

COLLABORATIVE EFFORT
**THE HISTORY OF THE
LINE TRADE**



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FOREWORD BY 1ST COMMANDING OFFICER

*"Either write something worth reading or do something worth writing."
- Benjamin Franklin*

With the concept fresh off the press and the foundation barely established for the only Line Regiment in the Canadian Forces, there was minimal time for reflection on the [line] trade. In the early months of 2019 ideas of how to capture the history of the Regiment were being considered. One barely had to look over their shoulder to see the beginning of the Regiment, however the legacy of the line trade was woven into the fabric of the CAF and successful campaigns decades prior.

A trade that so often works in the shadows, fierce with pride had established a reputation and solid credibility long before 77 Line Regiment was a reality. The foundations and concept for this paper were born in the operational success of military Linemen. As the CO of this group of dedicated soldiers, so critical to military commanders' successes, it became clear we had a duty to capture their history and their stories.

The intent of this paper was to provide a single repository of Line history capturing events, individuals, tools, and technology as well as recognition soldiers received. Without a single dedicated resource to deliver this essential reading, the opportunity to employ the research and literary skills of the officers of 77 Line Regiment to do just that presented itself. Over the spring months of 2019, the research took place and the framework of this document took shape. It is broken out into time periods and can be read as a single document or as independent sections.

I would like to acknowledge the efforts of all officers of the Regiment as their research and their words captured the historical moments of the line trade. This will become mandatory reading for those members of 77 Line Regiment. I am proud of the collaborative effort demonstrated by all to bring together such a document and offer it as factual representation of historical Line significance and trust it will be enjoyed with the same spirit and intent with which it was written.



Lieutenant-Colonel E.A.S. Gillingham

Commanding Officer

77 Line Regiment (2016-2019)

INTRODUCTION BY 1ST REGIMENTAL SERGEANT MAJOR

The creed of the Canadian Military Lineman is one of mission focus, hard work and dedication, which is accurately represented by their motto “THROUGH” (To get the message through no matter the cost). While extremely dedicated to establishing line communications links regardless of the dangers and sacrifices required, these critical links are most often built by small teams of non-commissioned officers and soldiers on their own working in the shadows outside the view or knowledge of most. Linemen have been involved in every major conflict Canada has participated in; but have never been good at telling their own story or recording their actions.

While there are established affiliations and relationships today with the Canadian Army, the Communications and Electronics Branch and the Royal Canadian Corps of Signals many other Level 1 Canadian Armed Forces organizations do not fully understand the capabilities of the Line Trade, nor the role of the Line Regiment itself.

This paper is aimed at identifying and linking those capabilities and actions in a manner which provides a brief overview of the Linemen’s journey from early roots and inception to modern day affiliations with the goal of inspiring continued deliberate recording of future accomplishments and milestones.



Captain B.R. MacKnight (former CWO)

Regimental Sergeant Major (2016 – 2017), Plans Officer (2018 – Present)

77 Line Regiment



LINEMEN IN THE CANADIAN MILITIA (1867-1914)

The ability to communicate is not only a basic human ability but also one of our primary needs. Communication has been a vital aspect of human life throughout history and plays a major role in human conflicts. BGen (Retired) Patterson goes so far as to state that “the history of humankind has been a consistent record of finding ways to communicate: to satisfy the need for

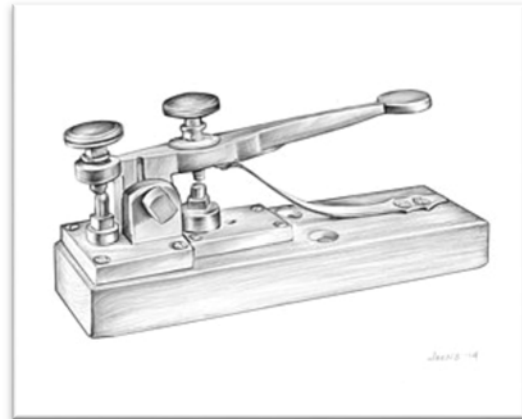


Figure 1. Samuel Morse's Electric Telegraph.

human relationships, to pass information or instructions within human societies, to control and direct human organizations, such as military forces” (Patterson, 2013, p. 5). Despite this, it took thousands of years for communication to evolve from the spoken word and oral traditions, to the written word; then in the past two hundred years with the industrial and technological revolutions humanity has progressed in rapid succession from the telegraph, to the telephone and finally to satellites and the world-wide web. The story of the Canadian Lineman starts after the age of semaphores and optical telegraphs, with the invention of the first practical electric telegraph by Samuel Morse on 24 May 1844, but when exactly?

An argument can be made that the roots of the Lineman are tied to the first men and women who laid wire, allowing the transmission of electricity, in the early 19th Century. While this first use of electric wires certainly resembles some of the work done by Linemen, it should be noted that true communication was only achieved when optical telegraphs were invented in the late 17th century by Hooke, and deployed in France by Chappe in the 1830s. Once electricity had been harnessed and turned into a tool to pass information, the role of the Lineman was

ultimately born. Unfortunately, the British Army as the precursor to Canadian Militia did not rapidly and thoroughly adopt these tools within North America. This tepid application of new

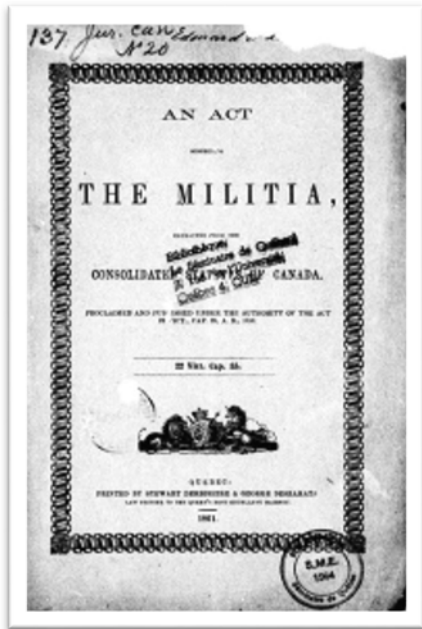


Figure 2. The Militia Act.

communication technology in British North America could be attributed to the geographic and political challenges of the nascent and growing nation of Canada.

With the Militia Act of 1855, the foundation of the Canadian Army was laid. This burgeoning militia only included cavalry, artillery and infantry companies amongst its ranks until 1901 when General Officer Commanding, MGen Lord Dundonald, in concert with the Minister of Militia and Defence Sir Frederick Borden, led a

reformation that saw the creation of combat and service

support units (Patterson, 2013, p. 10). These units included the Royal Engineers, who were the

custodians of signalling as well as any electrical

installations within camps and barracks. BGen

(Retired) Patterson states that “signalling does not

appear to have been practiced” prior to the Boer War

in 1899 (Patterson, 2013, p. 9). However, Cliff Lord

states that “tension with the United States in the 1860s

led the military to adopt the technology (telegraph) to

supplement its semaphore systems” (Lord, 2007, p.

69).



Figure 3. Royal Engineer Crest.

The dramatic technological uplift from semaphores, heliographs and other means of optical telegraphy – which can only transmit information not receive it – to electrical telegraphy enabled the reception and archiving of civilian and military messages. This revolution in communications necessitated the development of other offices and trades, such as message centres, telegraph operators and later teletype operators. These early tradesmen formed the backbone of what would become the Royal Canadian Corps of Signals in the early 19th Century, under the leadership of Major Bruce Carruthers. Prior to the establishment of the RCCS Canadian Lineman belonged to the Royal Engineers; these predecessors to modern Linemen served as part of the first 15 engineer companies that were stood up and subsequently disappeared between 1855 and 1901 (Patterson, 2013, p. 9).

The story of the military Canadian Lineman would be shaped by the continuous and relentless advance in communications technology. The second great communications invention that played a part in the story was Bell's telephone in 1876 (Patterson, 2013, p. 7). This invention was met with even more enthusiasm than the telegraph by the Military, so

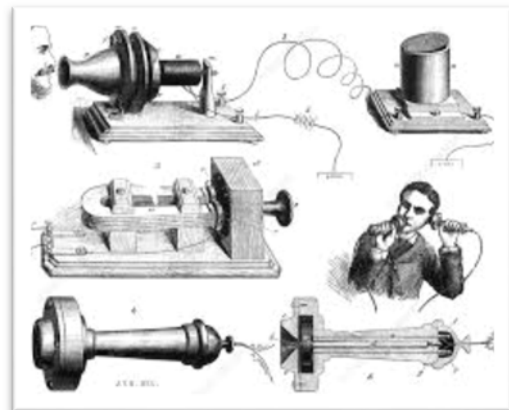


Figure 4. Alexander Graham Bell's Telephone.

much so that the Army was one of the early adopters of the technology, with one of the first telephones switchboards being established in the Kingston at the Royal Military College (RMC) in 1883 (Patterson, 2013, p. 7). By the end of the 1880s, “telephone links were in use within major military posts and to connect local environs” (Lord, 2007, p. 69). Unfortunately, the application of this technology was limited to static emplacements initially. The use of field

telephones was restricted by the lack of an electrical source and subsequently led to little military use in field operations (Patterson, 2013, p. 7).



Figure 5. Marconi Towers.

The third great communications invention of the 19th Century was wireless telegraphy which culminated with the transmission of a voice signal out to sea in 1906, using Guglielmo Marconi and Reginald Fessenden's innovations in the field (Patterson, 2013, p. 8). This new technology saw little use at this time as only the RCN tested it out in 1899 when “three Royal Navy warships (HMS Alexandra, Europa and Juno) exchanged wireless signals at sea over a range of 87 miles” (DeNoble, 2010, p. 2). The involvement of Linemen at this time was limited, this split in roles and responsibilities between wired and wireless telegraphy, and later wireless voice would persist within the RCCS up to the modern age. With Linemen responsible for wired infrastructure and Radio Operators responsible for wireless communications infrastructure.

Prior to the official stand-up of the Signalling Corps on 24 October 1903 – later renamed by King George V to the Royal Canadian Corps of Signals on 15 June 1921 -- there is historical evidence of soldiers functioning as “Linemen” who are known to have taken part in the North West Rebellion of 1885 (DeNoble, 2010, p. 2). “Where they existed, communicators with the force often tapped commercial telegraph lines to “acquire” communications” (DeNoble, 2010, p. 2). The importance of this new means of communication seems to have given British Major General Frederick Middleton an effective means to coordinate the rest of his campaign against Louis Riel following two early defeats (DeNoble, 2010, p. 2). The coordination ensured British victory at Batoche against the Metis-Indian forces.

Interestingly despite the stand-up of the Signalling Corps in 1903, the soldiers conducting line work on telegraphy systems continued for the most part to fall under the Engineering Corps. Following the stand-up of the Canadian Engineer Corps in 1904, No 1 Section Field Telegraph, CE was authorized in Ottawa (DeNoble, 2010, p. 3). However, this section was never organized and was subsequently dropped from the organization in 1910.



Figure 6. Royal Canadian Engineers Badge.

This did not mean that communicators skilled in field telegraphy did not exist. There was training in field telegraphy as early as 1905 and a CE School of Telegraphy was officially created in 1907 at the Royal School of Engineering in Halifax Nova Scotia (DeNoble, 2010, p. 3). The skill and capabilities of these CE communicators continued to expand in subsequent years with two wireless companies being authorized in 1907 alongside the thirteen telegraph, two air-line, two cable, six divisional and two wireless telegraph companies (DeNoble, 2010, p. 3). With such a large expansion, the communicators of the Canadian Engineer Corps needed a new name. In 1910, Canadian Engineer companies involved in communications were re-named “Signal Companies”.



LINEMEN IN WWI (1914-1918)

When the war broke out on 28 June 1914, the Canadian Signal Corps was composed of ten officers, eight attached officers and two-hundred seventy-six non-commissioned members (which is very close to the establishment of the 77 Line Regiment). Most of the members of the Canadian Signal Corps ended up being attached to the Canadian Engineers (Mackenzie, 1995, p. 20); however, there was one exception, which was the 1st Divisional Signal Company, which was formed on 6 August 1914. The 1st Divisional Signal Company was the only standalone Signals related unit in WWI which gave them a chance to make a name for themselves. Most of the cable and line communications continued to be established and operated by the Engineers with the exception of 1st Canadian Division due to the Signal Company, that was in charge of the difficult task of supporting the various signal needs of the 1st Canadian Division (CAFL, 2019).

From the beginnings of the Corps unity of leadership has been a challenge. The leadership within the 1st Canadian Divisional Signal Company was originally sourced from available officers out-of-trade, as there were very few trained and competent 'Signal' officers. For example, there were only ten officers in all of the Canadian Signal Corps at the beginning of the war, and none senior enough to be trusted with the Commanding Officer billet of the 1st Divisional Signal Company. So, the Commanding Officer of the 1st Divisional Signal Coy ended up being Major F.A. Lister, who was an Infantry officer by training; furthermore, his second in command, Captain W.F. Hadley, was also not a Signal Officer but rather a member of the Royal Canadian Engineers (Mackenzie, 1995, p. 20).



Figure 7. A Cable Wagon from 1918.

It did not take long after the creation of the 1st Canadian Divisional Signal Company to get involved in the war effort; in fact, a mere three months after their creation they arrived in England from Canada to conduct further training to before deploying to Europe. After the Signal Company finished their training in England, they deployed to the battlefield in St-Nazaire, France 12 Feb 1915. Following their arrival, they made their way to Ypres. Since the Signal Company took no wireless equipment with them during their deployment to France, they did not see much action in during their first year in France; regardless line capability was considered the backbone of the communications architecture during the 1st World War (CAFL, 2019).

Once they arrived in Ypres, the 1st Canadian Division experienced intense and sustained enemy shelling of allied line infrastructure. The enemy artillery had a devastating effect on lines laid on the ground and those installed on poles. In order to counter the damage being done, the 1st Divisional Signal Company started to bury the cable underground in order to prevent destruction due to enemy artillery strikes. This method of protecting the communication lines proved very successful. So much so that there was only minor damage to most lines, and these could easily be repaired by Linemen employed on maintenance. The terrain, enemy shelling, gas attacks, and persistent machine gun and sniper fire combined with the normal weather in France ended up causing enormous problems for the Linemen installing the cables. One of the biggest issues they had was with the digging required for the underground lines. The damp conditions in Northern France ended up causing a need for better insulated cable that could survive longer length of time with no degradation or corrosion.

Unfortunately, the required better insulated cable was in short supply within the 1st Canadian Division (CAFL, 2019). Insulated wire was not the only thing in short supply within the division; specifically, in 1915 an entire brigade of field artillery was provided with a mere 26 miles of telephone wire. Despite this lack of equipment, the Linemen were able to provide reliable communications to the observation posts, trenches and rear parties. This remained to be the case until the enemy forces started to use the 5.9 howitzer which could use a 77mm shell to break the cable at its current depth of 3 feet (CAFL, 2019). Following this change in tactics by the German forces, the leadership of the Signal Corps and Engineers investigated options to mitigate the increased attrition rate of cable. Two new plans were developed to bury cable deeper to avoid the damage caused by the enemy. One of these new plans to avoid enemy artillery from the 5.9 howitzer included using the underground sewer system in the city of Ypres; while the

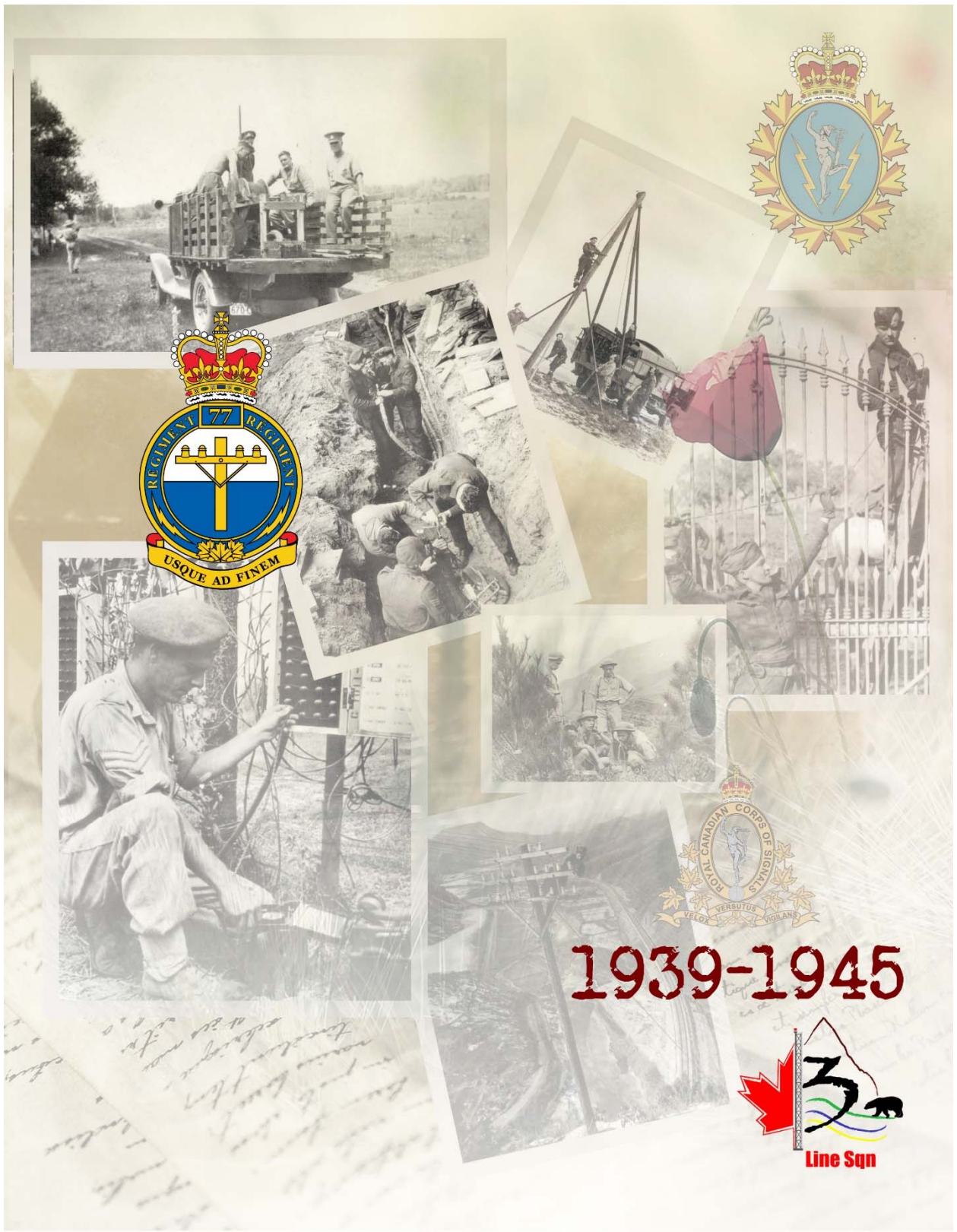
second plan involved the resource intensive and dangerous decision to bury the cable lines below 3 feet. This plan was used at and around Mount Kemmel by the Canadian Corps when they buried the lines at a depth of 6 feet. This plan was used again at Vimy where the cable was buried all across the front of Canadian Corps at a depth of seven feet (CAFL, 2019). At Vimy, and throughout the rest of the war, the Linemen worked very hard, in some of the most austere environments and dangerous jobs faced along the front lines. Under withering fire, gas attacks, sniper fire, and constant and unbelievable bombardments of artillery they continued installing and repairing the telephone lines; which was made all the more difficult by the heavily shelled landscapes. One particular lineman who stuck out at Vimy was Sgt. George Johnson Oliver DCM MM** who was honoured on multiple occasions with multiple commendations (Banks, 2019, p. 33). At Vimy Ridge, he was awarded his first commendation, the Military Medal for bravery, for his success and courage in setting up line communications between the attacking battalions that had moved forward and the Brigade Report centre (Banks, 2019, p. 33).¹



*Figure 8. Sgt. George Johnson Oliver DCM MM**.*

¹ This was not the only time Sgt. George Johnson Oliver received the Military Medal for bravery. He ended up receiving his second Military Medal of bravery at Hill 70. Having received two Military Medals for bravery did not stop him from continuing his hard work as he ended up being awarded a third Military Medal for bravery for his support in the capture of Hill 62. Sgt George Johnson Oliver ended up being awarded the Distinguished Conduct Medal in the fall of 1918 as well. He was one of only 1,947 Canadians who won the Distinguished Conduct Medal during the First World War. In addition to that great honour, he was also only one of five Canadians that received the Distinguished Conduct Medal and the Military Medal of bravery with two bars in the First World War.

The 1st Divisional Signal Company continued to support the Canadian Corps by providing services including the installation of buried line and line on poles during numerous battles including Ypres, the Somme, Cambrai and Vimy Ridge until the end of the war in on 11 November 1918. Following the war, as is often the case there was a drawdown of military spending and procurement sometimes referred to as the 'Peace Dividend', which necessitated the disbandment of mobilized expeditionary units; unfortunately this meant that 1st Divisional Signal Company was formally disbanded following the Armistice.



LINEMEN IN WWII (1935-1945)



Figure 9. RCCS Badge.

The Royal Canadian Corps of Signals served with the Canadian Expeditionary Force during the Second World War. On 1 September, 1939, only 9 days before entering the war officially, the unit was re-formed and re-designated 1st Division Signals. They were initially quartered in Camp Barriefield awaiting deployment overseas (Chronology of Significant Historical Events Annex A Chapter 5).

Canada's initial commitment to the British war effort was one expeditionary division, with another division in reserve for homeland defence ... this initial commitment would greatly expand by war's end.

Canada formally entered the War on 10 September, 1939. Within two months, the first contingents of Canadian troops arrived in the United Kingdom to supplement the British



Figure 10. Her Royal Highness Mary, the Princess Royal.

Expeditionary Forces. Forestalled by the evacuation of the British Army from Dunkirk and the Channel ports, Canada's role became one of defence of the British Isles. Far across the globe, a small force of Canadians arrived in Hong Kong in time to meet the Japanese invasion and fought with the British, Indian and Hong Kong forces in defence of the colony until the surrender on Christmas Day 1941 (Gibson & Ward, 1989).

On 19 May, 1940, Her Royal Highness Mary, The Princess Royal, became the Colonel-in-Chief of the Corps (Chronology of Significant Historical Events Annex A Chapter 5).

On 15 August, 1940, the National Resources Mobilization Act established a universal recruiting system. Eligible males were called up by the District Depot, introduced to the Army, clothed, paid \$1.30 a day and sent to basic training. Then, soldiers went to the Advanced



Figure 11. Line Laying vehicle WWII.

Training Centers, which in the case of signallers was the Canadian Signal Training Center at Vimy Barracks (CSTC). A large percentage of the men were trained to be Linemen, which took 9 weeks (Patterson, 2013, pp. 221-223).

Before long, a force of British, Canadian and Norwegian soldiers landed on the Norwegian island of Spitsbergen. The unopposed raid was intended to deny the coal and port facilities to the Germans (Cherrett, 2016).

In Asia, the Canadian Force arrived on 16 November, 1941, and as part of the Hong Kong Garrison was organized into two Brigades. The mainland Brigade, under British Brig C. Wallis, was to be deployed in the defence of Kowloon Peninsula and the second, under Brig J.K. Lawson, for the protection of Hong Kong Island. Both forces required wireless communications. The Linemen were detailed to various Royal Signals Line sections and employed on fortress communications with which they had little experience. In addition to the limited training, they

were also committed to provide the wireless communication training for the mainland brigade to select infantry signallers.

Due to the lack of proper training, no maintenance was possible and once the sets broke down, they were discarded. However, the loss was not serious as the Island was adequately served by underground lines (Patterson, 2013, pp. 231-232). Despite their efforts, Hong Kong Island fell to the Japanese invasion force, and many Canadian soldiers spent the remainder of the war within Japanese POW camps.

In Europe, for six weeks, from 10 July to 17 August 1943, the Canadians, fighting as an independent unit for the first time, slogged through the interior of Sicily as part of Operation HUSKY, the first stage of taking back Europe from the Nazis after four years of war. Meanwhile, the Americans skirted the Western coastline of the island and the British came up the East side, each competing with the other for glory (Dunn & West, 2011).



Figure 12. Line crew in the Netherlands 1945.

On 1 June 1944, 1st Division Signals was re-designated as 1st Canadian Division Signals (Chronology of Significant Historical Events Annex A Chapter 5).

When D-Day arrived, the Linemen were not only scrambling to finish their tasks, but they also proved the concept of “soldier first”. For example, there was a line detachment running a line from 7 CIB HQ to 12 FD Regt HQ over 1.5 miles in distance. On reaching a crossroad, the



Figure 13. Signalman J.A. Knirchk, Royal Canadian Corps of Signals, 4th Canadian Armoured Division, stringing a line on a statue, Eikelenberg, Belgium, 23 October 1944.

line crew thought it wise to have one of the three with a Bren gun providing cover for the other two from a ditch 20 yards away. At that point, a German soldier appeared saying that some of his company were in the fields and wanted to surrender. A few minutes later, a German officer appeared with a pistol and when challenged, opened fire only to be cut down by the Bren. Shortly thereafter, a German major appeared and offered to surrender his whole company. Soon, 60 soldiers appeared. After disarming the lot, two of the Linemen marched the Germans down the road toward the village of Banville. LCpl. M.V. Hughes stayed at the crossroads and had about 20 more Germans surrender. So, he followed the main body. After a short time, further Canadians appeared and the group of Germans numbering nearly 100 were marched to POW cages on the beach.

Nonetheless, LCpl Hughes and his detachment, Sigmn E.W. Martin and J.D. McPhee, continued with their line laying. Although, well documented, the trio never received recognition (Patterson, 2013, p. 187).

On 6 July 1944, during the attack on Carpiquet and Caen, the war diary noted with pride that there were no failures of communications. After experiencing trouble keeping lines open with D5 cable, the line detachments had better success with D8 cable.² The heavy use of cable caused 3 Div Sigs and Rear Corps HQ to question the amount requisitioned. On 9 July, 3 CID moved to La Villeneuve causing all cables to be re-laid and once again, upon movement to

² WD cables D8 twisted together with each cable coloured blue, green or yellow.

Villons Les Buissons. On 11 July, following the move to La Folie, north of Caen, the Linemen had difficulty keeping the lines intact in the face of shelling and numerous casualties. There was some rejoicing by the Linemen when 37 drums of cable were found at Carpiquet along with an ultra-modern telephone exchange. It was short-lived, however, when on 13 July, seven Linemen were wounded by German shelling. On 19 July, Linemen ran the longest line ever run, which worked perfectly from Villons Les Buissons along the Orne River to Ranville. As such LCpl C.H. McNeil, 3 Div Sigs was awarded the MM for his achievement (Patterson, 2013, pp. 190-191).

During WW2, funds were distributed to other telecommunication innovations. This meant that no new equipment was created for Linemen. That of course did not stop them from attempting to be innovative in their field. A note, in the 4 Div Sigs War Diary from 23 October 1944, made reference to the creation of a Signals School to teach good ideas and eliminate bad habits. One humorous account of an experimental firing of a rocket-assisted device to carry line cable over a water obstacle, a variation of the alternate use of a Projector Infantry Anti-Tank, was discovered in Italy. The line crew of “C” Troop watched as the projectile took off, disappeared from view, then suddenly appeared out of a wooded area and came straight toward the launching base. Everyone scattered into slit trenches and under vehicles. Unfortunately, they were not fast enough, as the projectile struck the shirt of one signaller painfully burning his back before burying itself in the ground. As a result of the experiment, the writer made the following three observations. First, all the Linemen using or contemplating using this equipment should be immediately issued with anti-flash clothing similar to that issued to Naval Gun Crews. Second, all Jerry V1 & V2 launching crews should be awarded the Iron Cross First Class. Finally, personnel of Cable troop 4 Cdn Armd Div Sigs will in all probability either swim, wade or ferry

lines across the water obstacles. Incidentally, the scribe was invited to attend a further demonstration but declined with thanks (Patterson, 2013, p. 206).

From 1 December 1944, there were a number of awards for gallantry to 1 Div Sigs: the MM to Sgt W.T. Cramp, LCpl W.A. Mackie and Sigmn P.V. Kallal, for laying line under fire; to 5 Div Sigs: the MM to Cpl R.J. Kirkpatrick, laying line to the Savio River and to Sigmn W.T. Gray for repairing line, hand over hand at night to the Westminster Regiment. Furthermore the MM was awarded to Sgt. T.W. Brydon, 4 Div Sigs, for restoring communications while under fire; to Sgt. A. Pateman, 3 Div Sigs, for maintaining the line through Cleve while under fire; and to Cpl. J. Tomlinson, 2 Div Sigs, for carrying the line through Xanten on 8 February 1945.

There was heavy fighting during Op VERITABLE and Op BLOCKBUSTER from February to March 1945. With the increased use of tele-printers to speed up communications, the situation required the installation of additional line. 2 Corps Sigs War Diary reported that the water was “2 feet 6 inches deep along the road Krankenberg to Wyler” making it necessary to use Weasels (amphibious vehicle), to lay quad cable.³ New higher poles were issued to get overhead lines higher and avoid armoured vehicles that were constantly tearing the lines down. A good indicator of the importance of work of the Signals Office was that at one point it had 8 divisions (Patterson, 2013, p. 212).



Figure 14. WWII Commander's brief.

³ Quad cable being qty 2 WD wrapped individually and then further covered in an insulated wrapping for durability and resilience.

The M



Figure 15. WWII D Mk V Field Telephones.

While heavy fighting was sporadic in April 1945, there was a serious situation on the 11th when 1 Div Sigs was attempting to lay a line across the Ijssel River in support of 1 CID's advance toward Apeldoorn. Lt. W.W. Finlay was given the task, along with a couple of assault boats. On the first attempt,

his assault boat was shot out from under him; on the second, a new boat was damaged by shellfire before it was unloaded. For his third attempt, Lt Finlay tried using a Buffalo (amphibious vehicle) to lay a quad line, but the line was broken by shellfire. The Buffalo couldn't mount the bank on the far side, so it turned around and proceeded to cut a D3 cable. Not one to give up, Lt. Finlay made another attempt with a third assault boat and was successful, remarkably with no casualties. Lt. Finlay received the MC for his persistence in the face of enemy fire. 1 Div Sigs brought recognition and the MC to Capt. H.E. Good and the MM to A/Cpl. J. Reiberger, and Sigm. G. E. Thomas, who continued to lay line between the Ems and Leda rivers after their Corporal was killed and two other Linemen were wounded (Patterson, 2013, pp. 216-217).

One of the main telephones used in 1944 was the Telephone D Mk V which was a portable telephone designed for field use in Army formations forward of Divisional Headquarters. In addition to the ability to talk, the telephone provided a call buzzer, a bell indication of an incoming magneto generator call, aural indication of an incoming buzzer call and the ability to communicate by buzzer and key. Reliable speech could be provided at distances of 14 to 16 miles with D8 cable or 8 to 10 miles with D3 twisted cable. Morse telegraphy could be 25 and 15 miles respectively (Costello, 2001).



Figure 16. WWII D Mk V Field Telephone.



LINEMEN FROM KOREAN WAR THROUGH AFGANISTAN (1950-2014)

The end of World War II brought a great many changes to the line trade. No longer just daring men crawling on their bellies under direct and indirect fire; rather, they along with the rest of the Canadian military had to adapt to new forms of warfare. While many other nations have disbanded their line assets following WWII, the Canadian military recognized the vital role that these men and women play in our delivery of communications. Senior leadership expanded the role of Linemen to include specialty training and working environments. Linemen are not only specialists in a field environment but also in designing and building up forward operating bases, supporting existing base infrastructure, and antenna construction and maintenance. Canadian Linemen have been at the forefront of every mission Canada has taken part in, including the Korean War, Golan Heights, Cyprus, Bosnia, Afghanistan, Iraq and Eastern Europe, helping lay the groundwork for communications capabilities in every corner of the world.

The 1950s saw Linemen travel across the Pacific to participate in fierce combat in a mission quite different from their brothers in WWII. The Korean War is referred to by some historians as the 'Forgotten War'. In 1951, Canadians faced what many thought were unbeatable odds ... during the battle of Kapyong during April 1951 where 700 Canadian soldiers from 2nd Battalion PPCLI repelled an attack from a Chinese PVA Division of between 5000 – 9500 men. 2 PPCLI was part of United Nations Command 27th Brigade which was the Division's reserve, and tasked with defending the Main Supply Route (MSR) #17 from Seoul. One veteran at the Canadian War Museum recalled to Capt Dupuis the story of the battle, conveying his tale. After 3 days of skirmishes he recalled laying over 26 miles worth of line over the battle space, in order to keep the lines of communications open, under heavy enemy fire. Lines installed between the

Battalion and Forward Company Command Posts proved indispensable over the 3 days and nights of the battle as VHF radio comms proved unreliable given the high terrain features, and low level sitting of the Battalion HQ. Lines were repeatedly installed and then reinstalled out of necessity as the retreating South Korean ROK vehicles unintentionally cut the lines during their withdrawal. When the Canadians were finally relieved on 26 April they had sustained 10 dead, and 23 wounded, with over 1000 PVA casualties on the Chinese side.

Another story from the Korean War comes from Cy Carney, a young man out of Minto New Brunswick who joined the Canadian Army in 1950. After completing his communications Linemen training in the fall of 1950, he found himself in Shilo Manitoba posted with the artillery and soon on a boat for a one year tour of duty in Korea. Driving across the “Bowling Alley” on route to hill 355 with his communications jeep, he recounts kicking up a bit of dust, which caused him to come under observation. This quickly turned into oncoming enemy fire. Fortunately they quickly turned about, and the jeep they were using seemed to travel that much faster to him, carrying him and his driver to safety (Historica Canada, 2019).



Figure 17. Signalman Cy Carney, taken at Kure Harbour, Japan, April 1953.



Figure 18. RCCS Patches Korean War.

Mr. Carney also recalled the large amount of minefields he encountered in Korea. As a lineman constantly going across the country, sometimes into unmarked areas, these were a constant threat. He was very fortunate to never fall victim to these, however he cannot say that others were so fortunate. Second Lieutenant Robinson, a young infantry officer from the 1st battalion of the Princess Patricia's Canadian Light infantry came across a lineman stuck in a minefield, who managed to crawl to help. This soldier then called attention to two of his compatriots who were still caught in the minefield he just extracted himself from. However he was so critically wounded, he could not give a clear direction to the location of his comrades. Under pitch darkness and sporadic enemy fire, after two hours of searching he had found the bodies of the two brave men, unfortunately they were fatally wounded (Halliday, 2018). These are the risks that faced these unsung Linemen because of their dedication to task, and their silent contributions to keeping the information flowing for friendly forces.

Because other nations had chosen to remove the specialty field within their communications branches, Canadian Linemen became heavily sought after when groups such as the United Nations and NATO were called to serve in a multi-nation capacity for such missions as the former Yugoslavia and Afghanistan. Our brave soldiers were called to not only lay line, but design and configure line infrastructure in various Forward Operating Bases (FOB) around countries where the conditions were extremely hazardous. Bosnia-Herzegovina was known to be one of the most actively land mined theaters of operations that Canadians had set foot into. 66% of the country side in total was actively mined with very little official marking of mine fields.

Mines were not the only challenge when laying line in such places as Sarajevo. The infamous “sniper alley” was a constant threat to those trying to accomplish tasks of interlinking communications capabilities. Canadian Linemen were constantly on the road, across not only the Canadian area of responsibility (AOR) which stretched from Tomislavgrad to Velika Kladusa, Bihac to Zgon. They were also found at places like Banja Luka, Sarajevo, and whatever dangerous location they were required to go. Whatever the call, they answered it and did the business despite the risks. Two such soldiers that were recognized for taking part in one of the biggest battles since Korea, the infamous Medak Pocket, in 1993. The pair earned the commendation for their actions in the Former Yugoslavia while serving with the 2nd Battalion, Princess Patricia’s Canadian Light Infantry Battle Group on Operation Harmony. At the time, 2PPCLI was serving with the United Nations Protection Force (UNPROFOR) under a UN mandate.

Its task was to implement the latest cease-fire agreement between Croatian Army troops and Serbian irregular forces. In September 1993, the unit advanced into the disputed Medak

Pocket in southern Croatia, inserting themselves between the warring factions. Suddenly, Croatian Army troops opened fire on them. For an entire afternoon and sporadically into the night, the Canadians became targets, facing incoming 20 mm cannon fire, heavy machine guns, and rocket-propelled grenades. The peacekeeping mission had turned into a war-fighting scenario. Some of the firefights lasted for minutes, others

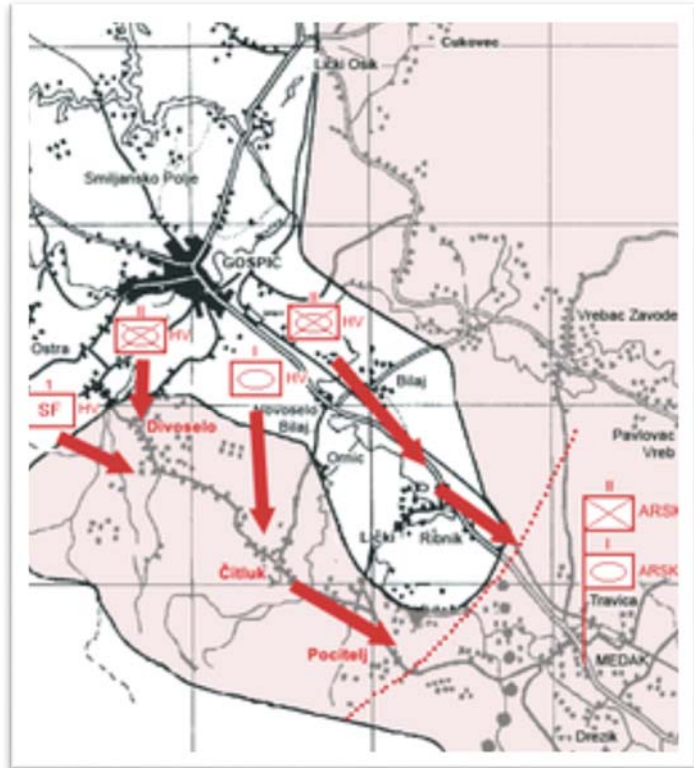


Figure 19. Battle of Medak Pocket Bosnia 1993.

lasted more than an hour. When it was over, four Canadians were injured and 27 Croatian troops were dead. However, the story does not stop here. Once the battle was over, the Canadians resumed their peacekeeping duties, aiding the individuals who only moments before had been trying to kill them. Thanks to the Patricia's' intervention, ethnic cleansing in the area came to a stop. For its heroic efforts, French General Cot awarded 2 PPCLI the United Nations Force Commander's Commendation, the first of its kind ... Master Cpl. Kilback and Cpl. Young are just a few of the soldiers who have been honored (The Canadian Association of Forces Linemen, 2018).



Figure 20. Kandahar Airfield Afghanistan War.

Finally, the most recent major campaign that saw the deployment of a Task Force sized element of Canadian soldiers, including Linemen, was the War in Afghanistan. As Canadians were winding down in Bosnia, the world was rocked by the events of

September 11th 2001. Shortly thereafter, a major multinational task force was dispatched to the Kandahar province of Afghanistan to fight the Taliban, who were allegedly harbouring Osama Bin Laden and his Al-Qaeda network of terrorists. Canadian Linemen hit the ground and being the only specialty trained and task focused line entity, they were given primary design and line implementation of a truly massive undertaking. The task of building the communications infrastructure of Kandahar Airfield, a task that involved installing at least 50 000 feet of cable and probably more off the books. (The Canadian Association of Forces Linemen, 2018).

Afghanistan changed the way we faced warfare. You could not distinguish the enemy from friendly in the country, because at any moment, one could become the other and vice versa. Dangers were everywhere, from the constant rocket attacks from Chinese 107/108 rounds to a varying array of Improvised Explosive Devices (IED). Once of our Line Sergeants, Sgt Schmidt, faced the very real and frightening reality of road side bombs. During more than one road move, he would suddenly find himself on the “X” where a device was set off, and friendly forces were

injured or killed. Sgt Schmidt quickly sprang into action, along with his fellow soldiers and went about the tasks required to lend aid to their fallen and injured comrades despite the obvious risks to his own personal safety. Not only facing the threat of IEDs, linemen were deployed forward to lay wire for communications and video surveillance equipment on every FOB, including those in the ever dangerous “Horn of Panjwai” which was the last Taliban stronghold in the Canadian AOR. Often Linemen would be seen scaling towers or straddling walls in order to string cables along, making for quite prominent targets however they never failed to accomplish any task set before them in a timely fashion regardless of the ever present threats and hazardous conditions (MacKnight, 2019).

They say that if Linemen are doing their job properly no one knows. Why? Because everything is working properly. However that is not to say there is a lack of exceptional soldiers in this trade, nor are there less perils than before. A new time calls for new Linemen to stand out, new traditions to be formed, as well as a swift and capable adaptation to new battlefields and technologies. We cannot however forget that this trade, regardless of the working environment, is a dangerous one.

On October 21st, 2004, the Signalman William Todd Gray building was opened and his service medals were presented by the Canadian Forces Association of Lineman. The medals which include the Italian star, French and German star and others were only made available through the hard work and dedication of the members of the Association of Lineman (Babcock, 2004).

And then there is Cpl Cory Galbraith, who on July 4th 2001, with no thought to his own safety, risked a 43 metre climb without safety equipment to rescue a suicidal individual. In total darkness, Cpl Galbraith began his climb to the individual who was perched on a narrow steel beam near the top. The man had taken a bottle of sleeping pills and wanted to end his life. After gaining the man's confidence Cpl Galbraith convinced him to begin the climb down, because they had no safety gear and the condition of the man, Cpl Galbraith kept the man between himself and the tower. By this time, Pte George had arrived and climbed to provide assistance as well as emergency services. Twice during this one hour ordeal the soldier eluded their grasps and began to climb towards the top again before they could regain control, the man began striking Cpl Galbraith which made his hold on the tower even more tenuous. Cpl Galbraith kept his cool realizing the man's distress and calmed him down, convincing him to continue to make his way down. Although exhausted, they did not leave this individual until he was safely to the ground where others took over. For their actions, Cpl Galbraith and Pte George were awarded the medal of bravery on December 13th, 2001 (Office of the Secretary to the Governor General, 2019).



*Figure 21.
Canadian Medal of
Bravery.*



Figure 22. Pte Perry Porter memorial parade Kingston ON.

Along with its
heroes, the trade
shares its risks as
well as tragedies,
none more
significant than that
of Signalman Perry
Porter who
perished in the line

of duty on November 6th, 1980. “While serving in the Golan Heights, Pte Perry Porter was conducting Antenna maintenance on Camp Ziouani when the tower collapsed, sending Sig Porter to his untimely death. Following the incident, a monument was constructed by CAF Lineman to honour his memory. Over the years, it served as the Canadian monument for Remembrance Day ceremonies at Camp Ziouani. The names of those who lost their lives in the same mission area were later added to it. It was decided several years later to repatriate the monument to allow Canadians to properly honour and maintain it. It left the mission area in March of 2006 and placed in front of the C&E museum at the signals branch home station in Kingston, ON where it is diligently cared for by Linemen of CFJSR 1 Line Squadron and CFSCE Line Training.”
(Macknight, 2007)

A new piece of history and tradition that has come to be since the turn of the millennium is one which gathers Linemen from across the nation in a competition meant to push soldiers both physically and mentally. The Jean Romard challenge was named after the retired CWO who



Figure 23. Jean Romard Competition.

was an instrumental leader within the line trade. This event brings together line trade members from all bases, brigades and units, in a good natured yet challenging competition which showcases the various skills that Linemen possess. The competition involves stands such as antenna climbing, pole carrying, cable pulls and pole ball that have made their way into this competition since its inception in 2001. The importance of this event is not only the challenge and competition between different units, but the gathering of the men and women in the line trade. Here stories can be shared, young Lineman can learn first-hand of their rich history from their predecessors and new friendships can be forged or old ones renewed. This event was traditionally held at Garrison Val Cartier and hosted by 5 Brigade, Headquarters and Signals

Squadron; however, in 2018 the competition made its return and was hosted for the first time by 77 Line Regiment during its first Regimental exercise, EX COLLABORATIVE EFFORT at CFB Kingston (Crabbe, 2007).

The ability of our soldiers to adapt and provide services to a variety of nations in such an austere environment speaks volumes of the depth of knowledge and initiative required by Canadian Linemen. Today Linemen serve in every corner of the world, providing critical services whenever called upon. From Eastern Europe, to Central America and the Caribbean to the deserts of the Middle East and into Asia; regardless, if it is climbing 100 foot antenna's in foreign countries, slinging sand bags during floods, or restoring critical communication services during natural disasters such as the 1998 ice storm – Linemen can be counted on to answer the call to duty.



1980s/Current



EVOLUTION OF LINE TRADE AND UNITS

Following the demobilization of forces due to the Armistice between North and South Korea in 1953 and 1954 there was a drawdown of Signals Units similar to what occurred following WW1 in 1918. During the Cold War era and up to the modern period there has been continue evolution, or some would say revolutions, of the Units that house Linemen within the Canadian Armed Forces. On 15 Aug 1963, 1 Signal Unit was renamed to 1 Canadian Signal Regiment (1CSR), a name which would be retained for 46 years (Patterson, 2013, p. 338). This paved the way for creating a home for Linemen as they now had a regiment to call their own. On 23 August 1968, 1 Line Troop became part of 1 Canadian Signal Regiment (1CSR) as 2 Squadron Heavy Line Troop (Patterson, 2013, p. 340). This was further celebrated on 16 February 1985, when 1CSR issued the first of its Regimental coins, of which 3000 were minted. At the time the unit strength was 32 officers and 493 enlisted men (Patterson, 2013, p. 349). On 1 September 1970 the Heavy Line Troop, 1 CSR, reverted to the command of Canadian Forces Communication Command (CFCC) as a unit and was again designated 1 Line Troop and assigned to 70 Communication Group, as of the summer of 1975. Then on 1 July 1983 it was again transferred to 76 Communication Group (Mackenzie, 1995, pp. 59, 69, 71). 1 CSR eventually rebranded themselves on 26 August 1989 (Patterson, 2013, p. 352) as the 1st Canadian Divisional Headquarters and Signal Regiment, 1 CDHSR (most commonly nicknamed the alphabet Regiment) as a way to better include and describe the breadth of ability and responsibility captured by their unit.

The main annual training event for these units between 1986 & 2004 was the Rendezvous exercises (RV's). While it is well known that Linemen work hard and play hard, no example

exemplifies this better as the RV Exercise. It was typical for Linemen to lay line over dozens of kilometers over 24 hours, only to move and relay/recover continually for days.

In 1997, 1 Line Troop stood down as an independent unit and amalgamated with the Regional Line Work Centers in Edmonton, Petawawa and Halifax to become 1 Line Squadron under command of 79 Communication Regiment. In June 2000, 79 Communication Regiment and 1st Canadian Divisional Headquarters and Signal Regiment amalgamated into the Canadian Forces Joint Signal Regiment (CFJSR) and 1 Line Squadron remained there until it was transferred to its current home within 77 Line Regiment on 31 Dec 2017.

On 1 April 2000, 1 CDHSR and 79 Communication Regiment unified themselves to create the Canadian Forces Joint Signal Regiment. It was during 2006 that CFJSR was under a high demand which provoked the regiment to reorganize into 5 separate squadrons; each squadron had their role to play and Linemen found themselves spread across Alpha Sqn for first line maintenance support, and Charlie Tp for line support and maintenance for all line installations.

In order to maintain cable infrastructure across Canada, CFJSR organized Linemen across the country that worked out of Regional Line Work Centers (RLWC). The RLWCs had large geographical boundaries for their responsibilities, and due to the breadth of the work needed to be completed, the Linemen working there spent a lot of their time not sleeping at home, deploying domestically for many weeks at a time.

With the loss of Canadian Forces Communications Command (CFCC), the Line Trade lost a single Formation HQ to be responsible for funding Line projects across the CAF. Individual bases were responsible to procure equipment for their Linemen to work as well as

decide their priorities which caused a decline of line expertise. Through a tight “tech net” group and high degree of professional pride they still maintain an operational line capability, enough to meet CAF operational needs.

On 11 Oct 2011 the signals occupation decided to pool the manpower in order better employ all the signal men and women. This resulted in the stand-up of Army Communication Information System Specialist (ACISS). This in turn created a marked increase in training and caused a slowdown of recruiting Linemen into the “Line System Technician (LST)” sub occupation.

Along with ACISS was the stand-up of Shared Services Canada. At this point the responsibility to maintain DND cable plants was taken away from Information Management Group, along with the funding for the tools and equipment to maintain them. While DND retained its antenna farms and thus its antenna capabilities, the capabilities and skill sets required to install and maintain cable plants became at risk as the cable plants provided the bulk of the operational training and development opportunities for the Linemen. It became paramount that DND/CAF Linemen somehow remain fully employed within these infrastructure environments regardless whom had the ultimate responsibility to provide the maintenance.



Figure 24. Official Stand Up of the 77 Line Regiment.

On 31 May 2016, the efforts of Lt Col Gillingham and CWO MacKnight resulted in the formation of 77 Line Regiment (77 Line Regiment, 2016). The Regiment officially stood up as a unit within the Canadian Armed Forces, allocated to 7 Communication Group

and on 20 July 2016, a ceremony was held at the Cartier Drill Hall in Ottawa to recognize and celebrate this momentous occasion.

77 Line Regiment's premise was to serve as a consolidated resource of line capabilities to force generate scalable cable and antenna capability in order to enable command and control across Canadian Armed Forces both domestically and abroad. The formation was achieved by



Figure 25. (L to R) Col Wood, CWO Lapointe, MGen Loos, BGen Rutherford, CWO MacKnight, Lt Col Gillingham, 20 July, 2016.

amalgamating the pieces left behind from the disbandment of all of the Shared Services Units (SSU). With Linemen in over two dozen different locations in the country who now fell under one unit and one collaborative effort. Each of these locations is supported through the establishment of Local Line Work Centers (LLWC). The Canadian Forces are now able to benefit from a standardized approach to both domestic and international operations. These operations included sending entire line teams, consisting of Linemen across the country, to a

variety of operations such as Op IMPACT, Op REASSURANCE, and Op NEVUS (77 Line Regiment, 2018).



Figure 26. (L to R) Sgt Dyck, MCpl Panter, MCpl Deschamps, Cpl Olliffe, Cpl Eichler.

With command and control centralized in CFB Kingston, any requirement for line activity was seamlessly actioned by tasking

Linemen and resources from across the country. To celebrate the achievement of uniting Linemen it was deemed appropriate to generate a regimental coin. The first coins were issued at the first regimental exercise held at CFB Kingston in September of 2018.

With 77 Line Regiment to support them as the home station for the trade, Linemen have a promising future. Technological advancements will continue, but just as they have transitioned to the use of fiber from copper wire, the next generation of Linemen will find their place enabling communications with whatever technology comes next.

CONCLUSION

The genesis of this paper was the desire to identify and extol the valiant history of Linemen in Canada; whereby we would finally document our capabilities, our missions, and our accomplishments

The officers of 77 Line Regiment would like to recognize and honour the sacrifices of our Warrant officers, Non-Commissioned officers, and soldiers who have sacrificed much – both domestically and on expeditionary operations – in the service of Canada. This paper cannot possibly explore the full extent of the countless hours spent away from family and friends on the road on line infrastructure projects or operational tours overseas. This paper is dedicated to you, the Linemen of the RCCS.

This paper was aimed at identifying and linking capabilities and actions in a manner which provides a brief overview of the Linemen's journey -- from the formation of the Canadian Militia; through the hellfire of WWI and WWII; to the decades of the Cold War; and then the modern era with the disappearance and re-emergence of the Line trade and Units -- with the goal of inspiring continued deliberate recording of future accomplishments and milestones. Having done so the task now passes to you, each member of 77 Line, and the line trade, to continue our traditions and record for posterity the positive future that lies before us.

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