UPWARD MOBILITY: THE CIVILIAN PILOT TRAINING PROGRAM, WAR, AND SOCIETY IN THE AMERICAN CENTURY

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DISCLAIMER

The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the US Government, Department of Defense, the United States Air Force, or Air University.

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ABSTRACT

Technology and progress are inextricably bound in the American mind. The airplane not only promised adventure, and faster travel, many viewed it as means to rise above socially imposed limits. The exponential growth of aviation during the 1920s could not be sustained following the economic collapse that ushered in the Great Depression. The early years of the 1930s proved particularly tough on private aviation, with the number of pilots and aircraft dropping sharply between 1929-1932. Although the number of pilots and aircraft manufactured slowly crept upward, the totals for each category had not yet returned to pre-1932 levels. The Roosevelt administration's Civil Aviation Authority (CAA) developed a plan to boost private aviation by sponsoring a pilot-training program that would be conducted through a cooperative between colleges and nearby flying schools. Beyond the economic-relief aspects of the program, the CAA felt the program would enhance national defense by creating a pool of pilots the nation could call on in case of emergency. President Roosevelt signed the Civilian Pilot Training Act in June 1939, creating a program of government-sponsored flight training for college-aged individuals. The legislation included provisions which allowed women and other minority groups to participate in the program. Social norms and discriminatory practices had previously limited the participation of women and minorities in aviation, but the Civilian Pilot Training Program (CPTP) helped to break down some of these barriers by providing them increased access to training at an affordable price. When World War II began, the exclusively white Army Air Forces (AAF) view of women and blacks mirrored that of greater American society. The demands of war eventually forced the AAF to expand its definition of an "Airman." Focusing on the Women Airforce Service Pilots Program and the Tuskegee Airmen, this paper reveals how the skills these two groups gained through CPTP helped to fill a critical void during the war. As the USAF grapples with how to best meet the challenges posed by today's emerging space and cyber threats, this study demonstrates how the nation's air arm has previously mobilized critically skilled groups that did not fit its definition of an Airman.

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Chapter 1

INTRODUCTION

A twelve-second flight in Kitty Hawk, North Carolina on a cold, windy day in December 1903 initiated a transformation in US economic and military power. Designed by bicycle mechanics from Dayton, Ohio, the airplane joined the likes of the steamboat, the telegraph, and the train as technologies that compressed speed and time on the vast American continent. The airplane reflected the independent, pioneering spirit of Americans. Flight provided the ability to see the world from a new vantage point. Technology had long been associated with progress in the American mind, and the airplane became a way to escape socially imposed racial and gender limitations.[1] During the American Century, African-Americans and women used the airplane as a vehicle for upward mobility.

Other nations also recognized the potential economic and military value of the airplane. Britain, France, Germany, Italy, and Russia spent more money to develop air power and to fund aeronautical research than the US who began to trail these nations as a result. When the US entered World War I it was forced to fly British and French planes because the US planes were deemed "antiquated in design and defective in workmanship."[2] Government investment in aircraft design and production during the war provided a boost to the aviation industry. By the end of the war, American manufacturers had produced 13,894 aircraft, and the number of manufacturers had grown from 16 to over 300. Although demobilization following the war led to a drastic reduction in the aviation industry, an image of the airplane as an instrument of American power had firmly taken root in the national psyche. The British and Portuguese announcements of their intentions to circumnavigate the globe in an airplane spurred the US to try to beat them. On 28 September 1924, the US Army's airplanes the *Chicago*, the *New Orleans*, and the *Boston II*, landed in Seattle having flown 26,445 miles in 366 hours of flight. The US earned "the honor of becoming the first country to encircle the globe entirely by

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[1] Virginia P Dawson and Mark D. Bowles, eds., *Realizing the Dream of Flight: Biographical Essays in Honor of the Centennial of Flight 1903-2003* (Washington, DC: NASA History Division, 2005), viii.
[2] Jenifer Van Vleck, *Empire of the Air: Aviation and the American Ascendancy* (Cambridge, Massachusetts: Harvard University Press, 2013), 28.

air."[3] Similar to the US Navy's Great White Fleet Voyage in 1907, the around-the-world flight by the Army's airplanes demonstrated US air power and the country's place as a leader among nations. This event also captured the popular imagination and spurred an increased public interest in aviation.[4]

The US government first became involved in civilian aviation in the mid-1920s with the passage of the Air Mail Act in 1925 and the Air Commerce Act in 1926. The Air Mail Act empowered the US Post Office to pay a fixed rate per pound for the airlines to transport mail. The Air Commerce Act authorized the creation of the Aeronautics Branch within the Commerce Department to provide technical regulation for civilian aviation.[5] The following year in May 1927, Charles Lindbergh became the first person to successfully fly non-stop between New York and Paris. The accomplishment of an American pilot in an American-built plane cemented the airplane as part of the US identity. Intense public interest in aviation, combined with government support for the industry, made the US the world leader in aviation by 1929. US airlines carried more passengers than all the airlines of Western Europe combined. Additionally, the US had air mail routes across the North American continent and into Latin America.[6] By the end of the decade, the airplane had become an instrument of American economic and military power.

Aviation's exponential growth in the US during the 1920s could not, however, be sustained in the 1930s. The early years of the Great Depression were very tough for the aviation industry. Financial hardships forced many pilots to allow their certifications to lapse which led to a decreased demand for new aircraft. As aircraft production slowed, the number of manufacturers dropped by almost two-thirds. These factors combined to slow aviation's development in the US. By 1937, the birthplace of aviation found itself once again falling behind the other major countries of the world.

As the decade of the 1930s drew to a close, Americans remained staunchly isolationist, believing the Atlantic and Pacific Oceans could insulate the nation from

[3] Van Vleck, 35.
[4] Van Vleck, 30–35.
[5] Arnold E. Briddon, Ellmore A. Champie, and Peter A. Marraine, *FAA Historical Fact Book: A Chronology, 1926-1971* (Washington, DC: U.S. Government Printing Office, 1974), 2–3.
[6] Van Vleck, *Empire of the Air*, 19.

foreign threats. Unfortunately, Germany's annexation of Austria and the Sudetenland, and Japan's aggression in China made the international security environment increasingly uncertain. While the Munich Agreement signed by Britain, France, Italy, and Germany in September 1938 provided hope that war could be avoided in Europe, the prospect of lasting peace seemed doubtful. Germany and Italy had instituted programs to deliver air education to boys in schools and through youth programs. The US government had chosen, instead, to concentrate its aviation efforts on commerce-related activities, with only limited support for private flying and air education.

On 23 June 1938, President Franklin D. Roosevelt signed the Civil Aeronautics Act into law creating a regulatory agency charged with fostering civilian aviation, along with establishing economic regulations and safety rules.[7] In 1938 there were approximately 130 million Americans, but fewer than 20,000 pilots and fewer than 10,000 civilian aircraft, including 400 transports.[8] In an effort to expand private flying in the US, the newly appointed Civil Aeronautics Authority (CAA) proposed a program to provide pilot training to college students as a way to help foster civil aviation and promote air commerce. The envisioned program fit within Roosevelt's New Deal construct of initiatives designed to provide economic relief and encourage revitalization of industry. Measures such as the Works Progress Administration, Civilian Conservation Corps, and the National Youth Administration were targeted at returning people to work, giving them usable skills through vocational training, and promoting education. The CAA's plan would be an addition to existing vocational programs the government already offered to young people.[9] The use of local flying schools near the participating colleges and universities would also provide an economic boost to airports. Additionally, the CAA hoped these newly trained pilots would increase the demand for light aircraft and, in turn, stimulate the light-aircraft industry.[10] The CAA believed the fostering of

[7] Dominick Pisano, *To Fill the Skies with Pilots: The Civilian Pilot Training Program, 1939-46* (Urbana, IL: University of Illinois Press, 1993), 26.
[8] Patricia Strickland, *The Putt-Putt Air Force; The Story of the Civilian Pilot Training Program and the War Training Service (1939-1944)* (Washington, DC: Department of Transportation, FAA Aviation Education Staff: GA-20-84, 1971), 8.
[9] G. Grant Mason, "The Authority and Private Flying," *Air Commerce Bulletin* 10, no. 7 (January 15, 1939): 181.
[10] House Committee on Interstate and Foreign Commerce, *Training of Civil Aircraft Pilots*, 76th Cong., 1st sess., 1939, H.R. 5073, 4.

civil aviation was important to US economic and national defense interests. Additionally, the students trained through the CAA program could provide a potential pool of pilots in case of national emergency.

President Roosevelt signed the Civilian Pilot Training Act into law on 27 June 1939, creating the Civilian Pilot Training Program (CPTP). The law provided opportunities for women to receive training and prohibited discrimination against anyone because of race, creed, or religion, which opened the door for the participation of people of color. Over the next five years, the CAA would train almost 500,000 Americans through this program. Many of those trained in the program went on to serve in the US Army Air Forces and US Navy during World War II (WWII).

At the beginning of WWII Army Air Corps "Airmen" were exclusively white men. No branch of the military service included women outside of nursing, and there were exceptionally few black officers. The CPTP provided training to a group beyond those that conformed to the existing model of an "Airman." The skills these men and women gained through CPTP helped to fill a critical void and broke down social barriers, setting the stage for the future. Their performance and achievements paved the way for social and cultural changes in the US Air Force. Focusing on the Women Airforce Service Pilots (WASP) program and the Tuskegee Airmen, this paper examines practical and sociological effects of the CPTP on the US Army Air Forces and US Air Force. Hopefully, this study will provide some context and insight into issues facing the USAF in the 21st century.

Chapter 2

Civilian Pilot Training Program

The stock market collapse of 1929, followed by the banking panics of the early 1930s, rising unemployment, and decreasing industrial production resulted in the Great Depression. Industrial production declined by more than 47 percent between 1929 and 1933 with unemployment reaching above 20 percent. The US economy slowly recovered from these setbacks during the mid-1930s but had not yet returned to its pre-depression peaks before another economic recession struck from May 1937-June 1938. When President Roosevelt took office in 1933, his administration instituted a two-pronged approach of reform and relief to meet the challenges the Great Depression imposed on the nation. First, the government developed and implemented banking reforms and securities regulations aimed at preventing a repeat of the events that caused the economic downturn. Second, through programs President Roosevelt called the "New Deal," the government sought to stimulate recovery. Measures such as the Works Progress Administration, Civilian Conservation Corps, and the National Youth Administration were targeted at returning people to work, giving them usable skills through vocational training, and promoting education.

The fledgling aviation field had been hit particularly hard by the economic hardships of the Great Depression, forcing many pilots to allow their certifications to lapse. The number of certified pilots in the US declined by 25 percent between 1932 and 1933. Although pilot totals increased in the following years, by 1937, they still lagged a little more than 900 behind the 1932 peak of 18,594 certificated pilots.[1] Aircraft production also declined during the Depression with the number of US manufacturers decreasing from 132 in 1929 to 48 in 1937, and the number of aircraft produced falling from 6,193 to 3,773 in the corresponding years.[2]

Recognizing the importance of aviation to the national economy, Congress formulated the Civil Aeronautics Act, which President Franklin D. Roosevelt signed into

[1] "Progress of Civil Aeronautics in the United States," *Air Commerce Bulletin* 9, no. 11 (May 15, 1938): 275.
[2] "Progress of Civil Aeronautics in the United States," *Air Commerce Bulletin* 11, no. 4 (October 15, 1939): 104; Briddon, Champie, and Marraine, *FAA Historical Fact Book: A Chronology, 1926-1971*, 9.

law on 23 June 1938. This law built on the foundation laid by the Air Commerce Act of 1926, which had charged the Secretary of Commerce with fostering air commerce, establishing and maintaining airways and navigation aids, licensing pilots and aircraft, and investigating aircraft accidents.[3] Although Congress intended for the Air Commerce Act to bring order to an emerging branch of transportation, the dispersion of regulatory duties between the Post Office, the Interstate Commerce Commission, and the Bureau of Air Commerce created inefficiencies and prevented a singularity of focus. The new Civil Aeronautics Act was intended to centralize the regulation of both commerce and transportation under one agency, and to further improve aviation safety. The law called for the creation of a five-member board, the Civil Aeronautics Authority (CAA), an Administrator, and an independent three-member Air Safety Board.

As the legislative arm of the agency, the CAA established air-commerce regulation and standards, including ensuring the availability of adequate air transportation at reasonable rates, and regulating competition between airlines. Additionally, the CAA formulated safety rules including: certification standards for aircrew, mechanics, and aircraft; air traffic rules; maximum working hours for aircrew; and minimum fuel requirements for operating an aircraft.[4] The Administrator oversaw the CAA's operational functions, including the development and maintenance of airways and airports, along with their accompanying lights and navigational aids. The management of the various certifications prescribed by the CAA and the enforcement of safety rules also fell to the Administrator.[5] The Air Safety Board investigated and reported on aircraft accidents and made safety-improvement recommendations to the CAA.[6]

The Civil Aeronautic Act became effective on 22 August 1938, and the Authority soon began to consider how it might best foster civilian aviation, particularly private flying.[7] In an address to an aviation group on 8 October 1938, CAA Chairman Edward J. Noble discussed the need for improvements in private flying. Participation in flying to

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[3] Richard C. Gasley, "Aviation Has Reached Maturity," *Air Commerce Bulletin* 9, no. 7 (January 15, 1938): 161.
[4] Clinton M. Hester, "New Civil Aeronautics Authority," *Air Commerce Bulletin* 10, no. 2 (August 15, 1938): 36.
[5] Hester, 38.
[6] Briddon, Champie, and Marraine, *FAA Historical Fact Book: A Chronology, 1926-1971*, 4–5.
[7] "Civil Aeronautics Authority and Air Safety Board Assume Duties," *Air Commerce Bulletin* 10, no. 3 (September 15, 1938): 65.

this point had been extremely limited compared to the total US population. He talked about the rise of flying clubs around the world and how the US trailed other nations, saying "we lead the world in the manufacture of airplanes, in the development of airlines, and the transportation of passengers and we are way behind even the little countries like Czechoslovakia when it comes to flying clubs." He cited the rise of aviation education in Europe, highlighting Germany and Italy, where boys received aviation instruction through schools and youth programs. In 1938, the US lacked a similar program.[8]

Conscious that the US was in danger of losing its place as an aviation leader, the CAA proposed a government-sponsored pilot training program for college students – the Civilian Pilot Training Program (CPTP). CAA board member Robert H. Hinckley is credited with proposing the idea for the program. Hinckley had a unique understanding of both New Deal programs and private aviation. Prior to his appointment to the CAA, Hinckley had served as assistant administrator of both the Federal Emergency Relief Administration and the WPA, and before that, he had run a fixed-base operation at a small airport in Utah.[9] The education and training provided through CPTP would be similar to other New Deal programs aimed at providing jobs skills to unemployed Americans. Hinckley felt that by conducting the CPTP as a cooperative effort between universities and airports in the immediate area of the schools, the government could simultaneously increase the number of licensed pilots in the US and provide economic aid to struggling flight operators. Additionally, Hinckley hoped that as more Americans took to the sky, they would want to purchase aircraft which would give a much-needed boost to aircraft manufacturers.[10] The CAA felt an increasingly "air-minded" US public was important for both economic and national defense reasons.

The CAA's proposed college training program hoped to train 20,000 of the estimated 1.2 million students as pilots during the 1939-1940 academic year at an estimated cost of $9,800,000. Over the course of the academic year, students would receive both the ground instruction and flight training necessary to obtain their private-

[8] Edward J. Noble, "Civil Aeronautics Today," *Air Commerce Bulletin* 10, no. 4 (October 15, 1938): 97–100.
[9] Pisano, *To Fill the Skies with Pilots*, 9.
[10] House Committee on Interstate and Foreign Commerce, *Training of Civil Aircraft Pilots*, 76th Cong., 1st sess., 1939, H.R. 5073, 4.

pilot certificate.[11] The ground course would cover topics such as the theory of flight, nomenclature, navigation, meteorology, and radio operations.[12] The flying portion of the course would include 35 to 50 hours of flying conducted at a flying school near the school's campus. Students would be required to pay a lab fee to cover the cost of a medical exam, a $3,000 life insurance policy, and other administrative costs associated with the program.[13]

The CAA believed the program could create a valuable reserve of trained pilots the military could call on during a national emergency and structured the program's eligibility criteria to ensure that the trainees who completed the program could meet the military's education and physical requirements.[14] Students needed to be US citizens between the ages of 18 and 25 and be enrolled in undergraduate or graduate programs to be eligible for the training. Additionally, the trainee would need to pass a physical exam administered by the school's doctor using military flight-physical standards.[15] The CAA envisioned the program growing to provide continuation flight training for its graduates during the remainder of their school years.

President Roosevelt approved a small-scale test of the proposed program and announced it during a press conference on 27 December 1938. The test trial would begin immediately and planned to use 13 colleges and universities to provide flight training to 330 students. To pay for the program, $100,000 would be carved out of the National Youth Administration budget. Unlike the CAA's envisioned program, the trial-run would be conducted over a single semester. To meet the constraints of the compressed timeframe, the CAA chose schools with already-established aeronautics programs because the students admitted would have already received the necessary ground education as part of their regular coursework.[16] The schools participating in the program were: Purdue University, University of Michigan, New York University, Massachusetts Institute of Technology, North Carolina State University, Georgia Tech, University of

[11] Mason, "The Authority and Private Flying," 179–83.
[12] House Committee on Interstate and Foreign Commerce, *Training of Civil Aircraft Pilots*, 76th Cong., 1st sess., 1939, H.R. 5073, 17.
[13] Strickland, *Putt-Putt Air Force*, 4–5.
[14] Mason, "The Authority and Private Flying," 181.
[15] Strickland, *Putt-Putt Air Force*, 3; Pisano, *To Fill the Skies with Pilots*, 59.
[16] House Committee on Interstate and Foreign Commerce, *Training of Civil Aircraft Pilots*, 76th Cong., 1st sess., 1939, H.R. 5073, 16, 54.

Alabama, North Texas Agricultural College, Pomona Junior College, San Jose State University, University of Washington, University of Minnesota, and the University of Kansas.

The program proved popular at the schools where it was offered, with one school reporting that 1,200 students applied to fill the school's 30 training slots. Purdue University became the first school to start the flight instruction portion of the program on 16 February 1939.[17] The CAA required that a minimum of 80 hours be devoted to ground instruction, including 10 hours for the study of Civil Air Regulations, and 35 hours of study each for navigation and meteorology.[18] (Appendix A contains a complete outline of the CAA's training curriculum.) The flight training was conducted in a mixture of Piper, Aeronca, Taylorcraft, and Fleet aircraft rated between 40 and 50 horsepower.[19] The test program had a 95 percent success rate, with 313 of the 330 trainees successfully earning their private pilot certificates by the end of the program. Twelve students dropped out of the program, and one student died in an accident during flight training.[20] The phenomenal success rate of students in the trial program can be attributed to two factors. First, the colleges that participated in the program had already established aviation programs, and second, both the schools and the flight operators likely worked hard to ensure students succeeded in the program in the hope the program would continue.

Advancements in aviation provided a boon to transportation, but it also posed a threat to security. Throughout the nation's history, the Atlantic and Pacific Oceans had acted as protective barriers; however, the increasing reach and speed of the airplane greatly reduced this protection. Improved aircraft capabilities made it easy for the airplane to shift from peaceful use to a weapon of terror. President Roosevelt feared the range of modern weapons, such as the aircraft, might bring war to North America. Throughout the fall of 1938, he met with military leaders to discuss the current state of the military and the measures needed to improve readiness. In a meeting on 14 November, Roosevelt told these men he believed the US would need 20,000 aircraft to

[17] "Pilot Training Gets Underway," *Air Commerce Bulletin* 10, no. 9 (March 15, 1939): 231.
[18] "Pilot Training Gets Underway," 232.
[19] "Pilot Training Gets Underway," 233.
[20] Strickland, *Putt-Putt Air Force*, 6.

prevent an attack on the Western Hemisphere.[21] At a time when the US military had fewer than 5,000 pilots and 1,000 aircraft, this number must have been shocking. Where would all the pilots to fly these aircraft come from and who would train them? In 1938, the Army Air Corps had trained 500 pilots at Randolph Airfield in Texas, its only training base; and the Navy turned out a similar number from its Pensacola, Florida, training base.[22]

President Roosevelt publicly expressed his concerns about the growing tensions across the globe in his annual message to Congress on 4 January 1939. He explained how the speed and range of the modern offensive weapons made the world smaller and the shores of the US and its territories easier to reach. These new weapons meant the US could not wait to arm itself until after it had been attacked. Prior to entering the first World War, the US had needed almost a year to prepare itself, and Roosevelt cautioned Congress that it would not have the same luxury again. The President further contended weapons of defense offered the best chance for safety.[23] Roosevelt followed this message with a defense-appropriation request on 12 January. Arguing that current military forces and expenditures were inadequate, Roosevelt asked for $525 million for Army, Navy, and civilian pilot training. According to the President's plan, the Army would receive $450 million, including $300 million to spend on the procurement of at least 3,000 aircraft. Additionally, the Navy would receive $65 million, including $21 million for naval aviation. Finally, $10 million would be devoted to training civilian pilots.[24] The funds requested for training civilians would become the basis for monies authorized under the Civilian Pilot Training Act.

Throughout the spring of 1939, Congress formulated and debated a bill to provide for civilian pilot training, and President Roosevelt signed the Civilian Pilot Training Act into law on 27 June 1939. Congress allocated $4,000,000 for the program, and the CAA set a goal to train 11,000 new pilots in the 1940 fiscal year.[25] The majority of students

[21] Pisano, *To Fill the Skies with Pilots*, 29.
[22] Strickland, *Putt-Putt Air Force*, 8.
[23] "Franklin D. Roosevelt: Annual Message to Congress," accessed February 11, 2018, http://www.presidency.ucsb.edu/ws/index.php?pid=15684&st=defense&st1=.
[24] "Franklin D. Roosevelt: Message to Congress on Appropriations for National Defense.," accessed February 11, 2018, http://www.presidency.ucsb.edu/ws/index.php?pid=15683.
[25] Pisano, *To Fill the Skies with Pilots*, 56.

participating in the program would be enrolled in colleges or universities, but the law expanded the pool of potential participants by requiring that at least five percent come from outside higher education. The non-college course would be conducted in partnership with local communities through college-extension classes, technical high schools, or trade schools. Participants in this portion of the program would need to meet the same age and physical requirements as the college participants. No limits were placed on the number of non-college students who could enroll in the ground portion of the course; however, only the 10 most qualified from each location would receive flight training. The law also provided an opportunity for women to participate. Any woman who met the age and physical-admission requirements could enroll in the ground portion of the program, but the numbers allowed to participate in flying training would be limited to a ratio of one female for every 10 male students. Additionally, the law prohibited discrimination against trainees based on color, creed, or religion which opened the door for the participation of people of color. [26]

The Civilian Pilot Training Program

Universities, colleges, technical institutions, four-year teacher colleges, and junior colleges who wished to participate in the program submitted applications to the CAA. Schools needed to be within 10 miles or 30 minutes' driving time of an airport that could provide the flight-instruction portion of the course. The CAA paid the schools $20 per student for the ground instruction and $270-$290 per student for up to 50 hours of flight training. [27] Students who wished to apply for CPTP training were required to be US citizens 18-25 years of age with no previous solo experience.[28] Schools were permitted to charge students up to a $40 lab fee to cover a medical exam and to provide insurance in case of death or hospitalization. The CPTP began full-scale operations in October 1939 with 403 schools.[29]

[26] "The Civilian Pilot Training Program," *Civil Aeronautics Journal* 1, no. 1 (January 1, 1940): 3.
[27] "The Civilian Pilot Training Program: Requirements for Participation Outlined by Authority," *Air Commerce Bulletin* 11, no. 3 (September 15, 1939): 59.
[28] "The Civilian Pilot Training Program: Requirements for Participation Outlined by Authority," 61.
[29] "Pilot Program Underway: 403 Schools Selected--Textbooks Distributed," *Air Commerce Bulletin* 11, no. 4 (October 15, 1939): 89.

Social norms and discriminatory practices had limited the participation of women and minorities in aviation, but the CPTP helped to break down some of these barriers by providing them increased access to training at an affordable price. Although there were 22,983 pilots in the US at the beginning of 1939, only 675 were women.[30] The government did not regularly report on the number of black pilots, but Bureau of Census records indicate there were only 125 at the end of 1939.[31] Four women's colleges were accepted into the CPTP: Lake Erie College, Painesville, Ohio; Adelphi College, Long Island, New York; Mills College, Oakland, California; and Florida State College, Tallahassee, Florida.[32] The ratio of one woman for every ten men did not applied to the programs offered at these schools which further enhanced the opportunity for women to receive training. Six black colleges were accepted into the CPTP program: Howard University, Washington, DC; Tuskegee Institute, Tuskegee, Alabama; Delaware State College, Dover, Delaware; Hampton Institute, Hampton, Virginia; North Carolina Agricultural and Technical State University, Greensboro, North Carolina; and West Virginia State College, Institute, West Virginia.[33] A handful of African-Americans were admitted to CPTP training at schools outside of the South. The CAA also established two non-college programs for blacks in the Chicago area.[34]

The CAA made training safety a top priority and levied a number of requirements on the schools and air-training operators to ensure safe operations. The airports needed to meet the CAA's guidelines for facilities, including runway length and meteorological conditions. Additionally, the flight operators could use only instructors and aircraft certified by the CAA. The aircraft used for training needed to be at least 50 horsepower and the flight operator needed to have one aircraft for every 10 students. Further, the CAA required the flight operator to carry public liability and property-damage

[30] "Status of Aircraft, Gliders, Pilots, and Glider Pilots by States as of January 1, 1939," *Air Commerce Bulletin* 10, no. 7 (January 15, 1939): 204.
[31] United States. Bureau of Census, *Negro Aviators. Negro Statistical Bulletin No 3*, 1940, https://play.google.com/books/reader?id=zK1NAQAAMAAJ&pg=GBS.RA1-PA85.
[32] Strickland, *Putt-Putt Air Force*; Florida State College became co-educational and changed its name to The Florida State University in 1947.
[33] Strickland, *The Putt-Putt Air Force; The Story of the Civilian Pilot Training Program and the War Training Service (1939-1944)*, 39.
[34] Strickland, 39.

insurance.[35] Over the course of the program, the CAA continuously conducted research to improve safety and instruction methods.

The CPTP designed its curriculum to span the 1939-1940 academic year. The ground portion of the course consisted of 72 hours of instruction which would begin at least two weeks before flight training and had to be completed by the end of the fall semester. The CAA also provided the texts to be used for the ground instruction course. The first text was *The Primary Ground Study Manual,* which served as the main textbook for the course and covered topics including: the history of aviation; theory flight and aircraft; parachutes; aircraft power plants; aircraft instruments; and air-traffic-control procedures and phraseologies. *Practical Air Navigation, The Digest of Civil Air Regulations,* and *Load Factor Information for Pilots* were also distributed to the students. Additionally, ground instructors received a copy of the CAA's *Study Outline for Primary Ground Instruction* which delineated the required curriculum and provided suggestions on how to present each subject.[36] (Appendix B contains a complete outline of the CPTP training curriculum.)

Unlike the ground training, the flight portion of the curriculum had climatological as well as temporal constraints. The CAA expected the flight training to take approximately seven months. Schools were instructed to begin flight instruction no later than November 1st and expected flying portion of the training to be completed by June 15, 1940. The flying curriculum was broken into three stages. In Stage A the student would receive a minimum of eight hours of instruction devoted to aircraft familiarization, taxiing, air maneuvers, take-offs, landings, spin recovery, and simulated forced landings. Once the student became proficient in these activities, he would progress to Stage B which required a minimum of three hours of solo work where the student practiced the skills taught during Stage A.[37] Stage C involved advanced solo work and required a minimum of 15 hours of solo work and 8 hours of dual work with an instructor. In this final stage of the curriculum, the student pilot worked on precision landings, advanced stalls, cross-wind take-offs and landings, power approaches and landings, and completed

[35] "The Civilian Pilot Training Program: Requirements for Participation Outlined by Authority," 59–60.
[36] "Pilot Program Underway: 403 Schools Selected--Textbooks Distributed," 89.
[37] "Controlled Private Flying Course," *Air Commerce Bulletin* 11, no. 3 (September 15, 1939): 62–63.

a cross-country flight. The first 12 hours of flight would be conducted in 30-minute blocks, three times per week. The remainder of the flying instruction would be done in one-hour blocks, two days per week during the final stage of the curriculum.[38]

By the beginning of 1940, there were 9,350 men and women enrolled in CPTP at 435 schools in every US state, as well as the territories of Alaska, Hawaii, and Puerto Rico. Additionally, there were 700 trainees enrolled in 75 non-college flying programs.[39] The need to standardize instructional methods and to ensure training flight safety drove the CAA to implement a re-certification program for flight instructors. Any pilot holding a commercial pilot's certificate was eligible to be re-rated as an instructor and needed to complete the required examination by 1 October 1940. The CAA even offered scholarships for a 10-hour flight instructor refresher course at approved advanced flying schools across the country. Priority for the scholarships went to those interested in being CPTP instructors, and the CAA hoped to gain an additional 600 instructors for the expanding CPTP.[40] The CPTP also sent instructors to the Army's Randolph Field to study the Air Corps' teaching methods so it could match CPTP instruction to military standards as much as possible. Mobile training teams from this cadre then traveled the country sharing these instructional methods with the local flying schools to ensure standardized instruction across the program.[41]

During the spring semester of 1940, the CPTP conducted a test of a planned advanced-flying course with 90 students who had completed the trial course in the spring of 1939. The advanced-flying course built on the student's previous CPTP training, providing an additional 146 hours of ground instruction and 50 hours of flight work in larger, more powerful aircraft. The training covered navigation, radio operations, cross-country, and night-flying.[42] Additionally, the CPTP also established a seaplane flight training program during the spring of 1940. Seaplane program followed the same curriculum as the elementary flying course, with 72 hours of ground instruction and 35 to 50 hours of flying training. The CPTP selected four of schools to participate in the

[38] "Controlled Private Flying Course," 62–63; "The Civilian Pilot Training Program: Requirements for Participation Outlined by Authority," 60.
[39] "The Civilian Pilot Training Program," 3.
[40] "Plans Announced For 45,000 New Pilots," *Civil Aeronautics Journal* 1, no. 12 (June 15, 1940): 112–13.
[41] Strickland, *Putt-Putt Air Force*, 21.
[42] "The Civilian Pilot Training Program," 4.

seaplane program: State Institute of Applied Agriculture, Farmingdale, New York; University of Miami, Miami, Florida; Morris Harvey College, Charleston, West Virginia; and University of Washington, Seattle, Washington. Twenty University of Washington students and ten students at each of the other schools received the seaplane training. [43]

By 1 July 1940, the number of pilots in the US had grown to by one-third to 41,006. The addition of 14,862 new pilots more than doubled the previous year's increase of 6,068. More than half of the new pilots received their training through the CPTP. During the 1939-1940 school year, the CPTP flew 371,000 hours and trained 10,197 students in its elementary course at 435 schools and 76 non-college programs.[44] A total of 8,313 elementary students earned their private pilot licenses. Additionally, 84 students graduated from the advanced training course.[45] The CAA re-rated 1,200 instructors through examination and another 825 instructors through its refresher training course; many of these instructors gained employment in the CPTP.[46] Civilian aircraft manufacturers also saw benefits from the program with aircraft production almost doubling from 3,715 airplanes in 1939 to 6,785 airplanes in 1940.[47]

Germany's artful use of the combination of air and ground forces during its invasion of Poland in September 1939 began to change the public's perception of the aircraft. The airplane could no longer be viewed only as a tool of peaceful commerce and transport; it now was also a fearsome tool of war. President Roosevelt addressed Congress on 16 May 1940, less than a week after the German invasion of France and the Low Countries. In his speech, the President spoke of the need to improve military readiness through an expansion of the armed forces and an increase in military production. He cautioned Congress that the increased speed and lethality of modern weapons meant that failure to improve readiness would risk being over-run by the enemy. Roosevelt asked for $896,000,000 to procure additional Army and Navy support equipment, increase military production facilities, and to purchase 50,000 military

[43] "Plans Announced For 45,000 New Pilots," 20.
[44] Civil Aeronautics Administration, "Wartime History of the Civil Aeronautics Administration" (US Department of Transportation, Unpublished), 3, 23; "The Civilian Pilot Training Program," 4.
[45] "The Civilian Pilot Training Program," 4.
[46] "Plans Announced For 45,000 New Pilots," 241.
[47] "Hinckley Reports on Pilot Training Program," *Civil Aeronautics Journal* 1, no. 15 (August 1, 1940): 12.

aircraft.[48] The events in Europe and the President's request to Congress led to a shift in the CPTP. The program's focus moved from its primary objective of training pilots for civilian aviation to its secondary purpose of bolstering national defense.[49] The CPTP expanded to train more students and to offer additional courses. For the 1941 fiscal year, Congress authorized a budget of $37,000,000 for the training of 45,000 students in the CPTP's elementary course and 9,000 students in its advanced course. The CPTP offered instruction in three sessions aligned with the colleges' summer, fall, and spring terms. Approximately 15,000 students received elementary training in each session, and the top 1,000 from each term were selected for the advanced course where they received an additional 45 hours of flying instruction at 93 schools across the US. The CAA envisioned the CPTP's advanced course as a feeder for the military and as such required that students must pass a physical exam administered by military flight doctors. [50]

The rapidly growing CPTP needed more instructors to meet its new goal. The CAA developed a training program to provide refresher instruction to 5,000 experienced aviators who had allowed their licenses to lapse.[51] The CPTP also began developing a cross-country course. The cross-country course entailed 40 hours each of ground instruction and flight instruction. The flying instruction would be done in a 4-place cabin aircraft with at least a 245-horsepower engine and would include both daytime and nighttime cross-country flying. To be eligible for the cross-country course, pilots needed to have completed the CPTP's elementary, advanced, and student-instructor courses.[52]

As a result of the CPTP's increased emphasis on national defense, all trainees were required to sign a pledge of intent to join the military upon completion of their education. Since women were excluded from the military, the pledge requirement meant they could no longer participate in the program. A total of 1,994 women received training through the CPTP from January 1939 to June 1941. The number of women

[48] "Franklin D. Roosevelt: Message to Congress on Appropriations for National Defense," accessed March 15, 2018, http://www.presidency.ucsb.edu/ws/index.php?pid=15954&st=&st1=.
[49] Civil Aeronautics Administration, "Wartime History of the Civil Aeronautics Administration," 4.
[50] "Hinckley Reports on Pilot Training Program," 389.
[51] "Hinckley Reports on Pilot Training Program," 389.
[52] "Civilian Pilot Training Program Adds Cross-Country and Instrument Courses," *Civil Aeronautics Journal* 2, no. 2 (January 15, 1941): 24.

pilots in the US grew from 755 to 2,783 during this period.[53] Almost every new female pilot had received her training through the CPTP.

When the 1941 fiscal year ended on 30 June 1941, the CPTP had grown to include more than 900 schools and 200 non-college programs.[54] The program averaged 7,000 flying hours per day, and its yearly flight-hour total reached 2,168,725 hours.[55] The program delivered training to 47,276 students in its elementary course and 8,019 students in its advanced course. Additionally, 7,131 instructors received training through the program.[56] Many of the universities participating in the program began awarding academic credits to students for their CPTP participation.[57] With the US soon to enter WWII, the number of pilots in the US had grown to 82,277, more than double the previous year's number.

The fighting in Europe continued to spread with the war stretching across the Continent, including Yugoslavia, Greece, and Malta. Further, fighting in North Africa and the Middle East meant the war was no longer confined to Europe. As the war expanded, the US became increasingly concerned about national defense. In February 1941, the Army and Navy announced plans to increase the number of pilots they trained each year from 12,000 to 30,000.[58]

In its short history, the CPTP had done much to boost civilian aviation in the US. The number of pilots in the US had increased by more than 300 percent, and civilian aircraft production experienced a two-fold increase. As the fighting in Europe spread to North Africa and the Middle East, the US became increasingly worried that it would be drawn into the conflict. Despite the CPTP's civil aviation successes, Congress remained concerned that the program did not do enough for national defense. Although the CPTP trainees had to sign an oath saying they intended to join the military, less than half its graduates had done so by July 1941.[59] As a result, Congress decreased the CPTP's budget by $12,000,000 for the 1942 fiscal year.

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[53] Air Commerce Bulletin, July 15, 1939:22; Civil Aeronautics Journal, July 15, 1941: 178
[54] "Schools Give Credit for CPTP Training," *Civil Aeronautics Journal* 2, no. 9 (May 1, 1941): 101.
[55] "Schools Give Credit for CPTP Training," 119.
[56] Civil Aeronautics Administration, "Wartime History of the Civil Aeronautics Administration," 23.
[57] Civil Aeronautics Journal, May 1, 1941: 101; Civil Aeronautics Journal, May 15, 1941: 119
[58] Civil Aeronautics Journal, Sep 15, 1941: 229
[59] Pisano, *To Fill the Skies with Pilots*, 77, 81.

According to an announcement made by Donald H. Connolly, the CAA Administrator, on 6 May 1941, 3,827 CPTP graduates had joined the Army Air Corps (AAC), and 1,806 graduates had joined the Navy. He claimed that by Spring 1941 a little over 20 percent of Army and 25 percent of Navy flight training classes were composed of the CPTP graduates.[60] The number of men joining the Air Corps and Navy aviation grew steadily through 1941. Over the course of the year, the percentage of prior-CPTP students grew from 19.5 percent in the first class of the year to 29.7 percent by the end of the year. The Civilian Aviation Journal (CAJ) reported, according to a census of the program's 900 training centers, 7,399 CPTP graduates joined the military air services as of 1 June 1941. Additionally, 1,279 CPTP instructors had joined defense units. Over half of them served as instructors in programs related to military aviation training, including 661 at Army contract schools, 29 at Navy flying schools, and 170 in Canada. Additionally, 163 instructors had entered active duty with the Army and Navy, and 256 had been hired as replacements by the airlines.[61] By September 1941, 10,153 trainees had joined the Army or Navy aviation branches. And 1,926 CPTP-trained instructors had joined military units.[62] CPTP graduates also found other unique ways to put their aviation skills to use in support of the war in Europe. Harold Strickland, a CPTP trained pilot, reported that two-thirds of the American Eagle Squadron in Britain's Royal Air Force was composed of men who had received their initial flying training through the CPTP.[63] The CAA announced in December 1941 that it would begin training pilots for the Army Air Corps' Ferry Division. This program was conducted in cooperation with contracted commercial aviation schools and Pan American Airlines. These pilots would help to ferry Lend-Lease aircraft to Europe.[64]

The CPTP began the year planning to use its $25,000,000 budget to conduct its elementary, advanced, cross-country, and instructor courses through its college and non-college programs. Like the previous year, the program was divided into three sessions:

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[60] Civil Aeronautics Journal, June 1, 1941: 132
[61] "7,399 CPTP Graduates Join Military Air Arms," *Civil Aeronautics Journal* 2, no. 12 (June 15, 1941): 141, 152.
[62] "Army to Give Cadets Credit For Prior Flight Training," *Civil Aeronautics Journal* 2, no. 21 (November 1, 1941): 269.
[63] "CAA Pilots Make Good Showing in Eagle Squadron," *Civil Aeronautics Journal* 2, no. 22 (November 15, 1941): 287.
[64] "CAA To Train Ferry Pilots," *Civil Aeronautics Journal* 2, no. 24 (December 15, 1941): 313.

summer, fall, and spring. The dramatic increases planned for the Army and Navy's pilot production meant their programs needed as many instructors as possible. The military's increased pilot training numbers caused the CPTP to shift its focus to producing instructor pilots to train approximately 18,000 students in its elementary, advanced, cross-country, and instructor courses. Again, fearful that a lack of instructors might cause a bottleneck in the military's training plans, the CPTP chose to emphasize the production of instructor pilots during the 1942 fiscal year.[65] The addition of a cross-country course to the program was an important step in this process. To become an instructor through the CPTP, the trainee had to successfully complete the elementary, advanced, and cross-country courses. These courses built the knowledge, skills, and experience required for flight instruction. The number of elementary pilot training slots decreased from the previous year, with 26,845 receiving training during the year. During the 1942 fiscal year, the CPTP trained 49,490 students in its various programs including 5,963 in the instructor course. The new cross-country course provided training to 7,288 pilots, many who would go on to become instructors.[66]

The surprise attack at Pearl Harbor on 7 December 1941 set the CPTP on a new course that would bring it much closer in line with the military. Roosevelt signed Executive Order 8974 on 12 December 1941. The President's order said that the CPTP would be "exclusively devoted to the procurement and training of men for ultimate service as military pilots, or for correlated non-military activities."[67] The change in focus also resulted in an eventual name change for the program. The CPTP became the War Training Service (WTS) effective 7 December 1942.[68]

The CPTP's transition to the WTS was marked by conflict with the Army Air Forces (AAF) as the program worked to figure out how it could best help the AAF. Since the CPTP's inception, the AAF had taken a wary view of the program, even expressing concerns that pilots trained through CPTP would be inferior to those trained by the military.[69] The CAA never envisioned the CPTP as a replacement for military flight

[65] Civil Aeronautics Administration, "Wartime History of the Civil Aeronautics Administration," 23.
[66] Civil Aeronautics Administration, 23.
[67] Pisano, *To Fill the Skies with Pilots*, 84.
[68] Pisano, 84.
[69] Pisano, 86.

training, instead believing it could help to ease the training burden placed on the services by providing a basic level of skill for use in the case of future contingencies.[70] At the Congressional hearings held during the formulation of the Civilian Pilot Training Act, Congress solicited testimony from the Army Air Corps and Navy, and both appeared to be supportive of the program. Both services felt that the training students received in the program would be a supplement to any future military instruction they might receive in the future.[71] The Army and Navy also recognized that there was a bow wave of training needs headed their way, and they needed to find a way to deal with it.

Although the AAF feared the training delivered by civilians would not prepare the men for military aviation, their fears seem to be unwarranted. The training provided by the CPTP appears to have had a positive effect on the students' overall success rate in military pilot training because 88.2 percent of former CPTP students completed the training versus 56.6 percent of non-CPTP students.[72] Additionally, General Henry "Hap" Arnold, the AAF Chief of Staff, felt that the pilots trained through CPTP might not have proper military bearing and discipline.[73] These concerns appear to be unjustified because the CPTP viewed its training as an aid to the military, and the AAF had already contracted its primary flight instruction to civilian flight schools. It is likely that the AAF's desire for independence colored its view of the program because its leaders feared a training program outside their jurisdiction might discredit their abilities. The Navy did not view the CPTP in the same manner. In recognition of the quality of training CPTP graduates received, in the spring of 1941, the Navy began to waive its elimination course for men who had completed the program's elementary and advanced courses, giving them credit for 33 hours of flying.[74]

Over the course of the spring of 1942, the AAF and CPTP worked to reach an agreement on how the CPTP could best support the AAF. They eventually agreed that the CPTP would use its facilities to train the AAF's enlisted reservists in non-combat

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[70] Pisano, 38–39.
[71] Pisano, 41.
[72] Pisano, 79.
[73] Pisano, 87.
[74] Strickland, *Putt-Putt Air Force*, 12; "CPTP Students to Skip Navy Elimination Stage," *Civil Aeronautics Journal* 2, no. 6 (March 15, 1941): 78; "CAA Pilot Trainees Join Army and Navy at Increasing Rate," *Civil Aeronautics Journal* 2, no. 16 (August 15, 1941): 201.

flying specialties. These specialty duties included: instructor pilots; service pilots, pilots for aircraft ferrying and artillery spotting; glider pilots; and transport co-pilots, for both the AAF's transport service and civilian airline activities in support of the military. To accomplish these missions, the WTS was divided into two divisions, with one division dedicated to training men who could meet the military's aviation-cadet requirements and the other to training pilots for non-combat specialties.[75] Men who could meet the military's aviation-cadet requirements were enlisted into the Army and Navy inactive reserve and received training as civilians. The WTS division was further divided into Army and Navy tracks, to provide training tailored to each service's requirements. The division dedicated to training pilots for non-combat specialties trained men ages 18-37 who could not qualify for combat aviation duties because they did not meet the AAF's physical or age requirements. The WTS even helped in recruiting these men when it partnered with the American Legion in the summer of 1942 on a recruiting campaign aimed at licensed pilots who could quickly be turned into instructor and service pilots through the WTS's advanced training programs.[76] By the end of the 1942 fiscal year, the CPTP/WTS had trained 49,490 pilots in its elementary, advanced, cross-country, and instructor courses. As the 1943 fiscal year began in July 1942, the WTS focused solely on supporting the military.

In the summer of 1942, the WTS offered seven courses: elementary, secondary, cross-country, Link instrument, instructor, flight officer, and liaison pilot.[77] The elementary course followed the same syllabus as the CPTP's elementary flying course, with 240 hours of ground instruction and 35-45 hours of flight training. All who completed the course progressed to the secondary course, except for glider pilot volunteers were sent to the AAF Glider School. The secondary course also mirrored the CPTP's advanced course with 240 hours of ground instruction and 40-50 hours of flight instruction. After pilots completed the secondary course, they advanced to the cross-country course where they received 108 hours of ground instruction and 45-50 hours of flight instructions before proceeding to either the Link Instrument course or the instructor

[75] Strickland, *Putt-Putt Air Force,* 17.
[76] Strickland, 18.
[77] Strickland, 18.

course. The Link trainer was a flight simulation tool used to teach instrument flying. Students in the Link Instrument course received 108 hours of ground instruction, 20-25 hours of flight instruction, and 15 hours of instruction in the Link trainer. Students undergoing instructor training completed 72 hours of ground and 50-60 hours of flight instruction. Students successfully completing this course were assigned to instructor duties in the WTS or the Army's contract flying schools or continued to the WTS' flight-officer training course. Flight-officer trainees completed 325 hours of ground instruction, 20-25 hours single-engine flying, 21 hours multi-engine flying, and 20-30 hours in the Link trainer. Students who completed this program received a commercial pilot certificate and were assigned to the AAF as a ferry pilot or to a civilian airline under AAF contract. The WTS' Liaison Pilot course was a stand-alone that provided its trainees with 240 hours of ground instruction and 55-60 hours of flight instruction. Liaison pilots used their planes as mobile, airborne artillery-spotting platforms. Once the liaison pilots completed this course, they proceeded to the Army's Field Artillery advanced courses for additional training.[78]

The inactive reserve was closed in December 1942 when manpower concerns forced the military to stop voluntary enlistments; from that point forward, all men would enter the military through the draft.[79] This change in personnel policy necessitated a change in WTS functions. One WTS division remained dedicated to training instructor pilots for the AAF. The other division would now provide introductory flight training to men as part of the AAF's College Training Program.[80] The AAF had accumulated a larger pool of manpower in the inactive reserve than it could immediately train. To deal with this backlog, the AAF established its College Training Program where men awaiting training would be sent to one of the approximately 150 participating universities. In addition to their WTS training, the men took classes in various subjects, including math, English, and physics. The AAF billed the program as an "attempt to diminish individual differences in educational background."[81] While enrolled in classes, the reservists also

[78] Strickland, 18–19.
[79] Civil Aeronautics Administration, "Wartime History of the Civil Aeronautics Administration," 8.
[80] Civil Aeronautics Administration, 9.
[81] Wesley Frank Craven and James Lee Cate, eds., *The Army Air Forces in World War II, Volume 7: Services Around the World* (Chicago, IL: The University of Chicago Pres, 1958), 563, https://media.defense.gov/2010/Nov/05/2001329892/-1/-1/0/aaf_wwii-v7-2.pdf.

underwent military indoctrination, including activities such as drill, inspections, and physical training. The WTS continued in this capacity until January 1944 when the AAF asked it to discontinue instructor training because it had enough instructors to fill the anticipated needs for the remainder of the war. When the last AAF College Training Program class graduated on 30 June 1944, WTS training in support of the AAF came to an end.[82]

The CAA trained 125,762 men and women through the CPTP. After the CPTP transitioned to the WTS, the program trained 55,348 enlisted reservists for the AAF, with the majority going on to be flight instructors. Additionally, the WTS trained 218,122 Aviation Cadet Candidates through the AAF's College Training Program and 105,000 men for the Navy.[83] CPTP graduates took part in operations in every theater of war during WWII, including the Tokyo raid, the Combined Bomber Offensive, and the island-hopping campaign in the Pacific. Some of the CPTP alumni found unexpected and ground-breaking ways to serve during the war, like the WASP and Tuskegee Airmen.

[82] Civil Aeronautics Administration, "Wartime History of the Civil Aeronautics Administration," 9–10.
[83] Civil Aeronautics Administration, 23–24.

Chapter 3

The Women Airforce Service Pilots

Harriet Quimby, Bessie Coleman, Amelia Earhart, Louise Thaden, Blanche Noyes, and Jackie Cochran are among the earliest of America's female aviation pioneers. Harriet Quimby became the first American women to earn her pilot's license in 1911.[1] Many of these trailblazers competed in air-racing as a way to show that women were equal to men. The All Women's Air Derby in August 1929 was the first air race where women competed. The eight-day transcontinental race started in Santa Monica, California and ended in Cleveland, Ohio.[2] The women competing in the race formulated the idea to organize for the mutual support and advancement of women aviators. In the November 1929, there were 117 women licensed as pilots in the US. All were invited to Curtiss Field, Long Island, New York to form a new organization. They chose the name Ninety-Nines to honor the 99 women who had expressed interest in joining the organization.[3] These women continued racing and their pioneering ways, with Amelia Earhart becoming the first woman to enter the Bendix Trophy Race in 1935. The Bendix Corporation sponsored the race to help stimulate the design and production of higher-flying, faster aircraft with improved reliability and durability. Jimmy Doolittle won the first race in 1931. Louise Thaden and Blanche Noyes became the first women to win the race in 1936.[4] By the time Jackie Cochran won the Bendix race in 1938, there were about 500 women pilots in the US.[5]

The CPTP made pilot training accessible and affordable for thousands of Americans. The program offered a unique opportunity for women to learn to fly, with 1,994 receiving training during the 30 months women were allowed to participate in the program. The number of women pilots in the US quadrupled from 675 in January 1939

[1] Henry M. Holden and Lori Griffith, *Ladybirds: The Untold Story of Women Pilots in America*, 1st ed (Freedom, N.J: Black Hawk Pub. Co, 1991), 19.
[2] Holden and Griffith, 49.
[3] Ninety-Nines. "Our History." https://www.ninety-nines.org/our-history.htm
[4] David H. Onkst. "*The Major Trophy Races of the Golden Age of Air Racing*." https://www.centennialofflight.net/essay/Explorers_Record_Setters_and_Daredevils/trophies/EX10.htm
[5] "Status of Aircraft, Gliders, Pilots, and Glider Pilots by States as of Oct 1, 1938," *Air Commerce Bulletin* 10, no. 5 (November 15, 1938): 155.

to 2,783 in June 1941.[6] Almost all the new women pilots had received their training through the CPTP, and a number of them would go on to become members of the Women Airforce Service Pilots program. When the CPTP ended women's participation in the program at the beginning of the 1941 fiscal year, some were nonetheless able to continue in the program as instructors.

As the international security situation grew darker, some in the US began to consider how women pilots might be of use to the nation in case of war. The growing crisis and conflict in Europe inspired Jackie Cochran to write to First Lady Eleanor Roosevelt in the fall of 1939, about a need to develop a plan to use female aviators in case of a national emergency, pointing out that Britain, France, Germany, and Russia currently used women pilots in their air forces. Mrs. Cochran was an accomplished aviatrix who had recently been awarded the International League of Aviators Aviatrix Trophy for the third consecutive year. Cochran opined that women could be used in a variety of ways and advocated for the development of an official organization for women and a training program for them.[7] In a separate effort in May 1940, another female aviator, Nancy Harkness Love, wrote to Lieutenant Colonel Robert Olds who worked in the AAC's Plans Division. In her letter, Love advocated for the use of a small group of highly qualified women pilots who would require minimal training before being put to use.[8] The Chief of the Air Corps, General Henry "Hap" Arnold, turned down these proposals and suggested that women pilots might best be used as co-pilots in commercial aviation, which would allow male pilots to return to the Air Corps.[9] The US was just beginning its preparations for a possible war, and manpower was not an issue at this point.

Although initially told no, Jackie Cochran did not abandon the idea of using women pilots to support the US military. In the spring of 1941, Cochran helped to fly a Lockheed Hudson bomber to Britain where she was able to observe the work of the

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[6] "Status of Aircraft, Gliders, Pilots, and Glider Pilots by States as of January 1, 1939," 203; "Status of Certificated Aircraft and Pilots, by States, as of July 1, 1941," *Air Commerce Bulletin* 2, no. 14 (July 15, 1941): 178.
[7] J. Merton England and Joseph Reither, "*Women Pilots With the AAF, 1941-1944,*" Army Air Forces Historical Studies (AAF Historical Office: Headquarters, Army Air Forces, March 1946), 2.
[8] England and Reither, 3.
[9] England and Reither, 4.

women in Britain's Air Transport Auxiliary. Upon her return, she wrote a report on what she had observed, adding recommendations for how the US might adopt such a program. She discussed her findings over lunch with President and Mrs. Roosevelt who told her she should talk to the AAC again about using women. At the President's direction, she went to the office of the Assistant Secretary of War for Air, Robert Lovett, to discuss using women to ferry aircraft with General Arnold and Colonel Olds, commander of the AAC's Ferry Command, in attendance.[10] Cochran again advocated for a separate women's organization that would oversee the management and training of women pilots for the AAC. Colonel Olds wanted only highly-skilled women who would need minimal training and wanted them to be managed from within the Ferry Command. Cochran was authorized to survey CAA records to determine the number of women pilots who could meet the AAC's service-pilot requirements. Her survey determined there were 2,783 women pilots in the US, but based on hours and ratings, only about 100 who could likely fly military aircraft without advanced training, and most would have needed basic and primary training.[11] The AAC's increased pilot training had necessitated the production of more trainer aircraft. The Ferry Command would need to deliver about 12,000 primary, basic, and advanced trainer aircraft by December 1942 which would require 200 additional ferry pilots.[12] Cochran and Olds had different visions for how women could be used. Olds was thinking in the short-term about how to get those aircraft delivered while Cochran was thinking about the long-term. Cochran's primary goal was to help the Air Corps release as many male pilots as possible for combat-related jobs, which, based on the existing qualifications of most of the female pilots in the US, would require a training program. Her secondary goal was to prove that female aviators could make a valuable contribution to the military and set the stage for future advancement. The survey of the CAA's records revealed there were 50 women pilots with more than 500 hours (including 30 with 1,000 hours), 83 women with 200 hours, and 2,000 with some experience but less than 200 hours.[13] General Arnold again disapproved the use of

[10] England and Reither, 4–5.
[11] Jacqueline Cochran, "*Final Report on Women Pilot Program*" (Washington, DC: US Army Air Forces, June 1, 1945), 3, http://www.wingsacrossamerica.us/wasp/final_report.htm.
[12] England and Reither, "*Women Pilots With the AAF, 1941-1944*," 6.
[13] England and Reither, 7.

women pilots. In his disapproval memo, Arnold wrote: "The use of women pilots serves no military purpose in a country which has adequate manpower at this time" and went further by pointing out that the military should be concentrating on training the 78,000 male pilots in the US instead of the fewer than 3,000 women pilots.

Shortly after the Air Corps rejected Cochran's proposal, Britain's Royal Air Force (RAF) contacted her, requesting she recruit women pilots for the RAF's Air Transport Auxiliary (ATA). Cochran enlisted the help of 25 women, getting them to commit to 18-month contracts to ferry aircraft for the RAF.[14] Before her departure, Cochran met again with General Arnold, and he told her that not only was she going to help an ally but that she would also gain experiences that might be valuable if the AAC decided to use women pilots in the future.[15] Jackie Cochran and the women she recruited left for Britain in the spring of 1942.[16]

In the summer of 1942, the AAF's Ferry Division struggled to deliver all of the training aircraft US industry was producing.[17] Nancy Harkness Love, who two years before had suggested using women pilots to ferry aircraft, was then working as an operations assistant in AAF's Ferry Division.[18] When Colonel William Tunner, the Division's Commander, learned that Love commuted to work in her family's airplane, he approached her to see if there might be other women like her who could be used to help ferry aircraft. Love told him she thought there were a hundred women who would be qualified to do that kind of work. Over the course of the summer, Tunner and Love drafted a plan for the training, housing, and utilization of these women. Their proposal called for the formation of a 50-woman squadron to help with the domestic ferrying of primary trainer and liaison-type aircraft. Women would be invited to join the unit and hired after successfully completing an interview and flight test. To qualify for an invitation, the women needed to be US citizens, 18-35 years of age, have a high school education, hold a commercial pilot's license with a 200-horsepower rating, and have at

[14] England and Reither, 12.
[15] England and Reither, 9.
[16] England and Reither, 12.
[17] The Army Air Corps became the Army Air Forces in June 1941. During the same month, Ferry Command became the Air Transport Command, with aircraft ferrying now falling under the control of Air Transport Command's Ferry Division.
[18] England and Reither, "Women Pilots With the AAF, 1941-1944," 12.

least 500 hours of certified flying experience.[19] As the plans for the women's squadron took shape, Tunner began to investigate the possibility of commissioning the women through the newly created Women's Army Auxiliary Corps (WAAC). Unfortunately, because the WAAC legislation did not include an authorization for women pilots, the bill would need to be amended before the women pilots could be commissioned. As a result, Tunner instead chose to pursue the hiring of the women through the Civil Service because it would be more expedient.[20] The women would be paid $287.50 month and receive $6 a day in per diem when away from the base delivering aircraft. The plan called for housing the women on base, charging them $15-20 per month for a room in the barracks. Additionally, the women would be allowed to purchase meals in the Officer's Mess.[21] Tunner chose New Castle Army Air Base, in Wilmington, Delaware, as the home base for the unit because of the nearby Fairchild Aviation Corporation in Hagerstown, Maryland, which built primary trainers for the AAF. General Arnold gave his approval for the plan on 5 September 1942, and Tunner appointed Love to be the Director of Women's Auxiliary Ferrying Squadron. On that same day, Love sent 83 telegrams to women pilots across the country to see if they would be interested in joining the Women's Auxiliary Ferrying Squadron (WAFS).[22]

The first woman to respond to Love's invitation was Betty Gillies, a charter member of the Ninety-Nines. By the squadron's first official duty day on 21 September, nine women, including Love and Gillies, had joined the program.[23] Once accepted into the WAFS, the women underwent 30-40 days of transition training. The new WAFS members learned about military organization, operations procedures, military customs and courtesies, and studied the aircraft technical orders, ferry routes, and operational procedures.[24] The WAFS flew its first mission on 22-23 October 1942, when the women ferried six L-4Bs, single-engine Piper Cub liaison planes, from the factory in Lock Haven, Pennsylvania, to Mitchel Field in New York. The squadron continued to grow in

[19] England and Reither, 13.
[20] Sarah Byrn Rickman, *Nancy Love and the WASP Ferry Pilots of World War II*, North Texas Military Biography and Memoir Series, no. 4 (Denton, Tex: University of North Texas Press, 2008), 73–76.
[21] Cochran, "*Final Report on Women Pilot Program*," 13.
[22] Rickman, *Nancy Love and the WASP Ferry Pilots of World War II*, 76.
[23] Rickman, 94.
[24] England and Reither, "Women Pilots With the AAF, 1941-1944," 16–17.

November and December as the WAFS ferried Cubs and PT-19 aircraft from the factories to training bases all over the South. By 21 November, the size of the squadron had grown to 25 pilots, meeting the initial goal set by Love. The squadron reached its final size of 28 in early January 1943.[25] Eleven of the 28 WAFS members had participated in the CPTP as students, instructors, or as both.[26] Several of the invited women were unable to join because they had contracts with the CPT/WTS they needed to fulfill first.[27]

The War Department issued a press release about the WAFS formation on 10 September 1942, and the New York Times carried the story on the front page of the paper on 11 September. Jackie Cochran had returned from Britain on the previous day and was startled to learn about this new women's program. Cochran wrote to General Arnold that day, saying "The use of a few of our women pilots to ferry trainer planes is just one segment of a larger job to be done."[28] She was referring to their previous discussions about the need for a single women's organization to coordinate the utilization of female pilots and a need for a training program so that more women could be used to release men for other flying duties. Arnold arranged a meeting with Major General Harold George, the commander of the AAF's Ferry Command, and Cochran, where he told them to revise the women's project to include a training program.[29] George felt the Ferry Command did not have the capacity to provide the training Cochran thought would be necessary and recommended that the Flying Training Command take on the training.[30] Once the women had completed their training, they could then be assigned to Ferry Command for operational duties. George recommended that Cochran be made Director of the Women's Training program. Arnold approved their plan and announced the formation of the Women's Flying Training Detachment (WFTD) on 15 September 1942.[31] He explained the broadening scope of the program by saying "We will soon have

[25] Rickman, *Nancy Love and the WASP Ferry Pilots of World War II*, 94–95, 97.
[26] Texas Women's University. "Women Airforce Service Pilots Digital Archive." http://twudigital.contentdm.oclc.org/cdm/landingpage/collection/p214coll2
[27] Rickman, *Nancy Love and the WASP Ferry Pilots of World War II*, 95.
[28] Sarah Byrn Rickman, *WASP of the Ferry Command: Women Pilots, Uncommon Deeds* (Denton, Texas: University of North Texas Press, 2016), 25.
[29] Rickman, 26.
[30] England and Reither, "*Women Pilots With the AAF, 1941-1944*," 18.
[31] Rickman, *WASP of the Ferry Command*, 26–28.

to take immediate and positive action to utilize women and over-age [sic] and physically unfit men in every possible position throughout the Air Forces" and asked for the "formulation of a complete plan as to what positions women may fill, the training necessary, procurement objectives, etc."[32] In a little over a week, the Army went from no women's flying programs to two separate programs. The two programs eventually merged into a single organization on 5 August 1943, when they became known collectively as the Women's Airforce Service Pilots (WASP).[33] The women's program began with these objectives: "to see if women could serve as military pilots and if so, to form the nucleus of an organization that could be rapidly expanded; to release male pilots for combat; and to reduce the Air Forces' total demand on the cream of the manpower pool."[34]

The candidates who wished to apply for training in the new women's program needed to be US citizens, 21-35 years old with at least a high school education, a minimum of 60 inches tall, have 200 hours of flight experience, and pass a physical administered by an Army flight surgeon.[35] In her final report on the women pilot program, Cochran points out that the number of hours required for admission was set intentionally high to ensure the program got off to a successful start. As the program progressed, the flight hours requirements dropped steadily, decreasing first to 100, then 75, and eventually to 35 hours.[36] Applications for acceptance flooded into the WFTD from women across the country. The program proved so popular that throughout its history it never needed to recruit candidates. In addition to a written application, the women had to complete an interview with a WFTD representative. The Aviation Cadet Qualification Exam, the same screening test taken by the AAF's aviation cadets, eventually replaced the personal interview in April 1944.[37]

The women pilot training program began operations when the first class, 43-1, entered training on 16 November 1942 at Houston Municipal Airport. This class nicknamed itself the "Guinea Pigs" because, as the program's first class, their training

[32] England and Reither, "*Women Pilots With the AAF, 1941-1944*," 25.
[33] Cochran, "*Final Report on Women Pilot Program*," 14.
[34] Cochran, 5.
[35] Cochran, 7.
[36] Cochran, 7–8.
[37] Cochran, 5.

was largely an experiment.[38] Similar in manner to the AAF's primary flight training, a civilian contractor, Aviation Enterprises, Limited, provided training for the new women's program.[39] At the beginning of the WFTD operations, trainees underwent a 20-week training course comprised of 180 hours of ground instruction and 115 hours of flight instruction. The ground-school portion of the training included navigation, weather, aircraft and engines, communications, and Air Transport Command (ATC) procedures.[40] The women received training in a mix of civilian aircraft including Fairchilds, Piper Cubs, Stinson Reliants, and Aeroncas.[41] The flying instruction was broken down into 25 hours in liaison-type aircraft; 75 hours in commercial-type aircraft, including 10 hours transition, 25 hours instrument, 10 hours nighttime, and 30 hours navigation; 15 hours in AAF advanced and basic trainers; and 20 hours of Link instruction. The women also dedicated one hour per day to physical training.

The WASP training program underwent almost continuous revision throughout its existence. These changes were done in response to the decreasing experience level of trainees, training program feedback from gaining units, and criticism of graduate proficiency.[42] Early in 1943, the program was divided into three phases: primary, basic, and advanced. These three phases matched the AAF's training program phases, as did their training except for gunnery training and formation flying which the WASPs did not receive because they were not being trained for combat.[43] As the entry skill-level of the women decreased, the program's length increased over time from its initial 22 weeks to 24 weeks, then 27 weeks, and finally 30 weeks. The ground training increased from 180 to 476 hours. The extended ground curriculum included 309 hours of academics covering math, physics, navigation, Morse code, aircraft and engines, and weather; 66 hours of military training, covering Army orientation and organization, customs and courtesies, drill and ceremony, and information protection; 19 hours of aeronautical equipment maintenance; 81 hours of physical conditioning; and 10 hours of medical

[38] Rickman, *WASP of the Ferry Command*, 59.
[39] *England and Reither, "Women Pilots With the AAF, 1941-1944*," 26.
[40] England and Reither, 27.
[41] Rickman, *WASP of the Ferry Command*, 68.
[42] England and Reither, "*Women Pilots With the AAF, 1941-1944,*" 29.
[43] Wesley Frank Craven and James Lee Cate, eds., *The Army Air Forces in World War II, Volume 1: Plans and Early Operations* (Chicago, IL: The University of Chicago Pres, 1948), 531, https://media.defense.gov/2010/Nov/05/2001329892/-1/-1/0/aaf_wwii-v7-2.pdf.

training, including first aid and chemical weapons.[44] Flying training hours increased first to 180 and to 210 hours, where the women learned "the usual stalls, loops, spins, lazy-eights, snap rolls, pylon-eights, and chandelles, and they had to be able to recover from any position."[45] As the program progressed, there was an increased emphasis on navigation and cross-country flying to prepare the women for ferry duties. Two cross-country flights were added to the training, one in the PT-17 (1,000 miles) and the other in the AT-6 (1,000 miles initially, then extended to 2,000 miles). These changes were made to ensure the women met service-pilot qualifications and were skilled in the AAF's primary, basic, and advanced training aircraft. The civilian aircraft used in the first few classes were replaced by military aircraft to ensure the women were prepared for the future duties. By the end of the program, women had received training in a variety of military aircraft including the PT-18, PT-19, BT-13, AT-6, AT-17, UC-78, UC-43, and UC-81.[46] The elimination rate for WASP trainees closely matched the rates for male aviation cadets, with an elimination rate for the women of 26 percent in 1943 and 47 percent in 1944, compared to 25 percent in 1943 and 55 percent in 1944 for the men. [47]

The women's pilot training program began with the goal of training 500 women by the end of 1943. By the early spring of 1943, the year's goal increased to 750, with 1,000 set as the goal for 1944. The facilities in Houston lacked housing for the women, and the only dining facility and bathroom were a half-mile away from the training hangar. These facility limitations threatened the program's ability to train even 500 women. The program's new goals meant a new training facility would be needed. The WASP moved to Avenger Field in Sweetwater, Texas, when the first class entered training there on 21 February 1943. At Avenger, the WASPs would have access to better aircraft, including the PT-19 and the AT-6, which would improve their training and better prepare them better for their ferry duties. The additional runways there would also facilitate increased training numbers. Additionally, Avenger's barracks, mess hall, classrooms, offices, and chapel would correct Houston's facility limitations.[48]

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[44] England and Reither, "*Women Pilots With the AAF, 1941-1944*," 28–30.
[45] Craven and Cate, *The Army Air Forces in World War II, Volume 1: Plans and Early Operations*, 531.
[46] Cochran, "*Final Report on Women Pilot Program*," 12.
[47] Craven and Cate, *The Army Air Forces in World War II, Volume 1: Plans and Early Operations*, 531.
[48] Marianne Verges, *On Silver Wings: The Women Airforce Service Pilots of World War II, 1942-1944*, 1st ed (New York: Ballantine Books, 1991), 80–81.

The WASP/WAFS were initially used to ferry light aircraft, but their duties eventually expanded to all aircraft including four-engine bombers. Early in the program, there were attempts to restrict women's flying activities. Some of these restrictions were based on medical and moral concerns. In March 1943, the Ferry Division Headquarters issued guidance that women could not fly during pregnancy and prohibited flight activities from one day before to two days following the last day of their menstrual periods.[49] The ban on flying during pregnancy remained in place for the duration of the program; however, several women continued to fly during pregnancy until they no longer felt they could execute their duties safely. The Air Transport Command Surgeon overturned the restrictions of flight during menstruation, viewing it as a problem that should be dealt with on an individual basis.[50] In an effort to protect the morals of the women pilots, the 3d Ferrying Group issued guidance that "no mixed flight assignments or crew assignments will be tolerated."[51] The policy even recommended allowing the women to ferry only on days offset from the male pilots.

Doubts about the women's ability to fly military aircraft also led to attempts to restrict the types of aircraft they could fly. Initially, there were doubts that the women could fly the more advanced military aircraft which resulted in a ban on their transition to high-powered pursuit or twin-engine airplanes.[52] Following an appeal from Nancy Love Harkness to ATC Headquarters, the Ferry Division issued new rules for women pilots, saying they would be allowed to transition to additional aircraft "under the same standards of individual experience and ability as apply to any other pilot." The updated rules also allowed for women to be assigned as co-pilots and in mixed flights for training purposes.[53] These changes were important not just to the women but also to the daily ferrying operations. The Ferry Division used a six-class rating system to denote pilot qualifications. Pilots advanced from basic aircraft to progressively more complex ones with the goal of having as many as possible qualified to ferry four-engine bombers overseas. The classification system, depicted in Table 1 below, relied on pilots steadily

[49] England and Reither, "*Women Pilots With the AAF, 1941-1944*," 41.
[50] England and Reither, 41.
[51] England and Reither, 40.
[52] England and Reither, 40.
[53] England and Reither, 42.

advancing through the system, limiting the women pilots to Class I would impede the progress of the male pilots.[54] Colonel William Tunner, the Ferry Division Commander, stressed the need for the women to be allowed to advance through the system, urging that "if they could qualify, they could fly the heaviest and 'hottest' planes."[55] Women were encouraged to advance to Class P, the flying of pursuit aircraft, for two reasons: first, because ATC did not feel flying pursuit aircraft was necessary for the progression to four-engine aircraft, and also because women would not be allowed to ferry aircraft overseas, so this freed up more men to concentrate on gaining this qualification.[56] These changes would be very important as more women joined the Ferry Division.

Table 1: ATC Pilot Classification System

Class I	Low-powered single-engine airplanes (examples, PT-17, PT-19, PT-26, Cubs)
Class II	Twin-engine trainers and utility planes (examples, UC-78, AT-9)
Class III	Twin-engine cargo/medium transport planes and on instruments (examples C-47, C-60)
Class IV	Twin-engine planes in the advanced categories, such as attack planes, medium bombers, and heavy transports (examples B-25, A-20)
Class V	Four-engine bombers and transports and able to deliver overseas (examples, B-17, B-24, B-29, C-54)
Class P-i	Single and twin-engine, high-performance pursuit or fighter aircraft, with "i" denoting instrument rating (examples, P-51, P-47, P-40, P-39, P-63, P-38, P-61)

Source: Nancy Love and the WASP Ferry Pilots of World War II, p. 126.

The number of women in the Ferry Division grew steadily from 120 in August 1943 until it reached 303 in April 1944. The Division maintained that number of women pilots through July before decreasing to 140 in September, which it carried until the program's disbandment in December 1944. The majority of the women in Ferry Command from mid-1944 on were qualified to fly pursuit aircraft. Their specialization in the ferrying of

[54] Rickman, *Nancy Love and the WASP Ferry Pilots of World War II*, 124.
[55] England and Reither, "*Women Pilots With the AAF, 1941-1944*," 43.
[56] Rickman, *Nancy Love and the WASP Ferry Pilots of World War II*, 126–27.

pursuit aircraft facilitated the training of men for overseas combat and non-combat duties.[57] The WASPs also performed other flying duties outside the Ferry Division.

Jackie Cochran envisioned the women pilots performing a full range of non-combat flying duties for the AAF. WASPs were assigned to the AAF's Training command beginning in the fall of 1943. The women began their Training Command duties towing targets for live-fire air-defense training. Their duties eventually grew to include missions to augment ground-force training such as simulated strafing, smoke laying, and search-light tracking. Additionally, the women flew utility and administrative missions, transporting cargo and high-ranking personnel within the US. A few women even performed flight-testing duties, including both rocket-propelled and jet aircraft.[58] Training Command even briefly considered using the women as Basic Flight Training instructors but chose not because of concerns that stereotypes about women would require the WASP to be substantially better than male instructors to garner the same respect.[59] The Command, instead, chose to use some as Link trainer instructors. Men returning from combat were freed up to be used as flight-training instructors because the WASPs were filling these duties.

By the fall of 1942, less than one year from the American declaration of war, the heavy demand for manpower from all the Services meant that every job a woman could fill had the potential to release a man for front-line duties. When the President signed the legislation authorizing the creation of the Women's Army Corps, it did not include provisions for women pilots. According to Cochran's report on the Women Pilot Program, the small number of women involved combined with the experimental nature of the program, dictated that militarization be delayed until it could be determined if the women could effectively contribute to the AAF's mission. The women lived in the barracks, wore uniforms, took their meals in the officer's mess, and performed duties similar to male pilots. Despite these similarities to their male peers, as civil-service employees these women lacked opportunity for advancement in jobs and pay, did not qualify for medical benefits, and were ineligible for life insurance. The government did

[57] England and Reither, "*Women Pilots With the AAF, 1941-1944*," 67.
[58] Craven and Cate, *The Army Air Forces in World War II, Volume 1: Plans and Early Operations*, 533.
[59] England and Reither, "Women Pilots With the AAF, 1941-1944," 74–75.

not provide for the burial of the women killed in the line of duty or pay a death benefit to their families as it did for military men. Further, as civil-service employees, the women were free to resign at any time.[60] As the program grew and the women proved versatile in filling many different roles, the value of militarization became apparent. In the spring of 1944, the WASPs began attending the AAF's School of Applied Tactics in Orlando, Florida, where 460 members of the group received further indoctrination in Army organization and administration; military customs, courtesies, and law; logistics; staff functions; and AAF doctrine.[61]

Unfortunately, by the time the WASP were ready for militarization, it was too late. The AAF attrition rates were much lower than expected, reducing its training needs. Additionally, the ending of the WTS program released many male pilots for duties that the women were filling. Some of these men complained to their Congressmen, feeling it was unfair that they might be put into the "walking Army" when they were qualified to take over the jobs the women were currently filling.[62] Throughout the spring and early summer of 1944, Congress debated the merits of militarizing the WASP. Militarization would have allowed the commissioning of women as pilots in the AAF and entitled them to the same pay, benefits, and privileges as male pilots of the same grade and years of service.[63] The bill for militarization was defeated on 21 June. In her final report, Cochran writes "it is felt that its [the WASP militarization bill] failure to pass was not due so much to opposition to militarization of the WASP as to a situation that had come to focus at that time dealing with civilian male flying instructors who were losing their jobs due to a cutback in the Army Flying Training Program, and also pilots or students who were a part of the WTS instructor program."[64] A few days after Congress failed to pass the militarization bill, General Arnold announced the WASP would no longer accept applicants. The WASP classes already in training would to finish, but no new classes would begin. On 3 October 1944, General Arnold issued an order for the inactivation of

[60] Cochran, "Final Report on Women Pilot Program," 26.
[61] England and Reither, "Women Pilots With the AAF, 1941-1944," 35.
[62] England and Reither, 92.
[63] England and Reither, 91.
[64] Cochran, "*Final Report on Women Pilot Program*," 26.

the WASP on 20 December 1944.[65] When the program ended, there were 916 WASPs on the AAF rolls.

When the War Department asked the Air Corps in 1930 if the Army might be able to use women pilots, the Air Corps' Chief replied that it could never work because "women were too high strung for wartime flying."[66] In the years immediately preceding the US entry into WWII, the Air Corps continued to resist the use of women pilots, but the manpower demand of the war forced it to reconsider. The women's pilot program began as an experiment to see if women pilots might be able to fill domestic, non-combat flying duties to free up men for overseas duty. The questions of the suitability of women for military aviation, particularly whether they would have the aptitude, temperament, and physiological make-up to be military pilots, needed to be answered. During the 27 months of the WASP program, a total of 1,102 women pilots served. As a group, the WASPs flew approximately 60 million miles in the execution of their operational duties, with each woman averaging 33 hours per month once she completed training.[67] By the end of their service, the women had flown every model of aircraft in the AAF's inventory.[68] The WASPs assigned to the Ferry Division completed 12,659 ferry missions, flew 9,224,000 miles, and operated 77 types of aircraft.[69] Their initial ferry duties entailed moving light, training type aircraft from the factories to training bases, but eventually grew to include ferrying: fighters and pursuits, including the P-38, P-39, P-40, and P-63; bombers, mostly B-17s, but a few qualified to fly the B-24, and two flew the B-29, the most advanced and sophisticated bomber in the world; and transports, both the C-46 and C-54.[70]

When the program began, there were many questions about the suitability of women to fly military aircraft, in particular how gender-related physiological differences might affect their performance. Regarding fatigue, stamina, and endurance, the women were found to be equal to the men. Concerns about menses leading to lost flying time

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[65] Cochran, 27.
[66] Craven and Cate, *The Army Air Forces in World War II, Volume 1: Plans and Early Operations*, 528.
[67] Cochran, "*Final Report on Women Pilot Program*," 19.
[68] Rickman, *WASP of the Ferry Command*, 185.
[69] England and Reither, "Women Pilots With the AAF, 1941-1944," 67.
[70] England and Reither, 67; Craven and Cate, *The Army Air Forces in World War II, Volume 1: Plans and Early Operations*, 532; Rickman, *WASP of the Ferry Command*, 185.

and undependability of the women proved unwarranted, with the average loss during training less than half a day and reported as negligible once on operational assignment. Cochran's final report on the WASP program even points out that the six female instructors at Avenger Field lost less time per month than their male counterparts there. Differences in muscular strength between men and women did not prove to be a hindrance in the women chosen to fly the B-17 and B-29, the AAF's two heaviest planes. The WASPs flew over 12,500 hours in the B-17 with zero fatalities and three minor incidents.[71] The minimum height required for entry into WASP program was 60 inches, but in her final report, Cochran recommended that the minimum for any future entries should be at least 64 inches.[72]

During a study of the effects of anoxia on women, 386 WASP underwent altitude chamber testing, and the results were compared to 719 male aviation cadets. The women proved to be slightly more intolerant of anoxia at 18,000 feet, with 3.6 percent unable to complete a six-minute period without the need for supplemental oxygen, compared to 0.8 percent among the male comparison. The women also suffered a slightly higher incidence of ear and sinus pain during the testing at 28,000 feet altitude. Due to problems with oxygen-mask fitting, more women underwent the testing at higher altitudes using continuous flow oxygen equipment.[73]

Over the course of the WASP program, 27 women died in the line of duty.[74] The women's program experienced a total 26 fatal accidents, with a fatal accident rate of 0.088 per 1,000 hours. Male AAF pilots executing operational duties within the continental US had an identical accident rate of 0.088 per 1,000 hours during the same period. With an all-accident rate of 0.693 per 1,000 hours for the entirety of the program, the WASP slightly exceeded the male pilots' rate of 0.54 per 1,000 hours. In her final report on the Women Pilot Program, Jackie Cochran attributed the higher accident rate among the women to the expanding nature of the program. She pointed out that male

[71] Cochran, "*Final Report on Women Pilot Program*," 20–23.
[72] Cochran, 28.
[73] Cochran, 24.
[74] Cochran, 18.

pilots performing domestic flying duties during 1942, a year when the AAF rapidly expanded its operations, suffered 0.707 accidents per 1,000 hours flown.[75]

The WASP training program began when the first class entered training in November 1942 at Hughes Airfield in Houston, Texas and finished 18 classes later in December 1944 at Avenger Field, Sweetwater, Texas. A total of 1,830 women entered training, with 1,074 graduating, with an overall elimination rate for all causes at 35.5 percent – almost identical to the AAF men's training elimination rate of 35.6 percent during the same period.[76] The women underwent the same standard aptitude test given to male pilots. The women achieved better scores in reading comprehension, math, and other academic subjects, but lower scores in some of the tests used to predict pilot aptitude. The women were also found weaker in two-handed coordination and their understanding of mechanical principles. The higher academic scores can be contributed to the women's higher level of formal education.[77] Weaknesses in mechanical understanding and coordination can be attributed in part to gender-based social roles where girls were encouraged to participate in activities associated with maintaining the home and family, while boys were typically encouraged to play sports and participate in activities that improved mechanical aptitude, such as building with Erector Sets.

Although small in size and disbanded earlier than its participants would have liked, the WASP program demonstrated that women could successfully fill a number of flying roles.[78] On the morning of 7 December 1944, the final class of WASP trainees, Class 44-W10, graduated at Avenger Field.[79] General Arnold gave the keynote address, telling everyone assembled there

> "frankly I didn't know in 1941 whether a slip of a young girl could fight the controls of a B-17…You, and more than 900 of your sisters have shown that you can fly wingtip to wingtip with your brothers. The entire operation has been a success. It is on the record that women can fly as well as men…We will not again look upon a women's flying organization as experimental. We will know that they can handle our fastest fighters, our heaviest bombers; we will know they are capable of ferrying, target towing, flying training, test flying and the countless

[75] Cochran, 18–20.
[76] Cochran, 17.
[77] Cochran, 28.
[78] England and Reither, "*Women Pilots With the AAF, 1941-1944,*" 77.
[79] Vera S. Williams, *WASPs: Women Airforce Service Pilots of World War II* (Osceola, WI, USA: Motorbooks International, 1994), 126.

> other activities which you have proved you can do. This is valuable knowledge for the air age into which we are now entering."[80]

Arnold appears to have been a late convert to the ideas of women flying military aircraft. Unfortunately, his crystal vision was muddled by the prevailing stereotypes and social mores over the next 30 years.

Over the course of women's participation in the CPTP, the number of women pilots in the US increased by approximately 400 percent, from 675 in January 1939 to 2,783 in July 1941. Many of these new women pilots earned their private pilot license through the CPTP, while others were inspired to pursue pilot training on their own. In the early months of US involvement in WWII, the AAF had a critical shortage of trained pilots which led the Ferry Division to hire women pilots for ferrying duties. As the women's program expanded, a number of CPTP graduates joined its ranks. The American women, both those trained through and those inspired by the CPTP, who volunteered for the WASP program, played a critical part in US military efforts during WWII.

[80] Sally Van Wagenen Keil, *Those Wonderful Women in Their Flying Machines: The Unknown Heroines of World War II*, Rev. and expanded ed (New York: Four Directions Press, 1990), 330.

Chapter 4

THE TUSKEGEE AIRMEN

The signing of the Selective Training and Service Act (STSA) in September 1940 opened the door for African-Americans to serve in the US Army Air Corps. At the time this legislation was signed, the AAC was the domain of white men because it did not accept black applicants. The STSA paved the way for the creation of a separate, segregated flying unit. In January 1941, the AAC announced a plan to create an all-black fighter squadron, the 99th Pursuit Squadron that would train and be based at Tuskegee, Alabama. This new squadron marked the beginning of a group that came to be known as the Tuskegee Airmen. The term Tuskegee Airmen encompasses not just pilots, but also bombardiers, navigators, radio operators, mechanics, and support specialists including medical personnel, meteorologists, intelligence specialists, and many others.[1] What started as a modest plan to utilize 476 men to create and man a single pursuit squadron and its accompanying support elements eventually grew to include two flying groups and more than 14,000 men.[2] Described as an "experiment," the program at Tuskegee set out to determine if African-Americans could be taught to fly military aircraft, lead their own units, and serve honorably in combat. Against steep odds, the Tuskegee Airmen succeeded in their task, and in the process helped to set the conditions for Air Force racial integration. The Civilian Pilot Training Program played a key part in this process, preparing the men and the Tuskegee Institute for their future wartime roles.

In the years following World War I, Americans became increasingly enthusiastic about the airplane, believing in its potential to improve the human condition. Hollywood movies, barnstormer aerial shows, and feats like Lindbergh's solo flight across the Atlantic spurred American interest in aviation. This growing "air-mindedness" did not have race or gender boundaries. A young woman from Waxahachie, Texas, Bessie Coleman, became enamored of flying after hearing her brother John's stories of daring French female pilots he saw while serving in Europe during World War I. Determined to learn to fly and unable to attain training in the US because of her race and gender, Coleman travelled to France to study at the École d'Aviation des Frères in Le Crotoy,

[1] https://www.nps.gov/tuai/learn/historyculture/index.htm
[2] Haulman, A Short History of the Tuskegee Airmen, 7.

France. Coleman earned her pilot's license from Fédération Aéronautique Internationale on 15 June 1921, becoming the first licensed African-American pilot in the US.[3] Following her return to the States, Coleman conducted air shows across the country to raise money to purchase an airplane and open a flying-training school. Although she died as the result of an aircraft accident in April 1926 without having achieved either goal, she did inspire many African-Americans to pursue aviation.[4]

Lindbergh's flight across the Atlantic mesmerized the world, imbuing a desire to fly in many people. The airplane captivated Americans, and regardless of race or gender, they were fascinated by the promise of flight.[5] The limited availability of aircraft and the expense of flight lessons, combined with social barriers, limited opportunities for minority groups, including African-Americans and women.[6] By the 1930s the airplane had come to symbolize progress toward a better life with improved opportunity for all. Inspired by the legacy of Coleman and the feats of Lindbergh, black Americans started flying clubs, organized aerial shows, and began to write about the importance of flying. William Powell, an African-American WWI veteran, flew in an airplane for the first time during a war-reunion trip to France in 1927 and returned to the US determined to learn to fly. After being turned down by multiple flight schools and the Air Corps because of his race, Powell eventually moved to Los Angeles, California for training and earned his pilot license in 1932.[7] Convinced that aviation would bring better jobs and a better future to black Americans, Powell founded the Bessie Coleman Aero Club in an effort to link local black flying clubs together and spread the message of air-mindedness.

In the first issue of the Bessie Coleman Aero News, published in May 1930, Powell wrote a message to "The Negro Youth of America," saying: "There is a better job

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[3] Amy Sue Bix, "Bessie Coleman: Race and Gender Realities Behind Aviation Dreams," in *Realizing the Dream of Flight: Biographical Essays in Honor of the Centennial of Flight 1903-2003*, ed. Virginia P Dawson and Mark D. Bowles (Washington, DC: NASA History Division, 2005), 6–7.; American Eugene Bullard is credited as the first African-American pilot to fly in combat; however, he received his flight training through the French Flying Service during WWI.
[4] Bix, 11,15.
[5] Dawson and Bowles, *Realizing the Dream of Flight: Biographical Essays in Honor of the Centennial of Flight 1903-2003*, viii.
[6] Dawson and Bowles, 2.
[7] Black Wings: The Life of African American Aviation Pioneer William Powell https://airandspace.si.edu/stories/editorial/black-wings-life-african-american-aviation-pioneer-william-powell

and a better future for you in aviation than any other industry. The reason is this: Aviation is just beginning its period of growth. Aviation is going to be America's next gigantic industry, and if you can get into it now while it is still uncrowded, you can grow as aviation grows."[8] African-American pilots demonstrated their growing skills during two long-distance flights, when pilot James Banning and his mechanic, Thomas Allen, became the first African-Americans to fly coast-to-coast from California to New York in 1932, and when pilot C. Alfred Anderson and Dr. Albert Forsythe completed a round-trip transcontinental flight the following year. Beyond showcasing their abilities, these flights were intended to promote the idea that African-Americans could and should be involved in aviation.[9] John Robinson, a Tuskegee Institute alumnus, led the Ethiopian Air Force from 1935-1936 when Italy invaded that country. Robinson's exploits were closely followed and widely covered by the black press in America, who nicknamed him the "Brown Condor," stimulated further African-American interest in aviation.[10] By the late 1930s, black Americans had come to believe that their exclusion from government-supported programs, such as air-mail service contracts, military aviation, and commercial flying, limited their prospects for progress.[11]

The economic conditions of the Great Depression forced many African-Americans to migrate north in search of jobs and better living conditions. Blacks, at least the ones allowed to vote, traditionally supported the Republican Party, but this began to change during Roosevelt's second term.[12] Access to jobs and training through New Deal programs such as the WPA, CCC, and NYA along with the presence of racial equality advocates such as Harold Ickes, who previously served as the president of the Chicago chapter of the NAACP, contributed to this shift. Eleanor Roosevelt's interests in black civil rights also acted as a strong influence in the White House.[13] The President appointed a number of black advisors, who became known collectively as the Black

[8] Robert J Jakeman, *The Divided Skies: Establishing Segregated Flight Training at Tuskegee, Alabama, 1934-1942.* (Tuscaloosa, AL: University of Alabama Press, 1996), 63.
[9] Barry M. Stentiford, *Tuskegee Airmen*, Landmarks of the American Mosaic (Santa Barbara, Calif: Greenwood, 2012), 137.
[10] Jakeman, *The Divided Skies*, 21–24.
[11] Jakeman, 68.
[12] Measures enacted in most southern states such as poll taxes and literacy tests stripped the vote from most African-Americans living there.
[13] Stentiford, *Tuskegee Airmen*, 36.

Cabinet, to various federal agencies and New Deal programs to assist with race-related matters.[14] New Deal programs and the Roosevelt administration created an environment where blacks could begin to advocate for issues they considered important. Approximately 400,000 blacks migrated north during the 1930s.[15] As African-Americans left the South, they escaped the voter suppression imposed on them by white southerners, which concentrated the black vote enough for it to become a factor in elections. A growing sense of empowerment and increasing political influence through voting set the stage for African-Americans to lobby for more inclusion in federal programs.[16]

Almost immediately after President Roosevelt requested Congress to authorize an expansion of the military and funds for a civilian pilot training program, black civil-rights advocates began to focus on black participation in the military. In previous wars, African-Americans had been allowed to serve on a limited, segregated basis in mostly support functions. Although the Army trained thousands of aviators for WWI, none had been black. American Eugene Bullard, a black man, born in Columbus, Georgia, served as a pilot in the French Flying Service during the war after receiving his flight training there.[17] Military service held an important place in African-American society. The black community took pride in their role in all the nation's wars, from Crispus Attucks during the Revolution, to the service of the Army's black regiments on the American frontier, in the Spanish-American War, and the Philippine Insurrection, and to Sergeant Henry Johnson's award of the French Croix de Guerre for his heroic actions during the previous war. Military service represented an avenue for upward mobility, through increased freedom and opportunity, including full citizenship. The link between citizenship and voting was unbreakable in their minds. Full citizens were entitled to vote, which would give them the ability to help shape the future. Citizenship was earned and protected through military service.

As Congress debated the merits of creating a pilot training program for civilians, Representative Everett M. Dirksen from Illinois proposed an amendment to the bill mandating that "none of the benefits of training or programs shall be denied on account

[14] Jakeman, *The Divided Skies*, 35, 76.
[15] Jakeman, 75.
[16] Jakeman, 77.
[17] Jakeman, 56.

of race, creed, or color."[18] Although some in Congress strongly opposed the amendment, it made it through the approval process and became part of the Civilian Pilot Training Act law that President Roosevelt signed into law in June 1939. The anti-discrimination amendment ensured that for the first time blacks would have wide-scale access to pilot training.[19] This amendment guaranteed their inclusion in the CPTP and set the stage for future advances into the AAC.

When the CPTP began full-scale operations in the fall of 1939, six black institutions participated in the program: Howard University, Tuskegee Institute, Delaware State College, Hampton Institute, North Carolina Agricultural and Technical State University, and West Virginia State College. With war looming on the horizon, one of these schools, Tuskegee Institute, would become a key component of the future of African-Americans in the AAF. Chartered by the Alabama Legislature as a teaching college for blacks, the Tuskegee Institute opened its doors on 4 July 1881 under the leadership of Booker T. Washington. Envisioning Tuskegee as "a veritable cathedral of practical learning and black self-help," Washington eventually added vocational training courses in woodworking, blacksmithing, masonry, and other trades to the curriculum.[20] Historically, the Tuskegee Institute took a gradualist approach to adding new programs, relying on its faculty to slowly and deliberately develop the new curriculum. For example, the Tuskegee agriculture program began with the construction of a building dedicated to agricultural studies, and the hiring of George Washington Carver, who then designed the courses.[21] Tuskegee first considered offering aviation classes in the mid-1930s. This sort of training, particularly aircraft mechanics, nested well with Tuskegee's traditional focus on vocational education.[22] The creation of a federally funded pilot training program inspired the Institute to follow through on establishing an aviation program. Tuskegee received its approval for participation in October 1939 with a quota of 20 students. The CPTP proved very popular at Tuskegee, just as it had at other schools throughout the country. Sixty students applied for admission to the program, and

[18] Pisano, *To Fill the Skies with Pilots*, 49.
[19] Von Hardesty and Dominick Pisano, *Black Wings: The American Black in Aviation.* (Washington, DC: Smithsonian Inst. Pr., 1991), 19.
[20] Jakeman, *The Divided Skies*, 2–3.
[21] Jakeman, 31.
[22] Jakeman, 2.

the Institute whittled the list down to 20, including two women, to meet the CAA's quota. Ground instruction began in December followed by the start of flight instruction in January 1940.[23]

Unlike previous curriculum expansions, Tuskegee could not rely on its organic teaching staff for the aviation program's development. Understanding the importance of getting the program off to a good start and concerned that none of the faculty had experience in aviation instruction, the Institute solicited the help of two aeronautical engineering professors from the Alabama Polytechnic Institute, located nearby in Auburn, to teach the ground portion of the program.[24] Alabama Air Service, based at the Montgomery airport approximately 40 miles west of Tuskegee, was contracted to provide the flight-training portion of the course. The distance between the campus and the airport well exceeded the CAA's requirement that the airfield used for flight training be within 10 miles of the school. Tuskegee requested and received a waiver with the promise that it would secure a closer airfield as soon as possible.[25] The school planned to build a runway about a mile from the campus, but the long drive to Montgomery, almost two hours each way, quickly proved untenable, forcing the school to look for a faster solution. The Institute secured a lease of a nearby grass landing strip and attained CAA approval for its use in February 1940. The school called the new airstrip Kennedy Field, naming it after one of the previous lease holders.[26] Tuskegee continued with the construction of the airfield on Institute property, which became known as Moton Field when it began operations.

On 25 March 1940, CAA inspector, George Wiggs, arrived at Tuskegee to administer CPTP's standardized written examination. Tuskegee became the first southern school to achieve a 100 percent passing rate on the written exam when all 20 of its students passed the exam with an average score of 88. A small black institution, considered by almost all outsiders to be of inferior quality to white schools, beat out the likes of Georgia Tech and North Carolina and garnered a lot of positive attention. When

[23] Stentiford, *Tuskegee Airmen*, 29.
[24] Jakeman, *The Divided Skies*, 124–25; Alabama Polytechnic Institute became Auburn University in 1960.
[25] Strickland, *The Putt-Putt Air Force; The Story of the Civilian Pilot Training Program and the War Training Service (1939-1944)*, 41.
[26] Stentiford, *Tuskegee Airmen*, 29.

the flying portion of the course concluded on May, 19 of the 20 students earned their pilot license when they passed the CAA-administered flight exam.[27] The outstanding success of the students in the first year of the program created a firm foundation for Tuskegee's continued CPTP growth and planted the seeds for its later involvement in AAF training.

The CAA granted Tuskegee a quota of 10 students for CPTP's 1940 intensive summer session which ran from 15 June to 15 September. Additionally, the CAA increased the Institute's school-year quota for the 1940-1941 academic year. At the beginning of July 1940, the CAA awarded Tuskegee a 10-student quota for the CPTP advanced course set to begin on 15 July. The CPTP advanced course was conducted at only select locations around the country, with the best students from all of the programs competing for the opportunity to attend. Tuskegee was the only black college to receive permission to conduct the advanced class. The 10 best students from among all of the CPTP students at the six black colleges traveled to Alabama to participate in the program. Unlike the elementary course, the CPTP paid for all the students' expenses except their travel to Tuskegee. The ten students selected for the advanced training reported to Tuskegee on 22 July and included three students from Howard University, three students from Tuskegee, two students from Hampton Institute, and one student each from West Virginia State College and North Carolina A&T.[28]

The short time frame between program approval and the start of class forced Tuskegee to work quickly to set up the new course. Determined from the beginning to establish a self-sufficient aviation training program, Tuskegee decided to hire its own flight instructors for the new course and to acquire the heavier aircraft required for the training. The Institute hired Charles Alfred "Chief" Anderson and Lewis A. Jackson as flight instructors and arranged to purchase a Waco UPF-7. Additionally, Tuskegee arranged to use the larger airfield in Auburn, Alabama, as a temporary operating location until completion of the school's new airfield. On 10 October 1940, a CAA inspector administered the ground and flying evaluations for the advanced course, and all ten students passed. Once students completed the advanced program, they were eligible for

[27] Jakeman, *The Divided Skies*, 128–30.
[28] Jakeman, 147–49.

the CPTP's cross-country and instructor courses. Tuskegee needed to develop more instructor pilots both to gain independence from outside help and grow its aviation-training program. The advanced course served as an avenue for that instructor development, and several students from the first class remained at Tuskegee as instructors in its growing program.[29]

Tuskegee's CPT program continued to expand in the fall of 1940, with quotas to train 30 elementary students, 10 advanced, and 10 instructors. The Institute hired additional instructors and purchased additional training aircraft to accommodate these increases. By the end of October, Tuskegee achieved full control of its aviation-training program and no longer needed to rely on Alabama Air Service or the API professors. The variety of training being offered and the number of students enrolled in its aviation program distinguished Tuskegee from the other black schools and highlighted its emerging role as a center of black aviation. The gains Tuskegee made during 1940 were attracting the attention of African-Americans across the country and government officials in Washington, DC.

Approximately 100 African-American students gained their pilot license through the CPTP during the 1939-1940 academic year. The addition of three more black schools to the CPTP increased the training opportunities available to black students, with an expected 300 receiving their pilot license by the end of the 1940-1941 academic year. Many in the black community viewed participation in CPTP as the first step towards admission to military aviation. Unfortunately, in the fall of 1940, the AAF continued to refuse to accept black pilots into its ranks, but the passage of the STSA in September set the conditions for change.

A loophole in Public Law 18 (PL18), the legislation that authorized the expansion of the AAC in 1939, allowed the AAC to continue its exclusion of blacks by promising to provide equipment for a CAA-approved civilian school to train black aviators.[30] This effort is more than a little disingenuous, particularly considering the AAC's stance that CPTP was not a suitable substitute for military aviation training. Additionally, the AAC

[29] J. Todd Moye, *Freedom Flyers: The Tuskegee Airmen of World War II*, Oxford University Press (New York, N.Y: Oxford University Press, 2012), 49.
[30] Jakeman, *The Divided Skies*, 101–2.

cited a number of reasons why it felt the accession of African-Americans was unnecessary. Racial stereotypes convinced many white Americans that blacks were poor and illiterate. Before the start of World War I, less than three percent of African-Americans living in the South and 14 percent living in the north had attained higher than a grade-school education. The migration of blacks to the North during the Great Depression, combined with improved access to school, dramatically improved these numbers for northern blacks, so that on the eve of the WWII approximately 63 percent attended school beyond the primary grades. During the same period, the number of blacks in the South with more than a grade school education increased to 43 percent.[31] Unfortunately, firmly rooted beliefs tend to change slowly, and the military's perception of the abilities of African-Americans remained rooted in pre-WWI America. Following WWI, the US Army War College published a study entitled "The Use of Negro Manpower in War." The study assessed the performance of African-Americans during the war and made recommendations for their use in future wars. Highly influenced by the prejudicial thinking of that era, the report called blacks mentally inferior, susceptible to crowd thinking, incapable of leadership, inherently weak in character, lacking in initiative and resourcefulness, and cowardly in the face of danger. The study recommended segregated training for the races and cautioned against assigning blacks to supervisory roles over whites.[32] The War College's findings shaped the military's view towards African-Americans in the years prior to US entry into WWII. The AAC perceived itself as an elite and technologically advanced branch of the military that had no room for anyone of limited mental capacity or technological aptitude, and it used the study's recommendations to justify its resistance to admitting blacks.

As the situation in Europe worsened during the summer of 1940, Congress passed the STSA in September, which authorized the first peace-time draft in the nation's history. Additionally, the law specifically prohibited racial discrimination in the military. The following month, the Roosevelt Administration released a seven-point plan for the "fair and equitable utilization of blacks for defense." The president's policy included guidance that blacks would be drafted in proportion to the population, used in all

[31] Stentiford, *Tuskegee Airmen*, 40.
[32] Army War College, "Employment of Negro Man Power in War," November 10, 1925.

branches of the military, trained as pilots and aircraft mechanics, and established that military units would be segregated by race.[33] Congressional mandate, pressure from the White House, the success of black CPTP students, and the need for more pilots to fill cockpits combined to force the AAC to develop a plan for the formation of an all-black flying unit. In December 1940, the AAC submitted its plan for the creation of a single, segregated pursuit squadron composed of 47 officers, including 33 pilots, and 429 enlisted men. Designated the 99th Pursuit Squadron, the new unit would be based at Tuskegee, Alabama, where its pilots would receive their flight training. The Tuskegee Institute's aviation training program's record of success played a key part in Tuskegee's selection as the location for the new squadron. The region's favorable flying weather, almost 300 days a year, and Tuskegee's proximity to the Southeast Air Corps Training Center at Maxwell Field in Montgomery also factored into the decision.[34]

The 99th Pursuit Squadron developed in three stages. The first stage started at Chanute Field, Illinois, on 22 March 1941, when the unit's enlisted aircraft mechanics and technicians and its support officers began their training there. Once the training at Chanute was completed, this group moved to Tuskegee to support the training of the squadron's pilots during the unit's second development stage. Only after the full complement of pilots completed their training would the unit enter the third stage where it became a fully functioning tactical unit.[35] The construction of Tuskegee Army Air Field (TAAF) began in early July, and the 99th's first pilot candidates entered training on 19 July 41 when they began their preflight training on the Tuskegee campus. The first training class consisted of 13 officers, including Captain Benjamin O. Davis Jr., a 1936 graduate of the United States Military Academy (USMA).[36] Davis originally tried to join the AAC before his graduation from USMA but was turned down because of his color.[37]

With Captain Davis as their leader, the trainees started the primary phase of flight training at Moton Field on the Tuskegee Institute's campus on 21 August. In keeping

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[33] Stentiford, *Tuskegee Airmen*, 31.
[34] Jakeman, *The Divided Skies*, 310.
[35] Jakeman, 198; Alan L Gropman, "Benjamin O. Davis, Jr: American Hero," in *Realizing the Dream of Flight: Biographical Essays in Honor of the Centennial of Flight 1903-2003*, ed. Virginia P Dawson and Mark D. Bowles (Washington, DC: NASA History Division, 2005), 115.
[36] Davis was one of two black officers in the US Army. The other black officer was his father Colonel Benjamin O. Davis, Sr, the Army's first black general officer.
[37] Gropman, "Benjamin O. Davis, Jr: American Hero," 113.

with its practice of using civilian contract flying schools to conduct the primary phase of flight training, the Army signed a contract with the Tuskegee Institute for its civilian pilots to conduct that phase of training.[38] At the end of primary training, the seven remaining students transitioned to the newly completed TAAF on 8 November to begin the basic phase of flying training. The class, reduced to five students by the end of advanced training, graduated on 7 March 1942.[39] The unit reached full strength in August 1942, then waited on alert status for five months until it shipped out for North Africa aboard the *SS Mariposa* on 24 April 1943.[40]

Once the 99th Fighter Squadron (99FS) reached North Africa, it was attached to the 33d Fighter Group.[41] The 99FS flew in combat for the first time on 2 June 1943. Tasked primarily with ground-attack missions, the squadron had few opportunities to engage Luftwaffe aircraft in the air. Lt Charles B. Hall became the first member of the squadron to shoot down an enemy plane when he took out a German FW-190 in early July.[42] The 99FS spent the war stationed in the Mediterranean Theater of Operations. The unit moved north as the Allies advanced through Italy, eventually settling at Ramitelli Airfield, Italy, where it was joined by the 101st, 301st, and 302d Fighter Squadrons. Once the newest Tuskegee squadrons arrived in theater the 332d Fighter Group stood-up with Colonel Ben O. Davis, Jr as its commander. As part of 15 AF, the 332d executed 200 bomber-escort missions flying the P-47 Thunderbolt and the P-51 Mustang. The 332d's dedication to the escort mission made them a favorite among bomber crews.[43]

The 332d Fighter Group flew its last wartime missions on 7 May 1945, a daytime reconnaissance mission into Austria intended to test the truce with Germany.[44] In almost two years of combat, the Tuskegee Airmen completed 1,500 missions, including 15,000 individual sorties. These valiant pilots destroyed 111 enemy aircraft, losing only 66 of

[38] Moye, *Freedom Flyers*, 33.
[39] Stentiford, *Tuskegee Airmen*, 42–45.
[40] Hardesty and Pisano, *Black Wings*, 36.
[41] Gropman, "Benjamin O. Davis, Jr: American Hero," 116.; The AAF re-designated all pursuit squadron as fighter squadrons on 15 May 1942.
[42] Gropman, 117.
[43] Moye, *Freedom Flyers*, 112.
[44] Stentiford, *Tuskegee Airmen*, 123.

their own along the way.[45] The men from Tuskegee earned 150 Distinguished Flying Crosses and hundreds of Air Medals for their outstanding work.[46]

The program that began as a limited, token initiative grew vastly beyond its original scope. When the program started, pilot trainees needed at least two years of college education and completion of the CPTP's advanced course to be eligible to apply. Determined to make the program successful, Tuskegee Institute officials encouraged the other black programs to send only their very best to advanced training because these men would become members of the newly formed squadron. In addition to providing introductory flying training for future military aviators, the CPTP also helped develop a pool of black instructor pilots who went on to serve as instructors in the various flying programs located at Tuskegee. These instructors helped to train approximately 2,000 black aviators, most of whom went on to serve as Tuskegee Airmen.[47] Finally, CPTP not only trained black aviators, but it also helped to prepare the Tuskegee Institute for its unforeseen, but critical role as the AAF's center of black aviation.

[45] Gropman, "Benjamin O. Davis, Jr: American Hero," 122.
[46] Moye, *Freedom Flyers*, 122.
[47] Hardesty and Pisano, *Black Wings*, 21.

Chapter 5

Implications & Conclusion

The provisions of the 1939 Civilian Pilot Training Act helped women and African-Americans gain access to pilot training at an affordable price. When the CAA proposed the program in late 1938, it intended the measure to bolster the lagging civil-aviation sector and hoped to create a reserve of pilots for use in case of a national emergency. Over the course of the program, 125,762 students received training through the CPTP. The CAA's wartime records indicate that by the end of Fiscal Year 1942, more than 42,000 CPTP students had reported for Army and Navy aviation training.[1] The CAA also estimated 11,200 instructor pilots trained through the CPTP advanced courses went on to serve as instructors at schools dedicated to training Army and Navy aviation cadets.[2] After the start of the war, when the CPTP became the War Training Service (WTS), it devoted its effort exclusively to support the military. The WTS provided training to more than 218,000 Army Aviation Cadets and over 105,000 Naval aviators during the 1943 and 1944 Fiscal years.[3] Women and African-Americans used the skills they had acquired through the CPTP to help their nation during the war. The wartime performance of the WASPs and Tuskegee Airmen paved the way for social and cultural changes that are reflected in today's US Air Force.

Women

During the years when women participated in the CPTP, the number of women pilots in the US increased from 755 in July 1939 to 2,783 in July 1941. Almost every one of these new women pilots had received her training through the CPTP. Although an increased focus on national defense and war preparation eventually resulted in the exclusion of women from the program, women continued to seek pilot training. A number of these women went on to serve in the WASP program, and about 50 became instructors in the Army contract schools or with the Navy.[4] Many women too young to have participated in CPTP were inspired to pursue pilot training on their own. Every

[1] Civil Aeronautics Administration, "Wartime History of the Civil Aeronautics Administration," 23, 26.
[2] Civil Aeronautics Administration, 26.
[3] Civil Aeronautics Administration, 24.
[4] Civil Aeronautics Administration, 26.

WASP on duty freed a man for potential duty on the front lines. As the AAF pilot training programs rapidly expanded in 1942, Air Transport Command struggled to deliver the ever-increasing number of training aircraft rolling off the aircraft manufacturers' assembly lines. The urgent need to safely and quickly deliver these trainers to the various AAF schools across the country led the ATC to the hire a small group of women pilots to help mitigate its pilot shortage. The addition of a full-fledged AAF pilot-training program for women helped this group grow and expand its operational mission. Over the course of 25 months, a total of 1,282 women graduated from the WASP training program.[5] The WASP mission expanded beyond ferrying aircraft to include training for aircraft crews, air defense units, and student pilots; cargo and passenger transport; and aircraft testing.

The system the AAF established to ferry aircraft between the point of manufacture and domestic airbases, and from their domestic locations to overseas operation areas proved vital to US victory during the war. The AAF's Air Transport Command ferried 268,905 aircraft, losing only 1,013, between July 1942 and August 1945, giving the US an astoundingly low non-combat attrition rate of 0.3 percent. America's adversaries did not enjoy the same success. By 1944, the German and Japanese air forces had begun to suffer tremendous losses during aircraft deployment—the period between manufacture and operational employment. Records indicate that German fighter production increased during the first seven months of 1944; however, there was no corresponding increase in operational aircraft because of problems encountered during delivery to final operating locations.[6] Germany suffered the loss of half the 1,400 Me-262 jet aircraft it manufactured to non-combat causes.[7] Following the war, Hermann Goering, the former Luftwaffe chief, blamed poor training and declining pilot quality, for the majority of these losses.[8] The Japanese Army suffered similar losses with about 50 percent of its aircraft being lost during transport to deployed locations.[9]

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[5] "Army AIr Forces Statistical Digest: World War II" (AAF Office of Statistical Control, December 1945), 64.
[6] Phillips Payson O'Brien, *How the War Was Won: Air-Sea Power and Allied Victory in World War II* (Cambridge, United Kingdom: Cambridge University Press, 2015), 94.
[7] O'Brien, 82.
[8] O'Brien, 94.
[9] O'Brien, 83.

Over the course of the WASP program, October 1942 to December 1944, the Air Transport Command delivered 152,726 aircraft to domestic locations, losing only 315 planes in the process for a non-combat attrition rate of less than 0.25 percent.[10]

The entry of the US into WWII triggered a groundswell of patriotism across the country. Young men flocked to enlistment offices, and civilian industry shifted to support the war effort. As the men left for the military, women entered the workforce to fill jobs traditionally held by men. The range of jobs women filled spanned American society, from mainstream clerical and manufacturing work to the less-traditional all-female professional baseball league. The women of the WASP program also found a unique way to serve their country during this time of crisis.

Almost 19 million women entered the workforce during WWII because of these new job opportunities.[11] Although the WASPs composed only a small portion of the wartime AAF, they performed their duties well and proved that women were capable of flying military aircraft. At the beginning of the war, the general public and the women themselves believed the employment of women outside the home would be temporary, with everyone returning to their more traditional roles when the war ended. By the end of the war, a number of women had found they quite enjoyed the excitement and sense of accomplishment they gained through their work.[12] The return of servicemen from overseas duty, the drawdown of the military in the immediate post-war years, and a great societal drive to return to the normalcy of the pre-war years meant decreasing opportunities for women outside their traditional roles.

The passage of the 1948 Women's Armed Services Act finally provided a permanent place for women in the military, but only on a small scale because of Congressionally mandated limits on the number of women allowed to serve. The law's prohibition on the placement of women into combat-related jobs further limited their opportunities. The Department of Defense took this restriction further, closing all career fields it felt "are not in conformance with the present cultural pattern of utilizing

[10] "Army AIr Forces Statistical Digest: World War II," 302.
[11] Dean Jaros, *Heroes without Legacy: American Airwomen, 1912-1944* (Niwot, Co: University Press of Colorado, 1993), 117.
[12] Jaros, 118.

women's services in this country."[13] The failure to militarize the WASP program during the war meant there was no precedent for women military pilots. The surplus of manpower, the lack of an existential crisis, and societal norms combined to limit opportunities for women in military aviation in the decades immediately following WWII. It would take a new crisis to get the military to reconsider the use of women as pilots. The ending of the draft and the transition to an all-volunteer force at the end of the American involvement in Vietnam forced the military to consider how it could expand its talent pool. The passage of the Equal Rights Amendment by Congress in 1972 also spurred the armed forces to determine how they could better utilize women.[14] The combination of these forces led to the admission of women to Navy pilot training in 1973, Army pilot training in 1974, and Air Force pilot training in 1976.[15] It is quite interesting that the service whose legacy included the WASPs trailed the Navy and Army in integrating women pilots into its ranks. In her book, *Women in the Military: An Unfinished Revolution*, retired USAF Major General Jeanne Holm, blamed the Air Force's tardiness on the fact that pilots in the USAF held a disproportionate number of senior leadership positions relative to their overall representation among the force. This remains true today. For the USAF, the admission of women to the pilot ranks would have more than just a symbolic effect; there would also eventually be leadership implications.[16]

The number of women pilots in the USAF has steadily increased in the years since 1976. The restrictions originally placed by the 1948 women's integration law prohibited the USAF only from using women as pilots on "aircraft engaged in combat missions." The USAF took a narrower view of the legal limitations and opened only about 30 percent of pilot positions to women. Just as the WASPs did during WWII, the USAF's newest women aviators proved they were capable of flying complex, military aircraft. As these women demonstrated their proficiency, the types of aircraft and mission-roles they were allowed to participate in expanded. Relaxation of restrictions

[13] Jeanne Holm, *Women in the Military: An Unfinished Revolution.* (Novato, CA: Presidio., 2009), 183.
[14] Holm, 262–67.; The Equal Rights Amendment failed because it was not ratified by at least three-quarter of the US states.
[15] Holm, 317–20.
[16] Holm, 320.

allowed for the assignment of women pilots to combat-support aircraft, which permitted their participation in the US military's contingency operations in Grenada, Libya, and Panama during the 1980s and the Gulf War in 1991.[17] (Holm). The last legal barrier for the assignment of women to combat aircraft fell away when President George H. W. Bush signed the National Defense Authorization for Fiscal Year 1992 and 1993.[18] The lifting of this restriction allowed women to fully participate in the US wars in Iraq and Afghanistan. USAF women pilots built on the legacy of the WASPs and are now a fully integrated part of the force where there are no limitations beyond aptitude for participation in any of the Service's career-fields.

African-Americans

When Congressman Everett M. Dirksen, an Illinois Republican, proposed an amendment to the Civilian Pilot Training Act that specifically prohibited the denial of admission to the program on the basis of "race, creed, or color," some felt this measure was unnecessary.[19] While some in Congress believed this would not be a problem, Congressman Dirksen and many leaders in the African-American community felt that the racial segregation and discrimination practices of the day warranted the amendment. With the door open to affordable, government-subsidized pilot training, many African-Americans were finally able to earn a pilot license. Over the course of the CPTP, almost 2,000 black men earned their wings.[20] The vast majority of these individuals would later serve in the AAF during WWII. George L. Washington, the Tuskegee Institute official who managed the school's CPTP/WTS program, felt the black participation in the program played a critical role in the admission of blacks to the AAF, saying: "I have serious doubts that were it not for the CPTP that there would have been a 99th Pursuit Squadron or a 332d Fighter Group."[21]

The creation of the 99th Pursuit Squadron, followed by 332d Fighter Group and its other accompanying flying squadrons provided an avenue for young black men from

[17] Holm, 426–27, 444.
[18] Holm, 473.
[19] Pisano, *To Fill the Skies with Pilots*, 51.
[20] Hardesty and Pisano, *Black Wings*, 21.
[21] Strickland, *Putt-Putt Air Force,* 47.

across America to serve during WWII. Through their outstanding performance, this small group of men proved there should be no limit placed on jobs African-Americans could fill in the military. In addition to demonstrating that blacks could master the technical skills needed to operate and maintain complex military aircraft, the Tuskegee experiment also exposed the expense and inefficiency associated with maintaining a separate program.[22]

The wartime leadership of Benjamin O. Davis, Junior, clearly dispelled the notion that black men lacked initiative, resourcefulness, and the ability to lead others.[23] Additionally, the dedication, determination, and courage displayed by the Tuskegee Airmen during the execution of thousands of wartime missions paved the way for their later integration in the USAF. Shortly after the USAF gained its independence from the Army, it conducted a study of segregation within the force. The study revealed no difference in aptitude between the races and that, given the same training, African-American pilots and technicians performed at the same level as their white counterparts.[24] After President Truman's 1948 Executive Order 9981 ended the practice of racial segregation in the armed forces, the USAF led the way for the other military services, by beginning the integration process in 1949 and finishing it in 1951. The USAF integrated before the other services had even begun their programs.[25]

African-Americans used the skills they acquired through the CPTP and their superior performance in the program to challenge the AAF's exclusion of blacks. Once they gained entry into the service, the Tuskegee Airmen's performance made it impossible for anyone to claim they were not capable aviators. Military aviation became an avenue for the assimilation of blacks into the USAF in roles beyond the operation of aircraft. One CPTP graduate, Daniel "Chappie" James, got his start in the Air Force as Tuskegee Airman, before going on to fly fighter aircraft in the Korean and Vietnam Wars. James became America's the first African-American four-star general in 1975, thirty-four years after earning his pilot's wings through the CPTP.[26]

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[22] Hardesty and Pisano, *Black Wings*, 3.
[23] Jakeman, *The Divided Skies*, 315.
[24] Gropman, "Benjamin O. Davis, Jr: American Hero," 125.
[25] Gropman, 112.
[26] J. Alfred Phelps, *Chappie: America's First Black Four-Star General: The Life and Times of Daniel James, Jr* (Novato, CA: Presidio, 1991), 23.

Conclusion

Thousands of Americans used the training they received in the CPTP to serve their country during WWII. For two groups, women and African-Americans, the training provided a vector for movement into areas that had long been denied to them. Their performance and achievements during the war paved the way for practical and sociological changes in the Army Air Forces and the United States Air Force.

When WWII began, the AAF's view of women and blacks mirrored that of the greater American society. A shortage of trained pilots to deliver the newly manufactured trainer aircraft, needed to facilitate the expanded AAF pilot training efforts, led ATC to seek out the help of a small group of women pilots. As these women demonstrated their capabilities and the program grew, the spectrum of aviation duties the women filled expanded. By the end of the WASP program, the women had flown every type of aircraft in the AAF's wartime inventory. The failed bid to militarize the WASP program and its disbandment before the end of the war resulted in a 30-year delay for the return of women to military aviation. The movement to an all-volunteer force and changes in American society set the conditions for the acceptance of women as military pilots. The legacy of the WASPs remains an enduring part of today's armed services.

The AAF began accepting black men for pilot training only after being forced by Congress, and it allowed them to serve only in segregated units. When the AAF established the 99th Pursuit Squadron, it viewed the creation of a training program for black aviators as an experiment doomed to failure; however, the men who trained at Tuskegee proved it wrong. Through the honorable and courageous service during the war, the Tuskegee Airmen demonstrated that they belonged in the cockpit. Unlike the WASPs, the Tuskegee Airmen units remained in the AAF after the war. Their continued service, although smaller in size because of post-war draw-downs, facilitated the desegregation of the USAF and cemented the changes the war had brought about.

Although the AAF began the war as a bastion of white men that did not admit anyone who did not conform to its narrow ideals, wartime exigencies forced it to expand its definition of an "Airman." The skills acquired by women and African-Americans during their CPTP training prepared them for the demands of the war that forced the AAF

to look beyond its socially constructed conception of an Airman. Today, the 2018 National Defense strategy stresses the importance of building a lethal, agile, adaptive, and resilient force to ensure the US can compete, deter, and win in today's complex and volatile international security environment. Just as the emergence of the airplane in the early 20th century changed how nations fought wars, rapid technological change and dispersion in the space and cyber domains promise to change the character of war in the 21st century. With these changes, it may again be time to re-examine our notion of what makes an Airman. Mobilizing groups that do not fit the traditional definition of an Airman could prove critical to USAF efforts to get in front of this transformation wave. Two groups in the not-so-distant past demonstrate the value of expanding our horizons.

Appendix A

CPTP CONTROLLED PRIVATE FLYING COURSE

Preliminary Ground Instruction

I. Thorough familiarization with functioning of airplane, controls, and instruments:
   a. Starting
   b. Warming up
   c. Stopping engines
   d. Warnings
      i. Danger from propellers
      ii. Difference between ground and air speed
      iii. Parking plane during strong wind
      iv. Running engine with no one in cockpit

Stage A. Dual Instruction – 8 hours

II. Taxing to proficiency
   a. Handling plane
      i. Into wind
      ii. Cross wind
      iii. Down wind
      iv. Gusty air

III. Take-offs:
   a. Into wind
   b. Cross wind
   c. Down wind (demonstrate only on auxiliary field)

IV. Air Work:
   a. Straight and level flight
   b. Gentle climbs and glides
   c. Gentle turns
   d. 70° turns
   e. Spirals and approaches for landings

V. Landings
   a. Into wind
   b. Cross wind
   c. Down wind (demonstrate only on auxiliary field)

VI. Stalls and spins; stressing approach and recovery

VII. Emergencies:
    a. Simulated forced landings from—
        i. Take-off with less than 200 feet of altitude
        ii. 90° from over 200 feet altitude
        iii. 180° from above 400 feet altitude

Stage B. Primary Solo—5 hours Solo, 1 Hour Dual

VIII. Solo flight – three landings recommended

IX. Practice work of stage A periods I, II, III, IV, and V only:
    a. All take-offs and landings into wind
    b. A 10-minute check by instructor preferably after first three solo flights of 30 minutes
    c. A 30-minute check after 3 hours

Note—Total of stages A and B to be 14 hours flying time. All landing practices will be without power.

Stage C. Advanced Solo—13 hours Solo, 8 hours Dual

X. Instruction (1 hour):
    a. Precision landing (180° U-type approach)
    b. 30° eights around pylons
    Solo (2 hours)—practice above

XI. Instruction (1 hour):
    a. Review period IX
    b. Precision landings (360° U-type approach)
    c. 70° power turns
    Solo (2 hours)—practice above

XII. Instruction (1 hour):
    a. Review period X
    b. Precision landings 720° (minimum 2 turns)
    c. 70° eights around pylons
    Solo (2 hours)—practice above

XIII. Instruction (1 hour)
    a. Review period XI
    b. Stalls and spins
    c. Slips
    Solo (2 hours)—practice above. (Spins may be solo or with certified instructor)

XIV. Instruction (1 hour)
- a. Power approaches and looking over fields
- b. Power landings

Solo (1 hour)—practice above

XV. Instruction (1 hour)
- a. Cross country (second type of aircraft used)

Solo (2 hours), cross country 50 miles minimum and two full-stop landings at different airports

XVI. Instruction (1 hour):
- a. Front seat indoctrination or opposite seat
- b. Complete private flying test given

Solo (2 hours)—goes through two complete tests alone and practice maneuvers as needed

XVII. Check by instructor for private flight test

Note—In stage C, length of period should range from 30 minutes to 1 hour at discretion of instructor after judging student and his tendency to tire. Additional instruction to that prescribed should be given on any maneuvers the instructor deems necessary. Above is a minimum outline only. Simulated forced landings should be given on all dual periods.

Table 2: Flight Training Hours

Stage	Number of Hours	
	Dual	Solo
A. Dual	8	---
B. Primary solo	1	5
C. Advanced solo	8	13
Total	17	18

Source: Air Commerce Bulletin, 15 March 1939, p. 233.

Source: "Controlled Private Flying Course," Air Commerce Bulletin 10, no. 9 (March 15, 1939): 232–33.

Appendix B

Controlled Flying Course

Stage A (Dual Instruction—minimum 8 hours)

Preliminary Ground Instruction:

a. Familiarization with airplane.
b. Simple explanation of controls
c. Simple explanation of instruments
d. Explanation of throttle
e. Explanation of brakes
f. Explanation of fuel system
g. Use of safety belts
h. Location of fire extinguisher
i. Location of first-aid kit
j. Warnings:
    1. Propeller danger
    2. Running engine with empty cockpit
    3. Local traffic rules
k. Instruction signals

Additional Ground Instruction (to be given sometime before solo):

a. Starting procedure
b. Swinging propeller
c. Warming up engine
d. Stopping engine
e. Line inspection of aircraft
f. Use of parachute

Note—Students should be permitted to solo at any time after 8 hours when in the opinion of their instructors the are qualified. The order of teaching and time spent on following maneuvers is left to the instructor's judgement to suit his conditions and personnel. Instruction periods should be approximately 30 minutes each. All landing practice without power.

I. Taxing to proficiency (to be given with daily instruction throughout dual periods while taxiing from line to point of take-off and from point of landing to the line):
    a. Into wind
    b. Cross wind
    c. Down wind
    d. Gusty air

II. Air work:
    a. First flight—orientation
    b. Straight and level flight
    c. Turns—medium—precision to be introduced as soon as possible
    d. Coordination exercises—"S" turns, elementary turns
    e. Confidence maneuvers
    f. Normal climbs and glides
    g. Turns in climbs and glides including "S" patterns
    h. Rectangular course around ground object—right and left
    i. Stalls from level flight and turns
    j. Steep power turns—right and left

III. Take-offs (explanation of differences between ground and air speed; effect of wind velocity and direction):
    a. Into wind
    b. Cross wind (demonstrate)

IV. Landings (using 90° and 180° approaches, with explanation of key positions):
    a. Into wind
    b. Cross wind (demonstrate)

V. Spins (never to exceed 3 turns):
    a. Normal entry and recovery
    b. Accidentally spins—demonstration of inadvertent entries from climbing turns, steep turns (both with and without power), and from skidding turns; students to be shown what is meant by "cross-controls" and warned to avoid such use

VI. Simulated Forced Landings (emphasis placed on right approaches):
    a. On take-off with less than 200 feet of altitude
    b. 90° with over 200 feet of altitude
    c. 180° above 400 feet of altitude—given on all periods after landing practice has commenced

Stage B (Primary Solo—minimum 3 hours solo—1 hour check to be given as instructor deems necessary)

VII. Solo flight

VIII. Solo practice: Work on Stage A periods I, II (except e, i, j), III, IV only. All take-offs and landings into wind only. All landing practices without power

Stage C (Advanced Solo—minimum 15 hours solo—8 hours dual)

Note—In Stage C, length of instruction and solo periods is left to the discretion of the instructor after judging student and his tendency to tire. Amount of dual and solo time is suggested but final determination is up to the instructor; however, 50 percent of indicated periods will be required. Four hours are allowed for periods XVI and XVII to be assigned as instructor deems necessary. Simulated forced landings should be given on all dual periods, becoming proportionally difficult as the student progresses.

IX. Instruction (1 hour) Solo practice (2 hours):
   a. Precision landing (180° U-type approach)
   b. 30° eights around pylons

X. Instruction (1 hour) Solo practice (1 hour):
   a. Review period IX
   b. Advanced stalls
   c. Spins with N.A.C.A recovery (never to exceed 3 turns)

XI. Instruction (1 hour) Solo practice (2 hours):
   a. Review period X
   b. Precision landings (360° U-type approach—altitude not to exceed 1,500 feet)
   c. 70° power turns (720° precision)

XII. Instruction (1 hour) Solo practice (2 hours):
   a. Review period XI
   b. Precision landings 720° (spiral approach—minimum 2 turns—altitude not to exceed 2,000 feet)
   c. 70° eights around pylons (altitude 800 feet—minimum starting bank 70°)

XIII. Instruction (1 hour) Solo practice (2 hours):
   a. Review period XII
   b. Cross wind take-offs and landings
   c. Slips (forward and side)

XIV. Instruction (1 hour) Solo practice (1 hour):
   a. Review period XIII
   b. Power approaches and power landings
   c. "Dragging" fields (instruction only)

XV. Instruction (1 hour) Solo practice (2 hours):
   a. Review period XIV
   b. Cross country
   c. Solo—cross country 50 miles minimum and two full stop landings at different airports—triangular course

XVI. Instruction as needed. Solo practice as needed.
Complete private flight test given by instructor, and student goes through two complete tests alone and practices maneuvers as needed.

XVII. Check by instructor for private flight test.
Discussion of maneuvers will be carried on before and after each flight. Coordination exercises are to be practiced whenever possible in climbs, gliders and going to and from practice areas.

The presentation of the items of the above course is to be in accordance with the explanations and precautions outlined in the Flight Instructors' Manual, Civil Aeronautics Bulletin No. 5

Source: "Controlled Private Flying Course," September 15, 1939, 61–63

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