

THE LANDINGS

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Newsletter of Chapter 75 Quad-Cities of Illinois and Iowa, USA

July 2014

THE EXPERIMENTAL AIRCRAFT ASSOCIATION



From The Desk of the President

Our June potluck was held at the Kewanee Airport. The weather was perfect, sunny and warm with a nice breeze. Thank you to all who attended, and a special thanks to the cooks.

The next day, Father's Day was the annual Geneseo Airport Father's Day Breakfast. A Young Eagle event was scheduled, however the wind was much more than a breeze. Therefore, no Young Eagle rides were given. We have several contact names for our next Young Eagle event.

The Geneseo group, as usual, did an excellent job on the breakfast.

The June 1st Saturday Donut and Coffee turned out to be a nice morning filled with fellowship and observation of Marty's RV-12 with some of the inspection panels off.

The July 5th Coffee & Donuts will be hosted by Ed Leahy at the Davenport airport. Gotta drive to this one as the airport is closed!!

The July 12th potluck will be held at Jim Smith's hangar at the Davenport Airport. The Smith's along with Bob & June Olds will be the hosts.

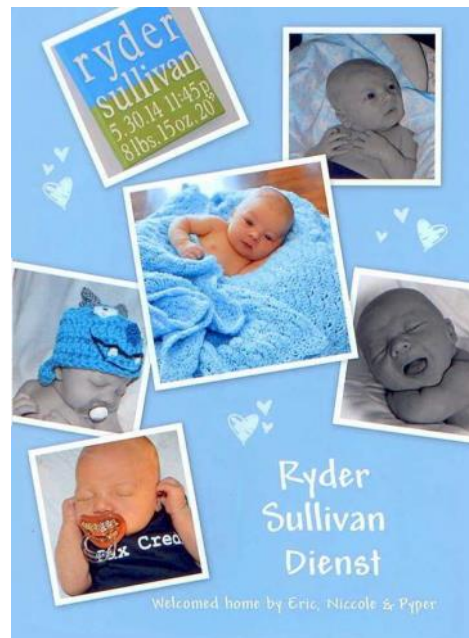
They will cook brats and furnish the beverages. Bring your favorite dish and your table service.

In this newsletter is a new section on Chapter 75 Youth and Young Adults. Brandon Gore describes his 1st solo!! Please contribute your Youth/Young Adults aviation activities and/or stories to Marty Santic for publication each month in the newsletter.

Hope to see many of you at the 1st Saturday Coffee at the Davenport Airport, the July 12th potluck and at the end of the month in Oshkosh.

Happy Flying, Jim

Welcome Chapter 75's Newest Member - Congrats to Eric and Niccole!!



**Next Meeting - July 12th - NOON - July Potluck Lunch - Davenport Airport
(Jim Smith's Hangar - Northeast Corner of the Airport)**

July 12th Chapter Meeting

The July Chapter potluck lunch will be held on **Saturday, July 12th at NOON**. It will be held at the Davenport Airport.

DRIVE IN! The airport is STILL CLOSED!

Will be held at Jim Smith's hangar at the Davenport Airport. The Smith's along with Bob & June Olds will be the hosts.

They will cook brats and furnish the beverages. Bring your favorite dish to pass and your table service.

Should be a great time!!

Tool Committee meeting, Held at the Kewanee Airport, June 14, 2014

The meeting was called to order by tool committee chairman Ron Franck at 1:05 P.M.

Those present: Jim Smith, Ron Franck, Mike Nightingale.

Those not present: Paul Fisher, Rodger Nightingale & Bernie Nitz

Those also present: Cy Galley, Marty Santic, David Jacobsen, Ed Leahy & George Bedeian.

Topic of discussion: Tools needed and to be purchased for the Repair Barn for AirVenture 2014. Also discussed were which tools to purchase here at home and which to purchase at Oshkosh during AirVenture.

Below are the items to be purchased, and where noted will be purchased at Oshkosh.

DC4 lube – Dow corning 4, **to be purchased at Oshkosh.**

Small center punch set, purchase as needed, **to be purchased at Oshkosh.**

¼ inch swivel air tool connector for air hose.

Set of ¼ - 28 replacement for close quarter drills

Set of wheel balancing weights.

Welding rods, general purpose assortment.

One fifty foot extension cord, 12 gauge.

Files for aluminum work.

Flapper abrasive tool, for disc grinder.

¾ & 3/8 inch adaptor for drills.

Fuel valve lube, **to be purchased at Oshkosh.**

It was noted that Tom Henry will bring a pin extractor tool to Oshkosh this year.

The purchase of a bore scope with a flexible shaft was discussed. Mike Nightingale suggested a projected a cost estimate of between \$1,200 & \$1,300. Marty Santic will look into the cost and different models available, and report back to the tool committee.

The tool committee meeting adjourned at 1:30. These minutes respectively submitted by Vahan G. Bedeian, recording secretary EAA Chapter 75.

June Board of Directors Meeting

The Chapter 75 board of directors meeting began after the June pot luck, and the tool committee meeting, at the Kewanee airport, at 1:35 P.M. June 14, 2014

The meeting was called to order by chapter president Jim Smith. Those in attendance were Ed Leahy, Jim Smith, Ron Franck, Dave Jacobsen, George Bedeian & Marty Santic.

Those not present: Tom Shelton & Ron Ehrecke.

Also in attendance were former Chapter 75 presidents Mike Nightingale & Cy Galley.

The tool committee presented a list of tools to be purchased for the repair barn, for this years AirVenture 2014 at Oshkosh.

David Jacobsen made a motion to spend \$1,200 to \$1,300 for a bore scope and also approve the purchase of items on the above tool list. Ron Franck seconded the motion, approval was unanimous.

Jim Smith made a motion to adjourn the meeting, George Bedeian seconded the motion. Approval was unanimous.

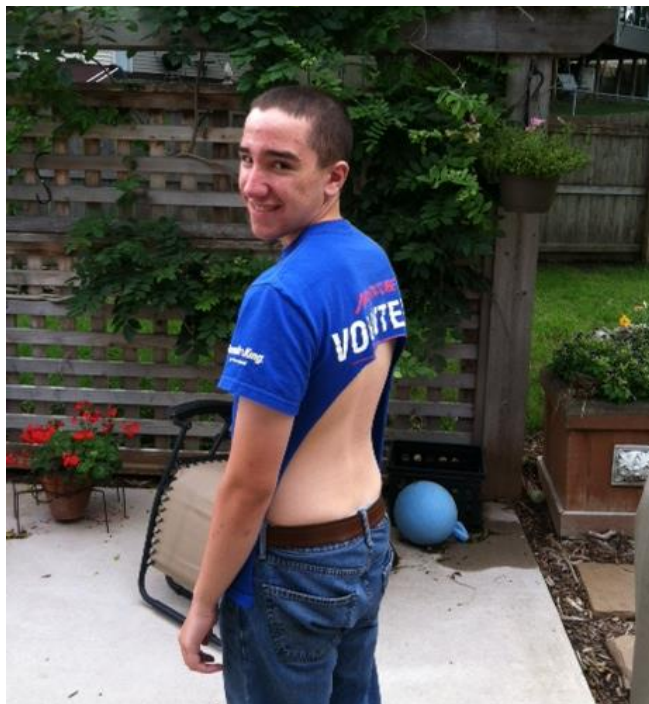
The board meeting ended at 1:45 P.M. These minutes respectively submitted by Vahan G. Bedeian, recording secretary EAA Chapter 75.

Flying Solo - Finally (by Brandon Gore)

Last Monday I flew solo for the first time! I have been waiting for this moment since I was 3 years old after taking a joy ride with my mom's friend in a Champ, which ironically is the same plane I am training in. I have graciously been employed this summer as a part time seasonal employee through the generosity of Mike Nass with the Clinton FBO serving as ground crew. I have been exposed to some really exciting planes and people, especially a surprise visit from air show pilot, Julie Clark who stopped at the airport for gas last week returning from a Tennessee air show and did a low fly by on her way out. That was pretty awesome!

Mike has been my CFI and has taught me a lot about flying and even creating situations that have taught me to pull out of given situations. After doing a few spins and stalls Mike told me to drop him off at the terminal. I did not expect to do a solo flight after flying for an hour of a lesson together that day and a total of 6.9 hours, but it was worth it. It was a little bit nerve wracking and very exciting to realize that you have your chance at finding out if you can really fly a plane or not by yourself. After my instructor got out I immediately reassured myself that there was no one in the right seat correcting my movements. My takeoff and downwind were normal, but during my turn to base I was low on airspeed. I pitched nose down to pick up airspeed but I also got low, so added power. My first landing alone was reassuring, even though my transition was a bit touchy. My next two landings were a piece of cake, although on my last one a gust of wind made me skid from the center line to the right side of the runway as I touched down.

It was touching to realize I could fly a plane by myself with no help after 13 years of waiting. We celebrated by cutting the back of my shirt off, signing it and the plane I flew with the tail number on it and hung it in the hangar. This Friday I will be soloing for my second time (weather permitting). After that its time to confuse myself with cross country and I have been immersing myself with working at the FBO during the day, flying lessons, swimming and studying for my FAA written after work til bed time. My day of soloing was double special by finding out I received a \$500 flying scholarship I had applied for to help fund my lessons and I have applied to 5 others. I plan on obtaining my CFI before entering college and the Navy ROTC if possible. My goals are go to college to be a test pilot and aeronautical engineer and a career in the military that will end with a civil position with Boeing. This awarded scholarship will help off set my flying costs as I am helping to pay for my lessons and all my pay check goes towards this goal,



but most of all I look forward to being a Young Eagle pilot someday.

I would like to thank everyone from the Chapter for helping me by mentoring, providing the air academy scholarships and just direction over the years. I could not have been to this point if it wasn't for a Young Eagle ride in 2008 when we met the Chapter and they talked to my mom about the scholarships and more. I hope to be a mentor to others as the years go on just as you were there for me. Stay tuned for more adventures from the student seat.

Service Bulletins and the Experimental Aircraft

(by Mel Asbury, DAR, Chapter 168, Houston TX)

Recently there has been what seems like a rash of service bulletins within the experimental amateur-built aircraft community. The forums and vendor sites have been buzzing.

There are questions asking; “Do I really have to comply exactly as the kit manufacturer specifies?” “Can there be an alternate method of compliance?” “Do I even have to comply at all?”

” Well, the bottom line answer is NO! Service bulletins are not mandatory, even in the part 91 certified world. The only thing that is truly mandatory is an airworthiness directive. And an airworthiness directive cannot be issued against an amateur-built aircraft. Now before you jump up and start emails on the “ADs can’t be directed to amateur-built aircraft” subject, keep this in mind. ADs may be directed to certain components of amateur-built aircraft, just not the aircraft itself. Remember amateur-builders are pretty much left to themselves as far as design and construction. But that’s another article.

Here we are talking about service bulletins. Just be-



A Grounded One Wing Bach Jet in Gilbert's IL at Indian Hills Stable, from Bob Kuhns

Don Grundstrom Wants to Say Thank You to ALL

The photo to the right is Don Grundstrom’s new acquisition, temporarily hangared in Geneseo due to the closure of the Davenport airport.

Don wanted to say THANK YOU to all in Chapter 75 and all of his friends and acquaintances for all of the cards, letters and thoughts as a result of his recent loss.

cause you don’t HAVE to comply doesn’t mean you shouldn’t. Service bulletins are issued because of a problem in the field. For example, If the main spar of your horizontal stabilizer is cracked, it needs to be repaired. Period! Under normal circumstances the kit manufacturer has investigated the problem and has come up with a reasonable solution. The service bulletin will reflect that solution. Can you come up with your own solution? Of course. But keep in mind that the designer of the aircraft, usually associated with the kit manufacturer, probably knows more about the design characteristics of the aircraft than you do. If you think you have a better method of compliance, it might be worthwhile to submit your solution to the kit manufacturer. He will then either approve of your method, tell you why it is not acceptable, or tell you, “It’s up to you, but we have tested our solution and think it is better.” The latter is more likely to happen.

Now one more thing to consider. When you, or whoever does your annual condition inspection, make that logbook entry stating that, “I find this aircraft to be in a condition for safe operation.” do you feel comfortable making that statement if there is an outstanding service bulletin? In other words, in case of an accident, would you be comfortable explaining to a judge why you knew better than the aircraft designer? Regardless, the final decision is yours. Make sure you are comfortable with it!



3G8 looking SW from my Luscombe, from Bob Kuhns



ADS-B Articles from Avionics News

In this newsletter find a VERY good series of articles regarding the installation of ADS-B in your aircraft. A bit hard to read but did my best in copying the article. The article first appeared in the June 2014 issue of Avionics News, a trade publication. The articles were authored by the FAA.

If you are planning on buying a PORTABLE ADS-B out solution at AirVenture, pay SPECIAL attention to the final two pages.

It appears a portable ADS-B out solution will not function (receive traffic) in an experimental when the requirement becomes effective in 2020.

The entire June 2014 issue of Avionics News can be found on the internet [using this link](#).

Internet Links from Our Readers

John Bender – [Fly 2 Lunch.com](#) – A new website that will list the restaurants within a distance from a given airport.

Mike Tea – [ADS-B Installation Guidance per the FAA](#) – A good set of articles on ADS-B appear in this issue. Page forward and back from this article or look at the table of contents for the other articles on ADS-B. Very comprehensive. From the FAA it appears there will NOT be a portable solution.

Marty Santic – [SPACE-X Dragon V video](#) – A nice video.

Cy Galley – A number of links to a vast array of military aviation info, thought you might be interested

- [Aviation Pioneers](#)
- [World War I Aces](#)
- [Hall of Fame of the Air](#)
- [WW2 European Theater \(ETO\)](#)
- [WW2 Pacific Theater \(PTO\)](#)
- [WW2 US Marine Corps](#)
- [WW2 US Navy Aces](#)
- [WW2 Mediterranean \(MTO\)](#)
- [WW2 German Aces](#)
- [Korean War Aces](#)
- [Russian Aces](#)
- [Vietnam Era Aces](#)
- [Airplanes](#)
- [World War I Planes](#)
- [1930s Aircraft photos](#)
- [WW2 Fighters](#)
- [WW2 Bombers](#)
- [WW2 German Planes](#)
- [WW2 Airplane Pictures](#)
- [History of Airplanes blog](#)

Chapter Nametags Have Arrived!!

You can pick up your nametag at the July and August potluck lunches or at AirVenture!!



- [Nose Art](#)
- [Postwar Jets](#)
- [World War Two](#)
- [WW2 Facts and Firsts](#)
- [WW2 Medals](#)
- [WW2 Museums](#)
- [WW2 Pictures](#)
- [WW2 Ships](#)
- [WW2 Weapons](#)

Marty Santic – [FAA Advisory Circular – Aircraft Propeller Maintenance](#) – Good stuff!

Marty Santic – [FAA Safety Briefing](#) – A good link to save.

Larry Geiger – [The Redline Pilots](#) – Formation flying at its BEST!

Tom Henry – [The Afters – Every Good Thing / Sonex Aerobatics](#)

Cy Galley – [EAA's Young Eagles to Receive Spirit of Flight Award](#)

Pete Anderson – [The PAL-V Flying Car](#)

Cy Galley - [Animation of Asiana 214 from the NTSB](#)



Courtesy of Cy Galley

industry

ADS-B Essentials: Part 1

ADS-B installations are beginning to take off

BY DAVID HUGHES, NEXTGEN PERFORMANCE AND OUTREACH, FEDERAL AVIATION ADMINISTRATION

Mike Hall equipped his high-performance single-engine aircraft with ADS-B (automatic dependent surveillance-broadcast), but it had a glitch.

The New York general aviation pilot upgraded his transponder to include 1090 ES (extended squitter) capability in 2010, and thought he was all set to

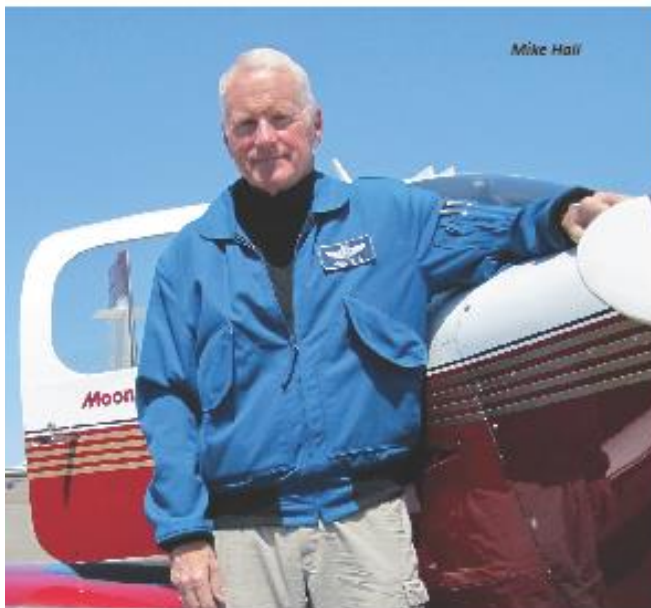
broadcast ADS-B Out. But he didn't realize he would also need a software upgrade and an additional wire to make sure the WAAS (wide area augmentation system) was feeding the ADS-B Out broadcast properly.

"My airplane was not broadcasting ADS-B signals when I thought it was," Hall said. "I went back to the shop for the wire and the software. Now I fly a fully ADS-B compliant aircraft that meets the FAA's 2020 mandate." Hall has equipped his aircraft with UAT (universal access transceiver) capability on 978 megahertz, as well.

As an early adopter of new technology, Hall finds the ADS-B In traffic and weather information useful as he flies for business and pleasure. He believes things will get easier for general aviation as equipage progresses in the next few years.

The nationwide ADS-B infrastructure has been completed with 634 ground stations installed. The upgraded surveillance and broadcast system is capable of providing aircraft position information to controller screens at a much higher rate than the current radar-based system.

As of May 1, 2014, there were 4,755 civil aircraft of all types equipped with the proper version of ADS-B Out for the ADS-B mandate. Two-thirds of these were fitted with 1090ES and about one-third with UAT. The remaining three percent were



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broadcasting on both 1090ES and UAT. About 100 of the 230 air traffic control facilities across the country are already using ADS-B to separate traffic, and all of them will be doing so before the mandate for equipage takes effect.

TIS-B (traffic information service-broadcast) provides track information on transponder-only aircraft that are being detected by air traffic control radar to ADS-B In equipped aircraft. The TIS-B service is provided within a 15-nautical mile radius, up to 3,500 feet above or below the receiving ADS-B In aircraft's position. A general aviation aircraft equipped with ADS-B In can also receive position data directly from other aircraft broadcasting on the same ADS-B Out frequency. ADS-R (automatic dependent surveillance-rebroadcast) relays position information broadcast by ADS-B avionics on the 1090 MHz ES link to aircraft receiving data on the 978 MHz UAT link and vice versa. The ADS-R service is provided within a 15-nautical mile radius and plus or minus 5,000 feet of airspace volume relative to the receiving aircraft's position.

Many avionics repair shops contacted by the Federal Aviation Administration for this article have already installed ADS-B equipment on a dozen or more aircraft to meet the agency's 2020 equipage mandate. The FAA wants to assist them and aircraft owners with guidance on how to complete installations correctly. Proper adherence to certain technical details is essential.

There are about 150,000 unequipped aircraft that need to have ADS-B Out installed. Based on this, the FAA and repair shops are recommending that aircraft owners begin accomplishing installations as soon as possible. This will help aircraft owners avoid being caught in the expected rush of activity leading up to the 2020 deadline.



When aircraft are equipped with ADS-B Out, controllers are provided with increased position updates and without need for interrogation by ground-based radar systems.

“One of the things I tell people is that right now there may be no hurry, but they shouldn't let the ADS-B installation go past 2016,” said John DenDekker, general manager for Carpenter Avionics at Smyrna Airport in Smyrna, Tennessee. “The last three years of installations before the mandate will be crazy. Waiting until then means a pilot can't take advantage of ADS-B In services, which are being broadcast to aircraft today.”

Transponder-equipped aircraft that fly in controlled airspace today will need ADS-B Out when the mandate takes effect in 2020. That's far enough away that many ADS-B installations can be done now when aircraft are in for other work.

“If we are doing installation work on an aircraft, ADS-B is just an add-on right now,” said Chuck Gallagher, manager of Cincinnati Avionics at the Clermont County Airport in Batavia, Ohio. “If the aircraft is opened up for other avionics work, ADS-B is not a hard sell.”

Gallagher also expressed concern that general aviation aircraft owners will wait until the last minute to add ADS-B, and by then there may not be enough capacity at U.S. repair shops to equip them all by the deadline.

Repair shop operators say aircraft owners and operators may be delaying because they are confused about what to do. But the experience of early adopters is helping the general aviation community understand how to proceed. To make installation easier to understand, the FAA Flight Standards Service's Aircraft Maintenance Division is providing a list of frequently asked questions and a checklist to guide repair shops:

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ADS-B INSTALLATIONS*Continued*

- **ADS-B Transmitters and Position Sources.**
(See *ADS-B Essentials, Part 2*)

This list of frequently asked questions explains that ADS-B transmitters must be compatible with installed GPS position sources. The transmitters and position sources cannot be mixed and matched. They must be installed in approved pairings detailed in a list of equipment on this FAQ that meets FAA certification requirements. This list is current as of April 2014.

- **ADS-B Avionics Installation Guidance.**
(See *ADS-B Essentials, Part 3*)

This checklist provides guidance on the installation of approved ADS-B Out avionics on aircraft with a standard airworthiness certificate as well as the installation of uncertified ADS-B Out avionics on aircraft with an experimental airworthiness certificate. The checklist also covers common problems involved in such installations and briefly explains how to deal with them. It discusses how to install both a 1090 MHz ES and a UAT system on the same aircraft. When properly configured, these systems allow pilots to take full advantage of available ADS-B broadcast services and capabilities at all altitudes.

According to DenDekker, avionics manufacturers have provided PowerPoint presentations to help educate aircraft owners and operators on ADS-B. He has provided presentations for his own customers. Other shops, such as Pacific Coast Avionics at Aurora State Airport in Aurora, Oregon, are providing similar information. "We try to break it down and make it as simple as possible," said Dewey Conroy, vice president and chief operating officer for Pacific Coast Avionics. "Very few people are coming through the door having figured it all out."

Many shops report considerable general

aviation interest in ADS-B In, which includes traffic awareness capability from TIS-B and weather capability from FIS-B (flight information service-broadcast). TIS-B and FIS-B services are available across most of the U.S. The ADS-B In avionics needed to provide TIS-B traffic awareness capability costs less than other traffic awareness systems available. In addition, there is no monthly subscription fee for the use of FIS-B weather data.

In some cases, customers are opting for a single system that provides ADS-B In and Out capabilities, including the display of traffic and weather information on a panel-mounted display. Others prefer displaying TIS-B and FIS-B on tablet computers.

Recently, Hall was flying with his son, who was piloting the Mooney into New York City. Hall monitored the traffic picture on a tablet.

"I could see the traffic flow into New York City airports from 50 miles away, and it gave me an idea of how busy the world was," he said.

When Hall saw four aircraft on the display lined up in a conga line headed into Westchester County Airport, he knew his son would be directed to follow this line to land at the airport. When a pilot knows what to expect, he can plan his next move on the airspace chessboard.

As Hall discovered, there are technical nuances that can make a difference in getting an ADS-B installation right the first time. More often, problems with installations that the FAA has identified in monitoring ADS-B avionics compliance have occurred with uncertified equipment installed on experimental aircraft. Guidance on what to do in these cases is included in the checklist, which appears later in this article, titled "FAA ADS-B installation guidance." The guidance should help a repair shop that is involved with one of these types of installations or when the operator of an experimental aircraft asks for installation advice regarding uncertified avionics.

Want to know how well your ADS-B system is performing? Send an email to 9-AWA-AFS-300-ADSB-AvionicsCheck@faa.gov identifying your aircraft's registration number (N-number) and request a system check.

ADS-B Essentials: Part 2

Frequently asked questions about ADS-B avionics installations

What are the rules?

The Federal Aviation Administration published two rules in the Code of Federal Regulations in May 2010: 14 CFR 91.225 and 14 CFR 91.227. Effective Jan. 1, 2020, aircraft operating in the airspace defined in 14 CFR 91.225 are required to have an ADS-B system to include a certified position source capable of meeting the requirements defined in 14 CFR 91.227. Aircraft operating in Class A airspace — from 18,000 feet mean sea level to and including Flight Level 600 — must broadcast position data using Mode S, 1090 ES. Aircraft operating in designated airspace exclusively below 18,000 feet MSL can broadcast the required information using either 1090 ES or a UAT on 978 MHz.

While the compliance deadline is 2020, the FAA is encouraging owners to equip their aircraft with ADS-B well before the mandate goes into effect. The improvement in situational awareness for pilots greatly increases safety.

Which type of ADS-B equipment should an avionics shop install?

There are two types of ADS-B systems:

1. Mode S transponder-based equipment certified to technical standard order (TSO)-C166b.
2. UAT equipment certified to TSO-C154c.

If an aircraft owner plans to operate above FL 180 or internationally, he or she should be equipped with Mode S Transponder.

If an owner plans to operate only below FL 180 within U.S. airspace, he or she can equip with Mode S transponder or with UAT equipment. UAT equipment provides the ability to receive traffic and weather data from two no-cost broadcast services,

TIS-B and FIS-B. TIS-B can be received on 1090 MHz, but not FIS-B.

Which type of position source should an avionics shop install?

The FAA recommends a TSO-C145 or TSO-C146-compliant WAAS GPS. These units are readily available for general aviation and provide sufficient performance to meet the 14 CFR 91.227 requirements. General aviation avionics vendors offer stand-alone receivers and package them with the ADS-B transmitter or with a GPS navigator.

Can an avionics shop match any ADS-B equipment with any GPS equipment?

No, an ADS-B transmitter must be compatible with its installed GPS receiver. ADS-B equipment manufacturers are beginning to identify this compatibility (see the list titled, “ADS-B equipment that meets FAA certification requirements”). Mixing GPS systems with ADS-B units in the field is not permitted unless the equipment combination is shown to be compatible via a previous FAA certification effort, e.g., supplemental type certificate. Contact the manufacturer to learn which GPS systems are approved for a particular ADS-B system.

Some manufacturers are marketing uncertified ADS-B transmitters. Can these be installed?

Aircraft owners may install an uncertified transmitter on an amateur-built aircraft with an experimental airworthiness certificate. The FAA, however, strongly discourages the use of uncertified ADS-B Out equipment even in experimental aircraft. Uncertified equipment, including uncertified

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ADS-B INSTALLATIONS*Continued*

transmitters, should not be installed on any aircraft with a standard airworthiness certificate. Uncertified ADS-B transmitters do not comply with 14 CFR 91.227 and will not be permitted to operate in airspace requiring ADS-B starting in 2020.

Air traffic control does not use data from these uncertified transmitters, which prevents controllers from providing flight following services or separation services to aircraft that are so equipped. Data from uncertified transmitters are not displayed on certified ADS-B In displays, and pilots in aircraft with certified ADS-B equipment will not be able to see aircraft equipped with uncertified transmitters.

Can an aircraft owner or avionics shop install an uncertified GPS as an ADS-B position source?

Aircraft owners or avionics shops may install an uncertified GPS on amateur-built aircraft and light sport aircraft with experimental airworthiness certificates. Uncertified equipment, including uncertified GPS units, should not be installed on aircraft with standard airworthiness certificates. These position sources do not comply with 14 CFR 91.227 and will not be permitted to operate in airspace requiring ADS-B starting in 2020.

As with uncertified transmitters, uncertified GPS integrated into an ADS-B system will transmit data that cannot be used by ATC or other certified ADS-B In systems. Contact the manufacturer to learn which GPS systems are approved for a particular ADS-B system.

What are the risks of using an uncertified position source?

The risk with any GPS receiver, when used to support separation services, is the potential for position measurement error without detection. If the position error is too great, ATC would not be able to provide safe separation between one aircraft and other traffic in the vicinity. The FAA and international partners conducted a safety

analysis prior to publishing the ADS-B final rule to define the error detection boundary, and ADS-B performance requirements are based on this analysis.

Certified GPS sensors compare GPS satellite measurements against each other. When a satellite signal error becomes great enough to detect, the receiver will reject that signal. The integrity performance specified in the ADS-B rule depends on the proper operation of this error detection feature that ensures the safety of using ADS-B position based on GPS measurements. Navigation Integrity Category specifies an integrity containment radius around an aircraft's reported position, as defined in TSO-C166b and TSO-C154c 14 CFR 91.227. The NIC radius (bubble around aircraft) must be 0.2 nautical miles.

By comparison, uncertified commercial-grade GPS sensors assume the system is working properly and do not attempt to detect errors in satellite measurements. When presented with an erroneous measurement, these GPS sensors will calculate an erroneous position. FAA safety analysis found this to be unsafe. Therefore, ADS-B position information based on these sensors is prohibited from being used to support air traffic separation services and ADS-B air-to-air operations.

What equipment is available?

Approved avionics are available from multiple manufacturers. The list titled, "ADS-B equipment that meets FAA certification requirements" is current as of April 2014. Check with the avionics manufacturer for the latest updates on which GPS position solutions can be matched with a particular ADS-B unit.

Several manufacturers have products in development that will be available to meet the 2020 mandate for ADS-B Out. Some approved GPS receivers are also certified GPS navigators. They may be installed to support precision approaches in addition to providing ADS-B position information. In some cases, the GPS receiver may be integrated with a multifunction display providing a moving map, an ADS-B traffic display, access to the FIS-B information and more.

ADS-B equipment that meets FAA certification requirements

The FAA does not endorse any product or manufacturer listed. These pairings of ADS-B and position sources are listed in order of when the supplemental type certificate was issued. *Source: Federal Aviation Administration*

<i>Manufacturer</i>	<i>ADS-B Model Number</i>	<i>Approved Position Source</i>
ACSS	XS-950	RCI GLU-920 , RCI GLU-925
Honeywell	XS-852	CMC CMA-4024-1 SBAS
Trig Avionics	TT-31	FreeFlight WAAS 1201 Accord Technology NexNav Mini GPS unit
FreeFlight Systems	FDL-978-TX	FreeFlight WAAS 1201
ACSS	XS-950	RCI GLU-920 (A320), Thales TLS8755-01-0101A/D102B (A330)
Honeywell	ISP-80A.1	Honeywell ADIRU Part Numbers (P/N) HG2030BE02, BE03 or BE04
Trig Avionics	TT-22	FreeFlight WAAS 1201
Garmin	GDL 88 GTX 23 GTX 33x w/ES GTX 330x GTX 3000 (GTX models require appropriate S/W rev)	Garmin GTN 625/635/650, GTN 725/750, GPS 400W, GNC 420W/420AW, GNS 430W/430AW, GPS 500W/530W (w/ or w/o TAWS) (all require appropriate S/W rev)
Honeywell	MRC XPDR w/ADS-B Out	CMC CMA-3024 SBAS GNSSU MK II and CMA-4024 SBAS GNSSU
Honeywell	XS-858B Transponder, P/N 7517402-970	Honeywell GPS module (made by CMC), P/N 245-604067-100
Honeywell	XS-858B P/N:7017401-970	Honeywell GNSS/MMR VIDL-G, P/N: 7026208-804
NavWorx	ADS600-B	Accord Technology NexNav Mini GPS unit
FreeFlight Systems	FDL-978-XVR	FreeFlight WAAS 1201 (either external or integrated in FDL-978-XVR)
Rockwell Collins	TDR-94D-550	Universal UNS-1Fw
Avidyne	AXP340	Avidyne GPS (including R9) Garmin GNS430W/530W Garmin GTN650/750 FreeFlight Model 1201/1204 NexNav mini-T (external)
BendixKing	KT-74	Accord NexNav Mini GPS unit FreeFlight WAAS 1201

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ADS-B INSTALLATIONS

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ADS-B Essentials: Part 3

FAA ADS-B installation guidance

Guidance on the installation of ADS-B Out avionics for aircraft with a standard airworthiness certificate; these aircraft can broadcast ADS-B data on 1090 ES avionics and/or on 978 MHz UAT avionics.

1. Refer to AC 20-165A for guidance on the installation and testing of ADS-B Out avionics on aircraft with a standard airworthiness certificate.
2. ADS-B Out avionics must be approved by the FAA with a TSO (technical standard order) when installed on an aircraft with a standard airworthiness certificate. Approved ADS-B Out avionics will be marked with either TSO-C166b (1090 ES) or TSO-C154c (UAT) on the equipment's attached data plate. Do not install non-TSO ADS-B avionics on Part 23 and Part 25 aircraft, or Part 27 and Part 29 rotorcraft.
3. Installation of approved ADS-B avionics on an aircraft with a standard airworthiness certificate must be through a supplemental type certificate, approved model list associated with an STC, or field approval under certain conditions. Refer to the FAA policy memo for more information at www.faa.gov/about/office_org/headquarters_offices/avs/offices/afs/afs300/media/Major_Repair_Alteration_Job-Aid.pdf.

Guidance on the installation of uncertified ADS-B Out avionics (1090 ES or UAT) on amateur-built aircraft and light sport aircraft that have experimental airworthiness certificates:

- Non-TSO ADS-B Out avionics may be installed on amateur-built and light sport aircraft with experimental airworthiness certificates. In such installations, the ADS-B Out system must be configured to transmit a system integrity level and system design assurance of zero (SIL/SDA=0). The SIL/SDA=0 settings prevent ADS-B data of unknown quality and integrity from being processed by ATC automation and other ADS-B equipped aircraft but allow for the avionics to receive FAA traffic and weather broadcast services:

TIS-B and FIS-B. Contact the manufacturer of non-TSO ADS-B Out avionics for instructions on how to ensure SIL and SDA parameters are configured properly prior to operation.

Guidance on the installation of both 1090 ES and UAT ADS-B systems on the same aircraft:

- It is acceptable to equip an aircraft with both a 1090 ES and UAT ADS-B Out system. When properly configured, such installations allow pilots to take full advantage of available ADS-B broadcast services and capabilities. Care must be taken to ensure the systems are configured properly to avoid possible issues with ATC and other ADS-B aircraft. The FAA recommends that aircraft equipped with both a 1090 ES and UAT system be configured to transmit ADS-B data from the 1090 ES system only and set to receive data on both systems (if applicable). This configuration will comply with all ADS-B Out airspace equipment requirements and maximize use of ADS-B broadcast services (TIS-B and FIS-B). The FIS-B service is available only with UAT systems over the 978 MHz frequency.

Use of portable ADS-B Out systems: Portable ADS-B Out systems, also known as "suitcase" units, should not be operated (transmitting) aboard any aircraft. While marketing associated with these units may imply approval for use by way of an FCC license, the FAA prohibits their use for the following reasons:

1. The positioning of portable, suction-cup GPS antennas associated with these units often require they be affixed to front or side windows or glare shield to obtain a usable signal. Such antenna placement obstructs the pilot's view. Wiring connecting the antennas to the suitcase unit also interferes with aircraft controls and instruments.
2. ADS-B Out avionics require the transmission of a valid Mode S code to operate properly with ATC

automation and other ADS-B aircraft. Mode S codes, also known as the ICAO code, are assigned to an aircraft during registration and then programmed into transponders and ADS-B Out avionics. Mode S codes remain static until a change in aircraft registration or identification (N-number) occurs. Portable units require users to input the Mode S code assigned to each aircraft flown. A high number of Mode S code entry errors have occurred with this procedure, which prevent proper target correlation within ATC automation systems (target drops). Errors have resulted in increased workload and unnecessary distractions for pilots and controllers.

Use of portable ADS-B In systems: Use of portable ADS-B In “receive-only” units is acceptable under the provisions of 14 CFR §91.21(b)(5) & (c). These units are limited to listening for ADS-B signals and do not interact with ATC automation or other ADS-B equipped aircraft. Users of portable ADS-B In units should be aware that traffic information broadcasts from TIS-B are initiated by ADS-B Out aircraft transmitting within a service volume. Therefore, when an ADS-B service volume does not detect the presence of ADS-B Out aircraft, users of receive-only units in the same service volume will not be provided with transponder-based traffic information (TIS-B).

Common problems following ADS-B installations:

1. Mode 3/A code processing between transponder and UAT.
 - In Dual ADS-B Out systems, the transponder control panel is typically used to input the Mode 3/A code, which is then sent to the UAT for broadcast. When this transfer is not accomplished correctly, a Mode 3/A mismatch occurs between the transponder and UAT broadcast, causing ATC conflict alerts.
2. Non-compatible position source (GPS).
 - If a position source is used that isn't approved for use with the ADS-B system, or an approved position source is used but isn't using the appropriate software version to perform critical calculations, misleading data can be transmitted, resulting in a hazardous situation. Examples include incorrect position, velocity, integrity and/or accuracy information.

3. Mode S code programming errors.
 - The current Mode S code assigned to the aircraft during registration must be programmed into the ADS-B transmitter at installation. If equipping with both a 1090 ES and UAT transmitter on the same aircraft, the correct Mode S code must be entered into both transmitters and verified. Incorrect Mode S codes will cause issues within ATC automation. Mode S code mismatches on dual-Out equipped aircraft will cause ATC conflict alerts.
4. Improper SIL/SDA configuration on non-TSO units (experimental amateur-built and light sport aircraft).
 - The installation of non-TSO ADS-B equipment on experimental e-AB and e-LSA aircraft is allowed but requires the SIL/SDA parameters to be configured to transmit values of zero. A SIL and SDA=zero configuration prevents ADS-B data of unknown quality and integrity from being processed by ATC automation and other ADS-B In equipped aircraft.
5. Aircraft with ADS-B Out capable Mode S transponders installed that comply with TSO-C166a but were misconfigured during installation to transmit as compliant to TSO-C166b.
 - This problem typically occurs during installation of a UAT Out system on an aircraft with an existing TSO-C166a compliant Mode S transponder and results in the aircraft transmitting bad ADS-B Mode S data and good UAT data.

How to avoid problems:

1. Use a Part 145-certified repair station with appropriate limited ratings to complete and test the ADS-B installation. An ADS-B avionics manufacturer can provide aircraft owners with a list of recommended service centers to accomplish this work.
2. For ADS-B installations on experimental e-AB and e-LSA aircraft, use appropriate ramp test equipment to verify system performance. The built-in test capabilities of individual ADS-B avionics components are not sufficient to verify proper operational performance of the entire system. □

EAA CHAPTER 75 – QUAD CITIES
1ST SATURDAY COFFEE AND DONUTS
MEMBER OR NON-MEMBER
ALL ARE INVITED – BRING THE FAMILY

**FREE COFFEE AND DONUTS AND SOME
GOOD HANGAR TALK AT THE DAVENPORT AIRPORT**

SATURDAY, JULY 5, 2014
8:30 – 11:00 AM (RAIN OR SHINE)

Hosted this Month by:
Ed Leahy at the
Davenport Airport



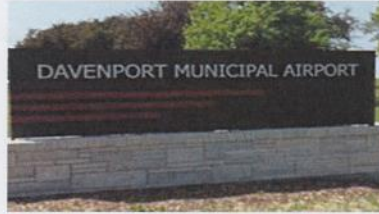
DRIVE IN – HOPE TO SEE ALL

This month, hope to see all at our 1st Saturday of the Month coffee hosted by Ed Leahy. Come for some good hangar talk and see your fellow Chapter 75 members. Plenty of room for all.

FLY IN: Unfortunately, not possible this month as the Davenport airport runways will be closed during the month of June for construction of the 15/33 - 03/21 runway intersection.

DRIVE IN: Just drive to the Davenport Airport. Will be meeting at Ed's hangar, which is at the west end of the old T-hangars. Will try to leave the new gate open on Harrison St. in the morning. Call Marty at 563-340-9919 for the gate code if closed and you do not know.

Status Update for the Runway 3/21 Reconstruction at the Davenport Municipal Airport



BOTTOM LINE UP FRONT: Everyone has been wondering what is the status of the runway intersection reconstruction and when the Airport will re-open. So far, the intersection sub-soil, stormwater system, and preparatory grading have been completed. Unfortunately, the contractor has had much difficulty providing the under-concrete aggregate that is so vital to the longevity of the new runway. Because of this, the completion date for the runway reconstruction and the Airport re-opening has slipped out to July 15, 2014.

TECHNICAL DIFFICULTIES: Because of the frost depth at the Airport, and the thickness of the new concrete, the FAA has mandated specific under-concrete aggregate requirements for this project. The P-209 Aggregate that we are to use is made up of specific percentages of stone sizes to maximize the drainage capability of the stone yet minimize the water retention should moisture infiltrate. The range of stone sizes allowed is from 2 inch all the way down to .02 millimeters.



The stone size that has been troubling us has been the .02 mm and smaller. This material is what helps bind the aggregate pile together when it's compacted and is a vital part of the concrete sub-base. With too much of this fine material comes a high probability of it being dirt. Through repeated freeze-thaw cycles, the moisture retained in this fine material would cause our new runway to crack. To prevent eventual cracking yet still bind the stones together, a maximum of 5% of this

fine material can be .02 mm or smaller. Keeping this number low would normally be easy if we had our choice of granite quarries in Iowa. Unfortunately, Iowa is primarily limestone.

SOLUTION: We have been working closely with the FAA to resolve this particular problem and have come up with a viable solution. We have been authorized to use a modified P-209 mix. Essentially, the stone is washed to remove all of the fine material, and then a manufactured stone sand is added back into the mix to achieve the results we need. All of the required testing procedures have come back positive on this modified material and the under-concrete aggregate is now being installed.



LATE OPENING: All tenants will receive a credit for the number of days that the Airport is delayed in re-opening. This credit will be calculated and applied to all tenant accounts once the Airport has re-opened.

The Airport re-opening has slipped to July 15, 2014

I have received many phone calls regarding the credit that was given for the month of June. What happened is that many of you paid during the month of May for the month of June. The credit that you received was applied to your accounts after the billing cycle had started, so the credit did not appear on your invoice as it should. I assure you that it is in the system. Please feel free to call me if you'd like me to verify that your account was credited correctly.

Local Calendar of Events

For many other Aviation Related events, visit the following websites. Click on the following links. Will only list events submitted to the editor and other most local events here.

[EAA Aviation Calendar of Events](#)
[AOPA Aviation Calendar of Events](#)
[Iowa DOT Office of Aviation Calendar](#)
[Wisconsin Fly-Ins and Airshow Event Calendar](#)
[Illinois DOT Division of Aeronautics Newsletter](#)
[Fly-In Calendar Website](#)
[Fly-Ins.com Calendar Website](#)
[Fun Places to Fly Website](#)
[Social Flight Calendar](#)
[Midwest Flyer Magazine Calendar](#)

July 5, 2014

1st Saturday Coffee and Donuts at the Davenport Airport hosted by Ed Leahy. Airport runways will be closed but come for some good hangar talk.

July 12, 2014

EAA Chapter 75 Summer Potluck at the Davenport Airport at NOON. Be there. See Page 2 for the details. ALL are welcome! www.eaa75.com

Upcoming EAA Webinars

Go to www.eaa.org/webinars to view the schedule and to register.

EAA AirVenture Apps Are Available

Free apps for both iOS and the Android, for your smartphone or iPad are now available. For the iOS version, go to the iTunes store.

A full view of Airventure events, attractions, visitor services, destinations, speakers, forums and exhibitors. Discover events near you at any minute.

THEY are FREE!!

Send event information on those activities that would interest the membership. Will be delighted to include any information on aviation related activities, fly-in breakfasts, etc. e-Mail your information to marty.santic@gmail.com

Classified Ads

DAR Services: Amateur Built/Light Sport Airworthiness Certification Inspections, Ferry Permits (Certified and Experimental), Replace lost/damaged Airworthiness Certificates (Certified and Experimental). Call Ross Carbiener (A&P) at 309-738-9391.

For Sale: Overhauled Std bare cylinders 320 wide deck 150 hp. I have all the other old cylinder parts as removed. Starter, flywheel, alternator, alternator brackets, vac pump, fuel pump & air shroud. The engine is from a 1965 Piper Cherokee 140. Contact Terry Crouch at 563-370-6126.

Hangars Available: At the Davenport Airport!! Call Tom Vesalga at **563-326-7783**.

For Sale: One share in the Four Seven Jays Flying Club. The club plane is an extremely well maintained 180HP 1973 Cessna 172M hangared at MLI. IFR equipped. Paint and interior new 2003. The following avionics were installed in 2010: Garmin GMA-340 Audio Panel/ICS/Marker, Garmin GNS-430W WAAS GPS/Garmin GI-106A CDI, Garmin 496

GPS, panel mounted, coupled to 430, Garmin GTX37 Transponder. Asking \$4000. Dan Murphy 309-230-2679, Ron Ehrecke 309-762-3210, or Ralph Stephenson 309-737-6902.

For Sale: Flying Country Club shares for sale. Will sell any amount you need at \$35.00 per share, buyer pays transfer/activation fees, call Ray Holland at 563-359-0450.

For Sale: Quad City Flying Eagles Share For Sale. I have a share in the Quad City Flying Eagles Club out of the MLI airport for sale. I am asking \$1000/obo. Please contact Amanda Gray at [563-340-9937](tel:563-340-9937) or amanda@avsafetyolutions.com

For Sale: My share in the Quad Cities Flying Eagles. \$1000.00 or best offer. Dave Leners. 563-357-5104

Have ANYTHING FOR SALE?

Send your listing to
marty.santic@gmail.com

To place an ad: Submit requests for aviation related For Sale or Want ads to the newsletter editor. Ads are free to Chapter 75 members. Ads from nonmembers will be run on a space available basis. Ads will be run / re-run at the newsletter Editor discretion. If we run out of room, will make some more!!

Chapter 75 Merchandise Now Available (from Marty Santic)

As mentioned at the last meeting, baseball caps are now available with the new Chapter 75 logo. The caps are of nice quality and the logo is embroidered, not printed. The caps are available for \$10 and will be available at our future monthly meetings. I will ship in a Priority Mail package for an additional \$5.00, if you cannot make one of the meetings. The normal price from Vistaprint.com is \$16. I ordered 30 and received a discount. If you would like a cap, please send me an e-mail. marty.santic@gmail.com If you would like me to ship, send a check to Marty Santic, 3920 E. 59th St., Davenport, IA 52807

Also available via CafePress are men's clothing items such as T-shirts, sweatshirts and jackets, women's clothing items, child's clothing items, accessories and holiday items with the logo. The logo is printed and not embroidered on all of the items from CafePress. Visit our store at www.cafepress.com/eaachapter75



Baseball Cap in Light Khaki



Men's Polo and Women's T-Shirt

EAA CHAPTER 75 OFFICERS

(Effective January 2014)

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Roger Nightingale (See Above)	
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Ed Leahy (See Above)	
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**Always Remember.....
The Time Spent Flying is NOT Deducted
from Your Lifetime!**

Chapter Website
www.eaa75.com

QUAD CITIES CHAPTER 75 MEMBERSHIP APPLICATION/RENEWAL FORM

New Member
 Renewal
 Info Change

Membership dues for EAA Quad Cities Chapter 75 are \$10/year.
 Make checks payable to EAA Chapter 75

Mail application/renewal to:
 Ed Leahy - EAA Chapter 75
 3211 South 25th Avenue
 Eldridge, IA 52748

National EAA offices:
 Experimental Aircraft Association
 EAA Aviation Center
 PO Box 3086
 Oshkosh, WI 54903-3086
<http://www.eaa.org>

National EAA Membership:
 1-800-JOIN-EAA (564-6322)
 Phone (920) 426-4800
 Fax: (920) 426-6761
<http://www.eaa.org/membership>

Name: _____
 Copilot (spouse, friend, other): _____
 Address: _____

 City: _____ State: _____ Zip: _____
 Phone (Home): _____ (Work): _____
 (Cell): _____
 Email Address: _____
 EAA#: _____ Exp Date: _____
 Pilot/A&P Ratings: _____
 Occupation: _____ Hobbies: _____

I am interested in helping with: _____

Tool Committee Tech Advisor Flight Advisor
 Repair Barn Young Eagles Social/Flying
 Hospitality Board Member Newsletter

What are You Building? _____

What are You Flying? _____
