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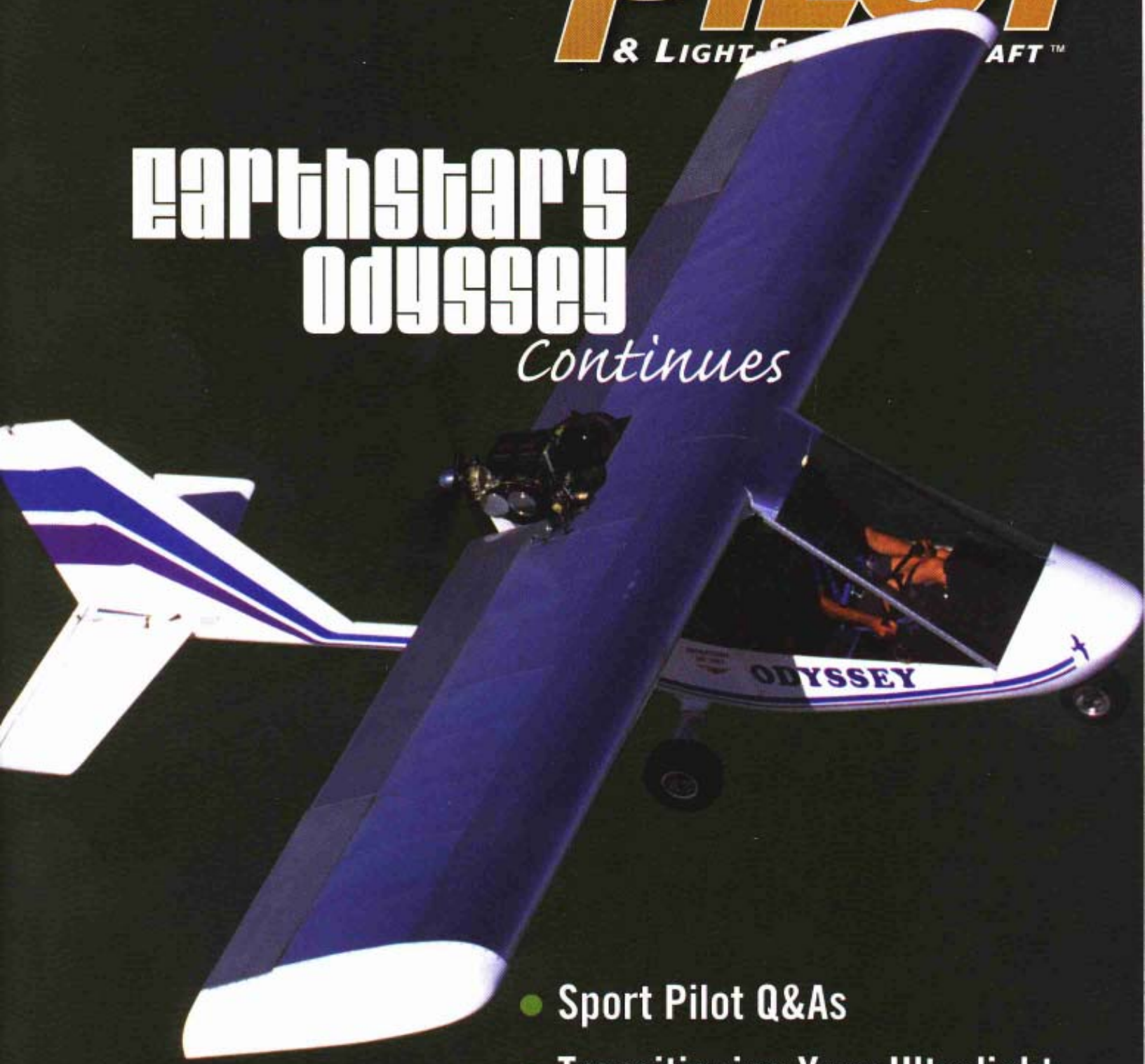

- Sport Pilot Q&As
- Transitioning Your Ultralight
- The Little Airplane That Did!

Transitioning Your Ultralight

Which Way To Go

Michael "Mike" Huffman

Stepping through the process

Some 10,000 to 15,000 ultralight-type aircraft may seek an FAA airworthiness certificate in the next few years, depending on whose estimate you believe. Recall that owners of "fat" or two-place ultralights have until January 31, 2008, to certificate their aircraft under the transitioning opportunity offered by the sport pilot/light-sport aircraft (SP/LSA) rule.

If you're the owner of an ultralight that needs to transition, pull up a chair; this article will help you understand the process. In this main article, we'll offer tips to make the process go smoothly; in the sidebars, we'll discuss the pros and cons of certificating your aircraft as an experimental light-sport aircraft (E-LSA) versus an experimental amateur-built (E-AB) as well as other pertinent issues.

Certificating an E-LSA

The E-LSA certification process is simple. The FAA endeavored to make it easy for all existing aircraft that do not qualify as Part 103 legal ultralights to convert to E-LSA. We will concentrate on existing ultralight-type aircraft transitioning to E-LSA in this article. (To learn about other E-LSA types, see the sidebar "E-LSA Options 2 and 3.") The process for certificating an ultralight-type aircraft to an E-AB airworthiness certificate is similar to the E-LSA process.

To certificate your existing ultralight-type aircraft, your aircraft:

E-LSA Options 2 and 3

In the SP/LSA rule, the FAA created three ways for an aircraft to receive an E-LSA airworthiness certificate. This article focuses on option 1, transitioning an ultralight-type aircraft.

OPTION 2 allows a manufacturer of a special LSA (S-LSA) to offer the aircraft as a kit up to 99-percent complete. No amateur construction is necessary. The purchaser of the kit may hire a person to complete the project. To sell such E-LSA kits, the manufacturer must build and certificate one aircraft of that make and model as an S-LSA and provide a final assembly manual in compliance with the appropriate consensus standard.

At this time, the consensus standards for these final assembly manuals have not been approved, so it will be some time before these Option 2 E-LSA kits exist. Beware of any manufacturer offering this kit as an option at this time.

OPTION 3 allows the buyer of an S-LSA to trade an S-LSA airworthiness certificate for an E-LSA certificate, which allows the owner to perform all repairs and maintenance and the condition inspection after completing a 16-hour course appropriate to the aircraft. However, the aircraft may no longer be used for commercial purposes, such as flight training or as a rental aircraft in a fleet.

1. Must be a fixed-wing airplane, a weight-shift aircraft, a powered parachute, a gyroplane, or a glider. Helicopters are not eligible as LSA.

2. Must meet all of the LSA weight, speed, and aircraft configuration specifications. (See sidebar, "Definition of an LSA.")

3. Must not have been previously registered in the United States or any foreign country in any airworthiness category.

These are the only eligibility requirements. It does not matter who built the aircraft, where it was built, or whether it has already flown. It also does not matter whether or not it looks like a typical ultralight—for instance, a Pietenpol Air Camper, a Sonex, or a Zenith 601 would likely qualify.

Beginning the Process

We recommend ordering EAA's E-LSA Conversion Kit as the first step in the process.

This kit contains all the necessary forms, placards, data plate, and a 15-page *E-LSA Conversion Guide*, which takes you through the process step-by-step. (To order, visit *www.sportpilot.org* and click on "E-LSA Conversion Kit" on the left-hand side of the main page, or call EAA's Membership Services, 800/564-6322). The price is $12.99 plus shipping for EAA members.

Next, we recommend you contact an E-LSA designated airworthiness representative (DAR) in your area. DARs are private citizens who have been authorized and trained by the FAA to certificate aircraft. Some DARs are authorized for all E-LSA aircraft classes; others are restricted to a single class, such as fixed-wing airplanes, weight-shift aircraft, or powered parachutes. (A list of DARs is available at *www.faa.gov/aircraft/rec/light_sport/media/DAR47.pdf* or *www.sportpilot.org/inspecting/elsa_dar.html;* click on E-LSA DAR Directory.)

Coordinating with the DAR early in the process prevents surprises during his or her visit to inspect your aircraft. The DAR can provide valuable guidance, and he or she might need additional information to complete the inspection or the operating limitations document. As a DAR, I have developed a detailed set of questions that, as I work with owners transitioning their aircraft, are designed to ferret out subtle nuances in the way the airplane is configured, where it is based, and how it is to be flown.

> The E-LSA certification process is simple. The FAA wanted to make it easy for all existing aircraft that do not qualify as Part 103 legal ultralights to convert to E-LSA.

Some DARs charge the applicant for their services while others in EAA's volunteer DAR program ask only reimbursement of travel, telephone, and miscellaneous office expenses. (See Jack McCarthy's letter in "Members Forum," page 6, for more information on this subject.)

As an alternative to a DAR, you may request that an FAA Aviation Safety Inspector (ASI) certificate your aircraft free of charge. However, because of workload constraints, FAA is offloading most of that work to DARs. Also, most ASIs have not yet been trained on E-LSA certification.

Registering Your E-LSA

EAA's E-LSA Conversion Guide provides detailed instructions for registering your aircraft with the FAA and obtaining an N-number.

When filling out the registration application form, note that the manufacturer, model, serial number, N-number, and owner's name listed on your registration certificate are the "master" data by which FAA knows your aircraft. All other forms must agree with this registration data. Inconsistencies in names/titles can result in confusion. For example, the registration application form asks for "aircraft manufacturer," while the application for airworthiness form asks for "builder's name," both of which are the same; you should use your name as the manufacturer/builder.

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Definition of an LSA

Light-Sport Aircraft:

- **Maximum gross takeoff weight—1,320 pounds (599 kg.), 1,430 pounds for seaplanes.**
- **Lighter-than-air craft maximum gross weight—660 pounds (300 kg.).**
- **Maximum stall speed—51 mph (45 knots).**
- **Maximum speed in level flight with maximum continuous power (Vh)—138 mph (120 knots).**
- **Two-place maximum (pilot and one passenger).**
- **Single, non-turbine engine only, includes rotary or diesel engines.**
- **Fixed or ground-adjustable propeller.**
- **Unpressurized cabin.**
- **Fixed landing gear, except for an aircraft intended for operation on water or as a glider.**
- **May be operated at night if the aircraft is equipped per FAR 91.209 and the pilot holds at least a private pilot certificate and a minimum of a third-class medical.**

E-AB *Vs.* E-LSA

By Charlie Becker, EAA Aviation Services

Many ultralight-type aircraft are homebuilt aircraft. That is, someone built the aircraft from a kit or set of plans. These aircraft are eligible for an experimental amateur-built (E-AB) airworthiness certificate instead of an experimental light-sport aircraft (E-LSA) certificate, the new certification category established for ultralights purchased ready to fly and/or from previous owners.

E-AB and E-LSA Qualifications

If you can document that you built your aircraft, you may be eligible for E-AB certification. How do you prove you built it? A builder's log that has a written journal and/or photographs will suffice. It doesn't have to be an elaborate document; it just must convince an FAA inspector that you are the builder.

If you built the aircraft from a kit, a complete chain of ownership for the kit, supported by the appropriate bills of sale, is required. For example, if you bought the kit partially built from your friend, Fred Smith, you will need a bill of sale from the kit manufacturer to Fred Smith, and one from Fred Smith to you. If you cannot provide this information, you won't get the aircraft registered as an E-AB. E-LSA, on the other hand, are not required to provide this chain of ownership.

If you did not build the aircraft, you'll need to certificate the aircraft as an E-LSA, and that's not difficult. We'll outline the process later in this article.

Advantages/Disadvantages

Assuming your aircraft can qualify for either certificate, let's look at the advantages and disadvantages of both certificates. **(See Table 1.)**

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Table 1

Airworthiness Certificates
Experimental Amateur Built vs. Experimental Light-Sport Aircraft
Prepared by EAA Aviation Services

The following is a general summary of the differences between an Experimental Amateur Built (E-AB "homebuilt") and an Experimental Light-Sport Aircraft (E-LSA).

	Experimental-Amateur Built §21.191(g)	E-LSA (Transition aircraft) §21.191(i)(1)
Qualifications	Major portion must have been built by amateurs for recreation and/or education. You must be able to document	Meets performance definition of a LSA
Availability of this airworthiness certificate	No time limit	Aircraft must be issued a certificate by 1/31/2008
Registration with FAA	If kit, must supply complete chain of ownership from kit manufacturer	No chain of ownership required
Maintenance	Anyone can perform all maintenance and repairs	Anyone can perform all maintenance and repairs
Repairman Certificate	Only the primary builder may obtain the repairman certificate – No cost to apply	Any owner can take a 16-hour course and pass a test to earn the repairman certificate
Flight over populated areas	After flight test period, can be flown in congested airways and over densely populated areas as long as sufficient altitude is maintained to effect a safe emergency landing without hazard to persons or property on the ground	Aircraft may not be operated over an open air assembly of persons, over densely populated areas or in congested airways. Note: May be amended to E-AB requirements in mid-2006.
Training	Cannot be used to carry persons or property for compensation or hire	Can be used for rental to students until 1/31/2010
Arranging the inspection	Well established process, inspectors available	Still new and therefore may be difficult if you are the first in your local area

You may choose any model designation and serial number you want. If the aircraft was built from a kit, general practice is to use the model designation and serial number provided by the kit manufacturer, but that is not required.

One final warning about the registration process. Once you send the registration package to the FAA, you may not legally fly your aircraft until it is certificated, and then you must hold a valid pilot certificate. It may be several weeks before your aircraft is officially registered. Airworthiness certification by a DAR cannot be completed until you receive the official FAA certificate in the mail.

Other Forms

Follow EAA's E-LSA Conversion Guide instructions for filling out the application for airworthiness, the program letter, and the weight-and-balance form. The DAR may request photocopies of these documents prior to his or her visit. Note that on the application for airworthiness, the year of manufacture should be the current year, not the year you began flying the aircraft as an ultralight.

On the program letter, coordinate with the DAR regarding the size and shape of the Phase I flight test area. Also, be aware that if you use the aircraft for flight instruction or towing of ultralights for compensation, your airworthiness certificate will likely expire on January 10, 2010, the date ultralight training exemptions expire. After that, you will need another DAR/FAA ASI visit to issue a new airworthiness certificate and operating limitations.

Regarding your weight-and-balance sheet, the DAR may have developed a specific form. For example, I have developed a Microsoft Excel spreadsheet that not only calculates the basic weight-and-balance data but also provides detailed instructions for performing the operation, a list of equipment installed in the aircraft at the time of the weight and balance, and a list of gross weight/CG parameters and how they were determined.

The DAR may ask if you intend to perform aerobatics in the aircraft; your decision will be reflected in your operating limitations.

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Maintenance and Inspection

Both E-AB and E-LSA enjoy the same maintenance rules; the owner does not need a special certificate to maintain or repair the aircraft. However, condition inspections are another matter. The aircraft's operating limitations (see sidebar, "Operating Limitations") will require a condition inspection every 12 months to determine if the aircraft is in a condition for safe operation. In both cases, the condition inspection may be performed only by an airframe and powerplant (A&P) mechanic or a person with an appropriate repairman certificate.

To qualify for a repairman certificate for an E-AB, you must be the primary builder of the aircraft. After obtaining your E-AB airworthiness certificate, you must apply in person to your Flight Standards District Office (FSDO) and receive your repairman certificate, which allows you to perform the condition inspection only for that specific aircraft. The certificate is non-transferable and only one person may receive it. (There is no cost involved.)

To qualify for an E-LSA repairman certificate, you must attend a 16-hour FAA-accepted course for a specific class of aircraft (for example, powered parachute) and pass its exam. Once you receive your certificate documenting that you passed the course, you must apply in person to your FSDO and receive your repairman certificate, which allows you to perform the condition inspection on any E-LSA you own in that class of aircraft. For example, if you passed the E-LSA powered parachute course, your repairman certificate is good for any E-LSA powered parachute you own now or in the future. Likewise, should you sell your E-LSA in the future, the new owner could also take a repairman course to earn that rating and perform the condition inspection.

Flight Restrictions

One of the more important differences between E-AB and E-LSA concerns where you are allowed to fly the aircraft. An E-AB, after Phase I flight testing is complete, may fly "in congested airways or over densely populated areas" when directed by air traffic control or when sufficient altitude is maintained to effect a safe emergency landing in the event of a power unit failure, without hazard to persons or property on the ground. That means that, for practical purposes, an E-AB can operate most anywhere. If the pilot does not crash or violate other FARs, he or she is not in violation for merely flying in congested airways or in densely populated areas.

By contrast, an existing ultralight-like vehicle certificated as an E-LSA "may not be operated over an open air assembly of persons, over densely populated areas, or in congested airways," even after Phase I flight testing is complete. This is considerably more restrictive than for E-AB. It means that you are in violation for simply flying in those areas. The definition of an "open air assembly of persons" is up to the FAA person who may be writing a violation against you. (*Note: EAA has requested that these restrictions*

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Operating Limitations

Operating limitations act as a set of mini regulations that govern how a specific aircraft may be used. FAA Headquarters provides standard operating limitations for every category of experimental aircraft, such as E-AB or E-LSA. However, FAA inspectors and DARs have the authority to modify these standard operating limitations to deal with specific situations.

Overall, the operating limitations for E-AB and E-LSA are similar with one exception: Once an E-AB completes its flight-testing phase, it may be flown over densely populated areas as long as sufficient altitude is maintained to execute an emergency landing without undue hazard to people or property on the ground. An E-AB does not have to comply with this requirement during takeoff or landing, or if so directed by Air Traffic Control (ATC).

Not so for an E-LSA. The operating limitations for an E-LSA prohibit flight over densely populated areas or over an open-air assembly of people, no matter if you are taking off or flying at 5,000 feet. What is an "open-air assembly of people"? Unfortunately, the FAA makes that determination on a case-by-case basis, but probable examples include a high school football game or an outdoor concert.

Editor's Note: In recent discussions, EAA recommended to the FAA that the limitation of flight over congested areas for E-LSA be discontinued and that E-LSA should have the same operating limitations in that regard as E-AB. The FAA indicated it would consider that recommendation, and EAA expects that limitation may be removed by mid-summer 2006.

This is the flight-test area that DAR Mike Huffman recently designated for a Challenger owner who recently converted his aircraft to E-LSA status. Note that Huffman has restricted the owner from flying over the airspace around Topeka, Lawrence, and Olathe, Kansas.

Preparing Your Aircraft

To get ready for the DAR visit, you must install the fireproof data plate and affix the N-number and any other required placards. You will also need to initiate an aircraft and engine logbook, if you do not already have them.

You may need to install additional equipment in your aircraft. If your aircraft is a two-place fixed-wing airplane, you will need to install an ELT. If your aircraft is based within the Mode C ring of a large airport (for example, Chicago O'Hare or Atlanta Hartsfield-Jackson), you may need to install a transponder and altitude encoder.

Before the DAR visits, inspect your aircraft. The E-LSA Conversion Kit contains an inspection checklist, but your DAR may have one he or she wants you to follow. Ask about any specific items he or she will be looking for. Perform the inspection, fix any problems you find, fill out and sign the inspection checklist, and make an entry in the aircraft logbook as directed by your DAR.

Airworthiness Directives

Confusion has existed as to whether E-LSA must comply with airworthiness directives (ADs). The question is pertinent to E-LSA equipped with FAA-approved engines (for example, Continental O-200s), propellers, seat belts, magnetos, carburetors, and various instruments.

Here's the bottom line: FAA regulations and guidance do not specifically define whether AD compliance is required. However, the DAR's job is to determine that the aircraft is "in a condition for safe operation" (FAA terminology). Most DARs work under the premise that because ADs describe known unsafe conditions, they must be complied with to make that statement. If you believe a particular AD is not applicable to your situation, talk with your DAR in advance.

The DAR Visit

When the DAR arrives, your paperwork must be complete, and the aircraft must be ready to fly. Uncompleted repairs or items removed for repair are

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against E-LSA be lifted, and the FAA in recent joint EAA/FAA meetings has indicated it will revise these restrictions. However, at this time, the "congested airways" restrictions remain in effect for E-LSA until the FAA publishes a notice stating otherwise.)

Training

A disadvantage for E-ABs is that such aircraft are prohibited from carrying persons or property for compensation or hire, which includes student pilot training, unless the student owns the aircraft. E-LSA aircraft that were previously ultralight trainers may elect to receive operating limitations that allow the rental of the aircraft to students for flight instruction until January 31, 2010. If you are converting a two-seat ultralight with the intention of providing commercial flight instruction, E-LSA is the way to go.

One caution is important to note. An ultralight trainer converted to E-LSA status and used for commercial flight instruction until January 31, 2010, is required to have a 100-hour inspection. Only an LSA repairman with a maintenance rating or an A&P mechanic may perform that inspection. An LSA repairman with an inspection rating is not authorized to perform this 100-hour inspection.

Miscellaneous Differences

Another benefit for E-ABs is that properly equipped E-ABs may be flown at night and in instrument flight rule (IFR) conditions. Sports pilots may not fly in those conditions, but should you wish to sell the aircraft in the future or add further ratings to your certificate that airworthiness certificate might be valuable to you.

E-LSA certification also has potential advantages. For instance, an E-AB with an unapproved engine/propeller combination must be flown at least 40 hours in a designated flight test area before being released for flights outside the area. However, the equivalent requirement for an E-LSA *may* be as little as five hours.

Now that we understand the differences between E-AB and E-LSA, the choice is yours. For a person who wants to provide commercial flight instruction in his or her aircraft or who cannot document the chain of ownership for a kit aircraft, E-LSA is the only option. Beyond that, your future plans for owning or selling the aircraft or adding ratings will impact your choice.

Available LSA Repairman Courses

To date, the FAA has accepted three different courses for individuals to earn an LSA repairman certificate with an inspection rating for airplanes. These include EAA, Rainbow Aviation Services (Corning, California), and Sport Aviation Specialties (Lee's Summit, Missouri).

The FAA has also accepted Rainbow Aviation Services' course for weight-shift-control aircraft (trikes). EAA and Sport Aviation Specialties are also developing courses for powered parachute and weight-shift-control aircraft.

The FAA has also accepted Rochester Institute of Technology's course for powered parachute owners.

For more information about EAA's courses, offered through EAA's SportAir Workshops, call EAA Aviation Services at 888/EAA-INFO (322-4636), or visit *www.sportair.com/schedule.html.*

For more information about Rainbow Aviation Services' classes, call 530/824-0644, or visit *www.rainbowaviation.com/books_and_seminars.htm.*

For more information about Sport Aviation Specialties' classes, call 816/838-6235, or visit *www.sportaviationspecialties.com/LS_Repairman_Courses.htm.*

For more information about Rochester Institute of Technology's course, visit *http://lsa.rit.edu.*

not acceptable. Unless other advance arrangements have been made with the DAR, the aircraft should be located indoors with good lighting and, if practical, some means of temperature control. The engine cowling and all access panels should be removed, and the aircraft thoroughly cleaned. Provide a creeper or mats for the DAR to inspect the underside of the aircraft, and a worktable, desk, or other surface for completing paperwork.

Treat the inspection seriously. Although the DAR may be a friend, in this setting he or she is an official representative of the FAA. This is not the time to have your airport buddies around. Be courteous and expect the DAR to be courteous. Answer questions promptly and completely when asked; however, keep idle chatter to a minimum. Avoid describing or bragging about past transgressions of the FARs—such talk puts the DAR on the spot. Remember: When the DAR isn't happy, nobody's happy!

Have a pad and pencil ready to note any discrepancies the DAR finds. If the pre-inspection coordination has been handled properly, discrepancies should be minor and can be corrected after the DAR has issued the airworthiness certificate.

A little nervousness is normal. On the other hand, have fun; without exception the inspections I have been involved with, whether on the giving or receiving end, have been enjoyable and were frequently occasions for additional learning.

At the conclusion of the inspection, the DAR will likely issue your airworthiness certificate and operating limitations, explaining them in detail. At that point, after reinstalling the engine cowling and access covers, you'll be set to go flying!

Questions or comments? Contact EAA Aviation Services at 888/EAA-INFO (322-4636), or e-mail *info@eaa.org*, or Mike Huffman, Sport Aviation Specialties at 816/838-6235 or e-mail *sportaviationspecialties@kc.rr.com.*