



Newsletter Vol. 1, No. 4. Winter, 2008 - 2009

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## 406 ELTs

One of the historical issues with aviation is that no matter how much training we get, how well we maintain our aircraft, or how prepared we are for a flight, occasionally, things go wrong. Off-airport landings can and do happen for these and many other reasons. Many are survivable, in fact most can be under the right circumstances. One of the tools we have on board our aircraft is designed to assist the survivability rate, and that is the Emergency Locator Transmitter, or ELT.

A little history: My first recollection of the ELT is we were installing them (retrofit) in aircraft when I broke into the business, as an apprentice, in the early 1970's. A unit devised to automatically send a distress signal should one have a deceleration of 9 G's or better. They could also be turned on manually, should you have an off-airport landing that was more successful. Some of the early units were rather poor in design, so the TSO (Technical Standard Order) to which they were built was revised. These units transmitted on dual frequencies of 121.5MHz and 243.0MHz. Problems included the transmitted signal being generic, and, even though the frequencies were monitored, there was not much way to locate the source other than homing on it. (Brings back memories of the old DF steer I learned about in private pilot training.) In the early 1990's, satellite monitoring of 121.5 was started. This gave us a 500 sq. mile accuracy of target, but only after several satellite passes (determined by Doppler shift analysis). Other sources were detected on this frequency by the satellites, such as ATM machines, pizza ovens and stadium scoreboards, so only about 2 in 1000 signals received was an actual distress signal.

In an effort to reduce the number of false signals, it was determined that the ELT needed to transmit additional information, and use a more well-defined frequency. Without going into a whole lot of detail, the next generation of ELT was developed, dubbed the 406, as it not only transmits the original distress signal on 121.5MHz, but also a digital signal on 406MHz. Among other things, encoded in this digital signal is information that tells the receiving authority the unit's identification number. This is then processed to give aircraft and registration information, so a quick phone call could determine if this might be a false alarm. With the higher-powered digital signal (5 watts compared to 0.1 watt), target accuracy allows for a 25 sq. mile search area after only one satellite pass, with one to three mile position accuracy. And, with optional GPS interface, can give exact latitude and longitude of last known position, enhancing position accuracy to less than 100 yards.

The 406's continue to broadcast on 121.5, also; allowing ground search and rescue personnel to use the homing

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406 ELTs, cont.  
method for the final phase.

Wow! Think about that for stretching our search and rescue budget! At this time, there is no requirement in the United States to replace the older units with the new 406, however, I have seen from the support side, the older units are getting increasingly difficult to find the new batteries (applies to the units that use a battery pack, as opposed to individual alkaline cells).

I asked for input from a few Canadians I know about their requirements. Apparently, there is a 2-year phase in of the 406 units, with all aircraft operating in Canadian airspace required to have them by February 1, 2011. An email string detailing some of the COPA efforts to get Transport Canada to delay and review implementation was forwarded to me. A strong point is made that if it will be required to change the ELT, revisit some of the problems the 406's carried forward from the 121.5's: poor antenna design, g-switch accuracy. Two additional arguments are that infrequent satellite coverage can be an issue in Northern Canada, and the 406MHz frequency itself being line of sight. What is true, come February of 2009, the only monitoring of the 121.5 frequency will be done by pilots; satellite monitoring of those frequencies will stop.

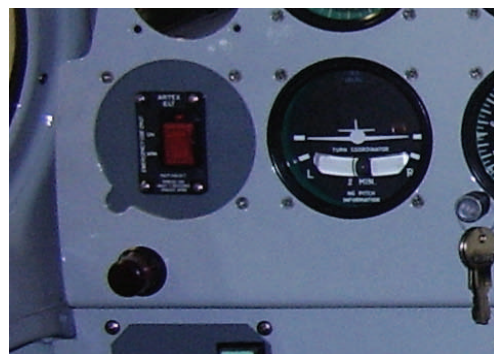
Nuts and bolts time. What does all this mean? For openers, if you need to be found, my opinion is have one of the 406 ELTs.

The pros? False signals are eliminated in short order, and search & rescue personnel can be dispatched to a well defined area. The units have an audible sound when activated (if you don't see the light flashing on the panel) that can be heard as you secure your airplane in event of false activation. Still transmits on 121.5 MHz.

Middle-Ground? Yearly maintenance of the units is the same (inspection and testing), batteries are a bit more expensive, but longer times between change. Requires registering the unit initially, and re-registration every 2 years, but, they give you a sticker for the ELT to remind you when that is due. (I also note this in the maintenance entry by the battery due date.) Satellite coverage in fringe areas is supposed to improve, but on what schedule?

Cons? Initial cost would be the big one. The units we have installed so far were installed at time of other maintenance events (airframe restoration of 891JH, annual inspection on the others), therefore install time can be reduced by coincidental installation. Plan on spending about \$1000.00 for a basic unit in the box; airframe configuration would determine labor. If you want it to be tied in to your GPS, that is additional. My understanding is a few manufacturers are working on units with internal GPS at a favorable price, but have not seen the results of that yet.

Life is good, my advice to help you keep it that way would be to make the investment in the new technology. Sure, a fancy new glass panel, or 530W will make reaching the destination easier, but if you fall short of your destination, a little technology might make the life difference.



**Panel unit (top) and main unit (bottom)  
of Artex ME-406 ELT installation in  
891JH**

Some of the information for this article obtained from [www.sarsat.noaa.gov](http://www.sarsat.noaa.gov),  
and the Federal Register, Vol. 66, #127, 7/02/2001.  
Also, a thank-you to Don Bradshaw of Aeromotive Performance in Pitt Meadows, BC

*AVSTAR Aircraft of Washington, Inc.*, can help you make the life difference in off-airport landings.  
We proudly offer the Artex line of 406 ELTs, and shoulder harnesses by BAS, Inc.  
Call 253-770-9964 today and we can work up a customized installation for you!

## The Survey Says

As many of you are aware, we conducted a survey of our customers and prospective customers. We derived our list from folks that have either had work performed by us, or people we did estimates for in the last three years. Basic questions were asked about the importance of different qualities in finding or using a certain maintenance provider, whomever they have chosen. We enclosed a stamped self-addressed return envelope to make it easier to respond, and asked the respondents to use a ranking system of 1 through 10, with 1 being low or least important, and 10 being highest or most important, to ask how the factors of Convenience, Quality of work, Communication, Scheduling, Price, Personnel, Knowledge of subject, or Other, affected the following areas:

**General:** How do these factors influence your decisions for a maintenance provider? Knowledge of subject, Quality of work, Communication, and Personnel were the key rankings here. Convenience and Price were not as important.

**Current AVSTAR customer:** Why do you plan to return for needed service? Not surprisingly, the answers were very similar to the general question.

**Past AVSTAR customer:** If you no longer use AVSTAR as your aviation maintenance provider, please tell us why. Other was the main reason, economy was cited in the remarks. Also mentioned was convenience and price.

**Prospective AVSTAR customer:** If you received an estimate from us for work in the last 3 years, and chose to go to another provider, or not have the work performed, please tell us why. Price and decision against having the work performed were the responses.

We asked for general comments and remarks, here is a sampling of what we received.

**The good:** “Your operation brings together all the things I value in a maintenance facility - honesty-fairness-and customer treatment. Oh, and quality of work at a fair price!”

“AVSTAR does excellent work and they stand behind the work they perform. Always friendly and helpful.”

“Where type specific knowledge and experience are important, it's worth the hassle to take it to you.”

**The middle of the road:** “Mike, I appreciate the work quality, knowledge of my airplane, (Bonanza) and the communications. You run a fine operation along with your assistant. The only area of concern was the additional misc. items not provided for in the (install kit) that added to the price exceeding the basic install. You might make sure that they are accounted for better in your estimate. Overall, I am very pleased and will use you again.”

“While I feel good about Avstar work in general there have been issues that compromise the price value relationship .... On the other side of the equation a lot of well done work needs to be recognized. See you next year.”

**And the not so good:** “May not return for service, not pleased with high price quote for engine exchange, compared to other Beech specialty shops.”

This survey was non-scientific. It allowed for respondents to remain anonymous if they desired. Our response rate was 39%; of the responses, 13% remained anonymous, 64% were Beech owners, and 19% were Cessna owners. Those that chose to identify themselves were entered into a drawing for a free oil change to be given in 2009. This prize is to be awarded to John, a Bonanza owner in Oregon; congratulations!

My take of the results: I'm excited at the rate of response! Thank you very much. The comments and remarks given are taken at full value. Some pointed out areas of concern (new) that will be addressed, also some concerns were reiterated—thank you, we do need to be humbled occasionally. Naturally, we can't please all of the people all of the time, so I also thank those of you that gave us a poor rating. Sadly, we can't address all areas because most of the poor remarks came from the anonymous. I also learned I should have spent a bit more time preparing the instructions; the ranking system I desired didn't work in about half of the responses, so I can't report on exactly how the numbers came out, but by combining the remarks with the answers, I feel that for most folks, the important areas are knowledgeable personnel, quality work and communication; and will deal with convenience and scheduling to get what they desire.

**Finally, to address a common remark:** Sorry, we can't relocate to Los Angeles, Everett, or other points in between!

Thank you, again, for your input.

## Winter flying, or inactivity?

Winter can put the brakes on flying for many of us, especially those of us in Western Washington. IFR days and low freezing levels just don't mix well with the types of aircraft we operate. Add in a splash of the current economy, and maybe we don't even take advantage of the good weather we may have. In any event, please don't forget the other member of your family, the airplane.

Aircraft manufacturers publish, in their service manuals, recommendations for preservation of inactive aircraft. If you need a copy of these instruction for your bird, drop me a line and I can send you one. At the minimum, here is what I recommend:

- Temperature permitting, clean your aircraft. Loose dirt can hold moisture, leading to corrosion. Lubricate all exposed hinges and bearings (which you should also do after normal washing or flight through heavy rain.) Confirm drains in the belly and control surfaces are clear. Top off the fuel cells to reduce condensation.
- Preserve the engine. An excellent source for the how-to of this is Continental Engine Bulletin SIL99-1. You can get a copy at: <http://www.tcmlink.com/pdf2/SIL99-1.pdf>
- Secure the aircraft. Hope you have a hangar! If not, tie it securely to properly installed anchors with good rope or straps (I don't recommend chains or cables, as there is not much give when the aircraft moves around in the wind and takes up slack). Next, pitot cover, engine inlet and lower cowl opening covers. Cabin air inlet and exhaust vents should be covered. I've never been a big proponent of cabin covers (we *can* sell you door and window seals), but if you choose to install a cover, make sure it is secure.
- Check the aircraft occasionally to make sure Mother Nature is treating her OK! If you do have to tie it outside, after a few inches of snow, it would be a good idea to brush it off, but remember where the antennas, strobe lights and OAT probes are, to prevent damaging them.

When the weather breaks, and it's time to re-commission the bird, be sure to follow the recommendations for that, also. The Continental bulletin discusses that, as well as the airframe manufacturer. Also, I have discussed this before, in Volume 1, Issue 1 of this newsletter.

*DID YOU KNOW Past issues of this newsletter are posted on our website at [www.avstarair.com](http://www.avstarair.com)? Just click on the Newsletter link to get to the index.*

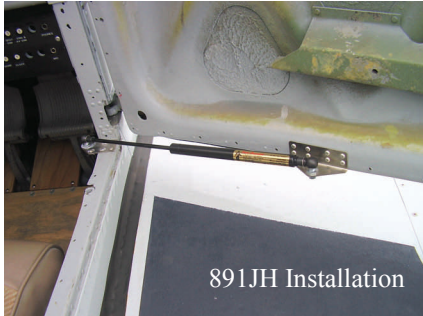
## Product Review

*(The first part if this article is the excerpted from the press release on the product; following that is my commentary.)*

The popular **Door Steward**<sup>™</sup> gas spring modification by Mtn View Aviation was recently granted FAA STC approval for the Beechcraft model series 33, 35, 36, 55, 56, 58 and 95 in October 2008 and is applicable to the Beechcraft cabin door. Beechcraft owners had been requesting a version for their aircraft since the popular version for the single engine Cessnas was introduced in late 2002 by Mtn View Aviation. The original version for Cessna aircraft was developed in 2002 by David Paradis because of the frustration and observation of pilots and passengers who were repeatedly nagged by unexpected door whips in even the slightest wind gusts. Since introduction, over 3500 of the **Door Steward**<sup>™</sup> kits have been sold all over the US and internationally. The modification utilizes a modern inert gas spring attached to the door frame and the door with stainless steel brackets. When the door is unlatched the door gently but firmly, opens and holds the door in the full open position. Closing the door compresses the gas spring again. The force is not such that it is hard or uncomfortable to latch the door; in fact it closes and latches quite naturally. The location of the gas spring is orientated to keep it out of the way while entering or exiting the aircraft. On the Beechcraft version, the gas spring is attached to a bracket riveted onto the lower forward corner of the door sill and a bracket riveted behind the upholstery on the bottom of the door. Once installed the existing hold open rod is removed and closing the door is a simple one handed operation. All **Door Steward**<sup>™</sup> versions are FAA-STC approved and come with complete documentation, installation, maintenance, parts listing, continued airworthiness requirements, FAA Form 337 and a 2 year warranty. The version for the Beechcraft series lists for \$195 and typical installation time is approximately two hours.

## Product Review, continued

The *Door Steward*<sup>™</sup> works exactly as advertised, no sales hype needed. We have installed several of these units (two of the installations are shown here), as well as shipped them to customers around the United States. The issues with the original Beech door stops are eliminated: no worries about the door being abused by the uneducated when closing, no door flopping in the wind or from prop-wash, and the two-handed door close is over. These units are STC approved for the main cabin door on all models of the 33, 35, 36, 55, 56, 58, and 95 Beech aircraft (except 58P), and most Cessna single-engine aircraft.



AVSTAR has the Beech units, in stock, ready for immediate installation or shipment. As noted, the list price is \$195.00; however through January of 2009, AVSTAR is extending our introductory installed price of \$315.00 for the Beech units, Cessna list price is \$175.00 (per door, most models), with our special installed price of \$305.00 through the end of January also. Additional information may be found on our website: [www.avstarair.com](http://www.avstarair.com), or at [www.mtnviewaviation.com](http://www.mtnviewaviation.com). Call 253-770-9964, to schedule your installation today!

## Tidbits

**Daniel Davis**, our apprentice mechanic we had around here for about a year and a half, is headed off to Portland after the new year starts, to begin his next phase of education leading toward missionary aviation. Best of luck to you, Daniel!

**No labor rate increase this coming year at AVSTAR.** Although suppliers are continually raising costs on their products, rest assured, we will try to hold our line for you. You will also notice a few differences in our invoices. On larger projects, we used to give 2 separate invoices; one for in-house labor, the other for parts, outside-labor, and freight. These are now combined into one, easier-to-read invoice. You will also notice a 'paperwork fee' which can be waived, ask for details. And, by popular demand, we finally obtained a new credit card processing machine! (Thank you for your patience...)

I know this issue is a wee-bit early, but I wanted to make sure I wished you a **Merry Christmas!** Enjoy the days off you may take. Wishing you VFR and tailwinds throughout the New Year!

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Thank you for reading this issue of our newsletter. I hope you have found it interesting and informative. If you have any questions or comments, you can email them to me at [avstarair@att.net](mailto:avstarair@att.net). If this issue was sent to you by a friend, you may opt in to receive further issues by sending an email to me at [avstarair@att.net](mailto:avstarair@att.net). If you chose to opt-out of receiving further issues, please email me at [avstarair@att.net](mailto:avstarair@att.net) with the word remove in the subject line.

Gear Green,

*Mike*

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