

**Report to Science Committee of the NAC**

**April 6, 2015**

## Planetary Protection Report to SC

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### January 2015 - Recommendation to NAC/Science Committee Improve MSL Project Office – Planetary Protection Officer Communications Recommendation

The Planetary Protection Subcommittee notes that Planetary Protection concerns continue for the life of a mission, and final resolution of Planetary Protection concerns does not end with compliance checks and launch. Ongoing surface operations for MSL must continue to comply with Planetary Protection requirements that were articulated in the PP Letter of 2011. PPS recommends that NASA ensure closer and more timely communications of the MSL Project with the PPO, consistent with the Project's obligations under the MSL planetary protection categorization letter.

### April 2015 update to NAC/Science Committee

At the January SC Meeting, the consensus was for PPS to address this issue with a letter directly to the Science Directorate. Since then, the MSL Science Team has provided advanced notice to the PPO of a pending publication related to planetary protection. PPS will reconsider the need for a letter at our June 8-10 meeting, and will continue to support the PPO in seeking timely notification of relevant scientific findings.

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## Status of Previous Recommendations

Nov. 2011 Recommendations (meeting held jointly with ESA PPWG)

- Continue joint meetings with ESA - this NASA obligation has not been fulfilled; current agreement with ESA is in a state of failure; recent developments highlight need for joint meeting in 2015

## April 2015 update to NAC/Science Committee

On Feb 2, 2015 the PPS received a formal invitation from the ESA Planetary Protection Working Group to attend their April 29-30, 2015 meeting to be held at Thales-Alenia-Space in France. Since then, the PPS and PPO have been working with NASA to secure approval. Formal approval to attend is still pending.

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## Background for the Recommendation

### From the MSL Categorization letter:

"To avoid violating Planetary Protection Category IVc requirements, ..., access by MSL to any Mars Special Regions is absolutely forbidden. This will include access to areas identified through additional discoveries made on Mars, e.g., fluid flows, that may be Special Regions but for which uncertainty exists."

"The project is prohibited from introducing any hardware into a Mars Special Region, as defined in NASA Procedural Requirements document NPR 8020.12D. Fluid-formed features such as Recurring Slope Lineae are included in this prohibition. Any evidence suggesting the presence of Special Regions or flowing liquid at the actual MSL landing site shall be communicated to the Planetary Protection Officer immediately, and physical contact by the lander with such features shall be entirely avoided."

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## Background for the Recommendation

**As reported at the PPS meeting November 17-18, 2014:** HiRise observations of Gale Crater, even before the launch of MSL, provide evidence for dark slope streaks around the central peak that are within the projected rover traverse area. These streaks are not inconsistent with morphologies suggestive of Recurrent Slope Lineae, which were reported in the literature as phenomena probably associated with liquid water only in 2011.

**As reported at the AGU meeting December 16, 2014:** The MSL team reported that the SAM instrument observed spikes of atmospheric methane in Gale Crater, at several points during the rover traverse including for a period of months in the winter of 2012-2013. Reports of transient methane spikes in the Mars atmosphere have been made for several years, on the basis of orbital assets and ground-based observations from Earth, however these observations were near the limit of sensitivity and had been refuted as artifacts.