Moon Beckons Commercial Comeback for Beagle

By Craig Covault
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Project managers for the British Beagle lander program are seeking redemption - on the moon - nearly six years after their spacecraft disappeared on Mars.

Collin Pillinger who headed the unsuccessful Beagle Mars project is in discussion with the commercial "Odyssey Moon" program to fly a backup version of Beagle's most powerful instrument on board the Odyssey lunar lander.

When lost in December, 2003, the Beagle Mars lander was seeking organic materials that could have been evidence of past life. But the Odyssey Moon program is seeking evidence for lunar resources that could be mined by future astronauts seeking profit.

The Beagle project's magnetic mass spectrometer is especially suited for finding such molecules, says Everett K. Gibson a NASA senior geochemist and astrobiologist at the Johnson Space Center. Gibson has led Lunar Beagle studies at JSC, where the lunar version of the spacecraft has been tested. A similar Pillinger instrument is on board a European Space Agency spacecraft headed for a landing on a comet.

Years before the Odyssey Moon program came calling, the Beagle Mars program had already converted its backup hardware into a "Lunar Beagle" configuration for a NASA study on low cost robotic lunar concepts. Those study results remain viable and theoretically could result in a NASA Lunar Beagle type mission in several years, says Gibson. Top NASA headquarters personnel disagree, however.

The Odyssey Moon commercial lander and rover are under development at MacDonald Dettwiler and Associates (MDA) in Canada using Canadian technology mated with a NASA spacecraft design already tested at the NASA Ames Research Center.

Top new U. S. personnel and hardware are also being added. Jay Honeycutt former director of the Kennedy Space Center has been hired as president of Odyssey Moon Ventures, responsible for all U.S. operations and launch programs for the lunar surface venture. He is based near Cape Canaveral.

Another major appointment to boost the project's stature is the hiring of Alan Stern, a highly experienced manager and engineer who was previously NASA associate administrator for science. Another top official is Paul Spudis, previously chief scientist at the Lunar and Planetary Science Institute in Houston. He has just been hired as Odyssey Moon's chief scientist.

"For a number of months we have had contact with Odyssey Moon and in early July we had "more firm" discussions," Pillinger tells Spaceflight Now. "They are interested in our mass spectrometer, but arrangements are still tentative at this moment."

The Beagle magnetic mass spectrometer has a strong capability to find and analyze volatile species like hydrogen and water ice and other molecules that would be critical for discovering and using lunar resources Gibson told Spaceflight Now.

Christopher Stott, a senior executive with Odyssey Moon has held the discussions. Stott was previously a manager with Boeing on the Delta IV and later with Lockheed Martin Space Systems where he helped lead international sales efforts.

Further discussions with Stott may be delayed a few weeks, however, because his wife, NASA astronaut Nicole Stott, is set for liftoff Aug. 25 on the space shuttle Discovery. She will be delivered to the ISS for a several month mission on board the outpost.

Odyssey Moon is one of 16 competitors in the Goggle Lunar X Prize competition that will award $30 million to the first team to fund a successful commercial robotic lunar landing. The winner must also demonstrate the ability for the mother ship or its rover to drive at least 500 meters (1,650 ft.).

The Odyssey Moon team was the first to register for the prize. From all outside

appearances at least, it has already amassed a strong investor and engineering team. That includes signing an agreement with NASA for commercial use of a NASA lunar spacecraft that has already been designed and tested at the Ames Research Center.

The mission will cost about three or four times more than the prize money. But Odyssey Moon is focused not on just one flight, but an ongoing series that has lunar prospecting goals as well as science objectives.

Odyssey Moon had been planning to launch in 2011. But the company indicates that launch of the first commercial robotic lunar lander "MoonOne" (M-1) will likely slip by a year to at least mid 2012.

Use of a Minotaur V or SpaceX Falcon 9 launch vehicle fits with the mission needs, although managers decline to discuss their launcher plans. Either rocket can deliver payloads of 5-50 kg to the lunar surface or 10-200kg to various lunar orbits, Ames studies indicate.

"I am extremely pleased and excited to be working on getting us back to the Moon in a sustainable way," says Honeycutt. "I believe the private sector has an important role to play in a permanent and affordable lunar program."

He has over 40 years of space experience, including key engineering and simulation positions at the Johnson Space Center during Apollo, Director of the NASA Kennedy Space Center and president of Lockheed Martin Space Operations.

Honeycutt will specifically focus on the commercialization of the NASA technology like the new Ames Common Bus lander. This should enable Odyssey to develop a series of robotic landings specialized for specific tasks at different landing sites.

Odyssey's MoonOne (M-1) lunar lander will use utilize the Ames Research Center design for a modular Common Spacecraft Bus.

Under the terms of a Reimbursable Space Act Agreement with Odyssey Moon Ventures LLC, Henderson, Nev., NASA Ames will share its small spacecraft technical l data and expertise with the company.

In return, Odyssey Moon Ventures will reimburse NASA Ames for the cost of providing the technical support and will share its technical data from its engineering tests and actual lunar missions with NASA.

"NASA is a big supporter of developing the commercial space sector, and is interested in developing small spacecraft for future lunar exploration," says NASA Ames Research Center Director Pete Worden. By making these designs available to commercial enterprises, we hope to spark rapid development of low-cost, small spacecraft missions."

NASA also will share data from the Ames Hover Test Vehicle, an engineering prototype to evaluate hardware and software systems. The Goggle Lunar X prize leaves open how each contender achieves 500 meter mobility. The Ames test vehicle, however, has demonstrated that it can not only land, but also rise off the moon and fire small thrusters to move sideways. This raises the possibility that the Odyssey lander can achieve the mobility of a rover, at least to win the $30 million prize and bragging rights that will go with it.

The Odyssey Moon venture is domiciled on the Isle of Man "to take advantage of favorable regulatory and export regimes that allow us to choose the best technologies and partners from around the world," the company says. It is actually headquartered in the U. S. in Henderson, Nevada with offices also in Washington, D. C. as well as the Cape.

Pillinger headed the Planetary and Space Science Research Institute at England's Open University.

After Beagle disappeared without a trace a British investigation sharply criticized the project's management and testing but the spectrometer was not faulted.

The first mission will be focused on assessing resources in dark mantle near the lunar equator. The second mission will be to the lunar South Pole and focused on a direct ground level search for water-ice.

One potential equatorial target is the moon's Sulpicius Gallus region where analysis indicates there is extensive dark mantel. The material could produce extensive "feedstock" for the production of hydrogen and oxygen. The region is more than 100 mi. north of the Apollo 11 landing.

Another option is Rima Bode, rich in black volcanic glass and thorium. U. S. Geological Survey scientists say that it too could be a major lunar mining area in future decades. The area is near the Apollo 14 landing site.

Images taken by the Lunar Reconnaissance Orbiter are helping to narrow other potential landing sites. Odyssey Moon is also extensively involved in support of and use of 45 year old NASA/Boeing Lunar Orbiter imagery. Data from those spacecraft are being to extract major new high resolution data as part of the Lunar Orbiter Image Recovery Project.

The program's CEO, Robert Richards, is the director of Toronto based Optech Inc. the global market leader in the development, of advanced, laser-based survey systems.

He also helped found the International Space University. The chairman of the Odyssey board is Ramin Khadmen who helped found Inmarsat and was Inmarsat Chief Financial Officer.

Other personnel who have joined Odyssey Moon with past careers in the Apollo program and more near term endeavors are:

Dr. James D. Burke - JPL retired; NASA Lunar Ranger Project Manager
Mr. Charles M. Chafer - CEO, Space Services Inc.
Mr. Arthur M. Dula - Space Lawyer; Founding Director of Excalibur Almaz Limited
Dr. Louis Friedman - Founder and Executive Director, The Planetary Society
Mr. Lewis Pinault - LEGO Senior Director and General Manager, LEGO Play for Business
Dr. Jean-Luc Josset - Director of the Space Exploration Institute, Neuchatel, CH
Mr. Jon Lomberg - Artist; Chief Artist, COSMOS Television Series
Dr. Bob McDonald - Science Journalist & Author
Dr. Wendell W. Mendell - lunar scientist at the Johnson Space Center
Dr. David Miller - University of Oklahoma's Wilkonson Chair Professor in the School of Aerospace and Mechanical Engineering specializing in the design and test of planetary rovers.
USAF Col "Coyote" Smith - Former chief of the Dream Works Advanced Concepts Office in the Pentagon's National Security Space Office

If Odyssey Moon carries the Beagle spectrometer, the fact the first Beagle Mars spacecraft "went missing without a trace" are the kind of words that should generate a tremendous amount of "British press." This could help scientists in the United Kingdom reclaim some luster lost upon British politicians who too often believe the words "British and space" are an oxymoron.

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