

U.S. Army Air Forces Pilot Training During World War II

(National Museum of the United States Air Force)

AAF Training During WWII

One of the greatest accomplishments of the U.S. Army Air Forces during World War II was the training of hundreds of thousands of flying and ground personnel for its air armada. Coming from all walks of life, they were molded into the most formidable Air Force the world had ever seen. Before the war, few of them knew much about aviation, but by the time Japan surrendered in 1945, they had become experts in their fields. In March 1944 their numbers reached a maximum of 2,411,294 -- approximately 31 percent of the total strength of the U.S. Army.

Cadet Program

The flying cadet program to train pilots, navigators and bombardiers was demanding. Following application and appointment as an Aviation Cadet, a man was usually sent to one of three classification and preflight centers established at Nashville, Tenn.; San Antonio, Texas; or Santa Ana, Calif. There he received his indoctrination into military life -- the G.I. haircut, inoculations, guard duty and the "infamous" K.P. (Kitchen Patrol). He was also given a rigid medical exam and numerous types of aptitude and physical tests to determine whether he was best suited for training as a pilot, navigator or bombardier. Once his classification had been determined, he entered preflight ground school for approximately nine weeks, after which he was sent to flying school.

Into the Sky: Primary Flying School

When the United States entered World War II in December 1941, the U.S. Army Air Forces continued with the type of pilot training program it had originally established in 1939 -- primary flying school operated by civilian companies under contract, and basic and advanced flying schools operated by the USAAF. The civilian primary schools had been started by 10 civilian contractors without contracts -- all they had was an urgent plea from Gen. Hap Arnold and his statement that he thought he could get the necessary funds from Congress the next year. Fortunately, the schools were already well in operation at the time of Pearl Harbor.

The civilian schools used Stearman, Ryan and Fairchild trainers owned by the USAAF, but their flight instructors were civilian employees. Each cadet received 60 hours of flight training in nine weeks before moving on to basic flying school.

Crossroads: Basic Flying School

During basic flight training, a cadet received approximately 70 hours in the air during a nine-week period. The basic school made military pilots of those who had learned only the fundamentals of flight in primary school. In addition to operating an airplane of greater weight, horsepower and speed, such as the BT-9 or BT-13, the cadet learned how to fly at night, by instruments, in formation and cross-country from one point to another. Also, for the first time, he operated a plane equipped with a two-way radio and a two-pitch propeller. At this point in his training, it was decided whether he would go to single-engine or twin-engine advanced flying school.

Winning Their Wings: Advanced Flying School

Advanced flying school prepared a cadet for the kind of single- or multi-engine airplane he was to fly in combat. Those who went to single-engine school flew AT-6s for the first 70 hours during a nine-week period, learning aerial gunnery and combat maneuvers and increasing their skills in navigation, formation and instrument flying.

Cadets assigned to twin-engine school received the same number of flying hours but did not practice combat aerobatics or gunnery. Using the AT-9, AT-10 or AT-17, they directed their efforts toward mastering the art of flying a multi-engine plane in formation and increasing their ability to fly on instruments at night.

Upon completing advanced flying school, the cadet received his wings and commission.

Forging Combat Pilots: Transition Training

The successful completion of pilot training was a difficult and dangerous task. From January 1941 to August 1945, 191,654 cadets were awarded pilot wings. However, there were also 132,993 who "washed out" or were killed during training, a loss rate of approximately 40 percent due to accidents, academic or physical problems, and other causes.

Those who graduated from flying school were usually assigned to transition training in the type of plane they were to fly in combat. The transition training, usually lasting about two months, became their last opportunity to prepare for combat before they deployed overseas.

Shooting the Sun: Navigators

Following preflight training, navigation cadets went to flying school, where they spent 15-20 weeks. Emphasis was placed on precision dead-reckoning navigation with basic proficiency in radio and celestial navigation. A navigation cadet logged approximately 100 hours in the air and about 500 hours in the classroom. Upon completion of training,

navigators usually were sent to operational training units to become part of a flying crew being readied for combat assignment.

The demand for navigators required a constant expansion of the training program. Through 1943 and the end of the war, more than 50,000 had graduated. The elimination rate was approximately 20 percent.

Civilian Pilot Training Program (CPTP)

In the 1930s several European nations built up their air forces in part by training civilians as pilots in anticipation of possible conflict. In the United States, a similar program, known as the Civilian Pilot Training Program (CPTP) began in 1938. President Franklin D. Roosevelt supported the CPTP's plan to train 20,000 civilian pilots a year because this would create a pool of potential military pilots that he believed the country would need soon.

In 1939 the Army had a total of only 4,502 pilots, including 2,007 active-duty officers, 2,187 reserve officers and 308 national guard officers. The number of new Army-trained pilots grew rapidly each year as war seemed more likely, from 982 in 1939, to about 8,000 in 1940, to more than 27,000 in 1941 -- but many more were needed, and the Army by itself could not train the huge numbers of cadets desperately required. The U.S. Army Air Forces drew additional fliers from the CPTP and a separate network of civilian schools under contract to the USAAF, as well as conducting training in its own schools.

The CPTP eventually operated at 1,132 colleges and universities and 1,460 flight schools, and CPTP-trained pilots did well in further training at USAAF schools. Recording nearly 12 million flying hours, the CPTP trained 435,165 pilots from 1939 to 1944.

Expanded Opportunity

The CPTP gave African Americans and women unprecedented opportunities in aviation. Pioneering black fliers campaigned hard for public awareness of their abilities, and their efforts paid off with an antidiscrimination rule within the CPTP -- a landmark in racial equality for Blacks in aviation. Though training remained mostly segregated, instruction for Black students began at six schools: the West Virginia State College for Negroes, Howard University in Washington, D.C., Tuskegee Institute in Alabama, Hampton Institute in Virginia, Delaware State College for Colored Students, and North Carolina Agricultural and Technical College. The program soon expanded to several more schools.

The best known was Tuskegee Institute in Alabama, where the first black USAAF combat pilots were trained. The CPTP graduated around 2,000 Black pilots overall.

Women also found new opportunities in the CPTP, but these were unfortunately ended before the U.S. entry into World War II. Four women's colleges initially participated, and women were enrolled at other schools at a ratio of one woman for every 10 men. When war preparation needs demanded that all graduates enlist, women were automatically excluded because they were not allowed to fly in the military at that time. Nonetheless, the CPTP trained around 2,500 women by mid-1941, and many of them became Women Airforce Service Pilots, or WASPs.

Wartime Demands

After the attack on Pearl Harbor, the CPTP's name changed to the War Training Service (WTS). From 1942 until the program ended in the summer of 1944, trainees still attended college courses and took private flight training, but they also signed agreements to enter military service after graduation.

Trainees from the CPTP entered the Army Air Forces Enlisted Reserve. Many went on to further instruction and commissioned service as combat pilots. Others became service, liaison, ferry and glider pilots, instructors, or commercial pilots in the Air Transport Command. As it became clear that Axis forces would eventually be defeated and fewer pilots would be required in the future, the services ended their agreement with the CPTP/WTS in early 1944. The program itself was abolished in 1946.

The Civilian Pilot Training Program and War Training Service served the nation and the USAAF well before and during WWII. The program created a much-needed pool of civilian fliers who were ready for further military instruction to fly a fast-growing armada of U.S. aircraft. The CPTP/WTS and its graduates significantly contributed to the strength in numbers that American air power needed to help defeat the Axis powers.

Link Trainer

Crude pilot training aids had been designed even before World War I, but none had any significant training value. Edwin A. Link provided a giant step forward when in 1931 he received a patent on his "pilot maker" training device. He had perfected his design in the basement of his father's piano and organ factory in Binghamton, N.Y. Organ bellows and a motor provided the means for the trainer, mounted on a pedestal, to pitch, roll, dive and climb as the student "flew" it. Ironically, most of his first sales were to amusement parks. In 1934, after a series of tragic accidents while flying the air mail, the Army Air Corps bought six Link trainers to assist in training pilots to fly at night and in bad weather relying only on instruments.

The World War II era brought orders for thousands of Link trainers from the United States and many foreign countries. Although Army Air Forces aviation cadets flew various trainer aircraft, virtually all took blind-flying instruction in a Link. Movement of the trainer is accomplished by vacuum operated bellows, controlled by valves connected to the control wheel (or stick) and rudder pedals. An instructor sat at the desk and transmitted radio messages which the student in the Link heard through his earphones. Inside the "cockpit," the student relied on his instruments to "fly" the Link through

various maneuvers while his navigational "course" was traced on a map on the desk by the three-wheeled "crab." Slip stream simulators gave the controls the feeling of air passing over control surfaces and a rough air generator added additional realism during the "flight." The trainers were realistic enough that a humorous but unlikely story circulated that one student, told by his instructor that he had run out of fuel on a night flight, broke his ankle when he leaped from the trainer as though parachuting to safety.

The complexity of flight simulators has grown with that of military and civilian aircraft. No one knows how many lives, aircraft and training dollars have been saved by flight simulators, but those savings can be traced back to Link's "Blue Box," which pointed the way to today's highly sophisticated and complex trainers.