

Sonic Booms

What is a Sonic Boom?

A sonic boom sounds like a sharp crack of thunder. It occurs when an aircraft moves faster than its own sound waves, also known as pressure waves.

Why does NAS Patuxent River conduct supersonic operations?

Naval Air Station (NAS) Patuxent River (PAX) is the U.S. Navy's headquarters for the research, development, test and evaluation of all Navy aircraft, aircraft components and related systems needed to carry out their military mission. Among the tests occurring at NAS PAX are evaluations of jets' abilities to fly at the speed of sound or "supersonic."

Why are supersonic flights flown over the Chesapeake Bay?

NAS PAX flight test squadrons conduct several types of supersonic operations in military restricted airspace over the Chesapeake Bay. Jet aircraft pilots perform low-level weapons separation test flights to ensure that ordnance separates safely from the aircraft when released at supersonic speeds. The aircraft must stay close to shore so that tracking stations along the Bay Shore can record the operation through high-powered cameras. Supersonic flights are also conducted at or above 30,000 feet over the Chesapeake Bay for mission essential flight testing.

Why are supersonic flights flown offshore along the Atlantic coastline?

The Department of Defense manages a strip of airspace used for military testing that begins approximately three miles offshore, over the Atlantic Ocean. This airspace, called the "Test Track," is designated for the performance of specific flight tests, including those that require supersonic speeds. Military aircraft from NAS PAX and neighboring military installations visit the Test Track to fly supersonic on a routine basis. The area is located offshore, as to avoid overflight of populated land areas, but close enough for the safety of the aircraft and pilots, and to conserve on jet fuel to and from the test area. Although most sonic booms generated in this area are never felt or heard on land occasionally, due to weather conditions or the details of the test flight, a sonic boom will be felt/heard on land.



Above: F/A-18 Super Hornet approaches the speed of sound. The lens-shaped cloud is condensed water vapor that forms in the area of low pressure. The high-pressure area, or ridge, streams invisibly from the nose and wings of the aircraft.

A. Below the speed of sound - subsonic. As the aircraft moves through the air it creates alternating waves of high and low pressure.

B. Near the speed of sound - transonic. As the aircraft increases speed, it begins catching up with the pressure waves ahead of it. If it moves fast enough, it will overtake the waves.

C. Beyond the speed of sound – supersonic. At supersonic speeds, the aircraft moves faster than the sound waves emanating from it. The waves pile up into a high pressure ridge of concentrated sound that radiates outward. Behind the high pressure ridge is a region of low pressure. When the high pressure ridge and low pressure region from a supersonic aircraft reach the ground, a sonic boom is heard.

NAS Patuxent River
 Noise Disturbance Hotline:
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