

SMALL SATELLITE MISSIONS SYMPOSIUM (B4)
Hitchhiking to the Moon (8)

Author: Mr. John Elliott

National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States,
jelliott@jpl.nasa.gov

Dr. Leon Alkalai

National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States,
leon.alkalai@jpl.nasa.gov

A DISCOVERY-CLASS LUNETTE MISSION CONCEPT FOR A LUNAR GEOPHYSICAL NETWORK

Abstract

The Lunette mission concept for a network of small, inexpensive lunar landers has evolved over the last three years as the focus of space exploration activities in the US has changed. Originating in a concept for multiple landers launched as a secondary payload capable of regional science and site survey activities, Lunette has recently been developed into a Discovery-class mission concept that offers global lunar coverage enabling network science on a much broader scale. A particular mission concept has been refined by the Lunette team that would result in a low-cost global lunar geophysical network, comprised of three landers widely spaced on the near side of the moon. Each of the three identical landers would carry a suite of instruments that would make continuous measurements of seismic activity, heat flow, and the electromagnetic environment during the full lunar day/night cycle. Each lander would also deploy a next-generation laser retroreflector capable of improving on distance measurement accuracy by an order of magnitude over those employed by the previous Apollo and Lunokhod missions. This paper presents a comprehensive overview of the Lunette geophysical network mission concept, including mission and flight system design, as well as the key requirements and constraints that guided them.