

# Cessna, Embraer arsenals take form

by Nigel Moll

Spurred by sluggish demand for light and midsize jets and the threat from Brazil's Embraer, Cessna has enlarged its mid-size cabin cross-section and refreshed one of the lightest jets it builds. The new contenders were revealed last fall in the form of the 680A Latitude mid-size and the M2 update of the CJ1+ (see November, page 18). They compete with, respectively, the Embraer Legacy 450 (slated for certification in late 2014 and service entry in early 2015) and the Phenom 100 (in service since 2009). Since Cessna fully acknowledges that the Embraer airplanes are the primary competitors for its new entrants, it seems timely to hold up the companies' offerings for a preliminary comparison.

Cessna plans to fly the Latitude in mid-2014, with FAA approval following in mid-2015 and entry into service in the second half of 2015, a few months behind Embraer's timetable for the Legacy 450, followed by EASA certification in the first half of 2016. The timetable for the M2 has the prototype flying before the end of next month and entering certification testing in the third quarter, for type approval in the second quarter next year and first deliveries in the fourth quarter.

### L-Class Warfare: Latitude Takes On Legacy 450

The Latitude's Sovereign roots show outside in the wings and empennage, but the interior of the newly enlarged

and sleeked fuselage reveals a Garmin cockpit, 72-inch stand-up headroom in a flat-floor cabin and bigger windows higher up the fuselage for a less hunched view of the world. Outside, sleeker nose lofting, curved windshield panels and subtle 787-style wingtip treatment distinguish the new airplane. The Latitude's list price of \$14.995 million (2011 \$) positions it between its \$12.295 million XLS+ and \$16.995 million

flat floor, the Latitude passenger cabin is more than 21 feet long, yielding one foot to the Embraer; the Cessna's external unpressurized baggage capacity is 120 cu ft, but internal baggage capacity has yet to be decided. Standard seating in the Cessna accommodates nine passengers in a single-club arrangement with a forward two-place side-mounted couch facing the door; the Legacy offers seven seats as standard and eight with

Latitude remain fully mechanical (no fly-by-wire), which Cessna justifies by citing simplicity and swifter certification. Embraer is already paying a price for embracing the additional complexity of FBW: it had planned to fly the 500 by the end of last year, but the [first 500 did not roll out until December 23](#) and the [first flight has now slipped until the third quarter this year due to a software problem with the fly-by-wire flight control system's](#) remote electronic unit made by Parker Aerospace, according to Embraer. The delay pushes Legacy 500 certification to the second half of 2013, about a year

Clarity manages on-board entertainment, interactive moving maps, flight information and Internet browsing.

It was in 2008 that Embraer announced development of the \$16.47 million Legacy 450 and \$19.875 million Legacy 500 (both 2012 \$), which share the same wings, empennage and six-foot stand-up flat-floor cabin cross-section. The 500's fuselage will be about six feet longer than that of the shorter-range 450. Both Embraers will have an externally serviced aft vacuum lavatory. The 500 will fly 2,800 nm with eight passengers, at Mach 0.80 and NBAA IFR



The front office of Cessna's M2 features the touchscreen Garmin 3000 flight deck, far left. Embraer's Phenom 100 uses the Prodigy, left, based on Garmin's all-glass G1000 avionics suite.

Sovereign stablemates and comfortably below the \$16.47 million (2012 \$) Legacy 450.

A pair of Pratt & Whitney Canada PW306D turbofans, each delivering 5,700 pounds of thrust, will power the Latitude; the Legacy 450 gets a pair of Honeywell HTF7500Es, each producing 6,080 pounds of thrust. The new Citation and the Legacy 450 share the same 45,000-foot ceiling, and time to FL430 will be 23 minutes for the Cessna and 22 minutes for the Embraer. Along with its 72-inch aisle height and

an optional side-facing divan for two up front.

In the Latitude's cockpit, the [Garmin G5000 avionics](#) will include three 14-inch-diagonal partitioned liquid-crystal displays, four touch-control screens and a Garmin autopilot, much like the suite intended for the Citation Ten. The Legacy 450 will have a Rockwell Collins Pro Line Fusion suite with SVS, autothrottle and full FBW as standard and HGS and EVS as options, and it will also come with full fly-by-wire flight controls.

Flight controls on the

later than planned, and service entry in early 2014. The Legacy 450's milestone dates all follow the Legacy 500's by one year.

Maximum takeoff weight for the Latitude is pegged at "just over 28,000 pounds" and for the Legacy 450 is undisclosed, and neither Cessna nor Embraer is revealing its airplane's target empty weight yet.

Like its M2 stablemate, the Latitude will incorporate Cessna's new Clarity fiber-optic cabin management system controlled by passengers through smartphone apps.

reserves—500 nm more than the 450 at long-range cruise speed. Embraer cut the first metal for the Legacy 450 and Legacy 500 on April 20, 2010.

The Legacy 450 will be equipped with Honeywell's high-definition, touchscreen Ovation Select cabin management system (CMS). It can interface with high-speed satellite communications and a variety of wired and wireless consumer electronics, including iPods, MP3 players, AppleTV and gaming systems. As on its smaller Phenom

*Continues on page 22 ►*

The Midsize Contenders		
	Latitude	Legacy 450
Basic operating weight	Not disclosed (ND)	Not disclosed
Max takeoff weight	Approx 28,000 lb	Not disclosed
Max payload	2,500 lb	2,800 lb
Full-fuel payload	1,000 lb	1,600 lb
High-speed cruise	442 ktas FL350	M0.82
Long-range cruise speed	Not disclosed	Not disclosed
Range (max/four pax) <sup>1</sup>	ND/2,300nm	ND/2,300 nm
Takeoff field length (mtow, ISA, SL)	3,900 ft	4,000 ft
Cabin dimensions		
Width (max/floor)	6.4/4 ft	6.8/4.7 ft
Max height	6.0 ft	6.0 ft
Length <sup>2</sup>	21.4 ft	22.4 ft
Baggage (ext/int)	120/ND cu ft	110/40 cu ft
Price	\$14.995 million	\$16.47 million

The Light Contenders		
	M2	Phenom 100
Basic operating weight	7,000 lb	7,132 lb
Max fuel	3,309 lb	2,804 lb
Max ramp weight	10,800 lb	10,516 lb
Full-fuel payload (single pilot)	500 lb	580 lb
Max cruise speed	400 ktas	390 ktas
Long-range cruise speed	Not disclosed	333 ktas
Ceiling	41,000 ft	41,000 ft
Range (max/four pax) <sup>1</sup>	NA/1,300 nm	1,196/1,050 nm
Takeoff field length (mtow, ISA, SL)	3,250 ft	3,116 ft
Avionics	Garmin G3000	Prodigy/Garmin G1000
Cabin dimensions		
Width (max/floor)	4.8/3.2 ft	5.1/3.6 ft
Max height	4.7 ft	4.9 ft
Length <sup>2</sup>	11.0 ft	11.0 ft
Baggage (ext and int)	45 cu ft	67 cu ft
Price	\$4.195 million	\$3.995 million

1 - NBAA IFR reserves, 200-nm alternate 2 - Cockpit divider to aft pressure bulkhead

1 - NBAA IFR reserves, 100-nm alternate 2 - Not including cockpit



*The cabin of the Citation Latitude, right, has room for nine passengers in a single-club arrangement with two-place side-mounted divan. In its standard configuration Embraer's Legacy 450, left, has room for seven passengers, with an option for an eighth. Both have six-foot stand-up cabin height.*

## Cessna, Embraer

► Continued from page 20

jets, Embraer collaborated with BMW DesignworksUSA on styling the Legacy 450 and 500 cabin.

The Legacy 450 cabin will feature a refreshment center located in the left-hand side of the entrance area, opposite the standard seventh seat or the optional two-place divan. The refreshment center features several stowage compartments, a working surface, an ice drawer, a trash compartment, an optional microwave or convection oven, soda cans compartment and coffee brewer or espresso maker. Cessna said the Latitude will have a wet galley with hot and cold beverage service, china and crystal storage, ice storage and an option for a microwave/convection oven.

The Legacy 450's flat-floor cabin accommodates seven or eight passengers, depending on whether the customer stays with the standard seven-seats layout or opts for the two-place divan. Half-club pairs of single seats can be rotated back-to-back and then recline together to form a sleeping surface. Both the Legacy 450 and Legacy 500 share the same lavatory design and size, featuring a solid door, vanity, basin and vacuum toilet. As an option, the lavatory seat can be approved for occupancy during takeoff and landing to increase seating capacity.

### M2 Takes on Phenom 100

Cessna announced the M2 in late September last year as a new twinjet derivative to serve as a step-up for Mustang owners or as a higher entry-level Citation between the Mustang and CJ2+. The M2 revives the CJ1+ airframe but with a [Garmin G3000 avionics suite](#), 1,965-pound-thrust F404-1A engines, subtle winglets and, compared with its predecessor, higher-quality interior furnishings and greater speed. Perhaps more important, however, the M2 lops about \$800,000 off what the CJ1+ cost when [Cessna quit building that airplane last year](#). The M2 carries a price tag of \$4.195 million, \$200,000 north of the Phenom 100's \$3.995 million. According to M2 business manager Brian Rohloff, the cost savings stemmed mostly from switching to a Garmin suite (in place of the CJ1+'s Rockwell Collins Pro Line 21) and in negotiating with Williams on the price of the F404s. For certification and pilot type ratings, the M2 retains the type designation C525. Cessna says it will fly the prototype in the first quarter of this year, followed by FAA certification in the second quarter of next year and entry into service in the fourth quarter.

The Phenom 100, powered by a pair of P&WC PW617F-Es each producing 1,695 pounds of static thrust, entered service early in 2009 and has proved popular not only with private owners but also as one of the smallest jets offered for fractional ownership and charter. As the numbers in the accompanying charts show, the Cessna and Embraer airplanes are closely matched, and for the owner-pilots who tend to buy this sort of airplane, the deciding factor will likely be how they compare on the stick. □