Grant NAG5-8909 supported both geological mapping and topical studies, primarily in the southern Acidalia Planitia/Cydonia Mensae region of Mars. The overall objective was to understand geologic processes and crustal history in the northern lowland in order to assess the probability that an ocean once existed in this region. The major deliverable is a block of 6 1:500,000 scale geologic maps that will be published in 2004 as a single map at 1:1,000,000 scale along with extensive descriptive and interpretive text. A major issue addressed by the mapping was the relative ages of the extensive plains of Acidalia Planitia and the knobs and mesas of Cydonia Mensae. The mapping results clearly favor a younger age for the plains. Topical studies included a preliminary analysis of the very abundant small domes and cones to assess the possibility that their origins could be determined by detailed mapping and remote-sensing analysis. We also tested the validity of putative shorelines by using GIS to co-register full-resolution MOLA altimetry data and Viking images with these shorelines plotted on them. Of the 3 proposed shorelines in this area, one is probably valid, one is definitely not valid, and the third is apparently 2 shorelines closely spaced in elevation. Publications supported entirely or in part by this grant are listed below.


