



STANFORD UNIVERSITY MEDICAL CENTER

STANFORD, CALIFORNIA 94305 • (415) 321-1200

STANFORD UNIVERSITY SCHOOL OF MEDICINE
Department of Genetics

March 15, 1972

Dr. Richard S. Young
Chief, Exobiology
National Aeronautics and Space Administration
Washington, D.C. 20546

Dear Dr. Young,

We have been given the difficult task of recommending a Viking Biology experiment for removal from the payload. The differences are not compelling from a scientific standpoint. We were told, nevertheless, that one experiment had to be dropped, and that we were to disregard engineering reliability considerations, which others had judged to be given no basis for choice.

Given these premises, we have concluded that the light-scattering experiment be selected. Dr. Vishniac is, however, one of the most valued scientists in exobiology and should be strongly encouraged to retain a vital role in the Viking mission, particularly in association with the gas exchange experiment. (In terrestrial biology we do not make a close identification of a scientist with a particular instrumental sensor.)

Our reasons, insofar as so tenuous a judgment can have a rational basis are:

- 1) The difficulty of interpreting turbidity as necessarily a result of microbial proliferation, rather than, for example micro-dispersion of soil particles.
- 2) The lack of any secondary utility if the result is negative. (If there is no proliferation there should be nothing to measure, and we will not have improved our knowledge of the physico-chemical habitat).
- 3) The a priori likelihood that organisms adapted to ultra-arid environments will not have a dispersed growth habit in a liquid medium.
- 4) Technical problems that may be expected from dust contamination, which may increase the noise signal level.

Except for (2) these are not categorical criticisms and much thought has been given to answering them, but we conclude that this experiment may be somewhat more vulnerable than its competitors on these grounds. The secondary potential of the gas-exchange experiment is one reason for preferring it. This is the alternative probe for responding to the contingency that Martian organisms can survive very high water-activities.

Sincerely yours,

LT. J. P. KENNEDY, JR. LABORATORIES FOR MOLECULAR MEDICINE, DEDICATED TO RESEARCH IN MENTAL RETARDATION

MOLECULAR BIOLOGY

HEREDITY

NEUROBIOLOGY

DEVELOPMENTAL MEDICINE

Joshua Lederberg