Civil Aviation Policy in Alaska

1913-2018

Theresa L. Kraus

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FAA Navaid System
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Caption: Cold Bay airport, 1972
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Caption: NASA DHC-3 Otter Surveying Mountain Glaciers
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Author's Preface

I want to thank Alaskan Regional Administrator Kerry Long for suggesting this history and having the confidence in me to complete the study. His support and that of many regional employees have provided me invaluable insight into Alaska's aviation system and how the FAA is working to make that system safer. Meeting and talking with colleagues in the Alaskan Region about the region's unique history was truly an honor. Their dedication and willingness to think outside of the box have vastly improved aviation in the state. Researching and writing this volume has been a labor of love and an incredible learning experience. Unless you live, work, and fly in Alaska, it is difficult to understand just how much Alaskans rely on the airplane for work and pleasure.

I also want to thank the FAA's Office of the Chief Counsel (AGC) for supporting me in this endeavor. It not only provided the agency's historian a home in AGC, but without its sponsorship, I would not have been able to complete this volume.

I appreciate the help of those who reviewed chapters of the book, especially, Maria Papageorgiou, LaTasha Tucker, Maureen Cummings-Spickler, Lisa Cooke, Howard Martin, Walter Combs, Brad Platt, Clint Wease, Marshall Severson, Raj Bhatnagar, David Hughes, JR Miller, Joe Buckingham, Finlay Mungall, Gary Norek, Ed Goldstein, Robert Drew, and Curt Biberdorf. Their thoughtful comments and edits made this a much better work. Any errors of omission or commission are my own. Kudos go out to Kim Galiazzi and Laurie Zaleski for the design and layout of the book. Their expertise makes my words look good.

Lastly, I want to thank my husband, John Henry King, for his continued support and encouragement.

Theresa L. Kraus

Foreword

Like many people, my first look at our most majestic state was from the air. I was a young Air Force pilot flying a Lockheed C-141B Starlifter from Norton Air Force Base, California, where I was stationed, to Elmendorf Air Force Base in Anchorage, Alaska. I was immediately struck by the sight of harsh terrain. I knew Alaska had more pilots per capita than any other state in the union – and that the vast majority of them flew small, single-engine aircraft, with Alaska-appropriate names like Cub, Beaver, Otter, or Goose – but still, looking down at the unfriendly terrain below me, I couldn't imagine making an emergency landing on the rocks and ice even though these aircraft were designed for landing on rough, unimproved surfaces. Yet, that is what Alaska pilots do every day. If huge tundra wheels won't work, they put skis under their planes, or floats.

You don't have to be a pilot or aviation expert to understand the importance of aviation to the State of Alaska. That is due, in part, to the fact that the majority of Alaska's vast and beautiful landscape is only accessible by foot, dogsled, or aircraft. Alaska's disproportionate pilot population is also an economic engine for the state. Pilots fly mail, milk, and medicine to remote villages. Guide pilots take city-slickers and hardcore adventurers into Alaska's interior.

Much of what I know about Alaska aviation I learned during the year I spent as a legislative fellow in the office of Senator Ted Stevens. Uncle Ted, as many who had the pleasure of working for him called him (never to his face), was a WWII pilot who loved aviation (he continued flying into his 80's). He had his private pilot license and was qualified to land on floats – a must have skill for guide pilots. Senator Stevens knew how to talk to pilots and, more importantly, understood the uniqueness and challenges of flying in Alaska. During my short time on his staff and for years afterward, I worked hard to help him help Alaska improve aviation safety without hampering her pioneering aviation spirit.

Before I was introduced to Alaskan aviation, I heard from some regulators in the Lower 48, that Alaskan pilots were reckless cowboys. As I flew around the state and spent more time among the pilot community, I learned that nothing could be further from the truth. While every population has its outliers, the vast majority of aviators in Alaska are like pilots everywhere – safety is their number one priority. By their nature, pilots are a tightknit community. But, nowhere more so than in Alaska. In a state where the weather is harsh and the terrain unforgiving, pilots keep their eyes and their radios open to help each other out. "Lake Clark Pass is clear" is music to a pilot's ears, as long as the report comes from another pilot and isn't more than a few minutes old. That's why Senator Stevens made sure weather cameras were installed in some of Alaska's remote airports and treacherous passes like Clark, Rainy, Moose, and Merrill.

Aviation safety in Alaska has improved significantly since the late 1990s. The Yukon-Kuskokwim Delta was the original testing ground for ADS-B, a new aircraft surveillance technology that uses ubiquitous GPS satellite coverage rather than traditional radar, which is non-existent over most of Alaska. The aforementioned weather cameras, put in place in the late 1990s and early 2000s, and the Medallion Foundation, established by Senator Stevens in 2002, were also instrumental in cutting Alaska's general aviation fatal accident rate almost in half since the early 1990s.

Since Alaska's statehood, no elected official has done more for the state's safe growth of aviation than Senator Stevens. He was one of our country's finest Senators. He was also an outdoorsman who loved aviation. A man who survived one aircraft accident – but was taken by another – he understood, respected, and supported the Alaskan aviation community like no other. With his passing, in a 2010 aircraft accident in Alaska, the state and the nation lost one of its greatest statesmen. But, his body of work will be remembered for generations to come.

So much wind has slipped beneath my wings since that first flight to Elmendorf AFB in the fall of 1987. Norton AFB is now San Bernardino International Airport, and Anchorage is now home to Joint Base Elmendorf-Richardson. Family and work responsibilities keep me in the Lower 48 for longer periods of time than I would like. But, I hold wonderful memories from many trips to that wild and beautiful state . . . memories that pull hard for my return. I'm so glad Theresa Kraus asked me to write this preface and that she decided to write about Alaska's history through the lens of aviation. As you read this fascinating book, you will discover that Alaska's identity is intimately tied to aviation. In fact, without aviation, Alaska would still be just a territory.

Dan Elwell,

FAA Deputy Administrator

We simply obtain by the treaty the nominal possession of impassable deserts of snow, vast tracts of dwarf timber, with a few islands where the climate is more moderate, and a scanty population.[1]

Prologue: The Last Frontier

On March 30, 1867, Secretary of State William H. Seward signed an agreement with the Russian minister to the United States, Baron Edouard de Stoeckl, in which Russia agreed to cede the territory of Alaska to the United States for $7.2 million. The Senate approved the purchase on May 27, and President Andrew Johnson signed the final treaty the following day. Russia formally transferred Alaska to the United States on October 18. With the purchase, the United States officially became an Arctic nation. For the most part, Americans had no idea why Seward wanted Alaska and had no interest in learning what the remote territory's 586,000 square miles of land; 6,640 miles of coastline; 100,000 glaciers; myriad islands; and approximately 34,000 miles of tidal shoreline had to offer. Extensive mineral deposits, fish, game, and a host of natural resources slowly lured settlers into the vast, mostly unexplored territory.

For decades, the U.S. government largely ignored its new territory, commonly referred to as Seward's Folly or Seward's Icebox. The War Department administered the Department of Alaska until 1877, when the Treasury Department took over. In 1879, the U.S. Navy had jurisdiction over the territory. During this period, however, the federal government did not create any kind of civil infrastructure. In 1884, the First Organic Act made Alaska a civil and judicial district. Thirteen federal officials had responsibility for the population of 32,000 people, mostly Alaskan natives.

National interest in Alaska was almost nonexistent until Joe Juneau discovered gold in 1880 in the Silverbow Basin of Alaska. Subsequent discoveries in the Klondike, Yukon, and elsewhere resulted in tens of thousands of people migrating to Alaska to make their fortunes. Boom towns quickly formed to support the miners.

Alaska gained territorial status on August 24, 1912, and John Henry Kincaid became the first territorial governor. Despite the influx of people during the gold rush and the establishment of a territorial government, Alaska remained underdeveloped, with little infrastructure to support its citizens. The weather could be harsh much of the year, communications with the Lower 48 states (and within the territory itself) proved difficult, and an almost nonexistent transportation system made travel challenging and dangerous.

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[1] "What We Get By The Treaty," *Holt County Sentinel* (Oregon), May 3, 1867.

The aeroplane can in three hours carry the mail to places where dog teams would take ten to fifteen days to reach.[1]

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Aviation Comes to Alaska

James and Lillian Martin with first aeroplane in Alaska, Fairbanks, 1913
Courtesy: Alaska Aviation Heritage Museum

Like most Americans, Alaskans paid close attention to aviation developments, beginning with the Wright Brothers' first flight in 1903. Local papers, such as the *Fairbanks Daily Times, Pinska Store News, and Alaska Citizen*, reported on aircraft and aviation feats occurring in the United States and abroad. Citizens in and near Fairbanks received their first real aviation experience in 1913 when James V. Martin and his wife, Lilly Irvine, came to town to give a lecture on "aeroplanes" and provide a flying exhibition. Martin, a Harvard graduate, pilot, and inventor, flew a biplane he had built. The flight – the first flight in Alaska – took place on July 3. As the *Alaska Citizen* reported, "Captain Martin . . . made as pretty flights as have ever been made anywhere in the world."[2] Martin showed off his flying skills with additional flights over the next two days.

Such demonstrations fascinated the American public who flocked to aviation exhibitions and meets to watch the barnstormers do loops and other tricks, and gape at wing walkers as they took their lives into their own hands. They also cheered on pilots, male and female, as they pushed one another to set, then break, a host of aviation records for speed, flight duration, and aerobatics.

[1] Henry Woodhouse, "Post Office Department Invites Proposals for Carrying Mails by Aeroplane," *Flying*, March 1916.
[2] "Martin Demonstrated Ability as Bird Man," *Alaska Citizen*, July 7, 1913.

For spectators, aviation was a novelty, but the barnstormers faced incredible risks. Early aviation remained a dangerous business – it was the realm of daredevils. Flying conditions proved difficult since the only navigation devices available to most pilots were magnetic compasses. Pilots flew 200 to 500 feet above ground so they could navigate by roads and railways. Low visibility and night landings were made using bonfires on the field as lighting. Fatal accidents were routine.

Despite public interest, very few saw the airplane as more than an exciting form of entertainment; only a few visionaries and entrepreneurs believed airplanes were key to commercial growth. One such businessman from Nome, Leon Richardson, saw the benefit of using airplanes for his endeavors. In late 1915, he went to the Glenn Martin factory to purchase a plane he could use to carry passengers and gold from Iditarod to Seward. Richardson believed he could reduce the time to move gold 600 miles from the interior to the coast in one day instead of the sixteen days required by dog sled.[3] Although Richardson's gold-carrying service never materialized, others came to the conclusion that the airplane could solve some of Alaska's major transportation and communication problems.

Air Mail Service

In Alaska, as with the rest of the United States, it was the Post Office Department that pressed for aviation development. Mail delivery in Alaska proved difficult since postal carriers largely delivered mail by dog sled, boat, or on foot. The Post Office just could not regularly serve some remote villages because of limited transportation. As explained by one early aviation writer, "The flying machine promises to be one of the most potential factors in the future development of Alaska – and of all places where the run of commerce is slow on account of lack of fast transportation." [4]

On February 12, 1916, the Post Office issued a request for bids on seven contract air mail routes in Alaska and one in Massachusetts. The contracts would be paid for out of the appropriation available to the Post Office Department for steamboat or other power-boat service.[5] All bidders had to apply by May 12. The contract term for the Alaskan routes would be from October 1, 1916, through June 30, 1918.[6] As one writer commented, "The aeroplane can in three hours carry the mail to places where dog teams would take ten to fifteen days to reach."[7] The initial advertisement for bids went unanswered"[8]

[3] "Aeroplane for Alaska Trade," *Fairbanks Daily Times*, January 1, 1916.
[4] Woodhouse, "Post Office Invites Proposals."
[5] US Department of Commerce, Bureau of Air Commerce, *Aeronautics Bulletin No. 1, Civil Aeronautics in the United States, August 1, 1935* (Washington, DC: US Government Printing Office, 1935), 4.
[6] Advertisement reproduced in Woodhouse, "Post Office Department Invites Proposals."
[7] Woodhouse, "Post Office Department Invites Proposals."
[8] Ibid.

The possibilities for air commerce seemed endless. As an editorial in the *Fairbanks Daily Times* pointed out, air mail service "will afford relief to the remote districts of Alaska which cannot be served satisfactorily in any other way." It continued optimistically . . . "The European war has hastened the development of aerial navigation to a point where risks are practically eliminated. Accidents to aeronauts which were the rule a few years ago are now the exception . . . in Alaska the transportation of mails by means of aeroplanes should be less hazardous than it is under present conditions, especially where mail carriers are constantly exposed to dangers during the winter months."[9] As it turned out, the optimism for air mail service was premature.

Of the eight routes the Post Office Department requested bids on, only one bidder came forward with a bid for the Iditarod to Seward route. Earl L. Byers, a steamboat engineer on the Yadkin and Iditarod Rivers, proposed to provide air mail service twice a week between Iditarod and Seward, carrying 1,000 pounds of mail on each trip at a rate of $49,500 per year. Byers made an experimental flight along the route, carrying four passengers with a total weight of 1,000 pounds. As several newspapers reported, "The country over which he will fly is mountainous. There are no level tracts on which to make a landing in case his engine should stop. In winter the snowfall is between twenty-five and thirty feet deep. Even should Byer's airplane make a safe landing in the snow between terminals, it would be impossible for the operator to get away again."[10] Byers, ever optimistic about the ability of his planes to land and takeoff in snow and ice, planned to use three Curtiss tractors, also known as the Curtiss JN-4 or Jenny, on the routes.[11] The Post Office awarded him the contract, but because the war in Europe created a scarcity of available planes, Byers could not purchase the requisite aircraft.[12]

After the war, Byers never fulfilled the terms of his contract. According to Postmaster General Albert Burleson, "The cause of the failure was the war . . . it was established that the reason bids could not be obtained was because the entire aeroplane supply was being gobbled up by the belligerent nations." He continued, saying, "But at the end of the war, all the genius in air craft, fostered and developed by the sturggle [sic], will seek a new outlet for its energies."[13]

The National Advisory Committee for Aeronautics, however, had a different perspective on the problem. In its October 5, 1916, annual meeting,

[9] "A Welcome Innovation," *Fairbanks Daily Times*, February 16, 1916.
[10] "Alaska Mail by Airplane," *Great Bend Tribune* (Kansas), December 30, 1916; "Will Carry Mail in Aero," *Charlotte Observer*, January 9, 1917; "Will Carry Mail in Airplane," *Galena Weekly Republican*, February 16, 1917.
[11] "The Alaska Mail Bid," *Aerial Age Weekly* (May 29, 1916): 337; "The Wide, Wide World," *Union Republican* (North Carolina), July 27, 1916; "Mails by Aero in Alaska," *Washington Post*, September 3, 1916.
[12] "Air Mail Route Can't Get Planes," *Postal Record XXIX*, no. 19 (October 1916): 322. The Curtiss tractors, also known as the Curtiss JN-4, or Jenny, had the engine and propellers in the front of the aircraft.
[13] Quoted in "Burleson Predicts Aerial Mails After the War," *Aerial Age Weekly* (July 31, 1916): 592.

the committee met with a representative from the Post Office to discuss the unsuccessful inauguration of the seven remaining air mail routes. According to the committee, despite the great strides made in aviation, aviation companies did not bid because of the severe flying conditions along the routes.[14]

World War I and Its Aftermath

On April 6, 1917, the United States declared war and officially entered World War I as a combatant, and all thoughts of air mail service in Alaska disappeared. During the war, combatant nations used aircraft in a variety of roles: bombers, fighters, ground attack, and reconnaissance. For the most part, the U. S. Army and Navy relied on British and French aircraft since U.S. manufacturers could not keep up with demand. The military, however, did use Curtiss JN-4 aircraft as trainers. After the war, the military gave Jennies to the Post Office Department for use in the air mail service and sold hundreds of the planes to the public. But, there were few takers in Alaska.

Alaskans, however, remained enthusiastic about the possibilities aviation could bring to them. Many caught the aviation bug in early 1920 when the War Department announced plans for an experimental flight from New York to Nome, using four of its new Jennies. The immediate purpose of the flight was to show the possibility of air mail service between interior cities in Alaska, between cities along the route, and between New York and Alaska. Mail service from Alaska to New York took thirty days; air mail would reduce that time to three days. The military flyers also planned to map interior sections of Alaska and study the possibility of opening an air route to Asia.

Caption: Left to right: Capt. St. Clair Streett, Flight Commander; 1st Lieut. Clifford C. Nutt; 2d Lieut. Eric C. Nelson; 2d Lieut. C. H. Crumrine; 2d Lieut. Ross C. Kirkpatrick
Courtesy: Wikimedia Commons

The four aircraft, from the Black Wolf Squadron, left New York on July 15, 1920. The planes reached Alaska on August 14, landing at Wrangell – the first airplanes to come to that town.[15] The pilots then flew to White Horse, Dawson, Fairbanks, Ruby, and Nome. The expedition arrived back in New York on October 20. The actual flight time from New York to Nome was fifty-five hours. Local and national press followed the flights, reporting from each city. Crowds gathered at each stop to see the planes and pilots. The flights convinced many that aviation would be possible and viable in Alaska.

[14] William Durand, "Second Annual Report of the National Advisory Committee for Aeronautics," *Aerial Age Weekly* (April 16, 1917): 148.
[15] "History of Wrangell," accessed online at http://www.wrangell.com/visitorservices/history-wrangell.

The Army Air Service crews at Sand Point, Washington, before the start of their round-the-world journey. Left to right: Tech. Sgt. Arthur Turner (who did not make the flight), Staff Sgt. Henry Ogden, Lt. Leslie Arnold, Lt. Leigh Wade, Lt. Lowell Smith, Maj. Frederick Martin, and Staff Sgt. Alva Harvey. Not pictured: Lt. Erik Nelson and Staff Sgt. John Harding Jr.
Courtesy: NASM

Two years after the Black Wolf squadron's success, the U.S. Army Air Service made the first around the world flight. The Army had commissioned Donald Douglas to build the planes for the flight. He delivered the World Cruiser in forty-five days. The open cockpit plane averaged seventy-five miles per hour. On April 6, 1924, eight Army Air Service pilots and mechanics left Seattle for Sitka, Alaska. The planes next landed at Seward before heading to Chignik.[16] One of the aircraft crashed near Port Moller on the Alaska Peninsula enroute to Chignik. The two crew members survived, but the damaged plane could not be repaired.[17] The remaining three planes stopped at Atka before flying to Russia. Two of the planes eventually completed the circumnavigation of the globe on September 28. The flight took 175 days and covered more than 26,000 miles.

[16] "U.S. Warships Search for Lost Flier," *El Paso Times*, April 16, 1924; "World Aviators Take Air Today," *Semi-Weekly Spokesman-Review* (Spokane, Washington), April 13, 1924.
[17] "Leader of World Air Trip Found Alive After Forced Landing on Rocky Shore," *Santa Ana Register*, April 16, 1924.

Alaska's First Aviation Companies

Inspired by the Black Wolf Squadron's flight, C. O. Hammertree, a World War I aviator and Anchorage businessman, had a Boeing seaplane shipped to Anchorage. The plane arrived in crates on April 24, 1922. After mechanics rebuilt the plane, pilot Roy Troxell flew around the Anchorage inlet and crashed. Troxell survived, but the plane did not.[18]

On July 17, 1922, Roy F. Jones became the first pilot to establish commercial air service in Alaska after landing his Curtiss MF flying boat,[19] named *Northbird*, in Ketchikan. He established the Northbird Aviation Company and flew round trip service from Seattle to Ketchikan and back. Jones' plane could carry three passengers and fly at ninety miles per hour. Jones crashed his only plane in Heckman Lake in August 1923.[20] The Northbird Aviation Company was out of business.

Carl Ben Eielson
Courtesy: National Portrait Gallery, Smithsonian Institution; gift of the University of Alaska

In late 1922, Carl Benjamin "Ben" Eielson, a Fairbanks high school teacher who had trained as a military pilot during World War I, organized the Farthest North Aviation Company.[21] Convincing investors – banker Richard C. Wood and editor of the *Fairbanks Daily News-Miner*, W. F. Thompson – that aviation would be a profitable venture, he purchased a surplus military aircraft, an OX-5-powered Jenny.[22] The plane arrived at Fairbanks in crates on July 1, 1923. Eielson became the company's only pilot. He made his first flight on July 4 during Fairbank's annual Independence Day celebration. He then flew to Nenana where he put on another aerial demonstration. On July 16, he provided a flying exhibition for the visiting President Warren G. Harding. As Alaska's only commercial pilot, he carried passengers and medical supplies to interior communities and mining camps, undertook exhibition flying, and offered flying lessons. He also held a number of contracts with mining companies to carry the mail.[23]

[18] "Anchorage Aviation History & Development," accessed at http://www.muni.org/Departments/merrill_field/Pages/History.aspx.
[19] Curtiss developed the MF (modernized F-boat) flying boat in 1917 from the original F model, a design the U.S. Navy had been using since 1912/1913.
[20] "Bibliographical Note," Guide to Roy F. Jones Manuscript Collection, 1922-1973," accessed at http://library.alaska.gov/hist/hist_docs/finding_aids/MS004-38-01.pdf.
[21] Some accounts refer to the company as the Farthest North Aviation Club.
[22] The Curtiss OX-5 engine was a V-8 American liquid-cooled aircraft engine and the first mass produced American-designed aircraft engine.
[23] Jim Reardon, *Alaska's First Bush Pilots, 1923-1930: And the Winter Search in Siberia for Eielson and Borland* (Oregon: Alaska Northwest Books, 2009), Chapter 1; "Dakota Man Pioneer Air Mail Pilot," *Bismarck Tribune*, October 24, 1923; "Two Fliers Lost in Siberia," *Fairbanks Daily News-Miner*, July 22, 1969; U. S. Air Force Fact Sheet, "Carl Ben Eielson," accessed online at http://www.eielson.af.mil/shared/media/document/AFD-061114-009.pdf.

In early 1924, Eielson secured an experimental air mail route from the Post Office Department to fly from Fairbanks to McGrath at $2 per pound of mail. The contract period was from February 1 to June 20. Eielson made the first flight on February 21, 1924, in an open-cockpit de Havilland provided by the Post Office Department. He made the round trip in nine hours, but got lost and flew ninety miles off course. He eventually reduced the time to five hours and forty-five minutes. He made the trip once every two weeks.[24]

Eielson did have mishaps on some of the flights; he damaged the plane three times on eight flights. When he ran out of spare parts and notified the Post Office Department that he needed additional parts, the Post Office grounded him. According to the Postmaster General Harry New, "Your experiment has been successful to a marked degree . . . there are many things which must be done before we can continue on a permanent basis our use of airplanes in mail-carrying in Alaska."[25]

Despite his success, postal officials, concerned about safety, withdrew the contract after three months. Eielson argued for continuing the route, saying, "I believe I have clearly demonstrated that aerial mail service in Alaska is not only feasible, but necessary." He continued, "I am confident the postal department will succeed in establishing a permanent service that will reach all important points in the territory."[26]

Eielson quickly became a popular figure throughout Alaska and the United States, with newspapers following his daring flights, from flying a doctor from Fairbanks to Brooks, to getting lost en route home from a mail delivery.[27] According to the press, the Alaska Natives, so impressed by their first glimpse of an airplane over McGrath, notified the Post Office Department that they intended to make the "manbird," or "The Moose Ptarmigan" (which means "huge grouse"), as they called Eielson, a chief. The Fairbanks Igloo of Pioneers made him an honorary member.[28]

[24] Department of Commerce, *Fifteenth Annual Report of the Secretary of Commerce* (Washington, DC: US Government Printing Office, 1927), 37; "N.D. Man Flies Alaskan Main," *Bismarck Tribune*, February 1, 1924.
[25] Quoted in Reardon, *Alaska's First Bush Pilots*, Chapter 1.
[26] "Would Have Air Mail in All Sections," *Bismarck Tribune*, July 21, 1924.
[27] "Dakota Man Pioneer Air Mail Pilot," *Bismarck Tribune*; "Aviator Lost in Alaska Finds Hangar by Luck," *Evening News* (Pennsylvania), March 31, 1924; "Mail Pilot Finds New Alaska Route: Flyer, Lost in Arctic Darkness Cuts Time 16 Days," *Belvidere Daily Republican* (Illinois), April 28, 1924.
[28] "Indians to Adopt Uncle Sam's Birdman," *Brainerd Daily Dispatch*, April 15, 1924; "Call Air Postman in Frozen Alaska Moose Ptarmigan," *Davenport Democrat and Leader*, April 22, 1924.

Aerial Surveys

The U.S. Navy conducted the first Alaskan aerial survey expedition between June 6 and September 24, 1926, under the command of Lieutenant Ben H. Wyatt of Naval Air Station San Diego. Preparations for the expedition were largely made at San Diego, although the staging area was Seattle. The expedition was composed of the tender *Gannet* (AM 41) the barge YF 88 housing a photo lab and mobile base for the expedition, and three Loening (OL) amphibians. Two of the airplanes were Loening OL-4s equipped for aerial photography. The third was an OL-2 which served as a standby plane for searching in case one of the photography planes was forced down.[29] It was also the radio plane for the expedition. The work of the expedition, which extended through the summer and into September, was performed in cooperation with the Department of the Interior for early aerial mapping of Alaska. The purpose of the expedition was to survey Southeast Alaska for the Department of the Interior for use with the investigation of resources in that region. During the summer more than 15,000 square miles were mapped. While Wyatt was commander in charge of this particular outing, the entire Alaskan survey (which began in 1926 and was finally completed in 1929) was under the command of Lieutenant Commander A. H. Radford.

After the first expedition ended in October 1926, Lieutenant Wyatt remarked, "The intense loneliness, the rugged grandeur of the scenery, more impressive by far than . . . [the] Grand Canyon, was awe-inspiring. For miles as far as the eye could reach from aloft, stretched ranges of saw-toothed mountains, blanketed in perpetual snows."[30]

At the request of the departments of Agriculture and Interior the U.S. Navy completed its survey of southeastern Alaska in 1929. The four-plane survey unit departed San Diego on May 15. During its time in Alaska, the crew mapped approximately 13,000 squares miles from Yakutat to Kodiak.[31] In 1932, the Navy sent a third survey team to Alaska, this time to map parts of southwestern Alaska from Seward westward to Chignik Bay.

[29] Grover Loening designed and built the Loening OL, also known as the Loening Amphibian, a two-seat amphibious biplane, for the U. S. Army Air Corps and Navy.
[30] "Stretch of Water Through Alaska Discovered by U.S. Aerial Survey," *Province* (British Columbia, Canada), October 31, 1926.
[31] Douglas E. Campbell, *Flight, Camera, Action! The History of U.S. Naval Aviation Photography and Photo-Reconnaissance* (Washington, DC: Syneca Research Group, Inc., 2014), 100-101.

No Longer a Novelty

As Eielson prepared to petition Congress to reestablish air mail service in Alaska, other Alaska aviation pioneers, who saw the benefits of aviation to the territory, worked to build the necessary instrustructure and businesses to encourage aviation growth. Anchorage businessman Arthur A. Shonbeck, for example, was determined to build an airstrip in Anchorage. Convincing citizens to help, he led a group in clearing a field of trees and other debris in the city. The strip became a nine-hole golf course and landing strip. On July 4, 1924, pilot Noel Wien inaugurated the golf course/landing strip with an aerobatic show.[32] Wien, at the time, worked for James S. Rodebaugh.

Rodebaugh, a conductor on the Alaska Railroad, who also traded furs along the rail line, bought two Standard J-1 biplanes for use in Alaska.[33] He established the Alaska Aerial Transportation Company in Fairbanks, and, in May 1924, hired pilots Noel Wien and Art Sampson, as well as mechanic Bill Yunker, to accompany the crated planes to Alaska. They arrived in Anchorage in early June. On July 6, 1924, two days after his flight over the new Anchorage landing strip, Wien made the first flight from Anchorage to Fairbanks.

Rodebaugh merged his company with Eielson's Farthest-North Airplane Company, creating the Alaska Aerial Transportation Company in 1925. Rodebaugh left that company in 1926 with pilot A. A. Bennett to form the Bennett-Rodebaugh Company based in Fairbanks. Noel Wien became one of their chief pilots.[34] Rodebaugh and Bennett sold the company in 1929 to Ben Eielson, who at that time owned Alaskan Airways.

Bennett-Rodebaugh Company
Courtesy: airspacemag.com

Wien, one of Alaska's earliest bush pilots, quickly made a name for himself. He was the first to fly from Fairbanks to Seattle, from Fairbanks to Nome, and from Alaska to Siberia via the Bering Strait. In 1925, he became the first pilot to fly north of the Arctic Circle when he flew merchandise broker Joe Meherin to Fort Yukon.[35] In 1927, Wien and some partners founded Wien

[32] "Anchorage Aviation History & Development," n.d., accessed at http://www.muni.org/Departments/merrill_field/Pages/History.aspx.
[33] Standard Aircraft Corporation built the J-1, two-seat biplane powered by an inline four-cylinder Hall-Scott A-7a engine.
[34] Reardon, *Alaska's First Bush Pilots*, Chapter 2.
[35] "Arctic Salesman Uses Plane to Show Wares," *Brooklyn Daily Eagle*, August 13, 1925.

Air Alaska based in Fairbanks. Wien made the first round-trip flight from Alaska to Asia.[36]

In 1926, Arthur Shonbeck established the Anchorage Air Transport, Inc., and flew passengers and freight. Shonbeck hired Russel Hyde Merrill as the airline's first pilot.[37] Merrill, a former naval aviator, was no stranger to Alaska. In 1925, he became the first civilian to fly over the Gulf of Alaska, and the first to fly an aircraft to Anchorage, Seldovia, and Kodiak Island.[38]

In June 1930, Roy Jones began a new aviation venture. With partners Vern C. Gorst and C. R. Wright, he established Pioneer Airways in Seattle, Washington. His pilots flew between Seattle and points in Alaska with two new Stinson SM-8A four place planes.[39] The first plane, named *Sea Pigeon*, arrived in Ketchikan on June 21, 1930. The second, named *Northern*, began flights in August.

Seeing the advantages of using the airplane for transportation, in 1925 the territorial legislature authorized the territorial Board of Road Commissioners to divert $40,000 from the 1925 biennial road appropriations to construct aviation fields when the construction of such fields would be of equivalent economic benefit as the construction of roads. As a result, in fiscal year 1926, the territorial government constructed aviation fields at the following sites:

- Beaver
- Chandalar
- Chena Hot Springs
- Chicken Creek
- Circle Hot Springs
- Flat
- Fort Yukon
- Golovin
- Kantishna
- Keewalik
- Lake Minchumina
- Livengood
- McGrath
- Manley Hot Springs
- Moose Point
- Nome
- Nulato
- Ophir

[36] Patricia Trenner "10 All-Time Great Pilots," *Air & Space Magazine* (March 2003): accessed online at http://www.airspacemag.com/history-of-flight/10-great-pilots-4026745/?no-ist.

[37] Anchorage Aviation History & Development," accessed at http://www.muni.org/Departments/merrill_field/Pages/History.aspx.

[38] "Russel Merrill," Alaska Aviation Museum, accessed online at http://www.alaskaairmuseum.org/#!russel-merrill/c1to0.

[39] "New Air Firm Formed – Will Serve Alaska," *Fairbanks Daily News-Miner*, June 18, 1930.

- Rampart
- Ruby American Creek
- Takotna
- Unalakleet
- Wiseman

The fields varied in size from 300 x 800 feet to 600 x 1,400 feet.[40]

[40] Department of the Interior, *Report of the Governor of Alaska to the Secretary of the Interior* (Washington, DC: US Government Printing Office; 1925), 34.

"This land which is so rich in natural resources offers aviation many opportunities."[1]

2

Pre-World War II Developments

While civil aviation held great promise in Alaska, commercial operations were slow to start. In the Lower 48, however, commercial aviation boomed. The Air Mail Act of 1925, which allowed the Post Office Department to contract for the carriage of air mail, helped create a profitable commercial airline industry. As a result, airline companies such as Pan American Airways, Western Air Express, and Ford Air Transport Service not only received mail contracts but also began scheduled commercial passenger service in the continental United States.

To encourage commercial development, aviation industry leaders wanted federal action to improve safety standards and develop critical navigation aids. At their urging, Congress passed and President Calvin Coolidge signed the Air Commerce Act of 1926. This legislation mandated the Secretary of Commerce foster air commerce, issue and enforce air traffic rules, license pilots, certify aircraft, establish airways, and operate and maintain aids to air navigation. Secretary of Commerce Herbert Hoover created a new Aeronautics Branch in the Department of Commerce and appointed William P. MacCracken, Jr., as its first director.

On December 31, 1926, MacCracken issued the first air commerce regulations. Development of the regulations had not been easy. As Secretary Hoover pointed out, "There was no precedent for such regulations. Aircraft operations and activities in the United States are on a broader scale and more diversified than in other nations; and the regulations had to take into account existing types of war surplus and rebuilt aircraft as well as anticipate new construction of known types and the development of new types."[2]

[1] "Aviation in Alaska," *Air Commerce Bulletin* 5, no. 9 (March 14, 1934): 225.

[2] Department of Commerce, *Fifteenth Annual Report of the Secretary of Commerce* (Washington, DC: US Government Printing Office, 1927), 23.

New regulations required all aircraft engaged in interstate or foreign commerce to be licensed and marked with an assigned identification number. Pilots of licensed aircraft had to hold private or commercial licenses. Commercial pilots were initially classed as either transport or industrial. The rules also required mechanics repairing aircraft engaged in air commerce to secure engine or airplane mechanic licenses, or both. Owners, pilots, and mechanics had until March 1 (later extended to May 1), 1927, to place their applications on file. Pending action on the applications by the Aeronautics Branch, those applying by the specified date could continue operating as previously until July 1, 1927. Failure to apply as required was punishable by a $500 fine.

The Aeronautics Branch hired fifteen men as the original corps of aircraft and engine inspectors. It hoped to increase that force to fifty by the following year. The inspectors initially had five aircraft at their disposal, and they had assigned duties in the Lower 48 states, not in the U.S. territories.[3]

The aviation regulations prescribed operational and air traffic safety rules. In addition, the Aeronautics Branch took over the building and operation of the nation's system of lighted airways, worked to improve aeronautical radio communications, and introduced radio beacons as an effective aid to air navigation. Branch researchers explored ways to improve aircraft structural and cabin safety and developed landing aids, such as the instrument landing system. In 1934, the Department of Commerce renamed the Aeronautics Branch the Bureau of Air Commerce to reflect the growing importance of aviation to the country. In 1936, the bureau began en route air traffic control.

While the Department of Commerce worked to improve aviation safety, a number of high profile accidents called the department's oversight responsibilities into question. A 1931 crash that killed all on board, including popular University of Notre Dame football coach Knute Rockne, elicited public calls for greater federal oversight of aviation safety. Four years later, a DC-2 crash killed U.S. Senator Bronson Cutting of New Mexico.

To ensure a federal focus on aviation safety, President Franklin Roosevelt signed the Civil Aeronautics Act in 1938. The legislation established the independent Civil Aeronautics Authority (CAA), with a three-member Air Safety Board that would conduct accident investigations and recommend ways of preventing accidents. The legislation also expanded the government's role in civil aviation by giving CAA power to regulate airline fares and determine the routes individual carriers served. On the eve of America's entry into World War II, for defense purposes, the CAA extended its air traffic control (ATC) system to include operation of airport towers.

In 1940, President Roosevelt reorganized the CAA and created the Civil Aeronautics Administration (also called CAA), which reported to the Secretary of Commerce. A new Civil Aeronautics Board became responsible for economic oversight of the airlines and accident investigation.

[3] Ibid.

Building an Aviation Industry

Transportation throughout the Alaska Territory was difficult. Alaska had few paved highways. The Alaska Railroad extended inland only from Seward to Fairbanks, a distance of almost 470 miles. Many of Alaska's rivers were navigable, but only during the short summers. Most of the fisherman, miners, prospectors, and trappers in the interior relied on sled dog teams.

Aviation seemed to be the answer to Alaska's transportation problems. Although several individuals began aircraft operations in the territory on a charter basis in 1922, they were small and sporadic. By late 1926, only three companies operated in the territory. Two had headquarters in Fairbanks and one in Nome.

When the Aeronautics Branch became operational in 1926, it had neither the fiscal nor manpower resources to have much of an impact on aviation in Alaska. The Aeronautics Branch hired bush pilot Carl Benjamin "Ben" Eielson as the first federal inspector in Alaska. He began his duties on September 6, 1927, and worked part-time inspecting aircraft, pilots, mechanics, and airfields. He resigned the position on April 15, 1929. Eielson died in a plane crash almost seven months later while on a rescue mission.[4]

Despite the lack of federal aid, Alaskans recognized the importance of establishing an aviation infrastructure. During fiscal year 1927 (July 1, 1927 through June 30, 1928), the Alaska territorial legislature passed a general act authorizing the construction and maintenance of aviation fields under road and trail expenditures. The expenditures could not exceed 30 percent of available road and trail funds. The legislature also provided a subsidy for two annual airplane mail trips during April and May for the biennium between the terminus of the Alaska Railroad and the Seward Peninsula.

Hoping to encourage air travel, in 1927, the territorial government constructed airfields at:

- Anchorage
- Barry's Landing
- Cache Creek mining district
- Council
- Curry
- Eagle
- Fairbanks
- Moose Creek coal mining district
- Nenana
- Seward
- Telida
- Teller
- Valdez
- Wasilla
- Willow Creek mining district

[4] "Memory of Ben Eielson Lauded in Upper House," *Fairbanks Daily News-Miner*, April 25, 1930; O. B. Burtness, "Carl Ben Eielson," Address Given at the Memorial Convocation Exercises, University of North Dakota, October 9, 1930, *The Quarterly Journal* 21, no. 2 (North Dakota: University of North Dakota, 1931): 121; George King, "Letters to the Editor," *Fairbanks Daily News-Miner*, March 12, 1958.

Anchorage Delaney Park Field, 1924
Courtesy: Alaska Aviation Heritage Museum

During the year, an aviation company opened in Anchorage, operating with two new Stinson Wright Whirlwind engine-powered planes, bringing the total to eight commercial planes operating in the territory. Between March 31, 1925, and March 31, 1927, the companies flew 269 trips, totaling 95,000 miles, and carried 16 tons of cargo and 415 passengers.[5]

The advent of air transportation had some negative impact on the other major mode of transportation in Alaska – the dog sled. As the F*reeport Journal-Standard* (Illinois) reported: "With airplanes coming into use all over Alaska for freight transportation, dogs are being used less and less on the trails. Consequently, there is an over-supply and hundreds of huskies, abandoned, have reverted to the wild state and are becoming the most dangerous kind of marauders."[6]

Homesteaders and prospectors also took issue with the "invasion" of airplanes into the remote areas of Alaska. Planes facilitated the commercialization of big game hunting in the territory, as airline companies began operating them from the terminus of the railroad into the mountain regions. Residents in those regions complained that the hunters were depleting the animals they relied on for subsistence. They said that "game was once plentiful and was killed only for meat. Now, they allege, tons upon tons of meats are left to rot in the hills because the hunters kill only to obtain heads as trophies."[7]

Governor George A. Parks
Courtesy: Library of Congress

Despite such complaints, in 1928, Territorial Governor George A. Parks enthusiastically reported, "Aviation has progressed in the Territory far beyond the expectations of its most optimistic advocates." A number of landing fields now existed in the territory, making "it possible to give airplane transportation to most of the important places in the interior of Alaska. Many localities heretofore inaccessible are now within easy reach of the larger centers." During the year, a fourth commercial aviation company opened in Alaska, becoming the third company based in

[5] Department of the Interior, *Report of the Governor of Alaska to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1927), 19-20.
[6] "Planes Displace Dogs," *Freeport Journal Standard* (Illinois), September 9, 1927.
[7] "Hunters Use of Plane Protested in Alaska," *Kingsport Times* (Tennessee), January 3, 1928.

Fairbanks (the operator in Nome had ceased operations). The new company operated with one aircraft. A flight school also opened in Fairbanks. To encourage more aviation companies, the territorial government constructed additional landing fields at:

- Beaver
- Candle
- Cantwell
- Circle Hot Springs
- Copper Center
- Cordova
- Fortuna Ledge
- Healy
- Kantishna
- Kasilof
- Kenai
- Lake Minchumina
- Lower Tonsina
- McCarthy
- Moses Point
- Ninilchik
- Palmer Creek.[8]

The opening of landing strips throughout Alaska led to a Department of Interior experiment. Prior to 1928, U.S. Geological Survey employees had gone into Alaska's interior every summer to map the territory. For thirty years, these mappers had traveled by dog sled and pack trains to reach the interior, a trip that took three weeks. In 1928, however, three Interior employees traveled into the interior by plane, a trip that took only an hour and fifteen minutes, expediting their work. The return trip, however, proved lengthy, as the Department of Interior had made no provision for financing an airplane for the return trip, so "there was no alternative but to walk."[9]

Alaska also became a stopping point for explorers and adventurers. On May 14, 1926, for example, the semi-rigid airship, *Norge*, landed in Teller after becoming the first aircraft to fly to the North Pole and the first to fly over the polar ice cap between Europe and the United States. The *Norge's* expedition, led by Roald Amundsen, ended in Teller. Amundsen shipped the airship, damaged as it landed in Alaska, back to Norway. In 1931, Charles and Anne Lindbergh stopped in Point Barrow, Shishmaref Inlet, and Nome as they made a survey flight to the Orient. That same year, Wiley Post and Harold Gatty made stops in Nome and Fairbanks on their flight around the world. In Post's 1933 solo round-the-world flight, he stopped in Flat for repairs and in Fairbanks.

[8] Department of the Interior, *Report of the Governor of Alaska to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1928), 8-9.
[9] "Alaska and Airplanes," *Indiana Gazette*, October 15, 1928.

Post and humorist Will Rogers met their untimely death in an August 15, 1935, crash near Barrow as they tried to find an air route from the West Coast of the United States to Russia. Flying a nose-heavy Lockheed Orion fuselage, coupled with wings from a Lockheed explorer and fitted with floats from a Fokker aircraft, Post and Rogers had flown from Fairbanks and landed near Barrow to repair the engine. After eating dinner with local Alaskan natives, the two took off in fog.[10] Upon take off the plane's motor apparently stalled and the airplane crashed killing both men.

From left to right, Will Rogers, Alaskan musher Leonhard Seppala, Wiley Post, and pilot Joe Crosson stand near Post's Lockheed monoplane on a floatplane dock on the Chena River near Fairbanks
Courtesy: NASM

Upon hearing of the crash, President Franklin Roosevelt said Post "leaves behind a splendid contribution to the science of aviation. Both [men] were outstanding Americans and will be greatly missed." Alaska Governor John Troy remarked, "The feeling of loss reaches into Alaska and is particularly personal as they were the guests of the territory." He continued, "Wiley Post had come to be regarded as a real Alaskan in all that term means."[11]

Unique Flying Conditions

Flying remained dangerous in Alaska in the early years, especially since the airplanes, built and sold by companies in the continental United States, or the Outside as called by Alaskans, were not well equipped for Alaska's flying conditions. Alaska's aviation pioneers, however, learned quickly to adapt the planes to the territory's particular needs. These adaptations amused and bemused the rest of the country. For example, one newspaper reported on a "winged sky freak" being shipped to Alaska. "To cope with any conditions that may develop in the vicinity of Mayo, Eagle or Fairbanks, the machine is equipped with skis, pontoons and wheels, so logically it might be 'amskiphibian.'"[12]

In another uniquely Alaskan experiment, the airlines kept carrier pigeons on board during the winter for "conveying messages of distress in

[10] "Will Rogers and Wiley Post Die in Plane Crash," *St. Louis Star and Times*, August 16, 1935.
[11] "Plane Winging Way Back with Bodies of Fliers," *Herald-News* (New Jersey), August 17, 1935.
[12] "Alaska Has Airplane to Roll, Float or Ski," *Brooklyn Life and Activities of Long Island Society*, October 13, 1928.

case of" an accident. "All planes doing winter flying now are equipped with compartments in which the little messengers live while touring the north by air." The pigeon experiment "was the result of several near-tragedies where aviators, operating freight and passengers service to all parts of the territory, were forced down in remote districts."[13]

Rapidly changing weather conditions proved to be one of the most dangerous parts of Alaskan flying. To help provide reliable aviation weather reports, on March 17, 1929, the U.S. Weather Bureau opened its first airways weather station in Fairbanks. Fairbanks also housed the headquarters for the airways weather service. Throughout the year, the Weather Bureau opened additional weather stations at Anchorage, Bethel, Crooked Creek, and Dillingham. Intermediate stations reported visibility, height of clouds, and general flying conditions. Barrow, on the northern Arctic coast, also sent aviation weather information. Officials believed it would take two to three years to adequately organize the airways weather service throughout Alaska.[14]

With little help or support from the fledgling Aeronautics Branch to improve and promote aviation in Alaska, on May 29, 1929, the territorial government approved a new law that adopted the "policy, principles, and practices established by the United States Air Commerce Act of 1926, and all amendments thereto." The new law gave the territorial highway engineer responsibility to administer the provisions of the act and authorized him "to make such regulations as are necessary to execute the functions vested in him by this act, including air traffic rules, which regulations shall conform to and coincide with, so far as possible, the provision of the Air Commerce Act of 1926."[15]

The highway engineer was also directed to promulgate regulations "requiring aircraft flying over sparsely settled country to carry rations, clothing, and other special facilities for the protections of passengers and pilots in case of emergency. No regulations shall require more than 15 pounds per person." The highway engineer had authority to issue temporary, thirty-day pilot licenses in emergency situations. In addition, on the last day of each month, each person operating a civil aircraft within the territory had to report to the Office of the Territorial Highway Engineer: the number of trips flown during the month, total miles flown, number of passengers carried, total number of passenger miles, amount of express (packages) carried in pounds, and the amount of freight carried in pounds.[16]

[13] "Pigeons Used to Lower Winter Flying Hazards," *Freeport Journal-Standard* (Illinois), January 2, 1929.
[14] Department of Interior, *Report of the Government of Alaska to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1929), 33. Department of Commerce, *Airway Bulletin No. 9* (Department of Commerce: US Government Printing Office, 1927), 1, listed one US Weather Bureau Meteorological Station in Juneau, Alaska.
[15] Department of Commerce, Aeronautics Branch, *Aeronautics Bulletin No. 18*, "State Aeronautical Legislation and Compilation of State Laws, Revised to September 1, 1929" (Washington, DC: US Government Printing Office, 1929): 10-11.
[16] Ibid.

The number of landing fields in Alaska increased to fifty-seven in 1929. The governor reported the Anchorage and Fairbanks fields had two runways. The Fairbanks field had "modern" lighting, including an airport flood light and a beacon airport flasher. He also reported that similar equipment was planned for the Anchorage field. The Aeronautics Branch, however, listed Weeks Field, owned and operated by the city of Fairbanks as occupying thirty acres, with two 2,000-foot by 4,000-foot runways in the shape of a cross. It said the airfield had no services and no lighting. The branch identified Anchorage Aviation Field, owned and operated by the city of Anchorage, as sitting on eighteen acres, with one 1,950-foot by 400-foot runway, with no lighting and no services. The branch also listed a third airport – Fort Yukon Aviation Field – owned and operated by the territory and local community. That field sat on nine acres and had one 1,400-foot by 300-foot runway and no services and no lighting.[17] One of the Fairbanks-based aviation companies ceased operations during the year. The Washington-Alaska Airways of Seattle, incorporated in Seattle, began flying between Seattle and Alaska and within southeastern Alaska.[18]

Federal Inspectors

Governor Parks reported in 1929 that "For the first time in the history of the Territory the transportation service is ahead of communication facilities. A number of isolated communities, which already are provided with Territorial aviation fields, are without telephone or telegraphic communication with existing aviation centers. This situation impairs the full economic benefits possible from aerial transportation in Territorial development." The governor recommended that "every possible encouragement and aid by both the Federal Government and Territory should be rendered" to encourage the growth of aviation.[19] This theme was echoed for several years. In 1930, for example, Governor Parks lamented, "Up to the present time landing fields, airports, and all other facilities have been provided by the Territory. The Federal Government has not participated to any great extent in the progress of aviation in the Territory."[20]

While waiting for its federal counterparts to engage more fully in the development of Alaska aviation, the territorial government continued to build infrastructure that would promote aviation for business and pleasure. The Alaska Road Commission published a comprehensive book on Alaska's

[17] Department of Commerce, *Airway Bulletin No. 740* (September 11, 1929): 2; *Airway Bulletin No. 743* (September 14, 1929): 2; *Airway Bulletin No. 744* (September 14, 1929): 2.
[18] Department of the Interior, *Report of the Governor of Alaska to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1929), 31-32.
[19] Ibid., 32-33.
[20] Department of the Interior, *Report of the Governor of Alaska to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1930), 13.

landing fields in 1930. Hoping to attract fliers from the Lower 48 states, the commission's book included descriptive information for each of the territory's sixty-one landing fields. It included the size and layout of each field, the number of landing strips, longitude and latitude, and altitude above sea level. In addition, the "flier is told whether gas, oil, spare parts and mechanics are available and what sort of accommodations he may find."[21]

In early 1930, the Aeronautics Branch appointed its second part-time inspector for Alaska. Major Wiley Wright worked out of the branch's Portland, Oregon, office.[22] In May 1930, he spent several months in the territory licensing and inspecting pilots, aircraft, and mechanics. He returned in April 1931 to carry out his annual inspection duties. While in Alaska, he met with Governor Parks. As Wright explained, they talked about the "aeronautical situation in the Territory." He explained to the governor that he "appreciated that owing to the more or less isolated condition of the Territory . . . there has been some laxity on the part of enforcing officials as well as lack of adherence to regulations by various operators in the Territory." As a result of the meeting, the Governor and Wright agreed "that regulations pertaining to the industry in Alaska should be rigorously enforced as are the regulations Outside."[23]

Perhaps to assuage any fears about his new stricter enforcement policy, on an inspection stop in Ketchikan in June, Wiley praised Alaska's pilots. He called the pilots the "true sons of the great Northland," and compared them with "the hardy pioneers" who developed Alaska. He also said that "history will show that aviation has played a great part in development work, and will play a still greater part in the future."[24]

To ensure greater compliance with aviation regulations, the Aeronautics Branch sent another inspector to Alaska in November 1931. Glen Niel, from Helena, Montana, spent only a couple weeks in the territory. He traveled to Valdez, Fairbanks, Nome, Anchorage, Juneau, and Ketchikan and inspected about twenty-seven planes and forty airmen. Prior to leaving Alaska, he remarked that the territory was "fortunate in having such excellent aviation facilities. The pilots, mechanics and operators are as competent as are to be found anywhere."[25]

[21] "Commission Book Describes Aerial Fields in Alaska," *Fairbanks Daily News-Miner*, May 8, 1930.
[22] "Dept. Commerce Inspector Here," *Fairbanks Daily News-Miner*, May 13, 1920; "Dept. Working for Air Safety States Wright," *Fairbanks Daily News-Miner*, May 22, 1930; "Government Will Inspect Aircraft Northern Fields," *Fairbanks Daily News-Miner*, April 11, 1930; "Waco Coming to Anchorage Base; McDonald Agent," *Fairbanks Daily News-Miner*, May 23, 1930.
[23] "Wright on Job Again," *Fairbanks Daily News-Miner*, April 17, 1931; "Wright to Be Strict," *Fairbanks Daily News-Miner*, April 23, 1931; "Air Rules Will Be Stricter," *Fairbanks Daily News-Miner*, April 28, 1931.
[24] "Major Wright Compliments Alaska Fliers," *Fairbanks Daily News-Miner*, June 16, 1931.
[25] "Plane Inspector Sails for Alaska," *Fairbanks Daily News-Miner*, October 28, 1931; "Dept. Commerce Inspector Arrives," *Fairbanks Daily News-Miner*, November 9, 1931; "Aircraft Inspector Leaves," *Fairbanks Daily News-Miner*, November 16, 1931.

Aeronautics inspector Edison Mouton made the trip to Alaska in late March 1932. He found it remarkable that despite flying conditions, "there have been no fatalities in regular operation of air service." He said, however, that "there is much room for improvement in landing facilities." While in the territory, he met with Governor Parks and U.S. Marshal Lynn Smith to find a way to ensure stricter oversight of aviation regulations. As a result, Smith designated Deputy Marshal Fred B. Parker as deputy-in-charge of enforcement of air regulations in Fairbanks, Deputy Charles D. Jones in charge in Nome, Deputy Harry Staser in Anchorage, and Deputy Harvey Sullivan in Valdez.[26]

Inspector Hugh Brewster made the next trip to Alaska in late 1932, but the lack of resources prevented another inspector from making a spring visit in 1933. In March 1933, the *Fairbanks Daily News-Miner* optimistically reported that the Aeronautics Branch had assigned William Shields to permanent duty in Alaska. The article noted, "The aviation industry in Alaska has long attempted to prevail upon the department [of Commerce] to station a man the year around in the territory but previous efforts have been unavailing." Unfortunately, Shields, who was expected to arrive in Alaska later in the month, never came. The lack of a full-time inspector stationed in Alaska irked the territory's aviation community. With only semi-annual or annual visits, pilots and mechanics had to wait to get their licenses, airline companies could not be certified, and required inspections were delayed.[27]

Alaska's nonvoting delegate to the U.S. House of Representatives, Anthony J. Dimond, did what he could to get federal aid to help the aviation community in the Territory. He advocated for the construction of military airfields, expanded air mail service, and the appointment of a permanent inspector. When it seemed likely that the Aeronautics Branch might not send an inspector at all in 1934, Dimond directly lobbied the branch, beseeching it not to ignore Alaska's needs. He succeeded in having Hugh Brewster return for a short period in November. Dimond also asked for a permanent inspector, but officials in the Aeronautics Branch told him "that a lack of funds would prevent that at this time."[28]

Star Air Service Bellanca CH-300 Pacemaker
Courtesy: Roy S. Dickson

[26] "Air Inspector Here," *Fairbanks Daily News-Miner*, March 28, 1932; "Inspector to Look Over Flying Fields," *Fairbanks Daily News-Miner*, March 29, 1932; "Air Progress in Alaska Encouraging," *Fairbanks Daily News-Miner*, April 7, 1932.
[27] "Inspector of Airplanes is in Fairbanks," *Fairbanks Daily News-Miner*, November 7, 1933; "Assign Inspector to Alaska," *Fairbanks Daily News-Miner*, March 2, 1933.
[28] Bob Bartlett, "Dimond Brings Alaska's Air Need to Fore," *Fairbanks Daily News-Miner*, April 12, 1934; Bob Bartlett, "Our Interests at National Capital," *Fairbanks Daily News-Miner*, November 14, 1933; "Inspector of Airplanes."

Aviation Growth

Aviation growth in Alaska necessitated the need for a fulltime Aeronautics Branch inspector. By 1934, the territory had seventy-seven airports and auxiliary fields. Only the airports at Fairbanks and Anchorage had lights and hangars. The Weather Bureau and the War Department provided weather information to pilots from forty-five radio stations. Eleven aviation companies had established charter or scheduled operations. Those companies included the following:

- Alaska Air Express, Inc., charter service from Anchorage
- Edw. Lerdahl and F. V. Pollack, charter service from Fairbanks
- Gillam Airways, Inc., charter service from Chitina
- Ketchikan Airways, Inc., charter service from Ketchikan
- Linious McGee, charter service from Anchorage
- Nat Browne Flying Service, Inc., charter service from Fairbanks
- Northern Air Transport, Inc., charter service from Nome
- Pacific Alaska Airways, Inc., a subsidiary of Pan American Airways, scheduled service from Fairbanks
- Service Air Lines, charter service from Fairbanks
- Star Air Service, Inc., charter service from Anchorage
- Wien Airways of Alaska, Inc., charter service from Fairbanks[29]

Alaska Air Express based in Fairbanks held the only approved repair station certificate in Alaska, although several of the airlines employed licensed mechanics. The territory had thirty-five licensed pilots and thirty-seven licensed aircraft.[30]

The airplane proved a godsend to mining companies. Located in fairly inaccessible parts of the territory, miners often had to wait weeks and even months for supplies, spare parts, and new equipment. According to Clarence William Poy, manager of the Big Four gold mine, before airplanes came to the Alaska, he had to have heavy equipment transported by horse and wagon at thirty-five cents a pound, which generally took four months to get to the mine. In 1934, however, he chartered an airplane when he needed to bring in a sixteen-ton mill, a crusher, pipes, materials for a bunk house, oil, coal, dynamite, groceries, and other equipment. Delivery took a week and cost only four cents a pound.[31]

The only delivery problem occurred when the mine needed a new diesel engine. The snow had melted at Valdez, and the plane had to take off for the interior with wheels. The snow at the mine, however, necessitated landing with skis. Poy and the airline company decided to drop the engine at the site using a parachute. As Poy explained, "the engine was disassembled into four

[29] "Aviation in Alaska," *Air Commerce Bulletin* 5, no. 9 (March 15, 1934): 226-229.
[30] Ibid.
[31] "Mining with Wings in Alaska," *The Literary Digest* (March 2, 1935): 18.

parts, and each section tied up in mattresses. A large parachute was attached to each, and the pilot landed them one at a time, in the snow near the mouth of the mine." This dropping technique worked so well that the miners used it for ongoing supply needs such as lumber, steel drills, and boxes of dynamite.[32]

In addition to carrying passengers and cargo, some of the airlines carried the mail under contract to the U.S. Post Office Department. The Post Office had earlier established what it termed star routes to carry mail into the interior. Sled dog teams primarily served the routes until 1929 when airplanes began to replace them.[33]

Preparing an aircraft for flight in Alaska required some unique adaptations. In addition to mounting the aircraft on skis in the winter and pontoons or wheels in the summer, the low winter temperatures required special motor cowl features. For example, the planes had protective plates installed between the cylinders and in front of the carburetor. Mechanics reversed the carburetor air scoop so it would open to the rear, and the carburetor and cabin were heated by the motor. In addition, often the propeller pitch had to be adjusted by as much as 1.5 degrees because of the atmospheric pressure.[34]

Many of the planes had no radio equipment. During the winter, pilots carried a motor tent, gasoline heating stove, cans for draining the oil, emergency tools, and repair materials. In addition, most carried a rifle, ax, matches, concentrated foods, snow shoes, and sleeping bags for each passenger. Because most winter operations were in subzero temperatures and most landing fields had no facilities for storage and maintenance, pilots took unusual precautions to keep their aircraft airworthy. When landing on skis, the pilot had to ensure the skis did not freeze to the snow. They also had to drain and store the oil and cover the engine. It generally took one to two hours before a flight to heat the oil and engine and to clear the plane from snow before they could take off.[35]

A Small Federal Presence

The U.S. government slowly began to recognize the growing importance of Alaska to the national economy. It also realized that in Alaska the airplane was an economic necessity, not a novelty. With this realization, federal aid and oversight slowly began to come to Alaska to encourage and boost commercial and private flying in the territory, and, of course, to enhance safety.

In July 1934, the Bureau of Air Commerce designated Murray Hall as

[32] Ibid.
[33] "Aviation in Alaska," *Air Commerce Bulletin*, 226.
[34] Ibid, 227.
[35] Ibid.

the first full-time aeronautical inspector for permanent duty in Alaska with the title of supervising inspector. His headquarters was in Anchorage. His duties included examination of airmen and aircraft for licensing, enforcement of airline regulations and air traffic rules, inspection of flying schools, rating of airports, and all other matters under the jurisdiction of the Department of Commerce. An important part of these duties was to cooperate closely with the territorial government in seeking to develop airports and stimulate interest in flying. Hall flew a Bureau of Air Commerce plane, equipped for Alaskan flying conditions to his new post.[36] By 1936, Hugh Brewster returned to Alaska to replace Hall.[37]

To aid pilots in obtaining required medical examinations, the Aeronautics Branch appointed medical examiners in Anchorage, Cordova, Fairbanks, Juneau, Nome, and Seward. The doctors did not work directly for the Aeronautics Branch. They received no pay from the federal government but collected a fixed fee from those they examined.[38]

Growing concerns about the safety of the aviation system in the continental United States led Congress to establish the Federal Aviation Commission in June 1934, as mandated by the Black-McKellar Act of 1934, also known as the Air Mail Act of 1934. The committee's mandate was "to make an immediate study and survey, and to report to Congress . . . its recommendations of a broad national policy covering all phases of aviation." The five-member commission first met on July 10, 1934. Members subsequently toured the nation's aeronautical centers and surveyed European and Caribbean aviation facilities. It held formal hearings beginning on September 24 that lasted for six weeks.[39]

On January 30, 1935, the commission submitted 102 recommendations to Congress. The comprehensive recommendations laid the groundwork for the passage of the Civil Aeronautics Act of 1938. With respect to Alaska, the commission recommended: "Air transport in American territories and possessions should be developed, and in particular there should be an increase in air transport service and ground facilities available for air navigation in Alaska." The commissioners lauded the work of the pilots operating in the territory, saying "the pilots and operators who have gone to Alaska and mastered the technique of Arctic flying and developed the equipment that was required to face temperatures of 50 degrees below zero and snowfalls of 10 feet or more have done a remarkable piece of work."[40]

[36] "Full Time Aeronautical Inspector Assigned to Alaska by Department of Commerce," *Air Commerce Bulletin* 6, no. 1 (July 15, 1934): 20; "Assignments of Bureau of Air Commerce Inspectors," *Air Commerce Bulletin* 6, no. 2 (August 15, 1934): 38.

[37] Hugh Brewster, "Recent Developments in Alaskan Aviation, *Air Commerce Bulletin* 8, no. 7 (January 15, 1937): 153-157; "Assignments of Bureau of Air Commerce Inspectors," *Air Commerce Bulletin* 8, no. 5 (November 15, 1936): 134.

[38] Ibid.; Theresa L. Kraus, "Louis H. Bauer and the Origins of Civil Aviation Medicine," *Aviation, Space, and Environmental Medicine* 83, no. 12 (December 2012): 1-3.

[39] United States, Executive Council, *Report of the Executive Secretary of the Executive Council to the President* (Washington, DC: US Government Printing Office, 1934), 40.

[40] United States, Federal Aviation Commission, *Report of the Federal Aviation Commission*

Acknowledging the pioneering work of the Alaskan aviation community, the commission recommended that the "work of the Airways Division of the Department of Commerce be extended to cover Alaska and that the main routes in the territory should be given a communication system and a weather-reporting system comparable with that standard in the continental United States."[41]

The Bureau of Air Commerce Airport Marking and Mapping Section surveyed the existing airport facilities in Alaska in August 1935. The office wanted to determine what it would take to upgrade the facilities to the minimum standard of safety requirements for scheduled airline operations. Based on the bureau's study, Alaska Governor John Troy requested $2.9 million from the Works Progress Administration (WPA) for the construction and improvement of airfields. During the following year, Troy submitted a number of reports and surveys to the Bureau of Air Commerce and the WPA to get funding but too little avail.[42] An allocation of about $100,000 to the Alaska Road Commission enabled the improvement of a few airfields, and the Civilian Conservation Corps did some additional work initiated by the Department of the Interior Forest Service.[43]

By 1936, the number of licensed pilots in the territory had grown to sixty-nine and the number of airfields to eighty-three. Alaska now had twenty-one operators although Pacific Alaska remained the only scheduled airline with one weekly scheduled flight from Juneau to Nome. As Hugh Brewster explained, "The small continuous volume of passenger travel caused by the season[al] nature of the work in the Territory, and the lack of landing fields and weather reporting stations," had prevented the development of scheduled operations.[44]

For some, the lack of funds for aviation development in Alaska seemed politically motivated. As author W. B. Courtney lamented, "The WPA, by its latest official reckoning, has spent more than $70,000,000 of federal money on airport improvement . . . many towns got airports beyond any commercial, sport or military flying they can reasonably be expected to ever see." He continued, "Driftwood, Pennsylvania, for example, with a population of about 250, got $77,000 for a field; while Fairbanks, Alaska, obviously the site for a strategic international airport . . . got nothing."[45] As one journalist wrote, "Alaska's wildcat fliers have accomplished herculean tasks in a decade in opening up their Territory, but they have yet to see the color of Uncle Sam's

(Washington, DC: US Government Printing Office, 1935), 80-81.

[41] Ibid.

[42] Civil Aeronautics Authority, Bureau of Federal Airways, Technical Development Division, "Proposed Program for the Development of Alaskan Airports," Note no. 9 (October 31, 1938): 1-2.

[43] Civil Aeronautics Authority, Bureau of Federal Airways, Technical Development Division, "Proposed Airports Plan for the Territory of Alaska," Note no. 23 (July 1940): 6.

[44] Brewster, "Recent Developments in Alaskan Aviation," 153-157.

[45] W. B. Courtney, "No Place to Land," *Colliers Weekly* (February 26, 1938): 17.

WPA money. There are currently 616 WPA improvement projects at 446 of the continental United States' 2,402 airports at a cost of $56,072,283, but none in Alaska." When asked to explain the lack of funding, Alaskans told the reporter, "We don't vote."[46]

Still pushing to get federal aid for aviation development in Alaska, a frustrated Anthony Dimond testified at a 1938 congressional hearing, "To the best of my knowledge the Department of Commerce has never spent a cent in Alaska for the maintenance of airways or for air-transportation facilities although substantial sums are expended yearly in the United States." Dimond made the case for federal aid saying it would provide great economic benefits to the United States and the people of Alaska. He pointed out that in 1920, only eight planes operated in the territory, and by 1937, that number had increased to 101. In 1929, the number of passengers on those planes totaled 2,171, and by 1937, the number had grown exponentially, totaling 20,958. Cargo operations had increased at an even higher rate from 118,961 pounds in 1929 to 3,184,268 pounds in 1937.[47]

Perhaps more importantly, according to Dimond, the construction of naval and air bases in Alaska would be critical to any United States war effort. With war already brewing in Europe and Asia, Dimond stated, "The short route between the Orient and the United States lies by way of Alaska." He argued, "Think of the destruction that could be made upon the forests and cities of the western part of the United States if a hostile nation had Alaska."[48]

During its 1937 session, the territorial legislature passed the Alaska Aeronautics Act, which established the Alaska Aeronautics and Communications Commission to "promulgate general rules and regulations for the supervision of aeronautics and communications within the Territory; to make recommendations for establishment and operation of airports, landing fields, and navigation aids, for the establishment and operation of air schools and clubs; for the establishment of radio equipment on airplanes, and territorial radiotelephone stations." The commission consisted of the territorial governor as chairman, four members from the aviation industry, and one from each division of the territory.[49] The commission undoubtedly would help lobby the Department of Commerce for aid.

In May 1938, the Department of the Interior, which oversaw the territory, requested the Bureau of Air Commerce to prepare a report for the estimated cost of constructing 106 airports in Alaska, which would serve modern

[46] "Sky Skis: Planes, Just Taxis to Alaskans, Take Off Over Snow for Teachers' Yuletide," *The Literary Digest* (December 26, 1936): 32.
[47] *Hearing before the Subcommittee of the Committee on Appropriations, House of Representatives*, Interior Department Appropriation Bill for 1939, part 1, 75th Congress, 3d session, January 18, 1938, 912.
[48] Ibid.
[49] *Annual Report of the Governor of Alaska to the Secretary of the Interior for the Fiscal Year Ended June 30, 1937* (Washington, DC: US Government Printing Office, 1937), 34.

high-speed, multi-engine transport aircraft.[50] On October 12, representatives from the Civil Aeronautics Authority (CAA, formerly the Bureau of Air Commerce), U.S. Army Air Corps, U.S. Navy Bureau of Aeronautics, Coast Guard Aviation Division, and the Department of Interior Division of Territories met to discuss plans for federal aviation aid to Alaska. The committee believed "that the military importance of these airports should in itself be sufficient to justify Federal participation in the cost of construction." Noting that the "foreign policy of this Government previously prevented airport development in the Territory, but this foreign policy is no longer in effect and can be entirely disregarded." The committee recommended that the Civil Aeronautics Authority request the Bureau of the Budget appropriate the following preliminary amounts for the Alaskan Airport Development Program:

- $5,563,133.00 for nine major terminals – Anchorage, Cordova, Fairbanks, Juneau, Ketchikan, McGrath, Nome, Ruby, and Tanana Crossing
- $3,525,000.46 for twenty-one intermediate secondary airports – Bethel, Big Delta, Deering, Dillingham, Donnelly, Flat, Golognin, Gulkana, Healy, Kodiak, Kotzebue, Koyuk, Nulato, Seward, Skagway, Talkeetna, Tanana, Unalakleet, Valdez, Wiseman, and Yakutat
- $1,814,921.87 for twenty-nine emergency fields along the coast – Bear Creek, Baldwin, Bluff, Bremner, Cache Creek, Candle, Cantwell, Cape of Prince Wales, Council, Curry, Goodnews Bay, Haycock, Kasilof, Kenai, Kiwalik, Lower Tonsina, Moose Creek, Ninilchik, Selawik, Sitka, Solomon, Susitna Station, Teller, Thompson Pass, Tin City, Wasilla, Willow Creek, Willow Creek Mines, and Willow Station
- $5,339,921 for forty-seven interior fields – American Creek, Battles River, Boundary, Brooks, Chena Hot Springs, Chicken, Chichagof, Chisana, Chistochina, Chiznik, Circle Hot Springs, Copper Center, Cripple Creek, Eagle, Farwell Lake, Fort Yukon, Gakona, Ganes Creek, Hoonah, Hot Springs, Jack Wade, Kaltag, Kobuk, Lost River, Lower Kougarok, Manley Hot Springs, May Creek, McCarthy, McKinley Park, Medfra, Moses Point, Nabosna, Nenana, Norvik, Ophir, Palmer Creek, Peters Creek, Pilgrim Hot Springs, Poorman, Point Barrow, Slate Creek, Squirrel River, Takotna, Taylor Creek, Tolovana, Tonsina, and Valdez Creek[51]

[50] Civil Aeronautics Authority, "Proposed Program for the Development of Alaskan Airports," 2.
[51] Ibid., 2-42.

Although Alaska did not get the millions of dollars it hoped for, the Bureau of Air Commerce slowly began to provide some development aid. In April 1938, supervising aeronautical inspector for Alaska, Hugh Brewster, announced that $80,000 worth of improvements to aviation facilities in Anchorage were either underway or scheduled to begin. Those projects included the extension of the three runways at the Anchorage airport at a cost of $10,000 and the installation of the telephone line to Lake Spenard at a cost of $2,500. The runway extension project would result in one runway at the airport lengthened to more than one mile long so it could handle "large, modern planes." The bureau also planned installation of a $7,500 water main at Merrill Field and the construction of a canal between Lake Spenard and Lake Hood at a cost of $60,000 that would accommodate seaplanes. In addition, the Anchorage projects, Brewer also said he hoped to build two emergency landing fields in Rainy Pass.[52] Brewster subsequently announced the installation of aeronautical radio stations at Anchorage and Fairbanks. The bureau would supply the equipment, and the Alaska Aeronautics and Communications Commission would install and operate the facilities.[53]

Federal Aid

When Alaskans got word that President Franklin Delano Roosevelt planned to "liquidate" the Bureau of Air Commerce in 1938, they were ecstatic that more federal aid would appear. According to an article in *Time* magazine on April 11, the problem in Alaska centered on the bureau's "hampering restrictions" and "red tape," which had hindered aviation development in the territory. Moreover, the bureau had not shown "an understanding of the problems that Alaska fliers face."[54]

President Roosevelt signed the Civil Aeronautics Act of 1938 on June 23. That act abolished the Bureau of Air Commerce and transferred its responsibilities to the new Civil Aeronautics Authority (CAA), which reported directly to the president. It also gave the new organization the authority to regulate air fares and determine the routes that air carriers served. In addition, the legislation mandated the agency undertake a survey of existing airports and provide recommendations by February 1, 1939, on whether and how the federal government should participate in the development, operation, or maintenance of a national system of airports. The establishment of the CAA, no doubt, gave hope to the Alaskan aviation community that sufficient federal aid would soon become available to help strengthen their economic viability.

The CAA began operations on August 22. That month, I. K. Williams succeeded Hugh Brewster as the resident inspector in Alaska. Brewster had served in the territory for three years[55] In 1938, the CAA appointed a second inspector, Charles Burnett, and established an inspection substation in Fairbanks.[56]

Under the new CAA, work continued on the installation of navigation aids in Alaska, using previously appropriated funds. In December, the *Fairbanks Daily News-Miner* reported on two radio beam ranges and three aeronautical radio stations under construction. The Alaska Aeronautics and Communications Commission had completed the radio stations in Fairbanks and Anchorage and had begun construction of permanent stations at Cordova, Juneau, and Ketchikan and a temporary station in Nome. The commission, with some funding from the CAA, had started construction of a radio beam facility on Ralston Island, about twenty miles from Juneau and one on Gravina Island, southwest of Ketchikan. The low-frequency radio station helped pilots stay on course, especially during periods of poor visibility. According to the commission's G. E. Goudie, the installations "are being made according to the recommendations of, and with the co-operation of the CAA . . . the territorial commission is following the CAA program until the CAA has funds to take it over." The CAA planned to install navigation aids on all the principal air routes in Alaska.[57]

During its internal budget request discussions in early 1939, the CAA determined it needed $4 million for fiscal year 1939 to build an air route, with navigation aids, from Ketchikan proceeding along the coast to Anchorage "cutting in to Fairbanks, and proceeding westwardly to Nome." The Bureau of the Budget, however, cut the request to $1 million, which was the number CAA officials defended during appropriations hearings.[58]

With the one $1 million appropriated, I. K. Williams told the Anchorage Chamber of Commerce that the CAA would start surveying a beacon line from Ketchikan to Nome by way of Anchorage in May. He expected the CAA would need at least fifty men stationed in Alaska for the project. CAA engineer Marshal Hoppin moved to Alaska to oversee the project.[59] With funds available beginning August 1, the CAA began hiring contractors to facilitate the construction program.[60] The first radio beam station opened in Ketchikan in May.[61]

[52] "$80,000 in Air Needs in Anchorage," *Alaska Miner*, April 19, 1938.
[53] "Radio Work This Season at Airport," *Alaska Miner*, August 2, 1938.
[54] *Time* magazine article quoted in "Plans to Liquidate Air Bureau," *Alaska Miner*, May 3, 1938.

[55] "New Official," *Alaska Miner*, August 23, 1938; "New Aviation Official On 1st Visit Here to Get Acquainted with Airmen," *Alaska Miner*, September 6, 1938.
[56] *Report of the Governor of Alaska to the Secretary of the Interior*, 1939, 42; "Inspector is Back at Post," *Fairbanks Daily News-Miner*, April 27, 1939.
[57] "Beams, Aeronautical Radio Stations to Air Airmen in Northland," *Fairbanks Daily News-Miner*, December 8, 1938; "Radio Beam Stations to Aid Airmen," *Fairbanks Daily News-Miner*, December 9, 1938; *Report of the Governor of Alaska*, 1939, 43.
[58] "Ask Over Million for Alaska Aviation Aids during Present Year," *Fairbanks Daily News-Miner*, March 14, 1939.
[59] "Aerial Beacons Plan for Alaska," *Fairbanks Daily News-Miner*, April 11, 1930; "Engineer for CAA Works Local Plans," *Fairbanks Daily News-Miner*, June 26, 1939; "CAA Staff is Now in Territory," *Fairbanks Daily News-Miner*, July 19, 1939; "New Officer of CAA Tells of Program Air Aid Radio Stations," *Fairbanks Daily News-Miner*, July 24, 1939.
[60] "Radio Range Work Is Under Way," *Fairbanks Daily News-Miner*, August 27, 1939.
[61] "First Radio Beam Station at Ketchikan," *Fairbanks Daily News-Miner*, May 18, 1939.

As the CAA began construction on a number of new navigation aids, the Alaska Aeronautics and Communications Commission issued a new regulation. The rule mandated that all licensed passenger planes in the territory must install two-way radio communication equipment so pilots could use the CAA's new facilities.[62] Contractors quickly began installing the new equipment under the supervision of CAA engineers. By late August, with site preparations almost complete on the 15.5 acre site in Fairbanks, CAA prepared to install five 140-foot radio beam towers and build a pre-fabricated two-story building to house the transmitter.[63]

While Alaskan aviators were finally getting the navigation aids they had long wanted, they were facing new regulatory mandates. The Civil Aeronautics Act of 1938 gave the CAA power to regulate air mail rates; airline rates, passenger fares, and routes; and some airline business practices, such as records, consolidations, and mergers. The CAA's Director of the Bureau of Economics, R. W. Stough, and CAA attorney William J. Madder, conducted hearings in Anchorage beginning September 1, 1939, to discuss the regulations and discuss the Alaska air carriers' applications for certificates of necessity and convenience under the "grandfather clause" of the 1938 legislation. That clause specified if an air carrier had provided satisfactory service on a route between April 14 and August 22, 1938, the CAA would give it a certificate to continue operations. That certificate would remain in effect until suspended or revoked or until the operation had ceased.[64]

As it turned out, not enough airline company representatives appeared for the hearing in Anchorage, forcing Stough and Madder to schedule additional sets of hearings in Fairbanks, Juneau, and Nome. While in Anchorage, they heard from representatives from Star and Cordova airlines. Reports from those hearings indicated the CAA required Star and Cordova to bring all of their books, prove citizenship and ownership of all aircraft in their fleets, and be represented by all stockholders.[65]

Stough opened hearings in Fairbanks on September 20 to listen to representatives from Gilliam Airways, James Dodson, Lavery Airways, Northern Cross Air Services, Pollack Flying Service, and Wien Alaska Airlines. He said he hoped to receive applications from Alaska Airmotive, Lucien F. Barr, Edward A. Brennan, Robert R. Heard, Lynn Air Service, Eric G. Schutte, Aaron Akin, and Lyle Airways before he left Fairbanks.

[62] "Two-Way Radio for Airplanes," *Fairbanks Daily News-Miner*, July 24, 1939.
[63] "Five Towers Going Up at Range Station," *Fairbanks Daily News-Miner*, August 24, 1939.
[64] Alaska Air Men to Meet in Anchorage," *Fairbanks Daily News-Miner,* August 26, 1939; "Fairbanks Fliers at CAA Hearing," *Fairbanks Daily News-Miner*, August 31, 1939; "Fairbanks Fliers Meet with High CAA Officer in Certificate Hearing," *Fairbanks Daily News-Miner*, September 20, 1939; "'Grandfather Clause" Lifted from CAA Act," *Fairbanks Daily News-Miner*, September 20, 1939.
[65] "CAA Offices May Negotiate in Fairbanks," *Fairbanks Daily News-Miner*, September 2, 1939; "Fairbanks Fliers Meet with High CAA Officer."

Bob Reeve
Courtesy: NASM

Any applicant who filed after he left Alaska, Stough warned, would have to travel to Washington, DC, to present his application.[66] Overall, nearly forty operators filed applications for certificates. Stough conducted hearings on all applications while in Alaska.[67]

Representatives from the Federal Communications Commission (FCC) met with the CAA and the Alaska Aeronautics and Communications Commission in Fairbanks at the same time Stough held his hearings in Alaska. Attendees at those meetings focused on aviation communication needs. At the meeting, the territorial government agreed to transfer six meteorological stations to the CAA, a move that would save Alaska about $5,000 per month. Under the agreement, the CAA would operate and maintain the stations at Anchorage, Cordova, Fairbanks, Ketchikan, Juneau, and Nome, and would also employ the current station personnel.[68]

At the meeting, the CAA announced plans to spend $1 million to build eight simultaneous range broadcast stations located at Anchorage, Cordova, Fairbanks, Juneau, Nome, Ruby, and Yakutat. It also would build six point-to-point communications stations located at Cantwell, Sitka, Skagway, Talkeetna, Wrangell, and Yakataga. Five emergency landing fields would be constructed in Cantwell, Koyuk, Talkeetna, Tolovana, and Yakataga.[69] The CAA later announced it had received approval to expand the radio range to

[66] "Fairbanks Fliers Meet with High CAA Officer;" "John Cross, Pollack End CAA Session," *Fairbanks Daily News-Miner*, September 21, 1939; "CAA Men Will Hear Nome Aces," *Fairbanks Daily News-Miner*. September 25, 1939.
[67] *Civil Aeronautics Authority, First Annual Report of the Civil Aeronautics Authority* (Washington DC: US Government Printing Office, 1940), 25-26.
[68] "Alaska Radio Weather Stations Will Go to Federal Government," *Fairbanks Daily News-Miner*, October 13, 1939.
[69] Ibid.

the Kuskokwim Valley, Tanana Crossing, and Seward Peninsula.[70] The CAA appointed Allen D. Hulen as supervisor of communications in Alaska.[71]

In addition to installing navigation aids throughout Alaska, the CAA also selected the University of Alaska to train pilots as part of its Civilian Pilot Training Program.[72] The program, started by the CAA in 1938, funded universities, colleges, and flight schools to train civilian pilots for possible military service. By law, the program could not discriminate in its selection process, which resulted in a number of women and minorities earning their pilot licenses. By 1944, 1,132 educational institutions and 1,460 flight schools across the country participated in the program, which trained more than 435,000 pilots, with the majority of the graduates entering military service during World War II.

By the end of fiscal year 1939, Alaska boasted that its thirty-one operators, using 175 certified airplanes, had flown 3,232,931 miles; carried 26,699 passengers (5,260,524 passenger miles); and transported 4,174,551 pounds of freight and 544,874 pounds of mail. The territory's 85 commercial pilots could use 127 aviation fields and 18 seaplane ramps, platforms, and floats. None of the fields, however, had boundary, obstruction, or flood lights, and only Fairbanks and Anchorage had beacons. According to CAA's superintendent of airways in Alaska, Marshal Hoppin, "Forced landings, due to weather and other conditions, are made under most adverse circumstances. In many cases it is impossible to salvage the plane, even though the passengers are able to walk out safely.[73]

CAA Douglas DC-3
Courtesy: FAA

Flying in Alaska would soon change for the better. The need for improved aviation safety in the territory and the beginning of war in Europe would soon bring significant federal aid. The war brought the building of major military bases in Anchorage, Fairbanks, and across the territory, along with many civilian airfields and other facilities. The building of the Alaska Highway, along with other new roads and docks, wharves, and transportation facilities also contributed to a period of great change. The federal government spent more than $1 billion in Alaska during World War II.

[70] "Alaska to Have Best Air Aids," *Fairbanks Daily News-Miner*, November 20, 1939.
[71] "CAA Will Take Over AACC Job," *Fairbanks Daily News-Miner*, December 11, 1939.
[72] "Aeronautics Training for University of Alaska Assured by CAA," *Fairbanks Daily News-Miner*, November 15, 1939.
[73] "Progress of Aviation in Alaska," *Civil Aeronautics Journal* 1, no. 6 (March 15, 1940): 78, 88.

"No one need think that Russia and Japan have not been keeping eyes on Alaska and are unaware of her exposed and poorly defended position."[1]

3

World War II

Federal aviation aid to Alaska remained relatively small until the eve of World War II, when lawmakers and citizens alike understood the critical strategic location of the territory. Although work began on military airfields as early as 1939, the fortification of Alaska did not become an urgent national priority until after the attack on Pearl Harbor on December 7, 1941. Alaskans and military strategists alike feared that its enemies would use the territory as a stepping-stone to attack the mainland.

Construction Boom

With the outbreak of war in Europe in September 1939, U.S. policymakers and the military became concerned about securing Alaska because of its strategic position bordering the Pacific Ocean and the Bering Sea. The Army, which had begun construction of Ladd Field near Fairbanks in August 1939, stationed the first Air Corps detachment at the base in April 1940. Two months later, the Army began construction of ground and air facilities at Fort Richardson in Anchorage. By September, the Army began construction of air facilities at Metlakatla, later known as Annette Island Army Airfield. It started construction on Yakutat Army Airfield in October, and later, in July 1941, took over construction of a new airbase scheduled to be built in Nome by the Civil Aeronautics Authority (CAA). The Navy subsequently constructed air and submarine bases at Sitka, Kodiak Island, and Dutch Harbor.[2]

While the military built bases to meet their specific needs, the CAA continued building intermediate landing fields and installing navigation aids

[1] "War in Alaska's Latitudes," editorial, *Fairbanks Daily News-Miner*, April 11, 1940.
[2] Stetson Conn, Rose C. Engelman, and Byron Fairchild, *Guarding the United States and Its Outposts* (Washington, DC: US Government Printing Office, 2000), 231, 243-244.

in Alaska for civil aviation. With military construction ramping up in 1939, the Army requested that the CAA build its landing fields and airports to meet military aviation needs. By February 1940, the CAA and military had agreed to coordinate their construction programs.[3]

To provide additional funding for military airport and landing field construction, Congress appropriated $40 million in 1939 for the construction, improvement, and repair of up to 250 public airports in the United States and its territories to meet national defense needs. Under the Development of Landing Areas for National Defense (DLAND) program, the CAA had responsibility for selecting the airports to receive aid; their choices were approved by a board composed of the secretaries of War, Navy, and Commerce. As part of the DLAND program, the CAA allocated $3.3 million for Alaska airport projects.

Surveys and construction began early in fiscal year 1940 on six new airports in the territory – Boundary, Big Delta, Cordova, Juneau, Nome, and West Ruby. Although some of these cities already had rudimentary landing fields, they did not meet military needs. For example, as one CAA official explained, the field at Cordova "is literally a wide place in the road that leads out from town . . . [it] is situated on the side of a mountain. The runway is 2,200 feet long, with the mountain towering on one side and dropping down to the river on the other." The new airport, on the other hand, located twelve miles from town, would have runways more than 5,000 feet long, capable of handling the largest of military aircraft.[4]

Boundary Field Work Under Way

Supplies and Equipment Moving In—Sixty Men at the Site

Work on the site for the new CAA airfield at Boundary, near the Alaska-Yukon line, is progressing steadily and freight and equipment moving in constantly, reports Bob Reeve, of the Reeve Airways, in Fairbanks today for a new motor for his plane.

Reeve holds the contract for transport of all supplies by air from Nabesna to Boundary for the project, and has made over 100 trips under the contract. He expects to handle approximately 800 tons of material in the service, and to place a large flying freighter in commission on the route soon.

To expedite construction, the CAA sent heavy construction equipment to Alaska from Seattle on the steamships *SS Dellwood* and *SS Baranof*. The shipment included twenty 80-horsepower tractors, four motor graders, twelve angledozers, eight bulldozers, and dozens of other heavy pieces of equipment, as well as spare parts. The ships disembarked the equipment at Nome, and then the CAA trucked the equipment to ten airfield sites as far away as Point Barrow. As one reporter remarked, "No Sahara safari ever faced a more challenging prospect than the tundra trek of the supplies and equipment."[5]

[3] "Progress Made Toward Airport Development," *Fairbanks Daily News-Miner*, January 16, 1940.

[4] "More Allocated Alaska for Improved Airports," *Fairbanks Daily News-Miner*, December 12, 1940; "Alaska Airport Work Progressing Rapidly," *Civil Aeronautics Journal* 2, no. 9 (May 1, 1941): 110-111.

[5] "Caterpillar Caravan Arriving for Tundra Trek North from Nome," *Alaska Miner*, October 29, 1940.

CAA Administrator Donald Connolly explained the need for the heavy equipment, "The original Alaska Airway System was intended primarily to serve civil aviation." However, "since the defense needs of the Army and Navy . . . have been made known to us we are doing everything possible to expedite the program." The heavy equipment was needed because of the territory's "severe weather, intense cold and ruggedness of the country." Once CAA completed the landing fields, communications stations, and airway navigation aids, Connolly said, "Alaska will have an airway and communication service as efficient as any in the United States."[6]

By mid-1940, the CAA had constructed simultaneous radio range and broadcast radio stations adjacent to its new fields. The agency also operated sixteen radio facilities in Alaska and had at least seventeen more planned. At the manned communications facilities, the CAA built "commodious five room homes" for its employees, as well as bachelor quarters. The agency planned to install boundary lights and beacons at six new airports as well as at eleven other fields, including Chignik, Copper Center, King Cove, Naknek, and Tenana Crossing. An initial team of fifty CAA employees oversaw the construction.[7]

The CAA and its contractors faced incredible hardships at these remote construction sites. Otto Nelson, a CAA engineer managing construction of a communications facility near Wales, Alaska, the westernmost city on mainland North America, described some of his issues in letters to his supervisor. To obtain necessary equipment, the CAA had to fly his supplies to Nome, where a tractor was used to move the freight to Tin City, and then brought by small boats to Wales.

He not only found it difficult to obtain construction supplies in a timely manner, but also found himself faced with other unique obstacles. In one letter he remarked, "I have no communication except by plaine [sic] and I never know when the plane will arrive . . . The CAA cannot leave this station without [food] supplies as the only other resource is rotten fish." Nelson reported that with temperatures forty to fifty degrees below zero Fahrenheit, the oil in the outside tanks "looks like lard all frozen up." He wrote, "A lot of things happen at 50 below that don't happen otherwise." In 1943, the CAA camp and the adjacent native Alaskan village suffered from a severe outbreak of the flu. Four of the villagers died, and the community elders asked Nelson to loan them the CAA tractor to haul "the cadevers [sic] to the bone yard;" a request he readily approved.[8]

[6] "C.A.A. Sending Aids for Alaska Airways," *Civil Aeronautics Journal* 1, no. 21 (November 1, 1940): 466.

[7] "Alaska Airport Work Progressing Rapidly" and "24 CAA Men to Build Homes at Ruby," *Fairbanks Daily News-Miner*, August 8, 1940.

[8] Otto T. Nelson, "Alaska Construction Correspondence," documents provided to FAA History

With construction moving at a hectic pace, it is interesting to note that although many believed Alaska might be attacked by Japan, others seemed to view Alaska as a haven ready to explore. In early 1940, the *Christian Science Monitor* published an op-ed asking, "Why Not Alaska for a Winter Vacation?" The piece noted that travelers had four modes of transportation to help them in their Alaska travels – steamer, airplane, train, and sled dog team. It pointed out that "Alaska's growing child of transportation is aviation." In the winter, with the addition of a pair of skis, "the man-made bird is off – humming through the skies happy and carefree."[9]

Once the intermediate fields were operational and navigation aids were in place, on January 27, 1941, the CAA designated its first twelve civil airways in Alaska:[10]

- Ketchikan, Petersburg, Juneau, Haines
- Juneau, Cape Spencer, Yakutat, Cape Yakataga, Cordova, and Anchorage
- Petersburg, Sitka, and Cape Spencer
- Anchorage, Talkeetna, Summit, and Fairbanks
- Fairbanks, Tanana , Ruby, Moses Point, and Nome
- Nome, Kotzebue, and Point Barrow
- Anchorage, Farewell, McGrath, and Nome
- Anchorage, Kenai, Iliamna, and Naknek
- Anchorage, Seward, Kodiak, Chignik, King Cove, and Unalaska
- Kodiak, Naknek, Goodnews Bay, Bethel, and Nome
- Fairbanks, Nenana, McGrath, Aniak, Bethel, Boundary, Tenana Crossing, and Big Delta
- Fairbanks, Cordova, Valdez, Copper Center, Paxson, and Big Delta

In March 1941, Weather Bureau Chief Francis Reichelderfer announced additional weather services for Alaska, which resulted in "pronounced improvement in the air-defense program in Alaska." The new radiosonde observation stations included Anchorage, Bethel, Fairbanks, Juneau, Ketchikan, Nome, and Point Barrow. In addition, the Weather Bureau had another eighteen stations under construction.[11] When the weather stations and CAA's communications system were completed, Alaskan pilots were able to receive hourly reports on airway conditions throughout Alaska.

Despite such advancements, the Army, concerned by what it considered slow progress on the CAA airfields, asked the Army Corps of Engineers to investigate the CAA program and determine whether the Corps should take over the construction program. During the investigation, the CAA vigorously defended its program. Marshal Hoppin pointed out the CAA's

Office by FAA employee Pat Magnuson.

[9] "Why Not Alaska for a Winter Vacation," reprinted from *Christian Science Monitor* in *Hancock Democrat* (Indiana), February 1, 1940.

[10] "Summary of Alaskan CAA Projects Underway and Contemplated," *Fairbanks Daily News-Miner*, April 22, 1941.

[11] Office of Government Reports," *Information Digest* 167 (March 19, 1941): 3.

accomplishments in Alaska and reminded the Corps investigators the CAA had already signed contracts for construction at Boundary, Big Delta, Cordova, Juneau, Nome, and Ruby. He expected the airfields to be completed by January 1, 1942. Specifications had been prepared for Bethel, Gulkana, McGrath, and Naknek. If the CAA received fiscal year 1942 (which began on July 1, 1941 and ended on June 30, 1942) funding, the fields would be nearly complete by early 1942. In addition, CAA crews had single runways (300 feet by 3,500 feet) under construction – or soon to be constructed – at Farewell, Homer, Kenai, Lake Minchumina, Nenana, and Seward, and at one or two other locations. Hoppin explained that all of the runways, except Homer, would soon be operational. After reviewing the CAA plans, the Corps of Engineer officers investigating the CAA construction program concluded that acceptable progress had been made for civilian control of the DLAND program to continue.[12]

With civil and military aviation activities increasing in the territory, on July 1, 1941, Administrator Connolly designated Alaska as the CAA's Eighth Region and announced it would be headquartered in Anchorage. Previously, the territory had fallen under the jurisdiction of the Seventh Region, based in Seattle, Washington. The civil and military importance of Alaska aviation, along with increasing numbers of CAA employees working in Alaska, made the designation a practical decision.[13] Connolly named Marshal Hoppin the region's manager.

Since 1939, Hoppin had been the superintendent of airways in Alaska. In his new position, he continued to oversee the $20 million construction program then underway in Alaska and would "coordinate the work of setting up a service to furnish meteorological and aircraft movement information" in the territory.[14] Hoppin's assistants included: I. K. Williams, supervisor of safety regulation; Walter Plett, superintendent of airways; Burleigh Putnam, Jr., senior aeronautics inspector; E. B. "Fred" Gentry, aeronautics inspector; E.S. Gull, inspector; Jack Jefford, chief patrol pilot; and Allen Horning, pilot.[15] Hoppin oversaw 172 CAA permanent employees in the region.[16]

Jack Jefford became the best known of the CAA's Alaska employees. As the first pilot hired by the CAA in Alaska, Jefford performed myriad duties for the CAA. He and a handful of other agency pilots became the first airway patrol pilots, or flight inspectors in the territory. As the CAA built airbases and installed navigation aids throughout the territory before, during, and after

[12] *Guarding the United States and Its Outposts*, 244-245.

[13] "Alaska Designated as 8th Region of CAA Field Offices," *Civil Aeronautics Journal* 2, no. 15 (August 1, 1941): 190.

[14] "Hoppin Appointed Manager of New Alaskan Region," *Civil Aeronautics Journal* 2, no. 20 (October 15, 1941): 264.

[15] "Hoppin to Head New CAA Area," *Fairbanks Daily News-Miner*, July 25, 1941.

[16] Department of the Interior, *Report of the Governor of Alaska* (Washington, DC: US Government Printing Office, 1941), 38.

World War II, these pilots were responsible checking the accuracy of the low frequency radio ranges. When not conducting flight inspection work or airport surveys, they provided logistical support for CAA construction sites across the territory. They carried food, supplies, medicine, gas, and oil to CAA employees located in remote areas. Jefford and his team also provided search and rescue operations for lost or downed airmen; medical evacuations of civilians from outlying areas; disaster relief for anyone in need; and transportation for CAA and territorial officials. In his first year of working for the CAA, Jefford logged 300,000 miles.[17]

Jefford had the reputation of someone who did what was necessary to get the job done. Early in his CAA career, for example, while inspecting a site for a landing strip, "a culvert gave way and his forehead was badly gashed. Holding up the loose flesh to clear his eyes, Jack stumbled to his plane, got into the air and radioed for a doctor to meet the plane, adding he was "flying an injured man." The doctor met the plane, found the injured man was Jefford, stitched the pilot's forehead, and a few hours later found him the town saloon. When asked why he had not gone home to bed as the doctor had ordered, Jefford simply replied, "I was hungry."[18]

The CAA maintained a number of aircraft in Alaska for flight inspection and other missions. The agency's first airway patrol aircraft was an Army Douglas O-38 observation aircraft.[19] In 1940, the CAA purchased two new five-place, twin-engine Cessnas, the first of this type of aircraft in Alaska.[20] Over the years, the inspectors also flew Douglas DC-3s and -4s, Boeing 247, twin-engine Grumman amphibian, Convair 240, and a Fairchild C-123.[21] The best known of those aircraft was probably a DC-3 (NC14), purchased in 1940 for use as a test bed in the Lower 48 for the development of radio navigation aids. The CAA moved the plane to Alaska in the mid-1940s where employees dubbed it "King Chris" after Chris Lample, CAA administrator of Alaska airports.

Jefford and "King Chris" became well known throughout the territory. As one newspaper described, "Flying a great shiny, brand-new Douglas, Jefford roams the north country from Attu to Kotzebue and from Fairbanks to Seattle, hauling government passengers and freight, checking radio ranges, making emergency 'mercy' flights, searching for planes that have

[17] "Jack Jefford Returns to Ord Home with Stories of Air Adventures in Arctic," *Lincoln Star* (Lincoln, Nebraska), February 5, 1942.
[18] "Collier's Magazine Article Applauds Pilot Jack Jefford," *Custer County Chief* (Broken Bow, Nebraska), June 27, 1946.
[19] Scott A. Thompson, Flight Check! *The Story of FAA Flight Inspection* (Washington, DC: Federal Aviation Administration, n.d.), 100.
[20] "Twin-Motor Cessna Arrives for CAA," *Fairbanks Daily News-Miner*, July 18, 1940.
[21] "Saga Told of Search for Bodies," *Fairbanks Daily News-Miner*, December 7, 1942; "Spenard International Field Headquarters for CAA Team," *Fairbanks Daily News-Miner*, November 8, 1955; "FAA's Aerial Life Line Uses Portable X-Ray Machine," *Fairbanks Daily News-Miner*, June 30, 1965.

CAA N17, "King Chris"
Courtesy: Jack Jefford via Alaska Aviation Museum Archive

been forced down, and shopping and doing errands – gratuitously – for residents in every corner of the territory."[22] Called the "Father of the Alaska Airways" for his pioneering flight inspection work, Jefford retired in 1972 after a thirty-two-year career with the CAA and its successor agencies.[23]

With flight inspection work underway, the CAA issued its first aeronautical planning chart for Alaska in October 1941. The chart, designed for planning flights within Alaska and between Alaska and adjacent areas, included portions of Siberia and Canada, and extended southward to provide connections with Portland, Seattle, and Tacoma. It included the eight aeronautical charts covering portions of Alaska previously released.[24]

War Comes to Alaska

In the wake of the Japanese attack on Pearl Harbor, Hawaii, on December 7, 1941, the CAA advised all civil pilots in Alaska that all planes flying over any naval station in Alaska would be fired upon without warning. In addition, on December 8, the CAA mandated that all pilots show proof of U.S. citizenship or face revocation of their certificates.[25] The CAA originally planned to give pilots time to prove citizenship, but on December 9, announced that no pilot could operate an aircraft without such proof. The agency authorized its inspectors to seize and impound any aircraft owned, operated, or piloted by a non-citizen or by a pilot without a new certificate. In addition, pilots entering within a twenty-five-mile radius of Anchorage had to obtain permission, via radio, to fly into the area or face the possibility of being shot down by antiaircraft fire.[26] A few days later, the CAA ordered that all aircraft must be under twenty-four hour guard or the planes would be made inoperable.[27] A subsequent rule required airport authorities to hire

[22] Russell Annabel, "CAA Transport Pilot Ushers in New Flying Era in Alaska," *Montana Standard* (Butte, Montana), January 10, 1944.
[23] To read more about Jefford's work in Alaska, see his autobiography, *Winging It!: Jack Jefford, Pioneer Alaskan Aviator* (Alaska: Alaska Northwest Books: 2011).
[24] "New Aeronautical Planning Chart Alaska," *Civil Aeronautics Journal* 2, no. 23 (December 1, 1941): 309.
[25] "No Flying over Navy Stations, *Fairbanks Daily News-Miner*, December 9, 1941.
[26] "New Rigid Regulations Promulgated for Pilots," *Fairbanks Daily News-Miner*, December 10, 1941.
[27] "Airplanes Must Be Guarded or Made Inoperative," *Fairbanks Daily News-Miner*, December 18, 1941.

guards and to record every plane and passenger arriving at or departing from the airport.[28]

As the CAA continued construction of landing fields under the DLAND program, the military also hastened its base construction activities. Concerned about a Japanese attack on Alaska's Aleutian Islands, the Army approved construction of airfields at Cold Bay, Port Heiden, and Umnak on November 21, 1941. The military augmented its troops in the Aleutians beginning in 1941, and construction of the new landing fields began in 1942.[29]

Oil Tanks burning after attack on Dutch Harbor, June 1942
Courtesy: National Museum of the U.S. Navy

On June 3-4, 1942, the Japanese bombed Unalaska, which had a small military base (the CAA and the military referred to Unalaska as Dutch Harbor, which is actually a body of water between the islands of Unalaska and Amaknak.) During June 6 and 7, Japanese forces occupied the sparsely populated islands of Kiska and Attu and established military defenses on each island. Many speculated the Japanese attacked the Aleutian Islands to divert elements from the U.S. Pacific fleet during the attack on Midway Island, or, perhaps, to use them as staging areas to attack the Alaskan Peninsula and the continental United States. Others speculated the attack was intended to prevent the United States from launching an attack on Japan's Kuril Islands, 650 miles from the Aleutian chain.[30]

A Soviet officer waiting for his Lend-Lease flight stands at the post office tent at Galena Air Station, Alaska
Courtesy: U.S. Air Force

U.S. military strength in Alaska in June 1942 stood at approximately 45,000 men, with about 13,000 at Fort Randall in Cold Bay, on the tip of the Alaskan Peninsula, and at two bases in the Aleutian Islands (both were on Umnak Island). With the occupation of the two islands, the military immediately stationed additional troops in Alaska and began building a series of airfields west of Umnak from which bombers could strike Kiska. By early 1943, the military had built an additional thirteen bases in Alaska, most in them Aleutians. In May 1943, U.S. troops retook Attu and three months later reclaimed Kiska, ending the Aleutian campaign.

[28] "Airport Proposal Should Carry," *Fairbanks Daily News-Miner*, April 6, 1942.
[29] *Guarding the United States and Its Outposts*, 244, 258.
[30] For a good overview of the Aleutian Campaign see US Army Center of Military History, "Aleutian Islands: The U.S. Army Campaigns in World War II," online at http://www.history.army.mil/brochures/aleut/aleut.htm.

Alaskan airfields played a key role in getting Lend-Lease aircraft to Russia during the war. The Lend-Lease Act of 1941 provided a means for the United States to send military aid to its allies. Beginning in 1942, the United States sent more than 8,000 aircraft to Russia along the Alaska-Siberia route – a series of airfields built in the United States and Canada. Russian pilots picked up the planes in Fairbanks and then flew them to the Russian Western front. These airbases and Lend-Lease activities played a critical role in the defense of the United States and the Allied victory in World War II.

CAA Construction Continues

Even as the battle in the Aleutians went on, the CAA continued building and improving landing fields, communication stations, and navigation aids throughout Alaska. By the end of 1943, the CAA had established the nucleus of an air traffic control system in Alaska. The agency commissioned a new air traffic control tower at Fairbanks on February 1, an air route traffic control center in Anchorage on September 15, and an air route traffic control center at Ladd Field in Fairbanks on October 14.

By the war's end, the CAA had constructed fourteen airfields at a cost of $21,230,725.71 under the DLAND program.[31] Including the pre-war program to construct intermediate landing fields, by the end of the war, the CAA had built fields at:

- Bethel
- Big Delta
- Boundary
- Cold Bay/King Cove
- Cordova
- Fort Yukon
- Galena
- Gulkana
- Juneau
- McGrath
- Minchumina
- Moses Point
- Nabesna
- Nome – construction taken over by the Army
- Northway
- Port Moller
- Ruby
- Summit
- Talkeetna
- Teller
- Valdez
- Yakataga[32]

[31] Theodore P. Wright, "The Civil Aeronautics Administration," in Van Rensselaer Sil, ed., *The Story of War Construction Around the World* (New York: The Odyssey Press, 1947), 261.
[32] Joel L. Klein, James L. Nolan, Jannette Warren Findley, William A. Brenner, Richard Gilles-

In addition, the agency made improvements to the airports and landing fields at:

- Anchorage
- Aniak
- Farewell
- Homer
- Iliamna
- Kenai
- Minchumina
- Nenana
- Seward
- Tanacross
- Tanana33

The CAA commissioned new communication facilities at:

- Anchorage IFSS (KIS) and FSS (KCDW), January 1, 1941
- Aniak (KHDA), October 26, 1941
- Annette Island (KEQF), January 1, 1940
- Bethel (KMZI), August 20, 1942
- Bettles, April 23, 1944
- Big Delta (KHG), May 1, 1942
- Bruin Bay, 1942
- Cordova (KEOU), January 1, 1940
- Fairbanks (KCDS), January 1, 1940
- Farewell (KHDF), July 9, 1942
- Fort Yukon, July 9, 1942
- Galena (KHDX), September 15, 1942
- Gambell (KMVE), November 2, 1942
- Gulkana (KHDH), October 30, 1942
- Gustavus, October 10, 1942
- Haines (KEQT), October 10, 1942
- Homer (KHDZ), July 25, 1942
- Iliamna (KMZO), September 22, 1942
- Juneau (KEAA), unknown
- Kenai (KHDK), December 31, 1941
- King Salmon, March 13, 1942
- Kodiak, July 19, 1941
- Kotzebue, June 3, 1943
- Lake Minchumina (KHDL), July 21, 1942
- McGrath (KMZH), March 10, 1941
- Middleton Island (KWUM), November 19, 1942
- Moses Point (KMZZ), May 21, 1942
- Nenana, November 4, 1943
- Nome (KEQO), January 1, 1940

pie, and John Vitter, *History of World War II in Alaska and Management Plan 1*, final report, #ADA196078 (May 1987): 2-13, 2-14, 2-25, 4-6, 4-19.

[33] Ibid.

- North Dutch Island (KTVJ), January 14, 1942
- Northway (KHDI), January 14, 1942
- Petersburg (KEQV), March 2, 1940
- Sand Point (KYWQ), 1945
- Sheep Mountain (KWVA) February 9, 1943
- Shungnak, August 15, 1943
- Sitka (KEQU), January 4, 1941
- Summit (KEQR), May 10, 1941
- Talkeetna (KEQS), May 17, 1940
- Tanana (KHDT), May 4, 1943
- Tanacross (KHDN), March 1, 1943
- Unalakleet (KYWU), May 2, 1943
- Yakataga (KEAV), December 21, 1942
- Yakutat (KEQW), June 30, 1940[34]

Staffing Alaska's Facilities

The fast pace of construction, equipping, and staffing new facilities, and building the civil airways and installing navigation aids took its toll on CAA employees. Many worked fifty-six-hour weeks in poorly lighted and heated buildings. The work, especially during the war, required long hours in harsh and sometimes dangerous conditions. Employees faced housing, food, supply, and equipment shortages. Many of the facilities were in remote locations, and the lack of reliable transportation challenged even the most adventurous CAA pioneer. Most, however, made the most of their situation and, although geographically dispersed, they became a close-knit family.

A number of CAA employees suffered accidents on the job – many of these fatal. In a well-publicized incident that occurred on January 5, 1943, a plane en route from Seattle to Anchorage crashed in a remote area of the territory. On board were Joseph Tippets, a CAA radio operator stationed in Yakutat; Susan Batzer, who was on her way to begin a job with the CAA; four other passengers; and pilot Charles Harold Gillam. Ms. Batzer died on impact; Gillam died while trekking through ice and snow trying to get help; and two passengers suffered serious injuries. On January 26, Tippets and one of the other passengers – both suffering from injuries, starvation, and frostbite – set out to find help. A small Coast Guard crew found them on February 3. The two passengers left behind were rescued several days later.[35]

The region's monthly employee newsletter, the *Mukluk Telegraph*, provided a forum for employees to stay in touch, complain about common

[34] H. Dale Heister, *The Air Traffic Control System: Past and Present Facilities* (California: 1990), Stations 1-2.

[35] A full account of the accident and rescue mission can be found in John M. Tippets, *Hearts of Courage* (Alaska: Publication Consultants, 2008). Joseph Tippets remained with the CAA until his retirement, rising through the ranks to become the administrator of the FAA's Western Region.

issues, share work and personal information, and even poke fun at managers. To encourage and applaud the region's work, in early 1943, CAA Administrator Charles Stanton published a letter to the region's employees in the newsletter. Congratulating everyone for their wartime work, Stanton wrote, "Personally I feel the work in the Eighth Region is more interesting than that in any of the other regions, even under the enormous amount of pressure." He continued, "After it [the war] has reached its peak, and when we are back to a more normal basis, the Eighth Region will be the best bailiwick with which to be permanently associated."[36]

Bernice Evans, Nenana Communications Station, 1944
Courtesy: atchistory.org

As more facilities opened in the territory, the CAA faced critical manpower shortages. In March 1942, the Alaskan Region announced it would be conducting a training class in Anchorage for communications specialists. The class was open to about twenty-eight Alaska residents who, preferably, could type forty words per minute.[37] The class, which began in May, proved so successful that the CAA announced the formation of a second training class in November. The month-long program included instruction in the operation of radio telegraph and teletype equipment, communications procedures, and weather observation. The CAA compensated students for their time. The agency encouraged husband-and-wife teams to enroll since many of the communications stations were in remote areas.[38] Mr. and Mrs. Melvin S. Majerus became the first husband-and-wife team to complete the training, a feat they accomplished in a record five and a half months instead of the normal six months.[39]

Finding sufficient personnel to staff its remote locations in Alaska proved to be a perennial problem. The CAA began recruiting communicators from the continental United States for six-month tours of duty. Although the agency had many volunteers, recruitment efforts continued at a vigorous pace. With training opened up nationwide, the CAA moved the Eighth Region training activities to Seattle, and later in 1946 consolidated all training activities at its aeronautical center in Oklahoma City, Oklahoma. By 1943, the CAA had 725 permanent personnel in the Territory, but the agency still faced severe personnel shortages in Alaska.[40] In 1944, for example, the CAA announced it needed sixty radio electricians to serve the 7,000 miles of civil airways in Alaska and ten radio engineers. The jobs paid between $3,475 and $5,600, depending on skill levels, and were no longer open to only Alaska residents. The CAA provided subsidized, furnished housing for selectees. The agency pointed out, "Although some of the CAA stations are isolated, many have sizable complements of Americans."[41]

Communicator training class
Courtesy: FAA

[36] Quoted in Marshal Hoppin, "CAA Completes Fourth Year of Service in Alaska," *Mukluk Telegraph* 1, no 7, July 1943, 3.
[37] "CAA to Give Training at Anchorage," *Fairbanks Daily News-Miner*, March 16, 1942.
[38] "CAA Agent Here to Get Applicants," *Fairbanks Daily News-Miner*, November 16, 1942.
[39] *Mukluk Telegraph*, January 1943.

CAA communicator
Courtesy: FAA

The military draft contributed to the personnel shortage. The CAA worked hard to get deferments for critical positions, and "consistently advised all CAA personnel that all efforts" would be made on their behalf "to obtain continued deferments for those employes [sic] on the critical manpower list." The agency urged "all personnel to remain on their assigned jobs regardless of initial indications and until every effort on their behalf has been exhausted." William P. Plett, the acting regional manager of the Eighth Region, went so far as to "urge all male employees of the Eighth Region to stay on their present jobs and perform their assigned duties" while the CAA worked with the military to get its key personnel deferments.[42]

Economic Regulation of Alaska's Airlines

On June 30, 1940, a reorganization of the Civil Aeronautics Authority, which was mandated by President Roosevelt, went into effect. The president wanted to clarify the relations of the Civil Aeronautics Authority's administrator and its five-member board, also called the Civil Aeronautics Authority. The new legislation divided the responsibility of regulating civil aviation between two new organizations. The five-man board was transferred to the Department of Commerce and renamed the Civil Aeronautics Board (CAB). The Air Safety Board was abolished and its accident-investigating functions assigned to the new CAB. Though the CAB would report to Congress and the president through the Secretary of Commerce, it exercised its functions of safety rulemaking, adjudication, investigation, and airline economic regulation independent of the secretary.

[40] "CAA Completes Fourth Year of Service in Alaska," 3.
[41] "Jobs for Radio Electricians Await Today's Alaska Pioneer," *Civil Aeronautics Journal* 5, no. 6 (June 15, 1944): 66.
[42] W. P. Plett, announcement, *Mukluk Telegraph*, April 1944, 2.

Alaska Star Airlines timetable, 1943
Courtesy: http://www.timetableimages.com

The administrator, with the new title of Administrator of Civil Aeronautics, was also transferred to the Department of Commerce and placed under the supervision of the secretary. The administrator's functions now included those initially mandated by the Civil Aeronautics Act, plus certain safety-regulating duties. These safety duties did not involve rulemaking or the power to suspend or revoke certificates.

Raymond Stough, appointed director of the Civil Aeronautics Board's Economic Bureau, had undertaken an extensive survey of aviation in Alaska and held a series of hearings in Alaska in 1939. He issued his report to the new CAB on December 17, 1940, and recommended the approval of twenty-three and denial of thirteen air carrier applications for certificates of convenience to provide service in Alaska. Recognizing the economic and military importance of Alaskan aviation, Stough reported the investment of the air carriers in Alaska totaled approximately $1 million with annual revenues in excess of that figure. Air express constituted "an unusually high proportion" of the total air traffic in the territory. Those flights carried "cases of canned goods and other food products, carcasses of slaughtered game, gold, platinum, furs, light household goods, light machinery and replacement parts, and drums of fuel oil and gasoline . . . even live animals and dynamite."[43]

[43] Civil Aeronautics Board, *Annual Report of the Civil Aeronautics Board*, 1941 (Washington, DC: US Government Printing Office, 1941), 9-11; Civil Aeronautics Board, *Annual Report of the Civil Aeronautics Board*, 1943 (Washington, DC: US Government Printing Office, 1944), 14; "C.A.B. Examiner Reports on Alaskan Airlines," *Civil Aeronautics Journal* 2, no. 2 (January 15, 1941): 21; "C.A.B. Defers Action on Certificate Applications of 38 Alaskan Airlines," *Civil Aeronautics Journal* 2, no. 16 (August 15, 1941): 204, 209.

Because of the unique nature of aviation in Alaska, the CAB announced on July 21, 1941, it had deferred final action on all Alaska certificate applications and exempted those carriers from the economic regulatory provisions of the Air Commerce Act of 1938. Alaska air services, the CAB said, had "circumstances so different from those present in the continental United States that further considerations should be given to problems of general regulatory policy." The CAB believed that in addition to unique flying conditions, such as terrain, weather, and distance between points, "Alaska holds a unique position of importance because many points [in the territory] are inaccessible by ground transportation." As a result, the CAB created the classification of "Alaskan Air Carriers" to differentiate them from other U.S. carriers.[44]

On December 15, 1942, the CAB, for the first time, granted twenty-two operating certificates to twenty-one Alaskan air carriers. The carriers receiving certificates included: Alaska Coastal Airlines; Bristol Bay Service, Inc.; Lon Brennan Air Service; Nat Browne Flying Service; Christensen Air Service; Ellis Air Transport; Ferguson Airways, Inc.; Harold Gillam; Lavery Airways; Munz Air Service; Northern Cross, Inc.; Peck-Rice Airways; Petersburg Air Service; Ray Peterson Flying Service; Pollack Airlines; Wien Alaska Airlines, Inc.; Woodley Airways; and Alaska Star Alliance (which received two certificates). The CAB denied certificates to Barr Air Transport and TransAlaska Corporation and dismissed the applications of thirteen other carriers that had already ceased operations.[45]

The certificates issued to the Alaskan carriers differed from those issued to other domestic carriers. For Alaska, the CAB authorized two types of routes – regular and irregular. Similar to those for other carriers, certificates for domestic routes named the terminal and intermediate points the carrier could serve. The CAB, because of the nature of the Alaska routes, determined it impractical to list all of the intermediate landing fields along the routes on the certificate. Therefore, it also authorized the carriers to serve intermediate points not named in the certificate.[46]

The CAB defined irregular routes as "designations of areas within which a particular carrier may, without further authorization of the Board, conduct operations in accordance with sporadic traffic demands and is free to build up new regular-route service." All Alaskan carriers had permission to make charter trips and render other special service authorized by their certificates. Charter and special trips could also be made to or from any point in the territory "provided that such trips originate at or are destined to a point on a route (regular or irregular) the carrier is authorized to serve."[47] The

[44] "Regulation No. 173," *Civil Aeronautics Journal* 2, no. 16 (August 15, 1941): 215; "C.A.B. Defers Action."
[45] "Alaska Air Firms Put Under CAA," *Fairbanks Daily News-Miner*, December 16, 1942; *Annual Report of the Civil Aeronautics Board*, 1943, 14; "12 Alaskan Carriers Granted Certificates," *Civil Aeronautics Journal* 4, no. 1 (January 15, 1943): 5.
[46] *Annual Report of the Civil Aeronautics Board*, 1943, 14.
[47] Ibid.

CAB warned that flights from points not named in the certificate of the carrier making such trips "will in many instances extend between two points named in the regular route certificate of another carrier." Hence, "to prevent wasteful service and destructive competition," the CAB required that "all such charter and irregular-route trips must be casual, occasional, or infrequent and must not be made in such manner as to result in establishing a regular or scheduled service."[48]

By June 30, 1943, only fourteen carriers of the twenty-one operating in Alaska before the war remained in operation. Three carriers suspended their operations because of the war, and four other operators were acquired by other carriers. The CAB announced that by the end of October, it had received seventeen applications from carriers for authorization for a change in service or for the establishment of new services within Alaska.[49]

In the summer of 1943, Raymond Stough returned to Alaska at the request of the CAB to make "an informal investigation of wartime Alaskan air operations." As a result of his observations, Stough recommended more stringent regulation of the Alaskan air carriers. In mid-1944, with Congressional funding, Stough returned to Anchorage to set up the first regional CAB office in Alaska. It opened its doors on August 15.[50] Stough subsequently became the first head of CAB's Alaska office and remained in that position until he retired from federal service in 1949.

Interestingly, although the CAB issued certificates of public convenience and necessity, a significant number of operators – approximately forty by 1945 – carried out irregular operations without obtaining a certificate from the CAB. Most of those carriers, according to the CAB, began operations under contract to the military and to a number of civilian agencies engaged in wartime construction projects. Because of fears that an investigation into the uncertificated carriers might have a detrimental effect on war activities, the CAB decided not to investigate those carriers until after the war. On July 20, 1945, the CAB announced that operators that had engaged in air service in Alaska without CAB authorization during the six months that ended on March 31, 1945, but filed an application on or before September 15, 1945, could continue in service until the CAB ruled on the carrier's application. Thirty-three operators filed applications before the deadline.[51]

[48] Ibid, 14-15.
[49] Ibid, 15.
[50] "Stough Assigned to Establish New CAB Alaska Office," *Civil Aeronautics Journal* 5, no. 7 (July 15, 1944): 86; "New CAB Alaskan Office Will Conduct Hearings," *Civil Aeronautics Journal* 5, no. 8 (August 15, 1944): 91; Department of the Interior, *Report of the Governor of Alaska*, 1945 (Washington, DC: US Government Printing Office, 1945), 6.
[51] Civil Aeronautics Board, *Annual Report of the Civil Aeronautics Board*, 1945 (Washington, DC: US Government Printing Office, 1946), 20; Department of the Interior, *Annual Report of the Governor of Alaska to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1946), 11.

The CAA's Fleet

FedAir IV
Courtesy: FAA

In a uniquely Alaskan operation, the CAA maintained a fleet of boats in the territory. In fact, the Alaskan Region was the only CAA regional office with its own fleet. By the end of the 1940s, the region operated thirteen boats. Managed by the chief of the River Transportation section of the Maintenance Division of Plant and Structures, the CAA primarily used the boats to transport supplies to remote CAA and Army field facilities, but CAA employees also used the boats when necessary. For example, a boat at Woody Island made three rounds trips each day to Kodiak, five miles away, to carry children back and forth to school. During one summer alone, five boats hauled 1,103,298 ton-miles of supplies to communications stations in Tanana, Galena, Bettles, and Lake Minchumina.[52]

[52] "CAA's Merchant Marine," *Mukluk Telegraph*, June 1949, 8-9.

Dependence on air transportation and tremendous growth in the postwar air-service pattern are the dominate characteristics of air transportation in Alaska.[1]

4

A New Era in Alaskan Aviation

During World War II, the Civil Aeronautics Administration (CAA) spent significant sums building navigation aids, communication facilities, emergency landing fields, and airports as a means of bolstering Alaska's economy, supporting the war effort, and enhancing aviation safety in the region. In the immediate postwar period, the territory witnessed incredible growth as "thousands of cat-skinners, mule operators, carpenters, along with fishermen and cannery machinists," military personnel, miners, construction workers, and homesteaders moved to America's last frontier.[2] With ground transportation in Alaska insufficient or lacking, especially in remote areas, aviation remained critical to the movement of people and goods.

Carl Brady
Courtesy: *General Aviation News*

The postwar years saw explosive civil aviation growth. The availability of surplus military aircraft after the war made it easier for the airlines and private pilots to acquire planes. For example, by the end of fiscal year 1950, which ended on June 30, 1950, Alaska boasted 1,300 certificated pilots and 800 active certificated aircraft. That number included a small number of helicopters.[3] Carl Brady, Sr., had brought the first helicopter, a Bell 47-B, to Alaska in June 1948.

[1] Civil Aeronautics Board, *Annual Report of the Civil Aeronautics Board*, 1952 (Washington, DC: US Government Printing Office, 1953), 15.
[2] Maria Swanson, "Economic Life of North Revolutionized by Alaska's Airways," in *Louis Jacobin, Tourists and Sportsmen's Guide to Alaska and the Yukon* (Juneau, Alaska: Alaska Tourist Guide Company, 1947), 20.
[3] Ibid.

By the end of fiscal year 1950, the territory also had 177 certificated mechanics, twenty-two dispatchers, and eight approved repair stations. It had fifteen designated flight examiners and thirty-six designated maintenance inspectors.[4] Seven Alaskan air carriers operated within the territory; two companies operated scheduled service from the continental United States into Alaska. With demand for service increasing, the Civil Aeronautics Board (CAB) authorized additional service between the United States and Alaska effective July 24, 1951. Alaska Airlines and Pacific Northern Airlines gained permission to provide service from Portland/Seattle to Fairbanks and from Portland/Seattle via Juneau, Yakutat, and Cordova to Anchorage respectively. The four carriers made fifty-three round-trips each week, fourteen of which were exclusively cargo. Travel between the continental United States and Alaska now had capacity for about 2,000 passengers in each direction per week.[5] One foreign air carrier, Trans-Canada Airline, flew into Alaska, after CAB recommended approval for the flights.[6]

The territory's 297 civil and military airports included 159 general aviation airports, 138 limited or emergency airports, twenty-one lighted and paved airports, and one unlighted paved airport. Its seven certificated airlines flew along 6,673 miles low/medium frequency airways.[7] The territory had a number of seaplane bases, including the world's largest outside of Anchorage. By the end of the 1950s, the new Federal Aviation Agency (FAA), established in 1958, operated low frequency radio range stations, thirty-two flight service stations, an international communication station, six control towers, and an air route traffic control center at Anchorage.

Cold War Military Preparations

During World War II, Alaska's economy shifted from one based on forestry, mining, hunting, and fishing to one that supported the war effort. The World War II buildup of military forces had been tailored to conventional war with relatively short range aircraft, and, as a result, its strategy focused on defending the entire territory from a number of garrisons and airfields constructed in Alaska. The military spent approximately $1 billion in the territory to not only defend against a Japanese invasion but also to provide a route for lend-lease materials, especially aircraft, from Alaska to Russia.

[4] Department of the Interior, *Annual Report of the Governor of Alaska to the Secretary of the Interior, Fiscal Year 1950* (Washington, DC: US Government Printing Office, 1950), 16; Federal Aviation Agency, *FAA Statistical Handbook of Aviation* (Washington, DC: US Government Printing Office, 1957), 64; Federal Aviation Agency, *FAA Statistical Handbook of Aviation* (Washington, DC: US Government Printing Office, 1960), 6, 8, 11, 22, 35, 37, 42, 43; 1960 6, 22, 33, 42, 43; Federal Aviation Agency, *FAA Statistical Handbook of Aviation* (Washington, DC: US Government Printing Office, 1970), 47, 49, 59, 173, 175, 181.
[5] *Annual Report of the Governor of Alaska*, Fiscal Year 1950, 75.
[6] "Favor Canada to Fairbanks Airline," *Daily Sitka Sentinel,* July 11, 1945.
[7] *Annual Report of the Governor of Alaska, Fiscal Year 1950,* 75.

Table 1: Aviation Growth in Alaska

	1949	1959
Active Pilots*	**1,300**	**3,049**
Active Aircraft	**800**	**1,208**
Civil and Military Airports	**297**	**344**
Paved/Lighted Airports	**21**	**24**
Low/Medium Frequency Federal Airway Miles	**3,890**	**6,809**
Very High Frequency Federal Airway Miles	**0**	**0**
Inter-Alaska Airlines	**7**	**8**

Source: *FAA Statistical Handbook of Aviation, 1960*
* Active indicates the pilot had a current medical certificate.

After the war, with political and ideological differences tearing the former allies apart, the United States and the Soviet Union entered into a protracted Cold War.[8] In its effort to prevent the spread of communism around the world, U.S. policymakers and diplomats worked to convince neighboring nations and allies about the evils of communism. At the same time, the military bolstered U.S. defenses against a possible attack, especially after the Soviet Union detonated its first atomic bomb in August 1949. With the beginning of the Korean War in 1950, the United States became even more concerned about the spread of communism.

Because of its proximity to the Soviet Union, Alaska became critical to U.S. strategic defense plans in the immediate postwar period. On January 1, 1947, the Joint Chiefs of Staff created the unified Alaskan Command, composed of the Alaskan Air Command, the U.S. Army, Alaska, and the U.S. Navy's Alaskan Sea Frontier. The role of the military in the territory evolved from defending Alaska from a Japanese invasion to defending Alaska and the continental United States from Soviet long-range bomber attacks. To accomplish its new mission, the military increased the number of troops at Fort Richardson, Elmendorf Air Force Base, Fort Wainwright, and Eielson Air Force Base (formerly 26 Mile Field); built air-defense artillery sites; and installed early warning and radar technologies to warn of a missile attack. Military construction necessitated the improvement of roads, ports, communications networks, airports and airfields, and even Alaska's railroad.[9]

[8] A 1922 treaty between Russia, Ukraine, Belarus and Transcaucasia (modern Georgia, Armenia and Azerbaijan) formed the Union of Soviet Socialist Republics (USSR).
[9] Laurel J. Hummel, "The U.S. Military as Geographical Agent: The Case of Cold War Alaska," *Geographical Review 95*, no. 1 (January 2005): 47-72.

With World War II over, the Army and Navy discontinued funding some CAA activities in the territory.[10] As a result, the CAA terminated its operations of the Anchorage and Fairbanks air traffic control towers. The city of Anchorage took over airport and air traffic control operations on August 16, 1945, and the city of Fairbanks took over airport and air traffic control operations of its airport on August 21. The tower at Fairbanks actually closed for several months while the CAA helped train the city's new air traffic controllers to operate the tower. Most CAA personnel transferred to air traffic control towers stateside.[11] With its own appropriation, the CAA resumed control of the towers the following year – Anchorage on April 15, Fairbanks on May 15, and the Annette Center, which converted to a tower, on April 15, 1946.[12] In addition, the CAA commissioned a new air traffic control tower at the Juneau airport on March 1, 1947.[13]

The CAA's workforce became strained with the increasing postwar air traffic in and out of Alaska, the growing number of aircraft and airlines in the territory, and the integration into the civil system of some of the military's facilities, communications frequencies, and airports. Recognizing the increasing workload, Alaskan Regional Administrator William Plett, in his 1946 end-of-year message to employees, thanked them for their

Operation Washtub

Concerned about a possible Soviet invasion, the Air Force and FBI devised a plan, Operation Washtub, in 1950 to establish "an organization within Alaska designed to obtain, collect, and transmit such intelligence information as may be of value to the United States in the event that Alaska or a part thereof is invaded and occupied by the armed forces of an enemy."

The plan called for the recruitment of "stay behind agents," bush pilots, businessmen, farmers, trappers, and fisherman. Agents would operate in and around key areas such as Nome, McGrath, Galena, Aleutian Islands, Fairbanks, Anchorage, Seward, and Kodiak. Women and native Alaskans would not be recruited as agents. The two organizations coupled the plan for intelligence collection with escape and evasion plan for U.S. personnel in the case of a Soviet attack on Alaska.

The agents were provided cover stories and trained in deception, message encoding and decoding, secret inks, interrogation, air drop and pick-up techniques, guerilla techniques and close combat, arctic survival, and Russian secret-police techniques. Agents were provided a list of items to look for in their reconnaissance work, for example: increases in the number of foreign nationals; communist propaganda in the local media; locations, strengths, and types of Soviet ground force units in northeast Siberia;

[10] "Wright's Request for Control Tower Funds Supported by AMA," *CAA Journal* 7, no. 1 (January 15, 1946): 2.
[11] *Mukluk Telegraph*, October 1945, 2.
[12] "CAA Operates Traffic Control Towers," *Mukluk Telegraph*, July 1946, 2.
[13] "Juneau Control Tower Commissioned March 1," *Mukluk Telegraph*, March 1949, 5.

perseverance during this "eventful year." He wrote: "We have crossed the threshold from an era of war tension to one that we all hope will be a lasting peace." He continued, "The transportation tie-ups, the acquisition of military facilities . . . and the acute housing shortage at field stations generally have all caused unusual conditions," for the old "sourdoughs" (a person who has survived at least one winter in Alaska) and the "cheechakos" (a newcomer to Alaska). The region's airways operations superintendent, Allen Hulen, echoed these thoughts, saying, "I wish to express appreciation for the faithful manner in which you have assumed and accomplished the many additional duties and responsibilities that have fallen your lot during the past year."[14]

Air Routes of the Future

In mid-1946, CAA Administrator Theodore Wright made an inspection tour of the territory's navigation facilities. Noting the importance of the CAA's Alaskan facilities during the war, he believed his agency needed to improve those facilities to meet the postwar needs of civil air carriers, especially if the United States hoped to open a civil route to Asia. Wright deemed the CAA installations "to be in excellent condition and readily adaptable for use in the 'top of the world' route."[15] The top of the world, or Polar route, would save time and money for those aircraft traveling from the United States to Europe.

fishing and whaling activities by foreign vessels; names and locations of individuals in Alaska "who might, in the event of hostilities, conduct a sabotage and subversion effort against U.S. installations and forces in Alaska;" and unusual trends among labor unions that might negatively affect the defense of the territory. Agents would be issued equipment such as radios, cameras, signal mirrors, emergency rations, bartering materials, garroting devices, commando-type knives, and small caliber hand guns.

Many of the selected eighty-nine agents had unique knowledge of Alaska and came from aviation-related jobs, tour guides, U.S. Postal Service workers, U.S. Fish and Wildlife Service personnel, and those working in hunting, trapping, fishing, and cannery occupations. Some of the early agent reports provided information on local villages, local populations, and potential targets. Bob Reeve, manager of Reeve Aleutian Airways, is believed to have worked as one of the agents. Operation Washtub ended in 1959.

References: Laurel J. Hummel, "The U.S. Military as Geographical Agent: The Case of Cold War Alaska," *Geographical Review*, 95, no. 1 (January 2005): 47-72; "Proposed Plan for Intelligence Coverage in Alaska in the Event of an Invasion," accessed at *http://www.governmentattic.org/12docs/FBI-USAF-AlaskastayBehindAgentProgram_1947-1954.pdf.*

[14] W. P. Plett, "Christmas Message," and Allen Hulen, "Message from Operations Branch," *Mukluk Telegraph*, December 1946, 2.
[15] "Wright Studies Use of Alaskan Airways for Route to Asia," *Civil Aeronautics Journal* 7, no. 8 (August 15, 1946): 104.

The military had proven the feasibility of the Polar route during the war. After the war, many touted the benefits of establishing such a route for commercial aviation.[16] As John Ryan, editor of the *Fairbanks Daily News-Miner* wrote after a series of Polar flights he took with the 10th Rescue Squadron, a unit of the Alaska Air National Guard based at Elmendorf Field, "a flight of from 16 to 20 hours would take a passenger from Alaska to Europe. From Norway or Sweden, planes could take the travelers to any capital on the European continent."[17] The route, however, posed significant obstacles: "Extreme cold, lack of navigational aids, and the ever-present specter of no place to land should trouble develop, all contribute to the hazard."[18]

Ryan pointed out flying the Polar route required unique procedures. As one Army Signal Corps pilot said of his flight over the Arctic, "Hours before the flight took off, ground personnel started the readying process by applying heat" to the aircraft. "The oil is like molasses, if not frozen. The wing covers have to be removed and the wings defrosted, as do the windshield and all control surfaces. The fuel drains are often frozen . . . while the heating and deicing is in progress, the battery is taken out of heated storage and put back in the aircraft."[19]

Navigation over the Arctic also resulted in some concerns. The magnetic pole affected compasses, creating variations of up to seventy degrees. Visual checkpoints often could not be found, especially in winter. Aircraft icing could prove deadly, and, in case of an emergency, suitable landing areas were few and far between. Pilots and crew members had to be proficient in Arctic survival techniques and carry special survival equipment.[20] "Once you get aloft," however, as one pilot explained, "Arctic flying is very good. A smooth, quiet ride is the rule rather than the exception. You will meet far less turbulence in the Northlands than you will in the Interior of the United States."[21]

After careful preparation, Scandinavian Airlines System (SAS) pioneered commercial flights on the Polar route. After two noncommercial flights to test the route on November 19, 1952, and December 6, 1952, the airline made the first commercial flight over the North Pole. Two years later, on October 30, 1954, the CAB approved a new route for the airline that took it from Sweden to Norway, Denmark, Greenland, and Los Angeles using a Douglas DC-6B. Scandinavian aircraft had permission to land at Anchorage

[16] In the 1950s, references to the polar route generally referred to what is now known as the Great Circle route.
[17] John Ryan, "Fairbanks-Europe Flights Are Definite Possibility for Future," *Fairbanks Daily News-Miner*, April 11, 1952.
[18] "Pole-vaulting Airman to Take Vacation After 58 Polar Hops," *Fairbanks Daily News-Miner*, October 27, 1951.
[19] Captain Richard L. Dowden, "Alaskan Operations," *Army Aviation Digest* (May 1956): 5.
[20] Major George H. Howell, Jr., "Army Aviation under Winter Arctic Conditions," *Army Aviation Digest* (August 1956): 9.
[21] "Stranded Cheechako," *Flying Safety* 10, no 10, (October 1954): 19.

to refuel, but passengers could not disembark.[22] SAS initiated its first regular scheduled service over the Polar route, flying between Los Angeles and Copenhagen on November 15, 1954. The new route cut the flight path from California to Europe by 1,000 nautical miles and resulted in four hours less flying time.

Scandanavian Airlines pioneers the Polar route
Courtesy: http://images.flysas.com

Before the war, aircraft flying from the United States to the Orient generally crossed the Pacific Ocean following a western route via the Hawaiian Islands. In fact, Pan American Airways flew the only U.S.-certificated route to the Orient, which stretched from San Francisco to Manila and Hong Kong by way of Honolulu, Midway Island, Wake Island, and Guam. Several exploratory flights, however, had shown that a route over the North Pacific would be shorter and more cost effective. The difficulty of flying over the North Pacific, however, combined with the inability to secure landing rights in Japan or Russia, made this shorter route untenable prior to World War II. During the war, however, the construction of airbases, radio ranges, fueling stations, and other facilities in Alaska and along the Aleutian Island chain made the route a possibility in the postwar period. The shortcut made the journey from New York to Tokyo 2,000 nautical miles shorter than the then current route through San Francisco.

After the war, Pan American Airways, Trans World Airlines, Northwest Airlines, and Pennsylvania-Central Airlines all applied to the CAB for North Pacific routes to the Orient. In early 1946, the CAB announced it would conduct a study for future Alaskan aviation patterns and the feasibility of a North Pacific air route to the Orient. While CAB undertook its investigation, public officials and citizens alike in Anchorage and Fairbanks lobbied for their cities to be selected as refueling stops on that route.

The CAB announced on August 1, 1946, that the North Pacific air route would converge in Anchorage, rather than Fairbanks. CAB officials reasoned that Anchorage, as the largest city and leading commercial center in the territory, already served as the center for the majority of air traffic moving between the continental United States and Alaska. The CAA and CAB had headquarters in Anchorage. Furthermore, Anchorage had more favorable weather conditions than Fairbanks.[23]

[22] United States Civil Aeronautics Board, *Civil Aeronautics Board Reports* (Washington, DC: US Government Printing Office, 1941), 321- 327.
[23] United States Civil Aeronautics Board, *Civil Aeronautics Board Reports* 7, 1946-1947 (Washington, DC: US Government Printing Office, 1948), 209-228, 602-603.

On December 13, 1946, the CAB permitted Northwest Airlines to fly directly between Seattle and Anchorage, Anchorage and Minneapolis-St. Paul, and Chicago and New York via Canada.[24] The CAB also granted Northwest a route across the North Pacific, from Seattle to Tokyo, and beyond to China, Korea, and the Philippines.[25] Northwest had flown contract flights for the military during the war in Alaska and the Aleutian Islands and had considerable experience flying in cold weather. Since U.S. air carriers did not have permission to land in Russia, the route took aircraft outside of that county's territorial waters. On July 15, 1947, Northwest Airlines began scheduled service to Tokyo over the North Pacific route. The initial flight, however, ran into difficulties. Because of poor weather and reduced visibility, the flight could not make its first refueling stop at Shemya and had to return to Anchorage. The plane restarted its journey on July 18.[26]

Canadian Pacific Airlines began flying the North Pacific route in 1949. It flew to Hong Kong via Tokyo with a refueling stop at Shemya Island. On July 1, 1954, the Air Force closed its facilities at Cold Bay, Kodiak, and Shemya. With commercial air traffic in need of at least one of these bases for a refueling stop, the CAA selected Cold Bay at the tip of the Aleutian Islands as the most appropriate location to support commercial aviation activities. The agency had considered Kodiak for a commercial base but determined it undesirable because of adjacent high terrain, unfavorable weather conditions, and hazards involved in the event of a missed approach.[27] During fiscal year 1955, the CAA converted the Cold Bay military airfield to commercial use and built housing and other facilities for the CAA and Weather Bureau employees stationed there.[28]

As more U.S. and international airlines requested routes to the United States via the North Pacific and Polar routes, in 1955, the CAA commissioned the U.S. airspace over the region as an oceanic control area in 1955. CAA's International Flight Service Stations (IFSS) at Anchorage, Cold Bay, Shemya, and a remote facility at Point Barrow, controlled by the Anchorage IFSS, handled communications for aircraft on the route.[29] Canadian Pacific Airlines began service on the Polar route on June 3, 1955, with DC-6Bs. Pan American Airlines started its service along the route on September 11, 1957, and TWA followed a month later on October 2.[30]

[24] Ibid.
[25] With the award of the Polar route, Northwest Airlines adopted the name Northwest Orient Airlines for advertising purposes.
[26] "Anchorage Asterisks," *Mukluk Telegraph*, August 1947, 12; Northwest moved its operations to Cold Bay in July 1954, see Geoff Jones, *Northwest Airlines: The First Eighty Years* (Chicago, Illinois: Arcadia Publishing, 2005), 36.
[27] "Considered Better Than Kodiak Field," *Fairbanks Daily News-Miner*, July 16, 1954; "CAA to Take Over Base at Cold Bay," *Fairbanks Daily News-Miner*, June 22, 1954; "Shemya Will Stay Open Until Cold Bay Is Ready," *Fairbanks Daily News-Miner*, June 12, 1954; "Commercial Aircraft to Use Cold Bay," *Fairbanks Daily News-Miner*, May 22, 19543.
[28] Governor of Alaska, *Report to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1955), 14.
[29] "Over the Top of the World," *FAA Horizons* (October 1966): 16-19.
[30] R.E.G. Davies, *Airlines of the United States Since 1914* (Washington, DC: Smithsonian

Airport Improvements

In January 1946, CAA received authorization to proceed with "all work in connection with converting Army-operated airports to civil operation." To facilitate the decommissioning of military facilities, on March 29, 1946, President Harry Truman issued Executive Order 9709. That order transferred to the Department of Commerce "all functions and authority, facilities, property, records, equipment and maintenance supplies of the War and Navy Departments relating to the care, control, maintenance and operation, of air-navigation, air-traffic-control, airway-communication, and meteorological facilities" located in foreign territories and elsewhere outside the continental limits of the United States.[31] Executive Order 9797, issued on November 6, 1946, ensured the transfer of the military's air navigation facilities in Alaska to the Department of Commerce. The president ordered the transfer of "certain air-navigation facilities, including airports and associated airport facilities, located in Alaska and elsewhere on territory outside the continental limits of the United States over which the United States exercises or claims sovereignty," from the War and Navy Departments to the Department of Commerce.[32]

As a result of the two executive orders, between February 5, 1947, and November 20, 1947, the War Department transferred facilities, including landing areas, communications equipment, buildings, and radio ranges to the CAA. The initial transfer included those facilities at:

- Annette Island
- Bethel
- Cordova
- Galena
- Gulkana
- Gustavus
- McGrath
- Moses Point
- Naknek (King Salmon)
- Northway
- Port Heiden
- Sitka

Institution Press, 1972), 386.

[31] Gerhard Peters and John T. Woolley, *The American Presidency Project*, Harry S. Truman: "Executive Order 9709 - Providing Interim Arrangements Respecting Certain Air Navigation Facilities Abroad," March 29, 1946, accessed online by. http://www.presidency.ucsb.edu/ws/?pid=78002.

[32] Gerhard Peters and John T. Woolley, *The American Presidency Project,* Harry S. Truman: "Executive Order 9797 - Transferring to the Department of Commerce Certain Functions Relating to Air-navigation Facilities Outside the Continental United States," November 6, 1946, accessed online at http://www.presidency.ucsb.edu/ws/?pid=77968.

- Summit
- Tanacross
- Wales
- Yakutat[33]

A CAA spokesperson, obviously unfamiliar with Alaska, told reporters that "the airports affected by the order were located primarily in the Aleutians."[34]

Once it took over airfields from the military, the CAA found it necessary to upgrade the facilities for civil use. Conversion of outlying airfields, such as Annette Island, Naknek, and Northway, Yakutat, required major construction projects. Since those fields were built for military exigency, they did not offer facilities for long-term commercial use. As a result, the CAA had to provide living quarters, mess halls, and other facilities for its personnel and equipment necessary to operate the sites. The CAA's Eighth Region's Construction Division had responsibility for planning and overseeing the necessary work at each facility. Construction began first at Annette Island.[35]

The CAA wasted no time in preparing the fields for civil use. In fiscal year 1946, for example, work began to convert eight military airports. The agency completed six projects during the year. Work included items such as installing fire protection, constructing access roads, and building sewerage and water systems.[36] The short construction season and resource shortages, however, slowed the construction at some of the former military bases.

Under the International Aviation Facilities Act, passed June 16, 1948, the president gave the CAA authority to transfer the fields to state and local communities, to make reasonable charges for aeronautical services, and to provide for fuel sales.[37] However, municipal and the territorial governments proved reluctant to assume responsibility for the bases, many of which required major upgrades.

With the addition of former military fields at Aniak, Bettles, Big Delta, Cape Yakataga, Cold Bay, Farewell, Homer, Iliamna, Kenai, Nenana, Nome,

[33] *Hearing before the Committee on Interstate and Foreign Commerce, House of Representatives*, HR 4428, a bill to encourage the development of a safe United States flag international air transportation system properly adapted to the present and future needs of foreign commerce . . . of the postal service, and of the national defense, and to meet certain obligations incumbent upon the United States by virtue of its membership in the International Civil Aviation Organization by providing for . . . maintenance of airport and airway property located outside the continental United States, for the training of foreign nationals in aviation activities, and for other purposes, 80th Congress, 2d session, January 22 and 23, 1948, 33; Civil Aeronautics Administration, *Study of Alaskan Airports Under Public Law 647* (Washington, DC: US Department of Commerce, June 1958): 24.

[34] "CAA to Acquire Army-Navy Fields," *Daily Sitka Sentinel*, November 8, 1964.

[35] "Plant and Structures Construction Division," *Mukluk Telegraph*, February 194, 1.

[36] Department of Commerce, *34th Annual Report of the Secretary of Commerce* (Washington, DC: US Government Printing Office, 1946), 57-64.

[37] Stanley Erickson "Aviation in Alaska, History of Federal Involvement," n.d., 17-19, FAA History Archives.

Skwentna, Talkeetna, and Unalakleet by 1958, the CAA operated twenty-eight airports in the territory. Twenty-three of those had scheduled airline service; two had authorization for airline service, and three had no scheduled service. Most of the airports' operating costs proved higher than the income they brought and operated at a loss.[38]

The CAA categorized Aniak, Annette Island, Bettles, Cold Bay, Cordova, Galena, Kenai, King Salmon, McGrath, Nome, Unalakleet, and Yakutat as primary because of location and traffic volume. (See Table 2.) Airports considered secondary, and hence unlikely to be wanted by local authorities included Bethel, Big Delta, Farewell, Gulkana, Gustavus, Homer, Iliamna, Middleton Island, Minchumina, Moses Point, Nenana, Northway, Skwentna, Summit, Talkeetna, Tanana, and Yakataga.[39]

As the CAA began major airport construction projects across the territory, in November 1946, the War Department informed the CAA that two military airports, Ladd Field in Fairbanks and Elmendorf Field in Anchorage, would be closed to civil operations.[40] The military had been allowing large aircraft to use its fields because the two civil airports in those communities, Anchorage Municipal Airport (commonly referred to as Merrill Field) and Weeks Field in Fairbanks, could not be expanded to accept larger aircraft. Neither civil airport had sufficient land for expansion. Even if they had the space, any expansion, with its resultant increased air traffic activity, would interfere with military air traffic in the area. As CAA Regional Administrator Walter Plett explained, the two airports "are unsafe because of the close proximity there of the two installations, that is the Army and the civil installation . . . they are unsafe because of the physical conditions of the two civil fields . . . they are unsafe because of their close proximity to the highly populated areas." Ladd Field planned to stop accepting commercial traffic on June 1, 1947, and Elmendorf on November 1, 1947.[41] The Air Force later extended both deadlines until new commercial airports opened.

On May 29, 1948, President Harry Truman approved legislation authorizing the CAA to construct and operate public airports in Anchorage and Fairbanks. The law also required the agency to provide the facilities, services, and roads necessary for their operation. Congress appropriated money for construction, which began in spring 1949. Congress ultimately appropriated about $17 million for construction of the two airports.[42] Chris Lample assumed duties as the administrator of Alaska airports on September 27, 1948. His primary responsibilities included overseeing construction

[38] Ibid.
[39] Civil Aeronautics Administration, *Study of Alaskan Airports under Public Law 647.*
[40] *Hearings Before the Subcommittee of the Committee on Appropriations, House of Representatives*, Department of Commerce Appropriation Bill for 1949, 80th Cong., 2d sess., February 25, 1947, 611.
[41] *Hearings Before the Committee on Interstate and Foreign Commerce, House of Representatives*, HR 3509 and HR 3510, 80th Cong., 1st sess., July 16, 1947, 19-20, 22.
[42] "Bartlett Points to Millions Congress Gives to Alaska," *Daily Sitka Sentinel*, May 19, 1950.

Table 2: CAA-Owned Primary Airports

Airport	Location	Airlines	Federal Agencies
Aniak	120 miles east of the Kuskokwin River	Northern Consolidated Airlines	Key logistics support for CAA's Aniak FSS
Annette Island	City of Metlakatla 255 miles from Juneau	Pacific Northern Airlines, Pan American Airways, Ellis Airlines	CAA, Coast Guard
Bettles	North-Central Alaska on the Koyukuk River	Wien Alaska Airlines	CAA
Cold Bay	Tip of the Aleutian Islands chain	Northwest Orient Airlines, Canadian Pacific Airlines, Reeve-Aleutian Airways	CAA
Cordova	Prince William Sound	Pacific Northern Airlines, Cordova Airlines	CAA
Galena	Near confluence of Yukon and Koyukuk rivers	Northern Consolidate, Wien Alaska Airlines	CAA; U.S. Air Force
Kenai	Cook Inlet	Pacific Northern	CAA; U.S. Air Force
King Salmon	Near Naknek in the Bristol Bay area	Pacific Northern, and Northern Consolidated Airlines, Reeve-Aleutian Airways	CAA; U.S. Air Force
McGrath	On the Kuskokwin River serves as hub between Anchorage and Nome and Fairbanks and Bethel	Alaska Airlines, Northern Consolidated Airlines	CAA; U.S. Air Force; Fish and Wildlife Service; Bureau of Land Management; Forestry Service; Department of Justice
Nome	Southwest shore of Seward Peninsula	Pan American and Wien Alaska Airlines	CAA; National Guard
Unalakleet	Eastern shore of Norton Sound	Alaska Airlines	CAA; U.S. Air Force
Yakatat	Gulf of Alaska at the northern end of the Alaska panhandle	Pacific Northern Airlines	CAA, Coast Guard

Construction of Anchorage International Airport
Courtesy: Alaska Aviation Heritage Museum

of the new Anchorage and Fairbanks airports, and, upon their completion, administering both facilities.[43]

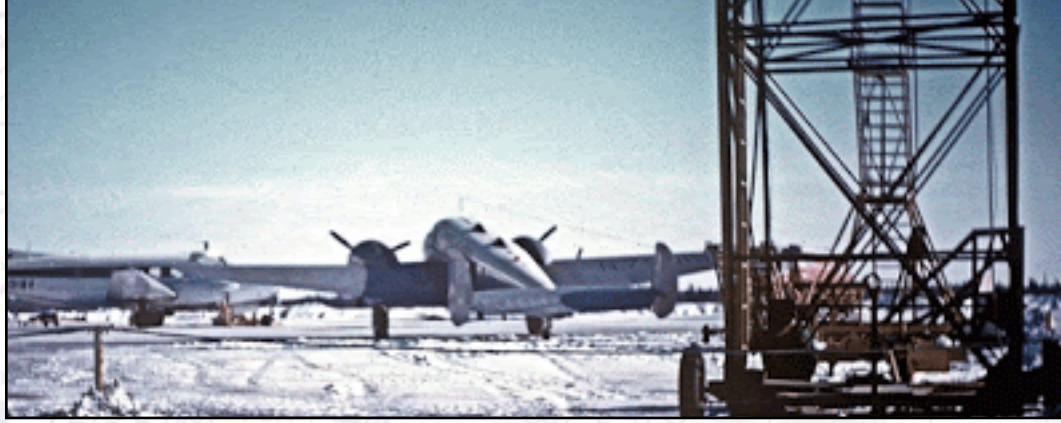
Construction of the airports ran behind schedule. As with many large scale projects in Alaska, the CAA had problems securing materials and supplies as well as difficulties entering into contracts.[44] During congressional testimony in 1950, the CAA administrator admitted that construction at both Anchorage and Fairbanks was was nearly nine months behind schedule. The agency hoped the 1951 construction season would go well, with supply issues overcome and weather delays at a minimum.

With construction well underway, in early 1951, the Fairbanks Chamber of Commerce began pressuring the CAA to let planes use the runways at the new Fairbanks airport. Ice fog, for a time, had made commercial takeoffs and landings at the Air Force's Ladd Air Base impossible. As pressure mounted, the CAA's Frank Gray declined the request, pointing out, the CAA had not yet commissioned the field; the agency had no funds, personnel, or equipment to operate the field; the airport still lacked a control tower; and, while the lights had been installed on the runways, the transformers and other equipment had not yet been installed. In other words, it was not safe to open the airport.[45]

The Fairbanks chamber also chided the CAA for its reluctance to grant leases for hangar facilities at the new airport. The chamber believed that if the CAA did not grant leases before April 1, 1951, the airlines would not have time to construct hangars and prepare for delivery of other services before the airport opened. After wiring CAA's Alaskan regional manager on March 6, 1951, and receiving no reply, chamber members contacted Chris Lample, saying "Any further delay in this matter will be of tremendous economic significance to Alaska in general and Fairbanks in particular . . . we cannot understand your reluctance to accommodate an industry so vitally essential to the economy of Alaska."[46]

Because of ongoing issues at Weeks Air Field, on April 13, 1951, the CAA finally relented to local pressure and opened the new Fairbanks International Airport, still under construction. Only pilot-owners, private

[43] "Lample Goes to Alaska as Airport Administrator," *CAA Journal* (October 15, 1948): 119.
[44] *Hearings Before the Subcommittee of the Committee on Appropriations, House of Representatives*, Department of Commerce Appropriations for 1951, 81st Cong., 2d sess., February 6, 1950, 280.
[45] "Chamber Request Immediate Usage of New Airport," *Fairbanks Daily News-Miner*, January 17, 1951; "Gray Explains Why Airport Not Opened," *Fairbanks Daily News-Miner*, January 18, 1951.
[46] "Construction of Hangars is Delayed," *Fairbanks Daily News-Miner*, March 21, 1951.



Fairbanks International Airport
Courtesy: Alaska Department of Transportation, State of Alaska

pilots, and dual student instruction operators could use the new airport.[47] The new Fairbanks International Airport officially opened on June 1, 1951. A Wien Alaska Airlines DC-3 was the first to take off from the airport, and an Alaskan Airlines plane was the first regularly scheduled commercial flight to land at the new airport. Operated by the CAA, the airport provided the final link in a chain of airfields capable of handling multi-engine aircraft stretching as far north as Point Barrow.[48] The CAA decommissioned the Weeks Field airport traffic control tower, which it had opened on May 16, 1946,[49] on June 1, 1951. Weeks Field closed shortly after Fairbanks International opened.

Anchorage International Airport opened on December 11, 1951. When opened, neither of the new airports had a terminal building or air traffic control tower, which would be located on top of the terminal buildings. Controllers worked in temporary towers until the terminal opened.[50] A wooden tower moved from Yakutat went to the Anchorage airport, and once the permanent tower opened, the CAA moved the wooden tower to Lake Hood to control traffic at the seaplane base.[51]

The CAA completed construction on both terminals in 1953. Anchorage formally dedicated its permanent tower on October 17, 1953, and Fairbanks opened its tower on February 27, 1954. With the opening of the new Anchorage International Airport, the CAA hoped the city would agree to close Merrill Field. However, many pilots, businessmen, and local officials in Anchorage lobbied against closure. "It may take a fatal accident to prove

[47] "Fairbanks Airport Opened Today for Limited Traffic," *Fairbanks Daily News-Miner*, April 13, 1951.
[48] "First flights Mark Opening of New International Field," *Fairbanks Daily News-Miner*, June 1, 1951 "Colorful Ceremony Marks Opening of International Airport," *Fairbanks Daily News-Miner*, June 6, 1951.
[49] "Weeks Tower," *Mukluk Telegraph*, June 1946, 3.
[50] Governor of Alaska, *Report to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1952), 26.
[51] Municipality of Anchorage, "Anchorage Aviation History & Development," accessed at https://www.muni.org/Departments/merrill_field/Pages/History.aspx; Governor of Alaska, *Report to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1955), 14.

how dangerous the situation is," warned Chris Lample.[52] He worried that planes operating at Merrill Field were in danger of colliding with planes flying in and out of the new airport.

Merrill Field, 1960s
Courtesy: https://wattsupwiththat.com

Prior to the new airport, Merrill Field had served as the hub for Anchorage aviation. Immediately after the war, the CAA had spent considerable funds to upgrade the airport because of the rapid postwar growth in aviation activity. In addition to itinerant flights in and out, it housed approximately 125 local aircraft. The CAA built an air traffic control tower, which opened on April 15, 1946.[53] The agency also built a paved 3,960-foot east/west runway and a gravel 3,260-foot gravel north/south runway. The CAA installed runway lights and installed a localizer used by civil aircraft at Merrill Field and military traffic at Elmendorf.

In early December 1953, the CAA announced it planned to move all of its operations to the new Anchorage International Airport and close the tower at Merrill Field. With intense lobbying by the general aviation community in Anchorage, Walter Plett, CAA's Alaskan regional director, announced on December 28, 1953, that the CAA indefinitely would continue operations at Merrill Field. The tower remained open on a sixteen-hour basis.[54]

With the two new airports now open, Chris Lample returned to CAA headquarters in Washington, DC, in January 1952. The Alaskan Region administrator established the Alaska Air Terminal Division to operate the two airports. U. M. Culver became the first director of the new unit. He appointed Virgil E. Knight as the first manager at the Anchorage airport and Frank Gray as manager at Fairbanks.[55]

Federal Aid to Airports

Like many of the airports on the Outside, Alaska's airport authorities had to find funding to meet the needs of postwar civil aviation. To help fund airport construction and improvements, President Harry S. Truman signed the Federal Airport Act on May 13, 1946. It authorized federal appropriations for airport construction of $500 million for the continental United States and $20 million for Alaska, Hawaii, and Puerto Rico over seven years, beginning July 1, 1947. Of the $20 million, the law provided for 50 percent to go to projects in Alaska. The funds would be available to states, territories, and municipalities to improve existing airports or to build new ones. The government would pay for 25 percent of land costs and 75 percent of the improvement cost. Local ownership of the airport was a prerequisite for federal aid, so those airports owned by the CAA did not qualify.

In February 1947, the CAA identified 4,431 airports throughout the United States that needed to be built or improved. Twenty-five of the locations were located in Alaska:

- Anchorage
- Candle
- Circle Hot Springs
- Craig
- Dillingham
- Fairbanks
- Fort Yukon
- Haines
- Healy
- Holy Cross
- Juneau
- Ketchikan
- Kodiak
- Kotzebue
- Fortuna Lodge
- Naknek Village
- Palmer
- Petersburg
- Seldovia
- Seward
- Stoney River
- Valdez
- Wainwright
- Wrangell[56]

Unfortunately, the territorial legislature did not have the legal authority to accept airport improvement aid from the U.S. government. Hence, the CAA did not expend any aid to the Territory during fiscal years 1947, 1948, and 1949.

Efforts had been made since early 1947 to get the territorial legislature to approve legislation that would create the framework for Alaska to qualify for aid under the Federal Airport Act. Legislative efforts repeatedly failed.

[52] "Territorial News Roundup," *Fairbanks Daily News-Miner*, October 29, 1951.
[53] "CAA Operated Traffic Control Towers," *Mukluk Telegraph*, June 1946, 2.
[54] "CAA to Keep Merrill Field," *Fairbanks Daily News-Miner*, December 28, 1953.
[55] Erickson, "Aviation in Alaska, History of Federal Involvement," 15-16.
[56] "Many Airports for Alaska," *Daily Sitka Sentinel*, February 10, 1941.

As a result, on January 1, 1949, the CAA closed the airports branch in the Alaskan Region, more than likely as a means of forcing the legislature into action. The staff of the airports branch transferred to the continental United States.[57]

The CAA's ploy worked, and, on February 24, 1949, the legislature passed the Alaska Municipal Airport Act. The law, effective June 1, enabled Alaska to use federal matching funds in the airport development program. The CAA reopened an airports office in the territory to, among other things, process grant applications.[58] No funds were immediately earmarked for the federal aid airport program in Alaska during fiscal year 1949, because $1,657,750 remained allocated to Alaska from the 1947-1948 aid program. During fiscal year 1950, the CAA tentatively allocated $178,935 for projects at Dillingham, Palmer, Seldovia, and Seward.[59]

The grant to Palmer created significant controversy for the CAA and Alaska alike. In 1947, the Palmer Airport Association had begun clearing land for the construction of an airport.[60] On January 9, 1950, Tony Schwamm, the territorial aviation commissioner for the Aeronautics and Communications Commission of the Territory of Alaska, applied to the CAA for federal airport aid to further improve the Palmer Airport. Palmer was not a municipality, so it could not apply for the grant and had to have the territory submit the application. Based on that application, on February 3, the CAA authorized a grant of $94,750 as the federal government's proportional share of the land purchase and construction work.

Territorial officials rejected the grant offer and, on March 17, 1950, submitted a second application requesting $145,125. The bulk of the increase came from the land cost, which the territory raised from the original $5,000 to $150,000. The CAA approved that grant on March 27, 1950. The territory's Aeronautics and Communications Commission purchased the airport land from the Palmer Airport Association for $150,000, and the Palmer Airport returned $145,000 to the commission. It appeared that the purchase of the land had been inflated to help cover more construction costs.

Upon discovering the money transfer, the *Fairbanks Daily News-Miner* urged a federal inquiry into the land transaction. The newspaper's investigators estimated that 128 acres of land was involved in the deal, and the cost of the airport was only $120,000. The newspaper argued the territory intentionally inflated land costs to offset construction expenditures. When a

[57] "Airports Branch Closed, Perry and Cusack Leave," *Mukluk Telegraph*, December 1947, 1, 3.
[58] Ibid.; United States Senate, P*almer, Alaska, Airport Project*, Interim Report, no. 357, 82nd Cong., 1st sess., May 24, 1951, 7.
[59] "CAA to Spend 21 Million in '50," *Daily Sitka Sentinel*, July 25, 1949, 2.
[60] Governor of Alaska, *Annual Report of the Governor of Alaska to the Secretary of the Interior, Fiscal Year Ended June 30, 1947* (Washington, DC: US Government Printing Office, 1947), 15.

reporter from the *Daily Sitka Sentinel* asked Governor Ernest Gruening about the land sale, he responded, "I am not familiar with the details of the Palmer airport deal, but I know it was necessary to set the price of land at $150,000 in order to permit the territory to receive matching funds for monies spent prior to passage of the . . . [Federal Airport] act."[61]

The *Daily Sitka Sentinel* referred to the Palmer land transaction a "pint-sized 'Teapot Dome' scandal." An editorial ruminated, "Apparently the purchase price of this property was built up to allow reimbursement to the territory by matching federal funds of moneys already spent by the Aviation Board. Whether this is legal or ethical remains to be seen."[62] As the newspapers kept the Palmer land deal in the news, territorial Representative Marcus Jensen asked for a grand jury inquiry, and Alaska's auditor requested the territorial attorney general to give an opinion on the legality of the transaction.[63] U.S. Senator Hugh Butler (R-NE) called for a senate investigation.[64]

Senator Clyde Hoey (D-NC), chair of the Investigations Subcommittee of the Senate Committee on Expenditures in Executive Departments, held hearings on the Palmer situation on January 18 and 19, 1951. Hearings became intense as senators grilled CAA personnel from the Alaska and Washington, DC, offices, as well as officials from the Alaska territorial government and the Palmer Airport Association.[65] With confusing and sometimes contradictory testimony, the subcommittee recessed until further evidence could be presented.[66] The CAA determined not to release any grant money until the U.S. Comptroller General reviewed the facts and circumstances surrounding the grant.

Hoey's subcommittee released an interim investigative report in May 1951. In that report, subcommittee members wrote: "As the result of collusion between Territorial and CAA officials there was an attempt to shift the entire cost of the improvement on the Palmer Airport to the Federal Government." They continued: "Had the Territorial and Regional CAA officials who handled this case acted with the candor and forthrightness which is to be expected of public officials . . . neither would have permitted the subterfuge and deceit which occurred in the case."[67]

After the hearings, on March 6, 1951, CAA Administrator Donald Nyrop sent a letter to all regional managers with instructions on how to handle airport project applications involving the acquisition of land. Each

[61] "Question Legality of Airport Sale," *Daily Sitka Sentinel*, July 11, 1950.
[62] Editorial, *Daily Sitka Sentinel*, July 11, 1950.
[63] "Demands Probe of Territorial Air Spending Program," *Daily Sitka Sentinel*, August 7, 1950.
[64] "Money for Airport Held Up for Investigation," *Daily Sitka Sentinel*, August 22, 1950.
[65] *Hearings before the Investigations Subcommittee of the Committee on Expenditures in the Executive Departments, United States Senate*, Palmer, Alaska, Airport Project, 82d Cong., 1st sess., January 18-19, 1951, 1; "Palmer Airport Deal Puts C.A.A. under Senate Fire," *Daily Sitka Sentinel*, January 19, 1951; see also "Palmer, Alaska, Airport Project," Senate Report No. 357 (May 24, 1951), accessed at https:babel.hathitrust.org.
[66] "Unfinished Business, *Fairbanks Daily News-Miner*, January 25, 1951.
[67] "Palmer Alaska, Airport Project, Senate Report No. 357.

application that included land donation had to include two appraisals of the land. The administrator also mandated that the CAA could not approve any project for land acquisition until the agency determined that the land costs were reasonable. Agency employees also had to ensure that the sponsor had acquired property rights before they would allow airport construction to begin. Furthermore, every CAA employee was required to disclose all information concerning an airport project obtained in his or her official capacity or otherwise.[68]

On January 31, 1952, the acting secretary of Commerce officially requested a decision from the U.S. Comptroller General regarding "the allowability of costs involved in the acquisition of project lands under the Federal Airport Act . . . and, in particular, the propriety of making grant payments on the Palmer, Alaska, airport project."[69] The comptroller general issued his decision on the case on June 24, 1952. He agreed with the senate subcommittee's report "that there was collusion between officials of the Territory and those of the Civil Aeronautics Administration in Alaska." He noted that "it is my view that, on the present record, the facts and circumstances would require that exception be taken to the payment as project costs of any items included by the Territory of Alaska in its Application for final Grant Payment." He pointed to Paragraph 5 of the grant agreement, which stated: "Any misrepresentation or omission of a material fact by the Sponsor concerning the Project or the Sponsor's authority or ability to carry out the obligations assumed by the Sponsor in accepting this Offer shall terminate the obligation of the United States."[70] As a result, the CAA did not provide Palmer grant money. Palmer became an incorporated city in April 1951, and, as such, took over ownership and operation of the airport.[71]

The controversy over the Palmer airport caused territorial aviation director Tony Schwamm some concern that the CAA would hold up the grant request for the airport in Seward. Alaska officials had been planning for a new airport there since 1949, but land acquisition issues held up the project. The CAA approved the Seward grant in September 1951. Plans called for a 3,800-foot long runway – long enough to handle large, multi-engine transports, such as the DC-3. If necessary, the runway could be extended to 4,500 feet.[72] When the airport opened in 1952, it became the twenty-fourth airport or seaplane float project approved, under construction, or completed by Alaska's Department of Aviation during the previous thirty-six months

[68] "Palmer Alaska, Airport Project, Senate Report No. 357.
[69] "U.S. Holds Up Payment on Palmer Airport Construction," *Fairbanks Daily News-Miner*, May 24, 1951.
[70] US General Accounting Office, "Decision B-101727, 1952, 31 Comp. Gen. 672," June 24, 1953.
[71] "Palmer Votes to become New City," *Fairbanks Daily-Miner*, April 13, 1951.
[72] "3,800-foot Airfield Approved for Seward; Work Starts Soon," *Fairbanks Daily News-Miner*, September 26, 1951; "Call for Bids on Seward Airfield; To Be Big Strip," *Fairbanks Daily News-Miner*, February 23, 1952.

when the department was allowed to accept federal airport grants.[73] Between 1947 and 1959, the CAA provided $10,410,000 in federal aid airport grants to fund eighty-eight projects at sixty-three airports. Alaska's investment equaled $4,036,000.[74]

Safety Improvements

Rugged terrain, quickly changing weather, few navigation aids, and limited radar coverage made it a challenge for pilots to fly in Alaska. To increase safety in the region, CAA engineers continued to upgrade and expand its communications networks, including those acquired from the military. In 1947, the CAA commissioned the Petersburg radio range, bringing the total number of radio range, beacon, and marker facilities to forty-seven in the territory.[75] By 1949, the agency began planning the replacement of radiotelegraph equipment with radioteletype equipment.[76] The CAA also planned to install a very high frequency (VHF) communications net of fifty-seven stations in the territory.[77] A lack of funding, however, forced the agency to reduce the number of stations to twenty-two. During fiscal year 1948, CAA engineers completed all surveys for the new stations and constructed thirteen of them. The agency commissioned the VHF link between Anchorage and Cordova in 1948.[78]

The agency began installing frequency modulation (FM) radio during fiscal year 1947. The use of FM radio allowed wider use of frequency bands, which ensured a more reliable and faster system for handling the growing aircraft operations in the region. The CAA first installed the new system between Anchorage and Annette Island, Anchorage and Skwentna, and Anchorage and Kodiak.[79] The CAA installed the first VHF omnidirectional range (VOR) station at Anchorage in 1947. That system allowed pilots with the appropriate onboard equipment to determine their position and stay on course by receiving radio signals transmitted by a network of fixed ground radio beacons. The system would eventually replace the four-course radio ranges.[80]

[73] "3,800-foot Airfield Approved for Seward; Work Starts Soon," *Fairbanks Daily News-Miner*, September 26, 1951.
[74] Federal Aviation Agency, *FAA Statistical Handbook of Aviation 1960* (Washington, DC: US Government Printing Office, 1961), 10.
[75] "Petersburg Range Commissioned," *Mukluk Telegraph*, February 1947, 3.
[76] Department of Commerce, *Annual Report of the Secretary of Commerce, Fiscal Year 1948* (Washington, DC: US Government Printing Office, 1949), 76.
[77] VHF stations were a line-of-sight, point-to-point type of communication that were more reliable to operate and easier to maintain – they used less power and required shorter antennas. VHF stations could communicate directly with airplanes and were used to relay ground-to-ground communication point-to-point between flight service stations.
[78] *Annual Report of the Secretary of Commerce, Fiscal Year 1948*, 71.
[79] Governor of Alaska, *Report to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1948), 19.
[80] "Large Construction Program Planned by CAA For Summer," *Mukluk Telegraph*, March

By late 1950s, the FAA starting deploying the VORTAC system in Alaska, which combined a VOR with the tactical air navigation facility developed by the military.[81] The CAA commissioned the first VORTAC at Anchorage in fiscal year 1957. The agency expected to install forty such facilities by 1964.[82] In 1958, the CAA had started VORTAC construction at Yakutat, Biorka Island (Sitka), North Nenana, Homer, and Middleton Island.[83] By the end of fiscal year 1959, the agency had commissioned systems at Anchorage, Middleton Island, Yakutat, and Biorka Island. Work was underway at Bethel, Cold Bay, Fairbanks, Homer, Kenai, King Salmon, North Nenana, and Sisters Island.[84]

Other safety improvements included the issuance of the first *Airman's Guide* for Alaska in 1947.[85] The CAA installed the first instrument landing system in the territory at the Gustavus airport in August 1949.[86] Other installations included: Anchorage International Airport, February 1953; Fairbanks International Airport, March 1953; Annette Island airport, April 1955; King Salmon airport, May 1955; and Cold Bay airport, 1960.[87] The CAA commissioned its first airport surveillance radar at Anchorage in 1955. That same year, the agency moved its approach control facility at Merrill Field to the new airport.[88]

In January 1951, the CAA began broadcasting flight information over two commercial radio stations in Anchorage. The following year, it began broadcasting from two stations in Fairbanks.[89] The broadcasted information included field conditions, changes in the civil air regulations, and military-provided instructions on avoiding military exercises.[90] In late 1956, the CAA and U.S. Air Force installed a radar approach control (RAPCON) facility at Ladd Air Force Base in Fairbanks, the first jointly operated RAPCON in the nation. The RAPCON combined a long-range and precision radar that could

1947, 17.

[81] "CAA Bid Schedule Announced," *Fairbanks Daily News-Miner*, May 29, 1958.

[82] Governor of Alaska, *Annual Report to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1958), 12.

[83] Governor of Alaska, *Annual Report to the Secretary of the Interior, Fiscal Year 1957* (Washington, DC: US Government Printing Office, 1958), 83.

[84] "Alaska's Airways Changing to VHF," *Mukluk Telegraph*, July 1959, 8.

[85] Governor of Alaska, *Annual Report to the Secretary of the Interior, Fiscal Year 1958* (Washington, DC: US Government Printing Office, 1959), 13.

[86] Governor of Alaska, *Report to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1953), 17.

[87] FAA, "Commissioning Dates of ILS Facilities," n.d., FAA History Archives; Governor of Alaska, *Report to the Secretary of Transportation* (Washington, DC: US Government Printing Office, 1955), 14.

[88] Governor of Alaska, *Report to the Secretary of Transportation* (Washington, DC: US Government Printing Office, 1954), 16-18.

[89] Governor of Alaska, *Annual Report to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1952), 24-26.

[90] Governor of Alaska, *Annual Report to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1951), 15-17.

"see" aircraft up to fifty miles from the airport. Controllers primarily used the radar for bad-weather landings.[91]

The CAA began experimenting with a communicator-staffed airport control tower on May 23, 1947. The airport at Yakutat had considerable activity, but not enough to warrant a separate air traffic control tower. The CAA decided to train its communicators to undertake some air traffic control responsibilities. The training, done at the Merrill Field tower, the Anchorage airway traffic control center, and the region's air traffic control division, qualified the communicators as junior air traffic control tower operators.[92] By the end of fiscal year 1948, the CAA determined that the combined operations of the airport traffic control tower and airway communications station was impractical.[93]

With an accident rate higher than the national average, increasing safety in Alaska remained the CAA's highest priority. As a result, the agency experimented with new ways to help pilots. In one such project, the CAA's research and development organization partnered with Alaska Coastal Airlines in 1947 to adapt radar to civil flying. Alaska Coastal Airlines served Juneau, Sitka, Wrangell, Ketchikan, and a number of canneries along the shore in Alaska's rugged southeastern region. Engineers at the CAA's Experimental Station in Indianapolis, Indiana, installed a General Electric radar, the APS-10, in the airline's Grumman amphibian. The use of radar, if the tests proved successful, would provide critical "visibility" in areas where navigation using a radio range was impractical.

The tests proved successful and the CAA published a research report in early 1948, titled "Radar Navigation in Southeastern Alaska." After the tests, Alaska Coastal pilot Clarence E. Walters reported, "A pilot would be quite safe in continuing flight in dense fog or heavy snow with visibility as low as one-eighth of a mile, because he would know his position at all times and would be warned of any obstacles in his path." Don Stuart, director of the CAA's Technical Development Service, agreed with the assessment, but explained, "It is not contemplated, nor would it be economical for the CAA to establish airways for an airline operating as Alaska Coastal does, and yet it deserves flying aids applicable to its special needs."

By the end of 1958, the CAA operated thirty-six flight service stations in Alaska. These facilities had evolved from the earlier radio communications stations. The agency also owned and operated fifteen other facilities, such as repeater sites necessary for boosting radio communications along the airways. The Defense Department's White Alice system provided an

[91] John P. Thomson, "RAPCON Makes Test Debut in Area: CAA-AACS To Operate Radar Setup," *Fairbanks Daily News-Miner*, June 27, 1956.

[92] G. A. McMurray, "Yakutat Tower Commissioned as First in New Experiment," *Mukluk Telegraph*, June 1947, 28.

[93] Department of Commerce, *36th Annual Report of the Secretary of Commerce* (Washington, DC: US Government Printing Office, 1948), 75.

integrated communications system for all government agencies in Alaska. During fiscal year 1958, with the military's White Alice communications project complete, the CAA closed five repeater stations.[94]

Boswell Bay White Alice Site, Radio Relay Building, Chugach National Forest, Cordova, Alaska
Courtesy: Library of Congress

Post-War Life in the Territory

At the end of the war, the CAA employed 1,139 employees with about 630 of those working in remote locations.[95] In Anchorage, the Hill Building housed the regional office; "Frame Room," which housed the VHF system controls for Anchorage to Annette Island and Cold Bay; Anchorage flight service station; and Anchorage air traffic control center. The crowded workspace required some ingenuity to keep operations efficient. As Jim Vrooman recalled, the center "had a big board for strips down the middle of the room, with controllers on both sides. They passed strips and flight info over the board on one of those carousals with clips like they use in restaurants." On the floor above the center, "at the east end was the IFSS, then the long teletype room, and the TTY [teletypewriter] shop on the west end, with an office in the NW corner."[96] Regional employees at one point worked in thirteen different buildings in the Anchorage area.[97] Life at the remote sites often proved even less accommodating.

Despite increasing aviation activity in postwar Alaska, the CAA continued to find it difficult to recruit and retain sufficient staff. Turnover of personnel, especially those working outside of Anchorage, exceeded 40 percent for each year for several years. Most personnel took the manpower shortages for granted and worked overtime with little complaint. A fully staffed facility proved a rare commodity. As one mechanic happily announced in 1947, "For almost the first time in history the Anchorage [flight service] station complement of maintenance personnel is completely filled, and it has stayed that way for over a week now."[98]

Even though it had a large need for communicators, during fiscal year 1947, budget restraints forced the CAA to close all of its communications

[94] Governor of Alaska, *The Annual Report to the Secretary of the Interior* (Washington, DC: US Government Printing Office, 1958), 12; "Progress Makes Ghost Towns of CAA Stations," *Fairbanks Daily News-Miner*, Marsh 28, 1958.
[95] *Hearings before the Committee on Interstate and Foreign Commerce, House of Representatives*, HR 4427, 80th Cong., 2d sess., January 21, 1948, 28.
[96] Jim Vrooman, "Anchorage FSS Remembered," *Our Time (FAA Alaskan Region Retired Employee Publication)*, January 1997, 4.
[97] "R O in 13 Buildings," *Mukluk Telegraph*, January 1959, 10.
[98] "Communications and Maintenance," *Mukluk Telegraph*, October 1948, 23.

training centers except the one in Seattle where Alaskan communicators received training. To bring staff to the field more quickly, the CAA reduced the training time from four months to five weeks. After completion of training in Seattle, the new communicators gained on-the-job training at the Alaskan facilities.[99]

Staffing shortages in Alaska became so severe in 1947 that the CAA gave the region special overtime authority, which allowed communicators to receive sixteen hours of overtime per week. This allowed personnel to take vacations. In addition, no communicator lost leave because of the inability to use annual leave during the fiscal year. The Region boasted that because of the special authority, 150 communicators took annual leave between June 1 and December 31, 1947. The average amount of leave taken at one time per person was approximately four weeks, as employees tended to vacation on the Outside.[100]

Yakataga Flight Service Sation
Courtesy: FAA

Because of a housing shortage, the CAA only hired single men in the immediate postwar period. A 1947 advertisement indicated a need for 200 "qualified single men" to staff the CAA's 45 airways communications stations. The basic qualifications included the ability to transmit and receive Morse Code at a minimum of thirty words per minute and the ability to type thirty-five words per minute. The CAA required selectees to remain in the job for at least twelve months after their appointment.[101]

An inability to attract sufficient new hires led the CAA in 1951 to not only recruit married personnel, but also change its advertising tactics. Its ads now asked: "Would you like to work where you can pan for gold, collect fine furs, catch big fish, shoot your own meat for the winter?" The ad continued, "The CAA reports that the great majority of its employees like life in the Territory. They plunge into its novelties and adventures in their off hours, panning for gold . . . fishing . . . shooting their moose . . . and the lady of the house assembles a beautiful fur wardrobe and collects carved ivory objects which make her the envy of her stateside acquaintances."[102]

CAA employees, when not working 56-hour weeks, kept themselves busy with picnics, dancing, home repair, gardening, boating, fishing, and hunting – often moose, wolves, and fowl – as well as sports leagues. It

[99] Department of Commerce, *35th Annual Report of the Secretary of Commerce* (Washington, DC: US Government Printing Office, 1947), 62.
[100] "Communicators Get Leave Through 56-Hour Work Week," *Mukluk Telegraph*, January 1948, 3.
[101] "Communicators Jobs Available," *Civil Aeronautics Journal* 8, no. 8 (August 15, 1947): 85.
[102] "Jobs in Alaska Open for Communicators and Maintenance Men," *Civil Aeronautics Journal* 12, no. 2 (February 20, 1951): 23.

CAA employees on their way to the Yakataga Post Office
Courtesy: FAA

was a close knit community with some friendly rivalries from communications station to station. The employees looked after one another and helped one another through difficult times. Lack of supplies and food, floods, fires, severe storms, limited housing, perpetually broken equipment, no heat, no water, and harsh winters unified the geographically dispersed workforce. CAA Alaskan pioneers and their can-do spirit kept the system going no matter what happened. The regional newsletter, *Mukluk Telegraph*, kept employees apprised of regional events, personnel changes, and news from Washington and the regional headquarters.

The *Mukluk Telegraph* also provided a forum for some friendly competition as to which station faced the most difficult situations. Stories of animal intrusions, commissaries depleted of food, manpower shortages, and other tales of woe kept those in remote areas uniquely connected. In describing its mosquito problems, one station in the Yukon area bragged that their "mosquitos exceed the B-20 in size and striking power . . . they strongly resemble the jet fighter in speed and also in sound."[103] A communicator in Kotzebue explained that his station had "two landing fields, and last winter we had a third, laid out on the ice of Kotzebue Sound. I believe I can safely say that it is the only CAA station in the world where we had to warn incoming planes of the hazard of Seals on the runway."[104]

With the CAA most often focused on communicator shortages, maintenance staff reminded other employees of what they did for regional employees. In an article in the *Mukluk Telegraph*, one maintenance employee wrote, "Men of 12 trades keep vital facilities in safe operation." Ninety full-time travelling maintenance personnel, approximately fifty part-time travelling mechanics, and 130 resident field station mechanics repaired, renovated, and remodeled 1,000 buildings. They maintained 200 engine generators, which provided "electricity vital to safe airways operation." In addition, "they repaired communication cables, plumbing in homes and facilities, and ensured heating and cooling systems worked. But mostly, these men who keep the wheels turning and the gears grinding, are scattered over the country's biggest state. The work they do fills a job description that runs on and on for pages . . . They are cable splicers, electricians,

[103] "Airman, Aircraft, and Flight Operations," *Mukluk Telegraph*. August 1948, 15.
[104] "Kotzebue," *Mukluk Telegraph*, November 1948, 18.

linemen, diesel engine mechanics, automotive mechanics, heavy equipment mechanics, carpenters, painters, plumbers, steamfitters, oil burner specialists, refrigeration specialists and equipment operators"[105]

In early 1947, CAA employees in Alaska formed their first employee association, called the Civair 8 Club. The recreational and welfare association worked to make life more enjoyable by hosting dances, showing movies, building "snack shacks," and helping new employees get settled in the region.[106] Club members also often invited native Alaskans in their communities to share in club activities.

The "Santa Claus Run" proved to be one regional tradition that kept remote employees and their children happy. In 1941, the flight inspection staff, then two pilots flying Cessnas, began flying Christmas treats to remote CAA stations without access to grocery stores. By 1947, the staff had grown to seven pilots making the deliveries. The runs took approximately a week to conclude and included day runs from:

- Anchorage to Bethel, Aniak, McGrath and back to Anchorage
- Anchorage to Kenai, Homer, Naknek, Port Heiden, Iliamna and back to Anchorage
- Anchorage to Galena, Tanana, Bettles, Gulkana, Northway, Big Delta, and back to Anchorage

One overnight trip went from Anchorage to Nome, Gambell, Kotzebue, Farewell, Moses Point, and Unalakleet. On many of these trips, the pilots also carried Christmas trees. As pilot Jack Jefford reported, "The trees we first took into Gambell in 1942 were the first trees the Eskimos there had ever seen." After that, it became a tradition for the pilots to gather and deliver enough trees "so each CAA house in these treeless Arctic stations can have one"[107]

Employees at the remote stations had experiences unique only to those in Alaska. In 1958, for example, the entire CAA compound at Bethel moved across the river to higher ground to protect it from floods. Although the CAA contracted for the construction of a new administration building, the agency actually moved the houses to the new location. A contractor hoisted the houses "on wheels, towed them to big barges for the trip across the wide Kuskokwim and then yanked them up the river bank and across the tundra to their new home." Only the foundations were new.[108]

The regional pilots used the short summer season to fly annual supplies to the remote facilities. In September 1947, for example, regional employees

[105] "Emergencies Are Routine with FAA Maintenance Specialists: Men of 12 Trades Keep Vital Facilities in Safe Operation," *Mukluk Telegraph*, August 1959, 1.
[106] "CAA Association to be Called CIVAIR 8 Club," *Mukluk Telegraph*, March 1949, 1.
[107] "CAA's Santa Claus Run," *Mukluk Telegraph*, November 1947, 14-15.
[108] "Bethel Starts New Life Above Flood Dangers," *Mukluk Telegraph*, December 1958, 6.

described the annual oil and gas delivery to Skwentna as the Skwenil project. In four days of 24/7 flying, CAA's pilots delivered 30,000 gallons of oil and 3,000 gallons of gasoline to the facility, located 70 miles north of Anchorage. The pilots then flew 4,960 pounds of freight from Anchorage to Port Heiden; six passengers and 1,800 pounds of freight from Anchorage to Naknek; 28,000 pounds of freight from Naknek to Port Heiden; and 8,500 pounds of goods from Naknek to Anchorage. Later, in a five-day operation the pilots flew 50,000 gallons of oil; 1,000 gallons of gasoline; 12,000 pounds of commissary supplies; and 3,200 pounds of freight from McGrath to Farewell in 63 trips using a DC-3. [109]

In a unique experiment to provide low cost and steady electricity, Big Delta became the first FAA station to receive its electric power from an atomic reactor in 1951. - the Army's SM-1A at the nearby Fort Greely. It delivered 40 million British thermal units (BTU) of heat per hour and 1700 kilowatt (KW) of electricity. The power plant cost about $7 million. Engineers placed the reactor in a 70-foot tank submerged in water. One pound of this enriched uranium put out as much power as 60,000 barrels of oil, and a 700-pound load lasted 18 months.[110]

Fort Greely nuclear power plant
Courtesy: U.S. Army Corps of Engineers

CAA employees faced many challenges in carrying out their duties in Alaska. Housing, food, and supply shortages tested their abilities to adapt to ever-changing circumstances. As the military closed several of its facilities, the CAA reaped some benefit from inherited military equipment. A lot of what the CAA employees received, albeit welcome, needed repair. For example, the Army gave the Fairbanks flight service station a car. As one employee described it a bit tongue in cheek: "At first it didn't run very well, but you should see it now. It consumes only two quarts of oil daily and smokes and snorts as it rattles off down the road." He continued, "There is no window in the door on the driver's side, but it really doesn't matter because the door automatically swings open on all the curves . . . During a three-day period the drivers had four flat tires and one blowout." He cheerfully exclaimed, "It still runs even though no one has discovered why, and, what is more, it's better than walking!"[111]

[109] "Remote CAA Stations Get Annual Supplies by Plane in Alaska," *CAA Journal* 8, no. 9 (September 15, 1947): 99.
[110] "BIG Will Have First Atom Electricity," *Mukluk Telegraph*, August 1950, 8.
[111] "Thanks for the Report, Fairbanks!" *Mukluk Telegraph*, January 1946, 13.

The Sportsman's Paradise

Despite the military buildup and Cold War fears, Alaska in the 1950s was seen as a frontier playground for U.S. adventurers. The promotion and expansion of civil flying became a focus for the CAA in postwar Alaska. In fact, even before the war ended, the CAA began touting the benefits of the navigation aids, communications facilities, and emergency landing fields it had established throughout Alaska. In mid-1944, CAA Chief of Current Information Charles Planck encouraged "private peacetime flyers" to explore the territory. After a trip to Alaska, Planck reported "the aerial tourist will be surprised and pleased with both summer and winter flying there." Although weather and terrain conditions necessitate special requirements in Alaska, Planck explained, "The average pilot can fly anywhere throughout the whole country without danger." He continued, "Adequate flying aids are now in operation along the 7,000 miles of airways to guarantee safety and flying for the conservative pilot." To encourage aerial vacations in Alaska, the CAA compiled a handbook of Alaskan flying.[112]

In 1952, the Department of the Interior published a travel guide to Alaska "to offer background material or to serve as a source of reference to aid the student, the prospective settler, and the potential investor." The book marketed the advantages of seeing the territory by airplane, "no form of transportation other than the airplane, serves the entire Territory with established routes which connect all cities, towns, and villages with one another and the States direct." It highlighted the air transportation system "setup by that group of stalwart and dependable pilots – the bush pilots, operating to the more remote locations that the mainline carriers do not reach. These bush, or pilot owner operators, are the backbone of the economy of the smaller towns and villages of this frontier land."[113]

The U.S. military, however, presented not as rosy a picture in a pamphlet published in 1954. "Aviation is ideally suited to Alaska," the pamphlet's author remarked, "but unfortunately, Alaska isn't suited to aviation. Flying in Alaska is a tough business. Weather conditions are generally poor, high mountains are hidden by clouds, and you can't depend on magnetic compasses in regions near the North Pole."[114]

[112] "Alaska Is Seen as Holiday Land for Peacetime Private Fliers," *Civil Aeronautics Journal* 5, no. 9 (September 15, 1944): 102.
[113] Department of the Interior, *Mid-Century Alaska* (Washington, DC: US Government Printing Office, 1952), iii, 22-24.
[114] Department of Defense, Office of Armed Forces Information and Education," *A Pocket Guide to Alaska* (Washington, DC: US Departments of the Army and the Air Force, December 16, 1954), 17.

Public Enemy No. 1 – the CAB

Irregular or nonscheduled airlines, commonly referred to as nonskeds, came into prominence throughout the United States after World War II when surplus aircraft, especially Douglas DC-3 and DC-4, and Curtiss C-46 aircraft, and special financing became available to veterans. Using these benefits, many veteran-owned aviation companies, with one or two aircraft, began unscheduled services carrying passengers and cargo. Such airlines became an important part of the Alaskan transportation system. They provided valuable service and often carried goods to Alaska from Seattle and passengers from Anchorage and Fairbanks to Seattle. They also participated in seasonally moving large numbers of cannery workers and fishermen from the continental United States to Alaska. Such carriers received no federal subsidies.

In an October 18, 1938, ruling, shortly after the CAB began operations, the agency exempted nonscheduled operations (nonskeds) from obtaining certificates of public convenience and necessity and, hence, economic regulation. The agency defined nonskeds as those being carried out by carriers with fixed base operations.[115] These carriers flew from their single fixed base to other points with limited frequency, generally as charter and cargo flights.

During and after World War II, the military relied heavily on the larger nonskeds to move troops and supplies in the territory. Noting the importance of Alaska in wartime activities and the extent of the territory's dependence on air transportation, in 1943, CAB members defined two distinct types of operations in Alaska. The agency authorized both regular and irregular routes in the territory. An operating certificate for a carrier on a regular route identified the terminal and intermediate points that the carrier could service. In addition, "because of the impracticality of attempting to name all intermediate points currently requiring service," the CAB authorized the Alaskan carriers on regular routes to serve "such intermediate points not named in the certificates as are situated within the area which ordinarily would be served by such route."[116]

The CAB defined irregular routes as "areas within which a particular carrier may, without further authorization of the Board, conduct operations in accordance with sporadic traffic demands." The carriers could "make charter trips and render other special service between points on routes authorized in their certificates." In addition, "irregular-route trips must be casual, occasional, or infrequent and must not be made in such manner as to result in establishing a regular or scheduled route on which competitive services have not been authorized."[117]

[115] Civil Aeronautics Authority, *First Annual Report of the Civil Aeronautics Authority, Fiscal Year Ended June 30, 1939, with Additional Activities to November 1939* (Washington, DC: US Government Printing Office, 1950), 18.
[116] Civil Aeronautics Board, *Annual Report of the Civil Aeronautics Board*, 1943 (Washington, DC: US Government Printing Office, 1944), 14.
[117] Ibid., 14-15.

After the war, approximately thirty large and small nonskeds operated in Alaska, as well as small bush operations, seven certificated intra-Alaska carriers, and two certificated airlines flying from the continental United States to Alaska. For most passengers after the war, it often proved difficult to know what type of service each air carrier offered and on which routes. As one journalist explained in 1946, "Air transport conditions in Alaska have reached such a confused point that CAB is expected soon to tighten restriction over both certificated and uncertificated carriers in the Territory. The conflict between these two groups is ever more pronounced there than in the U.S. The certificated carriers generally feel that their uncertified competitors should be put out of business, while the latter maintain that they are filling a public need and should be allowed to continue operations."[118]

The importance of nonskeds in Alaska became abundantly clear in 1946. In April of that year, members of the Alaska local of the International Longshoremen & Warehousemen went on strike. The territory quickly faced shortages of food and supplies generally shipped from Seattle. To help relieve shipping problems, the CAB issued an exemption that granted all Alaskan airlines, including the nonskeds, permission to fly freight and cargo between Seattle and Alaska between April 17 and June 1, 1946.[119] Recurring strikes by the longshoremen helped assure the need for the nonsked carriers. The CAB subsequently announced that Alaskan carriers could fly charter and nonscheduled operations between Alaska and points in the United States as long as the flight originated or ended at a point in Alaska where the carrier had been certificated to serve.[120]

The nonscheduled operators, however, soon felt under attack by the CAB. On May 17, 1946, the CAB amended its economic regulations to require nonskeds to apply for a letter of registration to continue operations.[121] On May 5, 1947, the CAB issued further revisions, effective June 10, 1947, establishing a classification of carriers to be known as noncertificated irregular air carriers and noncertificated cargo carriers. The irregular air carriers were divided into two classes, according to size of the aircraft. Operators of large aircraft – those in excess of 10,000 pounds or three or more aircraft, each grossing between 6,000 and 10,000 pounds and aggregating more than 25,000 pounds – were subject to greater economic regulation, including the filing of tariffs, quarterly flight reports, inter-carrier agreements, and applications for interlocking relationships, and obtaining CAB approval of consolidations and mergers.

All noncertificated irregular air carriers, no matter what size, had to obtain a letter of registration from the CAB. When it issued the registration,

[118] Merlin Mickel, "Alaskan Air Chaos Expected to Stir CAB Regulating Action," *Aviation News* (October 21, 1946): 29-30.
[119] "Alaska Airlines Fly Food from U.S. to Meet Shortages," *Civil Aeronautics Journal* 7, no. 5 (May 15, 1946): 56.
[120] "Alaskan Lines May Make Charter Trips to U.S.," *Civil Aeronautics Journal* 7, no. 8 (August 15, 1946): 105.
[121] Civil Aeronautics Board, *Annual Report of the Civil Aeronautics Board*, 1946 (Washington, DC: US Government Printing Office), 23-24.

the CAB included a list of cities the carrier could fly in and out of.[122] Alaska's large irregular carriers included: Arctic-Pacific, General Airways, Trans-Alaska, Pacific Alaska Air Express, Arnold Air Service, Mount McKinley Air Service, Rainier, Northern Airlines, Golden North, Oswald, Yakima Sky Chief, Associated Airlines, Seattle Air Charter, Pearson Alaska, and Totem Air Lines..

In December 1948, the CAB ruled that all nonscheduled operations had to be limited to between eight and twelve flights each month between the same two points.[123] The following month, the CAB announced it planned to further revise its regulations for irregular carriers effective May 20, 1949. The new rule, among other things, would strengthen the restrictions on the large irregular carriers. The CAB noted that those carriers had increased operations beyond the proper scope of their operating authority.[124] The CAB planned to cancel the blanket exemption allowing the nonskeds to operate and, instead, would require each operator to apply for an individual exemption from some of CAB's economic provisions. Each operator would have to travel to CAB headquarters in Washington, DC, to make its case, a process that cost the operators' time and money to prepare their application and then travel to Washington, DC, for a hearing on that application. A year later, the CAB determined that it would deny the application of any nonsked that operated a quasi-scheduled service.[125]

The nonsked operators, especially those in Alaska, had become an integral part of the transportation system. The Alaska nonsked operators, outraged by what they viewed as the CAB's attempts to increase the profits of the scheduled airlines at their expense, began an intense lobbying effort. In response, Alaska Territorial Representative Stanley McCutcheon introduced a memorial into the Territorial House of Representatives saying the CAB regulations would effectively push the nonskeds out of business.[126] In fact, many in Alaska considered the CAB as Public Enemy Number 1. Herb Hilscher, a member of the Alaska Development Board, for example, charged the board with setting up "Alaska's non-scheduled airlines for extinction." He claimed the "CAB is entirely impervious to the Alaskan viewpoint . . . members have no adequate appreciation of Alaskan transportation problems."[127] Similarly, Territorial Governor Ernest Gruening declared that Alaska needed relief from the CAB, which exercised a "totally unsympathetic absentee control of our economic lifeline."[128]

[122] Civil Aeronautics Board, *Annual Report of the Civil Aeronautics Board*, 1947 (Washington, DC: US Government Printing Office), 18-20.
[123] Davies, *Airlines of the United States Since 1914*, 449.
[124] Civil Aeronautics Board, *Annual Report of the Civil Aeronautics Board*, 1949 (Washington, DC: US Government Printing Office), 24.
[125] Davies, *Airlines of the United States Since 1914*, 448-449.
[126] "C.A.B. Regulations Hit Totem Service," *Daily Sitka Sentinel*, January 29, 1949.
[127] "Damns C.A.B. As Public Enemy No. 1," *Daily Sitka Sentinel*, January 23, 1950.
[128] "Gruening Hits at CAB Rulings," *Daily Sitka Sentinel*, March 6, 1950.

In an open letter to President Truman in January 1949, the National Independent Air Carriers organization, which represented the nonscheduled airlines in the U.S. and its territories, called the CAB's rules unwise. The organization claimed it "will destroy the independent air carriers of this country. It will be a military catastrophe. It will be an irrevocable blow to that freedom to compete and grow." The letter argued that the CAB, committed to "policies of subsidy and monopoly," intended to destroy the nonskeds. The carriers, operating without federal subsidies, charged rates 37 percent lower than the scheduled airlines and made air travel accessible to "thousands of plain citizens" who could not have otherwise flown because of the higher fares charged by the scheduled airlines.[129] Even the American Legion joined the battle and expressed concerns that, without the nonsked, the military would not have sufficient airlift in times of war.[130]

Proponents of the nonskeds took their message to congress. At a 1949 hearing of the Interstate and Foreign Commerce Committee, U.S. Senator Wayne Morse (R-OR) asked why the CAB was intent on putting the nonskeds out of business. Morse said, "I believe it is noteworthy . . . the Civil Aeronautics Board is about to put out of business, I understand, by regulation and individual proceedings, the only profitable segment of the air transportation system, namely, the nonscheduled air lines." He continued, "I am not as much impressed by the charge that they have flown 'too frequently' as the public need for them and the public interest in an unsubsidized low-cost air service" is well understood.[131]

Governor Gruening made it a point to sit in on the senate confirmation of Delos W. Rentzel as chairman of the CAB in September 1950. At the hearing, Gruening complained, "The inaction of the CAB has done more to throttle the development of Alaska than any other factor." Many senators also raised concerns about CAB's operations. Senator Edwin C. Johnson (D-CO) told Rentzel "some members of this committee don't like their [CAB's] dilly-dallying and their prejudging of cases, and expect them to keep this a land of opportunity."[132]

In early June 1950, the CAB proposed to limit the large nonskeds to eight flights in the same direction between any two points each month. According to the *Daily Sitka Sentinel*, the "proposal stems from the board's efforts to prevent the irregular lines from operating regularly in competition with the companies licensed for regular routes."[133] Gruening agreed, declaring the CAB is "'killing off our bush operators, our local Alaskan airlines, our new non-skeds and still not doing what is needed for successful . . . carriers and businessmen.'"[134]

[129] "Independent Carriers Appeal to Truman," *Daily Sitka Sentinel*, January 31, 1949.
[130] "Legion to Aid in Air Line Fight," *Daily Sitka Sentinel*, February 2, 1949.
[131] *Hearings Before the Committee on Interstate and Foreign Commerce, United States Senate*, CAB Chairmanship, 81st Cong., 1st sess., April 11-14, 18, 20-22, 25-26, 29, 1949, 243-244.
[132] "CAB Slapped By Senators Over Airlines Policy," *Daily Sitka Sentinel*, September 21, 1950.
[133] "Irregular Lines Get new Orders to Stop Service," *Daily Sitka Sentinel*, June 8, 1950.
[134] "Gruening Hits At CAB Rulings."

Another CAB ruling, adopted on March 2, 1951, restricted nonskeds to three round-trip flights each month over major traffic segments and eight round-trip flights between all other points, the three and eight rule. The rule was to become effective on April 6, 1951. It did, however, allow large irregular carriers to engage in charter flights for the military on an unlimited basis.

The nonsked carriers protested the regulations to the Senate Select Committee on Small Business, claiming the CAB intended to force them out of business with the new order. The committee requested a ninety-day delay in the effective date so it could investigate the matter. The CAB granted a thirty-day extension until June 5, and later extended it to July 5, 1951. The committee held hearings over a seven-day period beginning on April 23, 1951.

The testimony painted a poor picture of the CABs regulations with regard to Alaska. Sally Carrighar, a naturalist and travel writer from Nome, testified that CAB's regional director in Alaska, Robert O. Kinsey, actually bragged that he had reduced the number of nonskeds in Alaska from twenty-eight to four. He said the last four were on the way out.[135] Carrighar and others who testified condemned the CAB for protecting the major, certificated airlines at the expense of the nonskeds and bush pilots. In its final investigative report, committee members recommended the CAB:

- Rescind its present regulation limiting "nonskeds" to three round-trip flights and eight round-trip flights
- Issue temporary regulations allowing the nonskeds to fly sufficient flights to allow for profitable operations
- Issue a regulation that would establish procedures for existing and new irregular carriers to file for permanent authority to operate an unsubsidized, second-class or coach-type route service without regard to regularity, but limited as to the total allowable flights[136]

With regard to Alaska, the committee members recommended the CAB "should act promptly to relieve the hardships it is imposing on Alaska through its restriction of flights from the United States." In addition, the CAB "should recognize the special need for cargo transportation to Alaska and the lack of alternative forms of low-cost passenger service."[137] At the conclusion of the hearings, Judge Walter Bastian of the U.S. District Court for the District of Columbia granted a permanent injunction against the implementation of some of the CAB's regulations. The CAB continued, however, to require each

[135] *Hearings Before the Select Committee on Small Business, US Senate*, Air Transportation Industry, Role of Irregular Airlines in United States, 82d Cong., 1st sess., April 27, 1951, 117.
[136] Ibid., 19.
[137] Ibid.

irregular carrier to apply for an individual exemption and granted exemptions to carriers only if the carrier followed the three and eight rule.[138]

The Senate Select Committee on Small Business held another hearing in 1953 to discuss the "Future of Irregular Airlines." In his opening testimony, CAB Chairman Oswald Ryan took issue with the committee's recent annual report. He said the committee's continued belief that the CAB "was 'hostile' to the irregular carriers and is conducting a 'war of attrition' and harassment against them" and "following the devious and dubious practice of 'death by delay' and 'strangulation by regulations'" was incorrect. He argued that "the task of regulating the relationship between the scheduled airline industry and the irregular carrier segment of the air transport system is not a simply or any [sic] easy task and that we do not yet have all the answers."[139] The CAB said it had opened another investigation to see how to incorporate the nonskeds into the aviation system. CAB's Deputy of the Bureau of Air Operations, Louis W. Goodkind, headed the investigative team.

The appointment of Goodkind raised congressional ire. Reporter Drew Pearson had recently uncovered an internal CAB memo written by Goodkind on September 16, 1948. Then chief of CAB's Economic Regulations Bureau, Goodkind had developed a plan to force the nonskeds to close. Goodkind had recommended the CAB repeal the authorization that allowed the nonskeds to operate. Each carrier would have to appear before the CAB in Washington, DC, to either apply for a certificate of public necessity, which would make them a scheduled carrier, or obtain permission to continue flying on a nonscheduled basis. Goodkind wrote: "Either procedure has the advantage of affording a means for ultimately terminating the operations of this group of carriers."[140]

Pearson pointed out that on April 16, 1949, the CAB did abolish "the blanket authorization and ordered the non-skeds to file individual applications if they wanted to stay in business." He continued, "Of the first 103 applications [the CAB] acted upon, 78 were turned down cold, thus forcing them out of business . . . Significantly, the ten that got the OK were

[138] United States Senate, Select Committee on Small Business, "Report on Role of Irregular Airlines In United States Air Transportation Industry," HR Rep. 540, 82d Cong., 1st sess., July 10, 1951, 1-3; "Senate Committee Urges CAB to End Restrictions on Non-Sked Operations," *Fairbanks Daily News-Miner*, July 10, 1951; "Senate Asks C.A.B. Help for Alaska Non-Sked Air Lines," and "Congress Accuses CAB of Favoring Big Companies," *Daily Sitka Sentinel*, July 10, 1951.
[139] *Hearing Before a Subcommittee of the Select Committee on Small Business, United States Senate*, Future of Irregular Airlines in United States Air Transportation Industry, 83rd Cong., 1st first sess., March 31, May 1, 4-8, 1953, 8-9.
[140] Drew Pearson, "CAB Plan Forces Small Airlines to Fold, Claim," *The Winona Republican-Herald* (Minnesota), March 28, 1953. The memo is reproduced in *Hearing Before a Subcommittee of the Select Committee on Small Business, United States Senate*, Future of Irregular Airlines in United States Air Transportation Industry, 83rd Cong., 1st sess., May 7, 1953, 322-325.

too small and insignificant to give the big airlines any competition."[141] The Goodkind memo seemed to be the smoking gun that proved the CAB's intent to shut down the nonscheduled operators.

For Alaska's large nonskeds, the CAB succeeded in forcing all of them out of business. Many closed their doors voluntarily because they could not make a profit operating under CAB's regulations. The CAB revoked the operating authorities of others. For example, Totem Air Service, which operated in southeastern Alaska, voluntarily suspended operations on October 20, 1949, after the CAB dismissed its request to become a scheduled air carrier and because of the "restrictive economic rules and regulations promulgated by the Civil Aeronautics Board."[142] In April 1950, the CAB revoked the operating permit of Mt. McKinley Airways, a nonsked based in Anchorage, for flying too many flights.[143] Arctic-Pacific Airways announced discontinuation of passenger service in February 1950.[144] When the CAB ordered Air Transport Associates, the largest and last operating nonsked in Alaska, to cease all flights by October 21, 1951, the battle went all the way to the Supreme Court.

After the CAB order, the airline temporarily ceased operations on September 29, 1951, saying it could not remain in business for even one month longer under the CAB's regulations.[145] After the airline's announcement, an editorial in the *Fairbanks Daily News-Miner* lamented, "So we have three big C-46 transports idle in Seattle, and at the same time, we have merchants and business firms in Alaska direly in need of fresh food which these planes could deliver. The only thing that stands between the merchants and their customers getting what they need are government regulations . . . just what role is the CAB playing in Alaska? Is the board trying to promote aviation, and the welfare of the territory? Or is the CAB trying to drive airlines out of business, and create shortages of food which bring hardships to the residents here?"[146]

The Air Transport Associates asked for reconsideration of the order and CAB granted them a thirty-day extension. The Veterans of Foreign Wars (VFW) filed a statement with the CAB asking them to reconsider the cease operations order. CAB based the revocation on the fact that the airline was licensed as an irregular carrier and had conducted regular operations between Seattle and Anchorage over a long period of time. The VFW's complaint argued that the airline was formed by "Pacific War Veterans and had been employing young ex-air force men as pilots over a long period." Although the Veterans

[141] Pearson, "CAB Plan Forces Small Airlines to Fold."
[142] "Letter to the Editor from the Totem Air Service, Inc.," *Daily Sitka Sentinel*, March 28, 1950.
[143] "Revoke Permit," *Daily Sitka Sentinel*, April 19, 1950.
[144] "Ask Action to Stop CAB Rulings," *Daily Sitka Sentinel*, February 16, 1950.
[145] Air Transport Associates, "An Appeal to You," *Fairbanks Daily News-Miner*, September 29, 1951.
[146] Ibid.

Air Transport Associates
Courtesy: Bill Larkins, C-46 Air Transport Associates

Administration and the War Assets Office had encouraged World War II fliers to get into aviation, "the CAB had been 'hacking away at the encouragement and assistance of the government.'"[147] The CAB denied the rehearing request.[148]

The Air Transport Associates challenged the CAB in federal court. The U.S. Court of Appeals, District of Columbia Circuit, ruled in favor of the CAB on July 10, 1952.[149] The airline appealed its case for a CAB rehearing to the Supreme Court, which denied the airline's request in 1953.[150] The CAB revoked Air Transport Associates authorization to operate on April 23, 1953. The company, Alaska's last large nonsked, continued for a short time after that as a contract carrier for the military before ceasing operations.[151]

Interestingly, as Alaska's nonskeds ended operations, the CAB downsized its Alaska office to one person. The CAB explained that the "carrier structure in Alaska had reached a degree of maturity which would permit the Board to handle Alaska air transportation problems in large measure from Washington." As a result, the CAB held all hearings in Washington, DC, requiring Alaska's air operators to travel to the nation's capital.[152]

The CAB's primary responsibilities consisted of establishing interstate air routes and regulating fares for the commercial airlines. Because of Alaska's status as a territory, however, the CAB also regulated Alaska's intra-territorial routes. For the most part, when approving routes, the CAB often authorized routes for only three to seven years. Despite the conviction of many that the CAB protected the scheduled airlines, those airline companies also had issues with the regulations. In particular, CAB's reluctance to provide permanent operating authority to the scheduled intra-state airlines. With the expansion of aviation after the war, and the airline industry in flux, the CAB often provided

[147] "VFW Issues Blast Against Closure of Non-Sked Line," *Fairbanks Daily News-Miner*, October 27, 1951.
[148] "Air Transport Associates Denied Rehearing by CAB," *CAA Journal* 12, no. 12 (December 20, 1951): 134.
[149] 199 F. 2d 181 - Air Transport Associates v. Civil Aeronautics Board; "Courts, Departments and Agencies," *American Bar Association Journal* 38 (October 1952): 857.
[150] Air Transport Associates, Inc. v. Civil Aeronautics Board, 344 US 922, no. 465 (1953).
[151] *Civil Aeronautics Board, Economic and Safety Cases of the Civil Aeronautics Board, December 1958-February 1959*, 28 (Washington, DC: US Government Printing Office, 1959), 318.
[152] Civil Aeronautics Board, *Annual Report of the Civil Aeronautics Board*, 1954 (Washington, DC: US Government Printing Office, 1955), 40.

temporary certificates rather than permanent operating certificates on many routes; the agency could not accurately predict the need for service on certain routes until the system matured and it gathered sufficient statistics. For the smaller certificated carriers, such as those that operated solely in Alaska, this resulted in problems in getting equity financing for expansion and upgrades to equipment.

As explained in a House of Representatives report, "Because it has been difficult to find adequate capital, as might be expected where the carriers are operating routes under temporary certificates, needed improvements have been deferred. In many cases equipment and maintenance facilities, essential to the continuance of operations . . . have been provided only through expensive short-term debt financing."[153]

A senate report pointed out, "Pioneering of air transportation within Alaska was accomplished by the managements of the carriers . . . only by the exercise of the utmost ingenuity, in areas which are considered the most difficult in terms of operational problems of any to be encountered in the world."[154] Permanent certification, according to the report, would "eliminate the expenses of periodic proceedings. Such economies will contribute directly to the financial welfare of the carriers. Funds otherwise spent in expensive renewal proceedings can be channeled into promotional expenditures and necessary capital improvements."[155]

In Alaska, lack of permanent route certification affected local carriers, such as Reeve Aleutian Airways, Wien Alaska Airlines, Ellis Air Lines, Alaska Coastal Airlines, Northern Consolidated Airlines, and Cordova Airlines. (Local carriers in the continental United States received permanent certification on their routes the previous year.) Some of the Alaskan airlines had permanent certification on some route segments, but temporary certification on other routes. Pacific Northern Airlines and Alaska Airlines held temporary certificates to fly to the United States, and Pan American World Airways and Northwest Airlines held permanent certificates to fly between the continental United States and Alaska.

To provide relief to the Alaskan and Hawaiian certificated local carriers, Congress drafted legislation that would give them permanent certification on the CAB certified routes they flew. President Dwight Eisenhower signed Public Law 84-741 on July 20, 1956. The CAB acted immediately to carry out the provisions of the law and expected it would issue all permanent certificates before the end of calendar year 1956.

[153] *Providing Permanent Certification for Certain Air Carriers Operating in Hawaii and Alaska*, 84th Cong., 2d sess., HR Rep. 2452, June 26, 1956, 2.
[154] Ibid., 5.
[155] *Providing Permanent Certification for Intra-Alaska and Intra-Hawaii Air Carriers*, 84th Cong., 2d sess., S Rep. 1868, April 26, 1956, 4.

Alaska Pilot Owners

In 1947, because of the unique nature of Alaskan flying, the CAB opened an investigation into the classification of air services in Alaska. On April 2, 1948, the agency established a new classification of pilots in the territory – Alaskan Pilot-Owners – and exempted them from obtaining certificates of public convenience and necessity. The new rule became effective on May 28, 1948.[156] In its decision, the CAB explained, "A great many activities in the Territory are seasonal and transitory in nature requiring an irregular rather than a scheduled operation with peak movement over short periods and with service being rendered through a variety of landing areas, both natural and prepared." Such landing areas could not accommodate large aircraft but were easily accessed by bush pilots in small aircraft.[157]

The CAB described an Alaskan pilot-owner as an individual who owned and operated a small aircraft and who "directly or indirectly engages as a principal in air transportation solely within the Territory of Alaska." The pilot had to have a CAA certificate with a commercial or air transport rating, fly an aircraft with a certificated capacity of no more than four passengers, and not be otherwise authorized by the CAB to engage in air transportation. The pilot-owner had to hold a CAB "Letter of Registration (Alaska)," and had to obtain an exemption from CAB economic regulations every year. To apply for a letter of registration, the pilot-owner had to provide the CAB with the following information:

- The name, citizenship, address, principal operating base, airman certificate number and ratings held, and whether the applicant operated as an individual enterprise, partnership, or corporation.
- The number of aircraft owned; the registration number, make, and model of each aircraft; the type of landing gear on each aircraft; and the name each aircraft was registered under.
- The types of services and area in which the transportation services were performed and any seasonal variations in that service.[158]

In 1951, the CAB allowed the Alaska pilot-owners a blanket five-year exemption that would expire on December 31, 1956.[159] The CAB also relaxed some of its restrictions, allowing for example, some pilot-owners to hire pilots to expand their business and even fly planes with as many as ten seats. The number of pilot-owner registrations remained at about ninety during the decade. In May 1958, the CAB gave further concessions to the pilot-owners.

[156] Civil Aeronautics Board, *Civil Aeronautics Board Reports 10* (Washington, DC: US Government Printing Office, 1949), 915.
[157] *Federal Register* 13, no. 85 (1948): 2337-2338.
[158] Ibid.
[159] Mary Lee Council, "Capital News Letter," *Fairbanks Daily News-Miner*, September 24, 1951; "CAB Lifts Bush Pilot Regulations," *Fairbanks Daily News-Miner*, September 15, 1951.

The new ruling, protested by the certificated airlines, allowed Alaska's then 110 pilot-owners to hire up to five pilots, fly parallel to scheduled routes, and operate aircraft up to 7,900 pounds gross weight. The CAB now referred to this segment of the industry as air taxi operators.[160]

From Administration to Agency

The approaching introduction of jet airliners and a series of midair collisions spurred the public, Congress, and the president to call for major reforms to the CAA. After a series of congressional hearings, on May 21, 1958, Senator A. S. "Mike" Monroney (D-OK) introduced a bill to create an independent Federal Aviation Agency (FAA) to provide for the safe and efficient use of national airspace. Two months later, on August 23, 1958, the president signed the Federal Aviation Act, which transferred the CAA's functions to a new independent FAA responsible for civil aviation safety. Although the new agency technically came into existence with the passage of the act, it actually assumed its functions in stages. Under the provisions of the act, the FAA would begin operations sixty days after the appointment of the first administrator. On November 1, 1958, retired Air Force General Elwood "Pete" Quesada became the first Federal Aviation Agency administrator. Sixty days later, on December 31, the FAA began operations.

FAA begins operations
Courtesy: FAA

[160] "CAB Gives Authority for Air Taxi Service," *Fairbanks Daily News-Miner*, May 16, 1958; Civil Aeronautics Board, *Civil Aeronautics Board Reports: Economic and Safety Enforcement Cases of the Civil Aeronautics Board, October 1957-June 1958* (Washington, DC: US Government Printing Office, 1958), 635-636.

From Territory to Statehood

Three days after the FAA began operations, on January 3, 1959, Alaska became the 49th state. World War II and the Japanese invasion highlighted Alaska's strategic importance, but many in Congress considered Alaska as a weak region dependent on federal resources and unable to manage its own affairs. The discovery of oil at Swanson River on the Kenai Peninsula, however, quickly dispelled that image. In 1958 the U.S. Senate had passed the Alaska statehood bill on June 30, and President Eisenhower signed it in to law on July 7. The legislation led to Alaska's admission into the union on January 3, 1959. Juneau, the territorial capital, continued as state capital, and William A. Egan became the state's first governor.

Dwight D. Eisenhower with Mike Sepovich, Territorial Governor of Alaska, and Secretary of the Interior Fred A. Seaton during the signing of the Alaska Statehood Bill, July 7, 1958
Courtesy: Dwight D. Eisenhower Presidential Library

The death of the CAA and the birth of the FAA – state – are historic milestones in the growth of Alaska.[1]

5

A New State and a New Agency

Alaska entered the union as the largest state with its 378.3 million acres. Its diverse population, climate, geography, and industries. Despite its large size, it had only a little more than 226,000 residents, with the largest percentage living in the Anchorage area.[2] Alaska's economy, small in comparison to other states, relied on military and federal activities and commercial fishing, logging, and mining. Considered a "high-income and high-cost" area, in 1959, Alaska's median family income averaged $7,305 – higher than the national average.[3]

The new state boasted 1,188 private pilots, 736 commercial pilots, 138 airline transport pilots, and 985 student pilots. The Federal Aviation Agency (FAA) approved three combined flight and ground schools for operation. Alaska had 344 airports; only 24 were lighted and paved. Active aircraft totaled 1,208, which included 50 scheduled and irregular air carrier aircraft, 71 multiengine general aviation aircraft, 416 four-place and larger single-engine aircraft, and 671 other aircraft (helicopters, gliders, etc.).[4]

For its part, the newly established FAA inherited the CAA's almost 34,000 employees, approximately 1,500 in its Alaskan Region. The new

[1] "Exit CAA; Enter FAA," *Fairbanks Daily News-Miner*, January 6, 1959.
[2] In 1960, the Census Bureau reported Alaska's population as 77.2% White, 3% Black, and 18.8% American Indian and Alaska Native. See Campbell Gibson and Kay Jung "Historical Census Statistics on Population Totals By Race, 1790 to 1990, accessed at https://web.archive.org/web/20141008183509/ and Population Division, US Census Bureau "Historical Census Statistics By Hispanic Origin, 1970 to 1990," Working Paper Series No. 56 (September 2002), accessed at https://web.archive.org/web/20141224151538/http://www.census.gov/population/www/documentation/twps0056/twps0056.html.
[3] Bureau of the Census, "Characteristics of the Population, Part 3, Alaska, 1960" (Washington, DC: US Government Printing Office, 1963), 3-48, accessed at http://live.laborstats.alaska.gov/cen/histpdfs/1960ak.pdf.
[4] Federal Aviation Agency, *FAA Statistical Handbook of Aviation, 1960* (Washington, DC: US Government Printing Office, 1960), 9, 22, 33, 42, 43.

agency had an annual appropriation of just under $550 million. It maintained 6,809 miles airways using low/medium frequency navigation aids in the new state and had no very high frequency routes. It also operated nineteen airports in Alaska, including the Anchorage and Fairbanks International airports, as well as 2,000 navigation aids.

Agency personnel in Alaska not only provided services such as air traffic control, installation and maintenance of navigation aids, and flight safety work, they also helped to maintain and service villages. They provided food, shelter, utility services, transportation, and even education for the children of agency personnel. The region's pilots moved everything from heavy equipment to fuel, food, household goods, and goldfish.[5]

As explained in an agency newsletter, the FAA operated thirty-four field stations "scattered from Cold Bay in the Aleutians to Kotzebue on the north and Annette Island in the state's southeast panhandle." Those stations served the federal airways located "over some of the most desolate and inhospitable areas on the North American continent. And they serve a vital lifeline for both over-the-pole, inter-continental scheduled air carrier flights and for scores of bush pilot operators who are frequently the only outside contact for isolated villages and mining camps." As FAA's Alaskan employees liked to say, "Alaska has the biggest bears, coldest winters, highest mountains, and largest mosquitoes," which made the state a unique environment to live and work in.[6]

Alaskan pilots and the new state government had the same type of love-hate relationship with the FAA as other states. Pilots often questioned the FAA's regulations, and the state government always hoped for more aid to build and improve the aviation infrastructure. Alaskans hoped for a more profitable relationship when Najeeb Halaby became the new agency's second administrator on March 3, 1961. Halaby's wife, Doris, was the daughter of well-known Anchorage jeweler Frank Carlquist. As it turned out, Halaby only visited the state once while serving as administrator.[7]

The Question of Airport Ownership

The Alaska Omnibus Act of 1959, which granted statehood to Alaska, required the FAA administrator to transfer to the state all airports constructed and operated by the FAA, including all land, buildings, structures, facilities, and equipment, except for such property as the administrator determined necessary for the performance of the FAA. The act made funds available to the president for reimbursement of federal agencies that continued, at Alaska's request, to perform services for the state that it would generally conduct itself. To cover this assistance, the act authorized funds for five years, until June 30, 1964.[8]

[5] "Tiger by the Tail," *Fly-By* (FAA Newsletter), March 1962.
[6] Ibid.
[7] "FAA Chief Due Today," *Fairbanks Daily News-Miner*, October 3, 1961.
[8] Federal Aviation Agency, *Sixth Annual Report* (Washington, DC: US Government Printing

Alaskans balked at the requirement to take over the airports. Fearing the cost of operating the airports and the need for upgrades to handle jet aircraft, politicians and citizen groups alike argued against assuming responsibility. The Anchorage and Fairbanks airports, in particular, cost approximately $1.4 million to run each year but only earned $1.2 million in revenue. Thus, those cities faced immediate deficits.[9] The Anchorage and Fairbanks Chambers of Commerce expressed concern that the two airports might become a liability rather than an asset. They argued, with the coming jet age, they also faced the immediate need to extend the runways at both airports and upgrade terminal and other facilities, all of which would prove costly.[10]

The FAA, for its part, expressed little sympathy. In response to a letter from Representative Ralph Rivers (D-AK), FAA Administrator Elwood "Pete" Quesada said he found it "inconceivable that Alaska would need any special federal financing to adapt its airports to jet aircraft." He said the FAA remained firm in its decision to turn airport control to the state. When Rivers said Alaskans were worried about the cost of converting existing airport terminals to jet terminals, Quesada replied that airports, such as Anchorage and Fairbanks, were "capable of bringing in sufficient revenues to more than support their own construction and operational costs."[11] He later stated emphatically, "I am convinced, and thoroughly convinced, that the State of Alaska should be able to turn both of these fields into enterprises that are profit-making beyond anything."[12]

Under the Omnibus Act, the FAA initially continued to operate the Fairbanks and Anchorage airports under contract.[13] The FAA ran Anchorage until May 1960 and Fairbanks until June 1960. When the cities of Anchorage and Fairbanks assumed control of the airports, the FAA valued the properties fairly high. The agency estimated the worth of Fairbanks International Airport at over $8 million and Anchorage International Airport at $11 million.[14] To finance necessary upgrades, the agency reassured the new airport authorities that they could apply for federal airport aid grants.

FAA officials keenly understood the need to continue airport aid to the new states of Alaska and Hawaii. "The program of Federal aid to airports is

Office, 1965), 74. As a result of the Good Friday Earthquake on March 27, 1963, Congress extended the deadline to June 30, 1966 (Public Law 88-311).

[9] Claus-M Naske and Herman E. Slotnick, *Alaska: A History of the 49th State* (Norman: University of Oklahoma Press, 1987), 163.

[10] *Hearings before the United States House Committee on Interior and Insular Affairs, Subcommittee on Territorial and Insular Affairs*, Statement of Hugh J. Wade, Secretary of State of Alaska, Alaska Omnibus Bill, 86th Cong., 1st sess., May 4-5, 1959, 55.

[11] "FAA Says Alaska Needs No Help," *Fairbanks Daily News-Miner*, May 1, 1959.

[12] *Hearings before the United States House Committee on Interior and Insular Affairs, Subcommittee on Territorial and Insular Affairs*, Statement of Elwood Quesada, Alaska Omnibus Bill, 86th Cong., 1st sess., May 4-5, 1959, 72. "State Starts Plan to Run City Airport," *Fairbanks Daily News-Miner*, June 5, 1959.

[13] "State Starts Plan to Run City Airport," *Fairbanks Daily News-Miner*, June 5, 1959.

[14] "Uncle Sam's $11,000 Gift," *Fairbanks Daily News-Miner*, May 6, 1960; "Carrington Takes over Airport," *Fairbanks Daily News-Miner*, June 2, 1960.

especially appropriate in our two newest states, Alaska and Hawaii, where surface transportation is largely by water (and therefore relatively slow) or, as in much of the interior of Alaska, impractical because of mountains and wilderness. Indeed, hundreds of communities in Alaska are accessible only by air; and when it is realized that Alaska reaches fully from coast to coast and from boundary to boundary when superimposed on the forty-eight contiguous states, it is not surprising that the Agency emphasized airport development in that state during the reporting period."[15]

The FAA, however, took its job to protect public funds seriously. On March 4, 1960, the FAA froze grant funding to extend the runway at Fairbanks International after the Air Force agreed to let Pan American Airways use its Ladd Field. The Fairbanks runway proved too short for Pan American's Boeing 707 jet service from Seattle to Fairbanks. The FAA undertook a feasibility study to see if all commercial jet operations could be handled by Ladd. After lengthy discussions with Air Force officials, the FAA, on April 18, decided to resume funding for the Fairbanks runway extension. The Fairbanks authorities awarded construction contracts within hours of the decision.[16] The first jet, a Pan American World Airways 707, landed on the newly extended runway on September 30, 1960.[17]

FAA DC-3 refueling at Northway Airport, c. 1960s
Courtesy: FAA

With the need to provide matching funds to acquire FAA airport development grants, in 1960, Alaska issued its first general obligation bonds for airport construction. The annual capital budget for airport construction initially totaled approximately $4.6 million; by 1964, that total rose to $6.7 million. In 1962, the state authorized two airport construction programs – the bush program for remote communities and the trunk program for larger towns. The trunk program initially helped finance work at Barrow, St. Marys (originally named the Andreafsky Airport), Savoonga, and Sitka. The Sitka construction was the largest single job ever undertaken by the Alaska's Division of Aviation. Construction costs totaled more than $6

[15] Federal Aviation Agency, *Third Annual Report, Fiscal Year 1961* (Washington, DC: US Government Printing Office, 1961), 8.

[16] "Senate Urges FAA to Proceed with Airport Improvements," *Fairbanks Daily News-Miner*, March 11, 1960; "FAA Freezes Funds for Airport Runway," *Fairbanks Daily News-Miner*, March 5, 1960; "Green Light Given by FAA to Extension," *Fairbanks Daily News-Miner*, April 18, 1960.

[17] "Jet to Land Saturday, *Fairbanks Daily News-Miner*, September 27, 1960; "Pan Am Jets Shift Friday to Airport," *Fairbanks Daily News-Miner*, September 28, 1960.

million, more than either the airport at Anchorage or the airport at Fairbanks. It cost that much because a large part of the Sitka runway had to be created by filling in the waters between small islands in Sitka Sound. The airport opened in 1967. When Savoonga Airport opened in August 1965, the last dog-team mail route in Alaska closed.[18]

The FAA's attempts to turn over operation of its seventeen remaining airports to municipal authorities did not proceed swiftly. In July 1963, the FAA gave the airport in Nenana to the city to operate.[19] On October 31, 1965, the FAA turned over eleven intermediate airfields to the state: Aniak, Bettles, Cordova, Gustavus, Iliamna, Nome, McGrath, Talkeetna, Tanana, Yakutat, and Unalakleet.[20] The agency turned over the last five airfields it operated in late spring 1966: Cold Bay, Galkona, Northway, Summit, and Umiat.[21] With the transfer of the last airports, President Lyndon Johnson sent a letter to Alaskan Governor William Egan commending the new state and FAA employees for overseeing the transfers. In particular, FAA's Virgil Knight, special projects and planning coordinator for the region, proved instrumental in the successful transfer of the airports to state ownership. The FAA continued to operate seven airports for logistics support of FAA facilities.[22]

Good Friday Earthquake

On March 27, 1964, a 9.2 magnitude earthquake, the largest recorded in U.S. history, damaged businesses, homes, and infrastructure, and triggered tsunamis and landslides in the south central region of Alaska. The quake began at 5:36 p.m. local time. Its epicenter was about fifty-six miles west of Valdez and seventy-five miles east of Anchorage. It lasted almost four and a half minutes, but aftershocks rattled Alaska for months afterwards.[23]

[18] State of Alaska Department of Transportation and Public Facilities, *Alaska Aviation System Plan: Aviation Functions within the State of Alaska*, Project no. 51156, November 2010, 6, accessed at http://www.alaskaasp.com/document-archives.aspx; "Egan Capital Improvement," *Daily Sitka Sentinel*, March 8, 1962; "Bond Issues Okayed By State Voters," *Fairbanks Daily News-Miner*, November 7, 1963; "$3.6 Million Sitka Trunk Airport Project Underway," *Fairbanks Daily News-Miner*, April 29, 1965.

[19] "FAA Gives Airfield to Nenana," *Fairbanks Daily News-Miner*, July 25, 1963.

[20] "FAA Tells State It Must Maintain Intermediate Bases," *Fairbanks Daily News-Miner*, July 1, 1965.

[21] "Last Five FAA Airfields Said Ready for Transfer," *Fairbanks Daily News-Miner*, May 27, 1966.

[22] "It's Official: Alaska Has Become a State," *FAA Horizons* (August 1966): 24.

[23] Brocher, T.M., Filson, J.R., Fuis, G.S., Haeussler, P.J., Holzer, T.L., Plafker, G., and Blair, J.L., "The 1964 Great Alaska Earthquake and Tsunamis - A Modern Perspective and Enduring Legacies," US Geological Survey Fact Sheet, 21204, Rep. 2014–3018, accessed at https://dx.doi.org/10.3133/fs20143018. Aftershocks continued to shake Alaska over a year after the quake. On February 3, 1965, for example, a temblor hit Shemya, an island on the tip of the Aleutians. It measured 6.5 on the Richter scale. It rendered all five air-ground HF transmitting channels inoperative, leaving only one VHF channel operational. The FAA restored the

At the time of the quake, the FAA had nearly 1,900 employees in the region. Most, however, had already gone home from work to celebrate the Easter holiday when the earthquake hit. Jim Ray, one of the few people still on the eighth floor of the Hill Building, which housed FAA's regional headquarters in Anchorage, recalled, "It started as a slight back and forth movement underfoot . . . I was standing at the time and found myself being pitched crazily from wall to wall like a steel ball in a pinball machine as the oscillations increased in intensity." Ray made it out of the building safely, but the building had significant damage.[24]

Controllers in the Anchorage International Airport control tower were not as fortunate. Controllers William "Bill" Taylor and Robert Daymude were on duty when the quake struck. Bill Taylor died when the tower collapsed as he tried to get to the ground. Daymude suffered serious but nonlife threatening injuries.

Within one hour of the tower collapse at the Anchorage airport, a controller began managing air traffic using a radio in a FAA-owned vehicle parked on the airfield. Two controllers, Russell Stallcup and James McDonald, then used equipment in a parked Cessna and FAA DC-3 as interim towers. Operations subsequently moved to a temporary tower at Lake Hood. In addition to the collapse of the air traffic control tower, the airport also lost all commercial utilities, telephone service, and cable circuits. The instrument landing system was inoperable, runway and approach lights damaged, and the Weather Bureau facility demolished.

The FAA also established a temporary tower at Seward since the earthquake destroyed the harbor and railroad facilities and caused serious damage to the Seward-Anchorage road link.[25] Controllers at the radar approach control (RAPCON) facility located at Elmendorf Air Force Base in Anchorage stayed on the job despite the swaying building. Jack Williams, the watch commander, and twenty controllers were on the job when the building started to shake. Williams said, "The big job was trying to work aircraft while dodging overhead light fixtures and equipment that was sliding from wall to wall . . . It was especially rough for controllers sitting in front of the large traffic status control boards, which started to sway and threatened to come tumbling down on their heads."[26]

In some areas of Anchorage, buildings sank thirty feet below their original levels.[27] The southwest corner of the building that housed FAA's regional

channels within 16 hours. See "Temblor Damages Airport, Halts Communications on Shemya Isle," *FAA Horizons* (April 1965): 20.

[24] George Fay, "The Big Breakup," *FAA Horizon*s (May 1964): 4-7; "Alaska Quake Didn't Shake CS," *FAA Horizons* (June 1964): 11.

[25] Federal Reconstruction and Development Planning Commission for Alaska, *Response to Disaster: Alaskan Earthquake - March 27, 1964* (Washington, DC: US Government Printing Office, September 1964), 25, 27.

[26] "The Big Breakup," 5.

[27] "Damage Estimated by FAA," *Fairbanks Daily News-Miner*, May 7, 1964. The Hill building

office sank five and a half inches. The other corners of the building either sank by lesser amounts or stayed level. Once safe to begin reconstruction efforts, four men using seventy-five jacks worked over twenty-four hours to level the building. They removed and replaced sections of the first-story walls. In late June 1964, FAA employees began moving back into the building. While the building underwent repairs, employees worked from spaces throughout the city, as well as at Elmendorf Air Force Base and Merrill Field.[28]

4th Avenue, Anchorage, Alaska, 1964
Courtesy: U.S. Army

The FAA facilities in Cordova, Kenai, Kodiak, Seward, and Valdez also suffered significant damage.[29] Although some FAA employees suffered damage to their homes and properties, most survived fairly unscathed. Virgil Knight, suffered incredible loss. He and his wife Leora were on their porch in the Turnagain section of Anchorage when the quake hit. The home, located on a bluff along with almost fifty other homes, slid from its foundation and tumbled toward Cook Inlet. Mrs. Knight died of her injuries and, suffering major wounds, Mr. Knight lost a leg.[30]

On Easter Sunday, two days after the earthquake, Regional Director James Rogers called a meeting of his senior staff to set direction for the region during the next months. The group developed a three-pronged program:

1. Carry on the FAA's safety mission
2. Lend all assistance possible to state and municipal agencies in disaster relief
3. Work to restore all FAA facilities to the previous state of readiness

Although all FAA facilities returned to limited operations fairly quickly, maintenance personnel could not complete a full assessment until June after the spring thaw. At that time, FAA crews examined the navigation facilities located in less accessible sites to determine if any of the equipment suffered

was less than three years old when damaged by the quake. See "FAA Building in Anchorage Is Contracted," *Fairbanks Daily News-Miner*, October 2, 1960.

[28] "Engineer Finds Solution When Hill Building in Anchorage Sinks," *Fairbanks Daily News-Miner*, June 30, 1964.

[29] "FAA Restores Navaids Quickly After Alaska Quake, Keeps 'Em Flying,'" *FAA Aviation News* 3, no. 1 (May 1964): 3-4.

[30] "The Big Breakup," 4-7; "Alaska Quake Didn't Shake CS," 11.

earthquake damage.[31] In a message to employees issued shortly after the temblor, Rogers wrote, "I need not tell you how proud I am of the way each of you responded . . . The days ahead will require further demands on each of us . . . I know we can meet the challenge. Let's get up, dust ourselves off, and emerge with even a better FAA."[32]

Rogers quickly established the regional office in the Merrill Field Flight Service Station (FSS), which had escaped structural damage. Richard Young, the region's chief of system maintenance, estimated that 75 percent of the region's total capacity, some 2,000 facilities, had been damaged during and immediately after the quake from flooding and fires. Ten hours after the quake, 85 percent of the region's capability had been restored.[33] FAA officials credited the quick recovery to a disaster relief exercise conducted by the FAA and Air Force the previous October. During Operation Keychain, the two agencies simulated a disaster in which an earthquake measuring 8.0 on the Richter scale destroyed facilities in the King Salmon area. The response to Keychain went smoothly and served as a "dress rehearsal for the real thing," explained Ralph Westover, the region's defense readiness officer.[34]

Earthquake damage in the Tunragain neighborhood in Anchorage
Courtesy: National Archives

Overall, the earthquake, flooding from the subsequent tsunamis, and fires from damaged gasoline and oil tanks resulted in 129 fatalities and hundreds of millions of dollars in damage to the new state. As many FAAers worked to return navigation facilities to operation, others, displaced from their duty stations, helped rebuild the communities surrounding Anchorage and pitched in wherever they could. Karol Harmon, for example, a secretary in FAA's Installation and Materials Division and the reigning Miss Alaska, went on air at a local radio station. For thirty-six hours straight, she broadcast announcements and news and answered telephones.[35]

The FAA's Washington headquarters staff received word about the quake at 11:30 p.m., Eastern Standard Time, on March 27 from the Western Region, which had relayed a message from a south-bound Northwest Airlines plane.

[31] "FAA Restores Navaids Quickly," 3-4.

[32] "The Big Breakup," 4-7; "Alaska Quake Didn't Shake CS," 11.

[33] Ibid.

[34] Federal Aviation Agency, *6th Annual Report, Fiscal Year 1964* (Washington, DC: US Government Printing Office, 1965), 64.

[35] "The Big Breakup," 4-7; "Alaska Quake Didn't Shake CS," 11.

FAA employees in the continental United States used their own amateur radio sets to establish communications with their Alaskan counterparts to relay news to citizens concerned about relatives and friends in Alaska. Shortly after the quake, FAA Deputy Administrator Lieutenant General Harold W. Grant flew to Alaska in the Agency's C-135 based in Oklahoma City to assess damage and reassure employees that the agency was committed to rebuilding damaged and destroyed facilities.[36]

The day after the quake, President Lyndon Johnson declared Alaska a major disaster area, the first step in authorizing federal aid. On April 2, the president established the Federal Reconstruction and Development Planning Commission for Alaska.[37] The commission coordinated plans for federal programs that contributed to reconstruction and economic and resource development.[38] As part of recovery efforts, the FAA was asked to assess the damage to Alaska's municipal airports and develop plans for repairs.[39]

The FAA surveyed the damage at sixty-four municipal airports. Twelve airports had runway and taxiway damage, which included the destruction of underground cabling and lighting facilities. The FAA worked with the officials of the Federal Reconstruction and Development Planning Commission and the U.S. Army Corps of Engineers to repair the damage. Afognak Airport, for example, had to be rebuilt at a new location on Kodiak Island. A tidal wave destroyed the village and airport.

The rebuilt village and airport were renamed Port Lions after the local Lions Club chapter which spearheaded the rebuilding effort. At Port Lions, the FAA constructed a 2,400-foot landing strip and a two-mile access road. The FAA designed the airstrip, drew up the plans and specifications, awarded the contract, and supervised construction.[40] The quake caused the landing strip at English Bay[41] to settle approximately three and a half feet, which subjected it to flooding. The FAA oversaw the reconstruction, which raised the field above the high water levels. It relocated and rebuilt the Old Harbor landing strip, demolished during the earthquake.[42]

On March 27, 1965, exactly one year after the earthquake, FAA Administrator Najeeb Halaby dedicated the new tower at Anchorage

[36] "Alaskan Region Snaps Back After Quake," *FAA Headquarters Intercom* (April 8, 1964): 1.
[37] The President abolished the commission on October 2, 1964, and replaced it with the President's Review Committee for Developmental Planning in Alaska. FAA Administrator Najeeb Halaby served on the commission and the committee.
[38] "President Johnson Establishes Alaskan Reconstruction Commission," *FAA Headquarters Intercom* (April 8, 1964): 1-2.
[39] *Response to Disaster*, Report of the Federal Reconstruction and Development Planning Commission for Alaska, 4.
[40] "Alaska Takes on a New Look," *FAA Horizons* (March 1965): 14; "A New Road Home," *FAA Horizons* (May 1965): 10-11.
[41] English Bay is now Nanwalek.
[42] "FAA Completes Landing Strips at English Bay, Old Harbor," *Fairbanks Daily News-Miner*, December 21, 1964.

International Airport. The FAA dedicated the tower to Bill Taylor, the controller killed while on duty when the tower collapsed. By this date, the FAA had also repaired and/or replaced all damaged facilities in the region. At the dedication ceremony, Administrator Halaby told Alaska's FAA employees, "You improvised, patched up, fixed up, propped up and performed technical feats that a less well-organized group would call impossible."[43]

In late March 1966, the FAA broke ground for a new control tower at Elmendorf Air Force Base since the old tower had been damaged by the earthquake. The FAA and the Air Force had signed an agreement on November 6, 1964, to share the cost of construction.[44] The Air Force paid 49 percent of the construction costs while the FAA paid 51 percent. In an agreement between the two agencies, the FAA would take care of all electronic and radar maintenance for the tower and RAPCON, and the Air Force would maintain the building and grounds. Under a separate agreement, the Air Force reimbursed the FAA for handling ground control approach at Elmendorf. The FAA and Air Force commissioned the new tower on July 12, 1967, which housed Army controllers and FAA's RAPCON controllers. The RAPCON had been previously located in the Anchorage Air Route Traffic Control Center (ARTCC) located at Elmendorf.[45]

Mother Nature Strikes Again and Again

Within months of the earthquake came the annual breakup of the ice, melting snow, and subsequent flooding of the Kuskokwin, Yukon, and Nenana rivers. On May 31, 1964, the flooding came to FAA outposts in towns such as Aniak, Bethel, Fort Yukon, Galena, McGrath, Nenana, and Tanana. Agency personnel, ready to help when called, received their first request from Aniak. The station manager, Albert Burnham, requested air evacuation of his staff and families when the flight service station and runway flooded. The FAA rescued 104 people from the area, including many people from the local villages.[46]

When the rising waters threatened McGrath, Army Corps of Engineers personnel used 600 tons of TNT to break up the ice jams so the water could recede before inundating the town. The Army used similar means to break up the ice near Bethel. A newly constructed dam at Galena saved the flight

[43] "New Anchorage Tower Dedicated; 1964 Earthquake Victim Honored," *FAA Horizons* (May 1965): 18.
[44] "Ground Broken for New Elmendorf Tower," *FAA Headquarters Intercom* (April 4, 1966): 1; Federal Aviation Agency, *7th Annual Report, Fiscal Year 1965* (Washington, DC: US Government Printing Office, 1965), 55-56.
[45] George Fay, "New Elmendorf Tower/RAPCON Really Stands Tall and Handsome," *FAA Horizons* (November 13, 1967): 7; "Alaskan Region Agrees: It was a 'Year of Change'" *FAA Horizons* (January 8, 1969): 3.
[46] "Alaskan Rivers on Rampage," *FAA Horizons* (August 1964): 5.

service station from major damage. Rising water from the Yukon River destroyed the very high frequency omnidirectional radio range (VOR) station at Fort Yukon. By mid-June, the FAA's station manager reported the rivers had receded to normal levels.[47]

In November 1965, Alaskan Region personnel at Moses Point and Unalakleet faced sixty-five mile per hour winds that pushed water and ice chunks over dikes and barriers, flooding the southern coast of the Seward Peninsula. FAAers kept the two facilities operational, quickly removing and repairing equipment. As the flood waters rose at Moses Point, FAA personnel swiftly loaded communications equipment on a flatbed truck to keep it safe. FAA staff helped evacuate Unalakleet when the water threatened to cover the road between the village and the high ground. With other volunteers, FAA personnel moved 400 native Alaskans to high ground at a U.S. Air Force aircraft warning site.[48]

Mother Nature, always unpredictable in Alaska, targeted Fairbanks in June 1967. An earthquake caused minor damage to the control tower at the Fairbanks International Airport. Darrell Nelson, the FAA's area manager for Fairbanks, suspended operations from the tower until a thorough inspection could be done. The FAA delivered a new, portable tower for use in the interim.[49]

Two months later, torrential rains caused the Chena River to overflow its banks sending nearly nine feet of water into Fairbanks, ravaging FAA facilities as well as personal property. Damaged FAA equipment at Fairbanks International Airport included navigation aids, communication systems, low-frequency range, and airport strobe lights. The agency had no casualties, but an estimated 30 to 50 percent of FAA employee homes suffered damage. A number of homes slid off their foundations and water hit roof levels in many areas. FAA families in Anchorage helped restore public utilities and opened their homes to the wives and children of evacuated FAA workers. By the end of August, FAAers from across the country had donated $48,000 to help their fellow FAAers in recovery efforts.[50]

Coastal storms, heavy rains, and flooding were a constant problem in parts of the state. In November 1974, for example, a series of fast moving storms battered the northwest and southwest coasts. The first storm hit Nome and surrounding areas, creating what Governor William Egan called a "full-scale disaster." The devastated area had no power, drinking water,

[47] Ibid.
[48] "Alaskan Region Weathers Floods, High Winds," *FAA Horizons* (January 1966): 23.
[49] "Airport Tower Due Study," *Fairbanks Daily News-Miner*, June 24, 1967.
[50] "Flood Toll High," *FAA Headquarters Intercom* (August 21, 1967): 1; "Fairbanks Digs Out," *FAA Headquarters Intercom* (August 28, 1967): 1; "Thanks to All . . . Brig. Gen. John Kulman," *FAA Headquarters Intercom* (October 2, 1967): 2; "Assistance Appreciated," *FAA Headquarters Intercom* (September 11, 1967): 1; "Mild Chena River Rose Into a Monster," *Fairbanks Daily News-Miner*, April 16, 1968.

and scarce food stores since aircraft could not immediately reach the area. Approximately two feet of water covered the airports taxiways; the runways spared severe flooding had a layer of ice on them. The storm also severely damaged the FAA and Weather Bureau facilities in Unalakleet as well as housing and community buildings.[51]

Modernization Brings Controversy

Throughout the 1960s and 1970s, the need to reduce costs, but increase system reliability, often provided significant challenges for the agency. As with its programs in the continental United States, the FAA had to find a way in Alaska to balance local desires with fiscal realities. This balancing act proved particularly problematic in a state where one in every ten people had a pilot's license and where aviation provided a critical mode of transportation.

On February 4, 1964, as part of the continuing effort to modernize the national airspace system (NAS), the FAA announced the first phase of a long-range plan to gradually reduce the number of flight service stations (FSS) in the contiguous forty-eight states. The number of stations would shrink from 297 to 150 and be backed up by a network of manned and remote communications links. The resulting consolidated FSS system, made possible by advances in communications technology, would require between 500 and 600 fewer flight service specialists than the existing system and would save approximately $3 million annually, according to FAA estimates. In the first consolidation phase, forty-two stations would be replaced either by manned information and communications facilities (MANICOM) or airport information desks, which would function as FSS satellites.

President Johnson approved the plan, and on April 14, 1964, instructed FAA Administrator Najeeb Halaby to "move as rapidly as possible to close unnecessary flight service stations." The plan, however, encountered strong resistance from general aviation organizations and private pilots in communities where FSSs were scheduled to be closed. Critics of the plan argued that the remote, impersonal service that airport information desks provided was no substitute for on-the-spot service offered by manned stations. In view of this opposition, Congress attached a rider to the fiscal year 1965 Independent Offices Appropriations Act, restraining the FAA from closing any FSS during the fiscal year. After restudying the plan, the FAA in August 1965 informed Congress that it would not implement the consolidation program; instead, it would evaluate the service needed in each FSS area on a case-by-case basis.

Although the consolidation plan failed for the continental United States, in August 1965, the FAA announced a plan to modernize flight services for

[51] "Second Storm Misses Nome; Waters Recede," *Fairbanks Daily News-Miner*, November 13, 1974.

small aircraft pilots in Alaska. It planned to downsize its twenty-four full-time FSS, ten part-time FSSs, and eight radio telephone stations in Alaska to fourteen full-time FSSs, four airport information desks, and a network of seventy-nine radio communications stations. The change would allow full-time flight service facilities to operate remotely stations that had been closed or had reduced operating hours.[52] "Remoting" was not a new concept in Alaska. In 1953, the Civil Aeronautics Administration (CAA) closed the Umiat and Point Barrow flight service stations and the Anchorage FSS remotely handled its calls. In 1955, the Skwentna FSS closed, and calls went to the Anchorage FSS. In 1958, the Middleton Island FSS closed, and pilot inquiries were remoted to the Cordova FSS. In 1960, the FAA closed the Fort Yukon FSS and remoted all calls to Fairbanks.[53] After the FSS closures, pilots routinely expressed concern about the difficulty of getting necessary information on conditions in the areas of the closed FSSs from the servicing FSSs. They criticized the FAA for degrading safety and questioned the necessity for the program.

CAA King Salmon FSS complex, c.1950s
Courtesy: FAA

Don Wolfe, head of the FAA air traffic division, explained that the FAA had originally designed the Alaskan system to meet the military requirements of World War II. It had never intended the system to provide flight services for general aviation pilots. The consolidation plan, agency officials subsequently explained, would create a system that would benefit greater numbers of general aviation pilots. Under the plan, the full-time FSSs would be located in areas most needed by the general aviation community: Anchorage, Annett Island, Bethel, Cold Bay, Cordova, Fairbanks, Galena, McGrath, Nome, Northway, Juneau, Kenai, King Salmon, and Kotzebue. Part-time stations would be located at Palmer, Tanana, Haines, Unalakleet, Sitka, Yakutat, Homer, Kodiak, and Dillingham. The new radio networks would provide communications in areas where none had previously existed, in remote areas such as Chickaloon Pass, Isabel Pass, Mentasta Pass, around the coast, and along the Aleutians. By establishing remote-controlled communication facilities, the FAA could eliminate about sixty-five to seventy flight service positions. The FAA anticipated the entire modernization project would be completed by January 1, 1968.[54]

Gukana FSS, c. 1960
Courtesy: FAA

Moses Point FSS
Courtesy: FAA

The FAA held a number of meetings around the state to provide information on the modernization plan.[55] At these forums, many general aviation pilots expressed concerns that information on sky cover, visibility, and weather would not be available when they needed it. An opinion piece in the *Fairbanks Daily News-Miner* explained: "'Remoting' these stations to other stations is in the name of economy," not safety. The article pointed out: "After the Fort Yukon station was 'remoted,' pilots at Fairbanks planning to fly to the Yukon Flats found in phoning the Fairbanks station they couldn't get the Fort Yukon sky and visibility conditions." This created serious safety issues. "Just because Alaska is far away doesn't mean its private pilots and 2,500 private aircraft should be 'remoted' back to the dark ages," argued another article in the newspaper.[56]

As the modernization program progressed, the FAA continued to receive complaints from Alaska's pilots. On January 18, 1966, the FAA Alaskan Region chief of the air traffic division, Herbert Stanley, and his assistant Darrell Nelson met with many unhappy general aviation pilots. At the forum, Stanley explained the program would cut costs, and the money would then be used to expand facilities and services elsewhere in Alaska. This did not appease the pilots who were adversely affected by the changes and found it difficult to get timely flight information. According to attendees, the FAA admitted that the Fort Yukon experiences had been unsatisfactory, and agency personnel were working to solve such issues.

The pilots complained of difficulty in getting through to the designated hub facilities. The large number of flyers contacting the hub at any one given

[52] "Modernization of Services in State Announced by FAA," *Fairbanks Daily News-Miner*, August 17, 1965.
[53] Heister, *The Air Traffic Control System: Past & Present Facilities*, Stations 1-2. Note: FAA reopened a FSS in Point Barrow on January 1, 1965, to handle communications with the five foreign airlines using the Polar route between Alaska and Europe. See Mike Dalton, "Wien 'Angels of the North' Replaced by FAA Communications in Barrow," *Fairbanks Daily News-Miner*, January14, 1965.
[54] "Modernization of Services in State Announced by FAA."
[55] "Pilot's Meeting," *Fairbanks Daily News-Miner*, October 6, 1965.
[56] "Remotely Controlled," *Fairbanks Daily News-Miner*, November 29, 1965; see also "More Communications Needed, "*Fairbanks Daily News-Miner*, December 16, 1965.

time contributed to delays on the one frequency radio channel. As the *Nenana Roadrunner* explained, "Under the new program Fairbanks is to be a hub, absorbing four stations, Big Delta, Bettles, Nenana and Ft. Yukon. This adds up to about thirty single frequency inlets using the same frequency." The pilots added that the Air Line Pilots Association (ALPA) had studied the modernization program and recommended it be dropped because it would "further degrade the reliability, utility and safety of general aviation operations." They also pointed out that, when the FAA proposed a similar plan for the continental United States, the agency encountered protests by aviation groups and Congress. These protests led to the program being discontinued.[57]

Despite pilot concerns, the FAA proceeded with the modernization plan though at a slower pace than originally anticipated. In late summer 1966, the Palmer FSS became the first part-time station erected under the modernization program. The Palmer business community furnished the materials and labor for the small building. At the dedication ceremony for the new facility, FAA Alaskan Regional Director George Gary expressed his thanks to the community and noted that Palmer was the only FSS with wall-to-wall carpeting. One FAA controller manned the new FSS during peak hours. When unmanned, pilots used a direct telephone line to call Anchorage to obtain information and file flight plans.[58] Other FSSs affected included:

- November 12, 1964, Moses Point became a part-time station[59]
- May 7, 1965, Talkeetna became a part-time station[60]
- April 13, 1967, Iliamna services hours reduced from sixteen to six hours a day[61]
- June 22, 1967, Minchumina and Farewell FSS service hours reduced from sixteen to eight hours a day, and calls remoted to the McGrath FSS[62]
- Summer 1967, new part-time FSS at Point Barrow opened[63] and the Gustavus FSS closed. Calls remoted to Juneau[64]
- May 23, 1968, Nenana FSS service hours reduced from twenty-four to sixteen hours a day[65]
- March 1969, a new part-time FSS opened at Ketchikan[66]
- January 31, 1974, Kodiak FSS closed and calls remoted to the Kenai FSS[67]

[57] "FAA Modernization Plan Decried by Area Pilots," *Fairbanks Daily News-Miner*, January 19, 1966.
[58] "Wall-to-Wall Service," *FAA Horizons* (September 1966): 31.
[59] *Federal Register 29*, no. 178 (September 11, 1964): 12822 - 12823.
[60] *Federal Register 30*, no. 93 (May 14, 1965): 6640.
[61] *Federal Register 32*, no. 78 (April 22, 1967): 6345.
[62] *Federal Register 32*, no. 102 (May 26, 1967): 7705-7706.
[63] *Federal Register 32*, no. 127 (July 11, 1967): 10211-10212.
[64] *Federal Register 32*, no. 127 (July 11, 1967): 10865.
[65] *Federal Register 33*, no. 90 (May 8, 1968): 6913.
[66] *Federal Register 34*, no. 52 (March 18, 1969): 5343.
[67] "Sen. Stevens Appeals for Air Station," *Fairbanks Daily News-Miner*, April 11, 1974.

- September 1968, Cold Bay Alaska IFSS closed and remoted to Anchorage and the Shemya IFSS decommissioned[68]
- March 1, 1968, the Point Barrow FSS began operations, becoming FAA's northernmost facility (71 degrees, 22 minutes north latitude)[69]

A new FSS in Fairbanks began operations on May 20, 1968. Formerly the FSS had been combined with the tower, but an increase in air traffic necessitated the FAA separate the two facilities. By June 7, 1968, the Fairbanks FSS remotely operated the stations at Bettles, Nenana and Big Delta. The Gulkana FSS took the Northway FSS calls during the night. The Anchorage FSS remotely controlled the stations at Talkeetna and Summit, and the Nome FSS controlled the Moses Point station.[70]

As the modernization program continued, pilots became even more frustrated. In 1973, at the urging of Senator Ted Stevens (R-AK), the FAA promised to rethink its plan to consolidate and reduce the number of FSSs in Alaska. In a letter to Stevens, the FAA acting director of the Air Traffic Service said FAA plans called for the use of computers and technologies to modernize flight service in the continental United States. In the Alaskan Region, however, FAA "intends to formulate a plan based on Alaskan needs and relying on manned facilities rather than a network of computerized stations." Stevens, remarked "for the safety of our many pilots and passengers, I feel we do need the manned stations and am hopeful that this report can develop ways by which even a higher rate of safety and service can be realized for our increasing traffic."[71]

In addition to the flight service modernization, in September 1966, the FAA announced plans to close the Fairbanks ARTCC located at Fort Wainwright. The agency planned to transfer the Fairbanks ARTCC functions to a new ARTCC in Anchorage. The FAA hoped to open the new facility in 1968. Thirty-six employees would be affected by the closure. The new ARTCC expected to be operational in 1968.[72]

Fairbanks politicians and community leaders were not pleased with the announcement, since the loss of the facility and its employees would have an effect on the local economy. They questioned the feasibility of building a new ARTCC in Anchorage, an area prone to earthquakes. An opinion piece in a

[68] Federal Aviation Agency, *FAA Statistical Handbook of Aviation* (Washington, DC: US Government Printing Office, 1970), 44.
[69] Edmund Preston, ed., *FAA Historical Chronology: Civil Aviation and the Federal Government, 1926-1996* (Washington, DC: Federal Aviation Administration, 1998), 108.
[70] "FAA Flight Service Station Opens at Fairbanks Airport," *Fairbanks Daily News-Miner*, June 5, 1968.
[71] "FAA to Study Techniques for Alaskans," *Fairbanks Daily News-Miner*, April 25, 1973.
[72] Kathy Colton, "36 Positions Here Face Elimination," *Fairbanks Daily News-Miner*, September 14, 1966; Kathy Colton, "Chairman Challenges FAA Move," *Fairbanks Daily News-Miner*, September 15, 1966; "FAA Plans to Switch Air Traffic Control to Anchorage," *Fairbanks Daily News-Miner*, September 14, 1966.

Fairbanks newspaper suggested that the "FAA could reduce its administrative contingent in the plush-lined offices of Anchorage and have more working men in the field, and be money ahead."[73]

The FAA broke ground for the new Anchorage ARTCC on May 1, 1967, and commissioned the new facility on June 16, 1969. Secretary of Transportation John Volpe dedicated the new center, located 4.5 miles east of Anchorage, on August 21, 1969. Before the FAA could close the Fairbanks center, it still needed to complete one phase of the project – the installation of special common digitizer equipment that would bring radar data to the new Anchorage center by landline from the Air Force's long-range radar at Murphy Dome near Fairbanks. The FAA originally set 1973 as the target date to close the Fairbanks center. However, the agency did not complete installation of the new automated radar terminal system (ARTS) III equipment at the Anchorage center until early 1975.[74]

With air traffic steadily increasing at Anchorage International Airport, Merrill Field, and Lake Hood seaplane base, the FAA saw a need for a taller, modernized air traffic control tower at Anchorage International Airport. (See Table 3.) FAA announced it had awarded a contract for a new tower in July 1975. In July 1977, the new, 165-foot tower began operations, replacing the 74-foot tower opened in 1965. Controllers in the new tower took over operations from the Lake Hood tower, which closed. The FAA tried to sell the Lake Hood tower, but only received one cash bid for $1. The FAA withdrew the tower from sale and donated it to the city of Anchorage for "educational and historical purposes." The city paid to move the tower from the airport.[75]

In 1976, the FAA announced plans to build a new tower at Fairbanks. The agency estimated the cost for the structure would be between $1.5 million and $2.5 million and anticipated it would be completed by August 1978. Construction took almost a year longer than originally anticipated, and the new tower became operational in March 1979. The FAA dedicated the tower on May 12, 1979. The tower housed a terminal radar approach control (TRACON) facility, which began operations on January 17, 1979. It replaced the RAPCON facility that had been located in the Elmendorf tower since 1962. The new TRACON was one of the first in the FAA to go operational with the new $1.5 million ARTS II.[76]

[73] "FAA Plan: Economy or Just a Reshuffling?" *Fairbanks Daily News-Miner*, September 16, 1966.

[74] "New Anchorage Center has Groundbreaking Ceremonies," *FAA Horizons* (June 12, 1967): 5; "Secretary Volpe Dedicates Anchorage Center," *FAA Headquarters Intercom* (August 25, 1969): 1; "Anchorage Air Control Contract Given to Univac," *Fairbanks Daily News-Miner*, January 24, 1974; "ARTS III Shipped to Alaska," *FAA Headquarters Intercom* (October 21, 1974): 1.

[75] "FAA Awards Two Contracts Totaling $3.6 Million to Anchorage Firms," FAA Alaskan Region Press Release, July 3, 1975, FAA History Archives; "Tower Becomes Classroom," *FAA Headquarters Intercom* (October 25, 1977): 3.

[76] "Fairbanks to Receive New Tower," *Tundra Times*, March 9, 1976, accessed at http://ttip.tuzzy.org/cgi-bin/ttimes.exe; "Fairbanks Tower Dedicated," *FAA Headquarters Intercom* (May 29, 1979): 2; "News Briefs," *FAA Headquarters Intercom* (February 5, 1979): 1.

Table 3: Total Aircraft Operations

	1960	1965	1970	1975	1979
Anchorage International Airport	**80,601**	**80,649**	**153,086**	**193,412**	**211,003**
Fairbanks International Airport	**56,965**	**39,243**	**106,970**	**180,465**	**155,899**

Source: *FAA Air Traffic Activity*, Fiscal Years, 1960, 1965, 1970, 1975, 1979

Although not part of the modernization program, when a fire at the Anchorage International Airport destroyed the FAA's hangar, funds had to be diverted to build a new hangar. The November 6, 1974, fire, called "spectacular" by the local press, gutted the hangar, which the FAA owned and shared with Reeve Aleutian Airways, and destroyed three aircraft: the airline's YS11 Japanese Turboprop and Lockheed Electra, and a FAA DC-3. Reeve's aircraft caught fire while being pulled from the hangar; the FAA's aircraft's gas tanks exploded in the hangar. The fire, touched off by a welder's torch, closed the airport for one hour as airport, city, borough, and Air Force firefighters battled the blaze. The airline quickly announced its flights would resume on a limited basis as it tried to find new hangar space. The FAA temporarily moved its aircraft to Elmendorf Air Force Base.[77]

The FAA announced on July 3, 1975, that it had awarded a contract for construction of a new hangar.[78] On August 13, the agency used explosive charges to destroy the steel remains of the old hangar. It dedicated the new $1,550,000 hangar on July 23, 1976. The 204-foot by 208-foot building accommodated all five agency aircraft assigned to Alaska: three DC-3s, a Sabreliner used in flight inspection work, and a C-123. The new hangar also housed technical offices and shops.

[77] "Anchorage Hangar Burns," *Fairbanks Daily News-Miner*, November 7, 1974; "Damages Tallied After Anchorage Airport Fire," *Daily Sitka Sentinel*, November 7, 1974; Howard Weaver, "Fire Destroys Hangar," *Anchorage Daily News*, November 7, 1974; Lisa May, "Holocaust Hits Hangar, Wrecks Planes," *Anchorage Times,* November 7, 1974.

[78] "FAA Awards Two Contracts Totaling $3.6 Million to Anchorage Firms," FAA Alaskan Region Press Release, July 3, 1975, FAA History Archives; "Making Room with a Boom for the New," *FAA Headquarters Intercom* (September 2, 1975): 3; "New Home for Cold Birds," *FAA Headquarters Intercom* (August 9, 1976): 1; "A New FAA Hanger Completed," *FAA Alaskan Region Intercom* (May 7, 1976): 2.

Technological Advances

Weather conditions, the types of flying, and the remoteness of some areas in the state often required the FAA to come up with unique solutions to help commercial and general aviation pilots in Alaska. Fiscal restraints often meant many of the technological advances applied to air traffic control in the continental United States came later to Alaska. Plus, Alaska's flying environment required the FAA to develop solutions adjusted to its requirements. As one controller in Anchorage explained: "Alaska is unique - so far from the rest of the USA that we can only approximate ATC as practiced elsewhere. The equipment we get is different; our procedures are different . . . the FAA in Washington seems to put us last on the list for everything, we still find out, when we look around, that our work is important to the people we serve."[79]

The growing popularity of the Polar route, which shortened the flying distance between the United States and Europe, necessitated improved oceanic control. Air traffic controllers faced lengthy communication delays in relaying information on planes flying between Anchorage and Europe. For example, they communicated with their peers in Resolute Bay off the north coast of Canada using radio teletype equipment. Canadian controllers then used radio telegraph (Morse code) to contact Thule, Greenland. In January 1962, the FAA linked Alaska and Thule by teletype machine. Financed by the Air Force, the system provided direct, simultaneous two-way communications between the Fairbanks ARTCC and the control center at Thule.[80]

The FAA further increased safety on international flights two years later when it began installing the single-sideband mode of air-ground communications in Alaska. Single-sideband technology enhanced the intelligibility of voices over high-frequency (HF) radio at long distances and in the presence of atmospheric noise and adjacent-channel interference. The equipment, first operational at Point Barrow for the North Polar route and at Cold Bay for the North Pacific route, substantially increased safety.[81]

In late 1964, the FAA installed its first very high frequency-ultra high frequency (VHF-UHF) Doppler direction finder at Kenai FSS. The system helped lost pilots to safely find their way. The equipment comprised a group of antennas arrayed in a ten-foot circle. The individual antennas were activated electronically by alternately switching them in pairs to introduce the effect of movement. The system received high frequency radio waves from an aircraft. The signal showed an appreciable Doppler shift as it struck

[79] "Out of the Mainstream - Or Are We?" *The Midnight Sun* (PATCO Local 601 newsletter, February 1979): 4, Georgia State University, Southern Labor Archives, Professional Air Traffic Controllers Organization, Series V, Alaska, Local Newsletters, 1976-1981.
[80] "Alaska Linked to Greenland by FAA Teletype System," *Fairbanks Daily News-Miner*, January 19, 1962.
[81] Federal Aviation Agency, *Sixth Annual Report*, 41.

different components of the antenna, and the amount of the shift indicated the location of the target aircraft.[82]

The FAA replaced the radio-teletype point-to-point radio frequency communications circuit with an all cable connection between Hawaii, San Francisco, Seattle, and Alaska in September 1965. The old circuit had been operational since August 5, 1952, and tied the 49th and 50th states together. For more than thirteen years, the FAA had used it to relay weather and flight-following information between the two states. Following the 1964 earthquake, the circuit had provided the only radio communications link between the mainland, sending messages to Honolulu, which then relayed information to San Francisco.[83] The new cable connection increased communication reliability and clarity.

FAA Administrator Alexander Butterfield visited a number of the agency's Alaskan facilities in early September 1974. He saw firsthand the unique needs of Alaskan pilots. The trip helped him to understand that not all technological improvements in the forty-eight contiguous states would work in Alaska. Upon his return to Washington, DC, after his two and a half day visit, Butterfield noted that Alaska "presents some rather unique challenges for aviation and our agency." He established a six-person FAA team and sent its members to Alaska to study the unique problems involved with flying in Alaska.[84] The announcement encouraged FAA employees in the state, but that enthusiasm turned to disappointment when nothing really resulted from the study.

During fiscal year 1974, the FAA installed the first of four en route automated radar terminal systems (EARTS) at the Anchorage ARTCC. A variation of the ARTS III, the system used long-range radar inputs and en route plan view displays of the Fairbanks ARTCC area in advance of the Fairbanks ARTCC closure. Previously, ARTS III was only used in airport towers. The system generated alphanumeric tags – letters and numbers – that followed the radar "blip" or target on the controller's scope.[85]

With new technologies being introduced, the FAA began gradually decommissioning obsolete equipment. In September 1974, the FAA shut down the last of the agency's over 300 low frequency, four-course radio ranges at Northway, Alaska. The FAA had begun replacing these ranges in the 1950s with other ground-based electronic equipment, such as the VOR and VORTAC – the VOR coupled with the military-developed tactical air navigation facility (TACAN).

[82] "New DF Makes 1st Save," *FAA Horizons* (January 1965): 9.
[83] "It's 'Aloha' to the Pacific/Alaskan Communications Circuit 325T," *FAA Horizons* (December 1965): 22.
[84] Alexander Butterfield, "A Unique Land," *FAA World* (November 1974): 1; "State Needs in Aviation Meeting Topic," *Fairbanks Daily News-Miner*, September 5, 1974. Served as FAA Administrator from March 14, 1973 - March 31, 1975.
[85] "First EARTS Delivered to Anchorage Center," *FAA Headquarters Intercom* (May 30, 1978): 1; National Aeronautics and Space Administration, *Aeronautics and Space Report of the President*, *1974 Activities* (Washington, DC: US Government Printing Office, 1975), 59.

Helping pilots fly in and out of Alaska's capital, Juneau, was an agency priority. Juneau, located in the Alaskan panhandle at the base of Mount Juneau and Mount Roberts on the Gastineau Channel, could only be reached by plane or boat. To land at the Juneau Airport, surrounded by mountains, a pilot had to descend through a narrow pass that became difficult or impossible to navigate with low visibility. The proximity of mountains ringing the airport prevented the use of standard airport approach devices, such as an instrument landing system. However, weather conditions often required an instrument approach. Juneau's difficult terrain required introduction of a special navigation aid, unique in the civil-military system. In 1962, the FAA installed a localizer type directional approach aid on the Mendenhall Peninsula not far from the airport. The equipment provided non-precision approach capability.[86]

With weather conditions an ongoing concern in Alaska, the FAA worked with the National Weather Service to provide the most up-to-date information as possible. As part of that effort, in July 1975, the FAA electronically tied the teletypewriter network in Alaska to the Weather Message Switching Center in Kansas City, Missouri. The new system eliminated the prior manual system in Alaska. The Weather Service, however, did not send automatically surface weather observations, forecasts, and upper air and wind readings to all FSSs in Alaska.[87]

To enhance airport safety, in the summer of 1977, the FAA installed the first airport surveillance radar, ASR-8, at Fairbanks International Airport. Built by Texas Instruments, the short-range, analog system detected the presence and location of aircraft in the terminal and en route airspace. Its dual-bean, solid state equipment reduced the clutter on a controller's screen and improved the detection of aircraft, especially those at low altitude. To get it to Fairbanks, the manufacturer had to truck the basic equipment, housed in two trailer-like structures, and the antenna to Seattle where it traveled by barge to Anchorage and then trucked to Fairbanks.[88]

Even as the FAA installed new technologies in its Alaskan facilities, sometimes old techniques helped improve safety. In 1979, Hank Sutter, chief of the Sitka FSS, spearheaded a low tech program to keep pilots on track. Sutter worked with the communities around Sitka to paint village names on roofs or other prominent spots. Air marking had long been abandoned as a safety program by the FAA. His superiors praised Sutter for his low-tech effort, writing, "Although difficult to measure in specific value, the benefits of roof marking have been recognized since the early days of aviation." The air marking program, they noted, "will ultimately save pilots from experiencing embarrassment, injury and even death."[89]

[86] Federal Aviation Agency, *Fourth Annual Report, Fiscal Year 1962* (Washington, DC: US Government Printing Office, 1962), 35.
[87] "Alaska Joins Weather Network," *FAA Headquarters Intercom* (August 11, 1975): 2.
[88] "New Radars Shipped," *FAA Headquarters Intercom* (August 8, 1977): 2.
[89] "Nothing New Under the Sun," *FAA Headquarters Intercom* (September 4, 1979): 2; "Sitka FAA Station Wins Commendation," *Daily Sitka Sentinel*, February 28, 1980.

Safety in the Flyingest State

The Alaskan aviation community took great pride in calling their state the "Flyingest State in the Union." The FAA released the finding of its first survey of general aviation in Alaska in December 1960. With no reliable data on Alaska flying, the agency hoped to collect dependable statistics. The survey questions focused on measurable questions, such as hours flown, installed equipment, and primary use of the aircraft.[90] As the Alaskan regional administrator explained: "We know we are the flyingest people in the Union, but we have never had good solid figures on how we fly."[91]

With a 70.2 percent response rate, survey results focused on the 1,158 general aviation aircraft with a current airworthiness certificate registered under an Alaskan address. That number included 71 multi-engine; 416 single-engine with four seats or more; and 671 single-engine with three seats or less aircraft; and twenty helicopters. Not surprising to anyone, the survey confirmed that Alaska ranked first among the states in aircraft ownership per capita.[92]

Alaskan pilots flew thirty-two million miles over 250,000 hours. Pilots used their aircraft for (in rank order): hired passenger and cargo transportation; pleasure and personal use; business transportation; miscellaneous work (government operations); instructional flying; and aircraft test, ferry, and demonstration. The number of general aviation aircraft in Alaska's major communities included:

- Anchorage – 625
- Bethel – 11
- Dillingham – 30
- Fairbanks – 213
- Homer – 23
- Juneau – 24
- Kenai – 28
- Ketchikan - 30
- King Salmon – 10
- Kodiak – 19
- Kotzebue – 22
- McGrath – 13
- Naknek – 11
- Nome – 15
- Palmer – 48
- Seward – 1993

[90] Federal Aviation Agency Office of Management Services, *General Aviation in Alaska*, *1958* (Washington, DC: US Government Printing Office, 1960), 12.
[91] "Aviation Survey Launched By FAA for Alaska Flyers," *Fairbanks Daily News-Miner*, May 6, 1959.
[92] Federal Aviation Agency, *General Aviation in Alaska* 1958, 1-11.
[93] Ibid.

Alaska also had the largest number of general aviation accidents in the country. Technology alone could not reduce the accident rate. Many accidents resulted from pilot error, especially among general aviation pilots unfamiliar with Alaskan flying conditions, weather, and terrain. One way the FAA hoped to improve the accident rate was through pilot education programs.

Kotzebue airfield, 1961
Courtesy: httpkotzpdweb.tripod.comkotzhist8.html

The Alaskan Region established a general aviation advisory committee, the first such committee in the agency, on October 18, 1966. Under its charter, the group's members would provide recommendations to the regional director on general aviation programs and recommended solutions to specific problems. As Regional Director George Gary told committee members, "In forming this committee, we have recognized that general aviation is the fastest growing segment of air activity . . . especially . . . in Alaska where general aviation aircraft are the sole means of transportation and communication for many."[94]

In 1967, the agency announced it was preparing the first sectional maps for Alaska. With no sectional maps, Alaska's pilots had to use the Operational Navigation Charts or World Aeronautical Charts. The FAA prepared sixteen sectionals, including two for the Aleutian Islands. The first two maps issued by the FAA covered Fairbanks and Anchorage. Maps for the entire Alaska area would be completed by mid-1968. The agency hoped to annually revise the ten principal charts and semi-annually revise the remaining six.[95]

In a novel approach to increasing safety, in September 1968, the regional flight standards division launched the "Smooth Cat" program. The FAA asked Alaska's pilots to pledge to follow ten common sense rules of air safety: "To preflight my aircraft prior to each flight; to be qualified in the aircraft I am going to fly; to have sufficient fuel to complete my flight and some to spare; not to fly in uncertain or marginal weather; not to make tight turns near the ground; to fly at a safe altitude over existing terrain; not to drink before flying; to tell someone where I intend to fly; to stay with my aircraft until rescued, if forced down; and to be especially alert for other aircraft." Those who had an accident-free year were awarded a "Smooth Cat" decal, which gave them bragging rights among their peers. The state, National Transportation Safety Board (NTSB), Weather Bureau, and other organizations supported the program.[96]

[94] "General Aviation Asked to Speak Up in Alaska," *FAA Headquarters Intercom* (October 31, 1966): 3.
[95] "New Sectional Charts, *FAA Aviation News* 6, no. 5 (September 1967): 4.
[96] "Alaska Launches Drive to Curb Accident Toll," *FAA Horizons* (September 30, 1968): 1, 7.

The FAA inaugurated a general aviation accident prevention program on a national level on November 30, 1970, after its effectiveness had been demonstrated in a two-year test in FAA's Central and Southwest regions. Expansion of the program during fiscal year 1971 involved placing accident prevention specialists in eighty-three general aviation and flight standards district offices, supplemented by one national and seven regional accident coordinators. The program's premise was that the number of general aviation accidents could be reduced by improving the attitude, behavior, proficiency, and knowledge of airmen, as well as by reducing environmental hazards.

Gene Morris became the Alaskan Region's accident specialist for the Fairbanks area. There, the rise of tourist air traffic as well as traffic to the North Slope contributed to an increasing number of accidents. Morris pointed out the difficulty in reducing the number of small aircraft accidents in the state, which had increased from 171 in 1970 to 205 the following year. "You have to realize that more people are flying in Alaska than ever before. We have one half of one per cent of all the aircraft in the U.S., 44 per cent of all float planes, and we comprise 5 per cent of all the accidents."[97] Morris held monthly meetings with pilots in Fairbanks, met with aviation groups, and provided educational materials to local pilots. As Morris explained, "Unfortunately, the pilots who would benefit the most from meetings do not turn out. It's like the preacher who started out his sermon by saying he was preaching to the empty seats."[98]

A high profile accident on October 16, 1972, called into question the FAA's Alaska safety program. On that day, a Pan Alaska Airways Cessna 310 vanished on a flight from Anchorage to Juneau. The plane carried Speaker of the House of Representatives Thomas Hale Boggs, Sr. (D-LA), and Alaska representative Nick Begich (D-AK), Russell Brown, a Begich aid, and pilot Don Jonz. Begich, a first term congressman, had asked Boggs to help him on the campaign trail. The pilot of the twin-engine plane had filed a visual flight rules flight plan with the FAA. The flight plan indicated the three hours and thirty minute flight would take the plane over the Chugach Mountains to Prince William Sound, along the coast to Glacier National Monument, then to Juneau, a distance of approximately 550 miles. The plane had enough fuel for six hours of flight. The pilot took off in fair weather, which deteriorated along the route. It was unclear if the plane carried an emergency locator transmitter, as required by Alaska state law as of September 1972. Once FAA personnel at Juneau reported the plane late, the Air Force took charge of the search from Elmendorf Air Force Base.[99]

A number of civil and military aircraft joined the search the following morning. A FAA spokesman said the last radio contact the agency had with

[97] Dale R. Leslie, "Small Plane Accidents Up," *Fairbanks Daily News-Miner*, September 22, 1972.
[98] Ibid.
[99] "Two Congressman Aboard Plane Missing in Alaska," *Kenosha News* (Wisconsin), October 17, 1972.

the plane happened twelve minutes into the flight when the pilot filed a flight plan. According to the FAA, "There could be many circumstances, like a malfunctioning radio or being out of radio range, that could cause us to lose contact, but the plane has passed its fuel exhaustion time and we assume that the airplane is down."[100]

As the search for the missing plane continued into November, Boggs and Begich won re-election to their congressional seats. On November 24, the Air Force announced it had suspended the search, the longest in Alaska history. During the thirty-nine day search, forty military aircraft, including the Air Force SR71 spy plane, and fifty civilian aircraft had covered nearly 325,000 square miles during 3,600 flight hours.[101] A judge declared Begich dead in a presumptive death hearing in Anchorage on December 12, 1972. The House of Representatives, at the request of the Boggs family, issued a resolution on January 3, 1973, stating Boggs was presumed dead.

Speaker of the House Hale Boggs with President Lyndon B. Johnson
Courtesy: LBJ Library

After investigating the accident, on January 31, 1973, the NTSB issued an accident report. Although stating it could not determine the probable cause of the accident since the wreckage had not been recovered, board members concluded, based on witness reports, that the pilot had not loaded a portable emergency locator transmitter or survival equipment onto the plane before its departure. In addition, they stated "the weather conditions along the proposed route . . . were not conducive to flight under Visual Flight Rules." One witness testified that pilot had said "he was not getting paid for the flight." If the aircraft was not operated for hire, the provisions of Part 91 [general aviation] of the Federal Aviation Regulations applied to the flight. As a result of its investigation, the NTSB recommended, "The Federal Aviation Administration, through its accident prevention staff, make wide dissemination of this accident to the general aviation community, particularly to those pilots and operators involved in operations in remote and environmentally hostile areas."[102]

Despite the FAA's efforts, by fiscal year 1974, the accident rate had increased to 78 per 1,000 aircraft, more than double the national average. During a ten day period in late August and early September 1974, Alaskan pilots had a record high of thirty-four accidents. That raised the year's total to 148 accidents with thirty fatalities. Alarmed by the growing number of

[100] "3 Others on Cessna in Alaska," *Indianapolis Star*, October 17, 1972.
[101] "Boggs Search Ended," *Town Talk* (Louisiana), November 25, 1972.
[102] National Transportation Safety Board, "Pan Alaska Airways, Ltd., Cessna 310C, N1812H Missing Between Anchorage and Juneau Alaska, October 16, 1972," Rept. NTSB-AAR-73-1, January 31, 1973, 6, 8-9.

general aviation accidents, Governor William Egan called on pilots to "curb an alarming increase in Alaska's aviation accident rate." The governor exhorted pilots to "fly by the book," saying that there "are no shortcuts where safety is concerned."[103]

The region did have some unique ideas on how to get the accident prevention word out to pilots. Alaska's regional employee newsletter, often included a column titled the "Ballads of Hezekiah Dyer," a fictitious light plane pilot. The Yakutat FSS employees found the messages in the "ballads" appropriate to share with the pilot community. One such poem, written by Lester Juhnke, discussed the importance of appropriate maintenance:

DON'T SUBSTITUTE FOR SAFETY
(Or, You Don't Have To Be Interested
in Agriculture To Buy the Farm)

Hezekiah Dyer, that nit-witted flyer
Decided to fix his own steed,
"The engine is jerking, but I'll soon have her perking
Mechanics I really don't need!"

So he fiddled with this and tinkered with that
And on run-up she sounded real good.
"I've made her behave, and cash I have saved,"
Said Hex, as he put on his hood.

He took her on high for a really good try,
And he did just one little old spin.
When he tried to pull out, the engine fell out -
He'd forgotten to safety it in!

Now the money he'd saved will be used for his grave.
For all of his fretting and stewing,
His saving a dime ran him right out of time
'Cause he didn't know what he was doing![104]

In February 1974, the FAA established a positive control area from 24,000 to 60,000 feet over most of Alaska. This meant that all aircraft in this part of the airspace flew under the direct control of FAA's air traffic controllers using instrument flight procedures. The FAA had consolidated positive control of almost all of the continental U.S. airspace into the continental positive control area in 1965. In 1971, the agency lowered the base area of positive control in the continental United States from 24,000 to 18,000 feet. Alaska pilots flying in the newly designated positive control area

[103] "Accidents Alarming." *Fairbanks Daily News-Miner*, September 8, 1973.
[104] "Teaching Safety a Fun Way," *FAA World 3*, no. 4 (April 1973): 19.

had to have certain radio and navigation equipment. No visual flight rules flights could operate in the airspace.[105]

Although the accident rate for large scheduled airliners in Alaska remained low, one 1971 accident gained national attention. On September 4, 1971, Alaska Airlines Flight 1866 disappeared en route from Yakutat to Juneau with 111 passengers and crew on board.[106] The plane crashed at the 2,500 flight level of the Chilkoot Mountains in the Tongass National Forest eight minutes before its scheduled landing at Juneau Municipal Airport. It had been cleared to land by air traffic controllers in Juneau. Because of heavy clouds and fog, air traffic controllers cleared the plane for a localizer directional aid approach. An initial NTSB assessment said "nothing was indicated that would reveal any problems with the aircraft."[107] The board subsequently reported the aircraft's radio navigation system had "only partially" used the approach frequencies. "Both VHF receivers were tuned to the Juneau localizer. In a normal approach, one would have been tuned to that frequency, the other to Sister's Island."[108] This led to speculation there might have been an issue with the Sister's Island navaid.

Governor William Egan wrote the Secretary of Transportation five days after the accident requesting an upgrade to the navigation equipment on Sisters Island. The FAA had already begun installation of distance-measuring equipment (DME) equipment prior to the accident. By the end of the year, the FAA had installed DME at Sisters Island, which served as a source of determining the location of fixes on the final approach course of the airport's localizer. The agency also mandated new standards for planes flying into Juneau's airport.[109]

During NTSB's investigative hearing in October 1971, Captain Charles David, a Western Airlines pilot who flew into Juneau, discussed his concerns about flying into the airport. He said a pilot needs "a bag of tricks" to land successfully at Juneau. He reported the distance-measuring equipment installed after the crash was "an inadequate improvement."[110] The crash remains Alaska's single worst air disaster. In its final report, published thirteen months after the crash, the NTSB concluded "the probable cause of

[105] "Positive Control Over Alaska," *FAA Headquarters Intercom* (March 11, 1974): 3.
[106] "Boeing 727 Hours Overdue between Juneau, Yakutat," *Fairbanks Daily News-Miner*, September 4, 1971.
[107] "Snow Falling Today at Scene of Crash," *Fairbanks Daily News-Miner*, September 7, 1971
[108] NTSB Report Reveals Jetliner's Radio Was Off Signal," *Fairbanks Daily News-Miner*, October 13, 1971.
[109] James Brooks, "The Disaster That Taught Us to Fly Safely: 45 Years After Flight 1866," *Juneau Empire*, September 3, 2016, accessed at http://juneauempire.com/state/2016-09-03/disaster-taught-us-fly-safely-45-years-after-flight-1866; National Transportation Safety Board, "Alaska Airlines, Inc., Boeing 727, N28969G, Near Juneau, Alaska, September 4, 1971," Rep. NTSB-AAR-72-28, Adopted October 13, 1972," accessed at http://lessonslearned.faa.gov/TWA514/AAR72_28_727_at_juneau.pdf.
[110] "Mystery Crash of '1866' Still Unsolved," *Fairbanks Daily News-Miner*, October 22, 1971.

this accident was a display of misleading navigation information concerning the flight's progress along the localizer course which resulted in a premature descent . . . The origin . . . of the misleading navigational information could not be determined."

The FAA ultimately assumed partial responsibility for the crash after discovering that the VOR at Sisters Island had probably malfunctioned, which resulted in a directional error of thirty-five to forty degrees. Alaska Airline's London-based insurance company filed a suit against the FAA in 1975. In an out-of-court settlement, the agency agreed to pay thirty percent, $4.5 million, of the $15 million in insurance claims made against Alaska Airlines.[111]

Wien Air Alaska Strike

On May 7, 1977, the pilots of Wien Air Alaska went on strike to protest the company's decision to reduce its Boeing 737 cockpit crew from three to two pilots.[112] One hundred and thirty-three pilots walked off the job after negotiations between the airline and the union that represented the pilots, the Airline Pilots Association, stalled after fifteen months. Wien operated intrastate routes to Barrow, Nome, Kotzebue, and points in between those cities. The Civil Aeronautics Board (CAB) granted emergency authority to Alaska Airlines to cover Wien's route. When Alaska Airlines pilots refused to cross the picket line, the airline tried to get a temporary restraining order to force the pilots to work Wien routes. A district judge refused to issue the restraining order and granted the Alaska Airlines pilots the right to honor the strike.[113]

Wien Air Alaska Constellation at Barrow Airport
Courtesy: berkeley_geography @ Flickr Commons

Wien hired eleven replacement pilots and sent them to Seattle for training at the Boeing Commercial Airplane Company.[114] In response, pilots

[111] "FAA Settles Crash," *Fairbanks Daily News-Miner*, November 15, 1975.
[112] Between 1947 and 1965, FAA and its predecessor agencies had required a three-man crew on all transports with a takeoff weight over 80,000 pounds. In April 1965, the FAA issued a new rule that set forth workload criteria as the standard for determining the size of an air transport cockpit crew. The FAA type-certificated the first U.S. aircraft for operation with a two-man crew, the Douglas DC-9, in 1965.
[113] "Wien Plans to Hire Crews from Outside," *Fairbanks Daily News-Miner*, May 18, 1977; "Court Denies Restraining Order," *Fairbanks Daily News-Miner*, May 19, 1977.
[114] "Wien Adds More Routes," *Fairbanks Daily News-Miner*, July 7, 1977.

from United, Western, Northwest Orient, and Alaska Airlines joined Wien strikers outside the Boeing Commercial Airplane plant in Seattle to protest Boeing training Wien's substitute pilots.[115] Wien also contracted with Alaska Island Airways and Northern Air Cargo to handle its freight operations during the strike.

When Wien contracted with Evergreen Airlines to handle some of its passenger flights to Nome and Kotzebue, Evergreen flight attendants replaced Wien flight attendants on those routes. Evergreen flew Lockheed Electras and the Wien attendants had no training on those planes. The flight attendants did not want to be furloughed like 800 other Wien employees. The teamsters, on behalf of Wien's flight attendants, petitioned for and were granted a restraining order to require Wien to stop using contract planes staffed by non-Wien union flight attendants. Wien ultimately agreed to have two Wien flight attendants on the crews of Evergreen's Lockheed Electra flights along with two Evergreen flight attendants. The Wien attendants provided essential services and the Evergreen attendants were on standby in case of an emergency.[116]

On November 2, 1978, President Jimmy Carter created a presidential emergency board to help settle the dispute. Three months later, on February 9, 1979, the board reported that both parties had agreed to accept a two-man crew for 737 operations. After twenty-one months, the strike ended on March 1, 1979. This settlement left only United and Western among U.S. airlines with a three-man crew for the 737.[117]

Alaskan Regional Office

During his tenure, Administrator Najeeb Halaby began efforts to decentralize the agency's Washington, DC, headquarters and its field organizations to improve administrative efficiency and service to the public. The agency established area offices within the regions headed by area managers. The area managers had line supervision over four basic operating programs: air traffic, flight standards, airway facilities, and airport programs. These programs had previously been in the hands of the regional directors and regional program division chiefs. In September 1965, the FAA opened its first nine area offices in Alaska. In 1966, the FAA opened area offices in Anchorage, Fairbanks, Northway, Kodiak, Juneau, McGrath, King Salmon, Annette, Nome, Cordova, and Kenai. Alaska ultimately had eighteen area offices.[118]

[115] "Pilots Join Pickets," *The Daily News Post* (Washington), June 7, 1977.
[116] "Filling In," *Fairbanks Daily News-Miner*, June 4, 1977; "Wien Consents to Addition of 2 Attendants on Charters," *Fairbanks Daily News-Miner*, June 15, 1977; "Wien Teamsters Hold Work Stoppage," *Fairbanks Daily News-Miner*, August 3, 1977; Dermot Cole, "Wien Hires Second 'Herc,'" *Fairbanks Daily News-Miner*, June 3, 1977.
[117] Christopher R. Knauth and Joseph P. Leuzzi, eds., *United States Aviation Reports*, 1978, 1 (New York: Oceana Publications, 1979), 193.
[118] "FAA Names Area Managers for Fairbanks, Anchorage," *Fairbanks Daily News-Miner*, September 2, 1966; Federal Aviation Agency, *8th Annual Report, Fiscal Year 1966* (Washington, DC: US Government Printing Office, 1967), 93.

Halaby's successor, however, believed in a more centralized organization. During fiscal year 1966, Administrator William McKee began reducing the number of area offices in the regions. He reduced the number in Alaska to sixteen, with plans to order additional reductions. In 1969, FAA Administrator John Shaffer continued the consolidation efforts. On May 22, 1969, he requested plans for consolidating regional and area offices located in the same city within the contiguous United States. The move offered operating economies and saved numerous positions that could be used to fill critical "firing line" position shortages. The FAA implemented the consolidations during late summer 1969, and completed the transfer of functions and employees to the appropriate regional divisions on September 8. The agency gradually closed the area offices in Alaska, and by April 2, 1971, the Alaskan Region's last area office closed.[119] A major organizational change to the FAA came in 1967. On April 1, the independent Federal Aviation Agency, which reported directly to the president, became the Federal Aviation Administration under the new cabinet-level Department of Transportation.

A 1966 estimate, approximated that federal agencies in the Hill Building paid a combined annual rent of $540,000 plus the cost of electricity.[120] After assessing the needs of federal agencies in Alaska in the late 1960s, the General Services Administration (GSA) determined the need for new federal office buildings in Anchorage and Fairbanks. GSA proposed a 135,000 square foot building be constructed in Anchorage to house the federal courts, postal service, FAA, and other federal officers.[121]

Congress authorized funding for the new Anchorage federal complex in September 1972. As plans for the new building progressed, projected construction costs rose and, in 1975, GSA delayed construction. GSA began construction on the new Anchorage building in the spring of 1975. In mid-February 1979, approximately 400 employees of the Alaskan Regional Office began moving from the privately-owned Hill Building in downtown Anchorage to the recently completed $71 million federal office building at 701 C Street in Anchorage.[122]

Unionization and Labor Unrest

Increasing air traffic, aging equipment, management issues, and the desire for better pay and work hours led air traffic controllers in New York

[119] Preston, *FAA Historical Chronology*, 66, 68, 72, 92, 112, 114, 115, 122, 134. Shaffer served as Administrator March 24, 1964 - March 14, 1973.
[120] "Davenny Attacks Administration's Plan to Have ASHA Buy Court Houses," *Fairbanks Daily News-Miner*, October 30, 1966.
[121] "135,000 Sq. Feet Planned in Facility," *Fairbanks Daily News-Miner*, September 28, 1971.
[122] "Construction Can Begin on Complex," *Fairbanks Daily News-Miner*, April 28, 1976; "On the Move in Alaska," *Fairbanks Daily News-Miner*, February 20, 1979.

to form the Professional Air Traffic Controllers Organization (PATCO) in January 1968. By the end of June 1968, PATCO had a national membership of well over 5,000 FAA employees, including some from Alaska. A number of controllers in Anchorage had joined the National Association of Government Employees (NAGE), and it would take almost two years and a court battle between PATCO and NAGE before those controllers could join PATCO.

On January 15, 1969, the U.S. Civil Service Commission ruled that PATCO was an employee organization, not a professional society, because it had sought and obtained a dues-withholding agreement. The FAA had agreed to permit a voluntary payroll deduction plan for the payment of PATCO dues with the understanding that PATCO would remain a professional society. As a result of the ruling, PATCO became subject to the standards of conduct and the code of fair labor practices. At the same time, it became eligible for formal recognition as a labor bargaining organization under Executive Order 10988, which recognized the right of federal employees to collective bargaining.

Between June 18 and 20, 1969, a number of PATCO-represented controllers claimed illness and did not report to work causing widespread flight delays. The sickout coincided with congressional hearings on legislation to provide higher pay, early retirement, and other benefits for controllers. Of the 477 controllers who took sick leave during the job action, the FAA suspended eighty from three to fifteen days, including a handful from Alaska.

As a result of the sickout, the FAA denied PATCO's request for formal recognition, and on July 27, the FAA terminated its dues-withholding agreement with PATCO, stating that it was not in the public interest to assist an organization taking part in an illegal job action. The situation changed, however, with President Richard Nixon's October 29 Executive Order 11491. That order replaced Executive Order 10988 as the basis for federal employee-management relations. The order, which went into effect on January 1, 1970, gave the Labor Department authority to grant exclusive recognition to federal unions. On February 18, 1970, PATCO filed a petition with the Federal Labor Relations Council for certification as the exclusive bargaining representative for all non-supervisory air traffic control specialists. PATCO gained union status.

Almost immediately after becoming the controller's bargaining unit, approximately 3,000 controllers engaged in another sickout, which lasted from March 25 through April 10, 1970. Some controllers remained absent for just a day or two, others for the entire seventeen day period. The work stoppage reflected widespread labor discontent, but FAA's decision to carry out the involuntary transfer of three controllers from the Baton Rouge combined station-tower over PATCO protests triggered the event.

The FAA and Department of Transportation viewed the sickout as a strike against the U.S. government and, therefore, illegal. The government

obtained temporary restraining orders against PATCO, and when the union failed to comply, it obtained a show-cause order against PATCO's officers. During the hearing on the show-cause order, PATCO agreed to call off the sickout. In the aftermath of the strike, the FAA suspended nearly 1,000 controllers and fired 52, including several from Alaska.

The Department of Labor stripped PATCO of its status as a labor organization on January 29, 1971, because of the strike. PATCO agreed to comply with a number of steps mandated by the Labor Department before it could again seek recognition as a labor organization. On October 20, 1972, the Federal Labor Relations Council again certified PATCO as the sole bargaining unit for air traffic controllers.

On April 4, 1973, the first labor contract between the FAA and PATCO went into effect. The one-year agreement contained fifty-six articles that included provisions on a variety of issues, including payroll deduction of union dues and "familiarization flights" by controllers in airline cockpits. On May 7, 1975, the FAA and PATCO reached agreement on a two-year contract, which became effective on July 8. The contract's seventy-four articles included an expansion of familiarization flight privileges, working conditions, and career enhancement.

When the U.S. Civil Service Commission proposed to downgrade the paygrades of controllers at certain low-activity facilities and delayed a pay reclassification study, a work slowdown protest by PATCO-affiliated controllers disrupted air traffic across the country for four days in late July 1976. PATCO President John F. Leyden ended the slowdown when the Civil Service Commission agreed to reconsider its position on downgrading facilities and expedite the pay reclassification study.

On November 12, the Civil Service Commission, in a reversal of a position taken earlier, announced its support for upgrading air traffic controllers at eight of the nation's busiest air traffic control facilities from GS-13 to GS-14 pay grades. The Commission also approved the upgrading of controllers at lower paygrades at approximately twenty-three other installations, but still insisted on downgradings at a few facilities. PATCO demanded better terms, backing its position with the threat of renewed slowdowns. On January 13, 1977, the Commission dropped its insistence on downgradings and approved promotions at some forty-five facilities.

By 1977, PATCO had learned how to flex its muscles to gain increased benefits for its members. It had staged five slowdowns or sickouts across the country between 1968 and 1977 all designed to pressure the FAA into addressing their concerns over antiquated equipment, working conditions, and wages with little repercussion from the agency. The union succeeded in forcing the Civil Service Commission to establish new classification standards for controllers that raised pay levels at many facilities. When President Carter took office on January 20, 1977, discontent among controllers remained high

despite the fact that the new standards, which went into effect on February 13 and March 13, promoted about 2,200 journeyman controllers at thirteen of the nation's busiest Air Traffic Control facilities to the GS-14 level. It also upgraded 420 controllers at nine facilities to the GS-13 level, raised about 180 journeyman controllers at eleven facilities to GS-12, and promoted an additional 145 at twenty-four facilities to GS-11.[123]

For the most part, controllers in Alaska enthusiastically joined PATCO, hoping the union would help them obtain better equipment, higher pay grades, and lower required overtime at understaffed facilities. Like other locals, they joined in the 1970 sickout and publicly accused the FAA of allowing unqualified employees control traffic during the sickout. "There are some men at the radar approach control facility at Elmendorf and the Anchorage control center who have not been at a radar screen for as long as four years," spokesman Harry Robinson claimed, which created a serious safety issue. The FAA denied all allegations.[124]

As a result of their sickout activities, the FAA fired several PATCO local officers and suspended a number of the protesters for up to twenty-four days. As the Washington, DC-based PATCO national officers fought to get fired local officers reinstated and suspensions reduced in the Lower 48 states, union members in Alaska felt largely abandoned. Those Alaska controllers disciplined for participation in the sickout received no financial help with their defenses and generally did not receive legal aid from the union's attorneys.

Although most of Alaska's controllers remained in the union, many complained about the lack of support they received from PATCO. Distance, time differences, and the sheer number of small facilities in Alaska made communications with the national office difficult. Frequently, the Alaskan controllers' dues payments were lost; union materials, such as the monthly magazine, never made it to Alaska; and often ballots for national elections did not arrive in time. Controllers in Alaska genuinely believed that PATCO had little interest in representing the smaller facilities.

Adding to the controllers' sense of neglect was the union's unwillingness to help get the Alaska controllers' promotions above the GS-12 level. These controllers were upset that GS-14 controllers who came to Alaska to work, although categorized as GS-12 employees once they arrived, retained their GS-14 pay for two years. After two years in Alaska, the FAA paid for them to return to GS-14 positions in the continental United States. Adding insult to injury, the FAA had the GS-12 controllers train the GS-14 recruits in Alaska airspace procedures. To fight what they believed a gross inequality, the Alaskan controllers rejected the PATCO definition of seniority and voted to define seniority on the number of years at an Alaskan facility, not longevity as a controller.[125]

[123] "Controllers Promoted," *FAA Headquarters Intercom* (April 25, 1977): 1.

[124] "PATCO Says FAA Using Unqualified," *Fairbanks Daily News-Miner*, April 6, 1970.

[125] Information on PATCO in the Alaskan Region can be found in Georgia State University's Southern Labor Archives, which has digitized its PATCO holdings, including 14 files on Alaska. The digital records can be accessed at http://digitalcollections.library.gsu.edu/cdm/search/collection/PATCO.

Despite issues with the union, most Alaskan controllers remained dues paying members of PATCO. Most of the locals produced union newsletters and dutifully reported safety issues and other local matters to the national office. Local officers continually tried to recruit new members and preach the idea of union unity within the state. Like in the Lower 48, the 1978 contract negotiations helped solidify support in Alaska. By August 1978, Anchorage Local 601, which included controllers in the Anchorage Tower, Anchorage TRACON, Merrill Field Tower, and Anchorage ARTCC, claimed 117 PATCO members with 227 non-members. Smaller facilities bragged about 100-percent union participation. One such facility, the tower at Valdez, proudly boasted of its 100-percent participation, however, admitting that the facility had only had two controllers.

PATCO's president, John Leyden, continued to encourage the controller workforce to seek even greater political influence and benefits. He vowed to continue the battle for removing controllers from the Civil Service Commission pay scales, shorter work weeks, higher pay, privatization of the controller workforce, and even the right to strike.[126] Even the somewhat disgruntled Alaskan controllers hoped union membership would pay off in the end.

Life in the Region

Alaska remained a hard place to fill job vacancies. In an article designed to encourage FAA employees to transfer to Alaska, FAA Alaskan Region Public Affairs Manager George Fay wrote in an FAA news magazine, "Alaska still retains much of the flavor and excitement of the western frontier at the turn of the last century." He said, "Alaska can be richly rewarding for anyone. With aviation and air transportation as its major activities, air traffic controllers, airway facilities technicians, flight inspectors and all the others who support the effort have earned special appreciation for the work they do." He remarked that the state "is a wonderful place to raise children. Its schools rate with the best. Many employees find the time to pursue their quest for higher education in Alaska's fine universities and colleges."[127]

Except for life in the "big" cities of Anchorage and Fairbanks, life "in the western frontier" proved challenging for many FAA employees. Housing

[126] Edmund Preston, *Troubled Passage: The Federal Aviation Administration During the Nixon-Ford Term, 1973-1977* (Washington, DC: US Government Printing Office, 1987), 248-250.

[127] "Alaskan Tour: Flavorful and Exciting Experience," *FAA Horizons* (September 1966): 16-18. See also "Land of Fantastic Beauty and Incredible Wealth," *FAA Horizons* (October 1966): 10-12. In 1967 the Alaskan Region published a recruiting booklet, "The Alaskan Region – A Family Affair," to answer questions about living and working in Alaska. "Colorful Booklet Pictures Alaskan Living, Working," *FAA Horizons* (March 4, 1968): 6.

shortages plagued the region's ability to attract new talent, as did the lack of modern conveniences. For the adventuresome, however, Alaska remained the perfect duty station where life at the remote facilities provided endless tests of their ability to cope and adapt to the state's many challenges.

Moose grazing at a flight service station
Courtesy: FAA

At Farewell, for example, senior air traffic control specialist Charles Shenkel noted that his "community" is formed by "the bears, bison, moose, caribou and wolves, which consider the station a second home." He added, "Everywhere we go, we have to carry a gun. Bears and bison are always rummaging in our garbage cans." Farewell had no schools or churches. As Shenkel remarked, "Keeping busy is the key to serving in a remote station."[128]

Alaska's wildlife provided endless amusement and frustration for the FAA's outposts. At the Talkeetna FSS, station manager William H. Price noticed the loss of a number of runway lights over the course of several nights. He reported, "Devotion to duty, though sleepy, caused this operator to keep an alert eye to ascertain the trouble." To his surprise, Price found that a moose was eating the light bulbs. "Apparently finding them distasteful, or possible a little coarse, he or she persisted in kicking over the light cones," reported Price.[129]

Alaska's FAAers delighted in relaying bear stories to colleagues in the Lower 48. Employees at the Cold Bay FSS reported in 1963 that "black bears, noted for their robust appetites and deplorable table manners," were on the prowl again. "In a recent incident, one of the dangerous animals, attracted by the aroma of baking bread did considerable damage to a residence in an unsuccessful attempt to force an entrance . . . Cause of the invasion: unusually poor salmon run and the possible feeling among bears that they have long established squatter's rights to the territory."[130]

In another Cold Bay bear encounter, an employee reported "the brown bear population at Cold Bay looks forward with happy anticipation each summer to the large salmon run," near the facility. "While waiting for salmon, they sometimes seek out hors d'oeuvres in the garbage cans in the living quarter's area of the Cold Bay International Flight Service Station." As a result, he recounted, "Housewives there have learned to live with the

[128] "This is Farewell!" *FAA Horizons* (March 1966): 6-7.
[129] "On the Inside: Mystery at Talkeetna," *Fairbanks Daily News-Miner*, January 27, 1960.
[130] "Alaskans Face Bear Facts of Life," *FAA Headquarters Intercom* (August 7, 1963): 3.

inconvenience of having hungry, 800-pound bears prowl around their homes . . . Mattie Weimar, wife of general mechanic Leonard Weimar, had a fleeting but frightening encounter with a bear recently. While on her way to visit a neighbor, she came upon a foraging bear in an open area. The nearest building was 200 feet away. A lively race ensued between Mrs. Weimar and the long-clawed garbage rooter – the fleet-footed wife won by a scant 10 feet."[131]

Robert E. Wilson's tale of Beauregard, the Pixilated Bear, amused many in the agency. Wilson, an evaluation officer in the Airways Facilities Division, recounted a FAA field maintenance party's encounters with Beauregard. The crew set out to check a non-directional beacon near the Chandalar River in the remote Brooks Range. Trekking on foot, they stumbled across a bear on top of a fifty gallon fuel storage bladder. The bear was using the bladder, made out of a strong rubber, as a trampoline. According to FAAer Dennis La Chance, a witness to the event, the bear "looked like a four legged kid, having one heck of a good time," bouncing up and down on the fuel bladder. Hoping to scare the bear, who blocked their way to the beacon, the field party screamed at the bear. "Beauregard stopped in mid-bounce, took a look at the three men and apparently decided those two-legged critters were kind of noisy, but otherwise of little significance." The bear "resumed its fun."[132]

The FAAers returned to their base and contacted Alaska Department of Fish and Game personnel for help, who moved a tranquilized Beauregard and released him forty miles up the river. About a week later, the same field party once again found Beauregard bouncing on his trampoline. This time, the Fish and Game wardens moved the bear 400 miles up river near Kotzebue, and the field party once again returned to work.[133]

For the children of employees on Woody Island, attending school provided a daily adventure. The two mile by four mile island did not have a school. Kodiak, which offered the closest school to the island, was located several miles offshore and reachable only by boat. The children took the ferry *FedAir IV*, which the FAA owned and operated, to and from school. The boat also hauled food and supplies to the island.[134]

FAA Woody Island housing, 1964
Courtesy: FAA

At Minchumina, the children were lucky enough to attend a new grade school, which opened in 1963.

[131] "Fleet Alaska Housewife Outpaces Brown Bear," *FAA Horizons* (September 1965): 28.
[132] Warren Runnerstrom, "The Case of the Bouncing Bruin," *FAA World* (August 1977): 5.
[133] Ibid.
[134] "On Woody Island," *FAA Horizons* (June 1965): 4-5.

The school, however, had no electricity. Teachers held class using gasoline and kerosene-fueled lanterns. The local power company offered to furnish electricity to the building for a fee if the community stretched and buried the necessary cables. FAAers, among others, buried over 1,200 feet of cable "around trees, through bush, over stumps, knee deep in mud."[135]

FAA employees at the Sitka FSS faced a different kind of school problem. The facility, located on the second floor of an old Navy hangar, shared space with the Mt. Edgecumbe High School, on the first floor. At times, according to one FAAer, "noise from the school below requires controllers to ask pilots to repeat their requests." For the most part, FAA employees did not really seem to mind their shared quarters. As one employee pointed out, the FAA communications and maintenance personnel "get deep satisfaction out of helping the faculty move the students (literally) up to science."[136]

Eleven FAA families lived near the remote Kotzebue FSS, thirty miles north of the Arctic Circle on the western coast of Alaska. There they happily encountered long sunless winters and summers with almost continuous sunshine. In fact, as reported, the sun did not set for thirty-six days straight starting in mid-June. The families, however, seemed content. As one employee noted, "Morale seems to rise in direct proportion to the station's distance from civilization."[137]

Of course, Alaska's short summers and long cold winters kept everyone complaining. As one erstwhile FAAer reported in December 1971 from Fort Yukon, the weather had been "still warm" at twenty degrees below zero until recently when the temperature dropped to thirty-two degrees below zero.[138] Those at the FAA headquarters in Washington, DC, perhaps, had some difficulty in understanding why some employees thrived in the Alaska environment. Regional Administrator Lyle Brown maybe offered the best reason, "The FAA people up here are just different . . . There's a sense of community among them and a strong personal bond between families."[139]

Life in Alaska did come with some exciting surprises. In early 1974, for example, Alaskans became some of the first in the United States to see the new French-British supersonic transport, Concorde. The jet had a maximum speed of 1,500 miles per hour, but FAA regulations would not allow the plane to fly at supersonic speeds over U.S. territory. The plane could be flown only as fast as 800 miles per hour while in the United States.[140]

The Concorde arrived in Fairbanks on February 7 for cold weather testing. The aircraft stayed at the Fairbanks International Airport for several

[135] "Dogs and Manpower Provide Light for New School at Minchumina," *FAA Horizons* (December 1963): 7.
[136] "Sitka FSS is Located Above Indian School," *FAA Horizons* (August 21, 1967): 2.
[137] "Wild Shadows Spell Danger on the Ice," *FAA Horizons* (July 1965): 16-17.
[138] "Fort Yukon," *Trapeline* (FAA, December 1971): 1.
[139] "Alaska - The Last Frontier is Booming," *FAA World* (November 1974): 7.
[140] "Super Transport Jet Fairbanks Test Set," *Fairbanks Daily News-Miner*, January 26, 1974.

weeks as the manufacturer subjected the aircraft to "cold soak" tests. Engineers left the plane out in the cold for a day or two then taxied it to check for flap, brake, and other system operation. The French crew also flew the plane on short flights near Fairbanks. While it was at Fairbanks, FAA conducted noise tests.[141]

The supersonic jet flew into Anchorage on February 15. There key officials, such as Regional Administrator Lyle Brown, took a two-hour demonstration flight over the Pacific. The aircraft flew subsonically over U.S. territorial waters until it passed Middleton Island. Then the pilot broke the sound barrier. As Brown said about his trip, "It was impressive how easily the Concorde made its transition from subsonic to supersonic flight."[142]

A Quest for Diversity

The FAA began a new training program for the air traffic control and electronic technician occupations in February 1970. The agency hoped that the project, termed the 150 Program because of the number of positions initially allotted to it, would work to broaden the recruitment base and offer opportunities for minorities. Candidates began at the GS-4 pay level, and after successfully completing a six-month training program at the Aeronautical Center, became a GS-5. The 150 Program was later renamed the Pre-development Program.[143]

As a result of the program in Alaska, Eleanor Joyce Williams became the first African American woman certified as a FAA air traffic controller. Born in College Station, Texas, on December 21, 1936, Williams was one of six children born to sharecroppers. Her parents moved the family to Vancouver, Washington, during World War II when they secured employment as riveters at Kaiser Shipyard. After the war, the family returned to College Station where her mother opened the first commercial laundry in town and her father worked in construction.

She married Tollie Williams, Jr., in 1955 and had seven children. In 1963, she moved her family to Anchorage, Alaska, where her sister had a janitorial contract with the FAA regional headquarters in Anchorage. After three months working on the FAA cleaning crew, Williams took another job at a hospital cafeteria before attending free classes at a local community college to further her education. After stenography and secretarial training, Williams applied to the FAA and obtained a job as a GS-4 clerk stenographer on March 15, 1965.

[141] "Concorde to Visit Alaska," *FAA Headquarters Intercom* (February 4, 1974): 3; "Concorde Jet Due Thursday," *Fairbanks Daily News-Miner*, February 6, 1974.
[142] Al Garvis, "The SST Drops In," *FAA World* (May 1974): 22-23; "SST Expected to Land in Anchorage Friday," *Fairbanks Daily News-Miner*, February 14, 1974.
[143] Preston, *FAA Historical Chronology*, 122.

Over the next few years, she slowly moved up the pay scale. She worked for the flight standards and personnel offices. While in personnel, she helped process the paperwork to hire new air traffic controllers. Seeing an opportunity for more interesting work and higher pay, she applied for one of the positions. She completed the controller entrance exam and began training at the Anchorage Flight Service Station in 1968. She received certification in 1971.

Eleanor Williams
Courtesy: FAA

Williams subsequently trained controllers in Anchorage. She then became a supervisor in San Juan, Puerto Rico; a supervisor back in Anchorage; an airspace analyst in Atlanta and at headquarters in Washington, DC; area manager at the Kansas City ARTCC; a section supervisor in the central region; an assistant air traffic manager in Kansas City; and then in 1994, manager of the Cleveland ARTCC, which became the busiest center in the country while she worked there. She served as a Women in Management Delegate to the Soviet Union with People to People International in 1990. Before retiring in 1997 with thirty-two years of federal service, Williams held an executive management position in the FAA's Great Lakes Region.[144]

Alaska's Airlines: The CAB, Routes, and Mergers

In the early 1960s, Alaska's air carriers entered the jet age. Alaska Airlines introduced its first jet service in 1960 with the Convair 880 on its Seattle-Anchorage-Fairbanks route. Alaska Airlines subsequently leased the Lockheed Hercules Type 382, and Alaska and Pacific Northwest Airlines added Boeing 727s to their fleets between 1965 and 1966. The feeder airlines upgraded their fleets with turboprop aircraft.[145]

A number of mergers in the late 1960s also redefined the airlines in Alaska. In 1967, Alaska Airlines merged with Cordova Airlines; the following year, Alaska merged with Alaska Coastal Airlines. By the end of the decade, Alaska Airlines flew all local routes in and out of Southeast Alaska with the exception of the Juneau-Ketchikan-Seattle route of Pacific Northwest

[144] For information on Eleanor Williams, please see https://employees.faa.gov/org/linebusiness/ato/news/features/story/index.cfm?newsId=35608 and http://www.gpo.gov/fdsys/pkg/CREC-1995-02-08/pdf/CREC-1995-02-08-pt1-PgE298.pdf.

[145] Davies, *Airlines of the United States since 1914*, 311-312.

Airlines. Pacific Northwest ultimately merged with Western Airlines.[146]

Wien Alaska Airlines changed its name to Wien Air Alaska in 1966. It merged with Northern Consolidated Airlines in 1968 and, again, changed its name, this time to Wien Consolidated Airlines. Wien now had responsibility for the northwest routes. Reeve Aleutian Airways continued its Aleutian service. Western Alaska Airlines, which began service in 1959, merged with Kodiak Airlines, established in 1960, becoming Kodiak-Western Airlines in 1973.[147]

As the carriers upgraded fleets, they hoped to increase their routes. From the air carriers' viewpoint, the Civil Aeronautics Board (CAB), as it had in the past, seemed to want to stymy growth. On March 19, 1962, for example, the CAB began an investigation to study if the current service from Alaska to the Pacific Northwest really needed the service of four air carriers: Pan American World Airways, Alaska Airlines, Northwest Airlines, and Pacific Northern Airlines. The CAB proposed the possibility of eliminating Pan American World Airways from the Seattle-Alaska route and suggested the merger of Alaska Airlines and Pacific Northern Airlines.[148]

Pan American immediately filed suit in U.S. District Court in Washington, DC, to enjoin the board from terminating its authority on the route. Judge Alexander Holtzoff granted Pan American a permanent injunction against the CAB, which permitted the airline to continue its Alaska service. The judge said the CAB had no right to cancel or forfeit a domestic carrier's franchise. In explaining the court's action, Edward Swofford, Pan American's regional director based in Seattle, said "The court simply has acted to clarify the powers of the CAB to revoke or terminate any air carrier permanent certificate."[149] The court of appeals for the District of Columbia Circuit ultimately dismissed Pan American's injunction suit as premature because there had been no final CAB decision.[150]

Alaskans, believing the CAB never really understood its aviation needs, vehemently defended Pan American's rights to fly in and out of Alaska. In a senate speech on March 22, 1962, Senator Ernest Gruening (D-AK) contended that the CAB had never had a full understanding of Alaska's

[146] Ibid., 312-313.

[147] Ibid., 313-314.

[148] Christopher R. Knauth and Joseph P. Leuzzi, eds., *United States Aviation Reports*, 1964, 1 (New York: Oceana Publications, 1965), 225-241; "CAB Orders Probe to Cut Number of Alaska Airlines," *Daily Sitka Sentinel*, March 20, 1963.

[149] "Pan American Comments On Judge's Ruling Against CAB," *Fairbanks Daily News-Miner*, July 19, 1962; "Judge Scores CAB on Pan Am Proposal," *Fairbanks Daily News-Miner*, July 18, 1962; "Background of Pan Am Case Told Chamber of Commerce," *Fairbanks Daily News-Miner*, July 25, 1962; "Improved Juneau-Interior Air Service Seen," *Daily Sitka Sentinel*, January 18, 1963; "Wien-Pan Am Route Shift Gets Setback," *Fairbanks Daily News-Miner*, January 30, 1963.

[150] Civil Aeronautics Board, *Annual Report of the Civil Aeronautics Board* (Washington, DC: US Government Printing Office, 1963), 1-2.

transportation needs and problems. "Like a bolt from the blue," he contended, "we are now confronted with a shocking and incredible effort on the part of the Civil Aeronautics Board to destroy the one good transportation service" in Alaska.[151]

On April 12, 1962, Pan American World Airlines and Wien Alaska Airlines announced a proposed route transfer under which Pan American would sell its Fairbanks-Whitehorse-Juneau routes to Wien. Wien planned to use its Fairchild F-27 turboprop aircraft on the route; Pan American used Douglas DC-6Bs.[152] The following day, the airlines filed an agreement with the CAB for Wien to acquire all operating and traffic rights of Pan American between Fairbanks and Juneau including all properties and equipment at Whitehorse, Yukon Territory, Canada. Wien agreed to pay $71,000 for the route and equipment.[153] The CAB had to approve the transfer before it became effective.

In July 1962, the CAB decided to consolidate its examination of the Pan American/Wien route sale with the ongoing Pacific Northwest Alaska study initiated in March. At the same time, it determined not to postpone its investigation of the Pacific Northwest routes.[154] On October 1, 1962, the CAB changed its mind and severed the proposed Pan American/Wien route transfer from the larger Pacific Northwest investigation. It held hearings on the route transfer in Washington, DC, on October 29.[155] At the hearing, the CAB's Bureau of Economic Regulations opposed the transfer. The bureau released its reasons for disapproval in mid-November. It believed Wien's operation of the route would be uneconomical because Wien's smaller planes would require more flights and additional federal subsidies.[156]

Despite the bureau's disapproval, on January 17, 1963, a CAB examiner recommended approval of the route transfer. The CAB Bureau of Economic Regulation filed an exemption to that recommendation on January 30. It was now up to the five-person CAB to make the final determination. The CAB held hearings on March 6, 1963. Board members approved the transfer and sent it to the president for signature. The board, however, reduced the price Wien paid to Pan American from $71,000 to $21,662, which covered the sale of tangible properties. Presidential approval was necessary because the route included flight over and landing in a foreign country - Canada. Presidential approval came in August. On December 20, 1963, Wien inaugurated its new Juneau-Whitehorse-Fairbanks route.[157]

[151] "Senator Accuses CAB of Destroying Air System," *Fairbanks Daily News-Miner*, March 22, 1962; "CAB Denies Prejudging Air Route Network to Alaska," *Fairbanks Daily News-Miner*, April 21, 1962.
[152] "Agreement Pending on CAB Approval," *Fairbanks Daily News-Miner*, April 12, 1962.
[153] "Wien to Pay $71,000 for Route Change," *Fairbanks Daily News-Miner*, April 13, 1962.
[154] "Refuses to Postpone Air Service Probe," *Fairbanks Daily News-Miner*, July 5, 1962.
[155] "Hearing Mon. On Wien PAA Transfer of Juneau Route," *Fairbanks Daily News-Miner*, October 27, 1962.
[156] "CAB Bureau Turns Down Juneau Routing," *Fairbanks Daily News-Miner*, November 1 5, 1962.
[157] "CAB Approves Route Transfer from Pan-Am to Wien Alaska," *Fairbanks Daily News-Miner*, January 17, 1963; "Wien-Pan Am Route Shift Gets Setback," *Fairbanks Daily News-Miner*, January 30, 1963; "CAB authorized Pan Am to Wien Route Transfer," *Fairbanks Daily News-Miner*, October 10, 1963; "Testimony Preponderantly Favors Wien Juneau Route," *Fairbanks Daily News-Miner*, March 6, 1963; "CAB OK's Wien Deal," *Fairbanks Daily News-Miner*, August 20, 1963; "JFK Signs Paper For Route Transfer," *Fairbanks Daily News-Miner*, August 19, 1963; Advertisement, "Wien Alaska Begins Scheduled Flights to Whitehorse and Juneau," *Fairbanks Daily News-Miner*, December 20, 1963.

The CAB issued its decision on the Pacific Northwest Alaska Service Investigation on March 26, 1965. Pan American became the exclusive carrier on the Seattle-Fairbanks nonstop route. The carrier obtained authority to serve Portland as a co-terminal point with Seattle-Tacoma and its authority to serve Ketchikan and Juneau was suspended for seven years. Alaska Airlines' authority to provide non-stop Seattle-Fairbanks service was suspended for seven years. The carrier received seven-year authority to serve a Seattle-Anchorage-Fairbanks route, subject to a condition that all Seattle flights originate or terminate at Fairbanks and stop at Anchorage. Pacific Northern became the sole carrier in the Seattle-Ketchikan-Juneau market. Its authority to serve Portland was suspended for seven years. Cordova Airlines' certificate was amended to extend its route from Icy Bay to Juneau, subject to a two-stop restriction on flights between Anchorage and Juneau.[158]

On January 25, 1965, CAB approved stopover rights in Alaska for five European airlines. Previously, the planes could stop and refuel in Alaska, but passengers could not leave the aircraft. Alaska had hoped for CAB approval in time for the Tokyo Olympics, but the CAB did not approve it until a month after the games ended.[159]

Oil

Alaska and FAA regional operations were significantly transformed by the Atlantic Richfield Company's and Humble Oil and Refining Company's discovery of oil on the North Slope of Alaska at Prudhoe Bay on March 13, 1968, and the subsequent oil exploration. By the end of fiscal year 1969, which ended on June 30, 1969, the FAA had witnessed a dramatic increase in Alaskan air activity in the Prudhoe Bay area. The Fairbanks Flight Service Station (FSS), for example, experienced a 325 percent rise in flight services performed. On the North Slope itself, services performed by the Point Barrow FSS rose 500 percent during the period to 17,221 while the number of services performed by the Bettles FSS rose 87 percent to 16,168.

To accommodate the heavy air traffic, the FAA and oil companies drilling in the area collaborated to bolster the air traffic facilities on the North Slope. The oil companies initially built six new airfields, and the FAA and the companies furnished navigation aids to serve the area. For example,

[158] Civil Aeronautics Board, *Civil Aeronautics Board Annual Report*, 1965 (Washington, DC: US Government Printing Office, 1965), 12.
[159] "CAB Action on Landing Rights Over Month Late for Olympic," *Fairbanks Daily News-Miner*, January 27, 1965.

Atlantic Richfield Oil Company built an airfield near its "Susie Unit No. 1" well on the Arctic slope. The airport had a 6,700-foot by 140-foot runway of packed snow over tundra, equipped with runway lights and runway end identifier lights. With the airport approved by the FAA for operation, Atlantic Richfield Company and Humble Oil and Refining Company shipped nearly three million pounds of equipment over a twenty-one-day period.[160] In 1968, Umiat Airport reopened to oil traffic after being abandoned, but the FAA did not reopen the tower. Ultimately, the North Slope corridor, eighty miles long and fifty miles wide, housed forty-five airstrips.[161] The oil companies worked together to provide air traffic control services in the region.

To increase safety in the area, on January 9, 1969, the FAA took over air traffic control and enforced more stringently aircraft and aircrew regulations.[162] The agency also improved navigation aids and weather observation equipment. In addition, it began certificating construction camp airports.[163] According the FAA's Fairbanks Area Manager Darrell Nelson, "Aircraft serving the oil exploration airports will receive the same en route air traffic control services as along other Alaskan routes. The new routes will use three radio beacons owned by private companies and one new FAA radio beacon."

The FAA signed agreements with Interior Airways to bring its radio beacon at Sagwon Airport into the U.S. air traffic control system. The agency had similar agreements with Consolidated Airlines for use of its beacon at Umiat and Alaskan Aeronautical Radio, Inc., for use of its beacon at Prudhoe Bay. The FAA installed a new radio beacon at Chandalar Lake. It also installed air-ground communication equipment at Baxter Island, Flaxman, Lonely, and Oliktok. With the new equipment, pilots serving the North Slope could file and close plans under instrument fight rules (IFR) and visual flight rules (VFR), exchange position and traffic information, receive in-flight pilot briefings, and use air traffic control services.[164] The FAA installed its own radio beacon at Umiat in March 1975.[165]

With the improvements, Lyle Brown, director of the FAA's Alaskan Region, predicted in late 1969 that air traffic on the North Slope would soon increase from 500 to 800 operations each day.[166] Because of safety concerns over private companies handling flight service duties, on July 1, 1970, the FAA opened a flight service station at Deadhorse on the North Slope.[167] The

[160] "Airlift Comes to the Aid of Wildcat Susie," *FAA Horizons* (April 1966): 20.
[161] "FAA, State Improve North Slope Nav-aids, *Fairbanks Daily News-Miner*, October 28, 1969.
[162] Ibid.
[163] "The Problems of Alaska's Transportation," *Fairbanks Daily News-Miner*, May 5, 1975.
[164] "FAA Sets Control of Slope Airplanes," *Fairbanks Daily News-Miner*, December 3, 1968.
[165] "FAA Plans Radio Beacon at Umiat for Guidance," *Fairbanks Daily News-Miner*, March 1, 1975.
[166] "FAA, State Improve North Slope Nav-aids."
[167] "Deadhorse Station," *Fairbanks Daily News-Miner*, June 9, 1970.

agency also converted the Barrow flight service station from a part-time to a fulltime station.[168] However, the increased aviation activity from the North Slope and Alaska's interior did not develop as rapidly as expected. The proposed pipeline initially failed to gain Department of Interior approval. When construction on the pipeline finally began, air traffic to the region, especially cargo flights increased exponentially.

Construction of the Trans-Alaska Pipeline System, also known as the Alyeska pipeline, began in the winter of 1973 and was completed by summer of 1977. More than 28,000 people worked on the project, which cost $7.7 billion. The project became the most expensive private undertaking in U.S. history. It involved building an 800-mile pipeline from Prudhoe Bay to the port of Valdez on Prince William Sound. The above ground pipeline had to climb two mountain ranges and cross 350 rivers and streams. To support construction needs, the FAA upgraded some of its facilities. In 1973, for example, a $2.3 million airport grant supported major projects at the Valdez airport, near the southern terminus of the pipeline. The work included construction of a new 5,000-foot by 100-foot hard-surface runway, three connecting taxiways, and an apron.[169]

By 1974, air traffic in and out of Fairbanks had almost doubled because of cargo shipments related to the construction of the pipeline.[170] Operations at the flight service stations in the region witnessed phenomenal increases over a twelve-month period: Fairbanks, 26 percent; Cordova, 44 percent; Gulkana, 33 percent; Northway, 20 percent; Bettles, 30 percent; and Deadhorse, 84 percent.[171] In late 1974, the FAA appointed Bud Seltenreich as pipeline safety coordinator to help improve the accident rate among flyers working on the pipeline. Many of the pilots came from the Lower 48 with no knowledge of the flying conditions in Alaska. Seltenreich estimated that 120 pilots worked the pipeline, not including pilots of the large Hercules cargo planes. He estimated the number of aircraft at sixty-five, half of which were helicopters.[172]

The FAA opened an air traffic control tower at Deadhorse Airport in January 1975 to help handle North Slope air traffic. When air traffic activity at the airport decreased to 16,620 operations, the FAA closed the tower on September 12, 1976. The FAA guidelines said that towers could be decommissioned when the number of takeoffs and landings fell below 18,000 annually.[173]

[168] Department of Transportation, *Fourth Annual Report* (Washington, DC: US Government Printing Office, 1973), 70.
[169] "Alaska Pipeline Gets ADAP Boost," *FAA Headquarters Intercom* (November 26, 1973): 3.
[170] "Airport Operations Booming," *Fairbanks Daily News-Miner*, April 12, 1974.
[171] John Leyden, "Alaska – The Last Frontier is Booming," *FAA World* (November 1974): 4-7.
[172] John Leyden, "Spreading the Word on Safety," *FAA World* (November 1974): 14.
[173] "Deadhorse Air Tower Closed," *Fairbanks Daily News-Miner*, September 29, 1976; "Times Change, So Do Towers," *FAA Headquarters Intercom* (September 20, 1976): 1.

With pipeline construction underway, in 1975 the FAA cautioned curious and unaware pilots not to fly low over pipeline construction areas since debris from blasting could reach as high as 100 feet. At the time of the warning, the areas of intensive blasting included Valdez, Keystone Canyon, Thompson Pass, Wickersham Dome, and Dietrich Pass. Because planes flying in the area between Valdez and Tonsina had limited altitude, the FAA warned pilots to check the blast schedule before flying into the area. The agency suggested pilots contact the Gulkana FSS or the Valdez combined station-tower to obtain copies of the blast schedules. Pilots could also contact the pipeline camps by radio to verify the schedule.[174]

FAA personnel also developed special procedures to reduce accidents. For example, they helped formulate special flight procedures for helicopter pilots flying to Ocean Ranger, a semi-submersible offshore oil platform anchored in the area of Cape Yakataga, 100 miles west of Yakutat. The area, plagued by ice, snow, and rain, often had winds up to 100 miles an hour that created 35-foot or higher waves, creating a dangerous situation for the helicopters flying on and off the oil rig. In 1976, the FAA developed special IFR procedures that allowed the helicopters to fly closer to the warmer ocean surface. The FAA approved the procedures for use in helicopter transport between Dutch Harbor in the Aleutian Islands and oil rig sites 1,000 miles to the north.

Developing the approach and en route procedures was not without cost. On July 22, 1976, Joseph Pyper, an Alaskan region general operations inspector, lost his life while delivering the new procedures to Dutch Harbor. Since the procedures had still not been demonstrated and approved, Pyper was making an instrument approach to an Air Force field at Driftwood Bay, twenty miles from Dutch Harbor. Following the tragedy, another inspector, Fred Porter, retrieved the procedures from the wreckage at the accident scene. He then performed the necessary route checks and issued the approval for the new procedures.

Despite the new procedures, it quickly became evident to pilots and the FAA alike that minimum en route altitudes and minimum descent altitudes proved too high for safe, reliable winter operations. Explaining the situation to employees at the FAA Washington headquarters, regional personnel obtained approval to lower the en route altitudes over water by incorporating radar altimeter and airborne radar into the procedures. This permitted lowering the minimum en route altitudes to 800 feet. This altitude, however, still subjected helicopters to hazardous icing conditions. The approach minimum did not prove adequate for the low ceilings encountered in the Gulf of Alaska. FAA technicians installed a non-directional beacon and ultra high frequency tactical air navigation equipment. Using this equipment for basic navigation to and from the rig platforms allowed the FAA to reduce the minimum descent altitude to 200 feet.[175]

[174] "FAA Warns Local Pilots," *Fairbanks Daily News-Miner*, October 6, 1975.
[175] Runnerstrom, "How They Tamed the 'Cradle of Storms,'" 12-13.

Alaskans have an unusual need to fly, and face unusual dangers when they fly. The natural result is a different risk-reward calculation than in other parts of the country.[1]

6

Growth, Safety, and New Concerns

As the FAA increased its airway modernization projects in the continental United States during the 1980s and 1990s, the pace of modernization in Alaska proceeded at a slower rate. Alaska's aviation environment presented critical obstacles for FAA planners. Alaska's land area exceeded the combined area of Texas, California, and Montana. The state's topography featured a variety of terrains, from some of the highest mountains in the country to a long coastline, as well as large expanses of forests and marshy tundra. The diverse landscape and sheer size of the state resulted in vastly divergent climates and microclimates.

Because of the lack of transportation infrastructure, Alaskans relied on the airplane more than any other state in the union. Compared to the rest of the United States, Alaska had six times as many pilots, fourteen times as many aircraft, and seventy-six times as many commuter flights per capita.[2] The airplane tied communities together, brought necessary food, goods, and medical supplies to the remote village, and brought doctors, dentists, and visitors into those communities. As Keith Miller, chairman of the Alaska Transportation Commission for the State of Alaska explained in 1981, "Aviation is the only multi-seasonal conventional mode of transportation serving most of Alaska . . . Traveling by air is far more ordinary and routine to many Alaskans, especially in rural Alaska, than to residents of any other State."[3]

[1] James Fallows, "Why Are There So Many Airplane Crashes in Alaska?" *The Atlantic* (August 10, 2010): accessed at https://www.theatlantic.com/technology/archive/2010/08/why-are-there-so-many-airplane-crashes-in-alaska/61275/.
[2] National Transportation Safety Board, *Aviation Safety in Alaska*, Safety Study NTSB/SS-95/03 (Washington, DC: 1995), 11.
[3] *Hearings before the Subcommittee on Aviation of the Committee on Commerce, Science, and Transportation, United States Senate*, Keith Miller, Testimony, Early Sunset of the Civil Aeronautics Board, 97th Cong., 1st sess., S 1425 and S 1426, July 7-9, 1981, 321.

For the most part, the small aircraft community met the transportation needs of many towns and villages. As opposed to service in the continental United States, commuter and air taxi aircraft operators in Alaska relied largely on single-engine aircraft flown by one pilot under visual flight rules (VFR). In 1993, for example, thirty-three of the thirty-nine commuter airline operators (14 CFR Part 135) in the state used single-engine aircraft. Sixty-five percent of the commuter fleet in the state were single-engine aircraft powered by a reciprocating engine. These smaller aircraft primarily served Alaska's remote villages, many of which had only short gravel or dirt landing strips.[4] Even if an aircraft had instrument flight rules (IFR) capabilities, the majority of airfields in the state did not have IFR approaches or official aviation weather observers to permit IFR operations.

In addition to commuter operations, commercial lodge operators also used small, single-engine aircraft to transport hunting and fishing customers. Judicial decisions from the early 1960s determined the carriage by air of these customers was incidental to the hunting or fishing guide services. As a result, FAA policy allowed guides to fly their customers under the less restrictive general operating rules of 14 CFR Part 91. The National Transportation Safety Board (NTSB) defined the typical lodge/guide operation as one that took "customers to a lodge or other remote site by light aircraft," and while there, provided "guide service, food, lodging, and supplies."[5]

Alaska in 1980 had 509 airports, 25 heliports, and 155 seaplane bases. Of that number, only forty-two were lighted and paved. By 1990, those numbers decreased to 477 airports, 20 heliports, and 105 seaplane bases. The state had 10,420 active pilots, including 2,578 commercial pilots and 4,607 private pilots in 1980. In addition to commercial aircraft, Alaska had 6,450 active general aviation aircraft. By 1990, the state had 9,715 active pilots, including 2,481 commercial pilots and 4,602 private pilots. There were 7,011 general aviation aircraft registered in the state.[6]

The FAA had approximately ninety FAA-owned and -operated ground-based navigational aids (navaids) in Alaska in 1980. These included fifty-four nondirectional radio beacons, seven very high frequency omnidirectional ranges (VOR), and twenty-six VORs with tactical navigational capability (VORTAC). In addition, the state hosted about seventy-five non-FAA-owned navaids. For terminal operations, the FAA owned and operated twenty-eight instrument landing systems and localizer equipment. Most of the airstrips had no air traffic control tower, no navaids, and limited weather information.[7]

[4] NTSB, "Aviation Safety in Alaska," 14.

[5] National Transportation Safety Recommendation, "Safety Recommendation to FAA Administrator David R. Hinson," December 1, 1995, 17-18, accessed online at https://www.ntsb.gov/safety/safety-recs/recletters/A95_121_136.pdf.

[6] Federal Aviation Administration, *FAA Statistical Handbook of Aviation*, *Calendar Year 1981* (Washington, DC: US Government Printing Office, 1982), 28, 30; Federal Aviation Administration, *FAA Statistical Handbook of Aviation*, *Calendar Year 1990* (Washington, DC: US Government Printing Office, 1991), 3-4, 7-6, 8-8.

[7] National Transportation Safety Board, *Air Taxi Safety in Alaska*, Special Study NTSB-AAS-80-3 (Washington, DC: NTSB, 1980), 7.

With a lack of transportation infrastructure, Alaskans relied on airplanes similar to how many in the continental United States relied on taxi cabs. Alaska was uniquely dependent on aviation. With its large land mass, variety of terrains, and a relatively small population compared to the states in the Lower 48, Alaska often required a different approach to making aviation safety improvements. How to address safety concerns, however, was problematic for the FAA. Some navigation aids developed for use in the continental United States did not offer the same level of utility to pilots in Alaska, especially for those pilots flying VFR.

The FAA also lacked the resources to deploy significant numbers of navaids tailored to the needs of pilots flying into remote airfields. In some cases, FAA policies and rules developed for use in the continental United States imposed unintended regulatory and cost burdens on Alaska's pilots and aviation companies. Not until it passed the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (PL 106-181) in April 2000, did Congress require the FAA administrator to "consider the extent to which Alaska is not served by other transportation modes other than aviation, and shall establish such regulatory distinctions" as appropriate.

FSS Consolidation

Background

Since the 1930s, the one thing the small carriers and general aviation pilots could count on were the safety-related services offered by the FAA's flight service specialists throughout Alaska. However, proposed consolidation of the flight service stations (FSS) threatened some of the services pilots had come to expect. In January 1978, the FAA and the Office of the Secretary of Transportation submitted to Congress a new master plan[8] for the modernization of the FAA's 292 continental FSSs;[9] later expanded to cover all 317 stations, including those in Alaska. The plan involved a three-stage process to modernize and automate the facilities. In the first stage, the FAA planned to install semi-automated computer equipment at the forty-three busiest stations. During the second stage, the agency would either decide to consolidate all 292 stations into twenty large ones co-located at the twenty en route traffic control centers, or modernize up to 150 of the existing stations

[8] Section 22 of Public Law 94-353, enacted on July 12, 1976, prohibited for three years the closing or remoting an flight service station, except (A) for part-time operation by remote control during low-activity periods, and (B) for the purpose of demonstrating the quality and effectiveness of service at a consolidated flight service station facility, not more than five flight service stations, at the discretion of the Secretary, may be closed or operated by remote control from not more than one air route traffic control center.

[9] Federal Aviation Administration, *Master Plan: Flight Service Automation Program*, FAA/RD-FSS-01A, January 1978, accessed at https://ia801601.us.archive.org/0/items/DTIC_ADA052001/DTIC_ADA052001.pdf.

at their present sites. The third stage would add the capacity for pilot self-briefings, thus completely automating the most important FSS function.[10] The FAA planned to build all new FSSs rather than lease them.

In congressional testimony in 1979, FAA Administrator Langhorne Bond[11] called the flight service station system "an obsolete, labor intensive system," and the only "logical and reasonable" solution to the problem would be "a program of modernization, automation, and streamlining."[12] Bond placed a moratorium on FSS closures, remoting, and part-timing of flight service stations until he received congressional approval for his new modernization program. In 1979, Congress approved initial funding for FAA acquisition of the automation technologies needed to support the nationwide modernization and consolidation program.[13]

Site Selection and Technology Development

In January 1980, the FAA announced award of contracts totaling $12.8 million to three companies to design computer systems for automating the FSS network. Contracts went to E-Systems, $3.7 million; LOGICON, $3.5 million; and Ford Aerospace, $5.5 million. The contracts called for a one-year design verification process in which the companies would demonstrate the basic capability for their technologies to provide automatic weather and other information needed by pilots and flight service specialists. The FAA wanted a system of minicomputers that would store data for immediate call-up on the flight service computers. The system had to provide the same information to pilots using communications terminals and push button and dial-type telephones. Following examination of the three designs, the FAA would select one contractor to proceed with production. By the time it signed the contracts, the FAA had determined to modernize forty-three FSS hub sites and later update another eighteen facilities. As with the original plan, where possible, the hubs would be co-located with en route traffic control centers.[14]

With congressional and general aviation community pushback on the plan, in early April 1980, Administrator Bond proposed a new strategy for FSS modernization. Rather than co-locating the facilities next to air route traffic control centers (ARTCC), which served commercial traffic, Bond wanted to build new automated flight service stations (AFSS) at busy general aviation airports, and replace the existing 317 FSSs with 61 AFSSs located in 45 states and Puerto Rico. He envisioned building fifty-nine new facilities, and modifying two existing FSSs. Bond estimated implementing the plan would cost $495 million over the next eight fiscal years, but "$1.5 billion can be saved through 1995 by replacing the current labor-intensive system with a fully automated one."

Hoping to garner support from the general aviation community and Congress, the administrator promised he would not close any FSS until the FAA proved the new AFSSs would provide equal or better service than the non-automated facilities.[15] The agency originally expected to have all sixty-one AFSSs commissioned by fiscal year 1992.[16] The FAA published the plan in the *Federal Register* on April 17, and asked for comments by June 7, 1980.[17]

On November 13, 1980, the FAA announced the locations for fourteen of the sixty-one AFSSs and tentatively identified the remaining sites. Under a phased plan, the agency expected to select twelve sites each year. With regard to Alaska, the agency planned to reduce the number of FSS in the state from twenty-seven to three, and proposed locating the new AFSSs in Anchorage, Fairbanks, and Juneau.[18]

While updating its plans for FSS modernization, the agency announced improvements to the FSS communication system. To improve service to general aviation pilots, the FAA installed a new computerized communication system in Alaska to upgrade and replace the old service "A" and "B" low speed circuits. When fully operational, the new satellite-based system could handle the transmission of all weather and flight planning data within the state and between Alaska and the Lower forty-eight states. The new equipment consisted of a TV-type display and keyboard, which provided access to all information at the FAA National Communications Center in Kansas City, Missouri. The agency planned to have the system fully operational by the end of July 1982.[19]

When Ronald Reagan became president on January 20, 1981, his economic agenda differed from his predecessor. As a result, on May 28, 1981,

[10] *Hearing before the Subcommittee on Aviation of the Committee on Public Works and Transportation, House of Representatives*, Testimony of Quentin S. Taylor, Deputy Administrator, Federal Aviation Administration, Flight Service Station System Modernization, HR 7699, 95th Cong., 1st sess., October 3, 1977, 4-6; "FSS Automation Okayed," *FAA Headquarters Intercom* (January 30, 1978): 1.

[11] Served as FAA Administrator May 4, 1977-January 20, 1981.

[12] *Hearings before the Subcommittee of the Committee on Appropriations, United States Senate*, Department of Transportation and Related Agencies Appropriations for Fiscal Year 1979, 95th Cong., 2d sess., part 3, April 19, 1978, 1116-1117.

[13] "Technology Behind Changes to FAA," *Daily Sitka Sentinel*, February 9, 1984.

[14] "FSS Automation Program Moving in to High Gear," *FAA Headquarters Intercom* (January 21, 1980): 1-2; Department of Transportation, *14th Annual Report, Fiscal Year 1980* (Washington, DC: US Government Printing Office, 1981), 18-19.

[15] "FSS Modernization Plans Revised," *FAA Headquarters Intercom* (April 7, 1980): 1-2; Jerry Lavey, "Bringing the FSS System Into the Modern World," *FAA World* (April 1980): 1-9.

[16] US Department of Transportation, *Budget Estimates, Fiscal Year 1987, Federal Aviation Administration, in Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives*, Federal Aviation Administration, Congressional Justification of Estimates of Appropriations for Fiscal Year 1987, part 2, 99th Cong., 2d sess., 1986, 39.

[17] *Federal Register* 45, no. 76, April 17, 1980, 26202; see also, *Federal Register* 45, no. 117, June 16, 1980, 40750-40755.

[18] "61 Automated FSS Sites Identified," *FAA Headquarters Intercom* (November 17, 1980): 1-2; "Technology Behind Changes to FAA," *Daily Sitka Sentinel*, February 9, 1984.

[19] "Alaska Comm System Being Replaced," *FAA Headquarters Intercom* (June 14, 1982): 3.

Administrator J. Lynn Helms[20] directed a change in policy on the acquisition of buildings for the planned AFSSs. The FAA could build and own facilities or could lease space at airports from municipalities, airport operators, private parties, or government agencies at the state or federal level if leasing proved more economical.[21] In July 1981, the agency began soliciting competitive lease offers for AFSS locations from local communities. The agency's regional offices would evaluate the proposals based on what the facility would cost the agency over a twenty-year period. The costs included communications, building leases, employee relocation, maintenance, and utilities.[22]

Congressional and public concerns over FSS closures and delays in the development and production of the automation system led Congress to prohibit the FAA from closing more than five flight service stations prior to December 1, 1983. Public Law 97-248, enacted on September 3, 1982, also barred the FAA from part-timing more than sixty flight service stations. The legislation prescribed "The operation of a flight service station on a part-time basis shall be subject to the condition that during any period when a flight service station is part-timed, the service provided to airmen with respect to information relating to temperature, dew point, barometric pressure, ceiling, visibility, and wind direction and velocity for the area served by such station shall be as good as or better than the service provided when the station is open, and all such service shall be provided either by mechanical device or by contract with another party."[23]

Legislation passed the following year included more stringent restrictions. Public Law 98-78, signed into law on August 15, 1983, mandated the agency submit to Congress a "detailed, site-specific, and time-phased plan, including cost-effectiveness and other relevant data, for all facility closures or consolidations over the next 3 years." Furthermore, "in the instance of any proposed closure or consolidation questioned in writing by the House or Senate Committees on Appropriations or by any legislative committee of jurisdiction, no such proposed closure or consolidation shall be advanced prior to April 15, 1984, in order to allow for the timely conduct of any necessary congressional hearings."[24]

The FAA submitted its facility consolidation report to Congress in October 1983, and an updated copy on December 1, 1984, as directed by House Report 98-1159. The 1984 version highlighted the FAA's approach to FSS consolidation through fiscal year 1987. The agency did not plan to consolidate any Alaskan facilities within that period, but reported the

[20] Served as FAA Administrator April 22, 1981-January 31, 1984.
[21] Preston, F*AA Historical Chronology,* 184.
[22] United States General Accounting Office, T*he Federal Aviation Administration's Process of Selecting Locations for Automated Flight Service Stations*, GAO/RCED-84-95 (March 2, 1984), 2.
[23] Public Law 97-248, section 528.
[24] Public Law 98-78, section 319.

consolidation of Alaskan facilities would take place over a three-year period beginning in fiscal year 1988.[25]

During senate hearings to discuss the plan, FAA Administrator Donald Engen[26] reiterated the "consolidation of flight service stations in Alaska will not occur during the period of this plan, and when it does occur it is not expected to result in significant difficulties." He continued, "Based on current implementation schedules, automation equipment will have been thoroughly teste[d] at other locations by the time it is installed in Alaska [and] the agency will have developed sufficient experience at transitioning to automated facilities to accommodate any unique Alaskan requirements."[27]

In preparation for building the three new AFSSs in Alaska, in late 1982 the FAA asked communities in the state to submit bids for building the new facilities. After an economic analysis of the submitted proposals, in January 1984, the FAA selected Juneau, Kenai, and Fairbanks as the AFSS sites. The agency planned to build the facilities in Juneau and Fairbanks, and lease the facility in Kenai, where the city offered to build the facility and lease it to the FAA for $1 per year.[28]

The selection of Juneau as the most cost-effective site in the southeast outraged the citizens of Sitka. In its bid, Sitka offered to donate the land, build the facility, and give it to the FAA at no cost.[29] Local and state politicians and community groups in Sitka demanded to know the selection criteria used by the FAA to make its decision. FAA officials explained the agency based its decision on not only the cost of the facility itself, but also things such as utility and transportation costs. The agency also assumed the land in Juneau would be given to the FAA at no cost.

The Juneau City Council and Borough Assembly, however, said its proposal did not include an offer of free land. The Juneau mayor explained, "As a matter of policy our land will not be free and it will not be cheap," and would be sold at current land costs in the region.[30] In an April 1984 letter to the Juneau City Council, the FAA reminded the council that when a city accepted grant money from the FAA for airport improvements, a footnote in the agreement stated the agency had the right to acquire necessary property

[25] Federal Aviation Administration, "FY 1985-1997 Planned Office and Facility Consolidations to Improve System Effectiveness and Efficiency," Rep. AD-A150 4441, December 1, 1984, 1.
[26] Served as FAA Administrator April 10, 1984-July 2, 1987.
[27] *Hearing before a Subcommittee of the Committee on Appropriations, United States Senate*, Statement of Donald E. Engen, Administrator, Federal Aviation Administration, Federal Aviation Administration Office and Facility Consolidations, 99th Cong., 1st sess., January 4, 1985, 4-5.
[28] "Site Selection Halfway," *FAA Headquarters Intercom* (February 7, 1984): 3.
[29] "Sitka Loses Bid for FAA Facility," *Daily Sitka Sentinel*, January 19, 1984.
[30] "Juneau Council Changes Offer to FAA for Facility," *Daily Sitka Sentinel*, March 2, 1984; "FAA to Decide Soon On Site for Facility," *Daily Sitka Sentinel*, March 29, 1984.

free of cost for FAA facilities.[31] When asked about the FAA's mandate, Juneau's city manager simply said, "It looks like they have us over a barrel."[32]

While AFSS site selection continued through the continental United States, issues with the Model 1 and 2 automation equipment development delayed the modernization program. On October 2, 1981, the FAA had announced the award of contracts to E-Systems for computer systems for sixty-one automated flight service stations. The computer equipment would be capable of providing flight service specialists with rapid data retrieval and then presenting the information on television-like displays. Production would be in two stages. The FAA would first deploy Model 1, with capability of displaying weather and aeronautical alphanumeric data, at forty-one facilities. All sixty-one AFSS sites would subsequently receive the Model 2 equipment, which would add a second display for weather radar, charts, and other graphics. Model 2 would also provide pilots direct access to the information from remote computer terminals. The agency planned to install the computers for both models at en route traffic control centers and connect them to the AFSSs by leased telephone lines.[33]

The FAA originally hoped to commission the first forty-one Model 1 systems by January 1984. E-Systems, however, had software difficulties and did not deliver the first system until February 1986.[34] Delays in Model 1 production, increasing costs, and community concern resulted in the FAA issuing a stop work order for the Model 2 to E-Systems in November 1983.[35] Congress subsequently suspended Model 2 funding.[36]

With the Model 2 on hold, the FAA began "looking at an alternative strategy which simply takes the model 1 computer software and builds on it by additional capabilities, to allow us to get to model 2."[37] The ability to enhance Model 1, rather than creating a new software design for Model 2, would save time and money. The agency ultimately decided to move forward on what it

[31] Susan Froetschel, "FAA to Get Free Land in Juneau?" *Daily Sitka Sentinel*, April 30, 1984; "Juneau Definitely Picked As Site for FAA Facility," *Daily Sitka Sentinel*, June 25, 1984, 1.
[32] Froetschel, "FAA to get Free Land;" "Juneau Definitely Picked As Site."
[33] Preston, *FAA Historical Chronology*, 187.
[34] *Hearings before the Subcommittee on Transportation, Aviation, and Materials of the Committee on Science and Technology, House of Representatives,* Oversight on the Federal Aviation Administration Fiscal Year 1987 Research, Engineering, and Development Budget Request, 99th Cong., 2d sess., April 22-23, 1986, 230.
[35] *Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives*, Department of Transportation and Related Agencies Appropriations for 1985, 98th Cong., 2d sess., part 6, February 23, 1984, 866.
[36] US Congress, House of Representatives, Report to Accompany H.R. 5813, Report 98-833, Department of Transportation and Related Agencies Appropriation Bill, 98th Cong., 2d sess., 1985, 32.
[37] *Hearings before a Subcommittee of the Committee on Appropriations, United States Senate*, Department of Transportation and Related Agencies Appropriations for Fiscal Year 1985, HR 5921/S 2852, 98th Cong., 2d sess., part 2, April 3, 1984, 259.

termed the Model 1 Full Capacity (M1FC) system. M1FC included enhanced hardware and software, aviation weather processors, and a flight service data processing system. In February 1987, Congress approved development of the enhanced system in place of the Model 2 system. The FAA planned to complete deployment of the equipment by the end of 1994. It completed the first phase of the AFSS program when it commissioned the thirty-seventh and final Model 1 system on September 28, 1987.[38]

Since M1FC would not be ready for deployment for several years and with FSS consolidations underway, the FAA needed a way to disseminate weather information to pilots. In 1983, the agency's technical center, in Atlantic City, New Jersey, had begun developing the direct user access terminal service (DUATS) system, which would allow pilots to obtain weather information and file a domestic flight plan using computers equipped with a modem for communication via telephone lines. With DUATS not yet ready for deployment, on March 30, 1984, the FAA announced the award of a contract to lease the interim voice response system (IVRS) from Input/Output Computer Services in Waltham, Massachusetts. The system would provide a computerized voice message system to provide weather information to pilots. The pilot simply called the local IVRS number on a touch-tone telephone and then punched in the three-letter identifier for an airport. The system provided information from the FAA's Weather Switching Center in Kansas City, on things such as severe weather watches, route forecasts, terminal forecasts, and winds aloft. In October 1985, the FAA announced the availability of IVRS to pilots in twenty-four cities.[39]

The FAA discontinued the use of the IVRS on February 13, 1990, when DUATS began operating in the continental United States. DUATS allowed private pilots to receive weather briefings and file flight plans from personal computers or at terminals established at other FAA facilities. A contractor provided the service free to civilian pilots and students.[40] The FAA did not deploy DUATS to the Alaskan Region until the three new AFSS facilities opened. Dick Mathews, the FAA air traffic flight service modernization program manager, explained the Alaskan AFSS system would be phased in slowly and would only begin full service operations after FAA officials were convinced the technology would work reliably in the state.[41]

At a meeting with Sitka area pilots, Dick Mathews explained that once DUATS came to Alaska, if pilots used the system it would ease current

[38] *Hearings before the Subcommittee of the Committee on Appropriations, United States Senate*, Special Hearing, Federal Aviation Administration's Facility Consolidation Report, 98th Cong., 1st sess., November 1, 1983, 126.
[39] "New Av. Weather Service Available in 24 Cities," *FAA Headquarters Intercom* (October 15, 1984): 3.
[40] Preston, *FAA Historical Chronology*, 226.
[41] Will Swagel, "FAA Officials Explain Changes in Service," *Daily Sitka Sentinel*, May 8, 1991.

FSS workload by about 70 percent. A local pilot, Wade Cothran expressed concern about the loss of the flight service station in Sitka when the FAA commissioned the Juneau AFSS. He lamented the fact that pilots would lose the "human touch" they currently received from specialists in Sitka. He doubted a computer could keep up with "rapidly changing or varied" weather conditions. Mathews reiterated the FAA's commitment to improving service to pilots. He explained that past budget cuts and a predicted 30 percent cut in fiscal year 1992 appropriations required the FAA to streamline services.[42] Mathews' explanation did little to ease pilot concerns.

Congress passed legislation (PL 100-223) in December 1987 to prohibit the FAA from closing or reducing hours of operations of any FSS unless the area was served by an automated FSS with Model 1 automation. This was expected to address local pilot concerns. The law mandated, "On or after July 15, 1987, the Secretary [of Transportation] shall not close, or reduce the hours of operation." In addition, "As soon as practicable after the date of the enactment of the Airport and Airway Safety and Capacity Expansion Act of 1987, the Secretary shall reopen any flight service station closed between March 25 and July 14, 1987, if the service provided in the area in which such station is located since the date of such closure has not been provided by an automated flights service station with Model 1 or better equipment."[43]

Congressional and Community Pushback

With Congress, aviation groups, and general aviation pilots generally opposed to FSS closures, in 1987 the FAA established a tiger team to study how to change pilot perception of the modernization program. The team identified a number of "misconceptions about the program among pilots." It also determined that a "nonstandard approach toward pilot education" about FSS change was a major problem "affecting the success of the program."[44]

As a result of the tiger team's finding, the FAA initiated an educational campaign to teach pilots about the benefits of the FSS modernization plan. Called Operation Takeoff, the agency designed the program "to remove misconceptions by familiarizing pilots with the overall FSS program, its benefits, problems, available services, and use of the system." To reach as many pilots as possible, the agency recommended each region undertake media outreach. "Success of this program," agency officials said, "depends greatly on continued local publicity before and during the time the program is active and the seminars are being conducted . . . The media should be

[42] Ibid.
[43] Airport and Airway Safety and Capacity Expansion Act of 1987, Public Law 100-223, Section 113, (December 30, 1987), 20.
[44] Federal Aviation Administration, Order 7230.17, "Pilot Education Program – Project Takeoff," April 3, 1989.

approached in a manner that will convince them that the program is of high public interest and is of proven value to flying safety."[45]

Operation Takeoff came to Alaska in 1990. On May 2, the FAA held a public meeting in Sitka to address concerns about the Sitka FSS closure and consolidation with the Juneau FSS.[46] At the meeting, Dick Mathews explained the FAA planned to consolidate all Alaska FSSs into three automated flight service centers manned around the clock. The previously staffed stations would be automated and linked directly to one of the new centers.[47]

Despite Operation Takeoff's attempts at convincing pilots about the benefits of FSS modernization, many remained unswayed in their opposition. During 1990 senate hearings on the FAA 1991 budget, the Aircraft Owners and Pilots Association (AOPA) urged Congress to mandate an auxiliary flight service station program. AOPA President John L. Baker, explained, "under such a program, existing flight service stations located in areas of unique weather or operational conditions critical to the safety of flight would be retained as manned, permanent auxiliary stations. These auxiliary flight service stations would supplement the services provided by the 61 automated stations under FAA's flight service modernization program."[48]

Baker argued the FAA had long promised FSS modernization would provide equal or better service for general aviation pilots. He said, "The FAA has evidenced bad faith on this issue for years," by closing FSSs prior to automating the AFSSs. Saying general aviation pilots would "never see the full level of flight service station 'modernization' originally promised," Baker urged the FAA to "abandon its original objective of full consolidation for the obvious reasons of safety."[49]

Bowing to AOPA and constituent pressure, Congress adopted a resolution requiring the FAA to keep open FSSs in areas with unique weather or flying conditions. Language in the Omnibus Budget Reconciliation Act of 1990 (PL 101-508) required the FAA to "develop and implement a system of manned auxiliary flight service stations. The auxiliary flight service stations shall supplement the services of the planned consolidation to sixty-one automated flight service stations under the flight service station modernization program. Auxiliary flight service stations shall be located in areas of unique weather or operational conditions which are critical to the safety of flight." The law required the FAA to submit a report to Congress within 180 days outlining the plan and schedule for implementing the auxiliary flight service station program.[50]

[45] Ibid.
[46] "Flight Service Briefing May 2," *Daily Sitka Sentinel*, April 17, 1990.
[47] Swagel, "FAA officials Explain Changes in Service."
[48] *Hearings before a Subcommittee of the Committee on Appropriations, United States Senate*, Testimony of Aircraft Owners and Pilots Association President John L. Baker," Department of Transportation and Related Agencies Appropriations for Fiscal Year 1991, HR 5229, 101st Cong., 2d sess., part 3, 1990, 156.
[49] Ibid.
[50] Omnibus Budget Reconciliation Act of 1990, Public Law 101-508, section 9115 (November

Without specific instructions from Congress on what the report should contain, the agency had to define the meaning of an area with "unique weather or operations conditions." The FAA asked Congress for a six-month delay so it could "commission a study with a private weather research organization.[51] With congressional agreement, the FAA contracted with the National Center for Atmospheric Research to identify unique weather phenomena and to provide a basis for the FAA to determine the locations of the auxiliary stations. In the meantime, HR 2132 prohibited FSS closures during the twelve-month period following receipt of the FAA report on auxiliary stations.[52] In April 1991, FAA Administrator James Busey[53] informed Congress he expected the report to be complete by October 31, 1991.

While waiting for the FAA's report, Congress began hearings for the fiscal year 1992 FAA appropriations. At those hearings, many in Congress inquired which FSS facilities would remain open as auxiliary stations. Senator Ted Stevens (R-AK), in particular, pressured the agency to let him know which Alaskan FSSs would remain open. In response to Stevens, FAA Administrator Busey said he was "particularly sensitive to the needs of Alaska." He noted that Alaska was "different. The State is different. The needs for aviation are different."[54]

The FAA submitted its plan on November 8, 1991. The agency proposed to have part-time manned auxiliary stations at Barrow, Cold Bay, Deadhorse, Dillingham, Homer, Kechikan, Kotzebue, Nome, and Sitka. Weather observations would not be automated as originally planned, but rather taken by either FAA or contract observers. The FAA would establish seasonal stations at Iliamna, McGrath, Northway, and Talkeetna, and a part-time station at Palmer. The agency gave Alaskans nine months to comment on the new proposal.[55]

5, 1990), and An Act Making appropriations for the Department of Transportation and Related Agencies for the Fiscal Year Ending September 30, 1991, and for other Purposes, Public Law 101-516, Section 330 (November 5, 1990).

[51] "FAA Won't Close any Manned Alaska Stations Before Oct. 31," *Daily Sitka Sentinel*, April 11, 1991.

[52] *United States Congressional Serial Set*, 14408, "Transfer of Certain Lands at Fort Smith Airport," S Rep. 102-144, September 11, 1991 (Washington, DC: US Government Printing Office, 1990): 2-3.

[53] Served as Administrator June 30, 1989-November 20, 1991.

[54] *Hearings before a Subcommittee of the Committee on Appropriations, United States Senate*, Department of Transportation and Related Agencies Appropriations for Fiscal Year 1992, HR 2942, 102d Cong., 1st sess., part 2, May 9, 1991, 271.

[55] "FAA written responses to questions from Senator Lautenberg," *Hearings before a Subcommittee of the Committee on Appropriations, United States Senat*e, An Act Making Appropriations for the Department of Transportation and Related Agencies for the Fiscal Year Ending September 30, 1995, and for Other Purposes, HR 4556, 103d Cong., 2d sess., part 2, April 21, 1994, 756; "FAA Proposal Includes Sitka Auxiliary Station," *Daily Sitka Sentinel*, November 8, 1991.

In August 1987, the FAA had broken ground on the new $1.9 million automated flight service station at the Fairbanks International Airport. The FAA expected the facility to open in September 1989, but delays postponed the commissioning until August 21, 1991.[56] It was the last of Alaska's AFSSs commissioned.[57] The FAA broke ground for the Kenai AFSS on July 29, 1986,[58] and commissioned it on April 25, 1988, and broke ground for the Juneau facility in 1989 and commissioned it on May 11, 1990.[59] Although the FAA commissioned the Kenai AFSS in late April 1988, it did not become fully operational or staffed until 1994.[60]

The commissioning of the Fairbanks AFSS brought to a close Phase 1 of the Alaskan Flight Service Modernization program. During Phase II, the FAA's development of remote capability would result in the incremental reassignment of the services and responsibilities of the remaining Alaska flight service stations to the new AFSSs. Under Phase III, the FAA planned to close the remote facilities. During Phase IV, the FAA would open auxiliary FSSs to augment the services of the AFSSs.[61]

Although the FAA commissioned the new AFSSs, it did not immediately connect them to all of the FSSs in the region. The agency had hoped to begin shutting down the older FSS operations in 1992 beginning with Northway, followed by Big Delta, Bettles, Tanana, Kotzebue, Barrow, Deadhorse, and Nome. It thought it could complete the Alaska consolidations in 1994. A schedule delay, however, postponed some of the consolidations by almost a year.[62]

Consolidation Begins

To help prepare employees for the consolidation, in 1990 Dick Matthews developed a master plan for consolidation and put together a team that included personnel from the region's human resource office to discuss consolidation with employees. The team planned to visit every location affected by the program. It made its first employee visit to Homer in November 1990. When Congress halted FSS consolidation in November 1991, Matthews' group postponed other site visits. Once Congress approved the consolidation program, Matthews' team went back on the road to provide information on topics such as how to compete for the new AFSS jobs, and

[56] "Fairbanks Automated Flight Service Station Commissioned," *FAA Alaskan Region Intercom* (September 1991): 1-2; Dick Matthews, "Fairbanks AFSS," *FAA Alaskan Region Intercom* (September 1991): 3.

[57] "Flight Service Station to Open in Fairbanks," *Daily Sitka Sentinel*, August 10, 1987.

[58] "Around the Region," *Alaskan Region Intercom* (August 1986): 7.

[59] Dick Matthews, "Fairbanks AFSS," *FAA Alaskan Region Intercom* (September 1991): 3.

[60] "Kenai Sees 90 Jobs in Automated Flight Station," *Daily Sitka Sentinel*, October 26, 1992.

[61] Dick Mathews, "Fairbanks AFSS," *FAA Alaskan Region Intercom* (September 1991): 3.

[62] *Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives,* "FSS Consolidation Schedule," Department of Transportation and Related Agencies Appropriations for 1996, 104th Cong., 1st sess., part 6, March 14, 1995, 516.

how to plan a move to a new duty station. Although the FAA guaranteed a position for all flight service specialists willing to relocate, non-air traffic personnel were not covered by that guarantee. However, the FAA worked to find new positions for the support staff.[63]

When the Juneau AFSS opened the biggest complaint from pilots centered on the lack of public restrooms. The manned FSSs provided coffee, vending machines, and restrooms for pilots coming in for weather briefings and to file flight plans. In response to complaints, the FAA said the AFSS was not supposed to be a hospitality house for air travelers and that public restrooms were the responsibility of the state authorities, which ran the Juneau Airport. Mathews explained, "We don't establish federal building just to have bathrooms available." The new facility's restroom, located in the secure area of the building, remained off limits to the public.[64]

As the agency began shuttering the FSSs after remoting them to the AFSSs, pilot complaints about the lack of human contact, especially with regard to local weather, increased.[65] As Larry Chenaille, owner of Larry's Flying Service, lamented, "A lot of times we need a live person; a human being, to tell us what they see out there . . . we hate to see the flight stations close because this state is so dependent on air transportation."[66] Even Senator Stevens entered the fray, noting, "It takes a lot of courage to land at Holigachuk knowing that the guy telling you that the runway is clear is sitting down in Kenai, 1,500 miles away. That will not happen anywhere else in the country."[67]

At an August 23, 1993, meeting with pilots in Fairbanks, a FAA representative explained that either National Weather Service or contract weather observers would continue to monitor the weather at most of the closed stations. In addition, the FAA planned to install 60 weather-monitoring systems throughout the state. When a Fairbanks pilot and Alaskan Aviation Safety Foundation board member complained the weather observers were a poor substitute for the flight service personnel, the FAA's Rick Ericson responded, "People don't like the system because they don't like to change." Alaskan Region spokesperson Joette Storm said the FAA was streamlining FSS operations with technology. She mused, "I guess you have to ask those pilots, would they be willing to pay more taxes to keep" the flight service stations open.[68]

[63] Joette Storm, "Flight Service Consolidation is Coming," *FAA Alaskan Region Intercom* (December 1992): 13.
[64] "Pilots Complain to FAA: Facility Lacks Facilities," *Daily Sitka Sentinel*, May 22, 1991.
[65] "Pilots at Odds with FAA Over Station Closures," *Daily Sitka Sentinel*, August 26, 1993.
[66] Ibid.
[67] *Hearing before the Subcommittee on Aviation of the Committee on Commerce, Science, and Transportation, United States Senate*, Reauthorization of the Airport Improvement Program and S. 1491, the Federal Aviation Administration Authorization Act of 1993, 103rd Cong., 1st sess., September 28, 1993, 33.
[68] "Pilots at Odds with FAA," *Daily Sitka Sentinel*.

Table 4: Alaskan Region FSS Commissioning and Closures

Station	Date Opened/ Commissioned	Date Hours Reduced/ Decommissioned
Anchorage IFSS Anchorage FSS	January 1, 1940 New Building commissioned January 1, 1964	Closed on or about June 19, 1993; service provided by the Kenai AFSS
Aniak	October 26, 1941	Closed on May 25, 1972
Annette Island	December 8, 1941	Closed in 1973, flight services transferred to Ketchikan
Barrow	Summer 1967	Open, part-time;Fairbanks satellite facility; hours reduced in 1993
Bethel	August 20, 1942	Closed on or about November 5, 1994; service provided by the Kenai AFSS
Bettles	April 23, 1944	Closed on May 8, 1993
Big Delta	May 1, 1942	Closed in 1993
Bruin Bay	1942	Closed 1945
Cold Bay	1958	Open, part-time; Kenai satellite facility; closed and remoted to Fairbanks FSS on September 17, 1963; reopened; on December 17, 1994, hours reduced to 6 am - 10 pm; off hours services provided by Kenai AFSS
Cordova	January 1, 1940	Closed on or about May 8, 1993 - services provided by the Juneau AFSS
Deadhorse	July 7, 1970	Open, part-time; Fairbanks satellite facility; on or about October 14, 1995, hours reduced to 6am - 9:30 pm; off hour services provided by the Fairbanks AFSS
Dillingham	1965	Open, part-time; Kenai satellite facility
Fairbanks	January 1, 1940, combined with tower; May 20, 1968, moved into a separate facility	Open, hub - AFSS opened in 1989
Farewell	July 9, 1942	Closed; on June 22, 1967, hours reduced from 16 to 8 hours a day, and calls remoted to the McGrath FSS; closed in 1993
Fort Yukon	August 24, 1943	Closed in 1960

Table 4: Alaskan Region FSS Commissioning and Closures - Cont.

Station	Date Opened/ Commissioned	Date Hours Reduced/ Decommissioned
Galena	September 15, 1942	Closed in 1972
Gambell	November 2, 1942	Closed on November 15, 1946
Gulkana	October 30, 1942	Closed on March 31, 1995; service provided by the Kenai AFSS
Gustavus	October 10, 1944	Closed in 1967
Haines	October 10, 1940	Closed on January 11, 1953
Homer	July 25, 1942	Open, part-time; Kenai satellite facility
Iliamna	September 22, 1942	Open, seasonal, part-time, Kenai satellite facility; on April 13, 1967, hours reduced from 16 to 6 hours per day. closed on September 30, 1995; reopened on May 1, 1996, when it became a seasonal facility open March 1, through September 30, and operates from 5:45 am to 9:45 am. Off hour services are provided by the Kenai AFSS.
Juneau	July 22, 1942	Open, hub; new AFSS operational on January 13, 1991 and commissioned on May 11, 1991
Kenai	December 31, 1941	Open, hub; new AFSS stood up in 1989, but not fully operational until the new building opened in 1994
Ketchikan	March 11, 1969	Open, part-time, Juneau satellite facility; began operations as a part-time facility; moved into the Ketchikan airport's terminal building in the Fall of 1974; probably became full-time when Annette Island FSS closed in 1973, before becoming a part-time facility again in the early 2000s
King Salmon	March 13, 1942	Closed on or about May 15, 1993; service provided by the Kenai AFSS
Kodiak	July 19, 1941	Closed January 31, 1974
Kotzebue	June 3, 1943	Open, part-time; Fairbanks satellite facility; on December 17, 1994, hours reduced to 8 am - midnight; off hours handled by the Fairbanks AFSS
McGrath	March 10, 1941	Open, seasonal, part-time; Kenai satellite facility; on or about April 3, 1993, closed and service provided by AFSS at Kenai. McGrath reopened on May 1, 1993, and operated as a seasonal FSS, open from May 1 - September 30

Table 4: Alaskan Region FSS Commissioning and Closures - Cont.

Station	Date Opened/ Commissioned	Date Hours Reduced/ Decommissioned
Middleton Island	November 19,1942	Closed in 1958
Minchumina	July 21, 1942	Closed; on June 22, 1967, hours reduced from 16 to 8 hours a day, and calls remoted to the McGrath FSS; closed in 1970
Moses Point	May 21, 1942	Closed; on November 12, 1964, became a part-time facility until it closed in April 1972 when a fire destroyed the facility
Nenana	November 4, 1943	Closed; on May 23, 1968, hours reduced from 24 to 16 hours per day; closed in 1972.
Nome	January 1, 1940	Open, part-time, Fairbanks satellite facility; On December 17, 1994, hours reduced to 7:15 am to 10:45 pm; off hours handled by Fairbanks AFSS
North Dutch Island	September 2, 1943	Closed on March 1, 1951
Northway	January 14, 1942	Open, part-time, seasonal, Fairbanks satellite facility; on or about July 25, 1995, hours reduced to 6 am to 9:30 pm; on September 30, 1995, Northway closed until March 1, 1996, when it reopened as a seasonal station from, operating from May 1 - September 30; when closed, services provided by the Fairbanks AFSS
Palmer	August 1966	Open, part-time; Kenai satellite facility
Petersburg	March 2, 1940	Closed on April 30, 1956
Port Heiden	December 29, 1946	Closed on June 30, 1951
Ruby	March 15, 1940	Closed early 1950s
Sand Point	1945	Closed in 1950
Sheep Mountain	February 9, 1943	Closed on April 5, 1951
Shemya	1964	Closed in September 1968
Shungnak	August 15, 1943	Closed on September 15, 1950
Sitka	January 4, 1941	Open, part-time, Juneau satellite facility - On or about May 20, 1995, hours reduced to 6 am - 9:45 pm; when closed services provided by the Juneau AFSS
Skwentna	February 15, 1945	Closed in 1955

Table 4: Alaskan Region FSS Commissioning and Closures - Cont.

Station	Date Opened/ Commissioned	Date Hours Reduced/ Decommissioned
Summit	May 10, 1940	Closed in 1969
Talkeetna	May 17, 1940	Open, part-time, Kenai satellite facility - on May 7, 1965, became a part-time station
Tanacross	March 1, 1943	Closed on September 1, 1950
Tanana	May 4, 1943	Closed on or about March 31, 1995; services provided by Fairbanks AFSS
Umiat	August 11, 1946	Closed on July 1, 1953
Unalakleet	May 2, 1943	Closed on March 1, 1973
Valdez	1942	Closed - On November 30, 1981, the FAA decombined the combined station/tower and closed the FSS
Yakataga	December 21, 1942	Closed in 1969
Yakutat	June 30, 1940	Closed on February 13, 1993

Sources: For the full list of references for Alaskan AFSS and FSS openings and closing please see Appendix IV.

Talkeetna FSS
Courtesy: Yasmina Platt

When the FAA commissioned the last AFSS on February 15, 1995, all had the Model 1 Full Capacity system. By the end of fiscal year 1995, the FAA had consolidated 286 flight service stations into sixty-one AFSSs, thirty-one auxiliary stations, and one remaining conventional station.

The Controller Strike

President Reagan press conference on controllers strike
Courtesy: Ronald Reagan Presidential Library

While general aviation pilots worried about FSS consolidation, commercial operators found themselves hampered by a nationwide air traffic controllers strike. When contract negotiations failed to provide better pay, equipment, and working conditions, members of the air traffic controllers union, the Professional Air Traffic Controller Organization (PATCO), voted to strike. On August 3, 1981, approximately 12,000 controllers walked off the job. President Ronald Reagan announced that if the strikers did not return to work within three days the FAA would fire them. The FAA ultimately fired almost 11,400 controllers.

The strike did not immediately disrupt traffic in Alaska. On the first day of the strike, approximately 170 controllers throughout Alaska walked off the job. FAA Alaskan Region Public Affairs Officer Cliff Cernick reported all air traffic operations throughout Alaska remained at full capacity, except for Anchorage, which had between a 20 to 30 percent decrease in traffic. Prior to the strike, the FAA had recertified front-line managers to control traffic and signed an agreement with the Department of Defense to allow military controllers to help handle civil traffic in the event of a strike. The FAA also moved nonstrikers and those flight services specialists who were also certified to handle air traffic control duties to facilities with higher levels of traffic to ease congestion. For example, controllers in Juneau's FSS took over the positions left empty in the Juneau terminal control center when its four employees walked off the job.[69]

On August 6, Cernick reported, "Indications now are that there are some – but not an awful lot (of controllers) – returning." Ken Killian, spokesperson for PATCO Local 601 in Alaska, countered that the number of Alaska controllers on strike actually exceeded 80 percent of the membership. Like airports across the country, air traffics delays proved inevitable in

[69] Kyoko Ikenoue, "At Least for Now: Sitka Flights Not Affected," *Daily Sitka Sentinel*, August 3, 1981; "Flights Into Sitka Still on Schedule," *Daily Sitka Sentinel*, August 4, 1981.

Alaska, but cancellations were rare. At the Anchorage International Airport, which generally handled about 1,000 flights per day, controllers handled approximately 770 planes on the first day of the strike and 870 flights the following day. On August 6, Wien Air Alaska and Northwest Airlines reported delays of up to three hours, but most of those delays were on flights originating in Seattle. On August 7, the FAA Alaskan regional office began sending out letters of dismissal to those controllers who had not returned to work.[70]

The FAA immediately began hiring new controllers. By 1987, the FAA employed 250 air traffic controllers in Alaska. FAA was authorized to hire up to 257 controllers in the state. On a visit to Alaska, FAA Administrator Donald Engen said the FAA has "enough air controllers nationwide. We don't have enough in some areas. Anchorage is a case in point."[71]

Safety Concerns

"A new aviation safety record was set in Alaska," exclaimed FAA Alaskan region spokesman Cliff Cernick, "when several days passed and not one aircraft accident was reported . . . This is unprecedented."[72] The accident-free streak began on June 2, 1980, and ended on June 9. FAAers in Alaska emphasized that going seven days without an accident in the summer had never happened before in the State.[73] On average, Alaska witnessed an aviation accident or incident every day and half. The majority of accidents occurred between June and September, when private pilots began flying again after the long winter and when charter flights began taking guides and hunters into the bush.

Traffic at Anchorage's Lake Hood seaplane base and Merrill Field increased exponentially during the summer months. As one reporter noted, "Sometimes in the long evenings of a summer day when daylight lasts until midnight, the hum of light aircraft over Anchorage makes it possible to believe that Alaska could not exist without private aviation. Mostly single-engine craft roar off the base at Lake Hood, next to the Anchorage International Airport, and . . . planes fly off the Merrill Field strips at the edge of downtown Anchorage."[74]

The FAA did what it could to keep pilots safe. The agency invited pilots to safety seminars, worked with the industry to ensure pilots maintained proficiency and, in general, strived to create a support system for Alaska's pilots. In 1985, for example, Alaskan Region Director Franklin Cunningham

[70] "Alaska Airports Escape From Effects of Controllers Strike," *Daily Sitka Sentinel*, August 6, 1981; "Air Traffic Slows a Bit in Alaska," *Daily Sitka Sentinel*, August 7, 1981.
[71] "FAA Chief Says Anchorage Needs More Controllers," *Daily Sitka Sentinel*, February 13, 1987.
[72] "Aviation Safety Record Set," *Daily Sitka Sentinel*, June 11, 1980.
[73] "Alaska Safety Record Set," *FAA Headquarters Intercom* (June 23, 1980): 3.
[74] Wallace Turner, "Big Ships, Bad Bears, Busy Sky," *New York Times*, June 10, 1985.

instituted an enhanced inspection program for general aviation pilots. Cunningham explained, "Ninety-seven percent of the 10,600 pilots in Alaska fly safely . . . It's the other 3 percent that we are trying to reach and protect with this program."[75]

Lake Hood seaplane base
Courtesy: Wikimedia Commons

Agency flight standards personnel monitored flights, counseled pilots, distributed safety literature, and provided technical assistance in an attempt to reduce the accident rate. FAA inspectors also checked to ensure pilots had their required medical checkups and current operating certificates for their aircraft. According to regional public affairs officer, Paul Steucke, "We'll walk over and introduce ourselves and ask pilots, 'When was the last time you flew the aircraft?' If they haven't flown in the past 90 days, we might suggest they spend $30 to have a flight instructor ride with them for an hour. That's really cheap insurance."[76] The FAA also initiated an inspection program for air taxi aircraft and pilots. "The success of our special spring inspection program on the general aviation pilots," explained Cunningham, "has prompted us to create a special fall season program that will place special emphasis on air taxi pilots and aircraft being used for the hunting season."[77]

Although the large scheduled commercial carriers maintained an enviable safety record in Alaska, the FAA remained concerned about the high rate of general aviation, air taxi, and commuter aircraft accidents in the state. (See Table 5.) The sheer volume of air traffic and Alaska's ever changing weather conditions contributed to the high accident rate. As the NTSB bluntly noted in 1980, Alaska "has an air safety problem." Based on 1974 through 1978 statistics, the NTSB found that the general aviation accident rate was more than double the rate for the rest of the United States. Furthermore, approximately 30 percent of all air taxi accidents happened in Alaska, and the rate of occurrence proved to be more than four times the national average.[78]

The NTSB attributed the high accident rate, in part, to what it termed the bush syndrome. "Descriptions of the 'bush pilot syndrome' range from a pilot's casual acceptance of the unique hazards of flying in Alaska to a

[75] "FAA Starts State Air Taxi Checks," *Daily Sitka Sentinel*, August 15, 1985.
[76] "FAA Sets Accident Prevention Project," *Daily Sitka Sentinel*, April 15, 1985.
[77] "FAA Starts State Air Taxi Checks."
[78] National Transportation Safety Board, Air Taxi Safety in Alaska, Rep. NTSB-AAS-80-3 (September 6, 1980): 2.

pilot's willingness to take unwarranted risks to complete a flight," the NTSB explained. "In Alaska it is not uncommon for pilots to fly in extremely poor weather or to attempt to land on runways that are in bad condition or off the airport on snow-covered strips or frozen lakes marginally suited for landing." The willingness to take chances, according to the NTSB, "is considered a part of flying in Alaska."[79]

The NTSB continued:

> VFR flight in adverse weather is not uncommon in Alaska . . . The risk of losing unrecoverable business often results in pressure on the operator or pilot to fly when good judgment dictates otherwise . . . the lack of FAA inspectors permanently on-site at the regional hub airports – FAA inspectors are permanently assigned only in Anchorage, Fairbanks, and Juneau – does little to discourage these unwarranted and often illegal flights. There is no one of authority available to discourage or stop those operators or pilots with a "bush mentality" from flying when others choose not to do so.[80]

Adding to the safety issue, according to NTSB investigators, was the "considerable mutual distrust" between the FAA and operators. "The FAA appears to believe that the most serious safety problem is the operator and pilot attitude." The operators and pilots, however, believed the FAA, rather than working with them to solve their problems, is 'violation' oriented."[81]

Alaska's pilots vehemently protested their categorization as reckless. Many believed that small aviation companies, in efforts to make a profit, were to blame. Those companies often hired young, inexperienced pilots and pressured them to fly in less than optimal conditions. As one pilot wrote: "The Part 135 operators in Alaska have a lousy reputation – one richly deserved – but then they have a strong tendency to hire kids at bottom dollar and force them (at penalty of losing their job) to fly in unsuitable conditions, with junky equipment, and way over-gross." He explained, "It's a fact of nature that if you combine abnormally low intelligence with abnormally high levels of testosterone, you will have problems. Guns in the inner cities and airplanes in Alaska – same phenomenon." He argued that the FAA could not mandate good judgement and Congress could not legislate informed decision making.[82]

Aviation accidents were actually the leading cause of occupational deaths in Alaska. In the early 1980s, the State of Alaska Epidemiology Office, with the support of the FAA and NTSB, studied the causes of general aviation accidents in the state.[83] Researchers examined accidents from 1963 through

[79] Ibid., 19-20.
[80] Ibid., 24-25.
[81] Ibid., 25.
[82] F. E. "Fred" Potts, "Is Alaska Flying Dangerous?" *AVweb* (August 1, 1995): accessed online at https://www.avweb.com/news/safety/183068-1.html.
[83] "Epidemiology of General Aviation Accidents in Alaska," State of Alaska Epidemiology Bulletin, no. 2 (February 3, 1984); accessed online at http://epibulletins.dhss.alaska.gov/Document/Display?DocumentId=1420.

1982 and reported that the 3,887 general aviation accidents during this period resulted in 513 fatal accidents and 1,366 fatalities.[84] In a similar 1994 study, researchers pointed out, "Alaska's rugged terrain and adverse weather are frequent factors in fatal aviation crashes. Many crashes might be prevented with better pre-flight and in-flight decision-making and avoidance of flight in conditions of adverse weather over hazardous terrain."[85]

Increasing safety issues in the early- to mid-1980s led the editors of the Alaskan Region employee newsletter, *Intercom*, to ask:

- Did you know over 50 percent of U.S. air taxi accidents occur in Alaska?
- Did you know that in the past eight months 36 people were killed in Alaskan aviation accidents?
- Did you know that from 1980 to 1985 fatal accidents in Alaska were up 15 percent and fatalities were up 8 percent?
- Did you know some pilots seem to think that because they are flying in Alaska, they should not have to operate by the regular rules of safety – that Alaska is different?[86]

As late as 1996, Phyllis-Anne Duncan, the editor of *FAA Aviation News*, a FAA flight standards organization publication for private pilots, still expressed concern about flying conditions in Alaska. She wrote on the joy and trials of flying in Alaska. "Beautiful though it is, Alaska contains lots of rough terrain, a scarcity of roads and facilities, and vast distances between communities." It also has an antiquated "enroute airway system we haven't seen the likes of here in the Lower 48 in years."[87]

[84] "The Causes of Accidents in General Aviation in Alaska, 1963-1981," State of Alaska Epidemiology Bulletin, no. 13 (July 12, 199985): accesses online at http://epibulletins.dhss.alaska.gov/Document/Display?DocumentId=1443.
[85] "Aviation Crashes and Injuries – Alaska, 1994," State of Alaska Epidemiology Bulletin, no. 15 (July 21, 1995): accessed online at http://epibulletins.dhss.alaska.gov/Document/Display?DocumentId=1630.
[86] "Did You Know," *FAA Alaskan Region Intercom* (August 1986): 8; "Oops," *FAA Alaskan Region Intercom* (September 1986): 10.
[87] Phyllis-Anne Duncan, "Flying in Alaska: An Overview," *FAA Aviation News* (April 1996): 4.

Table 5: Aviation Accidents/Incidents in Alaska, 1980-1999

Year	Overall Number of Accidents/ Incidents*	Overall Number of Fatalities*	Air Carrier Accidents/ Incidents (Part 121)	Number of Air Carrier Fatalities (Part 121)	Commuter/ Air Taxi Accidents/ Incidents (Part 135)	Number of Commuter/ Air Taxi Fatalities (Part 135)	General Aviation Accidents/ Incidents (Part 91)	Number of General Aviation Fatalities (Part 91)
1980	240	58	1	0	67	29	172	33
1981	229	88	5	0	56	32	164	57
1982	199	61	2	0	41	24	156	37
1983	213	40	2	0	35	2	175	38
1984	220	46	3	0	29	9	188	44
1985	205	75	1	0	52	34	152	42
1986	191	33	2	0	26	4	165	29
1987	191	63	0	0	26	32	164	26
1988	182	51	0	0	42	15	140	36
1989	194	31	2	0	41	10	148	20
1990	195	55	1	0	40	13	154	41
1991	177	38	1	0	39	15	137	23
1992	196	48	2	0	41	9	153	38
1993	192	38	1	0	36	3	153	33
1994	139	43	4	0	35	29	99	14
1995	176	50	1	0	31	13	144	37
1996	164	38	6	4	35	13	123	21
1997	160	55	1	1	41	28	117	27
1998	174	25	2	0	41	10	129	15
1999	160	23	7	0	38	16	115	16

Source: NTSB Aviation Accident Database

*The NTSB defines an accident as "an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage." An incident is defined as "an occurrence other than an accident, associated with the operation of an aircraft, which affects or could affect the safety of operations."

NOTE: Overall totals include FAR Parts 103, 125, 129, 133, and 137

From Friend to Foe to Partner

In early 1985, the Department of Transportation Inspector General audited the FAA's inspection procedures and enforcement policies in Alaska. Covering a two-year period ending in October 1984, the auditors concluded because of the agency's lax inspection and enforcement procedures, the FAA could not assure the safety of Alaska's air carriers. The auditors criticized the Alaskan Region for failing to conduct routine air carrier safety inspections

and collect fines. They noted the FAA's managers in Alaska routinely reduced recommended penalties. In response to the audit, released in late 1985, Alaskan Region Director Franklin Cunningham issued a news release assuring the public the region's inspectors did use standardized inspection checklists and had established new procedures for coordinating the collection of civil penalties. He also created a regional task force to standardize enforcement.[88]

Shortly after the audit results became public, a Ryan Air accident outside of Bethel in February 1986, triggered an in-depth FAA inspection of Alaska's largest commuter airline.[89] The airline had four other crashes in the previous sixteen months. In March, with the inspection complete, Cunningham reported, "Ryan Air is operating a safe airline." He noted, inspectors "did discover some problems with their operations, equipment performance and record-keeping, but none of the discrepancies we found would jeopardize public safety."

Ryan employed forty pilots to fly thirty-six planes, and served eighty-five locations in the state.[90] The FAA did fine the airline $16,000 in November 1987 for failing to maintain accurate records of pilot training, flight time, and load manifests. The agency had fined the airline two other times in the past two years. Tom Westhall, head of the region's flight standards organization, did not consider Ryan Air's federal aviation rule infractions "real serious violations." He explained that many airlines had record-keeping issues.[91]

On November 23, 1987, a Ryan Air Beechcraft 1900, a twin-engine turboprop carrying nineteen passengers and two crew members crashed through the perimeter fence at the Homer Airport. Three passengers survived. On December 30, with the NTSB investigation of the accident focusing on aircraft weight and balance issues, the FAA announced it would begin a thorough investigation of the airline. According to the agency, Ryan Air had "an apparent pattern of regulatory violations," which involved crew qualifications and testing, aircraft maintenance and equipment requirements, crew and aircraft records, and airplane and flight limitations. In addition, the airline had "experienced a significantly high number of aircraft accidents in recent years."[92]

Ryan had been involved in eleven accidents since 1980 with a total of thirty fatalities.[93] Under the terms of a January 29, 1988, consent order Ryan suspended flights until the agency found it qualified to resume operations. Ryan agreed to replace several top management officials, revise its pilot training program, establish a flight following program, and reestablish the

[88] "FAA Says Inspection Procedures Improved," *Daily Sitka Sentinel*, January 7, 1986.
[89] "Ryan Air Passes First Test," *Daily Sitka Sentinel*, February 28, 1956.
[90] "FAA Clears Ryan Air," *Daily Sitka Sentinel*, March 18, 1986.
[91] "Ryan Air Cited for Poor Record-Keeping," *Daily Sitka Sentinel*, November 25, 1987.
[92] "FAA Finds Problems with Commuter Line," *Daily Sitka Sentinel*, December 31, 1987.
[93] Federal Aviation Administration, "Ryan Air Volunteers To Temporarily Shut Down Flights," FAA New Release, #88-04, February 1, 1988, FAA History Archives; "Ryan Suspends Flights," *FAA Headquarters Intercom* (February 9, 1988): 2.

qualifications of each of its crewmembers and the airworthiness of its aircraft among other changes.

As part of the consent agreement, the airline's president, Wilfred Ryan, stepped down and John Eckels, the financial vice president took over as president.[94] As a result of the suspension, the airline began laying off employees and filed for financial protection under Chapter 11 of federal bankruptcy laws. The airline hired Richard Jones, an attorney and former deputy administrator of the FAA, to help it meet FAA demands and get its operating certificate renewed.[95]

While conducting its own investigation of Ryan Air, on January 28, 1988, the *Anchorage Daily News* reported that according to some of the airline's employees, the carrier pressured its pilots to fly overloaded aircraft. Three of the airline's pilots had earlier, the newspaper noted, asked the FAA for immunity from prosecution for their violations, and offered to testify about the airline's practices. FAA inspector, Ernest Keener, said he forwarded the pilots' request to FAA regional counsel Donald Boberick, who did not forward the immunity request to the U.S. Attorney.[96] One of three pilots who had asked for immunity died in the November 23, 1987, accident.

The same day the *Anchorage Daily News* printed its story, the Department of Transportation Inspector General began a special investigation into allegations that Ryan Air Service had falsified its load manifests. Upon hearing about the investigation, FAA Executive Director Robert Whittington, based in Washington, DC, asked the investigators to expand their inquiry to include an examination of the internal FAA processes followed by the Alaskan Region Flight Standards Division and the regional counsel in handling enforcement actions against Ryan Air Service. In late March, FAA Administrator T. Allan McArtor[97] received the investigative report.[98]

The report confirmed the *Anchorage Daily News'* story as well as highlighted issues between the regional counsel and flight standards office. The investigators said that the regional counsel had "an enforcement philosophy that centered on the individual, be it the mechanic or the pilot, and said they were primarily responsible for their actions. If the pilots were flying overweight, unless there was a very clear and compelling connection to the company, he would take action against the pilot not the company."[99] According to the investigators, Boberick also did not want to take any action that would "invoke an economic hardship on either an airline or on a pilot."[100] The safety inspectors in the region frustrated by the lack of enforcement

[94] "FAA Releases List of Ryan Air Violations," *Daily Sitka Sentinel*, February 2, 1988.
[95] "Grounded Airline Seeks Bankruptcy Protection," *Daily Sitka Sentinel*, January 3, 1988.
[96] "Ryan Pilots Warned of Overloaded Aircraft," *Daily Sitka Sentinel*, January 28, 1988.
[97] Served as Administrator April 10, 1984 to March 18, 1987.
[98] *Hearing before the Subcommittee on Investigations and Oversight, Committee on Public Works and Transportation, US House of Representatives*, Federal Aviation Administration's Safety Enforcement Program, 100th Cong., 2d sess., June 28, 1988, 5-6.
[99] Ibid., 10.
[100] Ibid., 24.

proceedings reported they viewed "counsel as a defense attorney for the airlines."[101]

On March 22, 1988, the FAA reassigned Donald Boberick from regional counsel to special assistant to the regional director. On June 16, 1988, in a national reorganization, McArtor straightlined the regional organizations, which allowed Washington, DC, headquarters organizations to exercise management over field operations. This meant, for example, regional directors, now called regional administrators, such as Franklin Cunningham, could no longer participate in enforcement proceedings. Many in Alaska blamed Alaska's higher than average accident rate on Cunningham and on his "laissez faire" attitude toward safety enforcement.[102]

Secretary of Transportation James Burnley highlighted the Ryan Air investigation in his calls to disestablish the FAA and assign its duties to other departmental offices. Burnley, long a critic of the agency, said the FAA's safety issues stemmed from its "closeness to the specialized industry that it regulates, services and promotes."[103]

The NSTB began hearings in Anchorage regarding the Ryan Air crash on April 6, 1988. After completing its investigation, on January 10, 1989, the NTSB announced the crew had "improperly supervised the loading of the aircraft, displacing its center of gravity and leading to its loss of control while landing at Homer." James Kolstad, acting NTSB chairman, said "the real responsibility rested with the crew, which is responsible for supervising the loading of the aircraft . . . For reasons I guess we'll never know, they failed in that function."[104]

The FAA gave Ryan Air permission to resume service with four aircraft on April 8, 1988. Before resuming operations, however, the airline also needed a certificate of financial fitness from the Department of Transportation.[105] After declining several earlier applications for its certificate, the Department of Transportation approved Ryan Air's application on July 19, 1988, pending another FAA safety review.[106] The airline resumed operations in late August after the FAA completed that review.[107]

After the Ryan Air crash and investigation, the Alaskan Region began a policy of strict enforcement of the federal aviation regulations, and, as a result began temporarily grounding airlines in the state:

- August 13, 1988, Armstrong Air Service based in Dillingham, operated ten airplanes and employed twenty people.[108]

[101] Ibid., 22.
[102] "Head of Alaska FAA May Be Out," *Daily Sitka Sentinel*, December 14, 1989.
[103] "FAA Transfers Top Counsel to Alaska," *Daily Sitka Sentinel*, March 25, 1988.
[104] "Safety Board Blames Crash on Cargo," *Daily Sitka Sentinel*, December 20, 1988.
[105] "FAA Gives Ryan Air OK to Resume Flights," *Daily Sitka Sentinel*, April 12, 1988.
[106] "Ryan Air Give OK To Resume Service," *Daily Sitka Sentinel*, July 20, 1988.
[107] "Ryan Air Extends Service," *Daily Sitka Sentinel*, August 26, 1988; "Ryan Recovers Partially from Crash," *Daily Sitka Sentinel*, November 29, 1988.
[108] "FAA Revokes Permit for Dillingham Firm," *Daily Sitka Sentinel*, August 15, 1988.

- September 25, 1988, Yute Air based in Dillingham, operated twenty-one single and multiengine fixed wing aircraft and employed twenty-nine people.[109]
- February 14, 1989, Troy Air based in Anchorage, operated one single-engine plane and eighteen multiengine aircraft and employed twenty-five people.[110] The airline closed on July 12, 1989. Its president Troy Hodges stated at the time, "I feel like I've been executed for a parking violation." The FAA's Paul Stake responded, "What we're after is compliance with federal aviation regulations so the public can be assured of what they're buying."[111]
- May 21, 1989, Channel Flying based in Juneau, operated two De Havilland Beavers, a Cessna U206, Cessna 180, and a Cessna 185 and employed thirteen people. The FAA and Channel Flying entered into an agreement, effective June 9, 1989, in which the company agreed not to appeal the FAA's May 21 emergency revocation order. The FAA, in turn, allowed the airline to apply for a new operating certificate if the company met all FAA and Federal Aviation Regulations and adequately demonstrated its qualifications to hold an air carrier operating certificate.[112]
- July 6, 1989, Alyeska Air Service based in Anchorage.[113]
- August 9, 1989, Seagull Air Service based in Bethel, operated ten single engine aircraft and one twin-engine cargo plane and had nineteen employees.[114]

The FAA's new, strict enforcement policy led to complaints and criticism of agency actions. In May 1989, the FAA administrator sent three senior officials from Washington to Alaska to assess the situation. The three executives conducted interviews with more than 100 FAA and other federal and industry officials. They provided their report to the administrator in late August. The investigators reported the Alaskan Region was "preoccupied with get-tough enforcement," and officials made decisions "with little or no communications," with industry. FAA inspectors in the region claimed "too much rigidity is being imposed by strict application of the enforcement handbook." Several inspectors expressed concern they were subject to

[109] "FAA Revokes License of Dillingham Air Taxi," *Daily Sitka Sentinel*, September 27, 1988.
[110] Federal Aviation Administration, "FAA Revokes Operating Certificate of Troy Air Inc.," FAA News Release, #89-07, February 15. 1989, FAA History Archives; "FAA Grounds Troy Air Inc.," *Daily Sitka Sentinel*, February 16, 1989.
[111] "Airline Closes with Bitter Blast at FAA," *Daily Sitka Sentinel*, July 13, 1989.
[112] Federal Aviation Administration, "FAA Revokes Operating Certificate of Channel Flying, Inc., " FAA New Release #89-20, May 22, 1989, FAA History Archives; "FAA Revokes Flight Permit For Channel Flying of Juneau," *Daily Sitka Sentinel*, May 23, 1989; Federal Aviation Administration, "Statement Regarding Channel Flying, Inc., FAA Information Statement, June 13, 1989, FAA History Archives.
[113] "FAA Closed Air Service," *Daily Sitka Sentinel*, July 11, 1989.
[114] "FAA Revokes Certification of Bethel-based Airline Service," *Daily Sitka Sentinel*, August 10, 1989.

disciplinary action if they did not open a formal investigation when they discovered a violation. In response, regional spokesperson Paul Steucke said the region had received a broad directive from FAA headquarters "to improve its relationship" with local carriers.[115]

Despite that directive, relations between the FAA and operators declined even further, when, on October 13, 1989, the agency revoked the operating certificate of Glacier Bay Airway, which flew charter flights between Gustavus and Juneau. Violations included falsification of pilot and training records, use of unqualified airmen, and failure to provide current manuals to personnel. When the airline continued to fly despite the revocation order, the FAA seized the company's Cessna 206 as collateral against a potential fine of $10,000 per illegal flight. The company appealed and a federal judge in the Ninth U.S. Circuit Court of Appeals issued a stay of the FAA emergency order on October 16, 1989.[116] The FAA appealed that decision.

Four days after the FAA revocation order, the Alaska Air Carriers Association (AACA) strongly condemned the agency's action against Glacier Bay Airways. The AACA expressed concern "that the emergency authority is being improperly utilized to shut-down a carrier for alleged violations without allowing the carrier the opportunity to answer the charges." John Hajdukovich, the president of AACA, explained, "Emergency revocation is an economic death sentence for an air carrier, with the FAA acting as the policeman, judge, jury, and executioner. The air carrier can appeal the emergency order, but it is shut-down and out of business during the process." He continued, "The FAA's emergency authority is tantamount to giving a policeman the authority to execute a suspected criminal on the spot. This is so contrary to the fundamental principles upon which this country was founded, that the AACA is requesting an independent investigation of the FAA Alaskan Region's use of its emergency authority of revocation."[117]

On October 20, 1989, a federal appellate court in San Francisco upheld the FAA order that Glacier Bay stop flying. Company attorney Lawrence Smith said FAA officials "step on" air taxi operators "like they're so many bugs. The Alaska Air Carriers Association called for a congressional investigation into what it called FAA's abuse of power.[118]

With the air taxi operators complaining to Congress and the press about

[115] "Washington Tells FAA in Alaska: Be More Polite," *Daily Sitka Sentinel*, September 1, 1989.
[116] Federal Aviation Administration, "9th Circuit Court Stays FAA Emergency Revocation Order on Glacier Bay Airways," FAA Information Statement, October 16, 1989, FAA History Archives; "Judge Stays Revocation of Air Taxi's Certificate, *Daily Sitka Sentinel*, October 17, 1989.
[117] Alaskan Air Carriers Association, "Alaska Air Carriers Association Condemns FAA Action," Press Release, October 17, 1989, FAA History Archives.
[118] "9th Circuit Court Upholds FAA Emergency Action," FAA Information Statement; "Court Upholds FAA in Glacier Bay Decision," *Daily Sitka Sentinel*, October 23, 1989.

the FAA's revocation of a number of air carrier operating certificates, the FAA released an explanation of its actions. The information statement, dated October 20, 1989, explained:

> Emergency Orders are issued only in unusual cases which present a clear and present endangerment to aviation safety and the public interest. In these cases the certificate holder clearly lacks the qualifications to hold the certificate. The orders are issued following investigation and a finding by the investigating inspector, his supervisor, the Flight Standards Division Chief, and Counsel, that the evidence clearly establishes a violation of the Federal Aviation Act or the Federal Aviation Regulations . . . All emergency revocations are instituted, processed, and carried out as expeditiously as possible due to the safety hazard presented.[119]

The FAA and Glacier Bay Airways agreed to settle the matter on February 2, 1990. The airline admitted to some violations and withdrew its appeal to the NTSB. In return, the FAA changed the Emergency Order of Revocation to an Order of Suspension, with the period of suspension being from October 13, 1989 to February 2, 1990.[120]

While the legal issues surrounding the Glacier Bay revocation continued, the FAA revoked the operating certificate of Alaska Island Air on November 14, 1989. The company owned a De Haviland DHC-2 and a Cessna 180 and employed five people. The airline, an on demand and scheduled Part 135 air taxi operator, carried passengers and cargo between Petersburg, Hobart Bay, and Kake. Violations included falsifying records, using unqualified airmen, and not providing crew sufficient rest between flights. The company's president Dane Roundtree complained the FAA's allegations "have little or no truth to them. The FAA makes it nearly impossible to defend yourself as the appeal process[s] will be very costly . . . In my opinion we're dealing with an American Gestapo that has no boundaries and nobody to answer to."[121] In December 1989, a NTSB judge overturned the FAA's revocation order. He rejected all the charges except the one asserting the airline had failed to retain pilot records for at least a year after the pilot's employment ended.[122]

After a meeting with FAA Administrator James Busey to discuss FAA enforcement actions in Alaska, Senator Ted Stevens announced on December 7, 1989, the FAA pledged to help Alaska air carriers meet federal safety requirements. "Everyone agrees that air safety must not be compromised," Stevens said, "the FAA ought to place the emphasis on helping air carriers meet safety requirements rather than shutting them down." According to Stevens, Busey had disclosed that the FAA's emphasis on enforcement over compliance and safety has caused problems nationwide. Stevens said Busey wanted to shift the focus back to cooperating with the air carriers beginning with operators in Alaska.[123]

In a December 11 follow-up letter to Senator Stevens, Busey agreed to improve "the adverse climate that has developed between the Federal Aviation Administration and the aviation community regarding almost every aspect of our enforcement activities."[124] Two days later, Alaskan Regional Director Franklin Cunningham announced his retirement. He had served as regional director since 1983. His tenure had been marked by controversy for his lax supervision of enforcement efforts after a series of aviation accidents.[125] On December 12 the *Daily Sitka Sentinel* reported Tom Westall, the head of the Alaskan Region's Flight Standards Divisions, might be removed from his position as the FAA worked to improve its relations with the Alaska aviation community. FAA Administrator Busey, however, did not plan to remove Westall, but rather he wanted upgrade the job to a senior executive position.[126]

In January 1990, Senator Frank Murkowski (R-AK) met with the Aircraft and Pilots Association in Alaska to discuss, among other things, the FAA's enforcement policy. At the January 20 meeting, the aviation community vociferously complained about the FAA's "nit-picking enforcement style." Pilot David Adams described FAA safety inspectors as "a vengeful and vindictive lot." Acting regional administrator Davie Elliston admitted the issue of enforcement in Alaska "had been recognized . . . in the highest levels of the FAA." He said the agency will not compromise on safety, but was taking steps to improve relations with the aviation community.[127]

To ease tensions with the aviation community nationwide, on March 5, 1990, Administrator Busey proposed a series of improvements in the way the agency handled regulatory compliance with private pilots. Acknowledging "a good deal of misunderstanding about the enforcement process exists," Busey instituted a series of changes emphasizing communication and education rather than sanctions. Among his recommend changes:

- Re-energize the agency's accident prevention program
- Establish new training programs for inspectors
- Handle some violations through administrative rather than legal actions

[119] Federal Aviation Administration, "Date and Time That Emergency Revocations Were Served to Alaska Operators," FAA Information Statement, October 20, 1989, FAA History Archives.
[120] Federal Aviation Administration, "FAA and Glacier Bay Airways Settle Compliance Action," FAA Information Sheet, February 2, 1990, FAA History Archives.
[121] Federal Aviation Administration, "FAA Revokes Alaska Island Air Certificate," FAA Information Statement, November 14, 1989, FAA History Archives; "FAA Yanks Certificate of SE Air Taxi Service," *Daily Sitka Sentinel*, November 16, 1989.
[122] "Airline in Petersburg Wins Appeal Over FAA Closure," *Daily Sitka Sentinel*, December 18, 1989.
[123] "FAA to Help Alaska Air Carriers Follow Rules," *Daily Sitka Sentinel*, December 7, 1989.
[124] "Head of Alaska FAA May be Eased Out."
[125] "Head of FAA in Alaska Announces Retirement," *Daily Sitka Sentinel*, December 21, 1989.
[126] "Head of Alaska FAA May be Eased Out."
[127] "Drug Enforcement Plan Draws Sharp Criticism" *Daily Sitka Sentinel*, January 22, 1990.

- Re-examine the agency's sanction guidelines to make them more consistent with the new approach[128]

On July 27, 1990, the new regional director, Ted Beckloff announced that in conformance with FAA policy the Alaskan Region would begin making public all major enforcement actions in the state. His predecessor, Franklin Cunningham, had ordered enforcement information not be released unless specifically requested by the press. FAA policy dictated that enforcement actions "should be made available to the media (within) a reasonable period of time regardless of whether there has been a request for such documents."[129] In September 1990, Thomas Stuckey became the new manager of the Alaskan Region's Flight Standards Division. He previously served as the assistant manager of the FAA's Southwest Region's Flight Standards Division.[130]

While working to better relations with the Alaska aviation community, the FAA still had to perform its safety mission and enforce federal air regulations. On September 21, 1990, the agency proposed a $45,300 civil penalty against Frontier Flying Service of Fairbanks. Safety inspectors discovered the alleged deficiencies related to crew training and certification and maintenance during an in-depth inspection in March and April 1990. The company operated ten multiengine aircraft and one single engine aircraft and employed twenty people.[131]

In January 1993 the FAA grounded Bush Air Service in Bethel for safety violations. The airline provided charter service to villages in the Yukon and Kuskokwim deltas. This was the first time in more than a year the agency had shut down an Alaskan carrier.[132] John Curry, an assistant FAA counsel in Alaska, wrote in the December 23 closure notice, "You do not possess the care, judgement and responsibility to hold" an operating certificate. The air carrier operated two Cessna aircraft. Between 1978 and 1992, it was involved in at least thirteen accidents. Bush Air had previously lost its operating certificate in 1985 after it flew six charter flights without liability insurance.[133]

Improving Weather Information

When the FAA began closing flight service stations and remoting them to other facilities, pilots expressed concern about the difficulty in obtaining up-to-date weather briefings. The number of aviation weather reporting

[128] "Busey Announces Changes Affecting Private Pilots," FAA News Release, FAA 12-90 (March 5, 1990), FAA History Archives.
[129] "FAA to Make Major Alaska Actions Public," *Daily Sitka Sentinel*, July 30, 1990.
[130] "FAA Chief Picked," *Daily Sitka Sentinel*, September 4, 1990.
[131] Federal Aviation Administration, "FAA Proposes $45,300.00 Civil Penalty Against Frontier Flying Service, Inc. Fairbanks, Alaska," FAA News Release, #90-30, September 21, 1990, FAA History Archives.
[132] Ibid.
[133] "FAA Grounds Bethel Carrier; Cites Safety Regs Violations," *Daily Sitka Sentinel*, January 7, 1993.

stations and automated weather observing technologies in Alaska lagged behind those deployed in the continental United States. The lack of resources and the sheer size of the state contributed to the problem. In January 1980, Alaska had 122 aviation weather observation stations, including:

- 42 contracts with people in rural communities to observe and report the weather regularly using government furnished equipment
- 19 supplemental weather reporting stations
- 18 FAA manned weather stations
- 18 National Weather Service (NWS) manned weather stations
- 25 other reporting facilities

To provide more weather information to the large carriers flying by instrument flight rules (IFR), in April 1978, the FAA and the National Weather Service (NWS) began a program to assign meteorologists to the air route control centers. Those meteorologists monitored aviation weather conditions within the center's control area and kept air traffic control personnel continuously advised of weather changes, particularly those that might pose a hazard to aviation and impede traffic flow. With constant weather updates, air traffic controllers provided commercial pilots with critical weather information en route. A meteorologist began work at the Anchorage Center in 1980.[134]

FAA rules required that if a pilot wanted to make an instrument landing at an ILS-equipped airport in bad weather an aviation weather observer had to be present at the airport to provide weather reports. If the airport did not have an aviation-certified weather observer, pilots had to land using visual flight rules, which meant they could only land in good weather. Some ILS-equipped airports in Alaska, however, did not have aviation weather observers. In fact, of Alaska's more than 700 airports, only sixty-one had published instrument approach procedures. Of those, only thirty-five had full-time weather reporting services. Nine of the remaining twenty-six had part-time weather advisors.[135]

Unbeknownst to or perhaps, overlooked by FAA personnel, commercial pilots in Alaska were making instrument landings using only general weather information provided by the NWS contract weather observers. Those weather reports, however, were general weather observations, not those specifically needed by pilots. With the number of accidents increasing, in March 1984 the FAA began enforcing the rule in Alaska. The FAA instructed all commercial

[134] "Weather Program Nears Successful Completion," *FAA Headquarters Intercom* (November 3, 1980): 2; "Center Meteorologist Program Nears Completion," *FAA Headquarters Intercom* (January 7, 1980): 1.
[135] Imre Nemeth, "'Cure' for Instrument Flying Ills Is Not Workable, Impasse Reached," *Alaska Journal of Commerce* (May 5, 1986): 12.

air operators in Alaska to stop using general weather reports for instrument landings in adverse weather. If an airport did not have an aviation-certified observer or FAA flight service station, pilots could only fly in and out of it in good weather.

For instrument landings at small airports that lacked a FAA facility or NWS aviation weather observer, the FAA required the air carrier's company to supply its own observer. NWS-trained observers, paid for by the airlines, could provide weather observations at such stations The FAA, however, required those observers to provide weather information to any commercial carrier using the airport.

While most operators complied with the requirement, some resisted. Those carriers primarily worried about liability issues. If an accident occurred because of the company's paid weather observation, some companies feared they could be liable. The problem, according to Wilfred Ryan, of Ryan Air, was that insurance underwriters could view the fact that others used the carrier's weather report as a perceived risk and as a result would withhold insurance coverage from the carrier. He argued that the FAA should be responsible for operating the supplemental aviation weather reporting stations, not the airlines.[136]

The FAA's flight standards manager in Alaska, Thomas Westall, dismissed the liability argument. He argued the real issue centered on the expanding air taxi markets in the state. Tight federal budgets meant the FAA could not expand flight services and weather reporting to new, smaller markets. Responding to the possibility of the FAA hiring weather observers, Alaskan Region spokesman Paul Stueke said with a scarcity of resources and shrinking appropriations, "The federal government is in no position to be writing out paychecks at this time," to hire weather observers.[137]

To help ease concerns, in 1987, the FAA contracted with Alaska Aviation Radio, Inc., for aviation weather reporting services at Aniak, Gambell, Iliamna, Valdez, Dillingham, Savoonga, Shishmaref, Unalakleet, Point Hope, and Dutch Harbor. The weather observers, paid for by the aircraft operators at each airport, provided hourly weather reports and watched the weather for aircraft making instrument approaches into the airports.[138] Still not completely happy with the ability to obtain information, pilots continued to complain to the FAA and Congress. As a result, the FAA trained flight services specialists to provide weather observations to the pilots during the hours the flight services stations were open.[139]

Congressional involvement in the issue resulted in a mandate inserted into the Federal Aviation Administration Authorization Act of 1994 (PL 103-305), signed by President Bill Clinton on August 23, 1994. Without

[136] Ibid.
[137] "Air Service Complains About FAA Rules," *Daily Sitka Sentinel*, November 29, 1985.
[138] "FAA Adds to Alaska Staff, Enforcement," *Daily Sitka Sentinel*, September 30, 1987.
[139] Correspondence with Joe Buckingham, August 10, 2020.

mentioning Alaska by name, the law required the FAA to place weather observers at airports that averaged three or more accidents per year during the period 1989-1993 involving serious or fatal injury to crew or passengers on regularly scheduled flights operating single-engine aircraft under visual flight rules. It also stipulated the FAA placement of weather observers would not:

- Exceed five airports where terrain and conditions did not lend themselves to IFR operations supported solely by automated weather observing systems
- Exceed one airport where an automated surface observing system was scheduled for acceptance on September 1, 1994, with such weather services to be provided until the FAA Administrator determined the automated surface observing system was fully operational
- Exceed eight airports (where such weather observation services shall be on a cost-reimbursable basis) that were minor hub stations or strategic visual flight rules alternate airports at times when an observer was needed to supplement the automated weather observing system or immediately replace it in the event of failure[140]

The FAA and the NWS believed the deployment of new technologies, such as the automated weather observing systems (AWOS), would help alleviate the need for human observers. In 1983, the FAA began a yearlong test of prototype AWOS equipment at airports in Valdez, Galena, and Farewell, as well as at several airports in the continental United States.[141] The agency completed the demonstration program in 1984, and, on April 11, 1986, issued an advisory circular containing standards for AWOS systems for non-federal acquisition. The agency also planned to acquire AWOS systems for federal use.

AWOS measured wind velocity, temperature, dew point, altimeter setting, cloud height, and visibility. After gathering the information, the system disseminated it to pilots via computer-synthesized voice. The FAA procured the commercially available AWOS to fill an immediate need for automated weather information during the development of the more sophisticated Automated Surface Observing Systems (ASOS), which, in addition to all AWOS functionality, would identify the types and amounts of precipitation and displays weather information for use in airport towers.

[140] An Act to Amend the Airport and Airway Improvement Act of 1982 to Authorize Appropriations for Fiscal Years 1994, 1995, and 1996, and for Other Purposes, Public Law 103-305, sec. 515, 103d Cong. (August 23, 1994).
[141] "FAA to Test," *Daily Sitka Sentinel*, February 10, 1983; "FAA to Demonstrate Automated Weather Reporting Systems, FAA News Release, FAA 04-83, January 26, 1993, accessed at https://babel.hathitrust.org/cgi/pt?id=ien.35556029334869;view=1up;seq=25.

The AWOS sensor, located near a runway, gave readings as close as possible to actual runway conditions. A computer collected and analyzed the data and generated an up-to-the-minute voice report in a standard weather format. In the aircraft, pilots received the information via ground-to-air radio. On the ground, pilots could call the system on the phone and hear the current weather before leaving for the airport. The FAA planned to install sixty AWOS stations in Alaska. In early 1985, the FAA commissioned the airport surface detection equipment at Anchorage International Airport. Installed at Administrator Engen's request, the system enabled controllers to see through fog, a frequent condition at the airport.[142] The systems at Unalakleet, Aniak, and Fort Yukon became operational in 1990.[143]

The early version of the AWOS only calculated a small number of weather parameters, which offered help to pilots using remote airstrips without weather observers. According to the FAA, before deployment of AWOS units, the agency relied on "human observers to record and report weather." Those human reports could "be sporadic or nonexistent in remote locations. Human observers frequently transfer or move, leaving a site without weather reporting; and human observers, unlike machines, must sleep."[144] The FAA did establish four new contract aviation weather offices at Valdez, Petersburg, Wrangell, and Sand Point, since the AWOS equipment at those airports could not support flight operations under instrument flight rules.[145]

Typical ASOS array
Courtesy: Wikepedia

By the late 1980s, the NWS and FAA began working on a more sophisticated system to replace the AWOS. The ASOS automatically gathered weather data from various locations around an airport. The data included information on wind speed and direction, temperature, dew point, visibility, sky conditions, ceiling, precipitation type and accumulation. Like the AWOS, the ASOS transmitted information directly to pilots by means of computer-generated messages using ground-to-air radio. Pilots could also access the information using a dial-in port. The FAA installed the first permanent ASOS in Alaska at Skagway in August 1996. The agency commissioned twenty-nine additional systems in Alaska the following year.[146]

[142] "ASDE Ordered by Engen in Place at Anchorage," *FAA Headquarters Intercom* (January 22, 1985): 2.
[143] "60 New Weather Stations to Improve Safety, FAA Says," *Daily Sitka Sentinel*, August 14, 1990.
[144] "AWOS!" *FAA Alaskan Region Intercom* (August 31, 1990): 10.
[145] Federal Aviation Administration, *FAA Annual Report '96* (Washington, DC: US Government Printing Office, 1996), 39, 60.
[146] Ibid.

The FAA and NWS began upgrading weather radar in Alaska in 1996. That year, the FAA installed the first Next Generation Weather Radars (NEXRAD) at Anchorage, Fairbanks, Bethel, King Salmon, Biorka Island (Sitka), Middleton Island, and Nome. The NEXRAD equipment, also known as Weather Surveillance Radar 88 Doppler, or WSR-88D, detected precipitation and wind velocity at the airports. The NEXRAD radars incorporated a number of improvements over previous radar systems. The system provided improved resolution and sensitivity, which enabled operators to see features such as cold fronts, thunderstorm gust fronts, micro-bursts, wind shear, and mesoscale to storm-scale features of thunderstorms not previously visible on radar. The departments of Transportation, Defense, and Commerce managed the national NEXRAD program as part of efforts to develop and implement a national network of advanced Doppler weather surveillance radars.[147]

In 1996, the NWS commissioned the Alaska Aviation Weather Unit. Forecasters at the unit issued area forecasts and in-flight advisories for the state. The unit produced weather graphics for FAA personnel who provided weather briefings to pilots. The unit served as a meteorological watch office and was located in the Volcanic Ash Advisory Center.

Because pilots landing and departing from Juneau International Airport face some of the nation's most challenging conditions, the FAA began work in 1997 to reduce turbulence-related incidents involving passenger jets at the airport. The airport provides the only non-waterway entry into and out of Alaska's capital city. Strong turbulence and winds near the airport are the result of the surrounding mountainous terrain on the wind-flow patterns near Juneau. For a time, the high winds led to so many passenger jet and private aircraft turbulence-related incidents that several airlines stopped serving Juneau.

After research and testing, the FAA commissioned the Juneau Airport Wind System (JAWS) in July 2012. JAWS consists of five anemometer sites and three wind profiler sites located around the airport and the Gastineau Channel to help interpret rapidly changing atmospheric conditions. The equipment transmits wind data multiple times every minute, and provides information pilots can use to route aircraft away from patches of potentially dangerous turbulence. Using JAWS, pilots can get near-real-time information about wind speed and direction, and a visual readout showing regions of moderate and severe turbulence in the airport's approach and departure corridors.[148]

[147] Federal Aviation Administration, *FAA Annual Report '97* (Washington, DC: US Government Printing Office, 1997), 87.
[148] American Association for the Advancement of Science, "New Airport System Facilitates Smoother Take-offs and Landings," EurekAlert, September 19, 2012, accessed online at https://www.eurekalert.org/pub_releases/2012-09/ncfa-nas091912.php; NCAR, "Juneau Airport Wind System," Factsheet, accessed online at https://ral.ucar.edu/projects/juneau-airport-wind-system-jaws.

Volcanic Ash

Of the approximately 130 volcanoes in Alaska, geologists consider about forty of them as active. Eight percent of all U.S. active volcanoes are in Alaska. Most are in an arc stretching from the Aleutian Islands into eastern Russia, an area known as the Ring of Fire. Inactive volcanoes, those that have not erupted for several hundred years, are in every region of the state. The active volcanoes pose a safety risk to aircraft flying along the North Pacific air routes between the United States and Asia.

In the first major volcanic eruption in over a decade, Mount Augustine, located 175 miles southwest of Anchorage, erupted on March 27, 1986. The airlines cancelled some flights into and out of Anchorage International Airport for a few days to ensure the abrasive ash in the airstream did not damage aircraft engines. The airport experienced heavy delays as the airlines diverted commercial flights from Anchorage to Fairbanks and Seattle to avoid the ash.[149] A number of airlines flying the Polar route between the Orient and Europe diverted flights from Anchorage to Fairbanks. To prevent damage to its facilities, the FAA closed the tower at the Kenai Airport and shut down the airport radar for forty-eight hours. Air traffic activity at the airport in Homer also came to a virtual standstill.[150]

The National Weather Service's John Eise reported an ash cloud 12,000 feet above Anchorage. City officials asked businesses to close and urged residents to stay inside their homes to avoid risking respiratory trouble. Federal, state, and city government offices as well as schools and local businesses closed. Employees at the FAA's regional headquarters in Anchorage went home early on March 28 because technicians shut down the buildings electrical generators to prevent damage from the windblown ash.[151]

The FAA warned pilots that eruption columns of gas and ash normally reach 40,000 feet and could damage aircraft. In addition, the agency advised that winds aloft could disperse the columns into plumes that could extend downwind for distances of 700 miles or more. Following the eruption, the U.S. Geological Survey (USGS), the University of Alaska Fairbanks Geophysical Institute, and the Alaska Division of Geological and Geophysical Surveys established the Alaska Volcano Observatory in 1988. Staff there initially monitored and alerted businesses, communities, and the FAA of eruptions of volcanoes in the Anchorage/Cook Inlet area, and, in 1996, began monitoring volcanoes in the Aleutian Islands. Volcanic eruptions affected the tens of thousands of national and international flights that annually flew over the Aleutians.[152]

[149] "Alaska Volcano Closes FAA Sites," *FAA Headquarters Intercom* (April 8, 1986): 1-2.
[150] "Mount Augustine Blows!" *FAA Alaskan Region Intercom* (April 11, 1986): 1.
[151] "Volcano Erupts on Alaska Island Spewing Ash Over Much Of State," *New York Times*, Late Edition, March 28, 1986.
[152] Thomas J. Casaderall, "Volcanic Hazards and Aviation Safety: Developing Techniques in Alaska," *FAA Aviation Safety Journal* 3, no. 1, 14-15.

Concerned that volcanic dust, invisible to radar, could lead to a major catastrophe, the FAA and the National Oceanic and Atmospheric Administration (NOAA) initiated an effort in 1989 to track volcanic ash clouds and warn pilots via notices to airmen. Developing ways to avoid dust, however, proved difficult. As NOAA's Mike Matson explained, "We cannot unambiguously distinguish ash clouds from meteorological clouds . . . They both look white. The only way to distinguish is to have somebody tell us, 'Hey, there's a volcano happening,' and then go look at it. Within a half hour to an hour, we can say, 'Yeah, this is definitely a volcano,' and start to track it."

The two agencies developed a system that uses satellite data and human observations to spot volcanic ash plumes. NOAA's four weather satellites, two in a fixed orbit 22,300 miles above the Earth and two in lower orbits, take photographs of the Earth to track volcanic plumes. The program also relies on human reports from American military bases, research stations operated around the world by the USGS, and the Smithsonian Institution's worldwide Scientific Event Alert Network. It focuses on the heavily traveled international air routes near active volcanoes, like those in the Alaska Aleutian Island chain.[153]

Three years after the Mount Augustine eruption, on December 14, 1989, Alaska's Redoubt Volcano began a series of eruptions, emitting ash that hampered aviation. The FAA immediately imposed flight restrictions in the vicinity of the volcano. Using the satellite-based system, the FAA tracked the ash and warned aviators of hazards. The agency initially issued fourteen advisories to pilots concerning the location, predicted path of the ash clouds, and possible hazards to aircraft from the corrosive and abrasive ash. FAA Alaskan Region Spokesperson Paul Steucke said four airlines, Alaska, Markair, United, and Delta, halted most operations into Anchorage as a direct result of the warnings. He noted, however, individual airlines determined what to do about the alerts.[154]

On December 15, KLM Flight 867, a Boeing 747, encountered an ash cloud at 25,000 feet, 75 miles northwest of Anchorage. All four engines stopped and the aircraft dropped at least 13,000 feet before the crew restarted the engines after thirteen tense minutes. Thirty-five minutes later the pilot safely landed the airplane at Anchorage International Airport.[155] Steucke subsequently reported the KLM airliner's captain had acknowledged receiving the dust alert, but he did not know what actions if any the pilot took as a result.[156]

[153] William Broad, "New System Warns of Volcano Dust, but a Plane Still Flies Into Trouble," *New York Times,* Late Edition, December 19, 1989.
[154] Ibid.
[155] Ivy Moore, "Don't Doubt Redoubt," *FAA Alaskan Region Intercom* (January 1989): 2-4.
[156] Broad, "New System Warns of Volcano Dust."

"The eruption of Mt. Redoubt," said Edward Haeseker of Alaska Airlines, "and the subsequent incident with a B747 encountering the initial ash cloud, sent a shock wave through the aviation community." He continued, "A B747 ingesting sufficient quantities of ash to cause all four engines to stop operating in flight forced the airlines serving Anchorage to react by suspending operations."[157] "I don't know what more we could have done," said FAA's Nicholas P. Krull in response to the incident. "But if we find a way to improve the system, we'll do it."[158]

KLM 867 crew looking for volcanic ash damage
Courtesy: Wikimedia Commons

A shift in wind direction on Saturday morning, December 16, carried ash to the Kenai-Soldotna area. The FAA's Kenai local coordinator and the sector field office manager dispatched personnel to various sites to begin precautionary shutdown of navigation aids, AFSS computer equipment, and the Anchorage ARTCC en route radar. FAA technicians took most air/ground communications offline. By 9:05 a.m., Kenai had approximately three quarters of an inch of ash on the ground. The airport managers at Kenai and Soldotna closed their airports, as ash shorted out transformers, causing several temporary power failures.[159]

Volcanic ash also fell in Anchorage, disrupting air traffic at Anchorage International Airport and stranding hundreds of passengers. As domestic air carriers canceled flights, or flew only during daylight hours, the international carriers began flying out of other cities such as Seattle. From December 1989 through February 1990, ash clouds from Redoubt damaged five commercial jetliners. Cancellations at Anchorage caused some carriers to curtail or cancel operations at the airport through January 1990, which resulted in reduced airport revenues of approximately $2.6 million.[160]

On August 15, 1992, at 4:41 p.m. Alaska Standard Time (AST), Mount Spurr erupted. The volcano, located eighty miles west of Anchorage, sent an

[157] Edward Haeseker, "Alaska Airlines Operating Procedures During the 1989-1990 Redoubt Eruptions," abstract, in Thamas J. Casadevall, ed., *First International Symposium on Volcanic Ash and Aviation Safety Program and Abstracts, Seattle, Washington, July 8-12, 1991* (Denver, CO: US Geological Survey, 1991), 20-21.
[158] Broad, "New System Warns of Volcano Dust."
[159] Moore, "Don't Doubt Redoubt."
[160] Casaderall, "Volcanic Hazards and Aviation Safety," 10-11, 15.

ash cloud, extending nearly ten miles high into the sky. Advance procurement of necessary supplies made it possible for the FAA Alaskan emergency readiness team to set up a command post at the regional office in the early evening to prepare for potential damage and manage recovery efforts from the volcanic ash. The eruption deposited nearly a quarter inch of volcanic ash on the area around Anchorage.

By 10 p.m., the ARTCC in Anchorage began experiencing heavy ash fallout. Technicians powered down all automation and support systems to prevent damage. Air traffic controllers maintained manual operations until the ash cloud passed the Anchorage area. Technicians then turned the equipment on and the ARTCC became operational again at 1:45 a.m. The FAA also deployed a helicopter and response team to Fire Island to top off the fuel tanks and provide additional protection to the equipment at that site.[161]

The agency shut down the airport surveillance radar, airport surface detection equipment, and other instruments when the Anchorage airport closed. Technical personnel added filters to equipment to prevent damage from the ash. Anchorage Tower Manager Art Gumtau reduced staffing at the facility until the airport reopened. "Needless to say, I had a very interesting first week," said Gumtau, who had just reported for duty. "I am very proud of our employees for their professionalism and the patience they demonstrated in working the traffic."[162]

The airport authority closed Anchorage International Airport for almost two days. Airport maintenance crews cleared almost 1,000 tons of ash and debris from each primary runway before reopening the airport. One of the airport's runways reopened on August 16, and the other on August 20. Merrill Tower remained open during the entire event. Both the Cordova and Valdez airports closed for about twenty hours because of a thin layer of ash on the runways.[163]

To help predict volcanic eruptions, in July 1996, the FAA funded a $1 million network of seismic stations to monitor Alaska's volcanoes. The network consists of ten remote monitoring systems that transmit information to the Geophysical Institute at the University of Alaska Fairbanks. Each sensing station consists of a seismic sensor buried two feet deep and connected by fifty feet of coaxial cable to a box containing battery banks, radios, and other electronics that process the signal from the sensor. Information from each site transmits information to a receiver located at a FAA facility.[164] The seismic data provides information about the location and strength of earthquakes beneath the volcano that scientists use to confirm the onset of an eruption.[165]

[161] Ivy P. Moore, ed., "Mount Spur Volcano: Response and Cleanup," *FAA Alaskan Region Annual Report 1992*, 14.
[162] Ibid.
[163] Ibid.
[164] "FAA Monitors Alaskan Volcanoes," *FAA Headquarters Intercom* (September 9, 1997): 4.
[165] "Seismic Network to be installed to Monitor Peninsula Volcano," *Daily Sitka Sentinel*, July 31, 1996.

Safety through Technology

In addition to new weather and volcanic detection technologies, the FAA worked diligently to upgrade navigation aids in Alaska. In the early 1980s, the agency began an aggressive program to modernize its air traffic control system. The effort focused on the acquisition of new communications, data processing, surveillance, and navigation equipment. It also involved the construction of new and expanded facilities.

In Alaska, with limited radar coverage for Alaska's air routes, the FAA began the process of installing long-range radars in the state. On December 1, 1980, the agency commissioned a $1 million long-range surveillance radar on Middleton Island, which extended radar coverage for 200 miles east of Middleton Island to Yakutat. The radar provided air traffic controllers at Anchorage with automatic positive identification of transponder-equipped aircraft along with aircraft altitude and ground speed. Transponder-equipped aircraft responded to pulses sent up by the radar. Ground computers digitized the information obtained by the radar and displayed it in numbers and letters on the controllers' radar scopes. An information data tag attached to an aircraft, or target symbol representing the aircraft, moved along with the symbol while the aircraft operated within the radar's operational range assuring positive identification of the aircraft.[166]

On November 16, 1981, a long-range radar began operating on Biorka Island, which allowed controllers to monitor air traffic along the entire Southeast Alaska coast from Yakutat to Sandspit, in the province of British Columbia.[167] A similar radar installed at Kenai helped close the gap in radar coverage. The Canadian government closed the final gap on the Seattle to Anchorage route in 1982 when it commissioned a new long-range radar in Sandspit.[168]

As part of a nationwide modernization program, in the mid-1980s the FAA installed remote maintenance monitoring equipment in the Anchorage ARTCC. Using satellite communications and computers, technicians at the ARTCC could monitor and maintain the agency's long-range radars at St. Paul, Middleton, Biorka Island, and Kenai. Although maintenance personnel still needed to travel to these remote sites to replace faulty circuits, maintain the buildings, and mow the grass, the new equipment allowed them to troubleshoot and fix other malfunctions from a central location.[169]

On August 4, 1980, the FAA commissioned its first en route automated radar tracking system (EARTS) at the Anchorage ARTCC. Sperry Rand's Univac Division developed the system for the agency by modifying the

[166] "FAA Okays Radar Facility," *Daily Sitka Sentinel*, December 2, 1980.
[167] Cliff Cernick, "Closing the Gap at Biorka," *FAA World* (May 1982): 16-17.
[168] "Radar Gap Filled by Station at Biorka Island," *Daily Sitka Sentinel*, December 17, 1981; "The News In Brief," *FAA Headquarters Intercom* (November 30, 1981): 1.
[169] Charles Spence, "The Long Arm of the Technician," *FAA World* (May 1986): 4.

automated radar terminal system (ARTS III) for en route operations by adding a display component that identified aircraft altitude and speed on the controllers screen. The FAA used the system to serve the offshore ARTCCs in Anchorage; Honolulu, Hawaii; and San Juan, Puerto Rico. EARTS provided a less expensive and simpler way to computerize the operations at these three low-activity centers.[170]

Four months after it became operational, concerns with EARTS led the FAA to make some changes in its operations. In December 1980, the FAA doubled the distance controllers using EARTS had to keep aircraft apart because of a "possible coding error" in the EARTS software. Without radar, controllers kept airplanes twenty miles, or ten minutes apart horizontally and maintained 1,000 feet of separation. With radar the controllers could keep planes five miles apart. The new FAA order mandated controllers keep planes ten miles apart until technicians fixed the error.[171] With the software issue fixed, the FAA commissioned EARTS in Hawaii in July 1982 and in Puerto Rico in December 1982.[172]

The FAA awarded a contract to Sperry Corporation in March 1984, to upgrade EARTS at the Anchorage, Honolulu, and San Juan ARTCCs, as well as at Nellis Air Force Base in Nevada. When completed, the upgrade provided a radar mosaic, which allowed controllers to view data from multiple radars on a single screen, a capability similar to that available at the continental United States ARTCCs equipped with national airspace system (NAS) En Route Stage A systems. In April 1985, Sperry received another contract to enhance the EARTS facilities by providing conflict alert and minimum safe altitude warning (MSAW) capabilities. The FAA accepted delivery of the combined conflict alert/MSAW software package in August 1987, and by fiscal year 1991, the FAA had commissioned all the upgraded operational EARTS.[173]

On November 16, 1981, officials in Valdez dedicated the country's first operational microwave landing system (MLS). The system belonged to the city, which purchased it for $800,000 from the Bendix Corp.[174] In the early 1970s, the departments of Defense and Transportation and the National Aeronautics and Space Administration (NASA) had begun work on developing the MLS as a replacement for the instrument landing system (ILS). MLS would provide precision, high-integrity guidance that would be relatively insensitive to the effects of terrain, structures, other aircraft, and weather. Furthermore, it could operate at airports, such as many of those in Alaska, where the conventional ILS could not operate because of terrain irregularities.

[170] "First EARTS Commissioned at Anchorage Center," *FAA Headquarters Intercom* (August 18, 1980): 1; Bruce Bartley, "FAA Changes Rules for Radar," *Daily Sitka Sentinel*, December 23, 1980.
[171] Bartley, "FAA Changes Rules for Radar."
[172] Preston, *FAA Historical Chronology*, 199.
[173] Ibid.
[174] "In the Regions and Centers," *FAA Headquarters Intercom* (November 22, 1981): 3.

The FAA received delivery of the first prototype MLS in 1976 and in 1978 the International Civil Aviation Organization adopted the U.S.-developed MLS for future use at the world's airports. In 1994, however, FAA Administrator David Hinson[175] halted further development of MLS to concentrate modernization efforts on global positioning system (GPS) technology.

As the city of Valdez incorporated the new MLS technology at the airport, the FAA decommissioned the last of a 1950s air traffic control system there. In August 1950, the FAA's predecessor agency, the Civil Aeronautics Administration (CAA), began combining some air traffic control towers and flight service stations at low-volume airports. Using combined station/towers, the CAA and then the FAA used personnel from both types of facilities interchangeably, which conserved manpower and money. On November 30, 1981, the FAA closed the last domestic combined station/tower located in Valdez.[176]

A series of communications outages between 1987 and 1992 caused by a leased commercial satellite that shifted in orbit prompted the FAA to buy its own satellite network. As Joette Storm, the FAA's spokesperson in Anchorage, explained, "The [leased] satellite wobbled out of orbit earlier than expected." In fiscal year 1994, the FAA awarded Melbourne, Florida-based Harris Corp. a $140 million contract to establish the Alaskan NAS Interfacility Communications System (ANICS). With ANICS, the FAA would own and maintain its own satellite circuits, which would save the agency an estimated $200,000 annually.[177]

With the contract in place, the FAA began construction on the first nineteen ANICs sites, as well as at four hubs located at the Anchorage ARTCC, and the Kenai, Juneau, and Fairbanks AFSSs. The Kenai and Anchorage sites began operations in November 1994.[178] By 1997, the FAA had four hub earth stations, a test and training facility, and thirty-eight sites fully operational. The ANICS became the first major acquisition conducted by a region and the first satellite communications network in the FAA. The system provided voice and data telecommunications for air traffic control, navigation, flight service, weather observation, and associated functions.[179] The Anchorage hub and three flight service stations were connected to each other by leased microwave or fiber-optic links, or copper cable, depending on the distance.[180]

[175] Served as Administrator June 30, 1989 to November 20 1991.
[176] Samuel Milner, "The Hybrid Experiment: Outliving their Usefulness, CS/Ts Vanish," *FAA World* (January 1982): 9.
[177] "FAA to Build 2nd Half of Bush Network in the Spring," *Alaska Journal of Commerce* (November 2001): accessed online at http://www.alaskajournal.com/community/2001-11-19/faa-build-2nd-half-bush-network-spring.
[178] Federal Aviation Administration, *FAA Annual Report '94* (Washington, DC: US Government Printing Office, FAA, 1994), 63.
[179] FAA, *FAA Annual Report '97*, 115.
[180] "FAA to Build 2nd Half of Bush Network."

FAA Administrator David Hinson travelled to Anchorage to dedicate the fourth installation of the voice switching and control system (VSCS) at the Anchorage ARTCC on October 28, 1995. The VSCS replaced 1950s-era technology with faster, more reliable air-to-ground and ground-to-ground links among air traffic controllers and pilots. The new system automatically routed radio communications from pilots to the correct air traffic controller. The Anchorage installation included more than 3,000 system cables and 101 telephone trunk lines with the capacity to expand to 240 lines.[181] The FAA tailored the system for each air traffic control center's environment and requirements, enabling each facility to configure the system to meet its specific needs.

To accommodate new equipment being developed as part of the FAA's air traffic control modernization program, called the Advanced Automation System (AAS), the agency began expanding the size of the en route centers throughout the country. The FAA had enlarged the Anchorage ARTCC between 1981 and 1982 with a new automation wing, expanded dining area, and ninety-nine new employee parking spaces.[182] In the early 1990s, the FAA began another expansion at the center.[183] The new construction, required to accommodate equipment installation and the implementation of the AAS and its subcomponents, more than doubled the area of from 60,000 square feet to over 120,000 square feet. The expanded building would accommodate such major systems as 118 common consoles, VSCS, remote control equipment, high capacity voice recorders, Alaskan NAS interfacility communications system, AWOS Data Acquisition System, and the power system with back-up generators. The total for construction and equipment installation, completed in 1998, cost more than $200 million.[184] In fiscal year 1994, the FAA completed a 50,000 square foot technical operations addition, a 10,000 square foot expansion of the utility services support building, and installation of a new critical and emergency power system.[185]

As part of the modernization efforts, in early 1993 the Alaskan Region dedicated a radar simulation lab at the Anchorage ARTCC. The lab consisted of eight computer workstations, large video screens that simulated a radar scope, and other features of a radar position in a control room. Planning for the lab had begun in 1989 and cost $9,000 per workstation. The lab was the first of its kind established by the FAA.[186]

[181] "Inside Alaska Industry," *Alaska Business Monthly* (December 1, 1995): 9.
[182] "News in Brief," *FAA Headquarters Intercom* (July 13, 1981): 1.
[183] FAA Alaskan Region, "Anchorage Center Expansion," *1992 a Year of Change*, 19, FAA History Archives.
[184] "Anchorage ARTCC is EXXXXXPANDING!!" *FAA Alaskan Region Intercom* (August 1992): 15.
[185] *FAA Annual Report '94*, 61.
[186] "Radar Training: Anchorage Center Dedicates Simulation Lab," *FAA Alaskan Region Intercom* (March 1993): 4-5.

The agency also began upgrading or building new air traffic control towers in the 1980s and 1990s. For example, on January 16, 1983, the FAA commissioned a new air traffic control tower in Bethel,[187] and opened a new tower at the Juneau Airport on July 1, 1987, which replaced a tower opened in 1961.[188] During fiscal year 1997, the agency completed construction on a new Anchorage tower hub base building and began construction on the new Merrill Field Airport tower.[189]

The FAA also began contracting out low activity towers in Alaska in the mid-1990s as part of a cost-cutting measure. In 1995, the FAA hired Barton Air Traffic Control International of Murfreesboro, Tennessee, to assume operation of the King Salmon Airport air traffic control tower. The company took over the Bethel tower in 1996, and the Kenai and Kodiak towers in 1997. The FAA still owned the towers and continued to oversee the contract controllers.[190]

Sometimes, when new equipment was not available, FAA employees in Alaska found innovative ways to solve issues. For example, in 1982, when the flight-data processing equipment controllers had been using since 1969 became obsolete and they had nothing available to replace it with, controllers and technicians in the region went to work. In a two-year development effort, the air traffic and airways facilities staffs designed new flight-data processing equipment. The offshore computer system (OCS) comprised two Hewlett-Packard 1000 computers, various terminals and printers located at each control sector, and a separate smaller, off-line processor for developing new software for the system. OCS processed and automatically amended flight plans filed from Alaskan flight service stations, air carriers, and military bases. It printed the flight strips at the controllers work stations, which reduced the chance of human error. OCS almost completely eliminated processor downtime at the Anchorage ARTCC because of its redundant back-up system.[191]

Alaska employees came up with another innovative solution in 1992 to overcome outages caused by snow on the Valdez Airport's non-directional beacon. That system generally experienced twelve outages per year. Since it was expensive for maintenance technicians to travel to Valdez, regional employees designed an inexpensive solution. Using a washing machine motor, they built a machine to shake snow off the antenna whenever the remote reset function activated. Dubbed "Thumper" by its inventors, the machine proved 100 percent effective in its first year of operation with no outages.[192]

[187] "The News in Brief," *FAA Headquarters Intercom* (January 31, 1983): 1.
[188] "Juneau Staff Moves into New Airport Tower," *FAA Headquarters Intercom* (June 30, 1987): 2.
[189] *FAA Annual Report* '97, 109.
[190] "FAA Privatizing Some Duties," *Daily Sitka Sentinel*, October 4, 1996.
[191] Gloria Moody, "Center Finds a Way," *FAA World* (January-February 1986): 20-21.
[192] "Flake Shaker," *FAA Headquarters Intercom* (June 22, 1993): 3.

FAA employees were not the only innovators. In 1993, Alaska airport officials conducted an experiment to deal with bird hazards at Lake Hood. Three sixty pound pigs, Larry, Curly, and Mo, were released to eat gull eggs. The pigs, it was reported, did a great job in disrupting the gull's nesting.[193]

A FAA First

The FAA's Alaskan Region employees continually amazed the agency with their ingenuity, and also with their desire to hone their skills and move up in the agency. For example, Betty M. Rogers moved to Alaska in 1970 and began her federal career in 1972 as a clerk at the Department of Housing and Urban Development. With an interest in aviation, she transferred to the FAA's Alaska office as an administrative assistant. Her husband, a pilot, flight instructor, and rated mechanic, encouraged her to improve her aviation qualifications and pilot skills as well as qualify as an airframe and powerplant mechanic. She also began taking FAA courses.

Successful in pursuing her dream, in 1980 she became the first women hired by the FAA as an aviation safety inspector (airworthiness). That position required her to certify flight schools and air taxis, investigate accidents, as well as undertake miscellaneous enforcement activity. In commenting on her accomplishment, Mrs. Rogers said "I'd like to see other women qualify themselves for positions such as mine . . . The field is wide open!"[194]

Capstone

The FAA's attempts to lower the accident rate in Alaska through education, certification, and safety programs, and a zero-tolerance policy that grounded pilots for fifteen days if they were caught violating a safety regulation, had only limited success. As a result, the FAA looked to technological solutions. With the development of the global positioning system (GPS), the agency hoped the new technology could be adapted to provide critical information to pilots.

GPS development began in the 1960s for military and intelligence operations. The Department of Defense refined the early technology and, in 1978 launched its first satellite that provided a navigation system with timing and ranging (NAVSTAR). It planned to deploy an additional twenty-three satellites by the early 1990s. When fully deployed, the constellation of twenty-four satellites would orbit the earth at fixed points above the planet and beam down signals to anyone with a GPS receiver. These signals would carry a time code and geographical data point that would allow the user to

[193] "Pig Patrol," *FAA Headquarters Intercom* (June 1, 1993): 3.
[194] "A 'First' for Betty Rogers," *FAA Alaskan Region Intercom* (January 25, 1980): 13.

pinpoint their exact position, speed, and time anywhere on the planet. The space-based system would pinpoint a three-dimensional position to about one meter (3.281 feet) of accuracy and provide nano-second precise time anywhere on Earth. Between 1978 and 1985, the United States launched the first eleven satellites. The NASA space shuttle *Challenger* disaster in 1986 delayed the launch of additional satellites until 1989, since the Department of Defense had used the space shuttles to launch GPS satellites.

In the early 1970s, the FAA began exploring the possible use of satellites to aid air traffic controllers as part of its research and development program. By 1977, with the Department of Defense's NAVSTAR program maturing, the FAA turned its attention to the possibility of using NAVSTAR for civil aviation use. As the Government Accounting Office pointed out in a 1979 report: "NAVSTAR could provide enough navigational accuracy to eliminate the need for FAA's Very High Frequency Omnidirectional Range (VOR), Tactical Air Navigation (TACAN), and distance measuring equipment (DME) facilities . . . If coupled with data link . . . NAVSTAR has the potential, provided that safety is insured, to do the surveillance now done by FAA's en route radar."[195]

The report also noted NAVSTAR could offer "many cost and operational benefits to civilians." A key operational benefit of using NAVSTAR for civil aviation would be the ability to allow pilots to fly direct routes, called area navigation (RNAV). It would also facilitate the ability of pilots to fly lower approaches into airports. Additional benefits included: increased safety; improved controller productivity; and more efficient use of airport capacity.[196] The FAA's early concerns regarding the use of the NAVSTAR constellation and GPS centered on the need for the civil aviation community to have access to NAVSTAR's signals and the development of low-cost GPS receivers for aviation use.

On September 5, 1991, at an International Civil Aviation Organization meeting, FAA Administrator James Busey announced that the United States would offer civil aviation free use of its GPS for at least ten years, starting in 1993 when the system would be fully operational. Although FAA-certified GPS cockpit receivers were not yet available, the FAA predicted that they would be soon.[197] To help begin the implementation process, on December 10, 1992, the FAA released a technical standard order (TSO C129) prescribing

[195] Comptroller General, "Should NAVSTAR Be Used for Civil Navigation? FAA Should Improve Its Efforts to Decide," Report LCD-79-104, April 30, 1979, 2. See also *Hearings before the Subcommittee on Oversight of the Committee on Ways and Means, House of Representatives*, Airport and Airway Trust Fund: Airport Safety in the Hawaiian Islands, 96th cong., 1st sess., March 30, 31, 1979, 126-134; Arthur A. Simolunas, "Civil Applications of NAVSTAR/GPS," in Federal Aviation Administration, Systems Research and Development Service Progress Report FAA-RD-78-90, August 1978, 297-305.

[196] Comptroller General, "Should NAVSTAR Be Used for Civil Navigation," 2-3, 5.

[197] FAA, "FAA Approves Use of Satellite-Based Navigation, Approaches by Pilots," FAA Press Release, FAA 20-93, June 9, 1993.

standards for the GPS receivers to be installed in aircraft cockpits. With the GPS constellation still incomplete, on June 9, 1993, the FAA approved the use of GPS for private and airline aircraft equipped with GPS receivers enabling them to choose direct routes without having to rely on ground-based navigation aids and to fly non-precision approaches into 2,500 designated airports.

The Department of Defense certified GPS for military operations on December 8, 1993, and on February 17, 1994, FAA Administrator David Hinson announced the system was now available for civil use in aircraft equipped with certified GPS equipment for certain civil instrument flight rules applications.[198] The FAA issued a notice to airmen on March 3, 1994, specifying the applications.[199] To protect military operations, the civilian signal would be degraded.

Alaska Airlines took quick advantage of the GPS offer to increase safety and efficiency on its routes in Alaska. The only airline to fly regularly scheduled passenger flights to Alaska's capital city of Juneau, it often had to cancel flights into and out of the city because of weather conditions. The mountains that tightly encircle Juneau Airport restrict air traffic patterns and also set up a complex wind-flow pattern. Taku winds, generated over the Gastineau Channel in the vicinity of Juneau and Douglas, create strong east-northeast winds that can attain hurricane force. At their worst, the winds negatively affect departure and arrival flight paths of aircraft.

To address the challenges it faced operating in and out of the Juneau Airport, Alaska Airlines, working with the FAA and Boeing, pioneered a technical solution. In May 1996, the airline began using required navigation performance (RNP) procedures. RNP combines onboard navigation equipment and the GPS satellite network to create precise landing paths, which are reliable in fog or bad weather. RNP procedures allow pilots to navigate through mountainous terrain in low-visibility conditions and reduce reliance on ground-based navigation aids. Alaska Airlines ultimately developed more than thirty RNP approaches for its Alaska operations and now uses FAA-approved RNP procedures at twenty-three U.S. airports. Other airlines operating in the United States and other countries, such as Australia, Canada, China, and New Zealand, are also using RNP procedures to improve safety and efficiency.

With Alaska Airlines' success using GPS signals, the FAA began studying what it called the Free Flight concept. Under Free Flight, using new procedures and technologies such as GPS, pilots would be able to choose the routes they considered most efficient. Controllers would intervene only to

[198] Associated Press, "Navigation System Ready for Civilian Use," *The Burlington Free Press* (Vermont), February 18, 1994.

[199] FAA Advisory Circular, AC-90-4, "Guidelines for Using Global Positioning System Equipment for IFR En Route and Terminal Operation and for Nonprecision Instrument Approaches in the U.S. National Airspace System," December 14, 1994.

ensure safety or prevent congestion. On March 15 1996, the FAA announced progress on Free Flight research and indicated it would work with the aviation community to phase in the concept over the next ten years. Confident of Free Flight possibilities, on January 15, 1997, the FAA announced plans for a two-year evaluation, beginning in 1999, of Free Flight air traffic management concepts and technologies in Alaska and Hawaii. The goal of the Ha-laska Free Flight Demonstration Project was to show that existing technologies could support the Free Flight concept. The FAA believed that the demonstration would help identify and mitigate the risks associated with implementing Free Flight.

Some of the technologies targeted for the demonstration project included digital data link for communications, GPS, and surveillance, and a conflict probe safety alerting system both on the ground and aboard aircraft. The FAA selected Alaska and Hawaii for the project because each state offered unique flying conditions within a controlled environment. Hawaii had a limited fleet size allowing for a full-scale evaluation of the Free Flight procedures and technologies. Alaska's adverse weather and mountainous terrain offered challenges for the new technologies to overcome. The FAA planned to equip about 2,000 aircraft in each state, including commercial, military, and general aviation."[200] The FAA subsequently renamed the Ha-laska demonstration as Free Flight 2000, and then Flight 2000.

On January 15, 1997, Vice President Al Gore announced, the "FAA in coordination with industry will begin equipping all commercial and general aviation planes in Alaska and Hawaii with advanced avionics." The new equipment would let pilots choose their own flight pattern with the help of satellites rather than follow predetermined flight routes.[201] Gore called the project an important step toward full operational status of Free Flight in the national airspace system. The FAA's initial plans called for the Free Flight modernization program to be completed after 2012.[202]

Despite White House endorsement, many stakeholders voiced strong reservations about conducting the demonstration in Alaska and Hawaii. They believed the lessons learned in those states would not transfer to the more complex airspace operations in the continental United States. As a result, FAA personnel worked with stakeholders to restructure the program and presented a new Free Flight demonstration plan to FAA management in September 1998. Among other things, they recommended the renamed Free Flight Operational Enhancement Program be conducted in the Ohio Valley and Alaska. The FAA eventually retitled the demonstration projects Capstone for the Alaska initiative and Safe Flight 21 for the Ohio Valley tests.

The Capstone Program kicked off in Alaska during fiscal year 1999.

[200] "Hawaii-Alaska Free Flight Demonstration Project Announced," *CNS Outlook* (January 22, 1997): 1; FAA Fact Sheet, "Ha-laska Free Flight Demonstration Project, FAA Press Release 08-97, January 15, 1997.

[201] "Alaska, Hawaii First to Test New Technology, *Daily Sitka Sentinel*, January 17, 1997.

[202] Vice President Al Gore, Chairman, *Final Report to President Clinton, White House Commission on Aviation Safety and Security*, February 12, 1997, 19.

Funded with $11 million, the initial phase of the program focused on the Yukon-Kuskokwim Delta region. Of the fifty-three villages in the region, thirty-three were served by either air carriers operating from Anchorage, Fairbanks, or Nome, or scheduled air taxis operating within the area. Bethel, the largest community in the region, served as the aviation, governmental, and cultural center. St. Mary's and Aniak served as economic and mail distribution centers.

In October 1999, FAA's Alaskan Region awarded a $3.9 million contract to UPS Aviation Technologies for aeronautical electronics to support the Capstone Program. The contract was for avionics systems, installation kits, terrain databases, ground-based transceivers, an avionics training simulator, and training support. The FAA planned to distribute the equipment to commercial airlines that volunteered to participate in the Capstone Program test period for three years.[203]

Improving Relations with Russia

On September 1, 1983, a Soviet interceptor shot down Korean Air Lines Flight 007, a Boeing 747 that penetrated the Soviet Union's airspace during a flight from Anchorage bound for Japan. All 269 persons aboard, including Representative Larry P. McDonald (D-GA) and sixty other Americans, died. An International Civil Aviation Organization (ICAO) report concluded the Korean crew unknowingly flew into Soviet airspace because they improperly operated their navigation equipment. It also said the Soviets assumed the 747 was an intelligence aircraft and did not make exhaustive efforts to identify it.

As a result of the tragedy, the ICAO assembly amended the Convention on International Civil Aviation to ban the use of weapons against civil aircraft. It also led to negotiations between the United States, Soviet Union, and Japan aimed at enhancing the safety of civil aircraft on North Pacific routes. The three nations signed a memorandum of understanding on July 29, 1985, followed by an implementing agreement on November 19 of that year. In addition to procedures for correcting the course of straying aircraft and for emergency landings in Soviet territory, the agreement included improved communications between air traffic controllers.

A telephone hotline linking air traffic control facilities in Anchorage, Tokyo, and Khabarovsk in Southeastern Siberia became operational on August 15, 1986. The new link consisted of a dedicated voice circuit between the Tokyo and Khabarovsk air route traffic control centers using an existing telephone cable between Japan and the Asian mainland. Controllers at Anchorage could communicate with Khabarovsk by patching through Tokyo Center. All communications on the North Pacific link were in English.[204] According to a FAA spokesman, "this hotline is the result of concern by all

[203] "FAA Awards Capstone Contract," *FAA Headquarters Intercom* (November 9, 1999): 6.

[204] "Comm Link Opened," *FAA Headquarters Intercom* (August 19, 1986): 3.

three nations that the incident that happened to KAL 007 not be repeated."[205]

On September 1, 1986, the Anchorage ARTCC began receiving remote radar beacon data via satellite from an Air Force installation on the island of Shemya near the end of the Aleutian Island chain. With the commissioning of the radar, the FAA no longer needed to station controllers at Shemya, which it had done since September 1983 to monitor North Pacific flights and alert the Anchorage ARTCC to any course deviations. The controllers had worked in pairs on two-week temporary tours on the remote island.[206]

To maintain positive control of aircraft flying the North Pacific route, the FAA established a secondary radar facility on St. Paul Island in the Bering Sea. The facility sent a remote signal to the Anchorage ARTCC where controllers could watch the progress of aircraft flying just off the Soviet coast. The FAA conducted operational readiness tests of the new radar in November 1984 and commissioned it in December 1984. The island already had a non-directional beacon and distance measuring equipment.[207]

Following technical talks in Moscow and Washington, DC, on February 16, 1990, the FAA and the Soviet Ministry of Civil Aviation signed a memorandum of cooperation to expedite air navigation for aircraft operating between Alaska and the Soviet Far East. Under the agreement, controllers in the Anchorage ARTCC and the Soviet en route center in Anadyr began using a communications link that allowed them to talk directly to each other in English. For the first time, Soviet and American controllers could hand off aircraft to one another, use standardized telecommunications procedures, and share weather and air navigation information.

In addition, the United States and the Soviet Union began exploring ways that U.S. air carriers might use available Soviet navigation facilities so they could serve Provideniya, Anadyr, Magadan, and Khabarovsk airports in the Soviet Far East. On July 12, 1989, the FAA certified Bering Air as an international carrier. It became the first airline to make regular flights from Nome to the Soviet Union. Bering Air, a charter company, flew into Anadyr, Lavrentiya, Egyikinot, and Provideniya.[208] In 1990, the Soviets declared Provideniya an international airport and published information in the U.S.S.R. aeronautical information publication needed by U.S. carriers to operate into and out of the city.[209]

Plans also called for Soviet civil aviation workers and FAAers to visit each other's facilities. Negotiations to establish the exchange program began in 1989. In 1991, the FAA and Soviet Ministry of Civil Aviation inaugurated

[205] "3-Nation Hotline Begun," *Daily Sitka Sentinel*, August 14, 1986.
[206] "Anchorage Gets Radar," *FAA Headquarters Intercom* (September 2, 1986): 3; "3-Nation Hotline Begun."
[207] "New Radar Monitors Planes Off Soviet Coast," *FAA Headquarters Intercom* (November 13, 1984): 2.
[208] "Nome Airline Gets OK to Go To Siberia," *Daily Sitka Sentinel*, July 12, 1989.
[209] "Polar Glasnost," *FAA Alaskan Region Intercom* (March 1990): 12.

an exchange program for air traffic controllers. The objective was to instruct and familiarize counterpart personnel from the FAA and Soviet Union in the methods, procedures, techniques, and equipment used to provide air traffic services, particularly in relation to the new routes opening between Alaska and Soviet Far East.

The first controller exchange occurred January 18 through February 4, 1991, when two senior controllers from the Soviet Union spent two weeks in the Anchorage ARTCC. The first two FAA controllers from the Anchorage ARTCC spent March 7 through 17 of the same year in the Soviet Union. When asked about the work the FAA had done to open the Soviet border to U.S. aviation, Alaskan Region Administrator Ted Beckloff said, "We are proud to be the leaders in this venture that will make a worldwide impact upon the aviation industry as it continues to bring economic, cultural, social, political, and peaceful exchanges among the many nations of the world."[210]

U.S. Secretary of State James Baker and Soviet Foreign Minister Eduard Shevardnadze signed an agreement for expanded air service between their two countries on June 1, 1990. On August 23, 1990, the two nations opened new air routes to facilitate commercial, social, and cultural opportunities. In late January 1991, Alaskan regional staff coordinated and participated in meetings with Alaska Airlines and Magadan Aeroflot representatives in Anchorage. Magadan Aeroflot began weekly round trip scheduled air service between Magadan, Anchorage, and San Francisco in May 1991.[211] Alaska Airlines began flying from Anchorage to Magadan and Khabarovsk on June 17.[212]

The FAA and the Soviet aviation authority continued to improve aviation relations throughout the decade. By fiscal year 1998, for example, the FAA had installed a direct digital satellite communications circuit for air traffic control between Alaska and Petropavlovsk-Kamchatsky in the Russian Far East. The agency installed a similar circuit for Anadyr. The communications circuits provided more reliable communications and enabled an increase in air traffic along the more fuel-efficient Soviet Far East routes. The FAA also continued to work through the Russian/American Coordinating Group for Air Traffic Control to develop and implement additional cost saving routes through Chinese, Japanese, Korean, Mongolian, and Russian airspace.[213]

[210] "Soviet/American Air Traffic Controller Exchange," *FAA Alaskan Region Intercom* (April 1991): 11; "FAA/MCA Controller Exchange," *FAA Alaskan Region Intercom* (February 1991): 8.
[211] "Alaska Airlines/Aeroflot Meetings," *FAA Alaskan Region Intercom* (February 1991): 10.
[212] "Alaska Airlines Begins Service to Soviet Cities," *Daily Sitka Sentinel*, June 17, 1991.
[213] Federal Aviation Administration, *FAA Annual Report '97* (Washington, DC: US Government Printing Office, 1999), 118.

Life in the Region

FAA employees in Alaska faced a number of hardships not encountered by those outside of the region. Most took the challenges in stride and considered them part of daily life in the Last Frontier. Employees, however, delighted in sharing their hardship stories with colleagues in the Lower 48. For example, in February 1980, a number of flight service station specialists exchanged tales of their winter weather woes in an employee newsletter. Alvin Nowland reported from the Northway FSS, "Good morning from the garden spot of Alaska. Overnight low: 55 below zero . . . High last week: 14 above – almost warm enough to go swimming." Not to be out done, David A. Brown at the Bethel FSS reported, "Temperatures with chill factor was 95 below recently. Strong winds, cold and heavy snow almost stopped air traffic on the Yukon Kuskokwim Delta."

Northway FSS
Courtesy: atchistory.org

Buddy Bayeur at the Ketchikan FSS pointed out, "'The weather here was variable. Conditions ranged from near-zero to well above VFR. In one 20-minute period, we experienced a thunderstorm, ice pellets, rain and snow." Tom Barnes in the Merrill Field Tower, countered, "Erratic, gusty winds up to 57 knots ripped two aircraft from tie downs and collapsed wing struts on two others. Several other aircraft reported substantial damage." Richard P. Kauffman at the Big Delta FSS, nonchalantly said, "Temperatures ranged from zero to 57 below. At the Delta Barley Project 10 miles to the east, temperatures as low as 70 below zero were recorded by a contract observer."

Reflecting the way FSS personnel took Alaska's weather in stride, Larry D. Buss at the Cold Bay FSS reported, "After a week of harsh winter weather, things are about back to normal. Personnel utilized the FM Snow-Trac to move essential workers to and from the job in near zero-zero conditions caused by high winds and drifting snow. Problems: None."[214] Personnel at the Yakutat FSS simply let others know the annual snowfall at their facility averaged 222 inches.[215] At Dutch Harbor, FSS staff reported the winds reached more than 100 miles per hour on November 26-27, 1985. The wind blew away major part of the new Dutch Harbor Airport terminal roof as well as two of the airport windsocks from their poles. The airport manager closed the runway for three hours because of the amount of debris on the runway.

[214] "Around the Region," *FAA Alaskan Region Intercom* (February 1, 1980): 14.
[215] "News in Brief," *FAA Headquarters Intercom* (May 4, 1981): 1.

During the same storm, the airport manager at Cold Bay closed runway 8-26 for four hours when a Grumman Goose landed and could not turn around because of the wind gusts.[216]

Employees in Deadhorse, near the North Slope, said the wind chill factor drops to 120 degrees or more below in the winter. The wind there blows incessantly, piling the snow up in huge drifts. And, the sun does not shine, or even come up for months at a time. Because of the severe weather conditions, the FAA began rotating employees through the Deadhorse FSS. Each team of seven or eight specialists worked eight hours per day for twenty-one consecutive days before returning to Fairbanks. The Airways Facilities technicians worked longer hours and rotated on a weekly basis.[217]

When not faced with temperature extremes, employees often dealt with human and animal intrusions at their facilities. In December 1983, the Alaskan Region issued an odd warning – children and adults should not play on the runways. The caution came after a Cessna 402 twin-engine plane, preparing to land on an ice strip at Kotlik in Southwest Alaska, could not land because of children playing on the airstrip. The pilot attempted to increase power and go around, but the aircraft lost power in one engine and crashed off the runway. One person in the aircraft sustained injuries. In addition to the warning against children playing on runways, the FAA notice also covered such adult activities as walking, jogging, and snowmobiling.[218]

In addition to humans, animals presented perpetual problems and some amusement. In Juneau brown bears routinely crossed the runway. In Homer coyotes on the runway caused issues. The Homer staff, located on the airport grounds, also reported the fence surrounding the airport "proved effective in keeping moose in the airport area." Apparently, the moose found "it easier to locate the gate into the airport than find the gate out of the airport. State of Alaska employees on horseback eventually rounded up the animals and herded them off airport grounds."[219]

A FSS specialist in Yakutat reported, "The brown bears are a bit spoiled and very determined. One pesky critter tore off the doors on both garbage bins and helped himself to a feast of leftover[s]." He continued, "Since the Alaska Department of Fish and Game no longer has a bear transport program in that area no one is quite sure how to handle the little critters . . . A plan has been devised whereby Tom Doherty (maintenance mechanic at Yakutat) hauls the garbage on a daily schedule to the city dump. By removing the temptation they hope to convince Brother Bear to pig out somewhere else."[220]

The Yakutat staff also had an issue with a bald eagle. They reported, "A severely over grossed, fish hauling bald eagle, belly and claws heavily laden with rotting silver salmon, stalled upon landing in Yakutat recently, taking

[216] "Across the Region," *FAA Alaskan Region Intercom* (January 3, 1986): 7.
[217] "Report From Deadhorse," *FAA Headquarters Intercom* (February 11, 1980): 3.
[218] "Don't Play on Runways," *FAA Headquarters Intercom* (January 10, 1984): 2.
[219] "Around the Region," *FAA Alaskan Region Intercom* (March 1987): 7.
[220] "Animal Stories," *FAA Alaskan Region Intercom* (August 30, 1988): 13.

out all the power lines which supply the FAA Flight Service Station . . . It took most of the hour to unravel the eagle from the wires. The eagle was released from custody and issued a citation for improper pilot technique and exceeding the limits of its design."[221]

At the Kenai FSS a bear and moose tormented the FAA staff. "First Denise Craviotto heard loud threatening growls coming from the vicinity of the dumpsters . . . when she was leaving the AFSS after an evening watch. A week later a large bear was seen at the end of the runway." During the same time as the regular bear visits, moose made regular runs through the new grass planted around the FSS facility. "It's amazing how much damage a 1,000+ pound animal can do to a new lawn during an evening stroll . . . The happy ending to this story is that no one has been harmed, and so far most of our furry friends have only come by to visit and have a quick bite to eat."[222]

Reportedly, "The brown bears in Cold Bay are the more sociable type. They wander into the housing area every night and shoot the bull with anyone who will listen. Sometimes the dogs will give them a piece of their minds, but most people just can't bear to have them lounging around. The bears usually lumber on back to the woods, sometimes with a tail full of buckshot when their curiosity had taken them too close to their human neighbors."[223]

At the Cold Bay FSS, a large brown bear decided to dismantle parts of the VOR (Very High Frequency Omnidirectional Range) building. "By the time Mr. Bear retreated to his woodland den, he had removed about 60 square feet along with another full-length strip of siding from our building." Shortly after the first incident, "Mr. Bear" returned to the scene of the crime. He passed by the VOR building "and decided the monitor antennas would make great scratching posts and pacifiers. By the time his/her itch was satisfied, our navaid equipment was out of service for the better part of the day." Staff at Cold Bay wondered if destroying navaids had become a "part of Mr. Bear's weekly exercise regimen." The bear returned again "bearing his voracious appetite for two more walls of siding from the VOR building and a piece of a field detector, which resulted in a system outage . . . Our people are about ready to construct a bier for this bear if he doesn't back off."[224]

In addition to critter issues, the staff of Cold Bay reported "Mother Nature has been throwing almost more than we can bear at the Cold Bay VOR structure." In addition to the bear's predilection for the VOR, winds gusts of up to ninety-six miles per hour damaged the VOR building and some of the hangars. A colleague responded to the woes, by suggesting, "You folks in Cold Bay might think about transferring to Cordova. At least there the bears just harass our people in their living quarters, but aren't quite as destructive."[225]

[221] "Around the Region," *FAA Alaskan Region Intercom* (February 1987): 9.
[222] "Animal Stories," 13.
[223] Ibid.
[224] "Big Bear Bares Cold Bay Building," *FAA Alaskan Region Intercom* (November 1988): 3.
[225] Ibid.

Polar bear on runway at Barrow Airport
Courtesy: FAA

Coyote Warning Sign, Juneau International Airport
Courtesy: *Juneau Empire*

Mother Nature and four-legged critters did not create all of the problems faced by FAA's Alaska employees. Vandals also proved a perennial issue especially at some of the more remote facilities. For example, they broke into a FAA communication building in late August 1980. They destroyed the communication lines connecting the Kodiak tower to the Anchorage ARTCC, disrupting air traffic communications at Kodiak Airport. Backup equipment at the airport allowed the tower to resume operations quickly. The FAA estimated damage at $30,000.[226] Shotgun and rifle shots on Middleton Island damaged the structure housing the outer airport marker, which provided radio signals serving as guideposts for pilots during their instrument approach. Someone also tore a railing off the building, and damaged a trailer used by the contractor installing a landing system. Robert Oliver, chief of the FAA Civil Aviation Security Division in Alaska warned that the intentional destruction of FAA equipment was a federal offense with a penalty of up to five years in prison or a fine of $5,000.[227]

Exxon Valdez Oil Spill

On March 24, 1989, shortly after midnight, the oil tanker Exxon Valdez struck Bligh Reef in Prince William Sound, Alaska. The ship's hull ruptured, spilling more than eleven million gallons of crude oil into the sea. The oil slick spread over 3,000 square miles and onto over 350 miles of shoreline. The spill, the largest in U.S. history, tested the abilities of local, national, and industrial organizations to prepare for, and respond to, a disaster of such magnitude. Many factors complicated the cleanup efforts following the spill. The size of the spill and its remote location, accessible only by airplane,

[226] "Vandals Destroy Kodiak Air Gear," *Daily Sitka Sentinel*, August 29, 1980.
[227] "Shooters Damage Airport Equipment," *Daily Sitka Sentinel*, July 1, 1980.

helicopter, and boat, made government and industry remediation efforts difficult.

FAA employees quickly became part of the clean-up efforts as air traffic in the area grew exponentially. With military, commercial, and charter aircraft flooding the skies carrying television and radio crews, job seekers, tourists, and cleanup crews, the small town of Valdez became an air mecca. The FAA had closed its tower at the Valdez Airport in 1983 and transferred all of the equipment to other operations. Immediately after the spill, the FAA sent two controllers to work air traffic from the U.S. Coast Guard cutter, *Rush*. That crew quickly grew to a total of eight air traffic controllers, who worked an average of sixteen hours per day providing traffic advisories and flight-following to several hundred aircraft. In addition, a crew of ten controllers and maintenance technicians from Fairbanks and Anchorage worked to re-equip the abandoned airport tower and prepare it for operations. The decommissioned tower reopened on March 26. As a FAA spokesperson related, "In less than two days after the spill we had everything up and running."[228]

During the oil spill cleanup, three FAA controllers and a manager worked with two military controllers per shift from 6:30 a.m. until 7:30 p.m. in the tower building. The FAA also assigned a flight standards safety inspector and two electronics technicians to the tower. Before the oil spill, the airport averaged between ten and fifteen flights daily. After the spill, the controllers handled approximately 400 daily operations. On March 30, the busiest day at the tower, controllers handled 687 flights. As the FAA's Mary Lou Wojtalik explained, "The town was just totally packed . . . People were chartering planes and flying in in record numbers" – in helicopters, bush planes, and C-130 cargo planes. In the immediate aftermath of the spill, the FAA limited airspace up to 1,000 feet to authorized air carriers to help ease congestion. "It got to be too dangerous," said Wojtalik. "There were planes and helicopters flying everywhere."[229]

In addition to handling high levels of air traffic, FAA employees also had to test their survival skills. Food and lodging quickly became scarce in the overcrowded town as hundreds of people inundated Valdez. Local residents rented floor space in their homes to visitors. Wojtalik recounted, "At first, our guys only got one meal a day . . . It was either due to A: not enough time or B: all the food was snapped up. They've gone through some pretty interesting times."[230]

[228] Imre Nemeth, "Spill Causes Major Upswing in Valdez's Aviation Traffic," *Alaska Journal of Commerce* (April 17, 1989): 9; "The Best of 1989," *FAA Alaskan Region Intercom* (June 1990): 4-5; "Valdez Update," *FAA Headquarters Intercom* (October 10, 1989): 2.
[229] "Oil Spill makes Valdez Busier Airport," *FAA Headquarters Intercom* (May 2, 1989): 1-2; Nemeth, "Spill Causes Major Upswing in Valdez's Aviation Traffic."
[230] Nemeth, "Spill Causes Major Upswing in Aviation Traffic."

As the crisis eased, the FAA decommissioned the temporary tower at Valdez on October 14, 1989.[231] On January 15, 1991, Senator Frank Murkowski (R-AK) recognized the FAA's contributions to the environmental disaster. "These air traffic controllers were pulled from their jobs at the Anchorage and Fairbanks airports, and were given the demanding task of managing large volumes of air traffic in areas unaccustomed to such activity," Murkowski said. "During the peak month of the oil spill cleanup . . . these controllers were an essential part of efforts to mitigate the effects of this environmental tragedy."[232]

Murkowski also lauded the FAA for its efforts to ensure aviation safety during a large wildfire near Tanacross in July 1990. At the request of the Bureau of Land Management, the FAA set up a temporary tower in Tanacross to aid in firefighting efforts. The senator pointed out, the tower "was operational during the most unpredictable and dangerous days of the fire. The controllers managed a large volume of air traffic operating in a small area, and were challenged by both high winds and limited visibility." The tower became operational on July 20, 1990. The Alaska Air National Guard provided the communications equipment for the tower, and the FAA supplied controllers from Fairbanks, Merrill Field, and Anchorage air traffic control towers.[233]

Such fires were not a rare occurrence in the state. In July 1988, for example, the Bureau of Land Management coordinated a large firefighting effort from staging points in Birch Creek, Fort Yukon, Five Mile, Hess Creek, Hot Springs, and Beaver. Since much of the air traffic activity concentrated over Beaver, the bureau asked the FAA to provide temporary tower services. By August 5, the FAA had deployed four controllers and a temporary tower to the town. The busiest day for the controllers happened on August 9, when they handled 346 operations, mostly helicopter traffic. The FAA closed the tower on August 14 once the bureau got the fires under control. While working in Beaver, the controllers lived in tents, had no running water, and ate combat rations for every meal.[234]

[231] "Valdez Update," 2.
[232] "Senator Murkowski Honors Alaskan Air Traffic Controllers," *FAA Alaskan Region Intercom* (February/March 1991): 8.
[233] Ibid.; "Temporary Tower," *FAA Alaskan Region Intercom* (August 1990): 10.
[234] "Smoke Gets in Your Skies," *FAA Alaskan Region Intercom* (August 1988): 2.

Like most people I've known who have travelled around Alaska, the usual superlatives seem inadequate to convey the experience, do justice to the magnificent landscape and fully capture the impressive spirit of the people who make this special place home.[1]

7

The New Century

Despite concerns, and after many tests, the FAA's air traffic control system successfully rolled over to January 1, 2000, with no service disruptions. The agency feared that the Y2K (year 2000) "bug" would bring down its computer systems. Many old computer systems, including the FAA's, expressed years using two digits, for example 99, for 1999, as a means of saving memory. The agency and many others across the globe had been concerned computers would treat the roll-over to the year 2000 as 00 and bring computers to a halt.

The new millennium had begun, bringing with it new ideas and approaches for improving aviation safety and efficiency in Alaska. In partnership with the aviation industry and associations, the FAA began testing and introducing new technologies in America's last frontier, and creating educational and training programs to help pilots and crews maintain proficiency and to understand agency regulations. In addition to becoming an important testbed for aviation innovations, Alaska also became a critical area for testing and refining policies and procedures for unmanned aerial systems (UAS or drones), and for the burgeoning commercial space industry.

The Unthinkable: 9/11/2001

On Tuesday, September 11, 2001, nineteen radical Islamic extremists with the group al Qaeda penetrated security at three major airports in the continental United States. They seized four U.S. domestic airliners, and turned them into missiles that destroyed the World Trade Center in New York City, and damaged the Pentagon in Arlington, Virginia, killing almost 3,000 people. Passengers on one of the planes fought the hijackers causing the plane to crash in a Pennsylvania field, killing all on board. For the first time in history, the FAA put a ground stop on all U.S. air traffic, including Alaska and Hawaii.

One Alaskan lost his life when American Airlines Flight 77 flew into the Pentagon. Ronald J. Hemenway, a 1982 graduate of Wasilla High School, had enlisted in the U.S. Navy in 1994. A U.S. Navy electronics technician, he had served on the *USS LaSalle* and in Italy, and had transferred to the Pentagon in 2000. He left a wife and two children. His service to the country is honored at Wasilla High School with a bronze battlefield marker and in the 9/11 memorial park at the Pentagon.[2]

With a four hour time difference behind Eastern Standard Time, many Alaskans were still in bed as the day's horrors unfolded on the East Coast. Word quickly spread and Alaskans mourned with the rest of the world. The day's trauma, however, increased when it appeared a hijacked plane was headed for Anchorage. South Korean Air Flight 85, a Boeing 747 carrying 215 people, transmitted an HJK, or hijacking code. The plane, en route from Seoul, planned to refuel in Anchorage before proceeding to New York. Air traffic controllers at the Anchorage Air Route Traffic Control Center (ARTCC) asked the flight crew to confirm a hijacking, using the hijack code 7500. The crew confirmed the code.

The FAA controllers immediately sent word to Elmendorf Air Force Base, headquarters for NORAD's Alaskan Region. Lt. General Norton Schwartz scrambled two F-15s, and told them the order to shoot down the aircraft would come directly from him. As he recalled, "I did believe that this was a real possibility and I had begun to try to steel myself on the possibility that I would have to authorize the shoot down of a passenger carrying aircraft."[3]

In case it proved to be another terrorist attack, local officials ordered an evacuation of some of the buildings in downtown Anchorage. As Anchorage Police Chief Walt Monegan explained, "We had gotten information that a flight inbound, they were having trouble communicating with . . . Worst possible case scenario, we wanted to err on the side of safety."[4]

Working with the military, controllers at the Anchorage ARTCC ordered the plane to land at Yakutat to get it out of range of Alaska's more populated areas. The crew agreed. They tried to contact the FSS to check on the airport's runway length. The FSS had closed in 1993, but the building was still under FAA lease. The region's environmental crew was using the old FSS building as office space at the time. When the phone in the building rang,

[1] Elaine Chao, "Milepost 0 – Deadhorse, Alaska," Connections, The Official Blog of the US Department of Transportation, August 29, 2017, accessed at https://www.transportation.gov/connections/milepost-0-deadhorse-alaska.

[2] Lee Jordan, "Our Nation: United on September 11, 2001," *ECHO* (September 7, 2017): accessed online at https://www.echoak.com/2017/09/our-nation-united/.

[3] Ibid.

[4] "Alaska military, civilians go on alert," *Anchorage Daily News*, September 11, 2001.

one of the environmental specialists answered the phone and spoke with the South Korean crew. The specialist informed the crew the FSS was closed and they had no idea how long the airport's runway was.[5] As it turned out, poor visibility at the Yakutat airport prevented the crew from landing the aircraft.

With the approval of Canadian officials, the plane, running low on fuel, diverted to the Erik Nielsen Whitehorse International Airport, in Canada's Yukon Territory. As a precaution, local authorities in Whitehorse evacuated parts of the city. The Royal Canadian Mounted Police met the aircraft when it landed and verified no hijacking had actually taken place. A miscommunication and misunderstanding among the crew and air traffic controllers had led to the tension-filled day.

South Korean Air Flight 85 at Erik Nielsen Whitehorse International Airport, Canada
Courtesy: http://www.explorenorth.com/library/aviation/aviation_photos-yukon.html

With all air traffic grounded, except for flights by military and law enforcement agencies, Alaskan airports dealt with grounded aircraft. One passenger aircraft and four cargo planes landed at Fairbanks International Airport. In Anchorage, flights prevented from taking off included a China Airlines and a Continental Airlines flight. Civic organizations and churches rushed in to help make the stranded passengers and crew comfortable.[6]

Not just Alaska's major airports felt the effect of the prohibition on takeoffs and landings. With no planes flying, hunters, fishers, hikers, and adventure seekers became stranded in remote areas of Alaska. Some without newspapers or radios wondered why their flights had not arrived to pick them up. FAA regional personnel quickly began collecting information on the number of people marooned in the bush, and ultimately estimated about 700 people had been stranded as a result of the ground stop.[7] As one of those stranded recounted, "I think a lot of people dropped off in the Bush may have been pretty frightened," not knowing what had happened. Supplies and mail in and out of the state also stopped for several days as airports instituted enhanced security measures.[8]

[5] Phone call, Theresa Kraus with Brad Platt, December 2, 2019.
[6] "Alaska increase security, also shows its hospitality," *The Peninsula Clarion*, September 12, 2001.
[7] Email traffic between FAA's Joette Storm and the National Park Service's Jay Liggett, September 12, 2001, FAA History Archives.
[8] Craig Medred, "Air taxis deliver the bad news," *Anchorage Daily News*, September 14, 2001; Melanie Plenda and Kathy Dye, "Air service ban strands travelers – and fish," *Juneau Empire*, September 12, 2001.

On September 12, the Alaskan Region's civil aviation security office reported the Juneau and Anchorage airports had been approved to receive flights, although carriers flying to or from the airports had to meet the new security requirements. Understanding Alaska's reliance on aviation as the main mode of travel and for subsistence, the FAA worked with the military to develop a plan to allow a limited resumption of flights in the state to pick up people stranded in the bush.[9] Regional air traffic personnel recommended to FAA headquarters that the agency allow the resumption of flights "within the borders of Alaska, single engine aircraft operating at a true airspeed of less than 180 knots with a maximum takeoff weight of 12,500 pounds . . . when urgently required for humanitarian reasons."[10] Later that day, the regional office air traffic division issued a notice granting permission for the resumption of general aviation flights within the state. The notice, however, warned, "Under no circumstances will any flight be authorized to fly beyond Alaskan state boundaries."[11]

By Wednesday evening, September 12, the FAA had approved the reopening of airports at Petersburg, Wrangell, Sitka, Yakutat, Gustavus, Kodiak, King Salmon, Bethel, Cold Bay, Dillingham, and Dutch Harbor. By the following day, the agency reported all airports open except for Nome, Deadhorse, Barrow, Cordova, and Kotzebue. In addition, the agency allowed all commercial and commuter carriers in the state to begin operations.[12]

Passengers in Alaska, like those across the country, faced much stricter airport security once they reached the airport. They found they could not park in front of the airport nor check their luggage at curbside. Once inside the airport, they found long security lines and a prohibition of non-ticketed passengers from entering the passenger waiting areas. On September 27, President George W. Bush announced new aviation security measures. He planned to expand the FAA air marshal program. Effective October 1, a fund of $500 million would be available to finance aircraft modifications to deny access to the cockpit. He also would work with Congress to put the federal government in charge of airport security and screening services. In November 2001, President Bush signed the Aviation and Transportation Security Act, which created the Transportation Security Administration and required all screening at airports to be conducted by federal officials.[13]

Since fully implementing the new airport and aircraft security measures would take four to six months, President Bush asked the governors of all fifty states to call up the National Guard temporarily to augment security staff at airports. The federal government paid for the call-up and the FAA

[9] Regional meeting notes, no author, September 12, 2001, FAA History Archives.
[10] Briefing Sheet AAT-1, AAl-539\RCollins\Sep 12, 2001, FAA History Archives.
[11] FAA Alaskan Region RENOT 01/016, September 12, 2001, FAA History Archives.
[12] Joette Storm, News Flash to Alaska media outlets, September 13, 2001, FAA History Archives.
[13] Aviation and Transportation Security Act, Public Law, 107–71 (November 19, 2001).

trained National Guardsmen for airport duty. In response, Alaska Governor Tony Knowles activated more than 230 members of the Army and Air National Guard. Once trained, they patrolled airports identified by the FAA as needing additional security. The criteria for the patrols included the size of the airport, number of passengers seats on commercial jets operating out of the airport, type of air carrier, and the agency's assessment of security needs. The Alaska National Guard deployed to approximately twenty airports, including, Anchorage, Fairbanks, Valdez, Juneau, Kodiak, Sitka, King Salmon, Unalaska, and Deadhorse.[14] Slowly air traffic in the state returned to normal levels.

Flight Service Stations

In May 2003, the Office of Management and Budget (OMB) issued a significant revision to Circular A-76, which at its core tenet said government functions should be performed in the most efficient and cost effective way regardless of whether it was with government employees or contractor personnel. OMB asked federal departments and agencies to examine their programs to determine if any would be more cost effective as a contract operation.

Nome Flight Service Station
Courtesy: atchistory.org

After careful review, the FAA formally announced in December 2003 that its automated flight service stations met the criteria for competitive sourcing and that it would conduct a competition under OMB's Circular A-76 guidelines. The competition would be limited to services provided by fifty-eight AFSSs in the contiguous United States, Hawaii, and Puerto Rico. The FAA would continue operating facilities in Alaska as part of its new Air Traffic Organization. The agency exempted the Alaska flight service stations from the A-76 competition because of the unique flying conditions within the state. The agency planned to award a contract by early 2005.

The FAA received bids from five competing service providers, including the incumbent government organization. On February 1, 2005, the agency announced the selection of a team headed by Lockheed Martin to take over the

[14] Marcus K. Garner, "No Guard Planned for Kenai," *The Peninsula Clarion*, October 22, 2001; Zaz Hollander, "Guard to Patrol Alaska Airports, *Anchorage Daily News*, September 28, 2001.

services provided by the agency's automated flight service stations. The total evaluated cost of the five-year contract, with five additional option years, was $1.9 billion and represented an estimated savings of $2.2 billion over the next ten years. Lockheed Martin assumed operation of the flight service stations on October 4, 2005. By the time the FAA had awarded Lockheed a three-year contract extension in September 2010, Lockheed had consolidated the automated flight service stations into three hubs and three satellite facilities.[15]

Despite exemption from the A-76 process, specialists in Alaska worried their flight service stations might be privatized in a future effort. At a senate field hearing in Anchorage in July 2005, Phil Brown, director of the Alaskan Region National Association of Air Traffic Specialists, called the A-76 process "ill-advised and misguided." Noting that FSS air traffic control specialists in Alaska were currently exempt from privatization, he testified, "There is no reasonable expectation or mandate preventing FAA officials from expanding their privatization efforts into our great state."[16]

Despite concerns, the FAA continues to operate three automated flight service stations in Alaska in Fairbanks, Juneau, and Kenai, as well as fourteen satellite field facility flight service stations across the state. Flight service specialists continue to provide key aviation safety aid to pilots and are instrumental in preparing the national airspace system (NAS) for the introduction of the FAA's Next Generation Air Transportation System (NextGen). They are working with Alaska's general aviation pilots to integrate new satellite technologies, such as automatic dependent surveillance-broadcast (ADS-B), into the system to improve safety.

Safety

Increased security after the September 11 attacks, did not interrupt the FAA's safety activities in Alaska. Although the early years of the new century showed improved safety across all types of aviation operations in Alaska, the FAA and its aviation counterparts in Alaska believed more could and should

[15] Lockheed Martin installed a new suite of equipment, Flight Services 21 (FS21), which provided information to specialists and pilots. Internet users and pilot weather briefers see the same information on screens while talking to each other. Also, Lockheed Martin consolidated the services provided by the fifty-eight former FAA sites into three new hubs (located in Leesburg, VA, Ft. Worth, TX, and Prescott, AZ), and refurbished fifteen existing facilities. The refurbished facilities have FS21 console equipment and other improvements. The system tools that FAA required for Lockheed Martin flight service specialists included: weather briefings; flight planning; and air-to-ground services to the flying community. Air-to-ground services include providing weather updates and aeronautical data, en route flight advisory service, airport advisory service at select locations, activating and canceling flight plans, lost aircraft and emergency assistance. For additional information see, https://www.transportation.gov/content/transition-faa-contractor-operator-flight-service-stations-lessons-learned.

[16] *Field Hearing before the Committee on Commerce, Science, and Transportation, United States Senate*, Alaska Aviation, Anchorage, Alaska, 109th Cong., 1st sess., July 5, 2005, 49-50.

be done. As the FAA explained, "The aviation accident rate for rural Alaska is 2.5 times the average of the rest of the United States." Alaska is large and "crisscrossed by mountains that block radio and radar transmissions so that aviation services and infrastructure" available in the forty-eight contiguous states are not available in many areas of Alaska. In fact, radar coverage is largely unavailable below 5,000 feet, and areas of fog, ice fog, whiteout or flatlight conditions, and intense icing, coupled with short distances between destinations, often keep flight operations below 2,000 feet. As a result, scheduled and unscheduled air carrier service using single-engine or light-twin-engine aircraft are often limited to visual flight rules operations.[17]

The Centers for Disease Control and Prevention National Institute for Occupational Safety and Health (NIOSH) further explained: "Of all the villages in Alaska, 82 percent have no connection to the national road system; all commerce and essential services and all personal transportation with these villages is done by airplane. These are mostly small, piston-engine airplanes that are not pressurized and cannot go into known icing conditions. With these and other factors, they cannot reasonably fly straight over the mountains (up to 20,000 feet high in some areas of Alaska); instead, the planes fly through mountain passes"[18]

During the 1990s, aircraft accidents had been the second leading cause of occupational deaths in Alaska. Commercial pilots in the state, in fact, had an occupational fatality rate five times greater than the rate for all U.S. pilots and almost 100 times greater than the rate for all U.S. workers. Most of the fatalities occurred during air taxi or commuter operations.[19] As Harry Kieling, chairman of the Alaskan Aviation Safety Foundation pointed out, "Safety is a cornerstone of aviation and aviation is a foundation of life in Alaska, and yet every year dozens of Alaskans and visitors are killed in aviation mishaps around the state."[20]

Research conducted by the National Transportation Safety Board (NTSB) and NIOSH found that most deadly aviation crashes in Alaska formed a repeated pattern: departure in good visibility conditions followed by continuation into limited visibility conditions and/or poor weather, which resulted in crashing into mountains or other terrain. Controlled flight into terrain, or CFIT, generally occurs when a pilot flies from an area of good visibility into an area of deteriorating visibility. Visual flight rules (VFR) govern flights conducted under conditions where pilots are able to use visual

[17] *Federal Register* 68, no. 16, January 24, 2003, 3777.
[18] National Institute for Occupational Safety and Health, "Evaluation of the Alaska Interagency Aviation Safety Initiative," accessed at https://pubs.iseralaska.org/media/0c31e7a8-bc10-42c3-954d-8c0b2e0dcea5/NIOSH_draft_9_03_05.pdf.
[19] Nicolle A. Mode, Mary B. O'Connor, George A. Conway, and Ryan D. Hill, "A Multifaceted Public Health Approach to Statewide Aviation Safety," *American Journal of Industrial Medicine 55* (2012), 176–177.
[20] NTSB, "Loss of Control in Flight Subject of Alaskan Aviation Safety Seminar," News Release, October 24, 2016.

references outside the aircraft to navigate. Instrument flight rules govern the conduct of flight under instrument meteorological conditions (IMC); those rules require pilots to use instruments inside the aircraft for navigation and use established routes and procedures to avoid obstacles and terrain.

Concern about aviation fatalities led NIOSH to open a field station in Alaska in 1991 (later known as the NIOSH Alaska Pacific Regional Office). In 2000, NIOSH and the FAA received congressional funding to work with the NTSB, National Weather Service, and Alaska aviation community to improve commuter and air taxi safety.[21] The goal of the three-year Interagency Alaska Aviation Safety Initiative was to reduce the number of occupational aviation fatalities in Alaska by 50 percent for the years 2000-2009, and to reduce substantially the number of aviation accidents and resultant deaths in the state. The initiative focused on:

- Gathering and analyzing data
- Bringing together working groups, including representatives of the aviation industry, the aviation workforce, and the insurance industry
- Working with local professional groups such as individual pilots and the Alaska Airmen's Association, industry, and education leadership
- Evaluating progress and suggesting additional improvements[22]

The partners in the initiative devised a multi-faceted approach to improve infrastructure, employ technology, provide education to pilots and passengers, and to encourage voluntary changes to improve safety and reduce the incidence of aircraft crashes in Alaska. Intervention strategies included:

- Capstone Program – a new FAA program to improve pilots' situational awareness and operator efficiency by providing state-of-the-art navigational equipment to provide information on weather, terrain, and other aircraft to air taxi and commuter pilots
- Weather cameras – a FAA program to place weather cameras in mountain passes and at remote airports to provide pilots with real-time weather information via the Internet
- Circle of Safety – a FAA educational program to increase safety awareness among passengers and addressed issues of potential social pressure on pilots
- Medallion Program – a nongovernmental voluntary program

[21] Public Law 106-69.
[22] "Prepared Statement of James LaBelle, Chief, Alaska Office, NTSB," *Hearings before a Subcommittee of the Committee on Appropriations, United States Senate*, Department of Transportation and Related Agencies Appropriations for Fiscal Year 2001, 106th Cong., 2d sess, December 14, 1999, 25-26.

for commercial air carriers that awarded stars for audited achievement in five critical areas of airline safety and fosters a "culture of safety" for operators and pilots[23]

Capstone

In 1999, the FAA initiated the Capstone Program, a joint initiative with industry to improve aviation safety and efficiency in Alaska by using new tools and technology to provide enhanced aviation infrastructure and services. Elevated accident rates and the absence of airspace services, such as radar, made Alaska the ideal location to evaluate new communications, navigation, and surveillance (CNS) technologies. In addition, increased pilot situational awareness, a critical need in the state, might be improved through the introduction of state-of-the-art avionics suites and ground stations. By installing Capstone avionics in aircraft – global positioning system (GPS)-based and ADS-B-based avionics and data link communications equipment, the FAA hoped to increase pilot situational awareness and reduce the risk of midair collisions and controlled flight into terrain accidents in Alaska.

The first phase (1999 through 2004) of Capstone focused on Southwest Alaska, primarily in the Bethel/Yukon-Kuskokwim Delta (Y-K Delta). That area has only a few roads between villages and no roads to any of Alaska's major cities. Transportation in the region relies on aviation year round, and on water transportation during the summer and snow mobile travel in the winter. The villages in the region are served by scheduled airlines operating from Anchorage, Fairbanks, and Nome, and by scheduled air taxis operating in the Y-K Delta. The only radar service in the region is high-altitude coverage for long-range jets, controlled from the Anchorage ARTCC. Bethel, the largest village in the area, has the only airport in the region with an air traffic control tower – a contract tower that handles nearly 100,000 operations annually.

The Capstone Phase I program involved:

- Equipping 200 commuter airlines, air taxis, and selected general aviation (Part 91) operators with avionics that showed pilots their location and information about nearby terrain, other aircraft, and weather
- Building 11 ground stations to broadcast weather and flight information
- Installing weather observation stations and creating and publishing instrument approaches to provide more weather information and enable pilots to land at isolated airports in poor weather

[23] Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, "Reducing Controlled Flight Into Terrain (CFIT) Accidents," accessed online at https://www.cdc.gov/niosh/topics/aviation/cfit.html.

The FAA equipped the aircraft chosen to participate in the project with:

- An IFR-certified GPS receiver for new and/or enhanced navigation capabilities and a universal access transceiver (UAT) data link radio to provide the pilot with timely decision making information via ADS-B
- Traffic information service-broadcast (TIS-B), and flight information service-broadcast (FIS-B) (e.g., graphical weather maps, meteorological aerodrome reports (METARs), terminal aerodrome forecasts (TAFs)
- A panel-mounted multiple-function color display to present traffic, weather, and navigation information from the new avionics and to present a terrain advisory database to help prevent controlled flight into terrain[24]

The ground station network initially combined new data link technologies with existing telecommunications facilities. Those sites connected FAA air traffic control facilities and participating aircraft. The major components of the ground system included:

- Modification to the Anchorage ARTCC's micro en route automated radar tracking system (Micro-EARTS) automation system to incorporate ADS-B data for processing and display at Anchorage ARTCC and, potentially, the Bethel Tower
- Installation of a Capstone server to control the flow of information (e.g., ADS-B, FIS-B, TIS-B) within the Capstone ground system architecture
- Installation of ground broadcast transceivers – remote ground stations with communication and router capability to the Anchorage ARTCC[25]

Other major parts of the Capstone Program included:

- Flight following/locating capabilities for aircraft operators/dispatch offices
- GPS non-precision instrument approach procedures for runways at remote village airports within the Capstone area
- FAA-certified automated weather observation systems (AWOS III) with radio broadcast capability to provide the necessary weather information to enable air carrier use of the new non-precision GPS instrument approach procedures[26]

[24] FAA Alaskan Region, "Capstone Test and Evaluation Master Plan for ADS-B Radar-Like Services," January 30, 2000, accessed online at https://www.faa.gov/nextgen/programs/adsb/Archival/media/TEMPFIN.PDF, 1.
[25] Ibid., 1-2.
[26] Ibid., 2.

As part of the FAA-industry Capstone partnership, on January 1, 2001, the FAA began the first use of ADS-B technology to track and assist air traffic near Bethel. The new system used ground-based transceivers to pick up transmissions from aircraft equipped with ADS-B. The information was then transmitted via phone line and satellite to the Anchorage ARTCC, where controllers could see an electronic representation of the information.

On April 1, 2002, under contract to the FAA's Capstone Program office, General Dynamics Decision Systems successfully demonstrated a direct small aircraft-to-satellite navigation communications data link capability. Using a Motorola handheld satellite telephone in a University of Alaska Cessna 180, General Dynamics conducted a proof-of-concept demonstration, transmitting a live-stream of aircraft position data via the Iridium satellite system to the Anchorage ARTCC. During the successful test, the pilot departed Merrill Field, proceeded along the Knik Arm of Cook Inlet past Pioneer Peak, and continued deep into the Knik Glacier valley.

In 2004, an interim analysis of the Phase I program, written by the University of Alaska and the MITRE Corporation Center for Advanced Aviation System Development, indicated a 40 percent reduction in accidents of instrument flight rules-equipped aircraft under the Capstone Program verses unequipped aircraft. Relying on lessons learned during Phase I, the FAA initiated the next phase of Capstone.

During 2002, the FAA began Capstone Phase II in Southeast Alaska. The area posed even more flight requirements than the Y-K Delta because of a combination of extremely mountainous terrain and large bodies of water that led to frequent ground fog. The agency deployed a more robust set of avionics in the Southeast region that included GPS and the wide area augmentation systems (WAAS). WAAS uses ground stations to correct satellite ambiguities and improve the accuracy, integrity, and availability of GPS. With satellite errors corrected, pilots can rely on GPS for all phases of flight, specifically, instrument approach procedures to airports within its coverage area. In addition, the FAA introduced IFR area navigation (RNAV) procedures, enabling pilots to fly along any course within a network of navigation beacons rather than flying directly to and from the beacons. By using published RNAV routes, pilots could reduce flight distance, save fuel, and fly into airports that lack beacons.[27]

Even as the Phase II program got underway, the Phase I program showed even more positive results. By the end of 2004, Capstone equipped aircraft in the Y-K Delta showed a 47 percent reduction in the number of aviation accidents and fatalities compared to non-equipped aircraft.[28] The program

[27] *Federal Register* 68, no. 16, January 24, 2003, 3779.

[28] FAA, Surveillance and Broadcast Services Capstone Statewide Plan, August 8, 2007, http://adsbforgeneralaviation.com/wp-content/uploads/2011/11/CapstoneStatewidePlanv7.1FinalSigned.pdf, 3.

proved so successful that in May 2006, FAA Administrator Marion Blakey[29] established a national ADS-B program office at FAA headquarters and the following December closed the Capstone office in Alaska.

To maintain the safety momentum resulting from Capstone, on February 12, 2007, the FAA, Alaskan Aviation Safety Foundation, Alaska Airmen's Association, Alaska Air Carrier's Association, and Helicopter Association International signed a memorandum of agreement (MOA) to continue working together to improve aviation safety in Alaska. PenAir and Frontier Flying Service became the first two commercial operators to sign the agreement. On August 8, 2008, the parties to the MOA agreed on an action plan, and documented how they planned to implement Capstone Program technologies throughout Alaska.

As part of the MOA, the FAA agreed to deploy a new ground-based aviation safety and access infrastructure including communications, navigation, and weather reporting systems, and upgraded airport access. The agency also pledged to accelerate deployment in Alaska – five years compared to the national deployment over ten years. The infrastructure transformation, however, would only be done if Alaska's aviation operators equipped with the avionics necessary to make the FAA infrastructure effective at a rate commensurate with the FAA investment in Alaska infrastructure.[30] To help meet this goal, in 2008, the Alaska legislature passed a bill creating a loan program to provide low-interest loans for the purchase and installation of ADS-B avionics.[31]

In 2010, the FAA adopted a national standard for ADS-B avionics. The original avionics the FAA installed on aircraft during Capstone Phase I and II, however, did not meet the new standard. To help Alaska's pilots and operators, the agency launched a project to upgrade the equipment by November 30, 2013. It committed to provide new avionics for any aircraft originally equipped by the FAA and also for any Alaska-based aircraft owner who had invested in ADS-B technology prior to 2010.[32]

Although not technically a part of the Capstone Program, Alaska's enhanced special reporting service became an important safety product as a result of adapting satellite/GPS communication devices for civil aviation use. In 2011, the FAA established a workgroup to:

[29] Served as FAA Administrator from September 12, 2002 - September 13, 2007.

[30] FAA, Surveillance and Broadcast Services Capstone Statewide Plan.

[31] Alaska Center for Public Policy, "New Policy to Improve Aviation Safety in Alaska," January 25, 2008, accessed online at https://acppboard.wordpress.com/2008/01/27/new-policy-to-improve-aviation-safety-in-alaska/amp/.

[32] Tom George, "FAA Upgrades Alaska Aircraft to National ADS-B Standard," AOPA blog, March 21, 2014, accessed at https://blog.aopa.org/aopa/2014/03/21/faa-upgrades-alaska-aircraft-to-national-ads-b-standard/; see also Stephen Pope, "Capstone Participants to Get Free ADS-B Upgrade," *Flying* (May 10, 2013): accessed online at https://www.flyingmag.com/avionics-gear/instrumentaccessories/capstone-participants-get-free-ads-b-upgrade.

- Develop operational knowledge about satellite/GPS tracking devices
- Demonstrate how FSS might enhance search and rescue response supplemented by satellite/GPS tracking devices
- Develop, test, train for, and make procedures available to pilots who wished to participate in an enhanced search and rescue responses[33]

Aircraft equipped with Garmin GPS
Courtesy: Matthew Piatt/Flickr

Composed of representatives from the Alaska Airmen Association, Aircraft Owners and Pilots Association, National Air Traffic Controllers Association, and the FAA Alaska Flight Services Information Area Group and Alaska Flight Service Stations, the group tested a number of satellite tracking devices – SPOT Messenger®, Spidertracks™, and DeLorme/Garmin inReach® – over Anchorage, Fairbanks, Deadhorse, Ketchikan, and Valdez to develop and test an enhanced special reporting service (eSRS). Aircraft equipped with the one of the three tested units could send an electronic distress alerting message to FAA flight service personnel, who could then initiate search and rescue operations for the aircraft rather than waiting for the flight plan to expire.[34]

The distress message was transmitted directly to flight service via text and email message, or on some devices, the distress message was relayed through the International Emergency Response Coordination Center to the flight service station. The message included the aircraft location and perhaps a link to an online map with additional information. Once received by flight service, the distress message could be correlated with the flight plan or other information to reduce response time to the emergency. After successful completion of the test program, the FAA made the service available to pilots in 2014 and planned to expand the service to include other makes and models of satellite/GPS units. The eSRS program supplements a standard flight plan and is only available for flights within Alaska.[35]

[33] Alaska Flight Services Information Area Group, "Flight Service Station Satellite Tracking Device Briefing: Enhanced Special Reporting Service (eSRS)," May 2019, accessed online at https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/systemops/fs/alaskan/alaska/esrs-ak/media/eSRS_Pilot_Briefing_V13.pdf.

[34] Ibid.

[35] Ibid., See also, Federal Aviation Administration, "Enhanced Special Reporting Service (eSRS): Satellite Assisted Flight Plan Tracking," Informational Brochure, April 30, 2019, accessed online at https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/systemops/fs/alaskan/alaska/esrs-ak/.

Weather Cameras

Weather Camera at Misty Fjords
Courtesy: FAA

Flying into bad weather is the leading cause of fatal accidents among Alaska's commuter airlines and air taxis. To help pilots see the weather along their routes, in 1997 the FAA began testing a web-based camera system installed in mountain passes, on rocky coasts, and at remote villages to supplement the agency's aviation weather reports. The FAA posted the real-time images on a website so pilots could decide whether or not to fly.

Pilots embraced the concept. As Walter Combs, FAA weather camera program manager, explained, the cameras "give pilots enough information that they look before they launch. They used to fly out to see if they could go and turn around and come back if they couldn't. Now, they take a look and see if they can go and if they can't they sit on the ground and wait until they can."

With the tests complete, the FAA began a trial weather camera program on February 5, 1999. The FAA, industry, and user meetings resulted in a list of candidate locations throughout Alaska to install cameras. The agency installed the first camera on the roof of the federal office building in downtown Anchorage for proof of concept.[36] Designed for harsh exterior conditions, the solar-and-wind-powered cameras are remotely controlled, allowing activation, inactivation, and operation of camera-lens heaters - to melt snow or ice - from a control center. Camera images are transmitted by a satellite communications link. Images are updated every ten minutes and are disseminated to the public through the FAA's aviation camera website. Between 1999 and 2008, the FAA had eighty-two operational weather cameras in use.[37]

FAA technicians have now installed 230 weather cameras across Alaska. Technicians installed the final weather camera in July 2016 in Quinhagak. Each camera site has up to four cameras pointing in different directions. The direction of each camera is provided with reference to a sectional chart.[38]

[36] FAA Order AL 7110/10A, Flight Service Station Aviation Closed Circuit Video Weather Camera Service, August 7, 2003, accessed online at https://www.faa.gov/documentlibrary/media/order/al%207110-10a.pdf.

[37] "FAA Weather Cams to Stay in Alaska," AOPA Blog, January 23, 2008, accessed online at https://www.aopa.org/news-and-media/all-news/2008/january/23/faa-weather-cams-to-stay-in-alaska-(2).

[38] FAA Advisory Circular, AC No. 00-45H, "Aviation Weather Services," November 14, 2016,

The cameras are positioned to view sky conditions around airports and air routes as well as extreme mountain passes, such as the Anaktuvuk Pass on Alaska's northern slope. The most remote camera site is in the tidal zone of the Misty Fiords, National Monument. It is located approximately fifty-two nautical-miles from the nearest harbor at Ketchikan, Alaska, and is normally accessed only by boat.[39]

Weather Camera at Edna Bay
Courtesy: FAA

The program improves safety and efficiency by providing pilots with near real-time visual weather information. It also helps aircraft operators save fuel by eliminating situations where pilots take off only to find they have to return because of bad weather. A 2012 FAA survey of Alaska (Federal Aviation Regulations (FAR) 14 CFR) Part 135[40] operators concluded that weather-cam data has become an integral part of flight planning and go/no-go decision-making. The NTSB credits the cameras with contributing to a 53 percent reduction in weather-related aviation accidents between 2008 and 2011. The cameras also helped cut unnecessary flight hours by 64 percent that had been caused by the unreliability of weather information."[41]

In May 2017, the FAA updated the weather camera website and other information necessary for flight planning into a single site that enhances pilots' flight decision-making capabilities. In addition to the camera images, routine aviation weather reports, terminal area forecasts, pilot weather reports, and special notices, the website now includes notices to airmen, radar and satellite weather data, and airport locations and facility data, such as landing charts, local procedures, and approach plates. According to Walter Combs, "The website has changed the pilots' flight decision-making processes."[42]

The Alaska pilots cannot agree more. Brett Coblentz, assistant director of safety for Seaport Airlines/Wings of Alaska, said: "As pilots and dispatchers we use the FAA webcams each day to assist in the safe operations of our flights throughout Southeast Alaska . . . We check the webcams before every flight to help us determine en-route weather . . . The webcams also allow us to delay flights if the en route weather is not favorable. Safety is our company's number one priority and the webcams are key to our continued safe operation."[43]

David Williams, Wings of Alaska assistant director of operations, is also a strong proponent of the weather cameras. "The FAA Weather Cameras become our most valuable asset for real time weather making decisions. I train all of my pilots and dispatchers to make their final operational control decisions based on the weather cameras."[44] Jason Kulbeth, director of operations for NorthStar Helicopters, echoed the sentiment, "NorthStar uses the cameras on a daily basis as they have become an invaluable link in our decision-making process. Although I have no way to quantify the benefits I can confidently say that the weather camera system has made our company a safer and more efficient operation."[45]

Circle of Safety

The FAA considers the customer an important partner in aviation safety. In 2002, the FAA established a program called Circle of Safety to educate passengers and organizations that contract for aviation services in Alaska on their role in aviation safety. The FAA explained that the responsibility for safety is shared by the many entities in aviation. Individual pilots and air carriers have responsibility to meet safety standards and provide quality service to customers. In addition, organizations who contract for aviation services have a vested interest, if not a responsibility, to see that the safest mode of transportation is the standard for their employees. Customers, those who pay for a flight, have the right to a safe journey. They are also responsible for following the safety rules. All of these groups are part of the Circle of Safety.

This consumer education program encourages passengers to ask safety questions and raise concerns to their pilot. If they are uncomfortable about something, there is probably a reason. Hence, it is important to act on these gut feelings, or intuition, and raise concerns. The pilot may have a simple answer to their question that restores their comfort level. On the other hand, asking a question may be all it takes to refocus on safety and avoid a mishap later on.

Passengers, according to the FAA, have the responsibility to be proactive about safety. They should:

accessed online at www.faa.gov/documentlibrary/media/advisory_circular/ac_00-45h.pdf.

[39] "Alaska Pilots Experiencing benefits of Weather Cameras, *SitNews*, February 12, 2015, accessed online at http://www.sitnews.us/0215News/021215/021015_weather_cameras.html.

[40] Federal Aviation Regulations (FAR) 14 CFR part 135.

[41] Mark Huber, "FAA Delays Hawaii Weather Cam Decision to 2018," *AINonline*, March 1, 2015, accessed at https://www.ainonline.com/aviation-news/general-aviation/2015-03-01/faa-delays-hawaii-weather-cam-decision-2018.

[42] "GA Pilots Laud AK Webcam Improvements," *FAA Focus*, June 6, 2017, accessed at https://my.faa.gov/focus/articles/2017/06/Alaskan_GA_Community.html.

[43] Email, Brett Coblentz to Walter Combs, May 16, 2014.

[44] Email, David Williams to Walter Combs, May 23, 2014.

[45] Email Jason Kulbeth to Walter Combs, January 25, 2013.

- Pay attention to the pilot during the passenger briefing. In fact insist on a complete passenger safety briefing if one is not automatically given.
- Tell the pilot that you can fly at another time if the weather is questionable. You should not ask the pilot to fly into unsafe weather.
- Accept the air carrier's decision to delay or cancel a flight due to weather.
- Do not ask the pilot to overload the airplane.
- Be alert to pilot fatigue. Be aware that the pilot has flight and duty time limitations. The pilot may have already flown many flights. Federal regulations allow a pilot to fly eight hours in a fourteen-hour duty day, and that this flight might be the end of a very long and hectic day.
- Dress properly for a flight according to the weather in case of an unplanned landing.
- Do not ask the pilot to fly below 500 feet above ground level, or to buzz people or fly close to things on the ground.
- Do not insist that a pilot land at an airstrip the pilot believes is risky, marginal, or inadequate.
- Remember that pilots are human and can make mistakes; if you have a question about the flight, ask.[46]

Medallion Aviation Safety Program

At the encouragement of Senator Ted Stevens, and with funding from the FAA and the State of Alaska, the Alaska Air Carriers Association established the Medallion Foundation on November 2, 2001. The foundation's primary goal was to improve safety. It became a non-profit (501(c)(3)) organization in February 2003.[47] It received an initial $3 million grant from the FAA in 2002, $1.5 million in 2003, and an estimated $1 million in subsequent years for its Alaska air carrier safety program. In fiscal year 2012, the FAA began working with the foundation to help it become financially self-sufficient, a goal it never achieved.[48]

The Medallion Foundation sought to improve safety by developing and implementing voluntary aviation safety standards that exceeded regulatory

[46] FAA, "Circle of Safety Consumer Safety Education: Train the Traveler Guide" (August 30, 2002): accessed online at http://www.faa.gov/about/office_org/headquarters_offices/arc/programs/fly_alaska/docs/trainerhb.pdf.

[47] Medallion Foundation website, accessed at http://medallionfoundation.org/. This website is no longer operational.

[48] Over its life, the FAA provided over $20 million to support the Medallion Foundation. Initially FAA funded the Foundation through a legislative mandate. It later used a grant agreement and then another transactional agreement, or OTA, which enabled fast acquisition of technologies.

requirements and were based on accepted system safety concepts. Originally created to help Part 135 and small Part 121 carriers, the foundation's free programs promoted safer flying through education, increased situational awareness, risk management, well-documented procedures, and information sharing. It also offered free flight simulator sessions in Anchorage, Fairbanks and Juneau, so pilots could brush up on their skills.

The voluntary Medallion Five Star Shield program encouraged airlines to take a business-like approach to safety by setting safety goals as well as planning and measuring performance in specific areas. The program focused on establishing and sustaining an elevated level of safety performance through: the development of a safety culture; continuous professional development of individual skills and competence; proactive sharing of operational control responsibilities; hazard identification and risk management; and management practices that supported the organization's safety objectives.[49]

To earn the first of five stars, an air carrier had to establish a safety program that included safety meetings and audits, the use of root-cause analysis, hazard identification, incident investigations, and a viable emergency response plan. The program required a classroom and simulator training program for pilots, mechanics, and ground service personnel. To receive the second star pilots had to have two annual check rides and an annual pilot proficiency check.

To get its third star, the carrier had to establish an operational risk management system that quantified the risks for each flight, including weather, airport, and crew readiness. The air carrier received a fourth star when it conducted specific training and manning levels for its maintenance and ground service operations. A proactive internal audit system that focused on the use of systems safety principles, as well as regulatory compliance, earned the fifth star.[50]

Once an applicant received all five stars, and passed an independent audit, they were certified for the Medallion Shield, which allowed them to display a decal on the aircraft, uniforms, and promotional materials. To maintain shield status, an operator had to pass an annual audit. If the operator failed to pass the audit, or if Medallion on-site inspectors noticed that a specific activity represented by a star was not being properly addressed, the star and shield could be revoked. An important benefit of the program for operators was that the insurance industry initially provided favorable insurance rates to operators for gaining the shield.[51]

The Medallion Foundation also worked to help air carriers address specific safety issues and to improve the company culture. It worked with the

[49] Statement of Marion C. Blakey, Administrator, Federal Aviation Administration," *Field Hearing before the Committee on Commerce, Science, and Transportation, United States Senate*, Alaska Aviation, Anchorage, Alaska, 109th Cong., 1st sess., July 5, 2005, accessed online at https://www.transportation.gov/content/aviation-safety-alaska.

[50] Ibid.

[51] Ibid.

carrier's management and employees to ensure a safety-oriented culture that not only checked the regulatory boxes, but instilled sound safety practices into all aspects of a carrier's operations. As a result, not only did safety improve, but, often, so too did the carrier's relationship with the FAA.[52]

In partnership with the FAA, air carriers, and employee labor organizations, the Medallion Foundation helped improve safety through the introduction of an aviation safety action program. Under the voluntary, nondisciplinary program, cabin crews, dispatch, flight crews, maintainers, and ground crews could report safety concerns and issues, such as operational deficiencies, non-compliance with regulations, and deviations from company policies and procedures. Each report could then be investigated and corrective actions taken.[53]

The FAA and the Medallion Foundation also worked with the general aviation community to improve safety. Interested pilots could submit an application to the Medallion Foundation, which would then issue the pilot a free copy of the FAA "Back to Basics – Runway Safety" CD. After that, the pilot could attend the FLYER Step II course, which provided free access to state-of-the-art flight training devices. During this phase, the foundation introduced pilots to hazard assessment and risk management techniques, and gave them the tools necessary to establish a personal safety program.

To help train the next generation of pilots, the foundation partnered with Nenana High School's new aviation education program. It provided a flight simulator to the school so the students could practice flying aircraft such as a single-engine Cessna, Piper, and Diamond Katana aircraft. Jerry Rock, then executive director of the Medallion Foundation, explained, "Medallion is about changing the safety culture at a young age as these students learn to fly promoting and educating safety first, so as they grow and advance the culture is already learned."[54]

The foundation purchased a number of flight simulators and located them across the state to provide refresher training to local pilots. It integrated Capstone technology into the simulators to help pilots train and understand the benefits of using the system. When the FAA uncovered Capstone training deficiencies with air tour operators in Southeast Alaska, the foundation shared the cost with the FAA to bring a trainer to Ketchikan and Juneau to ensure the operators understood how to use Capstone technology.[55]

The foundation also partnered with E-Terra, a geographical informational service company; the FAA Safety Team, comprising FAA and industry representatives; and the FAA regional safety office to develop visual cue-based training to help improve pilot decision-making. Cue-based training graphically depicts realistic terrain on a flight simulator. It shows pilots and operators what their flight path looks like in blue sky conditions, compared to marginal weather, and other simulated severe weather conditions.

E-Terra mapped and then created realistic three-dimensional flight simulator data for twelve mountain passes in Alaska, and the Medallion Foundation installed the data on its simulators statewide. The simulations showed the flying altitude of some air routes and provided visual checkpoints, or geographical reference points, along the routes that served as cues. The simulator could introduce things such as fog, clouds, rain, or snow along the route to obscure the cue. Once a pilot passed over a cue, he had to decide, based on visibility, to continue on the route or take an alternate route. The tool, explained David Karalunas, manager of the FAA Safety Team, helped "train new pilots from outside of the state or new pilots to a geographical area when to turn back or go to an alternate waypoint."[56]

In other ongoing safety work, the foundation supported the FAA's Circle of Safety program. It worked with the FAA Safety Team to produce television advertisements explaining the program to the Alaskan public. In partnership with the cruise line industry, cruise ship operators also broadcast the same advertisements to help tourists make wise decisions about taking air tours.[57]

The Medallion Foundation co-sponsored a number of safety outreach events with the FAA and its ongoing programs helped reduce the number of accidents in Alaska. Despite its successes, however, some began questioning the efficacy of the foundation's work, especially after a fatal accident in 2016. In its final investigative report for the October 2016 Hageland Aviation's crash in Togiak, the NTSB expressed concern "that despite Hageland's safety programs in place and achievement of the Medallion stars (and ultimately the shield), the conditions and risk factors that led to this accident and two others within a 3-year period (including Hageland's fatal CFIT accident in Saint Mary's, Alaska) were able to persist."

The NTSB said that while the Medallion Foundation performed annual audits of Hageland's program participation, the audits "did not provide oversight of the programs or their implementation but rather ensured only that the programs had the items in place to meet the requirements of each star." The NTSB continued, "Medallion did not keep any detailed records of these audits (citing confidentiality reasons); thus, the [Togiak] investigation could not determine whether auditors identified any areas in need of improvement or what actions may have been taken."[58]

[52] Theresa Kraus telephone call with Clint Wease, April 28, 2020.

[53] Medallion Foundation, "Aviation Safety Reporting," accessed online at https://medallionsafety.wbat.org/.

[54] "Medallion Foundation supports Nenana 'Pilot' program," *General Aviation News*, October 29, 2013, accessed at https://generalaviationnews.com/2013/10/29/medallion-foundation-supports-nenana-pilot-program/.

[55] Statement of Marion C. Blakey, Field Hearing.

[56] "Aviation Training Developed to help Alaska Air Tour Pilots," A*laska Journal of Commerce*, July 2009, accessed at https://www.alaskajournal.com/community/2009-07-02/aviation-training-developed-help-alaska-air-tour-pilots.

[57] Email to Theresa Kraus from Clint Wease, April 27, 2020.

[58] NTSB, "Collision with Terrain, Hageland Aviation Services, Inc, dba Ravn Connect Flight 3153, Cessna 208B, N208SD, Togiak, Alaska, October 2, 2016," Accident Report NTSB/AAR-

After the hearing, political and public pressure increased for the FAA to change how they worked with the foundation, which created stress between the two entities. Proponents of the Medallion Foundation's work, however, found the NTSB's assessment uninformed and not entirely accurate. They pointed out that air carriers voluntarily worked with the foundation; the foundation did not have an oversight role, and it was not a regulatory enforcer. The foundation also never had a requirement to report air carrier deficiencies to the FAA. Furthermore, no matter what safety measures were put into place, no safety program could entirely erase human error. As one participant explained:

> Unfortunately, as long as human beings interface with machines on an operating basis, there will be accidents. The Medallion program and other programs like it attempt to provide systems to an operator that will help them identify risk or hazardous conditions as well as systems that are not functioning properly so that corrections can be made proactively. Our hope is that by participating in the program, carriers will be able to identify ineffective aspects in their operation and manage them. Medallion is much more than an audit program. The desired result is that each organization's culture is positively affected to improve overall safety with a commitment for continuous improvement.[59]

A former FAA safety manager echoed that point, saying, "The true value of the Medallion Foundation and the FAA's efforts will never be able to be measured, because we cannot measure the number of people that landed safely at the end of the day and went home to their families safe and alive."[60]

Taking the aviation community and the FAA by surprise, on August 16, 2019, the Medallion Foundation announced it would be closing its doors on September 15, 2019. Prior to the announcement, the foundation had been working with the FAA to expand its reach into Hawaii, to enhance safety of air tour helicopter operations, and perhaps into Washington State, where a number of carriers had routes into Alaska. According to Anchorage TV channel KTUU, a foundation press release cited its reasons for closing on reduced FAA funding and what it deemed new FAA "language that may place the Medallion Foundation in the position of being used as an instrument to take action against air carriers who are voluntarily participating" in its programs.[61]

The FAA, which had undergone some management changes, had

18/02 (April 17, 2018): 59.

[59] Dave Prewitt, "Medallion Foundation an unfair target in recent crashes," Opinion, *Anchorage Daily News*, June 4, 2019.

[60] Email to Theresa Kraus from Clint Wease, April 27, 2020.

[61] "Non-profit aviation safety organization Medallion Foundation to close doors," KTUU, August 16, 2019, accessed online at https://www.ktuu.com/content/news/Non-profit-aviation-safety-organization-Medallion-Foundation-to-close-doors-547993231.html.

begun to examine how best to work with the foundation in the future. The foundation seemed concerned that the FAA might try to somehow make it a regulatory arm of the agency – something that would create liability issues and erode carrier trust in the organization. In addition, the FAA had proposed reducing funding from about $1 million to $850,000. Alaska media outlets speculated that reason for Medallion's decision included external questions about its value to aviation safety and its management of FAA funding.

The Safety Record

As a result of efforts of the federal and state government, pilots, and operators, Alaska witnessed a decline in aviation accidents over the past few decades. New technologies, education campaigns, and greater awareness on the part of pilots, crews, and passengers have all contributed to improvements in safety. With this multi-faceted approach, the number of air taxi and commuter fatal crashes in Alaska decreased 53 percent between 1990 and 2009. The Alaska aviation community had met the goals set by Congress for the Alaska Interagency Aviation Safety Initiative.[62]

The death of former Senator Ted Stevens on August 9, 2010, in an aircraft accident, however, quickly focused attention away from the improving accident rate. The airplane, a privately operated single-engine amphibious floatplane, de Havilland DHC-3T, crashed near Aleknagik, Alaska. The pilot and four passengers, including Stevens, died; survivors included the former administrator of NASA and then-CEO of EADS North America Sean O'Keefe, his son, and NASA Deputy Administrator James Morhard. The airplane was not equipped with a cockpit voice recorder, flight data recorder, or other crash-resistant flight recorder, making it difficult for the NTSB to determine the accident's probable cause.[63]

The accident garnered worldwide attention, highlighted aviation safety concerns in Alaska, and showed a need for improvements in the Alaskan aviation system. According to the NTSB, for the period 2008-2017, the total accident rate in Alaska was 2.35 times higher than for the rest of the United States and the fatal accident rate in was 1.34 times higher.[64] The NTSB faulted the FAA, saying its "failure to fully implement needed safety programs in Alaska has resulted in aviation safety issues in Alaska persisting."[65] According to NTSB Chairman Robert L. Sumwalt, "We need to marshal the resources of the FAA to tackle aviation safety in Alaska in a comprehensive way . . .

[62] NIOSH, "Epidemiology and Policy Solutions," accessed on line at https://www.cdc.gov/niosh/topics/aviation/epipolicy.html.

[63] NTSB, "Collision into Mountainous Terrain GCI Communication Corp. de Havilland DHC 3T, N455A Aleknagik, Alaska, August 9, 2010," NTSB/AAR-11/03, May 24, 2011.

[64] NTSB, "Safety Recommendation Report: Revise Processes to Implement Safety Enhancements for Alaska Aviation Operations," Report ASR-20-02, February 13, 2020, accessed at https://www.ntsb.gov/news/press-releases/Pages/NR20200220b.aspx.

[65] Ibid.

The status quo is, frankly, unacceptable"[66] The safety agency recommended "the FAA work with stakeholders that service the Alaska aviation industry to implement a safety-focused working group to review, prioritize, and integrate Alaska's aviation safety needs into the FAA's safety enhancement process." [67]

The NTSB painted a fairly dire picture of Alaska aviation safety. The FAA's statistics, measured by the number of accidents per 100,000 flight hours, however, indicated a much more optimistic view.[68] During the period from 2010 through 2018, except for one year, the Alaska Flight Standards Division met or came in well under the FAA target rate of one accident per 100,000 flight hours. Based on these statistics, Alaska experienced some of the lowest overall accident numbers in the history of Alaskan aviation. The FAA does recognize a need for additional improvement. The agency is now working with industry, academia, state and local governments, and other federal agencies to decrease further the number of aviation accidents in Alaska not only through the introduction of new technologies and infrastructure improvements, but also by working with the pilot community to ensure they make the right decisions before flying and while in flight.

Alaska Bypass

The U.S. Postal Service (USPS) began the Alaska Bypass Program in 1972 as a means to provide reliable package delivery service to Alaska's rural communities.[69] The bypass service allows businesses to ship goods directly to rural customers, therefore "bypassing" the USPS. With no highway system throughout much of Alaska, the majority of bypass is carried on airplanes.

Under the program, major airlines ship food and other cargo on pallets from Anchorage or Fairbanks to about twenty hub airports, where small airlines or independent pilots break down the pallets and deliver the goods to the rural communities. Only in Alaska, does the USPS consider items such as flat-screen televisions, charcoal grills, soft drinks, and fresh fruit as mail. USPS pays for the cost of air transportation from hub airports to the Alaska bush sites. Bypass pallets must be ordered from authorized shippers in minimum quantities of 1,000 pounds.[70]

With the USPS paying for the bypass mail, some air carriers in Alaska eliminated passenger service to carry the more profitable bypass freight. The USPS required bypass shipments to be transported in accordance with the

[66] NTSB Office of Public Affairs, "Comprehensive Alaska Aviation Safety Approach Needed," February 20, 2020.
[67] NTSB, "Safety Recommendation Report: Revise Processes to Implement Safety Enhancements for Alaska Aviation Operations."
[68] The FAA switched to a rate metric in 2010.
[69] 39 U.S.C. § 5402.
[70] US Postal Service Office of Inspector General, Risk Analysis Research Center, "Alaska Bypass: Beyond Its Original Purpose," Report RARC-WP-12-005 (November 28, 2011): 1

"36/24" rule. The rule required a carrier to transport bypass from Anchorage or Fairbanks to a regional hub by the end of the second day following the day it received the shipment (thirty-six hours). The bush carrier then had to transport the cargo from the regional hub to the bush point within twenty-four hours.[71]

Air carriers had to notify the airport mail facility when the bypass did not make it onto the expected flight, no matter what the reason: cancellation of the flight, weather delay, or mechanical issues. Once notified about the delayed shipment, the airport mail facility manager directed the carrier on what to do with the bypass: transfer it to another carrier, return it to the airport mail facility, or hold it for a later flight. Originally, the USPS policies did not address delays due to inclement weather. In February 1993, the USPS issued a policy letter on weather-related mail delays. The letter stated, "The Postal Service does not condone any action on the part of any of its employees that would require an air carrier to operate when to do so would clearly be in conflict with safe aviation practice."[72]

Despite the policy clarification, if a carrier decided not to fly during inclement weather, the USPS would often transfer the mail to another carrier if it decided to fly into a given area. Many small operators relied on bypass to stay viable. Financial dependence created pressure for operators to keep pilots flying in marginal weather and for long duty hours.[73]

While Congress debated the efficacy and cost of the bypass system, the FAA and NTSB expressed concern about the safety of the program. In a 1996 speech to the Alaska Air Carriers Association, the NTSB's Jim Hall explained, "Under current [USPS] procedures, as long as one company declares an airport open, the clock starts for all the other carriers. Clearly, this places operational pressures on pilots and company management," which creates a safety risk with regard to delivering bypass mail.[74]

In 2002, Congress passed the Rural Service Improvement Act (RSIA), in part, to lower USPS bypass mail costs and to improve the safety of the carriers transporting the bypass mail. The act mandated that air carriers

[71] USPS, "Intra-Alaska Mail Service by Air: Instructions for Certificated Air Carriers and Bypass Mail," *Handbook, PO-506*, (March 2012), 8.4.
[72] National Transportation Safety Board, Safety Recommendation to Honorable Marvin Runyon Postmaster General United States Postal Service, A-95-137, December 1, 1995, 4-5, accessed at www.ntsb.gov/safety/safety-recs/recletters/A95_137.pdf.
[73] G. A. Conway, N.A. Mode, J.C. Manwaring, M. Berman, A. Hill, S. Martin, D.M. Bensyl, and K. A. Moran, US Department of Health and Human Services Centers for Disease Control and Prevention National Institute for Occupational Safety and Health, *Survey and Analysis of Air Transportation Safety Among Air Carrier Operators and Pilots in Alaska* November (2006), DHHS (NIOSH) Publication No. 2007-102, 27; See also, National Transportation Safety Board, "Aviation Safety in Alaska," Safety Study NTSB/SS-95/03 (November 1995): 36-39.
[74] Jim Hall, "Prepared Remarks before the Alaska Air Carriers Association, Anchorage, Alaska" (March 4, 1996), accessed at: https://www.ntsb.gov/news/speeches/JimHall/Pages/Alaska_Air_Carriers_Association_Anchorage_Alaska.aspx.

providing passenger carriage must also provide 70 percent mail service on a market-by-market basis. Likewise, established air cargo carriers on a route must carry 20 percent of the mail. The law also required operators of rural air carriers to upgrade operations from Federal Aviation Regulation (FAR) Part 135, under which they generally operated (aircraft with fewer than ten seats), to FAR Part 121 regulations. The FAR 121 regulations call for air carriers operating aircraft with ten or more seats to have two pilots, operate with a dispatcher, and fly set route flight patterns. Part 121 carriers must have higher levels of onboard instrumentation and maintenance routines and reporting not required of Part 135 air carriers. The writers of the legislation believed the new legislation would result in larger and more sophisticated aircraft operating in rural Alaska. These aircraft offered the added benefits of being safer, faster, and more efficient.

When bypass service began, Steven Deaton, senior vice president of Alaska Central Express, explained, "The Alaskan aviation industry consisted of approximately 35 air carriers, with the majority consisting of small carriers operating to bush communities. These were not the large mainline carriers that transported large bypass volumes out of the Anchorage and Fairbanks origin points, but were the carriers that transported bypass mail from the hubs to the final village community using small aircraft that had to make multiple trips to move all of the mail . . . During this period it was quite common for there to be one or two passenger carriers serving bush villages along with six or seven all cargo carriers."[75]

The mandate to upgrade fleets resulted in a serious disruption in the number of small carriers providing service to the remote communities in Alaska. By one estimate, within a few years of the legislation, the number of bush carriers shrank from thirty-five to nine because of air carrier consolidations and closures.[76] With fewer flights, the risk of accidents declined. "However," explained Bod Hajdukovich, the chief operating officer of Frontier Flying Service, "the aircraft left in the system are larger and require better airport conditions. To maximize the benefit of Part 121 operations, the airports and associated airway infrastructure need to be commensurate with the high standards and demands of [Part] 121."[77]

The unforeseen consequences of the mandate led to changes. An amendment to RSIA, incorporated into the Postal Accountability and Enforcement Act of 2006, reduced the 20 percent passenger rule to 10 percent and removed the Part 121 transition requirement. As Senator Ted Stevens

[75] Testimony of Steven Deaton, senior vice president, Alaska Central Express, *Hearing Before the Subcommittee On Federal Workforce, US Postal Service And the Census of the Committee on Oversight and Government Reform, House of Representatives*, Bypass Mail, A Broken System, 113th Cong., 2d sess., March 4, 2014, 47-54.

[76] Ibid.

[77] Statement of Bob Hajdukovich, Chief Operating Officer, Frontier Flying Service, *Field Hearing before the Committee on Commerce, Science, and Transportation, United States Senate*, Alaska Aviation Infrastructure and Funding Challenges – Meeting Future Safety, Capital and Technological Needs, Anchorage, Alaska, 109th Cong., 1st sess., July 5, 2005, 19.

explained, the amendment allowed the USPS to assign a larger share of mail to air carriers offering the safest passenger air service to rural Alaska.[78]

By 2011, with the changes to bypass mail requirements, bush air carrier operations were on the rise. Bypass mail shipments continued to originate in Anchorage and Fairbanks. From there, the goods went to sixteen regional hubs and then on to 120-130 bush community destinations. Five mainline carriers transported mail to the regional hubs, and nearly twenty-five small Part 135 carriers then transported the bypass mail to the bush destinations.[79]

Bypass mail en route to Fort Yukon
Courtesy: Wikimedia

Still concerned with Part 135 safety, the FAA worked with the USPS to revise its guidance for bypass mail. The new policy stated: "When inclement weather or adverse flight conditions prevent all aircraft from traveling from an origin to a destination, the transit times . . . are extended by the amount of time related to the interruption in service caused by the event."[80]

Unmanned Aircraft Systems

During the early 1990s, federal entities, such as the Department of Defense, started experimenting with unmanned aircraft systems (UAS), commonly known as drones. Recognizing the efficacy of using drones, military and civil agencies began placing drones into operational use. For example, the military used drones for military and border security operations and civil agencies used them for operations such as monitoring forest fires. The success of those operations led to the commercialization of drones in the new century as private citizens and business operators saw the potential for using drones in a variety of personal and commercial operations. By 2006, the Department of Defense became the largest user of drones. It deployed approximately 2,600 small unmanned aircraft, and 300 larger UAS such as the Global Hawk and Predator.[81]

[78] Ted Stevens, "Rural Service Improvement Act Changes Ensure Viability of Bypass Mail-Passenger Air Service," Vote Smart Facts Matter, February 10, 2006, accessed at https://votesmart.org/public-statement/153222/rural-service-improvement-act-changes-ensure-viability-of-bypass-mail-passenger-air-service#.XOVVANpJFdg.

[79] State of Alaska, Transportation & Public Facilities, "Intra-Alaska Mail Service by Air," Factsheet, August 1, 2011, accessed online at www.alaskaasp.com/media/1087/mail_service_in_ak_short_paper_-_8-1-11__1_.pdf.

[80] USPS, "Intra-Alaska Mail Service by Air: Instructions for Certificated Air Carriers and Bypass Mail Handbook," PO-508, March 2012.

[81] Testimony of Dyke Weatherington, Deputy of DOD's Unmanned Aerial Systems Planning

Background

The FAA, responsible for safely integrating drones into the national airspace system (NAS), faced a number of technical, operational, and regulatory challenges with the increasing use of drones. In particular, three technological challenges hampered growth of the civil UAS industry and FAA certification of drones. For drones to be integrated into the NAS they needed sense and avoid systems, control and communications links, and incorporation of safety technologies. Initially, the FAA approved, on a case-by-case basis, applications from government agencies and private-sector entities for the authority to operate UAS in the NAS. Federal, state, and local government agencies had to apply for certificates of waiver or authorization (COA), and private-sector operators had to apply for special airworthiness certificates.

With the number of COA requests increasing, on September 16, 2005, the FAA issued interim operational approval guidance to help inspectors evaluate COA applications. The agency explained that in response to increasing requests COAs, "It has become necessary to develop guidance . . . [for FAA inspectors] to use when evaluating applications . . . This policy is not meant as a substitute for any regulatory process."[82] The agency cautioned that "unmanned aircraft operations might interfere with commercial and general aviation aircraft operations . . . [and] could pose a safety problem for other airborne vehicles, and persons or property on the ground."[83]

On September 28, 2005, the FAA issued its first airworthiness certificate for a civil drone, the General Atomics Altair. The agency categorized the Altair's FAA airworthiness certificate as "experimental" and limited flights to research and development, crew training, or market survey. The agency also specified a number of safety conditions for the Altair's operation and required a pilot and observer.[84]

With the growing popularity of private and commercial UAS, the FAA hastened efforts to establish standards for UAS operations. Full and safe integration of UAS into the civil aviation system required the FAA to work closely with other government agencies, industry, and international entities that had experience in developing and operating unmanned aircraft. In August 2006, for example, the FAA signed a memorandum of agreement with the U.S. Air Force Research Laboratory Control Science Division to conduct flight tests of the Global Hawk and Predator. The objective of the flight test program was to demonstrate the feasibility of technologies that would provide

Task Force, *Hearing before the Subcommittee on Aviation of the Committee on Transportation and Infrastructure, House of Representatives*, Unmanned Aerial Vehicles and the National Airspace System, 109th Cong., 2d sess., March 29, 2006, 10.

[82] FAA, AFS-400 UAS Policy 05-01, September 16, 2005, accessed at http://www.everyspec.com.

[83] *Federal Register* 72, no. 29, February 13, 2007, 6689.

[84] Theresa Kraus, *1997-2019 Update to FAA Historical Chronology: Civil Aviation and the Federal Government, 1926-1996*, online at https://www.faa.gov/about/history/.

UAS with the ability to sense conflicting aircraft, determine if there was a collision hazard, and autonomously maneuver to avoid mid-air and near mid-air collisions.

In February 2006, the FAA established its Unmanned Aircraft Program Office to coordinate all certification and operational policy activities related to UAS.[85] With a number of amateur drone enthusiasts questioning the FAA's authority to regulate drones as aircraft rather than as a model, the agency issued a notice in the *Federal Register* clarifying that an unmanned aircraft system fell under the definition of aircraft. The agency asserted, "An unmanned aircraft is a device that is used, or is intended to be used, for flight in the air with no onboard pilot."

Explaining that, "the law enforcement and aerial photography industries, plus others conducting remote sensing activities, have mistakenly interpreted FAA advisory circular (AC) 91-57, Model Aircraft Operating Standards, for permission to operate small UAS for research or compensation or hire purposes," the FAA established the Small Unmanned Aircraft System Aviation Rulemaking Committee on April 10, 2008. The agency charged the committee with:

- Reviewing the FAA's approach to integrating small UAS into the NAS
- Defining the risks and mitigations associated with small UAS operations
- Identifying the costs associated with a proposed small UAS regulation
- Recommending rulemaking necessary to meet objectives; and preparing a draft proposal
- Developing guidance and recommending the implementation processes[86]

As the committee began its work, the FAA also continued working to refine guidance for large UAS. On March 13, 2008, the FAA issued Interim Operation Approval Guidance 08-01, which updated earlier guidance. That was followed on March 27, 2008, by updated procedures for issuing special airworthiness certificates to UAS in the experimental category.[87]

While the FAA continued to update its UAS guidance and conduct research necessary to support rulemaking activities, state, local, industry, and

[85] Memorandum from the FAA Manager, Aircraft Engineering Division and the Manager, Production and Airworthiness Division, "Unmanned Aircraft Systems (UAS) Certification Status, November 15, 2006, accessed on line at https://www.faa.gov/uas/resources/policy_library/media/uas_policyupdate.pdf.

[86] FAA Order 1110.150, "Small Unmanned Aerial System Aviation Rulemaking Committee," April 10, 2008, accessed online at http://rgl.faa.gov/regulatory_and_guidance_library/rgOrders.nsf/0/8616600949dcc4b78625742c004c52b0/$FILE/1110.150.pdf.

[87] FAA Order 8130.34, "Airworthiness Certification of Unmanned Aircraft Systems, March 27, 2008, accessed online at https://www.faa.gov/uas/resources/policy_library/.

public pressure calling for the agency to speed up its regulatory processes led to a number of congressional mandates. Public Law 112-95, FAA Modernization and Reform Act of 2012, required the agency to develop a comprehensive plan to safely accelerate the integration of civil UAS into the NAS,[88] prepare a five-year roadmap for the introduction of civil UAS to the NAS,[89] publish a final rule on the use of small UAS,[90] and establish six test ranges as part of a program to integrate UAS into the NAS. The test sites would enable the acquisition of data and operational experiences to help in the regulatory process to safely operate and integrate these aircraft into the NAS.

Arctic UAS Program

Public Law 112-95 also mandated the FAA, "develop a plan and initiate a process to work with relevant Federal agencies and national and international communities to designate permanent areas in the Arctic where small unmanned aircraft may operate 24 hours per day for research and commercial purposes. The plan for operations in these permanent areas shall include the development of processes to facilitate the safe operation of unmanned aircraft beyond line of sight. Such areas shall enable over-water flights from the surface to at least 2,000 feet in altitude, with ingress and egress routes from selected coastal launch sites."[91]

The requirements of the Arctic provisions presented several challenges for the FAA. The airspace included areas over international waters the FAA controlled on behalf of the International Civil Aviation Organization (ICAO). The type of airspace described in the legislation did not fit any of the existing types of airspace then used by the FAA. ICAO would have to approve any changes to the airspace, and other international stakeholders operating in the Arctic would also have to be consulted. This meant that the agency would have to create and obtain international agreement on operational rules.

To accomplish this task, the FAA's Arctic UAS program manager served as co-chair of the Arctic Council's Arctic Monitoring Assessment Programme's UAS expert group. The group, in conjunction with the Arctic Council, ICAO, the agency, State Department, and civil aviation authorities of the eight Arctic states developed and ratified the first multilateral UAS agreement for international search and rescue and scientific UAS operations

[88] FAA Modernization and Reform Act of 2012, Public law 112-95, 112th Cong., sec. 903, February 14, 2012.
[89] A copy of the Roadmap and the July 2018 update can be found online at https://www.faa.gov/uas/resources/policy_library/; See also FAA, "FAA Releases Unmanned Aircraft Systems Integration Roadmap," Press Release (November 7, 2013).
[90] The rule can be found online at https://www.faa.gov/uas/resources/policy_library/media/Part_107_Summary.pdf.
[91] FAA Modernization and Reform Act of 2012, Section 332.

in 2015.[92] In addition, the legislative requirement to allow commercial small UAS (sUAS) Arctic operations required aircraft design and production approval, operational approval, and pilot aircraft certification. At the time, the FAA had no standards it could use to certificate the aircraft, certificate the operators, or certify pilots flying the aircraft.

In May 2012, a team of FAA experts began developing a workable approach to meeting the congressional mandate. They developed a plan to use three blocks of airspace over international waters. In these areas, sUAS would be able to operate twenty-four hours a day for research and commercial purposes. Missions from coastal launch sites could fly over water to a maximum altitude of 2,000 feet. The "Arctic Implementation Plan: Expanding Use of Small Unmanned Aircraft Systems in the Arctic," approved by the Secretary of Transportation in November 2012, included developing protocols to operate unmanned aircraft beyond the vision of a pilot or observer, known as beyond visual-line-of-sight (BVLOS). This was a first for sUAS operations.[93]

The FAA established three permanent Arctic areas:

- Southern Arctic Area: The portion of the Anchorage Continental Control Area (CTA) Flight Information Region (FIR) overlying the Bering Sea, north of the Aleutian Island chain and south of the Bering Strait beyond domestic US airspace
- Bering Strait Area: An area connecting the Southern and Northern Area through the Bering Strait, which will allow small UAS to assist with search and rescue operations and shipping lane ice surveys
- Northern Arctic Area: The Anchorage Arctic CTA/FIR areas of the Chukchi Sea and the Beaufort Sea beyond domestic U.S. airspace. The Anchorage Arctic CTA/FIR has a floor of flight level 230, the airspace below is Class "G" or uncontrolled airspace[94]

Based on a lengthy safety management system (SMS) process, the FAA team determined there was an extremely low amount of air and ship traffic and people in the proposed flight areas. It determined that unmanned aircraft could operate safely beyond a pilot's or observer's vision with conditions and limitations added to COAs.[95] Concurrently, the FAA's aircraft certification

[92] See https://oaarchive.arctic-council.org/handle/11374/1503.
[93] FAA, Expanding Use of Small Unmanned Aircraft Systems in the Arctic Implementation Plan FAA Modernization and Reform Act of 2012, November 1, 2012, accessed online at www.faa.gov/uas/programs_partnerships/completed/media/suas_arctic_plan.pdf.
[94] Ibid.
[95] FAA, "FAA Opens Arctic to Commercial Small Unmanned Aircraft," News & Updates, September 23, 2013, accessed online at https://www.faa.gov/news/updates/?cid=fb200&newsid=73981.

office began work to certificate the first pair of sUAS – Insitu ScanEagle X200 and AeroVironment PUMA. In late July 2013, the agency awarded a restricted category type certificate to both models, allowing them to fly commercially. Previous military acceptance of the Scan Eagle and PUMA designs allowed the FAA to issue the type certificates.[96]

In July 2013, the FAA issued ConocoPhillips an authorization to use a ScanEagle to monitor whale migrations and ice flows. As a result, on September 12, 2013, ConocoPhillips made the first commercial flight of an unmanned aircraft in the Arctic when it launched a ScanEagle from the research vessel *Westward Wind* in the Chukchi Sea, part of the Arctic Ocean west of Alaska. ConocoPhillips agreed to share its data about the UAS's flight operations with the FAA.[97] As part of its research effort, in 2014 ConocoPhillips successfully transferred over-the-horizon control of a drone in Alaska from a ship to a land-based system.[98]

In another Arctic research effort, the FAA issued a certificate of waiver or authorization for energy corporation BP to use a sUAS to survey its pipelines, roads, and equipment at Prudhoe Bay, the largest oil field in the United States. AeroVironment performed the first flight for BP on June 8, 2014, using its Puma AE for aerial surveys. This became the first time the FAA authorized a commercial UAS operation over land. The surveys, according to Secretary of Transportation Anthony Foxx, "on Alaska's North Slope are another important step toward broader commercial use of unmanned aircraft . . . The technology is quickly changing, and the opportunities are growing."[99] By 2015, after local public outreach and meetings, the FAA identified and had established ten UAS coastal launch sites in Alaska (published in the Alaska Supplement, an FAA airport facilities directory now called FAA chart supplements), and developed and published communication procedures for flying drones BVLOS in the Arctic.[100]

[96] FAA, "One Giant Leap for Unmanned-kind," News & Updates, July 26, 2013, accessed at https://www.faa.gov/news/updates/?newsid=73118.

[97] FAA, "FAA Opens the Arctic to Commercial Small Unmanned Aircraft."

[98] Jan Hester, "ConocoPhillips Flies High," S*pirit Magazine* (September 6, 2018): accessed at http://www.conocophillips.com/spiritnow/story/conocophillips-flies-high/.

[99] FAA, "FAA Approves First Commercial UAS Flights Over Land," June 10, 2014, accessed online at https://www.faa.gov/news/press_releases/news_story.cfm?newsId=16354. See also, FAA, "Surveys Will Check Pipelines, Infrastructure on Alaska North Slope," Press Release, June 20, 2014, accessed online at https://www.faa.gov/news/press_releases/news_story.cfm?newsId=16354.

[100] FAA, "Unmanned Aircraft Systems: Completed Programs and Partnerships," accessed online at https://www.faa.gov/uas/programs_partnerships/completed/. Also see, Lessons Learned from UAS Arctic Operations in the Summer of 2013 and Implementing Scientific Data Collection Across the Arctic Oceanic Region Utilitizing Unmanned Aircraft Systems.

University of Alaska Joins the UAS Research Program

Seeing an opportunity to participate in these groundbreaking UAS activities, the University of Alaska, which already had robust aviation training and research programs, established the Alaska Center for Unmanned Aircraft Systems Integration in December 2012 at its Fairbanks campus. The center manages the Pan-Pacific UAS Test Range Complex. In 2013, the new center submitted a proposal to the FAA to become one of the six UAS test sites mandated by the FAA Modernization and Reform Act.

University of Alaska Fairbanks UAS researcher
Courtesy: Eyal Saiet, Alaska Center for Unmanned Aircraft Systems Integration

On December 30, 2013, the FAA announced it had selected the University of Alaska as one of six public entities to undertake UAS research. The other entities included the State of Nevada, New York's Griffiss International Airport in New York, North Dakota Department of Commerce, Texas A&M University, and Virginia Tec.[101] Researchers at these congressionally-mandated sites would conduct critical research to help define the certification and operational requirements necessary to safely integrate drones into the national airspace over the next several years.

The University of Alaska's test site became the second of the six to become operational.[102] On May 5, 2014, the FAA granted the University of Alaska Fairbanks a certificate of waiver or authorization permitting flights by an Aeryon Scout sUAS for animal surveys at its Pan-Pacific UAS test range complex. As the Alaska team began flight operations, Secretary of Transportation Foxx, proclaimed, "Alaska has a history of innovation in manned aviation, and now they are bringing that pioneering spirit into the unmanned aircraft arena as well . . . [W]e look forward to the contributions they and the other test sites will make toward our efforts to ensure the safe and efficient integration of UAS into our nation's skies."[103] FAA Administrator Michael Huerta acknowledged the value of the Alaska test site, "The University of Alaska Fairbanks program is important because it

[101] FAA, "FAA Selects Unmanned Aircraft Systems Research and Test Sites," Press Release, December 30, 2013, accessed at https://www.faa.gov/news/press_releases/news_story.cfm?newsId=15576.

[102] The North Dakota Department of Commerce operated the first operational site. See FAA, "FAA Announces First UAS Test Site Operational," Press Release, April 21, 2014, accessed online at https://www.faa.gov/news/press_releases/news_story.cfm?newsId=16154.

[103] Ibid.

includes a diverse set of test site range locations in seven climatic zones, so it will give us a wealth of data to help develop appropriate safety regulations and standards."[104]

As part of the 2014 Consolidated Appropriations Act, Congress mandated the FAA establish a Center of Excellence (COE) for UAS. The COE program facilitates collaboration and coordination between government, academia, and industry to advance aviation technologies and expand FAA research capabilities through congressionally required matching contributions. In May 2015, following a rigorous competitive process, Administrator Huerta selected the Alliance for System Safety of UAS through Research Excellence (ASSURE), a Mississippi State University-led team, as the FAA's UAS COE.

The COE comprised a core team of fifteen of the nation's leading UAS and aviation universities, including the University of Alaska Fairbanks, as well as an affiliate team of eight domestic and international universities.[105] Congress appropriated $5 million for the five-year agreement with the COE, which would be matched by the team members. The COE research areas initially included: detect and avoid technology; low-altitude operations safety; control and communications; spectrum management; human factors; compatibility with air traffic control operations; and training and certification of UAS pilots and other crewmembers, in addition to other areas. In announcing the selection, Huerta said, "This team has the capabilities and resources to quickly get up and running to help the FAA address the demands of this challenging technology over the next decade."[106]

Partnering with Industry

Based on experiences in Alaska and elsewhere, the FAA proposed a framework of regulations that would allow routine use of certain sUAS in the NAS while maintaining flexibility to accommodate future technological innovations. The February 15, 2015, proposal covered safety rules for sUAS (under 55 pounds) conducting non-recreational operations. The rule would limit flights to daylight and visual-line-of-sight operations. It also addressed height restrictions, operator certification, optional use of a visual observer, aircraft registration and marking, and operational limits. The proposed rule included extensive discussion of the possibility of an additional, more flexible framework for "micro" UAS under 4.4 pounds.[107] After receiving and adjudicating public comment on the proposal, on August 29, 2016, the FAA implemented the first operational rules for routine non-hobbyist use of sUAS. The provisions of the new rule – formally known as FAR Part 107 – were designed to minimize risks to other aircraft, and people and property on the ground.

The following year, on October 25, 2017, President Donald Trump directed Secretary of Transportation Elaine Chao to launch an initiative that would safely test and validate advanced drone operations in partnership with state and local governments in select jurisdictions. The initiative – the UAS Integration Pilot Program – would:

- Test and evaluate various models of State, local, and tribal government involvement in the development and enforcement of federal regulations for UAS operations
- Encourage UAS owners and operators to develop and safely test new and innovative UAS concepts of operations
- Inform the development of future Federal guidelines and regulatory decisions on UAS operations nationwide[108]

The program would help the FAA develop a regulatory framework that would:

- Allow more complex low-altitude operations
- Identify ways to balance local and national interests
- Improve communications with local, state and tribal jurisdictions
- Address security and privacy risks
- Accelerate the approval of operations that currently require special authorizations

Under the pilot program, researchers would evaluate a variety of operational concepts, including night operations, flights over people, flights beyond the pilot's line of sight, package delivery, detect-and-avoid technologies, counter-UAS security operations, and the reliability and security of data links between pilot and aircraft. As the FAA administrator explained, the program will give stakeholders the opportunity "to demonstrate how their innovative technological and operational solutions can address complex unmanned aircraft integration challenges."[109]

[104] FAA, "FAA Announces Alaska UAS Test Site Begins Research Flights," Press Release, May 5, 2014, accessed online at https://www.faa.gov/news/press_releases/news_story.cfm?newsId=16194. See also, Graham Warwick, "Civil UAS Use Starts in Nevada, Expands in Alaska," *The Weekly Business of Aviation* (June 16, 2014): 2.

[105] Other COE members included: Drexel University; Embry-Riddle Aeronautical University; Kansas State University; Montana State University; New Mexico State University; North Carolina State University; Oregon State University; University of Alabama-Huntsville; University of California Davis; University of Kansas; University of North Dakota; The Ohio State University; Wichita State University; Auburn University. Affiliate members include: Concordia; Indiana State University; Louisiana Tech University; Sinclair Community College; Technion Israel Institute of Technology; Tuskegee University; and the University of Southampton. See http://www.assureuas.org/about.php.

[106] FAA, "FAA Selects Mississippi State University Team as Center of Excellence for Unmanned Aircraft Systems," Press Release, May 8, 2015, accessed online at https://www.faa.gov/news/press_releases/news_story.cfm?newsId=18794.

[107] *Federal Register* 80, no. 35, February 23, 2015, 9544.

[108] Presidential Memorandum for the Secretary of Transportation, "Unmanned Aircraft Systems Integration Pilot Program, October 31, 2017.

[109] FAA Factsheet, October 25, 2017, accessed online at https://www.faa.gov/news/

On May 9, 2018, Secretary Chao announced the selection of ten participants for the pilot program:

- Choctaw Nation of Oklahoma, Durant, OK
- City of San Diego, CA
- Innovation and Entrepreneurship Investment Authority, Herndon, VA
- Kansas Department of Transportation, Topeka, KS
- Lee County Mosquito Control District, Fort Myers, FL
- Memphis-Shelby County Airport Authority, Memphis, TN
- North Carolina Department of Transportation, Raleigh, NC
- North Dakota Department of Transportation, Bismarck, ND
- City of Reno, NV
- University of Alaska Fairbanks

The ten, selected from a pool of 149 other proposals, began collecting data involving night operations, flights over people and beyond the pilot's line of sight, package delivery, detect-and-avoid technologies, and the reliability and security of data links between pilot and aircraft.

Commercial space

Background

Between 1963 and 1982, U.S. expendable launch vehicle (ELV) manufacturers produced vehicles only under contract to the National Aeronautics and Space Administration (NASA) or the Department of Defense (DoD). In the early 1970s, when private companies and foreign governments purchased communications satellites, if they wanted to launch them from the United States, they had to contract with NASA to launch their payloads. Launches could be procured on any one of four NASA ELVs: Titan, built by Martin Marietta; Atlas, built by General Dynamics; Delta, built by McDonnell Douglas; and Scout, built by LTV Aerospace Corporation. NASA would purchase a launch vehicle through traditional government procurement practices, and the launch would be conducted by a contractor under NASA supervision.

The U.S. government essentially served as the only provider of space launch services to the Western world. Seeing an opportunity to provide launch services, the European Space Agency developed its own ELV, Ariane, which became the first competitor to NASA for commercial launches. The first Ariane launch occurred in 1979, and in 1984, a private company, Arianespace, took over commercial operation of the vehicle.

updates/?newsId=89007.

In the late 1970s, the U.S. government decided to phase out all ELVs, except Scout, in favor of the U.S. space shuttle. The shuttle would take all U.S. government satellites and commercial satellites into orbit. NASA declared the shuttle, which made its first test flight in 1981, operational in 1982, and government funding of ELV production ceased in 1983. It quickly became evident, however, that the flight schedule of the shuttle could not meet all of the U.S. security, civil, and commercial launch requirements. As the need grew for more launches than NASA could handle, some launch vehicle manufacturers expressed interest in offering commercial launch services.

In 1982, the first successful private launch in the United States took place – a test launch of the Space Services' prototype Conestoga rocket. The procedures required to gain approval for that launch, however, proved time-consuming and led to the introduction of legislation to make it easier for companies to pursue commercial launch activities. A bill (HR 1011) introduced in the House by Congressman Daniel Akaka (D-HI) would have designated the Department of Commerce as lead agency, while the Senate bill (S 560), introduced by Earnest "Fritz" Hollings (D-SC), intended to give the lead role to the FAA. Others suggested the lead go to the Department of State or NASA.[110] While Congress debated the efficacy of the legislative proposals, on July 4, 1982, President Ronald Reagan issued National Security Decision Directive (NSDD) 42, "National Space Policy," stating that expansion of U.S. private sector involvement in civil space activities was a national goal.[111]

The president's senior interagency group on space subsequently reviewed the policy and concluded a commercial ELV capability would offer substantial benefits to the nation by:

- Maintaining a high-technology industrial base
- Providing jobs for thousands of workers, thus adding to the federal tax base
- Spawning numerous spinoff and supporting activities
- Strengthening the U.S. global position
- Providing a potential market for excess flight hardware, special-purpose tooling, test equipment, and propellants
- Creating a market for U.S. government and facilities

On May 16, 1983, the president issued NSDD 94, "Commercialization of Expendable Launch Vehicles." It stated the "U.S. Government fully endorses and will facilitate the commercialization of U.S. Expendable Launch Vehicles. The U.S. Government will license, supervise, and/or regulate U.S. commercial ELV operations only to the extent required to meet its national and international obligations and to ensure public safety."[112]

[110] Congressional Research Service, *Policy and Legal Issues Involved in the Commercialization of Space* (Washington, DC: US Government Printing Office, 1983), 10.
[111] National Security Decision Directive Number 42, "National Space Policy," July 4, 1982, accessed at https://www.hq.nasa.gov/office/pao/History/nsdd-42.html.
[112] National Security Decision Directive Number 94, "Commercialization of Expendable

The directive created an interim space working group on commercial launch operations co-chaired by the Department of State and NASA. The FAA and Federal Communications Commission also had representatives in the group. Among other things, the president mandated the group develop and coordinate the requirements and processes for the licensing, supervision, and/or regulations applicable to commercial launch operations and recommend the appropriate agency with the U.S. government responsible for commercial launch activities.

The group submitted its report on September 15, 1983. It did not recommend a lead agency, but, instead, deferred to the Cabinet Council for Commerce and Trade. At a meeting of the council on November 16, 1983, President Reagan announced his intention to designate the Department of Transportation (DOT) as the agency with principal responsibility for fostering the private commercial ELV business. His rationale centered on the fact that DOT, as a department that understood the regulatory process and with experience as a deregulator (airline, railroad), was uniquely suited to remove regulatory barriers and to streamline regulations necessary to create a commercial space industry.[113]

In a January 1984 speech, Secretary of Transportation Elizabeth Dole explained the President wanted to stimulate interest in commercial space ventures by removing regulatory barriers. She said that companies trying to operate in space must go through as many as seventeen agencies to get appropriate permits and licenses. DOT would give companies one-stop service to help them "cut through the thicket of clearances, licenses, and regulations that keep industrial space vehicles tethered to their pads."[114]

Executive Order 12465, issued on February 24, 1984, formally designated DOT as the lead agency for encouraging, facilitating, and licensing commercial ELV activities.[115] DOT entrusted these duties to the new Office of Commercial Space Transportation. Dole appointed Jennifer Dorn as the first director of the new office. Prior to her appointment, she had served as Elizabeth Dole's special assistant.

Congress affirmed and expanded these actions through the Commercial Space Launch Act, enacted on October 30, 1984. This legislation addressed three substantive areas: licensing and regulation; liability insurance requirements; and access of private launch companies to government facilities.[116] Despite the legislation, U.S. launch firms remained largely

Launch Vehicles," May 16, 1983, accessed at https://fas.org/irp/offdocs/nsdd/23-2082t.gif.

[113] Harry R. Marshall, "Commercialization of Outer Space," *Current Policy 622*, October 9, 1984 (Washington, DC: US Department of State, Bureau of Public Affairs, Office of Public Communication, Editorial Division, 1984): 3.

[114] Dole Seeks To Encourage Space Travel," *Tyrone Daily Herald* (Pennsylvania), January 20, 1984.

[115] Executive Order 12465, "Commercial Expendable Launch Vehicle Activities," February 24, 1984, accessed at https://www.archives.gov/federal-register/codification/executive-order/12465.html.

[116] Commercial Space Act, Public Law 98-575, 98th Congress, October 30, 1984.

uninterested in offering commercial launch services, finding it difficult to compete against the government subsidized space shuttle. U.S. policy changed in the wake of the January 28, 1986, space shuttle *Challenger* tragedy. The government reversed its policy of phasing out its ELVs and instead adopted a mixed-fleet approach where ELVs and the shuttle were available for commercial users.

On December 27, 1986, President Reagan issued NSDD 254, "United States Space Launch Strategy," which limited NASA's role in providing commercial launches to only those satellites that required the unique capabilities of the shuttle or for which there were unusual foreign policy considerations.[117] The resulting unavailability of NASA as a domestic civilian launch service, coupled with the already enacted legislation, led to the emergence of the U.S. commercial launch services industry. On February 11, 1988, Reagan issued the "Presidential Directive on National Space Policy," which required U.S. government agencies to purchases launch services from commercial companies.[118]

The U.S.-licensed commercial space industry made its first launch in March 1989 when Space Service, Inc., sent a scientific payload on a suborbital trip aboard a Starfire rocket. Later in 1989, McDonnell Douglas made the first U.S.-licensed commercial orbital launch on August 27, using a Delta I launch vehicle. On August 7, 1995, DOT announced that the Office of Commercial Space Transportation would move from the Office of the Secretary to the FAA, effective October 1, 1995, as part of a larger DOT reorganization. The transfer of the office was delayed, however, until sanctioned by legislation.[119]

The fiscal year 1996 DOT appropriations bill, signed by President Bill Clinton on November 15, 1995, cleared the way for the transfer of the Office of Commercial Space Transportation from DOT's Office of the Secretary to the FAA. The transfer became effective on November 16 of that year.[120] At that point, the agency became responsible for a number of activities to encourage and regulate commercial space launches. The new FAA office had responsibility for:

- Regulating the U.S. commercial space transportation industry to ensure compliance with international obligations of the United States, and to protect the public health and safety, safety of property, and national security and foreign policy interests of the United States
- Encouraging, facilitating, and promoting commercial space launches and reentries by the private sector
- Recommending appropriate changes in Federal statutes, treaties, regulations, policies, plans, and procedures

[117] National Security Directive 254, "United States Space Launch Strategy," December 27, 1986, accessed at https://faa.org/irp/offdocs/nsdd/nsdd-254.pdf.

[118] NASA, "Presidential Directive on National Space Policy," Factsheet, February 11, 1988, accessed at https://www.hq.nasa.gov/office/pao/History/policy88.html.

[119] Preston, *FAA Historical Chronology*, 251.

[120] Ibid., 252.

- Facilitating the strengthening and expansion of the U.S. space transportation infrastructure[121]

Spaceports

The FAA issued its first commercial space launch operator's license in 1997 to Spaceport American in New Mexico. In 1998, the agency issued its fourth commercial space launch site operator license to the Alaska Aerospace Development Corporation (AADC)[122] to operate a launch site at Kodiak Island, Alaska. The Alaska State Legislature established the AADC in 1991 to place satellites into orbit and to support missile defense testing. To fulfill its mission, the AADC built and operates the Kodiak Launch Complex. The Kodiak spaceport was the country's first commercial spaceport not co-located on a federal reservation.

Caption: Athena 1 rocket launches from Kodiak Island
Courtesy: NASA

The first orbital launch from Kodiak occurred on September 30, 2001, when NASA launched Athena I, known as the Lockheed Launch Vehicle. An August 2014 launch failure damaged launch pads 1 and 2, the payload processing facility, and the integrated processing facility. With the facility under repair, the AADC announced in April 2015 it had renamed the facility the Pacific Spaceport Complex – Alaska. The AADC rededicated the repaired facility on August 13, 2016. The AACD signed a multi-year contract with the Missile Defense Agency for multiple launches from the facility through 2021.[123]

[121] FAA Office of Commercial Space Transportation, "About the Office," accessed online at https://www.faa.gov/about/office_org/headquarters_offices/ast/about/.
[122] Now called the Alaska Aerospace Corporation.
[123] George Chambers, "Kodiak Island Spaceport Reopens Following 2014 Launch Failure," NASA Spaceflight.com (August 25, 2016): accessed at https://www.nasaspaceflight.com/2016/08/kodiak-spaceport-reopens-2014-failure/.

Environmental Cleanup

The FAA's presence in Alaska dates back to the 1930s when its predecessor agencies (Bureau of Air Commerce, Civil Aeronautics Authority, and Civil Aeronautics Administration) began to acquire property to support the military and the expanding civil aviation industry. These facilities, ranging from the Arctic coast to the Aleutian Islands contained now-banned materials such as asbestos and lead paint. Long-abandoned landfills, drum storage areas, waste disposal sites, old housing areas, fueling pipelines, and trash incinerators held unknown quantities of tainted scrap metal, diesel fuel, solvents, batteries, lead-based paint, pesticides, heavy metals, polychlorinated biphenyls (PCBs), and chemicals, some labeled as containing 2,4,5-T, the primary ingredient in Agent Orange.

After World War II, declining military need and the advent of new postwar technologies, eliminated the need for many of the manned operations. Hence, the Civil Aeronautics Administration (CAA) began reducing the size of some of its Alaskan facilities, abandoning or closing some, and relinquishing additional facilities to other federal agencies, the State of Alaska, and private entities.

In 1980, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which gave the Environmental Protection Agency (EPA) the power to seek out those parties, including federal agencies, responsible for any hazardous material release and assure their cooperation in the cleanup. The EPA implemented the law in all fifty states and U.S. territories. It coordinated Superfund

Summary of the National Environmental Policy Act 42 U.S.C. §4321 et seq. (1969)

The National Environmental Policy Act (NEPA) was one of the first laws ever written that established the broad national framework for protecting the environment. NEPA's basic policy is to assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action that significantly affects the environment.

NEPA requirements are invoked when airports, buildings, military complexes, highways, parkland purchases, and other federal activities are proposed. Environmental Assessments (EAs) and Environmental Impact Statements (EISs), which are assessments of the likelihood of impacts from alternative courses of action, are required from all federal agencies and are the most visible NEPA requirements.

Legislation Affecting FAA Cleanup Efforts

1976 - Responding to public concern over 'midnight dumping' of toxic wastes, Congress passes the Resource Conservation and Recovery Act (RCRA). The law establishes authority for controls over hazardous waste from generation to disposal under the act.

1976 – Congress enacts the Toxic Substances Control Act (TSCA), which provides EPA with authority to protect public health and the environment through controls on toxic chemicals that pose an unreasonable risk of injury.

1980 – Congress passes the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to address the dangers of

site identification, monitoring, and response activities in states through the state environmental protection or waste management agencies.

CERCLA has been amended several times since its passage in 1980. The two most substantial amendments were the Superfund Amendments and Reauthorization Act (SARA) and the Community Environmental Response Facilitation Act of 1992 (CERFA). SARA amended CERCLA to strengthen and broaden the scope of the original statute and incorporate new community involvement requirements. CERFA amended the statutory language of CERCLA §120(h), regarding transfer of federal property to private entities.

In addition, in the 1980s, as populations began to grow near some of the old CAA, now FAA, sites and global concerns about health and safety increased, the FAA began to assess needed cleanup activities at these the old facilities. In 1985, the agency started removing old oil drums found near Lake Minchumina, a popular fishing area near Denali. By 1987, the FAA began examining thirty-seven additional sites for contaminated waste.

Cleanup activities originally moved slowly since the agency had neither sufficient guidance from the EPA nor sufficient resources for environmental cleanup activities in the state. In 1988, the EPA created the Federal Agency Hazardous Waste Compliance Docket, which it regularly updates in the *Federal Register*.

The EPA published the initial list of docket facilities in the *Federal Register* on February 12, 1988. The docket identified four FAA sites in Alaska: the ramp at Lake Minchumina Airport, Fire Island, Northway Airport staging field, and the Umiat airstrip staging are.[124] In 1989, the Anchorage air route traffic control center Anchorage ARTCC was added to the list.[125]

In addition to the EPA docket, local authorities, state governments, and tribal organization also began identifying former CAA sites for FAA cleanup activities. State and local environmental regulatory agencies often established more stringent investigation, remediation, and site closure requirements. In Alaska, the Department of Environmental Conservation (ADEC) became responsible for overseeing cleanup of contaminated sites.

During fiscal year 1989, the FAA began a multi-year program for the cleanup and removal of all hazardous materials and wastes from its facilities and sites. The agency established a staff to help control hazardous materials, wares, and wastes, and began funding the environmental cleanup program. Environmental specialists conducted thirty-seven fact finding interviews in three regions to begin assessing potential area of concern (AOC). The interviews and the results from focus groups helped identify the guidance, training, and regional support staff necessary for the FAA to address environmental issues.[126]

As part of the agency's efforts, the Alaskan Region administrator established the Airway Facilities Environmental Compliance Section in 1989 to begin remediating decades of hazardous material contamination at sites owned or acquired by the FAA in Alaska.

abandoned or uncontrolled hazardous waste dumps by developing a nationwide program for: emergency response; information gathering and analysis; liability for responsible parties; and site cleanup. CERCLA also creates a trust fund (Superfund) to finance emergency responses and cleanups.

1982 – The EPA establishes the Hazard Ranking System (HRS) as the principal mechanism for evaluating environmental hazards of a site. HRS is a numerically-based screening system that uses information from preliminary investigations to assess the potential threats that sites pose to human health or the environment.

1982 – The EPA issues the first national guidelines for implementing CERCLA in its revised National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The NCP sets forth the procedures that must be followed by the EPA and private parties in emergency responses and cleanups.

1983 – The EPA creates the first National Priorities List (NPL): Using the HRS screening system, the EPA creates the first NPL, classifying 406 sites as the nation's priorities for cleanup under Superfund. Only sites on the NPL may qualify for long-term remedial actions financed by the Superfund. The NPL is updated on a regular basis.

1984 - Concerns about gasoline and hazardous chemicals seeping from storage tanks and landfills into underground drinking water supplies prompt Congress to enact the Hazardous and Solid Waste amendments to RCRA under which the EPA makes efforts to prevent such contamination and requires the treatment of hazardous waste prior to land disposal.

1986 - Congress passes the Superfund Amendments and Reauthorization Act (SARA), which in part: strengthened CERCLA's enforcement provisions; encouraged voluntary settlements instead of litigation; stressed the importance of permanent remedies and innovative treatment technologies; increased state involvement in every phase of the Superfund program; increased the focus on human health problems posed by hazardous waste sites; and encouraged greater citizen participation in how sites are cleaned up.

SARA adds certain specific provisions to CERCLA applicable to the cleanup of contaminated sites at federal facilities. Under CERCLA Section 120, federal agencies are required to comply with CERCLA in the same manner and to the same extent as non-governmental entities. Section 120 also requires federal agencies to: identify contamination affecting contiguous or adjacent property; compile information about contaminated sites at federal facilities and enter the information into the Federal Agency Hazardous Waste Compliance Docket; and promptly conduct preliminary assessments, remedial investigations, and feasibility studies at federal facilities.

1990 – The EPA revises the Hazard Ranking System in accordance with SARA to help ensure the HRS accurately assesses the relative degree of risk to human health and the environment posed by uncontrolled hazardous waste sites that may be placed on the NPL.

Source: https://www.epa.gov/superfund/superfund-history

[124] *Federal Register* 53, no 29, February 12, 1988, 4280.
[125] *Federal Register* 54, no. 72, April 17, 1989, 51474.
[126] Department of Transportation, *Twenty-third Annual Report Fiscal Year 1989* (Washington, DC: US Government Printing Office, 1990), 24.

Wayne Eberhardt, the agency's hazardous waste specialist in the region at the time, said the agency hoped to get $20 million to clean hazardous waste at more than forty FAA sites in the state. He indicated the agency's top cleanup priorities focused on Northway, Middleton Island, and Moses Point.[127]

During fiscal year 1992, the region ramped up its cleanup efforts and began recording those efforts in formal environmental compliance investigative reports.[128] In a chronicle of its fiscal year 1992 concerns, the agency reported the Alaskan Region had 70 percent of the FAA's national federal docket listings for possible Superfund sites. During the fiscal year, the agency completed fifty hazmat investigations, scheduled eighteen additional investigations, and planned to study an additional sixty sites the following year. Once it completed the studies, it had to prepare remediation plans, and then undertake cleanup operations. Cleanup efforts proved slow and onerous. During the summer of 1992, the agency disposed more than 600 tons of hazardous materials and waste from twenty-six sites. The hazmat included batteries, pesticides, herbicides, and used solvents, oils, and glycol (antifreeze). The FAA transported 424 drums of dioxin-contaminated soils from Lake Minchumina to an EPA-designated storage facility in Texas.[129]

In 1994, the agency issued guidance on its new environmental due diligence audit process. The focus of the process "is on risk and the associated liabilities from past site and adjacent site uses and potential environmental contamination." Under CERCLA, "prior site contamination can result in extremely expensive cleanup. CERCLA is a strict liability statute, which means that responsible parties are liable regardless of fault."[130]

The agency issued its Cleanup Program Master Plan in February 1998. The Environmental Cleanup Program goals and objectives included:

- Eliminate the FAA's environmental liability by achieving site closure, or obtaining no further remedial action planned (NFRAP) designation
- Focus resources and target mobilization efforts on high-priority stations first
- Conduct cleanups in accordance within regulatory framework and requirements
- Plan project work based on an assumption of approximate FAA allocation of $4 million per year

[127] "FAA Agrees to Clean Chemical Waste Site," *Daily Sitka Sentinel*, December 16, 1988; "Environmental Excellence," *FAA Headquarters Intercom* (June 13, 1995): 5.
[128] Theresa Kraus phone conversation with Brad Platt, April 27, 2020.
[129] "Hazardous Materials," *FAA Alaskan Region Annual Report 1992*, 20, accessed at http://atchistory.org/History/Pubs/ak_intercom/1992/alaskan_reg_intercom_Year_of_1992.pdf.
[130] FAA Order 1050.19A, "Environmental Due Diligence Audits in the Conduct of FAA Real Property Transactions," (June 25, 2002): 13. FAA updated the order on October 3, 2007, Order 1050.19B.

The plan prioritized cleanup sites based on:

- Risk to human health and the environment using a modified ADEC hazard ranking system
- Administrative/civil/criminal cleanup liability
- Public relations/public perception
- Impact on FAA operations

When the FAA began site cleanups, it loosely followed the CERCLA 10 phase process (all steps are not always needed):

1. Site Discovery – When a site is determined to be contaminated
2. Preliminary Assessment – Collect and review non-intrusive information through a comprehensive search of historical information, such as titles and deeds; federal, state, and local government records; descriptions of past activities; etc
3. Site Inspection – If information suggests that a potentially hazardous substance exists, specialists may sample air, water, soil, and/or water with laboratory analysis to determine if a hazardous substance exists at the site
4. Remedial Investigation – If the site requires further investigation, a more technical examination is conducted to determine the exact nature and extent, or potential threat, from contamination, as well as a health assessment to estimate risks to human health and environment
5. Feasibility Study – Identifies alternatives for remediation or site cleanup
6. Remedial Design – Designs the selected cleanup remedy to included engineering drawings and specifications for site cleanup
7. Remedial Action – Includes on-site activities that implement the cleanup methods. This step can involve removing waste from the site or for off-site treatment and disposal, or containing or treating waste on-site, such as construction of a groundwater treatment facility
8. Operations and Maintenance – If a groundwater treatment facility is built, during this stage, the facility will be monitored to ensure it is properly operated and maintained
9. Long-term monitoring – Long-term monitoring of the site may be required to ensure groundwater, capped landfills, and other items remain contaminate free
10. Site Closeout – Physical site closure, such as well abandonment, generally happens before submittal of closure documentation to the EPA, state, and/or local regulatory agencies. Acceptance of site closure documentation is required prior to the FAA's removal of a contaminated site from its environment cleanup list[131]

[131] FAA, ATO Environmental Compliance Reference Guide, (n.d.): 14-1, 14-4, accessed online

The agency quickly discovered the hazmat problem was larger than originally anticipated. During the 1990s Alaska Native Corporations began discovering that land withdrawn through the Alaska Native Claims Settlement Act contained abandoned aviation facilities with associated environmental problems. Subsequent congressional inquiry led the FAA to start trying to identify those facilities. As Brad Platt, FAA Alaskan Region environmental program manager recounted, "We started our research by looking at old USGS [US Geological Survey] maps. The maps identified several old aviation sites in Southeast Alaska."[132]

Platt and Dave Hanneman began making site visits to locate old aviation sites in Alaska. In 2003, they stopped in Ketchikan and talked with local aviation historian, Gerald A. "Bud" Bodding. "Bud . . . picked us up from our hotel and took us to his home, which looked like an aviation museum. Bud told us that he began flying in Southeast Alaska in 1937 and that after the war ended started as chief pilot for Ellis Air Lines in Ketchikan. Bud was the Vice President of Ellis Airlines when it merged into Alaska Coastal Airlines in 1962 and eventually became Alaska Airlines in 1967," Platt explained.[133]

Bodding gave Platt a 1942 World War II aeronautical chart of Alaska that he had carried with him in his cockpit during the war years. At that point, Platt "realized that those early aeronautical charts were the key to identifying the location of early CAA aviation sites. Working with the Library of Congress and the National Archives, Platt and Hanneman reproduced Alaska's charts from 1942 through 1970." After reviewing the aeronautical charts, they identified more than 200 pre-1960 aviation-related facilities in Alaska, many of which were abandoned and forgotten. "Collectively, those facilities became the driving force of the FAA's Environmental Cleanup Program" in Alaska. With locations identified, the FAA began an aggressive cleanup program.[134]

Cleanup activities in Alaska generally took many years to complete because of the complicated nature of required activities at each site and because of other constraints. FAA environmental engineers, for example, faced unique issues, such as: lack of transportation infrastructure; short construction season; waste left behind by the military when it turned over airfields to the FAA after World War II (including items such as explosives, carbon tetrachloride fire suppression grenades, organic peroxide, and trinitrophenol); and a lack of permitted hazardous waste treatment storage and disposal treatment storage and disposal facilities. Such waste in Alaska must be sent to a hazardous waste facility in the Lower 48.[135]

at https://employees.faa.gov/org/linebusiness/ato/operations/technical_operations/atc_facilities/eosh_services/env/ecrefg/media/lib/Ch.14/Chapter%2014%20Environmental%20Cleanup_ECRG%20FINAL_rev%206-18-15.pdf.

[132] Brad Platt, "Aeronautical Chart Background," provided to Theresa Kraus on December 2, 2019.

[133] Ibid.

[134] Ibid.

[135] FAA, K. Brown, "AAL Presentation at NISC Offsite '03," n.d., accessed online at https://employees.faa.gov/org/linebusiness/ato/operations/technical_operations/atc_facilities/eosh_services/env/ecu/ecu_library/.

[136] Ibid., 81.

FAA clean-up activities in Bethel
Courtesy: Brice Environmental Service Corporation

Since the cleanup program began in the late 1980s, the FAA has conducted investigation, remediation, and closure activities at contaminated sites across the United States and its territories at a cumulative cost of about $551 million. Cleanup proceeded as fast as resources could be allocated. In fiscal year 1996, for example, the Alaskan Region:

- Excavated and removed ten cubic yards of dioxin-contaminated soils at Yakutat
- Excavated and removed polychlorinated biphenyl-contaminated soil at McGrath
- Decommissioned a groundwater monitoring well at Aniak
- Compiled a report on the environmental issues at Annette Island
- Removed fifty tons of hazardous waste from various sites across the state
- Completed asbestos surveys at sixty-three FAA facilities and completed abatement work at four facilities; demolished twenty-six asbestos-contaminated buildings on Biorka Island
- Completed the removal/replacement of 63 percent of fuel tanks and completed 10 percent of the remediation of contaminated sites[136]

Since 2000, the FAA has closed 846 AOCs,[137] but has added 811 newly identified AOCs. The agency estimated at that time it maintained approximately $724 million of contingency environmental remediation liability through fiscal year 2053.[138] During fiscal year 2000, the FAA cleanup activities in Alaska included nearly 65 locations and 814 AOCs. By the end of fiscal year 2014, the agency had 58 locations in Alaska and 590 AOCs at former and current FAA facilities, with a cost of almost $4.6 million to remediate those sites. Fiscal year 2014 saw a concerted effort to speed up remediation in Alaska. That year it increased the funding requirement from $6,823,950 in fiscal year 2013 to $17,315,605 in 2014.[139]

In fiscal year 2018, which ended on September 30, 2018, the FAA had responsibility for a total of 62 locations and 470 AOCs in Alaska. The agency estimated funds necessary to close the Alaskan sites at $181,820,833. The agency identified requirements for $19,810,389 for Alaska cleanup activities in fiscal year 2019.[140] The FAA's successful efforts in Alaska, led the agency to begin research and cleanup activities at old World War II sites on islands in the Pacific Ocean.

[137] ECU sites are identified by a unique combination of a LOC, FAC, and AOC number, as defined below. Once a particular AOC is closed, the AOC number is not reused in subsequent years to avoid confusion and enable data comparability from year to year.
- A location (LOC ID or LOC) is a physical geographic area such as an airport property boundary, associated off-airport facility properties, and stand-alone locations (e.g., ABC-VOR). A location may contain one or more facilities.
- A facility (FAC TYPE or FAC) is a physical geographic boundary (e.g., property boundary of a VOR), and is not based on function or equipment types. A facility may contain one or several AOCs.
- An area of concern (AOC) is associated with a facility and describes a specific area of contamination. Facilities may contain one AOC or several AOCs.

[138] FAA Western Service Area, Final Environmental Site Cleanup Report Fiscal Year 2018, n.d., accessed online at https://ksn2.faa.gov/env-osh/Waste/CleanUp/ECUDocuments/Forms/ECUDoc.aspx, 2.

[139] FAA, Environmental Site Cleanup Report Fiscal Year 2012, n.d., accessed online at https://ksn2.faa.gov/env-osh/Waste/CleanUp/ECUDocuments/Forms/ECUDoc.aspx, 3.

[140] FAA, Final Environmental Site Cleanup Report, Fiscal Years 2000, n.d., accessed online at https://employees.faa.gov/org/linebusiness/ato/operations/technical_operations/atc_facilities/eosh_services/env/ecu/media/FYESCR/FY2000%20ESCR.pdf; FAA, Final Environmental Site Cleanup Report, Fiscal Years 2014, n.d., accessed online https://employees.faa.gov/org/linebusiness/ato/operations/technical_operations/atc_facilities/eosh_services/env/ecu/media/FYESCR/Final%20FY14%20ESCR_HQ.pdf; FAA Western Service Center, Final Environmental Site Cleanup Report, Fiscal Year 2018, n.d., accessed at https://ksn2.faa.gov/env-osh/Waste/CleanUp/ECUDocuments/Forms/ECUDoc.aspx.

FAA Alaska Flight Inspection Activities, 2010 - 2018

Aviation by the Numbers

By the end of 2018, the FAA served Alaska's 586,412 square miles of land and 2,427,971 square miles of airspace with:

- 3 flight standards district offices
- 8 FAA and 5 military control towers
- 2 certificate management offices
- 2 terminal radar approach control facilities
- 1 aircraft certification office
- 1 air route traffic control center
- 147 full-time aviation weather reporting stations
- 17 flight service stations

The agency also continued its active flight inspection program, started in 1940, to ensure accuracy of its navaids in the state.[141]

The FAA maintained 230 sites with 960 weather cameras and hosted 130 Canadian sites with 430 cameras; and 139 certified automated weather stations: 44 automated surface observing systems (ASOS); 79 automated weather observing systems (AWOS); and 16 automated weather sensor systems (AWSS). In addition, six stations had National Weather Service-supported paid observers; twenty-one facilities had some type of certified weather observer augmentation, and DoD administered twenty-seven sites.[142] Twenty-one airports in Alaska had a FAA-approved instrument approach, but no certified on-site weather station.[143]

[141] Figures provided by Finlay Mungall, FAA Flight Program Operations.

[142] Ibid., 10.

[143] State of Alaska Department of Transportation & Public Facilities, Division of Statewide

The state had 8,288 active pilots, 2,502 airframe and power plant mechanics of which 793 had inspection authorizations, and 8,734 registered aircraft in Alaska. The number of enplanements (5 million) in Alaska was 6.8 times the state population compared to 2.6 times the U.S. population for all states. There were 311 certificated air carriers in Alaska providing scheduled and on-demand services. Alaska had 394 public use airports, 281 land-based airports, 4 heliports, 109 seaplane bases, and approximately 760 recorded landing areas (private, public, and military).[144] Part 139 certified airports include:

- Adak (ADK)
- Barrow Wiley Post-Will Rogers (BRW)
- Bethel (BET)
- Cold Bay (CDB)
- Cordova Merle K. "Mudhole" Smith (CDV)
- Deadhorse (SCC)
- Dillingham (DLG)
- Fairbanks International (FAI)
- Gustavus (GST)
- Homer (HOM)
- Juneau International (JNU)
- Kenai Municipal (ENA)
- Ketchikan International (KTN)
- King Salmon (AKN)
- Kodiak (ADQ)
- Kotzebue Ralph Wien Memorial (OTZ)
- Nome (OME)
- Petersburg – James A. Johnson (PSG)
- Sitka (SIT)
- Ted Stevens Anchorage International (ANC)
- Unalaska / Dutch Harbor (DUT)
- Valdez (VDZ)
- Wrangell (WRG)
- Yakutat (YAK)[145]

In addition, pilots could land on many of the thousands of lakes and gravel bars across the state. The state also boasted one commercial space port. Alaska has remained the flyingest state.

Aviation, *Aviation Weather Reporting in Alaska*, May 2016, 1.

[144] FAA, "Alaskan Region Aviation Factsheet," March 2019, accessed online at https://my.faa.gov/content/dam/myfaa/org/regional_offices/aal/alaskan_region_aviation_fact_sheet.pdf.

[145] Alaska Department of Transportation and Public Facilities, *Alaska Aviation System Plan*, 2017, Executive Summary accessed at http://www.alaskaasp.com/Documents.aspx.

Because of the enormous role aviation plays in Alaska, particularly with our diverse geography and enormous airspace, we have long led the way in developing innovative measures and partnerships to ensure our aviation systems are safe, reliable and accessible for all users.[1]

Epilogue: The Next Frontier

On October 18, 1867, when the territory of Alaska officially became part of the United States, many in the country could not understand why Secretary of State William Seward wanted this vast frontier. Alaska had few inhabitants, mostly Alaskan natives, Russian settlers, and a few adventurers and missionaries. The federal government initially showed little interest in exploring its new acquisition or developing its vast resources. Alaska was deemed America's last frontier.

It would take fourteen years before the United States established Alaska as a civil and judicial district. Alaska did not achieve territorial status until 1912. Even then, communications with the Lower 48 states (and within the territory itself) proved difficult, and an almost nonexistent transportation system made travel to and within the territory challenging. It would take the invention of the airplane to start a transformation in Alaska.

Alaskans had their first aviation experience in 1913 when James and Lily Martin provided a flying exhibition in Fairbanks. It did not take long for the citizens to recognize the power of the airplane to change their lives. Alaska's pilots became early safety innovators. With few if any paved runways or even airports, the early bush pilots adapted to their environment. For example, because of the need to land on lakes, rivers, ice, and rough land, they pioneered the use of skis, pontoons, and tundra tires. In the early days of aviation, with some areas reaching winter temperatures of sixty degrees below zero, just keeping engines warm proved a big challenge. Pilots quickly learned to empty the oil and keep their engines from freezing with a small fire pot.

As the federal government geared up for possible entry into World War II in the late 1930s, interest in Alaska grew exponentially and investment soon followed. Alaska's strategic location and its lack of infrastructure resulted in millions of federal dollars spent to build airfields, communication facilities, and navigation aids throughout the territory. The Civil Aeronautics Administration (CAA) opened an office in Anchorage and, in 1941 established a regional office there.

[1] Dan Sullivan, "Alaska Senators Welcome Selection of University of Alaska, Fairbanks As Drone Integration Pilot Program Site," Press Release (May 10, 2018), accessed online at https://www.sullivan.senate.gov/newsroom/press-releases/alaska-senators-welcome-selection-of-university-of-alaska-fairbanks-as-drone-integration-pilot-program-site.

The postwar years saw explosive civil aviation growth. Rugged terrain, quickly changing weather, few navigation aids, and limited radar coverage made it a challenge for pilots to fly in Alaska. The CAA expanded its presence in the territory and worked to upgrade and expand communications networks, install airport safety technologies, and improve air traffic control systems and airports.

Alaska achieved statehood in 1958, the same year the Federal Aviation Act created the Federal Aviation Agency (FAA). Weather conditions, the types of flying, and the remoteness of some areas in the state often required the new agency to come up with unique solutions to help commercial and general aviation pilots in the forty-ninth state. From its earliest days, the FAA worked with the aviation community in Alaska to develop and test new technologies and procedures. As former FAA Administrator Marion Blakey acknowledged, Alaska is "really a showplace for what you can do in aviation . . . [it] is a model for the rest of us on how to improve, how to translate technology into safety."[2]

Alaska and Alaskans, in many respects, have been defined by aviation. Historian Dale A. Stirling points out, "Aviation and Alaska go hand in hand. Since the late 1920s the airplane has been an important link in the state's transportation network . . . Whether private, commercial, or military, aviation is an invaluable Alaska institution."[3] With ground transportation in Alaska insufficient or lacking, especially in remote areas, aviation remains critical to the movement of people and goods.

Alaska has more licensed pilots and registered aircraft per capita than any other state, as well as a unique mix of aircraft. As Senator Dan Sullivan (R-AK) explained, "Simply put, aviation and aviation infrastructure are a critical component of the Alaskan economy and our way of life . . . 169 communities in Alaska . . . are reliant on aviation to travel in and out of their communities and for their goods and services."[4]

The FAA recognizes that Alaska's distinctive aviation environment provides an unparalleled testing location for innovative aviation technologies. With its 2.4 million square miles of airspace, and an abundance of Class G, or uncontrolled airspace, Alaska played a critical role in testing automatic dependent surveillance-broadcast, which is now a cornerstone technology of the FAA's NextGen modernization plan for the country's airspace. State

[2] "Statement of Honorable Marion Blakey, Administrator, Federal Aviation Administration, United States. Congress. Senate. Committee on Commerce, S. (2005). Alaska aviation: Field Hearing before the Committee on Commerce, Science, and Transportation, United States Senate, One Hundred Ninth Congress, first session, July 5, 2005. (Washington, DC: US Government Printing Office. 2005), 11.

[3] Dale A. Stirling, *A Bibliography of Alaska Aviation*, 2nd edition, Reference Publication No. 4 (Heritage North Press: October 2002).

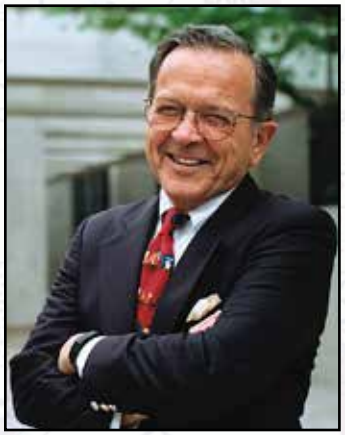
[4] Dan Sullivan, "Sullivan Works to Pass Major FAA Reauthorization with Key Provisions Benefitting Alaska," Press Release, October 3, 2018, accessed online at "https://www.sullivan.senate.gov/newsroom/press-releases/sullivan-works-to-pass-major-faa-reauthorization-with-key-provisions-benefitting-alaska.

entities are now involved in critical research activities that will help safely integrate drones in the national airspace system. The University of Alaska Fairbanks is pioneering procedures for safe drone use, such as delivering medical devices to remote areas, helping searches and rescues, surveying fish and wildlife, and monitoring pipelines, roads, and other infrastructure.[5]

Today, approximately one out of ten jobs in Alaska has some connection to air transportation. According to Nolan Klouda, Alaska's executive director of the Center for Economic Development, "There are inspiring new areas of [aerospace] growth – innovators in Alaska are experimenting with airships, liquid-fueled rockets, and even unmanned cargo delivery."[6] Britteny Cioni-Haywood, director of the Alaska Division of Economic Development, concurs saying, "Combined with our strong history of innovation related to air transportation, Alaska provides an attractive environment for entrepreneurs to test new aviation technologies."[7] The flyingest state is now also aviation's next frontier.

Plane at sunset
Courtesy: NPS

Appendix I:



Senator Ted Stevens: A Champion for Aviation Safety

Theodore Fulton Stevens, Sr. (November 18, 1923 – August 9, 2010) served as a United States Senator from Alaska from 1968 to 2009. His six-decade public sector career began with service in World War II. A pilot in the Army Air Corps, his deployments spanned several continents and included "flying the hump," the name given by Allied pilots to the eastern end of the Himalayan Mountains. He flew C-46 transport planes over this dangerous route from India to China to resupply the Chinese war effort of Chiang Kai-shek as well as United States military units based in China. His valor earned him two Distinguished Flying Crosses for flying behind enemy lines, two United States Armed Forces Air Medals for meritorious achievement in aerial flight, and the Yuan Hai Medal awarded by the Chinese Nationalist government.

After the war, Stevens earned a B.A. in political science from the University of California, Los Angeles. After graduating from Harvard Law School, he worked in a Washington, DC, law office before taking a position in a Fairbanks, Alaska, law firm. In 1954, Stevens became the U.S. Attorney for Fairbanks. He left that position in 1956, to join the Eisenhower Administration as the legislative counsel in the Department of the Interior. From that position, he helped lead the fight for Alaska statehood.

He was elected to the Alaska House of Representatives in 1964 and became House majority leader in his second term. In 1968, Alaska's governor appointed him to fill a vacancy in the U.S. Senate. Alaska voters subsequently elected him to that seat where he served over 40 years.

As Senator, Stevens helped shape modern Alaska with federal laws and billions in federal dollars. He played key roles in legislation that shaped Alaska's economic and social development, including the Alaska Native Claims Settlement Act, the Trans-Alaska Pipeline Authorization Act, the Alaska National Interest Lands Conservation Act, and the Magnuson–Stevens Fishery Conservation and Management Act. As he once described his activities: "From frozen tundra, we built airports, roads, ports, water and sewer systems, hospitals, clinics, communications networks, research labs, and much, much more. We constructed military bases essential to our nation's defense."

As a general aviation pilot, Stevens understood aviation's critical role in connecting isolated communities across Alaska's vast distances. With a limited transportation infrastructure, Alaska's pilots delivered vital resources and services and generated economic value. He made sure his congressional colleagues understood the special role aviation plays in Alaska. Very protective of Alaska's flyers, Stevens repeatedly argued Alaska's dependence on air transportation and its unique weather and terrain necessitated national and state resources to improve the state's aviation infrastructure.

One of the most powerful senators of his generation, Stevens obtained federal and state money for a number of critical aviation safety improvements for Alaska and across the nation. He sponsored or cosponsored a number of significant aviation laws, such as the Fair Treatment for Experienced Pilots Act (Public Law 110-135), which amended federal transportation law to allow a pilot who has attained 60 years of age to serve as a passenger airline pilot until the age of 65. He successfully fought for funding for national runway safety initiatives, airport improvements, essential air service, new aviation and air traffic control technologies, federal improvement grants to airports, new aviation weather reporting equipment, weather cameras, and pilot education and training programs.

For Alaskan aviators, he obtained federal funding for key safety projects, such as the Juneau airport wind system, rural airport lighting, weather cameras, and upgrades to airports. He supported key pilot and passenger safety initiatives, and helped establish the Medallion Program, a government and industry cooperative program to improve aviation safety. His efforts helped expand Alaska's global air cargo industry, establish the Alaska bypass mail program, and create the Medallion Program, which works with the aviation community to enhance aviation safety.

Stevens recognized Alaska's distinctive aviation environment would provide an unparalleled testing location for innovative aviation technologies. With its 2.4 million square miles of airspace, he ensured the state had a role in assessing new technologies, such as automatic dependent surveillance – broadcast (ADS-B). ADS-B allows an aircraft to broadcast its position, via satellite, allowing it to be tracked. After successful tests in Alaska, ADS-B is now a cornerstone technology of the FAA's NextGen modernization plan for the country's airspace.

With Stevens help, state entities are now involved in critical research activities that will help safely integrate drones in the NAS. The University of Alaska, Fairbanks is pioneering procedures for safe drone use, such as delivering medical devices to remote areas, helping searches and rescues, surveying fish and wildlife, and monitoring pipelines, roads and other infrastructure. He also urged the FAA to introduce instrument flight rules (IFR) area navigation (RNAV) procedures in Alaska, which enable pilots to fly along any course within a network of navigation beacons, rather than

flying directly to and from the beacons. By using published RNAV routes, pilots can reduce flight distance, save fuel, and allow flights into airports that lack beacons. With his support, the FAA worked with airlines to establish required navigation performance (RNP) procedures in Alaska. RNP is similar to RNAV, but includes an alert system to warn the crew and air traffic controllers if the system malfunctions.

Keenly understanding Alaska's strategic importance, Stevens also strongly championed the military. He defended funding to upgrade facilities at Elmendorf Air Force Base, acquire new aircraft for the Air Force and the Coast Guard, and ensure soldiers, airmen, sailors, and Coast Guardsmen have the necessary training, equipment, and facilities to carry out their missions.

In 2000, the Alaska State Legislature renamed the Anchorage International Airport, the Ted Stevens International Airport, to honor the Senator's contributions to aviation. The same year, a local civic group and the state legislature named him "Alaskan of the Century." In 2011, the Air Force renamed the Joint Mobility Complex at Eielson Air Force Base in his honor. That same year, the United States Congress voted to name a mountain and ice field in Denali National Park in his honor. In January 2019, the United States Navy announced it planned to name a future Arleigh Burke-class destroyer the USS Ted Stevens (DDG 128).

Appendix II:

Alaskan Region Administrators

July 1, 1941
Alaska becomes Civil Aeronautics Administration (CAA) Region Eight
Civil Aeronautics Administration, Alaskan Regional Manager
Marshal C. Hoppin – 1941-1945

1945, Regional Managers retitled Regional Administrators
Walter P. Plett – 1945-1955

1953, Alaskan Region is redesignated as Region Five

1958, the CAA becomes the Federal Aviation Agency

1960, Regional Administrators retitled Regional Managers

Allen D. Hulen – 1955-1963

1961 Region Five redesignated as the Alaskan Region, Regional Managers retitled Regional Administrators

1962 Regional Administrators retitled Regional Assistant Administrators

1963 Regional Assistant Administrators retitled Regional Directors

James G. Rogers – 1963-1965
George M. Gary – 1965-1967

1967, the Federal Aviation Agency becomes the Federal Aviation Administration under the new Department of Transportation

Lyle K. Brown – 1968-1970
Jack G. Webb – 1970-1972
Thomas J. Creswell – 1972-1973
Lyle K. Brown – 1973-1978
Robert Faith – 1979-1983
Franklin L. Cunningham – 1983-1990

1988, Regional Directors retitled Regional Administrators

Theodore Beckloff – 1990-1992
Jacqueline L. Smith – 1992-1995
Andrew S. Billick – 1996-1998
Patrick N. Poe – 1998-2005
Michael Cirillo – 2006-2007
Robert N. Lewis – 2008-2013
Kerry B. Long: July 28, 2014 to present

Appendix III:
Alaska AIP Grants, 1982-2018

Year	Grants Awarded
1982	$8,127,311
1983	$32,652,720
1984	$37,525,616
1985	$21,118,322
1986	$38,718,767
1987	$41,374,179
1988	$40,257,287
1989	$37,316,789
1990	$44,754,133
1991	$60,566,617
1992	$62,237,133
1993	$61,328,462
1994	$66,111,411
1995	$77,711,251
1996	$58,888,748
1997	$76,650,643
1998	$78,650,087
1999	$77,767,986
2000	$84,871,626
2001	$140,761,073
2002	$154,854,812
2003	$172,506,373
2004	$219,208,629
2005	$193,503,911
2006	$220,916,024
2007	$199,037,782
2008	$226,191,838
2009	$289,029,746
2010	$235,632,954
2011	$229,179,503
2012	$225,881,495
2013	$187,262,571
2014	$198,632,520
2015	$201,687,408
2016	$215,013,447
2017	$222,527,584
2018	$243,001,704

Appendix IV:
References for AFSS/FSS Openings and Closings

Anchorage IFSS/FSS: On September 24, 1978, the FAA had combined the Anchorage FSS and Anchorage IFSS into one facility called the Anchorage Flight Service Station/IFSS; *Federal Register* 58, no. 117 (June 21, 1993): 33854.

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Dr. Theresa "Terry" Kraus currently serves as FAA's historian. She joined the FAA in 1991 as a senior historian, and subsequently served as an analyst in the ATO Operations Planning Research and Development Office. Prior to her 2009 appointment as the agency historian, she authored or co-authored a range of articles and publications on FAA and aviation history, including *The Federal Aviation Administration: A Historical Perspective, 1903-2008*, to celebrate the agency's 50th anniversary. Before coming to the FAA, she worked for the U.S. Army Center of Military History, where she authored and co-edited the Army's official history of Operations Desert Shield/Desert Storm, *The Whirlwind War*. Dr. Kraus holds a Ph.D. in history from the University of Maryland. Additional publications include chapters in anthologies and a variety of articles appearing in military and aviation magazines and journals. She can be reached at terry.kraus@faa.gov.