FLIGHT LINES

SEPTMBER 2019

CENTERPIECE OF THE MEMORIAL AIRPARK

THE LOCKHEED A-12

Page 4
Formed as a territory on March 3, 1817, Alabama became the nation’s twenty-second state on December 14, 1819. To commemorate the people and places of Alabama as well as its path to statehood, ALABAMA 200, a three-year celebration, supports and hosts events that celebrate our rich history.

The ALABAMA 200 is led by the twelve-member Alabama Bicentennial Commission and is chaired by Senator Arthur Orr of Decatur. Beginning in 2013, the commission established committees to plan and coordinate events and activities centered on education, statewide initiatives, and local activities. The Southern Museum of Flight was a proud partner in ALABAMA 200 sponsoring many educational aviation-related programs during this commemorative period.

ONE OF A KIND - THE MINIMAC

The Mini-Mac was an original design homebuilt aircraft of Charles E. McCarley of Bessemer, Alabama. Of all-metal construction, the tri-gear, single-seat aircraft was powered by a 65 hp VW 1800 engine. Built by the designer himself and registered as Special 1600, this aircraft was first flown in July 1970. It was lost in a fatal accident at Bessemer Airport on October 28, 1978. At the time of the crash the aircraft was still registered to McCarley, but co-owned by three other persons.

A 2nd example of the Mini-Mac was built by a good friend of McCarley, George Harrison (shown in the picture to the right) using McCarley’s tools. This aircraft had an open cockpit. Power came from a 55hp, VW1600 engine. Registered as N75GH (s/n 3), this aircraft was first flown on July 4, 1974.

The museum proudly displays the only Mini-Mac in existence.
Early exhibition aviators staged the first air shows around 1910, when individual pilots and small groups of aviators gathered together and flew demonstrations to earn a living, promote aviation, and entertain the masses. Eventually these aviators started competing to see who could perform the best stunts, and fly the highest, fastest, and farthest. By the start of World War I, air shows had become a popular international phenomenon.

After World War I, during the "barnstorming" era, air shows changed significantly. In the past, spectators had usually gone to airfields to see an exhibition, but after the war, stunt pilots and wing walkers brought their shows to the people, even in the most remote areas. As a result, barnstorming became one of the era’s most popular forms of entertainment.

Air shows drew thousands of people between both world wars and the opening of the Birmingham Municipal Airport in 1931 was one of them.

Amid the pomp, ceremony and the greatest air show that the city had ever seen, more than 50,000 people attended the National Air Carnival to witness the Birmingham debut of commercial passenger service by American Airways with a Birmingham stop between its Atlanta and Fort Worth route.

By the late 1930s, more than 350,000 spectators were attending the carnival. And celebrities such as Jimmy Doolittle, Roscoe Turner, Eddie Rickenbacker and Claire Chennault were also in attendance. Beauty queens from all parts of the country competed for the coveted title of “Miss American Aviation.” The carnival’s elegant ball featured entertainers such as Jimmy Dorsey, Guy Lombardo, and Ella Fitzgerald. Before World War II, the National Air Carnival was the largest free air show in the United States.

In 1941, 400,000 people saw static displays, aerobatics, and parachute jumps that attracted Robert L. Ripley to visit Birmingham for a broadcast on the “Believe-It-or-Not of Aviation.”

The free air shows were discontinued in the 1950’s due to increased traffic at the Birmingham Municipal Airport. In 1964 an annual fly-in and aviation exposition was established called the "Southeastern Aircraft Exposition".

One of the longest continuously running aviation events in the United States, the Birmingham Aero Club’s Wings and Wheels Air Show continued to provide an introduction to aviation to thousands of spectators. Each year, the show had featured nationally recognized aerial aerobatic acts along with sky-divers, classic automobiles, aircraft displays and other entertainment.

The 1941 National Air Carnival—Birmingham Municipal Airport
The CIA developed the highly secret A-12 OXCART as the U-2's successor. The intention was to meet the nation's need for a fast, high-flying reconnaissance aircraft that could avoid Soviet air defenses. The CIA awarded the OXCART contract to Lockheed in 1959. Legendary engineer Clarence "Kelly" Johnson, who led the development effort, overcame numerous technical challenges with cutting-edge innovations in titanium fabrication, lubricants, jet engines, fuel, navigation, flight control, electronic countermeasures, radar stealthiness, and pilot life-support systems. In 1965, after hundreds of hours flown by the elite team of CIA and Lockheed pilots, the A-12 was declared operational, attaining sustained speed of Mach 3.2 at 90,000 feet altitude.

The CIA's operational use of the A-12 was beset by many technical problems, political sensitivity to aircraft flights over denied areas and competition from imaging satellites. By the time of CIA's first A-12 deployment in 1967, satellites were being launched regularly to collect thousands of images worldwide each year and were invulnerable to anti-aircraft missiles and much less provocative than A-12 overflights.

During the same time, the USAF was developing the SR-71 Blackbird which was a modified version of the A-12. Seeing little value in maintaining both overt SR-71 and covert A-12 fleets with similar capabilities, President Johnson ordered retirement of the A-12s in 1968.

The Blackbird on display at the SMF Memorial Airpark is the 11th of the thirteen A-12 spy aircraft built. It was assigned Article 131 by Lockheed and CIA, and serial number 60-6937 by the USAF. This A-12 was the first to be deployed to Kadena AFB, piloted by CIA pilot, Mele Vojvodich (22 May 1967) and it flew the first operational mission over North Vietnam (31 May 1967). It was the first A-12 overflight of North Korea during the USS Pueblo incident, piloted by CIA pilot, Frank Murray (23 January 1968). Article 131 made its last flight on 21 June 1968 and was the last A-12 to ever fly. It had flown just 345.75 hours in 177 flights.

MUSEUM HIGHLIGHTS

The Southern Museum of Flight has been visited a number of times by the man who set, and still holds, the world speed record for an airplane flight from the west coast of the United States to the east coast. Raymond Edward Yeilding is from Florence, Alabama and was tasked to set an official speed record to honor the highly dedicated Americans who designed, maintained, supported, and flew the amazing SR-71 Blackbird during its 25 years of vital service. The speed record was made in the SR-71A "Blackbird" on March 16, 1990 with an average speed of 2153.24 mph, in 67 minutes and 54 seconds. The SR-71A was retired from the USAF following this flight. This Mach 3" aircraft is now on public display at the Udvar-Hazy facility of the National Air and Space Museum. At the time of this flight, Ed Yeilding was a Lt. Col. in the USAF, and was Senior SR-71 pilot.

Ed Yeilding (shown on the right in the picture above) was elected to the Alabama Aviation Hall of Fame in 2013 having been nominated by Bob Gilliland (on the left in the picture). Bob Gilliland was the first Lockheed test pilot to fly the SR-71 and had also attended a number of SMF events over the years.
The Museum is fortunate to count among its prized assets a team of experts whose talents are committed in the restoration of the various artifacts displayed.

One of these dedicated individuals is Alan Moseley, who is also a member of the Board of Directors and currently serves as President of the Birmingham Aero Club. Alan credits his father, a 9th Air Force member in WW II, for having sparked his interest in aviation at an early age.

His aviation interests include the study of aviation history, RC model aircraft, military weapons and equipment collections, and photography.

Alan earned his Private Pilot's license and was co-owner of a Cessna 150. He has also flown the Cessna 172 & 192, the AT-6 "Texan", Boeing B-17, Bell 47 helicopter and has crewed in the North American B-25 and P-51, as well as a 1928 New Standard Bi-plane.

Alan attended the University of Alabama and UAB and was the owner of Advanced Computer Engraving.

He has taken restoration courses at the Warbird Restoration School and attended Fabric Covering classes.

His many restoration efforts include the lozenge camouflage paint scheme on the Fokker D.VII, the painting and marking of the F-86 "Sabrejet" and the MiG-15 "Fagot". He was also responsible for the finish painting and markings of the F-101, F-106, and A-4 cockpit simulators, the T-33 "Sea Star", the Bell UH-1 "Huey" and his talents are now helping to bring life back to the North American TB-25N "Mitchell" which will become a part of the Tuskegee Airman exhibit.

Banks High School was to be closed forever and school alumni began looking for a home for their beloved jet mascot. A group of alumni visited the museum and developed a plan to save the jet. When ownership of the jet was transferred to the SMF, alumni began raising funds to restore the jet and build a monument in honor of the aircraft's service. In June 2007, the jet was removed from the school. In 2012, after thousands of restoration hours, the jet was unveiled at the museum and remembered for its service and for its years of inspiration to thousands of Banks students.

An aileron from the TB-25N recovered with fabric by the museum's restoration cadre
On February 1, 1950, Contract N8ss-2660 was approved for 1,000 Jeep units “especially adapted for general reconnaissance or command communications” and “constructed for short underwater operation such as encountered in landing and fording operations” - in other words, a waterproofed, radio Jeep.

Production began in March 1950 and the total of 1,000 units was completed by June 1950. The Department of the Navy was the procuring agency, and Willys Overland Motors of Toledo, Ohio, was the sole contractor. The entire contract was intended for use by the United States Marine Corps. The Navy designation for this vehicle was: Truck 1/4-ton 4x4 V-35/U for general radio use (the /U stands for underwater). The CJ-V35/U was similar to the CJ-3A civilian Jeep, and was basically a modified CJ-3A with snorkels, extended exhaust pipes, tailgates like the 3A’s, and 6- or 12-volt generators to power radios, but had unique features specific only to this military model. Stamped Willys lettering was also unique to the CJ-V35/U, as other military vehicles of the era did not have raised lettering on the hood or tailgate.

The CJ-V35/U was designed for short-duration operation in water about one foot over the top of the hood and had a snorkel ventilation system for the engine and other drivetrain components. Before delivery, a sampling of each day's production was given a rigorous underwater test requiring that the Jeep operate for 15 minutes under water.

The cost for each new vehicle (plus the radio gear and spare parts) was about $3,000 in 1950. Adjusted for inflation, the price would be more than $26,000 each today.

Today there are less than 100 of these Jeeps still known to exist. While there are surely other CJ-V35/U’s unaccounted for, those that are currently inventoried are not all complete vehicles. The CJ-V35/U is one of the rarest military Jeeps ever built by Willys, and the likelihood of seeing another one is almost non-existent.

This rare Jeep model was a gift to the Museum by Mr. Steve Chilton.
On display in the Reconnaissance Area is a Technical Objective Camera that was utilized on the Blackbird in addition to a series of other camera types.

The TEOC is a very high-resolution, pointable camera (110 lines per millimeter, which equates to about 6" ground resolution from an operational altitude). Camera on-off, operating mode, and pointing angles were controlled automatically by the navigation system or manually by the RSO (Reconnaissance Systems Officer). Left and right cameras were mounted in bays on both sides of aircraft’s chine and controlled by a computer. Shown below is a picture of Edwards AFB taken from 81,000 ft. in a SR-71. The blown-up detail is amazing.

This task was not simple as the aircraft would have moved several hundred feet forward during the exposure time of the picture which was around one or two tenths of a second. Without some kind of correction, this would have resulted in a picture that was blurry.

To solve this, the velocity over height ratio number was fed to the camera, either manually as computed by the pilot, or automatically as computed by the sensors and computer of the SR-71 (and it turns out that the machine did a better job at this than the pilot) and while the picture was taken, the high-precision mirror that directed the camera field of vision downwards would rotate in the opposite direction towards which the airplane was moving.

At the right is a schematic showing the major components of the Hycon HR-308B Technical Objective Camera (TEOC).

The museum is also fortunate to have a number of important aerial recon and mapping cameras on display as part of the Cold War Exhibit.

- Fairchild KA-2
- Fairchild F-56
- Fairchild K-17C
- Folmer Graflex K-21
MEMBERSHIP

When It Comes to Southern Aviation History …
Just Ace It!
With a Southern Museum of Flight Membership!

Yes, I would like to become a member of the Southern Museum of Flight
Your membership will help the museum continue its work in preserving southern aviation history, restoring historic aircraft and inspiring students to excel in science and technology

<table>
<thead>
<tr>
<th>Membership Level</th>
<th>Annual Fee</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family/Grandparents</td>
<td>$65.00</td>
<td>Unlimited admission for one year, admission to more than 300+ museums across the USA, discounts on Birthday Parties &amp; Camps</td>
</tr>
<tr>
<td>Family/Grandparents</td>
<td>$85.00</td>
<td>Unlimited admission for two years, unlimited admission for more than 300+ museums across the USA, discounts on Birthday Parties &amp; Camps</td>
</tr>
<tr>
<td>Aviation Pioneer</td>
<td>$100.00</td>
<td>Unlimited admission for one year, unlimited admission for all Family Benefits above plus 5 Guest Passes</td>
</tr>
<tr>
<td>Aviation Barnstormer</td>
<td>$200.00</td>
<td>Unlimited admission for one year, all Family Benefits above plus 10 Guest Passes, 5% Discount on a Basic Facilities Rental</td>
</tr>
<tr>
<td>Aviation Ace</td>
<td>$500.00</td>
<td>Unlimited admission for one year, all Family Benefits above plus 15 Guest Passes, 10% Discount on a Basic Facilities Rental</td>
</tr>
</tbody>
</table>

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