I will keep the president's column shorter than normal this time to make room for my promised 406 MHz ELT article.

Those who were at the last meeting will know that I owe Transport Canada, and particularly our own Bob Shuter an apology for suggesting that TC supported ICAO's plans to introduce these expensive new ELTs. In fact TC has formally called for more study to ensure that we make the right decisions that will really solve the problems with the existing systems.

If you like my proposals, let TC and COPA know. Working together, we can effect positive change.

January Meeting

Our featured speakers for our last meeting, **Barney De Schneider** and **Frank Hendrickson** treated us to a high tech tag team presentation on the restoration of their **Aeronca Chief**. Like all homebuilt/restoration projects, this one has taken much longer (5 years) than the original optimistic estimates (1 year?). However, when it finally takes to the air later this year, I am sure it will all be worth it. This looks like a first class restoration all the way.

Thursday Feb. 18th Meeting

Our featured speaker for our next meeting at the National Aviation Museum will be **Andrew DePippo** who will discuss the painting of his **CH-701** via an electrostatic process. Andrew will also have a video showing this unique process. I look forward to meeting you there.

Gary

The 406 MHz ELT Problem

by Gary Palmer

As we enter the countdown to a new millennium, ICAO is promoting mandatory adoption of new 406 MHz ELTs at an estimated cost of $3,000 to $4,000 Cdn. each. For the 15,000 or so Canadian aircraft owners, this is an investment on the order of $50 million. For the much larger U.S. population, it is closer to $500 million.

If ICAO has its way, all new aircraft must be equipped with these new gold plated ELTs by 2002, only 3 years from now, and all existing aircraft must replace their older 121.5 MHz ELTs by 2008.

The new ICAO system means major investment in obsolete technology for minor improvements in accuracy when vastly superior alternatives are becoming available.

To many hard strapped aircraft owners, this is likely to be the last straw that either drives them out of aviation altogether, or into open civil disobedience.

The justification for this change seems to be that the newer ELTs will have slightly better accuracy, and reduced administrative overhead in search and rescue centers, since the aircraft ID (or at least an ELT serial number) will be digitally encoded in the signal sent by the ELT. Provisions have apparently also been made to include GPS lat.-long information as an optional function, presumably priced as an optional extra.

To their credit, Transport Canada, together with COPA and AOPA have opposed these recommendations, calling for more study.

A better solution on the horizon.

A much more effective solution that promises to save lives, and dramatically reduce costs, is quite literally on the horizon. A horizon populated with low earth orbit (LEO) communications satellites.

The key to realizing this is to stand back from the detail problems that beset the current ELT system, and ask ourselves how a superior system can be built, utilizing **ubiquitous** current technology. In effect we need to engage in some creative lateral thinking, and see if we can come up with a superior solution, at a significantly lower cost. This challenge is not new to Industry, and even NASA has proven with its latest Mars Missions, that a million can go a lot further than in the past.

The Basic Objectives.

Any new system should offer:

Accurate location. The current 121.5 MHz ELTs have circular errors measured in several kilometers, only possible after several satellite passes. The 406 MHz ELT improves this somewhat, but error is still measured in kilometers. GPS routinely provides accuracy of 10 metres, with rapid acquisition times of less than a minute from a cold start. On this level a GPS system is 100 to 1,000 times more accurate than existing ELT solutions.

Rapid notification. Several passes of the SAR satellites are required before a reasonably accurate position is possible. This requires a couple of hours minimum. A satellite communication (SATCOM) system can process a voice call within 20 seconds, and a packet data system (the preferred approach) would provide notification in a fraction of a second. Once again, improvements over 100 times faster are possible with a SATCOM system.

Acceptable Costs. The key to acceptable costs lies in high volume production. The key in our case is to view the aviation emergency alerting capability as a minor variation on a much broader market for emergency response systems.

The Basic Elements.

Imagine a software configurable option for **satellite based cell phones** that couples an inexpensive **GPS receiver** chip with the basic satellite phone. An external connection to a **G switch** provides a highly effective alternative to the traditional ELT.

The **Iridium** satellite chain is now a reality, and provides global communications. GPS receivers in a watch are being introduced by Casio, and single chipsets are available to manufacturers at rapidly decreasing costs (Approx. $50).

Surely we can piggyback on this new technology to design a vastly superior system offering pinpoint accuracy, and immediate notification. Think of it as a global 911 service that serves the emergency needs of pilots, boaters, outdoors people of all stripes, even victims of a mugging.

As a practical example, General Motors employs similar technology for an automobile emergency location system called **OnStar**. At initial introduction to Cadillac owners, the price is $895 US, it is already a third of the cost projected for our vastly inferior 406 MHz ELTs. Imagine the cost reductions as this technology matures.

The Magellan GCS 100 is a handheld combined GPS and satellite data communications unit using the **Orbcomm** LEO Satellite system. It too can be purchased today for less than $1,000 U.S.

Superior Operational Modes.

Today's software technology makes it easy to provide a number of flexible operational modes. I believe the following modes, differentiated only by the code sent from the system are sufficient.

MAYDAY. Manually or G switch activated, this results in the transmission of a Mayday packet containing aircraft ID, phone #, and GPS lat.-long. This allows immediate dispatch of SAR resources.

PAN. This manually activated mode is used by a pilot facing an emergency such as engine failure, IFR conditions, entry into box canyon, etc. This results in periodic packet transmissions, say at 10-second intervals, and alerts SAR resources to a developing emergency. Interruption of this regular data stream turns this into a Mayday situation. Track information is available for narrowing the search area; and a telephone call can be attempted directly to the aircraft in distress as the first step in the SAR procedure.

POSITION. This mode provides an advisory position report every few minutes, and is a last resort adjunct to a traditional flight plan. In fact it holds the potential to eliminate the need to file flight plans.

RESET / ALLOK. This mode cancels any prior PAN or MAYDAY, or POSITION if no assistance is required.

Note that the PAN and POSITION reporting capabilities provide highly accurate track information that is extremely useful in the event of subsequent total failure of the aircraft systems.

Next Steps.

The preceding set of concepts is meant to spark debate both within the pilot community, pilot organizations, manufacturers, and most importantly the regulatory agencies.

Pilots, if you agree with these suggestions, need to make it painfully clear to the regulators that you will not accept the 406 MHz ELT proposals, and that a better solution is required.

Regulators have to work together with other safety agencies to develop a common system that will have a large user base to share the costs. Continue to exploit the existing ELT system beyond 2002 until a demonstrably better system is available. Adopt a more **flexible** policy aimed at encouraging **diversity**, and ensuring competition in the marketplace as the best way to keep costs reasonable. Establish the necessary technical standards for interconnection of modular elements of the system.

Manufacturers need to work creatively with pilot organizations and regulators to come up with more cost-effective solutions, that solve the real problems.

Summary.

Rapidly evolving Satellite Communications systems, coupled with low cost GPS receivers can deliver vastly superior ELT functionality compared to our existing systems. Given the will to think creatively, we will save many more lives, without placing SAR resources at undue risk, while minimizing SAR costs. This is a clear win-win situation for all parties; let's do it!

Maintenance Corner

by Charles Gregoire

This is a follow-up on last month's article where I talked about preparing my plane for winter storage. I've included a few pieces of information received from various members in addition to something I forgot to mention last time.

What I forgot to mention last time:

> Because I use Autogas I learned that it would be a good idea to add a fuel preservative for storage over the winter. I bought a product by STP for this at Canadian Tire. Added some to both wing tanks and let it settle into the fuel system by running the engine for 15 minutes. Also topped up my fuel tanks.

Some other information through e-mail from Wolfgang Weichert:

I read your article, it looks like we both went through the same procedure. I had read about F2 fluid in Sport Aviation, then looked it up on the website, and phoned Shell in Ottawa. Of course they told me that I could buy it only in drums in Canada, not by the liter. Further phoning around led me to Red Sutton, I bought 6 liters from him and installed it in my engine. I also thought of buying desiccant sparkplugs, but I figured there cannot be much desiccant in them. I had some desiccant from work, which I dried on my stove over several hours and kept it then in an airtight container. At the airport, I put it into 2 containers and pushed it over the exhaust tubes, then taped it airtight. Did the same with the air intake, and also taped the oil vent shut. I also used Amsoil Metal Protector to spray into the cylinders.

As a further aside (i.e. editor's note) Wolfgang also mentioned the idea of changing out the desiccant around February (i.e. with freshly dehydrated desiccant).

From a discussion with Irving Slone:

Irving also mentioned the idea of sealing the intake with tape. In hindsight I think this is the better way (i.e. in my case, it would have saved me the effort of having to peel off the Bracket air filter on the carb box). Irving also mentioned the idea of using nylon stockings filled with desiccant (i.e. to form a desiccant beanbag) and stuffing them into the exhaust outlet(s) and then sealing everything up with tape.

US shipping addresses

by Charles Gregoire

My experience with ordering things from the US is that you can save a fair amount of the shipping cost if the item is delivered to an address within the US. If it shipped to a

Canadian address you'll incur additional costs such as brokerage fees (i.e. if sent by courier). In some cases the shipping maybe offered for free if your order exceeds a specified minimum (e.g. Aircraft Spruce) and the item is delivered to a US address. With this idea in mind, a number of our members have made use of various US mailing addresses close to the Border south of Ottawa.

Russ Robinson sent me the following information:

There is a MailBoxes, Etc outlet in Ogdensburg NY (just across the bridge) that will receive mail, UPS, Fedex, etc and hold for pick-up. You don't need to have a mailbox rented to have the service. I have used the service for a number of things but it is ideal for shipments of flammable or hazardous goods. These can be shipped by UPS ground in the US only but cannot be shipped to Canada. If the members can use this service the address is;

MailBoxes, Etc
2981 Ford St
Ogdensburg, NY
13669
(315)393-1188 - Phone
(315)393-0121 - Fax

Editor's Note:

I have use the following address on a number of occasions:

Roethel Parcel Service
1801 Ford Street
Ogdensburg N.Y.
13669
(315)-393-4770

In this case there is a fee charged for each package (I believe it was $2 US (so good idea to have some US cash handy for this kind of thing). There is also a toll for using the bridge to cross the river at Ogdensburg, (i.e. $2 US each way). Be sure to bring a packing slip with the value of each item. For example Aircraft Spruce normally sends one in the mail to your home address. It is a good idea to bring this with you when you go to pickup your order. Normally there is packing slip on the package but sometimes it is missing. This can cause a real hassle at the Canadian border when its time to show proof of the item values for the purposes of calculating GST (By the way, you will have to declare and pay GST on the value.of the items you bring over, but at least there is no duty on aircraft parts). A final note is to remember to arrange that back-ordered items be sent directly to your address in Canada. I caution this because it will not likely be worth your while to make a second trip over the border to pick-up a smaller valued item arriving on backorder.

Classifieds

Place your ads by phone with Charles Gregoire @ 828-7493 or e-mail to cbg@nortel.ca
Deadline is first of the month.
Ads will run for three months with a renewal option of two more months.

Irving Slone is thinking about flying his PietenPol to the 1999 EAA Oshkosh fly-in (i.e. AirVenture '99). Irving would like to find out if anyone would be interested in accompanying him in another aircraft (The PietenPol does about 70 to 75 MPH IAS). Irving is also looking for an accompanying car to carry supplies such as tents etc. If your interested give Irving a call at:
722-0359 (res) or 230-2100 (office) 02/99

A limited number of WearCheck engine oil analysis (SOAP) kits at $32.50 each. Price includes analysis for 17 wear elements, additives and contaminents, percent fuel dilution, water concentration and diagnostic recommendation, plus debris examination (if present). SOAP has been used for at least 30 years and is the most widely accepted method of internal engine health monitoring and can often pinpoint impending engine failure.
Garry Fancy 836-2829 02/99

Lycoming O-235 L2C 118HP. 54 hrs since rebuild to factory tolerances. HOwever, not certified, since it was put into a homebuilt Murphy Rebel. Engine removed this summer for more power - aircraft was put on amphib floats.$8000 U.S. Hamilton area.
Call Les McInnis 905-945-4372, or
e-mail mwiebe@sympatico.ca. 01/99

Charles's Parts Bin

ASA Tri-fold Knee board $40 obo
New SCAT Hosing, 3"dia. $8/ft
Old tachometer and cable off C150M $35 obo
Cessna Clock $35 obo
Westach Dual EGT/CHT (1yr TTSN) gauge with brand new single EGT and CHT probes $140
Charles Gregoire 613-828-7493 11/98

Garmin GPS-55 AVD + Mount $500.00 obo
IC-A20 VHF Air band X'cvr $500 obo
Andrea Thorne 613-741-4273 09/98

Davis-DA2 TT400,
C-85 25 SMOH, all metal, 110 MPH, $13,500
Jim Bradley 613-839-5542 06/98

Canox Model 250 Arc Welding Unit

AC/DC Amps	76	38	30	
	Volts	230	460	575
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Duty Cycle 40%
$700 or best offer
Les Staples 613-831-9079 05/98

Tim's Parts Bin

Cessna 140 exhaust system complete $500.00
Cessna 140 engine baffles $50.00
MS24566-4B pulley NEW $8.00ea.,
Large HF radio (ex Otter), good ham project $25.00, Large Radar Screen (possible coffee table???) $25.00, Beech 18 oil cooler, new (possible rad??) $50.00, 6 Gal. J-3 wing Tanks (2) $200.00, Box of VW engine Parts (possible 1/2 vw project) $50.00, New autopilot , 12 volt trim servos and stuff $25.00, Air Path and Pioneer 3 1/8 compass cores $75.00/ea, Shark Fin pitot tube 24volt, new in box $25.00, Beaver U/L Lotus float rigging (spreader bars, etc.) $25.00, Continental prop. spacer (O.E.M. alum) $50.00
Tim Robinson 613-824-5044 03/98
75714.2136@compuserve.com

McCauley Metal Prop, 70-38 for a continental A65 or C85.
Jim Robinson 613-830-4317 01/98

Garry's Parts Bin

50 ft. 1/8" galvanized aircraft control cable, 7x19, MIL-W83420D
Dynafocal engine mount
Wheel pants $100.00
Oil, break-in, 12 litres, Shell, Esso
Wing Tip Nav Lights
NACA air inlets
Elevator trim assembly
Primer
Valves, Fuel selector
Valve, Parking brake
Accelerometer (G-meter) 2.25 inch
Oil cooler - Continental 6cyl.
CHT guage and probe
Lycoming, Accesory case, dual take-off adapter for hydraulic and vacuum pumps.
Piston rings for Continental E-185 or O-470.
Light weight starter & bracket for Lycoming O320 or O360.

Control wheel yoke assembly from Piper Tomahawk

Engine, VW 1600cc completely rebuilt
Garry Fancy (613)-836-2829 01/98

Articles Wanted

I am always interested in receiving submissions for this, your Newsletter. You may bring articles to the monthly meetings or mail information to the post office box or send me an e-mail attachment at:

cbg@nortelnetworks.ca 01/98

EAA Chapter 245 Membership Application

NEW:___ RENEWAL:___ DATE:__/__/__
EAA NUMBER:.....
EXP Date:__/__/__
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Annual Dues: January 1st to December 31st. (porated after March31st for new members/subscribers).
Associate Member ____: $30.00 Newsletter plus Chapter facilities
Full Member: ____: $55.00 Newsletter, hangar, workshop, tiedowns
Newsletter subscriber ____: $30.00 Newsletter
Note Associate and full members must also be members of EAA's parent body in Oshkosh WI, USA

Make cheque payable to:
EAA Chapter 245 (Ottawa)
Mail to - P.O. Box 24149, 300 Eagleson Road, Kanata, Ontario, K2M 2C3