Air Force scientists are working on hypersonic air vehicle

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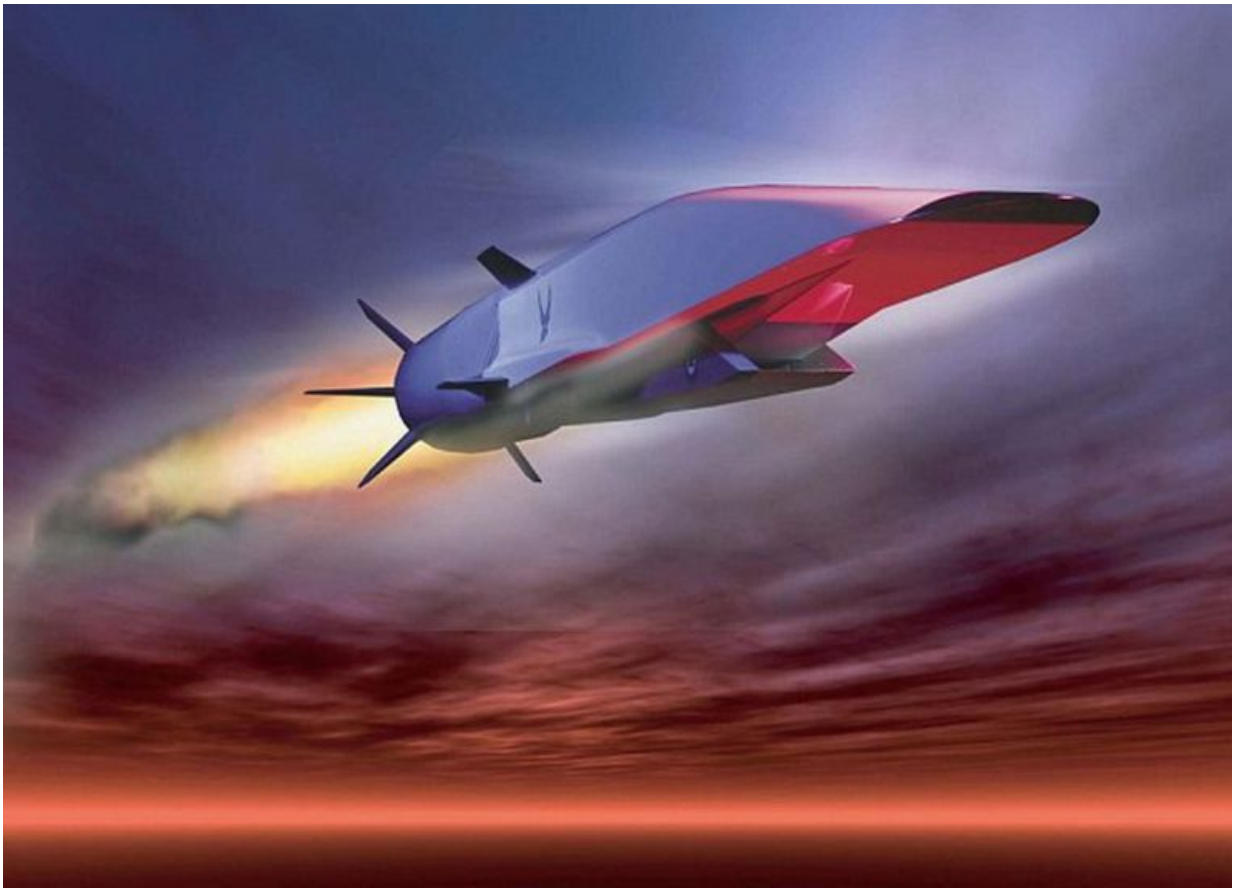

How the Waverider might look. Credit: EPA

Engineers said the US Air Force is getting closer to testing a hypersonic weapon. They are developing a hypersonic weapon based on an

experimental scramjet program. What is a scramjet? NASA said in a "scramjet," or Supersonic Combustion Ramjet, the oxygen needed by the engine to combust is taken from the atmosphere passing through the vehicle rather than from an onboard tank. "Researchers predict scramjet speeds could reach 15 times the speed of sound. An 18-hour trip to Tokyo from New York City becomes a 2-hour flight," said NASA.

Military.com said this refers to a "supersonic combusting ramjet, has very few moving parts and relies on an air-breathing propulsion system to travel faster than the speed of sound."

Back in 2013, *Defense Tech* reported that the "Air Force Sees Hypersonic Weapons in 2025"—these would be unmanned super-fast weapons. That same year, The X-51 WaveRider, an experimental "scramjet" made by Boeing, had reached up to five times the speed of sound for a record three and a half minutes. It was called the longest air-breathing hypersonic flight ever. Efforts continue and have reached a point where scientists with the Air Force Research Laboratory and DARPA, the Pentagon's research arm, are working on a hypersonic air vehicle that can travel at speeds up to Mach 5 while carrying guidance systems and other materials, said *Defense Tech*.

(Today's cruise missiles travel at speeds up to 600 miles per hour; hypersonic weapons will be able to reach speeds of Mach 5 to Mach 10, according to Air Force officials.)

Military.com said the WaveRider experimental scramjet was first propelled by a solid rocket booster, a surface-to-surface missile (MGM-140 Army Tactical Missile System) A weaponized version of the vehicle would use another missile, not a ground system design.

"Certainly, the U.S. is not the only country involved in developing hypersonic weapons," Mica Endsley, the Air Force's chief scientist, said

in an interview with *Military.com*. "The advantage of hypersonics is not just that something goes very fast but that it can go great distances at those speeds."

As an example, she said, to get from NY to LA "is a five hour flight in a commercial aircraft. With a hypersonic weapon, you could do that same thing in about 30 minutes."

Endsley said in *Defense Tech* that the Air Force and DARPA, plan to have a new and improved hypersonic air vehicle by 2023.

For the follow-on weapons program, the Air Force is teaming up with DARPA to shrink the technology into a hypersonic weapon that could fit on most of the bomber fleet, according to Kenneth Davidson, manager of the hypersonic materials development at the Air Force Research Laboratory.

The X-51 size was too big to put it on current bombers; it was made as a demonstrator. Davidson explained in *Military.com*: "There's no weapon in it. There are no sensors on board for controlling the guidance. So we're looking at making it more durable, getting the guidance control developed so that it can become a weapon system, developing the ordnance."

Other demonstration projects being developed by DARPA include the Hypersonic Air-breathing Weapon Concept and Tactical Boost Glide. Their test flights are scheduled for 2018 or 2019.

Davidson said the goal was to make sure the Air Force "has the knowledge in 2020 or over the next five years to be able to make acquisition decisions using this technology."