



**STRATEGY  
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**THE EVOLUTION OF THE SIGNAL CORPS ORGANIZATION**

**BY**

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USAWC STRATEGIC RESEARCH PROJECT

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by

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## ABSTRACT

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With the ever increasing range of weaponry and speed of movement on the battlefield, as well as the Army's increased participation in military operations other than war, the Signal Corps units organic to corps and below are not adequate to support the war fighter without the aid of specialized units, specifically designed to fill theater or strategic requirements. Since World War II, these units have grown in size and complexity. This has as much to do with the development of new technology, as it does with the ever increasing size of a given unit's area of operations. The purpose of this paper is to trace the organization of the Signal Corps units, both organic and specialized and how they supported the war fighter.



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But most of all I would like to thank my family whose love makes everything worthwhile and whose support keeps me going.



While cognizant that history never repeats itself exactly and that no army ever profited from trying to meet a new challenge in terms of the old one, the Army nevertheless stands to benefit immensely from a study of its experience, its shortcomings no less than its achievements.

— Major General Thomas Matthew Rienzi

The organization of the Signal Corps has always depended on three things; first, was the available technology, the second was providing the war fighter with what he needed, and the third was the nature and characteristics of the conflict. This has caused the Signal corps to develop two types organizations. One type organization belongs to the war fighter - becomes organic to his organization and provides his required internal communications. These organizations are relatively standard. The other type of organization provides communications required by the nature and characteristics of the situation or conflict. These units are typically non-standard and formed based on the needs of the moment. The former type unit can be planned for, whereas the latter is normally adhoc. However, the war fighter cannot be properly supported without both.

Said differently, the Army Signal Corps has made its organizational structure dependent on supporting the war fighter from within their organizations and from outside their organizations. The Signal Corps supports the war fighter from within by providing the organic communications, i.e., tactical signal units, required by corps and below units to prosecute the battle. It supports the war fighter from outside by providing specialized units to take advantage of required technology, or to connect the tactical signal units to a theater of strategic network outside their organizations.

With few exceptions since World War II the Army has not fought the kind of war it was expecting to fight. Therefore, the Signal Corps has failed in most cases to be

properly organized. When the realization of this shortcoming became evident, the Corps reacted by creating special signal organizations to better meet the need.

Prior to World War II, flexibility of manning and equipping any organization on short notice was institutionally difficult and complicated. Therefore, units were created for short term use. They were created either by designating them as experimental units, or simply by piecing them together.

In an effort to correct an in-place organizational structure which was incapable of communicating over ever increasing distances and difficult terrain, more of these specialized units were created during the Vietnam Conflict. More recent conflicts have required assets which far outstrip the organic, or even planned capabilities of existing units. This has made it almost a standard requirement to employ more signal units and equipment than are organic to the size war fighter units deployed. The result is an ever increasing requirement for either units augmented well beyond their normal size, or contractor support on short notice.

This paper will explore the organizational development of both the organic corps and below units as well as the adhoc units required to meet the challenges of the conflict and technologies at hand.

## **ORGANIZATION OF THE SIGNAL CORPS IN WORLD WAR II**

To understand the organizational changes made during World War II it is important to look at the size of the Signal Corps shortly before the onset of U.S. direct involvement in the war. This is especially important because shortly before the outbreak of World War II, the Signal Corps was one of the smaller of the branches in the Army. As the total strength of the Army grew in anticipation of war however, so did the total

strength of the Signal Corps. The situation and the characteristics of the war would drive the formation of special signal units, albeit with great institutional difficulty.

The 1941 Troop Basis, which was the formal War Department authorization for the manning of units, envisioned the activation of at least four field armies. It therefore allowed the Signal Corps one signal service regiment, five air warning regiments, 19 signal battalions, 32 division signal companies, one troop for each of the cavalry divisions (total of two), 29 platoons and various other specialized companies to meet the needs of radio intelligence, operations, depot storage, repair, photographic duties, construction, and so forth.<sup>1</sup>

In 1941 each Infantry division consisted of 15,000 personnel, three regiments of three battalions of three companies and one heavy weapon company and regimental artillery. This system was known as the triangular division and would be the basis of organizational structure until shortly after the Korean war. On the other hand, between 1940 and 1942 Armor divisions were tailored organizations, normally consisting of two regiments of three tank battalions each one armored infantry regiment of three battalions and three battalions of 105-mm self propelled howitzer. Both types of divisions would be assigned a signal company with a Lieutenant Colonel as the communications staff officer. Corps level organizations were supported with a signal battalion and a Signal Corps Colonel as a staff officer.

With the war going on in Europe, President Roosevelt anticipated eventual United States involvement and declared a "limited national emergency." This would start the build-up of the Army and with it the Signal Corps.<sup>2</sup>

By August 31, 1941, the Signal Corps had witnessed an overall increase nearly ten-fold to its original strength, with nearly 2,179 officers and 40,128 enlisted personnel. Although this initial expansion was extremely rapid it was not enough to support a total war. The Signal Corps used a program known as the Affiliated Program, whereby it would tap the civilian population for technical expertise and training. However, the quantity necessary was not successfully recruited. Therefore, smaller cadres of expertise were formed and then signal units were built around them.

The means by which any branch of the Army shaped its units to fit into the overall Army structure was (1) its troop program, which forecasted the number and type of unit to be on active service; and (2) the table of organization (T/Os), which authorized the composition of a given unit. Unfortunately, the T/Os were extremely rigid in structure, size and composition.<sup>3</sup>

The Office of the Chief Signal Officer tried vigorously to change these rigid structures. It was obvious that flexibility and elasticity were key ingredients in both organizational strength and economy in the use of manpower. Never before was such economy in men as critical as then. The war had already highlighted the need for new military methods and equipment that were greatly different from those known so far. Also, both climate and terrain were clearly going to affect operations significantly. Inflexible, rigidly organized T/O units could not be expected to operate well in such widely varying conditions as could be found in the Mid-East, the Far-East and Europe.<sup>4</sup>

It was intuitively clear that units would have to be tailored to fit the existing conditions and situation. However, the process for either setting up a new T/O or changing an existing one was laborious and protracted. A detailed breakdown of each

man's duties in a proposed new unit as well as his grade were only the first steps the Signal Corps would have to take to start the process. Then it would be submitted through the Adjutant General to the War Department Staff. It would go through the G-1 through the G-3 and eventually make its way to the War Plans Division. Once there, a requirements unit would analyze it for its equipment, training and operational feasibility. If it made it through these various stages, it would be approved. Conversely, it could be stopped and sent back to the Signal Corps to be reworked and then the cycle would have to start over again.<sup>5</sup>

Due to this rigidity, the Signal Corps often resorted to special tables or organizational charts to establish and organize new units. These units would be created to perform those functions or missions that organic T/O units were not organized or equipped to perform. This was a quick fix to the problem and circumvented the cumbersome process of T/O development. The drawback was that since these units had no official standing as a T/O there was nothing to determine its training requirements.<sup>6</sup>

At the outset of the war, the Signal Corps had the mission for: Installation, operation, and maintenance of all wire communications down to but not including brigades; Installation, operation, and maintenance of radio communication agencies down to but not including brigades; Installation, operation, and maintenance of message centers for headquarters of division and larger units; Operation of messenger service between the echelons of the headquarters and between headquarters and the echelons of the command; Breeding, training, and supply of pigeons; Installation, operation, and maintenance of the meteorological service; Installation, operation, and maintenance of the signal intelligence service; Installation, operation, and maintenance of photographic service; Supervision and supply of signal equipment and material; Other duties such as the responsibility for the operation of schools were considered incidental to the above. The Signal Corps had combat as well as supply functions. It provided for the equipping of the arms with all the instrumentality of signal communications, manufacture, and distribution of equipment as well as repair and replacement parts.<sup>7</sup>

Although some of these functions referred to units above corps, generally they were intended for corps and below. However, if a requirement did not fit within this mission statement, there was no unit or organization to accomplish it. New requirements coupled with the need to quickly form specialized units resulted in drawing on available signal resources.

The first units to face the enemy in the field were in the Pacific. In December 1941 the Japanese coupled their attack on Pearl Harbor with assaults on American air bases in the Philippines. With the defeat and surrender of the Philippines, communications between the Philippines and the Allied forces in Australia was maintained surreptitiously by soldiers who had escaped into the hills and by Filipino guerrillas. The Signal Corps organized a unit, the 978<sup>th</sup> Signal Service Company, to infiltrate the islands and cooperate with the guerrillas. Comprised largely of Filipino-American volunteers, the members received training in the building, operation, and maintenance of radio stations; weather forecasting and aircraft warning; the use of cameras and these men, some of whom were captured by the Japanese and tortured to death, helped pave the way for the eventual Allied liberation of the Philippines.<sup>8</sup>

Another specialized unit that was formed would be used as "code talkers." The 4<sup>th</sup> Signal Company used American Indians from the Comanche tribe. Because few non-Indians knew the difficult non written language, they were the perfect security system for voice transmission. They served as voice radio operators with the 4<sup>th</sup> Infantry Division.<sup>9</sup>

Some specialized units required a mix of military and civilian contractor. One of these units was formed to operate a strategic communications system between the Aleutian Islands and the Continental United States. The formation of this unit was driven by the situation at hand. Because the Signal Corps did not have the available construction capabilities, civilian contractors were called upon to install the system.

On 3-4 June 1942, nearly six months to the day after they had bombed Pearl Harbor, the Japanese as part of their Midway campaign

struck the naval base at Dutch Harbor in the Aleutians and followed up with the occupation of Attu and Kiska Islands at the western end of the chain. From these outposts the Japanese could harass American lend-lease shipments to Russia and threaten the continental United States. There they remained until ousted by force from Attu in the spring of 1943, after which they abandoned Kiska voluntarily.<sup>10</sup>

The enemy presence on American soil for almost a year stimulated work that was already underway to make Alaska more defensible. In collaboration with Canada, the United States Army in March 1942 began building the Alaskan (Alcan) Highway, stretching over 1,400 miles from Dawson Creek, British Columbia, Canada, to Big Delta, Alaska, where it connected with the Richardson Highway to Fairbanks. This roadway provided a land route to Alaska and means for supplying a number of military airfields stretching across northwestern Canada.<sup>11</sup>

The Signal Corps furnished communications for the engineer troops building the Alaskan Highway. While radio provided the necessary mobility, it was unreliable in the far north due to atmospheric and magnetic interference. It also posed a security problem. Better communications were necessary. Consequently, in the summer of 1942 the Signal Corps took on the task of installing an open wire (bare wire) telephone line parallel to the road, using civilian construction crews and uniformed operating personnel. Because the Signal Corps had few construction units available, civilian crews performed much of the work. Commercial companies, particularly Western Electric, supplied technical specialists and equipment. With a capacity of six voice and thirteen teletype circuits, the line required the setting of 95,000 poles in frozen, snow-covered ground and stringing of 14,000 miles of wire.<sup>12</sup>

Once formed, specialized units above corps were manned and equipped to perform specialized communications functions. However, even after their formation they were often expected to extemporize their functions or organization to fit the theater or strategic requirements. Such was the case in Operation Torch.

The Signal Officer in the U.S. Army was responsible for Signal Supply, Intelligence and photography, yet these were all outside the capabilities of his British counterpart in Operation Torch. This forced the Signal Officer to coordinate with multiple agencies on the battlefield. Also, in the instance of the Allied Forces Headquarters, AFHQ, Signal Section, they were expected to supply communications to an entire

headquarters. This meant not only U.S. and British, but also both Navies and Air Forces as well as the diplomatic sections. The communications provided were extemporized from a unit tasked well beyond its organic assets.<sup>13</sup>

By 1943 it was obvious that a rigid system of organization would not meet the demands of the ever changing environments of the European and Pacific theaters of operations. Therefore, a "cellular" T/O was established - it only made sense. Until this time, units had been either augmented with nonstandard equipment and personnel, or pieced together to fill a specific need. This new system would allow units to be constructed out of small modules to better adapt to a nonstandard situation. Each team had a two letter designator. EF denoted a sixteen man radio-link team, while EA stood for a four man crystal grinding team.<sup>14</sup>

#### **ORGANIZATION OF THE SIGNAL CORPS FOR THE KOREAN WAR**

The interwar years found the Signal Corps, although reduced in numbers, much the same as in World War II. Lessons learned from World War II had driven organizational changes in the Infantry, Armor and Airborne Divisions. Each of these divisions had a Signal Corps Company assigned with the mission of providing communications to all units operating directly under the division headquarters.

Its capabilities included wire and radio, teletype, messenger, signal maintenance, still and motion picture photography and development and in the case of the Airborne Division limited radar assets. Each Division has a Signal Corps Lieutenant Colonel assigned as the Division Signal Officer. At Corps level the revised signal battalion mission included the installation operation and maintenance of the corps signal systems. The signal battalion included a Headquarters and Headquarters Company for signal repair, signal supply, and photography; a field operation company for carrier and radio relay, telephone switchboards, radio teletype, messenger center and service and wire operations; a signal construction company; a

signal service company (RI) for enemy radio intercept, position finding, crypto analysis and traffic analysis.<sup>15</sup>

As in World War II, the triangular division was the basic organizational building block for the Army. As each division had a supporting Signal Corps Company, so each corps had a signal Battalion and each Army a signal regiment.

The signal regiment and corps signal battalion consist of an HQ and HHC, a signal operation battalion, which has an HHD, wire OPS, radio OPS, message center OPS, a signal construction battalion, consisting of HHD, four signal construction companies, a support battalion, consisting of HHD, a wire company, a radio company, a message center company, a signal photographic company, a signal air-ground liaison company, a signal supply battalion, consisting of an HHD, a signal depot company, a signal repair company, a security battalion, consisting of an HHD, a signal service company (radio intercept), a signal service company (friendly radio monitoring).<sup>16</sup>

Both its mission and its organization were to overcome shortcomings found in World War II. As the Army reduced in size in the post World War II years, so did the amount of signal units.

Exacerbating this shortage was the fact that Signal Corps personnel had been reduced from over 330,000 officers and enlisted men and women to 48,000 military and 12,000 civilians. This shortage of trained and ready signal soldiers had to be offset by recalls to active duty. Training facilities would also have to be expanded to meet the new demand. In the meantime, however, the short term requirement of meeting the Korean threat would be taken up by the most available troops.

United States occupational troops in Japan that were rushed to Korea were Signal Corps troops - for communications then, as always, had to be established first. The American vanguard checked the enemy until reinforcements could be brought in. Along with signal companies of the division which were sent directly to Korea, Signal Corps radio relay teams, construction companies and operations battalion were deployed from their fixed station sites in Japan to be utilized as mobile tactical units supporting the Divisions fighting in Korea. These small units

were called upon to function in lieu of the two corps signal battalions that had been deactivated in Japan in March, 1950. This serious shortage of signal troops available for duty in Korea meant a long delay before corps signal battalions could be moved from the United States.<sup>17</sup>

The number of Signal Corps troops would grow. In the Far East Theater of operations alone, officers and enlisted would grow from approximately 7,000 in June of 1950 to well over 28,000 by August of 1951.<sup>18</sup>

One of the most significant changes to the thinking and structure that would come during the Korean Conflict was due to a culmination, or better said a realization of advances in technologies and warfare. This realization resulted from The Baker Electronic and Communication Mission to Korea. Dr. W.R.G. Baker would lead a study of military communications and electronic problems on the battlefield and the needed solutions.<sup>19</sup>

While stabilizing the activities of the Signal Corps at a high level of effort the concurrent challenge prompted by increased military activity in development and application of nuclear weapons was being met. It soon became clear that the mobility of modern weapons have changed our offensive and defensive tactics. The combat forces must be able to operate with greater dispersion, have a greater potential mobility, including vastly augmented organic army aviation, and be capable of quick and devastating action. In an early consideration of changing concepts, the Signal Corps recognized the necessity of incorporating into combat forces every possible advantage gained in scientific and industrial progress. A comprehensive examination of our future requirements showed that our conventional signal systems and equipment could not provide for the nuclear age. Communications and electronics are to play an increasingly greater role in modern warfare and in the employment of new weapons systems and tactical formations. The concept of greater mobility and dispersion necessitates better communications and control, the use of advanced technical systems for surveillance of the battlefield and for the direction and control of our own weapons systems. This increased integration of electronic technology into the employment of combat forces clearly required that the Army must be adequately organized and manned to supply, operate, and maintain this imposing array of electronic equipment.<sup>20</sup>

And, although this was the findings of the study regarding the tactical signal requirements, what they found at the strategic level a vast communication network in the Korean theater. However, they found that in many cases the network had gross redundancies. Each major command had their own network receiving reports from their subordinate units and passing reports to the theater command headquarters. The theater artillery, intelligence, engineer, etc., each had their own network. The study found that this was caused by the lack of a single Signal Command in charge of the theater network. A central command could tie this network together. This would eventually happen later, in the Vietnam conflict.<sup>21</sup>

The invention of the integrated circuit ushered in the Information Age. This and other electronic advances would increase range and reliability of communications. New technology would bring about another organizational change to better support the war fighter.<sup>22</sup>

By the end of 1957 the division signal company was expanded to a battalion with the battalion commander doubling as the senior signal staff officer. The Army had reorganized from its World War II triangular division to a new formation, the pentomic division. These divisions were structured to meet the contingency of either conventional or nuclear war while at the same time keeping within a reduced budget. The new formation consisted of five battle groups, each capable of operating either independently or concentrated for a major attack. These leaner divisions, while designed to provide the capability to meet the demands of the modern battle field, would by their nature engage in warfare on a dispersed or even fragmented battlefield. This dispersed concept brought far more importance to command and control communications.<sup>23</sup>

By 1961, the Army regulations designated the Signal Corps as both a technical service and a combat arm. In January 1961, President Kennedy along with Congress abolished the technical services as independent agencies, with the exception of the Medical Department. Although this abolishment meant that the chiefs of the special services all disappeared, the Chief of Signal was retained along with the Chief of Transportation as special staff officers, rather than service chiefs. The Chief of Signal now reported to the Deputy Chief of Staff for military operations (DCSOPS). The war fighter would control the destiny of his organic communications. However, even though the Chief of Signal had lost most of his authority, he still retained control of strategic communications, due to the lack of any other functional command to which to assign them.<sup>24</sup>

In 1962, a study was conducted by general officers from all major staff elements by the direction of the then chief of staff, General Earle G. Wheeler. He was concerned that the Army Staff had lost its understanding of the role of communications and electronics. In 1964, the outcome of this study, known as the Powell Board, was the establishment of the position of Chief of Communications-Electronics. A subordinate agency to the Office of the Deputy Chief of Staff for Military Operations, this position replaced that of Chief Signal Officer.<sup>25</sup>

With the Chief Signal Officer position abolished and the position of Chief of Communications-Electronics established, command and staff responsibilities were now separated. Strategic communications would go to the newly formed Strategic Communications Command (STRATCOM). The Chief of Communications-Electronics would retain principal responsibility for radio-frequency and call-sign management,

communications security and retain the Army Photographic Agency in the Pentagon, but become an adviser to the Army Staff on communications-electronics issues.<sup>26</sup>

At the same time as this redesignation, the Army's tactical divisions once again underwent reorganization. The Army's Reorganization Objective Army Divisions or ROAD plan was designed to overcome the weaknesses of the battle groups of the pentomic divisions. Four new types of divisions were formed: infantry, armor, airborne and mechanized. Each of these divisions would have a common base with three brigades. They would vary in the number and mix of battalions, but each would have an organic signal battalion assigned and the battalion commander would double as signal staff officer.<sup>27</sup>

#### **ORGANIZATION OF THE SIGNAL CORPS FOR THE VIETNAM WAR**

The mobility of units in the field coupled with increased range and lethality of weapons systems would place unparalleled demands on the communications systems, both tactical and strategic. The communications in support of the Vietnam war would far exceed the scale of any previous war in history.

From the outset military signal advisors were assigned to each Vietnamese division as well as to each of the country's military regions. Their task was to provide training, operational and signal logistic support. Due to the lack of a signal staff officer assigned to the advisory group for planning, most of the operational planning for South Vietnam was conducted by the signal staff of Pacific command in Hawaii. The Signal Corps also sent training teams as well as accepting Vietnamese signal officers at the schools in Ft. Monmouth and Ft. Gordon.<sup>28</sup>

However, the role of the US would soon change from military advisor to a full combat partner. This change would reveal that the established communications systems were inadequate. Overcome this inadequacy would not only encourage many dedicated systems, it would also breed many new organizations designed to overcome the requirements of a new kind of warfare.<sup>29</sup>

In February of 1962, the United States established a unified headquarters, the U.S. Military Assistance Command, Vietnam (MACV), to cope with the expanding American military mission in South Vietnam. To support MACV, the 39<sup>th</sup> Signal Battalion was deployed. Its mission also included the operation of the troposcatter backbone system known as Backporch, which connected five major cities with Thailand. Extensions of this system would reach advisory detachments at remote sites equipped with newly designed and untested troposcatter equipment. Part of the workload of the overextended 39<sup>th</sup> was taken over by the newly activated 41<sup>st</sup> Signal Battalion, who operated the system in the northern portion of South Vietnam.<sup>30</sup>

Although the 1<sup>st</sup> Cavalry Division had been deployed to Vietnam in September, its organic signal asset, the 13<sup>th</sup> Signal Battalion, was lighter and smaller in size than required for the mission. This Signal unit could provide the required internal communications for the division, but did not have the required assets to develop and operate the theater and strategic systems that would soon be required. In June of 1965, elements of the 2d Signal Group arrived in South Vietnam and became the major signal headquarters for at least the next year. It would act as the initial theater signal command in support of MACV with control over the 39<sup>th</sup> and the 41<sup>st</sup>.<sup>31</sup>

Later it would be merged with elements of the Army's Strategic Communications Command to become the 1<sup>st</sup> Signal Brigade and become part of the United States Army Strategic Communications Command's global organization. The 1<sup>st</sup> Signal Brigade would consist of six signal groups, twenty-two signal battalions, and a total strength of well over 23,000 men. Most importantly, this merger eliminated the fragmentation of control over the signal efforts. The brigade commander was also the U.S. Army, Vietnam, communications-electronics staff officer.<sup>32</sup>

Although it operated relatively fixed communications systems of the Defense Communications System, 1<sup>st</sup> Signal Brigade had the surge capability to augment its Corps Area Systems with men and equipment on short notice in response to the tactical commanders in each of the four tactical zones. It also had the capability of providing base camp communications to service the tactical zones.

Mobile Combat Systems were provided by organic signal units within the divisions such as the 13<sup>th</sup> Signal Battalion. The division signal battalion commander was dual hatted as the division signal staff officer. At corps level an extremely large signal battalion existed, with the battalion commander also serving as the Corps Signal Officer. The size of this organization was due to necessary attachments and augmentation for the corps.

As the signal mission expanded and the signal activities increased, organizational problems were encountered. In Washington, the abolishment of the Chief Signal Officer position had left the Signal Corps without a clear chain of command. A reorganization in 1965 conducted by then commander General Westmoreland, created the US Army Vietnam (USARV) and made the signal officer on his staff in charge of all tactical signal

operations. However, the Army left the responsibility for long-haul communications under Strategic Communications Command.<sup>33</sup>

The combat situation, coupled with the dense triple canopy jungle of Vietnam, did not conform to what signal planners had expected to confront in the post Korean War period. According to the pentomic and ROAD configurations the Army was equipped and organized to fight the Soviet threat in a highly mobile environment in Western Europe. This could not have been further from the truth of the guerrilla warfare environment in Vietnam.<sup>34</sup>

As the war progressed, innovations in techniques would be used rather than changing organizational structure. Due to the significant absence of an anti-air threat, heliborne command posts equipped with radio consoles were used to control ground units. This technique overcame the limitations of line of sight ground-based FM radio. It also expanded the range of the organic tactical signal units beyond the planning range and blurred the lines between tactical (organic), and backbone (theater/strategic) communications.<sup>35</sup>

However many problems the Vietnam war highlighted in the signal community, it brought about, for the first time, the use of high-quality commercial communications systems by the soldier in the field. It also brought about a blurring of the lines between tactical and strategic communications when it allowed the President and the Joint Chiefs of Staff to control or direct the war from Washington.<sup>36</sup> This trend contributed to mission orders becoming voluminous compared with those required in previous conflicts. Tremendous information flows were generated by requirements for reports to higher headquarters. This factor helped to over stress the tactical-communications facilities.<sup>37</sup>

The organizational adjustments made to overcome this demand were to increase the size of the theater backbone system and increase the number of signal personnel.

### POST VIETNAM - THE COLD WAR

With a post-Vietnam budget tightening, the Army would adopt a streamlined force structure consisting of sixteen regular divisions; an Army strong enough to protect our interests in Europe, yet lean enough to be affordable to the taxpayer.<sup>38</sup>

During the 1970s the post-Vietnam Army would undergo a revision of the doctrine; incorporating lessons learned from Vietnam. By 1976 a new Field Manual 100-5, *Operations* existed. This document had a narrow concentration which focused the Army on an armor-dominated war in Europe where we would fight while greatly outnumbered and winning the first battle was an imperative.

However, in 1978 the Army initiated the "Division 86" study to validate or modify the ROAD configurations. As a result, "heavy divisions" were designed to fight against a numerically superior force of the Soviet Army and allied Warsaw Pact. The resulting divisions consisted of four mechanized and six tank battalions as well as division aviation assets centralized within an aviation brigade with a total strength of approximately 19,000. However, the signal battalion within the division would not differ significantly from that of the ROAD structure with its four types of divisions.<sup>39</sup>

In the 1980s the Army organized light divisions for rapid deployment to fight limited wars should they occur. These divisions were about six thousand soldiers smaller than the heavy division. So, to retain combat power, the support elements of the division were drastically reduced. This included the associated Division Signal Battalion, which would go from a strength of 784 to 470 soldiers.<sup>40</sup>

The Army revamped FM 100-5 again in 1982. This new document adopted the concept of the AirLand Battle - the use of maneuver could keep the enemy off balance. The warfare on the ground and in the air would become integrated.<sup>41</sup>

In Europe, Echelons Above Corps (EAC) units, would both be provided by the North Atlantic Treaty Organization as well as include national assets from the various countries. Eventually a fixed backbone of communications sites would be built and operated by NATO to provide EAC signal support to tactical links as well as joint and interoperable doctrine developed.

### GRANADA

This new doctrine with its implied signal interoperability would have no impact on Operation Urgent Fury. In October and November of 1983 the U.S. sent elements of Airborne, Ranger, and Special Forces units to Grenada to rescue American medical students. Due to the overall hasty planning and absence of any joint signal plan, communications were severely hampered.

There was no existing theater or strategic backbone system. The type conflict did not support a division or higher type battle, nor the organic support from its signal unit. Special signal units were used for both the operation and the reconstitution of the island after the conflict. Neither the standard doctrine nor the standard tactical signal unit which a division would use would play a role in this operation.<sup>42</sup>

The short nature of the operation showed a flaw in the existing planning. Without the time allowed to develop and piece together an umbrella under which all units involved in the operation could communicate, communications would break down. Even though

this happened, the ingenuity of the soldier overcame many of the problems and the operation was an overall success.

But what the operation showed most, was not only the need for special signal but the difficulty in writing a doctrine that would allow the Army to plan on their size and shape. This was a lesson that was relearned after World War II, Korea and Vietnam.

### PANAMA

In 1989 worsening tensions between the U.S. and Panama caused by the regime of General Manuel Noriega caused a threat to American lives. As a result, the U.S. launched Operation Just Cause to protect lives, restore democracy and to uphold the Panama Canal Treaties. The Signal Corps would validate many of the modernization efforts it had in progress.

Using Lessons learned from Urgent Fury, better joint communications doctrine and procedures were established. The participation of the Navy, Marines and Air Force in a joint effort with the Army resulted in a much more successful communications operation than Urgent Fury.

Only minor organizational changes had taken place between Urgent Fury and Just Cause at EAC units and none at tactical signal units. Due to the location of the operation, the U.S. could not only make use of in- country signal forces, but also fixed communication facilities. Therefore an operational/strategic backbone was already established in country.

However minor the organizational changes might have been, many of the Army's fixed and specialized EAC signal units had been undergoing a change from soldier operators to civilian operators. This was done not only to release the soldier for tactical

duty, but to save money. Therefore, not all units deployed were organized for such an operation. Although the accomplishments of the 1109<sup>th</sup> Signal Brigade were noteworthy in Panama, the unit was only 60% military. Therefore, substantial reorganization had to be accomplished to fill key positions with soldiers where ever possible, rather than civilians for deployment.<sup>43</sup>

### **DESERT SHIELD/DESERT STORM**

The largest operation launched since Vietnam took place in August of 1990 - over half a million soldiers and civilians would be deployed to the Persian Gulf. After neither world diplomatic efforts nor months of sanctions would cause Saddam Hussein to withdraw from his occupation of Kuwait, the U.S. launched an offensive on 17 January 1991 which would conclude as a U.S. lead coalition victory on 18 February 1991.

This war experienced probably the largest amount of civilian augmentation, both in personnel and equipment than ever before. Both the organic corps and below as well as the special signal units required augmentation.

The extended range needed in the vast operational environment of Desert Shield and Desert Storm coupled with the increased speed of movement associated with the requirements of the AirLand Operations could not be filled by standard TOEs. Extensive use of both satellite and tropospheric scatter systems employed assets well over and above the standard authorization for division and corps signal units.<sup>44</sup>

The 11<sup>th</sup> Signal Brigade deployed from Fort Huachuca between August and November 1990 to provide data, line-of-sight and long range communications. Along with its assigned battalions, the 40<sup>th</sup> and 86<sup>th</sup> as well as the 19<sup>th</sup> Signal Company, it was augmented by two battalions from Germany, one battalion Fort Gordon and even a

separate troposcatter company from the Florida National Guard. By the end of January 1991 it grew to five battalions and two separate companies.

By December 1990 the Army had activated the 6<sup>th</sup> Signal Command to administer the theater communications network. In March of 1991, the 54<sup>th</sup> Signal Battalion was formed to provide Information Management Arena support for the theater. In September the 57<sup>th</sup> Signal Battalion from Fort Hood arrived to augment the XVIII Corps with Mobile Subscriber Equipment and the 143<sup>rd</sup> arrived from Germany to augment the VII Corps also with MSE equipment.

### **BOSNIA**

In 1994, the U.S. deployed troops in support of the international effort to stop the internal civil war in Bosnia. This was also in accordance with the peace accords drawn up and signed in Dayton, Ohio. Under these accords the U.S. would participate as part of a NATO operation to bring peace and stability to the region.

After the initial deployment, it soon became obvious that the infrastructure required to support such an operation did not exist. Most local national assets had been badly damaged during the conflict and sorely needed repair. Therefore, assets required would soon exceed those organic to assigned in-country forces.

Satellite assets became a premium. So much so, that even prototypical satellite assets were brought in from the Pacific to be used in conjunction with the river crossing effort of the Sava River. The MSQ-126 was operated at the Sava end with an adhoc team of operators drawn from V Corps and two Department of the Navy civilians. A civilian contractor- provided unit was installed at the reach-back end of the system in Heidelberg, Germany, with a mix of civilian and Army equipment operated by both contractors and

military. Both the difficulty of installing a prototype, interfacing it with civilian equipment and adhoc operator teams extended the installation time in excess of 30 days - the original requirement was forty-eight hours.

Further, the war fighter had found a new technology which he soon would require as a standard of living. Video Teleconferencing was introduced as a new tool, but the demand for this new tool and the required assets to provide it, would soon exceed the ability of signal units. The use of contractor-provided satellite assets soon became mandatory. However the terminal ends would be operated by an adhoc team of military and Department of the Army civilians.

The requirement for senior officials to communicate in the cities within the U.S. area of responsibility also became a problem. Any digital remote phone capability had been degraded by the destruction of the conflict. With the nature of the structures within the cities, it was necessary to find a radio system that could communicate while on the move beneath tall buildings. This was provided by a prototypical unit from the Air Force and, then turned over to an adhoc team from the Army to operate. Later it would be provided by a contractor.

The deployment of several Department of the Army civilians became necessary due to the extreme technical nature of the data systems developed to aid the war fighter during the operation. Their deployment was based on their expertise and they were deployed as individuals or in two person teams. For the most part, this was successful. However, it showed the strain it puts on already drawn-down units to lose key personnel for extended periods of time. In a few cases civilians decided to retire or resign rather than deploy to Bosnia - this also had a distinct impact on the units.

## CONCLUSION

Signal support organizations exist at every echelon of the Army. Their mission is to support the commander by providing reliable and flexible communications, automation, and information services. This support is provided by signal organizations organic to the maneuver unit. At theater, there is a tailored signal command; at corps, a signal brigade; and at division, a signal battalion. In maneuver brigades and battalions, there is a signal staff officer with a section configured to the support unit.

—FM 11-43, June 1995

It is true that theater units exist to provide the umbrella under which the tactical units operate with their associated signal assets. However, the continuing race for providing the best and newest in technology coupled with the demanding characteristics of the conflict, have caused these units to increasingly use augmentation. Especially in operations other than war, where there is a higher demand for non-standard equipment. As the demand of the war fighter continues to increase, so will the Signal Corps dependence on assets beyond the organic signal unit's capability.

It is clear that the Signal Corps has always and probably will always operate in an unfamiliar and challenging environment, while trying to meet a technological demand with less equipment and fewer personnel assets than are required. Innovations in technology will be one cause for this to become more acute with each operation or deployment. The other cause will be the theater of operation. The need for augmentation will continue to exist.

To continually integrate new technologies into corps and below units and man and train them accordingly is neither cost effective nor prudent. The technology "gap" is simply another special requirement which will change, as will the terrain and environment, with each operation. And, a special signal unit, with or without civilian augmentation, will fill the requirement. If the right unit does not exist, it will either be

built adhoc, or an organization augmented until it meets the requirement. If equipment does not exist in the Signal Corps inventory, it will be procured from a civilian source. If Signal Corps operators do not exist, contractors will be used. Special units have and will always exist.

From the specialized units in world war II , to the necessity to stand up extra units in Vietnam, to the augmentation necessary to provide the required communications in Desert Storm, the Signal Corps has been driven by three things; available technology, providing the war fighter what he needed, and the characteristics of the conflict. None of these are transitory. Each of these has caused the Signal Corps to develop special signal units to accomplish the mission.

Experience has shown that the Army cannot plan on its next conflict and therefore, the Signal Corps cannot plan on special signal requirements that exceed those organic to the war fighter. But it has also shown that there will be a continuing need for special signal units. Only with both the internal organic signal units and the external special signal units, has the Signal Corps been able to provide the best support for the war fighter.

Word Count 7,067

## ENDNOTES

<sup>1</sup> Rebecca Robbins Raines, *Getting the Message Through, A Branch History of the U.S. Army Signal Corps* (Washington, DC : Center of Military History, United States Army, 1996) p. 256.

<sup>2</sup> Raines, p. 240.

<sup>3</sup> George Raynor Thompson, Dixie R. Harris, Pauline M. Oakes and Dulany Terrett, *The Signal Corps: The Test*, United States Army in World War II( Washington, DC: Office of the Chief of Military History, United States Army, 1957), p. 35.

<sup>4</sup> Thompson, et. al., *The Test*, p. 35.

<sup>5</sup> Thompson, et. al., *The Test*, p. 36.

<sup>6</sup> Thompson, et. al., *The Test*, p. 36.

<sup>7</sup> *Signal Corps Field Manual, Volume I, Signal Corps Troops* ( Washington, DC: Government Printing Office, 1931), p. 2-4.

<sup>8</sup> Raines, p. 289-290.

<sup>9</sup> Raines, p. 266.

<sup>10</sup> Raines, p. 288.

<sup>11</sup> Raines, p. 288.

<sup>12</sup> Raines, p. 288-289.

<sup>13</sup> Tactical Communications in World War II, part I Signal Communications in the North African Campaigns.(New York: Unpublished Historical Manuscript File, Signal Corps Historical Section, 1945), p.4.

<sup>14</sup> Raines, p. 258.

<sup>15</sup> *Signal Officers Handbook a Reference Text*( Fort Monmouth, NJ: The Signal School Officers' Department, 1948),p. 37.

<sup>16</sup> Elton F. Hammond, *Signal Officers Handbook* (Fort Monmouth, NJ: The Signal School Officer's Department, 1948), p. 91-93.

<sup>17</sup> *Quadrennial Report 1955*,p. 2.

<sup>18</sup> *Quadrennial Report 1955*,p. 2.

<sup>19</sup> *Quadrennial Report 1955*,p.8.

<sup>20</sup> *Quadrennial Report 1955*,p. 3.

<sup>21</sup> *Quadrennial Report 1955*,p. 8.

- <sup>22</sup> Raines, p. 337.
- <sup>23</sup> Raines, p. 342.
- <sup>24</sup> Raines, p. 346.
- <sup>25</sup> Raines, p. 346.
- <sup>26</sup> Raines, p. 347-348.
- <sup>27</sup> Raines, p. 348.
- <sup>28</sup> Raines, p. 360.
- <sup>29</sup> John J. Lane, Jr. , *Command and Control and Communications Structures in Southeast Asia* (Maxwell Air Force Base, Alabama, Airpower Research Institute, Air University, 1981), p. 144-146.
- <sup>30</sup> Raines, p. 361.
- <sup>31</sup> Raines, p. 365.
- <sup>32</sup> Thomas M. Rienzi, *Communications-Electronics, 1962-1970* (Department of the Army, Vietnam Studies, Washington, DC, 1972) p. v.
- <sup>33</sup> Raines, p. 365.
- <sup>34</sup> Raines, p. 368.
- <sup>35</sup> Raines, p. 368.
- <sup>36</sup> Raines, p. 376.
- <sup>37</sup> Lane, p. 144-146.
- <sup>38</sup> Raines, p. 392.
- <sup>39</sup> Raines, p. 396.
- <sup>40</sup> Raines, p. 396.
- <sup>41</sup> Raines, p. 393.
- <sup>42</sup> Raines, p. 394.
- <sup>43</sup> *Operation Just Cause Lessons Learned, Volume I. Soldiers and Leadership* (Center for Army Lessons Learned Bulletin, Fort Leavenworth, Kansas, October 1990) p. I-14.
- <sup>44</sup> *Joint Tactical Communications* (Center for Army Lessons Learned, Fort Leavenworth, Kansas, January 1992) p. 6.

## BIBLIOGRAPHY

- Adkin, Mark. Urgent Fury The Battle for Grenada. Lexington, MA: Lexington Books, 1989.
- Allard, Kenneth . Somalia Operations: Lessons Learned . Ft. McNair, Washington, D.C.: National Defense University Press, 1995.
- Army Times. A History of the U.S. Signal Corps . New York, NY : G.P. Putnam's Sons , 1961.
- Bacevich, A.J. "The Pentomic ERA - The U.S Army Between Korea and Vietnam." In Implementing National Military Strategy, Vol. 2. Carlisle, PA: U.S. Army War College, 1997.
- Baicker, Joseph A. A Study of Combat Communications in Korea, Part II . Chevy Chase, ML : John Hopkins University, The Headquarters, 1953.
- Bergen, John D. United States Army in Vietnam Military Communications a Test for Technology . Washington, D.C. : Center of Military History, 1986.
- Brooks, Delores M. , Kathy R. Coker, and Carol E. Stokes. The Army Signal Corps in Operation Desert Shield / Desert Storm . Fort Gordon, GA: U.S. Government Printing Office, 1994.
- \_\_\_\_\_ . History of the Korean War, Organization of the Korean Communications Zone . U.S. Far East Command. Military History Section : Office of the Chief of Military History, Department of the Army, 1952.
- "Disaster Assistance, Operations Other Than War Volume II." Ft. Leavenworth, KS : Newsletter NO. 6, Center for Army Lessons Learned, 1993.
- U.S. Department of the Army. The Signal Leader's Guide . Field Manual No. 11-43. Washington, D.C.: U.S. Department of the Army, 12 June 1995.
- "Joint Tactical Communications, Operation Desert Shield - Desert Storm." Ft. Leavenworth, KS : Newsletter NO.1, Center for Army Lessons Learned, 1992.
- Klinck, Earl F. II "Improvements in C3: A Comparison of Urgent Fury and Just Cause." Unpublished Research Paper, U.S. Naval War College, Newport, RI: 1990.

- Lane, John J. LTC . Command and Control and Communications Structures in Southeast Asia . Maxwell Air Force Base, AL : Air University, 1981.
- Larew, Karl . The U.S. Army Signal Corps in Combat in Korea . Arlington Hall Station, VA: U.S. Army Signal Historical Office, 1961.
- Meyer, Charles R. Vietnam Studies Division- Level Communications 1962-1973 . Washington, D.C. : Department of the Army, 1982.
- Office of Chief Signal Officer . Annual Report to War Department For Fiscal Year Ended June 30, 1942 . Washington, D.C. : U.S. Army, Chief Signal Officer, July 1942.
- “Operation Just Cause Lessons Learned: Volume III Intelligence, Logistics & Equipment.” Ft Leavenworth, KS : Bulletin NO 9, Center for Army Lessons Learned, 1990.
- \_\_\_\_\_ . Quadrennial Report of the Chief Signal Officer May 1951- April 1955 . Washington, D.C. : U.S. Army, 15 April 1955.
- \_\_\_\_\_ . Quadrennial Report of the Chief Signal Officer May 1955 - April 1959 . Washington, D.C. : U.S. Army, 30 April 1959.
- Rains, Rebecca Robbins . Getting the Message Through: A Branch History of the U.S. Army Signal Corps . Washington, D.C. : Center of Military History, 1996.
- Rienzi, Thomas M. MG Vietnam Studies, Communications-Electronics 1962-1970 . Washington, D.C. : Department of the Army, 1972.
- Rienzi, Thomas M. MG, “Senior Officer Debriefing Report : MG Thomas M. Rienzi, CG, 1<sup>st</sup> Sig Bde & ACSC-E, HQ, USARV, Period 30 Sept 68 to 19 Jun 70.” Memorandum for The Adjutant General, U.S. Army, Washington, D.C. , 27 Aug 70.
- \_\_\_\_\_ . Signal Corps Field Manual : Volume I, Signal Corps Troops . Washington, D.C. : U.S. Government Printing Office, 1931.
- \_\_\_\_\_ . Signal Officers Handbook . Ft. Monmouth, NJ : The Signal School Officer’s Department, 1948.
- Stanford Research Institute . Command Control Communications , Communications Requirements for Tension Situations and Limited War . DA 36-039 SC-76481. Menlo Park, CA : 1962.

Stokes, Carol E. "The United States Army Signal Corps : preparedness during the late twentieth century," PhD Dissertation, University of South Carolina, 1994.

\_\_\_\_\_. "Tactical Communications in World War II, part I  
Signal Communications in the North African Campaigns." Unpublished Historical  
Manuscript File, Signal Corps Historical Section, New York: 1945.

\_\_\_\_\_. "Tactical Communications in World War II, part II  
Signal Communications in the Sicilian Campaign." Unpublished Historical  
Manuscript File, Signal Corps Historical Section, New York: 1946.

Terrett, Dulany. The Signal Corps: The Emergency . Washington, D.C. : Office of the  
Chief of Military History, 1956.

"The Ultimate High Ground , Space Support to the Army, Lessons from operation  
Desert Shield and Storm." Ft. Leavenworth, KS : Newsletter NO. 3, Center for  
Army Lessons Learned, 1991.

Thompson, George, R. and Dixie R. Harris . The Signal Corps: The Outcome .  
Washington, D.C.: Office of the Chief of Military History, 1966.

Thompson, George, R. , Dixie R. Harris, Pauline M. Oakes and Dulany Terrett . The  
Signal Corps: The Test . Washington, D.C. : Office of the Chief of Military  
History, 1957.

Torrieri, Don J. Principles of Military Communication Systems . Dedham, MA :  
Artech House, 1981.

Watson, Bruce W. and Peter G. Tsouras . Operation Just Cause The U.S. Intervention  
in Panama . Boulder, CO : Westview Press, 1990.

Westover, John G. Combat Support in Korea . Washington, D.C. : Center of Military  
History, 1986.