File: Diag3818.doc

Space Environmental Diagnostic Package

M. Buehler, K.R. Kuhlman, J. Wellman and R. Some
Jet Propulsion Laboratory
California Institute of Technology
Pasadena, CA 91109

The New Millennium Program is examining the possibility of developing a low-cost environmental diagnostic package (EDP) for inclusion on its technology validation flights to provide an indication of the space environment. The *raison d'etre* for this effort follows from the need to characterize the validation-flight environment so that future users can extrapolate or scale NMP test results to the end-use environment. Such a monitor would not contribute to the refinement of models of space weather or debris, but rather provide low resolution environmental information needed to characterize anomalous behavior or failure of spacecraft components. The short-term objective is to develop a "hockey-puck" size diagnostic package, which would be readily available from a commercial vendor. The longer-term goal is to dramatically reduce unit cost by providing this generic package to a wide variety of missions and spacecraft.

Towards this goal, a set of common diagnostics must be identified. The current diagnostics of interest are: radiation dose, particle flux, contamination flux and temperature. A generic design has been established that includes a microcontroller-based data logger with data storage capability and interfaces to the sensors and the spacecraft. This talk will present the process by which the sensors will be chosen as well as the interfacing issues both to the sensors and to the spacecraft.