

Status Update on ispace HAKUTO-R Mission 1 Lunar Lander

TOKYO—April 26, 2023—ispace, inc., (ispace) a global lunar exploration company, issued an update on the status of the HAKUTO-R Mission 1 Lunar Lander.

The HAKUTO-R Mission 1 Lunar Lander was scheduled to touchdown on the surface of the Moon at approximately 1:40 a.m. JST. As of 8:00 a.m. JST, April 26, 2023, the communication between the lander and the Mission Control Center was lost, although it was expected even after the touchdown, and it has been determined that Success 9 of the Mission Milestones is not achievable.

Based on the currently available data, the HAKUTO-R Mission Control Center in Nihonbashi, Tokyo, confirmed that the lander was in a vertical position as it carried out the final approach to the lunar surface. Shortly after the scheduled landing time, no data was received indicating a touchdown. ispace engineers monitored the estimated remaining propellant reached at the lower threshold and shortly afterward the descent speed rapidly increased. After that, the communication loss happened. Based on this, it has been determined that there is a high probability that the lander eventually made a hard landing on the Moon's surface.

To find the root cause of this situation, ispace engineers are currently working on a detailed analysis of the telemetry data acquired until the end of landing sequence and will clarify the details after completing the analysis.

For Mission 1, it has been determined that Success 9 of the Mission 1 Milestones, successfully landing on the Moon and establishing communications, is no longer achievable. Despite this, the mission has already achieved Success 1 through Success 8. In addition, while attempting the completion of Success 9, the Mission Control Center was able to acquire valuable data and know-how from the beginning to nearly the end of the landing sequence, which will enable a future successful lunar landing mission. It is strongly believed that this is a great leap forward to future lunar exploration and an important milestone to advance space development by the private sector toward the next level not only in Japan but also the world.

ispace will continue to make the most of the data and know-how acquired during the operation through Success 8, and landing sequence including aspects of Success 9, aiming to dramatically improve the technological maturity of Mission 2 in 2024 and Mission 3 in 2025.

“Although we do not expect to complete the lunar landing at this time, we believe that we have fully accomplished the significance of this mission, having acquired a great deal of data and experience by being able to execute the landing phase. What is important is to feed this knowledge and learning back to Mission 2 and beyond so that we can make the most of this

experience,” said Takeshi Hakamada, Founder and CEO of ispace. “To this end, we are already developing Mission 2 and Mission 3 concurrently and have prepared a foundation that can maintain this continuity. I would like to thank once again all the employees who have contributed to this mission from its inception to the present, all the families who have continued to support it, and all the shareholders, HAKUTO-R partners, customers, suppliers, and many others who have continued to believe in ispace’s vision. We will keep moving forward.”

“Today, ispace’s HAKUTO-R” Mission 1 became the first private company to attempt to land on the Moon, but unfortunately, the landing could not be realized, said Hiroshi Yamakawa, President of the Japan Aerospace Exploration Agency (JAXA). “As a fellow Japanese space enthusiast, I am proud of ispace’s challenge and respect the efforts of everyone involved. Ispace will analyze the data obtained from this mission and use it as a foundation for the next mission. JAXA will continue to make steady progress together with ispace, the industry and organizations challenging space, and our international partners, and will contribute not only to space exploration activities but also to the sustainable development of human society.”

“The Mission underpins the successful cooperation between ESA and ispace. Such collaboration schemes between new space companies and space agencies open up exciting opportunities for the future of lunar exploration and other domains. Accounting for new space approaches is also a central element of ESA’s agenda 2025. I’m convinced that the HAKUTO-R Mission 1 is only the beginning of many fascinating projects and activities to come,” said Josef Aschbacher, Director General of the European Space Agency.

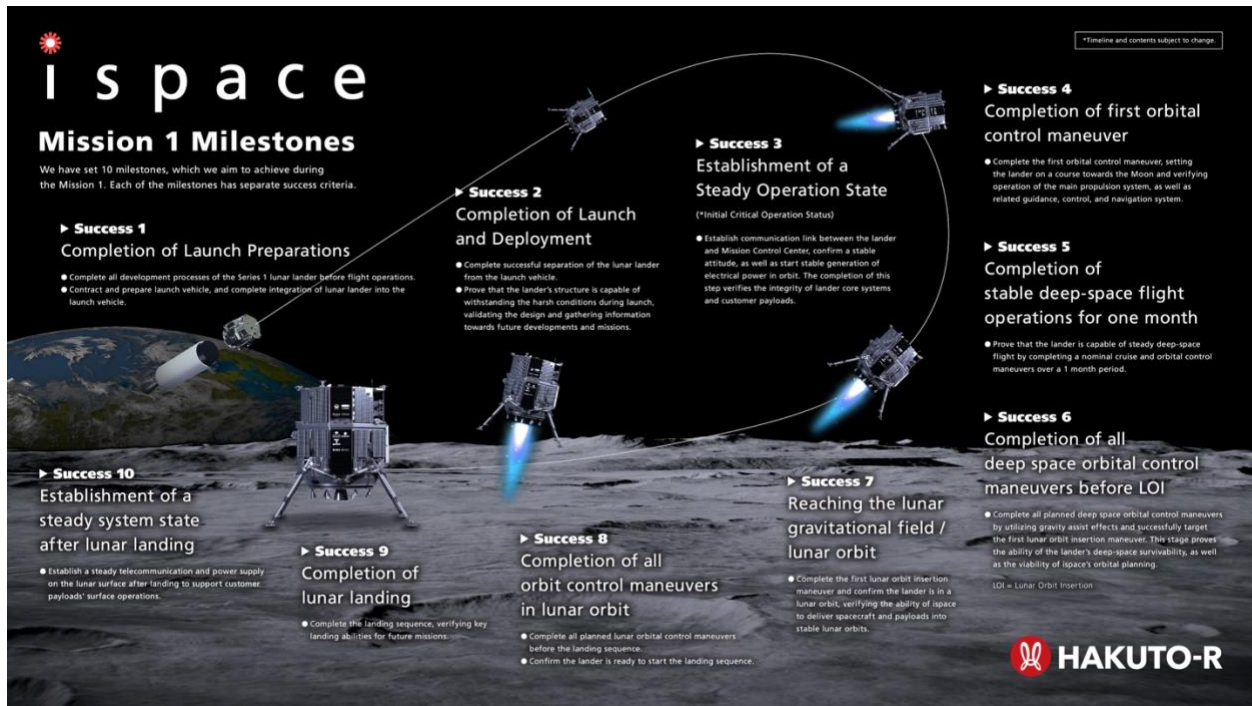
“ispace has already accomplished a tremendous feat by entering lunar orbit and attempting a first landing. What they are trying to do is so complex and at the cutting edge of technology that success is not guaranteed at the first attempt. The experience and unique expertise gained by the team will help make the next mission a success,” said Martin Sion, CEO of ArianeGroup.

Draper released the following statement: “The historic maiden commercial mission of ispace inc.’s M1 HAKUTO-R achieved numerous significant first-time achievements, but ultimately fell short of its goal of landing safely on the Moon. M1 HAKUTO-R experienced an anomaly, ending the mission prematurely. Though the mission did not achieve its ultimate goal, by successfully reaching cislunar space and orbiting the Moon, the mission represents an important step forward for the international space economy. Draper serves on ispace’s team for the M1 HAKUTO-R mission and will collaborate on missions M2 and M3. We look forward to our ongoing partnership with ispace, both now and in the future.”

Mission 1 Milestones

For Mission 1, ispace set 10 milestones between launch and landing, and aimed to achieve the success criteria established for each of these milestones. Recognizing the possibility of an anomaly during the mission, the results will be weighed and evaluated against the criteria and incorporated into future missions already in development between now and 2025. Mission 2 and Mission 3, which also will contribute to NASA’s Artemis Program, will further improve the

maturity of ispace's technology and business model. Future announcements on progress of milestone achievement are expected to be released once attained.



#	Milestone	Success Criteria per Milestone
1 Completed	Completion of Launch Preparations	<ul style="list-style-type: none"> Complete all development processes of the Series 1 lunar lander before flight operations. Contract and prepare launch vehicle, and complete integration of lunar lander into the launch vehicle.
2 Completed	Completion of Launch and Deployment	<ul style="list-style-type: none"> Complete successful separation of the lunar lander from the launch vehicle. Prove that the lander's structure is capable of withstanding the harsh conditions during launch, validating the design and gathering information towards future developments and missions.
3 Completed	Establishment of a Steady Operation State (*Initial Critical Operation Status)	<ul style="list-style-type: none"> Establish communication link between the lander and Mission Control Center, confirm a stable attitude, as well as start stable generation of electrical power in orbit. The completion of this step verifies the integrity of lander core systems and customer payloads.
4 Completed	Completion of first orbital control maneuver	<ul style="list-style-type: none"> Complete the first orbital control maneuver, setting the lander on a course towards the Moon and verifying operation of the main propulsion system, as well as related guidance, control, and navigation system.
5 Completed	Completion of stable deep-space flight operations for one month	<ul style="list-style-type: none"> Prove that the lander is capable of steady deep-space flight by completing a nominal cruise and orbital control maneuvers over a 1 month period.
6 Completed	Completion of all deep space orbital control maneuvers before LOI	<ul style="list-style-type: none"> Complete all planned deep space orbital control maneuvers by utilizing gravity assist effects and successfully target the 1st lunar orbit insertion maneuver. This stage proves the ability of the lander's deep-space survivability, as well as the viability of ispace's orbital planning.

7 Completed	Reaching the lunar gravitational field / lunar orbit	<ul style="list-style-type: none"> Complete the first lunar orbit insertion maneuver and confirm the lander is in a lunar orbit, verifying the ability of ispace to deliver spacecraft and payloads into stable lunar orbits.
8 Completed	Completion of all orbit control maneuvers in lunar orbit	<ul style="list-style-type: none"> Complete all planned lunar orbital control maneuvers before the landing sequence. Confirm the lander is ready to start the landing sequence.
9	Completion of lunar landing	<ul style="list-style-type: none"> Complete the landing sequences, verifying key landing abilities for future missions.
10	Establishment of a steady system state after lunar landing	<ul style="list-style-type: none"> Establish a steady telecommunication and power supply on the lunar surface after landing to support customer payloads' surface operations.

About ispace, inc.

ispace, a global lunar resource development company with the vision, “Expand our Planet. Expand our Future.”, specializes in designing and building lunar landers and rovers. ispace aims to extend the sphere of human life into space and create a sustainable world by providing high-frequency, low-cost transportation services to the Moon. The company has offices in Japan, Luxembourg, and the United States with more than 200 employees worldwide. ispace U.S. is part of a team led by Draper, which was awarded a NASA Commercial Lunar Payload Services (CLPS) Program contract to land on the far side of the Moon by 2025. Both ispace, and ispace EU were awarded contracts to collect and transfer ownership of lunar regolith to NASA, and ispace EU was selected by ESA to be part of the Science Team for PROSPECT, a program which seeks to extract water on the Moon.

Established in 2010, ispace operated “HAKUTO”, which was one of five finalist teams in the Google Lunar XPRIZE race. The company’s first mission as part of its HAKUTO-R lunar exploration program launched on Dec. 11, 2022, from the United States on a SpaceX Falcon 9 rocket. Subsequent missions are in development with launches expected in 2024 and 2025. ispace has also launched a lunar data business concept to support new customers as a gateway to conduct business on the Moon.

For more information, visit: www.ispace-inc.com; Follow us on Twitter: [@ispace_inc](https://twitter.com/ispace_inc).

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