

# **TESLIN AIRPORT RADIO NORTHWEST STAGING ROUTE RADIO**

*by Spurgeon G. "Spud" Roscoe  
Amateur Radio VE1BC*

This history was definitely not what I imagined it to be.

I undertook this project simply to learn the history.

The codes after each name is their amateur radio call sign at the time they are mentioned.

The Department of Transport was created on November 2, 1936 and there are those who claim it was created by an act of God. It was simply the way those who ran it gave one that impression.

The Royal Canadian Air Force operated these airports from Edmonton, Alberta to Snag, Yukon Territory during World War II. This was known as the Northwest Staging Route. These airports assisted the nearly 8,000 aircraft the United States had given Russia under the lend-lease terms. These aircraft were built all over the United States and gathered at Edmonton and flown to Alaska and turned over to Russia in Alaska. My main interest has been the operation at Teslin, but these are the eleven locations of the airports involved that had radio communications. There were emergency airstrips between these radio equipped fields and a number of other airports outside this area considered a part of this route:

Edmonton, Alberta  
Grand Prairie, Alberta  
Fort St. John, British Columbia  
Beatton River, British Columbia  
Fort Nelson, British Columbia  
Smith River, British Columbia  
Watson Lake, Yukon Territory  
Teslin, Yukon Territory  
Whitehorse, Yukon Territory  
Aishihik, Yukon Territory  
Snag, Yukon Territory

The Radio Range navigation and communication unit had been delivered to Teslin via barge from Whitehorse in 1941 and was installed before the Alaska Highway had reached Teslin. Teslin was an intermediate landing strip in 1942. Nisutlin Bay had been used as a landing area before the airport was built.

In November 2019 I was made aware of a photograph of the Teslin Airport Tower during World War II. I had been told there was a tower in that area while I was at Teslin, but I had no detail on it. I did not realize it was that elaborate. It was in front of our old operations building and one can see a bit of our old operations building. Our operation building was the RCAF Barracks. I thought I knew something of the operations of the Air Force during the war so decided to carry on with this and see what I could find.

The aircraft parked in front of the Teslin tower in this old photograph is CF-DFZ a de Havilland Tiger Moth 82C serial number 1101. Twenty years later it was on register in 1963 to Herbert

Foxcroft, Hamilton, Ontario. Herb Foxcroft was one of the Radio Operators at Fort Nelson during the war when it was an RCAF station.

There was a rotating light on the roof of the tower called an aerodrome beacon. There was no aerodrome beacon at the Teslin airport while I was there.

The radio operators operated their equipment from the tower. This gave them a good view of the runway and weather while on duty. **Ernie Brown VA3OEB** can describe the buildings better than I. These are the buildings at all these small airports. "The buildings were constructed with locally cut spruce logs, roughly 8 inches in diameter, squared on three sides to 6 inches, and assembled with the round side outward. The inside was covered with ten-test, compressed fibreboard of that era. The logs were caulked with oakum from the outside, so the building was quite cozy." They were cozy that is for sure and by the time I was stationed at Teslin they were painted white with orange trim.

It is impossible to record the history of radio in Canada and not mention **A. H. Keith Russell**. He was the Canadian General Manager of the American Radio Relay League back in the early 1920's while a university student. He joined the RCAF in September 1939 and was a Wing Commander in charge of No. 4 Wireless School at Guelph, Ontario shortly after he joined. My experience and research have me convinced the excellent communication system of the RCAF was created by him. This communication system was in such good condition and had enough wireless operators that Air Commodore A. H. Keith Russell could take an early retirement and return to his legal practice at Toronto in December 1944. After the war he held call sign VE3AL and created a communication system across Canada for the reserve air force. One could be a member of this system without being a member of the reserve air force. This gave the air force an excellent communication system if it ever needed it.

These **RCAF stations** during WWII were assigned a four-letter call sign. This is all eleven stations and their RCAF Call Signs:

EDMONTON	VFDX
GRAND PRAIRIE	VFDC
FORT ST JOHN	VFDR
BEATTON RIVER	VFFM
FORT NELSON	VFDT
SMITH RIVER	VFFL
WATSON LAKE	VFDZ
TESLIN	VFFJ
WHITEHORSE	VFDY
AISHIHIK	VFFH
SNAG	VFFD

Experience and research tell me all these stations operated on 157 kilocycles, but the International Telecommunication Union state their licenses were permitted to use the following:

TESLIN 157, 197, **2612**, 5500, 6690 and 9080 kilocycles

WHITEHORSE 157, 197, 1615, **2612**, 2645, 2745, 3255, 4690, 4885, 5010, 5500, 6545, 8015, 9080 and 11615 kilocycles

EDMONTON 157, 197, 2220, **2612**, 4885, 5500, 6690, 9050, 10785, 11615, 11990, 13300, 17635 and 19525 kilocycles

I will not bother to list the others, but one wonders what use was made if any of all those frequencies. Those four high frequencies at Teslin would require two RCA AT3 transmitters and I do not remember any sign that they were there in the transmitter building.

The radio range must have been via a different license because it is not included in these frequencies.

This was before the transceiver and very high frequency radio and that **2612** frequency looks like it may be the one used to communicate with the aircraft. That aircraft radio communication was radiotelephone from low powered audio modulated transmitters. The antenna was a piece of wire. The aircraft antenna ran from the top of the tail down to a position on top of the aircraft as far forward as possible. The radio was in the tail of the aircraft and had a remote control to the pilot in the cockpit. I cannot see an antenna in the photograph of the Teslin tower but it would have been a piece of wire.

Unfortunately I have been unable to find a list of the radio equipment at RCAF Teslin to try and learn more about what was taking place.

Whitehorse and Edmonton were the two busiest Canadian airports of the Northwest Staging Route and some of those frequencies were no doubt used for direct communications between the two airports. These stations were using the RCA AR88 receivers and the RCA AT3 high frequency transmitters. The AT3 was two channels only so it would take several transmitters to keep all these frequencies on standby or else the operators would have to go to the transmitter site, change the crystals and retune each time they changed frequency.

In order to become a radio telegraphist in the **RCAF Marine Squadrons** one had to attend a civilian radio school and take a radio operating course and pass the Morse code at 12 words per minute. The RCAF paid for this course once one became a member. The RCAF Marine Squadron radio telegraphists used the frequency of 6666 kilocycles during the day and 3333 kilocycles during the night. There was no radiophone in the marine squadrons. It was all radiotelegraph (Morse code). The RCAF ground station at Botwood, Newfoundland had been known to communicate with the ground station at Bella Bella, British Columbia on occasion. When I learned this, I assumed this applied to all air force aircraft as well as the vessels in the air force marine squadrons. Most of the vessels of the marine squadrons had the same radio station as the aircraft. The transmitters were two channel crystal tuned; 3333 and 6666 kilocycles. Apparently these frequencies were for the vessels that made up the marine squadrons of the RCAF and the aircraft had nothing to do with them. The RCAF had quite a navy of small vessels although a few were supply vessels that made some interesting long voyages. Their crash boats were capable of more than 40-knots in speed. The majority of the marine squadron vessels were of similar size to the inshore fishing vessels of today; 30 to 40 feet long. Those that carried a radio operator had a crew of three; skipper, engineer and radio operator. That was similar to some of the aircraft; pilot, engineer and radio operator.

**The pilots** flying over Teslin during the war had Morse code training so they could read the identification of the Radio Range and would be able to transmit a call for help if their radio telephone equipment became defective and they could still key the transmitter. We will never know the number of lives that have been saved by Morse code. There have been so many it leaves one convinced that Morse code should still be taught to as many as possible.

Most of the aircraft flying over Teslin during WWII did not carry a radio operator. They were visual flight rules only, were to maintain visual contact with the ground and fly during daylight only. There was a daily RCAF Norseman and later Expeditor (Beech 18) flight from Whitehorse to Teslin bringing mail and supplies during the war. Neither the Norseman nor Expeditor carried a radio operator and had a radio range capability only, if they had anything.

There were **15 members** of the RCAF stationed at Teslin during the war. The 15 trades involved with these members would be very interesting. The radio operators were members of the Department of Transport and not RCAF. I believe some of the others at these airports were civilian and not RCAF. They broadcasted weather observations the same as we did when it was a

Department of Transport station but they had a meteorological staff who took the observations. The meteorological staffs were probably one with more training than the radio operators. The radio operators were given a few days training in meteorology at a warehouse in Edmonton on their way north. This was the predecessor of the Air Services Training School in Ottawa that I graduated from before going to Teslin.

The RCAF had a trade known as a **Wireless Operator Ground** abbreviated WOG and most of these people became known as a WOG. They were both male and female members of the RCAF but none were stationed at these small airports.

Some of the following description of an Aeradio Station using Teslin as an example along with a DVD of our old 8-mm home movies taken while at Teslin gave me an Honorary Life Membership in the Yukon Historical Society in 2005.

**The Canadian Aeradio Station** was spread out over three sites or locations. One was the main operations room; one was the navigational aid transmitter site and the other was the communications transmitter site. Occasionally **the operations site** was simply a one-story building like a small house. This is where the radio operator on duty operated the station. The more common location of the operations site was at the local airport. The **navigational aid transmitter site** was a small building a few miles from the operations site that housed either a Radio Range Transmitter or a Non-directional Beacon Transmitter. The more common was the Radio Range Transmitter. The **communications transmitter site** was another small building a few miles from the operations site that housed a low frequency radiotelegraph transmitter. A few stations had high frequency radiotelephone transmitters that permitted communication with aircraft fitted with this equipment. These transmitters had to be a few miles from the operations site because they would create so much interference with the rest of the equipment in the operations position that it would be unusable. The operation of the transmitters was via regular telephone lines.

The Canadian Department of Transport Aeradio Station like the RCAF Aeradio Station was assigned **two means of identification**. One was the radio call sign and the other was the station identifier commonly called the International Civil Aviation Organization (ICAO) identifier. Both were assigned from the international blocks of call signs assigned to Canada from the International Telecommunication Union located in Switzerland. The station identifier was a four-letter group with the prefix CY. The two-letter suffix indicated the station in question. This meant there were 676 two-letter possibilities. There were less than two hundred Canadian Aeradio Stations. A 1941 training film on the Radio Range showed the United States covered in Radio Ranges with 2-letter identifications. The ICAO two-letter suffix was the identification for the weather observations and the identification transmitted by the radio range or the non-directional beacon. These eleven stations were with the frequency of their radio range in kilocycles.

EDMONTON	CYXD	EDMONTON	XD	266
GRAND PRAIRIE	CYQU	GRAND PRAIRIE	QU	221
FORT ST JOHN	CYXJ	FORT ST JOHN	XJ	326
BEATTON RIVER	CYZC	BEATTON RIVER	ZC	
FORT NELSON	CYYE	FORT NELSON	YE	382
SMITH RIVER	CYZL	SMITH RIVER	ZL	263
WATSON LAKE	CYQH	WATSON LAKE	QH	248
TESLIN	CYZW	TESLIN	ZW	269
WHITEHORSE	CYXY	WHITEHORSE	XY	302
AISHIHIK	CYZK	AISHIHIK	ZK	
SNAG	CYXQ	SNAG	XQ	

**The radio ranges** were using these letters and frequencies from the time they went in service. The International Civil Aviation Organization (ICAO) was created in 1944, is a part of the United Nations and has its headquarters in Montreal, Quebec. One wonders if the Department of

Transport had created these four letter station identifiers before the creation of ICAO. Today one will find the last three letters of these identifiers as tags for their luggage, etc., YYZ Toronto, YUL Montreal, YHZ Halifax, YXD Edmonton Municipal, and YEG Edmonton International and so on around the country.

Snag and Aishihik were closed in 1966 and moved to Burwash Landing creating another station.

BURWASH                      CYDB                      BURWASH                      DB                      341

Unfortunately I have been unable to locate the three missing frequencies but I suspect one was 341 kilocycles and simply transferred to Burwash.

Thanks to Laval Desbiens VE2QM here is a list of the stations of the Northwest Staging Route and the Department of Transport Radio Operators at each station in 1944:

**Edmonton XD**

Norm Larson  
Bud Ostrum  
Guy Simmons  
Leo Zuccato  
Stan Morrison  
J. F. Perrier  
Bob Jones  
Eric Lambert  
Dusty Weaver  
Bill Wylie  
Joe Wasyluk  
Lorraine Sandman  
Ron Buss  
Earl Walker

**Grande Prairie QU**

Max Bonitz  
George Erickson  
George Gauld  
Chil Flick  
Doug Woolven  
Alf Dawson  
Harold Bowden  
Bob Dawson  
Alex Krutko  
Al Bromley  
Kevin Coyne

**Fort St John XJ**

Charlie Fisher  
Vince Tomlinson  
Babe Marcelle  
Bud Woodruff  
Guy Philpott  
Hugh Barlow  
Jim Shaw  
Gordon Hauch  
Frank Parsons  
Sammy Gangbar  
Leo Georgy

George Galinas  
Howie Zurbrigg  
E. Wagonblass  
Lloyd Collins

**Beatton River ZC**

Ted James  
J. Harold Otis  
Bill Freek  
R. A. Blenkarn  
Lloyd Stokes  
W. Melaychuk  
George Oakes  
I Grimbey

**Fort Nelson YE**

Herb Foxcroft  
Joe Swatkoff  
Enos Lundrigan  
Elliott Schwartz  
Jack Chalmers  
Tom Lawlor  
Les McPherson  
Alf Steigenberger  
Bill Sault  
Larry Laughton  
Chris Crump  
A Dewores

**Smith River ZL**

Frank Cole  
W. R. McLauchlan  
Maurice Smith  
Earl Reid  
Allan Matheson  
Joe O'Connor – probably the personnel manager in my time at Teslin  
Red Peddie  
E. C. Scotten  
Gordie Bean

**Watson Lake QU**

Joe Kandell  
Jim Semper  
Ron King  
Pete Volk  
Al Coulter  
Bob Smith  
Don Broughton  
Bill Moore  
Don MacKenzie  
Alex Brouse  
Al Holliday  
Hugh Clarke

**Teslin ZW**

Pete Clute

Bob Collomy  
Tom Lee  
Chas Stredulinsky  
Keith Morton  
Jack Proctor  
Bob Kliner  
Harold Taylor  
Gordon Warner  
Reg Harmer

**Whitehorse XY**

Elmer Nelson  
Warren Johnson  
Gerdon Harding  
Max Hubbard  
Jimmy Marr  
Bob Williamson  
Frank Grant  
Story Leith  
Ray Oliver  
V. C. Robinson  
Larry Nelson  
Russ Travers  
Curt Hart  
Russ Clemo  
L. J. Kandell  
Keith Nablo

**Aishihik ZK**

Otto Rajaaho  
Ernie Brown – Ernie was at Swift Current, Saskatchewan in 1944  
Elmer Carley  
Walter Latcham  
Harry Reiss  
Johnnie Boudreau  
George Goodwin  
Ed Ross

**Snag XQ**

Bob Devlin  
Keith McMillan  
Bill Stunden  
Alf Taylor  
Ed Sommers  
Jack Rhodes  
Amie Rushton  
John Quinn  
Don Moore  
Stuart Ewing

Looking over this list one has to wonder if it actually is 1944 or if it is the names of those who served during the time the RCAF operated the stations.

The Department of Transport Radio Range Station had a radio call sign with the prefix VF. Some of the Department of Transport three letter radio call signs had a figure suffix with a digit from 2 to

9 inclusive. The third letter was often the first letter in the name of the station. The digit 0 and 1 were not used because they would be mistaken for the letter O and the letter I.

The Royal Canadian Air Force turned these eleven stations over to the Department of Transport in **1951**. Their call signs for communications were changed as follows:

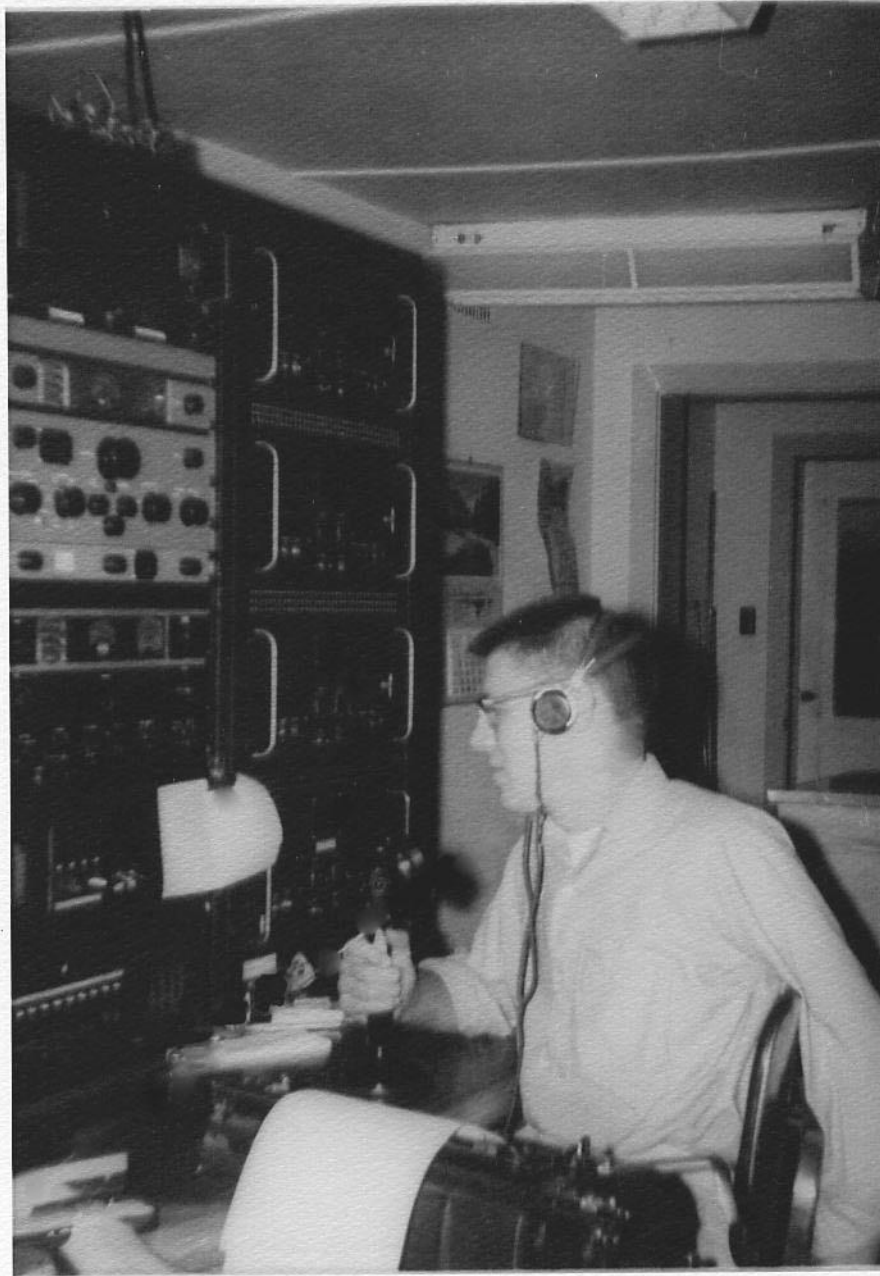
EDMONTON	VFE
GRAND PRAIRIE	VFG4
FORT ST JOHN	VFJ
BEATTON RIVER	VFB2
FORT NELSON	VFH
SMITH RIVER	VFS7
WATSON LAKE	VFD
TESLIN	VFT2
WHITEHORSE	VFW
AISHIHIK	VFA3
SNAG	VFS6

These stations were listed with the **same frequencies** with the International Telecommunication Union in Switzerland as when they were RCAF stations.

Snag and Aishihik were closed in 1966 creating another station at Burwash Landing.

BURWASH	VFD9
---------	------

---



*Joan Roscoe*

This is S. G. "Spud" Roscoe, VE8RM operating Teslin Aeradio VFT2 in 1963. I was an operator at this station from 1963 until 1966. There was a large scratch down this old photograph but thanks to Sue Maskill XYL G4PYR, Peterborough, England she managed to remove it. The units in the rack on the right are VHF receivers. Some were made by Marconi and some by Collins. Yes, that is the microphone and yes, this is a Radio Range Station. This Radio Range Station was installed in 1942 but was the same as the first one that entered service in 1927. A few years after this photograph was taken in 1963 the Radio Range was removed and replaced with a Non-Directional Radio Beacon with the same ZW identification and on the same 269 kHz MF frequency. The toggle switches to the left of the message hanging on the hook are used to select the various transmitters. The message hanging on the hook is the current weather observations for the stations along the Alaska Highway. I am probably making one of the twice hourly weather broadcasts on the Radio Range. Note the two RCA AR88 receivers in the rack above the toggle

switches. I am listening to the broadcast on the lower AR88 receiver via the headphones. To the left of this out of the photograph were the VHF and UHF transmitters and the two UHF receivers. There were speakers for each receiver across the tops of these 6-foot 4-inch racks. Each speaker was probably 6 inches in diameter and there were two speakers in the top of each rack on their own 19-inch standard rack panel for same.

For an example I will try and describe the Teslin Aeradio Station when I operated the station. The **operations position** of this station was located at the Teslin Airport. The **communications transmitter** was in a small log building east of the station and south of the Alaska Highway. The **radio range** was in another small log building 4-miles east of the airport and north of the Alaska Highway, a little farther east than the communications transmitter. The radio range building has been repaired and moved to the George Johnston Museum in Teslin.

The Department of Transport four-letter identifier for this station was CYZW and the radio call sign was VFT2. The ZW was the prefix in all weather observations and the radio range keyed ZW in Morse code for identification. The duty operator identified the communications radiotelegraph transmitter by transmitting the call sign VFT2 while using it.

**The communications transmitter** had two steel towers that held its wire antenna. It operated on a very low frequency down near the bottom end of the radio spectrum at 157 kilohertz. I believe this transmitter at Teslin was an RCA N26, but I have been unable to find any detail. It was left there by the RCAF and was crystal tuned to 157 kilocycles. It had a good range and was easy to work Coppermine up on the Arctic Ocean. Coppermine had a stronger signal than Watson Lake. I told the duty operator at Coppermine to pass along our best to Merv "Rip" Kitchen one time on a boring night shift at about 4AM. Most night shifts were boring, and this was strictly a no, no but I did not get caught. I was told the East Coast sister stations used a frequency of 160 kilohertz. The landline Teletype replaced the communications transmitter at Teslin in the late 1950's. This was a Teletype that operated on telephone lines up and down the Alaska Highway into Edmonton. The communications transmitter was used as a backup in case the Teletype failed and was used in 1964 while the Teletype was converted to an automatic pickup.

**I was told** the East Coast Stations used a frequency of 160 kilohertz. Did someone round this off to 160? There is a possibility that it was 157 kilohertz all over Canada.

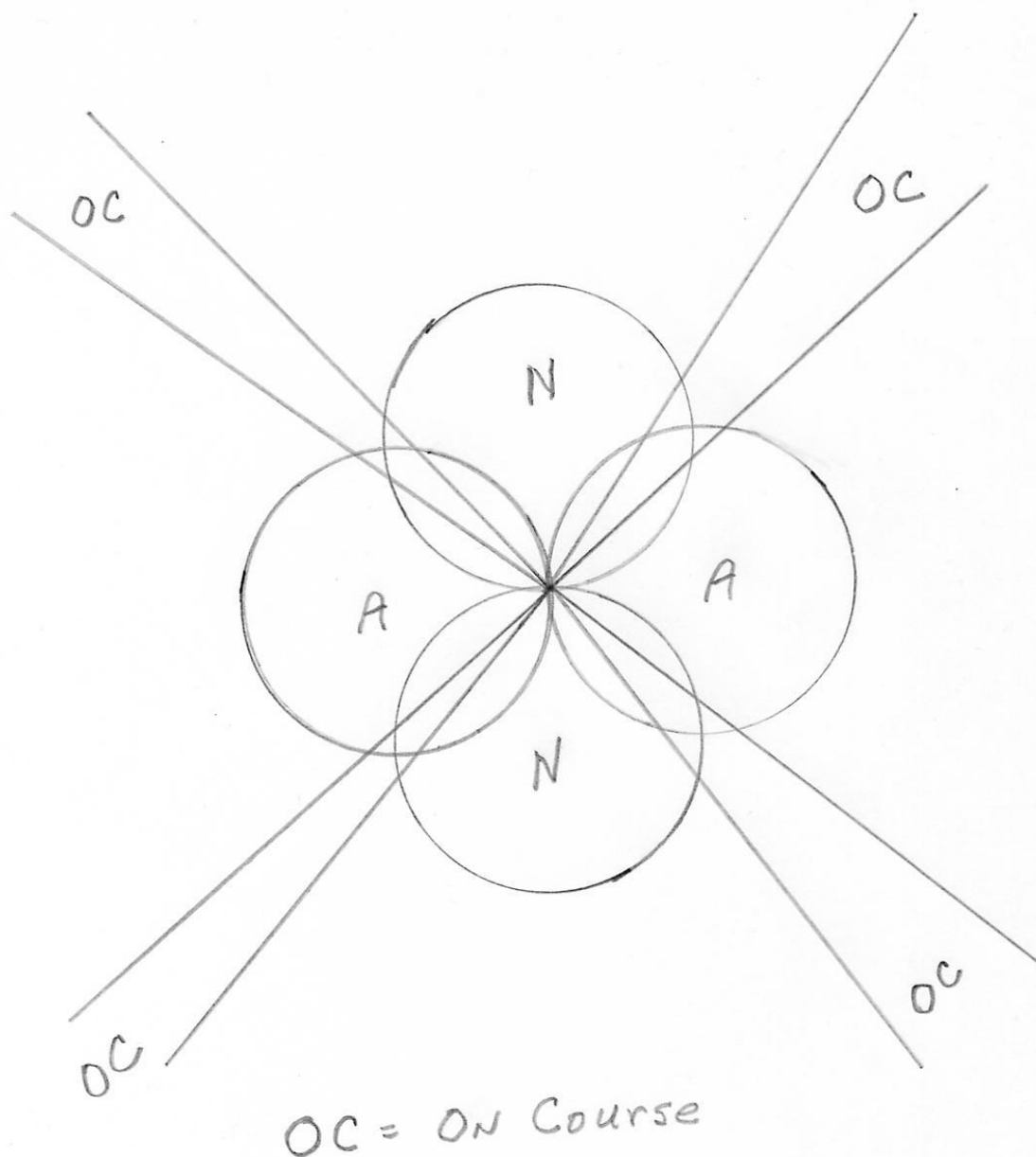
The Radio Range was the first electronic navigational aid for aircraft and first entered service in 1927. These old ranges worked and worked well. Most of them lasted forty years or more.

The Department of Transport Radio Range Transmitter at Teslin operated continuously on a frequency of 269 kilohertz and identified by keying ZW in Morse as stated, accomplished by a **Bakelite wheel**. The Morse code characters were engraved around the wheel's edge. This wheel was turned by a small electric motor and the Bakelite characters would push a contact up against another contact making and breaking the keying sequence. As you can see changing this Bakelite wheel is all it would take to change the transmitted identification of a radio range. There were no electronic Morse keyers until the late 1960's.

I have not seen it but in 2020 I was given a photograph that shows at least part of this radio range station is encased in a glass cabinet in the Teslin museum. I have operated radio since 1956 and I do not think I operated a station that provided better service. It is a good record. Thirty of its eighty years was spent as the main navigational radio aid of air route **Red 5**. One has to admit it was a rather technical marvel created in 1927. I do not know who invented or created it but in 1927 a lot of things were taking place in the world of aviation and a lot of people were killed trying to break one record or another. The radio range may have been a military secret when new.

**A Radio Range Transmitter** had five vertical steel antennas, and this permitted a pattern that I have attempted to draw below.

---



A low-frequency radio range employed two pairs of antennas that radiated energy in a double figure-of-eight pattern, in the horizontal plane. The transmitter was alternately connected first to one and then to the other antenna system, being keyed with the Morse code A for one antenna and with N for the other. The dots and dashes of these code signals were interlocked so that if a pilot was flying a course midway between the two maximum A and N signals, they received a steady signal known as the On-Course signal. If they left the beam, they then began to distinguish the A or the N, depending upon which side of the course they were now flying. In addition to the double pair, a center antenna transmitted an omni-directional signal at a frequency of 1,020 hertz removed from that of the A and N beams. Accordingly, the A and N indications were heard as a 1,020-hertz tone in the airplane.

On one side of the On Course or steady-tone region of a low-frequency range beam, the Morse code A would be distinguished, while on the other side of the On Course the N could just be heard. These regions were called the twilight zones. Aircraft used to **keep to the right** of the on-course region traveling in either direction in order to avoid collision. This was changed and aircraft either fly at an **odd or even altitude** depending on the direction of flight.

The signals from a low-frequency radio range were **vertically polarized** and were normally received at the aircraft on an antenna that responded best to vertical polarization. Reception of the radio range in a small region above the transmitting-antenna system was poor, resulting in the phenomenon known as the **cone of silence**, in which the signal was either extremely weak or altogether absent, depending upon the transmitting antenna system and upon the gain control setting of the aircraft receiver. When the aircraft flew through this cone of silence the pilot knew they were directly over the transmitting antenna system.

By adjusting the radio range transmitter antenna system, one could **point the on-course signals** in various directions. The south on course signal of the Teslin radio range pointed down into British Columbia. The east on course signal of the Teslin radio range pointed towards Watson Lake and the west signal pointed to Whitehorse. The air route formed from these two legs formed the air route known as **Red Five**.

The air route that went up the Alaska Highway and into Alaska was known as **Amber Two**. The west on course signal from Watson Lake pointed to Whitehorse and the Whitehorse east on course signal pointed to Watson Lake. This was part of air route amber two. Where the north on course signal of the Teslin radio range crossed these on course signals from Watson Lake and Whitehorse was known as the Fish Lake intersection. This was identified as **3A** for recording purposes.

Apparently during the war one leg of the radio range pointed to the runway of the nearest airport. I have no knowledge of this applying to Teslin. Teslin has one 5,500 foot runway and this means one end is known as runway 26 and the other is known as runway 08. This means the aircraft is heading 260 degrees when using 26 and 080 degrees when using 08.

The operations room of the Teslin Aeradio Station was a room on the east end of a long operations log building that was just east of the present (2003) operations building. This was the barracks for the members stationed there during the war. The duty Department of Transport radio operator recorded a **weather observation** every hour on the hour and every time the weather changed sufficiently to warrant a special weather observation. The operator broadcasted this weather twice every hour at 22 minutes and 52 minutes past each hour over the radio range transmitter.

An aircraft required nothing but a radio receiver capable of hearing a radio range in order to navigate by a radio range. For many years an aircraft carried this radio range receiver and one radiotelephone transmitter. In other words, a pilot could call any radio range station simply by listening to the radio range and transmitting on his only transmitter. When these radio ranges first entered service, the transmitters associated with this system had two transmit frequencies. They were 3105 kilocycles and its second harmonic of 6210 kilocycles. 6210 kilocycles was to be the day frequency and 3105 kilocycles the night frequency.

They claim the 3105-kilocycle frequency on these aircraft gave the aircraft a communication capability of 40 miles. The 6210-kilocycle frequency would give the aircraft a much greater communication capability. No doubt the Whitehorse/Teslin Norseman/Expeditor could work Teslin from Whitehorse and vice versa on that frequency on a good day providing they could hear the radio range.

The **majority of the pilots** in the various ferry groups flying the aircraft north during World War II were young men who had been in high school a year or two before their first trip from Edmonton

to Fairbanks. They were lucky if they had a couple of hundred hours of flying experience. They were just hungry boys, game for anything and convinced they would live forever. There were few if any instrument ratings and they were not allowed to use the radio range if they were in an aircraft equipped with a radio range receiver. They were to fly visual flight rules, maintain visual contact with the ground and fly during daylight only.

The delivery aircraft were turned over to the Russians at Fairbanks, Alaska and the delivery pilots were flown back by a C47 (Douglas DC3) and they were the aircraft using the radio ranges.

The **7,983 aircraft** that flew up the Alaska Highway to Russia during a **21-month period** of World War II were using this system. These were the aircraft given to Russia by the United States under the lend-lease terms. They were mostly the single seat P-40, P-39 and P-63 fighter aircraft. Pearl Keenan, Cliffe and Ted Geddes and all the others living in Teslin had watched them go over Teslin and said they were painted Russian colours; all black with a red star. It was an amazing feat flying all those aircraft to Alaska and turned over to their Russian crews. The aircraft came out of various places all over the United States. The most amazing fact of flying so many aircraft is that **133 only** were lost due to weather and pilot error. When these aircraft ran into weather they had to land and wait for the weather to improve. On occasion they would get caught in weather and this created a number of accidents.

They flew in groups and the group leader was often one who had made a couple of trips only. They were lucky when the group leader was a larger twin engine aircraft but it could not use instruments (radio range) in weather because they would lose sight of the smaller single seat aircraft. Their main navigational aid was the Alaska Highway when completed. They would drop down and buzz an army vehicle convoy when they spotted one for entertainment.

**The Civil Air Patrol** (CAP) is still operating in the United States and was a big help doing coastal patrols during World War II. The American Radio Relay League (ARRL) has produced an interesting monthly publication called QST since 1914. CAP is strictly civilian volunteers as the name implies; pilots, mechanics, radio operators and whatever is necessary to keep their aircraft flying. The August 1942, February 1944 and May 1945 issues of QST give detailed descriptions of the operation of a Radio Range. This includes instructions on how to build a station for an aircraft complete with a 200 to 400 kilocycle receiver and a transmitter and states it would make a good 80-meter amateur station after the war.

The Lockheed 10E aircraft flown by **Amelia Earhart** when she disappeared in 1937 had these two transmit frequencies 3105 and 6210 only. Her aircraft was also equipped with 500 kilohertz. Neither Earhart nor her navigator Fred Noonan could operate it and the antenna to it had been lost so this equipment was useless. It is amazing that Earhart and Noonan had not taken the time to become proficient in Morse code and able to operate radiotelegraph. One had to use radiotelegraph on 500 kilohertz, and this was back when Morse code was in use by everyone and everything. RKO pictures started their movies with Morse code in all the theatres back then, as an example.

These two frequencies 3105 kilocycles and 6210 kilocycles remained until sometime in the 1950's when they were changed to **3023.5 kilocycles** only. The radio spectrum is divided up into bands of frequencies and these were changed at this time. The various bands are divided up into marine bands, air bands, and amateur radio bands and so on for the use of the various types of service. They are divided up so the various harmonics of the various services do not interfere with another service. At this time the 6 megacycle band, megahertz in today's terminology was changed to include the frequency of 6202.5 kilocycles to 6354.75 kilocycles inclusive. This would place 6047 kilocycles the second harmonic of 3023.5 kilocycles below the 6 megacycle marine band of radiotelegraph frequencies. There were separate frequency bands for the marine radiotelephone frequencies. At that time 6210 kilocycles became a radiotelegraph working

frequency for passenger ships. Transmitters were better by this time but one could still be heard on the second and even third harmonic of the transmitted signal.

The operations room at Teslin monitored these audio modulated radiotelephone frequencies continually. The operations room also had one or two general coverage receivers for monitoring. Each aeradio station monitored their adjacent stations to make sure their radio range was operating properly, and that each operator made their **weather broadcast** at the scheduled time. The Department of Transport Teslin duty operator not only monitored Whitehorse and Watson Lake; they broadcasted their weather observation. Teslin started the broadcast with the correct Greenwich Mean Time and then the Teslin, Whitehorse, Watson Lake and Teslin again weather. They signed off the broadcast with the statement "Keep alert watch for other aircraft". One wonders if that did any good. Bush Pilot Jack Lamb claimed it made him feel good as though the radio station was thinking of him when there was no other aircraft within five hundred miles of him.

The RCAF had 15-memders stationed at Teslin during the time they operated the airport. When the Department of Transport took over, they cut this number **down to eight**; Airport Manager, Mechanic, Equipment Operator and we five radio operators. Waldo Crawford trucked in the five prefabricated houses for us five radio operators. This was one of Wally's first trucking jobs after his army discharge. Wally was a wheeler and dealer and went on to own a large trucking company mainly hauling steel between Edmonton and Calgary. The Teslin Airport Manager had a house that appeared to have been built there after the war. The Teslin mechanic and equipment operator each had a house that appeared to have been left over from the RCAF. One of these two houses was used to house the NDB in 2003. All eight had their wives and families living in these houses that were provided fully furnished.

During the early 1950's the **very high frequency (VHF)** audio modulated radiotelephone began to be fitted in aircraft. The Canadian Aeradio Station was fitted accordingly. The Teslin aeradio station monitored three of these frequencies continuously. 121.5 megahertz the distress frequency, 126.7 megahertz, the instrument flight rules communication frequency and 122.2 megahertz, the visual flight rules communication frequency. These aircraft very high frequency radios are audio modulated to this day and not frequency modulated. The reason for this is that the discriminator in the frequency modulated receiver will lock on the strongest signal, known as the captured effect and not permit another signal to be heard; whereas in the audio modulated receiver one can hear another signal if received while a station is transmitting. In other words, if someone is transmitting and another station is in distress technically the station in distress will be heard.

Max Ward (Wardair) fitted his de Havilland Beaver CF-IFJ and de Havilland Otters CF-GBY, CF-ITF and CF-IFP with VHF radios in 1965. Those four aircraft were fitted with high frequency audio modulated radiotelephone radios only at the factory and retained this high frequency equipment when the VHF was fitted and this applied to the majority of the bush aircraft at that time. The high frequency equipment contained two frequencies only. The two frequencies were 5680 kilocycles and a company frequency around that frequency and each company had its own frequency. The high frequency radio equipment was fitted in the tail of each aircraft and was remote controlled by the pilot up in the cockpit. These aircraft radios were capable of radiotelegraph and one pilot around Inuvik made use of that mode. They claim this provided the best communication and they had no trouble working him while sitting on a lake some distance from Inuvik that would have been impossible in radiotelephone. Teslin and most of the other small aeradio stations on the Alaska Highway were not equipped with 5680 kilocycles.

During the late 1950's military aircraft were fitted with **ultra high frequency** audio modulated radiotelephone equipment. A few of the aeradio stations were fitted with this equipment for communication with these aircraft. This consisted of two frequencies. 243.0 megahertz, the distress frequency, and one working frequency for communications, but I no longer remember the

Teslin frequency for this communication. The reason I no longer remember this frequency is because it resembled the range frequency of 269. Teslin communicated with the military aircraft going in and out of Alaska and communicated with the U2 spy planes flying over Russia back in the 1960's.

The very high frequency transmitters and ultra high frequency transmitters were mounted in the same equipment racks as their corresponding receivers at the operations position. At these high frequencies they did not interfere with the other equipment in use. Teslin continued to monitor 3023.5 kilohertz up into the late 1960's.

The radio range transmitter at Teslin had an **Atlas emergency generator** that would run the radio range in the event of a power failure. This was the only emergency generator at the station. We Department of Transport operators did a weekly maintenance routine at the Radio Range Building. It was a thrill to walk into the building and throw the main power switch. You could hear the large electrical relays slam (they were loud), then the starter on the old Atlas gasoline generator grind until the engine started and settled down. Teslin operated on electricity from Yukon electric and their diesel power generating plant located in the village of Teslin. This was operated by Gerry Mahoney, in the 1960's, and this power was so accurate that an electric clock kept perfect time. I do not remember a power failure from this generator. We had a red light on the operating desk that came on when the emergency generator was running.

During the 1950's the **automatic radio direction finder (ADF)** began to replace the radio range receiver in aircraft. The automatic radio direction finder would simply point to any radio transmitter it was tuned. The aircraft pilot would tune this direction finder to any radio station he was flying towards. When the aircraft flew over the radio transmitter the compass needle on the direction finder would swing 180 degrees and point back to the transmitter. This of course told the pilot he had gone over the transmitter and he could then tune in the next radio transmission he was heading towards. These units worked well on the regular AM broadcast transmitters so needless to say when something like an interesting ball game was being transmitted, that is where the pilots listened. The World War II aircraft were fitted with a unit called a radio compass that was capable of tuning these AM broadcast stations. It is hard to find a direction finding loop antenna on most World War II aircraft but that is what I assume was their radio compass.

By the mid 1960's the automatic direction finder was so popular that the radio ranges were being converted to a non-directional beacon. The non-directional beacon simply transmitted a steady tone, identified by the same Morse code keying as the radio range and on the same low frequency. The non-directional beacon used one antenna; an antenna identical to the five radio range antennas. The radio range at Teslin was replaced with a non-directional beacon and this was moved up on the airport a few hundred feet northwest of the operations building.

The Department of Transport Teslin Aeradio Station also monitored an open telephone line on an ordinary loudspeaker. This line provided communications with all the aeradio stations in the area and with the nearest air traffic control. At Teslin the duty operator was in communication with all the stations along the Alaska Highway from Northway, Alaska down to and including the Edmonton Air Traffic Control Centre. This communications link was known as **Sked F**.

If I received a position report from an aircraft during the war what did I do with it? One would have passed it to someone in radiotelegraph until Sked F was created. One would probably have passed it to the station they were heading towards. If an aircraft landed one would simply close the flight plan with the station the aircraft intended to land and the station the aircraft had originated the flight plan. While the RCAF ran the station this was not the radio operator's responsibility. The RCAF would have created any message to be transmitted via radiotelegraph.

The Department of Transport Aeradio Station required a minimum **staff of five**. One was the officer in charge who did the paperwork and could fill in when necessary. One was the senior

operator who was a regular radio operator but could fill in for the officer in charge. And three radio operators. It required four radio operators to operate the station twenty-four hours each day. One was on day shift (8am to 4pm), one on evening shift (4pm to midnight), one on night shift (midnight to 8am), and one on day off. The stations that had more aircraft movements in their area would often require two operators on the day and evening shift. There were two operating positions in the World War II towers of the small airports and from the number of operators on staff in 1944 it would indicate two operators on duty for each shift. Probably one on the radio range and the other on 157-kilocycles often called the point to point frequency.

One post war air force aircraft radio telegraphist told me that he had a daily schedule and had to maintain this radio contact when his aircraft was parked on an airfield. This sounded to me like **waiting for orders** like we often did with ships at sea. We would go into a port or bay drop the anchor, shut down the main movers (the main engines) and simply wait for orders to make our next voyage. I came home to Nova Scotia and went back to sea after operating these aeradio stations and managed to sail in 12 ships over the years. The computer and satellite terminated the radio officer position in the world's merchant ships in the 1990's. I have been retired since March 1995.

**Navcanada** was created in 1996 and took over the operation of the radio at the Canadian airports from the Department of Transport. When we visited Teslin in 2003 the only thing left at the airport that was there when we were was the garage and the old house housing the NDB as mentioned. The rest was gone and I have no idea where it went.

I hope this brief description is not only of interest but helps one understand the operation of these stations.

Some of the above is what I mailed to someone in Teslin to describe the building they found in the bush 4 miles east of the Teslin Airport Runway. Pearl Keenan had told them that I would be able to give them a description of the building. This building has been repaired and moved to the George Johnston Museum in Teslin.

**Snag VFFD** holds the record of the **lowest temperature** recorded in Canada when it recorded a temperature of -62.8C (-82.84F) on February 3, 1947. Bob Devlin was the duty radio operator and realized it was going to be a record so Gordon Toole the Officer in Charge took over the observation. When I was stationed at Teslin we referred to that low temperature as -83F and a few guys around there had leather jackets with that detail recorded on them. They had to send the thermometer to Ottawa to make sure it was accurate. The thermometer is in the Ingenium Collection at the Museum of Science and Technology in Ottawa today. You will receive several variations of this temperature on the internet. Joan and I experienced -60.6C (-77.0F) twice while in the north, once at Teslin and then again at Inuvik, North West Territories.

Henry Kozuluk was the last radio operator, actually the last person at Snag. He spent the final six months there all alone just before the station closed. Only Henry could and would do that. Henry was a nice guy and a good friend. I enjoyed working with him. He was a good example of the good go first because cancer claimed him when only 41-years old.

---



*Thanks to Jacques d'Avignon VE3VIA for finding this photo*

This is an aerial view of the Radio Range Site at Kuujjuak, Northern Quebec via Google. It is probably the last Radio Range Site left in Canada and it was probably easier to leave it as is rather than take it down and ship it out. At least when it changed to a non-directional beacon (NDB) it provided four spare antennas. Kuujjuak was known as Fort Chimo until a few years ago. Kuujjuak in the first nation native language is "Great River". Jerry Proc, VE3FAB, has an excellent description of the naval station at this location on his web site. <http://jproc.ca/rrp/chimo.html>

Back in the "Good Old Days" when all communications to the outside world was in radiotelegraph on 160 kilocycles, Fort Chimo was assigned international call sign VFF4. This radio circuit was known as the "point to point" or "pint to pint" depending on the accent from what coast you came from. The only exception to this was when the military was stationed at Fort Chimo. The U.S. military was stationed there during World War II and the Royal Canadian Navy for a short while during the 1950's. They both had their own radiotelegraph circuits to the outside. In 1988 Kuujjuak is listed with an NDB on 390 kilohertz that appears to be at this site. This NDB identified in Morse with the letters VP, making CYVP the four-letter airport identification for this station.

I could not properly pronounce Kuujjuak if my life depended on it. Having lived in the north I used to enjoy reading about it but they have changed so many names now I do not know what they are talking about. Pearl Keenan said she gave up trying to teach the Teslin kids their native language simply because their parents refused to speak it at home. Lillian Usher had a good giggle the first time I tried to say Nisutlin. When I was a kid I was told we would all be speaking Esperanto at this date and time. Whatever happened to that idea?

We used to enjoy a coffee with Pearl's mother at her log cabin home. I will never forget the first one. When I was a teenager I was in the navy. We had gone into St. John's, Newfoundland and I had gone ashore and simply walked around alone looking things over. I decided to go into this hole in the wall coffee shop for a coffee and sandwich. There was one two place table left and I simply sat down. In a few minutes this elderly grandmother came in for a coffee. I motioned for her to sit with me and we had a good chat, I could not get over the similarity with my conversation with her and Pearl's mother. The high cost of things in the T. Eaton catalogue, what would become of their grandchildren and so on? I came to the conclusion we were crazy to have a provincial and territorial border between them. The one and same government should govern one and all in this country.

Ernie Christian VE8ET was the Officer in Charge at Teslin in 1963. I was working the day shift and Ernie came in and said he was going fishing. I said, "What will I tell the crew from Edmonton when they arrive?" He said, "Tell them I've gone fishing".

CF-CUE was a World War II Douglas C47 that reverted to her civilian DC-3 label on leaving the American Army Air Force. The aircraft had been an American C47 Skytrain with serial number 12983. In 1963 this aircraft was part of the Department of Transport fleet and Teslin Aeradio was a Department of Transport station. I may have been stationed there a month but no more. I had served five years in the navy as a Radioman Special rating, graduated from Radio College of Canada in Toronto, served as Radio Officer in the full rigged square-rigged sailing ship *BOUNTY*, and graduated from the Department of Transport Air Services Training School in Ottawa.

I could hear each station south of Teslin calling Air Traffic Control in Edmonton on Sked F delivering their position report on CF-CUE. CF-CUE was coming on Instrument Flight Rules and I was so new at this job I had not handled an IFR landing nor had seen anyone handle one. I was rather worried about this and with nothing to do became more concerned about this as CF-CUE kept getting nearer.

When CF-CUE called me I simply said here goes. They must feel I can handle it, or they would not have left me here alone. I simply answered CF-CUE and his reply was simply canceling IFR at this time and estimating Teslin in so many minutes. I acknowledged receipt and gave him the routine information on landing as taught at Air Services Training School. The wind direction and speed, the altimeter setting and stated there was no reported local traffic. It was as though he had lifted a ton off my shoulders and I simply passed the report to Edmonton.

CF-CUE landed and taxied up to the terminal building just outside the radio station windows. I could see the three or four men on board come off the aircraft. They all appeared to be 80 years old and were helping each other off. Looking back, they were probably 50 years old or nearing 50 years of age.

When one entered the Teslin Aeradio Station, they walked past the Officer in Charge office as they walked towards the operating position. This door is just out of the photo above and was just behind the right corner of the rack. As each member of this crew came in, they looked in the office and then looked around the station. A couple of them carried on to the washroom farther down in the old log building that was built by the Air Force during World War II.

The only one I knew in this crew was Joe O'Connor who oversaw personnel for the region. I had met Mr. O'Connor on the way through Edmonton on my way to Teslin a month or so before this. Mr. O'Connor and I simply had a routine chat. I was a bit of an oddball having driven across Canada from Nova Scotia and up to Teslin in a pick-up truck pulling a travel trailer. Joan and I had lived in this rig while at Air Services Training School in Ottawa. My experience in *BOUNTY*, making the movie "Mutiny on the Bounty", and living in this trailer was quite a conversation piece if nothing else.

---

It was not long before one of these old boys came back for a couple more looks around the station. I could tell he was looking for Ernie and finally asked me "Where is Mr. Christian?" I simply said, "He has gone fishing". I doubt a rifle crack would have created a bigger jolt to one and all. This old boy said, "Did he not know we were coming?" I said we all knew they were coming and if he wanted Ernie for some reason, I could tell him to contact him. He said, "Oh no, I was just wondering if he had any problems". I simply said, "Hell man, this is Teslin there is nothing here including problems." They all got a good giggle out of it, turned and left.

CF-CUE departed on Visual Flight Rules for Whitehorse and I advised Edmonton accordingly.

One time the radio range needed some tender loving care. The eastern on course leg pointing to Watson Lake had a faint N in the center of the on-course signal. The Edmonton Office sent up CF-DTM to help us eliminate this problem and bring the range back as advertised. CF-DTM was a Beech D18S serial number CA184, the former air force Expeditor 2311 that had joined the air force on July 4, 1952 and transferred to the Department of Transport on February 2, 1959.

By 1963 the majority if not all aircraft were fitted with an automatic direction finder (ADF). By this time aircraft flew at either an odd or even altitude, depending on the direction of flight to avoid colliding with another aircraft. This was probably the unit the aircraft were using in 1963 to navigate via these old radio ranges, but Teslin had a radio range, one of the few in Canada so we had to ensure it was working properly.

It is worthy of note that Amelia Earhart had a direction finder in her Lockheed 10E aircraft that she disappeared in way back in 1937. This was not an ADF but one of the first airborne direction finders. One had to turn the loop antenna mounted on the cabin roof manually, in order to obtain their bearing on the station they were tuned in to. It is amazing that girl got as far as she did with the little, she knew about what she was doing. United States civilian aircraft are registered with letter and number combinations commencing with the prefix N. The U.S. aircraft radiotelegraph call sign was a five-letter combination back then with the prefix KH. Amelia's aircraft had call sign KHAQQ, but her aircraft had registration NR16020. Canadian aircraft simply used the five-letter aircraft registration, like most countries as the radio call sign in both radiotelephone and radiotelegraph. The United States aircraft use the registration as the radiotelephone call sign.

The World War II Air Force pilots referred to a radio compass that could tune in the old AM Broadcast band. This must have been a direction finder but it is near impossible to find the loop antenna on their aircraft.

Dick LeBlanc was flying CF-DTM and I was on duty when he landed at Teslin. When he came into the radio station and introduced himself, he asked me if I knew a girl from Yarmouth, Nova Scotia that he heard was living in Teslin. I said, yes, she is married to the Mountie that oversees the RCMP detachment. My wife Joan is from Weymouth and I

am from Kentville, Nova Scotia. I handed him the keys to my pickup as I told him where the detachment was located and told him to run down and see her.

The one in charge of the RCMP detachment was watering the front lawn when Dick drove in the detachment yard. He paid no attention to the pickup because Joan was forever running in with it to visit. The girl in question happened to spot Dick driving in and came running out of the detachment screaming his name, grabbed him and gave him a big kiss. The one in charge of the detachment dropped his hose and his chin and was wondering what in hell was going on. One of the biggest laughs we had while stationed at Teslin. This girl and Dick had been high school sweethearts and on completion of high school had gone their separate ways. Dick joined the air force as a pilot and then joined the flying staff of the Department of Transport. The girl married one of the Mounties stationed at Yarmouth and was eventually transferred to Teslin.

Dick hated flying this eastern leg with a proverbial passion. One cannot blame him because flying back and forth on that one leg must have been akin to watching paint dry. He would dream up every excuse imaginable to come in, but we had to get that leg working. I suggested he take my wife Joan with him. It worked. He let her fly the aircraft and it gave her one of her more memorable northern experiences, and we in turn had that eastern leg working as designed.



Joan looking up at the wheelhouse on the Expeditor at the Air Museum at Gander Newfoundland July 2018 and probably thinking of that day so long ago.

The Expeditor was the RCAF terminology and when these aircraft left the air force they reverted to their civil designation as a Beech 18. I was in the habit of using the civil designation because there were so many of them flying around. The Department of Transport had at least a dozen or more of them, the Mounted Police had at least five of them and it seemed every outfit around had one or two. There were over 7,000 built from 1937 to 1969 so no wonder so many were around. The RCAF purchased 388 in the 1950's and gave them the designation C-45. The Beech 18 engines were Pratt & Whitney 450 horse power, if I remember correctly.

I will never forget the time Bill Hines VE8CM came into Yellowknife on wheel skis in a Beech 18 and the wheels would not come down for landing. He made several passes where everyone could see him and make suggestions, but no way would those wheels drop down. Finally he said he was coming in and would land in the snow next to the runway. We watched him closely as he turned down wind and came in. He stopped the engines, and then hit the starters moving the props parallel to the wing and made quite a splash of flying snow when he landed. The only damage created was a mark on one ski and one VHF radio antenna torn off. Bill had flown Spitfires during the war but unfortunately flew into a cloud with a rock in it (a mountain top) and all on board was killed.



*Bill Demish VE6YXH*

This is an old friend, Bill Demish VE6YXH standing next to a Canadian Beech 18 CF-BKN located in the Air Museum in Tucson, Arizona in 2017. This aircraft had been part of the Prairie Airways Limited fleet. I have not found further information on this aircraft so have no knowledge as to whether Prairie Airways bought it new or if it is a former RCAF Expeditor.

---



Prairie Airways Limited was formed in 1938 and was merged with nine other airlines to become CP Air. CP Air had started as Canadian Pacific Airlines and all these small airlines kept merging until they created Canadian Airlines. Air Canada eventually purchased Canadian Airlines and merged it all into Air Canada. It looks like they used CF-BKN, maybe a sister to create their sign. The company was created in 1938 and this would indicate a possibility CF-BKN was purchased new from the Beech factory in Wichita, Kansas.

**End**

[spudrve1bc@outlook.com](mailto:spudrve1bc@outlook.com)

[www.ve1bc.com](http://www.ve1bc.com)

---