



AMA Chapter #3798

# Chino Valley Model Aviators Official News



November 25, 2020

Volume 23 Issue 11

[www.chinovalleymodelaviators.org](http://www.chinovalleymodelaviators.org)

*"To create an interest in, further the image of, and promote the hobby/sport of radio controlled aircraft"*

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### Quote of the Month:

"Cultivation of the mind is as necessary as food is to the body."

CICERO

**Support our  
Local Hobby  
Shop**



**Valley Hobby**  
Prescott Gateway Mall

## Dave Domzalski's V-22 Osprey



## Dennis O'Connor's Gas Powered Corsair





# Bill Gilbert: CVMA President's Message



As we celebrate Thanksgiving, it's a good time to look around at our club and appreciate the great membership we have, the fantastic flying field we enjoy, and all the blessings of living in this area. We are fortunate indeed.

We've had our first membership meeting at the new meeting room; the Chino Valley Senior Center. While the meeting itself was not well attended, perhaps due to choice of date the day before Thanksgiving, the facility was nice. Heightened concerns over a resurgence in the Covid-19 virus are also very valid and may have kept some folks away from a gathering.

We had a report from our Treasurer with a good financial standing at this year-end, with a balance of about \$20,000. We are grateful to have some very generous members that have made donations to the club through the year. We thank you! That, and some other extra ordinary income have bolstered our finances.

Field improvements is a topic that needs more discussion with the members; we will re-initiate in January when we hope to have more refined cost information, and we will focus on the high priority item. In the meantime, a control line circle will be created in the space near the entry gate, between the runway and the drive way. There will be no financial cost associated with this, just sweat equity by the interest group.

We've met our minimum attendance number for the Christmas banquet, so that event will go forward as planned, unless we get a shutdown order for gatherings from the governor or other authorities. We are looking forward to another fun Christmas event with our members, with the annual awards being presented as well.

We need to stay aware for upcoming news on the final Remote ID Rule, the Knowledge Test, and the requirements for a Community Based Organization. All of these are due to be published in the Federal

Register before year's end. These rules will define how the hobby as we know it moves forward and survives.

Help keep your interest in the hobby alive and well over the next couple of months; as the winter weather will be upon us with cold temps and brisk winds. Even though our flying may be limited, repairs, upgrades, and new builds can help keep the RC bug alive! Trying something new in RC can help stave off boredom from doing the same old stuff as well. Indoor flying is another fun activity when the weather is not cooperative. Stay involved and continue to enjoy our great hobby!

See you at the field!

**BILL**



## CVMA Flight Instructors

- Steve Shephard-  
*Chief Flight Instructor*
- Al Marelllo-basic
- Lloyd Oliver-basic
- Riley Harley-basic
- Jack Potter-gliders

## CVMA NEWSLETTER

AMA Chapter #3789  
Published Monthly

President — *Bill Gilbert*



Vice President — *Doug McBride*



Treasurer — *Harold Ellis*



Secretary — *Bob Steffensen*



Safety Officer — *Rick Nichols*



At Large Member — *Dan Avilla*



At Large Member—*Dennis O'Connor*



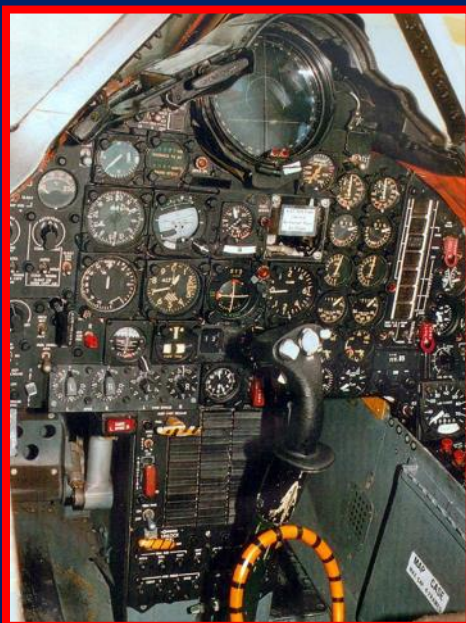
At Large Member *Mark Lipp*



Newsletter Editor — *Bob Shanks*



## What Plane Has This Cockpit?



See Page Ten



**2020 — MARK YOUR CALENDARS**



**Dec. 4 Christmas Banquet**



**Club General Membership Meetings:  
Senior Center Chino Valley**



**BORN IN A BARN ?**

IF YOU ARE THE LAST ONE TO LEAVE THE FIELD **CLOSE & LOCK THE GATE.**



**SAFETY IS ALWAYS A MAJOR ISSUE: THE P FACTOR**

*By Rick Nichols, Club Safety Officer*

P Factor, No I am not talking about the number of potty trips you make during the night. Here is an explanation of P-Factor as applies to our sport.

The P-Factor, also known as *Symmetric Blade Effect and Asymmetric Disc Effect*, is an aerodynamic phenomenon experienced by a moving propeller where the propeller's center of thrust moves off center when the aircraft is at a high angle of attack causing the aircraft to veer left (see diagram at right).

Well, that is easy enough for the experts to say but let me see if I can explain it a little better and how it applies to us. The easiest way I can explain P-Factor is that because of the direction of the rotation of the propeller upon take-off when our airplanes are at a high angle of attack, our airplanes tend to turn left when departing the ground. We compensate for this by applying right rudder as needed when taking off.

Most of our experienced pilots are aware of this and by nature compensate for this effect. It is important that experienced pilots and instructors teach this skill to our newer pilots and pilots that may not understand this effect.

At this time, it is looking like a circular field will be laid out for pilots that wish to fly U-Control aircraft. Most of our older pilots learned to build and fly U-Control back in the day. In some areas it is making a resurgence.

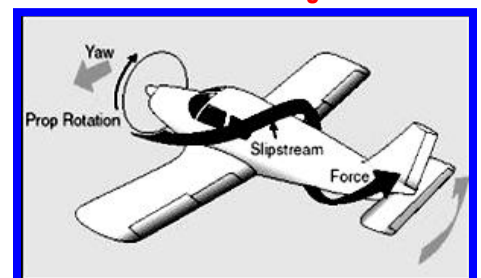
Here is the important connection between U-Control airplanes and P-Factor. The U-Control circle will be at the west/downhill end of the runway between the runway and the entry road. This is in the P-Factor area adjacent to our runway and therefore it is important to use more diligence while U-Control pilots will be flying. This area is also used by our Drone and Helicopter pilots.

Chino Valley Model Aviators is a

Model Airplane Club. We do not discriminate what type of airplanes may fly at our field. We have Gas, Fuel, Electric, Gliders, 3-D, Sport, Helicopters, drones and now will welcome U-Control Flying. Our field has been noted for providing a place for all model airplane pilots to enjoy and to work with others in all ways.

As always, Fly Safe and be courteous to your fellow pilots. If you observe safety issues, please politely point it out to your fellow pilot and/ or a club officer.

**P-Factor Diagram**





# Members Cool Models

Don Ferguson's Twin

## Railroad Ties That Lined the Drive-Through Removed Tripping Hazard Now Gone for Safely Loading/Unloading



About 10 members showed up early one recent November Saturday morning to help move all the railroad ties from the driveway. Too many members have tripped over them carrying planes and gear from their cars to the cabana. They were all stacked up next to the water tank near the hanger.

A few were left to help delineate the curve in the road coming into the field. Members can still back into the row of railroad ties for parking to unload but don't have to worry now about carrying their planes and gear and tripping over the ties that used to line the entry road.



Editor Bob Shanks' WWII P-39



Randy Meathrell's control line Flite Streak zipping around him. We will be cutting a large circle for those still interested in C/L.

### New Entry Way Sign



# MORE COOL MEMBERS & THEIR FLYING MACHINES



Steve Zingali's Swing Wing F-14



Don Ferguson & His big foam Twin he Designed.



Rick Nichols Old School Mambo.



Steve Zingali's F-14 Tomcat.



Rick's Mambo has some very cool graphics he had Callie's Graphics make for his Old School rendition.



Nothing like a big yellow Cub or a Super Cub below...



Tomcat high speed pass!



# How Did Charles Lindbergh See Out of His Spirit of St. Louis?

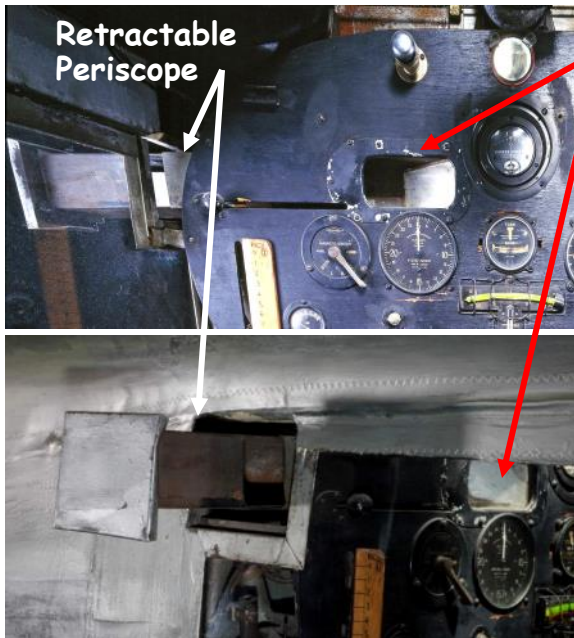
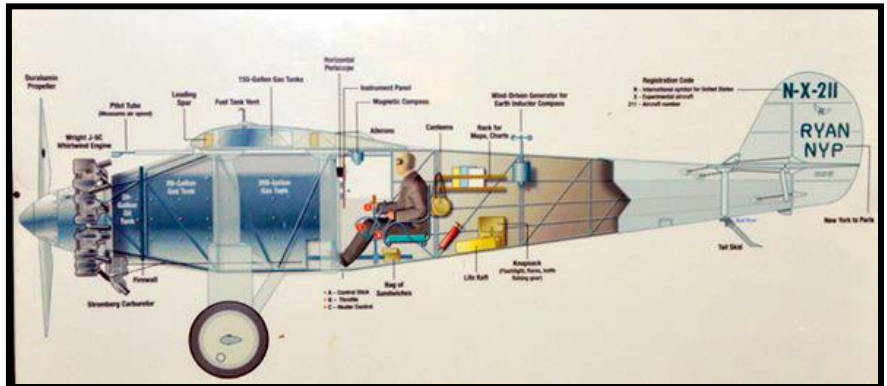
<https://www.quora.com/How-did-Charles-Lindbergh-see-out-the-front-of-the-Spirit-of-St-Louis-to-navigate-and-land-the-plane>

The *Spirit of St. Louis* was designed in 1920's for one mission: getting one man across the long expanse of the ocean. All the design features were chosen for that mission accomplished in 1927.

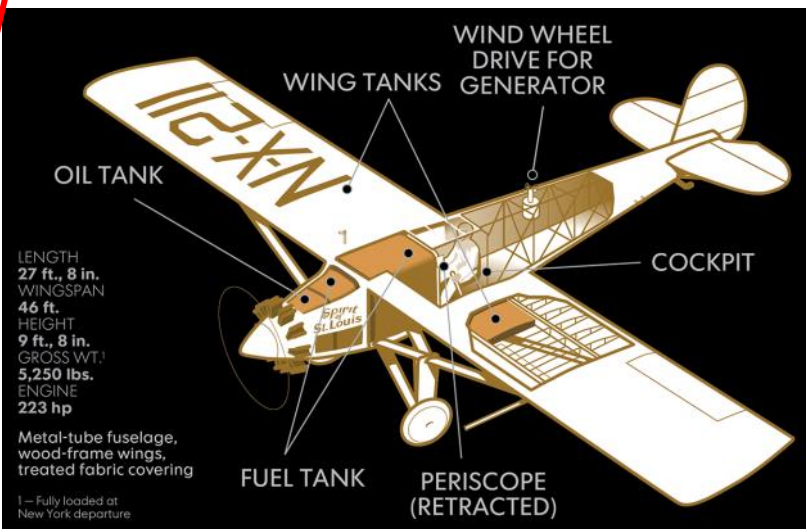
The main specification of the design was the need for over 450 gallons of gasoline. Normally in small planes, the gasoline is in the wing tanks; the *Spirit of St. Louis* had 155 gallons in the wing which is prodigious all by itself. But the additional gas was placed in two tanks in the fuselage too, adding another 300 gallons. Note that the combined tanks are all placed near the Center of Gravity of the plane when flying, essentially under the peak lift point of the airfoil (wing). So the tanks got to sit up front! The tanks blocked the forward view. Lindbergh was flying from what would be a far back seat in a typical plane. This would create problems for Lindbergh because as the gasoline was used up the Center of Gravity would continue to move to the rear of the plane, requiring adjustment to his trim.

The second consideration was speed. How Lindbergh was able to stay awake all those hours is incredible. But the *St. Louis* could cruise at 184 MPH, which is pretty fast for a small plane. Big engine, and aerodynamic nose generated the speed, but again it made a forward view impractical.

In 1927 there weren't tall buildings to worry about, no mountains, virtually no trans-ocean air traffic, and he was landing in a giant open field. He didn't need to know a lot about what was in front of him. He could see forward somewhat with his periscope, angled vision through both side windows, and he could tack the plane left and right to get a panoramic view. Most pilots wouldn't like it, but the fame and wealth made it worth it.



View opening



## What is Synthetic Aperture Radar (SAR)? \*

Synthetic aperture radar (SAR) is a way of creating an image using radio waves. The radio waves used in SAR typically range from approximately 3 cm up to a few meters in wavelength, which is much longer than the wavelength of visible light, used in making optical images. These wavelengths fall within the microwave part of the spectrum in the figure below.

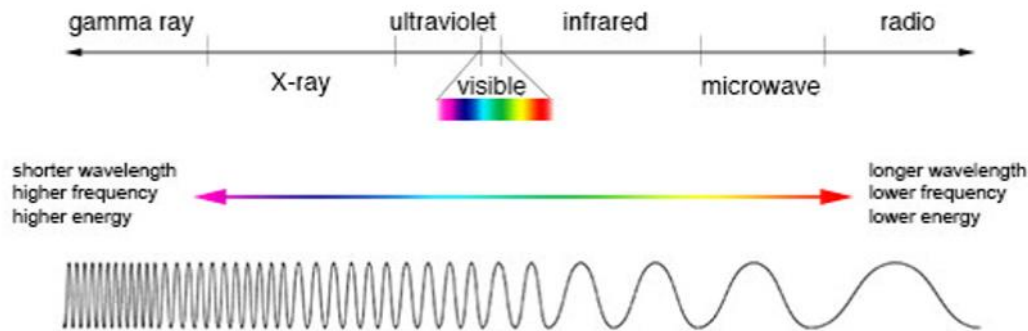
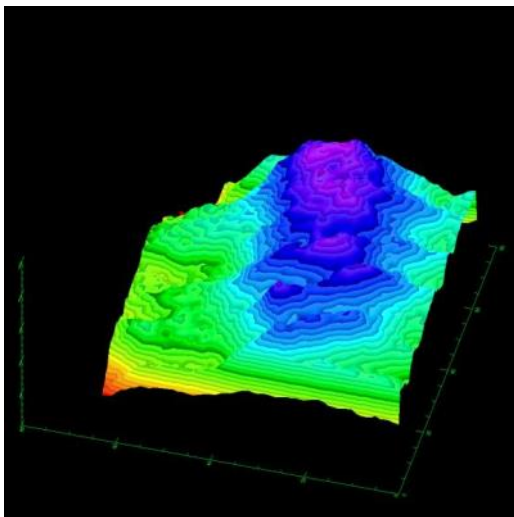


Figure 1. Comparison of wavelength, frequency, and energy for the electromagnetic spectrum. (Credit: NASA)

RADAR is an acronym for Radio Detection and Ranging. Radar is an active system, which generates its own radio waves and transmits them from its antenna, toward a target. Depending on the target properties and the imaging geometry, the radar antenna will receive all, some, or none of the radio wave's energy (this is the Detection part of RADAR). This received signal will travel for an amount of time proportional to the target's distance from the antenna (this is the Ranging part of RADAR).

When asked to picture a "satellite image," most people envision something like the left side of the figure above. It's an optical image – a photograph – albeit one taken by a very powerful camera. But optical images are not the only way to visualize the earth's surface from a satellite or an airplane. General aviation makes excellent use of this for navigation as well.

Synthetic aperture radar, or SAR, is a completely different way to generate a picture by actively illuminating the ground rather than utilizing the light from the sun as with optical images. The right side of the image above shows how very different SAR images look from optical images. These differences present challenges but also create new capabilities. One major advantage of SAR is simple: *Even the best aircraft-mounted or satellite-mounted optical camera is less useful at night and useless when clouds or smoke are present. SAR can capture images at night and see right through clouds and smoke. It is a 24-hour, all-weather technology in high resolution black and white or color.* Of course, this high quality imagery is also excellent for military applications as well and is used by all the services.



Kilauea Volcano, Hawaii



San Francisco, California

\*

<https://www.capellaspace.com/sar-101-an-introduction-to-synthetic-aperture-radar/>

<https://www.capellaspace.com/sar-101-an-introduction-to-synthetic-aperture-radar/>

## Secret Stealth Drone RQ-180 is a B-2 Look Alike ❁

The U.S. Air Force's secret stealth reconnaissance drone has been operational since 2017. Now the flying branch is setting up a forward base in Guam in order to support the radar-evading drone on missions over the Pacific region.

The Air Force has never officially acknowledged the existence of the Northrop Grumman-made RQ-180 drone. Trade publication *Aviation Week* in 2013 broke the news of the drone's development. The magazine on Oct. 24, 2019 followed up with an in-depth feature tracking the unit changes that could support a fleet of seven RQ-180s. *This first appeared in 2019 and is being reposted due to reader interest.*

"There's a growing body of evidence that the stealthy vehicle is now fully operational with the U.S. Air Force in a penetrating intelligence, surveillance and reconnaissance role," *Aviation Week* reporter Guy Norris wrote. The Flying wing RQ-180 reportedly is similar in shape to the Northrop-designed B-2. The unmanned aircraft is smaller than the manned bomber is, however, and also features design improvements that Northrop also is including on the new B-21 bomber that the company is building for the Air Force.

The RQ-180 first flew in 2010, *Aviation Week* reported, finally allowing the Air Force to penetrate enemy air defenses with a far-flying reconnaissance craft. The service last possessed that capability in the late 1990s in the form of the Mach-three SR-71 manned recon plane.

The Air Force reportedly tested the roughly 170-foot-wingspan RQ-180 at Groom Lake, part of the Area 51 complex in Nevada. "In 2009, with Northrop well underway on low-rate initial production of the RQ-180, the Air Force began preparations to evaluate the new vehicle and established a flight-test organization at Groom Lake dubbed the 'Mad Hatters,'" Norris wrote.

New information given to *Aviation Week* now points to 2010 as the key year for the program. First flight of the prototype air vehicle at Groom Lake, known as V1, was believed to have taken place on Aug. 3, 2010. Circumstantial evidence that supported the buildup of pre-first-flight test activity included frequent flights to the site by Northrop Grumman-owned Beech 1900D logistics aircraft, one of which was seen parked by the large south end hangar in a May 2010 satellite image.

The first prototype, V1, had been in flight testing for more than 14 months when a second vehicle, V2, is thought to have joined the test campaign in November 2011. Three more test and development aircraft are also suspected of following the first vehicles into flight trials over the next 15 months, with first flights believed to have occurred in November 2012 (V3), July 2013 (V4) and February 2014 (V5).

Testing of the stealth drone transferred to Edwards Air Force Base in California. "Activity in the program stepped up through the remainder of the year, with the first flight of V6 believed to have taken place in September 2014," Norris explained. "In late 2014 and early 2015, a unit described as Detachment 2 of the 15th Test Flight was stood up at Edwards AFB, likely marking another key phase for acceleration of the new UAS capability toward front-line operational service." The seventh and apparently final production RQ-180 first flew in November 2015, according to Norris.

Eight months later, the system took another step toward its operational debut when Detachment 2 of the 9th Operations Group was established at Edwards South Base. Following the establishment of Detachment 2 in 2016, preparations for initial operations entered the final phases and are believed to have culminated in a secret long-range graduation test mission from Edwards sometime in early 2017. No details of the flight, thought to have been code-named Project Magellan, have been acknowledged, but the mission is thought to have focused on validating the performance of the autonomous navigation system at extremely high latitudes—possibly as high as the Geographic North Pole.

By 2017 the RQ-180 was ready for initial deployment. To support the drone's long-distance missions, the 9th Operations Group stood up two new detachments. Detachment 3 is at Beale Air Force Base in California, while Detachment 4 is at Andersen Air Force Base on the Pacific territory of Guam.



*The inset photo above shows the RQ-180 taken over California recently.*





# Advanced Aerospace Threat Identification Program (AATIP) ✿

## Editor's Note:

*We do try to cover interesting items on anything that flies and that includes Space. There seems to be more news on UFO's these days on not only the Science Channel but the History Channel as well. While there is some controversy in the public's perception there is a lot of research and interest generated in science. The formerly secret AATIP program was a quite a break from the normal government releases on Unidentified Aerial Phenomenon (UAP) also called UFO's.*

The AATIP program was initiated in 2007 by then U.S. Senator Harry Reid (D-Nevada) now retired. The goal was to have the Pentagon study unexplained aerial phenomena (UAP) using government contractor Robert Bigelow. Supposedly these efforts ended in 2012. The public learned of this program in 2017 and since there have been programs on the History and Science Channels there is Much more public interest in UFO's.

As might be expected, due to some in the government, media and public who discount UFO's as even existing, there has been controversy. Some of the controversy centers around the former head of this program, Luis Elizondo, who allegedly resigned from the Pentagon and was featured on one the History Channel's UFO programs (mentioned below).

Investigative journalist, Keith Kloor writing in "The Intercept", said no evidence Elizondo ever worked for the Pentagon can be found. However, one official source was found, a Pentagon spokeswoman, Dana White confirmed to Politico that the secret program existed and was indeed run by Elizondo. Of course nothing would be found on this in "open sources".

**Many in the media, forget that classified programs have limited to no access to records despite the request for information under the Freedom of Information act.** Many are so heavily blacked out they don't make any sense and can't be followed. Those individuals assigned to such programs also are kept highly classified. So Elizondo may have indeed worked for the Pentagon as confirmed above. The History Channel is good about verifying sources for their programs so perhaps they were satisfied enough to do this program entitled "*Unidentified: Inside America's UFO Investigation*".

The DoD says it shut down the AATIP programs, but a spokesman Christopher Sherwood, has indicated the department continues to investigate UFO reports, especially those coming from military aviators. Nick Pope, who secretly investigated UFO's for the British Government in the 1990's said this DoD admission is a "bombshell revelation." Pope, also an author, can be seen often on History and some Science Channel programs. The British, use the acronym UAP (Unidentified Aerial Phenomenon) to keep from using such pop-cultural terms like UFO which often generates controversy and inhibits open, unbiased discussions. Our military is taking these sighting more seriously as well, the Navy has developed new guidelines for reporting UFO's. John Greenewald Jr. — whose website *The Black Vault* archives declassified government documents on UFO reports, called the Pentagon's use of the term "unidentified aerial phenomena" (UAP) unprecedented in its frankness.

Former Senate Majority Leader Harry Reid (D-Nev.) took credit for arranging \$22 million in annual funding for the AATIP, telling the New York Times that it was "one of the good things I did in my congressional service". Reid's home state of Nevada hosts the top-secret military installation known as "Area 51," long rumored to be the storehouse for an alien craft that crashed in Roswell, New Mexico, in 1947.

So club members before you discount UFO's and go on about your day, ask yourself: **How likely is it that this story you just read here would have been produced by a different news outlet other than the source we used if the "The Intercept" hadn't done it? How many covert wars, miscarriages of justice, and unknown technologies would remain hidden if investigative reporters weren't on the beat?** We should all try to keep an open mind to new science, technologies, and especially to new research and future plans for space and aviation developments.



*Here's a strange shaped triangular UAP often reported by observers.*



✿ **Sources:** [https://en.wikipedia.org/wiki/Advanced\\_Aerospace\\_Threat\\_Identification\\_Program](https://en.wikipedia.org/wiki/Advanced_Aerospace_Threat_Identification_Program)  
<https://nypost.com/2019/05/22/the-pentagon-finally-admits-it-investigates-ufos/>  
<https://theintercept.com/2019/06/01/ufo-unidentified-history-channel-luis-elizondo-pentagon/>

# USAF YF-12A Experimental Fighter-Interceptor

<https://www.nasa.gov/centers/armstrong/news/FactSheets/FS-047-DFRC.html>

The YF-12 "Blackbird" was an experimental fighter-interceptor version of the Lockheed A-12 reconnaissance aircraft. In Air Force flight tests on May 1, 1965, the YF-12 set a speed record of 2,070.101 mph and an altitude record of 80,257.65 feet. First publicly displayed at Edwards Air Force Base in 1964, the YF-12 was never adopted by the military as an operational aircraft. [It was, however, a precursor to the SR-71 Blackbird reconnaissance plane.](#)

Two YF-12s were flown in a joint Air Force-NASA research program at the NASA Flight Research Center (after 1976, the NASA Dryden Flight Research Center) between 1969 and 1979. A third shared plane, piloted primarily by the Air Force, was lost to an in-flight fire in 1971.

The YF-12 allowed NASA researchers at all four of the agency's aeronautical centers (Langley, Lewis [now Glenn], and Ames as well as the Flight Research Center) to study the thermal, structural, and aerodynamic effects of sustained, high-altitude, Mach 3 flight. Painted flat black, the YF-12 was fabricated primarily from titanium alloy, which enabled it to withstand skin temperatures of over 500° F.

Work on the YF-12 began in secret in the late 1950s at the Lockheed Advanced Development Projects office, better as known the "Skunk Works," in Burbank, CA. Flight data remained classified long after President Lyndon Johnson announced the plane's existence on Feb. 29, 1964. After the announcement, the plane received the Air Force designation YF-12A.

The "Skunk Works" was the unofficial designation of Lockheed's secret development entity in Burbank. It was located near a plastics plant that exuded a rather strong odor. Since the engineers were also brewing up their secret designs, the "Skunk Works" in Al Capp's comic strip "L'il Abner," where Kickapoo Joy Juice was made, seemed an appropriate designation. However, it was changed to Skunk Works to avoid plagiarism.

During its nine-year life, the YF-12 research program logged 297 flights in the joint NASA-Air Force program and approximately 450 flight hours. Only one YF-12 remains in existence. It is displayed at the U.S. Air Force Museum at Wright-Patterson Air Force Base in Dayton, OH.

## YF-12 Crews

The YF-12 carried a crew of two - a pilot and a flight engineer (in Air Force parlance and practice, a fire control officer). Research pilots Fitzhugh Fulton and Donald Mallick flew NASA's YF-12 flights at the NASA Flight Research Center from 1970 to 1979, with several other pilots performing familiarization and a few research flights. On June 24, 1971, one of the planes experienced an in-flight fuel line failure that led to a fire in the right engine. Unable to save the smoking aircraft, Air Force pilot Lt. Col. Ronald Layton and fire control officer Major Billy A. Curtis ejected and were not injured, but the YF-12A was lost in a fiery explosion in the desert.

## The History of NASA's YF-12 Project

On July 18, 1969, NASA and the Air Force announced joint involvement in a YF-12 research program. The agendas differed, with the Air Force focusing on combat research and NASA engineers initially focusing on a study of flight loads and structural heating. Much of the NASA research was concerned with the viability and development of supersonic cruise aircraft. Two YF-12As (tail numbers 935 and 936) were removed from Air Force storage for the program. On December 11, 1969, 935 successfully made its first flight as a NASA-USAF research plane and inaugurated the program. On June 24, 1971, 936 experienced the fuel line failure described above.

The YF-12's ability to sustain a cruise speed of greater than Mach 3 allowed NASA to expand its research capabilities. A large amount of flight research was performed in aerodynamics, propulsion, controls, structures, subsystems and other areas such as the physics of the upper atmosphere, noise tests and measurements, and handling qualities. The YF-12 flight research data was augmented by a series of wind tunnel tests, laboratory experiments, and analyses. As a result, the combined ground/flight research generated vast amounts of information that was later incorporated into the design of other supersonic aircraft. The program yielded over 125 technical reports.

The program was ordered terminated in 1977, but NASA used some residual funding to keep the project alive into 1979. Plane 935 made its last NASA flight on October 31, 1979. On November 7, 1979, it was ferried by an Air Force crew to the Air Force Museum at Wright-Patterson Air Force Base in Dayton, OH.

## Specifications

The YF-12A has a wingspan of about 55 feet 6 inches, and a length of about 101 feet 8 inches. It is roughly 18 feet 4 inches high. The plane's maximum loaded weight was 127,000 pounds. Its power came from two Pratt & Whitney J58s, each with 32,000 pounds of thrust with afterburners. However, a significant portion of the thrust as the aircraft neared Mach 3 speeds came from the supersonic shock wave captured within each engine inlet and exited through the engine nozzles. The YF-12 had a maximum speed of Mach 3.2 and a range of more than 2,000 miles. Its service ceiling was above 80,000 feet.



## NOVEMBER GENERAL MEMBERSHIP CLUB MEETING HELD AT THE CHINO VALLEY, AZ SENIOR CENTER

Drone photo taken by  
Ron Escott from  
Florence, AZ.  
His drone was quite  
small, he took this one  
hovering over the porta  
potty showing the  
runway and parking  
area very well.



The General Membership meeting for November 25, 2020 opened at 7pm at the winter meeting place, the Chino Valley Senior Center. We began with the Pledge of Allegiance. Club membership stands at 139. There were 17 members present. New members and guest were not to be seen. Minutes of October 31<sup>st</sup> meeting were unanimously approved by members, the correction of China-Chino.

### President's Agenda

Treasurer **Harold Ellis** presented the Treasurer's report. The total of all accounts is \$20,799. T 'was a good year for revenue! The report was approved unanimously. Get your hats and T-shirts while they last.

President **Bill Gilbert** presented a review of field improvement plans: concrete work to extend the sidewalk, pad and install two additional run up stations on the West end; a concrete pad in front of the shed door; and a concrete pad with tie downs for the porta potty. Also, the sign on the cabana has been removed and will be refurbished at a cost of \$176 and the fire cart has been upgraded with

a new 15 gal water tank with pump. Events: The Christmas Party is the last event of the year. It will be December 4<sup>th</sup> at Goods from the Garden in the Gateway Mall. We have 32 members that will celebrate the season. If you know where Valley Hobby is near the main entrance to the Mall, the venue is across the round-a-about from the main entrance. If you have not made reservation you are too late! See you next year.

A "Long Range Planning Committee" (LRPC) has been established to help identify and prioritize club improvements. If you have any inputs for maintenance or improvements, please contact the LRPC members: Doug McBride- [dougmcblive.com](mailto:dougmcblive.com), Don Crowe- [bigchinodon@gmail.com](mailto:bigchinodon@gmail.com). Mark Lipp- [jflipp@aol.com](mailto:jflipp@aol.com).

Safety Officer **Rick Nichols** had nothing to report except: Be safe! VP **Doug McBride** thanked volunteers that helped with recent miscellaneous projects at the field.

Member comments: **Mark Lipp** noted the new signs that the City of Chino has put up at the intersection of Santa Fe Trail and Perkinsville Road.

We took a break at 7:25pm and resumed at 7:38pm. **Rick Nichols** came through with mini cupcakes. Thanks Rick!

### Show & Tell: Planes and Projects

**Harold Ellis** showed us his PT19 control line controlled by a RC car TX; **Randy Meathrell** brought his foam Nobler control line with a unique controller; **Steve Zingali** brought in his latest foam creation a 3D "jet" indoor flyer; **Embry Chandler** told us about his quad copter that he build from parts for an Embry Riddle class project.

### Door Prize/Raffle

**Rick Nichols** won the door prize consisting of Super Glue, craft knife and a 3 channel RX; **Bill Gilbert** had the winning ticket for the 3D Twister, which he immediately sold it to **Greg Flowers** for \$100. Bill donated it to the runway fund.

A motion to adjourn brought us to the close of the last meeting of 2020 at 7:56pm.

Respectfully, **Bob Steffensen** Club Secretary