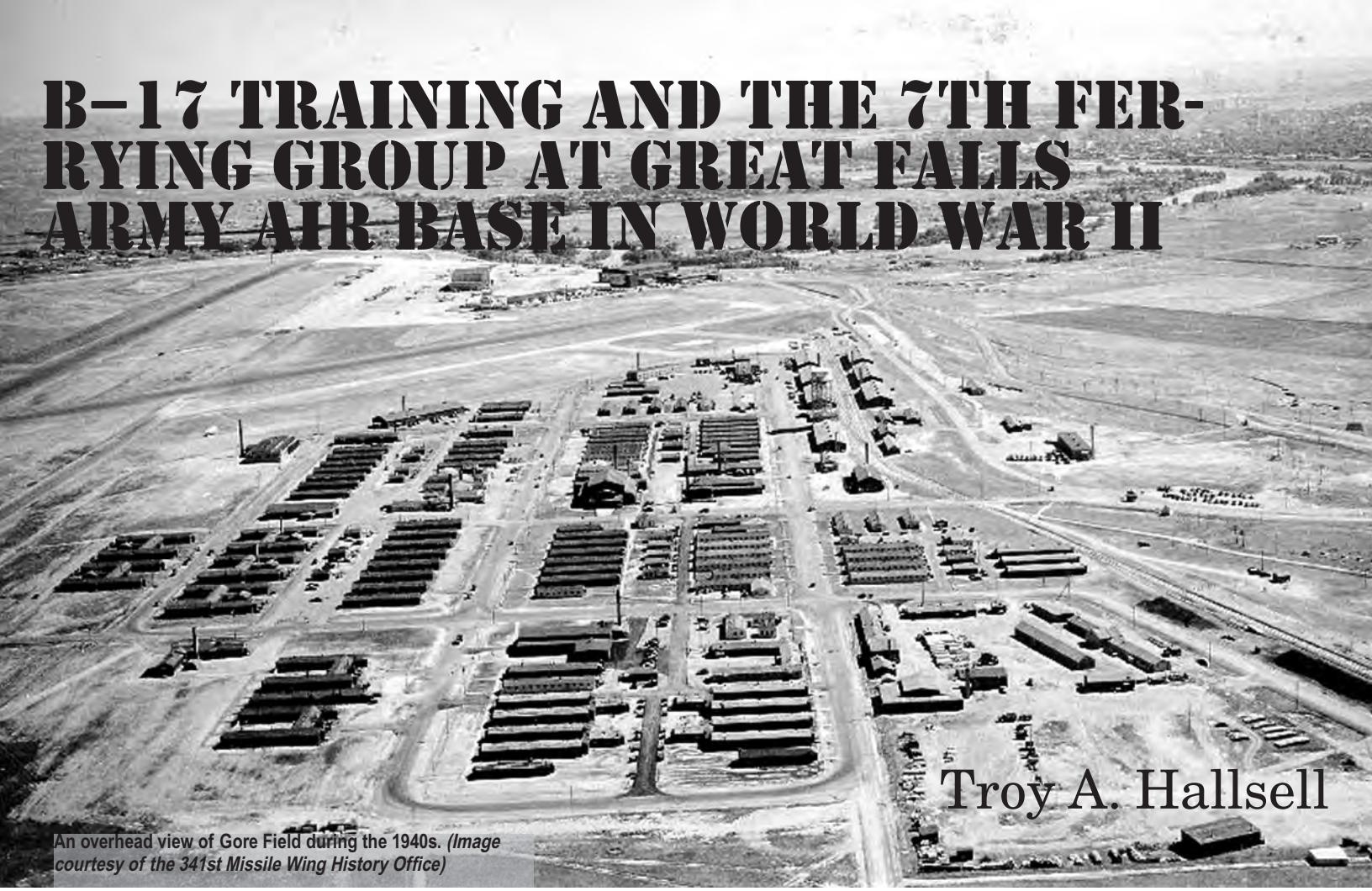
B–17 TRAINING AND THE 7TH FERRYING GROUP AT GREAT FALLS ARMY AIR BASE IN WORLD WAR II



Troy A. Hallsell

An overhead view of Gore Field during the 1940s. *(Image courtesy of the 341st Missile Wing History Office)*

Following Japan's bombing of Pearl Harbor on December 7, 1942, the Army Air Forces (AAF) strategic goals intersected with Great Falls, Montana's economic needs. As the war in Europe intensified from 1938-1941, President Franklin Delano Roosevelt sought to expand the size of the army's aerial fleet. In the spring of 1939 Congress doubled its size, approving 5,500 planes, 3,203 officers, and 45,000 enlisted personnel. However, by summer of 1942 that number had been revised upward to include 84 groups with an additional 400,000 personnel.[1] This rapid expansion required the federal government to identify and acquire air fields for basing and pilot training. As the War Department sought desirable locations for new air fields, favorable weather and light air traffic were considerations that guided much of its decision making.[2]

Great Falls civic leaders kept their eyes focused on these developments. Long dependent on the mining and smelting industries, along with the broader agricultural economy, on the eve of World War II (WW II) Great Falls struggled to pull itself out of the Great Depression.[3] Given the high levels of projected wartime spending, in the summer of 1940 city leaders lobbied the AAF to station an air base at Great Falls. The Great Falls Chamber of Commerce argued its city was an ideal location since Great Falls was within forty miles of five hydroelectric dams, the transcontinental Milwaukee railroad, and had an easily accessible labor force.[4] Montana Congressman James Murray jumped on board with the project and got army officials to investigate the opportunity.[5] Unfortunately, this, and a subsequent visit went nowhere.[6] However, as the United States (US) entered into war with Japan the AAF returned to Great Falls because of the city's location on the Alaska-Siberia (ALSIB) lend-lease route, alongside the region's 300 clear flying days per year, made it an ideal spot for an air base. It ultimately selected two locations, both on the outskirts of Great Falls: the municipal airport at the top of Gore Hill and on approximately 2,000 acres of land six miles to the city's east. From these installations the AAF played an integral role in supplying aircraft to the Soviet Union for use against Germany as part of President Roosevelt's lend-lease program and training B–17 bomber crews for combat.[7]

World War II left its mark on cities around the nation. With the United States' entry into the war the federal government mobilized its resources, American industries, and populace into a coordinated effort to defeat the Axis powers. Across the nation defense industries and military installations appeared seemingly overnight. This massive buildup brought lasting changes to a city's economy and physical landscape.[8] Great Falls was no different in this regard. Unfortunately, historians have largely overlooked the city's WW II military missions.[9] By using AAF histories, local newspapers, archival materials, and existing secondary sources, this essay explores the establishment of Great Falls Army Air Base (GFAAB) and its B–17 operational training unit (OTU) mission and the 7th Ferrying Group's (7 FG) role in the US's lend-lease

TSgt James R. Schneid in a Link flight trainer at Freeman Field, Indiana in 1943. ***(Public domain image.)***

program. In doing so we see how central Montana played an integral role in the Allied victory over Axis powers in North Africa and Europe.[10] Not only did these missions have a lasting impact on the city of Great Falls, but they thrust central Montana onto the world stage.

Great Falls Army Air Base and the B–17 Bomber Training Mission

Beginning in May 1942, the United States Army Corps of Engineers oversaw the construction of GFAAB and satellite bases at Cut Bank, Glasgow, and Lewistown.[11] When formal construction began on June 8th approximately 2,500 workers labored twenty-four hours a day to construct the facilities necessary to host the AAF's B–17 training mission.[12] The installation included four 8,850 ft. long runways, two hangars, an air operations office, air control tower, a "Link" flight training simulator, and numerous warehouses.[13] But construction was not limited to the installation itself, the War Department worked with the city and state to alter and extend roads to the base along with a new water main to provide the Airmen, civilian employees, and contractors with a much needed water source.[14] Construction finished in February 1943 and the 352nd Base Headquarters and Air Base Squadron took command of the installation with the 994th Guard Squadron providing security and military police services.[15] The satellite bases included similar facilities but on a smaller scale.[16]

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Cut Bank Army Air Field in Cut Bank, Montana during World War II. ***(Image courtesy of the Cascade County Historical Society)***

Great Falls Army Air Base was home to the Second Air Force's (2 AF) B–17 "Flying Fortress" OTU. Operational training units assembled 10-man B–17 crews that consisted of pilots, navigators, bombardiers, and gunners who trained as a group before deploying overseas. Upon arrival at Great Falls, Cut Bank, Glasgow, or Lewistown, crews conducted three training phases. During phase one, 2 AF devoted most of its time reinforcing the skills air crews learned during their individual training. For example, pilots and co-pilots revisited courses on navigation, weather, engines, and aircraft identification along with instruction specific to bomber pilots: aircraft commander duties, responsibilities to crew members, and air discipline. Alongside classroom instruction, pilots spent up to 15 hours in the Link trainer. This was a simulator that replicated flight, but with the safety of being on the ground.[17] Great Falls Army Air Base also had mobile B–17 mock-ups that traveled around central Montana instructing air crews on the most up-to-date changes to the Flying Fortress.[18] Likewise, navigators, bombardiers, and gunners took refresher instruction such as navigation theory, bombing theory, or moving target practice.[19] Training varied between 83-125 hours, depending on how long it took a squadron to assemble a complete flight crew. Once a crew came together, they transitioned out of the classroom and into the sky.

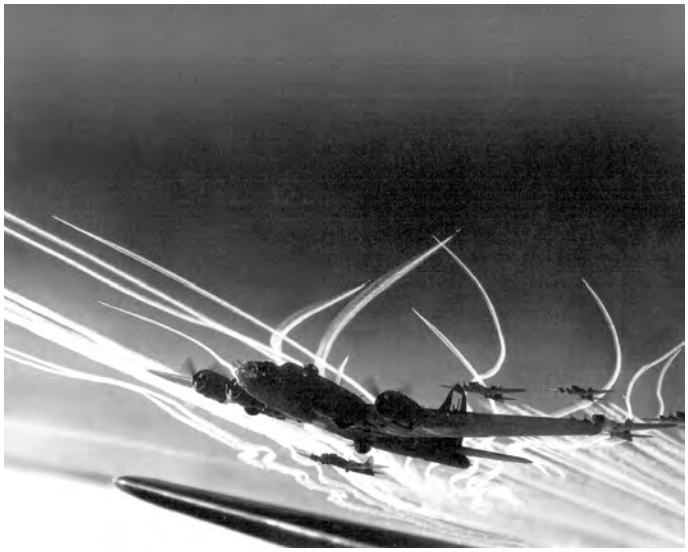
Once all members of a flight crew arrived, they entered their second phase: team tasks. Over the course of their time in central Montana, bomb groups and their squadrons flew anywhere between 13-15 missions and practiced their formation, bombing, and gunnery skills. For example, once a squadron received its mission, crews assembled in the intelligence room for their brief. Here they learned their cruising altitude, munitions carried, radio frequencies, weather, and any details on the target such as possible anti-aircraft fire or pursuit planes. Flight crews flew both day and night, and varied from 50-100 miles to long-range missions that spanned from the Pacific coast to the Mississippi River and as far north and south as Canada and Mex-

ico.[20] After given the order for takeoff, pilots lifted off at 30 second intervals. Once airborne the squadrons practiced three-, six-, or nine-ship formations. Depending on the mission, one squadron might meet over town A, two others over town B, before merging into a single formation over town C.[21]

After forming-up, air crews practiced a number of skills. For example, given the mission's weather, pilots practiced ascending and descending through overcast and high altitude gunnery and bombing formations. While some instructors suggested B–17 pilots fly as much as a mile apart until they got comfortable behind the stick, pilot John Boeman remembered his instructors, recently returned from combat duty, demanded their students "get in close!" "Don't leave room for fighters to fly through your formation. Keep it tight so gunners give each other mutual fire support. The enemy always picks on the sloppiest bomber formation first."[22] For OTUs, a pilot might have been the commander of his aircraft, but how that aircraft worked in tandem with the rest of his squadron could determine whether they achieved their mission successfully, or made it back safely.[23]

Once in formation, crews sharpened their bombing and gunnery skills at one of several ranges throughout central Montana, their third task. During training the bombardier used the Norden bombsight, one of the Allies most closely guarded secrets, to target its enemies. As an early computer, the bombardier entered a bomb's drift and dropping angle, along with ground speed, air resistance, and the estimated time to impact. It was accurate enough to allow precision bombing at 25,000 feet and the AAF claimed a bombardier could drop a bomb into a pickle barrel.[24] On one exercise, air crews with the 401st Bomb Group (401 BG) engaged targets at one of these ranges.[25] At Winnett crews targeted both 200- and 1,000-foot targets, each with a 20-foot tall by 20-foot square red pyramid that marked each center. Here they dropped M38A2 100-pound practice bombs with M1A1 spotting charges before using live munitions such as an AN-M57 4-pound incendiary bomb.[26] As the aircraft climbed to its designated altitude, the crew announced "bomb bays open." A reporter wrote that Lieutenant Howe, the bombardier, "dropped his first missile and 'bombs away' echoed in the interphones. The bomb plummeted toward the target and then billows of dust sprang skyward on the rim of the circle."[27] The aircraft repeated this action using a "cloverleaf" maneuver until the bombardier exhausted his munitions.

Many aircrews conducted gunnery practice as a follow-on mission. The gunner position was paramount in defending the B–17 during bombing raids. By 1942, it had a crew of 10, including a tail gunner, lower turret gunner, and two waist gunners; everyone but the pilot was trained as a gunner too. A typical gunnery range was at least two miles by six miles with silhouettes of Japanese Zero planes set up on two flight lines. The pattern range near Lewistown in Fergus County was no different. Here gunners would practice strafing runs at a low altitude, approximately 500 feet, day and night.[28] According to AAF Training Standard 20-2-1, "upon completion of the prescribed period of operational training, heavy bombardment groups will be prepared to conduct offensive missions against the enemy… To be capable of such action, a unit must represent a closely knit, well organized team of highly trained specialists."[29] Between formation flying, bomb, and gunnery ranges, B–17 training in central Montana sought to replicate as best possible the conditions bomber crews would face overseas.



Aircraft with the 390th Bomb Group over Germany during World War II. (*Public domain image)*

While most of the 2 AF's B–17 bomber training program in central Montana was efficient, there were several incidents that led to the loss of life and equipment. In order to meet this demand, the AAF's reduced its requirements for B–17 pilots. In 1938 the Army Air Corps (AAC) required pilots to have between seven and 11 years of commissioned service and over 2,000 flying hours, along with ratings as a dead reckoning and celestial navigator, expert aerial gunner, and expert bombardier. In 1942 pilots only needed one year of military service and 200 hours of school house flying time.[30] This inexperience, combined with the aircraft's factory defects and Montana weather, led to numerous crashes. For example, shortly after arriving at GFAAB in November 1942, the 2d Bomb Group (2 BG) commenced

B–17s with the 2nd Bomb Group take off from Amendola Air Base, Italy. *(Image courtesy of the Second Bombardment Association)*

Planes are arranged in the final outfitting hangar ready for the morning shift in June, 1945. Malmstrom once was home to various aircraft. ***(Image courtesy of the 341st Missile Wing History Office)***

its "routine training missions" during one of the harshest Montana winters to date. Beginning in January 1943, a cold front brought arctic weather to central Montana. During this period the temperature fell as low as 32 degrees below zero, with 30 degree temperature swings across town and at least 14 inches of snow accumulation.[31]

Against this frigid backdrop a three plane element left Great Falls for Ainsworth Army Air Base, Nebraska. Shortly after assembly, Lt Jacob W. Bingham gave the order to commence overcast penetration. Lt Bingham and his right wingman, Lt Clyde H. Knaggs, completed their penetration without incident, but Bingham's left wingman, Lt Edward T. Layfield, did not appear. It was not until the element landed in Nebraska that they learned the fate of Layfield's aircraft: it crashed near Roundup, Montana killing the entire aircrew and their passengers, 12 total dead. The *Roundup Record-Tribune* claimed the aircraft "slithered on the belly of the fuselage about 20 yards before hitting two pine trees about seven inches in diameter. The fuselage of the plane passed between the two trees, which hit the outer ends of the wings. The plane went about 70 yards further along the ground before coming to a stop."[32] One eye witness sprinted to the crash site with a crew of men from a nearby ranch. He claimed the heat from the wreckage was so intense that rescuers could not approach the site for hours.[33] While crashes like these happened frequently during the B–17 training mission, the AAF argued the conditions air crews faced in central Montana provided "the experience that will bring them through when the pressure goes on."[34]

Following B–17 OTU training in central Montana, the 2 BG, 385th Bomb Group (385 BG), 390th Bomb Group (390 BG), and 401 BG deployed to the African and European theaters of operation. Second Bomb Group flew 81 missions out of Algeria and Tunisia in 1943, but mostly operated from Amendola Air Base, Foggia, Italy from 1943-1945. From there it engaged in 331 missions against industrial targets in Germany, Poland, Czechoslovakia, Hungary, Yugoslavia, Romania, and Greece. For its part, 385 BG deployed to Ashfield, England and conducted 297 missions against targets in Normandy, France in preparation of the D-Day invasion and numerous strategic sites throughout Germany. Likewise, 390 BG flew 301 combat missions against industrial and strategic sites in Germany from Framlingham, England. As its final mission before returning stateside, it dropped food supplies to the Dutch the week before V-E Day. Finally, the 401 BG flew 254 combat missions out of Deenethorpe, England against German fortifications in preparation of D-Day, at the breakthrough at Saint Lo, and during the Battle of the Bulge. While none of these groups alone won the war, when combined with their American counterparts and European allies, they played an integral role in defeating the Axis powers in the European theater.[35]

The Lend-Lease Program and the 7th Ferrying Group

The Lend-Lease program emerged from President Franklin Delano Roosevelt's efforts to support the United States' allies without committing the country to war. Many Americans were wary of another war in Europe following World War I. As a result, throughout the 1930s Congress passed a series of Neutrality Acts that severely limited the country's ability to wade back into a warzone. By 1939 President Roosevelt persuaded Congress to amend them and allow allies to purchase war materiel from the United States. However, isolationists added a "cash-and-carry" provision which required buyers to make a full cash payment and receive title before any item left American docks.[36] But this was not enough to bolster the United States' allies. Given Germany's rapid advance across Europe, and England's depressed economy, during a December 29, 1940 fireside chat President Roosevelt called on the United States to be a "great arsenal of democracy" and produce "more ships, more guns, more planes – more everything" to aid America's faltering allies lest Americans "be living at the point of a gun."[37] Enter the Lend-Lease program.

The Lend-Lease program provided war materiel to American allies in support of their war against Germany. The program launched in March 1941 with aid to Britain, but after Germany violated its non-aggression pact with the Soviet Union the US included the USSR in this program. While the US aided the Soviets much like it did the British, it sought to replenish the Soviet Union's Air Force for use against Germany.[38] But it was not as simple as the US manufacturing new aircraft for the Soviet Union. In order to get the aircraft to the Soviets, the Lend-Lease program entailed a multi-step logistical process that got new aircraft from the assembly line to Great Falls and then onward to Fairbanks, Alaska.

In the summer of 1942 the AAF redesignated the Air Corps Ferrying Command as the Air Transport Command (ATC) to manage the military's movement of war materiel, personnel, and mail.[39] It transferred 7 FG from Seattle, Washington to Great Falls and tasked it with overseeing the Northwest Air Route to ferry aircraft from Gore Field to Ladd Field in Fairbanks and operated major bases at Edmonton, Alberta, Canada and Whitehorse in Yukon Territory.[40] Alongside 7 FG, ATC initially established the 34th

Workers process a C–47 at Great Falls Army Air Base for transport to Fairbanks, Alaska. ***(Image courtesy of the 341st Missile Wing History Office)***

Subdepot at the Cascade County fairgrounds—it later shifted operations to Gore Field and then GFAAB—and was responsible for the finishing of aircraft before the 7 FG ferried them to Fairbanks for transfer to the Soviets.[41]

So, what did this ferrying process look like? First, Women Airforce Service Pilots (WASP) flew aircraft domestically to and from locations like Great Falls. Established on August 5, 1942, WASPs were civilian pilots who freed men from domestic flying duties so the AAF could marshal its labor towards international and combat missions. The program received over 25,000 applications and admitted 1,830, with 1,074 completing the training program and assigned to operational duty. While graduates could choose their desired aircraft women flew over 77 types of aircraft to include the P–38, F-5, P–39, P–40, P–63, C–54, C–46, and B–24. For example, in December 1942 ATC tasked WASPs to fly PT–17s from Great Falls to Jackson, Tennessee, a 1,700 mile trip in an open cockpit during winter. While this particular mission ended successfully, not all were lucky.[42]

Hazel Ah Ying Lee was one of many WASPs that died while ferrying aircraft around the United States. Born in Portland, Oregon in 1912, Lee was one of two Asian American WASPs. She learned to fly in 1932 on Swan Island outside Portland where the Chinese Benevolent Society hoped young Chinese Americans would go to China and fight the Japanese who invaded Manchuria in 1931. In 1933 Lee made her way across the Pacific Ocean but the Chinese Air Force denied her an opportunity to fly since she was a woman. As a result she took a job with a private airline and flew commercial flights until returning to the US in 1938. When Lee heard about the WASP she jumped at the opportunity to fly again; she was a member of its fourth training class.[43]

In November 1944 Lee found herself ferrying a P–63 Kingcobra from the Bell factory in Niagara Falls, New York to Great Falls for eventual delivery to the Soviets in Alaska. This trip took her through South Bend, Indiana; Madison, Wisconsin; Fargo, North Dakota; and Billings before making the final leg of her journey into central Montana. On November 23, 1944, as Lee made her final

Hazel Ying Lee's aircraft after crashing on Great Falls Army Airfield. ***(Image courtesy of the 341st Missile Wing History Office)***

approach at the Great Falls Army Airfield another P–63 piloted by Lt Charles H. Russell came in above and slightly behind her. After Russell lowered his landing gear his aircraft collided with Lee's just short of the runway and upon impact both aircraft became enveloped in flames. A nearby officer rushed to Lee's aircraft, pulled her from the wreckage, and placed Lee in an ambulance. She died from major burns the following day at the East Base hospital.[44] Despite this incident, and other like it, WASP's labor got much-needed aircraft to the mechanics in Great Falls.[45]

Once in Great Falls, the 34th Subdepot prepared aircraft for their next destination. Led by Maj Alexander Cohn, it employed upwards of 400 civilian employees across its administrative, supply, and engineering divisions. However, the engineering division, which included aircraft mechanics, iron workers, painters, welders, sheet metal workers, electricians, carpenters, cabinet makers, machinists, etc., made up the bulk of its workforce.[46] With most men eligible for the draft, minus those over 45 years of age or with deferments, the AAF hired scores of women to fill jobs typically done by men.[47] This meant training women to perform industrial labor. For example, the AAF hosted a mechanic-learner course at GFAAB beginning in January 1944. Over four weeks of instruction students, mostly women, learned about Army customs and courtesies, before instructors introduced technical skills such as identifying nuts and bolts or reading micrometers and the slide rule before concentrating on different types of aircraft and engines. Following the course the Subdepot unleashed these new mechanics on the aircraft in its possession.[48]

Men and women labored in eight-hour shifts, 24-hours a day, seven days a week to outfit aircraft for transfer to the Soviets waiting in Fairbanks. Upon arrival, personnel towed aircraft to the maintenance hangars and arranged them in long rows with plenty of space to conduct their initial inspection; as many as 25-30 pursuit planes could fit in a hangar at a time. Once there, mechanics conducted a wide range of services on aircraft depending on its final destination. This might include checks on emergency exits,

air filters, safety belts, hose clamps, pneumatic shock struts, and radiators, or more in-depth troubleshooting for gas and oil leaks. If mechanics identified a malfunction, they took the aircraft to aero repair, the final stop before an aircraft's final inspection and test flight. Here maintenance personnel conducted major repairs or upgrades to an aircraft. For example, GFAAB was home to the AAF's C–54 modification program that brought these aircraft up to operational standards. Mechanics installed a flux gate compass, a new forward command antenna, radio inverter, windshield de-icer system, or phosphorescent placards on all escape hatches to name a few. In total, maintenance crews processed 103 new and "war weary" C–54s.[49] For those headed to Alaska the paint shop added a Russian Red Star to the wings or fuselage. After the Subdepot crews completed all maintenance and upgrades a flight test team conducted a final inspection and performed a test flight. Afterwards, crews either returned the aircraft to the maintenance bay for more work or gave it an "OK" and parked it at the "ready hangar" until a 7 FG pilot ferried the aircraft to its next destination.[50]

Flying aircraft from Great Falls to Fairbanks was, simply put, dangerous. Most pilots flew single engine aircraft like the P–39. Under typical circumstances it was a pleasure to fly, but in order to get them from Great Falls to Fairbanks mechanics at the Subdepot attached a 175 gallon external gas tank; this added six additional hours of flying time but according to Jack Greager "really raised the devil with the aerodynamics of the plane" and caused many pilots to crash their aircraft upon approach.[51] Others faced inclement weather. For example, Lt John Wetmore left Great Falls in January 1943 and planned to make Edmonton his first refueling stop. However, it began to snow. He landed in Calgary but convinced himself he could make it the rest of the way. Shortly after taking off again, a blizzard struck and forced him to descend to maintain visual contact with the ground but hit the earth near Lacombe, Alberta. Lieutenant Wetmore did not survive his injuries.[52]

The cold also marked most Airmen's experience on the northwest route. For example, Maj George Jordan, a United Nations representative assigned to 7 FG, traveled to and from Fairbanks as part of his job. On his first trip there in February 1943 a blizzard grounded his aircraft in Watson Lake, Yukon Territory. When Jordan finally left on the last 220-mile run to Fairbanks the heaters froze in his aircraft since the temperature outside the aircraft was 70 degrees below zero; he "never knew a person could be so cold." Upon arrival, a Russian mechanic screamed after looking at him; Jordan's face was covered with frost. She then drove Jordan to the operations office, stripped him down to his underwear, and plunged him in a tub of cold water to warm him up. Next, she pulled Jordan out of the water and rubbed his body down with rough terrycloth rags. The treatment finished with a paper cup of Russian medicine, vodka, and soon his body temperature returned to normal.[53] Regardless of whether or not a pilot arrived at Ladd Field safely, the northwest route was a harrowing experience.

Russian personnel inspect an aircraft at Ladd Field, Fairbanks, Alaska. ***(Image courtesy of the Cascade County Historical Society)***

After 7 FG pilots landed they handed off their aircraft to the Soviet delegation. The Soviet Purchasing Commission first arrived at Ladd Field in September 1942 and ensured the aircraft they received met strict maintenance and technical standards before they took ownership from the Americans. For example, Bill Schoeppe, a mechanic with North American Aviation remembered repeated problems with the V-12 engines in P–39s and P–63s. Since the engines did not do well in extreme cold pilots had to warm the engines on a high idle, which often caused the spark plugs to fail. Instead of replacing the bad plugs, Soviets demanded mechanics replace all of them, 24 per engine. At first glance this might seem like an unreasonable request, but was necessary since repairs couldn't be easily done on the Siberia side of the route.

After incoming planes passed both US and Soviet inspection, Russian pilots received training on their new aircraft. In one instance, a Russian pilot simply wanted to know how to start his plane, the maximum pressure and revolutions per minute necessary for takeoff, how to keep the coolant temperature up, and how to operate the radio. That was all a seasoned pilot needed to know, apparently. After the Russians accumulated a large enough contingent to fly the ALSIB route—a typical flight consisted of a B–25, several A-20s, and P–39s—they fired up their engines and headed west towards Russia. One visitor to Ladd Field remembered the commotion: [54]

There was feverish activity on the field, a tremendous roaring of motors as a large convoy was getting ready to take off. … The medium bombers, one after another, with a final

racing of the motors…taxied down to the end of the runway and took off, the first ones circling the field until the last ones could join them. Then the half dozen P–39s…took off, one after another. And all together they moved into a tight formation and disappeared over the western hills.

By the end of the Lend-Lease program in September 1945 7 FG delivered 7,983 aircraft to the Soviets in Alaska.[55]

Conclusion

In December 1945 after fighting ceased in Europe and the Pacific theaters, the Board of Directors of the Great Falls Chamber of Commerce met at the Hotel Rainbow to plan for the city's economy now that WW II was over. As one might expect they discussed using the city as a staging point for regional tourism and a location for conferences like the Automobile Association of America's annual meeting, alongside mundane details such as the Merchants Association's annual Christmas decoration campaign. But what consumed most of their time was their effort to lobby state and local officials to name GFAAB a permanent installation. While the Chamber's discussion hinted at the air base's monetary benefits to Great Falls, it was also a gentle nod to Great Falls' role in the Allies' victory over the Axis powers.[56] The Chamber of Commerce fully understood what GFAAB and the Airmen stationed here meant to the city; to hold on to the base was to secure the city, state, and nation's post-WW II future.

While units stationed at Gore Field and GFAAB did not participate in direct combat, their efforts contributed to allied success against the Axis powers. The OTU mission at GFAAB provided B–17 bomber crews the much needed-time to train together as fighting units in order to wage successful bombing campaigns in North Africa and Europe. Likewise, 7 FG's mission provided vital war materiel to the Soviet Union for use against Germany on the Eastern Front.[57] Taken together, the military missions located in Great Falls during WW II made it possible for the Allied powers to defeat Germany and laid the foundation for central Montana's participation in the United States' national defense over the next 70 years. ■

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