



Flying the Beige Skies of Mars

NASA put out the request: Can anyone design a flyer to be carried to Mars in a payload capsule, then separate in two, becoming both a low flying intelligence gathering plane and a circling communications station?

This flyer must be rocketed through 48.6 million miles (77.2 million kilometers) of space and survive a year in an extreme in-transit environment from freezing cold to searing heat. Upon deployment, the plane must be able to fly in the low atmospheric pressure of Mars, roughly the Earth equivalent of flying a plane at 100,000 feet (almost 30,500 meters).

Flying a plane on Mars would make it possible for the first time to survey the Valles Marineris, a canyon as wide as the continental United States, and to search for signs of water which could help answer the question of whether life exists or once existed on the red planet.

Since 1996, designers have taken up the challenge and produced half a dozen designs for a flyer. Recently Bob Parks, an independent engineering consultant for Aurora Flight Sciences, created the Kitty Hawk III, the first design to be built, tested, and to set a record. The finished Kitty Hawk III was raised to over 100,000 feet via balloon then dropped to set an altitude record for unpowered flight. Parks used Ashlar-Vellum GraphiteTM CAD software to design the Kitty Hawk III "because it is so effortless to use...it's no exaggeration to say that this cuts the time required in half in most cases."

After designing several unpowered versions of the plane in Graphite, Aurora started working on a new powered version using CobaltTM 3D modeling software, integrating advanced parametrics with solid and surface modeling, and precision wireframe drafting. Parks especially likes how Cobalt continues in the Graphite tradition, anticipating your next move and allowing you to use whichever modeling mode is most appropriate, switching seamlessly from one to another.

"The great thing about Graphite and Cobalt is that they let us sketch out our ideas as easily as if we were working with a pencil, and then simply tighten them up when the time is right to produce a fully defined 3D model."

Speaking of his work, Bob says, "I find Graphite and Cobalt to be the ideal tools for consulting work because they are so simple to use I can focus nearly all of my attention at the task at hand."

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The Kitty Hawk III, created in Graphite CAD software, was the first Mars Flyer design to be tested and built. It set an altitude record for unpowered flight. A new, powered version is now in design using Cobalt CAD and 3D modeling.



The Mars Flyer will explore the red planet's rugged terrain.

Background/Contact

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