



Project/Media Update

Date: August 29, 2008
Subject: Universal EFI-890R Glass Cockpit for Special Missions Cheyenne

For Immediate Publication

Kitchener, Ontario, CANADA — Kitchener Aero Avionics (KAAV) is well respected as one of Canada's premiere aviation avionics sales, repair, installation and integration service specialists. The focus of KAAV's technical expertise is corporate and general aviation markets. The KAAV team is pleased to announce the completion of yet another standard-setting *Special Missions* avionics project.

The Marinvent Corporation is a highly regarded Canadian aerospace engineering firm who operate two advanced airborne test-bed aircraft - a Piper Cheyenne and Piaggio 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.

Recently, KAAV 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. A similar program was undertaken by Mid-Canada Mod Center (MC2) last year on Marinvent's Avanti.

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 speaking about this project, KAAV President Barry Aylward said – *"This project was challenging because Marinvent is a unique customer with very special requirements. The nature of their test and certification work drives extremely precise requirements for the cockpit configuration. This includes a need for "plug in" new and different avionics systems for evaluation, performance recording, and/or datalog of the results of their flight test activity".*

The new cockpit and avionics have created a terrific environment for the pilots, eased their workload, and enhanced situational awareness dramatically. Our whole team was thrilled to have worked with Marinvent on this project. I know it has helped us to grow as well - as every challenging Special Missions project does."

Project Specifics

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 basemap has cities, roads, rivers, airports, airways, navaids, 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 - extended audio alerts 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.

KAAV Background

In the 30 years that KAAV has been in business, they have been responsible for many industry *firsts*. In addition to conventional avionics sales, installation, and repair, the firm has become highly regarded as Canada's *Special Missions Specialists*. They have consistently delivered the highest quality and reliability in such areas as Aerial Law Enforcement, News Gathering & Traffic Reporting, Air Ambulance, and Flight Inspection (FIS) Systems.

Marinvent Background

Marinvent is well known in aerospace engineering circles. Founded 22 years ago by Canadian air force test pilot John Maris, the Marinvent name has been associated with some very high-profile aerospace projects. Among these was the development of Jeppesen's popular *JeppView* electronic charting software and the underlying vector graphics technology that re-creates digital charts and moving maps - a key component installed in thousands of electronic flight bag (EFB) portable computers flying in a wide variety of aircraft. The company lists dozens of aerospace patents to its credit and has worked with a variety of avionics manufacturers on R&D and Human Factors evaluation projects for various systems, including Flight Management Systems, new types of stall-warning systems, and the development of enhanced heads-up display (HUD) symbology.