



Aerospace technology of the highest order was on display at AFA's annual showcase.

Technology demonstrators, products aimed tightly at upcoming Air Force competitions, and eye-grabbing displays filled the hall at AFA's 2013 Technology Exposition. **1** Chief of Staff Gen. Mark A. Welsh III toured the exhibit hall after a speech in which he urged contractors to help USAF find affordable solutions to its most pressing problems. **2** Boeing presented a life-size display of an extended-range Small Diameter Bomb. The ability to carry more weapons on fewer airplanes could be a force multiplier. **3** and **4** Siemens and Northrop Grumman showed off specialty motorcycles built by Orange County Choppers. The white ride is an electric bike illustrating Siemens' "green" capabilities, while the gray machine commemorates the 20th anniversary of the B-2 bomber's first flight.





11 Lockheed Martin presented a generic wing loaded with company products, including its Long-Range Anti-ship Missile, LRASM. The stealth missile, derived from the Joint Air-to-Surface Standoff Missile-Extended Range, completed a successful test just before the expo. *12* This massive long-range radar is a Lockheed Martin concept to help protect air bases from ballistic missiles. *13* Boeing's Phantom Eye is a high-altitude, long-endurance, remotely piloted surveillance aircraft. The real one has a wingspan of 250 feet. *14* Adm. James Winnefeld, vice chairman of the Joint Chiefs of Staff, stopped by the expo after his Air Force Association conference address.

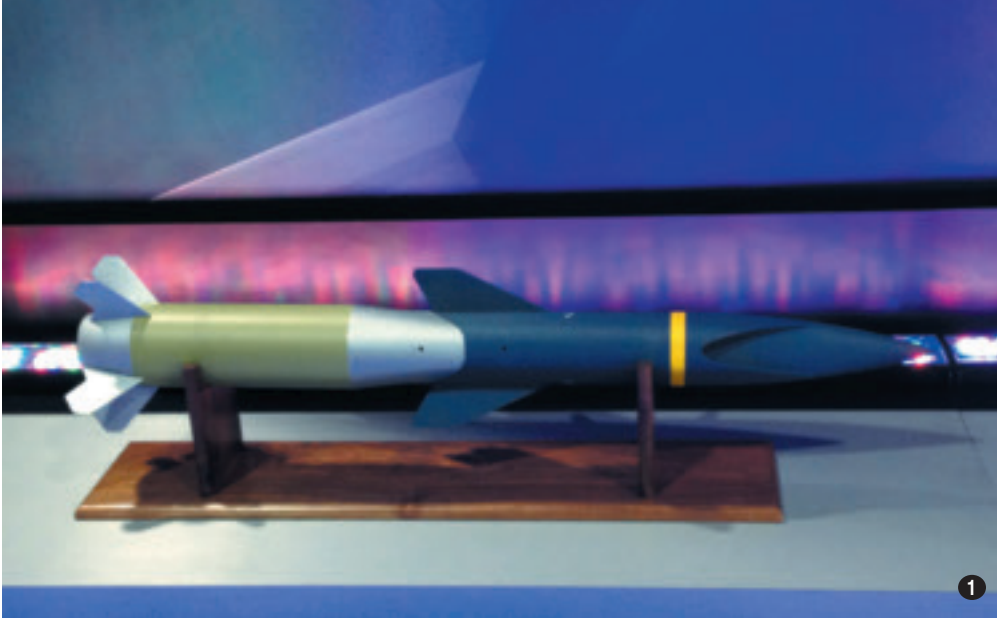


111 Lockheed Martin's Cuda missile is intended to increase the F-35's loadout without resorting to unstealthy carriage on the wings. A dozen of the radar guided hit-to-kill missiles could be carried internally on the F-35. Steering is aided by bursts from a belt of thruster ports. 121 Brig. Gen. Burke Wilson (r), director of space operations on the Air Staff, enjoys a moment with CMSgt. Rodney Reyes (l). 131 A Boeing satellite orbited above the company's booth. Boeing promoted its GPS IIF system as well as hosted payloads for government/commercial partnerships.



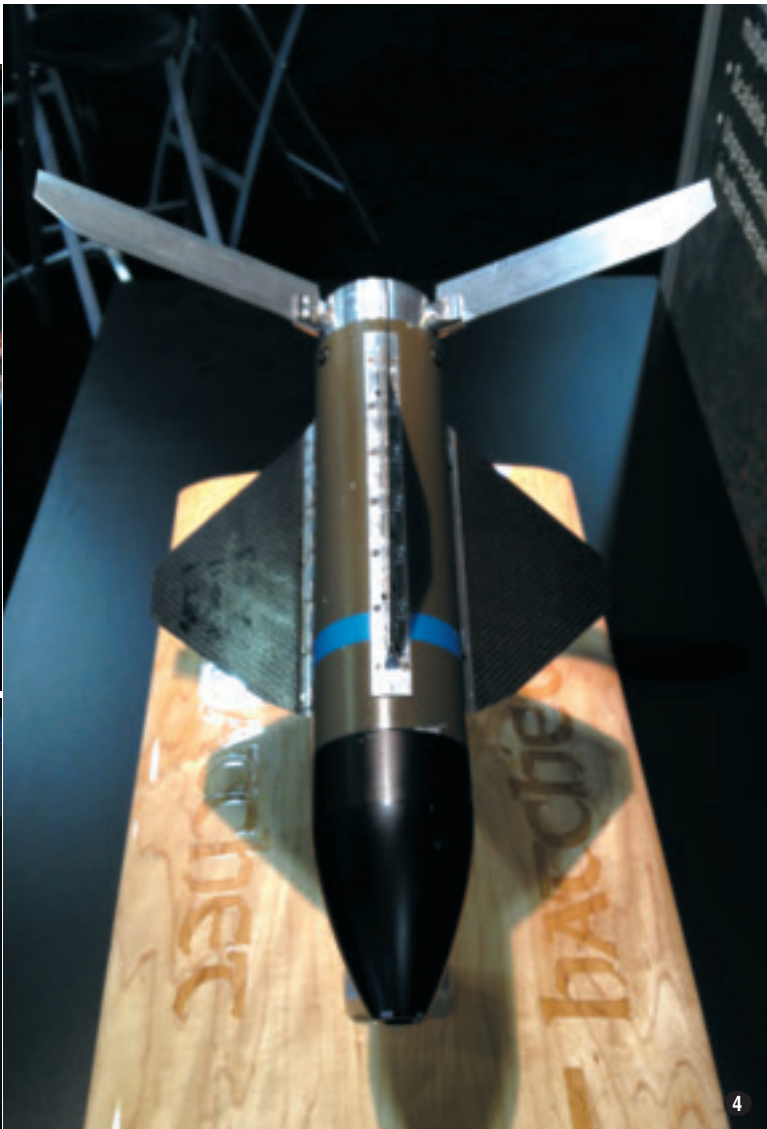
141 General Atomics' MQ-9 Reaper displays its impressive maximum load. The remotely piloted armed intelligence, surveillance, and reconnaissance aircraft has been a USAF workhorse in Afghanistan and is now being acquired by a number of allied nations. 151 Warrior Canine Connection is a Maryland-based program that provides therapy dogs to help vets with post-traumatic stress disorder; the vets themselves help train the dogs, who are always welcome visitors at the expo.



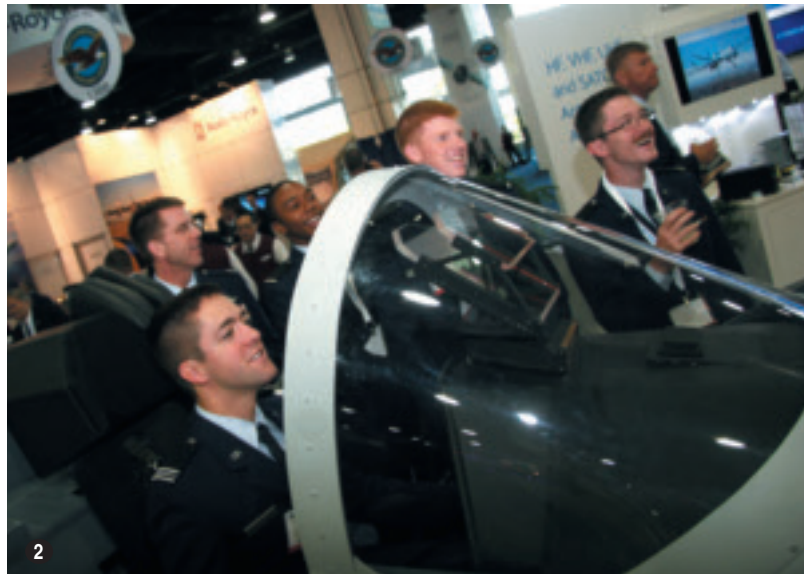


111 This two-stage hypersonic missile is Lockheed Martin's entry in the upcoming High-Speed Strike Weapon competition. Like the X-51 hypersonic demonstrator, the missile is accelerated to hypersonic velocity on an ATACMS booster. Reaching speeds of up to Mach 5, such a weapon could go a long way toward keeping standoff bombers relevant against future air defenses. The dual-mode ramjet weapon also has some stealth shaping. It bears the Skunk Works logo on the tail. **121** AFROTC cadets try out a generic cockpit presented by CMC Electronics. Flying the notional fighter is Caleb Bliesner from Liberty University in Lynchburg, Va. He's cheered on by classmates.

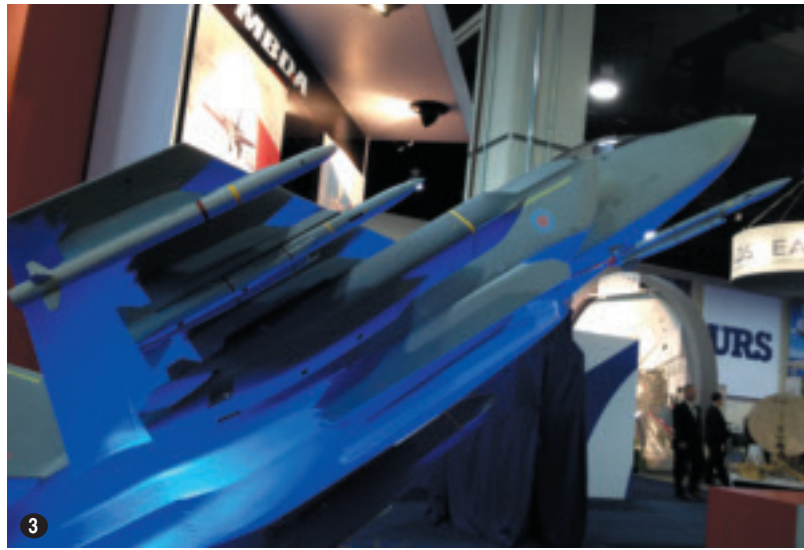
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131 MBDA's large F-35 model featured weapons that will be integrated on the Lightning II for the UK and could be integrated on US F-35s as well. They include (outboard to inboard) the ASRAAM short-range heat-seeking dogfight missile, the Meteor long-range radar guided missile, and the Storm



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Shadow long-range strike missile. **141** ATK offered the "Hatchet" miniature weapon for armed reconnaissance, intended for deployment on RPAs, cruise missiles, and large aircraft.



111 The pathfinder for the High-Speed Strike Weapon is the X-51 Waverider, shown off as a model by Boeing. The real X-51 achieved a flight of more than 300 seconds at speeds up to Mach 5 in May, providing a wealth of data for aerospace technologists to study. The project was a joint effort of DARPA, NASA, the Air Force, Boeing, and Pratt & Whitney. **121** Textron Chief Executive Officer Scott Donnelly speaks with Maj. Gen. Kenneth Merchant, director of USAF Global Reach Programs, in front of the Textron display. **131** Pratt & Whitney's large model display emphasized its key role in providing propulsion for USAF's top fighter aircraft (l-r): the F-15, F-16, F-35, and F-22 as well as the KC-46 tanker. **141** A C-130J propeller (background) made by Dowty and a Goodrich ACES 5 ejection seat with elements that can be retrofitted to the ACES 2, used by a large portion of the combat fleet, on display.





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111 Sikorsky brought its experimental X2 Technology Demonstrator to the expo. The coaxial rotor, pusher-propeller configuration has achieved speeds of more than 300 mph, and could be the basis of future rescue, medevac, utility, or special operations machines. 121 BAE Systems, Northrop Grumman, L-3, and Rolls Royce are teamed to offer the Hawk Advanced Jet Training System when the Air Force is ready to pursue the TX-trainer to replace the T-38. The Hawk booth featured this large model and a trailer with multimedia presentations. 131 EADS's show offerings included this derivative of its UH-72 Lakota light helicopter. To replace UH-1s, the Air Force must recapitalize. 141 The Airborne Battle Management Crew of the Year stopped by the Northrop display. They are Combat Crew 3, 16th Airborne Command & Control Squadron, 461st Air Control Wing, from Robins AFB, Ga. Wing commander Col. Henry Cyr is in the back row, far right. ■