The Mooney Flyer

The Official Online Magazine for the Mooney Community

www.TheMooneyFlyer.com

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Editors

Phil Corman | Jim Price

Contributors

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Departments

Features

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The views expressed in each author's article are their own.
The Mooney Flyer's goal is to educate, inform, and entertain Mooniacs.

From the Editor

Phil Corman FTE

Lean Aggressively While Taxiing

Want to significantly reduce the possibility of fouling your sparkplugs? Then lean aggressively when taxiing. To do this, set your throttle to taxi power and then continue leaning the mixture until your engine coughs. Then, enrichen the mixture until it runs smoothly. You will thank me later.

Don't forget to enrichen the mixture for your runup. If you forget, your engine won't; stalling unless you add full mixture. Ditto if you forget to enrichen the mixture on takeoff.

Oil Levels & Consumption

My IO550 has an oil sump of eight quarts. However, my sump never sees eight quarts on the oil dipstick because if I fill it that much, all that happens is that I smear my belly with oil blow by. I choose to keep my oil at six quarts and my belly remains clear. I won't let it get too much below six quarts before I add a quart. I've been doing that for 20 years with both my M20C and M20S and I have consistent oil consumption and great Blackstone Labs oil analysis.

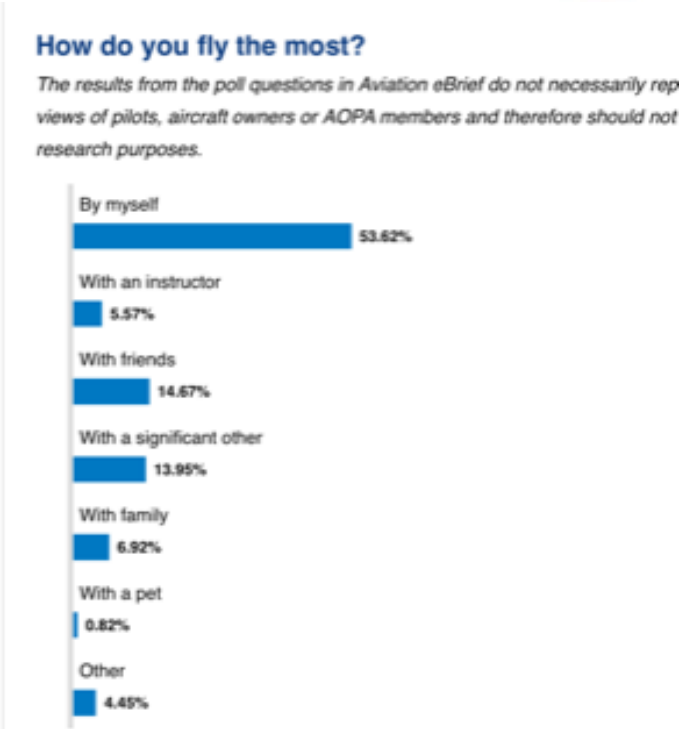
I have used Tempest filters for the last 6 years and prefer them over Champions. They meet the TCM by-pass specification of 12-14 psi, reducing the risk of premature bypass that can result in unfiltered oil flowing to your engine.

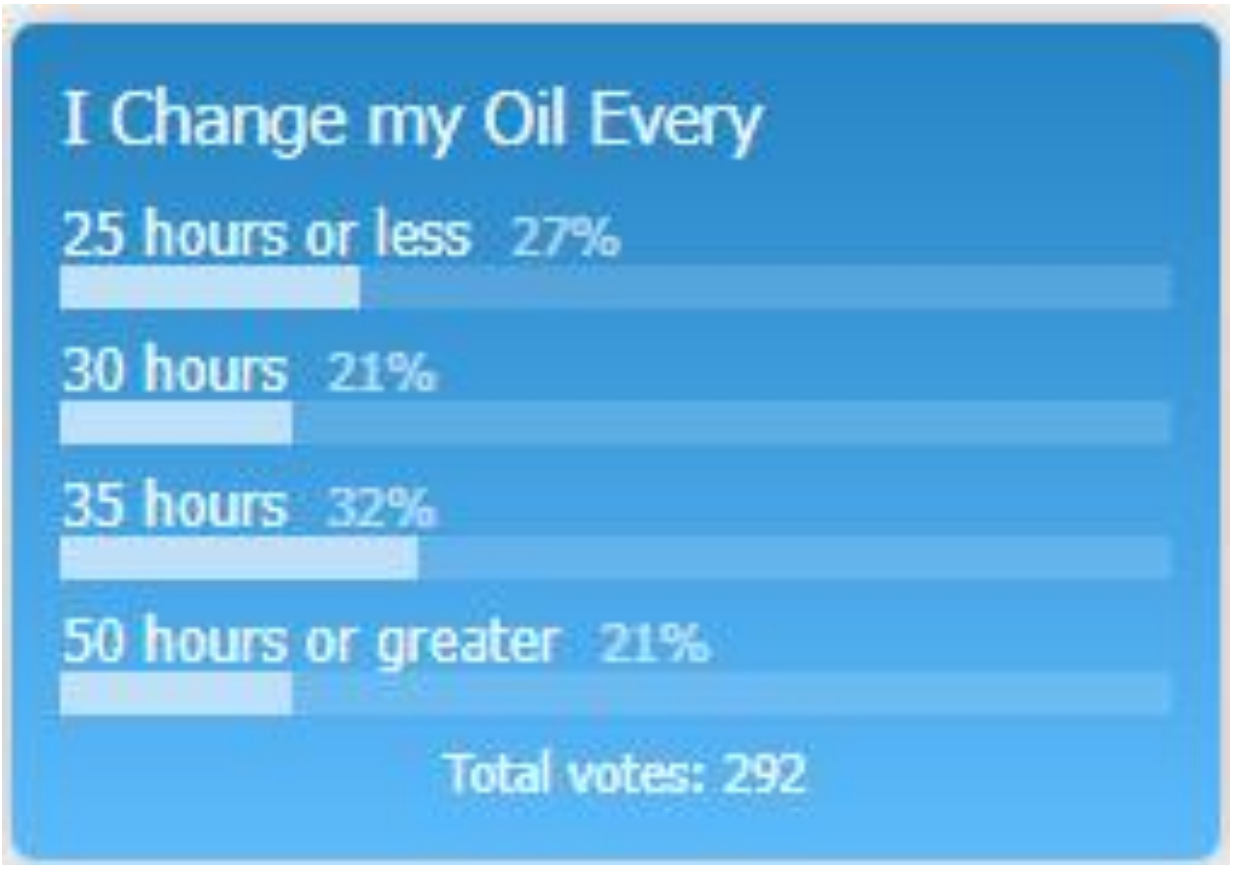
And I also use CamGuard with each oil change and each quart of makeup oil. Usually, the upper engine will lose its protection after about 36 hours in the hangar. However, with CamGuard, I get more than 500 hours of protection. In addition, the lubricity increase is good for my big IO550.

Oh, and I save money by using Phillips X/C 20W-50.

Unleaded Av Fuel

I'm hoping that UL100 is priced at or less than 100LL. I know that's wishful thinking, but I can still hope, right? It's easier to refine, so it has that going for it. It is also easier to transport without all that lead in it. Plus, engine manufacturers are loving it because it increases engine TBOs.





Next month's poll: "My Personal Minimums are" **CLICK HERE** to vote.

Letters to the EDITOR

TheMooneyFlyer@gmail.com

We love and appreciate mail, so please add your valuable thoughts to The Mooney Flyer.

Interview with Jonny Pollack, CEO of Mooney International

In late October, I called Jonny to get a sense of Mooney's current status.

I found Jonny to be an extreme devotee of Mooneys and Mooniacs. This came through very clear as he spoke. He agrees that Mooniacs have more love for their aircraft than pretty much any other GA model.

Mooney is definitely up for sale with an asking price of $15M. Jonny is the owner of an Acclaim, and although he is the CEO, he works for no salary. Mooney recently had a potential buyer with "all of the right motivations and ideas," but ultimately could not come up with the necessary capital.

The current ownership does not have the amount of capital that is required to truly restart Mooney aircraft production. A well-financed buyer, committed to the Mooney brand, is needed.

In the meantime, Jonny' primary goal has been to keep intact the valuable components of Mooney, and this is significant. The Production Certificate, the factory, the Mooney brain trust, and the equipment investments that the Chinese made over the past several years are still intact.

Jonny indicated that the Kerrville facility is still the best place to bring your Mooney for service. I didn't know that.

Parts availability is more complicated. I told him that our readers were sharing that it is increasingly more difficult to get parts. He indicated that it's difficult not to lose money on some parts. If a part is sourced and a reorder requires Mooney to buy, say 20 units, then it's difficult to make that purchase immediately. This is an area he would like to improve.

MOONEY
WE LOVE TO FLY. FAST.

Mooney started as Mooney Aircraft Corporation in 1929. It was founded by Albert Mooney and his brother Arthur, with financing from the Bridgeport Machine Company in Wichita, Kansas. In 1930, Mooney went bankrupt, and the Mooney brothers had to work for other aircraft companies.

Albert reopened Mooney as Mooney Aircraft, Incorporated with financial help from Charles Yankey in Kerrville, Texas in 1946. In 1947, Arthur joined the new Mooney company.

The new Mooney's first aircraft was the single-seater Mite M-18 that was also called the Texas Messerschmitt because it was almost identical to the Messerschmitt Bf109; a popular German fighter aircraft used in World War II.

In 1953, Charles Yankey died of a stroke. Losing his financier, Albert had to sell his stock to Harold Rachal and Norman Hoffman. Albert left to work for Lockheed Corporation and soon thereafter, Arthur joined him.

31st Nall Report

Joseph Trippe Nall

Who was Joseph T. Nall?

Originally from Atlanta, Georgia, Joseph T. Nall graduated from Furman University. In 1964, he received his master's degree in divinity from Southeastern Baptist Theological Seminary. After just under a decade of preaching, Nall decided to pursue the law as another way to help others. He received his law degree from Wake Forest Law in 1973 and practiced in North Carolina. Nall made time to pursue his other passion, aviation. He earned his instrument pilot rating and was a Certified Ground Instructor. He taught pilots at Johnston County Airport in Smithfield, North Carolina through his own company, Nall Aviation Enterprises. His interest and dedication to flight did not go unnoticed. In 1986, with the help of his friend, U.S. Representative Martin Lancaster, and Senator Jesse Helms, Nall was appointed by President Ronald Reagan as a Member of the National Transportation Safety Board.

In 1989, Nall's life was tragically cut short by a plane crash in Caracas, Venezuela. While in the country to give a speech to the Venezuelan Aeronautical Congress, Nall was aboard a Cessna 402 that was chartered for a sightseeing trip. When the aircraft attempted to land in dense fog at Charallave municipal airport, the plane impacted the runway, broke its landing gear, flipped and skidded upside down along the runway, killing Nall and both pilots.

The Nall Report

The Joseph T. Nall Report is dedicated to the memory of Joseph Nall. It is the Air Safety Institute's (ASI's) annual review of general aviation aircraft accidents that occurred during the previous year. The report is This report analyzes GA accidents in U.S. National Airspace and on flights departing from or returning to the U.S. or its territories or possessions. The report covers airplanes with maximum rated gross takeoff weight of 12,500 pounds or less and helicopters of all sizes. Collectively, these types of aircraft account for 99 percent of GA flight activity. The report excludes gliders, weight-shift control aircraft, powered parachutes, gyrocopters, Unmanned Aircraft Systems (UAS), and lighter-than-air (balloons, blimps, and dirigibles).

The 2019 Report - #31

Because the NTSB generally takes two years to publish a full report with a "probable cause," the Nall Report considers accidents that are two years in the past; reporting 2019 accidents in 2021. The *31st* ***Joseph T. Nall Report,*** offers a near real-time analysis of general aviation accidents that are updated on a rolling 30-day cycle, with access to analysis going back as far as 2008. Data trends are projected well into 2021. This report shows that general aviation accidents decreased in 2019. However, the overall accident rates rose during 2019 due to a reduction in flight hours, resulting in a total accident rate of 4.88 per 100,000 hours and a fatal accident rate of 0.88 per 100,000 hours.

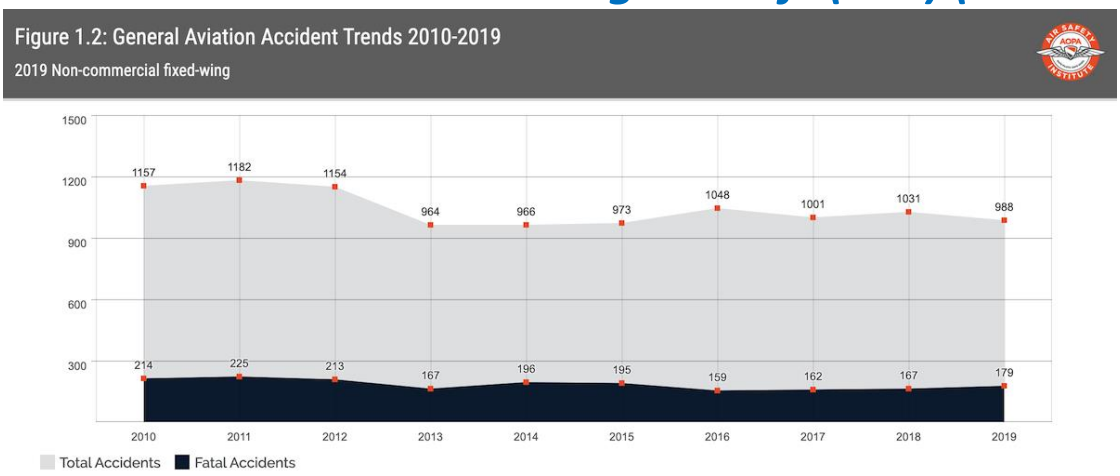
An Increase in Fatal Aviation Accidents

Fatal accident rates in non-commercial fixed-wing, commercial fixed-wing, and commercial helicopter all increased. After spiking for two years, non-commercial helicopter rates fell. The commercial fixed-wing fatal accident rate remains low and largely unchanged.

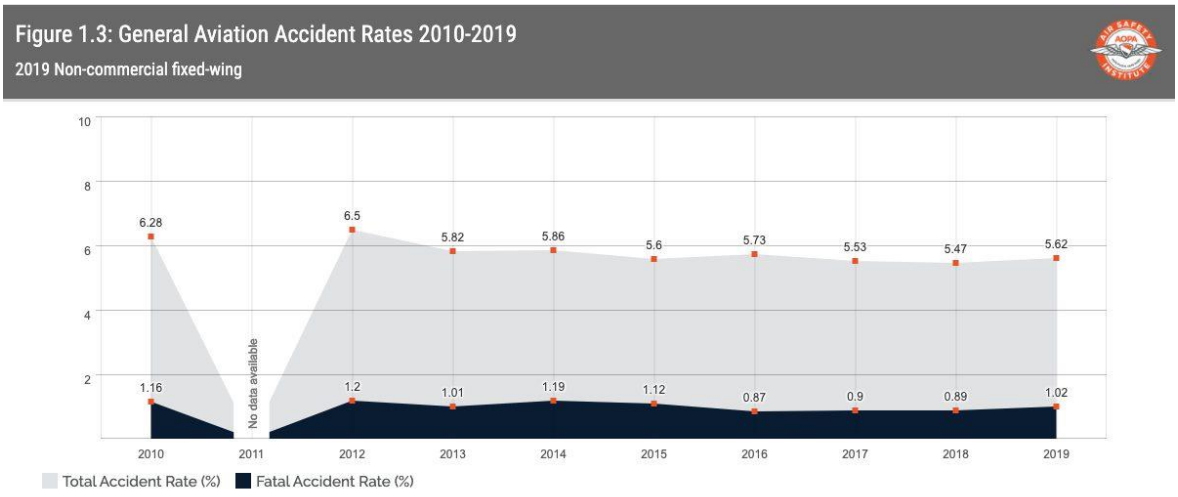
A Favorite Test Question

What's the leading cause of fatal accidents? The Answer: Stall / loss-of-control (LOC) is still the leading cause of fatal accidents. There were 39 fatal Stall / LOC accidents in 2019. Stalling or settling on takeoff, is the second leading cause, accounting for 38 fatal accidents. There were 30 fatal weather-related accidents.
Stalls, Loss of Control and Weather accidents relate to pilot decision-making and proficiency. The Nall Report data helps inform the industry where further education and training are needed to improve aviation safety.

Non-Commercial Fixed-Wing Aircraft (988) (179 Fatal)



The 988 accidents in 2019 shows a downward trend from 2018's 1,031. However, a decrease in non-commercial fixed wing flight activity nudged the accident rate upward from 5.47 in 2018 to 5.62 in 2019.



Fatal Non-commercial fixed wing accidents (179)

The accident rate is commonly expressed as the number of accidents per 100,000 flight hours. In 2019, there was a slight increase. The 2018 rate of 0.89 increased to 1.02 in 2019.

The percentage of pilot-related accidents fell below 70%.

2018 Nall Report	2019 Nall Report
724 (104 fatal)	614 (88 fatal)

Landing Accidents (308 – 5 fatal)

Approach and landing are the highest risk phases of flight. At 163, loss of control continued to dominate as the leading cause of landing accidents.

2018 Nall Report	2019 Nall Report
333 (2 fatal)	308 (5 fatal)

Takeoff and Climb Accidents (115 – 16 fatal)

These declined from the previous year. The largest number of accidents (39) were caused by loss of control, followed by stalled or settling on takeoff (38).

2018 Nall Report	2019 Nall Report
129 (26 fatal)	115 (16 fatal)

Fuel Management (58 – 8 fatal)

This was a slight drop from the previous year. Most, 32 of them, were avoidable because they were caused by poor flight planning.

2018 Nall Report	2019 Nall Report
63 (8 fatal)	58 (8 fatal)

Maneuvering Accidents (36 – 20 fatal)

These involve turning, climbing, or descending while close to the ground. Many of these accidents could likely involve buzzing attempts and stall/spin scenarios. About half of the maneuvering accidents occur in the traffic pattern. See:
https://www.faa.gov/news/safety_briefing/2018/media/SE_Topic_18_08.pdf
These increased in both total (36) and fatal (20) from the previous year. Stall/Loss of Control (LOC) accounted for 22 accidents, of which 12 were fatal.

2018 Nall Report	2019 Nall Report
31 (16 fatal)	36 (20 fatal)

Descent and Approach Accidents (34 – 11 fatal)

These decreased sharply, while the number of fatal accidents (11) dropped from the previous year.

2018 Nall Report	2019 Nall Report
64 (21 fatal)	34 (11 fatal)

Collision Accidents (16 – 6 fatal)

11 Stalls / spins were the leading cause.

Weather Accidents (34 – 30 fatal)

19 VFR into IMC accidents led the cause category. 18 of these were fatal.

2018 Nall Report	2019 Nall Report
29 (24 fatal)	34 (30 fatal)

Mechanical Accidents (194 – 15 fatal)

There was in increase in total accidents from 2018, along with a small increase in fatal accidents. The majority (132) were cause by Powerplant issues, followed by 27 – gear and brakes, and 15 – airframe.

2018 Nall Report	2019 Nall Report
175 (11 fatal)	194 (15 fatal)

Want to Know More?

The Nall Report's digital platform provides near real-time accident data. It is updated on a rolling 30-day cycle, allowing for the most current snapshot of general aviation safety performance, according to AOPA officials. See: https://www.aopa.org/training-and-safety/air-safety-institute/accident-analysis/joseph-t-nall-report/nall-report-figure-view?category=all&year=2019&condition=all&report=true

What's All That Flaps About?

Compared to most other GA airplanes, our Mooney flaps are a bit less effective. Set 40° flaps on a Cessna 182 and that airplane drops like a parachute. Not so much on our Mooneys.

I now have an M20S Eagle, which I love to death, but the flaps are electric, and I only have two settings: 1) Takeoff (10°) and 2) Full (33°). I loved my M20C flaps which were controlled by pumping a hydraulic lever. I had infinite options over how much flaps I wanted to extend.

Use or non-use of flaps is "religious" with many Mooney owners. I always use takeoff flaps regardless of the runway or weather conditions. It shortens my takeoff run and gives me a little more lift. I then retract them once I have sufficient airspeed and a positive rate of climb. Most times when landing, I use full flaps as I appreciate the slower touchdown speed in my swift Mooney. In crosswind conditions, many owners don't use flaps, or just Takeoff Flaps. They land faster to have better horizontal control in the runway environment.

So here is a little more info on Flap-ology.

1. **Increasing flaps** increases the camber of your wing, (see above illustration). This lowers your stall speed and increases your lift coefficient. Adding a smaller amount of flaps increases lift without adding excessive drag. Adding more flaps significantly increases drag.
2. **Increasing flaps** reduces your stall speed and enables you to fly at a lower angle of attack. This can lower your nose on approach to landing. Without flaps, you are more likely to approach at a shallower descent angle and at a greater airspeed.
3. **Increasing flaps** increases drag which is useful when landing.
4. **Using full flaps** when landing enables you to maximize lift and drag over your wing. This lowers your stall speed which enables you to land slower and will produce more drag which enables a steeper descent angle.

It is also necessary that you understand how your stall speed is affected by your other decisions. Increasing flaps lowers your stall speed, but there are two other factors that also reduce your stall speed. One is extending your landing gear. Full flaps and extended landing gear produce the lowest stall speed on my Eagle. Another factor is your weight. Published stall speeds are "at gross weight." Your stall speed goes down as your weight decreases. My stall speed decreases by about 4kts for every 300 pounds under gross weight. If you know your starting weight on departure, your weight will decrease with either 1) fuel burn, 2) someone jumping out, or 3) you went on a Keto diet. It's useful to know your weight on final so you can safely reduce your approach speed if necessary.

HAUNTING DECISION

by Bruce Jaeger

With over 18,000 flight hours and 52 years as a pilot, I have anticipated and experienced significant weather and failures of most mechanical and electrical Mooney systems. Though sometimes expensive, these have generally been no more than disappointing inconveniences. Placed in the back of my memory for even better handling the next time, none changed my life. That is until a time nearly 30 years ago.

What was so different that time?

I can vividly recall a flight from Minnesota to Pensacola with my wife and son in a Mooney 300 Missile with the standard 64 gallons fuel. The weather for departure was good and late into the first leg is where we experienced our first taste of winter clouds, precipitation and lower ceilings. This was a time that the desire to complete our trip overshadowed common sense. With this high-performance modified Mooney, I had the ability to climb, avoiding clouds all the way until there was no choice but to land for fuel. The extra power was enough to climb over the weather, getting us into serious trouble. I recall changing the first planned stop from Peoria to Springfield, Illinois as snow was now reducing visibility. Though we had adequate fuel for approach and landing, alternates had passed and became a frightening zero. Staying on top, pushing the need for oxygen as long as possible, we ultimately had to start down. Temps were just right for

icing, and I hoped for layered conditions. Asking for a non-restricted descent, I was advised, “No problem,” as no one else was flying.

Decisions could not have been worse. Ice started to accrue the instant we touched the clouds and layers were nonexistent. With enough power to keep the engine working, reduced RPM, and nose down for maximum descent, airframe ice continued to accrue. The windshield iced, even covering the far corners. Propeller icing vibrations were reduced with RPM adjustments. Thankfully, the pitot heat was working. The ceiling was now 400 feet or so and the visibility was not great. With all this ice on the windshield and wing, how much is on the tail? I did not want to know. We finally reached initial approach altitude and carried cruise power all the way to the glide slope intercept and beyond. Inside the final approach fix, and still in the clouds, power was left at cruise and gear up until the ground was in sight. I recall 105 knots with no flaps all the way until touchdown.

Facing a peripheral vision landing and no option for a go-around, I was thankful for a long runway. Relieved to be on the ground and taxing to the nearest heated hangar, I opened the door so I could see. My heart rate was high, and I was absolutely sick for having put my family at such risk. No schedule is worth it.

Now all these years later and looking into the eyes of our handsome 12-year-old grandson and his beautiful younger sister, I often think of that terrible decision to fly, and how the lives of our entire family could have been drastically affected forever. We were lucky. One more mistake and no one would be reading this article. From my experience, the worst emergency is the one you create. Do not let it happen to you.

Safe Flights,
Bruce Jaeger

1956

Jim Price
Co-Editor

Wakeup Call

A Worldwide Sensation

According to the Smithsonian National Air and Space Museum, in 1930, just 6,000 Americans traveled commercially by airplane. Just four years later, that number would multiply by 75 times and 450,000 passengers flew in 1934. That number would be dwarfed once more in another four years. In 1938, 1.2 million Americans traveled by air. The 1930s were truly the decade that commercial air travel became a worldwide sensation. But, because of the ticket cost, commercial aviation was not for everyone. According to Compass Lexecon, in 1941, the average flight from Los Angeles to Boston, in today's money, would cost $4,539.24 per person. It was also a complex undertaking, requiring 15 hours and 15 minutes with twelve stops along the way.

By 1955, it was cheaper to fly. A ticket on TWA from Chicago to Phoenix cost $138. Adjusted for inflation, that ticket would be $1,168. For the average worker, earning $400 per month, that $138 ate up over 30% of their month salary.

Evolution of US Air Control Centers

In the mid-thirties, with increasing numbers of people flying, that meant there were more airliners in the skies. After some commercial aircraft mid-air collisions, a consortium of airline companies began to monitor the operation of their own flights. In 1935, to supervise their air routes, several carriers created the first Air Control Center, in Newark, New Jersey. In 1936, two more centers opened in Cleveland, Ohio and Chicago, Illinois. Shortly thereafter, the Department of Commerce assumed control of the operations and opened eight more units so they could cover more US airspace.

These early route controllers used maps, blackboards and mental calculations to ensure the safe operation of aircraft. To represent planes, they moved boat shaped weights called “shrimp boats” across maps. These controllers had no direct radio links with aircraft. Instead, they used telephones and radio to communicate with airline dispatchers, controllers in airport towers and airway radio operators, who relayed instructions and weather information to pilots.

This is called “procedural control.” Flight strips, (shown at right), would later replace the blackboards and maps.

In 1946, the Civil Aviation Authority (CAA) experimented with a radar-equipped tower for civil flights.

The next big step for Air Traffic Control would arrive in 1950, when Air Control Centers were provided with long-distance direct communications between the pilot and the controller.

By 1952, approach and departure controls routinely employed radar. However, federal budget cuts thwarted installation of systems that extended beyond airports.

Business was Booming

Thanks to pressurized modern airliners like the Constellation with transcontinental range, Americans were flying higher and more than ever before. From 1950 to 1955, revenue passenger miles, (one passenger traveling one mile), increased from eight billion to 20 billion.

June 30, 1956

Los Angeles International Airport (LAX) was bustling with activity. TWA Flight 2, a Lockheed Constellation flown by Capt. Jack Gandy, departed LAX at 9:01 am with sixty-four passengers (includes two flight attendants), headed for Kansas City's Downtown Airport. They flew north over the San Bernardino Mountains at a speed of 270 knots and an elevation of **19,000 feet**. Flight 2 stayed in controlled airspace as far as Daggett, California. At Daggett, Captain Gandy turned to a heading of 059 degrees magnetic, toward the radio range near Trinidad, Colorado. The Constellation was now "off airways", otherwise known as flying in uncontrolled airspace.

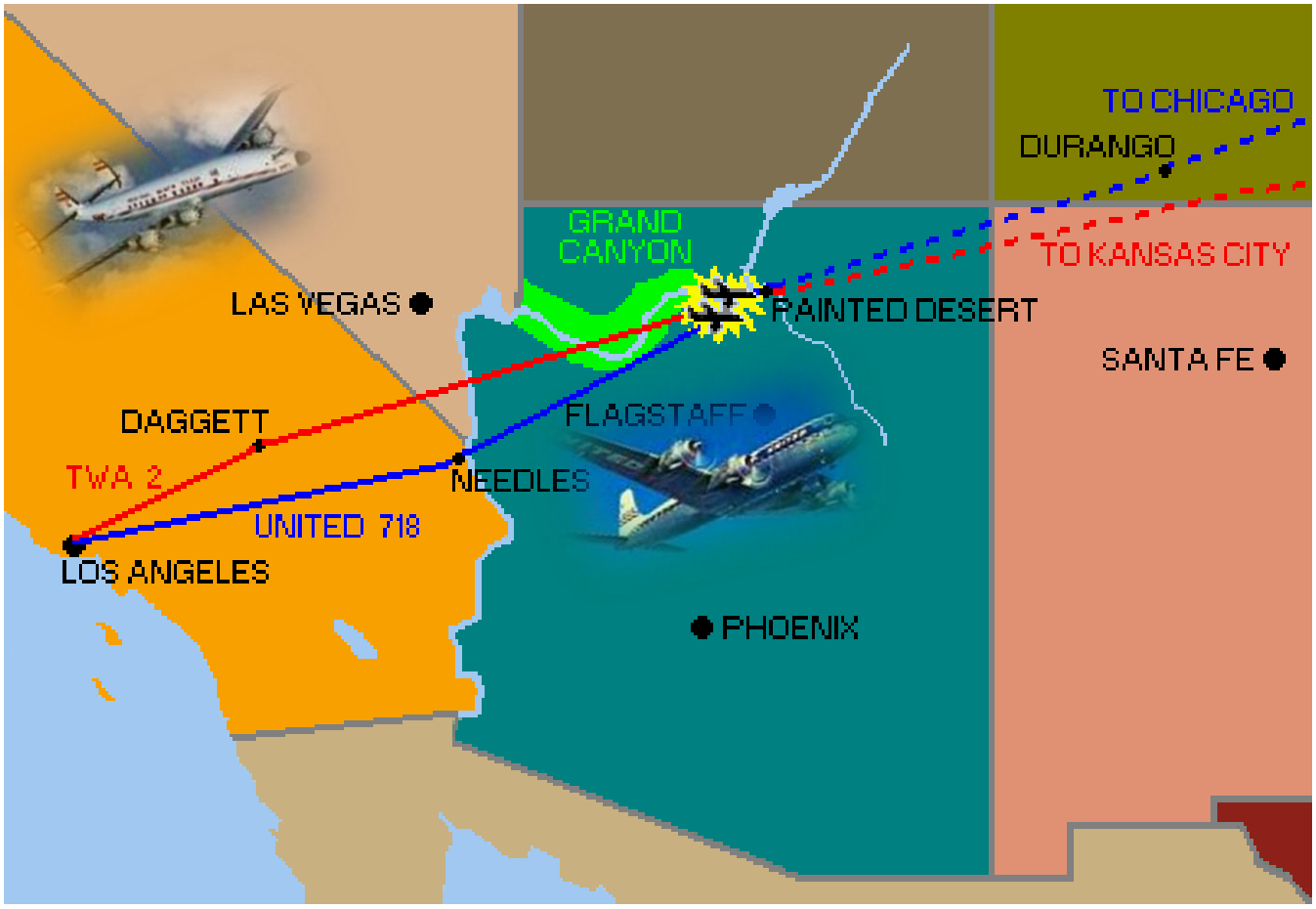
United Flight 718, a DC-7 flown by Capt. Robert Shirley, departed at 9:04 am with 53 passengers bound for Chicago's Midway Airport. They flew east over Palm Springs at a speed of 288 knots and an elevation of **21,000 feet**. Captain Shirley flew under IFR in controlled airspace to a point northeast of Palm Springs, California, where he turned left toward a radio beacon near Needles, California. After Needles, his flight plan was to fly direct to Durango in southwestern Colorado. The DC-7, though still under IFR, was now flying in uncontrolled airspace, just like the TWA Constellation.

Everything went as planned for about 15 minutes. Then Captain Gandy called in to report turbulence. He requested approval to climb to 21,000 feet to avoid an overcast area up ahead. His request was denied, but he was granted permission to fly 1,000 feet on top of the harsh weather.

According to the 1956 Flight Information Manual (FIM), "Air Traffic clearances which specify 'at least 1,000 feet above all clouds' in lieu of a cruising altitude, permits flight to be conducted at any altitude at or above the minimum en route altitude which is 1,000 feet or more above the cloud layer."

The FIM read, "1,000 on-top operations are common, but they put a lot more responsibility on the pilots when it comes to air traffic."

1,000 on-top operations limited how much information the pilot would be able to receive about how close his plane was to other planes. The pilot had to rely on what he could see, a procedure referred to as "see and be seen." The phrase is now, "see and avoid."



When Captain Gandy was cleared to move to 1,000 above the clouds, he was now at 21,000 feet. United's Captain Shirley was not notified of TWA's altitude, even though it meant that the two aircraft would be flying over the same area at the same altitude, at around the same time.

Over the Needles area, the TWA Constellation and United Air Lines DC-7, made routine radio checks to separate airline radio stations, just before they crossed into Arizona.

According to the accident investigation, the last coherent reports from the pilots were received just before 10:00 a.m. Both crews had estimated that they would arrive somewhere along the Painted Desert line at about 10:31 am Pacific time. The Painted Desert line was about two hundred miles (320 km) in length, running between the VORs at Bryce Canyon, Utah, and Winslow, Arizona.

As the two aircraft approached the Grand Canyon, now at the same altitude and nearly the same speed, the pilots were likely maneuvering around towering cumulus clouds, though TWA's VFR clearance, required them to stay in clear air. As they were maneuvering near the canyon, it is believed the planes passed the same cloud on opposite sides.

At 10:30, Aeronautical Radio communicators in Salt Lake City received a call that was indecipherable. After weeks of studying, the message was finally interpreted: "Salt Lake, United 718 ... ah ... we're going in."

About 10:31 a.m., the two planes collided over the Grand Canyon. The report states that the clouds obstructed the view for both crews. The clouds were moving in and out of the area at the time, and they probably did not see each other until it was too late.

According to the accident report, the collision occurred over the confluence of the Colorado River and the Little Colorado River. The TWA Constellation crashed on the northeast portion of Temple Butte and the United DC-7 came to rest on the south side of Chuar Butte. There were fires at both wreckage sites. All 128 crew and passengers perished.

The Grand Canyon Congressional Wakeup Call

Although sixty-five crashes like this one had occurred from 1950 to 1955, this midair collision got Congress' attention. Even though U.S. air traffic had more than doubled since the end of World War II, little had been done to mitigate the risk of midair collisions. Additionally, much of the air space in America was uncontrolled and once at 20,000 feet and beyond the range of the terminal radars, it was "see and be seen". The incident highlighted the need for better communication between planes & controllers.

Congressional hearings in 1957 led to increased funding to hire and train more air traffic controllers and to purchase new radar technology.
The next year, the Federal Aviation Agency (FAA) was created, ("Agency was changed to "Administration" in 1966). The FAA was given total control over American airspace.

NextGen

After the Crash in the Canyon, air traffic continued to grow. In 1960, to help controllers do their job, and improve aviation safety, transponders were required. In 1971, when I was in Air Force Undergraduate Pilot Training (UPT), the Air Force began installing Mode C (altitude reporting) transponders. We were so excited because that significantly reduced the number of altitude reports that we needed to make.

In 1988, a Mode C transponder was mandated in certain airspace. The mandate caused quite a stir and harsh comments from leading aviation writers and advocates. For example, a May 1988 *Flying Magazine* editorial, entitled "*Mode C Madness*", strongly disagreed with this requirement.

In the 1990's, GPS and WAAS GPS became available. WAAS GPS enabled advances in navigation and air traffic control.

As air traffic grew, it was time for another change. The NextGen program introduced the ADS-B mandate, which became effective on January 1, 2020. This generated the similar cries of warning that were heard in 1988.
ADS-B is now required in the same airspace which once required a Mode C Transponder.

We should all be grateful for the advances in aviation technology. Let us not wait for another wakeup call. Once is enough.

Part III – Oshkosh Rookie – Getting out of Dodge

by Richard Brown

"All good things must come to an end," or so they say. Our plan was to stay for the Wednesday evening airshow and depart Thursday morning. As I had done every morning, I woke up and looked at the weather forecast for the day. Unfortunately, what I saw was thunderstorms forecast for the evening with the possibility of large hail, winds at 30kt gusting 45kt, and up to an inch of rain. The forecast was enough for my friend and I to "call it" and get out of Dodge. We weren't the only ones that came to that conclusion, as evidenced by the constant stream of departing planes.

This was just my first time flying into Oshkosh. Before I went, I talked to other pilots who expressed anxiety about the arrival and departure. Now that I have been and experienced the process, I think the concern is overblown. I felt that the arrival was easy and doable for anyone that knows how to follow someone around a traffic pattern. The only difference is that you are following someone for 20-30 miles, or in the case of our arrival, which began at the town of Portage, it was about 60 miles. The departure from Oshkosh was much easier than the arrival.

After breakfast and a trip to the seaplane base, we received our mandatory departure briefing. The departure briefing boils down to one of the folks that works at the show, reading through the pertinent NOTAMs. For a moment, I thought it was silly that they require you to have someone go over the NOTAMs with you. Then I remembered our arrival and the shenanigans that we heard on the radio from pilots that had obviously not read the NOTAMs. I then realized that the mandatory departure briefing was a good thing. I imagine there are those that skip the briefing, but I wasn't going to be one of them. With our highlighted copy of the NOTAMs in hand, we packed up camp and contacted a Marshall to help us taxi out.

Looking down the row of planes, I asked if we should push back and go out a different aisle. He responded that they would "walk the wing" and assured me that we would fit through just fine.

As we taxied, it felt extremely close, sometimes with only a couple feet between the end of the wing and the spinner of the plane we were passing. However, they had one guy walking along my right wing and the other keeping an eye on my left wing, and with their help we found ourselves on the wide taxiway heading toward runway 18R. In a reversal of the arrival, you just follow the directions of the Marshalls and the airplane in front of you. Eventually, we were next in line and heard, "Mooney 878, line up right side." Shortly after the plane on the left side of the runway was on his way, we heard "Mooney 878, 18R, cleared for takeoff." I advanced the throttle, and we were on our way, down the runway and lifting off into the hazy sky.

A short note: Unlike normal operations, you are not supposed to respond to the radio calls, just follow their instructions. Despite this, we still heard pilots repeating radio calls. This only clogs up what is often a very busy frequency.

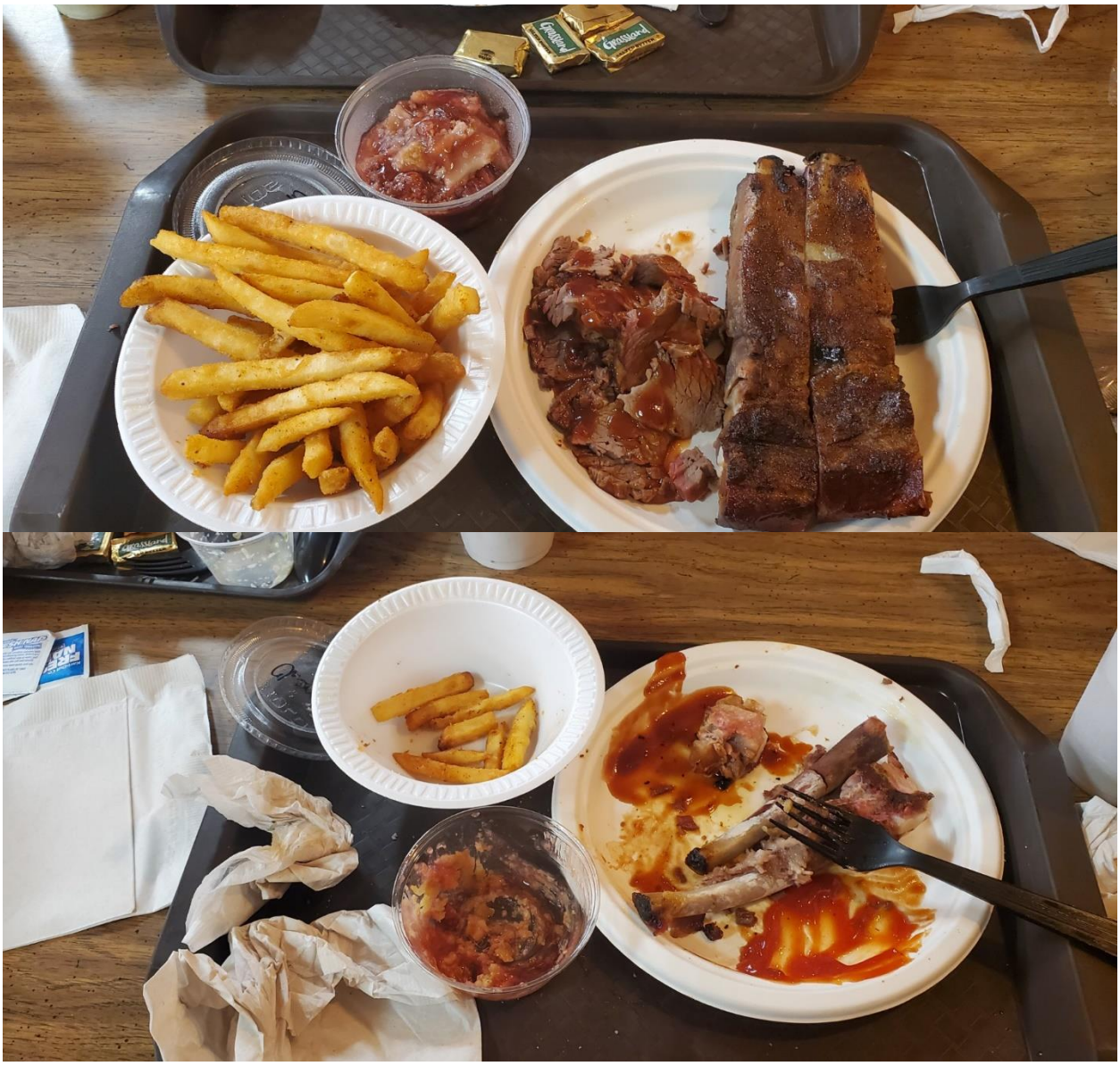
The departure procedures are fairly simple. We were departing on 18R which meant flying runway heading at or below 1,300' until clear of the Class D airspace. If you can fly a heading and an altitude, you can fly the departure procedure. Again, I was amazed at the well-orchestrated Oshkosh arrivals and departures.

Once clear of the Class D, we climbed to 2,500' until clear of the patchy clouds and then up to 3,500'. As we approached the shore of Lake Michigan, we descended to 1,500' for the skyline tour. When I was first planning the trip to/from Oshkosh, I noted how close Chicago is and decided it was the perfect opportunity to check off a bucket list item and fly the Chicago skyline. The Oshkosh NOTAMs stated that Milwaukee Approach would not provide VFR traffic advisories within 70 miles of Oshkosh. Once we were 85 miles from Oshkosh, I called, "Milwaukee Approach, Mooney 78878, VFR request." I was told, "Stand by." A handful of other VFR planes called after I did, and they were given the same "Stand by." After what seemed like a long time, she asked for our request. Upon hearing that we were looking for flight following along Chicago, she informed us that Chicago Approach was not handling any VFR advisories. No problem, we just cruised along VFR, squawking 1200 and trying to find the planes that were showing up on the tablet.

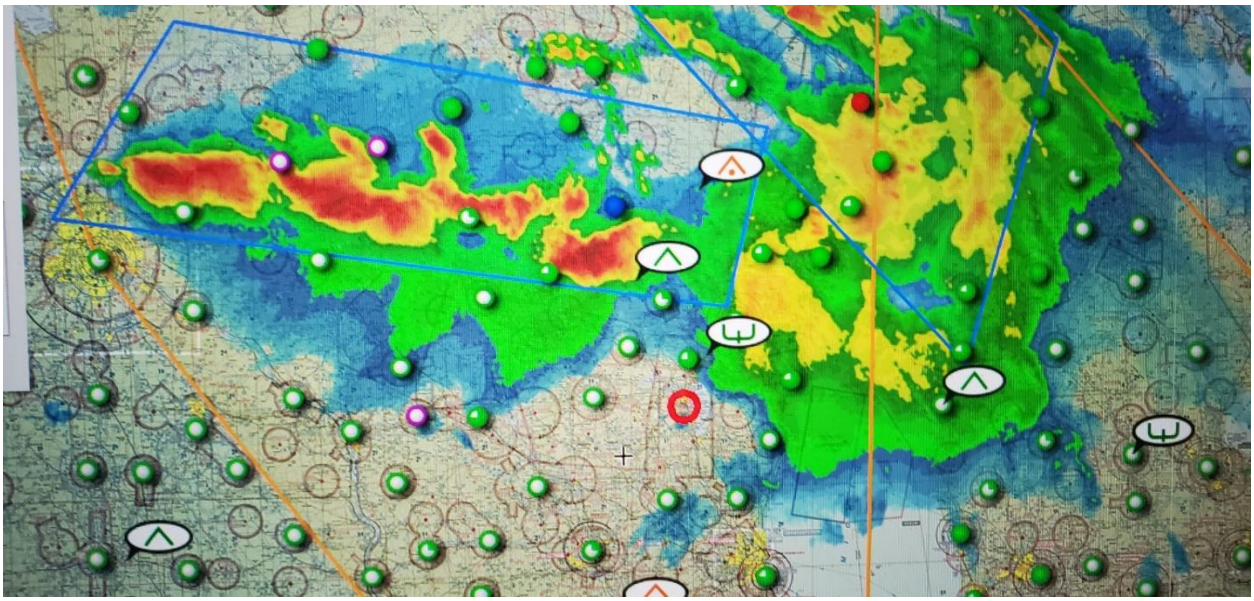
It was hazy, and a little bumpy, but it was AWESOME! We flew along, just offshore, taking in all the sights. We only flew the shoreline, but if you look at the charts, there is room under the 1,900' shelf of the Bravo to loop around downtown. If you fly to Oshkosh, the Chicago tour is worth the detour.

Once clear of the Bravo, we climbed to 6,500' and hooked around the south end of the Bravo and headed southwest toward our first fuel stop at Pekin Municipal Airport (C15). It is a small little airport just south of Peoria, IL. There was a young guy from the FBO that came out and helped with the fuel and we enjoyed a little air conditioning inside, while looking at the next leg of the flight. With no desire to leave the cool indoors for the hot humid outdoors, we grudgingly headed back out to the plane and began our next flight to Ponca City, OK (KPNC) where we would stay the night.

We had checked ahead to see if there was Uber service available in Ponca City and considering it has a population of just over 23,000, we weren't concerned. Luckily, we were able to get a ride to our hotel with the one operating Uber driver. We arranged for her to pick us up in the morning and asked where to go for some good BBQ. She told us Danny's BBQ was the best, and conveniently, it was right across the street from our hotel. So far, we hadn't been steered wrong by a local, and this was no exception. The BBQ was amazing!



That evening, I watched the weather in Oshkosh, the deserted grounds, the show planes with wings wrapped in bubble wrap and anything else they could find, and the notifications that they were bussing people to the museum for shelter from the incoming storm. I was glad to be in a hotel room almost 675 miles away. Thankfully, the storm did not produce the forecasted hail and winds and those who stayed, were treated to the night airshow on Thursday.



The first leg of the final day of our adventure was from Ponca City, OK to a fuel stop at Dalhart, TX (KDHT). The runway was in decent condition and the FBO was nice. However, if you go, be **very careful** when taxiing to the pumps. There are big potholes in the concrete, and because of the Mooney low ground clearance, these could cause a prop strike.

The final fuel stop was in Holbrook, AZ (P14) where we refueled. I took a long look at the weather radar and noted storms building to the west. Once in the air, I picked up flight following and was promptly advised by ATC that the gaps in the storms were closing quickly and to get around them, we should divert south to Phoenix.

Approaching Phoenix, it looked like we were in the clear, but ATC advised us of an area of precipitation ahead. “I’m not sure if it is at your level or above you,” he said, “State your intentions.” I could see the returns on my tablet. But looking out the windshield it looked clear. However, to avoid it, we could make a slight detour, so I cued up the mic and said, “It looks like if we go direct Buckeye, that will keep us out of it.” He replied, “I concur.” From there on, it was smooth flying all they way to our touchdown back home at KFUL. It was five days of flying, over 4,000 miles flown, three and a half days at Oshkosh, and memories for a lifetime. If you have ever dreamed of flying to Air Venture, take it from a Rookie. It is not as scary as you think, and it is more fun than you can imagine. Just make it happen.

As always, thanks for reading, and if there are things you would like me to write about (or not write about) drop me an email at richard@intothesky.com.

CLICK HERE for Richard’s Departure Video from Oshkosh

What You Need to Know about Service Bulletins

Service Bulletins are different from Airworthiness Directives. Airworthiness Directives (ADs) are issued by the FAA. ADs are legally enforceable regulations, in accordance with 14 CFR part 39, to correct an unsafe condition that exists in a product. Compliance with an AD is mandatory for continued airworthiness.

Manufacturers like Mooney issue aircraft Service Bulletins (SBs) and Service Instructions (SIs) in response to identified maintenance and manufacturing defect issues to give owners and operators critical and useful information about aircraft safety, maintenance, or product improvement. Compliance may or may not be required depending on the type of operation and whether or not it is included in an AD.

If Service Bulletins are not Mandatory, can they be ignored? No. Manufacturers issue SBs to call attention to improvements you should make to enhance your safety. It is also just good sense to heed the advice of the aircraft manufacturer who is providing important information about your aircraft.

SB Purposes:

- Inform you about the manufacturer's recommended inspection and maintenance items for your aircraft.
- Help you detect trends and spot weaknesses.
- Advise you about items that may be wearing faster than anticipated or items that you or your mechanic might overlook.

When a SB displays the words "Mandatory," "Alert," or "Emergency" in big red letters, it is emphasizing a significant safety concern, and manufacturers may ask the FAA to issue a specific AD to address the unsafe condition. These mandatory SBs can also be included in an AD as an additional source of information about the unsafe condition. If a SB is included in an AD, then compliance with that SB is mandatory for continued airworthiness. However, do not ignore "recommended" or "optional" SBs. Ask your mechanic to check these items during inspection.

Make it a best practice to read, or ask your mechanic to review, any SB that the manufacturer issues for your aircraft. If cost is a concern, discuss this with your mechanic to determine the best course of action. The SB may only be reporting a product improvement that does not affect airworthiness or your safety.

What Can Happen If You Ignore a Service Bulletin?

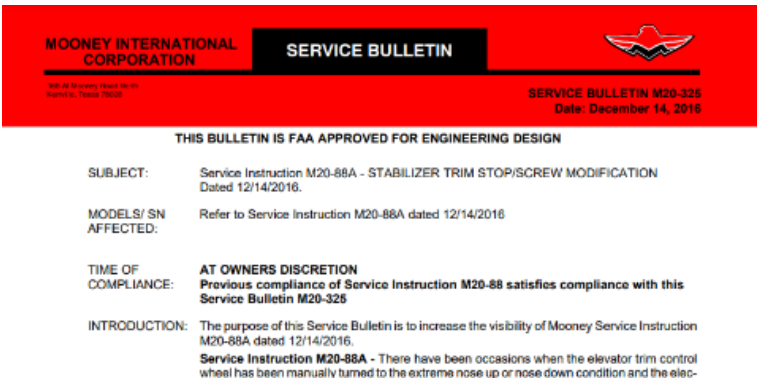
On July 7, 2017, a Cessna T337 with faulty fuel gauges crashed in a wooded area after running out of fuel. Textron Aviation had published a mandatory SB that required inspection of the fuel quantity indicating system to verify that each fuel gauge showed the precise fuel amount. It also required an initial inspection within 100 hours of operation and subsequent recurring inspections every 12 months. Examination of the airplane's maintenance logbooks revealed no evidence of compliance with the mandatory SB. The aircraft was a total loss. Fortunately, the pilot and passenger survived with minor injuries, but it could have been much worse. They learned an expensive lesson about the importance of SBs.

What if there is Loss of Life or Injury?

Courts often favor the manufacturers in cases where the aircraft owner didn't follow the guidance of the Service Bulletin (SB) or Service Instruction (SI). You can rest assured that the plaintiff's attorneys will spare no expense to find you at fault.

Service Bulletins and Service Instructions

Some SBs are considered mandatory by the manufacturer. Some include the Service Instructions (SI). For instance, Mooney Service Bulletin M20-325, dated December 14, 2016, concerns a Stabilizer Trim Stop/Screw Modification. It refers you to the Service Instruction M20-88A, to find the models affected.



MOONEY INTERNATIONAL CORPORATION

SERVICE BULLETIN

SERVICE BULLETIN M20-325
Date: December 14, 2016

THIS BULLETIN IS FAA APPROVED FOR ENGINEERING DESIGN

SUBJECT: Service Instruction M20-88A - STABILIZER TRIM STOP/SCREW MODIFICATION Dated 12/14/2016.

MODELS/ SN AFFECTED: Refer to Service Instruction M20-88A dated 12/14/2016

TIME OF COMPLIANCE: **AT OWNERS DISCRETION**
Previous compliance of Service Instruction M20-88 satisfies compliance with this Service Bulletin M20-325

INTRODUCTION: The purpose of this Service Bulletin is to increase the visibility of Mooney Service Instruction M20-88A dated 12/14/2016.
Service Instruction M20-88A - There have been occasions when the elevator trim control wheel has been manually turned to the extreme nose up or nose down condition and the elec-

MOONEY INTERNATIONAL CORPORATION

SERVICE INSTRUCTION

165 Al Mooney Road North
Kerrville, Texas 78028

SERVICE INSTRUCTION M20-88A
Date: December 14, 2016

SUBJECT: STABILIZER TRIM STOP/SCREW MODIFICATION

MODELS/ SN AFFECTED: Mooney Aircraft M20J Serial Numbers 24-0001 thru 24-1694 & 24-3000 thru 24-3172
Mooney Aircraft M20K Serial Numbers 25-0001 thru 25-1230
Mooney Aircraft M20L Serial Numbers 26-0001 thru 26-0041
Mooney Aircraft M20M Serial Numbers 27-0001 thru 27-0058

TIME OF COMPLIANCE: **WITHIN THE NEXT 100 FLIGHT HOURS**

Note, the Service Instructions are located on pages 3, 4, 5, and 6 of the SB. Both the Service Bulletin and Service Instructions can be found at https://www.mooney.com/wp-content/uploads/2020/12/SBM20-325.pdf

Where Can I Find ADs, SBs & SIs for My Aircraft?

SBs and SIs are available online, and they are free. The Mooney SBs and SIs can be located at https://www.mooney.com/contact-2/Take a look at any engine or airframe manufacturer's website and you'll find up to date information on the safety issues identified from accident reports, service difficulty reports, and any other data used for safety analysis and product improvement.
Lycoming SBs can be found at https://www.lycoming.com/
Continental SBs can be found at http://www.continental.aero/home/
You can also find information, guidance, recommendations, and airworthiness concerns for your aircraft free of charge in the FAA's Special Airworthiness Information Bulletin (SAIB) database. CLICK HERE. It is searchable by SAIB number or by aircraft make and model. Subscribe and get the latest ADs and SAIBs delivered straight to your inbox.
Finding ADs, SBS and SIS is easy. You can find the links on our website, at https://themooneyflyer.com/tech-mech.html Simply click on "Maintenance Resources"

Service Bulletins are a great way to stay informed about product improvements and safety issues that affect your aircraft. Take an active role in maintenance by reviewing inspection results and discussing ADs and SBs with your mechanic. Service Bulletins call attention to improvements you should make to enhance your safety. Do not ignore them. Complying with SBs keeps you and your passengers safe and keeps Mooney Aviation strong!

According to Chaytor Mason, retired professor of Aviation Psychology at the University of Southern California, in some pilot groups, the rate of acrophobia, (an extreme or irrational fear of heights), is 90%.

Wisconsin Aviation Expands Aircraft Interiors Service with the Acquisition of Jaeger Aviation & Its Spatial Interior

Wisconsin Aviation, Inc., announces the expansion of its aircraft interiors department with the acquisition of Jaeger Aviation, based in Willmar, Minnesota.

With its roots stemming back to 1945, Jaeger Aviation's sixty-four years of specializing in Mooney Aircraft sales and service made a new interior design for the vintage Mooney a natural. The "Spatial Interior," as this new design was labeled, allows for a simpler and better way to increase cabin space and expedite service while giving the Mooney a look it deserves. The Spatial Interior, now 15 years in the making, is recognized worldwide.

For more details, visit: www.WisconsinAviation.com or www.JaegerAviation.com

Wisconsin Aviation's aircraft interiors department, located in Watertown, Wisconsin (RYV), accommodates all types of general aviation aircraft. Its services include minor repairs to complete customized interior replacements. The Jaeger Aviation products and experience will help continue to grow this department.

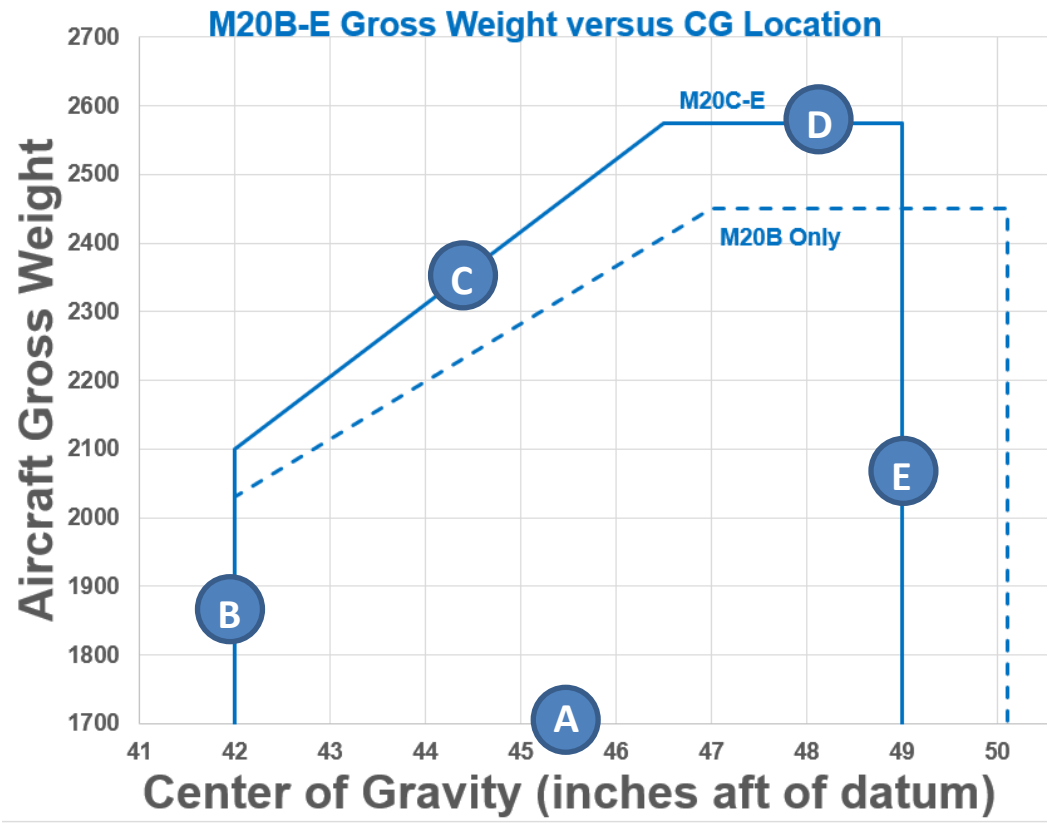
Wisconsin Aviation offers a complete line of general aviation services including air charter, aircraft maintenance, avionics repair and installation, flight training and aircraft rental, aircraft management, aircraft brokerage, and fueling services. The corporation has locations in Madison, Watertown, and Juneau, Wisconsin.

For more information about Wisconsin Aviation, send email to Interiors@WisAv.com or call 920-261-4567.

A Walk Around the Envelope

seventeenth in the series
by Ron Blum

In flying we talk a lot about different envelopes. We also talk about pushing the envelope. And, in Flight Test, we talk about expanding the envelope … something that should be left to the professionals. Sometimes the envelope is an airspeed envelope. Sometimes the envelope is a Mach envelope. What we're going to discuss this time, is the weight and balance or center of gravity envelope. This article is going to be a short read, but it is a very, very important safety topic.



We will take a quick walk around the weight and balance envelope. This envelope is often referred to as the Center of Gravity (CG) envelope, but there is a lot more information here than just the position of the center of gravity. Let's take a closer look.

We'll start at the bottom of the graph at line "A". This is typically a horizontal line. It is known as the minimum fly weight. It is not applicable for all airplanes, including the Mooney M20 series. The Type Certification Data Sheet (TCDS) for the M20 series models just states, "or lighter." Not exciting.

B Let's move forward in the envelope to the vertical line segment, (left of the graph), labelled "B". This limit of the chart is known as the "forward regardless" limit. In other words, this is the furthest forward the center of gravity should ever be. It is sometimes driven by the maximum stall speed the Original Equipment Manufacturer (OEM) wants to publish at that weight or the airplane is aerodynamically getting too stable (the control forces might be too high for OEM preference). Now off to more exciting portions of the envelope!

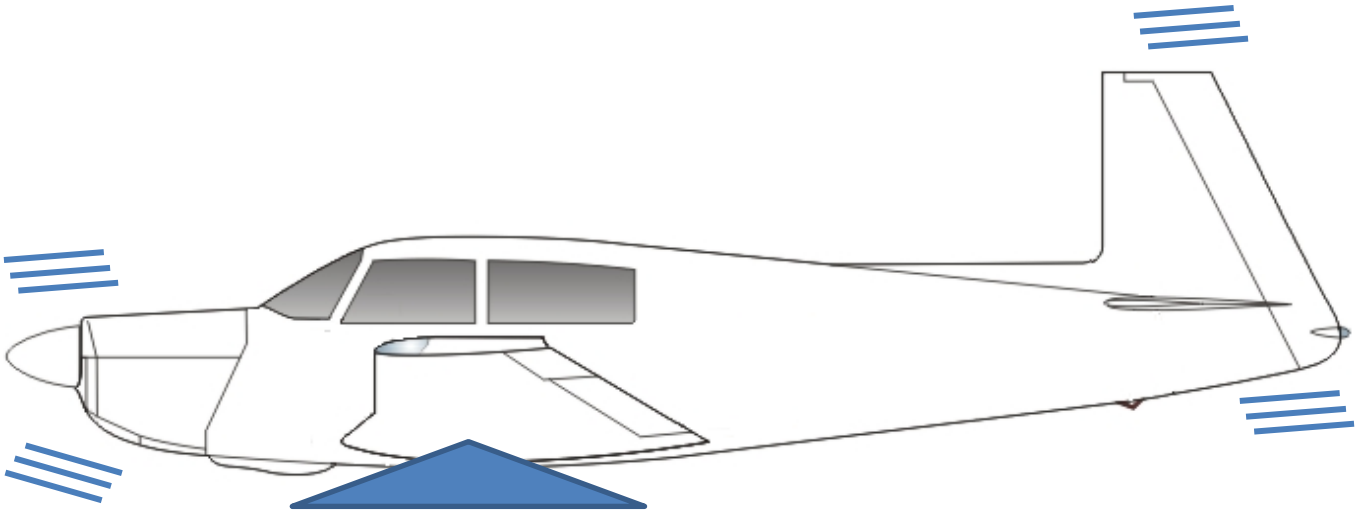
But, before we move around the next corner, I should make it clear that the final weight and balance envelope is not determined by just one group. The final envelope is the envelope that is acceptable to, or within, the Structures, Aerodynamics, Performance and Flight Test envelopes.

Line segment "C" is where things get a little more exciting. Try to appease me; I'm an EngiNerd. This line is close to the line for what we call "equal or constant tail power." What does this mean to the pilot? It is not exact, but all points along this line have a similar tail down force. In other words, the tail is pushing down the same amount at the corner or intersection of "B" and "C" as it is at the corner or intersection of "C" and "D" and all along the "C" line. If we want to keep the same tail force as the aircraft gross weight increases, the CG of the airplane must move aft to keep the airplane "balanced" longitudinally. This line is a structural limit, but foreshadowing, the slope of this line is going to play a big aerodynamic role as we talk about segment "E."

Horizontal segment "D" is a Structural, Aerodynamic and/or Performance limit. The limiting factor here could be the maximum stall speed (Aerodynamics), the maximum weight (to meet Performance – takeoff and/or landing - requirements), or the maximum weight the landing gear can be certificated (structural). It also could be all of the above.

Vertical segment "E" is all about Aerodynamics and Flight Test … kind of. What do I mean by this? Here is where the analytical world of Computational Fluid Dynamics (CFD) and equations don't always perfectly model the real world, as in Flight Test. To be fair, it's VERY complicated. Segment "E" can be driven by longitudinal stability requirements and/or stall characteristics or other control issues. Remember my foreshadowing when we were talking about segment "C"?

Stall speed is typically highest at maximum gross weight and forward CG. Most people believe that stall characteristics are the worst at aft CG and maximum gross weight. Stall characteristics are really at worst at aft CG and LIGHT weight. Going back to line segment "C," (equal tail force), as the CG moves aft or the aircraft weight decreases, less down force is required from the horizontal tail. In other words, as the CG moves aft and/or the aircraft gross weight decreases, the tail can produce too much balancing force, or it can drive the nose of the airplane higher and further into the stall! On some airplanes, this line will move forward as the weight decreases.



We've now taken a nice little stroll around the weight and balance envelope. I hope it clarifies why this envelope is the shape it is.

I really want to know your comments, questions and concerns about this article. I appreciate suggestions on where to take these articles and/or answer any questions you may have. Please email me at solutions@blueontop.com. Until next time keep the blue on top.

Blue on Top

Ron Blum is an aeronautical/astronautical engineer with a 35+ year career managing general aviation Flight Test and Aerodynamics departments from shore to shore and border to border. He was Chief Engineer of the Mooney M-10 in Chino, CA. He founded Blue on Top LLC, providing engineering and management consulting, Flight Analyst DER services and keynote speaking.

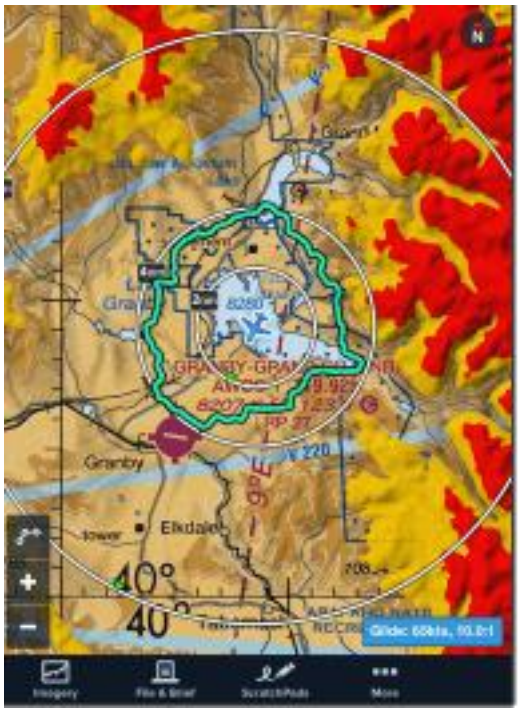
Safety of Flight
Who's Responsible? PIC or ATC?

The answer is YES. Both are essential to the safety of flight. In order to execute a safe flight, both need to work together as a team. In the end, you, as PIC, are responsible, and using an old adage, "If ATC makes a mistake, the pilot can die and if the pilot makes a mistake, the pilot can die." If you get conflicting requests from ATC that could affect your safety, you can and should ignore it and make a PIC decision. That's how the system is supposed to work.

In an emergency or any event causing a safety of flight issue, we all know that the first three things that the PIC must do is "Aviate, Aviate, Aviate." It's so easy to say, but sometimes it is forgotten when the PIC is faced with his or her first emergency situation. Once you are in the most stable condition/situation that is possible, then and only then, should you enlist the help and support of ATC. These actions include: 1) Setting the transponder to 7700, 2) Switching to

121.5 Mhz. This enables ATC to be your teammate in getting your Mooney on the ground so you can walk away and get help immediately.

I like to do VFR flight following on longer flights because I don't have to immediately switch to 121.5. I'm already talking to Center or Approach Control, and they can help stat.



Most of us have EFBs in the cockpit that will show where we can safely glide to at any instant. ForeFlight does this so well. ForeFlight takes your altitude and terrain into account as it shows you your options.

But if you don't have this capability, ATC is an excellent resource, vectoring you to the appropriate airfield or safer terrain. This is also useful if you don't have sufficient weather info, such as ADS-B FIS-B and have inadvertently flown into nasty weather, such as icing, turbulence, etc. ATC can vector you out of the weather, or at least guide you to improved weather.

ATC can also help VFR pilots who need non-emergency support. Once I got myself on top of a solid undercast. All the weather reports indicated it would breakup in 30-40 minutes, but it did not. I asked Center if they had a direction to a break in the clouds. They called 2-3 other planes, one of which reported a suitable hole, which I was vectored to. This happened many years ago, but still sticks with me, emphasizing in my mind that ATC is not an enforcer, but a teammate.

VFR Flight Following itself is a safety of flight asset. During your flight, you are constantly receiving relevant traffic info and sometimes a slight vector for traffic. As stated earlier, if you need urgent help, you are talking to ATC already and don't have to retune your radio and make fresh contact. If you don't have an inflight EFB, you can ask ATC for PIREPs. These can be useful in diminishing weather, turbulence, icing, etc.

Clearly ATC can slap your hand, or worse. Some pilots get the dreaded, "Please call this number when you land." Having said all this, if you do something that's dangerous or break an FAR, remember that, unless you are a frequent sinner, you have 10 days to file an ASRS "Get out of Jail" report.

Sometimes you'll get a controller who is human and having a bad hair day, but you should really think of ATC not as an adversary, but as a potential partner, radioed into your cockpit to assist you at any time with a relevant request.

That Little Step

by Jerry Proctor, CFII

That Mooney step. You step on it to hop in your plane. You step on it to get off the plane. What is the big deal? Yah, you could look at it that way. What else about that step? Have you ever wheeled yourself around under the belly on a creeper? Some of you might find that foreign territory, but others really do get under there. So, there you are, focused on all that goop your bird burped out and one more creeper roll and BAM! You hit that $%@ step. Jeez that smarts! Some of you don't have a step. Ah for those younger days when that didn't matter. Some Mooneys have a retractable step.

Flying OV-1 Mohawks, (yes here I go again with that dinosaur), you could not get in the cockpit without an extendable foot peg step, which was brought down by punching in a flap over the second step. Pretty smart. When you were heading out on a mission, the crew chief retracted the foot peg. When you had no one to do that, trying to retract it from the second step, was an art for a gymnast or contortionist. Perhaps you could get in without that first step, but not likely. I digress. Just be glad you have a much lower step.

So, there it is, some steps look pretty good, some look forlorn. It can be slippery. You know, I once wrote about doing an unscheduled dismount after a big OKC rainstorm. I was getting off the wing, and quicker than a bolt of lightning, I was on the tarmac, flat on my side. What the….? I did what all red-blooded guys do. I first looked around to see if anyone saw this bonehead move. Nope. Good. Now, did I break anything? I didn't. Pride before pain any day.

We have about covered it you say. Ah, read on. THAT step is so very significant, so monumentally important. It is your bridge, your launch pad, your path to the wild blue yonder. One foot on the step, hand on the cargo handle and you are halfway there.

Put the other foot on the wing and you are now in aviation. You have transitioned from the bonds of earth borne beings to that of flight, aviation, and freedom! You are now on the wing.

One or two more steps and you are standing tall on that wing, where you are absolutely in aviation. You now tower above anyone else near your plane! Stand there and take in your amazing bird. It is yours and you are going to orchestrate it into flight; something that mere mortals cannot do.

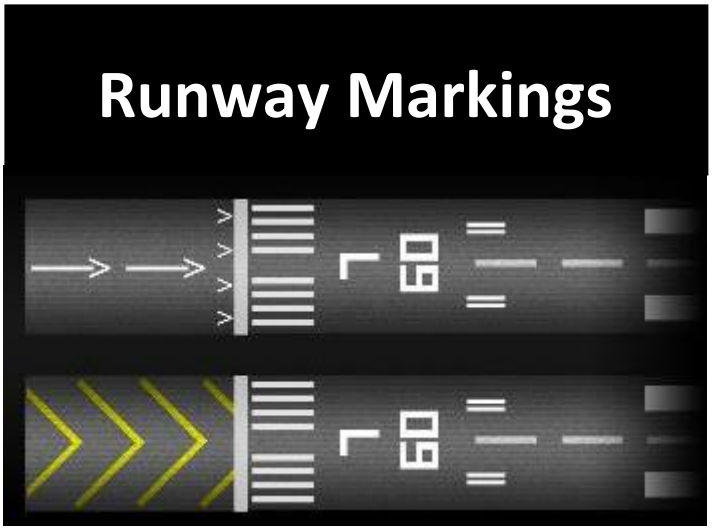
That step is as important as the Golden Gate Bridge; in my opinion, it is more so. So, you go from San Francisco to Marin County. Yes, getting out of SF is a big deal, but – I had better stop. The length of the bridge matters not. Not as much as where the bridge takes you. Earth borne or flight? Wow, that is really a huge step. I bet you never thought of it this way.

Do you clean the front of the step and removed the bugs? Well, do so now. Did it get waxed like the rest of the plane? No? What a shame. Do you reviver it and smile at it, even pat it like you do the nose cone? Come on, give it the respect it deserves.

Yes, that step is important; so important I guess, that Mooney gave the newest planes two steps. Although, it would take me a long time to remember to get in on the left side.

That little step, say that no more. Please, from now on, refer to it as the BIG step. It deserves that and more.

Go and gently caress it, then clean the bottom of your shoe. Step and transition into aviation. Now, go fly!



1) What type of operation can the yellow chevron markings be used for?

a) Takeoff
b) Landing
c) Taxi
d) None of the above

Answer is d, none of the above. Chevron markings are used to show pavement areas aligned with the runway that are unusable for landing, takeoff, and taxiing.

2) What type of operation can the displaced threshold be used for?

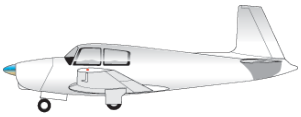
a) Takeoff
b) Landing
c) Taxi
d) None of the above
e) Takeoff and taxi

Answer is e, Takeoff and Taxi. Displacement of a threshold reduces the length of runway available for landings. White arrows are located along the centerline in the area between the beginning of the runway and displaced threshold. It is usually used to increase the clearance between arriving aircraft and obstacles. By displacing the threshold further down the runway, it increases the height at which the aircraft will cross the airport boundary. After landing at the other end, the landing aircraft may use the displaced portion of the runway for roll out.

There is a big inventory of serviceable airframe parts, including wings for M20C, E, F, G, J, K & R models, empennage assemblies, fuselages, rebuilt controls, rudders, elevators, ailerons, flaps, cowls, engine mounts, landing gear and small parts.

Paul Loewen is offering them online, or by phone. The website is www.LoewensMooneySalvage.com, and he can be contacted in Lakeport, California at **707 263-0462** or by cell at **707 272-8638.** Email is PaulLoewen98@gmail.com. The used inventory is also still available through LASAR Parts at 707. 263-0581

Mooney Maintenance



Search Mooney's new website for Service Bulletins (SBs) and Service Instructions applicable to your Mooney

Click here

Download and search LASAR's Airworthiness Directive (AD) Log – all models

Click here

LASAR
Fanatically Mooney. Exceptionally Fast.

Ask the Top Gun

Tom Rouch

Founder of Top Gun Aviation, Stockton, California

Send your questions for Tom to TheMooneyFlyer@gmail.com

Question: Mr. Rouch, How often should I replace my brake fluid? Also, how do I purge the system before adding new brake fluid? I ask because a friend had not changed it for a long time, and it was very pasty and gel-like.

Answer: Changing aircraft brake fluid is not a common task and is rarely done. It is not the same fluid that is used in automobiles. Most manuals do not even address it, but as part of repairs, I recommend doing this. When changing seals or hoses, where you are losing fluid, you can just let the fluid drain out and then add new fluid. I also would observe the color. If it is dark, I would suggest draining all the fluid and refilling. I know of no procedure to "purge" the system, but I am sure someone will prove me wrong. However, in my 60 years on aircraft, I have never heard of it, and that includes my experience with B-52s. Brake systems are a closed system, so usually the fluid doesn't get dirty. However, if you have a fluid leak, then it is possible. This would be a good time to change the fluid.

Question: I recently got my 2003 Ovation back from annual and it now has a rudder trim rigging issue that it didn't have when it went in. The mechanic found corrosion on a cable end that is used in rudder trim, (I don't know which cable). He removed the cable end to remove the corrosion. He then put it all back together and performed the rudder trim rigging procedure, (something like 3 deg left for left stop and 23 deg right for right stop). Now, I must be at the full left rigging stop to get the ball almost centered in cruise flight. There is no excess left trim to move the ball even partially right of center. I returned the plane and they rerigged it with the same result. Before the annual I could get the ball on either side of center using the rudder trim.

I am at a loss as to what to do next. Running rudder trim to a stop for normal cruise does not seem normal to me.

Answer: This is a complicated procedure and must be followed exactly. First the plane must be on jacks when rigging. There are two little required "tools." Spring clips are required. Then, follow the procedures and with the rudder centered, after rigging, the indicator will be almost full left. You rig the trim first, then adjust the indicator to match.

That is basically it, but it is easy for me to criticize. However, something was not done correctly, period. If you were close to my shop, Top Gun, we could fix it. Wherever you are, you need to get to someone with experience.

MOONEY MARK 20A

So easy to fly, even an 11 year old can do it!

Mooney's comfort engineering and quicker ETA'S make any trip a pleasure trip. You travel in comfort and arrive at your destination fresh, relaxed and ready to go. For business or pleasure, flying a Mooney is fun.

Feature for feature, Mooney is the biggest value in today's air-minded world. The Mark 20A is the only plane that will cruise up to 180 m.p.h. *and* operate for as little as 8c a mile.

Now is the time to take a flight comparison ride. Enjoy Mooney's quiet elegance . . . incomparable flight ease . . . space swept design. Mooney features include the quiet, reliable Lycoming engine; retractable landing gear; flying tail; simplified flap system; laminar flow wing; steerable nose wheel; low-wing visability; contour no-sag spring seats; tinted glass windows; retractable foot step; tubular steel frame, and knee-action shock system. The Mark 20A is priced at $14,850 with standard equipment.

Inquire about Mooney's new and unique lease plan. See your Mooney dealer or write:*

*Mooney aircraft, inc.

Kerrville, Texas

FLYING—August 1959 21

MiraCheck Brings a Virtual Copilot to Smartphones

MiraCheck Copilot started a few years ago as a unique electronic checklist app that uses CRM-like challenge/response. The latest version of the program has morphed into a virtual copilot. Using speech recognition (connected via Bluetooth), the app can run side-by-side with most navigation apps (including ForeFlight and Garmin Pilot) and is always listening in the background to run customizable checklists, help with flight planning, backstop emergency procedures and to fetch airport and airspace information on the fly. Think of it as the Siri or Alexa of the cockpit.

MiraCheck uses an AI on-device speech recognition engine, which has made huge strides in recent years and allows you to quickly move through your content completely hands free. You can jump around using touch or voice. Say, “Mira, go to Engine Failure,” for example, and she’ll read your engine failure checklist.

Learn More HERE

Laser Strikes Rise in ’21

Shining a laser at an aircraft is a serious safety threat that continues to rise. As of Oct. 14, the Federal Aviation Administration (FAA) has received 7,186 laser strike reports for 2021, exceeding the 2020 total of 6,852. This marks the highest number or reports since 2016.

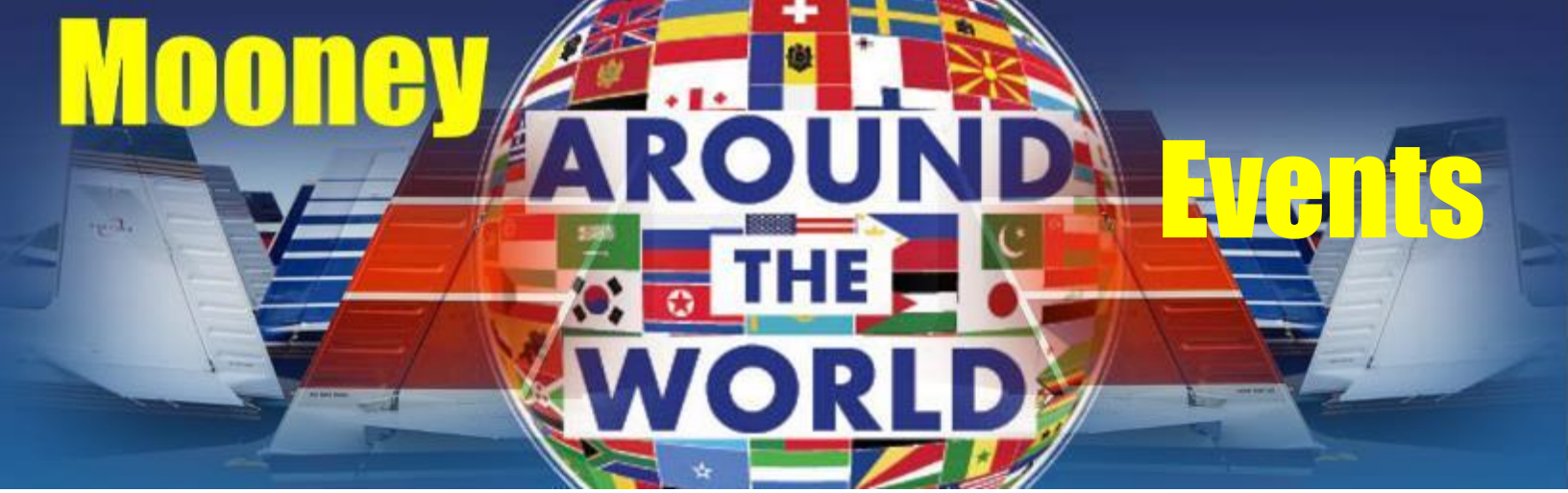
Many types of high-powered lasers can completely incapacitate pilots, many of whom are flying airplanes with hundreds of passengers. People who shine lasers at aircraft face FAA fines of up to $11,000 per violation and up to $30,800 for multiple laser incidents. The FAA has issued $120,000 in fines for laser strikes during 2021. Violators can also face criminal penalties from federal, state and local law enforcement agencies.

Pointing a laser at an aircraft can temporarily blind a pilot. A strike not only affects the crew, but also endangers passengers.

To identify laser strike trends, the FAA developed a visualization tool, using the Tableau software platform that shows laser strike data from 2010 to 2020 and highlights trends by geographic area, per capita data, time of day and year. The FAA shares the information to draw attention to the dangerously high rate of laser strikes on airplanes. Laser report data by year can be downloaded on the FAA’s website.

The FAA remains vigilant to raise awareness about the dangers of pointing lasers at aircraft and encourages the public to report laser strikes to the FAA and local law enforcement agencies.

For more information on laser strikes, watch the FAA’s video about the dangers of lasers, visit their web site and read their fact sheet .



Florida Mooney Lunch Group	*Contact Dave at daveanruth@aol.com or (352) 343-3196, before coming to the restaurant, to have an accurate count. Events begin at 11:30* November 13: Sebring (SEF) December 11: Winter Haven (GIF) January 8: Leesburg (LEE)
MOONEY SAFETY.COM	**2022 Events** Jan 28-30: Lakeland, FL Apr 22-24: Santa Maria, CA Jun 3-5: Denver, CO Sep 16-18: Oshkosh, WI Oct 21-23: TBD, PA Sign Up at https://www.mooneysafety.com/ppp-registration/
MOONEYSUMMIT	**Learn more at** https://www.mooneysummit.com/
Australian Mooney Pilots Association	March 17-21, 2022: Mount Gambier Fly-In **Learn more at** https://www.mooney.org.au/
EMPOA	**Learn more at** https://www.empoa.eu/index.php/en/
Other Mooney Events	June 3-5: Walla Walla Fly-In by Henry Hochberg. Wine, food and Fun. Hotel room block at Whitman, 866-826-9422. Contact Henry if you need any additional info at aeroncadoc@comcast.net.

PRODUCT

This newly upgraded design of the popular Pilot Pocket is the best fit yet for all your cockpit storage needs. If you are looking to keep a device, such as your smartphone or your aviation Bluetooth device within easy reach during flight, the Pilot Pocket Pro has you covered. In addition to the main storage compartment, the Pilot Pocket Pro provides a convenient holder for your sunglasses and a divider for two pens. Dual windows on the bottom of the Pilot Pocket Pro allow for easy charging cable or cord organization.

Features:

• Secures firmly to any smooth plastic or glass window surface with its 3 suction cup design. Each suction cup has a pull-off tab, making it easy to detach and reattach. Perfect for airplane renters.

• Built-in pen slots for added convenience plus a holder for your sunglasses.

• Two precision-cut openings on the bottom of the Pilot Pocket Pro allow for connecting power cables and chargers to a variety of Bluetooth GPS units and cell phones.

• Constructed of strong, high quality, transparent acrylic that is resistant to scratches and won't discolor in sunlight. Additionally, a convenient temperature conversion chart is printed on the face.

Measures 4 3/16" Wide by 4 3/4" High by 1 3/4" deep. Can hold a cell phone or GPS up to 3 3/8" wide by 1 1/2" deep.

Click Here to purchase

Parts for Sale

This Cowling was removed from a M20E and replaced with a M20J (201) cowling. The cowling is located at Fullerton Airport (KFUL) and is in excellent condition. Offers accepted.

Contact: Bernard Lee – leebern@msn.com (562-865-2547)

P/N 310309-501
P/N 310309-502

These fairings are new and priced @ $280.00 each or $525.00 for both. Priced elsewhere @ $362.69 each.

Contact: Bernard Lee – leebern@msn.com (562-865-2547)

Bushing P/N 914007-003 - 2- Bushings in the original package @ $35.00 each. Priced elsewhere @ $45.00 each.

Bushing P/N 914007-005
1-Bushing in the original package @ $59.00
1-Bushing loose @ $50.00
Priced elsewhere @ $69.00 each

Contact: Bernard Lee – leebern@msn.com (562-865-2547)

Access Covers P/N 3000-901 (2-available) - 1-without nuts attached.
Make offer. Contact: Bernard Lee – leebern@msn.com (562-865-2547)

1/3 SHARE FOR SALE

Two partners are offering the final 1/3 co-ownership share in this excellent, incredibly unique and well-equipped aircraft. Over $50,000 spent over the last two years, upgrading and sorting it out. The share price is $45,000.
TTAF is about 3160, engine SMOH About 1320 (Mattituck Red/Gold). We have Calculated that 1/3 of the fixed expenses will be around $5,250 per year. Reserves TBD. Photos and all records can be provided. The plane is hangered at KCCR Concord, CA.

- Garmin GNS 430 WAAS
- King KX 155 N/C/LOC/GS
- Castleberry electric back AI
- King KFC 150 FD/AP alt hold, climb/descend, simulated GPSS
- King KCS 55A HIS
- Garmin GTX 330 ES TXP with traffic, ADS-B out
- Newly Overhauled KX 256 AI ($1,730)
- King KN 64 DME
- New Garmin GMA 345 Audio Panel
- New JPI 830 with *all* options
- ADS-B in including traffic, weather, Sirius XM, etc. via a new certified Garmin GDL 52R hard wired to a panel mounted Garmin Aera 660. A new yoke mounted Aera 760 will be hard wired to provide IFR charts and Additional features. More Bluetooth connections for portables and iPad available from GDL 52R
- Newly Overhauled BFG WX 1000+ Stormscope, display and processor ($1,890)
- 28-volt electrical system
- Astrotech LC-2 clock
- Electric trim with CWS
- Yoke mounted AP disconnect and ident.
- Electric Back-up vacuum
- New STC'd gear and stall audio alarm ($1,100)
- Built-in CO2 detector
- Speed brakes completely overhauled January 2020 ($2,800)
- Four place intercom
- 2900 GW STC
- Two built-in David Clark 20-10X ANR headset jacks with headsets
- CYA 100 AOA with custom housing, (not yet wired) ($1,690)
- Useful load 992 lbs.
- Air/Oil Separator
- Reiff Preheater, 2 sides
- Removable back seats
- Articulating seats
- Inflatable lumbar support
- Indirect interior lighting
- Kool scoop
- Wing mounted fuel gauges
- Two place Sky Ox oxygen tank with custom rack
- Sidewinder electric power tug
- B-Cool ice cooler with remote switch
- Annual completed February 2020 by Top Gun Stockton MSC.
- Tan leather interior redone 2012, good condition, front sheepskins coming soon
- Custom black front floor mats, custom cover, cowl plugs
- Original paint. Pleasing colors. Looks very good at 8'.
- The plane starts right up hot or cold, good compressions, does not use much oil, good oil analysis, runs very smoothly, flies great.
- Recent avionics fan, fuel pump, starter, battery, airstop tubes on mains
- New shock discs 2 1/2 years
- No back clutch spring was installed 2 1/2 years ago

Give me a call anytime at 510 377 0129 or email bradinc@astound.net. Thanks! Steve


Rusty Pilot or Old Pro
INSTRUMENT PROFICIENCY CHECK
Study Guide
J D Price, CFII, MEI, ATP
FLIGHT REVIEW
Study Guide
J D Price, CFII, MEI, ATP
Prepare online
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