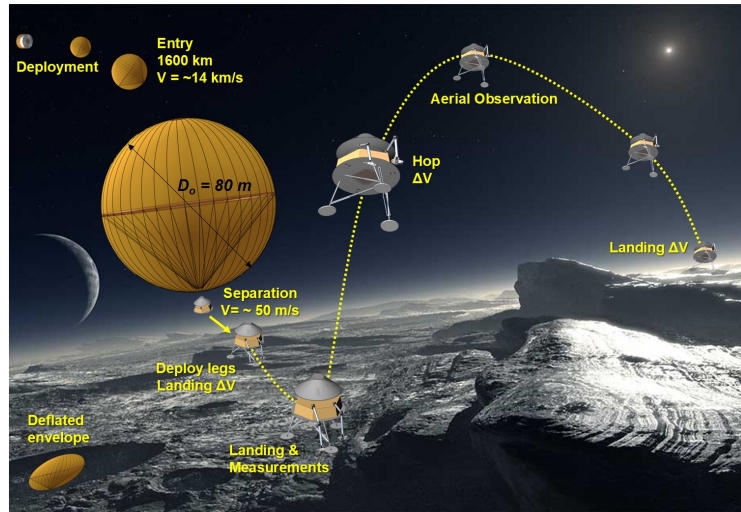


Global Aerospace Corporation to Present Pluto Lander Concept to NASA

Global Aerospace Corporation plans to present its “Pluto Hop, Skip and Jump” mission concept at NIAC as symposium in Denver, CO on September 25.

IRWINDALE, CA – Global Aerospace Corporation (GAC) announced today that it will present its Pluto lander concept at the 2017 NASA Innovative Advanced Concepts (NIAC) Symposium in Denver, CO. Under a grant from NASA’s NIAC program, GAC is developing an integrated “entrycraft” architecture that can decelerate and gently land on the surface of Pluto from a speed of over 30,000 mph using only drag from Pluto’s ultra-thin atmosphere and just a few pounds of propellant. Once at the surface, the vehicle can switch to “hopper” mode, taking advantage of the low gravitational acceleration and a modest propellant store to hop around the surface, sometimes tens or hundreds of kilometers at a time, investigating surface features of interest.



“Pluto’s surface pressure is just 10 millionths of Earth’s, but its atmosphere is extremely spread out, extending about 1000 miles above the surface, said Dr. Benjamin Goldman, principal investigator of the Phase I NIAC effort. “This extended and ultra-low-density atmosphere is ideal for dissipating large amounts of kinetic energy by means of aerodynamic drag, but the key is making the drag area very large while keeping system weight at a minimum.”

To effectively make use of Pluto’s atmosphere for deceleration, the entrycraft will need to be almost as large as a football field. So far, GAC’s design concept passes the preliminary physics tests, but feasibility will be determined as part of the Phase I NIAC effort. The Pluto entrycraft’s aerodynamic decelerator design will be supported by GAC’s research partner, ILC Dover LP, a world leader in space inflatables. ILC Dover is known for producing NASA’s space suits for the Apollo program and the extra-vehicular activity (EVA) suits worn on Space Shuttle missions and on the International Space Station. ILC Dover was also NASA’s prime contractor for the Mars Exploration Rover (MER) airbag subsystem that helped make the landing a success.

After the entrycraft has carried out its mission and delivered the lander-hopper to the surface, the lander-hopper will have the ability to perform several exciting science measurements on Pluto that will (1) shed new light on its origins and relationship to other Kuiper Belt objects and other planets; (2) characterize the dynamics between the subsurface and the atmosphere by investigating outgassing processes such as cryovolcanism; (3) expand the understanding of surface geomorphology from multiple locations (on approach, during descent, and at the

surface); (4) use in-situ sampling to study the nature of the its crust and search for hypothesized liquid water oceans; and (5) validate New Horizons measurements including atmospheric pressure and temperature profiles.

GAC's concept was inspired by the recent *New Horizons* flyby mission, and it would similarly fall under NASA's New Frontiers class of space exploration missions. While landing on Pluto is the primary focus of the current investigation, GAC's technology could also enable orbit capture, where the atmospheric drag is used instead to decelerate the spacecraft enough to put it in orbit around the dwarf planet.

In the future, GAC envisions prototyping efforts to include the design, fabrication, and testing of a subscale prototype entrycraft to be tested from Low Earth Orbit (LEO). The system could be scaled to fit into a small satellite known as a CubeSat and released from the International Space Station or as a secondary payload on a launch vehicle carrying large satellites into orbit. Eventually, the full-scale system could be deployed in LEO as well. In collaboration with NASA centers, such as the Jet Propulsion Laboratory (JPL) and Langley Research Center (LaRC), or other planetary research organizations like Southwest Research Institute and Applied Physics Laboratory, this technology could be on its way to Pluto in just 12 years.

According to NASA, the NIAC program is not a typical NASA research program. Its revolutionary and futuristic focus deliberately pushes boundaries, exploring innovative concepts that could "change the possible" in aerospace. GAC is very pleased to participate in the NIAC program for the fourth time since its founding in 1997. GAC's prior NIAC awards include Astronaut Hotels for rapid transit between Earth and Mars, Global Constellations of Stratospheric Scientific Platforms, and Directed Aerial Robot Explorers (DARE).

The NIAC Symposium will be held Sept 25-27 in Denver, CO at the Hyatt Regency Denver Tech Center, 7800 E Tufts Avenue Denver, Colorado 80237. Symposium is open to the public and registration is free. Online viewing is available at:
<https://livestream.com/viewnow/NIAC2017>

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