



The Flightline



Volume 53, Issue 2 Newsletter of the Propstoppers RC Club, AMA 1042, April 2023



President's Message

Gentlemen,

The new flying season has begun. Several groups of members are at the fields regularly.

Please post on our Facebook page when you plan to be out flying, so other members can see which field and times you are flying. I started doing this and then I delete the previous message when I post the next to avoid mix ups.

Both fields are in good condition. Chuck is doing a very nice job of cutting the fields for us. We would like to get a large roller onto Elwyn to flatten out the bumps and pound out the hump that goes straight across the runway from the pits. That will have to wait until the field dries out. We have money in the budget for this purpose. If you know someone who works for a road crew or has access to that type of equipment, please put us in touch with them.

I hope to see you at the first picnic on May 20th. Please contact Paul and volunteer to assist with set-up, cooking, and clean-up etc. FYI – we will **not** have a porta potty. We are attempting to avoid the nasty heat we encountered last year by holding our picnics in the Spring and Fall. Get those planes ready and join us!

Mike

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Fields at Elwyn and CA are now fully open for members and guests, 8 AM to sunset every day all year round. (CA-electric only, Elwyn - Sunday mornings from 8AM to Noon electric only.

We respectfully ask all members to stay in compliance with all Health Department recommendations. The fully vaccinated are no longer required to wear a mask at the field.

Please respect those who are continuing to wear masks or who are not vaccinated, by maintaining social distancing.

LOA with Philadelphia International:
Please comply with the following rules to stay in compliance with our FAA Agreement:

- Maximum altitude 400 feet
- In case of Fly-Away call 215-492-4123 immediately. This is a direct line to the TRACON Office at Philadelphia International Airport.

Tuesday morning breakfast at the Tom Jones Diner starts at 9:00am Indoor flying at the Brookhaven Community Center gym follows at 10:00.

Members and guests must complete a waiver of liability form to fly at Brookhaven Gym.

**Propstoppers RC Club of
Delaware County,
Pennsylvania.**

Club Officers

President:
Mike Black

Vice President:
Pedro Navarro

Secretary:
Michael Black

Treasurer:
Pete Oetinger

Membership Chairman:
Ryan Schurman

Safety Officers:
Eric Hofberg
Ryan Schurman

Newsletter Editor:
Larry Woodward

Facebook Editor:
Ryan Schurman

Webmaster:
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www.propstoppers.org

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**Indoor Flying at the
Brookhaven Gym**

The Brookhaven Community Gym is open to members Tuesdays at 10:00-11:00.

Indoor pilots must sign a waiver of liability form.



Minutes of the Propstoppers Model Airplane Club

General Membership Meeting Minutes from April 15, 2023

Call to order: 12:00 at CA Field. Sixteen members were present.

Treasurer's Report: Pete reported a current balance of \$7,900.00 and commented that this is \$600 more than this time last year.

Membership: No Report from Ryan

Paul Pujol commented that an enthusiastic candidate, Andy Marzano, has been meeting with members at the Elwyn Field and will be completing his membership application shortly.

Website: Mike – No Report

Newsletter: Larry is currently working on the Spring newsletter to be out at the end of April.

Safety: Eric will place a review of the club safety policies and procedures in the Spring newsletter.

Picnics: Paul confirmed the 2023 season picnic dates as follows-

#1 May 20, raindate may 21

#2 September 9, raindate September 10.

#3 (tentative) October 14, raindate October 15.

Old Business

Windssocks have been installed at both fields. Thanks go out to Paul and Fran for their help with installation.

Crabgrass and weed prevention was completed last week, thanks to Pete for taking up this work.

FRIA: Mike reported that he has been in recent contact with AMA regarding our status. Our application, which is among the first to be processed by AMA, has now been submitted to FAA. It is expected that there may be some further delay before the application would be granted. There have been many delays to the program due to Covid and it is likely that the deadline for compliance with Remote ID will be extended beyond the current date of September 2023. A second permit application will have to be submitted later for

CA Field at a time not yet announced.

Insurance: Updated insurance certificates for 2023 have been received and forwarded to Brookhaven, Elwyn and Christian Academy.

New Business: Mike met with Bob, the Grounds Director at Elwyn, to discuss the installation of wind socks. He reports that Elwyn is very pleased to host Propstoppers, especially because of the excellent care we take of the site. Let's all continue to be diligent about carrying out any trash and keeping the picnic table area clean. Bob did mention a problem with fuel residue on the tables. Please be careful with fuel and thoroughly clean up any spills.

Adjournment : Time not recorded.

Editor's Notes:

By Larry Woodward



Once again I am indebted to Dave Harding for providing me with the lion's share of content for the issue. He often will send me links to interesting stories he found on the web or in periodicals. I can usually edit these, often expanding the graphic content with Google Images, into something that works okay in our newsletter format. And that is in addition to his regular reporting on activities like the Drexel engineering program.

This time, he also sent me a wonderful firsthand account by Propstopper Dave Bevan relating his early Cold War work on the USAF B-57, a precursor to the U-2 spy plane.

I know for a fact that many of you are equally enthusiastic and engaged in this hobby. Many of you have substantial experience and skill. I'm sure you are spending time exploring new ideas and products or exchanging stories with friends and colleagues. Please make an effort to keep me in mind when something peaks your interest. If you send me a link to an article or attach a couple of photos with a description, I can often find a way to make them part of the newsletter. *****

I can't help myself focusing on what a great privilege it is to count men like Dave Harding, Dave Bevan and the late Mick Harris among my friends. Their knowledge and experience is only eclipsed by their warmth and generosity. And, their seat at the table of aviation history in the latter half of the 20th Century is impressive. We are all so grateful for the contribution they make to the club and to our individual lives.

But, there is so much more to the club than just the Boeing legacy. Propstoppers has its own half century long history of model aviation progress, with hundreds of members, past and present who made their mark. If you care to look through some of the older newsletters on the website you can see many of the awards and accomplishments that brought recognition and advanced the hobby. You can also picture the kind of vibrant community and fellowship that characterized the club and its activities.

I'm optimistic that the club may currently be in the beginning stages of a post-Covid rebirth. With enthusiastic new members joining and a new generation of leadership stepping up, the signs look good. Long live Propstoppers!



The late Al Taburro demonstrates a complex principle of flight during a gathering of Propstoppers in the early decades of the club.

Member Profile

Meet new member Andy Marzano

By Larry Woodward



I first became interested in model airplanes as a kid. My friends and I built and flew balsa control line planes.

Thirty years later I tried my luck building and flying my first 3-channel RC plane. After many hours of assembly and just a few seconds of flying, the plane was reduced to a pile of sticks.

Twenty more years “flew by”. Now retired, I’ve decided to give my childhood hobby another shot.

I discovered the Elwyn flying field and spotted a solo R/C’er, Paul Pujol, tinkering with his planes. Paul was welcoming and explained the details of the AMA and the PropStoppers Club. Soon after, Paul had me flying several of his planes using a buddy-box transmitter.

I recently purchased my own RTF Aero Scout and became a PropStoppers member. I haven’t actually soloed yet but hope to in the near future.

I’m already looking at perhaps an electric sailplane as my next model, but only after becoming a lot more proficient with the Aero Scout.

Drone-on-Drone Combat

Ukraine Marks a New Era of Aerial Warfare

Submitted by Dave Harding

[Drone-on-Drone Combat in Ukraine Marks a New Era of Aerial Warfare - Scientific American](#)
By Jason Sherman, April 3, 2023

Antidrone technology is combatting “flying IEDs” in the air over Ukraine—with implications beyond the war with Russia

The Fortem Technologies fully-autonomous, radar-guided DroneHunter captures a Group 1 level aircraft, that can weigh up to 20 pounds. (Photo right, look closely to see the thin web about to envelope the target drone.) It is also capable of capturing heavier aircraft, such as the Iranian-built [Shahed 131 and 136 fixed-wing drones](#). (Photo below)



Credit: Donte Hunter.

In the skies over Ukraine, a new epoch in air warfare is emerging: drone-on-drone combat.

These aerial duels don't involve bullets, missiles or bombs. In some, hobby-type camera quadcopters that are used to spy on enemy positions simply [ram each other in a crude aerial demolition derby](#). In other encounters, highly sophisticated craft use advanced radar—backed by artificial intelligence and the latest aerospace engineering technology—to [precision fire nets](#) that snag other drones.

Kamikaze drones strike Ukraine

Russia has been blamed for using “kamikaze drones” to attack Kyiv and other cities in Ukraine. The small, slow-flying weapons are used to strike targets by crashing into them

SHAHED-136: Ukraine accuses Russia of using Iranian-made suicide drones

Engine: 50-horsepower motor drives two-bladed propeller

Stabilising rudders

Delta wing configuration

Weight **200kg**

Speed **185km/h**

Claimed flight range **1,000km**

Multiple launch truck
Drones fired in batches of five from racks inside truck-mounted container

Warhead weight **40kg approx.**

Guidance
Drone can be programmed to fly automatically to set of GPS coordinates with payload of explosives

Target must be stationary

Drone and human to scale

Sources: Army Recognition, BBC, Defence Express, France 24 © GRAPHIC NEWS

“This is something we haven’t seen before,” says Caitlin Lee, who leads the Center for Unmanned Aerial Vehicles and Autonomy Studies at the Mitchell Institute for Aerospace Studies in Arlington, Va. “This is the first time we’re seeing drone-on-drone conflict.”

And the action in Ukraine suggests that even more novel kinds of aerial conflict—including combat drones armed to fight in tandem with piloted aircraft—are coming to the broader world of warfare. The U.S. Air Force, for example, now envisions [a fleet of 1,000 high-performance uncrewed aircraft](#) paired with its most advanced combat jets. This plan is in response to China’s growing challenge to the U.S. military’s 75-year air dominance. Beyond the battlefield, weaponized drones could, from the skies above any [city](#), easily threaten things such as crowd safety at [major sporting events](#), [prison security](#) and [critical infrastructure](#). (Of course, much of the underlying technology is also expected to usher in [changes for the good](#) in the realm of peaceful applications. Drones have already been successfully used to [rush extremely perishable donor organs](#) to transplant patients.)

In Ukraine, the initial drone dogfights sprung from the proliferation of commercially available, low-cost, low-altitude aircraft, such as Chinese drone maker DJI’s quadcopter. People can creatively modify these hobbyist machines for combat to allow the drones to conduct overhead surveillance and drop grenades. Defending against such small drones, some weighing just a few ounces or pounds, is difficult. For starters, they are hard to detect.

“We can retrain air defenses to look for smaller radar cross sections, but then they’ll pick up every bird that flies by,” says Sarah Kreps, director of the Cornell Brooks School Tech Policy Institute. “So it’s a real sensor problem that countries like the U.S. have spent billions trying to solve—not unlike when the U.S. spent [heavily on] countering improvised explosive devices that were far less expensive or sophisticated than systems our militaries had been trained to destroy. These are essentially flying IEDs that have foiled militaries in similar ways, creating asymmetric advantages that have been difficult to counter.”



Blighter AUADS (ANTI-UAV DEFENCE SYSTEM)

- Detect - Blighter A400 Series Air Security Radar
- Track - Hawkeye DS and EO Video Tracker
- Defeat - Directional RF Inhibitor

Another challenge these small drones present is that they are now widely available and cheap enough to be purchased in large numbers. Even though an individual machine modified for combat is not capable of causing massive destruction, the number of potentially vulnerable targets is nearly infinite, Kreps notes. This enables a group with fewer resources to attack a more powerful foe.

In 2016 French special operations forces deployed in Syria were among the first to see small commercial drones imaginatively converted into instruments of war when the forces were attacked by Islamic State fighters. “Less-funded countries now have access

to airpower where they wouldn't have in the past, so that's changing who's entering the fray," says Nicole Thomas, division chief for strategy at the Pentagon's Joint Counter-Small Unmanned Aircraft Systems Office, an organization created in 2020 to synchronize the U.S. military's response to such threats.

The U.S. government divides small drones into three categories: Group 1 describes craft that have a gross takeoff weight of up to 20 pounds. Group 2 covers the next tier, between 21 and 55 pounds. And Group 3 encompasses uncrewed drones that can weigh as much as 1,320 pounds.

While the drone war era has clearly begun, it is not yet clear that these small aircraft are playing a decisive role in the larger Ukraine fight by creating an offensive breakthrough or an opportunity to seize the initiative for one side, Lee says. "I think the open question is: Do the drones have to get more sophisticated ... in order to hold the ground, let alone contribute to a combined arms campaign that actually takes back territory?" she adds.

Defense experts are not waiting for small drones to become more advanced before taking steps to defend against them. In the 2021 National Defense Authorization Act, the U.S. Congress directed the Pentagon to [create a plan for developing and fielding defense systems to counter small drones](#). And this year the Pentagon plans to spend nearly \$700 million for counterdrone research and development, plus \$78 million for procurement. A [private research firm estimates](#) the market for systems to counter small drones will grow from about \$2.3 billion in 2023 to \$12.6 billion by 2030. This market includes not only the Pentagon but also state and municipal governments, as well as private entities.
<https://theaviationist.com/2022/10/17/shahed-136-kamikaze-drone->

[photo/https://theaviationist.com/2022/10/17/shahed-136-kamikaze-drone-photo/](https://theaviationist.com/2022/10/17/shahed-136-kamikaze-drone-photo/)

That potential is inspiring more than a dozen companies around the world—including [Blighter Surveillance Systems](#) in England and [Dedrone](#) and [DeTect](#) in the U.S.—to develop antidrone technology.

Such systems may be ground-based, handheld or drone-based and can bring down other small aircraft using electromagnetic interference, lasers and other technology.

Fortem Technologies, a start-up based in Pleasant Grove, Utah, has vaulted into the drone wars by adapting its earlier work on miniature radars. The company says it has developed a complete system for detecting small drones—and capturing them midair with a net.



DedroneDefender is a lightweight, smart narrowband disruption device that is cloud-enabled for use with DedroneTracker software, so users can detect, identify, locate, track, and mitigate drone threats.

Fortem's DroneHunter F700 has six rotors, a radar backed by autonomous technology and two "net heads" that can precisely fire webs at adversary drones. Once ensnared, smaller drones can be dragged away by the DroneHunter. Larger drones are also netted but then released; the net prevents them from flying, so they drop to the ground under their own weight. Then a parachute attached to the net deploys to soften the landing.

"We're really the only one in the world at this point that can do that," says the company's chief executive officer Jon Gruen.

The U.S. government is using this technology to protect unnamed "strategic" sites. And Ukraine is flying Fortem's new drone to patrol the skies and nab small Russian aircraft intact and on the fly.

Ukraine first deployed DroneHunter last May to chase down the Group 1 and 2 drones that Russia was using to spy on frontline Ukrainian troops. DroneHunter has dented Moscow's ability to use drones for collecting artillery-targeting data on Ukrainian troop positions and has stymied larger kamikaze drones aimed at critical infrastructure.

When Russia began launching the Iranian-built uncrewed aerial vehicle Shahed, a Group 3 drone, as a kamikaze weapon, Fortem began modifying DroneHunter to intercept these armed drones. The system has ensnared more than 5,000 target drones during developmental flight tests, Gruen says. This has helped capture the attention of capital venture divisions at Lockheed Martin, Boeing and other giant corporations, which have invested \$75 million in scaling up Fortem's operations.

Significantly, DroneHunter operates autonomously: once deployed, it races to the action, makes independent decisions about all its moves, nets its prey and returns to be equipped with a fresh net.



"There have been debates about using autonomous drones in combat, and thus far, countries seem to have shied away from using them in a lethal capacity," Kreps says. "At the same time, though, we've seen an increasingly porous line between the semiautonomous drones—which is how the U.S. used drones for counterterrorism—and fully autonomous drones."

In a situation such as the one in Ukraine, where the West broadly supports giving the country the tools it needs to defend itself, "there could be a real first-mover advantage in using counterdrone systems in this type of autonomous capacity," Kreps says, "which takes us further down the slippery slope of autonomy."

[Preview YouTube video Video captures dogfight between two Mavic quadcopter drones in Ukraine.](#)

Drexel SAE Aero Competition 2023

Propstoppers support two teams competing in Texas finals

By Dave Harding

In the last few years Propstoppers have supported Drexel University Professor Yousuff in teaching his course on Aircraft Design Build Fly. We have provided five basic airplanes for which the students design and build wings and tails to meet performance and stability conditions. We have then hosted the fly off for these models, usually resulting in a good deal of Propstopper support to get them flight worthy and fly them!

In prior years we have also supported them in Senior Projects competing in the SAE Aero Design International Competitions.

There are usually three classes held in separate East and West Coast competitions;

- Regular Class, big airplanes rated on demonstrated payload capacity
- Miniature Class, carrying a payload and with limited packing space and assembly time.
- Advanced Class which involves some complex performance, like accurately dropping a “bomb” or this year carrying water payload simulating fire fighting.

The picture below is a Drexel Regular Class entry in 2017 being assembled at my daughter’s house in Pasadena.



This year, and rather late, we were asked to support two teams entering the Miniature Class for the West Coast competition to be held in Fort Worth.

Drexel enters two teams into SAE Aero Design West 2023

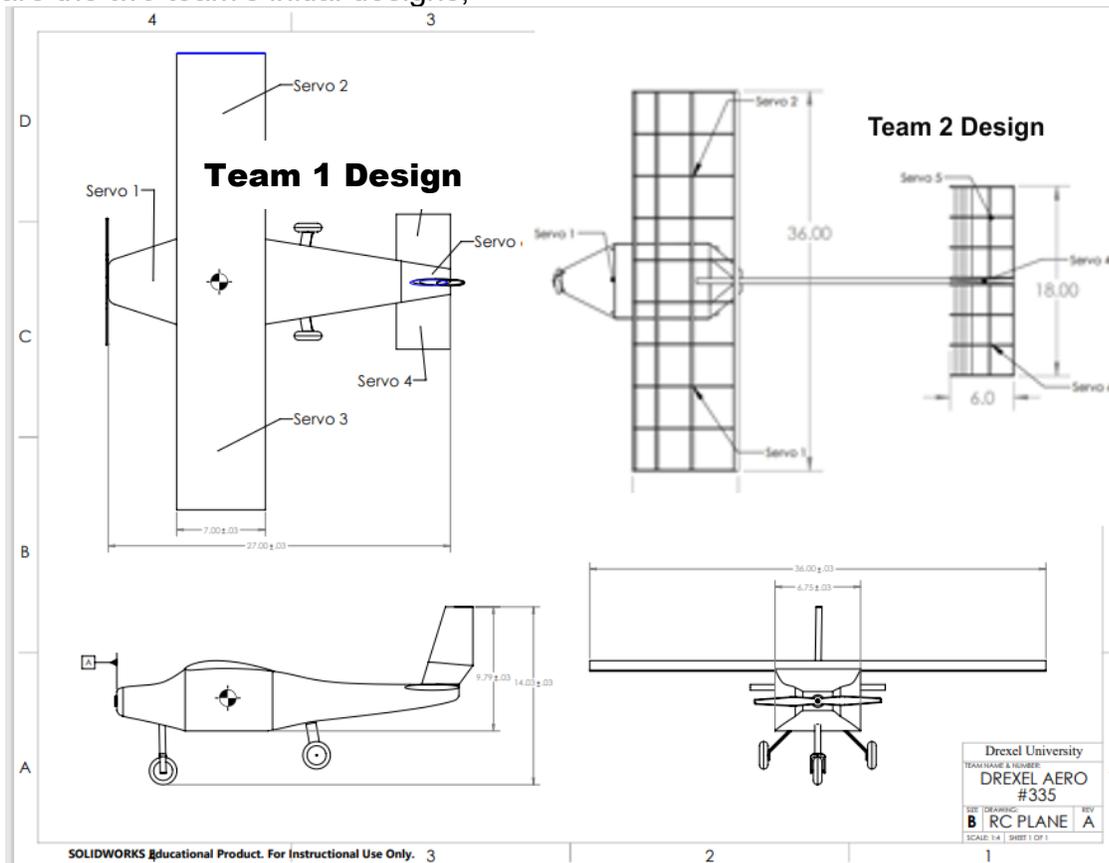
MICRO CLASS DESIGN REQUIREMENTS:

The objective of the Micro Class is to challenge engineering students to design a small, lightweight, all electric aircraft to overcome various conflicting design and performance requirements such as short take-off, max-speed, external payload carriage, internal payload carriage, and rapid unloading of the payloads

Carrying two different sized “Payload Boxes” and additional plate metal payload. Payloads and boxes must be loaded in less than one minute.

- 1. Both boxes are rectangular prisms with specifications consistent with the table:
Type; Length Large; 12x12x 2in. 5.5oz, Small; 6x6x4in 2.5oz. Points are given for boxes and payload flown.
- Wing span is limited to 36 inches
- A Power limiter of 450 watts was required in the circuit and the result is a fairly highly powered small airplane.
- Takeoff was to be from an 8 ft table 2 ft off the ground.

Here are the two team’s initial designs;



We supported the teams in developing the designs through a series of virtual Zoom meetings. Eventually the teams separately brought their developing models to my workshop to examine different approaches and materials etc. Finally with less than two weeks to go, they separately brought their models for us to try some test flights.

The first team brought their model to Elwyn where a number of us helped set it up for some test runs followed by modifications. Here the landing gear is modified by Paul Pujol. Then the control settings were adjusted under the direction of Ryan Schurman



A successful flight was made by Ryan with Paul tweaking the trims.



The model was a handful but Ryan managed to handle the wild takeoff maneuvers to take it to a fine flight.

The second team brought their model to CA field where Paul took over the controls.



Takeoff from grass was unsuccessful so a table takeoff was attempted. This too failed and the model was taken back for repairs.



It apparently failed as the torque from this propulsion system overwhelmed the landing gear resulting in a powered roll off the table. So once again the model was taken back to the workshop and repairs made. Oh, this was the day before the teams flew to Texas.



Team 1 made three flights with a local pilot and judging from the videos he should have managed them better. However each flight resulted in damage and much of the weekend was taken in making repairs.



Further repairs were made and the team made it to the flight line but too late to make another flight.

Click below to see complete video coverage of the SAE Aero West 2023 competition. You've never seen a more diverse collection of aircraft or more tension filled flights.

https://youtu.be/zW_MnfstF1o



Team 2's problems were worse as they not only suffered from flight attempt damage but even suffered motor failure.



The repair and new motor were not up to the power level of the original and this resulted in a failed table takeoff failure. The local pilot claimed inadequate pitch control to stop the dive off the end. But examining the video it seems more like there was insufficient power as the model just dived off the end indicating no effective aerodynamic lift.



These projects are quite complex, especially for individuals with no prior experience. So it was a shame they did not achieve a bit more success at the event.

Nevertheless they value our efforts of support, so thanking you Propstoppers for helping the teams.
Dave Harding

Propstopper Dave Bevan's Early Critical Contribution to Climate Research

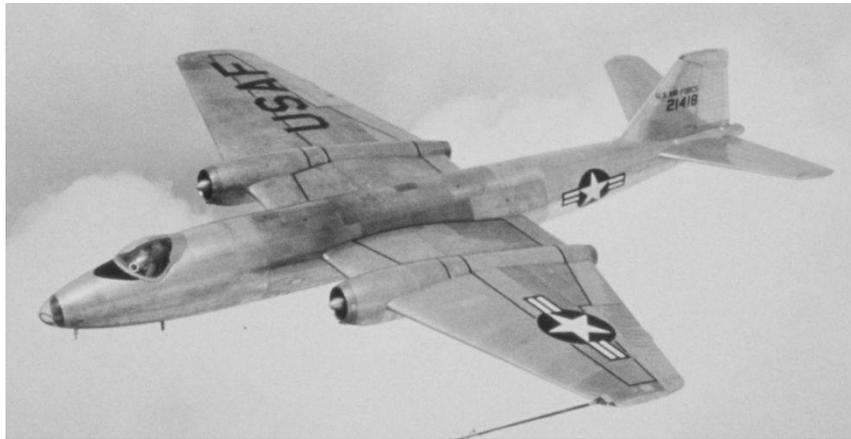
By Dave Harding

NOAA will use a converted Air Force B-57D bomber to sniff the Sky for Geoengineering Particles. They will be searching the upper atmosphere for substances that could help the U.S. reflect sunlight away from Earth.

A WB-57 aircraft operated by NASA will monitor the upper atmosphere for aerosols and other Substances that could be used by humans to cool the Earth.

<https://www.eenews.net/articles/old-bomber-will-sniff-the-sky-for-geoengineering-aerosols/>

So, how did Dave help develop solutions to the World's Major Problem?



The B-57 aircraft to be used in this effort was successfully developed from the British English Electric Canberra bomber bought for the US by the Glenn L Martin Company in Baltimore. Critical problems with the development of this aircraft were solved by our own Propstopper Dave Bevan who worked at Martin at this time.

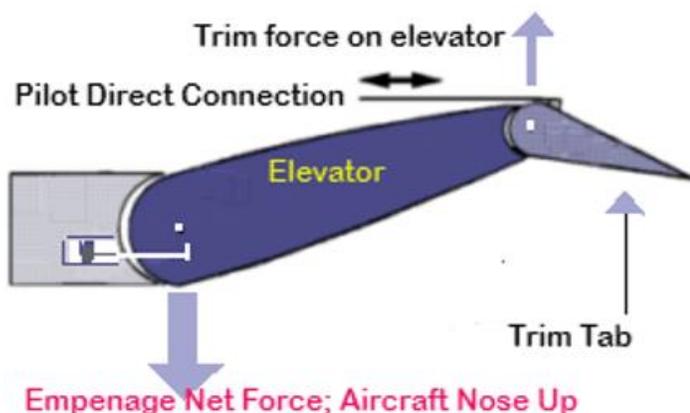
Released to service in 1951 the British Aircraft Corporation Canberra was the Royal Air Force's first jet bomber. Work had begun on the aircraft's design back in 1945 when it was realized that the jet engine was going to have a major impact on the balance of worldwide military power. With relations between the West and Soviet bloc countries rapidly deteriorating during the early 1950's the Canberra was ordered in quantity to replace the RAF's outdated propeller driven bomber aircraft.

The Canberra was also exported to other countries including the Glenn L Martin Company, who built the B-57, as the Canberra was known in America, for the United States Air Force. Here's an account of Dave's work on the project:

"RAF Wing commander W. E. Petter working with English Electric did a really good job designing the Canberra as a light weight, low drag aircraft. He did not use hydraulics on the control surfaces, saving weight by having manually driven surfaces over the whole altitude and speed range.

The most basic flight control system designs are mechanical and date back to early aircraft. They operate with a collection of mechanical parts, such as rods, cables, pulleys, and sometimes chains to transmit the forces of the flight deck controls directly to the control surfaces. Just as we do with our RC models.

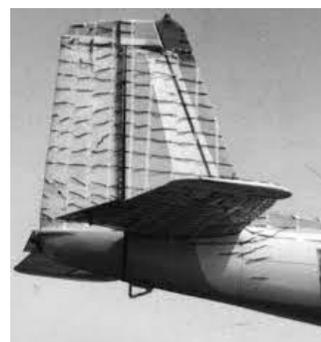
However, for larger aircraft the resulting control loads as experienced directly to the pilot can become too great. On such aircraft a trim tab control actuation is sometimes used. In this approach the pilot control stick and rudder pedals are connected to trim tabs connected to the control surface trailing edge.



This was the control method of the B-57.”

Dave reports; “In flight test we noticed rumble and buffet at Mach .72, so my bosses said ‘see what you can do’. I bought black yarn and tufted it and bought some aluminum angle strips and cut and filed them and stuck them on the inboard upper horizontal tail, and on Monday morning post-flight they said ‘the tuck is gone!’

I had found a lot of air coming out of the variable incidence horizontal tail seal area. Air was coming from inside the fuselage at bulkhead 42 where the control rods went aft. I put Schlegel cloth seals around the hole, a seal used on car windows. By futzing around I got it up to M .74 then .76, then .78 and .8 where we had problems like a terrible tuck.

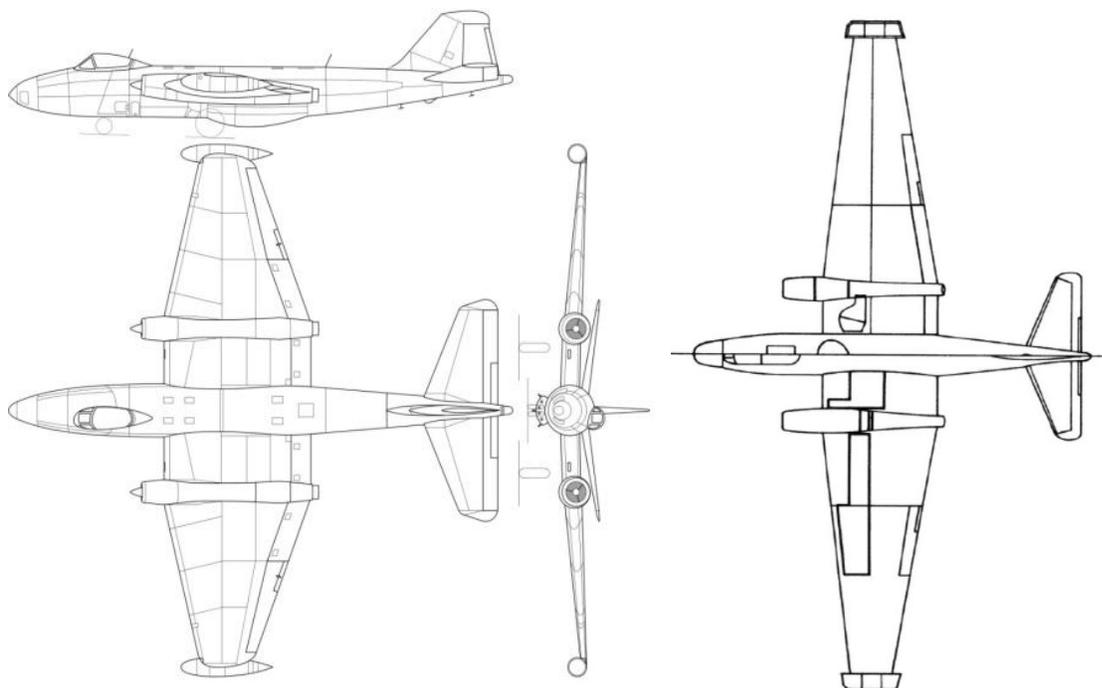


My roommate was the flight test engineer and I knew the test pilot very well, so I was concerned about what we saw above M.8. I called English Electric head of flight test, Sir Roland P. Beaumont, and told him about 70 pounds pull force and a dent in the dash, so he said ‘I’ll bring my helmet and come right over’. Post flight he said, ‘by Jove it goes down.’ My boss said you better do something or we can’t deliver these.

Well, we now had to modify the controls so I had double-acting pre-loaded blowdown torsion tubes on the surfaces to keep stick forces within the MilSpec.

We now had a plane with the greatest [available] ratio between low speed and high speed, so the Air Force flew me every Wednesday from Baltimore to Wright field to discuss a ‘*very high altitude special purpose aircraft*’. We changed the span from 64 feet to 105 and made other changes.

One Wednesday at Dayton I told the Air Force man that if we build this aircraft, it won't meet the MilSpec for Flying Qualities for Piloted Aircraft, and he said all aircraft have to meet the MilSpec. I told him the atmosphere is too thin.



Eventually a bunch of us made a variable stability Hellcat to fly like my calculations, and Woody Fulton – Fitzhugh, who had flown everything in the USAF inventory, and was flying the B-52, flew it for a week and said he could do the mission. So we built it, but at 70,000 feet the air is so thin that M.8 is only 120knots indicated airspeed.

In 1956 when I was at English Electric for other work, some aero guys said we heard you modified some Canberras to fly over Russia and take pictures. 'I told them I know nothing about that!'



The modified B-57 was used by the United States Air Force during the 1950s prior to operational use of the Lockheed U-2

Something the guys might not know- The U-2 has a much larger vertical tail and is heavier, having hydraulics, and a starting system much heavier than the Canberra's cartridge starter, so it won't go as high!"

Dave as a Propstopper and Helicopter Museum Lecturer.

Some years back Dave each year gave regular one week student courses at the Helicopter Museum, which resulted in the students building and flying a hand launched glider. After several years and a new Museum President, Dave was told they have cancelled the event as it was "too expensive to advertise it"!

At one of our Middletown Days held at the Williamson Trade School, Dave built and gave away a hundred such gliders!



F-22 Shoot Down and Air Space Issues

Submitted by Dave Harding

From MPR website;

An F-22 Raptor shot down an airborne object last Saturday, in an incident that could be linked to a balloon put into the sky by a hobby club. U.S. officials say they're still investigating.

But the Propstoppers are ready;

Did a superpower showdown provoke the U.S. into using a fighter jet to shoot down a hobbyist group's research balloon in Canada? That's the question the public — and the FBI — wants to answer, after the U.S. military shot down several unidentified airborne objects last weekend.



An F-22 fighter jet is pictured during a NATO exercise in Lask, Poland, in October. The same type of jet shot down an "unidentified object" over Canadian airspace on Saturday, Prime Minister Justin Trudeau said. *Omar Marques/Getty Images*

A military spokesperson tells NPR it's their understanding that the FBI has spoken to the

hobbyist group in question — the Northern Illinois Bottlecap Balloon Brigade, based just north of Chicago — in an apparent attempt to determine whether their small balloon might have inadvertently caused a big ruckus.

[UFOs? Airborne objects? What we know about 4 recent shootdowns](#)

But the hobbyist club's members are warning that while their balloon, whose radio callsign is K9YO-15, is missing in action, it's too soon to say whether it was shot down by a warplane. They also say their balloon launches follow all federal regulations.

The [Biden administration said on Friday](#) that it cannot confirm any reports potentially identifying the objects that were shot down, citing ongoing investigations.

The as-yet-unexplained incident began on Feb. 10, when U.S. defense officials [detected a "high-altitude airborne object"](#) over U.S. airspace in Alaska, days after a Chinese balloon crossed much of the continental U.S.

Two F-22 fighters were dispatched to track the mysterious object over Alaska. When it crossed the international border into Canada, aircraft from the Royal Canadian Air Force joined the formation. It quickly prompted calls between President Biden and Canada's Prime Minister Justin Trudeau, and between Defense Secretary Lloyd Austin and Canadian Defense Minister Anita Anand.

With the use of force authorized, a U.S. F-22 used an AIM-9X Sidewinder missile to [shoot down the cylindrical object](#) over Canada's Yukon Territory on Feb. 11. Officials have not yet offered an explanation about the origin or purpose of the unidentified object. But an intriguing theory quickly emerged in the community of hobbyist balloon enthusiasts: that a high-altitude "pico" balloon, similar to a Mylar party balloon, was shot out of the sky.

And as it happens, Saturday, Feb. 11, was the last time the amateur group in Illinois heard from their balloon.

"98% certainty" that it's the same balloon, an expert says

"Before the Yukon balloon was shot down, us amateurs were watching [K9YO-15] go towards Alaska," Dan Bowen, a stratospheric balloon consultant, told NPR.

Bowen, who 12 years ago helped to research and design small balloons like the one used by the Illinois club, says he and others were using [a tracking website](#) to follow K9YO-15. The tool also gives a forecast of a wandering balloon's likely path.



Sailors recover a high-altitude surveillance balloon in the waters off the coast of Myrtle Beach, S.C., on Feb. 5, after a fighter jet shot the balloon out of the sky.

Petty Officer 1st Class Tyler Thompson/U.S. Navy Photo

When the prediction showed K9YO-15 heading from Alaska over the Yukon, Bowen said, "we really hoped it wouldn't be intercepted. But we knew the moment that the intercept was reported, whose it was and which one it was."

Asked if he believes the Northern Illinois Bottlecap Balloon Brigade's balloon was shot down, Bowen didn't hesitate. "Yes. Absolutely," he said. "You know, I would say with 98% certainty."

A spokesperson for NORAD, the joint U.S.-Canadian military organization, told NPR on Friday that from their understanding, the FBI has spoken with the balloon hobby club. Representatives from the FBI and NORAD told NPR on Friday that they have no new information to provide, with the FBI saying that "the overall recovery operation is ongoing."

The balloon had already circled the Earth 6 times

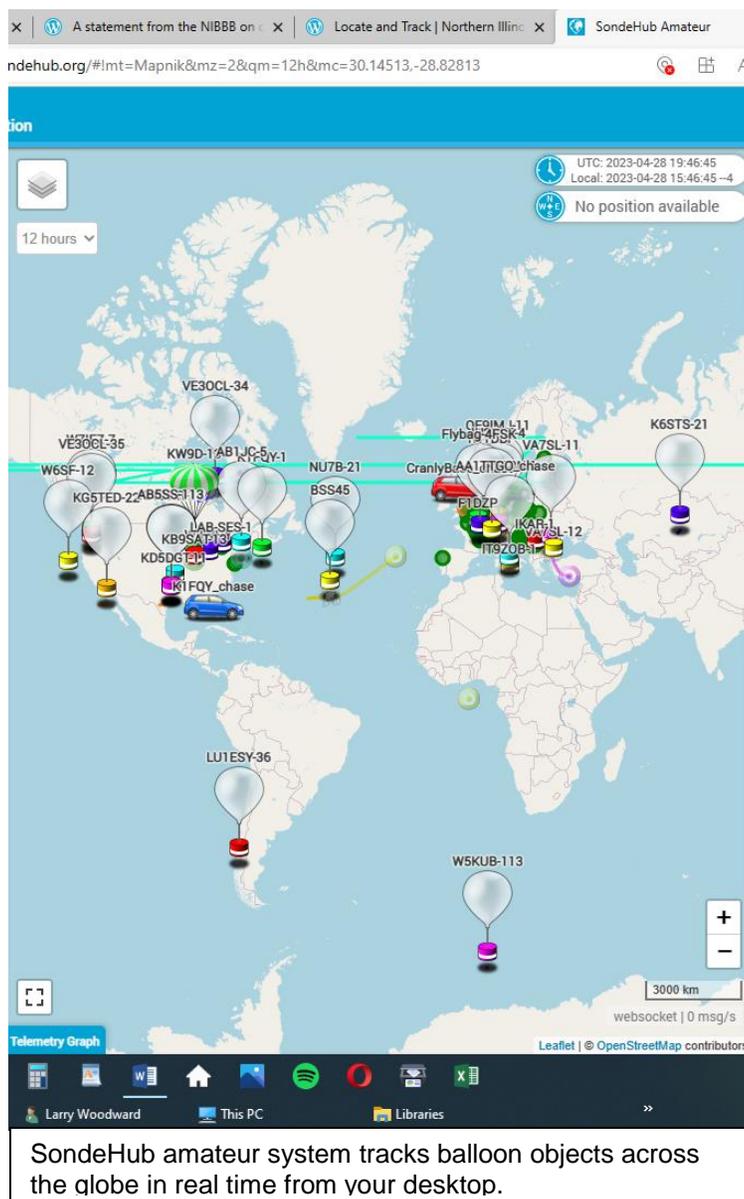
K9YO-15 was launched last fall by members of the Bottlecap Balloon club — the group takes its name from the Pixar movie *Up*, which prominently features both balloons and a bottle cap.

Its journey began with a launch from Libertyville, Ill., on Oct. 10, 2022. Before it disappeared, it was one of the club's longest-flying balloons; in its 123 days aloft, it had circumnavigated the Earth nearly seven times.

On Tuesday, the club published the balloon's last known coordinates and its projected path. "For now we are calling Pico Balloon K9YO Missing in Action," wrote club organizer Cary Willis.

In the days since, speculation has grown over the possibility that the U.S. Air Force shot down the 32-inch silver Mylar balloon. [On Friday, the NIBBB posted a statement](#) saying there is presently no connection between its balloon and the unidentified object shot down by the F-22 last weekend.

"As has been widely reported, no part of the object shot down by the US Air Force jet over the Yukon territory has been recovered," the club wrote. "Until that happens and that object is confirmed to be



an identifiable pico balloon, any assertions or claims that our balloon was involved in that incident are not supported by facts.”

A representative for the club did not respond to an interview request.

You wouldn't need a missile to take the balloon down

Balloons like K9YO-15 are inexpensive — when asked for a cost estimate, Bowen replied, "I don't think you'd break \$100."

“Some of them are the same silver balloons you buy in the grocery store," he said, "and I mean from the same manufacturer of the same model.”

After they're launched, the balloons expand as they climb, swelling until the Mylar envelope pressurizes. They stop rising at altitudes where the air density is equal to the balloon's density. The pico balloons "just float the same way a fish bladder or a submarine does underneath the water," Bowen said.

One thing that might make a pico balloon hard to shoot down, Bowen said, is its small size. "The entire thing that the balloon lifts is a business card-sized circuit board and two little tissue paper-thin solar cells," he said.

Those characteristics help the balloons meet legal regulations that require them not to pose a danger to aircraft. They're made to be safe — and a missile isn't needed to pop them.

“These balloons are pressurized just below the point of popping," Bowen said. "So if you can hit them with [aircraft] turbulence, they'll pop. If they get hit with a sonic boom from nearby, absolutely going to pop. Those are the easiest ways to pop them.”

The Bottlecap club says its balloons sometimes go silent

In its Friday statement, the club also noted that it's normal for pico balloons to lose touch. "It is not unusual for significant periods of time to elapse between received transmissions," they explained, adding that K9YO-15 had previously gone MIA around Christmas before reappearing in late January.

One explanation is that the balloon's GPS pings require solar power. At higher latitudes in wintertime — like the recent path of K9YO-15 — the tiny solar panels can struggle to receive enough sunlight to power the balloon's lightweight systems.

The balloon was equipped with a GPS module, a transmitter, a tiny computer and a small solar panel package. Its total payload weight was just 16.4 grams, or about half an ounce, [according to a blog post about the launch](#).

Federal law requires most large flying objects to be registered with the Federal Aviation Administration. But amateur pico balloons, like K9YO-15, are so small and light that they are not subject to those requirements. (Its radio transmitter is registered with the FCC.)

Amateurs await potential policy changes

Balloon enthusiasts say they're happy to see so much interest in their hobby. And they're hoping to be able to keep pursuing it, even if the U.S. and other countries adopt new rules.

"These are often launched by schoolchildren," Bowen said. "The amateurs who have figured this out have gone to schools to get them excited about science and engineering, and the kids just love the ability to see their little robot creature wandering the planet."

The students track their balloons, much like the Bottlecap Brigade club. As the U.S. and other countries take a fresh look at balloons and high-altitude objects, Bowen notes that there are 10 to 20 more balloons still out there, making their way around the world — "and there's no way for us to bring them down remotely."



Safe Flying Is Everybody's Responsibility

By Eric Hofberg

I heard it through the Grapevine. Not just the name of a once-popular song, but alarming stories, from the past, of flyers in our club who have used the Elwyn field, overflowed Route 352, and needed to recover their airplanes from the far side of the highway. The stories continue with some flyers landing/crashing in the parking lot and too close to the buildings. I can only assume that the flyers in question had not used good judgment and may well lack the ability to safely fly what they have brought to the field.

The cure for situations like this lies in the club's culture and in its procedures. Simply put – safety is everyone's responsibility. If we all agree to conduct ourselves safely, and expect it of others, then safety will simply be an inherent characteristic of our community. And, that cultural development begins with early and effective training and procedures.

AMA requires a training program in our club and surrounding clubs. A new flyer is required to undergo training with a designated instructor or experienced pilot and then pass a solo test *prior* to being permitted to fly without direct supervision. Our club has designated instructors and many "go to" experienced pilots who are very willing to assist with flight instruction. Our designated instructors are:

Ryan Schurman	484-802-2319	throttle152@hotmail.com
Jeff Frazier	610-357-4557	jfrazier@comcast.net
Paul Pujol	(484) 844-5251	paulacs@comcast.net

We now live in a time where the choice of what you purchase to fly is only limited by the thickness of your wallet, and it no longer requires countless hours to build that dream. The progression should be a high wing, more stable airplane, perhaps starting with a small, light flyer and progressing to larger airplanes as skill and practice dictate.

This process should be monitored by the experienced flyers. The flying fields should be "supervised" by the members using them, and if you see someone continuing to fly in an unsafe manner and perhaps attempting to fly something beyond their skill level, this should warrant a discussion, perhaps with an offer to help. If there continues to be a problem, they should be reported to one of the field safety officers: Eric Hofberg (610 565-0408, bgsteam@comcast.net) or Ryan Schurman (484-802-2319 throttle152@hotmail.com).

If this message seems somehow petty and not related to you, rest assured that flying sites are very hard to obtain. The loss of a flying site due to someone's carelessness would be a major blow from which this club might not be able to recover. "Safe flying is everyone's responsibility" is not just a slogan, it's a necessity.

Please observe the following rules, fly safely, and we'll all continue to have fun:

1. Announce your intention to take off or land.
2. Do not take off or land with someone on the field.
3. If you intend to step onto the landing strip to place your plane or recover same, say "on the field."
4. Do not overfly other people and refrain from making high-speed passes down the flight line.
5. Respect the boundaries of the field, do not fly behind the flight line or too high or far out.
6. All airplanes/helicopters/drones should be identified with the owner's contact information and AMA number on the airframe. Your FAA pilot registration number **MUST** be clearly posted on the **OUTSIDE** of the aircraft.

- 7. Try to coordinate your flight time with other flyers, i.e., you don't have to fly continually, give some others a chance to fly in clear airspace, especially beginners.
- 8. If you suspect that a flyer is not a club member and perhaps not an AMA member, please ask. Insurance regulations require that our fields are for the use of our club members only. Guest flyers are welcome for up to 3 visits if they are accompanied by a club member and are AMA members.
- 9. No taxiing in the pits.
- 10. No mixed aircraft types unless mutually agreed upon by the flyers present (heli, quad, airplane).

Hopefully, all of these issues should be resolved in a non-confrontational manner. Please review the club by-laws for a more complete understanding of our rules for flying. They are on the club website.

*

A Moment in Flight:

Flight Video by Pedro Navarro

The Maestro has brought another old friend out of the hanger for a celebration of spring and a fitting commencement to the new flying season. He is flying the venerable "SlowPoke" to the musical theme from the Godfather

Editor

Click below to see this issue's Moment in Flight.

[The SlowPoke and the Godfather](#)



Endnotes and Links

GREAT AMATEUR ROCKET LAUNCH, submitted by Dave Harding
<<https://www.youtube.com/watch?v=4QsEPEhq5yk>>