

Wing Flap

Monthly Newsletter of the EAA Chapter 52
Sacramento, CA - **September 2021**

**Experimental
Aircraft
Association**



FROM The Left Seat Gill Wright

In the last 14 years there have been efforts to find a fuel recipe to meet the technical requirements for a viable unleaded aviation fuel that will meet the diverse specification of the Piston aircraft market. In July, at Airventures there was an announcement regarding the viability of GAMI's G100UL for aircraft. This caused quite a stir in the aviation community with the hope of a fuel that will finally get the lead out of flying. Cars were able to clean up their fuels in the early 1990's, but the nature of the certificated aircraft engines, and fuels, has been difficult to overcome.

In August there was a local political pushback on this leaded matter in Santa Clara County with an effort to use the 'leaded aviation fuel' issue as a pretense to close Reid-Hillview (RHV) airport prior to 2031, when FAA AIP grant assurances expire. On August 17th the Santa Clara County Board of Supervisors (SCCBOS) voted to petition the FAA for early closure due to "Lead poisoning of local children by aviation". It's basically political theatrics for a real estate land grab of the airport land. Time will tell how this will factually play out with the FAA, but it is likely the RHV airport will stay open for quite some time. However there has been a number of responses from the aviation community, both locally and Nationally, on this issue of Leaded aviation fuel.

In the last 4-6 months there were efforts by various FBO's to deliver 94UL at a reasonable cost to California pilots. Just prior to the

SCCBOS's vote, two FBO's at RHV began selling SWIFT 94UL for their flight school aircraft. This resulted in about 60% of the daily traffic at RHV switching to unleaded fuel overnight, and thus removed much of the lead issue for that community. Last week Watsonville airport began selling 94UL, and there are very advanced discussions with other California airport operators to bring this unleaded fuel to their airports as soon as economically practical. As more airports join in this California unleaded aviation fuel effort, the economy of scale issues will bring the price down further, which will be a good neighbor effort on aviations part.

Nationally there has been a focus on what we Californians are doing West of the Sierra Nevada Mountains with our aviation fuels. On September 16th AOPA had a webinar with the creator of the GAMI G100UL, George Braly, where he discussed his experimental efforts over the last 14+ years to get his fuel tested and certificated with the FAA, on his own cashflow.

I think his discussions are well worth the 1 hour, 25 minutes to watch and listen to. As it seems his efforts may become available in the aviation fuel market in the next 6-12 months, and may be rapidly adapted. Time will tell if this is true or not, but when a large shift, developed over many years, comes to fruition, it often seems like it is happened suddenly. From what I am seeing there is the shift of aviation fuels that will arrive in the near future, we need to

keep an open mind of the efforts to bring our community to this point of our enterprise.

I know this Left Seat article is not focused to much on our chapter life, but this aviation fuel evolution is very important for the health of our community in the years and decades to come. I encourage you to take the time to review the enclosed AOPA webinar link to better understand this evolution.

Safe travels, and I look forward to discussing this when we ZOOM for our general meeting on September 28th at 7:00 PM.

Gill Wright

FROM The Right Seat jim heffelfinger

Chapter outreach: Pleasant Grove High School - Elk Grove Unified School District
COVID restrictions for campus access to visitors altered the original plans to have chapter outreach during the school day and hands-on in person projects for the IDEA program [<https://sites.google.com/egusd.net/pghs-idea/home>] .

But we were able to set up an aviation club after school. During 'Club Rush' the initial sign up was 40 students and 22 made the first meeting. Now Mondays 3:30 to 4:30.

During the first meeting we covered some orientation issues, some class rules and talked about the Club Mission: Aviation Awareness and the five goals of the club. They include the following: careers, recreation, transportation, economics, and science, with the addition of developing technologies.

A breakout group task was to identify what subsets of each area included. They did very well with good leadership in the random assignments to groups. A really good sign of things to come.

Demographics: 3 seniors, 4 juniors, 3 sophomores, 8 freshmen. 14 from the IDEA program, 6 AP students, 0 students from the bio

Medical Group, 1 from digital media, 6 from the robotics group, 4 from FAA. 7 know a pilot, 1 is a student pilot, 8 know someone who has built their own plane, 5 have family or close friend already involved in aviation

The second meeting didn't happen with staffer going home ill and no one to sponsor me on campus. This issue will accelerate my credentials to meet without sponsorship.

A story.... By Keith Gordon

My research of the Junkers JU-87 Stuka dive bomber in last month's Newsletter wetted my appetite for more information about dive bombers, which I am happy to share with you this month.

Dive bombers were produced by USA, Great Britain, Germany, Russia and Japan during WW11. The American and Japanese aircraft were mostly operated off aircraft carriers and those operated in Europe and North Africa were primarily land-based, thus the forces operating them could be Air Force, Army or Navy.



The Douglas SBD (Scout Bomber Douglas), also nicknamed "Slow But Deadly" by the crew, was developed from the Northrop BT-1, which was designed in 1935 and taken over in 1937 by Douglas. 6 developmental versions totaling 5,936 airplanes were produced until 1944. In addition, 953 Douglas A-24 Banshees, which were produced with a tailwheel and without a tail-hook were built for land-based operations. The main up-grade modifications to these versions were self-sealing fuel tanks, mainly to overcome enemy ground-fire damage, 2 rear facing guns, in case one jammed or ran out of bullets and more

powerful engines. The perforated dive-brakes which reduced tail buffeting during dive-bombing and the rugged construction were the highest regarded virtues of the Douglas productions. Unlike other carrier aircraft the SBD did not have folding wings, opting instead for structural strength. A small number of the Douglas aircraft were fitted with torpedo mounts and designated as TBD

Devastators.

A large number of SBDs belonging to US Navy and Marine Corps were destroyed on the ground during the Pearl Harbor raid on December 10, 1941. SBDs and TBDs took part in various raids on Japanese installations in the Gilbert, Marshall, Wake and Marcus Islands as well as the Coral Sea battle. The SBD's most important contribution to the American war effort came during the Battle of Midway in June, 1942 when they sank or fatally damaged 4 Japanese aircraft carriers and 2 cruisers. In the Guadalcanal Campaign. One carrier was sunk, 3 severely damaged, plus a cruiser and 9 transports sunk. The Battle of the Philippine Sea was the last major engagement of the carrier-borne SBDs, which were being replaced by Curtiss SB2C Helldivers. Of 215 aircraft involved, only 115 survived. 80 aircraft were lost due to ditching because of fuel exhaustion.

The Douglas SBD Dauntless was regarded as the most important aircraft in the Pacific War, being credited with sinking 6 Japanese carriers, 14 cruisers, 6 destroyers, 15 transports or cargo ships and scores of lesser craft.



Aichi D3A nicknamed "Val" Japanese dive bomber.

The Aichi D3A-1 first saw combat against French Indochina shipping on the Yangtze River in November 1939. It was then involved in all Japanese combat operations, including the attack on Pearl Harbor until the end of WW11 in the Pacific. The DA3-1 and subsequent DA3-2 dive

bombers were credited with sinking the most allied warships during WW11. 9 warships, collectively belonging to America, Australia, and Great Britain were sunk in the Indian Ocean, mostly around Ceylon (now Shrilanka) during March/April 1942. They were also involved in all the great sea battles of the Pacific, sinking 16 warships. 2 of those sunk were kamikaze attacks. Engines ranged from 700 hp - 1300 hp 9-cylinder radial engines produced by Kinsei. Both the pilot and observer/navigator were provided with bombsites. It seems that the senior-ranking crew-member would command the aim corrections during the dive. The normal bomb used was a 500 lb. bomb slung under the fuselage, which swung away from the propeller arc prior to release. This was for the same reasons as the JU-87 Stuka. 2 wing-racks could carry additional 150 lb. bombs. 2 forward-firing machine-guns were fitted to the wings and a single rear-facing gun was located at the rear station. Japan also operated Yokosuka D3Y and D4Y dive-bombers developed from the Aichi DA-3 and Mitsubishi also contributed the KI-51 but it did not see much service before the war ended.



Fairey Barracuda of the British Fleet Air Arm.

The Fairey Barracuda appears to be the dominant carrier-borne torpedo and dive-bomber to serve the British Royal Navy Fleet Air Arm during WW11. Like most of the other dive bombers, it started out under-powered with a Rolls Royce Merlin V-12 engine developing 1,260 hp. By the end of its production life, it was powered with a Rolls Royce Griffon engine developing 2,020 hp. Between 1941 and 1945 2,602 Barracudas were built. The first prototype

flew in December 1940. It had a shoulder-wing that allowed the navigator to look out through windows below the wing. The hydraulic undercarriage folded into the wing-root and fuselage. It had a fixed tailwheel with an arrestor hook forward of the tailwheel. Three crew were housed under a long green-house canopy. Large flaps doubled as dive-brakes. It was originally fitted with a conventional tailplane but improved stability was achieved by a t-tail configuration. It was one of the first aircraft to use rocket-assisted takeoffs and reversible-pitch propellers. The Barracuda Mk 11 was one of the first aircraft fitted with radar for anti-submarine work. Armament consisted of 2 machine-guns fitted in the rear cockpit and it could carry one 1,620 lb torpedo or 4 X 450 lb. depth -charges or 6 X 250 lb. bombs. Barracudas saw service in the North Atlantic and Norway to the Mediterranean Sea. It was involved in the Allied invasion of Italy and also saw service in the Pacific. In April 1944, 42 Barracudas attacked the German warship Tirpitz in Kafjord, Norway causing substantial damage and loss of life to the crew but did not sink it. The British fitted out many fighters and light bombers as dive-bombers such as the Spitfire, which was nicknamed the "Bombfire".

Hurricanes, Mosquitos and Beaufighters were all tried as dive-bombers, however rocket-firing Hawker Typhoons and Tempests were in action, and, of course, the first jet Gloster Meteors were under development in the latter part of WW11. Many American-built dive-bombers were used in action in Europe, such as the Curtiss Helldiver, Douglas Dauntless, Vultee Vengeance and Republic Thunderbolt.



Petlyakov PE-2 served in the Russian Air Force

The Petlyakov PE-2 was a Russian twin-engine dive-bomber similar in appearance to the British DH Mosquito. 11,430 were built during WW11. It was used by the Soviet, Polish, Czechoslovakian and Bulgarian Air Forces.

The first prototype flew on December 22, 1939 and titled VI-100. It was an all-metal low-wing, twin-fin, twin Klimov M-105R engines driving 3blade variable-pitch propellers.

Russia had not entered WW11 at this stage and aviation experts were able to visit German aircraft factories, where they discovered the capabilities of the Junkers JU 87 Stuka divebomber. As a result, it was decided to modify the VI-100 to a dive-bomber, which would be designated PB-100. It was required to have a maximum speed of 350 mph, cruise at 16,000 ft and with a range of 1,000 miles. It was to have 3 pressurized cabins for crew and the engines had to be turbo-charged. Each engine nacelle would have a bay to carry a 220 lb bomb. Extensive glazing was added under the nose for a bombardier and an upper turret was added forward of the empennage. Venetian-blind type dive-brakes were added to the wing and the stabilizer was given an 8-degree dihedral for dive-stability. This airplane flew in late 1940. Further modifications were required and the production version was redesignated PE-2-2M-105. It was found that this version required a large elevator-force to lift the aircraft off the ground on takeoff and also flare for landing.

Russian night-bombing missions were often flown with female crew, some of whom were not strong enough to get the aircraft airborne by themselves. To overcome this problem, the navigator would kneel behind the pilot and put her arms around the pilot and grab the control wheel to help the pilot pull back. It is not stated how they handled the flare for landing.

The PE-2s also had a unique system of filling the fuel tanks with nitrogen as fuel was consumed to suppress fire in the self-sealing fuel tanks. The PE-2 also had a fuselage bomb-bay holding 4 X 220 lbs. bombs as well as the single bomb in each engine nacelle. This was supplemented by 4

external under-wing racks. A fully-loaded combination of 2,200 lbs. of bombs could be carried. Only the under-wing bombs could be used for dive-bombing. Defensive armament consisted of 2 machine-guns in the nose and the rear facing machine-gun forward of the tailplane. Some later versions of the PE-2 were fitted with a machine-gun mounted behind the bomb-bay. This was operated by the navigator and aimed by a periscope. This arrangement proved to be totally inadequate. Some versions were fitted with underwing guide-rails for up to 10 unguided rockets towards the end of the war.

If you are wondering how Russia became involved in WW11; Germany attacked Russia on June 22, 1941.

Personal flight – the Tinkers and Dreamers.
<https://www.youtube.com/watch?v=rGdh1IzwykE>

Twist of fate....

Oak Ridge, Tenn., is in the process of gaining approvals to build a general aviation airport on land owned by the Department of Energy that once housed a plant used to enrich uranium for atomic bombs. If the project moves forward, construction would begin on the new airport in 2025.

Full Story: [WBIR-TV \(Knoxville, Tenn.\)](#) (9/17)

DSEI NEWS: Northrop, Leonardo Team Up to Develop Unmanned Helios

9/17/2021 By [Stew Magnuson](#)

LONDON — Two defense industry giants announced this week that they were teaming up to develop unmanned helicopters.

Italy's Leonardo Helicopters and U.S. manufacturer Northrop Grumman announced at

the Defense and Security Equipment International trade show in London Sept. 15 that they would jointly pursue opportunities in the vertical take off and landing uncrewed



aerial systems market.

“We see this as a great partnership opportunity to leverage synergies between Leonardo and Northrop Grumman in the sphere of VTOL and UAS technologies,” Gian Piero Cutillo, managing director of Leonardo's helicopters division said in a statement.

Nick Chaffey, chief executive officer of United Kingdom, Europe, Middle East, at Northrop Grumman said: “There are many possibilities that our collaboration with Leonardo will deliver for customers worldwide as they look to solve new challenges in a complex, unpredictable threat environment.”

Northrop Grumman was a pioneer in the field, developing the MQ-8 Fire Scout helicopter drone for the U.S. Army and Navy, beginning in the 1990s.

The two companies have cooperated on several programs dating back to 1995, when they jointly developed an airborne platform protection system, the AN/AAQ-24(V) Nemesis for the U.K and U.S. militaries. They are continuing work in that field together on the U.S Army's Common Infrared Countermeasures program.

In the robotic realm, the companies' Australian

divisions are jointly working as one of five teams competing for the Royal Australian Navy's SEA129 Phase 5 program, a fixed wing maritime unmanned aerial system.

Vera Lin, aerospace, defense and security associate at data and analytics company, GlobalData, commenting on the announcement in a statement, said "the demand for rotorcraft VTOL drones is gaining momentum alongside existing fixed-wing platforms."

GlobalData estimates that the global military UAV market, valued at \$8 billion in 2021, is expected to grow at a compound annual growth rate of 7.15 percent through 2031. The VTOL segment is forecasted to have the greatest growth through 2031 eventually reaching \$2.3 billion per year.

Chinese and South Korean firms are expected to be some of the strongest competitors the Leonardo-Northrop Grumman team will face in the unmanned VTOL market, she added.

Every aircraft has its own origin story and some are more unique than others. The Steen Skybolt was designed by Lamar Steen, a shop teacher, whose students built the first prototype as a class project in 1970. Since then, over 400 Skybolts have been completed in over 29 countries. What homebuilt biplane would you want to build? 🇺🇸 Carl Schuppel



Snowbird **accident** review
<https://www.youtube.com/watch?v=MaCH-liI24E>
Fly a Cub.....
https://www.youtube.com/watch?v=NNB_iokQ7F8&t=5s
https://www.youtube.com/watch?v=NNB_iokQ7F8&t=5

On the Internet

"*Inspire*" – cornucopia of what is EAA. Short stories <https://inspire.eaa.org/>
<https://inspire.eaa.org/why-we-fly/> - EAA special story content.

Gone West Chris Heintz – Founder of Zenith
- <https://inspire.eaa.org/2021/06/21/gone-west-chris-heintz-the-legendary-founder-of-zenith/>

Chapter 52 Long-EZ - Progress report on the Chapter Long-EZ – Owen Hughes

Chapter 1) *The Paper Chase – Registration:* I contacted the FAA to modify the test area for the Long-EZ from the Redding area to the Yolo airport area. Unfortunately, Roger Loftus, builder and donor of the Long-EZ had let registration lapse – threatening the validity of its airworthiness certificate. N81LE would first have to be re-registered – which currently is managed by the National Aviation Center which is a private firm contracted to manage aircraft registration. After filling out their forms and paying the \$365 re-registration fee I am now awaiting official re-registration of N81LE. Once re-registered, I can request modification of the test area... maybe. I have been going through its paperwork – assembling and checking all required documents.

The Paper Chase – Flying Club Set Up: I have taken the EAA's templates for setting up a flying

club and a 501C3 and merged them. So far we have the Articles of Incorporation and the Bylaws completed. I haven't filed yet (due to \$200 filing fee), but will within the next week or two. If I get the 501C3 status, we will get back the annual \$800 corporation tax, but not the initial filing fee. I was encouraged by Isai's interest in flying it, and will try to set it up so its as available as possible to anyone in Chapter 52! However, it is likely that the most onerous requirements for flying it will come from insurance requirements.

Chapter 2) Airworthiness / Annual Inspection –

With any plane that has been "down" for some time, there may be a few issues. While Roger did a remarkable job on N81LE, time and the collective experience of the Long-EZ have brought up more than a few issues. First, almost every hole in the plane (including the pitot tube) became the residence of mud daubers. I think I've removed most of them – now about 7 different infestations. The lower spark plugs were removed to examine the cylinders by bore-scope (which looked good). Oil was then sprayed in each cylinder and the engine spun. This was repeated a few times and then the spark plugs were replaced and compression rough checked just by the "pull through" method. Encouragingly, each cylinder demonstrated good and roughly equal compression and no leakage noise was noted from intake or exhaust valves. Additionally, I have removed the exhaust system to ceramic coat it in the hope of reducing heat damage inside and to the engine cowl. All panels are being opened, inspected, and all moving components are being lubricated. Some re-arrangement of the panel is being done to deal with a couple of issues (for example the compass is located right next to the radio, and it swings nearly 60 degrees when the radio is turned on – unacceptable.) The transponder seems in-op and I am still trouble shooting it.

The Long EZ will be re-assembled within the next week or two, and it will make its debut at the October Pancake Breakfast. I hope to see you all there!

A Quick Visit to a Secret Fly-In ---- TOP SECRET

This Friday, a secret meeting of the Yolo Antiquität Flugzeug Oberherren was penetrated by agents of EAA Chapter 52. At an undisclosed location just northwest of Yolo County Airport, our agents, were able to insert themselves into the secret monthly meeting of these classic aircraft enthusiasts. Perhaps this was only possible because they were cleverly disguised as a counter-culture intellectual, and his idiot sidekick, thus ensuring they would be ignored and remain free to spy unquestioned.

Remarkably, Yolo county is one of the most active centers in the world of this nefarious collection, restoration, and operation of obsolete aircraft. No! you say, what about Sonoma?, Chino?, Rhinebeck New York?, or even Kermit Weeks' place in Florida? Well, you may have me on the Weeks thing, but I think you'd be surprised by the number, variety, quality, and even uniqueness of the classic and important aircraft populating Yolo County! Visit Yolo County airport almost any Saturday morning and you are likely to see Golden Age Classics, World War II war birds, and even Korean/Vietnam era Warbird Jets. Our EAA Chapter 52 idiot side-kick agent captured this disturbing video at KDWA: <https://youtu.be/BVmxuIwIBCI>

But we return your attention to the secret monthly gathering of Yolo Antiquität Flugzeug Oberherren. This questionably criminal and clearly depraved assignation of obsolete aircraft operators is held far from the prying eyes of the good public. YET, our idiot side-kick agent managed to take the following incriminating photographic evidence using a miniature camera cleverly concealed in his communication device. See for yourself the remarkable collection of dangerous and antiquated devices specifically designed to turn money into noise. (INDEED, the aloof operators of these noise making devices become quite agitated when they suddenly go silent!):







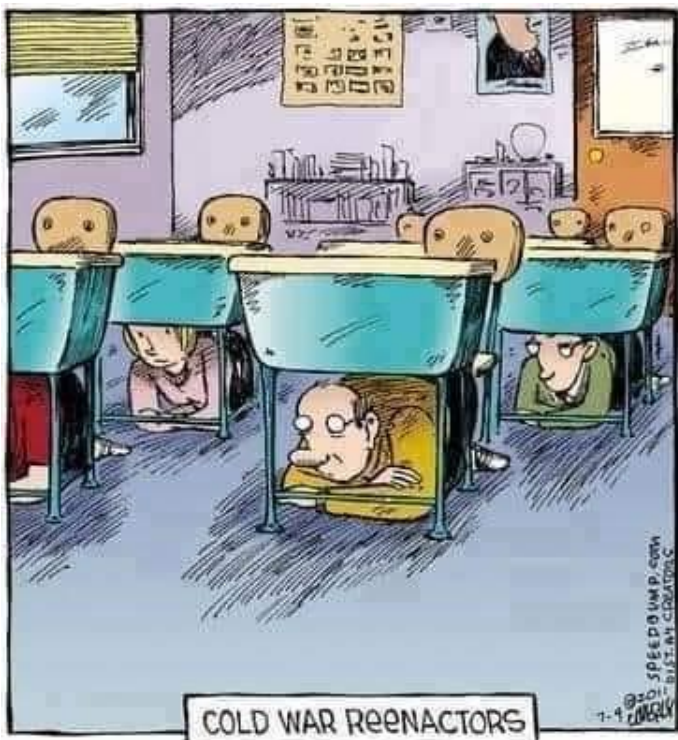


Be first to identify September's Mystery Airplane by emailing chapter52.news@gmail.com



Mechanics Corner





FROM THE EDITOR(s)

We are trying several different formats for the newsletter – feedback would be appreciated. Nick is trying to get his feet under him in a back-in-class environment. Jim H is supporting.

If you would like to contribute a story or news article it would be great. All submissions should be emailed to no later than the 15th of the month. Remember if you submit an article from a publication; please include the name and date of publication so that proper credit can be given. Chapter52.news@gmail.com.

IF YOUR MEMBERSHIP HAS LAPSED let me encourage you to re-engage! We miss you and your involvement in Chapter 52!

If you would prefer to be removed from our mailing list, just drop an email to Chapter52.news@gmail.com requesting to be unsubscribed and we will do so promptly.

BOARD MEETING

2nd Tuesday of each month
7PM-9

Zoom

Meeting ID:

858 9594 7691

Passcode: 63860

(Interested members

always welcome!)

CHAPTER 52 MEMBERS MEETING

Last Tuesday of each month

7:00 PM

Zoom

[https://us02web.zoom.us/j/86295420288?pwd=](https://us02web.zoom.us/j/86295420288?pwd=ZzFxeXNRU0NZZWRRLOpmbHBFYjJXQT09)

[=ZzFxeXNRU0NZZWRRLO](https://us02web.zoom.us/j/86295420288?pwd=ZzFxeXNRU0NZZWRRLOpmbHBFYjJXQT09)

[pmbHBFYjJXQT09](https://us02web.zoom.us/j/86295420288?pwd=ZzFxeXNRU0NZZWRRLOpmbHBFYjJXQT09)

Meeting ID: 862 9542 0288

Passcode: EAA52

Pancakes/FlyIn EVENT

2nd Sunday

April - October,

9-11:30

Yolo Hangar Yolo County Airport – midfield.

(Volunteers always appreciated!)