

Product Overview



The Artex UHF ELT Product Line for General Aviation

The ME406 is designed specifically with the private pilot in mind. With a weight of two pounds it is the lightest, smallest and least expensive 406 MHz ELT on the market. The mechanical footprint is compatible with all Artex and some other ELT product dimensions. It features a single antenna output feeding a wire whip or a rod antenna, depending on the aircraft speed. The ME406 is available with a single G-switch for fixed wing applications and as a helicopter model (HM) with a multi-axis G-switch (which will enable the ELT to activate regardless of how the helicopter impacts). The ME-406 Series does not include NAV Interface capability.



Also of note, one of the latest versions of the ME406 is the ME406 ACE. The "ACE" stands for Absolute Cost Efficiency. This unit incorporates a remote switch design that allows retrofitting for currently installed ACK E-01 VHF ELT installations. It requires hardly any alterations on the instrument panel. Another popular feature of this unit is the capability for re-using the wiring harness of the installed ELT thus - reducing the installation cost. Overall ME406 ACE offers of an upgrade to 406 MHz ELT technology with affordably for the aircraft owner.

The Artex G406 Series was designed for use with the general aviation market in mind. The ELT automatically activates during a crash and has been tested to meet the rigorous requirements of TSO C126 including 500 G shock, 1000 pound crush as well as flame and vibration tests. The G406-4 is available for use with Artex's low cost whip antennas or a sturdy fibreglass rod antenna. This unit may also be interfaced with the optional Artex ELT/NAV Interface, enabling latitude and longitude data to be transmitted as part of the 406.025 MHz message.

The C406-1 and -2 Series has most of the same features of the G406 but also is available for use with Artex's low cost whip antennas, rod antenna, or a blade antenna. It also features a single coax output cable and is available for fixed wing with a single-directional G-Switch and helicopter (HM) applications with a multi-axis G-Switch. This series may also be interfaced with the optional Artex ELT/NAV Interface,

The C-406N is the latest GA version, featuring VHF/UHF capability on a single antenna and cable, and an integral NAV Interface (ARINC 429 only) The C406N represents the current state-of-the-art in a General Aviation UHF ELT System, and is now available and certified for use in Canada.



These are the Artex UHF ELT options. Choose one for your aircraft and plan it in as part of your next scheduled maintenance or downtime session. February 2009 is around the corner!

A Note From (continued) . . .

WAAS GPS (Precision Approach as opposed to Non-Precision) has also been keeping us very busy. The Garmin 430/530 upgrade program has gone very well, and Universal is now offering WAAS FMS equipment. KAAV and MC2 are among the leaders in WAAS upgrade know-how, with certifications complete on almost every type and category of aircraft.

The next hot topic lurking out there are the new 'Glass Cockpit' Systems for GA aircraft. Stunning new systems are arriving such as the Garmin G-600, Aspen EFD-1000 Pro, and Sandel 4500 Series Collins & Sperry replacement EADI/EHSI Indicators. These new offerings are in addition to the systems already available from Chelton, SAGEM, and Avidyne, and Bendix/King is not far behind. We are now finally in a position to install 'glass cockpits' in almost any aircraft. These are exciting times in the avionics business!

Call Bill @ MC2 or Barry @ KAAV to discuss your upgrade requirements!

Did you know?

UHF ELT's:

KAAV & MC2 are now fully capable of performing bench-level recertification of all 406 Mhz. UHF ELT Systems.

Transponder/Encoder Test Requirements have changed:

The CAR's have been changed, and the "Full System Integration Check" of Transponder/Encoder Systems is now required every 2 years. Bench-level certifications no longer meet the requirements for system certification. This requirement now parallels the FAA requirements in this area.

KAAV & MC2 are both fully capable of performing RVSM Air Data recertification, in addition to conventional 2-year Pitot-Static and XPDR/Encoder System Integration Testing & Recertification.

Transport Canada TCAS Requirement for Commercial Operators:

CAR 702/703/704/705 operators will all have to comply with Transport Canada's TCAS equipage requirements by July 1, 2009. All commercial aircraft with greater than 12,500 lbs MCTOW are affected. TCAS 1 is required for 703 operators, and TCAS/ACAS II is required for most 704/705 operators.

Call Barry or Bill to discuss your TCAS requirements.



A Note From . . .

BUSY would be an understatement! The level of activity has been almost insane in our shops! Here we are past the half way point of the year and things just do not seem to slow down around either of our shops. The last few months and the next few will see many different and interesting mod programs underway or delivered.



Over in the MC2 world, the last of nine Transport Canada Citation II avionics retrofits the project we dubbed "Polaris" - has just been completed. This Collins ProLine 21 retrofit package was one of the most extensive avionics mod programs of its kind, not only in Canada, but for the global Citation II fleet. The results have been truly great and the TC folks are raving about their upgraded aircraft.

Earlier this year MC2 completed a full avionics upgrade with Universal EFI-890R flat-panel displays to a Hawker 700 that is now part of the Montreal based StarLink Aviation fleet. The new cockpit is amazing! Also they have just delivered their second B737 retrofit similar to the project we did for Falconbridge. We also have a couple of ATR-42's in house now, as well as some major Dash 8 upgrade projects now underway.

The story in Kitchener is similar...extremely busy with big projects! This summer, we put the finishing touches on a massive upgrade to the Marinvent Cheyenne, an aircraft used extensively for avionics and aerospace research. It now sports a Universal EFI-890R Display suite, with full synthetic vision among other things.

As you are reading this, we also have two more new Citation XLS's in house. These aircraft are receiving Flight Inspection System installations for the Chinese Civil Aviation Authority under a program we affectionately refer to as 'China 2'. We are working again with our good friends at RVA Aerospace, with whom we did the similar "China 1" project several years ago. And we have just confirmed that a third XLS is anticipated to be delivered for a similar treatment before the end of the year.

And as I write this, we are about to deliver a KingAir 350 with Collins TCAS-4000 and Honeywell Mark VI EGPWS installations, as well as a Collins TWR-850 Doppler Weather Radar upgrade, and a few other goodies. This brings up an important point to all you Collins operators there are some outstanding factory upgrade programs for your Collins-equipped aircraft. We encourage you to look into these superb factory upgrade programs!

The two hottest topics in the avionics world right now have to be WAAS GPS and UHF ELT's.

The COSPAS-SARSAT folks are going to discontinue monitoring VHF (121.5) ELT signals effective September 1 2009, which will reduce the real-world level of safety provided by the old VHF ELT's to almost zero. Transport Canada is introducing regulations to mandate the UHF ELT equipage of all Canadian Registered aircraft, and indeed all aircraft operating in Canadian airspace. We are told that there will be a 2-year period for compliance, however we are encouraging all customers to do the upgrades ASAP, and avoid the inevitable crunch at the deadline. We are already doing installations at a rapid pace in advance of the final rule.

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Teaching an old dog new tricks!



This is how a Hawker 700 can look today!

With the OEM order books full and wait times getting longer, plus the screws slowly starting to tighten on the economy - many flight operations have been exploring ways and means to bring efficiency by incorporating modern updates to older airframes rather than lining up for expensive new airframes. Enter MC2 with another unique solution!

Starlink Aviation, based at YUL, recently found such efficiency by completely upgrading their Hawker 700. They have invested new paint, interior, and a complete avionics upgrade, creating a very nice corporate aircraft for their current and future client and charter needs. The result is stunning for both passengers and the flight crew.

Based upon the proven and highly successful Universal EFI-890 EFIS, as the core system, Mc2 have now completed and brought to certification another Canadian first with this mod! The new avionics upgrade included:

- 3 display Universal EFI-890 EFIS
- Dual Universal FMS
- Universal Class A TAWS
- Universal Application Server Unit to display charts on Navigation Display
- Dual Collins AHC-1000AAHRS
- Collins TCAS-4000
- Dual Collins Mode S Transponders with ELS/EHS
- Collins Proline II radio suite
- Dual Universal Radio Control Units
- Collins TWR-850 Weather Radar
- RVSM w/dual Collins ADC-87AADC's

An update like this brings better operational management and efficiencies today. It also will extend the useful life of an airframe and can add serious resale value down the road.



Before



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Avionics Talk

Report
and
Update

PROJECT FILE
CLIENT - MARVINVENT
AIRCRAFT - CHEYENNE

Marinvent Corporation operates two advanced airborne test-bed aircraft - a Piper Cheyenne and Plaggio Avanti. Used for flight testing at locations throughout Canada/U.S.A., these aircraft have been instrumental in the certification of navigation and safety systems for a diverse number of avionics manufacturers and aircraft.

KAHV was tasked by Marinvent to undertake a massive upgrade of the cockpit and related avionics systems to "State of the Art" in their Super-Cheyenne. Marinvent's requirements for this project dictated that most existing equipment be removed and upgraded to more modern systems. Because this Cheyenne is an avionics research test bed aircraft, the upgraded "architecture" had to allow for the integration of new avionics products with minimal interface or downtime and without the requirement of entering the "Experimental Flight" category.

The most obvious change is the installation of a 2-screen Universal EFI-890R Flat-Panel EFIS Display System, including Universal's TAWS and new Vision-1 Synthetic Vision System. These stunning flat-panel LCD displays form the heart of the new "Glass Cockpit". In the Marinvent Cheyenne, the PFD (Primary Flight Display) has been placed in the left seat position, while the second display is an ND (Navigation Display) in the CoPilot's instrument panel. This package provides high-resolution 3-D worldwide Terrain display in both ego-centric and exo-centric views, and really has to be seen for the quality of the displays to be fully appreciated.

In addition to the Universal EF1-890R displays, the new avionics system incorporates the following:

- Universal TAWS Terrain Awareness System, along with Universal Vision 1 Synthetic Vision system -displays three dimensional worldwide Terrain information on the EFI-809R Displays, providing the crew with dramatically enhanced situational awareness.
- Garmin GNS-530W & 430W - WAAS-capable GPS receivers, IFR certified for WAAS LPV approaches.
- Dual LITEF LCR-93 AHRS are selectable and provide redundant heading and attitude data digitally via an ARINC 429 to the EFI-890R displays and the Autopilot, TAWS, Vision-1, Radar, Skywatch and Stormscope.
- Thommen AC32 DADC - high accuracy Digital AirData System
- Garmin GMX 200 MFD - displays Skywatch HP Traffic, Weather Radar, and XM DataLink Weather information from the Garmin GDL69 system. The GMX base map has cities, roads, rivers, airports, airways, nav aids, airspace and Jeppesen ChartView.
- Garmin GDL69 - XM Satellite Weather (providing detailed NEXRAD and METARs data), current reports on precipitation, lightning, winds-aloft, echo tops, TFRs and more.
- Honeywell KRA 405B Radar Altimeter system, interfaced to the EFI-890R.
- ARTEX C406-N UHF/VHF ELT - GPS Nav Interface to the Garmin GNS 530W
- L3 Stormscope system - data transmitted digitally via the ARINC 429 data bus to the EFI890R.
- L3 SkyWatch HP Traffic Avoidance system - displayed via ARINC 429 data bus on the EFI890R and Garmin GMX200 MFD using TCAS traffic symbology.
- Transponder systems upgraded to new Garmin GTX330 Mode S units - transponders offer Traffic Information Service (TIS) interface, displayed on the GNS 530W and GNS 430W units.

When you do your job very well you enjoy repeat and referral business.



Once again the KAAV facility is the short-term home to two factory fresh Citation XLS aircraft (a third due for delivery soon). Owned by the Civil Aviation Authority of China (CAAC), these aircraft will serve a dual role as official government transportation and Advanced Automatic Flight Inspection aircraft. This will bring the current fleet to five aircraft that KAAV has completed their Special Missions magic on for this customer.

Speaking of repeats, MC2 has again answered the call to help bring new life to an older commercial aircraft. Many will remember the Falconbridge 737 project from a few years back. Well the news is that a second ship has now taken residence on the Canadian fleet with very similar improvements. This time the client is Air Inuit and the aircraft is also a B737-200 Advanced. Air Inuit provides air carrier services to the fourteen Inuit communities of Nunavik. The airline celebrated 20 years of operation in 1998 and has carried more than a million passengers.

The upgrades and improvements are virtually identical to the last project which after many hours of proven flight time has shown its value and worth - a significant factor in Air Inuit opting for the update. The avionics upgrades to this 737 include:

- GH-3100 Electronic Standby Instrument System
- Dual UNS-1LW WAAS FMS with 3D approach coupling
- Collins ProLine II radio suite with RTU-4210 Controls
- Triple NAT 3110 Audio Panel
- 4 display Collins FDS-2000 EFIS
- Universal MFD-640 Multifunction display
- Universal Class A TAWS
- Collins TCAS-4000
- Dual Collins Mode S Transponders with ELS/EHS and ADS-B
- Dual Honeywell SAH-2100 Super AHRS
- Honeywell 120 Minute Cockpit Voice Recorder upgrade
- Multi-parameter L3 Aviation digital FDR

These aircraft have come to KAAV for installation of Flight Inspection Systems (FIS), manufactured by RVA Aerospace of Orangeville, Ontario. The RVA AAFIS System includes a suite of advanced navigation sensors from Honeywell, Rockwell/Collins, and Ashtec, including differential GPS. The AAFIS System is also integrated into a variety of existing sensor platforms on the aircraft, and has its own dedicated set of antenna systems. Rounding out the AAFIS package is a state-of-the-art Cubic Direction Finding (DF) System that is used in the analysis and locating of interfering signals.



Marivent Cheyenne after KAAV cockpit upgrade.



Marivent Cheyenne before.

WAAS in Canada

One of NAV CANADA's key goals is vertical guidance on all approaches while providing the lowest possible decision altitudes. Vertical guidance provides significant safety benefits and low minima meaning fewer diversions to alternates. Up until recently, ILS was the only technology that could deliver these benefits, but ILS is expensive and traffic levels at many airports don't justify the cost.

The FAA started developing the Wide Area Augmentation System (WAAS) in the 1990s, with NAV CANADA providing technical and flight test support. A network of WAAS ground stations observes GPS satellites and calculates correction and integrity data for broadcast from geostationary satellites orbiting over the equator. WAAS avionics meeting TSO C145a/C146a use this data to refine accuracy and provide the kind of integrity needed for precision approach, without any electronic guidance system needed at the airport. WAAS operations started in the USA in 2003, and the FAA has found that WAAS performance is better than predicted

At runways that meet "precision instrument" standards (lighting and layout) WAAS can support the same minima as a Cat I ILS; at "instrument" runways WAAS will normally support a 250 ft decision altitude. NAV CANADA worked with the FAA to install four WAAS stations in Canada, at Winnipeg, Iqaluit, Goose Bay and Gander; they became operational in late 2007. The addition of these four stations will support WAAS approaches across Canada, as far north as Inuvik in the west (thanks to Alaska stations) and Kuujuaq in the east.

Pilots will soon start to see more RNAV(GNSS) approaches with LNAV (GPS), LNAV/VNAV (GPS and Baro VNAV) and LPV (WAAS) minima lines. NAV CANADA recently acquired a computerised approach design tool and has contracted with a private design organization to help address backlog demand. Priorities will be based on traffic levels, operational advantage and aircraft equipage. Operators are encouraged to contact NAV CANADA with their requests for WAAS-based approaches via e-mail (service@navcanada.ca) or phone (1-800-876-4693).

