SOLAR PIONEER MISSION OPTIONS

S. J. Kerridge, M. Evans, B. Surutani (Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena, CA 91109, U.S.A.)

The origin of the solar wind has long been a focus of science. Direct measurements, close to the source, are required. This can be accomplished by a Solar Pioneer mission that approaches within a few radii of the sun's surface. Such a mission could also characterize the acceleration processes and coronal structure by a detailed study of energetic particles. Past studies of a mission labeled Solar Probe, envisaged a 1000 kg-class spacecraft with a wide range of instruments. Current interest ranges from this kind of a mission, perhaps carried out by a consortium of space agencies, to much smaller concepts that are more consistent with the near-term anticipated budget of a single space agency. NASA's Space Physics Division and the Jet Propulsion Laboratory, California Institute of Technology, have been studying two spacecraft options. A smaller, 200 kg spacecraft, would derive heavily from the planned Pluto Flyby design and could be launched on an Atlas IAS/Star-48. Multiple copies could go on a larger launch vehicle, such as a Proton, with a Star-48 upper stage. A larger, 400 kg spacecraft would also be compatible with a Proton and could carry a more comprehensive payload. Both missions are designed to use a single gravity assist from Jupiter to keep the flight time at about three years. These options, and others, are shown to be timely, cost-effective and scientifically rewarding for renewed study of the sun and its processes.

Submittal Information:

1. Dr. Stuart J. Kerridge, 301-165, Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA, 91109, U.S.A., Tel: 818-354-0899, FAX: 818-393-9815, Telex:67-5429

2. SJ

3. Dr. F. C. Simon (Brussels)

4. None

5. Oral

6. None