

Asteroid Dreams

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Space exploration is always exploring new frontiers. Modern astronomical programs are discovering hundreds of Near Earth Asteroids (NEAs) every year. Feared as "potentially hazardous objects," some of these asteroids are rich in resources in the form of heavy metals, water, and volatiles. There are not only of great commercial value, but also may help us to explore space within the solar system and beyond. As repositories of critical resources, they are our tickets to the stars.



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Diona Wilder eagerly donned her space suit. She could barely believe her fortune: NASA had chosen her to lead the expedition to Orpheus, the near earth asteroid. This would be the first human flight to an asteroid. The mission would focus on the exploration and mining of the asteroid for 6 months with the launch scheduled for July of 2021 to land on Orpheus a mere 3 months later.

Commanding this mission would be a dream fulfilled for Diona, a young black woman, whose love for science and technology was nurtured by her mother, Jessica Wilder. Jessica had earlier developed the life-suit, a special type of space suit that helped humans overcome the ill effects of weightlessness. The suit, which significantly reduced the amount of bone-mass loss as well as preserved muscle tone, was one of the many important advances since the turn of the century.

Diona was confident that her years of experience and weeks training on mining would serve her well on this mission. She learned about her appointment as she was concluding the second of two 6-month tours onboard the International Space Station, Hope, which was still in service after 30 years of Earth orbit. A veteran pilot of many shuttle and X48 missions, Diona was selected to pilot the spaceship, Santiago that would become a revolving habitat for her and a culturally diverse crew. Joining Diona would be Juan Torino, who had developed special methods for mining the heavy metals--nickel, iron and platinum; Joyce Redden, a doctor and life support specialist; and Georgiy Popovich, a veteran cosmonaut.

In addition to their space ship, Santiago, NASA had previously launched an equipment and supply vessel, the 49er, which contained the heavy equipment necessary for penetrating the surface. The 49er would arrive at the asteroid shortly before the main mission ship. The distant spacecraft was

reporting all systems optimal. After this mission, the 49er would be left at the asteroid, where a future crew would refurbish it in 2025, and with any luck, another in 2029.

During a previous close-Earth approach of Orpheus in 2017, a robot probe, *Eurydice*, was sent to explore the asteroid in great detail. One of the most successful asteroid exploration vessels, *Eurydice*, discovered a large quantity of heavy metals as well as a "deposit" of a mass of water ice. The water was evidently left over from some impact between the main body of Orpheus and an ice body. As a result of this finding, a secondary goal of the mission would be to send part of this hunk of ice hurtling toward Mars, where it would eventually be used to help support a fledgling colony, now being developed on the Martian surface.

Diona was excited by the scientific investigations she and the crew would perform. They might discover clues to the origin of the solar system or uncover pieces to other cosmological puzzles. There was much more exploration and development to come before humans could declare themselves free from the danger of extinction due to a disaster in the solar system. As she gazed upon the rocket bearing Santiago before climbing the entryway, she saw the future unfolding before her. This mission to Orpheus was but one more step on the path to the stars.

Note: The asteroid 3361 Orpheus was discovered in 1982 by C. Torres in Santiago, Chile. It is an Apollo-type, planet-crossing asteroid about which very little is known. Exploration and mission dates are based on observed orbital elements but the description of its makeup is fanciful, the real truth is waiting for future investigators to discover. More information on NEOs is available at my web site, Astra's Star Gate, on the world wide web at <http://www.astras-stargate.com>

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