



## **Odyssey Moon – Request for Information for a Payload Flight Opportunity on the Odyssey Moon “MoonOne” (M-1) Lunar Lander**

### **Background / Overview**

Odyssey Moon Limited (OML) is a private commercial lunar enterprise offering lunar services and products to aid humanity’s sustained return to the Moon.

Odyssey Moon will be sending a series of small robotic missions to the Moon in support of science, exploration and commerce in the coming decade. In December 2007, the company was unveiled as the first official competitor for the Google Lunar X PRIZE. It was also announced that mission design work had begun by the company’s prime contractor, MDA Space Missions of Canada.

The inaugural mission of the Odyssey Moon “MoonOne” (M-1) Lunar Lander, currently scheduled for launch by July 2011, has 15 to 25 kg of additional payload capacity available to the lunar surface. OML intends to offer an opportunity for the international lunar community to place scientific or technology demonstration payloads onboard the initial M-1 mission through an Announcement of Payload Flight Opportunity (PFO).

This PFO will be the first of a series of Odyssey Moon mission opportunities designed to enable low cost, rapid and frequent access to the Moon (orbit or surface) for government, academic and commercial customers. The inaugural M-1 flight opportunity will serve as a prototype for scientific and technology payloads sharing space on Odyssey Moon commercial “missions of opportunity” on a recurring basis.

OML is conducting this request for information (RFI) to survey interest in the international lunar community for this payload flight opportunity. OML seeks to identify potential payloads and Principal Investigators (PIs) who wish to explore rapid, low-cost lunar flight opportunities. OML will work with PI’s to identify how such flight opportunities could be supported by national space agencies and other sources.

Note that this RFI is not an announcement for funding of payloads.

### **Purpose**

This RFI concerns an opportunity for scientific and technology demonstration payloads (totaling 15 to 25 kg maximum, with required margins) to be delivered to the lunar surface in the equatorial regions, with launch planned by July 2011. This is a preliminary survey of interest only. Landing loads, telecom and other technical details necessary for detailed proposals will be contained in a subsequent formal PFO announcement.



This RFI is being issued in order to survey interest in the lunar community for this payload flight opportunity and initiate discussions with potential payload PI's and teams.

Odyssey Moon is collecting information from the community for the following reasons:

- Survey interest in the lunar community for rapidly delivering payloads to the lunar surface aboard OML commercial "missions of opportunity"
- Identify candidate payloads that are sufficiently developed to be able to meet the schedule requirements for this initial mission
- Begin the exchange of technical information between OML and the PIs that will be required to prepare the payload and lander to meet the flight schedule
- Support private and government organizations in establishing mechanisms to fund payloads on commercial missions of opportunity
- Help define the required technical and programmatic information exchange between the PI and OML's prime contractor in order to:
  - Assist the PI in securing the required funding for the payload, and
  - Reduce risk during payload integration, flight, and operation of the mission

### **Odyssey Moon M-1 Reference Mission**

Although many aspects of the inaugural Odyssey Moon M-1 mission remain subject to ongoing trade studies, the mission is being designed to minimize risk throughout its design structure. Flight heritage is being employed wherever possible in the lander design and the launch system will be a proven reliable system. Details of the technical baseline will be made available in the formal PFO announcement in Q2 2008.

The Odyssey Moon M-1 plans are being developed around a reference mission that includes the following elements:

- Equatorial landing site, potentially focused on Rima Bode, Sulpicius Gallus or other lunar regions containing well established dark mantle deposits
- A single platform lander offering horizontal mobility of at least 500 m, potentially with a rover
- Operation during a single lunar day and potentially incorporating operation during a terminator event (sunrise or sunset)
- Direct surface access for instruments is in the trade space



## OML RFI Schedule

This OML RFI is being released Tuesday, March 11, 2008, at the 39<sup>th</sup> Lunar and Planetary Science Conference (LPSC) in Houston, Texas. Responses to this OML RFI are requested by email by April 12, 2008.

## Payload Selection Process for Payload Flight Opportunity (PFO)

OML will be working with potential sponsoring and funding organizations to define how the inaugural M-1 Payload Flight Opportunity can support defined goals and elicit support to PIs requiring funding for their payloads. OML will not be selecting payloads but plans to identify payloads eligible for support through more extensive technical assessments and coordination with the proposing PI. OML anticipates working with PIs to “pre-qualify” payloads within the OML M-1 lander system, and provide technical support for PI proposals submitted through private or government funding opportunities.

OML anticipates the release of an Announcement of Payload Flight Opportunity by June 2008 to include details of the payload constraints and instrument and mission flight criteria. Payloads meeting OML PFO criteria will receive additional technical assessments through its technical team and prime contractor to pre-qualify the payloads for flight on OML M-1 lander missions and assistance in preparing funding proposals.

## Development Schedule for OML M-1 Mission

The planned schedule of mission development activities is as follows:

- OML plans to release a detailed PFO by June 2008.
- Submissions of proposals by PIs will be due by September 2008.
- Payload selection in coordination with funding sponsor in early 2009.
- M-1 Mission payload delivered for lander integration in mid-2010.
- Odyssey Moon M-1 mission targeted for launch by July 2011.

## Specific Information Requested

The following is requested from payload Principal Investigators (PIs).

1. Payload name and brief description
2. PI name, contact information and biography/resume detailing flight experience
3. Other individuals and/or institutions associated with the payload
4. General objective of the payload (e.g., instrument type)



5. Engineering parameters and requirements (include approximate design values, ranges, or limits)
  - a. Payload mass
  - b. Payload volume and dimensions (including deployments after landing, if any)
  - c. Power requirements (average during operation, peak, and minimum keep-alive requirements if applicable)
  - d. Data rate (Earth-to-payload, payload-to-Earth), data storage volume
  - e. Dynamic Mechanical requirements (launch and operational loads, vibration, shock, etc)
  - f. Thermal control requirements
  - g. Description of any mechanisms (deployments, arms, sample collection, moving scanners, etc.)
  - h. Pointing and viewing angle requirements
  - i. Expected duration and cycle of operations
  - j. Flight Heritage or Technology Readiness Levels of payload systems, and other technical characteristics of the payload design and/or operations important for lander interface
6. Potential sources of funding or collaboration, data required from OML to support PI funding applications, and any known deadlines for support of PI proposal efforts.
7. PI responses may include alternative configurations of the payload (e.g. listing a 5 kg or 15 kg version of the payload) along with those specific parameters that are associated with the alternate configuration.
8. PIs are invited to suggest specific procedures and schedules for technical coordination between the PI and OML, as well as what specific information will be needed by payload PIs to propose the OML flight opportunity to sponsoring organizations identified by the PI.



## Response Information

Responses are requested by April 12, 2008. Responses and any questions regarding this RFI should be emailed to: **PFO-M1@odysseymoon.com**

**NOTE:** This is not intended to be an exhaustive RFI. Responses are requested from PIs to include information that is readily available, but with adequate detail to assist OML in understanding the payload concept and payload team.

## What OML will do with the information collected

OML will not publish the details of information collected through this RFI. Copyright and ownership of submitted materials will remain the property of the submitting party and will not be shared beyond Odyssey Moon and its prime contractor, MDA Space Missions.

OML intends to use the general information to:

- Determine the level of interest in the international lunar community for this type of flight opportunity
- Determine the type of instrumentation and technical requirements that should be accommodated in the M-1 lander designs
- Provide input to the development of the formal M-1 PFO

PIs should identify what information (if any) they consider proprietary when they submit their information. Materials marked proprietary will be respected as such. PIs should not submit any information subject to export controls.

Information submitted to OML will be the starting point for discussions between OML and the PI. There are no restrictions on communication between OML and PIs in connection with this RFI. OML welcomes your comments on this RFI and other aspects of this announcement.

*It is emphasized that this RFI is for planning and information purposes only and is NOT to be construed as an offer to sell or a commitment by Odyssey Moon to enter into a contractual agreement.*

## References

Odyssey Moon Limited  
[www.odysseymoon.com](http://www.odysseymoon.com)

Google Lunar X-Prize  
[www.googlelunarxprize.org](http://www.googlelunarxprize.org)

MDA Space Missions  
[sm.mdacorporation.com](http://sm.mdacorporation.com)