

Club Meetings

Board Of Trustees:
11/3/16- 7:00 PM
Club House

General Meeting:
11/19/16 9:00 AM
N12 CAP Building



Editorial Staff: Charles Burke,
Dave Pathe, Karen Barbagelata

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What's in Your Flight Bag? by Charles Burke

Last month, the topic for this column was the inclusion of a small mirror in your flight bag. So this month the subject swings from the esoteric to the ubiquitous headphones. Since this is a must-carry item, the approach will take a different turn in that it deals with keeping them clean.

Before taking a scrub brush to the unit, it is wise to first check the instructions that came with the headset. If you no longer have it, a quick search of the internet will surely locate a copy either from the manufacturer or an independent source such You Tube. These instructions may provide very specific directions that are unique to your unit so it is worth taking the time to locate them. But if you are just interested in some general tips, here are a few to consider:

1. Using a soft cloth that is slightly moistened with a mild soap and water and gently wipe off the ear pieces, the head band and the cord. When you are finished, carefully dry all parts with a soft absorbent cloth. In some cases, the original manufacturer instructions will detail how to remove the ear cushions but if you have never done this, or they are old, you may find the plastic has lost its flexibility and may crack. Should this be the case, you really should replace them with new soft and pliable cushions.

2. The plugs on the end of the wires may be made of brass and if this is the case, you may want to try cleaning them. By doing this they will make better electrical contact when inserted into the jack. What I have found works extremely well is to take a small piece of fine steel wool, such as 000 or finer, and carefully wipe the shaft down so that it becomes a bit on the bright side. It is extremely important that you remove any traces of the steel wool once this step has been taken.

3. The microphone is a totally different story because of the fact that it sits directly in front of your mouth and is covered with a soft foam rubber. This covering can act as a sponge that absorbs moisture, bacteria and all sorts of things that you may not want to breath back in again. The cleaning process here is simple, if is one that can be removed and washed, follow the manufacturers directions.

Just be careful about taking matters into your own hands. If you spray on an anti-bacterial solution, it will seep into the foam and possibly enter the actual microphone causing irreparable damage. Rather than take this chance, you can usually buy inexpensive replacement covers from the manufacturer. Replacement instructions will come with the covers but in many cases simply involves clipping off the old cable strap to remove the cover. Once it is off, use a lightly dampened cloth to wipe the mic clean, then let it dry before putting the new cover on.

4. If you have a headset that has a battery powered unit, replace the batteries at least once a year. A simple reminder on the calendar can save you a great deal of money should a battery leak. On the other hand, you can do a little cleaning here with the soft eraser on a pencil. These erasers make a great tool that you can use to clean off the battery ends and the clips that they fit in.

Bottom line, don't take this important piece of equipment for granted, a small amount of maintenance will generate years of good use.



In a recent issue of the Asbury Park Press (October 11, 2016 section B), there was an article on people who board commercial aircraft with pets that will make most people take a second look then scratch their heads. The article describes passengers boarding with monkeys, turkeys and pigs. The airlines realize that they must accept trained service animals, such as dogs, but this official FAA list can actually include miniature horses! But they also realize that there are some people who label their pets as service animals to avoid paying a \$75 fee to store the caged animal under their seat.



Spotlight on Ina Kelemen



As for many of us, we were introduced to aviation by someone special. That someone special is my father who joined the US Army after leaving Hungary during the Hungarian revolution in 1956. He felt that by joining the US Military he would combat communism and did so when stationed in Europe. My first memories of the military was when my father was stationed in the Army Air Division in Texas where he was also a member of a local air club. I remember sitting in aluminum hangers watching wings being repaired, the roar of a single prop engine being started by hand and sitting in the cockpit with my father and being in the air. After leaving the Army, my father joined the airlines and I was fortunate to travel to many parts of the world as a child and teenager including every continent except Antarctica

In High School I joined the Air Force ROTC program and was privileged to visit Grumman (Bethpage Long Island), Smithsonian Air Museum and Andrews Air Force base and saw Air Force One standing on the tarmac.

Although I never served in the Military I admired those who have often sacrificing their lives, their families to protect our freedom.

Growing up I was also fascinated in the field of medicine and ultimately that became my career. This year I attended the AME Conference in Oklahoma City and now I am an AME and able to perform Class II and Class III physicals. I am also excited in learning to fly and learning from other club members their aviation experiences.

STALLS and SUCH by Parvez Dara, MD ATP, Master CFI

Needless to say, that was not the right answer. So I asked again, with just a touch of irony and disbelief. "What is your stall speed in the present configuration?" Umm... and a whole bunch of numbers flowed through as each answer was met with a quizzical look. The process continued and he had exhausted all the numbers, even the right ones. The problem was they were all guesswork, hence did not meet the criteria of knowledge, let alone wisdom; the latter, I believed might take a whole another lifetime.

So we began our straight and level flight and to his credit, he was pretty good at it. But then I cut the power and when the engine doesn't sing anymore, a whole host of noises seem to become acute and engaging, some human squeaks and others more aligned with the air and aerodynamics. "What should you do first?" He looked like a deer in headlights. "Go ahead, we don't have all day." I asked. "Call 911?" That spontaneity was hilarious, even for him, now that I think about it. "Try again?" "Check the engine, magnetos and Fuel inputs?" Ah, I thought some private pilot stuff had just raised its head. "No, try again" I doggedly maintained.

"Squawk 7700?" "Uh uh!" He looked flustered as his aircraft, a beautiful 2015 brand new Mooney Aircraft hurtled towards terra firm at breakneck speed from 5500 feet. "Ever hear of Glide Speed?" "Oh..." And the bulb went on. He guesstimated the Glide speed at 85 knots and pulled back on the yoke to get us there. So many things wrong with that maneuver, I thought and still do, that I will let that sink in for a bit. Hey don't forget the trim instead of manhandling the elevator and creating drag.

His hands kept going for the throttle and I would gently but firmly push them away. In the end, My left hand had the throttle in a lock...no holds barred. He would have to figure this one out right till the end of my comfort envelope. Needless to say he saw an airport around 6 miles by pressing the NRST button on the GPS and made the turn towards it. The problem was that we had already transitioned through 2500 feet and seem to be in a race to get to the grassy knolls that preceded the approach end of the runway. And that is where he started to do the "No, No" maneuver of stretching the glide. I let him push his aeronautical "mental stuff" and finally took the aircraft away from him, just close to the stall speed+5. "My plane!" is all I said. Magically as I pushed the throttle, the TIO 550 jumped into action and back up to a safe altitude we went.

More work was needed here. I asked him to show me an imminent stall first and at the first sound of the stall warning horn he pushed the nose forward and pushed the throttle. Tsk, tsk. We tried it again and each time he did the same thing, becoming slightly unglued at the fact that I was being so "picky."

When I asked him about a power off approach stall. He admitted his instructor and never taken him through one. He was told to recognize the “imminent stall” characteristics and never exceed them. “Huh?” If one never recognizes the aircraft characteristics of a full stall, how is one then able to respond to it in a real world situation? I thought.

We spent an hour in slow flight, minimal controllable airspeed with the aircraft hanging on to the thrust of the three-bladed prop for dear life and then we (initially me helping him, followed by him brazenly showing off) did around 10 power off and 5 power on stalls.

His comfort grew. His frown gave way to a smile. His hands grew steady at the yoke and the feet nimbler on the rudder pedals. I pressed the rudders on my side, but his control over them was firm. Good! I thought. He is learning safety.

We flew many times again and each time he would demonstrate his abilities without hesitation to the point of taking pride in it. His pulse if I had to guess, got steadier and the face flush disappeared completely. He was one with the aircraft and that made me feel some pride.

The moral of the story for all pilots is to experience, experience at the hands of an experienced flight instructor, who does not instruct simply for the sake of building time or neglects using the real world requirements for safety. Experience creates the wisdom from the knowledge extracted through information. Suddenly the stall speed, the VSO1.3 and Glide Speed had real meaning. Experience makes for a good memory. Makes for safety under duress. Life is strange that way. It throws curve balls when you least expect them. By experiencing reality, the answer to nature’s curve-balls is “Been there done that” attitude.

Bits & Pieces

1. A recent wind storm damaged the antenna that is located above the trailer. Rather than attempt a new unit, Charles Burke (WA2SLK) built a dipole using recycled 1/2” copper tubing. With the help of Joe Evans the unit was installed and the radio is once again working.



If you have a handheld aviation radio and would like to set up base station at home, help can be provided in fabricating a similar unit. This will dramatically increase the range of the unit.

2. The club now has new phone number (732) 901-6024.



3. The growth of the trees along the fence at the end of runway 6 have prevented pilots from being able to scan the sky when stopped at the hold line. This can be a very dangerous situation if an incoming aircraft does not alert those in the area with a radio message. Matt Applegate, N12 Manager, was asked for help in removing them and within 24 hours, all of the trees on the N12 property were gone. An attempt is now being made to cut the trees on the other side of the fence. Steps are being taken to obtain help from the owner of the property on the other side of the fence

4. Thanks to the donation of a newer computer by Steve Fox, logging into Flight Circle has become a much more efficient process. Along with this upgrade, Tom Smock has offered to purchase a new printer. According to Steve, once the new printer is in, both computers will be linked to it allowing for documents to be generated from either station.

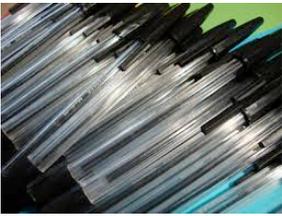


5. The new transponder in 4287Q generated a non-problem problem when it was reported that the 8 and 9 button did not work. There is a good reason for this, the transponder codes only run fro 0 to 7. On this unit, the 8 and 9 are there for making changes while in the MENU windows. The same transponder is also mounted in the Archer.



6. If you would like to get an idea what N12 will look like in the future, there is an architectural drawing hanging in the clubhouse.

7. A pinch hitter sitting next to you may be an option in the near future. The club is looking into reestablishing a program that would allow for a companion to be trained so that they could take control of the aircraft should something happen to the pilot. This was once practiced in the club years ago but is now being actively considered for reinstatement. If it is adopted, a special training program would be made available to non-pilots who wish to take advantage of this potentially life saving training. Stay tuned....



6. Kill two birds with one stone, clean out those junk drawers at home and donate all of those unused ball point pens to the club!

Slipping & Skidding Turns by Matthew D'Angelo

Make sure you aren't fixated looking over the nose during climbs. This should be just one place you look during all phases of flight. Along with over the nose, you should be looking at 10:00 and 2:00 (at the horizon where the glare shield dips in most aircraft), under each wing and (10% of the time at the very most!) inside the cockpit. The most important thing to look at when scanning inside the cockpit are the engine instruments. Look for abnormal indications or trends in both engine and flight instruments, but you should be looking outside at least 90% of the time.

If pilots aren't using a good scan pattern during climbs, they won't recognize:

1. the nose rolling and yawing to the left due to inadequate right rudder or
2. the fact they are correcting a rudder problem with aileron by holding the right wing slightly down during climbs.

Both of these problems will be amplified during power-on stall practice and climbs at V_x. When is the last time you practiced these?! Grab an instructor and try this in the airplane: Cover the flight instruments for both of these maneuvers and make sure you are able to use outside references and all your senses to keep the wings level and nose straight.

Early in your training, or if it's been a while, ask your instructor to demonstrate a climb using no rudder to show you the power of the left turning tendencies. Have them increase the angle of attack while doing this to show how these tendencies worsen.

Also, ask your instructor to demonstrate a slipping climb so you know how to recognize this. If your instructor guides you and points out very specifically the slipping climb, you will be able to both see and feel when you are doing this improperly.

Skidding Turns:

Initially when learning the art of coordination, a little skidding can be a good thing – it shows you are using proper rudder direction and understand coordination. You just need to work on the 'how much pressure' part. Slipping is just the opposite as it indicates you aren't using the rudder at all or aren't using it enough.

In turns, many pilots and pilots-in-training fail to neutralize the rudder after establishing the bank. Because of how clear it is visually if ailerons aren't neutralized (the aircraft will continue rolling!), pilots are usually good at neutralizing the ailerons, but fail to consistently neutralize the rudder. This results in a skidding turn, which can be a dangerous thing, especially when operating in the traffic pattern. Loaded with too much back pressure, a skidding turn can very quickly become a spin.

Lead with rudder prior to doing anything with the control wheel. In terms of bank, act as if there is a metal rod between the rudder pedal and the corresponding side of the control wheel. Right rudder pressure 'pulls' the control wheel or stick to the right. Left rudder pressure 'pulls' the control wheel or stick to the left. Also, make sure you are aware of the control wheel position. The glare shield and cowling should be banked in the same direction the control wheel is being held. Anything else is a dangerous cross-controlled, skidded state. Very dangerous, yet very easy to identify and prevent. The exception to this is during steep turns when slight opposite aileron and rudder controls may be necessary due to the overbanking tendency. The emphasis here is on *slight!* Also, these steep turns should still be coordinated turns. You should be able to see this using only outside references and should be able to feel it in your posteriors (butts!).

One more thing...make sure you are keeping a consistent seat position and are not 'leaning' away from turns to stay upright in relation to the ground. This will throw off your interpretation of outside references and will constantly change your site picture, making it both challenging and uncomfortable.

The only time an airplane should be slipping is when doing so deliberately during a crosswind landing or forward slip. The only time an airplane should be skidding is during a taxi turn on the ground. Period!

Two of the best resources for understanding turns and rudder use are "[Stick and Rudder](#)" by Wolfgang Langewiesche and "[Airplane Flying Handbook](#)" by the FAA.

Learning proper rudder using outside references early in training and practicing it throughout your flying career is one of a pilot's most important responsibilities. As with everything, deliberate and proper practice is the only way to improve!

Remember, the best way to control the airplane is to look outside, look all around...and enjoy the view! After all, isn't that why we fly?!

\$100 Hamburger- Apron Cafe in Hammonton (N81) by Nick Billow & Charles Burke

It was a beautiful day and initially we were not sure where to have lunch so we pulled out the sectionals and decided to take a short hop to Hammonton (N81). Located only 31 nm and almost directly south west of N12, it looked like an ideal spot to aim for. Before finalizing the plan, we called the Apron Cafe just to make sure that they were open. It was a Monday and sometimes restaurants close down but Dawn, a staff member, picked up the phone and assured us that she would be there to serve a great meal.



After landing at Hammonton Airport, we taxied south towards the cafe where there was both ample as well as nearby tie-down space next to the cafe. We walked in and found a pleasant, dining room decorated with a wide range of aviation memorabilia and hardware. On one wall we found a large four blade fixed wooden propeller that is worth taking a look at. The woodworking that went into the joining of the pieces is amazing.

After settling in, Dawn appeared and gave us a choice of either the breakfast or lunch menus but not knowing which we wanted, both were requested. This gave us an opportunity to get a better feel for the epicurean delights that they offered. A quick examination revealed a nice range of items so we required a little time to sift through the choices. But once that task was completed, we had a few minutes to discuss our return flight while sipping our drinks.

When the food arrived the most striking element was the sheer volume! The plate was overflowing so it was decided to immediately ask that half of it be put into a take-home container. Had we attempted to eat everything, there is no doubt that it would have been necessary to recalculate the weight & balance figure. When we finally got around to the task at hand, the taste lived up to our visual expectations and we enjoyed a great meal. That said, a return visit was already put into motion for sometime in the near future.

So, if you are looking for a great \$100 hamburger run, just set the compass or GPS for Hammonton and give it a try!



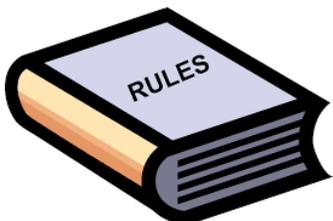
APRON CAFE

Lunch Menu

<p>APPETIZERS</p> <p>MEDITERRANEAN MIX • 12 Served cold with Eggplant, Bruschetta, Hummus and Roasted Peppers with Grilled Pita</p> <p>LONG HOTS • 10 Stuffed with Prosciutto and Sharp Provolone on Garlic Bread</p> <p>BUFFALO CHICKEN QUESADILLA • 10</p> <p>SHRIMP QUESADILLA • 12</p> <p>SIX WINGS • 8, TWELVE WINGS • 10 Choice Hot, Mild, Garlic, Parm, Chili, BBQ</p> <p>TOWER OF BEER BATTERED ONION RINGS • 6</p> <p>HOMEMADE MOZZARELLA 9 Served w/ Marinara sauce</p> <p>SANDWICHES With your choice of a bread or roll, cheese and chips.</p> <p>HAM OR TURKEY WITH CHEESE • 6</p> <p>TUNA CHICKEN OR EGG SALAD • 6</p> <p>BLT • 6</p> <p>GRILLED CHICKEN • 7</p> <p>CHICKEN OR BEEF PHILLY CHEESESTEAK • 8</p> <p>SALADS</p> <p>CHEF • 12 Ham, Turkey, Cheese & Vegetables</p> <p>CAESAR • 6 ADD CHICKEN • 3 ADD SHRIMP • 4</p> <p>VEGETARIAN • 12 Spring Mix, Beets, Goat Cheese, Oranges, Walnuts and Craisins Dressed with a Cider Vinaigrette</p> <p>SEAFOOD SALAD • 14 Shrimp, Crabmeat, Cherry Tomatoes, Cucumbers, Roasted Pepper, Red Onions, Dressed with a Lemon Herb Vinaigrette</p>	<p>SIGNATURE SANDWICHES</p> <p>APRON BURGER • 8 Boz Beef Char-Grilled Burger (Build your own)</p> <p>PROPELLER • 12 Pulled Pork, Broccoli Rabe, Roasted Peppers and Sharp Provolone Cheese on a Long Roll</p> <p>TOMCAT • 12 Turkey, Brie Cheese, Granny Smith Apples and Spinach Dressed with Honey Mustard on Long Roll</p> <p>CATALINA • 8 Sliced Mozzarella, Tomato and Basil with a Balsamic Glaze on a Long Roll</p> <p>WRAPS</p> <p>CRAB • 10 With Hard Boiled Egg, Bacon, Tomato and Spring Mix</p> <p>CHICKEN CAESAR • 8</p> <p>GREEK CHOPPED CHICKEN • 8 Grilled Chicken, Romaine, Red Onion, Tomato, Black Olives and Dill</p> <p>SHRIMP 9 Grilled Shrimp in a Roasted Pepper Sauce with Spring Mix & Tomato</p> <p>KIDS MENU</p> <p>CHEESE FRIES • 4</p> <p>CHICKEN FINGERS • 4</p> <p>FOOT LONG HOT DOG • 4</p> <p>GRILLED CHEESE • 4</p>
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MAFC Rules and Regulations Part 2

3. Required Payments (cont'd)



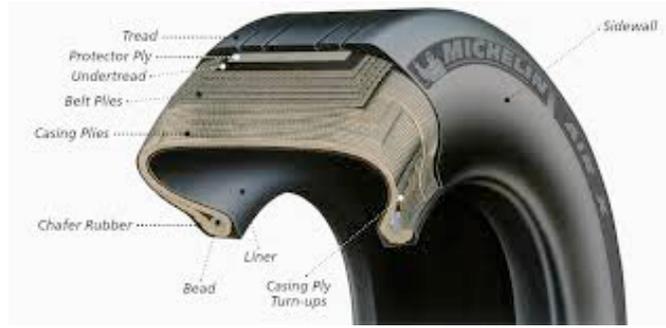
INACTIVE STATUS: Members who will not be flying for an extended period of time due to reasons generally beyond their control (such as temporary job transfer, military deployment, attending an out of town college or medical reasons) may request to go inactive for up to 12 months. Members who do not reactivate by the end of the 12th month will have their membership terminated. The BOT will consider extending inactive status up to an additional 12 months on a case by case basis. If approved, members who wish to reactivate at any time during the 12 month

extension will be required to pay a \$150 reactivation fee. While inactive, monthly dues will be waived. Members who have a balance due MAFC must zero out their accounts before going inactive. All requests to go inactive must be sent in writing (letter or email) to the BOT and must include a reason and an estimated time of return. The BOT will review each request and notify the member within 30 days of its decision. Inactive members who wish to become active again may do so by notifying any BOT member. Terminated members who wish to rejoin the Club will be required to pay the current initiation fee. Any member who wishes to rejoin the Club, whether inactive or terminated, will be required to fill out a new application form and will be required to attend a BOT meeting.

Tire Pressure by Charles Burke

At the last general meeting, it was noted that the problem of excessive tire wear has reached a point where consideration is being given to buying tires in bulk so that they can be changed on site. A good portion of the problem stems from poor landings and because brakes are being applied when they should not be. But another problem is that of under inflation.

It is extremely important to make sure that proper air pressure is being maintained to insure both long tire life as well as optimum safety. Aviation tires have a number of unique characteristics that make a simple visual inspection totally inadequate as a way to determine proper inflation. This is because they are designed to have a deflect ratio that is twice that of an auto and three times that of a truck tire. A tire that may simply appear to be filled to a normal capacity may, in fact, be under-inflated.



Aside from FOD (foreign object debris) on the ground, under inflation is the leading cause of tire failure that can even be catastrophic. In extreme situations, the tire may actually spin on the wheel severing the inner tube. Lacking proper pressure will also cause an abnormal increase in friction between the various layers that make up the treads. The heat generated by internal friction will cause these layers to separate from each other as well as the tire from the wheel. Also, both under and over inflation will cause improper wear on the treads that will reduce the usable life of the tire.

Checking for under-inflation is such an important step that it cannot be overlooked. In fact, a tire that has been operated below 90% of it's rated pressure for any length of time should be considered for replacement. This is because there may be internal damage that is not apparent from a casual observation.

Tire inflation should be checked before each flight because the loss of pressure can be as much as 5% per day in normal operation in certain situations. Tires exceeding this normal rate should be checked for abnormal defects. In addition, changes in temperature will have a significant impact upon pressure during a single flight from a very warm to a very cold environment. As the winter months approach this factor is especially important to take into consideration. The recommended rule is to fill the tire to optimal pressure based upon the coldest temperature that will be experienced. Another good rule of thumb is to initially fill the tire with air to 105% of the recommended pressure.

To insure compliance, the POH of the aircraft you are flying should provide you with the proper air pressure figures. Using this data, tires should be checked with a gauge prior to each flight. This is especially true for aircraft that are equipped with wheel covers since direct access to the stems are sometimes difficult to achieve. However, checking the tires, especially on the Archer, Arrow and the new Cessna can be made a bit easier by the new knee pads (car floor rugs) that were recently donated to the club. These can be found in the baggage compartments of selected aircraft

For those who wish to learn more about proper tire inflation issues, the FAA has an excellent course # ALC-269, The Importance of Tire Maintenance on Aircraft Safety.

Proposed Changes to the Rules & Regulations

As per the Rules and Regulations of the MAFC, as well as the By-Laws, any changes must be voted on by the membership after the proposed changes have been "advertised" to the membership two months (or two meeting cycles) prior to being voted on by the membership present at the third meeting. I sent out the following notifications after the regular September meeting and am now sending the same out following the regular October meeting in order that the vote on these items may take place during the regular November meeting scheduled for Saturday, November 19th.

The items to be voted upon are as follows:

1. The president shall not serve more than two consecutive one year terms. *Reasoning: No offense to Art Martone or Dave Pathe, who served the MAFC for multiple year terms as president, but change is good and the limitation allows new members to feel they can become more active and able to run for positions on the Board of Trustees and/or President/Vice President without feeling the entrenched leadership is in their way.*
2. Probationary members MAY NOT hold an elected office. *Reasoning: In most cases, probationary members are in that category for one year from the time of their admission to the MAFC. The probationary period is to allow the member to gain experience in the operation of the MAFC, as well as piloting skills. Following the designation to full membership, usually granted by the BOT after the completion of the one year probationary membership, that member becomes eligible to run for an elected office.*

3. Elimination of the requirement that TWO signatures are required on club related financial documents. *Reasoning: The By-Laws, as originally written and influenced by our former affiliation with the military, currently require two signatures on all club related financial documents, including checks and financial funds transfer between accounts. It has been common and past practice since the separation of the club from the military that the treasurer has been the sole signature on those documents. This allows our bills to be paid on a much more timely schedule as physical movement of documents are not required.*

Important Dates In Aviation for November

- November 3, 1998: The 50th Boeing 747-400 for British Airways is delivered.
- November 10, 1998: Despite the belief that BA meant “Boeing Always”, British Airways today placed an order for as many as 188 of the Airbus A320 series.
- November 16, 1970: The Lockheed L-1011 TriStar makes its first flight.
- November 18, 1977: Eastern Airlines puts the Airbus A300B2 on its service from Newark to Miami. This marks the first Airbus aircraft to fly for a U.S. airline.
- November 22, 1977: The Concorde is finally allowed to land in New York.
- November 24, 1971: A man later known as D.B. Copper hijacks a Northwest 727 en route to Seattle. After freeing the passengers in exchange for \$200,000 and four parachutes, Copper has the aircraft fly to Mexico. He then bails out of the tail door and is never seen again.
- November 27, 1962: Boeing rolls out the prototype of the Boeing 727.
- November 29, 1962: Britain and France agree to build a Supersonic transport.
- November 30, 1971: The Boeing 747-200 Freighter makes its first flight.

Of Special Note!

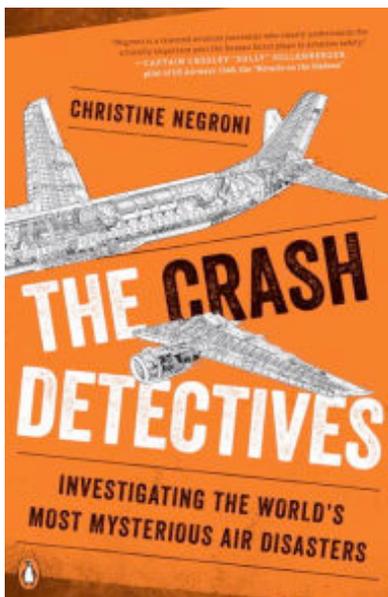
MAFC member and Pilot-in-Training Ollie Lin completed his first solo cross-country flight on 16 October, 2016 by safely aviating, navigating and communicating his way to KWWD and back to N12!
Matthew D'Angelo Instructor



Takeoffs are Optional, Landings are Mandatory



A Good Read: The Crash Detectives



In *The Crash Detectives*, veteran aviation journalist and air safety investigator Christine Negroni takes us inside crash investigations from the early days of the jet age to the present, including the search for answers about what happened to the missing Malaysia Airlines Flight 370. As Negroni dissects what happened and why, she explores their common themes and, most important, what has been learned from them to make planes safer. Indeed, as Negroni shows, virtually every aspect of modern pilot training, airline operation, and airplane design has been shaped by lessons learned from disaster. Along the way, she also details some miraculous saves, when quick-thinking pilots averted catastrophe and kept hundreds of people alive.

Tying in aviation science, performance psychology, and extensive interviews with pilots, engineers, human factors specialists, crash survivors, and others involved in accidents all over the world, *The Crash Detectives* is an alternately terrifying and inspiring book that might just cure your fear of flying, and will definitely make you a more informed passenger.

“Christine Negroni combines her investigative reporting skills with an understanding of the complexities of air accident investigations to bring to life some of history’s most intriguing and heartbreaking cases.” —Bob Woodruff, ABC News