

HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Governmental Human Spaceflight Programs (Overview) (1)

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AN OVERVIEW OF NASA'S ASTEROID EXPLORATION EFFORTS: PAST AND PRESENT

Abstract

The National Aeronautics and Space Administration (NASA) is actively pursuing an ambitious goal of robotically capturing a near-Earth asteroid (NEA) and then redirecting it to a safe lunar orbit. From this stable orbit, humans will then have the opportunity to visit and explore the asteroid. This plan, called the Asteroid Redirect Mission (ARM), is part of NASA's larger Asteroid Initiative, which also encompasses the agency's Asteroid Grand Challenge (AGC) – a global effort that seeks to find all asteroid threats to human populations and know what to do about them. NASA's Asteroid Initiative is a bold strategy that will steadily advance human space exploration capabilities into deep-space, while at the same time expand and intensify efforts to defend the Earth from potentially catastrophic impacts.

NASA's Asteroid Initiative is the culmination of many years of study and builds on a significant foundation of research and conceptual design work. While most of the effort has been focused on the work performed under the Obama Administration, human exploration of an asteroid has piqued the interest of scientists, engineers, and space enthusiasts alike for decades.

Beginning with an investigation of the historical interest in human exploration of an asteroid, this paper will synthesize the more recent efforts of NASA and its partners to achieve this goal. Focus will be placed on events and notable efforts leading to President Obama's historical speech at the Kennedy Space Center and the release of the National Space Policy in April 2010 with a closer examination of the public events, studies, and other efforts initiated by NASA through the present day.

A primary objective of this examination will be to illustrate the evolution of NASA's conceptual strategy to enable humans to explore an asteroid. In addition to an overview of the evolving policies and plans, attention will be given to how the technical concepts have progressed with a brief synopsis of the agency's current efforts and forward work to be performed in 2015 and beyond.