

PILOT REPORT

HondaJet

HondaJet production is ramping up, and more pilots are getting to see how the new jet flies.

by Matt Thurber

The HondaJet has taken a long time to enter service. First announced as a commercial product in 2006 with certification planned in 2010, the new light jet finally received its [FAA blessing on December 8 last year](#), nine-and-a-half years

since Honda Aircraft applied to the FAA for type certification. (Flight into known icing certification remained pending when I flew the HondaJet on May 12.) The HondaJet received EASA certification on May 23. Base price is \$4.85 million (2016 \$).



When the FAA presented Honda Aircraft with its type certificate in December last year, Honda Aircraft president and CEO Michimasa Fujino called the approval the culmination of an “aviation adventure” begun in 2005, when Honda showed the test version of the HondaJet to enthusiasts at AirVenture.

That the airplane is thoroughly modern is a credit to Honda Aircraft’s designers, chief among them company president and CEO Michimasa Fujino. While it must have been frustrating to see milestones pushed back for various reasons, including the engine’s own certification delays, Honda Aircraft engineers didn’t sit around twiddling their digital slide rules but took full advantage of the extra time to hone and refine and tweak almost every facet until perfection loomed closer and closer. To say that there is a Japanese and Honda-style level of pursuing perfection might be an understatement. And to be fair, a company like Honda, when fully committed to a project, apparently has financial pockets deep enough to let a little time in the long scheme of things go by, as long as steady progress is made toward the goal.

In this case, the goal has finally been reached, and it is by any

measure a remarkable achievement. Recall that the HondaJet is a first aircraft designed and built by an entirely new company, and it is an airplane every bit as, if not more so, sophisticated as anything else available (not comparing it to fly-by-wire jets). Also, the HondaJet is powered by a new engine of Honda design, the 2,050-pound-thrust HF120, which was refined, certified and put into production by a 50-50 joint venture between GE and Honda called GE Honda Aero Engines. Designing, building and putting into production a new jet powered by new engines is a huge challenge, and Honda Aircraft and GE Honda have made it happen.

How the HondaJet Flies

A modern airplane is much more than just its handling in the air; now designers focus



Author Thurber settles into the cockpit of the HondaJet, noting that it exemplifies the company's attention to detail, with the Garmin G3000 integrated seamlessly and the layout crafted to simplify pilots' transition to the airplane. The FlightSafety training course is also an asset, as it provides the opportunity to learn about the airplane's handling on the ground.

intensively on the pilot-aircraft interface. The HondaJet came on the aviation scene as the concept of better cockpit design took on more importance, and Fujino and co. certainly paid that a lot of attention, especially taking into account that the HondaJet is designed to be flown by a single pilot.

Yet from a pure hands-on perspective, the HondaJet is a pleasure to fly. It is a light jet, with an mtow of 10,600 pounds, but handling-wise it feels like a larger jet. Its wing loading is relatively high and it punches easily through bumpy air. The controls are not light and snappy, but are firm and positive and well harmonized; when trimmed, the HondaJet stays right where you put it, with no tendency to wander while the pilot is looking elsewhere in the cockpit.

Where the HondaJet really

shines is the cockpit design and the integration with the Garmin G3000 flight deck, which Honda engineers helped design; Honda Aircraft was the first manufacturer to select Garmin's new touchscreen-controlled avionics, but other OEMs have brought G3000-based flight decks to the market ahead of the HondaJet.

In the HondaJet cockpit, the placement of all controls is natural and instantly comfortable. Checklists are surprisingly short and simple, and they match a superbly crafted cockpit flow that will help new pilots feel safe and proficient in little time. Adding to the excellent cockpit feel is a well thought out implementation of the dark cockpit concept; not only are there few knobs and switches, but those that are needed are logically placed with intuitive alignment and indications.

The usual drill for a pilot report begins with a briefing before the flight in the airplane. Sometimes the briefing is an all-day affair; other times it lasts for an hour or two. In this case, however, I was able

to fly the HondaJet simulator first with Honda Aircraft demo pilot and manager of corporate flight operations Tim Frazier. The FlightSafety HondaJet learning center is located on the Honda Aircraft campus at Piedmont Triad International Airport in Greensboro, N.C., and the HondaJet Level-D full flight simulator has been busy training pilots since it was certified by the FAA last December. FlightSafety did an excellent job with the simulator, and it handles almost exactly like the real airplane, although I found it slightly easier to land than the airplane. The simulator features FlightSafety's latest Vital 1100 visual system, as well as a modern electric motion base.

The big benefit of flying the simulator first was beginning the process of training my flying muscles to recognize the switchology in the HondaJet cockpit. I liked that Frazier had me go through the checklists in the simulator because that replicated what we would do in the

airplane, but it also helped me learn the Honda Aircraft cockpit design philosophy.

A big but pleasant surprise was that the HondaJet checklists are relatively short; this is a big change from most business jets, some of which make me feel like I'm about to launch in the Space Shuttle, with endless checklists filled with critical steps. The HondaJet designers made a huge effort to pare the steps to the minimum, which is a boon for the single pilot but also something that any pilot will appreciate. A lot of this has to do with taking advantage of automation, but doing so in an intelligent fashion that supports keeping pilots in the loop.

Frazier added another simple twist to help make my flight smoother; he positioned the simulator on the Honda Aircraft ramp about where the real airplane awaited, so when I taxied out in the simulator, I would recognize landmarks and be that much more comfortable when taxiing the airplane. This proved to be an excellent use of the

simulator, and it whetted my appetite for getting my hands on the airplane.

In the simulator, we ran the checklists to get the HondaJet's HF120 engines fired up and the jet ready to taxi, then taxied from the Honda service center ramp to nearby Runway 23L. The simulator flight lasted about an hour and included steep turns and a stall then an ILS approach to a full-stop landing, and a reposition to an approach from three miles on final to another full-stop landing. It didn't take long at all to feel comfortable in the HondaJet cockpit, and I can easily see that new HondaJet pilots are going to experience a straightforward transition into their new jet.

One item that I would need more time to get used to, however, turned out to be the pilot checklist interface. The pilot uses a roller knob on the left yoke horn to scroll the checklist, then pushes on the roller wheel to select an item. It takes a little practice to learn how to push to select instead of letting the roller roll, and a few times I missed clicking on the roller and instead scrolled. I'm pretty sure I would get used to this after a few hours, but it was one move that didn't initially feel completely natural during my simulator and airplane flight.

The Real McCoy

One thing that is hard to duplicate with a simulator is the external preflight inspection or walk-around, and Frazier took time to introduce me to the HondaJet parked on the ramp. This was N420EX, Serial Number 11, with the green/gold paint scheme.

Of course, the placement of the HondaJet's HF120 engines is one of the jet's most noticeable characteristics, and it isn't just because it looks different from other jets. This configuration

has been tried before and even made it into production on the Fokker VFW 614, a 40- to 44-passenger jet that went out of production after 16 aircraft had been delivered in the mid-1970s.

In the HondaJet, there are two principal benefits from the over-the-wing engine placement. One is elimination of structure and systems to accommodate traditional aft-fuselage engine mounting. The HondaJet fuselage doesn't narrow until the very aft end, allowing for a more roomy cabin and space for a fully enclosable, externally serviced lavatory, something missing in many light jets, plus a huge baggage

could help delay the onset of the drag-producing shock wave that builds as jets gain speed, the result being a 5-percent improvement in fuel efficiency. Fujino and engineer Yuichi Kawamura received a U.S. patent for this "method of reducing wave resistance in airplane" on Oct. 30, 2001. In the HondaJet, it was critical not only to position the engines precisely but also to design the engine pylon so that it doesn't generate too much side lift or drag. The aerodynamic shape of the vertically mounted engine pylons is clearly evident. The engines' placement also makes it easier to look them over during preflight.



The over-the-wing engine mount design makes more room in the cabin. Honda Aircraft expects the most popular configuration to be the executive version, with leather seats and an under-seat storage drawer.

compartment. The fuselage is almost entirely composite (cured laminate composite with four plies of carbon fiber and copper mesh embedded for lightning protection), which added to the engine placement provides a quiet environment for passengers and pilots.

The other design benefit of the over-the-wing engine mount is improved high-speed performance. Fujino discovered that an over-the-wing engine placed in exactly the right spot (about 75 percent of wing chord)

There are other distinct airframe features, such as what appears to be bulbous shaping of the nose and cockpit side windows. This helps with pilot visibility, but also facilitates natural laminar flow, reduces drag and cuts cockpit noise.

The all-aluminum wings look like they belong on a larger jet, with bleed-air anti-icing a welcome feature in a light jet. The wings are equipped with vortex generators on the lower surface in front of the ailerons "to energize airflow across the lower surface

of the aileron," according to the pilot's operating manual. A stall strip is mounted on the inboard leading edge to improve airflow at high angles of attack. A subtle "bump" is visible on the wing's upper surface, and this is designed to improve airflow at high Mach numbers. Tiny triangle-shaped devices march up each winglet's leading edges to "energize the airflow over the winglets at high angles of sideslip."

The empennage is aluminum, and the horizontal stabilizer leading edges are fitted with a Cox electro-mechanical expulsive de-icing system (Emeds). The system's 20 actuators electromagnetically create mechanical force that deflects the leading edge skin to break off ice. With switches in the NORM position, wing and tail anti-icing automatically turns on when ice is detected; windshield heat normally runs in the low power mode when at least one engine is running, then switches to high heat when ice is detected.

The wing upper surfaces aren't marred with fuel filler ports because fueling is done through the single-port adapter mounted on the upper right aft fuselage. This isn't pressure fueling; fuel is gravity fed through the filler first into the wing carrythrough tank, then each wing tank and finally the aft fuselage tank. Honda Aircraft offers an optional external fuel gauge mounted next to the filler cap, and this eliminates the need to monitor fueling from inside the airplane using the fuel synoptic page. The HondaJet does require fuel containing fuel-system icing inhibitor. Max fuel load is 2,850 pounds.

One other notable feature on the airframe is the optional speedbrakes, which are hydraulically actuated panels on the aft fuselage that deploy on either side like hefty butterfly wings. The speedbrakes, while selectable only in full or retracted positions, automatically blow back toward the closed position

at high speeds. If the pilot forgets to retract the speedbrakes when they could add unwanted drag, during a go-around, for example, moving the throttles forward to near the maximum continuous thrust (MCT) position automatically causes the speedbrakes to retract.

Before Takeoff

The simplicity and elegance of the cockpit was immediately apparent because even with me running the checklists, entering the flight plan (KGSO-KGSO, TRIAD6 departure) and setting up the mode control panel, it didn't take long at all. Cockpit switchlights use the convention of dark for normal operations, or lit with the words NORM or OFF for other required positions. Rotary switches are aligned so they look consistent, and their state can quickly be determined at a glance, with

three-position switches always pointing forward (12 o'clock) when in the normal position.

"When I designed the cockpit," Fujino explained, "I tried to be consistent, one philosophy: the dark cockpit concept or the knob should be 180 degrees so that any switch can be observed on the spot."

Fujino approached Garmin early in the HondaJet design process, meeting with co-founder Gary Burrell in 1999 to discuss future avionics concepts. "He was open for any discussion," Fujino recalled. "And he attended all the technical meetings with me. At the time they didn't produce an avionics system, just GPS [the G1000 integrated flight deck didn't enter service until 2004]. Gary was interested in going to an entire avionics system. And we started to work together."

While many aircraft manufacturers prefer to attach their

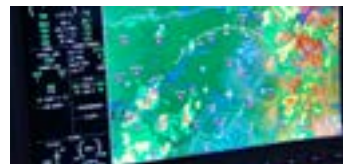
own brand name to the customized flight decks that they select, Honda Aircraft stuck with G3000, even though the system is customized for the HondaJet. "I appreciated our relationship from 1999," Fujino said, "and they collaborated with me without having any commercial decision. At the time I didn't have any business plan I could present formally to him. Of course I had a business plan, but as a company we could not present it. [We had] just the one experimental aircraft. And Gary Burrell maybe saw the future of HondaJet, and that's why he decided to collaborate."

What sets the G3000 flight deck apart from G1000 is the dual GTC 570 infrared touchscreen control display units (CDUs) that are the main pilot interface with the avionics. The G3000 system retains soft-keys, buttons and knobs similar to those on the G1000, but these are hardly needed when using the CDUs. For Fujino, the CDUs make operating the avionics much simpler for

pilots because it doesn't require them to memorize complicated menus and layers of information. Honda Aircraft engineers spent much time helping design touchscreen location for proper cooling and operation in turbulence as well as influencing the selection of infrared touchscreen technology so pilots can operate the CDUs while wearing ordinary gloves.

"We discussed how we use the touchscreen menu for each operation, so that is a collaborative effort. We proposed input and they incorporated it, and we requested revisions," he said. This partially illustrates Fujino's and his engineering team's incredible attention to detail. Not only did they have to fine-tune the distance between touchscreens for cooling, but also to meet center eye-distance constraints with proper location and tilt angle. "When you fly you may see how much time we spent to optimize the location of the touchscreens," he said.

The cockpit is comfortably outfitted, and further evidence of the designers' attention to detail. Three 14-inch displays fill the panel, along with a Meggitt standby display mounted next to the mode control panel. The two CDUs are mounted at an angle in front of the center pedestal and are



Location of the G3000's touchscreens relative to the pilot was a key concern for HondaJet designers, who wanted to find the optimal location and tilt angle to work eye-distance constraints. Avionics options include synthetic vision, radar altimeter, CPDLC, Iridium satcom, Tcas II, Taws A and Garmin SurfaceWatch.





Honda Aircraft has handed over 12 HondaJets to date.

easily viewable and reachable. The power levers and yoke feel substantial and match the purposeful decor of the flight deck, while adding a touch of leather-trimmed design flavor.

Each front seat has a cupholder at the front of the side ledge, and oxygen masks sit aft of the cupholders. The pilot seats received as much design attention as the passenger seats and are equipped with adjustable inboard armrests that fold into the seat back and thigh adjustments to set the forward seat edges to the most comfortable position. Leather covering is optional.

Among the avionics options are synthetic vision, radar altimeter, CPDLC (VHF datalink), cockpit Iridium satcom (voice, text, weather), DME, ADF, second transponder, Tcas II, Taws A, Sirius XM Weather, weather radar ground-clutter suppression and turbulence detection, CVR, maintenance recorder, Jeppesen Chartview and Garmin SurfaceWatch. Takeoff and landing data is not automatic yet in the HondaJet but will be added in a future software upgrade. ADS-B OUT is standard.

The electronic checklists are available as soon as the HondaJet is powered up, and it was easy to scroll through the lists using the yoke scroll-wheel. Clicking the wheel without scrolling takes a little time to get used to, but Frazier showed me how I could

position my thumb on the edge of the switch to hold it steady while pushing. This got better as the flight progressed.

Before starting the engines, I used the CDU to plug in our flight plan, weights (7,381 BOW without pilot, 2,410 pounds of fuel plus two pilots for an mtow of 10,161 pounds) and V speeds (V_1 110, V_R 115, V_2 120, V_E 140). While I know that traditional FMSs are capable devices, I find the G3000 pilot interface far easier and faster for cockpit setup. Just touch the icon on the CDU, fill in the blanks and you're good to go. Systems tests on the before-start checklist are simple: just push one button on the CDU, and all the tests run automatically.

Starting the Faded HF120s is totally automatic, with the sole pilot action moving the power lever off from cutoff, past idle, then pulling it back to the idle stop after pushing the START button. Green rings light up around the START button during the start process. The engines started at a relatively cool ITT, below 400 degrees C.

Nosewheel steering is electronic (steer-by-wire), a surprising feature in a small jet. While sensitive, the steering worked fine and I felt that I was able to taxi smoothly fairly quickly. The simulator experience was a big help preparing me for the ground behavior, too. Minimum pavement width for a 180-degree turn

on the ground is just 38.5 feet, and after landing Frazier demonstrated the tight turning capability.

KGSO weather was calm wind, good visibility and higher than normal temperature, with towering thunderstorms flanking each side of the Shenandoah Valley, leaving us a clear southwest-northeast path to put the HondaJet to the test.

I pushed the TOGA button on the throttle, but didn't select a lateral mode on the flight mode annunciator yet. Frazier likes to set the assigned heading in the mode control panel, but without pressing the select button. That way, the flight director command bars show normal takeoff pitch and wings level, but then after getting airborne, pushing the select button immediately commands a turn to the assigned heading.

After Takeoff

I took off on Runway 23L, and as Frazier had explained, the HF120 engines accelerated the HondaJet smartly, just as they had in the sim. After rotating, I held the nose steady for a moment then allowed it to climb into the V-bars, then retracted the landing gear and, after building more speed, the flaps. I pushed the heading selector button and started a turn to 270 and pulled the power levers back to max continuous power (MCT). Climbing through 3,000 feet at ISA+11 degrees C, the HondaJet was ascending at nearly 4,000 fpm, and I had to pull the power back about halfway to keep the speed down for our first level-off at 5,000 feet.

We weren't able to get an unrestricted climb to FL430 because of all the traffic sandwiched between the thunderstorms, but Frazier said such a climb normally takes 25 to 26 minutes and uses about 520 pounds of fuel. We leveled briefly at FL280 at MCT, burning 550 pph per side at ISA +8 degrees C. As we leveled again

at FL330, fuel flow dropped to 480 pph per side. After accelerating with MCT still set, speed topped out at 423 kts and Mach 0.72. Resuming the climb, we saw 2,000 fpm through FL410 then leveled at the HondaJet's maximum altitude of FL430 at ISA -9 degrees C. Fuel flow dropped to just 300 pph per engine and cabin altitude maxed out at 8,000 feet.

On the way back down to KGSO, Frazier showed me the rudder bias system, which takes out some, but not all, of the rudder pedal needed during an engine failure. When rudder bias is engaged, the flight mode annunciator replaces the yaw damper symbol ("YD") with "RB." Although we were still at a high altitude, pulling one engine back to idle hardly seemed to affect the jet's flightpath.

Frazier showed me the HondaJet's handy cruise speed control (CSC) feature, which allows the pilot to use the autopilot and Faded to set and hold a target airspeed. CSC can be engaged in altitude hold mode with a steady airspeed when the engines are in sync mode. CSC holds that speed using the autopilot and Faded, but the speed can't be changed without disengaging CSC, flying to a different speed, then re-engaging CSC. This feature is helpful when the pilot needs to hold a specific speed per ATC in an airplane with Faded but no autothrottles. CSC can also hold speed while Vnaving to an altitude restriction.

Another useful feature is quick access to the G3000 system control pages. Pushing a button on the aft side of the inboard yoke brings them up; they can also be accessed by pushing a CDU icon, but it's much easier to use the yoke button. Various items can be set or changed on the system control pages, such as power control for access to solid-state relays

and cabin power outlets, engine sync de-select, setting the landing field elevation, lights and lighting configuration, thermostat and CVR erase (only on the ground).

Frazier accelerated our descent by cranking down the vertical speed roller on the mode control panel while I popped the speed brakes, which rumbled slightly but didn't seem to affect pitch at all. The HondaJet descended smoothly to FL240 at more than 6,000 fpm. He then had me bring the power back up to MCT to show me the overspeed protection, which kicks in just above redline. While we heard the overspeed horn, the HondaJet didn't get quite fast enough for the protection to activate; if it had, it would have raised the nose to slow us below redline.

On the way back to KGSO, we diverted to Shiloh for some airwork. I slowed the HondaJet to 200 knots VFR at 4,500 and flew a left and right steep turn then a clean and dirty stall, just to stick shaker, then recovered. Even with just a short amount of time hand-flying, I felt completely comfortable in the HondaJet. The steep turns were solid, although it feels a little like cheating to use the G3000 synthetic vision's flightpath marker to maintain altitude. The stalls were straightforward, with quick recovery and fairly rapid spool-up of the HF120s.

After the airwork, we dialed up ATC and headed back to KGSO for a coupled ILS approach to Runway 23R. Setting up the approach is simply a matter of making sure KGSO is selected as the destination, then pushing the procedure icon on the CDU, then selecting the approach and transition.

The G3000's autopilot smoothly captured the localizer and glideslope, and all I had to do was deploy approach flaps then landing gear at glideslope about one dot up, and full flaps at glideslope intercept. Then it



was time for the before-landing checklist, managing power for VREF+5 and monitoring the HondaJet's progress. I clicked off the autopilot at about 300 feet and tracked down to the touchdown point for a clean but solid landing in a seven-knot nearly direct crosswind, not as smooth as in the simulator, but still satisfactory.

Frazier took care of resetting the flaps, then I added power for a touch-and-go and took off and flew a right pattern back to Runway 23R. The second landing was slightly smoother; the HondaJet doesn't need much of a flare and lands like a larger jet. "There's not a lot of flare," Frazier said. "The only thing is when you de-rotate, just hold the nose up there, rotate [it down] nice and smooth, and

then firm on the brakes initially, not anti-skid firm, then release them as required."

Interior Details

The passenger cabin of the HondaJet got equal attention from designers, and they made maximum use of the space available. While the normal number of occupants is six, one of them the pilot, a seventh side-facing seat can be installed opposite the main entry door. To add some utility to this seat, when the cabin door is closed, one of its steps cleverly folds out to make a table for the side-facing passenger.

Many buyers will likely opt for the executive seating option, which upgrades all cabin seats to leather and adds a neat

under-seat sliding drawer to the main cabin seats, as well as retractable inboard armrests.

Cabin windows are electrochromically dimmed and brightened, but powered pleated window shades are an option. One stowable table is standard on the right side of the cabin, and a left-side table is optional. Optional personal storage compartments are available at each seat.

Buyers can opt for an enhanced cabin management system with touchscreen controllers added to the right-hand aft personal storage compartment and right-hand cabinet, and with this upgrade the remaining three storage compartments can also be equipped with optional touchscreen controllers. The enhanced upgrade allows installation of an audio entertainment system, with mobile device control of audio, lighting, temperature and electrochromic windows. Sirius XM satellite radio and Gogo Business Aviation airborne connectivity are optional. Up to six cabin power outlets are available.

Other desirable airframe options include the external service port for the lavatory and solid pocket doors for the lavatory area, and a sink with running water. The flushing toilet is standard, and there are two skylight windows that add natural light to the aft lavatory area.

Thanks to the engine placement on the wings, the HondaJet's cabin is roomy at 4.8 feet high, five feet wide and 17.8 feet long from the forward to aft pressure bulkheads, leaving plenty of legroom for the club-four seating area. Baggage space is a key attribute of the HondaJet, with 57 cu ft in the unpressurized aft compartment and nine cu ft in the nose area. The aft compartment is easily reached from the ground, with no ladder needed to hoist luggage into the space. While not heated, the aft compartment does get warmed by cabin outflow air.

Expected Performance

On a standard day at mtow, the HondaJet should be able to climb directly to FL430 in 24 minutes, but the jet's sweet spot speedwise is about 12,000 feet lower. Climbing to FL310 takes just under 12 minutes, and at that altitude true airspeed should clock in at 422 knots while burning a total of 1,122 pph. Long-range cruise power settings cut fuel flow considerably. At FL410 and after burning off about 500 pounds in climb fuel, the HondaJet can cruise at 356 ktas burning 597 pph total.

The HondaJet could climb to FL430, fly at high-speed cruise for 2.6 hours then descend and land with 600 pounds of reserve fuel. This would result in a flight of just over 1,200 nm. The same high-speed flight at FL310 would allow an 800-nm trip in about 1.6 hours. These numbers were calculated using a high-speed descent.

At long-range cruise with a climb to FL430, the HondaJet could fly 2.8 hours and about 1,250 nm, with a normal descent at the end of the flight. Clearly the high-speed cruise option is better at this altitude.

Takeoff field length on a standard day at mtow, with takeoff

flaps and anti-icing off, is just under 4,000 feet. Add about 1,000 feet for a 5,000-foot airport. Typical landing field length numbers on a standard day at sea level range from about 3,000 to 3,500 feet, depending on landing weight.

Overall Impressions

The HondaJet is a fully capable business jet that will be a pleasure to fly for the owner-pilots who are likely the majority of the market for this airplane, but also appreciated by professional pilots who fly a HondaJet for the owner. Obviously customers who placed early orders had to wait a while, but I'm betting that they are glad they waited. Apart from revealing that buyers committed to more than 100 airplanes early after it had announced the program, Honda Aircraft has not released any current backlog numbers. At the current rate of three to four deliveries per month, it will take just over two years to fulfill the orders for 100 aircraft.

Honda Aircraft isn't a typical jet manufacturer; instead of selling directly to buyers, it has set up a network of dealers worldwide, modeled after Honda's own automobile dealer network, not only for sales but for service as well. The dealers'

service network is backed up by a full service center at the Honda Aircraft headquarters, and here all of the delivered jets are overseen to make sure customers are being taken care of properly.

All of the documentation that comes with the HondaJet—the airplane flight manual (AFM), pilot's operating manual (POM), quick-reference handbook (QRH)—is of highly professional caliber and among the best I've seen in this industry. For example, the POM's Operating Procedures and Techniques section provides detailed steps for each phase of flight, including diagrams of flight profiles and notes about various steps, all in a logical sequence. The POM

Systems Description section is amazingly detailed yet clearly explained and illustrated by gorgeous colorful lifelike images of various systems. The environmental control system illustrations are especially well done.

The HondaJet's systems and performance are at the high end of the Part 23 design spectrum, and it is clear that Honda Aircraft's engineers have learned enough on this program that another airplane, even a Part 25 design, will easily be within their capabilities. The HondaJet is a thoroughly modern airplane, and it is abundantly clear that Honda Aircraft has now joined the ranks of serious business jet manufacturers. □

Honda Aircraft HA-420 HondaJet Specifications and Performance

Price (base)	\$4.85 million
Engines (2)	GE Honda Aero HF120, 2,050 lbs
Passengers (typical)	1 crew + 5 pax
Range (w/NBAA reserves, 100-nm alternate)	1,206 nm
High-speed cruise	422 ktas/Mach 0.72
Long-range cruise speed	368 ktas/Mach 0.64
Fuel capacity	2,850 lbs
Max payload w/full fuel	547 lbs
Ceiling (certified)	43,000 ft
Cabin altitude at ceiling	8,000 ft
Max takeoff weight	10,600 lbs
Takeoff field length at mtow (sea level, standard)	3,934 ft
Landing distance	3,047 ft
Length	42.6 ft
Wingspan	39.8 ft
Height	14.9 ft
Cabin	Volume: NA
	Width: 5.0 ft
	Height: 4.8 ft
	Length (between pressure bulkheads): 17.8 ft
Baggage capacity (nose compartment)	9 cu ft/100 lbs
Baggage capacity (aft compartments)	66 cu ft/400 lbs
FAA certification (basis, date)	FAR Part 23 (through 23-62), 12/08/15
Number delivered (through date)	12 (6/17/16)



The HondaJet has room for an enclosed externally serviced lavatory.