History of Aviation in the

BC Forest Service

A pictorial account for the BCFS Centennial

August 2011

Part 1 : Transport, Supply, Reconnaissance

This is a brief pictorial account of the history of fixed wing flying in the roles of transport, supply, reconnaissance, patrol and inventory with the British Columbia Forest Service.

The Early Years

Figure 1: Hoffar H-2 crash Vancouver Sept. 1918

By now, many of us have heard about or seen the results of the BC Forest Branch's first foray into the world of aircraft. A contract was initiated by the Department of Lands with the Hoffar Motor Boat Company for the construction of a single engine two seat flying boat, to be used primarily for patrolling. The H-2 biplane was constructed during the summer of 1918 and test flights conducted toward the end of August and early September. On September 4th, on one of the early tests over Vancouver, the aircraft experienced engine problems and the pilot elected to head for the waters of Coal Harbour. It never made it. The aircraft stalled (quit flying) and spiralled onto the roof of a house in West Vancouver. The H-2 was destroyed but the young pilot luckily sustained only minor injuries. This ended the thought of Forest Service aircraft ownership for almost 80 years.

Figure 2: Curtiss JN-4 first forest fire discovery 1919

In September of 1919, the first aerial discovery of a forest fire in B.C. took place over Duncan. The pilot of a Curtiss JN-4 (possibly during an air mail flight) spotted the fire and landed at Duncan to report it to the Forest Branch, who then took suppression action.

The end of WW1 saw a surplus of aircraft and support equipment in both Europe and North America. After the war, governments and agencies recognized the value of aircraft in roles such as patrols and transport of men and supplies. The Canadian government formed the Dominion Air Board to oversee the growing civil aviation in Canada. Half a dozen air stations were established across the country in 1920 including Vancouver, located at Jericho Beach. The Vancouver Air Station soon acquired 2 types of flying boats.

The Curtiss HS-2L was a single engine four place biplane with a payload of up to 700 pounds and a top speed of 70 mph. The Felixstowe F.3 was a large twin engine flying boat capable of speeds over 85 mph and a payload up to 12 people with gear. These aircraft were not used operationally in 1920 but the HS-2L was tested and evaluated by the Forest Branch and Air Station in the fall.

Figure 3: HS-2L at Alert Bay late 1920. BC Archives NA-07649

The 1921 fire season saw both types used in various roles by the Forest Branch including patrols, fire suppression and forest reconnaissance, inventory and photography. One HS-2L was also based in Kamloops during that summer.

1922 proved to be a serious fire season on B.C.'s coast. The F.3 proved it's worth transporting men and equipment to fires. Near the end of July the F.3 transported men, equipment and camp supplies to a fire near Buttle Lake on Vancouver Island. The use of the F.3 saved days of ground travel and undoubtedly prevented the fire from becoming a major event.

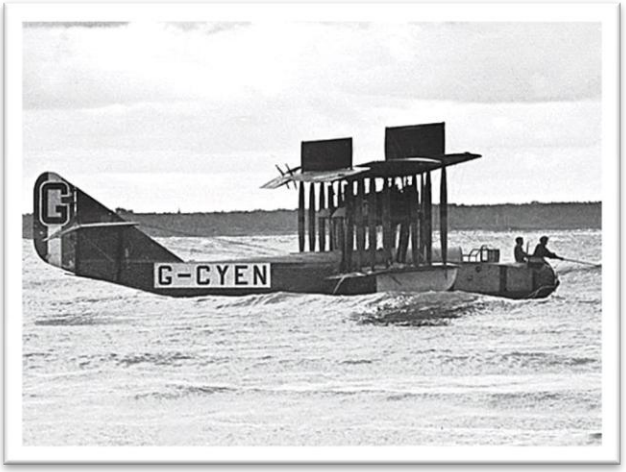

Figure 4: Felixstowe F.3

By 1923, the Forest Branch had become somewhat disenchanted with both types of aircraft as they were becoming obsolete. Aircraft performance was not up to requirements especially in the mountains, and aircraft maintenance costs were high. In 1924 the Branch used the aircraft on a casual basis and only flew two dozen hours. By 1926 the regular use of aircraft for forestry work was severely curtailed.

For more detailed information on Forest Branch aviation activities between 1918 and 1926 including an account of the 1918 accident, see the publication "Aircraft and Their Use in Forestry in B.C.: 1918 – 1926" http://www.bcfs100.ca/docs/pdf/8/398.pdf

Through the late 1920's and 1930's occasional fire patrols and aerial spray projects were undertaken by the Branch, but not nearly on the scale of the early 1920's. Fire patrols did continue with local civilian aircraft if they were available. Aircraft such as the Dehavilland Moth were used for patrol and reconnaissance work.

Figure 5: DeHavilland Gypsy Moth Recce 1935

In 1929, in response to a outbreak of western hemlock looper in Indian Arm near Vancouver, the Branch conducted an "experimental dusting" project with a Boeing Flying Boat. 1200 pounds of calcium arsenate was spread over 45 acres reportedly with "satisfactory results".

Primarily due to the Depression, the period between 1932 and WWII proved to be lean years for aviation and fire suppression in the province. Fire suppression funding was severely curtailed during this time.

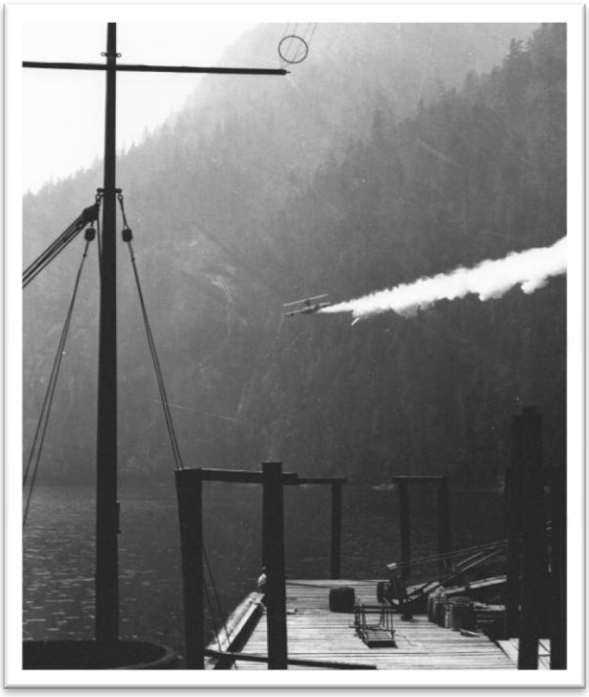

Figure 6: Boeing Flying Boat dusting project

Figure 7: Boeing B1E Flying Boat Indian Arm

WWII and Post War Years

During the Second World War Forest Branch personnel again recognized the value and potential of aircraft, particularly float planes in the fire detection and suppression roles. In 1942 they noted "there will be room for air transport in the post-war organization of the Forest Branch". During this period lookoutmen trained in the identification of hostile aircraft assisted the military as part of the "Aircraft Detection Corps". In return the military provided reconnaissance and transport flying when available. In 1943 and '44 local aircraft were chartered for specific projects.

In 1945 the Branch contracted 2 float aircraft based in the Fort George District. One plane was smaller, suitable for reconnaissance work and the second was a heavier aircraft able to move men and equipment to remote fires. These aircraft also flew in the Nelson and Kamloops Districts that season.

Figure 8: Fairchild 82 Nelson River 1944 NA-08394

The success of these aircraft lead to the addition of a second contract in 1946. Two Cessna Crane aircraft on wheels were based in Kamloops and Nelson as well as the float aircraft in Fort George. This new contract was with Central B.C. Airways Ltd. which went on to become Pacific Western Airlines in 1953. This started a lengthy association with this company into the 1960's.

Parachute tests were conducted with the Crane in Kamloops in 1946 using U.S. surplus 6' cargo chutes.

Figure 9: Cessna Crane

After the war, in response to the demands of Canadian bush operators, DeHavilland Aircraft of Canada Ltd. designed and developed the DHC 2 Beaver. The prototype aircraft registered as CF-FHB serial # 1 first flew in August 1947 and was acquired by Central B.C. Airways in early 1948. It wasn't long before FHB was part of the B.C. Forest Service's contract fleet. Nearly 1700 Beavers were built between 1947 and 1968 and were registered in over 60 countries. There are many Beavers operating commercially and privately today. This would arguably make the DHC 2 the most popular bush aircraft in history. CF-FHB is now preserved and on display at the Canadian Aviation and Space Museum in Rockcliffe / Ottawa.

Figure 10: Beaver CF-FHB near New Denver 1950

Over the next decade, the use of aircraft increased and became nearly routine. Workhorse types such as the Noorduyn Norseman and Junkers JU33/34 were used extensively, more often than not on floats. They transported and supported crews and supplies not only on fires but on projects such as lookout construction, saving a tremendous amount of time and money. One project saw the freefall drop of packaged lumber to a drop site with the Junkers W34 aircraft.

Figure 11: Central BC Airways Junkers W 34 transport

Figure 12: Freefall lumber drop Junkers 34 1949 NA-09884

By 1954 the Forest Service had a contract with Pacific Western Airlines for 6 float aircraft including: 4 Beavers, 1 Junkers 34 and 1 Fairchild 71. They were based at Vancouver, Lakelse, Prince George, Kamloops and Nelson. All aircraft had a minimum 1000 pound payload and were paradrop equipped. These were on top of the many charter operators and aircraft available throughout the province by the mid 50's. Several other Forest Service Divisions used the contract and charter aircraft including Surveys and Inventory Division.

Figure 13: Pacific Western Airlines Norseman 1956

In the late spring of 1955 disaster struck. A Pacific Western Cessna 180 floatplane (similar to the one pictured at right) departed Ocean Falls with the pilot and 3 survey crewmembers with the Forest Surveys and Inventory Division. Their eventual destination was Kemano where the survey crew camp was located. The aircraft never arrived. A search was initiated on June 14th consisting of 5 military and 8 PWA aircraft. The aerial search officially ended on June 22nd. Forest Service survey vessels searched for another week or more, but the aircraft and occupants were never found.

Figure 14: Cessna 180 floatplane

Figure 15: Pacific Western Airlines Canso and Norseman were part of the aerial search

To illustrate the tremendous growth in the post war aviation industry in B.C., by the spring of 1959 the Pacific Western Airlines fleet consisted of: 6 DC 3's, 2 C 46's, 2 DC 4's, 12 Norseman, 23 Beavers, 2 Mallards, 8 Cessna 180's and 10 Bell 47 helicopters.

1960's and On

Other aircraft types that emerged in the 1950's and early 60's included the Fairchild Husky F II and the DeHavilland DHC 3 Otter, both of which also operated as water bombers. By 1965 the Forest Service contract fleet (in addition to airtankers, birddogs and helicopters) consisted of 3 Beavers based at Vancouver, Kamloops and Nelson, and 1 Otter based at Prince George. Their primary role was transporting fire fighters, work parties and supplies to inaccessible areas. On occasion they would serve in the roles of air patrol and reconnaissance.

Figure 16: Fairchild Husky F II

6 Piper Super Cub PA 18's were also on contract to the Province. These 2 seat aircraft started flying for the Forest Service in 1960. In 1965 two were based at Dawson Creek, two at Smithers, one at Williams Lake and one at Kelowna. They were considered "flying lookouts" whose sole purpose was fire detection. They flew fixed patrol routes designed to provide maximum detection coverage.

Figure 17: DeHavilland DHC 3 Otter

Figure 18: A Skyway Air Services Super Cub - illustrating oversized tires for use in soft, rough field operations

Again, in response to demands of operators and customers, DeHavilland Aircraft developed the DHC6 Twin Otter. This twin engine turboprop aircraft was generally a replacement for the single Otter and provided greater reliability, payload and retained the short take off and landing (STOL) capabilities. The Twin Otter's first flight was in May 1965. It went on to become a success internationally and has been a workhorse in B.C. for over 40 years in wheel, float and ski configuration.

Figure 19: Air West DHC6 Twin Otter

We would be remiss in not mentioning the Grumman line of amphibious aircraft. The Grumman Widgeon, Goose and Mallard undoubtedly played an important part in this era in the history of B.C.F.S. transport flying, especially on the coast.

Figure 20: Grumman Widgeon - Harrison Airways

Figure 21: Grumman Goose - BC Airlines 1968 Sandspit

Figure 22: Grumman Mallard - Pacific Western Airlines

1967 proved to be the heaviest flying year in history to that point. Transport and reconnaissance flying in the province reached nearly 9000 hours with contract and charter aircraft, and accounted for over 40% of the overall flying that summer. Numbers and types of provincial contracted aircraft remained fairly static through the late 60's and early 1970's. Interprovincial and interagency exchange of personnel and equipment was still in it's infancy through this period.

The 1970's saw increased use of agricultural aircraft in aerial spray, fertilization and grass seeding projects on the coast and in the southern interior. The Cessna 188 Agwagon operated by Conair Aviation was a popular resource on these projects.

Figure 23: Early 70's shot of Conair C 188 - possible tests of aerial drops of seedlings in plastic bullets

Figure 24: Conair Agwagon - spray calibration with Rhodamine dye

The Canadian Interagency Forest Fire Centre was formed in June of 1982 with British Columbia as one of the founding members. CIFFC's mandate included "a cost effective sharing of resources".

The 1985 fire season was one of the worst in decades with over 3600 fires consuming 235,000 hectares. At peak periods there were over 8,000 firefighters employed. CIFFC was to become a major benefit during this season.

Aside from some aerial detection aircraft, there were no support or transport aircraft on long term contracts during this period. Several aircraft were placed on short term agreements, usually for 30 day periods. 2 Douglas DC 3s and

Figure 25: DC 3 operated by North Cariboo Air

several Beech 200 King Airs were put on these agreements to guarantee their availability. The North Cariboo Air DC3s were kept very busy transporting firefighters and fire equipment especially in the southeast of the province. The King Airs were used primarily for transport of personnel, however one operated by Conair provided infrared mapping services on the larger fires in the south of the province. This aircraft was leased through the National Safety Council of Australia. Air patrols flew over 10,600 hours in 1985.

Figure 26: Conair King Air infrared aircraft at Cranbrook 1985 - "Ram" fire in the background

The B.C.F.S. continued to use short term agreements for transport aircraft when needed through the late 1980's and early 1990's.

1990's and On

The development of provincial sustained action (Unit) crews in the late 1980's and early 90's lead to the need to transport these crews quickly, often from one end of the province to the other. In 1992 the province entered into a long term seasonal contract with Trans-Provincial Airlines for the services of a Convair 580. This also allowed for long distance pre-positioning of Initial Attack crews.

Figure 27: TPA CV580 Safety Features Card 1992

Figure 28: Trans-Provincial CV 580 at Kelowna 1992

In early 1993 Trans-Provincial was purchased by Harbour Air and the B.C.F.S. contract was continued with Kelowna Flightcraft Ltd.

Flightcraft (KFC) continued with the long term agreement through the busy 1994 fire season. They provided a “combi” aircraft capable of carrying personnel and equipment together in the cabin area.

Figure 29: Flightcraft CV 580 Kamloops with fire crews 1994

In 1995, Conair Aviation supplied a contracted DeHavilland Dash 7 leased from Trans Capital Airlines from Ontario. The aircraft proved to be a success and led to negotiations with Conair over the winter of 1995 /96.

Figure 30: Conair/Trans Capital Dash 7 Abbotsford 1995

Figure 31: Dash 7 C-GGXS demobilizing fire crews at Kamloops

Remember the statement at the beginning of this account regarding Forest Service ownership of aircraft? After 78 years, in January of 1996, the Forest Service Protection Branch entered into a Joint Venture partnership agreement with Conair Aviation for the ownership of a 4 engine DHC Dash7 “combi” transport aircraft.

The aircraft could seat up to 44 passengers and had an area dedicated for firefighting equipment or other cargo. The aircraft (registered as C-FWYU) was ideal for crew deployments within B.C. and to other adjacent agencies.

The aircraft operated through the 2001 fire season, at which time Conair chose to limit their operations to fixed wing firebombing aircraft. The aircraft and parts were sold to Trans Capital in 2002. It went on to serve with the United Nations overseas.

Figure 32: Unveiling of Joint Venture Dash 7 spring of 1996 - Conair President Barry Marsden and Protection Branch Director Jim Dunlop in attendance.

Figure 33: Dash 7 Captain outlining ramp procedures to fire crews prior to departing from Castlegar.

Figure 34: Interior of WYU showing dedicated cargo area.

Figure 35: On the flightdeck of WYU with Captain Tim Whiting – Abbotsford June 2000

Through the 1990's charter aircraft also played a major part in crew movements in and outside of B.C. - everything from the 30 seat Dash 8 to larger jets such as the Boeing 737 and Airbus types.

Figure 36: First Air Hawker Siddeley HS 748 mid 90's

Figure 37: Alberta Govt. Air Transport Dash 8 - 100 Kamloops 1994

Figure 38: Fire crews board a Canadian North Boeing 737 for the return flight back to their home agency.

Light aircraft were contracted through this period as well. The Cessna 210 was a popular type seating up to 5 passengers and used for administrative support flying. The Piper Aerostar was also used, when not called on as a backup birddog.

Figure 39: C210 C-FVEG operated by Island Aero - at Abbotsford 1996.

Forest Service Protection Branch also contracted intermediate types usually seating up to 9 passengers between the mid 90's and mid 2000's. Agreements with Conair Aviation saw the use of the Beech 200 Kingair C-GTUC in the mid 1990's.

Figure 40: Conair's Kingair C- GTUC in front of Hanger 1 at Abbotsford

In the late 90's, the Branch contracted a Piper PA 42 Cheyenne III operated by Carson Air out of Kelowna. While faster than the Kingair, it couldn't quite match the cargo volumes.

In the early to mid 2000's the Protection Program again contracted the services of North Cariboo Air out of Fort St. John for a Beech 200 Kingair. This 9 passenger aircraft was crewed by 2 pilots and came equipped with a belly cargo pod which increased the cargo volume substantially. C-FCGC was a popular aircraft and served the program well for a number of years.

Figure 41: Carson Air Cheyenne III C-GIDC Victoria 1999

Figure 42: Kingair C-FCGC & pod Abbotsford July 2002

Figure 43: Kingair C-FCGC at Penticton in 2000

On the aerial application side, two sizeable spray projects were completed over Vancouver in 1992 and Victoria in 1999. Two Douglas DC6's operated by Conair were converted to spray configuration and aided in containing outbreaks of the Asian Gypsy Moth in the two harbour cities. Minor outbreaks in smaller built up areas were contained using a twin engine Piper Aztec.

Figure 44: Spray converted Conair DC6's based out of the Abbotsford Tanker Base

The addition of the Air Tractor 802 to the provincial air tanker fleet in 1996 provided a cost effective platform for the spraying of spruce budworm in the southern and central interior of B.C. These programs have continued annually in the late spring mainly in the southern Cariboo region.

Figure 45: Conair AT 802 in spray configuration

Another crew transport initiative took place in the late 1990's by the Northwest Fire Centre. The Parattack smoke jumping program initially started with a converted Cessna 208 Caravan out of Smithers in 1998. The project soon progressed to the DHC6 Twin Otter operated by North Cariboo Air the next season. Parattack moved to the existing facilities at the Fort St. John airport in 2000.

Figure 46: Modified Parattack Cessna Caravan - Abbotsford 1998

Figure 47: North Cariboo Twin Otter C-GIGK

The termination of the Dash 7Joint Venture agreement after 2001 did not have a serious affect on the acquisition of this size of aircraft for crew transport. Numerous operators were able to supply types such as the Dash 7 and 8, Beech 1900, Saab 340, Convair 580 and others on a charter basis.

Figure 48: 36 passenger Saab 340 Abbotsford July 2002

Figure 49: 19 passenger Beech 1900 - Central Mountain Air

For the larger interagency firefighting hauls, many of the major aircraft operators including Westjet and Air Canada are able to supply types such as the Boeing 737 and Airbus 319 and 320 on a fairly short notice charter basis.

Figure 50: BC fire crews board a Flair Air Boeing 737-400 at Prince George for deployment to Ontario - July 2011

Appendix

About the author

Gord Bell started with the B.C.F.S. in 1972, retiring after 35 years in 2007. He spent 25 of those years dedicated to aviation programs as Air Attack Officer in Kamloops and Superintendent Flight Operations and Aviation Management with the Protection Branch / Program in Victoria. He has been involved with aviation history and a member of the British Columbia Aviation Museum for a number of years. He remains active as an Air Attack Officer with the Provincial Air Tanker Centre.

Acknowledgements

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