Competitors move toward certification and market entry

by Chad Trautvetter

The dawn of the very light jet (VLJ) is nearly upon us, with the first, the Eclipse 500, set to receive FAA certification in June. Hot on the heels of the Eclipse VLJ is Cessna’s Citation Mustang and 10 other potential competitors.

While it might seem like a crowded market, the VLJ category (defined as any jet aircraft with an mtow of less than 10,000 pounds) is really somewhat broad. There appear to be three distinct VLJ subcategories—single-engine (costing about $1 million), small-cabin (between $1 million and $2 million) and large-cabin (more than $2 million). Aviation Technology Group’s Javelin—with two tandem seats and a $2.795 million price tag—is the exception to this rule, but it’s hardly a business jet either.

In the single-engine category are the Diamond D-Jet and Excel-Jet Sport-Jet. Small-cabin VLJs include the Javelin, Eclipse 500 and Tam-Air Epic EliteJet. The large-cabin segment encompasses the Adam A700, Avocet ProJet, Cessna Mustang, Embraer Phenom 100, Evolution EV-20 Vantage, HondaJet and Spectrum 33.

While competition is fairly light in the single-engine and small-cabin VLJ subcategories, it’s much more fierce in the large-cabin group. Therefore, any casualties are more likely to come from this crowded subcategory, though entries in the two smaller groups are far from immune to failure.

In any case, this year will be a watershed year for VLJs, with some entering service and others reaching key milestones. Below is an aircraft-by-aircraft update of the various VLJ programs. For abbreviated VLJ specifications and performance data, see chart on page 22.

Single-engine VLJs

Diamond D-Jet—Diamond’s Williams FJ33-powered D-Jet didn’t fly as planned in October, but first flight appears to be right around the corner. According to Diamond North American president Peter Mauer, the proof-of-concept D-Jet (S/N 001) is nearing completion at Diamond’s London, Ontario facility and will roll out this month. First flight is scheduled for late this or early next month.

Five aircraft will participate in certification flight trials, with S/Ns 004 and 005—both customer aircraft—scheduled to conduct function and reliability testing. Transport Canada certification is expected late next year, with FAA approval immediately following.

First deliveries are slated to begin in early 2008, and by the end of that year production is planned to ramp up to eight airplanes a month. Full production capacity is estimated at 200 aircraft per year. According to Mauer, Diamond recently changed the D-Jet interior to allow for wider aft seats. Further, flight-deck interior volume has been redistributed to allow for a three-screen—two 12-inch multifunction displays and one 15-inch primary flight display—Garmin G1000 avionics system. An upgraded interior package has also been added to the options list.

The split intake for the D-Jet’s engine has been validated at Williams’ facility using a full-scale fuselage. Additionally, wind-tunnel testing of a scale model at Washington State University has been completed successfully.

Diamond said it has orders for 125 copies of the $850,000 (2002 $) VLJ.

Excel-Jet Sport-Jet—Excel-Jet president Bob Bornhofen said all that remains to complete the Sport-Jet prototype is the installation of the Williams FJ33-4A engine, delivery of which was pending at press time. Following this installation, the four-seat, single-engine jet will immediately start taxi trials, with first flight planned to take place by the end of this month.

Bornhofen said his “best guess” for certification is two years from first flight, meaning March 2008. Excel-Jet won’t start
taking orders for its nearly $1 million VLJ until after first flight.

In December, Excel-Jet announced it would build its production plant in Guthrie, Okla. The Guthrie Industrial Development Authority is giving Excel-Jet up to $5 million in incentives to relocate its facility from Colorado Springs to Guthrie. Excel-Jet plans to make the move soon after the first flight of its VLJ.

Small-cabin VLJs

Aviation Technology Group Javelin—Since the ATG Javelin made its maiden flight on September 30, the twinjet prototype has logged about 1.5 hours in three flights. The two-seat Javelin was originally scheduled to fly in July, but nosewheel shimmy problems emerged during high-speed taxi tests, delaying the initial flight.

The landing gear system was recently upgraded to incorporate an emergency landing gear extension system, and a new canopy with improved contours was also installed. At press time, the Javelin prototype was undergoing ground tests, with flight tests expected to resume by this month.

Unlike most civil aircraft, the Williams FJ33-4-17M-powered Javelin prototype incorporates ejection seats, which will allow ATG to evaluate performance capabilities of the military Javelin Mk 20 as well as those of the civilian Javelin Executive. Israel Aircraft Industries is ATG’s partner in the development and marketing of military trainer derivatives of the Javelin.

According to the Englewood, Colo., start-up manufacturer, the Javelin prototype will be used to evaluate aircraft performance, handling qualities and some system installations. Results from this testing will shape any necessary changes for integration into the civil and military production versions of the aircraft.

ATG expects FAA certification of the Javelin late next year, with deliveries of the $2.795 million jet to follow in early 2008. The company says it has firm orders for more than 100 aircraft.

Eclipse 500—Just weeks after gaining type inspection authorization for the Eclipse 500 in early December, Eclipse Aviation of Albuquerque, N.M., confirmed that a supplier problem has delayed certification of its VLJ by three months to late June. Despite the setback, last month Eclipse said its five flying test aircraft had amassed nearly 1,100 flight hours during some 800 flights.

In addition, the company said its test fleet has passed a series of critical testing milestones, including flutter and stall characteristics, powerplant, lightning strike and various avionics systems. Certification of the Eclipse 500’s P&WC PW610F turbofan is scheduled for this month (the PW615F for the Citation Mustang received Transport Canada certification on December 30).

Eclipse Aviation said its order book for the $1.295 million Eclipse 500 exceeds 2,350 aircraft.

Tam-Air Epic EliteJet—Epic Aircraft parent Aircraft Investor Resources has partnered with Republic of Georgia-based Tbilisi Aviation Machine (TAM) to build this $2.1 million very light jet. Under the partnership, Epic Aircraft and TAM will co-produce the twinjet.

TAM will market the all-composite, six-seat VLJ as the Tam-Air EliteJet in Eastern Europe and Asia, while the U.S.-based start-up will sell it as the Epic EliteJet in the Americas and Western Europe. The Williams FJ33-4-powered twinjet shares 80-percent commonality with the Epic LT turboprop single, including the Garmin G1000 avionics system.

First flight of the EliteJet is expected by the end of next month, and the company intends to fly the first example—a production-conforming airplane—to EAA AirVenture this summer. Certification is now planned for early 2008, a slight delay from previous estimates.

Last year, Epic Aircraft president Rick Schrameck said that, due to the backlog at the FAA certification branch, the EliteJet would be certified in Brazil first, with FAA approval to follow.

But Schrameck recently told AIN that those plans have changed; the aircraft will now be certified first by Transport Canada, with follow-on approval from the FAA and EASA. He cited the Canadian authority’s “very can-do attitude” as the reason for the switch.

Further, a duplicate of Epic’s 100,000-sq-ft production plant in Bend, Ore., will be constructed in Alberta, Canada, which will effectively double the manufacturing capacity for the Las Vegas-based start-up.

Large-cabin VLJs

Adam A700—On February 6 the first production-conforming A700 (S/N 002) made its maiden flight. S/N 002, the aerodynamics and engine test aircraft, was rolled out in early November, though at the time the aircraft was far from complete. Over the next three months the build crew installed the nacelles, pylons and tailcones, as well as the engine fire suppression system and Williams FJ33 turbopfans.

A nonconforming A700 prototype (S/N 001) has been flying since July 2003, logging more than 400 flight hours. S/N 003, the systems test aircraft, is expected to join the test fleet later this year, as is the first customer A700 (S/N 004), which will perform function and reliability testing.

“Initial” certification is now planned for the fourth quarter, with deliveries scheduled to start by early next year. The price of the A700 has surpassed the $2 million mark, and the twinjet’s order backlog now sits at 282, with 225 (including an order for 75 aircraft) of those from fleet operators.

Avocet ProJet—it appears that the ProJet, an Israel Aircraft Industries (IAI)-Avocet joint venture, doesn’t have much forward momentum. Westport, Conn.-based Avocet referred AIN’s inquiries about the twinjet program to IAI. Moshe Zilberman, IAI’s commercial air group marketing director, told AIN that the program “is in stagnation.”

Earlier last year IAI and Avocet said they were close to reaching a deal with a third-party OEM to handle marketing and after-sales support. But that arrangement with the OEM—widely believed to be Raytheon Aircraft—fell through. During an interview in September, Raytheon Aircraft...
## Very Light Jets at a Glance

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
<th>Seating (crew+pax)</th>
<th>Engine (# of engines)</th>
<th>Max speed</th>
<th>Range</th>
<th>First Flight</th>
<th>Estimated certification</th>
</tr>
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<tbody>
<tr>
<td>Diamond D-Jet</td>
<td>$1M</td>
<td>1+4</td>
<td>FJ33 (1)</td>
<td>315 ktas</td>
<td>1,320 nm</td>
<td>April 2006</td>
<td>2007</td>
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<tr>
<td>Excel-Jet Sport-Jet</td>
<td>$1M</td>
<td>1+3</td>
<td>FJ33-4 (1)</td>
<td>370 ktas</td>
<td>1,000 nm</td>
<td>10/06 (est.)</td>
<td>2006</td>
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<td>Eclipse 500</td>
<td>$1.295M</td>
<td>1+5</td>
<td>PW618F (2)</td>
<td>275 ktas</td>
<td>800 nm</td>
<td>Dec. 31, 2004</td>
<td>Late 2006</td>
</tr>
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<td>Avocet ProJet</td>
<td>$2M</td>
<td>1+5</td>
<td>N/A (2)</td>
<td>350 ktas</td>
<td>1,200 nm</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Adam A700</td>
<td>$2.1M</td>
<td>1+6</td>
<td>FJ33 (2)</td>
<td>340 ktas</td>
<td>1,100 nm</td>
<td>July 27, 2003</td>
<td>2006</td>
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<td>Tam-Air Epic EliteJet</td>
<td>$2.1M</td>
<td>1+5</td>
<td>FJ33-4 (2)</td>
<td>420 ktas</td>
<td>1,680 nm</td>
<td>March/April 2006 (est.)</td>
<td>2008</td>
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<td>Cessna Citation Mustang</td>
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<td>1+5</td>
<td>PW618F (2)</td>
<td>340 ktas</td>
<td>1,150 nm</td>
<td>April 23, 2005</td>
<td>2006</td>
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<td>Embraer Phenom 100</td>
<td>$2.75M</td>
<td>1+7</td>
<td>PW617F (2)</td>
<td>380 ktas</td>
<td>1,160 nm</td>
<td>10/07 (est.)</td>
<td>mid-2008</td>
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<td>ATG Javelin</td>
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<td>1+1</td>
<td>FJ33-4-17M (2)</td>
<td>520 ktas</td>
<td>1,120 nm</td>
<td>Sept. 30, 2005</td>
<td>2007</td>
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<td>Eviation EV-20</td>
<td>$2.95M</td>
<td>1+9</td>
<td>FJ44-1AP (2)</td>
<td>350 ktas</td>
<td>1,200 nm</td>
<td>Oct. 2006 (est.)</td>
<td>Oct. 2007</td>
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<td>Spectrum 33</td>
<td>$3.65M</td>
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<td>FJ33-4 (2)</td>
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<td>2,000 nm</td>
<td>Jan. 7, 2006</td>
<td>2008</td>
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<td>HondaJet</td>
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<td>HF118 (2)</td>
<td>405 ktas</td>
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<td>Dec. 3, 2003</td>
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Note: All data supplied by respective aircraft manufacturers.