NATIONAL RESEARCH COUNCIL
COMMISSION ON PHYSICAL SCIENCES, MATHEMATICS, AND RESOURCES
2101 Constitution Avenue Washington, D.C. 20418

SPACE SCIENCE BOARD

OFFICE LOCATION:
JOSEPH HENRY BUILDING
21ST STREET AND
PENNSYLVANIA AVENUE, N.W.

November 22, 1985

Dr. Burton I. Edelson
Associate Administrator
Office of Space Science and
Applications
Code E
NASA Headquarters
Washington, D.C. 20546

Dear Burt:

As you know, the United States--as a signatory nation to the Outer Space Treaty--is obliged to undertake certain measures to assure with high confidence that its planetary spacecraft will not contaminate the surfaces and atmospheres of the planets, including the Earth. In the early days of the U.S. planetary exploration program, when our knowledge of other planets was more limited, our policy to prevent contamination was conservative. Its implementation resulted in a strict application of measures to reduce the bioload of spacecraft, often at considerable risk to the designed function of the spacecraft and its experimental payload and with significant added cost to individual missions. With the expansion of our knowledge of the planets, it became clear that our conservative posture should be reassessed with the purpose of relaxing it while maintaining our original intention of protecting the planets with a high degree of confidence.

The current NASA policy regarding planetary protection requires that each proposed mission be assigned to one of five categories, based upon the type of mission and the target planet. The requirements imposed by the new policy can be implemented by procedures that may vary from no control on the bioload of the spacecraft to sterilization of the spacecraft. Further, the specific modes of implementation for any particular mission can be met in different ways. But even with this flexibility in implementing the new policy, the Board is concerned that the scientific objectives of a given mission may not be fully realized.

For this reason, the SSB urges NASA to conduct studies of all proposed planetary missions in which the science objectives, including planetary protection, are weighed against specific modes of implementation in order to maximize their scientific content. We recommend that science teams engaged in phase A studies consider carefully as early as possible the issues inherent in planetary protection and that they assess various alternative methods to achieve both their objectives and planetary protection. In every step of this process, scientists in the relevant disciplines should be involved.

The SSB should continue to be cognizant of the needs of planetary protection, its impact on mission design and operations, and the methods by which planetary protection requirements are implemented. Periodic reviews of the current NASA policy and requests for categorization of specific missions will be undertaken by our Committee on Planetary Biology and Chemical Evolution.

Sincerely yours,

TM Donahue

Thomas M. Donahue,
Chairman

cc: A. Nicogossian
D. DeVincenzi