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**A Computer Program for Automation of Spacecraft Operations Power Data Trending**

The TOPEX/POSEIDON spacecraft was launched successfully on August 10, 1992. The satellite is powered by the Modular Power Subsystem (MPS) containing 3 NASA Standard 50 Ah capacity batteries manufactured by McDonnell Douglas. Similar design batteries and cells are on board other NASA satellites experiencing battery anomalies. These satellites include: the Extreme Ultraviolet Explorer, the Upper Atmosphere Research Satellite (UARS), and the Gamma Ray Observatory (GRO). All satellites exhibited large voltage divergence of the half-battery voltage very early in life (4-7 months). This deteriorating condition normally would be exhibited near the battery end-of-life, which normally is approximately 5 years under a Low Earth Orbit regime.

Prior to launch, an Investigation Team and the Battery Management Team were formed to make operational recommendations for the Topex batteries. The results of the recommendation included actively trending several battery and solar array parameters on a daily basis. Due to the unpredictable battery concerns surfacing prior to launch, there was no automated system in place to trend spacecraft parameters for long periods of time. An automated database program (TPower) was written using FoxPro 2.5 on a PC to archive and trend the power data. This program provides easy access to the data, automatic archiving, report generation with parameter alarming, and long term power parameter trending capabilities.

This paper will describe the features and capabilities of this program in detail. TPower could easily be modified to trend subsystem data for any spacecraft. Using programs like TPower will lead to improved productivity in mission operations.