



Media Release

Date: June 14, 2005
Subject: Another MC2 First – Boeing 737-200 Glass Cockpit!

For Immediate Publication

Mississauga, Ontario, CANADA – Mid-Canada Mod Center (MC2) have unique expertise in all forms of airborne communication, cabin entertainment systems, TCAS, EGPWS, TAWS and RVSM as well as and numerous EFB applications. One area in which the firm has become particularly well respected is that of cockpit design around avionics upgrades –especially those that accommodate unique and user-specific operational profiles.

The most recent application success for the dedicated MC2 team involved revamping the avionics suite of a Boeing 737-200 (Advanced) aircraft. The result for the owner/operator is increased safety, operational effectiveness and improved cockpit resource management.

Project Overview . . .

The subject aircraft was purchased and is operated by Falconbridge - one of the longest standing mining firms in the country and a leading producer of nickel, copper, cobalt and platinum group metals. The goal was to replace an existing, similar unit that was reaching its life expectancy for Canadian operations.

Falconbridge is a respected and well know corporate flight operator and has developed their own somewhat unique application of the “corporate shuttle” concept – combining just-in-time delivery of parts and support supplies with the first class transport of staff to the company mine in Raglan Quebec.

The replacement aircraft was manufactured in 1979 and came from the Boeing factory with the distinctive forward located, upward opening, large cargo door. The aft compartment is for the passengers. One of the unique attributes of this new aircraft – and a significant advantage over the older model it is replacing - is that the bulkhead that separates the passenger and cargo areas is movable – meaning seating can range from 60 with three cargo pallets to 76 with two pallets.

Technical Specs of Project . . .

As is usually the case in a project of this magnitude, the process began almost a year before any work actually got started. From a fairly off-the-cuff remark by the aircraft operator stating “we’re looking at buying a new aircraft and would like to make the avionics more efficient and modern” - the actual package that was finally chosen evolved dramatically and went from a minor retrofit to replacing everything avionics except for the 2 Collins Flight Director Systems and the Honeywell SP-77 Autopilot System. Replacing these systems was desirable but not cost effective.

Equipment Removed

According to MC2 VP Bill Arsenault, the standard Boeing 737-200 suite of avionics was a fairly plain system of Nav/Com DME and Audio system, built to support basic commuter traffic. In the evolution of this particular aircraft, to meet changing regulations, low cost GPS systems were added as well as TCAS. The Air Data systems were also original and did not meet RVSM specifications.

The radios were older, airline standard Collins and Honeywell VOR/ILS receivers, Collins ADF Receivers, Collins VHF Communications, Garmin GPS receiver, Gables Audio systems, Collins DME's and Honeywell TCAS II with Mode S Transponders. These were removed. The Electro-mechanical control heads that supported these radios were also removed and the standard Honeywell C6 Compass systems as well as VG-311 spinning iron vertical gyros all came out.

Equipment Installed

The MC2 team started from a clean, new cockpit panel and then moved on to incorporate the following systems and units:

Air Data

A complete dual I. S. & S. digital air data system was installed in accordance with the approved STC.

Navigation/Communication

Dual Universal UNS-1L Flight Management Systems
RTU-4210 Radio Tuning Units
VHF-22C VHF Com's
VIR-32 VOR/ILS Receivers
ADF-462 ADF Receivers
DME-42 DME's
ALT-4000 Radio Altimeters
Collins TDR-94D Mode S Transponders
Dual Baker B1045 Audio Panels
Aircell ST-3100 Iridium Satcom System

Flight System and Display

Dual AHC-3000A Attitude and Heading Reference Systems
Four display Collins FDS-2000 Flat Panel LCD EFIS
Universal MFD-640 Multi-function LCD Display
Dual Davtron M800 Clocks

Hazard Awareness and Display

Universal Class A TAWS with display on MFD-640
Collins WXR-701X Weather Radar with Forward Looking Windshear Detection
Collins TCAS-4000 TCAS II



Standby Instrumentation

An L3 Avionics GH-3000 ESIS with Air Data Computer and Magnetometer was added – and of special note - the system is powered from its own emergency battery and provides the crew with standby attitude, Air Data and magnetic heading for a period of 3-5 hours.

Switching/Reversionary system

The switching and reversionary modes from the older aircraft system were either very rudimentary or non-existent. At the very best, one could switch the pilot's instruments to the #2 vertical gyro in case of a #1 failure. Accordingly the complete switching system was redesigned to give each pilot the option of selecting off-side equipment in the event of failures. As well, two new switching and annunciation panels were developed, built and located in areas that effectively reduce pilot workload and increase situational awareness. The switching system also now allows autopilot coupling of either pilot's EFIS and Navigation sensors including Flight Management System.

The interface to the autopilot from the UNS-1L FMS' was also enhanced through the addition of 3 dimensional coupling. This allows the autopilot to fly pseudo localizer and glideslope FMS approaches.

Instrument Panels

All pilot and copilot instrument panels were re-built to accommodate the newer instrumentation. The newer systems and equipment actually cleaned the panel up extensively as the total number of instruments was reduced and replaced with newer EFIS displays that combine the functions of radio altitude, radio magnetic and Horizon Situation displays. All the remaining panels were refurbished to look like new or at least overhauled.

And the results . . .

The avionics overhaul on this aircraft was part of a bigger aircraft renewal being executed by the Hamilton base for Kelowna Flight Craft. According to Arsenault, the cockpit alone required hundreds of man-hours on the concept and design and thousands of man-hours for the production and installation. This was followed by over 25 hours of flight-testing including a flight monitored by Transport Canada's Engineering Flight Test group.

Arsenault sums the project up by saying "In the end, Falconbridge received an aircraft that fully complies with all current and immediately foreseen NPAs and enhancements. We are proud of the role we played in helping Falconbridge bring this aircraft into service. According to the head of Falconbridge's flight group - Bob Liershaft, the firm are ecstatic with the result and have found thus far that in combination with all the mods and updates to this new aircraft, that pilot workloads are dramatically reduced, situational awareness enhanced and that operational safety has increased in the 25-28% range.

MC2 has a solid track record for the development of unique and effective STCs and along with that design and development of efficient cockpits. They have been responsible for many industry *firsts* and are the proud recipient of numerous awards by both the industry and their peers. MC2 provides avionics sales, service, installation and integration for private, corporate and commercial aviation. Located at Lester B. Pearson International Airport – Toronto YYZ - the firm has enjoyed continued and steady success and is consistently ranked among the top dealers in North America by leading avionics equipment manufacturers.

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For additional information on MC2 please consult their web site or call Bill Arsenault.

For additional information about this media release, you may contact Robert Seaman - by telephone at (416) 806-2966 or by email at rwseaman@bizav.ca.

Photos



*A stock early mode 737 cockpit.
(photo by G. Tahir)*



The completed B737 – 200C cockpit as redesigned and completed by MC2 for Falconbridge. (photo by T. Melvin)



The distinctive up swinging cargo door of the 737-200C – the reason that this aircraft is able to service Falconbridge as it does. (photo by MC2)



Now in regular service, this 737-200C runs staff and cargo from Toronto and Montreal to company sites in the north. Owner Falconbridge say it's a real BBJ – Boeing Bush Jet. (photo by MC2)



This aircraft received a complete and total rebuild while at Kelowna Flight Craft in Hamilton (photo by Falconbridge)



Almost complete with new engines, paint, interior, avionics and much more! (photo by Falconbridge)



All the old is gone and ready for the new. (photo by Falconbridge)



Inside the cargo area looking aft to the moveable bulkhead – a key feature to the flexibility in this 737. (photo by MC2)



New switching and annunciation panels were developed and located to effectively reduce pilot workload and increase situational awareness. (photo by MC2)

