Spring 2015

WINGS OF CAROLINA FLYING CLUB

Wings Newsletter

Inside:

Left Seat in a Beaver

By Brian Grant

Sometime last year, my interest in seaplanes was piqued and I did some internet research. I stumbled across Ryan Aviation Seaplanes in Palm Coast, Florida where they have an exquisitely restored 1953 de Havilland DHC-2 Beaver on amphibious floats - available for training. The claim was that a proficient pilot can earn a seaplane rating in the Beaver in two days. Perfect! The original plan was to take two days at the beginning of a mid-November flying vacation to Marathon, FL in our Warrior, stopping off in Palm Coast to get the rating in the Beaver on the way. That wasn't to be. The day before my appointment, a careless student switched both mags all the way off at the same time and then quickly back to one mag during a run up. Apparently on the big Pratt and Whitney 985 Wasp Jr. supercharged radial engine (450hp by the way), that causes a rapid fuel excess leading to a backfire leading to a destroyed magneto. During a fuel stop in Brunswick GA, I got a message from the seaplane base telling me the bad news. The plane was out of service for several days. We saw the Kennedy Space Center instead and it was excellent. That's another story...

A couple of months later in late January, I had rescheduled everything and hired Delta to fly me

to Florida. This time I had a fully functioning and beautiful DHC-2 at my disposal for two days. But alas, that turned into one day because of high winds on day 1. I then had to squeeze all the flying into the second day. This was going to be intense. People ask me, "Did you actually get to land it on the water?"

I did indeed get to land it on the water. 18 times, in fact, plus three times on a paved runway. I'm proud to say that my landings were pretty good. Of course I had the coaching from a good instructor sitting there in the right seat. The flying began with me doing the engine start on the P&W 985 Wasp Jr. engine. Oh, the sound was mesmerizing. And the engine was super smooth. After things got up to temperature, we started our taxi to the runway. Taxiing took some getting used to because I have always had nose wheel steering, and this was differential braking and rudder only. I took it slowly, and I got the hang of it quickly. I smiled as Dan (instructor) told me not to worry about the wingtips hitting parked airplanes on the ramp because our wings were high above anything else. They just

Continued page 6

A very brief history of navigation

By Barry Moore

Recently you may have seen on the news the *Philae* mission to launch a space probe from Earth and land it on a comet. Philae's mission was to land on the surface of a comet, attach itself securely, and transmit data about the comet's composition. An Ariane 5G+ rocket carrying the Rosetta spacecraft and Philae lander launched from French Guiana on 2 March 2004 and travelled for 3,907 days (+10 years) to Comet 67P/Churyumov-Gerasimenko.

I wondered how do they possibly 'steer' a space ship to meet a comet a gazillion miles away over 10 years? I got this explanation from NASA's web site:

For all U.S. interplanetary probes, the antennas of the Deep Space Network act as the measurement system. These antennas transmit radio signals to a probe, which receives these signals and, with a slight frequency shift, returns them to the ground station. By computing the difference between the transmitted and received signals, a probe's distance and speed along the line from the antenna can be determined with great accuracy, thanks to the high frequency of the signals and a very accurate atomic clock by which to measure the small frequency changes. By combining these elements, navigators can measure a probe's instantaneous line-of-sight velocity and range to an accuracy of 0.05 millimeter-per-second and three meters respectively, relative to the an-

Continued page 2

Contents

Early Navigation

tenna.

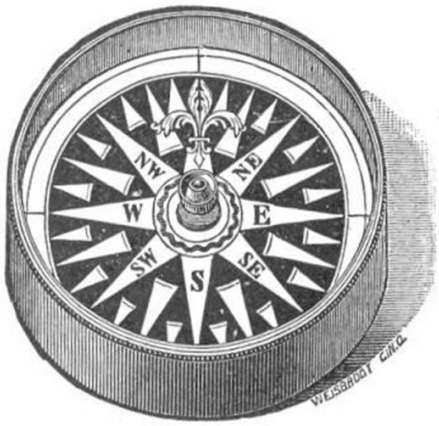
AMAZING …. It wasn't always so.
I did a little research into earlier navigation techniques and I thought I'd share these with you…

Just like us VFR pilots, ..the very first navigators made sure they kept sight of the land. Losing sight of the land was to be lost. Later our long lost ancestors developed more 'advanced' navigation by means of star courses. Between 3,000BC and 1,000BC Polynesian navigators for example journeyed many hundreds of miles between the many islands of the region, perhaps even as far as Hawaii by means of star courses passed down from generation to generation by word of mouth. This was a fantastic feat somewhat akin to memorizing all VFR sectionals for the United States. The details that would have needed to be memorized would have been quite considerable and their knowledge of the movement of the sun and the stars was extremely good. They knew how to apply the correct complex corrections to navigate with amazing accuracy.

Philae Probe

Early navigators were aware that on the equator the stars rise and set at the same points on the horizon through the year, by that the suns point of rising varies and that when viewed from north or south the stars have an apparent motion towards the equator. The night sky would have been like one giant star compass. In winter the night's sky is completely different than the summer so a completely new 'map' of the stars would have to be memorized. This was before charts or writing or alphabets remember.

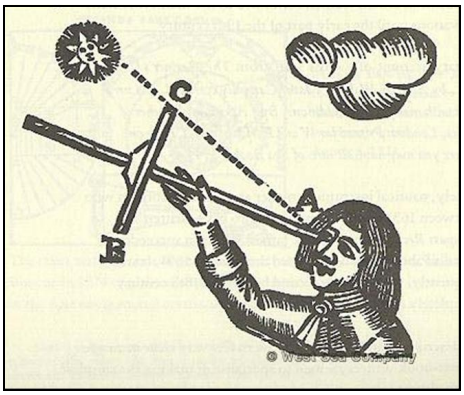
Half a journey would of course be in daylight so the memorized chart in your head of the stars was no good, therefore – a course was determined by observing the shadow of the mast and applying the appropriate corrections. On cloudy days and nights however ocean swells could be detected by the navigator from the movement of the boat. Waves are results of local wind, but swells are generated by strong prevailing winds, such as trade winds and they maintain direction over long distances. Great skill was required from the navigator to differentiate between the motion of the boat and the swells. It is said that many navigators sensed the motion of the swell through their testicles, the most sensitive part of the anatomy available. What you call 'navigating by the seat of your pants'. I don't recommend this in a club 152.



It is not known whether it was the Vikings or the Arabs who were the first to use a compass. For a long time it was understood that the lodestone was known to have the ability to magnetize a piece of soft iron for a short period, and when pivoted it was able to point north and south. Ordinary peoples of the middle ages no doubt thought this was witchcraft.
Next came the original wind rose of the Greeks which showed the 8 points of the principal winds and this was later subdivided into 32 and then 64. Real charts only appeared around the 13th century. These first maps were closely guarded secrets as they undoubtedly gave huge competitive advantage to the merchants and seamen who managed to obtain one.
So now we have a compass and we have a map. How do we navigate? Dead reckoning was still being used to estimate longitude with the course being read from a compass and time measured by the cabin boy repeatedly turning a sand glass (think a big egg timer). Accurate recording of speed remained difficult. One technique was to use a piece of floating wood and measure the time it took for the 'wooden log' to travel the ships length. This was originally known as the Dutchman's log and later give it's name to the ship's log – and the log book you use today.

Later advances seen a piece of rope attached to the log and streamed astern until outside the ships' wake. A series of knots were tied at set intervals and this allowed measuring time by releasing the remaining rope and recording the number of knots passing over the stern, thus giving speed in knots – now equivalent to one nautical mile per hour.

Our great, great, great…great granddaddy had a problem though… determining Longitude was a considerable problem! Today we are used to opening our iPhone or iPad and



hitting a button to see exactly where we are. But for many of the great explorers from Vasco Da Gama to Sir Francis Drake – as soon as they left sight of land they had only a vague sense of where they were. The problem assumed legendary proportions, on a par with discovering the fountain of youth, the secret of perpetual motion, or the formula to turn lead to gold. Spurred to action by a series of naval catastrophes, the British Parliament passed its famed 'Longitude Act' in 1714, offering a prize of £20,000(roughly $14 million in today's currency) for any device or technique that would enable mariners to find their exact longitude. They setup the Board of Longitude agency. This was likely the world's first R&D agency.
The whole trick to solving the longitude problem lay in being able to keep accurate time aboard ship while simultaneously keeping track of the correct time at the port of origin. By comparing the local hour at sea with the precise hour back home, navigators could convert a time difference into a geographical separation. Since the Earth is a sphere, 360° in circumference, and takes a full day to make one revolution, then each hour's time difference between two locations equals 360 divided by 24, or 15° of longitude. The de-

Continued page 3

President's Message

By John Gaither

We had a beautiful day for the Club trip to the aviation museum in Charlotte. About 40 members participated, taking most of the fleet as well as several privately owned aircraft. For those who did not go on the trip, I would recommend an individual trip. It is only about an hour flight, depending on which plane you fly. The 737 from "Miracle on the Hudson" is in the museum. They also have the actual C-130 that made it back from Desert One, when we failed to rescue the Iranian hostages. They have various other exhibits. One is the cockpit from a 727. It amazed me how little was automated in this old workhorse. If you ask John Hunter, he may tell you that this was one of the best planes ever built. It would be a great trip to take the kids. They will let the kids climb into the life raft from a 737 as part of the Miracle on the Hudson exhibit. (See Page 4 for more details on the trip)

The new Club facilities are substantially completed! The John Hunter Room is a new multipurpose room on the second floor. We have ordered new furniture for the second, which should arrive before this newsletter is published. We have a new simulator room, so pilots using our flight training device will no longer be interrupted by constant hallway traffic or suffocate in the small room because of the closed door. It also provides room for future more sophisticated training devices. We are still working on furniture for the lounge area and deck but generally intend for the first floor room to replace the current folding tables with round tables and for the deck to add some tables similar to the ones we have and add some separate seating. Let any board member know if you have suggestions. There will be opportunities to contribute to the deck furniture as we wish to minimize use of Club general funds for this purpose. Special thanks to those members who donated the funds to build the deck. With the new space, we have also been able to get FAA approval to resume

2015 President: John Gaither

Second Saturday medicals at the Club. The maintenance team has moved their tools and parts storage into the hanger annex. This provides a safer work area in the hanger, better parts storage, and room to add some desperately needed machine tools. (Contrary to rumors, the hanger annex is not a nursery for William Garlick -- the new addition to James' family – congratulations to James and Lenka.)

Hold the date! May 9, 2015. David Greenfield is planning a grand opening celebration for the new facilities for the Second Saturday of May. There will be good food, and some aviation related events. I am sure that there are many pilots who would like to have a rematch with Gene on a spot landing contest.

N613DR, the Mooney M20S, has arrived. James completed the "Screaming Eagle" STC modifications. The avionics are also being upgraded as it was not WAAS capable. James tells me that the modifications should be completed and it should be ready for check-out rides before the end of April. George will publish information on what will be required. N5726M will remain available until John sells it or '3DR is fully on line. (I flew '26M to Charlotte and it is still the smoothest flying plane in the fleet in my – some say misguided -- opinion.)

Many of you know that I spent the end of the year holidays and January in Colorado. I am back to North Carolina and resumed flying in February. Shortly after I returned, I went out with an instructor and shot some approaches and got night current. It never ceases to amaze me how rusty you get with a short break from flying. With weather improving, this would be a great time for all members to knock the rust off and get ready for the flying season. I hope to see you around the Club soon.

History of Navigation (cont..)

grees, in turn, can be expressed as nautical miles with the help of some further calculations. At the equator, where the girth of the Earth is greatest, 15° of longitude stretch fully 1000 miles. North or south of that line, however, the mileage value of each degree decreases. One degree of longitude equals four minutes of time the world over, but in terms of distance, 1° shrinks from 68 miles at the equator to virtually nothing at the poles.

Eventually a self educated English carpenter named John Harrison devised a virtually friction free clock –the Chronograph. This clock had no pendulum (a rolling sea plays havoc with a swinging pendulum), he used different metals to avoid changes due to contracting with temperature, and he avoided the messy oils that were common place in clocks of the time. His clock was verified by Captain Cook on one of his voyages around the world. Some historians claim that England's mastery over the oceans was because of its boom industry in navigation timekeeping that led to the British Empire. John Harrison died on 24 March 1776, exactly 83 years to the day after his birth in 1693. He kept good time indeed.

In more recent times with the invention of the airplane, navigation challenges became somewhat different. Because airplanes move many times faster than ships, air navigators had to move much faster to fix their position. Even minor calculations could result in much greater errors. Combine this with the natural roll of the airplane and combined with air turbulence to take sightings and readings. Remember your very first cross country? You all know what I'm talking about. The weather was a problem too of course as there are usually more clouds where airplane fly than where ships sail! Clouds keep navigators from sighting the sun and stars and determining wind drift. And of course airplane cockpits are much smaller than a ship's deck.

Today we have Gyroscopic compasses, Radar, GPS, moving maps and synthetic vision for navigation. So next time you are planning your VFR cross country and doing your calculations give a thought to the early Polynesians with their star maps, to Captain cook and his Chronograph and to NASA with their outer space atomic clocks.

Club Trip to Charlotte

By Wanda Jackson

On probably the finest flying day seen so far this year, 14 aircraft departed TTA for the big Class B experience of CLT on Sunday, March 8. It's not something GA pilots get to do on a regular basis. A lot of planning went into the trip to not only experience Charlotte Douglas International Airport, but to make it really worthwhile by visiting the Carolinas Aviation Museum. David Greenfield organized a very smooth trip.

David gave a pilot briefing so everyone knew what to expect enroute and upon arrival at CLT. Not only had he contacted CLT ATC to let them know a hoard of GA aircraft were planning to descend upon them during the Sunday mid-day push time, he had also contacted Approach for GSO and FAY to let them know we would all be requesting flight following. I don't know if it was the VFR weather or the fact that everyone knew we were coming, but ATC was particularly friendly and accommodating throughout the trip. David advised us of which runway to expect, which taxiway departure to exit, and who to follow to Wilson Air Center, the FBO.

We all departed on schedule around 11:00am for the approximately 45 minute trip through clear blue skies. For some of us, this was the first time entering Bravo airspace. David had grouped pilots and passengers with not only weight and balance consideration, but also experience. Those who had not flown into CLT before were paired with others who had. Upon clearance into Class B airspace downtown Charlotte and the airport were visible for miles before we arrived. ATC encouraged us to keep up our speed on approach. As we turned final for runway 36R, it became very obvious why we needed to keep up our speed. There were about 12 commercial airliners waiting to take off. No pressure.

After a box lunch at the FBO we boarded shuttle buses to the museum. The museum exhibits ranged from a reproduction of the Wright Flyer to the C-130 used in a rescue attempt of hostages in Iran in 1980. The star attraction was an Airbus 320-200, better known as US Airways Flight 1549 that made an emergency landing in the Hudson River in 2009. Any time you see an airplane that large inside a building is pretty awe inspiring. This one, however, was exceptional. The reconstructed aircraft still bore the damage of the Canada Geese strikes and subsequent river landing. It suffered further injuries while being removed from the water and transported to Charlotte, which had been its intended destination on its final flight out of LGA . The marks of the NTSB's investigation were still evident on the fuselage. Surrounding the aircraft was an exhibit explaining the whole event. So much to see from a flight that only lasted about 6 minutes.

Around 3pm we headed back to the FBO to settle up our fuel bills and preflight the 14 planes that would soon put a halt to departing commercial flights. It seemed that ATC was eager to get us out of there since they let us go one after the other without sequencing us between large jets. No wake turbulence to worry about. The trip back was uneventful until everyone started converging on TTA and joining the pattern. That was more exciting than Class B airspace!

(photos by Michael Hrivnak)

Transcontinental Air Mail system

By Jerry Wood

In today's world of aviation it is fairly easy to navigate from one place to another, day or night, good weather or bad, using radio navigation aids and especially with GPS. But in the early days of aviation, cross-country navigation was challenging and even dangerous. A century ago, before there was any sort of navigation aids, pilots used "Pilotage" and "Dead Reckoning" as their only means of flying from one place to another without getting lost. Even today, every pilot learns these skills during primary flight training, but these skills are seldom used as the primary means of navigation for long cross-country flights because it is so much easier to use radio navigation aids and GPS.

In the early 1900's it became apparent that pilots needed help in order to safely fly long distances over sparsely populated areas, and especially the Central plains and Western deserts, at night and in bad weather, when finding landmarks on the ground was difficult or impossible. Many U.S. Airmail pilots flying cross-country were killed. They could not fly at night. So in the early 1920's the U.S. Post Office Department (now U.S. Postal Service) decided to implement a system to assist Airmail pilots with navigation and allow them to fly cross-country at night. The Transcontinental Airmail System, became operational in July 1924.

The Transcontinental Airmail Route System consisted of light beacons placed at intervals from New York to San Francisco via Chicago.

The beacons were on top of steel towers about 50 feet tall and were powered by gasoline generators. The tower and generator shack were mounted on cement slabs that were shaped like an arrow. The arrow pointed to the next beacon. The slabs were painted yellow and were approx.. 10-17 miles apart, closer in the mountains.

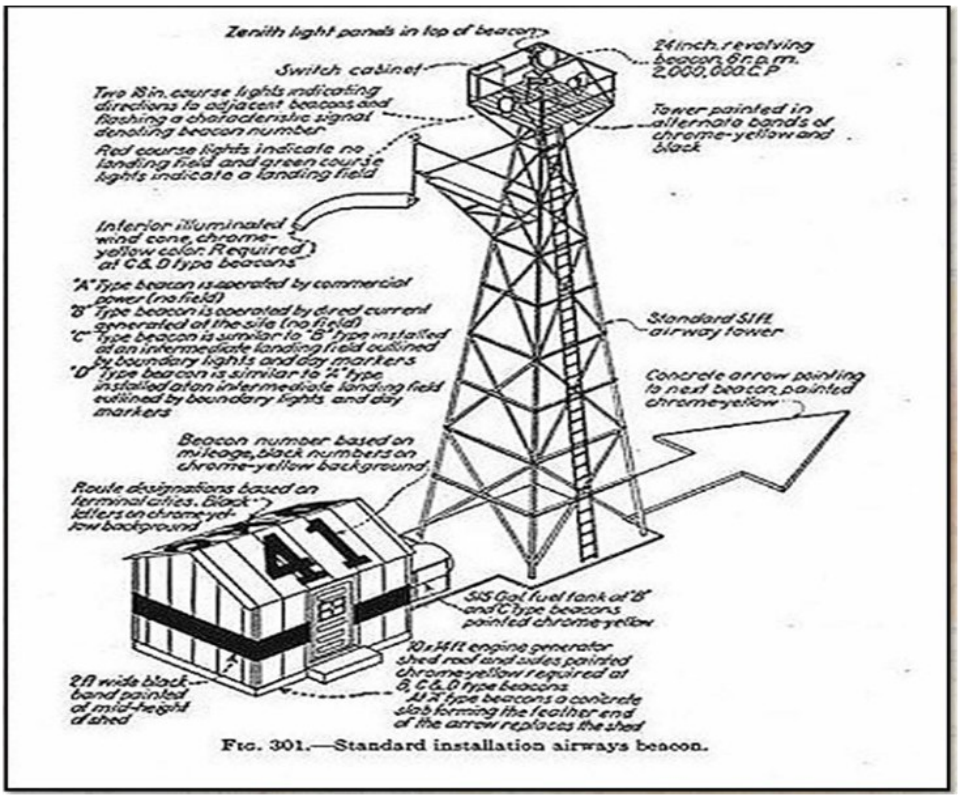
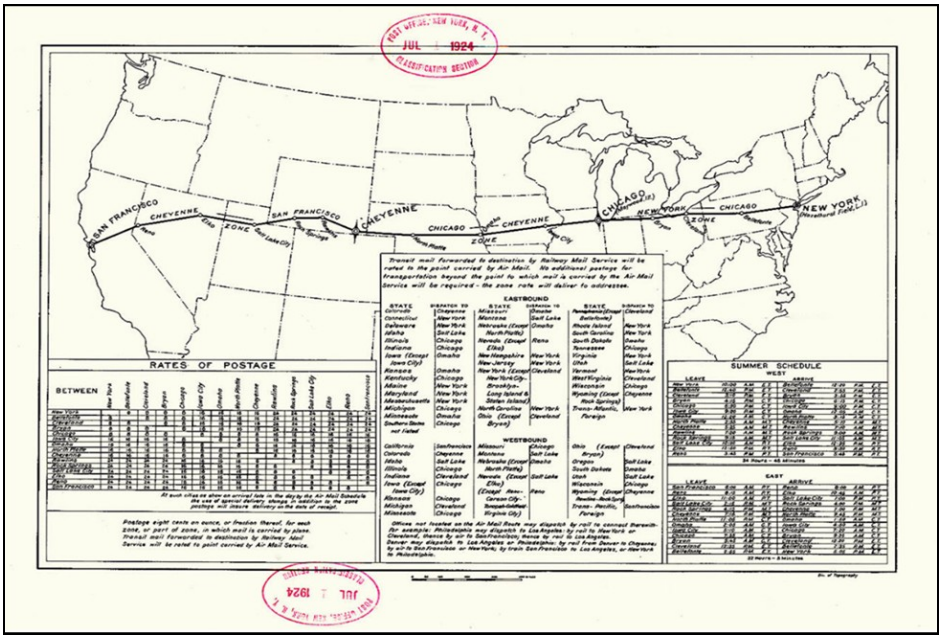


FIG. 301.—Standard installation airways beacon.



Diagrams courtesy of FAA.

Left seat in a beaver (Cont)

go right over everything! The machine is massive. We got our takeoff clearance from the tower and as I rolled onto the runway and turned to line up, I felt like I was already flying since the sight picture was so high off the ground. It seemed like I was rolling a 757 onto the runway! Once lined up, the power gently goes up to full power of 36.5" and 2300RPM. That's not all the way to the firewall for the throttle, because with the supercharger and everything, you have to move the lever to max power and stop there. No more. You can run at 36.5" for 2 minutes, then back to 33.5" and 2200RPM for max continuous, where you can run all day every day to TBO, so I'm told. Cruise power is 29" and 1900RPM, which produced a lovely leisurely growling hum from the radial. Flaps are used for everything and are actuated by a hydraulic hand pump mounted between the seats behind the gear selector console. You even use flaps in cruise, where you keep in 7 degrees to keep the nose down. The airplane was equipped with a drooped leading edge STC and STOL kit, which required this. The ailerons are interconnected with the flaps, so as you put in more flaps, the ailerons droop too.

In cruise, the airplane was solid and stable. Not upset much at all by the bumpy thermals as we cruised at 1000ft over the Florida countryside. It was neat to look out the window and see that LARGE float out there in the breeze, way below me. Despite the hulking size of the 8 seat airplane and its floats, the flight controls were very light, and it was almost unnecessary to ever adjust the pitch or rudder trim throughout all phases. Those controls were on the ceiling.

At the lake, we assessed the water and wind conditions and Dan demonstrated a normal landing, step taxi, and normal takeoff. Then the airplane was mine again for me to do the same. He was very hands-off with the controls, but coached me through it all through the headset. For me, power management was a big part of it - almost distractingly so. That engine requires gentle and precise adjustments. After all landings, pull the power off and the yoke all the way back. The nose is dramatically high for a moment, and then as the plane comes to rest, the nose goes level and a wisp of spray hits the prop creating a neat visual effect. When the plane is fast on the water, during landing, takeoff, or step taxi, there is a lot of spray off to the sides of the floats creating a neat view in my periphery.

We did three flights in all that day. I did normal takeoffs and landings, rough water takeoffs and landings, glassy water takeoffs and landings, engine off sailing, docking, idle taxi, step taxi, and simulated engine failures. Water traffic patterns were at 500AGL, so you can see the water better. It was neat to see the wake on the lake dissipating from the previous takeoff. Simulating an engine failure at 500FT abeam your touchdown point resulted in a need to push the nose WAY down to maintain 80mph through the turn to a landing. With all that drag and no power, the windshield must be full of water, no sky.

The step taxi required a lot of right rudder with that 450hp, even in the left turns, with the tricky combination of lots of right rudder pressure with tiny movements. The plane responded dramatically with very little rudder changes, all with loads of pressure on the right.

The glassy water takeoff was a highlight. Yoke full aft and max power. The nose has a first rise, then a second rise. No forward visibility over the cowling. After a while, push forward onto the step. Then left aileron and hold that until the right float lifts off. Nose straight with rudder. You can feel the acceleration pick up when the right float comes off the water. Then, the left float lifts off and the acceleration really accumulates. And then away we climb!

As I said, I couldn't fly the first day because of high winds, so I only had the one day to fly. Late in the day, bobbing around on the water before heading back to the airport, Dan and I agreed that a check ride was not prudent at that point. I wasn't ready. I wasn't prepared to do all these things on my own in front of an examiner with no coaching while managing that beautiful beast of an airplane. Someone had the plane booked the next day so I was done. He noted that I never gave up at any time on anything. I was glad to hear him say that. The day was a lot of work and I was spent. So I did a normal water takeoff and we had a smooth and beautiful flight back to the airport for a straight-in landing on the runway. It was a greaser. My emotions were all over the place.

After the debriefing and a handshake, I left the airport with my tail between my legs feeling like a failure. I drove straight out to the beach and stared at the ocean in solitude as the sun set, trying to sort myself out. Brian T. called my cell phone and I told him the story. He offered good perspective on the whole thing. With that perspective and that I gained while on the beach, I realized there was no failure at all. True, I didn't get my rating, but that really wasn't the point. The point was the experience. How fortunate am I to be able to have that experience in such an iconic airplane! And I loved it. All of it. And I got the nice entries in my logbook, too. I'll probably still go for the rating at some point.

The next day, and the day after that, I was surprised and amused at how sore my legs were. I knew I had worked hard mentally, but as it turned out, I had worked hard physically. The plane was easy to control in the air, but required a lot of legwork on the water. I hadn't realized how much work until the soreness set in. Dan wore jeans and I couldn't tell, but his legs must be massive!

As a footnote, AOPA did a story with great photography on this particular Beaver and Ryan Aviation in 2013. It can be seen at: http://www.ryanseaplanes.com/AOPA_June2013_art.htm

The 30,000' interview with Roger Montgomery

How did you get started in Aviation?
I've been around aviation in one form or another most of my life. I grew up near an Air Force Reserve base that ran sorties constantly, and my family had a friend that was a civilian employee there. I remember being in such awe of it when I got to tour the tower and airfield with him.

In the military, I worked on electronic equipment that was used to service aircraft, and then after the military, I worked as a ramp agent for an FBO at a large airport for a while. I've always wanted to fly, but never had any clue how to realize that dream... until now.

Funny story... I've got a friend and former colleague in Florida that flies. He had been telling me for YEARS that I need to get into flying, that it is 'right up my alley'. I always dismissed it, due to cost, and time. Fast-forward a few years, and I finally got a chance to move from FL to NC, and right before my 40th birthday, I get an itch to do something different. My friend brings up the flying thing again, and I decide to give it a go. So we start looking for places to try it out, and we did see the club's website, but I wasn't sure I'd like flying yet, so I wasn't ready to commit to it.

I started to do some more research, and remembered that Kennebec Flying Club was right up the street from me. I took a ride up there, and just happened to catch them on a day they had a gathering going on. I talked at length with several of the members, and one had informed me that he had taken lessons at B Bar-D, and told me where it was. I looked them up, and gave them a call. I went up for a Discovery Flight, and it scared the pants off of me.. but I loved it all at the same time!

Nevertheless, I was hooked, and I had gone back for my first official flight lesson. I have to be honest, the LSA's didn't exactly impress me, especially looking at the ramp full of Cessna's, and Pipers (which I found out later, belonged to WCFC).

Immediately after my 1st official flight lesson, I wandered over to an open hanger next door, and was watching a gentleman work on a C-152. It turns out, that gentleman was John Hunter, and it was right after a Second Saturday even in May. We spoke at length about many things aviation, and that's when I got my first lesson about Primacy of Learning! I was given a tour by another member, and I instantly knew this is where I wanted to be!

Roger Montgomery

Where did you learn to fly and in what aircraft?
Here at Wings, of course! I started flying in the Piper Warriors, and did all of my flight training in them. It wasn't until after I had my ticket that I began flying the C172's as well. Since starting with the club, I've had the opportunity to fly several aircraft... I can't wait to fly more!!

What are your total hours?
I have around 140 hours. I'm working on my instrument rating now, so that number will go up a lot more soon!

If you could change something about general aviation today what would it be?
Cost, and technology. This is a great hobby, but still expensive! The technology still has a long way to go, I do believe it'll get there. Being an engineer and techie myself, I love watching the advances in tech and the gadgets that go along with them!

Have you ever had an Emergency?
Thankfully, no. but I continue to practice for them. I attend Safety nights to learn more, and I'm always reading up on articles in Flying magazine!

Where is a great place you love to fly to from TTA?
Being a relatively new pilot, I'm still learning to stretch my wings out. I do love going to Roxboro for dinner, and flying to Charlotte as PIC recently was REALLY exciting!! I've flown to Florida and Savannah, with another member (got to drool over some F-18s there), and different parts of NC and VA. I have several spots on my wish list, including Ocracoke, and the Wright Brothers Memorial, and flying to Pittsburgh to see a Steelers game!

What makes a great pilot?
Wow.. Being a relatively new pilot, that's not an easy question for me to answer. A couple of things that come to mind is awareness, and attention to detail. Oh, and PRACTICE!!

If you won the lottery tonight, what airplane would you be flying tomorrow ?
I have to pick just one??
I think I'd have to get two. I'd probably have to get a Cirrus and a Vans RV.. Maybe a 12 or 14. That way, I'd have one to fly, and one to build!

What is the most fun you have had in an airplane?
When is it not fun in an airplane?? I tell people that my Zen place is at about 5000'. I have plans to have more fun in (and out of - think SKYDIVING) an airplane. I'm also planning on sharing more flying experiences with my little girl. The weather hasn't been the best the past few months, and I'm watching for sunny skies!!
One of the most memorable has to be my checkride. I was scared to death, but knew Gene had prepared me well. I had opted to go with Zenda, and I had heard so many things about her checkrides. As it turns out, that was one of my favorites. Zenda is super nice, and we had a great time!

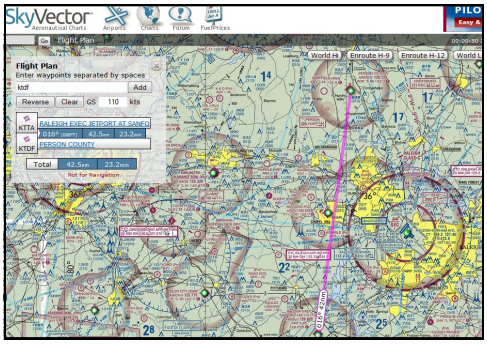
Cross country planning resources for VFR Newbies

By Gary Wrayno

I received my private pilot's license in October having flown only in 152's. Since October, I have gotten trained on 172s and Warriors so I can stretch my distance, have a bit more room and have more flexibility on carrying passengers.

I hesitated about the thought of having anything of interest to say in a newsletter because I am so new at flying. In planning for the first cross countries of spring, I have been talking with fellow pilots about places to go and tips on planning. From those conversations, it seems other new pilots might benefit from a few resources I use.

The club requires a navlog for cross country flying and I have found two resources very helpful when planning routes. Skyvector.com has been very helpful for me. Skyvector is internet based and free. I use the Flight Plan feature frequently to plan possible checkpoints, to access airport data and to measure distances between them. It draws a line between requested points and alloes easy drag and drop adjustments to waypoints or airports. I find it handy for routing around Class B or C airspace, MOAs and restricted areas. It also serves well in comparing my measured distances from my sectionals to the values Skyvector arrived at. Should you use Skyvector, beware the course headings that they show. A very detailed explanation of their methodology is available at http://skyvector.com/content/magnetic-course-numbers-few-degrees#comment-1427.



The second feature of skyvector that I use extensively is the Airports data. Once a route is entered, one can click on the airport link and reference all key data required for the navlog. Elevation, runway lengths, frequencies, nearby navaids, phone numbers, an airport satellite picture and airport remarks.

The second resource from the internet that I like to use is Google maps hybrid view's Measure Distance feature. Once I have selected a route and checkpoints, I like to use Measure Distance to draw a line on my map between the checkpoints and airports I intend to use. By following the line and on the map and zooming in, I have a fresh reference on what the checkpoint will look like from the air.
To see the distance between two points in the new Google Maps, you can now use the right-click menu.

1. Open the new Google Maps.
2. Right-click on your starting point.
3. Click **Measure distance**.
4. Click anywhere on the map to create a path you want to measure. Click to add additional measuring points.
5. [Optional] Drag a point to move it, or click a point to remove it.
6. Look on the map and under the search box for the distance.

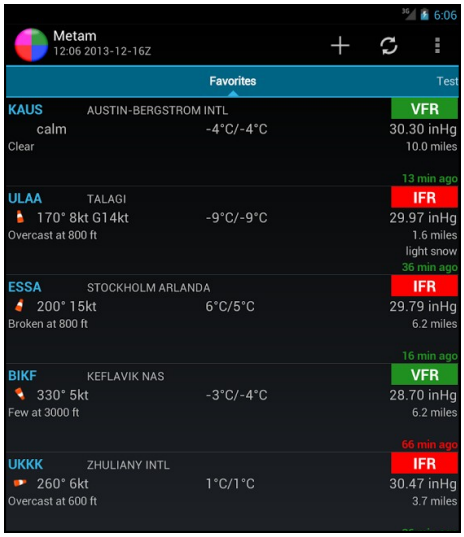
When done, either click the “X” in the card under the search box or right-click on the map and select **Clear measurement**.

In addition to the internet resources, there are numerous free phone or tablet apps. I am an Android user and thought I would share the ones that I use most. Additional information is available in Google Play,

AvAre is the most robust and most valuable app I have. It has a moving map displayed on a sectional that is awesome. I have used it to validate that I have not unintentionally entered Class C airspace west of Raleigh and also to double check on my checkpoint locations. It has a Find Airport feature that displays distance, heading information, altitude and ground speed. You can elect to display obstacles onscreen and also runway extensions. It also includes an A/FD.

METAM is an aviation app. You create your favorite airports and it displays the METARs on screen for all of the airports you entered. It has a side button with a map function and that displays any one of a number of conditions: Color-coded current status for VFR/MVFR/IFR, Visibility, Lowest Ceiling, Altimeter, Temperature and Wind Speed are what I commonly reference. You can also select an airport and pull up the latest NWS forecast with radar and satellite data.

FlyQ Pocket is AOPA's application. It has a Nearby feature with distance, heading, runway orientation and elevation. A quick click on the airport brings up a satellite picture of the airport, communication frequencies runway heading and dimensions. It also has a Services selection with names of vendors and an easy link to dial the number with one touch.



VFR Digital is a rudimentary application that has a Nearest Airport capability with distance and heading information. It also has a Panel function with ground speed, altitde and track. I do not use it frequently but have it
as a backup

Continued page 9

should a failure occur and I want a second option.

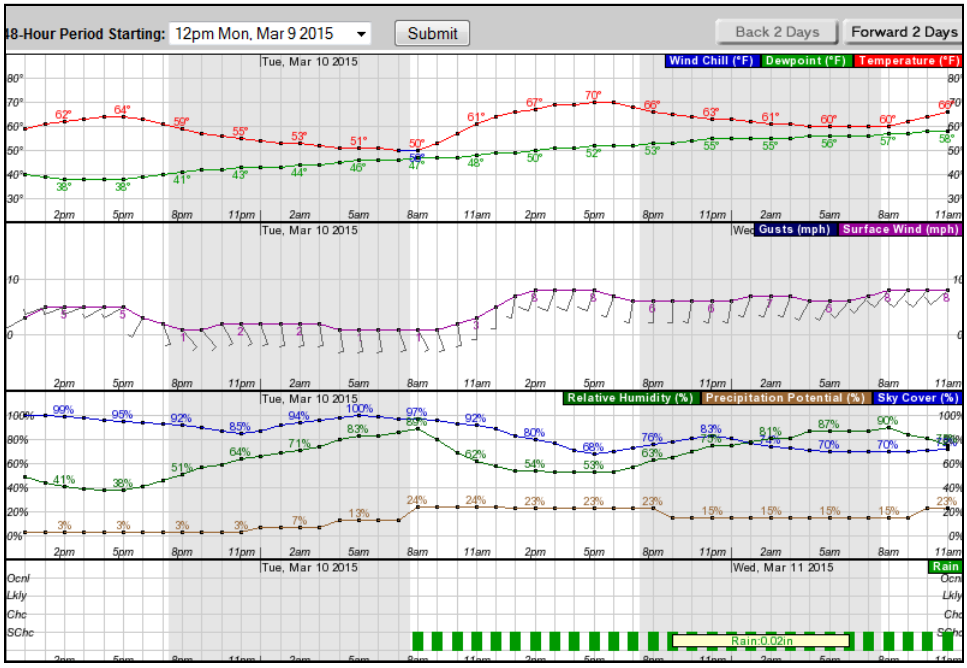
Aviation Weather provides NOAA data to the phone. Radar, satellite, winds aloft, METARs and TAFs and Area Forecasts are available.

Aircraft VOR Free is cool tool. You can tune to any VOR you choose. The free version stays active for 3 minutes and you have to refresh it to use it longer or but the pay version. Because it uses the GPS rather than the radio, you can reference a VOR from any distance. As an example, you could set up 80 miles from your destination and spot check it until you get in range of your actual VOR.

Flightwinds and **The Pilot's Friend** are both graphical crosswind calculators

I also have an application that Steele Scott showed me while doing check out in the 172. Cloudahoy requires a $45/year subscription fee. It is essentially a debriefing tool for flights that you have recorded. It records altitude, heading and speed for your flight and displays it via Google Earth in 3D. It is very informative (and can be humbling) in letting you know how consistent your air speed was on approach, whether you were centered on the runway, how rectangular your pattern work was, how symmetrial your steep turn was, how much altitude you lost on a stall and the like. It also can generate a link that can be shared with non-Cloudahoy users that is nice to share with a passenger to show the route a flight you have taken them on.

Another free internet resource is the hourly forecast from NOAA and NWS Weather Service. http://www.weather.gov/rah/ I select Forecasts, Hourly View and Sanford.
It shows precipitation, temperature, wind and cloud forecasts and Sanford is one of the selectable options.



David & Patrick's Corner

By David Greenfield & Patrick Lofvenholm

The first article in a series that will span the next few issues of our newsletter, this corner will be a journal of the places we go, the restaurants we find and the people we meet. It will only be a few paragraphs, just long enough to pique your interest without making you skip to the next page. Our adventures are in search of the illusive 1500 hours of total time in the most economical airplane in the club while getting to see the state and actually learn something along the way. These trips are not club trips but we always welcome anyone else to join us in another airplane, we just don't provide the same level of detail or organization as demonstrated on our last trip to Charlotte. Some flights have a mission, others are meant to supply us with dinner and flight time. Since we started in October, I have some recapping to do….

10/23/2014 N69012 TTA-GSO-RDU-TTA. *"The Start of a Great Adventure"*
The first adventure flight with the initial purpose of going to Burlington to eat at the Cutting Board. When we were in the air headed to Burlington, we found out we weren't very hungry and really just wanted more flight time. We performed a touch and go at GSO and then over Kernersville for a photo flight over my parents house. 65 knots on final was quite an adjustment for me. Afterwards, a flight at dusk with a night touch and go at RDU before leaving the area for TTA. Total flight time: ~2.5

11/21/2014 N309CD TTA-CTZ-ILM-W03-TTA. *"Best Lobster Dinner in NC"*
David needed an Instrument Proficiency Check which needed to consist of a number of instrument approaches, a holding pattern and tracking and intercepting a flight path. As the instructor, I was riding to confirm David could safely execute all aspects of an instrument flight. David flew the ILS for runway 35 into Wilmington, which allowed me great visibility of Carolina Beach and the pitch black ocean beneath us. As we turned onto final, I could see the UNC Wilmington campus lit up with street lights. We had a great dinner at the Shuckin Shack consisting of oysters and lobster. We departed and I got dropped off at W03 after a quiet flight up I-95. We discussed lean of peak operations and how to properly isolate problems in the engine. Total time: ~3

1/28/2015 N89433 TTA-VUJ-BUY-TTA. *"Who Knew Albemarle had Steak"*
Stanley County had a NOTAM for runway lights being turned off after 8:30PM, which piqued our interest. We flew to VUJ and talked to the tower controller about the NOTAM. We found out C-130s would be using Night Vision Goggles to do low approaches into the airport. Yelp recommended Yadkin Valley Steak House, so we asked for a crew car and drove the quick 5 minutes to the restaurant. For $20, a great steak with sides was had in a quaint steak house that reminded us of a small version of Angus Barn. Instead of flying to Person County, a few landings at Burlington

Continued page 10

David & Patrick's Corner (Cont)

was a better choice based on the time. We experienced our first wildlife runway crossing and as we left the airspace, an inbound pilot reported seeing 6 deer cross the runway. This reminded us of the low approach to clear the runway of wildlife, which we have continued to do since. Total flight time: ~2.5

2/4/2015 N89433 TTA-EQY-AFP-TTA.
"Freezing cold but worth it"
David and I decided that we would alternate short flights with restaurant dinners versus long flights with a quick dinner, typically a sub or sandwich we bring with us (BYOD). This night was a longer flight with bringing our own dinner. An uneventful flight but it was absolutely freezing. Wearing gloves, sweaters and running the heater as wide open as we could, we hoped the FBO would warm us up while we ate. We finished our subs and flew to Anson for a touch and go. We flew over a large truck depot that turned out to be Valley Proteins, which was very active for8:30PM. Total flight time: ~2.5.

2/11/2015 N89433 TTA-TDF-DAN-TTA.
"Night time Pilotage to Homestead"
David and I do these flights for fun, and always welcome anyone to come with us. This night we welcomed the company of Harrison and Bryan to Person County and Homestead. Once we landed at TDF, we called Homestead and they came to pick us up. There was an all you can eat buffet that a few folks picked, and I ended up getting a steak with a sweet potato. Wanda ended up bringing me *two* sweet potatoes, she knew my young bones needed the extra vegetable nutrients. After dinner, David and I flew to DAN for a touch and go and based on how late it was, decided to go back to TTA instead of a further flight to MTV. Total flight time: ~2

2/14/2015 N89433 TTA-MYR-TTA.
"Valentine's Turbulence"
Being Valentine's Day, any hopeless romantic would want to at least see their Valentine, most are lucky. I on the other hand, have a girlfriend in Charleston, SC who is an accountant. During busy season, I don't get to see her much but we still talk every day. My plan was to surprise her on Valentine's Day by flying with David to Mt Pleasant and driving a crew car to her house with an early dinner so she could relax after working that morning. It was second Saturday, and no one was flying at the club-it was too windy for most. We would feel our way through the flight and, as any good flight crew, constantly update our decisions with current data in the flight instead of forecasts. Once we climbed to 3000 feet, it was still bumpy so we climbed to 4500 feet looking for smooth air. By this time, we were already at the SC border but getting bumped around the sky for the next 45 minutes in addition to the bumps on the way home wasn't our kind of fun so we decided to land at Myrtle Beach International. During this leg, David was the flying pilot and I was the radio (monitoring) pilot. The winds were 250 at 22 knots gusting 29 with a runway orientation of 180. That's **70** degrees! We were holding up a Spirit Airlines A320 from departing so I apologized to him on the radio, but he came back with "that's quite okay, this is totally worth it" with a chuckle. Yes, we were getting bumped up and down the elevator ride on short final but David made a great landing and immediately put the correct inputs for the crosswinds on the ground. We taxied to the FBO and roped the plane down so it wouldn't fly away. We walked inside and took a breath before deciding to return to TTA. The flight back was uneventful, other than the constant turbulence but David and I got to teach each other some turbulence and crosswind techniques that we tried. I didn't get to see my Valentine, but we did get a bunch of flight time out of the attempt. Total flight time: ~3

2/19/2015 N89433 TTA-CRE-TTA.
"Beach Sub"
Tonight was a long flight and a BYOD night. Subway subs and a cold flight to Grand Strand brought us to the FBO where it looked like the personnel were surprised someone would be out flying on such a cold night. We ordered some fuel and ate our sandwiches. On departure, I was the left seat flying pilot and quickly found out there is an air gap the blows directly on the left hand position of the yoke, which meant I should have been wearing my gloves. We departed and turned north over the beach, with the security lights basking the white caps rolling into the beach. Total flight time: ~3

3/6/2015 N89333 TTA-ILM-TTA.
"Seafood Bucket"
Tonight we needed some more lobster for dinner so we flew to Shuckin Shack. It turned out that Wilmington was having their "Restaurant week" and meant that David and I could enjoy 2 lobsters, oysters, clams, and mussels for $50. The bucket full of this seafood was finished and we were stuffed. We got some of the free cookies at Air Wilmington and headed home. The moon was full and the fields were reflecting the light nicely. We attempted night time pilotage, with our backup iPads if needed, and didn't have any issue getting back home. Total flight time: ~2.5

3/13/2015 N89333 TTA-W17-TTA.
"No really…. I flew to get here"
A last minute change of plans required my immediate landing at the Raleigh East airport, and then allowed us plenty of flight time afterwards. David and I flew over the Fuquay-Angier airport, Eagles Landing and a few other grass strips near Siler City. The forecast for the night showed worsening conditions but it was a great night with 6000 foot overcast and rain showers floating around the area. Visibility was otherwise great and the air was calm. Total flight time: ~1.5

3/14/2015 N309CD TTA-CHS-TTA.
"Are you sure you don't want to take a 152?"
The rain and low clouds were a perfect day to allow for instrument practice. Entering IMC at 150 feet over the runway gave David and I a few seconds to say good bye to the trees around us. We climbed to 3000 feet and headed to the Sandhills VOR (SDZ) to go around the R-5311 area. Having come from Oklahoma, I was well schooled on how to know when instability in the air is conducive for tornados, and sure enough we were around the SC border and needed to deviate 20 degrees away from the inbound cell causing the instability we were feeling. Florence allowed us to deviate as necessary which allowed us to smooth out the ride. Charleston cleared us for the ILS 15 and we joined the conga line inbound. We broke out of the clouds at 800 feet which gave us a great view of an F-18 taking off with full afterburner. The tower didn't appreciate my Top Gun reference to confirm I had the departing traffic in sight "Roger tower, too close for missiles switching to guns." Another F-18 was holding short as we landed, and David did a great job with a very tough crosswind. We took a courtesy car from Atlantic Aviation and drove to the Tattooed Moose for a late lunch. Having been featured on Diners, Drive-Ins and Dives, the Moose offered up a great Duck Sandwich and French fries that had been fried in duck fat. I flew the return flight and reacquainted myself with Cirrus flying from a previous life. Total flight time: ~3.5

The Killing Zone

By George Scheer

As many of you know, the WCFC has recently suffered another landing incident that will send one of our 172s to the shop for many months, inconveniencing members who will be without one of our most popular airplanes for the summer flying season, reducing its market value, and no doubt displeasing our insurance underwriters. The incident was a classic pilot-induced oscillation, an event that continues to stubbornly reoccur on a regular basis at the club, concerning all of us who worry about the safety of club pilots and the survival of our fleet. If you are not familiar with the term PIO or the aerodynamics that drive the event, please talk to a club instructor before it happens to you. Both John Hunter and I have numerous times distributed papers to the club intended to educate us all about the phenomenon and spare us from one of our own. Those documents are available for the asking. The damage from a single such landing will typically exceed $50,000 and take months to repair and a PIO is entirely capable of totaling an airplane.

I have recently been rereading ***The Killing Zone***, a 2001 book by Paul Craig, a flight instructor and director of collegiate aviation programs. (A second edition is now available.) The colorful title is Craig's description of that period in the flying life of a pilot between 99 and 299 hours of total flight time – a period during which the great preponderance of aviation accidents occur. Without quoting numbers in detail, it is safe to say that for the twenty-year period prior to the book's publication, the number of accidents that befell pilots in that stage of their career was roughly double the number of accidents that occurred to pilots with more than 300 hours total time and, interestingly enough, pilots with fewer than 50 hours. The small number of accidents occurring to pilots below the 50-hour threshold seems clearly attributable to the supervision that is part of the flight training process. Simply put, flight training is relatively safe because student pilots are kept on a short leash. This seems to be true for both primary training and subsequent training levels.

In 1974, the NTSB published a study of weather-related general aviation accidents and, in its final report, concluded: *"Pilots with fewer flight hours were more frequently involved in weather accidents, especially those pilots with more than 100, but less than 300, total flight hours. Perhaps the explanation for the peak is that by the time a pilot has accumulated 100 to 299 hours he is confident of his flying ability even though his actual flying experience is low."*

Those of you who have been flying for a few years may recall that prior to 1986 a pilot was required to have 200 hours of flight time before qualifying for an instrument checkride and obtaining an instrument rating. In response to this study and others, the FAA took the interesting, and apparently paradoxical, step of reducing the time requirement for the instrument rating from 200 to 125 hours total time. Why would the FAA allow us to acquire an instrument rating with less experience rather than more? The hope was that by keeping an ambitious pilot in training, in this case toward the instrument rating, the safety benefits of the training environment would protect the pilot until he had passed through that dangerous zone. Today the time requirement for the rating has been eliminated altogether and the reduction in required unsupervised VFR flying has made a statistical difference. Nonetheless, the second and third hundred hours in a pilot's logbook remain by far the most dangerous pages.

When I read Craig's book upon its publication, I was, however troubled by his use of statistics. He graphs total numbers of accidents on the Y-axis against pilot flight hours on the X-axis, which fails to account for the number of pilots falling into each category of flight hours. My suspicion was that the graph of accident pilots in each flight time category might somewhat resemble the graph of pilots in that category -- that the striking spike in accidents in that killing zone period might be an artifact of the total number of pilots that fall into that category. We must understand that frequency and rate tell different stories and that the apparent spike in accidents in the low range of pilot hours may be a result of the number of pilots occupying that statistical bin and that the apparently skewed graph of accident frequency quite resembles that graph of pilot segments by total time. In other words, the ratio of accident to non-accident pilots in that killing zone category might not be so strikingly exaggerated. I recently found a critique of Craig's use of statistics that seems to confirm that suspicion, but in which the author concludes after a rather sophisticated statistical analysis that the killing zone is actually broader than Craig supposes, extending out to approximately the 2000-hour point for both VFR and instrument-rated pilots. This is a sobering thought for the many of us who fall into this range. (Knecht: *The "killing zone" revisited: Serial nonlinearities predict general aviation accident rates from pilot total flight hours.)*

What are the implications for the Wings of Carolina? Fortunately, the club has had very few serious accidents in its fifty years of operation. However, we have endured a stubbornly consistent record of incidents resulting in aircraft damage, most of them landing accidents and most of those involving pilot induced oscillations of the sort that damaged 972WW.

We do know that low recent flight time and low time in type are both leading indicators of accidents. When we look back at the accidents and incidents that have occurred to the club fleet over the years, we see that a large majority of those events have occurred with pilots at the controls who were inexperienced at their type of operation. They may have been new private pilots; they may have been new to the Warrior or the Skyhawk or the Mooney. They may have been inexperienced as an instrument pilot, or inexperienced at taking long solo flights, instrument or otherwise; they have been inexperienced in weather flying or night landings or landing heavily-loaded airplanes. The one common thread to all of the accidents was inexperience at the specific level of operation. There is a temptation to conclude that we simply need to keep a leash on pilots who are expanding their horizons, exercising their newfound achievement. That was my first conclusion after an analysis of club incidents. Upon further reflection, I realized that this is a deceptive statistic because it does not help us differentiate or discern the pilots who are likely to have difficulty. Why? Because we all fit that profile. That is what we do at the club, we drive our members toward inexperience as we step them up through the fleet, through their training, and toward new challenges. Just because all of the accident pilots have red hair does not mean that red hair is the proximate cause of accidents, particularly if we look around and realize that all of we pilots have red hair. It is also true that the vast majority of club pilots involved in accidents have been men. May we conclude that the Y chromosome is antithetical to aviation safety? Of course not. The vast majority of club flight hours are flown by men, so the subset of pilots involved in accidents will also be predominantly

Continued page 12

male. What else differentiates pilots who suffer accidents from those who do not? Frankly, I don't really know.

I do know that, as an organization, we make it possible, even encourage pilots to give up the safety that comes with familiarity and move into a new airplane with which we are unfamiliar, venture into the additional privileges that come with a new certificate or rating, expand our horizons and the utility we wring from our flying by essaying a more ambitious flight – a longer cross country, an instrument flight, a flight at night, a vacation flight with the family or a business flight that overlays social or professional pressures on to the go / no-go decision. I believe that we are, in that sense, a high-risk pool of pilots. This is what we do and we had best acknowledge it.

So can we tease out the qualities that characterize those pilots in our environment who are involved in accidents or incidents? It is not merely inexperience. Is it personal qualities: One of the hazardous attitudes about which the FAA cautions flight instructors? A taste for risk? Ignorance of risk management principles. Is it a failure to appreciate the consequences? Is it a deficiency in training? Shaky stick and rudder skills? Do we even have enough data to reach a meaningful conclusion? I don't know. I am unsatisfied with convenient answers and the longer I train pilots the less certain I am that I can foresee and predict those who will bend airplanes. I do know that, although our record is not atypical of the flight training industry, it coalesces into a recognizable pattern that we can either accept or acknowledge, analyze and endeavor to improve.

2015 Safety Seminar schedule

April 16, Thur - tentative date
May 13, Wed - Ronney: CFIT
July - no pizza Night
June 17 Wed - tentative date
August 25th - Mayday 101
Sept 15 or 17 - tentative dates
Oct 15,20 or 22 - tentative dates
Nov - no pizza night

Http://www.wingsofcarolina.org

WINGS OF CAROLINA FLYING CLUB

Back Page News

2015 Summer
Private Pilot Ground School
May 18 through July 13
(Mondays and Thursdays 7-10pm)

New Members
Orientations are every second Saturday 12:30pm to about 1:00pm.

Next edition
The next edition will be the Spring edition to published early August 2015. Start writing your articles now and send them to us.

Editors
barry.i.moore@gmail.com

MAIL ADDRESS LABEL GOES HERE

Wings of Carolina Flying Club,
702 Rod Sullivan Rd, Sanford,
NC 27330