

Preface

In the early 1990s, Duke and Budden convened a series of workshops addressing mission rationale, exploration objectives, and key constraints and issues facing human crews on Mars (*Duke and Budden, 1992, 1993*). The focal point was "why" the U.S. should fly humans to Mars. In the mid-1990s, strategies for a Mars mission matured and evolved, driven formally by NASA Johnson Space Center's Office of Exploration. In 1997, NASA published a report capturing the current thinking: the NASA Mars Reference Mission (*Hoffman, 1997*). In the 1997-1998 school year, HEDS-UP sponsored six universities to conduct design studies on Mars exploration, using the Reference Mission as a basis for their work. The 1998 Mars Exploration Forum presents the results of these university studies, suggesting "how" we might explore Mars, in terms of specific technical components that would enable human missions to Mars.

A primary objective of the HEDS-UP Mars Exploration Forum was to provide a forum for active interaction among NASA, industry, and the university community on the subject of human missions to Mars. NASA scientists and engineers were asked to present the state of exploration for Mars mission options currently under study. This status "snapshot" of current Mars strategies set the stage for the six HEDS-UP universities to present their final design study results. Finally, a panel of industry experts discussed readiness for human missions to Mars as it pertains to the aerospace industries and technologies. A robust poster session provided the backdrop for government-industry-university discussions and allowed for feedback to NASA on the Mars Reference Mission. The common thread woven through the two days was discussion of technologies, proven and emerging, that will be required to launch, land, and sustain human crews on the Red Planet.

As this decade (and indeed this millenium) draws to a close, Mars will continue to loom in our sights as the next target for human space exploration. It is our hope that the efforts of the Mars Exploration Forum will serve as one small contribution toward the ultimate goal of humans exploring Mars.

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