Entry Trajectory Reconstruction Using Phoenix Radio Link

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The Phoenix Mars Lander entered the Martian atmosphere on May 25, 2008. All ensuing communications during Entry Decent and Landing (EDL) path were via an UHF uplink to a Mars orbiting spacecraft. The Odyssey orbiter relayed the Phoenix data to the Deep Space Network station (DSN) at Goldstone. In addition, direct UHF from Phoenix was received from the Green Bank radio telescope. The objective of this activity was to monitor the state of the lander during critical stages of the EDL. The data can now be explored for utility to reconstruct the entry trajectory provided that the received UHF signal is not too noisy. The recorded signal profile from Phoenix EDL is processed to quantify the accuracy of the reconstructed trajectory and the atmospheric profiles (density, pressure, and temperature) determined along this trajectory.