet the prerequisites for accession into the warrant officer corps.

Rigorous training at the U.S. Army Signal Center of Excellence at Fort Gordon, is the beginning point for Signal Soldiers who gain world-class training and experiences.

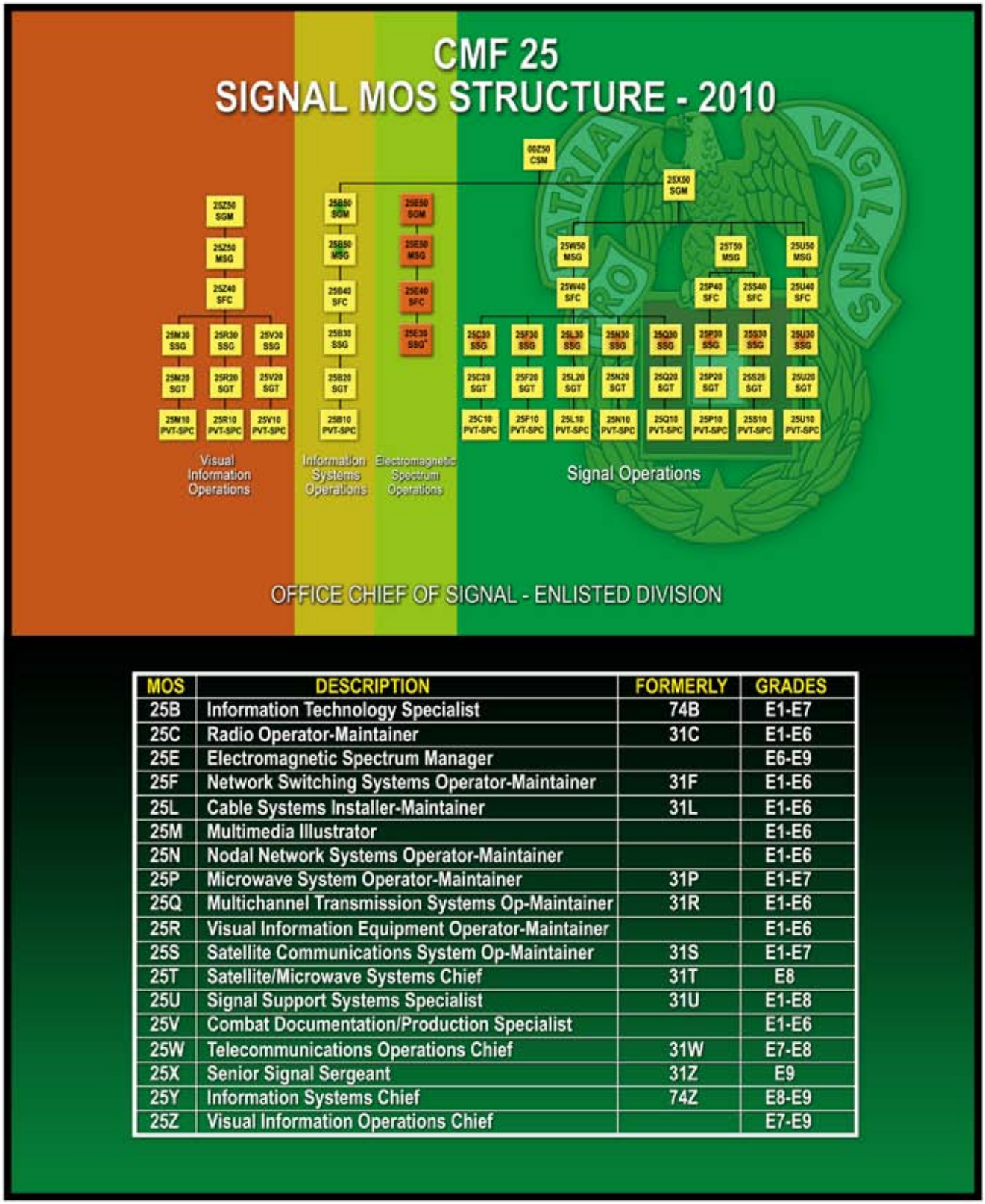
The constinuously changing technological landscape makes it essential that Signal Soldiers engage in continuing and career-long education, business/industry research internships, on-line and distance learning. Workers with the experience and training gained in the Signal Corps are highly sought by industry. After their military career most Signal Corps Soldiers have skills and certifications that are readily transferrable to the civilian work force with exceptional salary potential.

The Signal Corps offers many opportunities in various specialized fields for enlisted, officer and warrant officers. On the following pages are brief glimpses of Signal Soldiers working in various occupational fields. Also featured are vignettes from Signal Soldiers sharing career highlights and aspirations.

Their own words

"In the early 1990's, Army Signal Corps Soldiers proved they could master new technology with the complete conversion of tactical communications from analog to digital under the Mobile Subscriber Equipment program."

MG USA (Ret) David R. Gust



MOS	DESCRIPTION	FORMERLY	GRADES
25B	Information Technology Specialist	74B	E1-E7
25C	Radio Operator-Maintainer	31C	E1-E6
25E	Electromagnetic Spectrum Manager		E6-E9
25F	Network Switching Systems Operator-Maintainer	31F	E1-E6
25L	Cable Systems Installer-Maintainer	31L	E1-E6
25M	Multimedia Illustrator		E1-E6
25N	Nodal Network Systems Operator-Maintainer		E1-E6
25P	Microwave System Operator-Maintainer	31P	E1-E7
25Q	Multichannel Transmission Systems Op-Maintainer	31R	E1-E6
25R	Visual Information Equipment Operator-Maintainer		E1-E6
25S	Satellite Communications System Op-Maintainer	31S	E1-E7
25T	Satellite/Microwave Systems Chief	31T	E8
25U	Signal Support Systems Specialist	31U	E1-E8
25V	Combat Documentation/Production Specialist		E1-E6
25W	Telecommunications Operations Chief	31W	E7-E8
25X	Senior Signal Sergeant	31Z	E9
25Y	Information Systems Chief	74Z	E8-E9
25Z	Visual Information Operations Chief		E7-E9

This chart reflects the Signal Regiment's enlisted Military Occupational Specialty structure. It also provides the MOS designations that were used prior to 2005; after which all Signal MOSs were designated "25."

(Left) **CPT Jason C. Snyder, 12th Division MiTT G1 & G8, 1st BDE 1st IN, takes up position on a .50 calibre machine gun while riding convoy duty August 2009 near Kirkuk.** *(Above)* **A stolen fuel tanker explodes near the K1 Compound where CPT Snyder was assigned.**

The Signal Experience

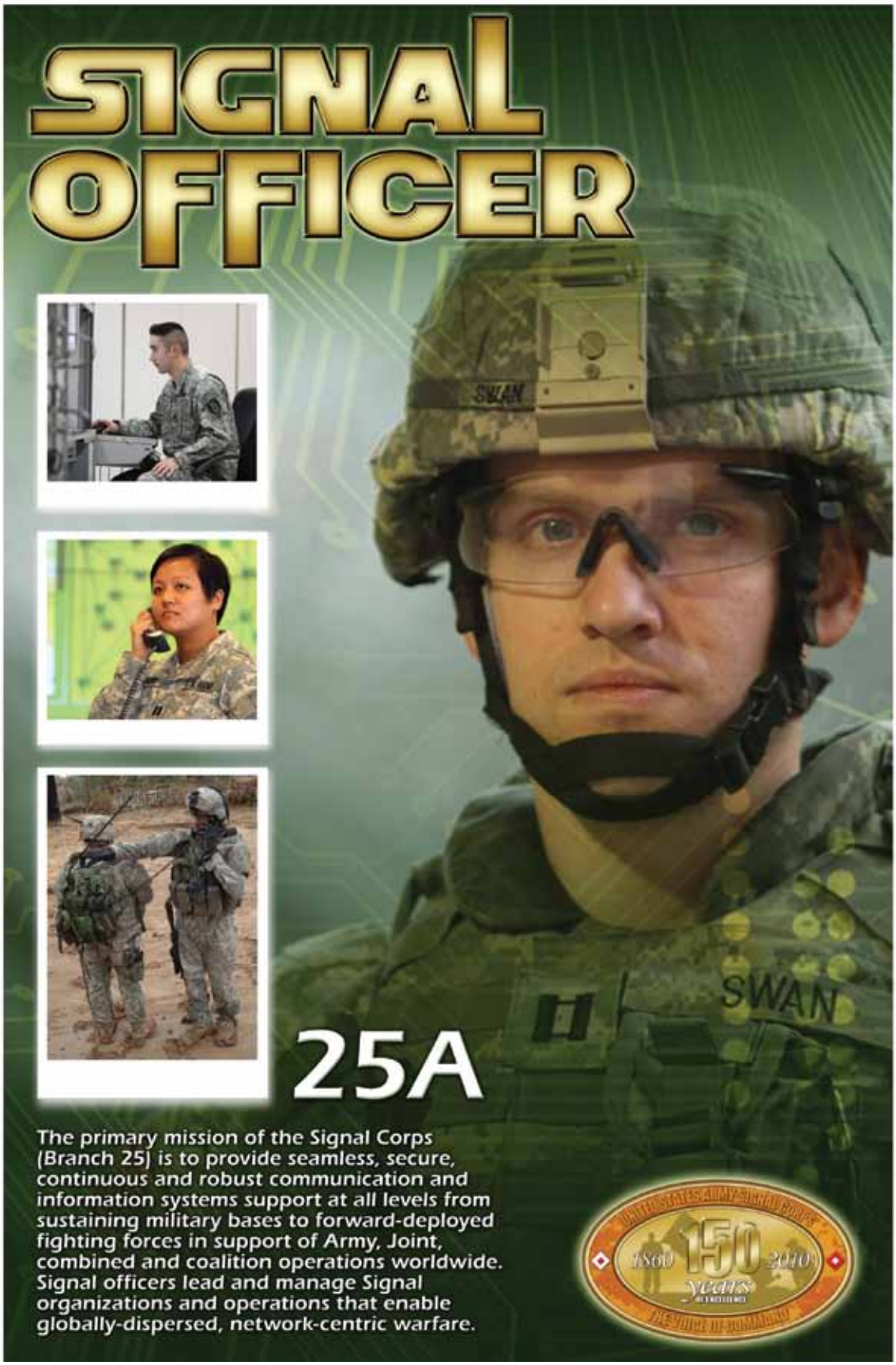
CPT Jason C. Snyder
St. Lawrence University, Canton, N.Y.
Bachelor of Science – Psychology
Troy University
Master of Science – Human Resource Management

12th DIV MiTT Team G1 & G8, K1 Compound (Kirkuk)
1st BDE 1st IN DIV, Fort Riley, Kan.
Operation Iraqi Freedom

My military transition team training began at Fort Riley, Kan. in 2008, where I had the privilege of working with a very diverse group of individuals from various backgrounds. We were well trained on all of the warrior task skills we would need. Throughout the three-month training period my 11-person team (Team Joker) developed solid camaraderie. We deployed to the K1 Compound near Kirkuk, a tiny island (approximately 1.5 football fields large) swimming in a much larger 12th Division Iraqi Army Base (about 6 miles in circumference). There were about 150 U.S. Soldiers among more than 18,000 Iraqi Army personnel just outside our small facility. We ran the perimeter on a daily basis armed with small arms to keep the packs of wild dogs away from us.

I worked as the combat advisor to the 12th IA DIV G1 and G8 and served as lead gunner on our convoys. Through the limited Arabic I had learned, plus the help of experienced interpreters, I was able to forge very strong working relationships with leadership of the 12th IA DIV. As the G1, I made recommendations for enhancing the division's strength management, assisted MOD personnel with ascertaining the amount of "ghost soldiers" in the division to reduce corruption, and tracked religious and ethnic percentages of the Soldiers in the 12th IA DIV. As the G8, I tracked the monthly payments to the 12th IA DIV Soldiers and Sons of Iraq, a group that had been recently incorporated by the Ministry of Interior for assistance at checkpoints because of their strong situational awareness of the area of operations. I assisted Iraqi personnel throughout the division by bringing their pay problems to the attention of the G8 OIC for resolution, and made recommendations regarding more efficient handling of pay problems.

I was very fortunate that my MiTT had strong cohesion that we sustained throughout the mission. I was amazed at the intelligence, generosity, sense of humor, and world experience of my IA counterparts. We developed bonds that run deep and will last forever. I will always hold the memories of that deployment very close to me, because it was definitely a once in a lifetime adventure that I'll always remember.


SIGNAL
OFFICER
SWAN
25A
The primary mission of the Signal Corps (Branch 25) is to provide seamless, secure, continuous and robust communication and information systems support at all levels from sustaining military bases to forward-deployed fighting forces in support of Army, Joint, combined and coalition operations worldwide. Signal officers lead and manage Signal organizations and operations that enable globally-dispersed, network-centric warfare.
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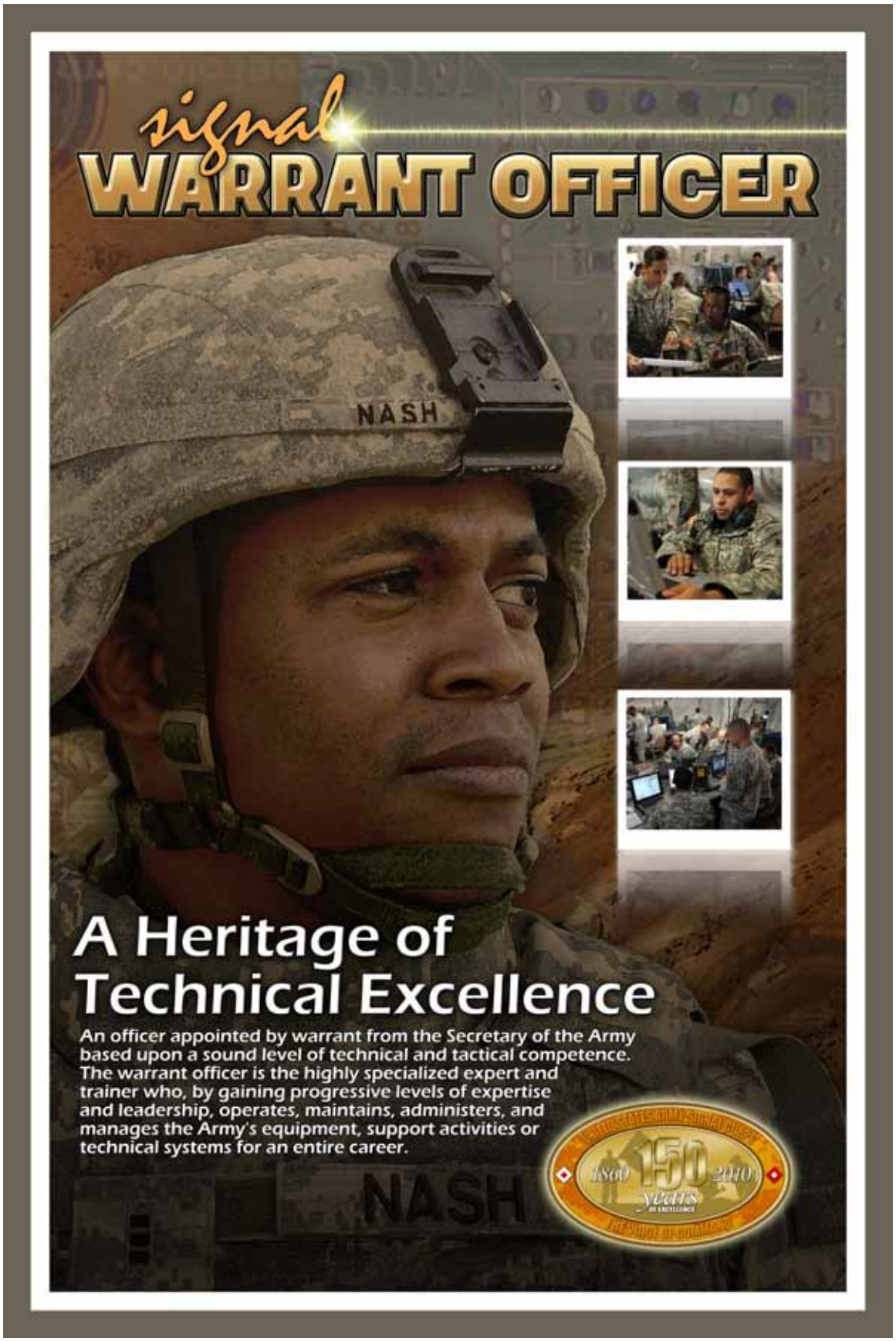
years


signal
WARRANT OFFICER
NASH
A Heritage of
Technical Excellence
An officer appointed by warrant from the Secretary of the Army based upon a sound level of technical and tactical competence. The warrant officer is the highly specialized expert and trainer who, by gaining progressive levels of expertise and leadership, operates, maintains, administers, and manages the Army's equipment, support activities or technical systems for an entire career.
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years
NASH

The Signal Experience

CW2 Julie Wilson
Charlie Company, 302d Signal Battalion, 21st Signal Brigade
Camp Roberts, Calif.
Operations Officer in Charge

It is a great challenge and an esteemed pleasure to be the officer in charge of one of only two CONUS Global Information Grid and Teleport sites. At Camp Roberts, Calif., we have a challenging mission. Being located on opposite coasts from our battalion makes it even more challenging. We provide support to NAOC, STRATCOM, TRANSCOM, SOCOM, PACOM, JFCOM, Fleet Forces Command, JCSE, NASA, FEMA, Homeland Defense, Air National Guard, and the American Red Cross. Since we are located in the CONUS, we are able to provide strategic communications to the eastern and western regions of the world. Having the added capabilities of Standardized Tactical Entry Point, we provide training capabilities for tactical users to prepare them for deployment and to ensure their equipment is properly configured. Not only is this site a CONUS GIG Teleport facility, we are also a co-located SATCOM and Technical Control Facility. Our military team is comprised of the following MOSs: 25S, 25P and 25F. All MOSs cross train and are required to provide troubleshooting assistance in each area. It is a one stop shop.

Our TCF is the west coast DISN Fiber Core Terrestrial backbone. We serve as a hub connecting several locations to include: Beale AFB, Vandenberg AFB, Monterey AFB, Mirimar Naval Station, McCord AFB, to name a few. This allows us to provide high data rates to our customers over several platforms to provide reliable communications. Our workforce is comprised of military, DA civilians, and contractors. This in itself is challenging. It is a constant balancing act to ensure all three sections are resourced. Each section has to assist each other to ensure our mission is accomplished. The military is still required to maintain their Soldier skills while the civilians and contractors have the limits of their actual contract and liabilities. In the end, each is a valuable asset to our team.

This position is extremely rewarding and challenging. The ability to have a dynamic workforce provides different backgrounds, theories, and diverse objectives to accomplishing the mission. The ability to have customers ranging from commercial providers to the warfighter is the reward of this job. We are able to stay on the cutting edge of technology, while still keeping with our military roots to provide stable communications for the warfighter.

The Signal Experience

CPT Amber Walker
United States Military Academy, West Point, N. Y.
Bachelor of Science in Mechanical Engineering

University of Oxford
Oxford, England
Master of Science in Engineering Science

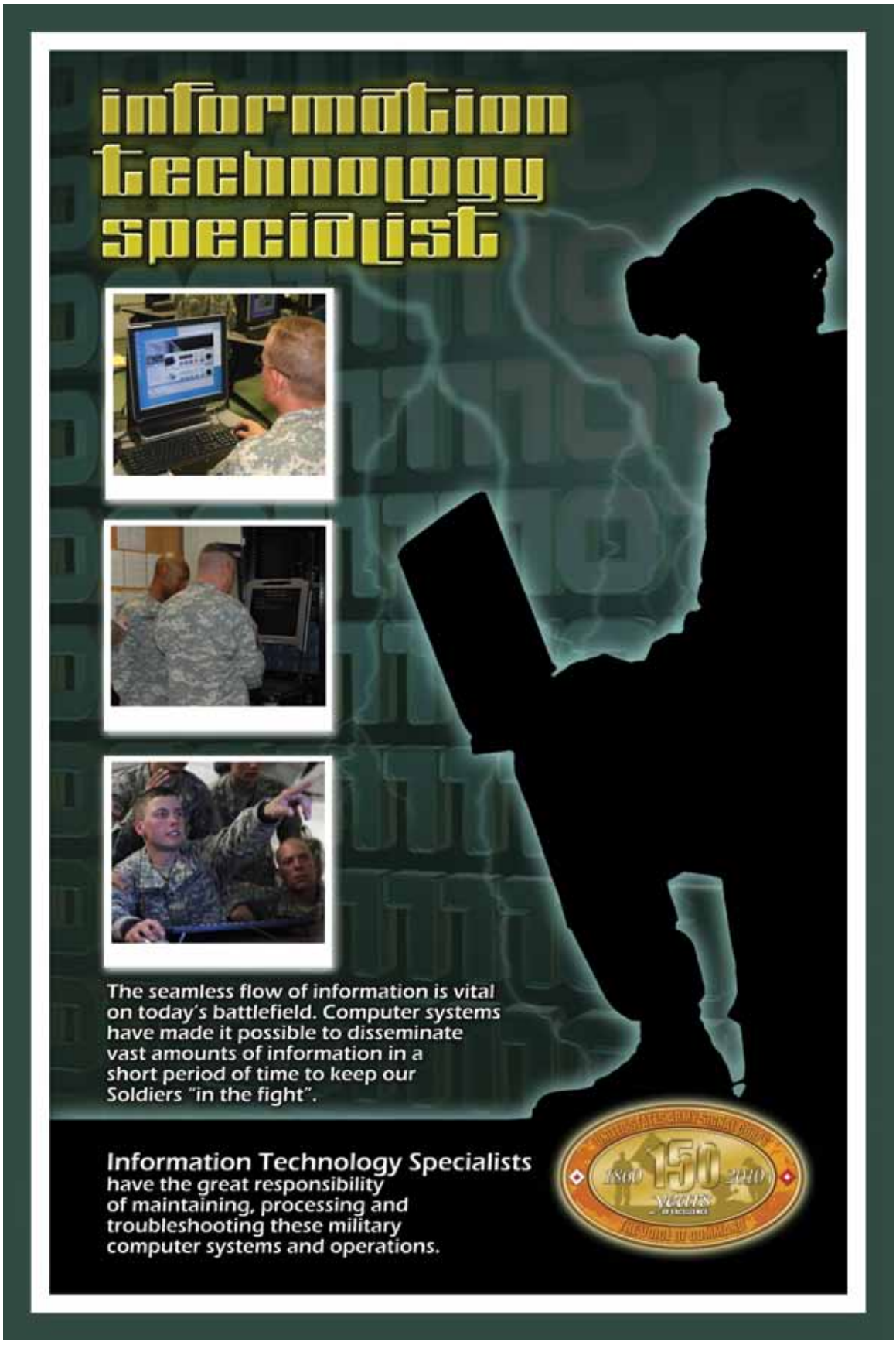
Battalion S-6, Division Special Troops Battalion
4th Infantry Division (Mechanized) Fort Hood, Texas
Operation Iraqi Freedom 07-09

CPT Amber Walker, Battalion S-6, Division Special Troops Battalion, 4th Infantry Division, displays the Bronze Order of Mercury Award she received August 2008 in Camp Victory, Baghdad Iraq for outstanding service during Operation Iraqi Freedom.

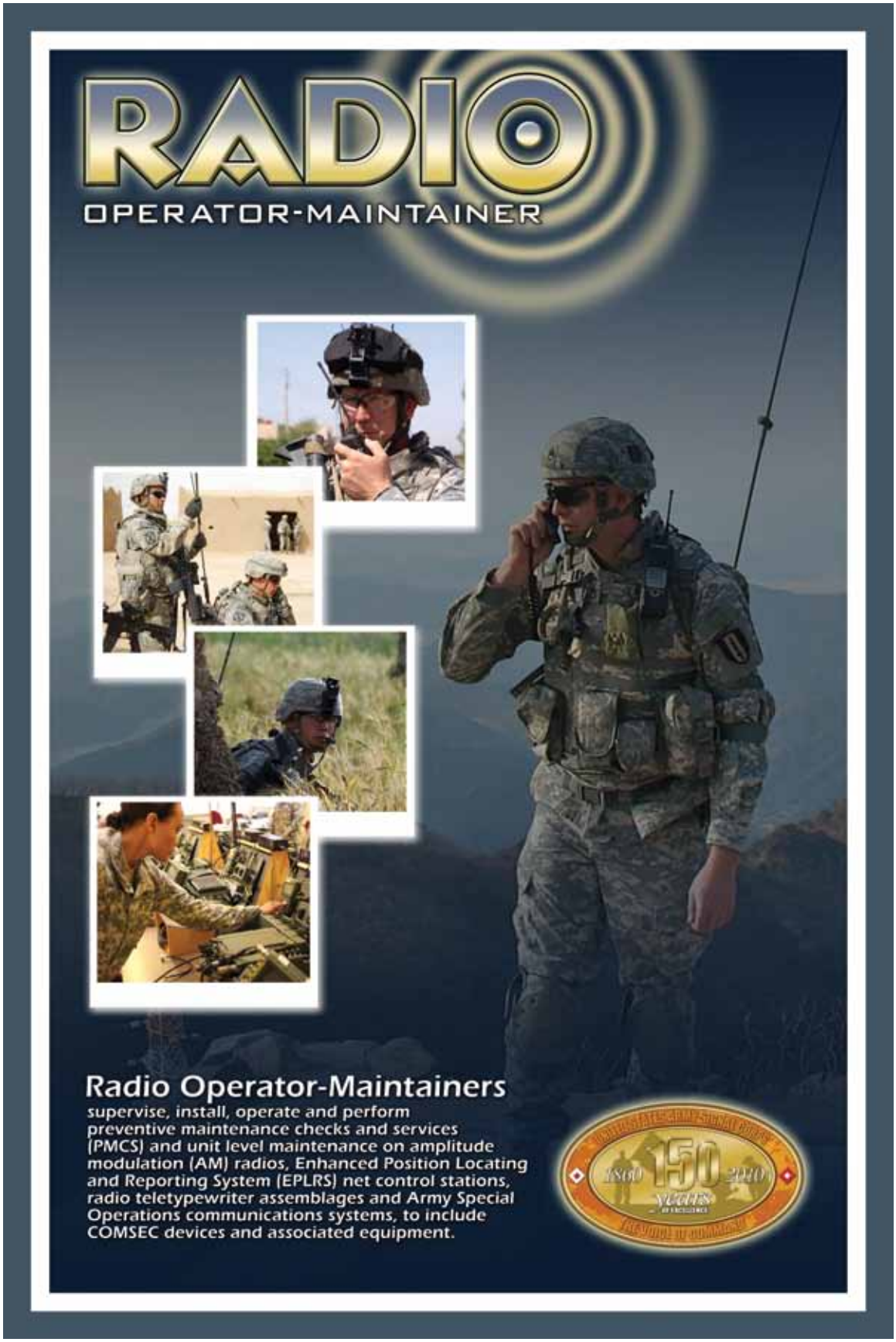
In November 2007 I deployed my battalion's communications to Baghdad, Iraq for a 15-month rotation. Once deployed, our unit consisted of all Division staff, the commanding general, his 150-person security detachment, a radar section, PsyOps, mobile public affairs detachment, the division band, multiple transition teams, and the MND-B detainee holding area.

My subscriber base grew from 800 in garrison to nearly 2,000 in Iraq. I was responsible, in tandem with division's internal support structure, for their daily automations and tactical communications needs which included everything from satellite-based systems all the way down to handheld radios. In my position I also served with the division's network support company and therefore the division G-6. I spent many hours working with the G-6 section to ensure local communications were robust and operational while also aiding our MND-B subordinate brigades with their issues. I sent more than $13 million dollars of equipment to all edges of Baghdad while personally contracting for over $450,000 of necessary equipment and accessories for use within the DSTB and the various units it supported.

While serving as a battalion Signal officer I was constantly challenged with myriad requests, problems and unique requirements that are not taught in military schools. I thrived on the opportunity to provide a solution to the warfighters I served whether it was vehicular remote control units for SINCGARs in MRAPs, new laptop computers, ethernet switch expansions to accommodate a larger network, or fielding over 100 JTRS-enabled multiband inter/intra team radios. As a school-trained engineer I especially appreciate the problem-solving aspects of my role as a Signal Corps officer. The Soldiers with whom I've had the honor to serve are top notch, intelligent and driven individuals. I have forged life-long relationships with fellow Signal officers and senior NCOs and know that these friendships will follow me well beyond retirement.


information technology specialist
The seamless flow of information is vital on today's battlefield. Computer systems have made it possible to disseminate vast amounts of information in a short period of time to keep our Soldiers "in the fight".
Information Technology Specialists have the great responsibility of maintaining, processing and troubleshooting these military computer systems and operations.
1860 150 2010
YEARS

MOS 25B


RADIO
OPERATOR-MAINTAINER
Radio Operator-Maintainers
supervise, install, operate and perform preventive maintenance checks and services (PMCS) and unit level maintenance on amplitude modulation (AM) radios, Enhanced Position Locating and Reporting System (EPLRS) net control stations, radio teletypewriter assemblages and Army Special Operations communications systems, to include COMSEC devices and associated equipment.
1860 150 2010
YEARS

MOS 25C

The Signal Experience

1LT Brandon A. Eicher
University of Kansas, Lawrence, Kan.
Reserve Officer Training Corps
Bachelor of Arts in Economics (2007)

Camp Korean Village, (Technical Control Facility/Help Desk) Officer In Charge
B. Co, 72nd Expeditionary Signal Battalion
Task Force Lion, Operation Iraqi Freedom 09-10

I have had the great fortune of being a platoon leader since February 2009. My first week on the job, my joint network node was tasked with providing Signal support to 21st Theater Support Command in Baumholder, Germany. Being a brand new platoon leader, I was considerably nervous since I had not yet even met my Soldiers and I had never even seen a JNN. Immediately upon my arrival, I was confronted by senior Officers, all asking me very direct and detailed questions about the network and bandwidth. I knew immediately that this job was going to be both rewarding and challenging.

In July 2009, my unit was deployed to Iraq. My platoon was tasked with a variety of missions throughout Western and Northern Iraq. My Platoon Sergeant and I deployed command post nodes, line of sight V-1 and V-3's, and a TSC 93D. We then deployed a team of 12 Soldiers to Camp Korean Village, Western Iraq, to lead the non-doctrinal mission of running a technical control facility and help desk for the post. We assumed the network management duties from a Marine Corps Signal company, with no prior training or experience with strategic communications. My Soldiers showed how capable they are at adapting to challenging environments, by swiftly leading the changeover from the Marine's CENTCOM based domain to the Army's United States Forces-Iraq domain in just a few weeks. We ensured that over 500 user accounts were transferred, and several hundred laptops were baselined with the new configuration. Our consistent and reliable Signal support to units of the both 82nd Airborne Division and 13th Expeditionary Support Command allowed Camp Korean Village to continue its vital mission. My experience in the Signal Corps has been extremely rewarding. It has shown me just how essential the Signal Corps is. I have been given the opportunity to lead Soldiers in the most austere environment possible, and to provide a vital service to warfighters. I am extremely proud to have had the opportunity to serve as an officer in the Signal Corps, and would definitely recommend it to future leaders!

Cable dawgs under the command of 1LT Brandon A. Eicher rearrange and test NIPR and SIPR CAT-V wire around the TCF of Camp Korean Village in November 2009 after a sandstorm damaged cables across the post.

The Signal Experience

MAJ Dale Pittman
Reserve Officers Training Corps, Mississippi State University
Bachelor of Science in Electrical Engineering
University of Maryland University College
Master of Science in Information Technology: Telecommunications Management

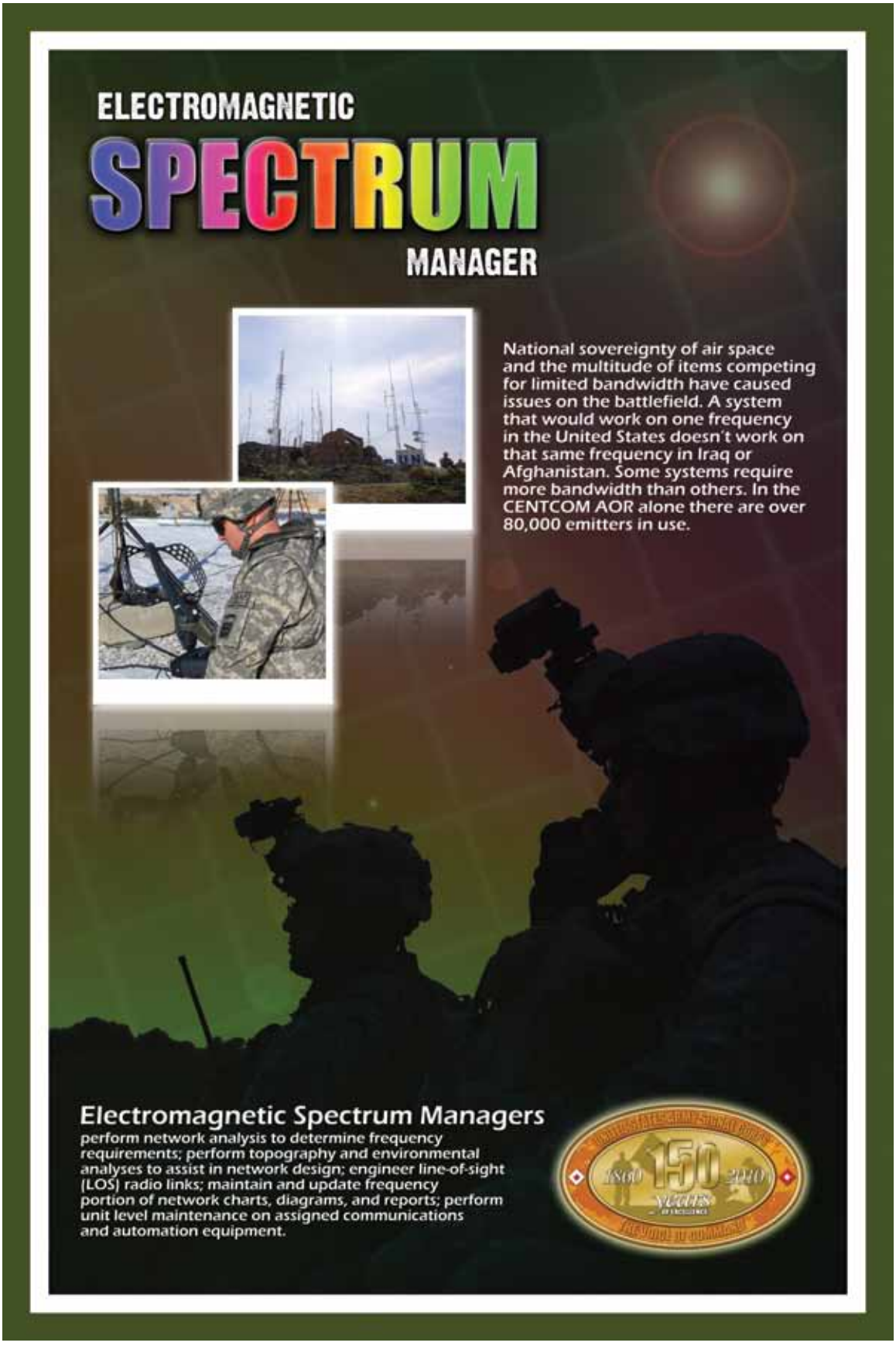
Cisco Systems Inc. Training Division
Durham, N.C.

MAJ Dale L. Pittman pauses inside the Cisco Customer Briefing Center in research Triangle Park, N.C. March 2010. In the training division with Cisco, MAJ Pittman works with unified communications, wireless, security and data center solutions.

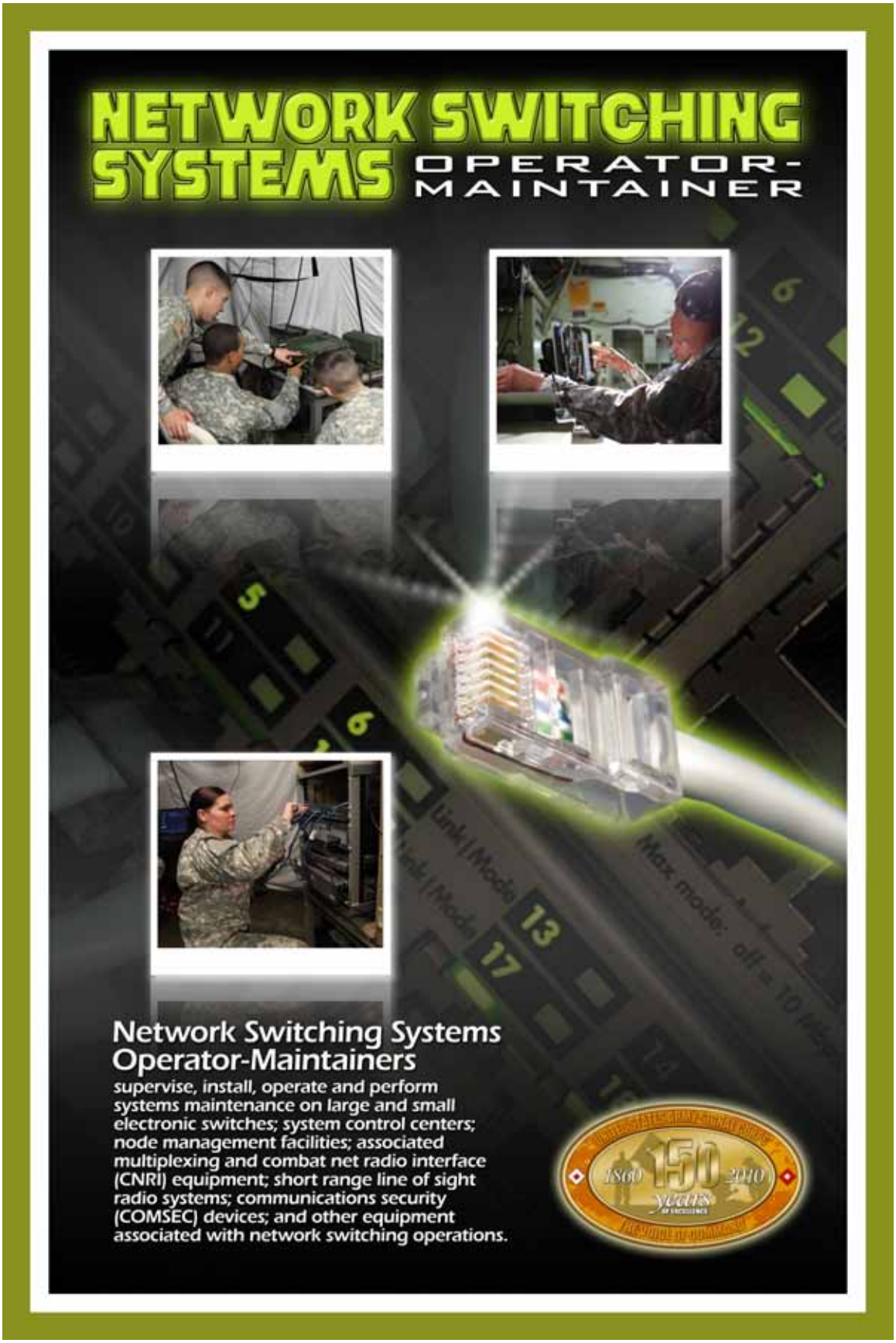
I'm currently training with industry at Cisco Systems in a unique and rewarding experience where I am learning about Cisco's business practices and technologies. I'm assigned to Cisco's Global Government Solutions Group where on a daily basis I have the chance to interact with network consulting engineers and account managers who work with federal, DoD, Army, Navy, and Marine accounts. NCEs are CCIE certified and assist customers by providing network architectural support, IOS recommendations, performance engineering and technical knowledge transfer. As a Functional Area 24 officer, I think there is no better experience that parallels the numerous roles and responsibilities we encounter on the job in the military.

At Cisco, I have the chance to study using simulation tools, working in the lab, or learning something new about technology that I can leverage in the military. Some of the new and emerging technology I have been exposed to in the past year includes Radio Award Routing, Full Motion Video , Unified Computing System and Virtualization, TelePresence, and Internet Routing in Space. Some of these new technologies are being employed in the military now. Others will shape the course of Army communication in the future. Out of my entire Signal experience, working among the best Cisco has to offer and gaining a unique look into the business side of Cisco, is my number one experience so far.

I have had an awesome and exceptional opportunity to serve in different leadership positions and work with numerous types of communication systems and equipment in the military. I could not be more proud of the things I have been able to do in the Signal Corps. I truly believe I have contributed and played a part in revolutionizing tactical communications. The Signal experience is one you must embrace and appreciate.


ELECTROMAGNETIC
SPECTRUM
MANAGER
National sovereignty of air space and the multitude of items competing for limited bandwidth have caused issues on the battlefield. A system that would work on one frequency in the United States doesn't work on that same frequency in Iraq or Afghanistan. Some systems require more bandwidth than others. In the CENTCOM AOR alone there are over 80,000 emitters in use.
Electromagnetic Spectrum Managers
perform network analysis to determine frequency requirements; perform topography and environmental analyses to assist in network design; engineer line-of-sight (LOS) radio links; maintain and update frequency portion of network charts, diagrams, and reports; perform unit level maintenance on assigned communications and automation equipment.
1860
150
2010
YEARS

MOS 25E


NETWORK SWITCHING SYSTEMS
OPERATOR-MAINTAINER
Network Switching Systems Operator-Maintainers
supervise, install, operate and perform systems maintenance on large and small electronic switches; system control centers; node management facilities; associated multiplexing and combat net radio interface (CNRI) equipment; short range line of sight radio systems; communications security (COMSEC) devices; and other equipment associated with network switching operations.
1860
150
2010
YEARS

MOS 25F

The Signal Experience

1LT William F. Thorne
Saint Joseph's College, Maine
Bachelor of Science, Health Administration

C Co. 4BSTB, 4th Brigade Combat Team
4th Infantry Division
JNN Platoon Leader, BDE S6 FUOPs/Projects
TF Mountain Warrior, Operation Enduring Freedom X

In September 2009, 1LT William F. Thorne, JNN Platoon leader, pauses during the process of issusing handheld radios and satellite phones to Afghan national/border policemen in Barg-E Matal, Nuristan, Afghanistan.

As a Signal officer I've had the privilege of leading a JNN Platoon from pre-deployment training at JRTC to our deployment in support of OEF X. During this period of time, I've been introduced to how dynamic a Signal officer must be. As a platoon leader, I am responsible for the success or failure of my platoon to execute its mission of supporting our task force voice and data network while maintaining the welfare of my Soldiers. I've learned tomes from my Soldiers and will always relish the time we spent together.

As our JNN is co-located on the same FOB as our BCT headquarters, the BCT S6 has incorporated the Signal officers of our company for various duties within his section. It is this area in which I have truly grown as a junior officer. My duties include planning C2 infrastructure for BCT level maneuver operations, researching and developing projects such as providing commercial satellite television and internet to Soldiers in the most remote mountainous areas in Afghanistan, and assisting the S6 with the internal management of the section.

At one point these duties placed an NCO in our company and me on an operation in support of Joint Special Operations Forces during which we lived in an enemy surrounded village and maintained a VSAT for our bearded hosts. During this time we dispensed HF, UHF, and VHF radios to and trained Afghan national police and Afghan border police on their operation. We trained the ANP and ABP commanders on the use of satellite phones which were later used as communications platforms with coalition force commanders for critical requests for support and resupply. This mission was complicated in part by small arms and sniper fire, RPG's and of course Murphy and his infamous law (of which I'm certain nearly every Signal officer is familiar).

My experiences here have provided many exceptionally high intensity evolutions. I will always remember this time in my career and will endeavor to make the most of the training and operational experiences that will remain indelibly etched in my mind.

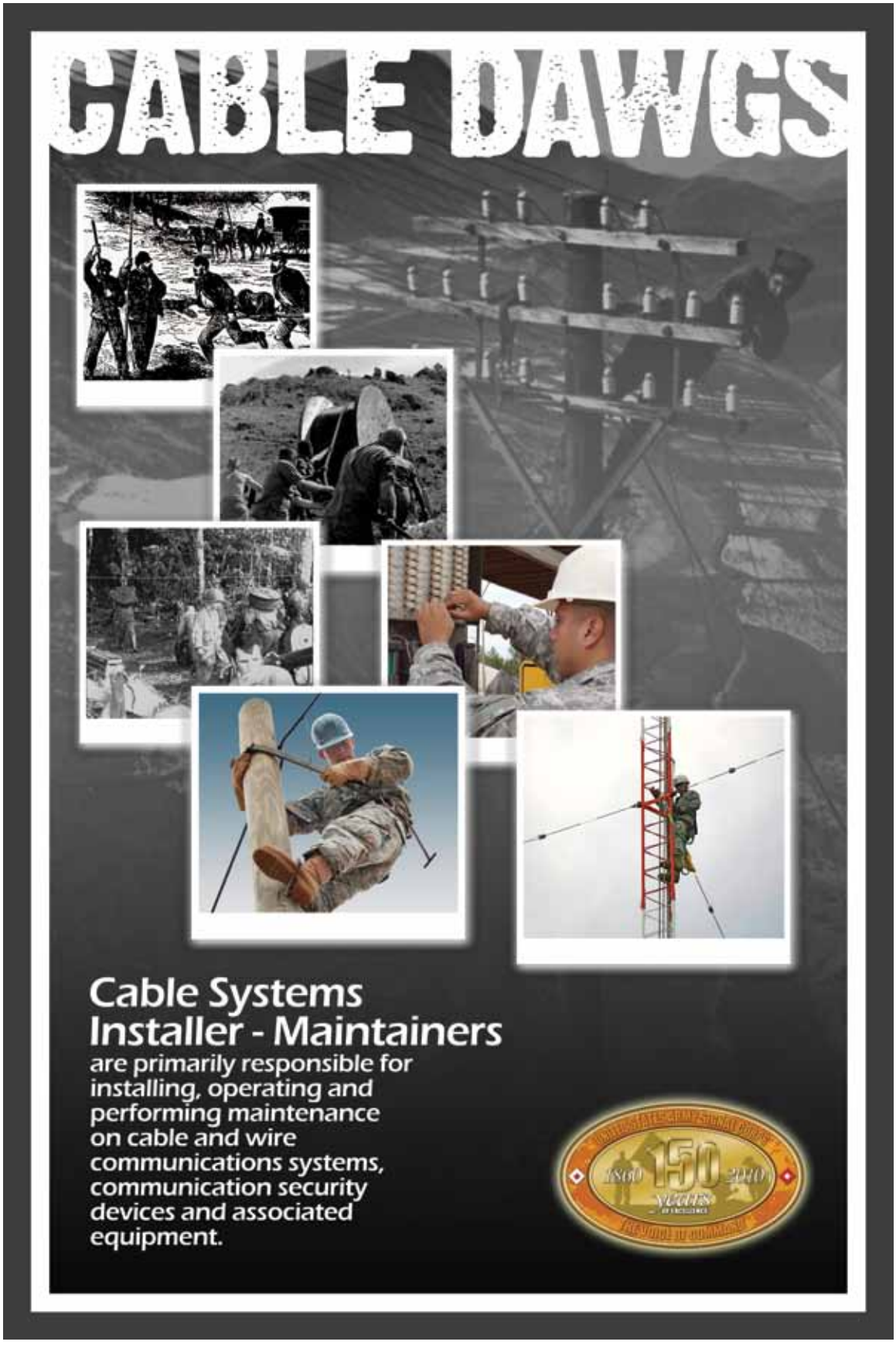
The Signal Experience

SSG Roman Harrington
Division G6 Network Operations NCO
Network Support Company, Division Special Troops Battalion, 10th MTN Div (LI)
Task Force Mountain, Operation Iraqi Freedom 08-09

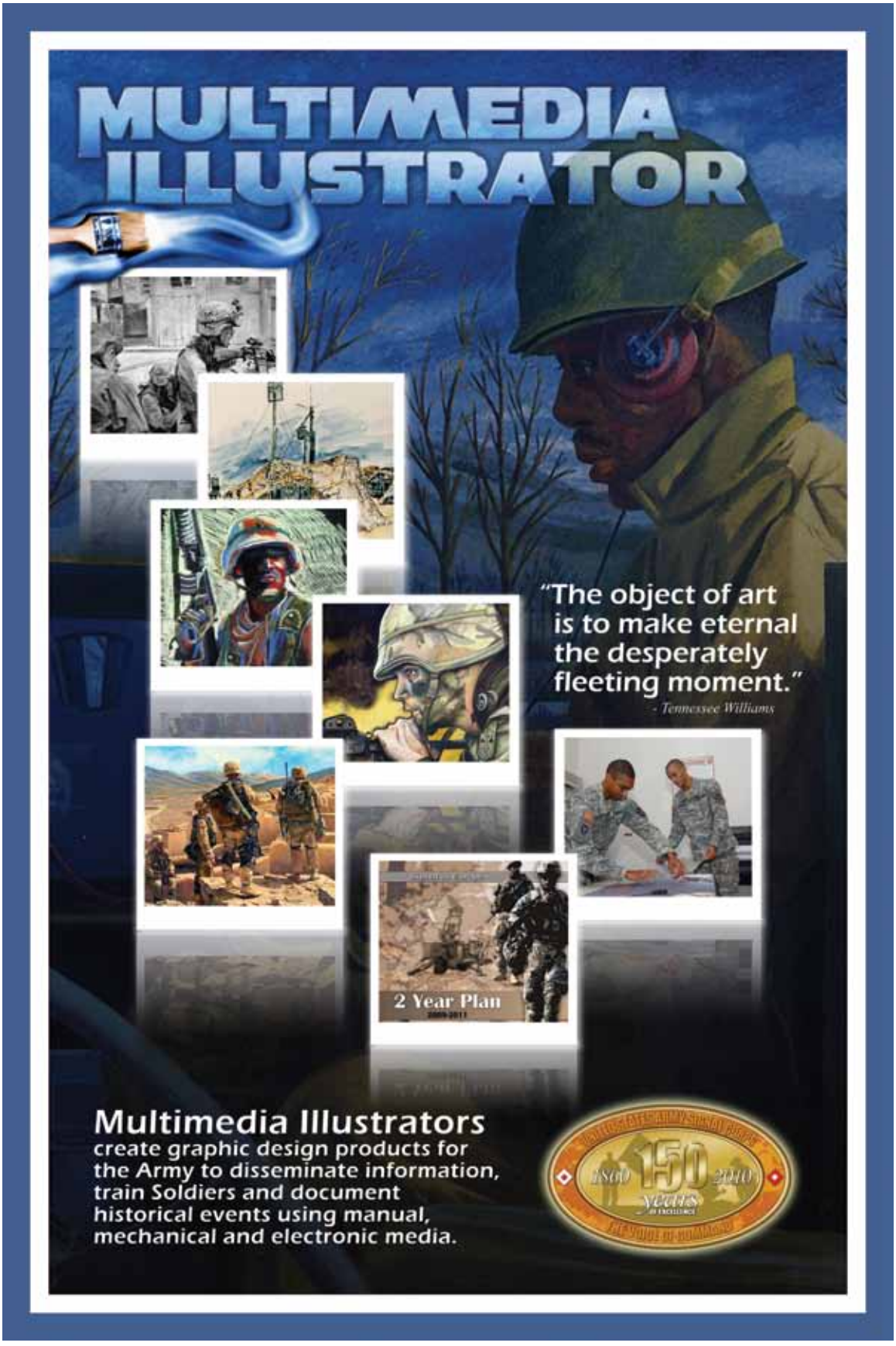
My experience as G6 Network Operations NCO supporting Operation Iraqi Freedom 08-09 was a truly rewarding and memorable experience. Alpha Company, the network support company deployed to Iraq with a little over 150 Soldiers comprised of a Signal company and G-6 division staff section. We provided direct support to the 10th Mountain Headquarters located in Multi-National Division-Center, Camp Victory, Iraq and subordinate units. We provided support for seven brigade combat teams and 2 task force elements, providing reliable Tactical SIPR/NIPR services to our subordinate units within our Area of Operations. Working in NETOPS was a great but challenging experience. I was forced to learn the entire network on all tiers. During our daily briefs we were able to report issues and discuss specific trend analysis within the network and have all major G6 sections available to assist in a resolution. This deployment allowed me to see and understand how teamwork plays a vital role in the success of the mission. I later became a liaison officer for Joint NETOPS Communication Center - Iraq. On this level all branches of service made up the Corps NETOPS. Together, all MNDs assisted Corps level technicians to continuously monitor strategic circuits that supplied voice and data throughout major sites within Iraq for reach back and also cross connect capabilities into our JNTC-S networks. Late spring MND-C was relocated and renamed MND-South in Basra. This move took a lot of planning and execution. Unlike being in Baghdad where we had very dependable LOS redundancy for our systems, the move to Basra quickly forced challenges. By working with some of the greatest network engineers from 10th MTN and 18th ABN Corps (shortly replaced by I Corps), problems were isolated and the network transition made with great success.

At a ceremony in MND-C Headquarters, Camp Victory, Iraq, March 2009, CPT Jessica King, company commander pins SSG Roman Harrington, 10th Mountain Division Special Troops Battalion, with an Army Commendation Medal for outstanding service during his tour of duty in Iraq as NETOPS NCO and division LNO.

I can honestly say this deployment afforded me the chance to meet some real Signaleers that didn't mind adapting to change and teaching subordinates what they knew. For this I am forever grateful because it made me more proficient and a better Soldier.


CABLE DAWGS
Cable Systems
Installer - Maintainers
are primarily responsible for
installing, operating and
performing maintenance
on cable and wire
communications systems,
communication security
devices and associated
equipment.
1800
150
2000
YEARS

MOS 25L


MULTIMEDIA ILLUSTRATOR
"The object of art is to make eternal the desperately fleeting moment."
- Tennessee Williams
2 Year Plan
Multimedia Illustrators
create graphic design products for the Army to disseminate information, train Soldiers and document historical events using manual, mechanical and electronic media.
1860 150 2010

MOS 25M

The Signal Experience

CPT Jerrod D. Castro
Reserves Officer Training Corps
University Of Washington, Seattle, Wash.
Bachelors of Arts in Interdisciplinary Visual Arts

G6 and Signal Company Advisor
4th Iraqi Army Military Transition Team
Company A, 25STB, 25ID
Task Force Lightning, Operation Iraqi Freedom 09-11

(Above) **CPT Jerrod D. Castro prepares to move out of FOB Dagger Salah ad Din Province for convoy duty in December 2008.** *(Below right)* **In March 2010, CPT Castro assists an Iraqi Signal company commander with communications procedures at FOB Ramagan, Tikrit, Iraq.**

In October 2009 I deployed for the third time in support to Operation Iraqi Freedom as part of the 25th Infantry Division's 4th Iraqi Army Military Transition Team. The team was made up of 53 Soldiers with all support slices and a BDE MiTT to augment our team.

As the division G6 advisor, I advised, trained, coached and mentored the 4IA division G6, his Staff and the division Signal company command team on planning networks, training Soldiers and maintaining equipment. I assisted the division G6 in improving his communications support plan for combat and sustainment operations as well as increasing the 4th IA division communications capacity. Through my counterparts and with the help of my interpreter, I learned about the Iraqi culture and picked up basic Arabic language. Over the course of my deployment, I was able to develop a strong and lasting relationship based on trust and respect. Being part of a MiTT requires a Signal officer to perform duties outside their normal area of expertise. We conducted countless convoys throughout the battlefield in order to assess, observe, or coordinate combat and support operations. Because our unit was small in number (and conducting multiple convoys at a time), I found myself serving as a patrol leader on one day and a gunner or driver the next day. On one occasion, I led an effort to clear a suspected Improvised Explosive Device. On another occasion, I served as a battle captain when our FOB received direct fire and I had to coordinate for ISR assets to survey suspected enemy positions. Because of the type of mission we were given, I had to ensure that my Soldiers and I were tactically proficient in our warrior tasks and drills.

This deployment was a unique and rewarding experience for me. My focus was on taking care of my Soldiers and accomplishing our mission. The best part about my experience was that I was able to test myself in everything that the Signal Corps had taught me. The Signal Corps prepared me to be an "agile leader." I am a technically and tactically proficient Soldier, ready to adapt and accomplish my assigned tasks in order to complete the mission. To top it off, I was able to meet and build new friendships, expand my knowledge of the Arabic language, and learn about the Iraqi Culture through my day to day engagements with my counterparts.

The Signal Experience

1LT Benjamin M. Smith
United States Military Academy, West Point, N.Y.
Honors Bachelor of Science in Computer Science

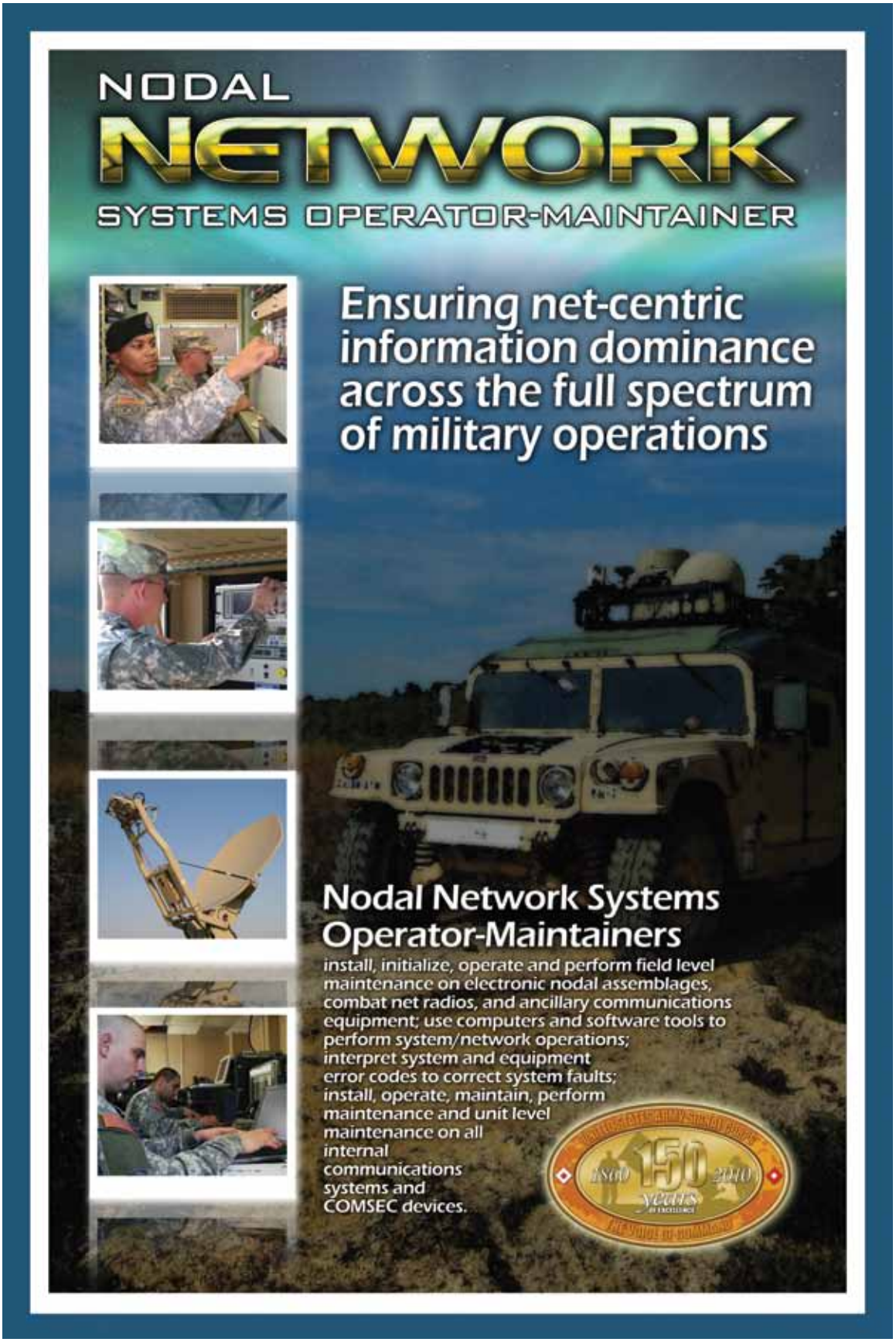
JNN Platoon Leader and FOB Warhorse
Technical Control Facility Officer in Charge
72d Expeditionary Signal Battalion
Task Force Lion, Operation Iraqi Freedom 09-11

As a first lieutenant deployed to Operation Iraqi Freedom 09-11 I have had the opportunity to experience both the tactical and strategic sides of the Signal Corps. As the platoon leader for five deployed command post nodes I've been able to experience the impact tactical signal equipment has on the battlefield. My position as the OIC for a technical control facility has introduced me to the challenges of running communications for a FOB supporting 20 units.

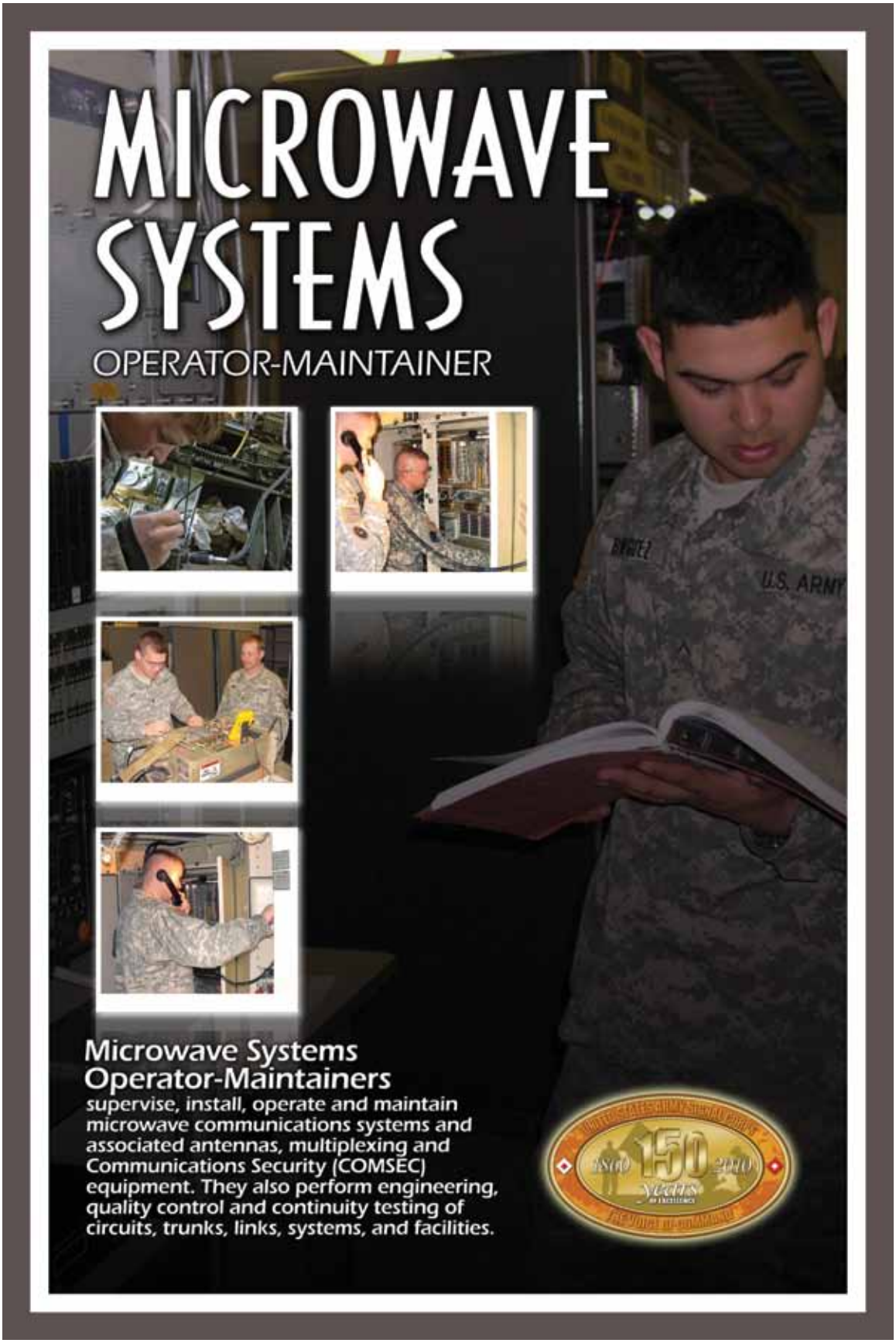
Leading deployed CPNs provides a unique perspective on how important quality communications support is to the warfighter and our mission in Iraq. From supporting brigade support battalions and brigade combat teams to providing the communication for joint provincial coordination centers that supervise the training for Iraqi police brigades, the quality of the services my Soldiers provide is critical to mission success. It's amazing to see E-5 team chiefs grow to their full potential in their positions as senior Signal Soldier on the ground responsible for their Soldiers and maintaining communications critical to their supported unit.

(Above) **At FOB Warhorse, Iraq in January 2010 1LT Benjamin Smith, JNN Platoon Leader, leads SPC Steven Parsons, 72d Expeditionary Signal Battalion, in a reenlistment ceremony as a staged fireball erupts in the background to mark the event.** *(Below left)* **SPC Dondre Fairgood, 72d ESB, scales an AN/30 tower November 2009 at Joint Base Balad to check systems on the antenna link between JBB and FOB Warhorse in support of Task Force Lion's mission, Operation Quickshot.**

Running the technical control facility on FOB Warhorse has been a truly unique experience for a platoon leader in an expeditionary Signal battalion. Enforcing information assurance patches; installing, operating, and maintaining commercial fiber optic cable, and planning and executing expansions or contractions of services on an FOB are all tasks ESBs typically don't encounter. Interacting with a wide variety of customers has been a rewarding experience. Working with Special Forces, unmanned aerial vehicle teams, and provincial reconstruction teams all highlight the diversity of our mission in Iraq.


NODAL
NETWORK
SYSTEMS OPERATOR-MAINTAINER
Ensuring net-centric information dominance across the full spectrum of military operations
Nodal Network Systems Operator-Maintainers
install, initialize, operate and perform field level maintenance on electronic nodal assemblages, combat net radios, and ancillary communications equipment; use computers and software tools to perform system/network operations; interpret system and equipment error codes to correct system faults; install, operate, maintain, perform maintenance and unit level maintenance on all internal communications systems and COMSEC devices.
1860
150
2010
years

MOS 25N


MICROWAVE
SYSTEMS
OPERATOR-MAINTAINER
U.S. ARMY
Microwave Systems
Operator-Maintainers
supervise, install, operate and maintain microwave communications systems and associated antennas, multiplexing and Communications Security (COMSEC) equipment. They also perform engineering, quality control and continuity testing of circuits, trunks, links, systems, and facilities.
1860
150
2010
YEARS

MOS 25P

The Signal Experience

SFC Alexander Perea
HHD 43rd Signal Battalion
USAREUR Commanding General's Communication Team

NCOIC Direct Signal Support Team
Jalalabad, Afghanistan

My experience as the NCOIC for a strategic Signal element supporting Operation Enduring Freedom 08-09 was truly a humbling experience. I was able to work in a capacity that not many NCOs are ever so privileged. We supported 3rd Brigade 1st Infantry Division in the Nangahar Province. I was responsible for four other NCOs, six Soldiers, 30 ITT contractors, a technical control facility and a DKET satellite station.

I was assigned to the 580th Signal Company, 25th Signal Battalion and maintained the strategic communication as well as all the fiber optic lines for FOB Fenty. I worked along side LT Kenneth A. Powell to ensure a constant state of communication for the warfighters in the 1st Infantry Division's area of responsibility.

During my deployment to OEF 2008-2009, we established many firsts. The air traffic control tower was one of our many projects and one of my proudest, as 4 of my Soldiers completed the Fiber Optic lines for this building with help from our ITT fiber optic team. They ensured this tower was able to begin landing aircraft on time with the completion date. Additionally, this dedicated team ensured the BCT commander's mission requirements were met by completing the installation of a fiber optic ring on FOB Fenty. A key project to the success of the FOB was designing the first tech control facility on FOB Fenty and ensuring all agencies were able to support the communication mission. The TCF currently houses all the communication equipment necessary to support the strategic and tactical mission for all brigade combat teams arriving to Jalalabad Afghanistan, and I am proud to say I was a part of that history.

SFC Alexander Perea, HHD 43rd Signal Battalion, terminates a fiber optic cable to provide telecommunication for the the Jalalabad TCF facility in Afghanistan May 2009.

SFC Perea is currently attending the Senior Leaders Course class 25W 005-10 at Fort Gordon, Ga.

The Signal Experience

CPT Barak V. Griffin
United States Military Academy, West Point, N.Y.
Bachelor of Science in Electrical Engineering

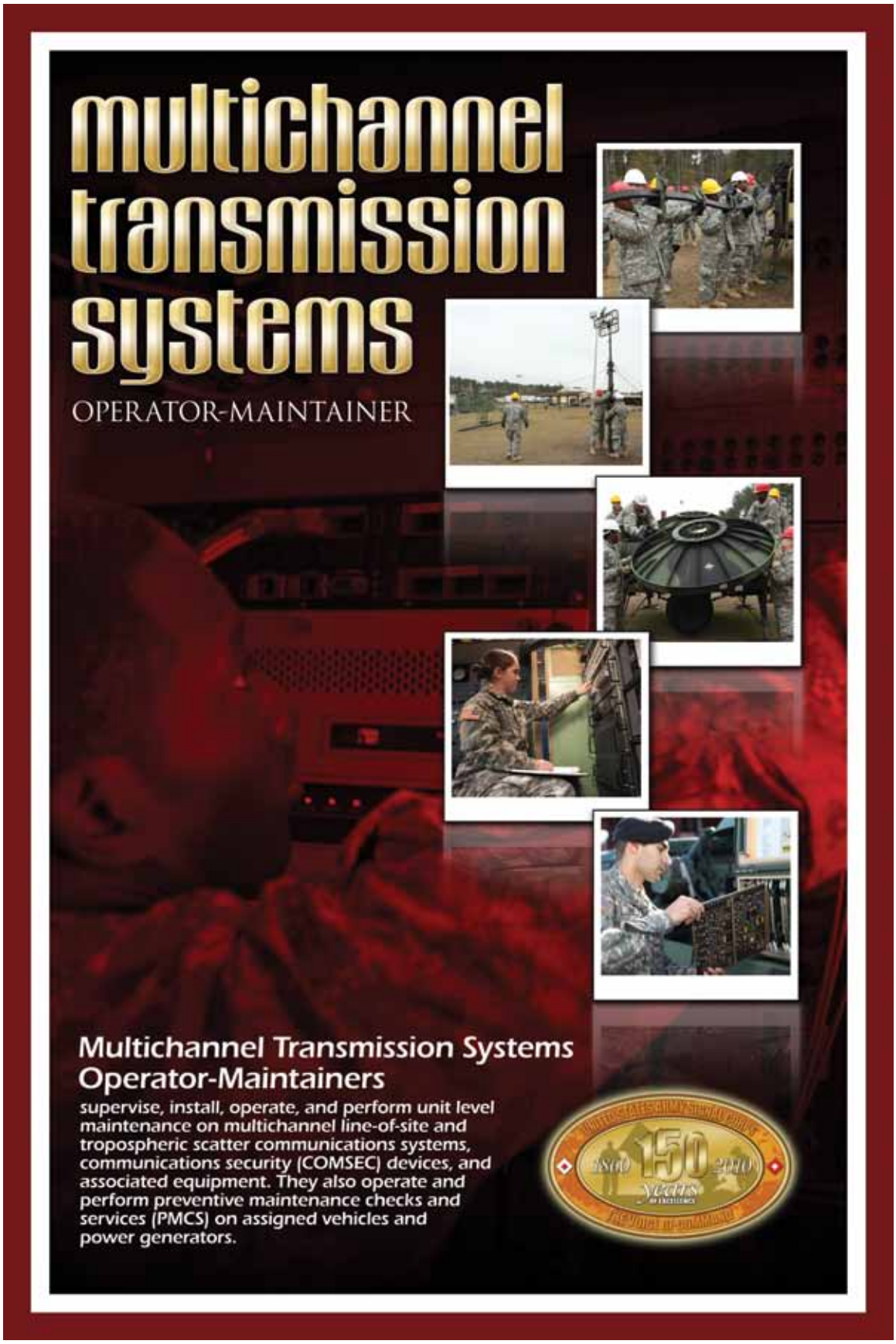
Regional Network Operations & Security Center, Regional Command-South, S3 Projects Officer
HHC, 57th Expeditionary Signal Battalion
Task Force Freedom, Operation Enduring Freedom 09-10

In 2008, when we took part in the 57th Expeditionary Signal Battalion transformation to Warfighter Information Network – Tactical equipment, I did not anticipate the wide scope of the mission that this tactical Signal battalion would soon take on in Southern Afghanistan. As a newly promoted captain, my battalion commander asked me if I was interested in becoming a project manager. As a member of the first Army ESB to go into Regional Command-South, I assumed the role of S3 projects officer, responsible for network infrastructure projects throughout the Southern Region of Afghanistan. When we arrived at Kandahar Airfield in May 2009, there was no infrastructure established to support the massive uplift of U.S. forces in the region. There was only a small detachment of 25Ls keeping the existing communications running, as well as a fledgling crew wiring new buildings for communications under the leadership of two USFOR-A (S) J6 civilian contractors. Jumping into this mission to provide inside-plant and outside-plant connectivity to new units on KAF and the surrounding forward operating bases forced us to create a "projects" platoon comprised of all 25L personnel in the battalion. At the end of the reorganization, the projects team totaled two officers, 11 NCOs, 33 Soldiers and 16 civilian contractors.

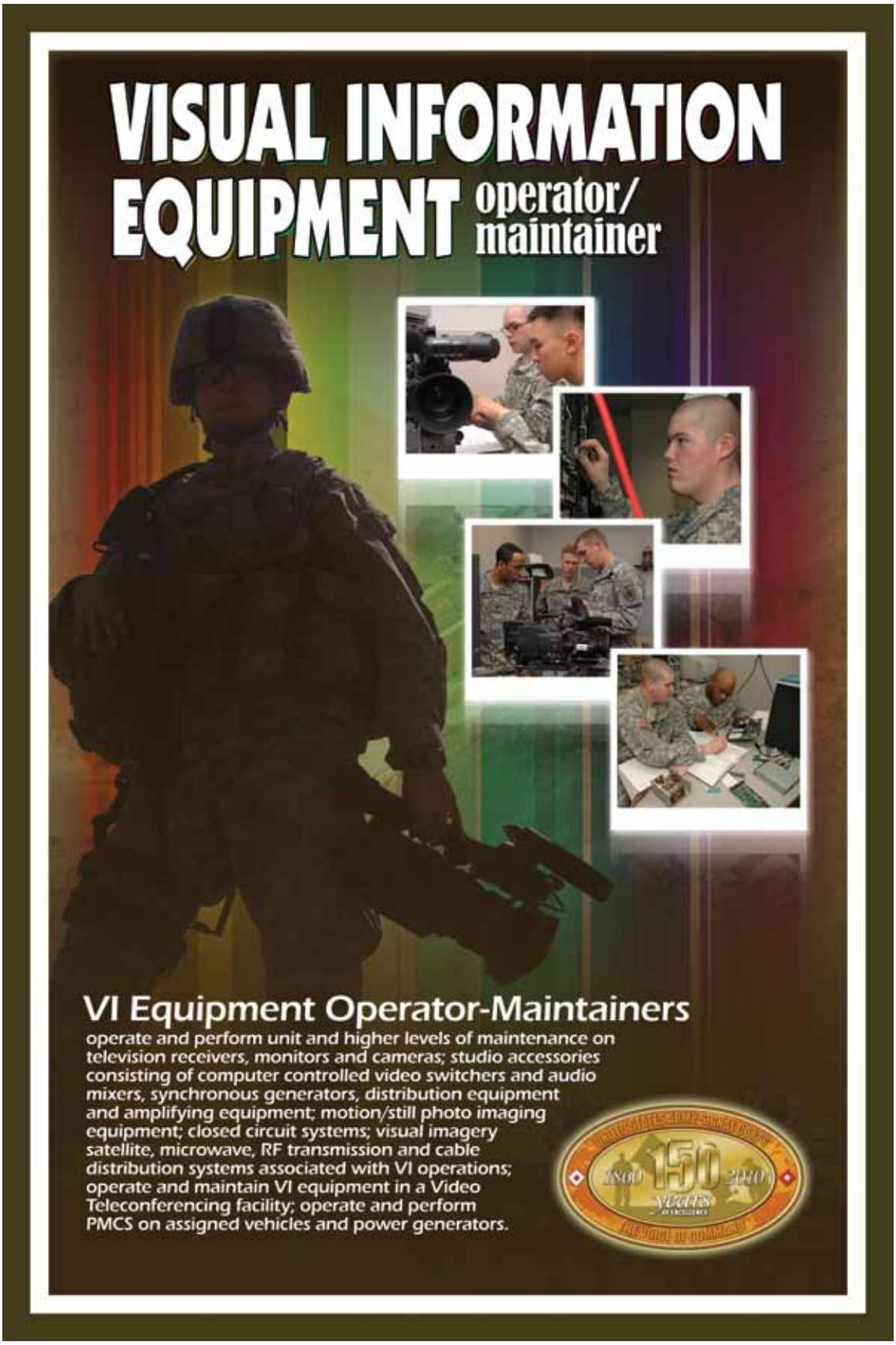
On KAF alone, our network infrastructure projects supported the communications requirements of two American surges – 15,000 troops in 2009 and 15,000 troops in 2010. The 57th ESB projects team completed over 110 commercialization projects, including the introduction of over 70 end-user buildings to the fiber optic network. These projects included the communications infrastructure for one sustainment command joint operations center, four brigade tactical operations centers and two special operations task force compounds.

Members of the 57th Expeditionary Signal Battalion lay fiber optic cable at U.S. Air Force Camp Davis January 2010 to provide connectivity to the aviation brigade at Kandahar Airfield.

I value all of the jobs I have been assigned in the Signal Corps – platoon leader, company executive officer and now S3 projects officer. This job has given me critical problem-solving skills, as well as project management experience. I also enjoyed being the projects officer because it gave me some more time as a "platoon leader," which will always be one of the best jobs in the Army. While my career thus far has not been very technically-focused, I have learned a tremendous amount about the operation and expansion of a robust Army network.


multichannel
transmission
systems
OPERATOR-MAINTAINER
Multichannel Transmission Systems
Operator-Maintainers
supervise, install, operate, and perform unit level maintenance on multichannel line-of-site and tropospheric scatter communications systems, communications security (COMSEC) devices, and associated equipment. They also operate and perform preventive maintenance checks and services (PMCS) on assigned vehicles and power generators.
1800
150
2000
years

MOS 25Q


VISUAL INFORMATION
EQUIPMENT operator/ maintainer
VI Equipment Operator-Maintainers
operate and perform unit and higher levels of maintenance on television receivers, monitors and cameras; studio accessories consisting of computer controlled video switchers and audio mixers, synchronous generators, distribution equipment and amplifying equipment; motion/still photo imaging equipment; closed circuit systems; visual imagery satellite, microwave, RF transmission and cable distribution systems associated with VI operations; operate and maintain VI equipment in a Video Teleconferencing facility; operate and perform PMCS on assigned vehicles and power generators.
1860
150
2010
YEARS

MOS 25R

The Signal Experience

CPT Kyle V. Moses
Reserve Officers Training Corps
The College of New Jersey, Ewing
Bachelor of Science in Computer Science
Webster University, Fort Bliss Campus
Master of Arts in Information Management

Systems Engineer
57th Expeditionary Signal Battalion
7th Tactical Theater Signal Brigade
Operation Enduring Freedom 09-10

In 2009, 57th ESB deployed to Kandahar to support expanding operations in Regional Command-South during Operation Enduring Freedom 09-10. I deployed shortly after completing the Functional Area 24 course and the Signal Captains Career Course at Fort Gordon. I spent the first month shadowing the battalion's network technician, CW2 Eric Rogers, and the rest of the outstanding engineering and network operations teams. The unit was tasked with a vast mission. The high operational tempo and rapid growth in the region resulted in numerous challenges that required strong teamwork and constant vigilance.

One of the biggest challenges was managing the RC-S tactical network hub. This hub is crucial to operations and outside the MTOE skill set of an ESB. Prior to the battalion's arrival in theater, B/50th ESB worked with CJTF-101 to build and prepare this terminal and its base band shelter for the troop surge that occurred in tandem with our battalion's arrival. MKET24 started out as a purely Frequency Division Multiple Access terminal that was upgraded to support Time Division Multiple Access systems as well. The use of available theater provided equipment components, numerous late nights of troubleshooting and "field expedient" repairs led to our well deserved moniker of the "Franken-Hub."

As support requirements continued expanding throughout the year, the MKET24 surged toward its maximum capacity. The theater's long term plan called for the replacement of MKET24 with DKET50. Unfortunately, numerous delays in the project schedule prevented DKET50 from serving immediate growth needs for the theater and we had to immediately bridge the gap.

Our plan of action involved the use of a spare Satellite Transportable Terminal and Master Reference Terminal push package to support additional terminals until DKET50 became available. The push package concept was far from new, but we faced several challenges in the set up process.

The push package itself was designed for use in a Rockwell Collins STT, but 57th ESB was fielded with Lot 10 General Dynamics STTs. Adapting the two systems to work together and support three traffic terminal modems required some creative RF cabling solutions. The project was further complicated by an NCC hard drive failure and Linkway software version conflicts. The temporary, on-the-fly solutions and equipment problems were clear parallels to MKET24 and it wasn't long before the push package earned several nicknames of its own to include "Son of Frankenhub," "Baby Frankenhub," and the combination of choice for the system operators, "Fat Man & Little Boy."

Serving as a FA 24 officer in OEF has been both the most challenging and rewarding experience of my seven years on active duty. I can't imagine a career field within the Army that I would enjoy more or a better place to learn my trade than Southern Afghanistan. This has been a great first assignment as an FA 24 Signal officer.

The Signal Experience

MAJ Brad Cook
University of Iowa
Iowa City, Iowa
Bachelor of Arts in Computer Science
Master of Computer Science

Sustainment Automation Support Management Officer
593rd Sustainment Brigade
Joint Base Lewis-McChord, Wash.

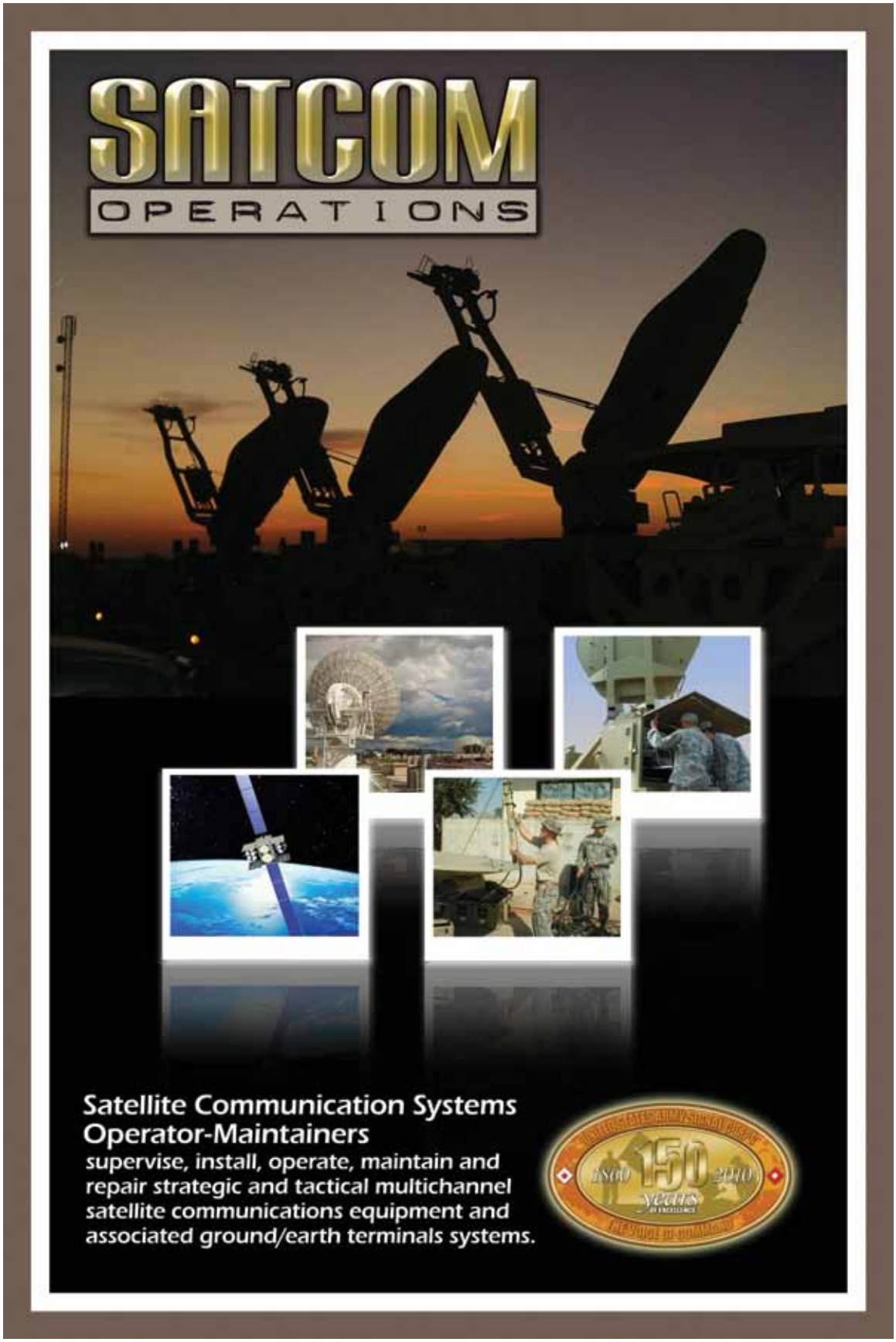
(Above right) **MAJ Bradley J. Cook stands beside a Very Small Aperture Terminal antenna outside the unit's tent in Camp Arifjan, Kuwait March 2010. Members of his Sustainment Automation Support Management Office, SGT Jason Menning and SSG Cheryl Boyd are shown with him.**

In support of Operation Iraqi Freedom I deployed with the 593rd Sustainment Brigade to Camp Arifjan, Kuwait in May 2009 to perform theater logistics support operations. The 593rd SB Sustainment Automation Support Management Office is responsible for ensuring reliable communications for the logistics automation systems which enable logistics units to execute their missions.

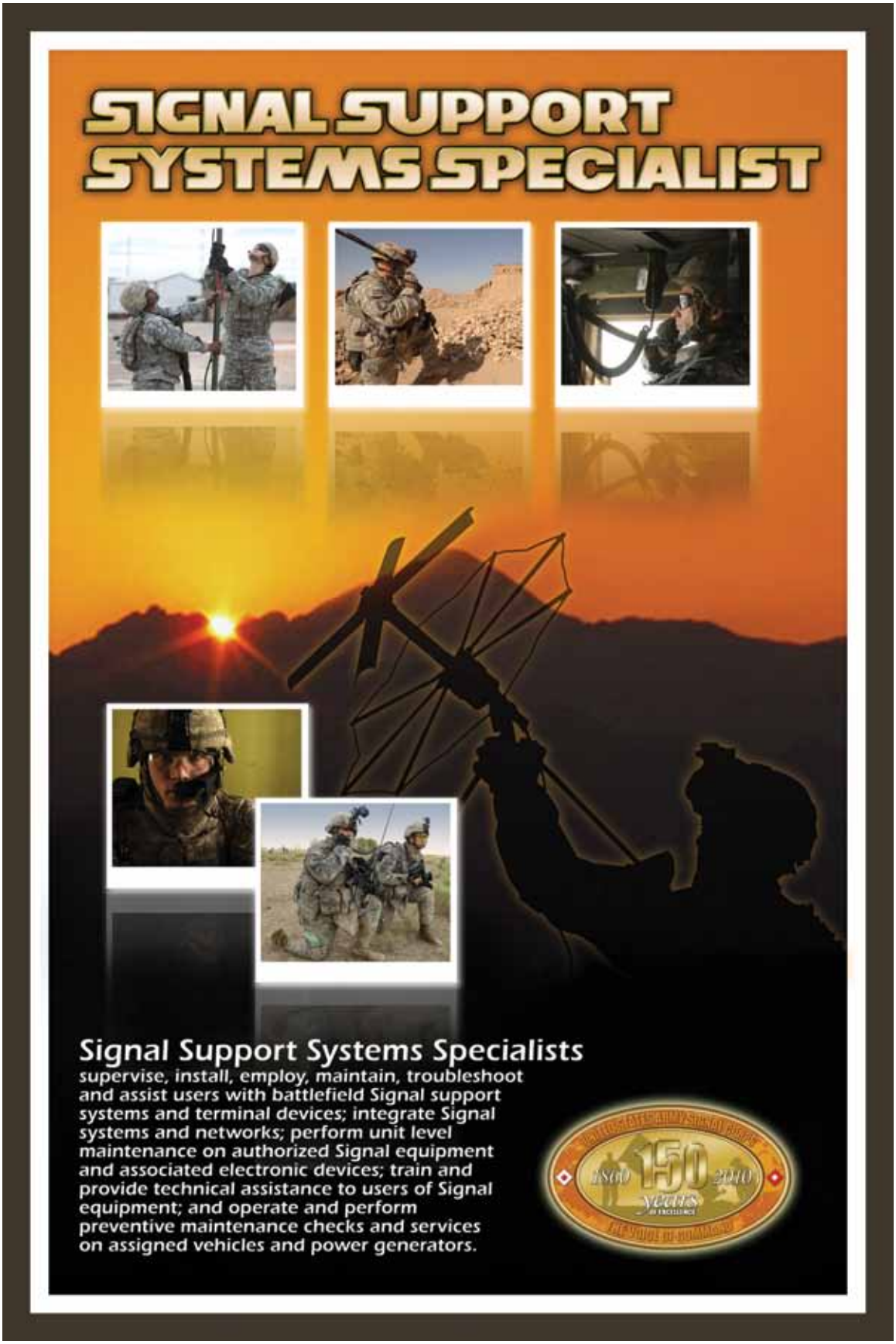
Our six-Soldier team supported a customer base spanning the Middle East, to include: Kuwait, Iraq, Afghanistan, Bahrain, Qatar, United Arab Emirates, Egypt and Djibouti. We provided this support not only through local helpdesk operations, but also by providing oversight for four logistics automation support contracts (leveraging over 40 contractors) worth over $50 million. In Kuwait, this consisted of ensuring connectivity for 1700+ logistics automation systems, enabling accountability and distribution of over $2 billion in Army stocks, processing over 29,000 maintenance work orders, and accounting for equipment worth $500 million. In my duties as a basic branch Signal and current Functional Area 53 officer, there is a lot of similarity between supporting C2 and logistics operations. While the supported systems may differ, success still depends on ready, rapid and reliable customer service and support. The SASMO shop is an enabler, just like an S-6 shop, that must anticipate customer needs and act decisively to solve problems so that the warfighters and sustainers can accomplish their respective missions.

This FA53 assignment provided my first opportunity to work with warrant officers again in over a decade. I am truly impressed by the quality of Signal and logistics warrant officer technicians I worked with. Each expertly filled MTOE slots one or two pay grades above their current grades and were recognized experts throughout our area of operations.

I also came to appreciate even more the resilience and adaptability of Signal Soldiers. All four Soldiers in our largest SASMO shop were Signaleers--none of whom had ever worked with logistics automation systems before arriving at the 593rd SB. All four were able to adapt easily to the new equipment and became experts after the first few months of our deployment. I would be honored to serve with any or all of them again.


SATCOM
OPERATIONS
Satellite Communication Systems
Operator-Maintainers
supervise, install, operate, maintain and
repair strategic and tactical multichannel
satellite communications equipment and
associated ground/earth terminals systems.
1860
150
2010
years

MOS 25S


SIGNAL SUPPORT SYSTEMS SPECIALIST
Signal Support Systems Specialists
supervise, install, employ, maintain, troubleshoot and assist users with battlefield Signal support systems and terminal devices; integrate Signal systems and networks; perform unit level maintenance on authorized Signal equipment and associated electronic devices; train and provide technical assistance to users of Signal equipment; and operate and perform preventive maintenance checks and services on assigned vehicles and power generators.
1860
150
2010
years

MOS 25U

The Signal Experience

MAJ Richard Abelkis
University of Massachusetts, Lowell
Bachelor of Science Electrical Engineering
DISA Joint Staff Support Center
335th Signal Command (Theater) Forward, Kuwait

I just came on board for my third deployment with the 335th Signal Command (Theater). Previously, I was in OEF 2001-2002, OIF 2003, and recently completed my OEF/OIF 2008-2009 tour. My role was the deputy C4I project director for the ARCENT AOR based in Kuwait. The 335th SC (T) is a reserve command filling the theater Signal role for ARCENT. The first units deploying as part of the 2008 Afghanistan build up were additional BCTs and an expeditionary Signal battalion with Signal companies. These BCTs brought along their organic signal assets, JNN and CPNs. The units were being allocated to RC-South, the southern command in Afghanistan.

While RC-East was the main U.S. effort with a full division headquarters and TAC HUB, RC-South was an ISAF command and no additional Division HQ was going to be supporting it. Along with the JNN and CPNs were smaller satellite systems that were augmenting tactical locations with SIPR and NIPR services. Units, as small as platoons, were being fielded these VSAT Satellite Network Access Points. All of these terminals required satellite access to the GIG and local services: email, voice and VTC on their main base in RC-South. To meet that need, a Jan 09 planning session with the 101st G6, ARCENT, 335th, 160th SC BDE, and 25th SC BN devised a design that included a USAFCENT mobile DKET in conjunction with interconnection of the Regional Hub Node (RHN) in Kuwait for a mesh architecture. It allowed for creation of a TAC HUB and GIG off load for RC-South units. This negated having to deploy a full DIV HQ TAC HUB and also utilize the RHN as a force enabler. One of the key differentiators of the RHN was that main services were being drawn from RC-South, however all internet traffic was being directed through the RHN.

A proxy server was placed in the RHN and all non-local traffic (Internet Explorer) was off loaded to the RHN which had a high capacity bandwidth to the GIG. Since the JNN and CPN in TDMA mode with the RHN allowed traffic to go from base camp to GIG, it reduced the load on the strategic DKETs in Afghanistan and showed a significant decrease in delay to the user when accessing the Internet. This also was used for CSTC-A, based in Kabul, and their SNAP terminals. Initially, 12 SNAP terminals were deployed throughout AFG, with an additional 20 – 30 more for future expansion. The RHN was the HUB for those terminals, as well as one JNN and four CPNs left by the 37th IBCT to augment to fixed regional support sites that assisted training of the Afghan national army and the Afghan national police. These sites previously had a basic 2 Mb/s or less commercial microwave service (prone to going down in the evenings) and now had a one hop access to the GIG and redundancy on their network.

This design was a win-win for Army Signal, reducing the requirement for a division tactical hub, and providing access through the RHN for off loading Internet traffic through Kuwait for troops in the field.

The Signal Experience

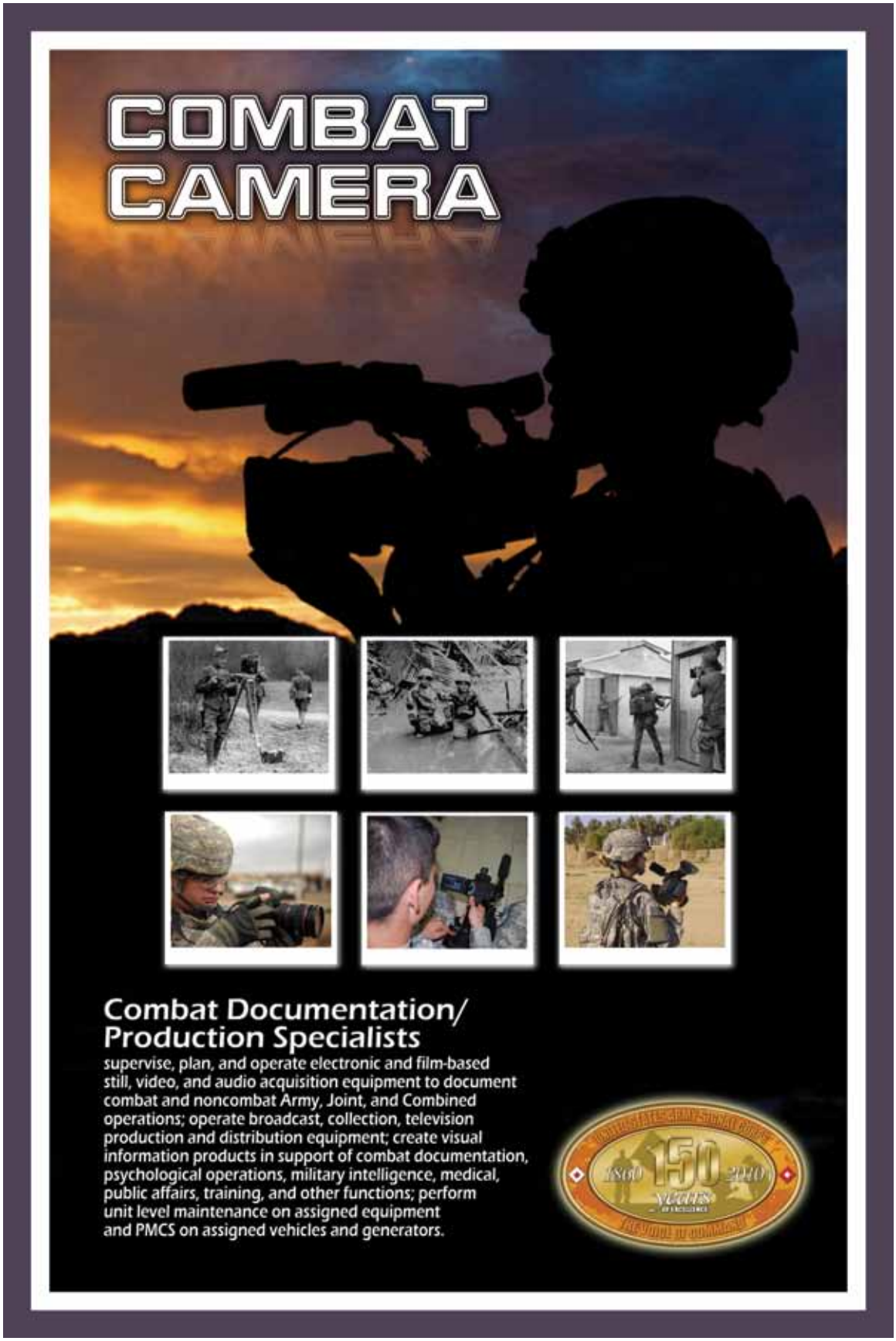
MAJ Heather Gunther
United States Military Academy '02, Colorado Technical University '07
Bachelor of Science in Psychology, Masters of Science in Information Technology

Company Commander
Alpha Company, 72d Expeditionary Signal Battalion
Task Force Lion, Operation Iraqi Freedom 09-11

My experience as an expeditionary Signal company commander supporting Operation Iraqi Freedom 10-12 has been truly rewarding. Alpha company deployed 121 Soldiers into theatre and immediately spread out to occupy 14 remote locations across Iraq. Teams provided strategic and tactical support to customers, including one division headquarters, three major installations, two brigade combat teams, four combat arms companies, two military transition teams advising Iraqi general officers and two combat outposts, totaling 2500 NIPR and SIPR subscribers. In addition to tactical outposts, our first platoon ran the technical control facility and strategic helpdesk on FOB Warhorse, maximizing cross training in non-doctrinal missions with consistently outstanding results. Headquartered in Tikrit, the company operations at COB Speicher provided me an especially unique perspective as we are located near where I served five years ago as a company executive officer with the now deactivated 121st Signal Battalion, 1ID. Witnessing the changes over the years as the theatre has matured, I am immensely proud and continuously amazed. Our efforts have shifted from building a sustainable logistics base to clearing our footprint as the team turns in significant amounts of accumulated and excess bench stock.

To watch this mission come full circle and to be able to lead troops in combat is the greatest honor and tribute that can be paid to those who have sacrificed for this country. I am humbled to serve with such amazing professionals and to provide a critical service as a Signaleer to combatant commanders during this historic time.

(Above left) **SPC Maria Herrera, 94E and 1SG Doug Lynch both from Alpha Company 72d Expeditionary Signal Battalion, install a SINCGARS radio in an M998 to provide communications to support a company small arms range on COB Speicher, Iraq January 2010. (***Above)* **In the midst of a February 2010 winter sandstorm in Tikrit, Iraq 25Q Soldiers from 72d ESB conduct core METL training with an LOS V3. Soldiers practice the "train as you fight" ethic in all weather conditions to get the message through.**


COMBAT
CAMERA
Combat Documentation/
Production Specialists
supervise, plan, and operate electronic and film-based still, video, and audio acquisition equipment to document combat and noncombat Army, Joint, and Combined operations; operate broadcast, collection, television production and distribution equipment; create visual information products in support of combat documentation, psychological operations, military intelligence, medical, public affairs, training, and other functions; perform unit level maintenance on assigned equipment and PMCS on assigned vehicles and generators.
1860
150
2010
YEARS

MOS 25V


THE SIGNAL CORPS'
ARMY
pictorial
SERVICE
1942-1970
While photography had long been a part of the Signal Corps' mission, its value and versatility had never been fully appreciated or exploited.
Improvements in training and organization overcame most of the initial difficulties and the visual record of WWII speaks for itself.
Because of the expanded scope of its work during wartime, the Photographic Division of the Office of the Chief Signal Officer became the Army Pictorial Service on 17 June 1942.
1860 150 2010
YEARS

The Signal Experience

MAJ Hac Nguyen
U.S. Military Academy, West Point, N.Y.
Bachelor of Science in Computer Engineering
Division G-6 Network Engineer, Company A, 82nd Division Special Troops Battalion, 82nd Airborne Division
Combined Joint Task Force 82 (CJTF-82), Operation Enduring Freedom X

"During my OEF X tour, I served as the CJ6 OIC for the CJTF-82 Tactical Command Post 1. CJTF-82 TAC 1's mission was to conduct combined action with Afghanistan National Security Forces within the 10 Afghanistan Central Region provinces. CJTF-82 TAC 1 accomplished its Combined Action mission by embedding itself with the 201st Afghan National Army Corps HQ at Pol E Charki ANA Garrison. My Signal team not only provided U.S. and coalition communication services to the CJTF-82 TAC 1 staff, but also partnered and mentored the ANA Corps G-6 staff to assist them with problem resolution and professional development within their areas of communications. The most rewarding part of my assignment was experiencing and learning about Afghan culture. During my travels to all 10 central region provinces, I had the opportunity to experience many different facets of Afghan culture including their foods, lifestyles, traditions and people. Our biggest challenge was trying to develop the ANA's antiquated communications equipment and limited resources to improve the timeliness of their tactical operational procedures throughout the 201st Corps area of operation. Throughout my Army career, I've been involved in numerous challenging experiences related to providing Signal support to United States and coalition forces. However, helping to improve the tactical communications capabilities of a country that is decades behind the United States in technology was truly the most challenging experience of my Signal officer career."

(Above left) **MAJ Hac Nguyen and COL Hamidi Atiqulah, Afghan national Army, 201st Corps deputy G-6 discuss communications strategies and** *(right)* **direct contractors in the process of digging trenches for laying fiber and copper cable to extend Afghan national army communications across Pol E Charki Garrison in Afghanistan December 2009.**

The Signal Experience

1LT Julie A. Leggett
ROTC
Wheaton College, Wheaton, Ill.
Bachelor of Arts in Political Science

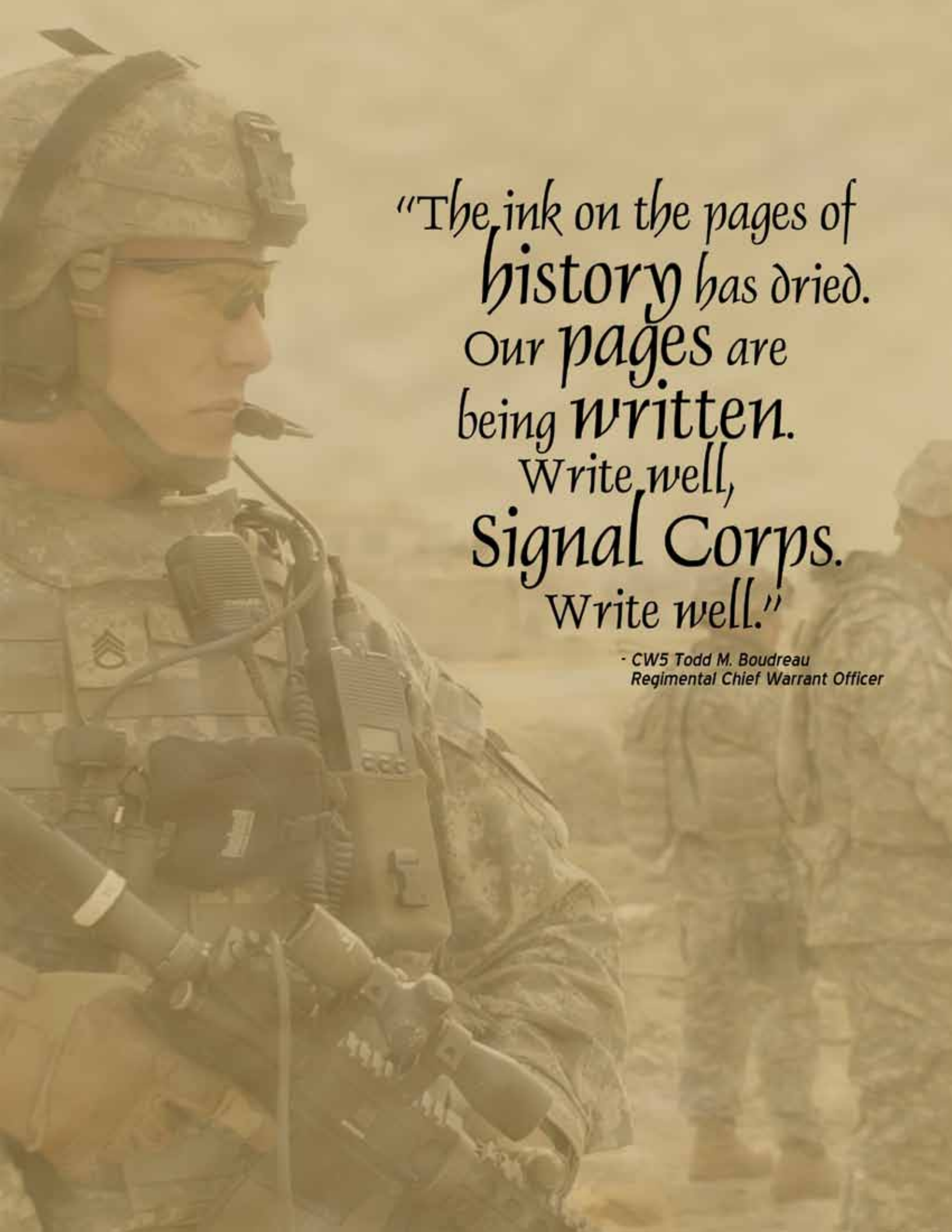
Reconnaissance Detachment XO
Security Detachment, 25th Special Troops Battalion, 25th Infantry Division
Contingency Operating Base Speicher, OIF 09-11

In April of 2008, as a young Signal officer on my first deployment, I was selected by my battalion commander to serve as an executive officer of a maneuver company. With this assignment I was not only taking on a job of increased responsibility, but one in which I was forced to serve entirely outside of my military occupational specialty. I went from providing communications to the division headquarters and staff as a JNN platoon leader to tracking maintenance on MRAPs and crew-served weapons."

Despite the difficulty of adapting to a non-Signal environment, the greater challenge in this job came in my additional duty as project officer for the area of operations. With that title, I began working directly with the local populace, coalition forces, and private contractors to develop a micro-grant program to foster economic development. I also funded public projects to help improve the quality of life. To say the least, this job was not what I expected to be doing on a deployment as a Signal officer -- it was much more.

As a new first lieutenant, there was immense benefit for me to experience the battlefield from a firsthand perspective and be on the operator end of a blue force tracker and a SINCGARs radio during combat operations. Before I deployed, I assumed I would be back with the communication backbone, safe behind the walls of a secure area. Instead, I was given the challenge to adapt to a new operating environment working directly with coalition forces and host-nation entities. The knowledge I gained from this experience has been invaluable to me as a leader. I believe there is benefit for every Signal leader to venture out of the Signal realm once or twice in a career to grasp a greater understanding of the multi-dimensional battlefield.

(Top left) **U.S. Army Signal Corps 1LT Julie Leggett and other Soldiers from the 25th Special Troops Battalion Security Detachment, 25th Infantry Division confer with a local town leader during a site survey in Al Sequor, Iraq, 12 august 2009.** *(Above)* **1LT Leggett shares time with children who received wheelchairs at her request from Iraqi Health Providers in Al Khanik, Iraq, July 2009.**



"The ink on the pages of history has dried. Our pages are being written. Write well, Signal Corps. Write well."

- CW5 Todd M. Boudreau
Regimental Chief Warrant Officer

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"The members of the Signal Regiment today, through implementation of communication networks, are enabling combat and support operations at levels never imagined in the history of our Army. This success is attributed to dedicated people throughout the force executing the mission to standard, and making good decisions on balancing what must be done today in transforming our Army, and preparing for the future."

- BG Jeffrey W. Foley
Chief of Signal

MAJ LAN T. DALAT
Executive Officer
36th Signal Battalion
Korea

ARMY COMMUNICATOR

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