

PROCEDURAL GUIDELINES FOR FLIGHT PROJECTS: COMMUNICATIONS WITH THE PLANETARY PROTECTION OFFICER

NASA's formal Planetary Protection Policy and requirements documents, NPD 8020.7G and NPR 8020.12C, detail overall planetary protection policy and requirements; assign and describe responsibilities; and provide specifications for key parameters involved in the implementation of requirements. These guidelines supplement those documents by describing a model process, consistent with NPD 8020.7G and NPR 8020.12C, for the flow of communications between flight projects and the NASA Planetary Protection Officer and her/his staff and consultants at NASA Headquarters (hereinafter, "the PPO"). The purpose of these guidelines is to provide flight projects useful information to facilitate their implementation of planetary protection requirements, enable effective and timely communications, and contribute to the success of their missions.

Missions can benefit from communication with the PPO at NASA Headquarters even during pre-project activities. Although not formally a part of planetary protection requirements, it is suggested that a project request a preliminary planetary protection categorization of the mission during the early stages of mission planning. A preliminary categorization letter may be required by specific AO language. Prior to a written request, the project is encouraged to communicate informally with the PPO.

During the early stages of the project, and no later than the end of Phase A, the project manager (may be either PM or PI, for PI-led missions) must request from the PPO, in writing, the formal planetary protection categorization of the mission. Again, informal communication with the PPO is encouraged prior to submittal of this request letter, to ensure that the request is comprehensive and phrased appropriately.

After receipt of a Categorization Letter from the PPO, the Project must submit a Planetary Protection Plan, unless the project received a Category I categorization, which exempts it from any subsequent requirements. A Project-approved draft of the Planetary Protection Plan is due no later than the end of Phase B (conceptual study phase), with the formal release of the plan due no later than the Project's Preliminary Design Review (PDR). For Category II missions, as well as Category V-unrestricted Earth return, the Planetary Protection Plan is a fairly straightforward undertaking, and may require only limited interaction with the PPO. To address any questions or issues that may arise, direct communication with PPO is encouraged.

For missions assigned Categories III, IV, and V-restricted Earth return, preparation of the Project's Planetary Protection Plan is significantly more involved and complex, progressively so for the three categories. Development of such a Planetary Protection Plan requires frequent interaction with the PPO, the extent of which will depend on the category and degree of mission complexity. During the evaluation of alternative implementation strategies, communication with the PPO is necessary to ensure that the strategies are consistent with NASA's Planetary Protection Policy and requirements and, therefore, acceptable. The Planetary Protection Plan is subject to approval by the Project and concurrence by the relevant Program Office and through

established Program Management channels (e.g., Program Executive), as appropriate, prior to its formal submission to the PPO for approval.

Following approval of the Planetary Protection Plan by the PPO, the Project embarks on the preparation of subsidiary plans and documentation as detailed in NPR 8020.12C, and the implementation of planetary protection requirements consistent with the strategy outlined in the Planetary Protection Plan. Subsidiary plans do not generally require formal approval by the PPO (except all “inbound” subsidiary plans for Category V-restricted Earth return missions), but projects are encouraged to develop these plans in consultation with the PPO. Subsidiary plans must be forwarded to the PPO for information and review to ensure consistency with planetary protection requirements and the approved implementation strategy.

The process of implementing planetary protection requirements is subject to monitoring by the PPO. Monitoring activities include informal and formal reviews; witnessing of important implementation activities; reviews of ad hoc analyses; verification assays; and frequent communication. When needed, the project may seek clarification on parameter specifications, negotiate trade-offs, and, if absolutely necessary, request a deviation (with justification) from a particular requirement. It should be noted that approval of such a request does not represent a 'waiver' of planetary protection requirements -- rather, the project is granted approval to deviate from the formal requirements by demonstrating that the goals of planetary protection will still be met.

The Project documents implementation activities in the Project's Planetary Protection Pre-Launch Report. This report is to be approved by the Project, with concurrence by the Program Office as appropriate, and submitted to the PPO no later than 90 days before launch. Again, it is strongly encouraged to maintain good communications with the PPO as the report is prepared; to provide a draft to the PPO to ensure the report's adequacy; and to address comments from the PPO before submitting the report for formal approval. Critical events and data collection taking place after the release of the Pre-Launch Report should be communicated to the PPO immediately and included in the informal and formal planetary protection pre-launch reviews that precede the certification by the PPO that the mission has met planetary protection requirements and is cleared for launch.

Activities occurring subsequent to submission of the Pre-Launch Report, along with launch and post-launch updates, are to be documented in the Project's Planetary Protection Post-Launch Report, submitted to the PPO no later than 60 days after launch. The process for formal approval of this document is the same as that followed for the Planetary Protection Plan and Planetary Protection Pre-Launch Report.

Communications with the PPO continue post-launch, as necessary, to report on mission operations involved in compliance with planetary protection requirements, including but not limited to the execution of trajectory correction maneuvers, orbit insertion, aerobraking, entry descent and landing, ground operations, etc. Any anomalies or off-nominal events that could affect planetary protection compliance should be reported immediately to the PPO, and an assessment of their impact on the project's compliance with planetary protection requirements should be provided in a timely fashion. Should compliance be jeopardized, the Project must take

appropriate steps, negotiated with the PPO, to ensure that planetary protection requirements are not violated.

If the project plans to extend its mission, a letter requesting approval for the extension as well as an Extended Mission Planetary Protection Report should be submitted to the PPO no later than 60 days prior to the end of the nominal mission. Communication with the PPO is necessary to assure that the appropriate information is included in the extension request. The same process must be repeated for each extended mission.

The final report the Project is required to submit to the PPO, per NPR 8020.12C, is the End-of-Mission Planetary Protection Report. Consultation with the PPO may be appropriate to address issues identified during preparation of this report, and it is due no later than 60 days after the formally declared end of mission.

In the unfortunate event of a mission failure, the project is required to submit to the PPO an End of Mission report that includes a comprehensive analysis and assessment of the failure's contribution to the potential contamination of the target planet(s).

For Category V-restricted Earth return missions, added to the above are the certifications and documentation detailed in NPR 8020.12C, particularly approval of all "inbound" subsidiary plans for Category V-restricted Earth return missions defined therein. The process of interaction with the PPO for sample return missions otherwise should follow the steps outlined in these guidelines.