

A NEW VIEW OF IO

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Early mission designs for what became the Galileo mission did not include flybys of Jupiter's innermost Galilean satellite, Io, despite intense scientific interest in this volcanic moon. The major concern was the survivability of the spacecraft in the intense radiation environment at Io's distance from Jupiter. The final design for the prime, two-year mission ultimately included one close flyby, during the initial approach to Jupiter. This encounter succeeded in collecting space physics data on the Io torus and during closest approach to Io. Remote sensing data were not taken due to concerns about the performance of the digital tape recorder (subsequently resolved for the rest of the mission). Io science during the remainder of the prime mission consisted of a highly successful series of more distant observations taken on most orbits to map the satellite and monitor volcanic activity. Six close Io encounters were planned for the extended phases of the mission, through January, 2002, three of them polar passes to establish the existence or absence of an internal magnetic field. Operations in Io's vicinity indeed proved to be highly challenging, with four of the six encounters experiencing some degree of problems due to radiation related problems with the spacecraft or instruments. However, valuable data were returned from all encounters, with two being completely successful. The result of these efforts is a tremendously exciting data set for Io, far beyond what was envisioned at the inception of the project. The presentation will highlight the new, integrated view of this intriguing world that has emerged from this store of data.