THE TITANIC

The TITANIC disaster on April 15th, 1912 has been called the greatest disaster known, which may be true. There were many factors involved to create this catastrophe. It is highly unlikely that a disaster of such magnitude could be reproduced with a moving vehicle. If for no other reason, the changing modes of transport have made it impractical for so many of the world's upper class to be found in the same vehicle. So much more is known about the many factors which created the TITANIC disaster and with the help from many minor incidents, it is clear that no matter how much emphasis is placed on safety, accidents are bound to happen.

Because no one had taken into consideration the possibility of a distress call occurring while the operators were sleeping, there were insufficient operators aboard the vessel. The TITANIC carried only two operators and many of the ships in the area at the time, including the largest passenger liners, carried only one. A normal day for these operators was from early in the morning to late at night and the most of them slept from around midnight until about seven in the morning. The TITANIC hit an iceberg at 11:40 PM. She sank around 2:30 AM. Because of this the hours of watch keeping for the operators at sea were altered. The larger ships were required to maintain a watch around the clock and this of course meant carrying more operators or making those carried work longer hours.

It was impracticable for the smaller ships to carry more than one operator so this brought about the automatic alarm. The auto-alarm was a device that rang three bells in a ship that was near a ship in distress. This was done by sending a proper signal consisting of twelve four second dashes with a one second space or pause after each on the distress and calling frequency of 500 kilohertz (600 meters). The auto-alarm was designed to activate on the reception of four of these dashes and therefore sending three times the required number was only additional assurance. On receipt of these signals the auto-alarm rang a bell next to the operator's bunk, a bell in the radio room, and a bell on the bridge that would alert the navigating officer on duty.

The last auto-alarm would, in addition to this, activate if for any reason it developed a fault and became unserviceable or if the main electrical power supply to the radio room failed. The last models were also so sensitive that if a high powered station thousands of miles away sent this signal during the hours of darkness they would activate. This was a nuisance but it was better to be safe than sorry.

A regulation radio room clock had these four second dashes clearly marked in red for the operator's convenience in sending this signal by a hand key. This clock also had the two three-minute silent periods clearly marked in red. All ships and coastal radio stations had to terminate any transmission on 500 kilohertz twice per hour from fifteen until eighteen, and from forty-five until forty-eight minutes past each hour. They were to monitor this frequency for any possible distress signal. Especially those from low-power lifeboat radios. Some of those clocks, in addition to those marks, had two three-minute periods marked out in green or blue. These two were from on the hour to three minutes past and from thirty minutes to thirty-three minutes past the hour. Those were the two radiotelephone silent periods for the distress and calling frequency of 2182 kilohertz and the same ruling applied to this frequency at those times.

Cape Race, MCE, was the main coast station involved in the TITANIC disaster. Mr. Walter Gray, a prominent figure in the early days of our wireless stations, was in charge of this station at the time and needless to say all at the station were kept very busy. Walter was a personal friend of Jack Phillips, the TITANIC's Chief operator, and stayed on the air for ninety-six continuous hours after receiving Jack's distress call. Jack went down with the ship while still sending the call for help, was rescued later, but died from exposure. He was one of over fifteen hundred persons, many of the world's upper class, to lose their life from this disaster. Every wireless station in the world was involved with this incident in one way or another, but I found no direct involvement of any description by Camperdown, MHX.

The TITANIC had call code MGY and she was the first to use the signal SOS, and sent both the CQD and SOS signals. The German representatives at the 1903 Berlin Radio Convention had insisted on changing

this CQD to SOE. It was eventually agreed to change it to SOS. This made a good clear signal for this purpose, three dots, three dashes, and three dots, sent as one character and not spaced out as the letters S O S. The E is only one dot in code and could easily be lost in static or interference. SOS is the distress signal to this day in Morse code. This signal was known as SOS, for the same reason the signal for the question mark was called IMI. The three letters make for an easy way to remember the full character. The question mark is two dots, two dashes, and two dots. Two dots are the letter I. Two dashes are the letter M.

Another bad habit was that ships at the time of the TITANIC fired flares and Roman candles at night for communication. By firing these in various colours each ship was identified. Therefore when the TITANIC sent up a large number of flares, signifying distress, no one knew what they were and paid little attention to them. This practice was terminated shortly after this disaster and flares, since that time, are used only to signal a distress.

This letter is held by the Dartmouth Heritage Museum, Dartmouth, Nova Scotia.

Anglo – American Telegraph Co.
Cable Ship "Minia".

April 27th/12
2.20 AM

My darling Mother

I expect you will be surprised to receive this written on this paper but I am on watch now in the wireless room so thought it a good opportunity to write you. This is the most remarkable trip the old Minia has ever been on as we are looking for bodies from the Titanic wreck. You know I wrote that we were up North on a Cable repair when we heard she had sunk – we arrived in Halifax about three days after and it was reported that we had "some of the rescued on board" but we had not, and the reporters that came to meet us were disappointed. The same day that we came in, the Cable Ship "Mackay-Bennet" of the Commercial Cable Co. was chartered by the White Star (owners) to go out and look for the bodies from the Titanic. The M-Bennet took 150 coffins and about 20 tons of ice and went to sea at once – 3 days after we were also chartered by the W. Star Co. and we also took 150 coffins and about 20 tons of ice and the same weight of old iron and sailed about noon on Thursday in a most rotten fog. When we arrived (it is about 600 miles) we found that the Mackay had picked up over 200 bodies and had identified about 150 and had buried the rest. They picked up J.J. Astor's body and some other well known people. By the way – there was a reward offered of $10,000 for Astor's body which was lucky for them. We began the search yesterday and the first we picked up was C.M. Haye, Pres. Of G. Trunk Rail, it was no trouble to identify him as he had a lot of papers on him and a watch with his name on. We picked up 10 more bodies yesterday (waiters and sailors). All those who are identified are embalmed and packed in ice and are to be sent to N. York. I can tell you none of us like this job at all but it is better to recover them and bury them properly, than let them float about for weeks. The Revd. Cunningham came out with us to bury those not identified. When we passed over the spot where the T. sank he held a short service in the Saloon, which I thought very nice of him. I expected to see the poor creatures very disfigured but they all look as calm as if they were asleep. Mack and I have had to keep 6 hours watches all this trip, so as to keep in touch with all ships and give them news – it is difficult to keep awake all night but I am getting used to it now.
May 2nd. Being again on watch it is now 3 a.m. will write a little more – We have been sailing about looking for bodies for the last 4 days and have only picked up 17. There has been a lot of wind and bad weather since the accident so the bodies are much scattered, some we picked up over 130 miles from the wreck, as they go very fast when in the Gulf Stream - very likely many will be washed up on the Irish Coast, as they are all going East.
May 3rd. Just a few lines to let you know how things are going. I honestly hope I shall never have to come on another expedition like this as it is far from pleasant! The Dr and I are sleeping in the middle of 14 coffins (for the time being) they are all stacked round our quarters aft. The Titanic must have been blown up – when she sank, as we have picked up pieces of the grand staircase and most of the wreckage is from below deck, it must have been an awful explosion too, as some of the main deck planking 4 ft thick was all

split and broken off short. I guess the fellows on the "Mackay-Bennet" will get a bonus for this job and my word they deserve it after picking up over 800 bodies. May 6th. Halifax. We arrived in port this morning. I hear the M. Bennet fellows are to get a months extra pay. I don't suppose we shall get a cent, as we only got 17 bodies. They say there was tons of money on some of the bodies when they were picked up. Astor had $10,000 and another man had a bag of diamonds hung round his neck worth $250,000. Some of the jewels that went down in her were worth enough to buy ½ doz "Minias", one woman's pearls alone were worth $450,000. I am sorry to say that we have to go out again in about 2 days up North the same place where we were in when we heard about the Titanic. Etc. etc.

Your loving son

Francis Dyke

Many bodies picked up from the TITANIC are buried at Halifax, Nova Scotia.

THE 1912 RADIO CONVENTION

At the time of the TITANIC incident the various authorities involved in the wireless business were fully aware of the need for some regulation governing the operation of these stations. Because of this an international radio convention was being held at the time in London, England. There had been two such conventions previous to this, both held at Berlin, Germany, one in 1903 and another in 1906, but little of anything concrete came from either. This convention of 1912 at London was the first International Convention that changed the wireless world for all time on an International scale.

The first and foremost was the mandatory examination and licensing of all radio operators. This not only meant that the people operating the equipment had to know something about same, it also meant that certain rules and procedures had to be recognized and adhered to, but above all else it meant that the various authorities had an excellent means of policing this radio communication. If some operator failed to meet the necessary qualifications, he was refused permission to operate. Further still, if an operator failed to operate per the rules, his license was suspended and he was out of work and trade. Needless to say this cleaned up the radio trade immensely.

Another important point brought about by this first Radio Convention of 1912 was the issuing of call signs with a prefix to signify the country of location, or the county of registration as it pertains to ships. Ships and coast stations were still issued a three letter call sign. The ship's call sign was still separate from the flag signal call sign. The great interest and rush to fit more ships with this radio equipment, as the result of the REPUBLIC – FLORIDA collision of January 1909, had not seen sufficient ships fitted to warrant the issuing of four letter call signs.

Some of these first blocks of call signs, or codes, assigned on an international basis are still held by their original countries. Canada was assigned the block of call signs beginning with VAA and ending with VGZ, one of Canada's blocks to this day. The reason for the V rather than C prefix is believed to be in memory of Queen Victoria who had recently died and many of the British Colonies were assigned these prefixes.

VAA to VZZ allotment of 1912

VAA-VGZ Canada
VHA-VKZ Australia
VLA-VMZ New Zealand
VNA-VNZ South Africa
VOA-VOZ Newfoundland
VPA-VSZ British Colonies not autonomous
VTA-VTZ British India
VXA-VZZ Great Britain

There were many other countries assigned call blocks, but many of the call blocks were not assigned at this 1912 convention. Mexico, Norway, Sweden, Denmark, still retain these first issues: Italy IAA-IZZ, France FAA-FZZ, Britain GAA-GZZ and MAA-MZZ, United States NAA-NZZ and WAA-WZZ, which are still held by these countries. But politics has played a big part in the changes of these calls. For example Germany in 1912 was assigned AAA-AZZ, DAA-DZZ, and KAA-KCZ, but today holds only DAA-DTZ from this first issue. The United States has held KAA-KZZ for some years since Germany lost KAA-KCZ. From this 1912 convention Great Britain also held BAA-BZZ and YYA-YZZ, but has since lost these blocks.

The block QAA-QZZ was reserved for code abbreviations and not used as call signs for any station, and this has been the practice to this day.

The TITANIC was not only the largest ship in the world at the time of her collision with an iceberg and following loss, she was the most modern and on her maiden voyage. A court of inquiry was held involving the most powerful marine authorities of the period. From this inquiry many faults in the basic design of the TITANIC and many faults in the basic laws governing the operation of all ships were discovered. This brought another International Committee into operation, known as the Safety of Life at Sea Conference (SOLAS). SOLAS has brought about many changes and has improved practically everything connected to and operated within ships. SOLAS was to make it mandatory for vessels of certain sizes or descriptions to carry radio and qualified radio operators. SOLAS made it mandatory for sufficient lifeboats to be carried by all ships. The TITANIC legally carried sufficient lifeboats because of out of date laws basing this fact on the size or cubic capacity of the ship, rather than ensuring there was room in a boat for every person on board. The TITANIC carried many more people than could fit into the number of lifeboats she carried. SOLAS has made it mandatory for all the equipment carried in a ship to be inspected regularly by certified inspectors. It is a pity such tragedies happen. But it would appear at times that this is the only way for us to learn because so much of the seafaring community was to gain from the TITANIC disaster.

Another organization to be created as a result of the TITANIC disaster, which should be mentioned, was the International Ice Patrol which is a very important organization that supplies information on ice as it affects navigation.

When Canada was assigned the VAA-VGZ call block in 1912, the first stations were all reaching their seventh or eighth year in service. Camperdown was assigned the VCS call sign and the old MHX call sign went to Great Britain. The only stations with Canadian call signs to retain their old Marconi suffix were Cape Race MCE to VCE, Cape Ray MCR to VCR, Point Riche MCH to VCH (they were Newfoundland stations) and Clarke City (Sept Iles, Quebec) MCK to VCK. So really, VCK was the only Canadian call sign to go from CK to MCK to VCK and terminate with the original call sign.

The Canadian Coast Stations per the 1915 List, the earliest I have been able to locate, are as follow:

VAA Halifax
VAB Point Grey
VAC Cape Lazo
VAD Pachena
VAE Estevan Point
VAF Alert Bay
VAG Triangle Isle
VAH Dead Tree Point
VAI Ikeda Head
VAJ Prince Rupert
VAK Victoria
VAN Glace Bay
VBA Port Arthur
VBB Saulte Ste. Marie
VBC Midland

VBD Tobermory
VBE Point Edward
VBF Port Burwell
VBG Toronto
VBH Kingston
VBM Les Pas
VBN Port Nelson
VCA Montreal
VCB Three Rivers
VCC Quebec
VCD Grosse Isle
VCE Cape Race, Newfoundland
VCF Father Point
VCG Fame Point
VCH Point Riche
VCI Heath Point
VCJ Harrington
VCK Clark's Point
VCL Point Amour
VCM Belle Island, Newfoundland
VCN Magdalen Island
VCO North Sydney
VCP Cape Bear
VCQ Pictou
VCR Cape Ray, Newfoundland
VCS Camperdown
VCT Sable Island
VCU Cape Sable
VCV Partridge Island

These forty-four stations were the only radio stations, according to this list, in Canada at this time except for a few amateur experimental stations. The United States left some of their old familiar Marconi suffixes in their call signs. South Wellfleet, Massachusetts went from MCC to WCC. Although the original site has disappeared because of erosion from the natural elements, mainly the Atlantic Ocean, and the station was moved to Chatham, Massachusetts, it was one of the most powerful stations in operation. Naturally New York went from MNY to WNY. This station closed in the early 1960's.

Although stations at Cape Ray, Cape Race and Belle Island were actually in the colony of Newfoundland at this time, they were advertised as Canadian stations and had Canadian call signs. Rather strange, but no doubt it had something to do with politics or was simply the beginning of so many incidents that made no sense. Actually it appears as though those stations that the Canadian Marconi Company installed on their own in Newfoundland received Canadian call signs, and the stations that the Newfoundland government hired the Canadian Marconi Company to install received the Newfoundland call signs. The ones with the Newfoundland VO call signs were listed as part of the Canadian Marconi Company operation.

By 1915 the colony of Newfoundland had ten stations and strange as it seems these were Canadian stations according to the records, as stated. The ten stations were as follow:

VOA Battle Harbour
VOB Venison Island
VOC American Tickle
VOD Domino
VOE Grady
VOF Smokey Tickle
VOG Holton
VOH Cape Harrison

VOI Makkovik
VOJ Fogo

THE DURLEY CHIME

1914 not only saw the outbreak of World War I, it saw a young operator start a career that was to cover most of the history of communications in the area of Camperdown Radio VCS. Cyril R. Spracklin was assigned his first ship that year, the CITY OF SYDNEY with call sign MZR. She belonged to the Black Diamond Line of Sydney, Nova Scotia. This line went out of business shortly after World War I, but was mainly in the coal trade although the CITY OF SYDNEY did carry passengers around the coast during the off season coal trade. Sprack's second ship was the BOSTON, a ferry belonging to the Yarmouth to Boston Line. She was Canadian flag, but Sprack did not remember her call sign. The spark stations he was operating on these ships were capable of transmitting on two frequencies – 300 and 600 meters. 600 meters is 500 kilohertz in modern terminology. They were tuned by altering the oscillator transformer coil that was housed in a large box, and were tuned to make the signal as sharp as desired.

Sprack went north to supply Port Nelson, VBN, on the Hudson Bay in 1914. On this trip he was "Sparks" in the DURLEY CHIME with call sign VDY. She and two sister ships had been purchased for this supply work. One of his many memories of this most enjoyable trip in VDY was being able to hear and copy the news that was transmitted by Chatham, WCC, while they were in the Hudson Strait. This of course meant he and his shipmates had the latest news as though they were at home receiving the daily newspaper. This was a big improvement over a few years previous on these voyages. By the time DURLEY CHIME returned to Halifax, World War I had broken out. The effects of the 1912 International Radio Convention were not in full swing and the operators were still in the habit of dropping the first letter or prefix of their call signs. Not only this but they were still separating their calls with the letter V rather than DE. The separation of call signs, when making a call was changed to DE around this time and was the separation signal until radiotelegraph terminated. Camperdown was still using the MHX call as well at this time. In other words, when Sprack called Camperdown it would have been HX V DY, rather than VCS DE VDY terminated with the letter K (the invitation to transmit). By the way these stations had to have their receivers switched off while transmitting.

As DURLEY CHIME approached Halifax Sprack began to realize he was in for some trouble because of the sloppy operating practices of these stations. The British Navy was in full swing on 600 meters along with the British Red Cross Hospital Ship STEPHANO. The operator in STEPHANO was operating by dropping the prefixes in the calls and separating his calls with the letter V. STEPHANO's wireless call sign was MDY. Sprack decided using his full call VDY or dropping the prefix would do no good and felt that no matter what he did, Camperdown and the others would mistake him for MDY. Then he realized that the duty operator at Camperdown would also have to know the old landline code, the American, or Morse code. At this time the Radio Code (the Continental Code) was being used over the air. This Continental Code was the one used via radio until the end and can still be heard on the Amateur Bands. The Continental Code is slower than the American or Morse code.

When Sprack was handed his arrival message to transmit, he called Camperdown and passed this message in the landline code. No problem and all went very well. He signed off with Camperdown and then went down for a bath in order to be cleaned up and ready for shore as soon as DURLY CHIME was made fast alongside Halifax.

Sprack was away from his station for about one-half hour or slightly longer. On his return to the radio room he switched on his receiver to hear Camperdown call him with a message. By this time DURLEY CHIME had developed a problem with her engine room telegraph and had gone to anchor until repairs were completed. Sprack naturally answered Camperdown and received a message stating that on DURLEY CHIME's arrival, the Captain and the wireless operator were to report to Naval Headquarters in the Dockyard complete with the radio log. Once the telegraph to the engine room from the bridge was repaired, DURLEY CHIME hauled in her anchor and proceeded into Halifax. As soon as the ship was secured and the Captain was free, he and Sprack complied with the instructions they received via message.

The letter Y in the landline code was a two-character code consisting of two dots each. The letter Y in the radio code is a dash, dot, and two dashes. The letters V and D are the same in both codes. Therefore Sprack's VDY to the many Navy telegraph operators listening should have sounded like a VDII. The letter I in the radio code is two dots. There being only three letter call signs in use and the practice of dropping the prefix meant that the Navy, somehow, copied Sprack's call as VDI and not VDY or VDII. The problem was that VDI was the call assigned to the Icebreaker EARL GREY that had recently been sold to Russia and had left for delivery sometime before this incident. The Navy immediately went into a big flap and went chasing off to find the EARL GREY and try to ascertain the reason for her return. Alf Lawton was the wireless operator who made the delivery voyage to Russia in the EARL GREY. The Icebreaker EARL GREY was HMCS EARL GREY at this time and Alf was a Warrant Officer Telegraphist in the navy.

Once all this had been resolved between the Navy, Sprack and his Captain, the meeting was terminated although the Navy insisted on Sprack making an apology. Sprack refused because as he said "there was nothing to apologize for". He was certainly correct on that count, but there must have been many such incidents, although few would have created so much confusion. This was the reason for adopting the Continental Code for use as the radio code. The Continental or Radio Code does not contain any double character letters and therefore less room for error, although it is a much slower code. (An operator can move along much faster using the old landline code.)

GOVERNMENT OWNERSHIP

The first Canadian East Coast Stations were both owned and operated by the Marconi Company until 1915 when most were taken over by the Canadian Government. The reason for this move by our government was that they did not want to get into a dispute with private enterprise, claiming both the Marconi Company and the British Columbia Telephone Company wanted to erect stations on the west coast of this country. Since Marconi had erected the East Coast stations, he was most interested in West Coast stations. Whether or not this move by our government was correct remains one of personal opinion. These stations were the only wireless or radio stations around at the time and those who could operate them were looked upon as a rather elite or special crowd. Any bureaucrat in sole charge of these stations would make for a rather imposing figure, a position that could be a very good political football.

There were many other reasons that would have influenced this move. World War I was well underway and it was becoming very clear that wireless was an important tool in the warfare arsenal. By this time many incidents south of the border in the United States had also added further fuel to the fire of government ownership. Many of the companies formed had gone out of business and there had been many lawsuits that had been won or lost in the courts over wireless in one form or another. There had also been a strike of organized wireless operators on March 19th, 1913.

So when all things are seriously considered our government had a lot going for it to make themselves solely in charge of all wireless stations, although there was plenty of "action" around to make it feasible for several small Canadian companies to make quite a name for themselves. But in those days, as today, it was rather hard to find Canadian ownership of anything.

Our government of the day could have just as easily issued various licenses to Canadian companies and set up a very good policing staff to discipline and police the wireless activities. Instead they took over ownership of all stations and hired the Marconi organization to operate them. It is believed that the Marconi Company did this for an annual fee of five thousand dollars, plus a fee for all messages handled. Therefore these stations made a fortune for this organization, a British Company. Logs indicate that the EMPRESS OF IRELAND, with call sign MPL, sent over four hundred telegrams at a time. She was only one of many passenger liners contacting these stations continuously. Cape Race, VCE, and Sable Island, VCT, were the busiest being right in the middle, you might say, of the high traffic routes. These two stations were often heard arguing over message traffic accepted by one or the other – which the other felt was rightfully his. The law stated that a ship was to work only the nearest station to the ship and this law was to remain until spark was replaced by the continuous wave signal, late in the 1920's.

There were many immigrants coming over from Europe and only ships to bring them so there were many messages to be handled. Another “old timer” I met many years ago claimed he was working at Chatham, WCC, at that time and that it was routine to go on duty and spend the full eight hours in steady communication with only one ship. The majority of these messages he handled were addressed in care of some Italian Barbershop or other, in New York City. Many future Canadian and American citizens arrived at this time and if they each sent only one telegram it would have amounted to a great number. Therefore the Marconi Company had no choice but to show a good profit from this arrangement.

At the time these stations were taken over by the Naval Service of the Canadian Government, many of the operators involved were made Warrant Officer Telegraphists in the Royal Canadian Navy, such as it was, a branch of the British or Royal Navy. We had put an effort into forming a Navy, but still had only two old British Cruisers HMCS RAINBOW and HMCS NIOBE. Both retained their original British names. These two had been purchased in 1910 with RAINBOW going to the West Coast and NIOBE remaining in HALIFAX. Both ships were not in use at the outbreak of the war and the Royal Canadian Navy (a title given by direction of the King in 1911) included only 336 officers and men.

NIOBE was to be fitted with a Marconi set on December 31st, 1901, while a member of the British Navy’s Channel Squadron. Through my research I assume she was fitted shortly after that date, which would have seen her “on the air” two years previous to the CANADA, MINTO, and STANLEY that were fitted in 1904. The earliest Call Sign, VDA, I was able to locate for her, was the one assigned from the major reshuffling of the calls which were made from the 1912 International Radio Convention. This was from the 1915 List of Radio Stations of the World; the actual title of the publication and not Wireless Stations as one would expect.

The eighty-seven Canadian ships fitted per this 1915 listing are as follows:

Flag	Radio	Name
	VDA	NIOBE
	VDB	RAINBOW
	VDC	CANADA
	VDD	MINTO
	VDE	STANLEY
	VDF	LADY LAURIER
	VDG	ABERDEEN
	VDH	DRUID
	VDI	EARL GREY
	VDJ	MONTCALM
	VDK	MONTMAGNY
	VDL	LADY GREY
	VDM	QUADRA
	VDN	ESTEVAN
	VDO	DOLLARD
RGCW	VDP	NEWINGTON
LVNB	VDQ	ARANMORE
	VDR	LURCHER lightship
HNRJ	VDS	SIMCOE
JCMD	VDT	ACADIA
	VDU	MALASPINA
	VDV	GALIANO
	VDW	MARGARET
SKCV	VDX	LADY EVELYN
JCRF	VDY	DURLEY CHIME
HWNC	VDZ	SHEBA
	VEA	DALHOUSIE CITY

VEB CORONA
VEC KINGSTON
RTFD VED TORONTO
HCBS VEE HAZEL DOLLAR
VEF SYRACUSE
VEG RAPIDS KING
VEH CHIPPEWA
VEI GARDEN CITY
VEJ CHICORA
KRJT VEK MACASSA
VEL CAYUGA
VEM MAJESTIC
VEN TURBINIA
NVSJ VEO CASCAPEDIA
VFA PRINCESS ADELAIDE
VFB PRINCESS MARY
VFC PRINCESS BEATRICE
VFD PRINCESS ALICE
VFE PRINCESS CHARLOTTE
TSQJ VFF PRINCESS VICTORIA
VFG PRINCESS ROYAL
PVNQ VFH PRINCESS MAY
VFI PRINCESS SOPHIA
VFJ PRINCESS ENA
NTBW VFK TEES
MTPR VFL PRINCE ALBERT
HQMK VFM PRINCE JOHN
VTPN VFN MORWENNA
HDVN VFO BESSIE DOLLAR
VFP BARGE EMPIRE
VFQ ALBERTA
VFR BARGE PROVIDENCE
VFS BOSTON
VFU AUILO
JSCT VFV SALVOR
PRBT VFW A.W. PERRY
THRL VFX LORD STRATHCONA
VFZ CAMOSUN
HLTW VGA ROYAL GEORGE
HMDG VGB ROYAL EDWARD
VGC KEEWATIN
VGD HAMONIC
VGE HURONIC
VGF SARONIC
VGG ATHABASCA
VGH MANITOBA
VGI ASSINIBOIA
RMHL VGJ PRINCE ARTHUR
QKBS VGK PRINCE GEORGE
VGL ST. IGNACE
VGN CHELOHSIN
KVCR VGP HALIFAX
VGQ EVERETT G. GRIGGS
VGR DOUGLAS H. THOMAS
VGT PRINCESS MAQUINNA
HSNM VGV SEAL

	VGW	NORONIC
HQNS	VGX	VENTURE
KLPV	VGY	YARMOUTH
HVDJ	VGZ	PRINCESS PATRICIA

Unfortunately I was unable to locate an old signal book that contained the complete list of flag signal call signs for this fleet.

This is a fascinating fleet mainly because it comes from a different world than the one we know today. Some of these ships were wooden and all were much smaller than the average ship we see today. They were powered by steam engines, and from the photographs they left behind one would think the amount of power they had was in direct proportion to the amount of soot and smoke they blew out their stacks. Many of their whistles sounded more like a high-pitched scream than the loud dull note of the steam whistle heard today. A look inside one of these ships would be most interesting. The most noticeable feature would be the total lack of electronics that is such a big part of a modern ship. This fleet was sailed by a magnetic compass and the use of a sextant to determine their direction or course and position. Quite likely the one item that would impress us most, about this fleet, would be the ship's steering wheel. It had to be fairly large in most cases to provide a lot of leverage in order to steer these ships. All had to be steered continuously by one or more of the seamen because automatic steering, auto pilots, were a long way off in the future. Many ships today do not have a steering wheel as such, just a small lever less than a foot long. Most ships that are fitted with a steering wheel today have one that is smaller than the average automobile steering wheel.

The life of a wireless operator in one of these ships would be like a dream to us. The total lack of stations ashore, other than those you and you alone could hear, would make you the centre of attraction for news outside the ship. This of course was why these operators were looked upon as a special group. But as can be seen from the list of this fleet, our practice of splitting the call sign allotments to signify a certain type of ship commenced with these first assignments. The VD prefix call signs are government ships. Few of these ships saw action during World War I although there were 2,479 merchant vessels and 670 fishing vessels registered in the United Kingdom, sunk from enemy action, in just over four years of this war. NIOBE and RAINBOW performed useful patrol work. A fleet of smaller craft and fishing trawlers did minesweeping and anti-submarine patrols in coastal waters. But that was the extent of the Royal Canadian Navy's fleet with the exception of two American built submarines that patrolled the West Coast off British Columbia. The personnel of the Royal Canadian Navy reached the figure of six thousand during this war, but mainly in British and not Canadian ships. Since this war was the war to end all wars, right afterwards our government did as much as possible to totally ignore a Navy or anything fitting that description.

There were twelve ships registered in Newfoundland that were fitted with wireless in 1915 as follow:

Flag	Radio	Name
TQND	VOK	ADVENTURE
TQNL	VOM	BELLAVENTURE
TQNP	VON	BEOTHIC
TQNM	VOO	BONAVENTURE
TWLM	VOP	BRUCE
	VOQ	INVERMORE
JCGB	VOR	KYLE
	VOS	LINTROSE
JHMQ	VOT	NASCOPIE
NTKM	VOU	EAGLE
MCBP	VOW	NEWFOUNDLAND
MJQC	VOX	NEPTUNE

At the outbreak of World War I Camperdown had been equipped with a new and modern receiver that used a carborundum crystal and was capable of tuning between 200 and 3000 meters (1500 and 100 kHz). Dr.

Lee DeForest applied for a patent on the three-element vacuum tube on October 25th, 1906, and these were known as an Audion for some time. The first receiver containing one of these tubes (Audion) was not placed in service at Camperdown until 1918.

THE HALIFAX EXPLOSION

On December 6th, 1917, the French munitions ship MONT BLANC, carrying benzene on her upper deck, pitric acid, gun cotton and nitro glycerine (T.N.T.) in her holds, was proceeding into Halifax. MONT BLANC was a floating bomb. At the narrows she collided with the Norwegian Ship IMO that was carrying relief supplies for the war victims of Belgium. This caused the benzene on the MONT BLANC to catch fire and roughly twenty minutes later caused the TNT to explode. This explosion nearly wiped Halifax off the map and the total count of those injured or killed was impossible to calculate. The estimates were placed at 2,000 killed, 2,000 wounded, and 6,000 homeless.

Many of the ships in Halifax harbour were destroyed, but others received little or no damage. HMCS NIOBE was alongside Halifax at the time of the explosion and George Harris was her operator. George was coming down a ladder at the time of the explosion and was blown to the deck but received no serious injury. NIOBE was only slightly damaged and her wireless equipment was not harmed.

This explosion was felt at the Camperdown station for about ten seconds but did not cause any damage. The wire lines into the city were put out of service and stayed out until late on the evening of December 7th when a telephone connection was established with the Dockyard. Camperdown was able to communicate with HMCS NIOBE and the other coast stations in the area that provided communications with the outside world. December 6th had been a beautiful clear sunny winter day but a blizzard started in the evening. This storm created a lot of static that increased the communication difficulties.

CAMPERDOWN SIGNAL STATION WORLD WAR I

The old Camperdown Signal Station, that by this time had been over one hundred years in continuous use, carried on during World War I as it had for these past one hundred years. For some years previous to this war it had been communicating with ships via the International Code of Signals and was communicating to the various offices around Halifax by the telephone. The staff was controlled by and made up of members of the Canadian Army. The increased activity created by the war was the only noticeable change.

BARRINGTON

The greatest change in marine communications during this war, in Nova Scotia, was the erection of a large new radio station at Barrington Passage (the south-western tip of Nova Scotia). This station went into service in 1915 and was a joint venture undertaken by the Canadian Government and the British Admiralty (British Navy). This station was to maintain contact with the naval vessels patrolling off New York and other large American cities. These naval vessels were trying to seal off these ports and prevent the many German ships caught there from breaking out and returning to Germany.

In his attempt to record this history of marine communications, Alf Lawton stated that the Barrington station opened using call code TS. Phil Dodds was one of the first operators at the Barrington station and recorded this as the station's call code many times in a journal that he kept. This makes little sense because this station opened three years after Canada was assigned the block of call signs from VAA to VGZ from the London Radio Conference of 1912, and was one year after Spracklin's experience in the DURLEY CHIME that I have recorded elsewhere in this exercise.

I had several interviews with both Mr. Spracklin and Mr. Reay Bridger and we discussed the Barrington station during these interviews. Both were former operators at this station and both stated the call sign was VAL and they did not mention any other call code or call sign. I simply assumed VAL was the one and only call sign assigned to this station.

Michael Christie brought the call code TS to my attention twenty-five years after my interviews with Mr. Spracklin and Mr. Bridger. This is the reason I wanted to learn this history because so much of what we did in Canada seemed to make so little sense. All four of these men, Lawton, Dodds, Spracklin and Bridger, had operated the Barrington station.

The Barrignton station definitely used call code TS and call sign VAL. The only call sign that makes sense is the VAL call sign. As you can see this sort of thing was going on throughout the history of marine communications for this area and started at the very beginning when these stations first opened.

The Barrington station contained three spark transmitters. One was a Poulson 25 kilowatt arc, one a 10 kilowatt asynchronous, and the other a 5 kilowatt asynchronous. The receiver was a very reliable British Admiralty (Navy) type RR receiver using some kind of regeneration and fewer than three or four tubes. The power supply to this equipment was one 1500 AHC (Ampre Hour Capacity) battery with sixty glass cells each weighing five hundred pounds, and one DC (Direct Current) to AC (Alternating Current) motor-generator converter which produced 120 volts 300 amps and 500 volts 45 amps. With these units Barrington was capable of putting about 38 HWA (Hot Wire Amps) into the aerial.

This made for a very imposing station and those who had the pleasure of operating it were very proud of the results. The operating position was housed in a lead-lined room to protect the operators on duty from the high voltages in use. Two of these operators were Reay Bridger and Cyril R. “Sprack” Spracklin as mentioned. They were able to communicate easily as far away as the Azores and one time Reay managed a two-way contact with a ship just leaving the English Channel. He did this on 2400 meters or 125 kilohertz in modern terminology. This contact also proved the naval receiver was pulling its share of the weight in making the station most efficient. The actual signals from the station had a very good tone, every bit as clear as a tube transmitter, according to Reay.

As near as I could learn the towers alone for this station cost around one million dollars to construct. The aerials were mounted on two towers three hundred twenty-five feet high. These towers were three hundred foot steel towers with twenty-five foot wooden extensions.

After the war no useful excuse for maintaining this station was found so it was closed in September 1922. The towers were sold to one believed to be John Simon for a fraction of their original cost. The general public was more than ready to get rid of anything pertaining to this war and do their best to forget it as soon as possible.

CHEBUCTO VAV

Barrington was not the only station to make a deep impression in the history of marine communications for this area. Another station was erected which was to be the first of many such famous stations around our coast. In 1909 two Italian inventors, Bellini and Tosi, perfected their famous radio direction finding system. Radio Direction Finding is a specially equipped radio receiver capable of determining the direction of any signal heard. The first of these stations erected in Canada was at Chebucto Head in the approaches to Halifax Harbour, according to Reay Bridger and Sprack Spracklin. Alf Lawton stated the date each of these stations opened around eastern Canada and that they all opened in 1918 or 1919. The Camperdown station was located on a hill just inside this point and was visible to this new station. The Chebucto Head D/F station was assigned call sign VAV and was wholly owned and operated by the Canadian Government through the Department of Fisheries. VAV Chebucto in 1918 had British Admiralty (Navy) direction finding equipment using a carborundum as a receiver, but used tubes for high frequency and audio amplifiers. It also had a long wave (low frequency) receiver using tubes that was replaced by a Marconi 55F Receiver with cascade amplifier. VAV Chebucto took these radio direction-finding bearings on the frequency of 800 meters (375 kilohertz).

SUBMARINE SIGNALING

One would think that this radio direction finding would have been the first electronic navigational aid (the term used today) to be constructed, but there was at least one other before this. The other was known, and rightly so, as Submarine Signalling. This navigational aid was a system of ringing bells about eighteen feet below the surface of the sea. It was a system designed and owned by the Submarine Signal Company, Boston, Massachusetts, and the equipment necessary for its operation was retained by them and leased to the various organizations that used it. According to the records I was able to locate on this, it was considered highly accurate and it appeared to be favoured over and above radio direction finding for accuracy. Radio direction finders were mandatory on vessels until the radio officer was replaced with satellite communications. I know of no submarine bell system now in use. Naturally the reason radio direction finders were mandatory is that they provided a means of locating a vessel in distress. With the knowledge we have accumulated over the years from below the surface of the oceans; the way sound is distorted by various currents, temperature changes, and so on by water, this system must have been found not as reliable as one would assume from the records I located. There is a record that the United States Lighthouse Board found this submarine signalling system so accurate that in June and July of 1906, it ordered these bells on five lightships to be rung continuously day and night.

The approaches to Halifax were equipped with three of these units. During the summer months there were two, both were buoys, one off Chebucto Head and the other off Sambro. During the winter months there was only one fitted on the Sambro Lightship. These buoys were a self-contained unit. The bell rang by a mechanical device from the motion of the water. They rang continuously except during periods of dead calm and since dead calm is practically unknown off Halifax the “ding-a-lings” rang nearly steady. In heavy seas the bell rang as often as every five seconds but eight waves per minute six inches high would cause the bell to ring six times every minute. Because of the mechanical device the force of the blow on the bell was not dependent on the motion of the water, therefore the strength of the bell signal remained the same no matter the condition of the sea or water the buoy was anchored.

The bells hung below the lightships were activated by compressed air, requiring three cubic feet of air at a pressure of twenty-five pounds per cubic inch to strike the bell one hundred blows. The Submarine Signal Company provided either a compressor or a compressor complete with motor to any installation that required one, the other, or both.

The ship’s receiver was leased by the Submarine Signal Company and this consisted of two cast iron receiver tanks, four microphone transmitters, one direction indicator box fitted with two standard telephone receivers (the long bell shaped instrument of the era), and one battery box containing four dry cells. Installing this equipment did not require dry-docking because it did not involve drilling any hole through the ship’s hull. The two cast iron receiver tanks were installed next to the ship’s hull down in the bottom of the forward part of the ship. Each tank contained two of the four microphone transmitters which formed two paired sets normally designated “A” and “B” for identification purposes. This duplication not only insured a reserve set but insured accuracy with one set providing a check against the other. The direction indicator box, which was mounted on the bridge or in the chart room, containing the two telephone receivers could switch either receiver to one of the four microphone transmitters. These switches also provided an indication of which receiver was switched to which transmitter, thereby the operator would have an indication of which transmitter was providing the louder signal. This comparison of the intensity of the received signal determined its position in relation to the bell. By 1917 over 1400 ships were fitted with this apparatus and upwards of 150 bells were “ding-a-linging” around the world. At 10:55 PM on March 27th, 1908, the Canadian Pacific passenger Liner EMPRESS OF IRELAND with call sign MPL called Camperdown MHX and the log entry reads:

“PL says he heard Submarine bells 17 miles off”.

If these bells could be heard consistently at that range, they would have been an important navigational aid.

DIRECTION FINDERS

Shortly after the Chebucto Direction Finding Station entered service a number of such stations that were to see nearly a half-century of service to all forms of shipping were erected around this coast. All these stations were owned by the Canadian Government and operated by the Department of Marine and Fisheries. They made their initial contact with a ship desiring a bearing to be taken from the ship's transmission on 600 meters (500 kHz) and then shifted and took these bearings on 800 meters (375 kHz).

On July 31st, 1923, the Canadian East Coast direction finding stations, with their range in miles, were as follows:

VAX Canso, N.S. 150 miles
VAZ Cape Race, Newfoundland 250 miles
VAV Chebucto, N.S. 150 miles
VAR Saint John, N.B. 250 miles
VAT St. Paul Island, N.S. 250 miles

Our American cousins south of the border called these stations Radio Compass Stations. They were much the same as ours. Our practice of calling them D/F or direction finding stations is just one of the many quirks we have adopted within the English language. American terminology is just as accurate as ours, possibly more colourful in this particular case.

Since the weather in this area often reduces the visibility to nothing, the operators on these direction-finding stations became very proficient. Many ships were navigated in and out of the area with only the bearings from these operators to guide them.

THE FIRST CERTIFICATES

The earliest record that I was able to locate making it mandatory for ships to be fitted with wireless and carry a wireless operator was that for 1917. Perhaps there is no difference between this and the ruling made in 1912, only five years previous. Therefore a sample of the questions and answers for prospective wireless operators pertaining to this ruling not only make these regulations self explanatory but provides much interest for we today. This sample is as follows:

INTERNATIONAL CONVENTION

Questions and Answers re Signalling

Q- To what ships, does the Convention apply?
A- According to Article 2, the ships carrying more than 12 passengers which proceed from one foreign port to another, or ships proceeding to and from any ports in the British Dominions abroad.

Q- Are any vessels exempt from these regulations providing they carry 12 or more passengers?
A- Yes, but only in cases of vessels being obliged to carry 12 or more passengers by reasons of force majeure or in the case of ship wrecked or other persons.

Q- Is there any obligation upon a ship master to report the sighting of ice or derelicts?
A- Yes. He is obliged to do so by all means at his disposal to all ships in the vicinity, and to the first point of the coast at which he can communicate.

Q- Is there any special method of so communicating this information?
A- Yes. A special code appears in the Regulations which enables the information to be sent in a uniform manner.

Q- What is the obligation of a master when ice is reported on or near the course of his vessel?
A- He must alter his course to go well clear of the danger and proceed at a moderate speed.

Q- What ships are obliged to carry Morse signalling lamps?
A- All vessels carrying 12 or more passengers to and from foreign or colonial ports.

Q- Are there any restrictions with reference to the making of International Distress Signals by vessels not in distress?
A- Such signals are prohibited. The use of private signals which are liable to be confused with distress signals are also prohibited.

Q- What new regulations are to come into force in addition to these already existing for Preventing Collisions at Sea?
A- A second white masthead light is to be made compulsory, a permanent fixed stern light to be compulsory, a special day signal for motor vessels to be compulsory and a special sound signal is to be established for use by a vessel in tow.

Q- Suppose the tow consists of more than one vessel?
A- In such event, the signal will be made by the last vessel of the tow.

Q- What signal has been added to the existing distress signals?
A- S.O.S., the International Wireless Distress Signal, has been added to the list of both day and night signals.

Q- Is it compulsory for all vessels to carry a wireless installation?
A- No, providing that they have not more than 50 persons on board, including passengers and crew.

Q- Supposing a vessel had, including deck, engine-room and steward staff, 52 persons on board, would she be compelled to carry wireless?
A- Yes. The regulation applies to 50 persons in all, irrespective of their ratings.

Q- Are there any exceptions to the foregoing regulation?
A- Yes, in the event of a ship being obliged to carry more than 50 persons on board, through causes over which the master has no control.

Q- What other ships are exempt?
A- Ships that do not go more than 150 sea miles from the nearest coast, or ships where the crews are temporarily increased beyond fifty, provided that the limits of latitude do not exist 30 degrees north and 30 degrees south.

Q- What other vessels?
A- Sailing vessels of primitive build, such as dhows, junks, etc., if it is practically impossible to equip them with wireless.

Q- How are ships carrying wireless installations rated? (The reason for the second-class, second-class counter signed for ships of the second category and the first-class certificate of proficiency in radio.)
A- In three classes; the first, second and third class.

Q- What are first class ships?
A- Ships which are intended to carry 25 or more passengers, ships which have an average speed of 15 knots, or if they have more than 15 knots, providing 200 persons or more are carried, and that, in the course of their voyage, they go more than 500 sea miles between any two consecutive ports.

Q- What are termed second class ships?
A- Ships having a wireless service of limited duration, or ships which are intended to carry 25 or more passengers.

Q- What is meant by continuous service in first class ships?

A- Ships having a constant wireless watch.

Q- What wireless watch may be kept in second class ships?
A- A continuous watch of, at least, seven hours a day, and a watch of ten minutes at the beginning of every other hour.

Q- What are third class ships?
A- Ships which have no fixed period of wireless service.

Q- What are certificated watchers?
A- Persons qualified and holding certificates to prove that they are capable of understanding the wireless distress and safety signals.

Q- In addition to the usual wireless installations, are vessels obliged to carry any other installation?
A- Yes. An emergency installation worked from an independent source for at least six hours.

Q- Are there any ships exempt from carrying an emergency installation?
A- Yes, providing that the normal installation has a range of 100 sea miles.

Q- Is it obligatory for ships to render assistance to vessels in distress?
A- Yes, it is compulsory, and the master of the vessel in distress has a right to call any ship or ships which are considered best able to render his assistance.

Q- What is the Safety Signal?
A- T T T.

Q- What is the Distress Signal?
A- S O S.

Q- Are there any other means of making the Urgent and Important Signals except by blasts on the whistle?
A- Yes, they may be made by the Morse lamps during the night or by hand flags during the day.

Q- Supposing that we are going to make a Nationality Signal, what signal should precede it?
A- The Preparative Signal. (I assume this means via flags.)

Q- What ships are obliged to carry the code of Urgent and Important Signals?
A- Every ship afloat.

As can be seen from these questions, they pertain to the actual operation of communications. It was necessary for persons operating wireless telegraph apparatus to hold either a first or second class certificate of competency in accordance with article ten of the regulations annexed to the International Radiotelegraph Convention. The certificates would certify that the operator:

A. was able to send and receive by sound, messages in plain language in the International Morse Code at a rate of not fewer than twenty words per minute (five letters being counted as one word) for a first class certificate; and,
B. was able to send and receive by sound, messages in plain language in the International Morse Code at a rate of from twelve to nineteen words per minute (five letters being counted as one word) for a second class certificate; and,
C. was able to adjust the apparatus ordinarily used in some well-known system of wireless telegraph so as to suit the varying conditions of working, without using excessive transmitting power; and,
D. had an efficient working knowledge of the regulations applicable to the exchange of radiotelegraphic traffic.

Candidates were expected:

A. to send on an ordinary Morse key for five consecutive minutes at not less than the prescribed speed. The accuracy of signalling, the correct formation of the letters, and the correctness of spacing were taken into account;
B. to receive and write legibly at the prescribed speed from a double headgear telephone receiver as ordinarily used for radiotelegraphic reception;
C. to understand simple diagrams of the electrical connections of the apparatus used in the system in which he was being examined;
D. to be able to connect up the apparatus with the help of such diagrams so far as this was required in the system in which he was being examined;
E. to name the principal parts of the apparatus and indicate their use;
F. to mention the most common faults, and the means usually taken to remedy them in the system in which he was being examined;
G. to explain the steps taken to change from one wave length to another, in sending and receiving, in the system in which he was being examined.

The practical examinations included the following:

A. Connecting up the apparatus.
B. Operating (sending and receiving).
C. Regulating and adjusting.
D. Altering the wave length.
E. Reducing or increasing the transmitting power.
F. Tracing and clearing faults.

The examination in regard to the actual transmission of messages was based upon the rules laid down by the federal government, mainly an exact copy of those as laid down by the British Postmaster-General.

Candidates for examination were required to pay an examination fee. If the candidate satisfactorily passed the examination, he was required to make a declaration that he would observe the secrecy of radio telegrams that came to his knowledge in the course of duty. In case of failure, the candidate was not ordinarily permitted to be re-examined, until after the lapse of three months. An additional fee was payable in respect of the further examination. The holder of a certificate of competency could have his certificate endorsed or suspended if he proved to be negligent. Or if failed to comply with the provisions of the International Radiotelegraph Convention and Regulations, or any other regulation that had been issued from time to time for his guidance.

These first or spark certificates lasted until the year 1928. In 1929 anyone who had obtained his certificate during 1928 or before, had to report to an examination office and be examined for the new continuous wave certificates.

QUENCHED GAP SPARK

The first wireless telegraphy signals were those of spark transmission, but before this type of transmission became obsolete there was an improved version which was to be the last of this type of transmission. This improved version was known as the Quenched Spark System. This actually lasted until World War II when the majority of our famous Park Ships (a fleet of 180 merchant ships built and operated by Canadians) were fitted with these units for emergency transmitters, although the laws had been changed making spark illegal for normal use. To this day the law clearly states that any means of transmission on any frequency may be used for distress communication (anything that will attract assistance).

The Quenched Spark System (also known as Quenched Gap Spark) was discovered as early as 1903 but was not fitted in British merchant ships until 1911 when first fitted by the Siemens Brothers Company Limited. This company is another of the famous wireless companies that is still operating.

The spark system of transmission involved one oscillation circuit, whereas the quenched spark system involved two oscillation circuits. One involved the antenna and the other was located in the transmitter. Feeding back some of the oscillations of the output or antenna circuit into the input circuit increased the output of the transmitter, especially when this feedback was quenched – applying more of the signal to the output.

A number of improvements resulted from this quenched spark signal. Higher output was but one. The ordinary spark signal radiated only 25 to 33 percent of the energy supplied by the transmitter, whereas this quenched signal radiated as much as 50 to 75 percent of the energy supplied by the transmitter. Another important asset was the smaller gap required for the spark. These units were much quieter than the ordinary spark transmitters. They actually radiated a 1000 cycle (hertz in modern terminology) musical tone that made them much easier to copy through natural static and interference.

Note the figures on the various components making up CHINDWIN's station. CHINDWIN's wireless call sign was GWG and her flag call was HRVQ. She had been built at Dumbarton, Scotland, in 1916, and was owned by P. Henderson and Company. She was a passenger vessel of 6400 gross tons and operated between Glasgow, Liverpool to Rangoon via Marseilles and Egypt, calling at Palma. This company also operated cargo ships from Glasgow to Brazil, Canada, the United States, and out to New Zealand. I found no record of the CHINDWIN visiting Halifax but her station was much the same as all the shipboard stations at that time.

The source of energy (voltage) for this station was the direct current voltage from the ship's main generators. This was fed through the fuses marked number 1 in the photograph and the switch marked number 2 and from there it went to the starter marked number 5 of the motor marked number 6. The speed of the motor was regulated. By the resistance marked number 7. The ammeter marked number 3 and the voltmeter marked number 4 were installed to control this speed. The speed of the motor was normally 1500 revolutions per minute but was capable of providing a variation of 30 percent above or below the normal speed of revolution, for the regulation of the transmitted signal. This motor drove a high frequency alternator marked number 8 in the photograph that was built upon the inductance principle. This delivered current through the fuses marked 10 and 11 in the photograph to a small highly laminated high frequency transformer that is not visible. A second ammeter marked number 12 and voltmeter marked number 13 were installed upon the switchboard to control the alternator, the excitation of which was varied by means of a regulating resistance marked number 9 and a fine adjustment marked number 9a.

A special high frequency device marked number 14, consisting of resistance lamps and condensers, was connected across the armature of the motor and the D.C. and A.C. terminals of the alternator. This was to protect the insulation of the windings in the motor and alternator from damage due to surges of high frequency current. The purpose of those devices was to provide all high frequency surges an easy path to ground in preference to passing through and damaging the winding of the machine.

The excitation circuit, fed from the transformer already mentioned, consisted of an inductance marked number 15, a battery of leyden jar condensers marked number 16, and a quenched gap marked number 17.

The excitation circuit was direct coupled to the aerial circuit by means of plugs and sockets upon the exciting inductance. The aerial circuit went to ground through a high frequency hot wire ammeter marked number 18 and passed to the aerial through the variometer inductance marked number 19, shorting capacity marked number 20, protective lightning switch marked number 21, and lead-in insulator marked number 22.

The inductance marked number 19 was made variable in order to permit the aerial circuit to be tuned to the excitation circuit, such tuning being shown by the maximum reading of the hot wire ammeter marked number 18. The arrangements of the various components are shown schematically in the schematic diagram that appears on these pages.

The Receiver is the unit marked number 23 and a larger photograph of this unit will also be reproduced on these pages. This receiver was directly connected to the antenna and to ground. It consisted of a primary

inductance and a variable condenser for tuning purposes in the antenna. This primary inductance induced upon a secondary inductance was connected to either of two detectors. Signals were reproduced in an ordinary headphone of the time, two of which could be used with the receiver, in order that two operators could listen at the same time to the signals received.

This receiver had a switch at the back, which became known as the transmit/receive switch, so that damage to the equipment or the operator did not occur by the accidental keying of the transmitter. It also was used to protect the receiver while transmitting. In other words we have two international Q signals which relate to this switch, the two being QSK, meaning "I can hear you between my signals", and QSG, meaning "I will transmit the number (transmitted right after – i.e. QSG5 meaning 5) of telegrams at a time". The last stations used an electronic means of switching the receiver on and off while transmitting and were capable of hearing between their radiotelegraph characters in code. These signals were rarely used with that equipment. The older ships would send the international Q signal QTC, meaning he had a telegram to send. Many often sent (for example) QTC25, meaning he had 25 telegrams to send, and he would follow this with (for example) QSG5. Meaning he would send five of these telegrams at a time and then switch from transmit to receive to make certain the receiving operator was still able to copy.

This Siemens Universal Wireless Receiver had a frequency range of from 200 to 2000 meters (150 to 1500 kHz). The wave change switch was located on the back plate. By means of a plug lead and plug socket any desired inductance was put into the antenna circuit. By means of a second plug a tapping was taken off the secondary coil for the required frequency. An exact tuning to this frequency was then obtained by means of the variable condenser at the base.

The batteries marked number 26 in the photograph are the emergency batteries capable of operating the station should the ship's main generators have failed. These batteries were kept charged from the ship's main generators by the unit marked number 25. Since the ship's main generators supplied direct current, this unit was nothing more than a resistance to drop this voltage to the required level. The unit marked number 24 was an automatic cut-out, which would break the emergency battery circuit had the main ship's voltage failed, especially when the operator was not present. This prevented these emergency batteries from discharging.

Switch marked number 31 switched the station from either the ship's main generators or these emergency batteries. When the emergency batteries were used as the station's operating voltage, the circuit was as follows: the batteries marked number 26 through the fuses marked number 27, through the switch marked number 28, to the induction coil marked number 30. The voltage and current were controlled by indicating instruments on the switchboard by means of a small switch beneath this switchboard. The voltage to the induction coil was regulated by the resistance marked number 29 and had a special heavy current hammer break. The high voltage from the inductance coil was supplied to the main excitation circuit composed of units marked numbers 15, 16, and 17, the number of spark gaps being reduced to two by means of short circuiting plugs.

The actual transmission from this station took place by either of the two telegraph keys marked number 32. Either of these keys could be placed in the low voltage circuit of either the main ship's voltage or that of the emergency batteries.

The units marked numbers 33 and 34 were test instruments known as a buzzer and an aperiodic circuit and were used for testing either the transmitting or receiving circuits.

At this date and time these wireless stations were sold with a guarantee of their range in miles. This particular Siemens Brothers Co. Ltd. Station came with a guarantee of 250 miles by day, 375 miles by night, providing the masts holding the antenna were 115 feet high. Naturally this detail also mentioned the fact that such installations had frequently communicated for distances of 1500 miles.

It is a pity I was unable to locate a better photograph of the Camperdown station around this time. A description of this station similar to that which I have tried to describe here of a ship which was communicating with Camperdown, would be most interesting. But the basic operation of the station would

have been much the same. The main difference would have been that a gasoline generator would have replaced the main ship's generators as described here.

In 1921 the equipment at Camperdown VCS consisted of a 2 kilowatt, non-asynchronous disc, 60 cycle Marconi coast station spark transmitter. This received its power from a generator driven by a 6 HP Fairbanks Morse 2-type engine. Also a ¼ kilowatt asynchronous disc 500 cycle Marconi cabinet type spark set, powered by a battery which was kept charged from a 1-1/2 HP engine and generator. The main receiver was a Marconi crystal type 2846A. A magnetic detector (ancestor of the wire recorder) formed part of an auxiliary receiver. The aerial was a four-wire umbrella suspended from a 180-foot mast.

THE ALEXANDERSON ALTERNATOR

Dr. Alexanderson, a Swedish immigrant to the United States, perfected his Alternator Transmitters during World War I while an Engineer-Inventor with the General Electric Corporation. These transmitters worked on the same principal as any alternator today, including the ones found in modern automobiles, except these were very large (47 feet by 11 feet) and weighed many tons (about 50). They were capable of very high speeds placing the outputs of same up in the radio frequency spectrum of between ten and thirty kilohertz. When you consider the size and the constant high speed of rotation involved with these units, Dr. Alexanderson begins to appear more the genius he actually was, rather than just an inventor or engineer. But these large alternators were the first of our continuous wave transmitters. It was one of these first alternator transmitters that made the first radiotelephone broadcast that took place as early as Christmas Eve 1906. Dr. Alexanderson perfected these transmitters during the war so that they were capable of a power output of 200 kilowatts. These 200-kilowatt units became and remained the most popular. Because of the low frequency used by these transmitters, their signals were very reliable and were heard half way round the world. Many provided continuous and reliable communications until the late 1940's.

These transmitters were involved in much of the history of the world and many have fond memories of one experience or another gained from them. One example is that one of these units installed at New Brunswick, New Jersey, and operating with call sign NFF, as part of the United States communications system during World War I, contacted station POZ, the largest German station, on October 20, 1918. And demanded the abduction of the Kaiser as a preliminary to Armistice negotiations. This contact was the first contact the United States had with the German station since the war had broken out and afterwards the station was used exclusively for the Armistice negotiations. This was so that all the countries, including the allies of Germany, could easily hear and obtain the true story of the negotiations. All transmissions were made in English and no coded messages were allowed.

When Mr. Marconi learned of these transmitters, he naturally became very impressed and not only tried to obtain exclusive world wide distribution rights, but placed an order amounting to several million dollars worth for a number of them to be constructed by the General Electric Corporation. This brought about an interesting development. The United States Communications during World War I was under the command of Admiral Bullard. It was he, who not only fully realized the tremendous commercial potential wireless contained, but felt it time that the United States owned and operated their own system, rather than rely on the Marconi Wireless Company of America that was owned by the British Marconi Company (identical to the Canadian Marconi Company).

Admiral Bullard arranged a meeting with the top officials of the General Electric Corporation and made his views known. From this meeting the sale of the Alexanderson Alternators to Marconi was cancelled and the General Electric Corporation purchased the stock of the American Marconi Company. The Radio Corporation of America (RCA) was formed in October 1919 and in November this new corporation took over all the stock of the American Marconi Company from the General Electric Corporation. This was the beginning of what has become one of the finest and largest electronic organizations in the world.

THE CLOSING OF CAMPERDOWN VCS

Amateur Radio has been (and still is) responsible for the greatest development in radio. Amateur radio operators have developed many unknown areas into something worthwhile. These developments have been taken over for commercial use. Amateur radio must be the most fantastic hobby known to man. There is something within it for everyone and it knows no political or international boundaries.

About this time Amateur Radio had discovered that the bottom portion of the high frequency band was of some use for communications. Prior to this all frequencies above our present AM Broadcast Band were considered useless. Progress along these lines clearly indicated that all it would take is a better vacuum tube. Communications on the high frequencies producing continuous waves of very long range with fairly low power were not only possible they were practical. Ships were now able to contact their home countries or any station in countries involving long distances direct. This created possibly one of the most significant changes to take place in marine communications. One coast station would now be capable of handling all the message traffic of many of the older stations. The Marconi organization started to cut back on the number of coast stations operated by them and Camperdown VCS was one of these stations.

The Marconi Company closed the station on April 4th, 1926, and the VCS call sign became redundant, but this did not mean that Halifax had no station to communicate with ships. When Marconi pulled out, the Canadian Government up graded the Chebucto Head D/F station VAV to a combined direction-finding coast station. VAV was already operating on 800 meters (375 kHz) and 600 meters (500 kHz), and it was a simple matter to convert this station for operation on another frequency for communication (the handling of messages between ships and shore). It was also a simple matter to transfer the telephone and the telegraph (the CD landline call was retained) to Chebucto Head VAV. “Sprack” Spracklin joined this station as Officer in Charge at this time.

At about this same time, because of cut backs in our military expenditures, many of our government officials wanted to terminate such an organization completely, the Army decided to close the old Camperdown Signal Station. These Army signalmen at this time were a few members of the Royal Canadian Regiment. A small signal station was opened at Chebucto Head to replace the famous old station. Two civilian signalmen, Dan Martin and John E. Spears, were hired to man this station around the clock. These two were joined by a third signalman, John Wilkie, shortly afterwards, and this new station provided a full range of visual communications, the International Code of Signals (flags) during the hours of daylight and signal lamp during the hours of darkness or daylight. The signal lamp operated from a voltage taken off the batteries at the wireless station.

HALIFAX RADIO VAA

VAA Halifax has proved to be somewhat of a mystery, but as near as I can determine it was a very small station located in a small shed at HMC Dockyard. This would have been a naval station, possibly the first such Canadian station, and would have been used mainly to communicate with naval vessels or all ships within the harbour area. I remember either Mr. Reay Bridger or Mr. C. R. “Sprack” Spracklin telling me that this station used to transmit a weather broadcast.

THE CANADIAN COAST STATIONS

This is a list of the Canadian Coast Stations that was composed by Mr. Alf Lawton. Mr. Lawton was one of the first wireless operators around Eastern Canada and was one of at least six that tried to record this history and failed. At least failed to have it published in a book, but as long as we can keep copies of this history in circulation it may become better known.

The stations according to Mr. Lawton were:

Year Built	Location	Date Opened	Call Sign (s)
1901	Belle Isle, Newfoundland	October 10th	BI

(appears to have been moved to new site in 1904)

1901	Chateau Bay, Labrador	October 20th	CB – MCB
1902	Glace Bay, Nova Scotia	December 15th	GB
1904	Fame Point, Quebec	June 25th	FP – MFP – VCG
1904	Heath Point, Quebec	July 21st	HP – MHP – VCI
1904	Point Armour, Labrador	August 10th	PR – MPR – VCL
1904	Belle Isle, Newfoundland (New)	September 1st	BI – MBI – VCM
1904	Cape Ray, Newfoundland	October 7th	CR – MCR – VCR
1904	Cape Race, Newfoundland	November 17th	CE – MCE – VCE
1904	Battle Harbour, Labrador		BH – MBH – VOA
1904	Venison Island, Labrador		VI – MVI – VOB
1904	Domino, Labrador		DO – MDO VOD
	(these three stations built by the Newfoundland government on the Labrador)		
1905	Camperdown, Nova Scotia	June 14th	HX – MHX – VCS
1905	Sable Island, Nova Scotia	June 24th	SD – MSD – VCT
1905	Cape Sable, Nova Scotia	July 3rd	SB – MSB – VCU
1905	Whittle Rocks, Quebec (Harrington)	July	WR – MWR – VCJ
1905	Point Riche, Newfoundland	August	CH – MCH – VCH
1905	Partridge Island, New Brunswick (Near Red Head and Saint John)	August	SJ – MSJ – VCV
1905	Cape Bear, Prince Edward Island	November 25th	BE – MBE – VCP
1905	Grosse Isle, Quebec	December 20th	GI – MGI – VCD
1906	Pictou, Nova Scotia	January	UB – MUB – VCQ
1906	Quebec City, Quebec	March 5th	QU – MQU – VCC
1906	Clarke City, Quebec (Sept Iles)	October 20th	CK – MCK – VCK
1906	Father Point, Quebec	December 22nd	RT – MRT – VCF
1906	American Tickle, Labrador		AT – MAT – VOC
1906	Indian Harbour, Labrador		NR – MNR
	(these two stations built by Newfoundland government on the Labrador)		
1907	Point Grey, British Columbia	April 10th	PGD – VAB
1907	North Sydney, Nova Scotia	May 15th	ND – MND – VCO
1907	Gonzales Hill, British Columbia (Victoria)	October 22nd	VSD – VAK
1907	Pachena Point, British Columbia	November 25th	KPD – VAD
1908	Estevan Point, British Columbia	January 13th	USD – VAE
1908	Cape Lazo, British Columbia	February 1st	SKD – VAC
1909	Three Rivers, Quebec	October	MRS – VCB
1909	Montreal, Quebec	November	MTL – VCA
1909	Ikeda Head, British Columbia	November	DKD – VAI
1910	Triangle Island, British Columbia	March	TLD – VAG
1910	Digby Island, British Columbia (Prince Rupert)	June	PRD – VAJ
1910	Port Arthur, Ontario	October 31st	PR – MPR – VBA
1910	Grindstone Island, Quebec	December 4th	MUD – VCN
1911	Dead Tree Point, British Columbia	February	CAD – VAH

1912 Fogo, Newfoundland Last week in March VOJ
(This is from an article in Downhomer magazine and states the station was erected and owned by Canadian Marconi Company and was closed in 1933/SGR)

1912	Midland, Ontario	July 5th	CKD – VBC
1912	Tobermory, Ontario	July 24th	CJD – VBD
1912	Sault Ste Marie	August 7th	CID – VBB
1913	Alert Bay, British Columbia	January 16th	CFD – VAF
1913	Point Edward, Ontario	April 16th	VBE
1913	The Pas, Manitoba	August	VBM

1913	Port Nelson, Manitoba	October	VBN
1914	Kingston, Ontario	January 19th	VBH
1914	Toronto, Ontario	January 24th	VBG
1914	Port Burell, Ontario	January 30th	VBF
1914	Newcastle, New Brunswick		VAN
1914	Louisburg, Nova Scotia		VAS
1915	Barrington Passage, Nova Scotia	April 10th	TS – VAL
1918	Chebucto Head, Nova Scotia DF	March 15th	VAV
1918	Cape Sable, Nova Scotia DF	April 29th	VAW
1918	Canso, Nova Scotia DF	June 20th	VAX
1918	Bird Rocks, Quebec	August 26th	VBR
1918	Cape Race, Newfoundland DF	November 23rd	VAZ
1919	Red Head, New Brunswick DF (Saint John)	February 5th	VAR
1919	Bull Harbour, British Columbia	June 23rd	VAG
1923	St. Paul's Island, Nova Scotia DF	September 15th	VAT
1923	Mayo Landing, Yukon Territory	October	VEB
1923	Dawson City, Yukon Territory	October	VEC
1924	Yarmouth, Nova Scotia	January 7th	VAU
1924	Edmonton, Alberta	October	VED
1924	Fort Simpson, N.W.T.	October	VEC
1925	Fort Smith, N.W.T.	August	VEG
1925	Aklavik, N.W.T.	August	VEF
1927	Nottingham Island, Hudson Bay	August 20th	VCB
1927	Wakeham Bay, Hudson Bay	September 22nd	VCJ
1927	Port Burwell, Labrador	October 24th	
1928	Cape Harrison, Hudson Bay		VAL
1928	Cape Hopes Advance, Hudson Bay	September 25th	VAY
1928	Fort Churchill, Manitoba		VAP
1928	Chesterfield Inlet, Hudson Bay		VBZ
1929	Resolution Island, Hudson Bay	October 4th	VAW
1930	Coppermine, N.W.T.	September 1st	VBK
1932	LuLu Island, British Columbia (New Westminster)	March 21st	

Mr. Lawton did not record Halifax, VAA, but it must have opened sometime during World War I and closed shortly after the war. The VAA call sign then went to Ottawa.

Great Whale River, Hudson Bay, is not on the list because it did not open until after 1936. Great Whale had Chebucto Head's call sign, VAV. Frobisher Bay, North West Territories is not here. Frobisher had call sign VFF and that is an indication it started as an aeradio station and probably during or after World War II. There were more stations that are not recorded here because they opened after 1932 or were missed for some other unknown reason.

Yes, there are duplicates in this list but if one checks the dates closely they will realize that the previous holder of any duplicate had closed and the call sign was reassigned. The only exception is that Mr. Lawton has a duplicate with the VEC call sign, but Dawson City was VEA, and Fort Simpson was VEC.

The VE calls were stations owned and operated by the Royal Canadian Signal Corps of the Canadian Army. I worked with two former members of this organization, Barny MacNeil and Dick Bullock. Both were sent to these stations during World War II. Barny came from Montreal and Dick from Toronto and both married native Indian girls and made their home at Inuvik, and only went outside, as we called it, about once in all the years they lived up north. When I left Inuvik Barny was the airport manager and Dick was the senior operator at the combined marine aeradio station, with call signs VFA and VFA6. When the Army terminated these stations, in the 1950's, the service was taken over by the Department of Transport and both Barny and Dick transferred over to the Department of Transport.

These two could tell some interesting stories about their years spent in the north. The one that I found most interesting was one Dick told. He said that one of the Army linemen stationed at Fort Simpson strung up a long wire antenna over two miles long. This worked so well they listened to Edmonton broadcast stations during the day.

Dick was a devote member of the Roman Catholic Church. So much so that he had sufficient kids to form a couple of hockey teams, a couple of curling teams, and a cribbage tournament or two, on the ice at the same time. One evening I gave Dick a lift home from work at the station that was eight miles from the village, and on the way we stopped off at the hospital and picked up my wife Joan. The first thing Joan said when she climbed in the vehicle was "you'll never guess what happened to me tonight". When you realize some of the experiences she had at that hospital it was a waste of time to guess. She carried on and stated a woman wanted a bedpan and when she gave it to her she had a baby in it. Thank God Dick spoke up with "yeah, it was my wife" before we got carried away with this news. One of the priests stationed at Inuvik, shortly after I left was into cross-country skiing. He coached some of Dick's kids to the point they made the Olympic games. Their achievements were described in various magazines at the time, and I am sure all of Inuvik and Canada for that matter, were very proud of their accomplishments.

These Army stations replaced the landline telegraph that was strung up through Northern British Columbia, the Yukon Territory and on to Alaska. It had connections into Alaska because they tried to set up a time signal from Washington, D.C., to Alaska on this line a few times. Whitehorse, VEY is not on Mr. Lawton's list and must have opened after 1932 or even later. Fort Smith, VEG was the capital of the North West Territories until 1967. Dawson City was the capital of the Yukon until it was transferred to Whitehorse in 1951. This government owned and operated Yukon Telegraph kept their lines in good repair after it was turned over to radio because they were not sure how well the radio would work. They did not fully understand the skip feature associated with radio.

One of my favourite books is "40 Years on the Yukon Telegraph" by Guy Lawrence. Mr. Lawrence joined this telegraph line in 1902 and retired in 1946. With the exception of a few years in the Army overseas during World War I, he spent all this time on these telegraph lines. A most interesting experience and this book was reprinted in 1990.

The Yukon Telegraph main telegraph line was from Ashcroft, British Columbia, straight north to Dawson City, Yukon Territory. There was a branch off this main line into Prince Rupert, British Columbia, and a branch off this branch line into Stewart, British Columbia.

In 1936 a large portion of the Yukon Telegraph line switched from landline telegraph to continuous wave radiotelegraph, and switched from the landline telegraph code to the continental radio code. The longest portion of this telegraph line to switch from landline to radio in 1936 was the section from Hazelton to Telegraph Creek in northern British Columbia. According to Mr. Lawton's list at least a section of this telegraph line in the Yukon must have switched to Army Signal Corps around 1923 or shortly after.

In 1953 the entire system became part of the Canadian National Telegraph organization. The telephones in the Yukon were Canadian National when I lived at Teslin, Yukon Territory, in the early 1960's. These telephones operated via some lines strung along the Alaska Highway and via microwave, not by radio. I spoke to my father in Nova Scotia over this phone system and had a very good connection. We had an open line on speaker at the aeradio station that included all the aeradio stations from Northway, Alaska, at the Alaska – Yukon border, down to and including Air Traffic Control at Edmonton, Alberta. This was known as Sked F and a means of keeping one and all in contact with the aircraft flying along that route. This worked very well and I remember very little outage because of line or equipment failure.