Lunar Exploration Analysis Group Updates and Action Requests

July 2024 Lightning Edition

Dr. Benjamin Greenhagen, LEAG Chair

Presented to NASA Planetary Advisory Committee

10 July 2024

Delays in Robotic Lunar Exploration

- **The Lunar community expresses concern over delays in landing attempts / cadence of CLPS lander task orders, and flow down effects to payload teams (budget/schedule), CLPS providers, and future solicitations (e.g. no ROSES-23 PRISM / PRISM SALSA solicitations)**
  - PRISM 1: Summer 2021 Payload Selections -> CP-11 (IM, Fall 21) & CP-12 (Draper, Summer 22
  - PRISM 2: Summer 2022 Payload Selections -> CP-21 (No RFTOP) & CP-22 (RFTOP Re-released)
  - Selecting CLPS providers during payload development allows for more efficient/effective engineering and avoids cost growth due to schedule extensions and storage
  - Maintaining a regular cadence of lander services is critical to the business models of CLPS providers and to ensure continued surface payload opportunities
- **The Lunar community expresses support for minimizing delays to the VIPER mission**
  - VIPER has reportedly been delayed indefinitely from its November 2024 launch pending resolutions following from the Peregrine-1 failure review
  - VIPER will collect data critical to lunar science and exploration and should fly as soon as an acceptable risk posture can be achieved
- **LEAG requests action from ESSIO, CLPS, and SMD to minimize delays in all phases of robotic lunar exploration and improve communication with the community about delays and ramifications**

LEAG Activities and Updates

- **Significant community resources continue to drive efforts for the LEAG Lunar Science Goals activity, LEAG-ExMAG Sample SAT, and planning an International Lunar Year in 2027**
  - Extensive updates provided at LEAG Town Hall (March 2024) and LSSW 23 (May 2024)
- **Lunar Community Perspective on NF 5 Target List – Backup Slide**
  - Collected community inputs (townhall, email, one-on-one discussions)
  - Briefed CAPS on May 20: Suggested to retain LGN, remove SPA-SR, and minimize list
- **LSSW 22: Science Enabled by the Artemis Base Camp (April 3, 2024) – Backup Slide**
  - LEAG supported the workshop and significantly contributed to the final report
  - LEAG has solicited 4 community white papers (5th under discussion) to elaborate on community inputs on the benefits of an Artemis Base Camp(s)
- **LEAG thanks NASA for continuing to facilitate LSSWs, including excellent annual HQ updates (LSSW 23), and for investigating feasibility for a similar series relevant to Mars**
- **LEAG ExComm Community Meetings – Backup Slide**
  - Monthly opportunities to brief on important topics and facilitate community discussion
- **LEAG Annual Meeting, October 28-30, 2024 at JSC Gilruth Center – Backup Slide**

Additional LEAG Slides for the PAC

- ***LEAG Executive Committee (July 2024)***
- ***LEAG NF5 Target List Recommendations to CAPS***
- ***LSSW 22: Science Enabled by the Artemis Base Camp (Apr 3.)***
- ***LEAG ExComm Community Meetings***
- ***LEAG Annual Meeting 2024***

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LEAG Executive Committee (July 2024)

Chair	Benjamin Greenhagen, JHU APL
Emeritus Chair	Amy Fagan, Western Carolina Univ.
Science	Timothy Glotch, Stony Brook Univ.
Human Exploration	Jacob Richardson, NASA GSFC
Technology	Jose Hurtado, Univ. of Texas, El Paso
Astrophysics Liaison	Nivedita Mahesh, California Institute of Technology
Equity, Diversity, & Inclusion	Alexandra Matiella Novak, JHU APL
Operations	Lauren Jozwiak, JHU APL
Strategic Roadmap	**< vacant for FY24 >**
Workforce Development	Tabb Prissel, NASA JSC
At-Large Member	Kerri Donaldson Hanna, Univ. Central Florida
At-Large Member	Erica Jawin, Smithsonian Institute
At-Large Member	Sarah Valencia, NASA GSFC
Chair of CAB	Stephen Indyk, Honeybee Robotics

Ex Officio Members
Sarah Noble, NASA SMD
Jacob Bleacher, NASA ESDMD
< vacant >, NASA STMD
Gregory Schmidt, SSERVI

LEAG Suggestion Box QR Code

Technology Chair Jose Hurtado will complete his term at the end of FY24
LEAG expects to solicit applications for Technology Chair, Heliophysics Liaison, and BPS Liaison this summer

LEAG NF5 Target List Inputs to CAPS

- **OWL's recommendation to retain NF 5 LGN as a NF 6 target is still well-supported**
  - The science objectives of LGN require long-lived, comprehensive geophysical measurements that are not currently available with any available alternate approach, including CLPS
- **OWL's recommendation to remove NF 5 SPA-SR as a NF 6 target is still well-supported**
  - OWL identified Endurance-A as "a superior approach" to SPA-SR, NASA has acknowledged this, and mission development is proceeding
- **Lunar science is also advanced by other NF targets**
  - **Io Observer**, Venus In Situ Explorer, Comet Surface Sample Return, Ceres Sample Return
- **Largest hurdle to lunar NF targets is not based on the quality of the science but rather programmatic considerations at NASA and proposing institutions**
  - V&V: "Because preparation and evaluation of New Frontiers proposals places a substantial burden on the community and NASA, it is important to restrict each New Frontiers solicitation to a manageable number of candidate missions."
  - OWL: "Indeed, with only 3 NASA centers (APL, JPL, GSFC) that can manage NF missions and proposals, a restricted list is needed so they can appropriately allocate resources."

LSSW 22: Science Enabled by the Artemis Base Camp (Apr 3.)

- **Purpose and Scope: Identify specific scientific activities that may uniquely benefit from repeated returns to a location near the lunar south pole that will inform the capabilities of Artemis Base Camp**
  - Lunar science uniquely enabled by the Artemis Base Camp
  - Scientific activities at the Artemis Base Camp to enable technology development
  - Scientific activities at the Artemis Base Camp that feed-forward to crewed Mars exploration
- **Meeting had 149 attendees and 60+ participated in the breakout sessions**
- **A Report representative of the discussions will be produced and delivered to NASA**
- **LEAG is using the LSSW 22 Report to identify priority science activities / areas and solicit white papers from LSSW 22 participants and other community members**
  - 3-4 white papers from LSSW 22 Report content
  - Additional white paper focused on Astrophysics science activities to be authored by Nivedita Mahesh (LEAG Astrophysics Liaison)
- **NASA also intends to request a NASEM study related to science during the sustained lunar exploration phase in the coming years**

LEAG ExComm Community Meetings

- **Meets for 30 Minutes on the 2nd Tuesday of Most Months at 4pm ET**
  - Meeting invite and agenda sent to Lunar-L each month (~1-2 weeks before meeting)

- **Frequent Opportunities to Brief the Community of Topics of Interest**
  - November, 2023 – PESTO Technology Roadmap
  - January, 2024 – Moon to Mars: MEPAG Tiger Team On Mars Human-Mission Science Objectives
  - February, 2024 – Lunar Exploration and Science Orbiter (LExSO) Status and Plans
  - March, 2024 – LEAG Townhall at LPSC
  - April, 2024 – Astrophysics from the Moon
  - May, 2024 – New Frontiers Target List Discussion
  - July, 2024 – LEAG Science Goals Activity

Note: Next LEAG ExComm Community Meeting is 13 August 2024 at 4pm ET

- **General Q&A with the LEAG ExComm**

LEAG Annual Meeting 2024

- **Save the date!**
  - October 28-30, 2024
  - Gilruth Conference Center
  - NASA Johnson Space Center, Houston, TX
- **Abstract submissions open**
  - Mid July
- **Abstract submissions close**
  - Mid August
- **Agenda available**
  - Mid September

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