

Review and Assessment of Planetary Protection Policy Development Processes

**Committee to Review Planetary Protection Policy
Development Processes**

Space Studies Board

**National Academies of Sciences, Engineering,
and Medicine**

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Europa Clipper lessons learned

- **Early definition of requirements is essential to effective project implementation. Early establishment of requirements can minimize the risk and uncertainty of future design changes and thus increased cost for the missions.**
- **Future research into the important parameters for these missions, including reevaluating legacy requirements, will likely reduce the cost of missions while still meeting U.S. obligations under the OST.**
- **Imposition of PP requirements on missions needs to follow standard system engineering protocols to ensure that every appropriate requirement is properly understood and implemented and can be adequately verified.**
- **NASA's conflict resolution process is essential in executing spaceflight missions and its use is required when disagreements between technical authorities and projects occur.**

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Recommendations for NASA: Managing Policy Implementation

- **Assess completeness of PP policies; formally define requirements that are missing; follow NASA standard project management and systems engineering protocols for review, approval, and flow-down of requirements; follow NASA's conflict resolution process; and evaluate policies for new mission situations well in advance of a mission start.**
- **Ensure that there is a process to engage the full breadth of NASA stakeholders in assessing changes to COSPAR PP policies and requirements and that the process is as disciplined as what NASA uses to review, concur, and approve changes to its own policies.**
- **Complete the transition of the OPP to OSMA and clarify the remaining issues concerning roles, responsibilities, resources, and locations of OPP functions.**
- **Evaluate the ESA PP implementation process and consider incorporating elements that are effective and appropriate.**

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Major conclusions: Period of biological exploration

- **Finding**: As the exploration of the icy moons rises in priority and plans for piloted missions to Mars emerge, it is necessary to reevaluate and clarify the period of biological exploration.
- **Recommendation**: Given the implications with respect to the Outer Space Treaty, NASA and COSPAR should facilitate development of an international strategy for establishing periods of biological exploration. Such a strategy should ensure that individual nation states all are using the same values. Specification of this period is vital to the calculations of probability of contaminating a potential habitat on another world.