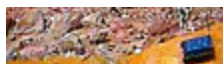




Q. What is the Average IQ?
☐ 80 ☐ 100 ☐ 130
 Free IQ Test!

Tickle
Your Brain



CHANNELS

[SPACE FORUMS](#)

[SPACEDAILY](#)

[TERRADAILY](#)

[SPACEWAR](#)

[MARSDAILY](#)

[SPACE DATABASE](#)

[Find a Therapist](#)

**BIG SAVINGS ON
EXERCISE EQUIPMENT**

SERVICES

[SITE SEARCH](#)

[FEEDBACK](#)

[SUBMIT NEWS](#)

[NEWSLETTER](#)

[ADVERTISE](#)

SPACEDAILY

YOUR PORTAL TO SPACE

MARSDAILY

Exploring Mars With Balloons

Altadena - Feb 11, 2004

Balloons outfitted with innovative steering devices and robot probes may be the best way to perform detailed surveys of Mars in preparation for human exploration. Dr. Alexey Pankine, a project scientist at the Global Aerospace Corporation, presented an analysis of balloon applications for Mars exploration at the Space Technology and Applications International Forum in Albuquerque, NM on February 10, 2004.



illustration only

His presentation, entitled Mars Exploration with Directed Aerial Robot Explorers, is based on research funded by the NASA Institute for Advanced Concepts.

At the center of the presentation are guided balloons that can float in the Martian atmosphere for months. Balloons have long been recognized as low-cost observational platforms and are routinely used in observations of the Earth's atmosphere. In 1985, two balloons were successfully deployed in the atmosphere of Venus for a short mission.

However, what has restrained the wider use of balloons in planetary exploration was the inability to control their paths in atmospheric winds. Attaching an engine to a balloon would convert it into an airship and likely make it too heavy, too power dependent and too expensive to send to another planet.

Faced with this problem, Global Aerospace Corporation has proposed to use an innovative device called the StratoSail balloon guidance system that allows the user to control the path of a planetary balloon. The device is essentially a wing that hangs on a long tether (several miles) below the balloon.



SPACE.WIRE

- [EU In Talks With Russia, Brazil To Build Galileo Navigation System](#)
- [New Reactor Puts Hydrogen From Renewable Fuels Within Reach](#)
- [Spirit Breaks Own Distance Record On Mars](#)
- [Pacific Nation Of Tuvalu Preparing To Disappear Beneath Tides This Week](#)
- [Iran Confirms It Is Researching Use Of New Centrifuges](#)

FREE SPACEDAILY NEWSLETTER

☐ Subscribe ☐ Unsubscribe
 your email

SPONSORED LINKS

- [Diamonds & Jewelry](#)
- [Amazon coupons](#)
- [Wrist watch & bags](#)
- [Cell phone shop](#)
- [Women clothing](#)
- [Apparel & Home Decor](#)
- [Men & Womens Shoes](#)
- [Garden Decor Store](#)
- [Bags & Luggage](#)
- [Dell Coupons](#)
- [HP Coupons](#)
- [Outdoor Gear & Equipment](#)
- [Home Decor & Accessories](#)
- [Kitchen Accessories & Tools](#)
- [Art & Craft supplies](#)
- [Columbia House DVD Club](#)
- [Online DVD Rental](#)
- [Playstation 2 Cheats](#)
- [PSX Extreme](#)
- [PS2 Cheats](#)

1 DAY SALE

NOKIA 6800
\$269.99 (RETAIL PRICE)
-\$220.00 (INSTANT REBATE)

\$4999



ONLY ON ATTWIRELESS.COM

WITH QUALIFIED ACTIVATION, SALES TAX AND RESTRICTIONS MAY APPLY. RECURRING BILLING AND CREDIT CARD REQUIRED.

AT&T Wireless

BUY NOW

press ESCAPE KEY or browser STOP BUTTON to STOP ALL animated GIFS after page has downloaded

Relative wind differences between the two altitudes create a force that pulls the balloon across the winds. Dr. Pankine reports that a small, lightweight wing can pull the balloon with a velocity of about 1 m/s across the Martian winds. This may not seem much, but applied constantly (without consuming power) over a 100-day mission, it would allow for pole-to-pole exploration, as well as targeted reconnaissance of possible sites for human exploration on Mars.

Guided balloon platforms would carry high-resolution cameras and other instruments to study the atmosphere and surface of Mars. The extended range of guided balloons can provide opportunities for highly adaptive observations during science missions. Just like rovers, if an interesting site is found, a guided balloon platform can be commanded to observe it.

However, the range of the guided balloon is the entire planet, not the immediate vicinity of a rover landing site. A guided balloon can deploy a small rover, miniature geo-chemical laboratory or a small navigation beacon at the site of interest with greater precision than if it were delivered from orbit.

Rocket-propelled airplanes are also being considered as a means of surveying Mars; however, such airplanes would only make pre-programmed flights over very limited areas which makes them ill suited to meeting global or regional reconnaissance objectives of future human exploration.

"The ability of long-duration guided planetary balloons to alter their flight path in the atmosphere, to deploy surface probes, and to carry out detailed reconnaissance make them a very powerful tool for future Mars exploration," says Dr. Pankine. The figure illustrates a guided balloon platform operating at Mars.

Related Links

[Global Aerospace](#)

[SpaceDaily](#)

[Search SpaceDaily](#)

[Subscribe To SpaceDaily Express](#)

MARSDAILY

How to Land Softly on a Hard Planet

Pasadena (JPL) Mar 25, 2002

Just one of the many problems in landing on another planet, after it's been determined where to land and the method to get there, is landing safely. For JPL, a



safe landing is "the name of the game," as engineers work to prepare two rovers for the journey to Mars.

[Discuss this article and more
at the Space Message Board](#)



press ESCAPE KEY or browser STOP BUTTON to STOP ALL
animated GIFS after page has downloaded

SPACEDAILY HEADLINES

February 17, 2003

- [EU In Talks With Russia, Brazil To Build Galileo Navigation System](#)
- [New Reactor Puts Hydrogen From Renewable Fuels Within Reach](#)
- [Spirit Breaks Own Distance Record On Mars](#)
- [Pacific Nation Of Tuvalu Preparing To Disappear Beneath Tides This Week](#)
- [Keeping Pace With Consumer Applications Vital To GPS Market Expansion](#)
- [Smart and Secure Tradelanes to Extend Network Footprint To Africa](#)
- [The Highway To Hydrogen Is A Long And Winding Road](#)
- [Gilat Introduces New Family Of VSAT Products](#)
- [ViaSat to Supply VSAT Systems for Coalition Network in Iraq](#)
- [Most Distant Quasars Probe End Of Cosmic Dark Ages](#)
- [Hubble Telescope Catches Glimpse Of An Unknown Galaxy](#)
- [Cyberspace To Revolutionize Environmental Sciences And Other Disciplines](#)
- [IBM and Eagle Broadband Team For Broadband Services](#)
- [European Space Policy Debate Continues In Leuven](#)
- [European Researchers Launch 10M Euro Collaborative Tech Project](#)
- [Wearable Air-Conditioners: Hot, New Microtechnology Keeps GI's Cool](#)
- [Engineers Create Chip-Size Version Of Widely Used Detector](#)
- [Laser Method Identifies, Counts Toxic Molecules](#)
- [3D Technique Uses Light-Activated Molecules To Create Microstructures](#)
- [Our Hazy Atmosphere: The Impact Of Aerosols On Climate](#)
- [Experiment Deflates Hopes Forests Will Alleviate Global Warming](#)
- [The Role Of Gas Hydrates In Carbon Cycling And Environmental Change](#)

- [Human Evolution At The Crossroads: Integrating Genetics And Paleontology](#)
- [Microsoft Launches Hindi-Language Office Software In India](#)
- [Iran Confirms It Is Researching Use Of New Centrifuges](#)
- [Top US Official Seeks China's Support In Stopping Weapons Proliferation](#)
- [Five Dead As Earthquake Hits Indonesian Island](#)
- [EU To Study Monsanto Request To Import GM Maize](#)
- [South Asia Holds Emergency Meeting On Bird Flu Epidemic](#)
- [China Plans To Go To The Moon On A Shoestring](#)

SpaceDaily Search Engine

The contents herein, unless otherwise known to be public domain, are Copyright 1995-2004 - SpaceDaily. AFP Wire Stories are copyright [Agence France-Presse](#). ESA Portal Reports are copyright [European Space Agency](#). Additional copyrights may apply in whole or part to other bona fide parties. Advertising does not imply endorsement, agreement or approval of any opinions, statements or information provided by SpaceDaily on any web page published or hosted by SpaceDaily. [Privacy Statement](#)