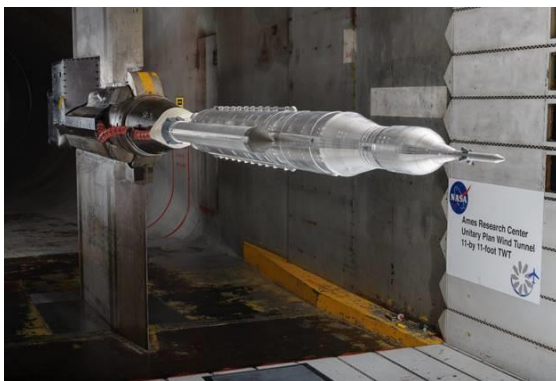


## Micro Craft Supports NASA’s Artemis Program – Past, Present and Future

Micro Craft, Inc. continues to support the nation’s space program with the recent successful launch of NASA’s **Artemis I**. Micro Craft has manufactured wind tunnel test and flight hardware in support of the maiden launch for several years. The work has been performed for multiple customers consisting of both government and prime contractors. Supporting the test and initial launch, Micro Craft manufactured Artemis I scaled models that were tested at the NASA Ames Research Center Unitary Plan Wind Tunnel in California (reference photo). Hardware such as “cases and closures” were built to support ground and flight tests.

According to Micro Craft President and Chief Executive Officer (CEO) Dr. Kenneth W. Sullivan, “Micro Craft has supported our nation’s space program for over six decades. Most notably the Apollo Program where multiple pieces of hardware were manufactured in Tullahoma such as the flagpole on the moon and the ‘moon spoons’ used to gather rocks from the lunar surface.” He added, “Micro Craft supported the Space Shuttle Program in both test and flight, the International Space Station (ISS) primarily manufacturing the Unity Node hardware along with multiple pieces of hardware used in deep space missions.”



Photos courtesy of NASA.gov

**Photo starting top left (clockwise) (a) Micro Craft manufactured Artemis I scaled wind tunnel model in the NASA Ames Research Center’s Unitary Plan Wind Tunnel located at Moffett Field,**

**California. (b) Micro Craft was the prime contractor for NASA's X-43 program and (c) Micro Craft machined precision parts for NASA's Lunar Flashlight propulsion system.**

“In addition to the Artemis Program, Micro Craft is supporting NASA programs utilizing commercial launch systems, such as Space-X,” added Mr. John Statum, Operations Manager. He added, “Micro Craft recently supported NASA’s Lunar Flashlight project that was launched on a Space-X rocket. Our craftsman performed precision machining on components of the propulsion system at the Tullahoma facility.” **Lunar Flashlight** (reference photo) is a mission that was selected in 2014 by NASA’s Advanced Exploration Systems (AES) by a team from the Jet Propulsion Laboratory, UCLA, and Marshall Space Flight Center. This innovative, low-cost concept will map the lunar south pole for volatiles and demonstrate several technological firsts, including being the first CubeSat to reach the Moon, the first planetary CubeSat mission to use green propulsion, and the first mission to use lasers to look for water ice.

Long before the current race by China, Russia, and North Korea to develop, and purportedly deploy, operational hypersonic missiles/weapons, Micro Craft played a major role in hypersonic research and development, commented John Nichols, VP and Director of Contracts and Procurement. John added, “Micro Craft was chosen as the Prime Contractor on NASA’s highly successful **X-43A Program** (aka Hyper-X). Micro Craft contracted with several major Aerospace Companies including Boeing and Orbital Sciences Corporation to construct the experimental unmanned hypersonic aircraft. The goals of the Hyper-X Program were to flight validate key propulsion and related technologies for air-breathing hypersonic aircraft. To perform the actual flight tests, the X-43A (reference photo) aircraft were attached to the nose of a Pegasus rocket booster (aka the stack); the stack was attached under the wing of NASA’s B-52B Mothership. The B-52 carried the stack to an altitude of 40,000 feet at which time the stack was released from the B-52; the Pegasus ignited and boosted the aircraft to an altitude of approximately 100,000 feet. At that altitude, explosive bolts and pistons pushed the X-43A aircraft away from the booster which allowed the supersonic combustion ramjet (scramjet) engine to fire. After separation from the booster, on both drops, the engines operated and were able to develop more thrust than drag on the aircraft and each vehicle accelerated. NASA accomplished two successful flights, the first flight, on March 27, 2004, set a speed record of Mach 6.83 (approximately 4,900 mph). The second flight, on November 16, 2004, reached a speed of Mach 9.6 (almost 7,000 mph). NASA’s X-43A achieved two Guinness World Records for the fastest air-breathing aircraft. Subsequent to the X-43A Program, Micro Craft was awarded the follow-on Contract for the X-43C Program which was, unfortunately, cancelled in CY2005 when the funding was withdrawn. In my opinion, this cancellation caused the US to fall behind our adversaries in terms of hypersonic development progress. However, the good news is that, once again, Micro Craft is heavily involved in various hypersonic Programs designed to develop and promote critical hypersonic solutions.”

Since 1958, Micro Craft, Inc. has provided support to the aerospace industry, NASA, and the Department of Defense (DOD) with prototype models and flight hardware. Throughout its history, Micro Craft has supported such programs as the Apollo moon landing and multiple hypersonic development projects. Micro Craft, Inc. has been employee-owned (ESOP) since 2011 and is a certified Small Business that is AS9100 Rev. D certified, providing engineering, manufacturing, quality assurance, and testing services.

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