Hangar Talk

December 2023 | Northern Palm Beach County Experimental Aircraft Association Chapter 203, Inc. | Volume 27, Number 12

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Join Us for a Holiday Breakfast This Saturday, Dec 9th

Participate in VMC Club

Since 2015 and 2017, respectively, EAA members have enjoyed participating in organized hangar flying through EAA's VMC clubs.

VMC Clubs are extensions of local EAA chapters and offer monthly VMC program meetings where pilots can network and share knowledge and experiences. The purpose of EAA Visual Meteorological Conditions (VMC) Clubs build proficiency when flying under visual flight rule conditions.

New Website. Go to https://chapters.eaa.org/eaa203 to see the new look! New Category called EAA 203 Events Calendar. See current and future activities.

Find the Air Speed Indicator

Hidden somewhere within the pages of this newsletter is an ASI similar to the one shown here (will be smaller). All you need to do is find the page on which it appears, specify article or photo and send to sdthatcher@bellsouth.net to win. Winning Entries will be published in the newsletter.

ASI Location: One Prize Only awarded for correct ASI location.

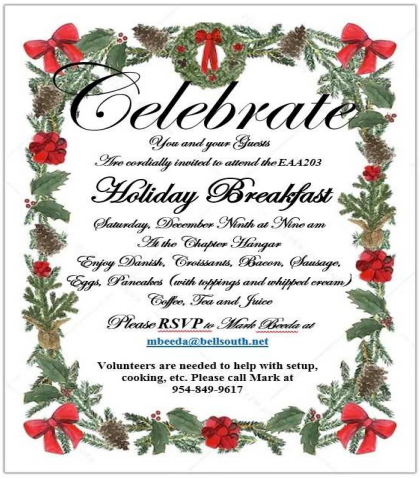
ASI Winners: Located bottom right photo (right of center) on page 4. Winner Was Rick Golightly!

Aircraft Winners: P38 Lightening, Rick Golightly won again!

Calendar of Events

December 9th

EAA203 Holiday Breakfast with Danish, Croissants, Bacon, Sausage, Pancakes, Eggs, Coffee, Tea and Juice.



Learn to Fly!

Private, Sport, or Ultralight?

There are three basic pathways to becoming a pilot here in the U.S.: You can become a full-blown private pilot, you can get there a bit faster and cheaper by becoming a sport pilot, or you can fly on your own as an ultralight pilot.

It all really depends on two things: what you want to fly, and how many people — if any — you want to take with you.

Private Pilot

Becoming a private pilot requires the most training (and a medical exam), but it also gives you the most privileges and fewest limitations. A typical private pilot will fly two- or four-seat airplanes, they can fly at night, and, with additional training and ratings, can fly on instruments in bad weather, fly multiengine airplanes, etc.

Sport Pilot

Getting your sport pilot certificate is simpler, faster, and less expensive than a private certificate, and is perfect for someone who wants to fly smaller, lighter aircraft on their own or with one other person. No medical exam is required, and the minimum training time is half of what's required for the private.

Ultralights

If the idea of flying low and slow, on your own, maybe using a grass runway mowed into a field on the family farm, and not necessarily going anywhere in particular appeals to you, then the world of ultralights is worth a look. They're not fast and they don't carry much, but they are definitely fun. While there's no legal requirement for instruction, training should be considered absolutely mandatory for safe and happy flying.

Young Eagles

Ever wondered what your neighborhood looks like from the sky? Or maybe you're curious how airplanes even work. You might even dream about being a pilot.

If you're nodding your head "Yes" and are between the ages of 8 and 17, you're ready to take a free Young Eagles flight and see what real pilots do on the ground and in the air.

Since 1992, more than 2 million Young Eagles have enjoyed a flight from EAA's network of volunteer pilots.

For more information contact Rick Golightly, metro9100@aol.com.

Meeting Directions

The next EAA Chapter 203 meeting will be held at the hangar located at North County Airport (F45). The EAA Hangar is found by going to the junction of the Beeline Highway (SR710) and PGA Blvd (SR786). Then go 2.6 miles NW (from PGA); turn left at the airport sign, and cross the train tracks. Follow the road to the hangar, which is on the left-hand side before you get to the FBO terminal, hangar 11250-5.

Barntoons

Used by kind permission of Dennis McLane (dennisdeanmclain@gmail.com)

Last Month's Aircraft — Lockheed P38 Lightening

The Lockheed P-38 Lightning is an American single-seat, twin piston-engined fighter aircraft that was used during World War II. Developed for the United States Army Air Corps (USAAC) by the Lockheed Corporation, the P-38 incorporated a distinctive twin-boom design with a central nacelle containing the cockpit and armament. Along with its use as a general fighter, the P-38 was used in various aerial combat roles, including as a highly effective fighter-bomber, a night fighter, and a long-range escort fighter when equipped with drop tanks. The P-38 was also used as a bomber-pathfinder, guiding streams of medium and heavy bombers, or even other P-38s equipped with bombs, to their targets. Used in the aerial reconnaissance role, the P-38 accounted for 90 percent of American aerial film captured over Europe. Although it was not designated a heavy fighter or a bomber destroyer by the USAAC, the P-38 filled those roles and more; unlike German heavy fighters crewed by two or three airmen, the P-38 with its lone pilot was nimble enough to compete with single-engine fighters.

The P-38 was used most successfully in the Pacific and the China-Burma-India Theaters of Operations as the aircraft of America's top aces, Richard Bong (40 victories), Thomas McGuire (38 victories), and Charles H. MacDonald (27 victories). In the South West Pacific theater, the P-38 was the primary long-range fighter of United States Army Air Forces until the introduction of large numbers of P-51D Mustangs toward the end of the war. Unusual for an early-war fighter design, both engines were supplemented by turbosuperchargers, making it one of the earliest Allied fighters capable of performing well at high altitudes. The turbosuperchargers also muffled the exhaust, making the P-38's operation relatively quiet. The Lightning was extremely forgiving in flight and could be mishandled in many ways, but the initial rate of roll in early versions was low relative to other contemporary fighters; this was addressed in later variants with the introduction of hydraulically boosted ailerons. The P-38 was the only American fighter aircraft in large-scale production throughout American involvement in the war, from the Attack on Pearl Harbor to Victory over Japan Day.

Design and development

The Lockheed Corporation designed the P-38 in response to a February 1937 specification from the United States Army Air Corps (USAAC). Circular Proposal X-608 was a set of aircraft performance goals authored by First Lieutenants Benjamin S. Kelsey and Gordon P. Saville for a twin-engined, high-altitude "interceptor" having "the tactical mission of interception and attack of hostile aircraft at high altitude." Forty years later, Kelsey explained that Saville and he drew up the specification using the word "interceptor" as a way to bypass the inflexible Army Air Corps requirement for pursuit aircraft to carry no more than 500 lb (230 kg) of armament including ammunition, and to bypass the USAAC restriction of single-seat aircraft to one engine. Kelsey was looking for a minimum of 1,000 lb (450 kg) of armament. Kelsey and Saville aimed to get a more capable fighter, better at dog fighting and at high-altitude combat. Specifications called for a maximum airspeed of at least 360 mph (580 km/h) at altitude, and a climb to 20,000 ft (6,100 m) within six minutes, the toughest set of specifications USAAC had ever presented. The unbuilt Vultee XP1015 design was offered to fill this requirement, but was not advanced enough to merit further investigation. A similar proposal for a single-engined fighter was issued at the same time, Circular Proposal X-609, in response to which the Bell P-39 Airacobra was designed. Both proposals required liquid-cooled Allison V-1710 engines with turbosuperchargers and gave extra points for tricycle landing gear.

Lockheed formed a secretive engineering team to implement the project apart from the main factory; this approach later became known as Skunk Works.[17][18] The Lockheed design team, under the direction of Hall Hibbard and Clarence "Kelly" Johnson, considered a range of twin-engined configurations, including both engines in a central fuselage with push–pull propellers.

High-speed compressibility problems

The P-38 was flown with a yoke, rather than the more-usual stick.

Test flights revealed problems initially believed to be tail flutter. During high-speed flight approaching Mach 0.68, especially during dives, the aircraft's tail would begin to shake violently and the nose would tuck under (see Mach tuck), steepening the dive. Once caught in this dive, the fighter would enter a high-speed compressibility stall and the controls would lock up, leaving the pilot no option but to bail out (if possible) or remain with the aircraft until it got down to denser air, where he might have a chance to pull out. During a test flight in May 1941, USAAC Major Signa Gilkey managed to stay with a YP-38 in a compressibility lockup, riding it out until he recovered gradually using elevator trim. Lockheed engineers were very concerned by this limitation, but first had to concentrate on filling the current order of aircraft. In late June 1941, the Army Air Corps was renamed the U.S. Army Air Forces (USAAF), and 65 Lightnings were finished for the service by September 1941, with more on the way for the USAAF, the Royal Air Force (RAF), and the Free French Air Force operating from England.

P38 Lightening Continued from Pg. 3

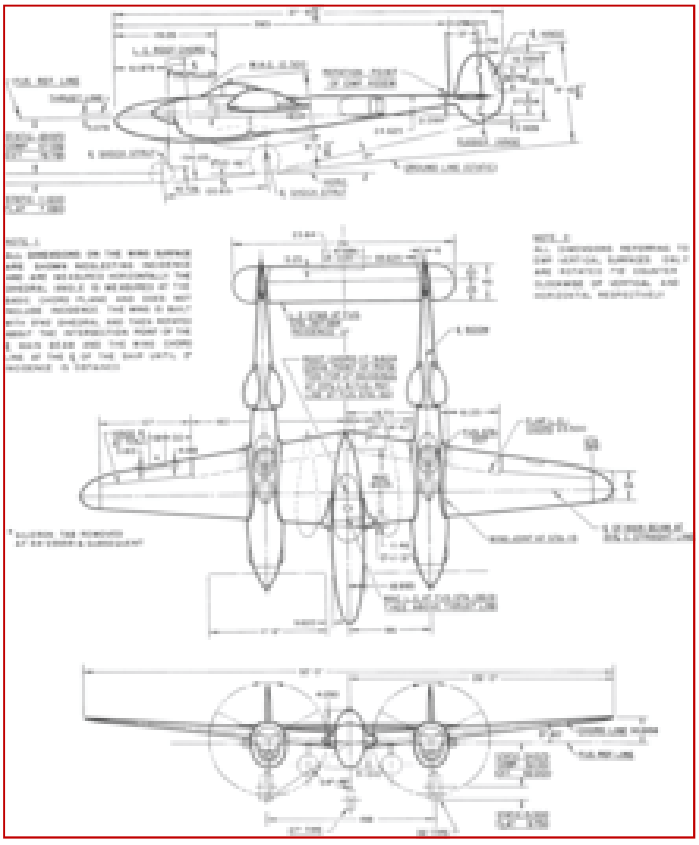
By November 1941, many of the initial assembly-line challenges had been met, which freed up time for the engineering team to tackle the problem of frozen controls in a dive. Lockheed had a few ideas for tests that would help them find an answer. The first solution tried was the fitting of spring-loaded servo tabs on the elevator trailing edge designed to aid the pilot when control yoke forces rose over 30 pounds-force (130 N), as would be expected in a high-speed dive. At that point, the tabs would begin to multiply the effort of the pilot's actions. Expert test pilot Ralph Virden was given a specific high-altitude test sequence to follow and was told to restrict his speed and fast maneuvering in denser air at low altitudes, since the new mechanism could exert tremendous leverage under those conditions. A note was taped to the instrument panel of the test craft underscoring this instruction. On 4 November 1941, Virden climbed into YP-38 #1 and completed the test sequence successfully, but 15 minutes later, was seen in a steep dive followed by a high-G pullout. The tail unit of the aircraft failed at about 3,500 ft (1,000 m) during the high-speed dive recovery; Virden was killed in the subsequent crash. The Lockheed design office was justifiably upset, but their design engineers could only conclude that servo tabs were not the solution for loss of control in a dive. Lockheed still had to find the problem; the Army Air Forces personnel were sure it was flutter and ordered Lockheed to look more closely at the tail.

In 1941, flutter was a familiar engineering problem related to a too-flexible tail, but the P-38's empennage was completely skinned in aluminum rather than fabric and was quite rigid. At no time did the P-38 suffer from true flutter. To prove a point, one elevator and its vertical stabilizers were skinned with metal 63% thicker than standard, but the increase in rigidity made no difference in vibration. Army Lieutenant Colonel Kenneth B. Wolfe (head of Army Production Engineering) asked Lockheed to try external mass balances above and below the elevator, although the P-38 already had large mass balances elegantly placed within each vertical stabilizer. Various configurations of external mass balances were equipped, and dangerously steep test flights were flown to document their performance. Explaining to Wolfe in Report No. 2414, Kelly Johnson wrote, "the violence of the vibration was unchanged and the diving tendency was naturally the same for all conditions." The external mass balances did not help at all. Nonetheless, at Wolfe's insistence, the additional external balances were a feature of every P-38 built from then on.

Johnson said in his autobiography that he pleaded with National Advisory Committee for Aeronautics to do model tests in its wind tunnel. They already had experience of models thrashing around violently at speeds approaching those requested and did not want to risk damaging their tunnel. Gen. Arnold, head of Army Air Forces, ordered them to run the tests, which were done up to Mach 0.74. The P-38's dive problem was revealed to be the center of pressure moving back toward the tail when in high-speed airflow. The solution was to change the geometry of the wing's lower surface when diving to keep lift within bounds of the top of the wing. In February 1943, quick-acting dive flaps were tried and proven by Lockheed test pilots. The dive flaps were installed outboard of the engine nacelles, and in action, they extended downward 35° in 1.5 seconds. The flaps did not act as a speed brake; they affected the pressure distribution in a way that retained the wing's lift.

Killing of Admiral Yamamoto

Because of its ability to fly long distances, the Lightning figured in one of the most significant operations in the Pacific Theater – the interception, on 18 April 1943, of Admiral Isoroku Yamamoto, the architect of Japan's naval strategy in the Pacific including the attack on Pearl Harbor. When American codebreakers found out that he was flying to Bougainville Island to conduct a front-line inspection, 16 P-38G Lightnings were sent on a long-range fighter-intercept mission, flying 435 miles (700 km) from Guadalcanal at heights of 10 to 50 ft (3 to 20 m) above the ocean to avoid detection. The Lightnings met Yamamoto's two Mitsubishi G4M "Betty" fast bomber transports and six escorting Zeros just as they arrived at the island. The first Betty crashed in the jungle and the second ditched near the coast. The Americans lost one P-38. Japanese search parties found Yamamoto's body at the jungle crash site the next day.



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Meetings

The Chapter normally meets monthly at 9:00 am on the second Saturday of each month at hangar 11250-5 at North County Airport. Guests are welcome to attend two meetings but are expected to join the Chapter at the third. Dues are $35 per year.

Notice

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Newsletter

Contributions need to be in the editor's hands by the last Wednesday of the month preceding publication, unless the moon is full, in which case the deadline is the Thursday preceding the first Wednesday prior to the next scheduled meeting of the Editor's staff. **Be an Author!! Send us something.**

Other Stuff

Board of Directors Meeting

Please contact President Bill Siegel for time and place of each monthly meeting.

Editor's Report

December 2023 Newsletter.
117 Email Notifications Sent.

Membership

37 Current Paid Members
03 Honorary Members

Advertising

Two and one-half column-inches costs $5.00 per month. A half-page ad is $15.00 per issue. Digital artwork or photos are preferred. Contact the editor for further details.

Chapter 203 members with email addresses on file will receive email notification of the link to the on-line edition of "Hangar Talk". Send your email address to the editor at Scott Thatcher, 423 SW Talquin Lane, Port Saint Lucie, Florida 34986. 561-818-0499 or *sdthatcher@bellsouth.net*.

Disclaimer

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