

FLIGHT LINES

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A PUBLICATION OF THE SOUTHERN MUSEUM OF FLIGHT
BIRMINGHAM, AL

WWW.SOUTHERNMUSEUMOFFLIGHT.ORG

The ATA "Spitfire Sisters"
of the
World War II WAFS/WASP



MESSAGE FROM THE DIRECTOR



Here we are nearly three months into 2022, and we are very much looking forward to what the rest of the year has in store at the Southern Museum of Flight!

Which reminds me... if you haven't had the opportunity to renew your Southern Museum of Flight Membership, now is the perfect time.

If you've never considered a Southern Museum of Flight Membership, allow me to encourage you to consider an interesting "*perk*" associated with such a wonderful opportunity.

The Southern Museum of Flight is proud to be a member of the Association of Science & Technology Centers, or ASTC. ASTC is a professional membership organization with a vision of increased understanding of (*and engagement with*) science and technology among all people and a mission to champion and support science and technology centers and museums. Through our association with ASTC, Southern Museum of Flight members are eligible for benefits such as free general admission to other member organizations throughout the country as part of the Travel Passport Program! When traveling outside of our local area, Southern Museum of Flight members can connect and engage with literally hundreds of other science & technology centers and museum across the nation. I encourage you to ask one of our knowledgeable team members or visit ASTC.org for the latest information!

I would like to wrap up with a new opportunity for our friends here at the Southern Museum of Flight. We are proud to join a number of attractions from around the City of Birmingham, as well as the State of Alabama, as a participating organization in the Alabama Department of Tourism's Alabama Attractions Pass!

The Alabama Attractions Pass is an "All-In-One" ticket to some of the best attractions throughout the state for one low price. There are several customized ticket packages, which allow for special groupings of attractions in various areas across Alabama.

Checkout gonow.alabama.travel for more information and set your course for an exciting ride!

We look forward to seeing all of our friends, old and new, in 2022!

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Flight Lines

is published monthly by the Southern Museum of Flight as an information source for its members, patrons, volunteers and friends. Articles that appear in this publication may be reprinted indicating the Southern Museum Of Flight as the source.

Comments are welcome and should be addressed to:

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Birmingham, AL 35206

WOMEN OF THE ATA



A large portion of combat occurred in the air during World War II. As such, manufacturers needed pilots to transport planes from the factories to those who would be piloting them. Enter the women of the Air Transport Authority, the ATA, who were nicknamed, the **Attagirls!**

Their U.S. counterparts at that time were the original Women's Auxiliary Ferrying Squadron, the **WAFS** - the 28 original aviators who answered the call in the fall of 1942 to do their part for the war effort. Birmingham native, Nancy Batson Crews (*Member of the Alabama Aviation Hall of Fame*) was one of the original WAFS.

The women aviators of the ATA came from across Britain and neutral countries. A notable American member of the ATA was Jacqueline Cochran who returned to the United States and started a similar female organization in 1943 known as the Women Airforce Service Pilots (**WASP**).



Over 160 women flew for the ATA in World War II. The introduction of women into the ATA was not popular, with some RAF brass sharing these sentiments. They were eventually proven wrong, as the female pilots accomplished much during their involvement in the war.

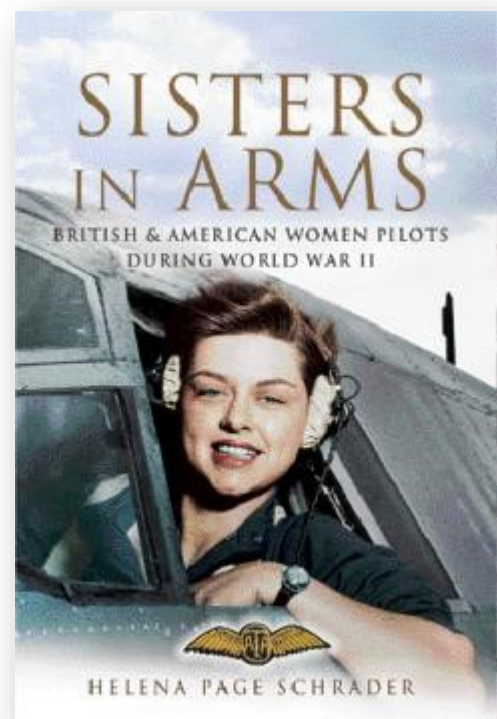
The training they received was different from pilots in combat. As they were required to fly within sight of the ground, they weren't taught to use instruments. They essentially flew blind, with just a map, a compass, and a watch to guide them. As well, very little flight training was required, which differed from those on the front.



They often worked on a schedule of 13 days on, 2 days off. They also received equal pay for their work, which was a first for the British government. At the same time American women flying with the Women Airforce Service Pilots were receiving as little as 65 per cent of the pay given to their male colleagues.

While initially restricted to flying non-combat aircraft, they were eventually permitted to pilot every type of aircraft flown by the RAF, except for flying boats. As non-operational delivery flights, the aircraft guns were not loaded. After an encounter with German fighters in UK airspace, the mid-upper gun turrets of Avro Anson transports were armed.

During the war the ATA flew 415,000 hours and delivered more than 309,000 aircraft, including the Spitfire, Hawker Hurricane, Mustang, Mosquito, Lancaster, Halifax, Fairey Swordfish, Fairey Barracuda and Fortress.





WOMEN IN AVIATION MONTH

Future Women Aviators

In 2022, the U.S. Air Force will take delivery of the F-15EX, a new and improved version of the nearly 40-year-old F-15E “Strike Eagle.” But for all of the modern advances of the new jet, only 9 percent of women in the Air Force currently meet the body-size standards for piloting the legacy F-15 and possibly also the new EX variant, potentially blocking highly qualified pilots from flying a platform that will be in operation for decades to come.

But recently the U.S. Air Force mandated that future weapons programs use current body size data that reflects the central 95% of the U.S. recruitment population - a move meant to make pilot and aircrew jobs more accessible to women and people of color.



In the meantime, legacy aircraft will remain a hurdle for the progression of female pilots. Whether necessary modifications can be made to legacy platforms that will accommodate operators with a wider range of body sizes, will depend on if they are technically feasible and funding is available for design changes. Changing the policy is one thing. Changing the platforms is yet another.

FEMALE MILITARY PILOTS BY SERVICE

| | Total Pilots | Female Pilots |
|---------------------|---------------|---------------|
| Navy | 7,074 | 589 |
| Air Force | 12,323 | 806 |
| Army | 9,133 | 612 |
| Marine Corps | 5,024 | 280 |
| Coast Guard | 1,258 | 126 |
| Army National Guard | 5,247 | 335 |
| Air National Guard | 3,638 | 193 |
| Air Force Reserve | 3,000 | 237 |
| Army Reserve | 1,611 | 136 |
| TOTALS | 48,308 | 3,314 |

Source: Department of Defense 2020 data.

Numbers are limited to pilots only, and do not include other aviator roles such as navigators, weapons officers or flight engineers.

Numbers do not include candidate pilots in training.

Women Join And Do A Man's Job

The first 8 women joined ATA on New Year's Day 1940, recruited into this man's world by Pauline Gower, who had made a living giving joy rides with a flying circus. Despite their experience, the women were restricted to flying non-operational types of plane, such as trainers or communications aircraft. They were also paid 20% less than the men, which was typical of the times.

With quiet persistence, Pauline Gower eventually won equal flying opportunities for her ladies. On July 19, 1941, Winnie Crossley was the first woman to be checked out on a Hurricane fighter, and from then on the sky was the limit.

In autumn 1942, First Officer Lettice Curtis became the first woman to fly a 4-engined bomber, an achievement shared by just 11 ATA women. Finally in 1943, the women were awarded equal pay to their male colleagues, making ATA one of the first Equal Opportunities Employers.

During the war ATA employed 168 women, including the famous trail-blazing pilot Amy Johnson (*killed in January 1941*) and a large contingent from the USA, who were recruited by the famous American pilot, Jacqueline Cochran.

The female pilots became known at the “ATAgirls”; flying Spitfires was an amazing thing for women to do, and so they were given a great deal of publicity, to the chagrin of some of the men.

While across “the pond”, their female counterparts in the WAFS, and later the WASP, mirrored these revolutionary accomplishments for the United States during the war years.



FOCUS ON RESTORATION

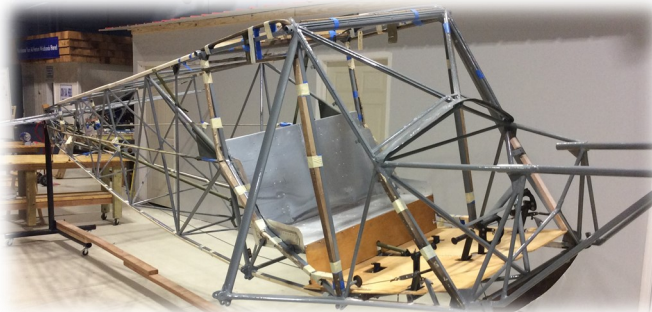


Fairchild 24 C8B - One Of A Kind !

In the July 2020 edition of Flight Lines, the acquisition of the 1932 **Fairchild 24 C8B** was chronicled and the start of the exacting and lengthy restoration process began.



This Fairchild Model 24 began life as a C8 version, of which only 25 were ever produced between 1932 and 1933. When a new Menasco Super Pirate engine replacement was completed in 1947, it made the original C8 version equivalent to a C8B, of which there were only two (2) of that version originally built in 1933. Today, the aircraft under restoration at the Southern Museum of Flight is the only 1932 Fairchild 24 C8B known to exist. This aircraft, when the restoration completes, will be “one-of-a-kind” and a true testimony to the quality of workmanship consistently attributed to the museum’s Restoration Council members.



Until the time this rare aircraft is ready for display, work continues on readying the metal frame and installing the wood stringers prior to covering the fuselage with fabric. Wood and metal fabrication is also a

necessity and is professionally being accomplished in plain view of our museum visitors.

Our skilled craftsmen enjoy answering the many inquiries of those museum visitors observing the restoration. In the past, most of their work and accomplishments have been carried on void of public view.

This “one-of-a-kind” aircraft will eventually represent itself well as part of the Early Aviation Hangar aircraft displays.



The Fairchild 24
“Glass Cockpit”



Smithsonian
National Air and Space Museum

The Museum in Washington, DC, will temporarily close to the public March 28, 2022, until fall 2022 to complete work on the first new

galleries in the west wing of the building, as part of their ongoing renovation. The National Air and Space Museum is undergoing a multi-year renovation, which began in 2018. Transforming the visitor experience, the museum will use creative and dynamic techniques to engage visitors. Exhibitions will be completely reimaged, with new presentation spaces and attractions.

The museum plans to raise \$250 million to transform their exhibitions and renovate the entire Museum, inside and out.

EAA's WAFS Auto

Ever since 2008, Ford has donated a custom designed Mustang each year to support the Experimental Aircraft Association's (EAA) educational programs.

Ford unveiled a one-of-one custom 2021 Mustang Mach-E, the first all-electric vehicle Ford has donated to EAA. Inspired by the volunteer female pilots and the planes they piloted during World War II, the unique Mach-E was auctioned at the 2021 Experimental Aircraft Association (EAA) AirVenture air show in Oshkosh. Proceeds from these auctions support EAA's initiative to provide young women and underserved youths more access to aviation industry careers.



This Mustang Mach-E honors the humble sacrifices of the Women Airforce Service Pilots (WAFS) in World War II with unique styling inside and out. Designed by Ford, the special Mach-E sports a custom paint scheme with military badging that include the U.S. Army Airforce star on both sides, wings logo on hood and fender, and the No. 38 badge on the transmission tunnel in honor of the 38 volunteers who died in service to their country. The unique Mustang Mach-E also features bright yellow accents on the dashboard, steering wheel, and door panels, as well as bright yellow wings logos on the headrests.

The EAA Aviation Foundation's events to support its education programs raised more than \$1.7 million dollars in total to focus on its mission.



"WASP" OF WORLD WAR II

In Her Own Words

**Nancy Batson Crews Chronicles Her Life As One Of The
1,102 WAFS & WASPs That Flew During World War II**

"I was born on February 1, 1920, in Birmingham, Alabama. At the University of Alabama, I was chosen for the Civilian Pilot Training Program and received my private license and went on to further my pilot career. I became an instructor for Embry-Riddle in Miami, Florida. I was the 17th to join the WAFS.



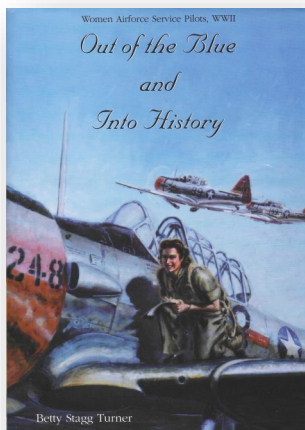
After deactivation, I married my college boyfriend, Paul Crews. We had three children: two sons, Paul, Jr. and Radford, and a daughter, Janey.

I worked part-time at the Pearblossom Gliding School near Palmdale as an instructor. I was also a flight instructor at the Hawthorne, California airport, and towed aerial banners and gliders.

I was WAFS president from 1972 - 75. In August 1979, I bought a Schweizer 2-33A, in which I gave rides and instruction. I restored a 1949 Mooney Mite and bred and trained race horses.

My husband, Paul, retired as a colonel from the Air Force. He died in 1978.

I flew in the Powder Puff Derbies and have been honored in the Forest of Friendship, Atchison, Kansas. I was elected mayor of California City, California in 1978. I returned to Alabama in 1981 and was inducted into Alabama Aviation Hall of Fame in 1989."



Nancy Batson Crews' story shown above is from the book,

Out of the Blue and Into History
by Betty Stagg Turner.

Turner's book provides a personal glimpse into the lives of these pioneer women pilots who opened the skies to today's female aviators.

Nancy Batson Crews (1920 - 2001)

This is the story of an uncommon woman – high school cheerleader, campus queen, airplane pilot, wife, mother, politician, business woman – who epitomizes the struggles and freedoms of women in 20th-century America.

In love with flying from the time she first saw Charles Lindbergh in Birmingham in October 1927, Crews began her aviation career in 1939 as one of only five young women chosen for Civilian Pilot Training at the University of Alabama. Later, Crews became the 17th woman of 28 to qualify as a Women's Auxiliary Ferrying Squadron (WAFS) pilot, employed during World War II shuttling P-38, P-47, and P-51 high-performance aircrafts from factory to various staging areas.

Before the war was over, 1,102 American women qualified to fly Army airplanes.

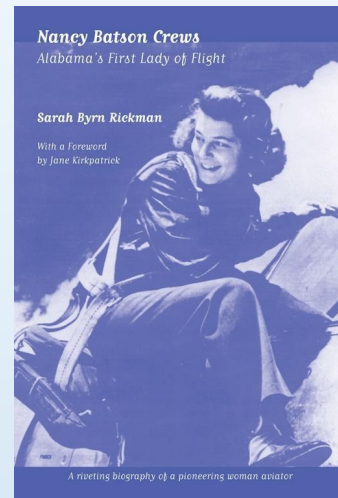
After the war, Crews continued to fly, from gliders and turbojets to J-3 Cubs, in a postwar career that began in California and then resumed in Alabama.

In 1989, she was the first woman inducted into the Alabama Aviation Hall of Fame. In 1997, a plaque in her name was placed in aviation's prestigious Forest of Friendship, near Amelia Earhart's Atchison, Kansas birthplace. Her WAFS uniform, first logbook, and Mooney Mite airplane are enshrined at the Southern Museum of Flight in Birmingham, Alabama.



She hosted a reunion of the surviving nine WAFS in 1999 at the Southern Museum of Flight and had recorded her own testimony and remembrances before her passing in 2001.

After helping lead the fight in the '70s for WASP to win veteran status, it was fitting that Nancy Batson Crews was buried with full military honors.

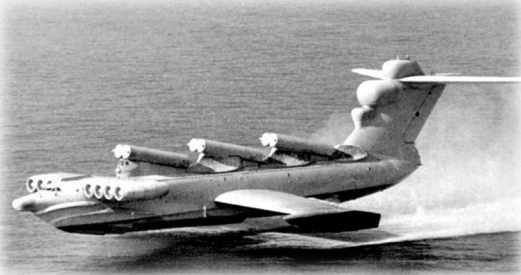


W-I-G EFFECT CRAFT FOR U.S. ?



Wing-In-Ground Effect Aircraft Regain Interest By Military

The Cold War between the U.S. and the Soviet Union produced an inventory of grotesque and somewhat devastating weapons. One such weapon was the wing-in-ground effect aircraft, the KM, also called, the “*Caspian Sea Monster*”. Testing in 1966 showed that the “*ekranoplan*” could cruise at about 265 mph with maximum speed at 460 mph. One MD-160 (shown above) entered service with the Soviet Navy in 1987. It was retired in the late 1990s.



An ekranoplan is faster than any sea-going vessel and didn't have drafts that sonar could pick up. They were immune to mines and torpedoes and were also giant stealth planes. Some of their shortcomings were they could only be used during fair weather seas and weren't fuel efficient nor very maneuverable (which makes them good targets for fighter jets).

Interest in the concept resurfaced in the United States in early 2000 when Boeing's Phantom Works started looking at solutions for moving troops, weapons, military equipment and provisions to a battle scene faster. The concept was later assessed as marginally feasible to enter service, ranking behind other platforms that were deemed feasible by a U.S. congressional report.

But the main branches of the U.S. armed forces are showing an interest in this concept again. The U.S. Defense Advanced Research Projects Agency (DARPA) released a Request for Information (RFI) in August 2021 seeking a Wing-In-Ground (WIG) cargo aircraft for the U.S. military.

They set some requirements for the WIG plane, but provided no data, artwork, sketches, examples, or models to bias and hinder the Defense industries and universities' WIG plane concepts. The deadline for the WIG craft concept submission was September 2021.

A good WIG aircraft example is Boeing Phantom Work's *Pelican*, originally designed around early 2002.

This WIG concept has been tried - and abandoned - in the past, but a new generation of WIGs could change all that.

What's Next For The Original Wright Flyer?

The Wright Brothers & the Invention of the Aerial Age is getting an upgrade as part of the transformation of the National Air and Space Museum in DC. The 1903 Wright Flyer is one of the most iconic artifacts in the Smithsonian. The reimagined gallery will feature an up-close experience with the 1903 Wright Flyer. The gallery has an online exhibition chock full of interesting insights into the Wright brothers, their career paths, their influence on aeronautical engineering, and their aircraft.



Also included will be artifacts from the brothers' youth and their aeronautical experiments to help visitors better understand what enabled Wilbur and Orville to achieve one of the transformational accomplishments in history. The gallery also covers how the world received and embraced the new experience of human flight in the decade after Kitty Hawk through art, film, photography, music, and other cultural artifacts. Their educational STEM webcast series for middle school students, has also produced a number of episodes about the Wright Flyer.



Smithsonian
National Air and Space Museum



The Boeing Pelican ULTRA (Ultra Large Transport Aircraft) was a proposed ground effect fixed-wing aircraft under study



MEMBERSHIP

When It Comes to Southern Aviation History ... Just Ace It !

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&
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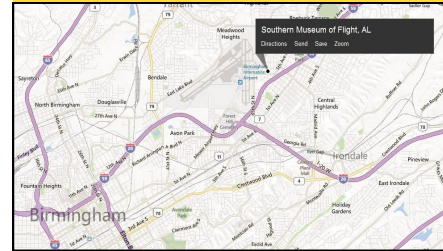
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The Southern Museum of Flight acknowledges the support provided by the Jefferson County Commission through the Jefferson County Community Arts Fund administered by the Cultural Alliance of Greater Birmingham



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