



The Importance in Keeping your ELT Current

by Phil Fountain

ELT's are extremely important but a much overlooked piece of safety equipment in general aviation. The first thing most aircraft owners think of is the cost of purchasing one, especially the 406 MHz ELT which is around \$1500. Owners can install expensive glass instruments and pay for nice looking paint jobs but not for equipment that someday may save your life.



In the early 1980s I was on an overnight flight to Hayward and heard that a single engine airplane departing Cable, WI on a clear night was reported missing. A number of years later the airplane was finally found about five miles south of the airport in dense woods.

Remember the next time you guys fly to Jansville for breakfast, going down in the wrong area may take a while for Search and Rescue to find you. An ELT is a very worthwhile insurance policy.

The following documents can be found on NOAA's Search and Rescue Satellite Aided Tracking website www.sarsat.noaa.gov and Wikipedia,

ELTs were the first emergency beacons developed and most U.S. civil aircraft are required to carry them. ELTs were intended for use on the 121.5 MHz frequency to alert aircraft flying overhead. Obviously, a major limitation to these is that another aircraft must be within range and listening to 121.5 MHz to receive the signal. One of the reasons the Cospas-Sarsat system was developed was to provide a better receiving source for these signals. Another reason was to provide location data for each activation (something that overflying aircraft were unable to do).

Different types of ELTs are currently in use. There are approximately 170,000 of the older generation 121.5 MHz ELTs in service. Unfortunately, these have proven to be highly ineffective. They have a 97% false alarm rate, activate properly in only 12% of crashes, and provide no identification data. In order to fix this problem 406 MHz ELTs were developed to work

specifically with the Cospas-Sarsat system. These ELTs dramatically reduce the false alert impact on SAR resources, have a higher accident survivability success rate, and decrease the time required to reach accident victims by an average of 6 hours.

Presently, most aircraft operators are mandated to carry an ELT and have the option to choose between either a 121.5 MHz ELT or a 406 MHz ELT. The Federal Aviation Administration has studied the issue of mandating carriage of 406 MHz ELTs. The study indicates that 134 extra lives and millions of dollars in SAR resources could be saved per year. The only problem is that 406 MHz ELTs currently cost about \$1,500 and 121.5 MHz ELTs cost around \$500. It's easy to see one reason for the cost differential when you look at the numbers. However, no one can argue the importance of 406 MHz ELTs and the significant advantages they hold.

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GPS-Based, Registered

The most modern 406 MHz beacons with GPS (US\$ \$300+ in 2010) track with a precision of 100 meters in the 70% of the world closest to the equator, and send a serial number so the responsible authority can look up phone numbers to notify the registrator (e.g. next-of-kin) in four minutes.

The GPS system permits stationary, wide-view geosynchronous communications satellites to enhance the doppler position received by low Earth orbit satellites. EPIRB beacons with built-in GPS are usually called GPIRBs, for GPS Position-Indicating Radio Beacon or Global Position-Indicating Radio Beacon.

However, rescue cannot begin until a doppler track is available. The COSPAS-SARSAT specifications say that a beacon location is not considered "resolved" unless at least two doppler tracks match or a doppler track confirms an encoded (GPS) track. One or more GPS tracks are not sufficient.

High-Precision Registered

An intermediate technology 406 MHz beacon (now mostly obsolete in favor of GPS enabled units) has worldwide coverage, locates within 2 km (12.5 km² search area), notifies kin and rescuers in 2 hours maximum (46 min average), and has a serial number to look up phone



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numbers, etc. This can take up to two hours because it has to use moving weather satellites to locate the beacon. To help locate the beacon, the beacon's frequency is controlled to 2 parts per billion, and its power is a hefty five watts.

Both of the above types of beacons usually include an auxiliary 25 milliwatt beacon at 121.5 MHz to guide rescue aircraft.

Traditional ELT, Unregistered

The oldest, cheapest (US\$ 139) beacons sent an anonymous warble at 121.5 MHz. From Feb. 1, 2009, they are no longer monitored by satellite. They could be detected by satellite over only 60% of the earth, required up to 6 hours for notification, located within 20 km (12 mi) (search area of 1200 km) and were anonymous. Coverage was partial because the satellite had to be in view of both the beacon and a ground station at the same time – the satellites did not store and forward the beacon's position. Coverage in polar and south-hemisphere areas was poor. The frequency was the standard aviation emergency frequency, and there is interference from other electronic and electrical systems, so false alarms were common. To reduce false alarms, a beacon was confirmed by a second satellite pass, which could easily slow confirmation of a 'case' of distress to up to about 4 hours (although in rare circumstances the satellites could be positioned such that immediate detection becomes possible.) Also, the beacons couldn't be located as well because their frequency is only accurate to 50 parts per million, and they send only 75–100 milliwatts of power.

Location by Doppler (without GPS)

The Cospas-Sarsat system was made possible by Doppler processing. Local unit terminals (LUTs) detecting non-geostationary satellites interpret the Doppler frequency shift heard by LEOSAR and MEOSAR satellites as they pass over a beacon transmitting at a fixed frequency. The interpretation determines both bearing and range. The range and bearing are measured from the rate of change of the heard frequency, which varies both according to the path of the satellite in space and the rotation of the earth. This triangulates the position of the beacon. A faster change in the doppler indicates that the beacon is closer to the satellite's ground track. If the beacon is moving toward or away from the satellite track due to the Earth's rotation, it is on one side or other of the satellite's path.

If the beacon's frequency is more precise, it can be located more precisely, saving search time,

so modern 406 MHz beacons are accurate to 2 parts per billion, giving a search area of only 2 square km, compared to the older beacons accurate to 50 parts per million that had 200 square kilometers of search area.

In order to increase the useful power, and handle multiple simultaneous beacons, modern 406 MHz beacons transmit in bursts, and remain silent for about 50 seconds.

Russia developed the original system, and its success drove the desire to develop the improved 406 MHz system. The original system was a brilliant adaptation to the low quality beacons, originally designed to aid air searches. It used just a simple, lightweight transponder on the satellite, with no digital recorders or other complexities. Ground stations listened to each satellite as long as it was above the horizon. Doppler shift was used to locate the beacon(s). Multiple beacons were separated when a computer program analysed the signals with a fast fourier transform. Also, two satellite passes per beacon were used. This eliminated false alarms by using two measurements to verify the beacon's location from two different bearings. This prevented false alarms from VHF channels that affected a single satellite. Regrettably, the second satellite pass almost doubled the average time before notification of the rescuing authority. However, the notification time was much less than a day.

Satellites

Receivers are auxiliary systems mounted on several types of satellites. This substantially reduces the program's cost.

The weather satellites that carry the SARSAT receivers are in "ball of yarn" orbits, inclined at 99 degrees. The longest period that all satellites can be out of line-of-sight of a beacon is about two hours.

The first satellite constellation was launched in the early 1970s by the Soviet Union, Canada, France and the USA.

Some geosynchronous satellites have beacon receivers. Since end of 2003 there are four such geostationary satellites (GEOSAR) that cover more than 80% of the surface of the earth. As with all geosynchronous satellites, they are located above the equator. The GEOSAR satellites do not cover the polar caps.

Since they see the Earth as a whole, they see the beacon immediately, but have no motion, and



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thus no doppler frequency shift to locate it. However, if the beacon transmits GPS data, the geosynchronous satellites give nearly instantaneous response.

Search and Rescue Response

Emergency beacons operating on 406 MHz transmit a unique 15, 22, or 30 character serial number called a Hex Code. When the beacon is purchased the Hex Code should be registered with the relevant national (or international) authority. Registration provides Search and Rescue agencies with crucial information such as:

- phone numbers to call,
- a description of the vessel, aircraft, vehicle, or person (in the case of a PLB)
- the home port of a vessel or aircraft
- any additional information that may be useful to SAR (Search And Rescue) agencies

Registration information allows SAR agencies to start a rescue more quickly. For example, if a shipboard telephone number listed in the registration is unreachable, it could be assumed that a real distress event is occurring. Conversely, the information provides a quick and easy way for the SAR agencies to check and eliminate false alarms (potentially sparing the owner of the beacon significant false alert fines.)

An unregistered 406 beacon still carries some information, such as the manufacturer and serial number of the beacon, and in some cases, an MMSI or aircraft tail number/ICAO 24-bit address. Despite the clear benefits of registration, an unregistered 406 beacon is very substantially better than a 121.5/243.0 beacon; this is because the Hex Code received from a 406 beacon confirms the authenticity of the signal as a real SAR alert.

Beacons operating on 121.5 and 243.0 MHz only simply transmit an anonymous siren tone, and thus carry no information to SAR agencies. Such beacons now rely solely on the terrestrial or aeronautical monitoring of the frequency. In the UK, the Distress and Diversion Cell of the Royal Air Force provides continuous monitoring of 121.5 and 243.0 MHz, with autotriangulation from a network of terrestrial receivers on both frequencies. In Canada, only air traffic service stations (control towers or flight service facilities) monitor 121.5 MHz during operating hours. Overflying commercial or private aircraft monitor 121.5 MHz only if equipped with a suitable receiver, and if time/courtesy permits; monitoring 121.5 MHz is not mandatory. SAR

authorities have no way of knowing whether a 121.5/243.0 MHz signal is actually a SAR signal until they physically deploy to the location and home in on the source (and sound) of the transmission. Since SAR resources are scarce (and expensive), most countries do not deploy the most useful SAR homing assets (aircraft) until ambiguity has been resolved.

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Daryl Lueck,
EAA Chapter 838 President

Spring has arrived, on the calendar any-ways. Temps are generally warming up so hangar doors can finally be opened again. That means we'll soon hear more airplane noise in the air. If you do fly, and didn't get to fly much during the winter, be careful! If you're unsure, or just want to be cautious, call one of our Chapter Flight Instructors for an hour or two of dual rust remover. Better

safe, than sorry always applies.

Nice weather means time for the Chapter Clean Up day. We'll be doing that again this year in May. Watch the website for more info. Speaking of the website, Tracy Miller has been working hard on getting some new features into ours. We'll soon have the Members section up and running with access to all member information. There are times when you may want to reach out to a member, and having access to their phone and email info is just what you need.

Phil Fountain has been putting together the newsletter for quite a while. I think that it is one of the more difficult Chapter jobs for 2 reasons: Assembling the newsletter requires the knowledge of a publishing application of some type. It takes time to be comfortable with the application and formatting the newsletter is more of an art, than a science. The toughest part about the newsletter is the content! We need members to supply stories for the newsletter. If you go out to some aviation related event, a short burger flight, a new museum trip, or even a visit to the Oshkosh EAA museum, write a story for the newsletter. Even though you may not think it's interesting, our members will enjoy it. Have a favorite airplane, write it up!

We had 15 members and guests attend the movie night in March to watch Captain Phillips. Great movie and a very good time. April's movie will be Those Daring Young Men and Their Flying Machines. Hope to see you there.

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Movie Night

Sat - April 19th - 7:00pm

**Those Daring Young Men
and Their Flying Machines.**



Supported Programs

SAVE THE DATES

EAA Chapter 838 will again have a table at the 26th Annual Career and Technology Awareness Day on Wednesday April 23, 2014 from 8:00 AM - 3:00 PM at Festival Hall, in Racine.

We will have information available about all our youth education programs: Young Eagles for ages 8-17, Aviation Explorer Post 218 for ages 14-21, Aviation Explorer Club Post 5218 for ages 11-13, and Young Aviators for ages 14-18.

I need a few volunteers to stand at the table and answer questions about our program. We have 2 shifts from 8-11:30 and 11:30 - 3.

Please call me at 554-9714 or email at kensack@yahoo.com if you can help.

Thanks

Ken Sack

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Saturday April 26th Chapter clean up, 9am till ?????

The Chapter 838 building needs a **GOOD** Spring Cleaning.

Remember this is your **CHAPTER**. We need workers and supervisors, young and old, men and women.

Some of the work will be done inside and outside of the building. The Box Elder tree is going to be cut down. Windows, floors, kitchen cleaned, outside weeds removed, just to name a few of the projects.

For more information or to sign up

Please Call: Ken Sack, 262-554-9714, kensack@yahoo.com

Explorer Post 218

For our **Feb. 27 meeting** Maj. Joe Small III (ret) came in and talked to us. He told some very interesting stories from his military service and the very cool aircraft he was able to fly. He spoke to us a bit about how he was shot down and captured in Operation Desert Storm. He also told us of his career in airlines. Not only did he tell us of his personal experience in aviation, he let us know of different careers in aviation besides being a pilot. It was great to meet Maj. Joe Small and he made it a very fun and interesting meeting.

Thanks,
Kinzie Kujawa

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On March 14th we had Kai Cooper, a Milwaukee Air Traffic Controller come and talk to us. He was a Flight Instructor out of Kenosha for two years. He talked to us about many aspects of ATC including the how he got in the program, training, what the job is now, and the equipment and knowledge required. He set up some different maps and showed us how they use them. It was a lot of fun and he was great to listen to. We learned a lot about the what goes on in the tower.

The next meeting we have Jacob Koehler talking to us about something he attended at Airventure, and he will also be showing us a game where you design and launch rockets.

Chrissy Kujawa

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March 27, 2014 Tonight's meeting seemed fun and everyone seemed to have a great time. We started of by having a speaker come in to let us know that the "Thunder birds" were going to be at Oshkosh and also to inform us that our duty would be to push the people past the burn line for safety measures. We then continued on to have a presentation by none other than Jacob Koehler. We learned about the next steps that N.A.S.A. Was going to take in space exploration. We learned about Boeing and space x and the contributions they made towards getting farther into space and possibly even reaching new planets. After his presentation, he



Supported Programs

introduced us to a game called Kerble space center. We all enjoyed creating , flying, and then of course crashing airplanes and rockets. To conclude, we all had a great time learned a lot about space travel, aerospace engineering, and how to blow stuff up.

Aviation Explorer Club Post 5218 (AEC)

Our “next step” program is intended to cultivate the initial spark and keep interest alive until they are able to join our Aviation Explorer Post at age 14. The AEC program we offer is designed for youth ages 11-13. Our club is coed, chartered with the Boy Scouts of America, and sponsored by EAA Chapter 838.

We should begin our 2014 schedule in May. If you are interested in joining us, please contact us at post218@eaa838.org

SC Johnson Volunteer Service

The SC Johnson Fund, Inc. awards \$250 to not-for-profits for 40 hours of volunteer service by employees and retirees of SC Johnson and JohnsonDiversey Inc.

The 40 hours of volunteer service must also take place within the current fiscal year.

If any EAA Chapter 838 member meets these criteria, please request an application and submit it to the Chapter Board for signature. Please join Bill Wolff and Sean Dwyer in completing this form for 2014. If you have submitted an application for another organization, you can also submit one for EAA 838 if you volunteer 40 hours for 838.

You can obtain an application by emailing johnsonfund@easymatch.com

MSOE Scholarships

Supporting student education has always been a desire of the EAA Chapter 838 membership and written in the chapters by-laws. Last year, the board approved two scholarships for two outstanding MSOE students, Bryan Voss and Collin Kohls. Their letters of appreciation are displayed below.



Supported Programs



January 30, 2014

Mr. Stephen Myers
3620 North Bay Drive
Racine, WI 53402

Dear Mr. Myers:

My name is Bryan Voss. I am from Yorkville, Wisconsin, and am currently a freshman at Milwaukee School of Engineering. I'd like to thank you and everyone at the EAA Chapter 838 for supporting a portion of my education through the EAA Chapter 838 Scholarship.

I came to MSOE specifically because it has a fantastic reputation throughout the country; in addition, it is known for having very major-specific curriculums. As I am from the Greater Milwaukee area, and very interested in the field of computer engineering, MSOE seemed like a natural choice. MSOE is certainly not an easy school, but your generosity will help me succeed in the classroom and prepare myself for a career in a field I very much enjoy.

As I was starting my freshman year at MSOE, I deemed it prudent to not overextend myself with student organizations and teams. Now that I have a better feel for the time I can make for myself, I will become more involved in the next quarter. I plan on joining IEEE (Institute of Electrical and Electronics Engineers) and SAE (Society of Automotive Engineers). I am also pledging Triangle Fraternity, the national fraternity of engineers, architects, and scientists. I also plan on becoming involved in the Super Mileage Vehicle team, to utilize my continuing education in a real-world project.

My parents were very involved in your chapter once. As I am pursuing my pilot's license, and possibly a career in the aeronautical field, I hope to become involved as well.

Thank You,

Bryan Voss
MSOE Class of 2017



Supported Programs



January 30, 2014

Mr. Stephen Myers
3620 North Bay Drive
Racine, WI 53402

Dear Mr. Myers:

I would like to personally thank you and the EAA Chapter 838 for your generous scholarship donation to help me overcome my academic endeavors. It is such an honor to attend a university that can provide this type of learning environment made possible by donors like you. Your contributions make it possible for students who demonstrate the drive, but who lack the financial resources necessary to obtain such a great education.

Since you have lifted a burden I am able to focus my efforts not only on school, but also enjoy time to myself. While I have continued working my part time job at Gordon Auto Parts, with some of my free time I have been given the opportunity to join a sailboat racing team in Racine. The last race series of the season was the Blue Nose Regatta in which we were able to win all three races organized by the Racine Yacht Club.

As far as schooling goes I am very pleased to tell you that last year I was able to manage a 3.9 GPA and enjoyed the learning opportunity that you have helped provide. It is difficult to put into words what a great feeling it is because I do not have to worry as much about being overwhelmed with student loans piling up before graduation.

I have had multiple companies interested in me as an intern in Racine. It really makes me feel good about what I have chosen for myself when I get to hear the response from someone when I tell them that I am an MSOE student. I would like to extend this feeling of pride you and your EAA Chapter for making this a possibility for me.

I would just like to thank you again for all the help you have provided to help me achieve my educational goals. If there is ever a way that I could be involved with any of the Chapter's activities please let me know. My email address is kohlsc@msoe.edu

Sincerely,

Collin Kohls
MSOE Class of 2016



Ben Franklin Explains How Balloons Can Fly

By Seán G. Dwyer

In the February issue of Contact I provided a letter that Ben Franklin wrote just after having seen the first two flights of aircraft with people on board. Two different types of aircraft were involved, and both types are still in wide use today. The Montgolfier hot air balloon was followed two weeks later by Jacques Charles and Nicholas Robert in a hydrogen balloon. This article contains another letter from Ben Franklin written two weeks after the flight of Charles' balloon. Franklin speculated on how the discovery of flight would change the course of human affairs and might even make war obsolete. He also addressed the underlying science in this 2nd letter on the subject of aviation.

Although Charles understood why his balloon flew, the Montgolfier brothers did not for their own balloon. They thought that it was the smoke that they created inside the balloon that provided lift. While much of the heated air was introduced into the balloon before they left the ground, there also was a frame inside the balloon on which they would burn straw and wool. Charles' hydrogen balloon was much more efficient, but hydrogen gas was both expensive to produce and a mystery as to what it really was.

While people knew that the gas in Charles' balloon was lighter than air, they had no idea as to its composition. Franklin called it "inflammable air" and knew that it was produced by reacting iron filings with sulfuric acid (which Franklin called "oil of vitriol"). Today we would write the reaction as follows:



Franklin called the gas in the Montgolfier balloon "air rarified by heat", suggesting that, unlike the Montgolfier brothers, he understood that it was expanded air rather than smoke that provided its lift. The science of chemistry was still in its infancy. Reading letters such as the one that follows should be required reading in chemistry classes, as one can see what was in the minds of these philosopher scientists in the emerging days of the science. Not only is the historical perspective interesting, it often reveals the paradigms and fears that controlled their thinking.

In a December 1784 letter to John Ingenhousz (from The Aeronautical Annual 1895 Edited by James Means) Ben Franklin talked about the different technologies in the two types of balloons and the potential impact of balloons on society in general, and war in particular.

Passy, January 16, 1784

Dear Friend :

I have this day received your favor of the 2d instant. Every information in my power, respecting the balloons, I sent you just before Christmas contained in copies of my letters to Sir Joseph Banks. There is no secret in the affair, and I make no doubt that a person coming from you would easily obtain a sight of the different balloons of Montgolfier and Charles, with all the instructions wanted; and if you undertake to make one, I think it extremely proper and necessary to send an ingenious man here for that purpose; otherwise, for want of attention to some particular circumstance, or of not being acquainted with it, the experiment might miscarry, which, in an affair of so much public expectation, would have bad consequences, draw upon you a great deal of censure, and affect your reputation.

It is a serious thing to draw out from their affairs all the inhabitants of a great city and its environs, and a disappointment makes them angry. At Bordeaux lately a person pretended to send up a balloon, and had received money from many people, but not being able to make it rise, the populace were so exasperated that they pulled his house, and had like to have killed him.

It appears, as you observe, to be a discovery of great importance and what may possibly give a new turn to human affairs. Convincing sovereigns of the folly of wars, may, perhaps, be one effect of it, since it would be impractical for the most potent of them to guard his dominions. Five thousand balloons, capable of raising two men each, could not cost more than five ships of the line; and where is the prince who can afford so to cover his country with troops for its defence, as that ten thousand men descending from the clouds might not in many places do an infinite deal of mischief before a force could be brought together to repel them? It is a pity that any national jealousy should, as you imagine it may, have prevented the English from prosecuting the experiment, since they are such ingenious mechanics, that in their hands it might have made a more rapid progress towards perfection, and all the utility it is capable of affording.



Ben Franklin Continued

The balloon of Messrs. Charles and Robert was really filled with inflammable air. The quantity being so great it was expensive and tedious filling, requiring two of three days' and nights' constant labor.

It had a soupape, or valve, near the top which they could open by pulling a string and thereby let out some air when they had a mind to descend; and they discharged some of their ballast of sand when they would rise again. A great deal of air must have been let out when they landed so that the loose part might envelop one of them; yet the car being lightened by that one getting out of it, there was enough left to carry up the other rapidly. They had no fire with them. That is used only in M. Montgolfier's globe which is open at the bottom and straw constantly burnt to keep it up. This kind is sooner and cheaper filled, but must be of much greater dimensions to carry up the same weight, since air rarefied by heat is only twice as light as common air, and inflammable air ten times lighter. M. Morveau, a famous chemist at Dijon, has discovered an inflammable air that will cost only a twenty-fifth part of the price of what is made by oil of vitriol poured on iron filings. They say it is made from sea-coal. Its comparative weight is not mentioned.

I am, as ever, my dear friend,

Yours most affectionately,

B. Franklin

The "Inflammable air" produced from "Sea-coal" by M. Morveau was about 50% Hydrogen (H₂ with a molecular weight = 2), 35% Methane (CH₄ with molecular weight = 16) and 8% Carbon Monoxide (CO molecular weight = 28). "Sea-coal" was regular coal and got the name to differentiate it from charcoal because it was shipped by sea from Newcastle to London. So the average molecular weight of this gas mixture would be 8.8, just over four times heavier than pure hydrogen, but still only about 30% the weight of the same volume of air at the same temperature. Bottom line, it would have been lighter than the hot air used in the Montgolfier balloon.

For reference, "Air" is 78% Nitrogen (N₂ molecular weight = 28) and 21% Oxygen (O₂ molecular weight = 32), plus 1-4% water vapor (H₂O molecular weight = 18) and a trace of Carbon Dioxide (CO₂ molecular weight = 44), so the average molecular weight of air is approximately 28.6.



A final point on balloons: Natural gas burners have replaced smoldering straw and wool in hot-air balloons, and helium has replaced hydrogen in gas balloons in the USA, although less so in Europe where less expensive hydrogen is still commonly used. Both hot air and gas balloons are still in use today, with the 9-day annual Albuquerque International Balloon Fiesta attracts upwards of 700 balloons each October. These hot-air balloons are huge, gaudy aircraft, just like those of their pioneering predecessors in the 1780's.

My book "STEM for All Ages" contains more information on the early days of aviation and is available in both hardcopy and as an eBook.

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90-Year-Old Mount Pleasant Man Building His Own Plane

By Cara Spoto



Roy Stuart, 90, of Mount Pleasant, talks to members of the Kiwanis Club of Greater Racine, as he shows them the airplane that he is building Wednesday afternoon, March 26, 2014, at the EAA Museum at Racine's Batten Field during the club's meeting at the museum. The club celebrated Stuart's 90th birthday during their meeting. / Gregory Shaver, gregory.shaver@journaltimes.com Buy this photo at jtreprints.com

CALEDONIA — For pilot and aircraft hobbyist Roy Stuart age means little. So does the notion of retirement.

At 90 years old, the Mount Pleasant resident serves as a volunteer and member of the Kiwanis Club of Greater Racine.

The one-time salesman for Massey-Ferguson and Cessna, also manages to keep working.

Every three months he hops in his car and travels across three states to visit the 75 customers he serves as a sales rep for Super Swivels in Minneapolis.

When he's not working or volunteering, he spends his time in a small hangar at the back of the local Experimental Aviation Association (EAA Chapter 838) building at Batten International Airport, fastening rivets into gleaming aluminum and studying the plans for a Sonex light sport aircraft.

Stuart has been working on the plane since Nov. 1, 2008 — the date the kit for building the aircraft arrived in the mail.

Since then he has spent an average of 10 hours a week at the hangar, carefully constructing various sections of the plane.

Asked why, in his late 80s, he decided to take on such a large project, he said simply "because I want to fly again."

On Wednesday Stuart was joined by his fellow Kiwanis for a special weekly meeting at the EAA Chapter building, 3333 N. Green Bay Road.

Instead of meeting at the club's usual spot they decided to take a "field trip" of sorts, said members, so they could both celebrate Stuart's birthday, which was Monday, and take a look at this plane.

Gathered around two long tables, members joked about not putting candles on Stuart's cake with so much aviation fuel nearby.

After lunch, they huddled into the hangar so Stuart could give them a brief presentation on the ongoing construction of the plane. Some marveled as Stuart explained that what appeared to be the frame of a fairly small cockpit would be large enough to fit a flight instructor and student.

"I guess you have to like who you are flying with," one member joked.



Asked what he thought about Stuart's effort, Randy Savaglio said "The thought of building a plane is intimidating enough (at any age)."

When all the pieces are put together, Stuart said he plans to paint the aircraft white and green.

He hasn't quite settled on a name yet, but so far he likes "Roy Express."

His hope is that it will be all done in time for next year's Fourth of July parade.

Asked what he would say to those who might question someone his age flying a small plane, let alone building one, Stuart said "It's only years."

"Most of the time I feel like I'm about 60," he said.

Cockpit Concepts

Aviation Safety Connection

Go to: <http://aviation.org>

Cockpit Concepts: March 20, 2014

Thoughts on Resolving Conflicts.

Recognizing and resolving conflict—within ourselves, with others—requires effort. Often there's a tendency to let things play out, to see what happens, but this attitude tends to breed complacency. Instead, if we routinely clarify minor discrepancies we develop the discipline to think and act to resolve the more pressing conflicts. As our colleague Doug Harrington suggests, "resolving conflict should become as normal as adding power for takeoff."

But "normal" requires that crewmembers be willing and able to voice their concerns. Often, however, fear, attitudes and behavior patterns get in the way. What if I'm wrong? He must know what he's doing! What am I missing? What are the consequences of speaking up?

The intimidating presence of an authoritarian superior is one potential barrier to voicing concern. I recall the demeanor of our Marine drill sergeant during pre-flight training. "There's the right way, the wrong way, the Navy way and my way. As long as I'm in charge, we'll do it my way." And we did. That presence might find itself to the flight line as this brief video clip, The Captain (<http://aviation.org/Captain/Captain.html>), illustrates. But even then, we have the

duty to speak out regardless of the potential consequences. Once again, the video presentations in our Media Center, "KLM 4805 and Clipper 1736 | Tenerife, Canary Islands—March 27, 1977 Runway Collision" and "A Failure of CRM | USAF C-5 Galaxy Crash—April 4, 2006," serve as dramatic examples of crew member failure to effectively voice justifiable concerns.

Doug, who has conducted numerous team training sessions on this subject, provides the following positive example regarding an airline captain friend:

"He told me whenever he stepped into the cockpit and was with a first officer he did not know, he said to his crewmate: 'You don't know me and you don't know how I fly. If at any time you are uncomfortable with anything I am doing, you MUST let me know.' This captain thereby established the copilot's role during that flight. In most cockpits, the captain establishes the roles in which questioning and resolving conflict are either encouraged or punished."

Oh, that every cockpit could operate in the cooperative atmosphere that Doug's friend creates.

The same thinking applies to the single-pilot cockpit. Ambiguities need to be resolved, and pilots have the duty to themselves and their flights to question why what they "expect to hear, see, or experience is different from what they are actually hearing, seeing, or experiencing," our prior definition of conflict. The PIC establishes his own role, one that includes the self-discipline to resolve ambiguity and maintain a high level of situational awareness.

In the team environment, potential conflicts are minimized when a common concept of the flight in all its dimensions is maintained—what has happened, is happening, will happen. When this concept breaks down, when uncertainty exhibits itself, speak up and continue to act until the conflict is resolved.

--Bob Jenney (rmj@aviation.org)

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Racine EAA Chapter 838

The People

Meetings
Third Thursday's 7:00 pm
Social 6:30 pm

April 2014
Volume XXVI Issue 4
www.Eaa838.Org

Welcome

New Chapter Members

Ko Kryger	February 2014
Dan Mouw	February 2014
Oliver Kotcke	December 2013
Lawrence Stys	December 2013
Rebecca Schmitt	September 2013
Matthew Borgardt	September 2013
Robert Clarke	August 2013
Bill Myers	June 2013
Bill Schalk	June 2013
Michael Ratchford	May 2013
Merritt Adams	Feb 2013
Michael Arts	Feb 2013

EAA Chapter Distribution

Chapter 18	Milwaukee
Chapter 217	Kenosha
Chapter 414	Waukegan
Explorer Post 218	Racine
Steve Hedges	AOPA

Monthly Meetings

Boards Meetings	Second Thursdays	7:00 pm
Chapter Meetings	Third Thursdays	
	Social	6:30 pm
	Meeting	7:00 pm
Shop Night	Every Monday	7:00 pm
Explorer Post 218	Second Thursdays	7:00 pm
	Fourth Thursdays	7:00 pm
Young Eagles	Second Saturday	9:00 am
	(March - November)	

Upcoming Meetings & Speakers

Apr 17 th	Jarrett Tessar	VFR Cross County Planning
May 15 th		
Jun 19 th	Steve Myers	SR-71 Blackbird
Jul 17 th		
Aug 14 th		
Sep 18 th		
Oct 16 th		
Nov 20 th		

Officers

President	Daryl Lueck	414-333-4228
Vice President	-----	
Secretary	Tracy Miller	847-420-5098
Treasurer	Steve Jenkins	262-681-2491
Foundation	Steve Myers	262-681-2528

Directors

Jim Hantschel	262-637-3376
Phillip Fountain	M 414-803-5357
Ken Sack	262-554-9714
Roy Stuart	262-884-0371
Eddy Huffman	H 262-639-8301

Committee Chairpersons

Programs	Rick Goebel	M 262-886-4171
Monday Shop	Jerry Bovitz	262-639-8583
Librarian	Eddy Huffman	262-639-8301
Membership	Ken Sack	262-554-9714
Newsletter		
Publisher	Phil Fountain	M 414-803-5357
Young Eagles	Tracy Miller	847-420-5098
	Chapter Building	262-634-7575