

BUSINESS

Aegis Aerospace Aspires To Be Game Changer At Moon

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HOUSTON—The airless lunar environment will require some customized assessments by those inspired to initiate scientific inquiries or invest in the commercial ventures that NASA hopes will help it establish a sustained human presence at the Moon.

This is where Houston's Aegis Aerospace believes it could become game changing. That is because of Aegis' three-decade legacy of conducting similar evaluations of how heritage and breakthrough materials and technologies hold up in low Earth orbit. This includes for the International Space Station's (ISS) external testbeds for the Department of Defense (DOD), NASA, major aerospace companies, and an assortment of others through the ISS National Lab.

"What we are doing today is helping startups start up. We are a conduit for the kinds of commercial things there has never been anything quite like," said Mark Gittleman, president and CEO of Aegis, a recent merger between Alpha Space and MEI Technologies (MEIT). Aegis is a woman-owned space and technology venture headquartered near NASA's Johnson Space Center (JSC) and Spaceport Houston, which is home to an emerging commercial space community. The community is led by many principals who have retired from or moved on professionally from NASA.

Aegis, whose name is derived from Greek and Latin and means "shield," has that perspective from its forerunners. But it also is focused on serving as a conduit for those less experienced but stimulated by opportunities to participate in lunar exploration or invest in a future cislunar economy.

"We are in a period of time when the government realizes it has to subsidize to stimulate this economy to get going. So it really invites entrepreneurs, not just space people, to bring those technologies," said Stephanie Murphy, Aegis principal owner and chair of its board of directors. "But they have to know about it. Part of our challenge is letting people know of the available opportunities. Every time we talk about it at a conference or a meeting, you can see people's gears start going. What can I send? What can I test? How can I get there fast?"

In October 2020, NASA's Science Technology Mission Directorate committed more than \$370 million to negotiate so-called Tipping Point contracts with 15 commercial companies to advance the development of innovative lunar surface technologies over five years on three fronts. Then known as the Alpha Space Test and Research Alliance, Aegis was the recipient of

a potential \$22.1 million agreement to nurture a lunar space science and technology evaluation facility.

On Aug. 23, Aegis announced the start of an effort to design, build, fly and operate an initial Space Science and Test and Evaluation Facility (SSTEF-1) under the NASA Tipping Point initiative. Aegis plans to transport SSTEF-1 to the Moon in 2024. It also is in discussions with Intuitive Machines, a member of Houston's emerging commercial space community, for a place aboard a Nova-C lander. The lander will have a manifest of commercial, industrial- and academic-furnished samples of electronics, sensors and materials to assess how they respond to the lunar environment.

"The whole idea behind tipping points is to bring new products or services to market," Gentleman said. "The whole idea behind SSTEF-1 is to create an ongoing lunar test service. We have six companies and Georgia Tech flying with us. We will test a pretty good variety of technologies and they are already asking us when SSTEF-2 will go."

SSTEF-1 is far from Aegis Aerospace's first space venture.

It is working with Firefly Aerospace on the Regolith Adherence Characterization (RAC) payload, one of 10 science investigations and technology demonstration payloads to be launched by Austin, Texas-based Firefly in 2023 to Mare Crisium, a 300-mi.-wide basin on northeast quadrant of the Moon's near side. There it will assess how lunar regolith sticks to a range of materials exposed to the Moon's environment during landing and subsequent lander operations.

Firefly is launching under a \$93.3 million NASA Commercial Lunar Payload Services (CLPS) initiative agreement. The accord was reached in February 2021 to help the agency prepare for future human exploration of the Moon under the Artemis initiative.

RAC components will be derived from the Materials International Space Station Experiment (MISSE) facility. The long-running sample exposure facility is part of the ISS's long solar power truss. It previously was flown on NASA's space shuttle and developed and provided by Aegis Aerospace's predecessors dating back to the early 1990s.

A year ago, prior to the Alpha Space and MEI Technologies merger, the venture logged its 1 millionth hr. of furnishing science and technology development data from space. It was achieved through agreements with the DOD's Space Test Program (STP), initially on platforms flown aboard the space shuttle. This was followed by the ISS, free-flying platforms and small satellites.

Most of the company's 350 personnel work off-site with their customers. About half are focused on DOD and classified projects, Murphy said.

AEGIS, P. 9

BUSINESS

Israeli UAV Control Startup Xtend Raises \$20M In Venture Capital

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Xtend, an Israeli-linked UAV operator system startup that aims to use artificial intelligence (AI) to help extend the use and range of unmanned vehicles, has raised \$20 million in Series A funding, the company announced Nov. 16.

The round was led by Chartered Group and included return investors Lool ventures, I3 Equity Partners, TPY Ventures, TAU Ventures, Surround Ventures, Homeward Ventures, NFX and Top Ventures.

Xtend said its Drone Operating System, XOS, allows “any” operator to “expertly” control a UAV in “extreme” indoor and outdoor scenarios. “Controlled via a unique virtual reality user

interface, XOS leverages state-of-the-art augmented reality and artificial intelligence technology and enables operators to immerse themselves in remote, high-risk, GPS-denied locations, allowing maximal effectiveness at a minimal risk.”

The company said U.S. Special Operations Forces and Israeli tier-1 military units are evaluating its offerings. It claims more than 300 systems deployed worldwide. “This funding round enables Xtend to scale out our truly unique and innovative operating system, which allows anyone to perform extremely precise interactive missions in dynamic complex environments with zero learning time—making the idea of human-centric telepresence a reality,” Xtend co-founder and CEO Aviv Shapira said.

Aviv and Matteo Shapira started Xtend in late 2018 along with Rubi Liani, founder of the Israeli Drone Racing League, and defense and UAV executive Adir Tubi.

AEGIS, from P. 8

On Sept. 22, Aegis was awarded a new U.S. Space Force STP contract task order to develop, build and operate the STPSat-7 satellite for low Earth orbit, hosting research and technology payloads, with a 2023 delivery commitment. STPSat-7 will employ a bus and ground systems initially developed by MEI Technologies for the STPSat-4 mission. Hosting five DOD payloads, it was delivered to the ISS aboard a NASA-contracted Northrop Grumman resupply mission in November 2019 and deployed from the orbital lab on Jan. 28, 2020.

The history of Aegis’s commercial space evolution dates back to 1992. That is when Murphy’s father, Ed Muniz, an aerospace engineer and retired U.S. Air Force officer, started Muniz Engineering. Based in Houston and working from JSC, he began the integration of materials for testing in low Earth orbit for the DOD and NASA. Murphy joined the company as part of its corporate office for a dozen years before returning to Texas A&M to earn an MBA shortly after the company changed its name to MEIT.

“People are really very aware of NASA’s commercial crew and commercial cargo programs, but there was another thrust from NASA around commercial services providers. That is really what opened the door for opportunity for Alpha Space,” Murphy recalled.

That led to the privatization of MISSE, which was facing budget pressures under NASA leadership. Intrigued by the business opportunity, Murphy convinced her father to spin off oversight under her leadership as Alpha Space in 2015. The MISSE platform was totally redesigned, built and tested prior to its launch to the ISS in 2018 for its external installation to assess material

and technology exposure to the space environment.

With the notion of diversifying the MISSE space testing and services activities, Murphy then decided to purchase her father’s interest in MEIT in 2019 after recruiting Gittleman to oversee Alpha, which merged with MEIT over the summer of 2021 to become Aegis.

An engineer, Gittleman began his professional career as a deep-sea construction diver. He would go on to join Houston-based Oceaneering International. There he served for 33 years as an engineer, project manager, program manager and, for 13 years, as division vice president of Oceaneering Space Systems. At OSS, Gittleman helped manufacture a variety of spaceflight hardware and spacewalk equipment.

After his Oceaneering career, Gittleman consulted before joining Intuitive Machines as executive vice president. This was prior to the company being selected as one of NASA’s first nine Commercial Lunar Payload Services providers on Nov. 29, 2018. It was while he was at Oceaneering that he got to know the Muniz family.

Aegis is currently preparing its eighth MISSE payload for launch to the ISS for a six-month test period. The company’s turnkey approach can cost as little as \$5,000.

“There is a great market for technology testing and demonstration. So it didn’t take long to figure out that what our customers really wanted was to test their technologies and prove them in orbit for a set period of time,” Gittleman said, reflecting on what Aegis has learned so far. “Enabling small businesses to bring their technology to market faster—that is where we come in, and it’s the same idea with lunar testing.”