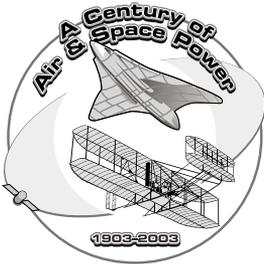


# Atlas: The Grandfather of ICBMs and Space-Launch Vehicles

ASPJ STAFF



Atlas, the first-generation intercontinental ballistic missile (ICBM), had a fitful start. Originally part of a classified Army Air Forces effort (Project MX-774), it fell prey to budget cuts in 1947. With the onset of the Korean War and Cold War, it was revitalized in 1951 under Air Force research and development. Original

plans called for a missile over 120 feet long with five engines, but by 1954 the "stage-and-a-half" Atlas had emerged, utilizing two booster engines and one sustainment engine. Even then, the final dimensions of 75 feet and 260,000 pounds represented an innovation in missile design.

Atlas incorporated a number of new technical concepts and utilized an innovative procurement paradigm. One of the former featured dual-purpose, pressurized, stainless-steel tanks that not only held the propellant, but also provided structural rigidity to support the weight of the missile and warhead. This revolutionary design yielded vast weight savings by reducing requirements for stiffening the missile's structure. Less weight made propulsion more manageable, thus permitting the thrust-to-weight ratio necessary to meet and surpass the intercontinental-distance requirement of 5,000 miles. Engineers met the 10-mile accuracy goal by using gimballed motors under gyroscopic-guidance control. Furthermore, Gen Bernard A. Schriever's visionary management concept of "concurrency" reduced the time from initial concept development to full-scale weapon-system deployment as authorized by the Air Force.

Strategic Air Command assumed responsibility for the missile in January 1959, and the first full Atlas D squadron became operational in 1960. Initially stored horizontally in above-ground buildings with removable roofs, the missiles later moved to underground horizontal facilities and finally to underground vertical silos. Launch from a silo required that the missile first be raised through



the removable storage roof or doors. Thirteen squadrons saw active service as part of the ICBM deterrent force.

Atlas led a dual life. Although it was retired from the strategic missile fleet in 1965, the National Aeronautics and Space Administration had begun using Atlas as a space-launch vehicle as early as December 1958, when it lifted SCORE—the world's first communications satellite—into orbit. President Eisenhower took advantage of this opportunity to broadcast a prerecorded Christmas message to the world. Additionally, Atlas vehicles launched space probes and Project Mercury's first orbital flights, including John Glenn's historic journey on 20 February 1962.

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## To Learn More . . .

- F. E. Warren AFB Intercontinental Ballistic Missile and Heritage Museum.* "Atlas (SM-65)." On-line. Internet, 31 January 2003. Available from <http://www.pawnee.com/fewmuseum/atlas.htm>.
- Launius, Roger D., and Dennis R. Jenkins, eds. *To Reach the High Frontier: A History of U.S. Launch Vehicles*. Lexington: University Press of Kentucky, 2002.
- Neufeld, Jacob. *The Development of Ballistic Missiles in the United States Air Force, 1945–1960*. Washington, D.C.: Office of Air Force History, 1990.
- Strategic-Air-Command.com.* "Atlas Missile History." On-line. Internet, 31 January 2003. Available from [http://www.strategic-air-command.com/missiles/Atlas/Atlas-Missile\\_History.htm](http://www.strategic-air-command.com/missiles/Atlas/Atlas-Missile_History.htm).
- US Army Corps of Engineers. "Did You Know? The Corps Built the Launch Sites for *Atlas*, the United States [*sic*] First ICBM?" Vignette no. 32. Washington, D.C.: US Army Corps of Engineers, 15 January 2003. On-line. Internet, 31 January 2003. Available from [http://www.hq.usace.army.mil/history/vignettes/vignette\\_32.htm](http://www.hq.usace.army.mil/history/vignettes/vignette_32.htm).