The Flightline

Volume 51, Issue 1 Newsletter of the Propstoppers RC Club AMA 1042 February 2021

Inside This Issue

President's Message

Gentlemen,

It is time to plan for this year's flying season.

I recently sent our re-charter in to the AMA and we held an executive committee meeting two weeks ago.

One problem that persists is the entry to CA field. In late fall it became a mire once again. I am looking for a solution. The wood chips we put down last year got us through the summer and early fall. Rocks are out of the question because of the pipeline. If anyone has a potential longer lasting solution, please bring it up on the Zoom General Membership Meeting on February 9th. Chuck Seiwell made arrangements for more wood chips, which will only cost $45 (delivery charge).

I hope you are successfully repairing, building and planning for the coming flying season.

Please make sure you read my Remote ID, and safety test article as both issues are on the horizon. I hope to see most of you on the ZOOM – 7 PM Tuesday February 9th.

Mike

Agenda

Tuesday February 9th 2021 General Membership Meeting
7:00 pm (Via Zoom)

Call to Order 7:00 pm

Minutes of the last meeting - Dick

Treasurer's Report – Pete

Website – Mike

Old Business:

- CA entry way

New Business:

- Remote ID – Q and A
- Safety Test – Q and A

Show and Tell

- Please be ready to show and demo

Reminders: – Please pick up all refuse and trash. Please use the Trash can at Elwyn and carry out at CA.

Propstoppers RC Club of Delaware County, Pennsylvania.

Club Officers

President:
Mike Black

Vice President:
Pedro Navarro

Secretary:
Richard Bartkowski

Treasurer:
Pete Oetinger

Membership Chairman:
Ken Merlino

Safety Officers:
Eric Hofberg
Ryan Schurman

Newsletter Editor:
Larry Woodward

FacebookEditor:
Ryan Schurman

Webmaster:
Michael Black

Propstoppers Web Site;
www.propstoppers.org

Contact: Propstoppers@gmail.com

Material herein may be freely copied for personal use but shall not be reproduced for sale.

Indoor Flying at the Brookhaven Gym

Indoor flying is suspended due to the Covid-19 related closing of the Brookhaven Community Gym

Minutes of the Propstoppers Model Airplane Club

General Membership Meeting 11/10/2020 via ZOOM

Call to Order:by President Mike Black – 15 members present.
Minutes of the previous meeting were approved as published.
Treasurer's report by Pete Oetinger was presented and accepted.
Membership chair reported 43 members currently registered for 2021.

Old Business:
Field Maintenance - Reports from the field showed that they look great and plans are underway for further upkeep

New Business:
Elections - All current officers were renominated to their positions.
Since no other nominations were presented, the officers were elected by acclamation.
Budget: Pete Oetinger presented his 2021 budget of club expenses.
The president and treasurer proposed a dues structure of $80.00 by December 31, 2020 and $90.00 afterwards to cover these expenses.
This represents an increase of about $5.00 over last year.
Ken Merlino moved approval of the budget and dues, approval was unanimous.
Ken Merlino gave an update on the health of Chuck Kime

Adjournment took place at 7:40 PM

Members participating in meetings, and using the fields at any time, must wear face covering and maintain 6' distancing at all times.

\

All activities and events are subject to change or modification in compliance with state and local directives related to the Covid-19 pandemic.

All members are advised to closely monitor timely and responsible sources of public information as the situation develops and to make decisions regarding participation in light of their individual needs and concerns.

As of the time of this publication, members are allowed to use the fields if operating in compliance with any and all current directives regarding public activities such as Personal Protective Equipment (masks and gloves) Social Distancing (6 feet) and/or other designated group dynamics.

Editor's Notes:

By Larry Woodward

As I sit writing this note on the First of February, there is a blizzard raging outside and thoughts of warm spring days at the field are a far memory. We did have a few seriously nice flying days in December, but with January's entry they were far a few between.

The battle against Covid 19 has not yet turned the corner and there are still tough days ahead. But with hope of significant vaccination progress by the summer, there is light ahead and we can dream of days at the field spent in the warmth of sunshine and good fellowship.

In the meantime let's all try to make the best of this month's Zoom meeting scheduled for February 9th at 7:00 pm. It will be so nice to see and hear those of you that have been MIA since last Spring.

If you are not familiar with Zoom, please don't hesitate to contact any of us Officers for help getting started.

All you need to do is download the Zoom App on your computer tablet or smart phone. Once you have the App running just click on the link to the meeting you received in Mike's email meeting announcement.

Oftentimes members will send me a link or file to something of interest for the Newsletter that although interesting, may not be easily incorporated as a formal article. Sometimes it is due to technical problems. For example, I can't easily reformat whole documents in pdf format. Or it may be that the content is mostly graphic and too voluminous. I don't want to miss out on these opportunities to expand content.

So, I have created a new ending segment to the Newsletter that follows Pedro's regular video page. It is called "Endnotes and Links." Be sure to check it out. And, keep those suggestions coming.

Thanks to all of you for the support.

Larry
!

Remote ID, Update

By Mike Black

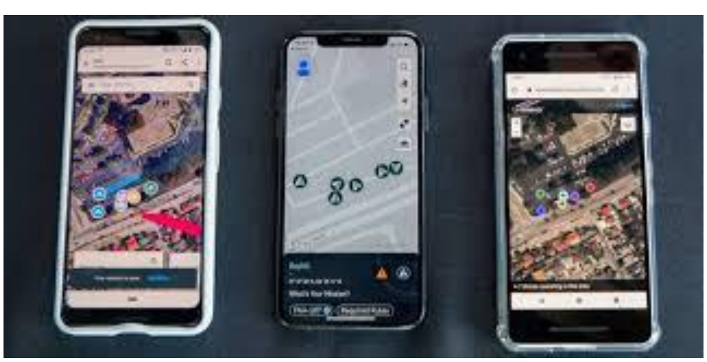
After reading 2 articles and watching the AMA interview video on 1/12/2021, I believe the following summarizes the state of **Remote ID**.

Thanks to AMA and all of you who wrote to the FAA the final rule looks nothing like the original notice.

Pilots must still register with the FAA as we have now done for 3 years, but you do not have to register aircraft. Flying sites will remain permanent and not be lost if a club goes out of business for a time. Homebuilt planes for recreation will not be required to have remote ID if flown on AMA fields.Planes commercially produced will probably be built with remote ID as part of the electronics package once the final rule takes effect. They believe the manufacturers will begin to make this a standard.

There are three paths to complying with the new rule:

First, aircraft manufactured with RID (Remote ID) will be given a registration number. This will take effect 20 months after the rule is published, so that will probably be late 2022. That number will have to be registered with the FAA using the same site we use now.



Second, add on modules will be available with a registration number that will be registered with the FAA for what they are estimating will be a $20 - $50 fee. Visual line of sight flying will still be required. The module will transmit takeoff, location, and altitude. Modules will probably use 2.4 GHz unless or until something more advanced is developed.

Third, flying sites will be recognized by the FAA where recreational flying will be permitted without RID. These will be identified in about 18 months. The status quo is in effect till then. AMA is going to attempt to register all clubs' fields. Once a site is designated it will be required to renew every 4 years. While an LOA (our agreement with the FAA at Philadelphia International Airport) will not guarantee that a field gets designated, it will be considered and help in areas near sensitive places like airports. This will take about 3 years to come into effect.

Note: - 0.55 lb. and under aircraft will be exempt, except if you are flying commercially or over people.

Note: – An APP will be developed for law enforcement including local police. In other words, they will be able to locate your airplane and thusly you.

Local police may request to see your FAA Registration Card – you must have it on your person when flying and your aircraft must have the appropriate number and information on it. While our club will not be enforcing this, it certainly behooves you to comply.

We will continue to keep an eye on this and notify you when each of the above items are about to take effect. For now, continue to enjoy flying as we have done for many years.

Flying Restrictions due to the Biden Presidency

We have been notified both of our fields are within thirty miles of President Biden's residence in Northern Delaware. The AMA was asked to compile a list for the FAA and to notify us. When the President is in residence at his home there will be restrictions that could require that there be no flying for the duration of his stays. I will keep you notified as we get more information.

Pilot Testing

Pilot testing is coming and will be required. The test will be multiple choice. It will be designed more to instruct on safety than anything else. AMA has applied to be a test site and it looks like they will earn that designation. The test will be designed so that if an individual gets a question wrong, they will be able to go back and change the answer until they get it correct. This could go into effect as early as late 2021. Again, we will keep you updated on this future requirement.

NASA's Ingenuity—the First Ever Off-World Helicopter—Is Set for a 'Wright Brothers Moment' on Mars

Launching with the Perseverance rover, this technology demonstration could lead to revolutionary new capabilities in interplanetary exploration

Submitted by Dave Harding

Scientific American
By Irene Klotz on July 27, 2020

The SUV-sized Perseverance rover due to launch to Mars this week has a sidekick: a svelte four-pound helicopter with four-foot-long rotor blades that weigh as light as feathers. It will attempt to make the first powered flight on another planet, a potential game-changer for deep-space exploration.

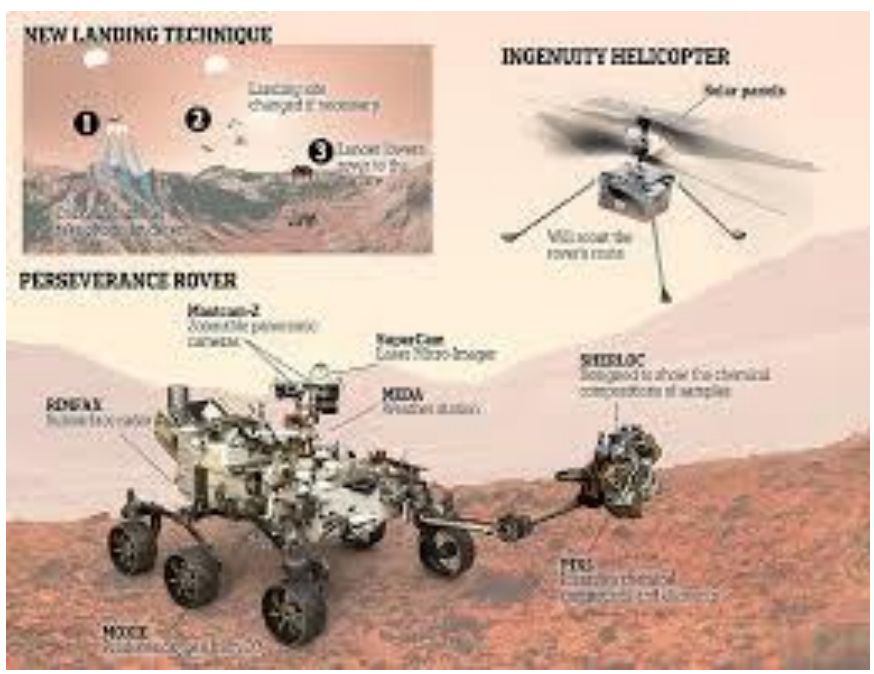
If all goes as planned, dispatching the helicopter from Perseverance's belly will be an early first step for the Mars 2020 mission after the rover's parachute, retro-rocket and sky crane descend onto the flat floor of the planet's Jezero Crater in early 2021. Intended solely as a technology

demonstration, the rotorcraft, named Ingenuity, will attempt up to five powered flights in the thin Martian air, which is less than 1 percent the density of Earth's atmosphere.

These trips will be quick, each lasting about 90 seconds from takeoff to landing, which is all the time available before Ingenuity's batteries drain. To push enough air downward to create upward lift, its blades have to spin at about 2,800 revolutions per minute—10 times faster than [full scale, Ed.] helicopters on Earth—so each flight will consume about 350 watts of power. Ingenuity's solar-powered batteries will take a full Martian day (a little longer than an Earth day) to recharge between flights. The craft's peak altitude will be only about 16 feet, but the conditions it will face will be comparable to those experienced at 100,000 feet on Earth—more than twice as high as any helicopter has flown.

Planning for the Mars helicopter began more than six years ago at NASA's Jet Propulsion Laboratory's (JPL's) autonomous systems division, which studies next-generation capabilities for space exploration. The team, headed by engineer MiMi Aung, was challenged to create a flying vehicle that would work on the Red Planet.

If successful, an aircraft could carry scientific instruments to places where rovers and landers cannot go, such as exposed ice scarps on the sides of cliffs or inside the walls of steep craters. The aircraft could loft cameras to scout locations for future rovers—and, one day, astronauts—to explore. Doing so would provide far more detailed pictures than what is available via current orbital imagery, which can resolve features on Mars down to about three feet or so. "Imagine having centimeter-level-precision, [or about half-inch-precision], images of possible destinations and characterizing those," Aung says.



Future concepts include swarms of craft that fly together and work cooperatively or a larger flight vehicle that could independently travel from location to location, enabling a new type of otherworldly exploration. JPL is studying potential Mars helicopters weighing up to to 33 pounds that could carry a payload up to about 3.3 pounds. NASA also is funding a far more ambitious helicopter-based mission called Dragonfly to explore the rich organic chemistry on Saturn's largest moon Titan. The natural satellite has a thick atmosphere and lakes and seas of liquid methane beneath its thick hydrocarbon atmosphere, as well as a watery underground ocean, making it a tantalizing world in the search for life beyond Earth.

"What's really changed in the last several years is the drone revolution—just how much development there has been in drone and autonomous flight technology," says planetary scientist Elizabeth Turtle, Dragonfly's principal investigator at the Johns Hopkins University Applied Physics Laboratory. "When we were looking at mission architectures that made sense to propose to explore Titan, we realized that we really now had all of this capability."

First, though, powered flight on Mars must be proved possible. And doing so is the sole goal of the $85-million Ingenuity mission.

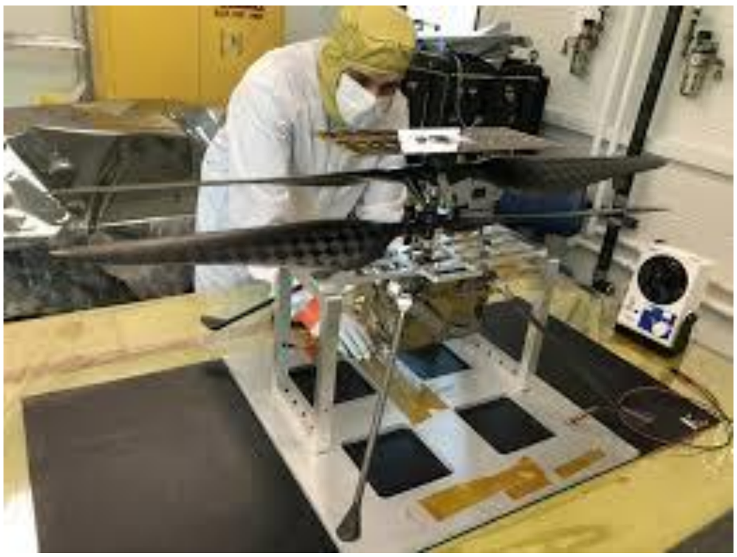
The helicopter is a bit bigger than a softball, minus its four carbon-fiber blades, which spin on two counter rotating rotors and sits on four legs, each 15 inches long. It carries diminutive avionics and communications equipment, a navigation camera, a single solar panel and rechargeable lithium-ion batteries—as well as heaters to keep the electronics warm through the frigid Martian nights. There are no science instruments onboard; just a high-resolution color imager.

Designing the helicopter required innovation across every domain of aerospace engineering—thermal, mechanical, structural, power, materials, and so on. "We had to remove all the boundaries," Aung says. "We're used to having our own chassis ... and our own computer for each subsystem. Integrating all of that together, and then combining, also, the aero aspect of it, pulling the whole system together in such a light weight..., was the first challenge. That's what also made it really fun and interesting."

Ingenuity will ride to Mars attached to the Perseverance rover and behind a shield to protect it from debris that may be kicked up during the sky crane's descent to the planet's surface. The launch is scheduled for 7:50–9:50 A.M. EDT on July 30 at Cape Canaveral Air Force Station in Florida. Perseverance is expected to land on Mars on February 18, 2021.

As the rover begins beaming back data that will allow scientists to assess Jezero Crater, the landing site for NASA's fifth and most ambitious Mars rover, Aung and her team will scout for a flat 33-by-33-foot site to become the experimental airfield for Ingenuity's test flights, which are scheduled to begin in May.

Ingenuity will not be the first spacecraft to soar through another planet's atmosphere. That distinction falls to a pair of balloons that traversed the skies of Venus in 1985, collecting weather data as part of the Soviet-era Vega missions. But Ingenuity will attempt the first powered flight on another world, a Wright Brothers moment for the 21st century.



After dropping off the helicopter, Perseverance will retreat at least 100 yards away—far enough to avoid being hit in case Ingenuity crashes but still sufficiently close for radio communications. Its maximum of five flights will take place within a 30-Martian-day span, after which the rover will turn to its primary mission: assessing the habitability of Jezero Crater and caching samples of rocks and soils that may contain microfossils or other evidence of past microbial life.

During the final test, Ingenuity could fly up to 150 feet away, perhaps reaching its modest maximum altitude before returning to its takeoff point. "Because this is a pathfinder, we don't have a hazard-detection-and-avoidance system," Aung says. "That would be essential for future helicopters, because right before you land, you would want a three-dimensional, digital elevation map to be able to divert away and avoid any hazard."

The most important flight test on Mars will be the first, which will replicate ones previously conducted inside a 25-foot diameter vacuum chamber at JPL. "We take off, hover, do a modest lateral flight, come back and land," Aung says. "It's extremely important, because it confirms all our models—all the tests that we've done on Earth."

After that trip, Ingenuity's flights should get a little bolder, with the rotorcraft traveling higher and then laterally farther before returning to land. "There's a saying in the aviation community that the only thing more exciting than taking off in your own aircraft is landing it again," says Håvard Grip, Ingenuity's lead pilot. "I think that's the case here."

Ingenuity is one of three technology demonstrations planned for the Mars 2020 mission. The second is an autonomous hazard-avoidance navigation system that Perseverance will use during its descent to the 28-mile wide Jezero Crater. And the third is an instrument called the Mars Oxygen In-Situ Resource Utilization Experiment (MOXIE), which will attempt to convert carbon dioxide pulled from the atmosphere into oxygen, a resource for potential future human missions to Mars.

FLYINGTHE ATLANTIC DURING THE LATE 1930s

Submitted by Dave Harding

You Jet-jockeys & Frequent-fliers will really appreciate this nostalgic look back in time at the Pan Am Clipper!   Be sure to look at it all. The 'fate' of the Pan-Am Clipper was shocking…What It was like aboard a Pan-Am Clipper

Clipper passengers took their meals at real tables, not their seats.   For most travelers in the 21st century, flying is a dreary experience, full of inconvenience, indignity, and discomfort.   That wasn't the case in the late 1930s, when those with the money to afford Even Franklin Roosevelt used the plane, celebrating his 61st birthday on board.

Between 1938 and 1941, Boeing built 12 of the jumbo planes for Pan American World Airways. The Clipper had a range of 3,500 miles — enough to cross either the Atlantic or Pacific, with room for 74 passengers onboard. **Of** course, modern aviation offers an amazing first class experience (and it's a whole lot safer), but nothing in the air today matches the romanticism of crossing the

oceans in the famed Clipper.
The nickname Clipper came from an especially fast type of sailing ship used in the 19th century.
The ship analogy was appropriate, as the Clipper landed on the water, not runways.

Here's a diagram of the different areas of the plane

On the Pan Am flights, passengers had access to dressing rooms and a dining salon that could be converted into a lounge or bridal suite.

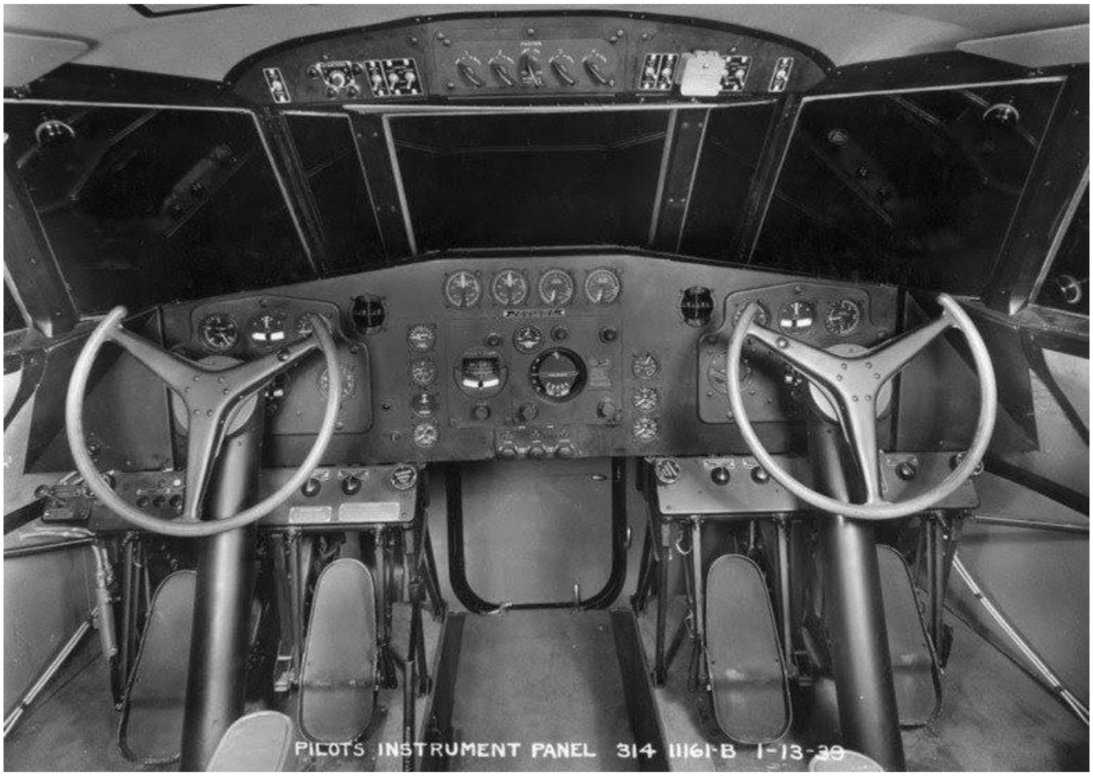
The galley served up meals catered from four-star hotels

If you want to sit at a table to eat with other people these days, you have to fly in a private jet. There was room for a crew of 10 to serve as many as 74 passengers.

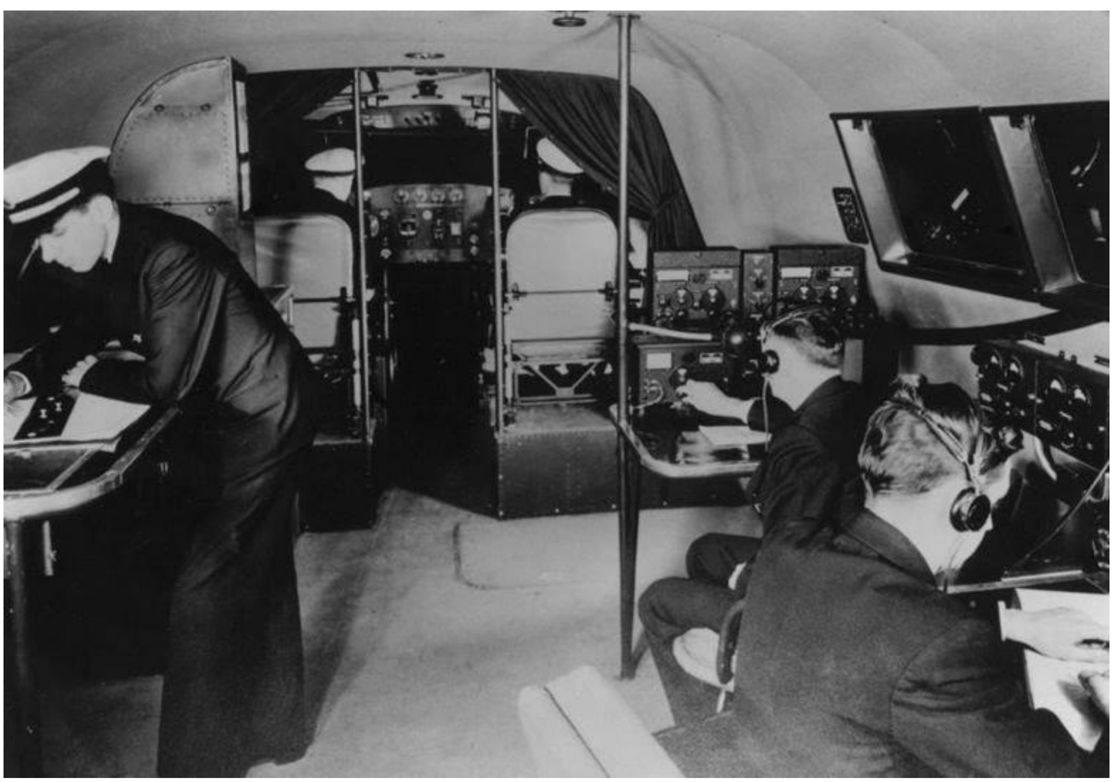
On overnight flights, the 74 seats could be turned into 40 bunks for comfortable sleeping. The bunk beds came with curtains for privacy.

On the 24-hour flights across the Atlantic, crew members could conk out on these less luxurious cots.

Unlike some modern jets that come with joysticks, the Clipper had controls that resembled car steering wheels.



Navigating across the oceans required more manpower in the air.



The lavatory wasn't too fancy, but it did have a urinal — something you never see in today's commercial jets, where space is at a premium.

The ladies lounge had stools where female passengers could sit and do their makeup.

The Clipper made its maiden trans-Atlantic voyage on June 28, 1939.

But once the US entered World War II, the Clippers were pressed into service to transport materials and personnel.

POSTSCRIPT:
Prior to WWII, the Japanese Military became very interested in the new Pratt & Whitney radial engines that powered the PanAm Clipper
.
On a flight from San Francisco to China, a Clipper landed on Truk Lagoon to be refueled by Japanese authorities. Later, the Clipper was assumed lost over the Pacific.

Years later, it was revealed that the crew and passengers were arrested and executed, the engines were retrieved and sent to Japan and the Clipper was sunk in deep water off Truk Lagoon

238 to 548 mph? More Dynamic Soaring

By Dave Harding

The July 2020 Flightline included an article about an amateur dynamic soaring pilot who set his personal record speed of 238 mph with a stock foamy. It was a great achievement.

Well, in January 2021 the world record for any rc model was raised to 548 mph, again by dynamic soaring, albeit with a very high tech composite construction glider.

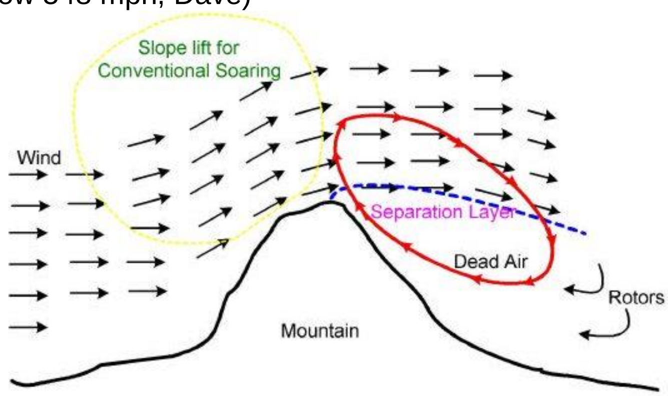
Read all about it and watch the video at https://dronedj.com/2021/01/20/remote-control-glider-sets-world-speed-record-548-mph/

To see how they do it, here is a reprise of a previous article that covers the theory and practice.

****

Ella Fitzgerald is singing in my ear…. "Birds do it, bees do it, even educated fleas do it, let's do it…"…Dynamic Soaring? Well, birds do it but I don't know about the others, probably not as their L/D (lift over drag ratio) is too low. But Albatross' do it and range over hundreds of miles searching for food while expending little energy.

Over the last ten years or so RC glider pilots who slope soar have found that they can emulate the Albatross, not by the conventional front side of the slope soaring, but dipping from the front side into the lee side and return in a continuous loop. Speed increases with every turn and very high speeds are possible. Some believe they are flying over 400 mph and recorded speeds are in the high 300's (as they used to say in the real estate business, a long time ago) but that is because the radar guns don't respond fast enough to measure higher speeds. (Now 548 mph, Dave)



Now in my professional life I have learned when you are working on a complex technical problem you need a comprehensive analysis to obtain insights, but you also need a simple model to relate the overall process and not be baffled or misled by the complexities (can you say Global Warming Mathematical Model?). In the case of Dynamic Soaring the simple model escaped me. Somehow it all looked like perpetual motion, and I am not ready to accept that yet.

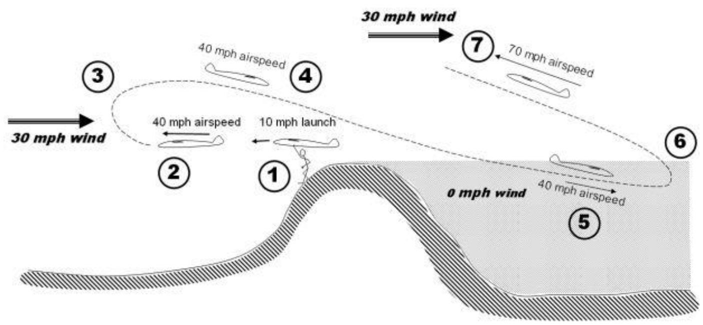
On the other hand, the other technical process mantra is "when theory and practice disagree, believe the practice"; and I know Dynamic Soaring works! What to do?

As luck would have it (no it is not luck come to think about it; my buddies are studying this and I am engaged on the periphery…. for now!)

Anyway, recently I visited Professor Grenenstedt at Lehigh University to discuss DSing and get updated with his other projects: exhilarating! Prof G assured me he could explain the physics of DSing in a simple way, and he did, but I still didn't believe it so #1 grandson and I batted the theories around on the homeward drive. Finally I crossed the boundary and got it. But it does take the same kind of mind experiment the Einstein did in Switzerland early last century, you remember, when he discovered the laws of relativity while riding the train to work! Well, maybe not quite that hard, but with the same elements.

First I will explain what happens then describe the physics. Let's consider an ideal dragless model flying on a slope against a 30 mph wind.

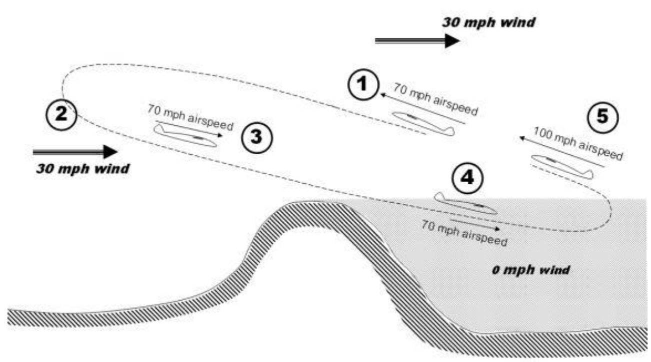
Dynamic Slope Soaring ~ First Pass ~ Ideal Dragless Model



1. The model is launched into the wind at 10 mph.
2. As it leaves your hand it experiences a 40 mph headwind; 10 + 30 = 40 mph.
3. You immediately make a 180 degree turn downwind. Because the model is dragless you loose no speed.
4. You now have a model travelling downwind at 40 mph (stay with me, we will expand on this later).
5. You dive the model into the windless lee of the hill. The model is now doing 40mph in still air.
6. You make another 180 degree turn back into the 30 mph wind.
7. You are now experiencing a 70 mph wind speed; 40 + 30 = 70 mph

Now we repeat the process;

Dynamic Slope Soaring ~ Second Pass ~ Ideal Dragless Model



1. We start where the last pass left off; climbing out of the shadow zone at 70 mph.
2. We now make another upwind turn of 180 degrees at 70 mph.
3. We follow this path back into the shadow zone at 70 mph
4. In the shadow zone we make another 180 degree turn upwind and enter the 30 mph headwind to achieve airspeed of 100 mph.

We may continue this process and the ideal dragless model will pick up 30 mph on each lap. But our model is not dragless and it turns out that the drag, expressed in L/D is a really important parameter. Here is why.

A real model with a specific L/D will slow down at each turn so not only will the jump in speed be less than the wind speed but there will be an upper limit to the speed achievable when the increase equals the loss.

Here is an example that Joe Wurts described in SE Modeler written in late 1998. He writes:

"One can derive the ratio of final velocity to initial velocity for a given rate of turn and a given turn L/D. It turns out that the wing loading drops out of the equations. The equation for final velocity divided by the initial velocity is:

V1/V0 = e^ (-theta/LD) where, V1 = final velocity V0 = initial velocity

e = 2.7182818 (natural log #)
theta = turn angle, in radians (180 degrees = 3.14 radians)
L/D = Lift/Drag (glide ratio)

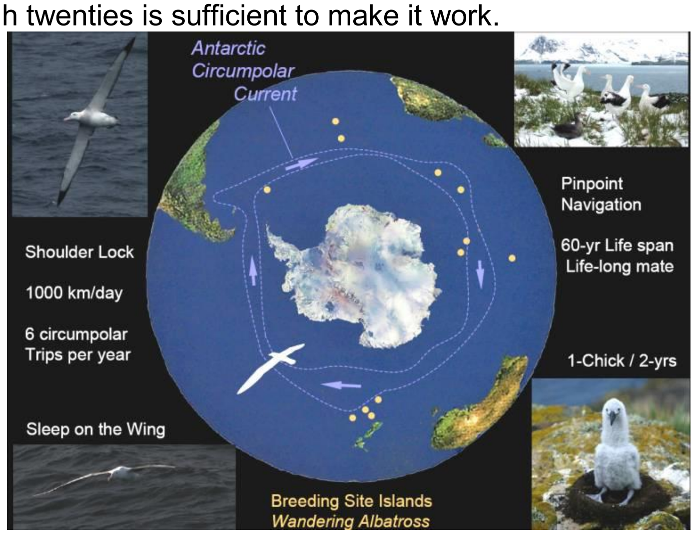
(Wait wait, we will make this easier in a mo)

Armed with this equation, one can start to figure out the potential from dynamic soaring. Assume a wind velocity of 30 mph and an L/D of 25 (good for a model sailplane). So, the airplane heading downwind has a ground speed of 40 mph (10 mph from airspeed plus the 30 mph tailwind) *(point 4 on our first diagram Ed.)*.

After crossing the shear boundary, the airspeed becomes equal to the ground speed *(point 5)*. Therefore, the plane is flying 40 mph ground speed in the "dead air" on the backside of the hill. Now, do a 180 degree turn in the dead air. The velocity ratio, V1/V0, for a 180 degree turn is 0.88 so you loose about 12% each turn. Therefore, the airspeed and ground speed after the turn is 35.3 mph *(point 6)*. Now, cross the shear boundary again into the headwind and the airspeed is now 65.3 mph *(point 7)*. Do another 180 degree turn, and the airspeed is 57.5 mph *(second picture point 3)*. In a single 360 degree turn, the sailplane gained 17.5 mph! Eventually, if you keep doing these turns, the velocity loss from the turn will equal the velocity gain from crossing the shear boundary. But, the final velocity will be about 134 mph!

An interesting note is that the maximum potential final velocity is linearly dependent on the velocity difference across the shear boundary. So if the wind speed goes from 30 to 60 mph, the final velocity potential goes from 134 mph to 268 mph!" And of course, with an even higher L/D you would go faster, as the SoCal flyers have demonstrated.

But this is slope soaring over a ridge with a shadow zone on the far side. The Albatross doesn't have this kind of environment, it soars over the Pacific Ocean surface; how? Well you see you only need a wind shear profile to fly DS and The Albatross flies in the wind shear over the ocean surface, typically about twenty meters high in the southern climes of its habitat. The wind at the sea surface is lower than at altitude and this profile and the Albatross' L/D in the high twenties is sufficient to make it work.



Surely flying in circles won't find enough food for this, the world's largest bird? It isn't, but the Albatross extracts energy from these flight modes and then uses this energy to move in the desired direction. But energy concepts are where I had the greatest difficulty in exorcising the potential motion beliefs. So, now we must go back and address the fundamentals and the fundamentals are involved with energy states. There are two energy states that concern us here;

- Potential Energy
- Kinetic Energy

Potential energy involves a weight raised to an altitude. In "Old English" units energy is expressed in Foot-pounds. Potential energy is easy;

Weight times the altitude = energy in foot pounds

Kinetic Energy is a bit more complicated;

Weight divided by 'g' times velocity squared = energy in foot pounds *(Where 'g' is gravitational acceleration (32.2 ft/sec/sec) and velocity is in feet per second.)*

Now when we fly our airplanes we frequently convert one form of energy into another. In the case of our electric powered airplanes we first convert the chemical energy in the battery into kinetic energy as our model accelerates to takeoff speed, then more of the chemical energy to gain altitude; a combination of kinetic and potential energy. If we now shut off the motor and climb into a stall turn we convert all the energy in the model to potential energy; weight times height.

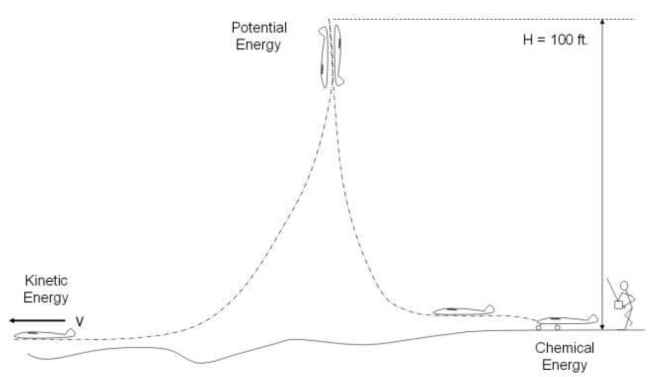
If we now dive the model to ground level we will accelerate to high speed, converting all the potential energy to kinetic energy.

With no losses, (no drag) we convert all the potential energy to kinetic energy the speed increase would be;

Speed increase = $\sqrt{height x 32.2}$ regardless of weight.

So if we climb to 100 ft in the stall turn we will gain 56 ft / second. For a 1000 ft it would be 180 ft/sec or 122 mph

Conversely if we were to enter the zoom at 122 mph we could reach 1000 feet at the top of the stall turn; for a dragless model!



So how might we use this altitude gain? Well if we had a glider with an L/D of 25, much like the Albatross incidentally, we could travel 25,000 feet while loosing the altitude ~ almost five miles! And this is precisely what the Albatross does to maneuver all over the southern oceans. It doesn't climb to 1000 ft; rather it modifies the flight loop to favor moving in the direction desired with each turn. Apparently the Albatross can cover 600 miles in a day this way.

But speaking of energy, we were weren't we? The Albatross, like all animals gets its energy from food (chemical energy again) and it turns this energy into flight motions etc via its muscles. If we held our arms out for hours on end we would consume a good deal of energy and so does a bird holding its wings against the weight and aerodynamic forces. But the Albatross has another trick or two; it can lock its wing-bones into the cruise position and so does not consume energy powering muscles to do so. Furthermore scientists believe it can continue its cleaver flying while asleep!

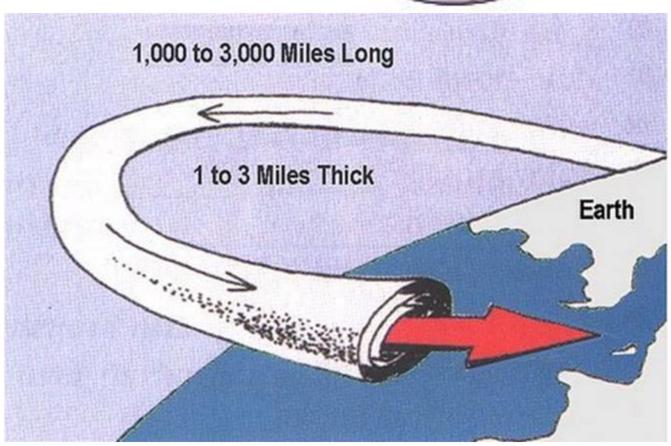
Ok, you say, why are we going into all this stuff when the subjects of interest are remotely controlled airplanes? Well it turns out that all this stuff is of some interest in the advanced airplane community because there is great value in unmanned airplanes that can stay aloft indefinitely, or for a very long time. And folks are just beginning to think that you could DS in the jet stream; the high speed, 100 mph+ currents that circle the world at altitudes of about 30,000 feet.

The jet stream is a fascinating phenomenon caused by a combination of tropical heating and polar cooling coupled with the earth rotation effects. You can read about it in Wikipedia; http://en.wikipedia.org/wiki/Jet_stream from which the following pictures were extracted.

There are four jet streams, the Polar and Subtropical streams in both hemispheres.

The jet streams, their position and strength, are vital components in today's commercial aviation. They are used to shorten west to east flight and avoided as much as possible in the other direction. Their effects on flights to Europe result in an hour difference in flight time between both directions.

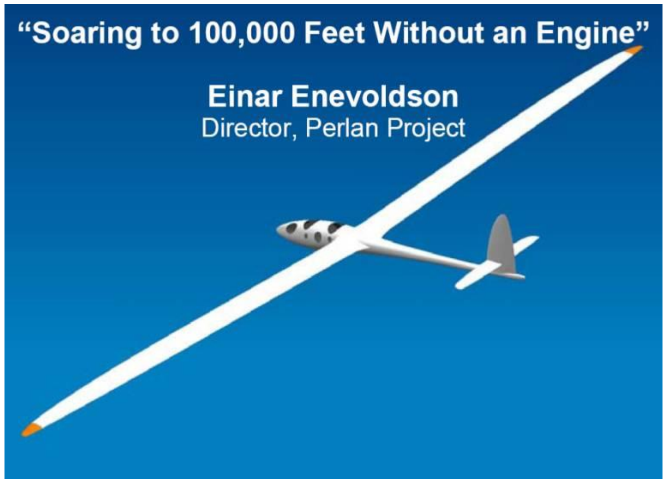
It is apparent that the wind gradient of maybe 100 mph over 3000 ft is sufficient to sustain flight given an airplane with a good L/D, but how do you get up there? And how much maneuver room would you have in and out of the stream. How much lateral range and how fast could you fly upstream to reposition?



To make such estimations you need data on the strength and location of the jet streams. Fortunately there are almost 1000 permanent weather measurement sites around the globe that launch radiosonde instrumented weather balloons each day. The data gathered from these sites is posted to the World Wide Web for all to use (well, maybe not the Chinese as their web access is censored!)

So over the next few months I shall stay abreast of my east and west coast wizards as they probe both the art of the possible and the Government's deep pockets to move the aviation goal lines further.

Meanwhile I am going to learn more about application of the earth's extreme winds when I attend Einar Envoldson's lecture on his attempt to soar to 100,000 feet over the Andes in the Southern Polar Jet Stream in a glider!



Dave Harding

But this was written over ten years ago. What has happened to the Perlan Project in between?

Read an update on this project in the January 2010 Propstoppers newsletter; http://www.propstoppers.org/pdf_files/jan10.pdf

And more recently; https://www.airbus.com/newsroom/press-releases/en/2018/09/airbus-perlan-mission-ii-glider-soars-to-76-000-feet-to-break-ow.html

TANKS?– That's Right

What do you do when it is much too windy to fly.

By Mike Black

Tanks! I have a Heng Long model of a Korean War Walker Bulldog. Eric Hofberg purchased a modern era M1A1 Abrams and we get together and do battle.

They are capable of shooting air soft bb's and shoot infrared beams. The receivers pick up the hits and your tank shudders. These are motorized and very realistic. The turrets can spin 360 degree and you can raise and lower the cannon.

They have realistic sound effects (engine start, engine noise, machine gun chatter, cannon firing, and taking hits). When your tank has been hit 5 times it is disabled for about 15 seconds. They also have either tank recoil or barrel recoil depending on the tank.

There are at least 3 companies Heng Long is lower end starting at about $175 with enhancements that can take you up to about $350. The bodies are a heavy plastic material with many details. I opted forsteel treads, steel wheels, steel gears and 360 degree turret rotation.

Tai Gen is middle of the road and run about $500 the one I viewed had a metal chassis and plastic top. Or you could go high end with Tamiya for $1,200.

They all have many different models of US, German, Russian, and other models in various paint schemesfor camo or season.Take a look around the web, chat with Eric or myself and join us for battle on those windy days.

BMW Makes the World's First Electrified Wingsuit.

It Reached 186 MPH on Its First Flight.

Submitted by Dave Harding

Robb Report November 9, 2020
Watch: BMW's Electrified Wingsuit Reach 186 MPH on Maiden Flight – Robb Report

BMW believed it could fly and now it's proved it. The German marque just successfully sent air sports pioneer Peter Salzmann soaring through the sky at speeds of up to 186 mph in a newly developed electric wingsuit.
The innovative concept was a joint effort between BMW, Designworks and Salzmann. The professional skydiver and BASE jumper said the idea arose while he was thinking of ways to improve performance in the air.
"One of them was a supporting motor—and it's an idea I just couldn't shake," Salzmann told BMW. "I found the idea of being able to jump from my local mountain wearing the wingsuit and land in my garden fascinating."

Ray Demski

After three years of intensive research and countless test flights in BMW's horizontal wind tunnel, Salzmann and the wingsuit completed the maiden flight over the picturesque mountains of Austria last week. The 33-year-old was dropped by helicopter at just shy of 10,000 feet alongside two other fliers sporting conventional wingsuits. BMW says the electric wingsuit enabled Salzmann to

accelerate faster than his mates at a peak speed of 186 mph. (Normal wingsuit operators typically reach horizontal speeds around 62 mph.)
The e-wingsuit is built upon BMW i EV technology and powered by a chest-mounted rig. It offers 15 kW of grunt that's split between two 7.5 kW carbon impellers. The impellers spin at a speed of 25,000 rpm and produce thrust for up to five minutes. The aim of the electric wingsuit is to increase performance and eventually allow for longer distances to be covered.

Ray Demski

In the video of the feat, the trio glide in tandem before Salzmann uses his kilowattage to boost above another mountain and actually manages to gain altitude while the other pilots descend. Yep, just like a real-life Iron Man. All three then deploy parachutes and land safely.
The wingsuit was revealed as part of BMW's #NEXTGen 2020 event in which the automaker offers a unique look ahead to the future of mobility. BMW will showcase an array of new tech and also reveal the new iNext electric crossover.
While Salzmann's first flight was a resounding success, it appears he's not resting on his laurels. According to BMW, the daredevil wants to fly between the skyscrapers of South Korea next.
"I will have to train more," the Austrian adds. "We will optimize the technique and look ahead boldly."
We have no doubt. Godspeed, Salzmann.
Check out more photos below:

Ray Demski

Ray Demski


Ray Demski

B-52 Stratofortress

The legendary bomber born in a Dayton motel room

Submitted by Dave Harding

Courtesy Boeing Company:

In August 2014, the B-52 Stratofortress celebrated 60 years in the air. The eight-engine, 390,000-pound (176,901-kilogram) jet was America's first long-range, swept-wing heavy bomber. It began as an intercontinental, high-altitude nuclear bomber, and its operational capabilities were adapted to meet changing defense needs.

B-52s have been modified for low-level flight, conventional bombing, extended-range flights and transport of improved defensive and offensive equipment — including ballistic and cruise missiles that can be launched hundreds of miles from their targets.

It had a rocky beginning. The original XB-52 design, selected by the Army Air Forces in 1946, was for a straight-wing, six-engine, propeller-powered heavy bomber. On Oct. 21, 1948, Boeing Chief Engineer Ed Wells and his design team were in Dayton, Ohio, when the Air Force's chief of bomber development told them to scrap the propellers and come up with an all-jet bomber.

Over the following weekend, in a Dayton hotel room, the team designed a new eight-engine jet bomber, still called the B-52, made a scale model out of balsa wood and prepared a 33-page report.

This effort impressed the Air Force's Air Materiel Command, and the design was approved. As the war worsened in Korea, the Air Force, in 1951, designated the B-52 the country's next intercontinental bomber and approved an initial production order for 13 B-52s. The first B-52A flew Aug. 5, 1954.

After assembly of three B-52As, production converted to B-52Bs, with more weight and larger engines. Some had photoreconnaissance or electronic capsules in their bomb bays and were redesignated RB-52Bs. The turbofan powered B-52H, the final version of the B-52, made its first flight March 6, 1961, and is still in service.

With each variant, the B-52 increased in range, power and capability. In all, 744 B-52s were produced by Seattle, Wash., and Wichita, Kan., plants between 1952 and 1962.
Throughout the 1950s, the B-52 chalked up many distance and speed records. It cut the round-the-world speed record in half, and in January 1962, flew 12,500 miles (20,117 kilometers) nonstop from Japan to Spain without refueling. This flight alone broke 11 distance and speed records. The B-52 saw active duty in the Vietnam War and was used in the Persian Gulf War in 1991 and over Afghanistan in 2001.

On Oct. 26, 2012, Boeing marked 50 years since it had delivered its last B-52 Stratofortress to the U.S. Air Force. H-model bomber 61-040 had been assigned to Minot Air Force Base, N.D., where it remained in active service. Modern engineering analyses showed the B-52's expected lifespan extending beyond 2040.

In May 2014, the Air Force introduced the first B-52 aircraft upgraded with an advanced communications system developed by Boeing into its fleet. The Combat Network Communications Technology (CONECT) modification added several communication data links, full-color LCD displays with real-time intelligence feeds overlaid on moving maps, a state-of-the-art computing network, and the ability to retarget a weapon, or mission parameters, in flight. At that time, the Air Force operated 76 B-52s primarily out of Barksdale Air Force Base, La.; Minot Air Force Base, N.D., and Andersen Air Force Base, Guam, and planned to upgrade all of them.

A Moment in Flight:

Flight Video by Pedro Navarro

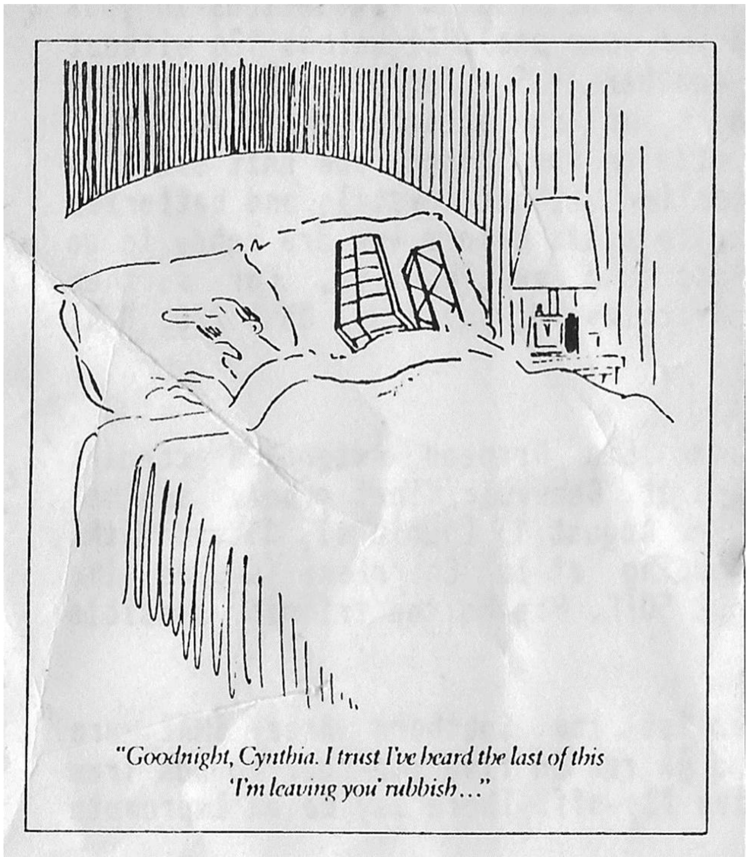
Pedro has been busy this winter clearing space in the hanger for the fruits of his decadent past. With several models still in the original boxes resulting from long ago buying binges, he is determined to get them in the air. One of these just maidened in the past few weeks is his Radian Pro.

Now Pedro is not a pilot you would normally expect to be attracted to the slow and deliberate flying of gliders and sailplanes. Let's just say his flying style is a little too "Exuberant" for these planes. But with the Maestro on the sticks this Radian is in the hands of the real "Pro." (Editor).

Click below to see this month's Moments in Flight.

The Radian Pro and "Fascination"

Endnotes and Links



"Goodnight, Cynthia. I trust I've heard the last of this 'I'm leaving you' rubbish..."

Awesome Aircraft Paint Jobs that Dominate the Skies, Eric Hofberg