

# Odyssey

Pushing the Edges

March  
2006

Official Newsletter of OASIS: the Los Angeles Chapter of the National Space Society

## Nowhere to Hide: Mars Reconnaissance Orbiter Brings Us Closer to the Red Planet

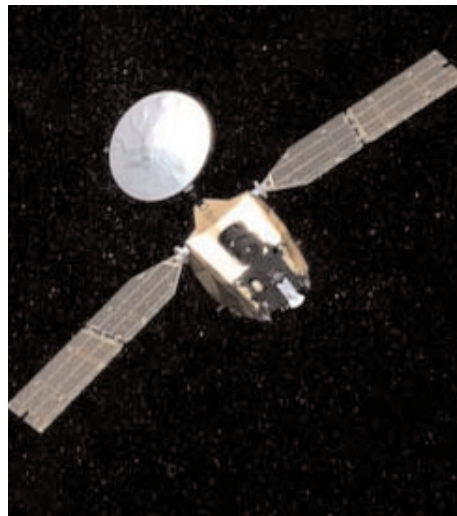
By Robert Gounley

**M**ars gets no respect.

Like a family cursed with inquisitive neighbors, the Red Planet has endured prolonged observation that grows bolder and more outrageous with time. The handful of images returned from early Mariner flybys might be compared to glimpsing the Martian backyard with a few quick peeks over the fence. With three spacecraft (two from NASA and one from the European Space Agency) orbiting the planet, Mars may feel like it's being watched from a guard tower.

I picture an elderly couple gaping from their second floor balcony. (And doing nothing about the grandkids' intrusions with their remote-controlled rovers.) Amid all this, Mars might have taken comfort in knowing the old folks have fairly weak eyesight.

That's changed. The neighbors



Artist's concept of Mars Reconnaissance Orbiter en route to Mars. *Image credit: NASA/JPL*

just brought home a telescope and some high-tech espionage gear.

The telescope in question is called HiRise, for High Resolution Imaging Science Experiment. It's an integral part of the Mars Reconnaissance Orbiter (MRO) that just arrived at Mars to become the fourth operating orbiter. Measuring 70 cm in diameter and 1.4 m in length, HiRise is

a spy camera for Mars. Images taken from 300 km away will present the Martian surface with picture elements the size of basketballs. Features 2 m across will be clearly visible - boulders, gullies, and potential landing sites. (Among its targets is the Mars Polar Lander, believed to have crashed in 1999.) Martian surveillance requires more than high-resolution pictures. With somewhat lower resolution, MRO's Compact Reconnaissance Imaging Spectrometers for

*(continued on page 2)*

### **Inside ODYSSEY**

- 2 **Thoughts on ISDC 2006**
- 3 **Sea Launch**
- 4 **Advertisements:  
ISDC 2006**
- 8 **SkyWatch**

**ISDC 2006! May 4-7, Los Angeles, CA. Mark your calendars now!**

## Some thoughts on this year's ISDC...

The theme for this year's ISDC is "Exploring New Worlds." It is fitting that we gather in California for this, as the North and South American continents have been referred to as the New World. Many people, myself included, settled this continent by starting on the east coast and heading west. In doing so, one finds that North America is a wonderful continent, but it has just one problem: about 3 miles west of the conference venue, it sort of runs out. But that doesn't mean that there are no new worlds. Whether one seeks knowledge, a new home, or a new perspective on one's old home, the way to go about it is the same: head on out.

So welcome to Los Angeles, and have a great ride, wherever it may take you.

*Seth Potter, ISDC 2006 Planning Committee*

**SEE ISDC ANNOUNCEMENTS ON PAGES 4-5!**

## Mars Reconnaissance Orbiter

*(continued from page 1)*

Mars (CRISM) is designed to detect extremely subtle color variations. With this, scientists can identify local minerals and spot places where water may once have flowed.

When HiRise sees an interesting feature, scientists will want to know exactly where on Mars it is - if only to find it again. For this they need to see known landmarks near the feature - a difficult task given HiRise's keyhole view of the surface. To help scientists pin down its Martian ground track, MRO carries a Context Camera (CTX) with a more panoramic view. These "big picture" views will also show what sort of terrains give rise to the features HiRise reveals.

As with any outdoor photography, local weather may not always cooperate. Dust storms can obscure the surface, but Martian weather patterns and climate are not well understood. To fill this

gap, MRO's Mars Color Imager (MARCI) will take pictures in spectral bands showing local variations in ozone, carbon dioxide, and dust. Aiding MARCI is the Mars Climate Sounder (MCS); it measures visible and infrared spectra to help scientists understand how air temperatures vary with altitude.

Any discussion of Mars inevitably leads to questions about water. The gullies and broad canyons we see today imply streams and rivers once flowed through them. Except at the polar ice caps, little water is apparent on the surface today - still less in the atmosphere. Where could it all have gone?

Data from other spacecraft suggest that Mars could hold large liquid aquifers below its surface. If so, MRO's SHallow RADarsounder (SHARAD) will find them and map them. The instrument is designed to broadcast radio pulses to the surface

and listen for liquid water's characteristic echoes. Depending on soil conditions, the radar could probe as deep as one kilometer below ground for traces of moisture.

With its large high-gain antenna and powerful transmitter, MRO creates a data line to Earth that is 10 times faster than from any previous Mars spacecraft. By the end of its planned mission, MRO will have returned more bytes of data than all other Mars planetary missions combined. The data sent back won't all be from the MRO. It also has a small relay antenna for communication with landers and rovers on the surface - boosting their data link enormously.

If it all seems like Mars's nosy neighbors must be building up to something, you're right.

The neighbors plan to visit.

# LECTURE REVIEW

James G. Maser, Sea Launch Company

By Robert Brodsky

If you are going to launch a satellite into geosynchronous orbit in the most efficient manner, you should launch eastward from the equator. Launches from the US mainland at Cape Canaveral, at 28 degrees north of the equator, require a "dog-leg" maneuver that rotates the inclined launch orbit into the equatorial plane, at a large expense of propellant and consequent loss of the capacity for payload weight. The French Arianespace launch service initiates missions from Kourou, in French Guiana, which is only six degrees from the Equator and is thus more efficient.

Sea Launch Company, LLC, based in Long Beach, provides a unique and very affordable service to get to geosynchronous transfer orbit (GTO), by launching from the Equator.

This most efficient approach became clear Wednesday night, February 22, at the American Institute of Aeronautics and Astronautics (AIAA) dinner meeting.

James G. Maser came to the SeaLaunch Presidency with an impeccable pedigree; having started out with the Boeing Delta and EELV programs, progressing to Chief Engineer for

Delta III, and then to Chief Systems Engineer of Sea Launch. He holds BS and MS degrees in Engineering from the University of Akron and an MBA from UCLA. In 2000, he was honored by AIAA with the George M. Low Transportation Award.

Sea Launch is composed of two operating elements. The first is a sea-going self-propelled converted oil drilling platform, on which the launch vehicle is erected upright on the launch pad and fueled. The crew then relocates to the second element, a tender ship that includes the launch control center as well as a vehicle assembly hall.

Once the vehicle is horizontally integrated, it is transferred to the launch platform. The assembly, transfer operation, and final tests are conducted at Sea Launch Home Port. Final erection and propellant loading take place at 154 degrees west longitude, on the equator, south of the Hawaiian Islands. The platform is remarkably seaworthy and stable, even in the high seas during transit. During launch, the team is supported by a Russian Control Center and Ground Station as well as NASA's tracking and data

*(continued on page 6)*



Odyssey Copyright © 2005  
by the Organization for the  
Advancement of Space  
Industrialization and Settlement  
(OASIS)

**Editor: Lisa Kaspin**  
**310-598-4564**

OASIS is a chapter of the National Space Society (NSS), a non-profit organization dedicated to promoting activities that contribute to the exploration and development of space. The opinions expressed by the authors herein are those of the author exclusively, and do not necessarily reflect the views, beliefs, opinions, or policies of the author's employer, the Odyssey editor, OASIS, or NSS.

Permission is hereby granted to NSS chapters in good standing to reprint articles unedited provided credit is given. All others must obtain written permission from OASIS.

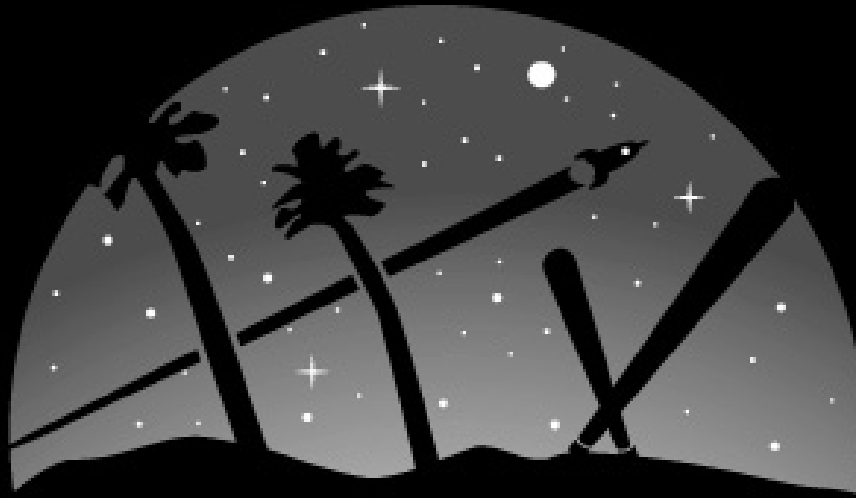
Submissions to the Odyssey of letters, articles, announcements, and reviews are encouraged. E-mail submissions to

**[odyssey\\_editor@oasis-nss.org](mailto:odyssey_editor@oasis-nss.org)**

Contributions may also be mailed as .doc or .txt files on PC-formatted CDs, or as hard copy to:

OASIS, PO Box 1231  
Redondo Beach, CA 90278

# ISDC06



## EXPLORING NEW WORLDS LOS ANGELES \* MAY 4-7

The National Space Society and The Planetary Society  
invite you to Los Angeles on May 4-7, 2006, for the 25th annual  
**INTERNATIONAL SPACE DEVELOPMENT CONFERENCE (ISDC)**  
Mark your calendars today for the biggest space advocacy event of the year!

**ISDC 2006** will feature dozens of presentations, panel discussions, interactive exhibits and activities spanning the entire spectrum of space-related issues: exploration, tourism, science, technology, policy, and commerce.

**ISDC 2006** is your window to the new world of space, and your chance to participate in the beginning of a spacefaring civilization!

Check back often for the latest updates and please contact us if you have any questions about the conference. We look forward to seeing you in Los Angeles next May!

Sheraton Gateway Los Angeles  
6101 West Century Boulevard, Los Angeles, California 90045  
See <http://isdc.nss.org/2006>, email [katherine@moinc.com](mailto:katherine@moinc.com), or fax to (202) 463-8497

*The National Space Society and the Space Tourism Society are proud to present...*

## **The 2006 ORBIT Awards Dinner**

Thursday, May 4... the opening night of ISDC!

This star-studded celebration of personal spaceflight comes at a time of great progress for the industry. Spaceports are being announced around the world, while well-financed teams build real commercial spacecraft. Join us at this exciting moment as we celebrate this progress with the leaders of space tourism.

### **Confirmed Honored Guests:**

Buzz Aldrin, Apollo 11 astronaut and Chairman, ShareSpace Foundation

Burt Rutan, designer, SpaceShipOne

Dennis Tito, the first space tourist, who launched to ISS in 2001

Gregory Olsen, the latest spaceflight participant, who launched to ISS in 2005

Hugh Downs, Chairman NSS Board of Governors

Peter Diamandis, Chairman, X Prize Foundation

Will Whitehorn, President, Virgin Galactic

Eric Anderson, CEO, Space Adventures

Noah McMahan, Zero Gravity Corporation

Shana Dale, Deputy Administrator, NASA

Brian Chase, Assistant Administrator, NASA

Rick Homans, Secretary of Economic Development, State of New Mexico

Rick Searfoss, Shuttle astronaut, XCOR test pilot, Rocket Racing League pilot

Register online at <http://isdc.nss.org/2006/gala.html>

## **ISDC 2006: VOLUNTEER OPPORTUNITIES**

**Q:** How can I get involved with this historic event????

**A:** There are many opportunities for people who live in the Los Angeles area to help make ISDC 2006 a reality.

These include:

- ◆ Operations (obtaining audiovisual equipment, scheduling)
  - ◆ Programming (contacting potential speakers, running sessions)
  - ◆ Communications (writing press releases, contacting media, publishing a program book)
- ...and much, much more!

No conference experience is required to help out.

If you are interested in volunteering for ISDC 2006, please contact:

PAT MONTOURE at [patmontoure@aol.com](mailto:patmontoure@aol.com) OR

CRAIG WARD at [volunteer-isdc2006@oasis-nss.org](mailto:volunteer-isdc2006@oasis-nss.org)

## AIAA lecture: Sea Launch

(continued from page 2)

relay satellite system (TDRSS). The most recent launch, for the EchoStar X satellite was on February 15, 2006; the next launch is scheduled for April. Customers include DISH Network, DIRECT TV, and XM Satellite Radio.

Sea Launch's record of success--18 successful launches out of 19, and now 16 consecutive successful missions--is admirable. The operation requires approximately 300 personnel. They perform only commercial launches; thus their competition at this point is limited to the European Ariane 5, and also the Proton vehicle, marketed by International Launch Services and launched from the Baikonur Cosmodrome in Kazakhstan. Sea Launch is prepared to make 6 launches per year and is now booked up at this rate through 2008. In 2005 they had 4 successful missions. Their present capability is to place 6100 kg

into GTO, but they are aiming for 6300 kg in the near future. Another future venture for the consortium is the initiation of land launches from Baikonur with the same Zenit launch system, which can lift up to 3500 kg into GTO. Three such launches have been contracted for 2007.

What is even more interesting is the composition of the consortium. The majority (40%) holder, Boeing, manages the business and overall operations and supplies the payload fairing. A Russian company, Energia, owns 25% and supplies the 3rd stage and is in charge of rocket integration and operations. Yuzhmash/Yuzhnoye of Ukraine owns 15% and supplies the first and second stages of the Zenit-3SL launch vehicle; all elements being LOX-kerosene fueled; while the final 20% owner, AKER of Oslo, operates the two vessels and

manages all marine operations. The rocket stages are shipped to Long Beach from a port in the Black Sea via the Panama Canal--a 30-day trek. The engines use Russian-brewed kerosene, which also must be shipped. The Zenit is about 4 meters in diameter, 70 meters long, and weighs over a million pounds at take-off. The first stage engine produces about 1.65 million pounds of thrust.

During launch operations, the launch control center on the command ship accommodates both English- and Russian-speaking teams. Thus their record of success is even more impressive! Do they show visitors around upon request? Yes; but Jim quoted a cost of \$10,000 per visit, and suggested instead watching the mission coverage on the website. ([www.sea-launch.com](http://www.sea-launch.com)).

### ***OASIS Space Calendar and Sky Watch***

(continued from page 7)

Friday, 14 April 2006, 7:30 pm. Santa Monica Amateur Astronomy Club monthly meeting.  
Fred Ladd "The Space Explorers' and Friends: How the Space Age Came to Television"  
Free admission. New Roads School, 3131 Olympic Blvd., Santa Monica, CA  
Visit <http://connect.to/smaac> or phone (310) 495-7595 or email [reinhardka@aol.com](mailto:reinhardka@aol.com)

Saturday, 15 April. 1:00 - 2:00 pm. "Mars Recon! JPL/NASA Spies on the Red Planet."  
Lecture Hall, Reuben H. Fleet Space Center, 1875 El Prado, Balboa Park, San Diego, CA 92101  
Information: Call (619) 238-1233 for the daily schedule or (TDD) (619) 685-5744 or visit [www.rhfleet.org](http://www.rhfleet.org).

Saturday, 22 April, 3:00 pm. OASIS Board Meeting (postponed one week for Easter)  
Home of Steve Bartlett & Tina Beychok, 7108 East Peabody Street, Long Beach, CA 90808  
Visit [www.oasis-nss.org/](http://www.oasis-nss.org/) or phone the OASIS HOTLINE AT (310) 364-2290

Saturday, 1 April. Sunset until 10 pm. Los Angeles Sidewalk Astronomers Star Party.  
Autry Museum of Western Heritage, 4700 Western Heritage Way, Los Angeles, CA 90027-1462  
Phone (323) 664-1191 or see <http://www.sidewalkastronomers.com/chapters/laevents.html>

Saturday, 1 April. 11:00 am to 4:15 pm. The Sally Ride Science Club Sally Ride Science Festival  
University of California, San Diego. 9500 Gilman Drive, La Jolla, CA 92093 Visit <http://www.sallyridefestivals.com/06ucsd0212/index.shtml> for registration form and mailing address or phone (800) 561-5161.

Tuesday, 4 April. 8:30 am - 6:00 pm. USC Marshall Center for Technology Commercialization. Thought Leader Forum  
Space Billionaires: Educating the Next Generation of Entrepreneurs. Networking Reception and Book-signing with Buzz  
Aldrin. \$295 for registration before March 15, \$395 after.  
Wilshire Grand Los Angeles, 930 Wilshire Blvd., Los Angeles, CA 90017  
Visit [http://www.usc.edu/org/techalliance/Space2006\\_home.htm](http://www.usc.edu/org/techalliance/Space2006_home.htm)

Monday, 10 April. Sunset (6:05 pm PDT) Los Angeles Astronomical Society "Brown Dwarfs" Amanda Mainzer, JPL.  
Griffith Observatory Satellite, 4800 Western Heritage Way, Los Angeles, CA 90027  
Email [outreach@laas.org](mailto:outreach@laas.org) or visit <http://www.laas.org/sched.html>

Thursday and Friday, 13 and 14 April. 7:00 pm. "Radar Sounding of Mars: MARSIS on Mars Express."  
Dr. Jeff Plaut, Co-Principal Investigator, MARSIS Instrument, Mars Express Spacecraft. Admission is free. Seating is limited.  
Thursday: von Kármán Auditorium, Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena  
Friday: Vosloh Forum, Pasadena City College, 1570 East Colorado Blvd., Pasadena  
Call (818) 354-0112 or visit: <http://www.jpl.nasa.gov/events/lectures/may05.cfm>. (continued on page 6)



Organization for the Advancement of Space Industrialization and Settlement  
A chapter of the National Space Society

Name: \_\_\_\_\_

Street: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_

Phone: (\_\_\_\_) \_\_\_\_\_ Fax: (\_\_\_\_) \_\_\_\_\_

E-mail: \_\_\_\_\_

Interests: \_\_\_\_\_

I wish to join as an:

- \_\_\_ \$15 Individual
- \_\_\_ \$25 Family\*
- \_\_\_ \$25 Supporter MMM yes/no\*\*
- \_\_\_ \$35 Family Supporter MMM yes/no\*\*
- \_\_\_ \$50 Adventurer MMM yes/no\*\*
- \_\_\_ \$75 Pioneer MMM yes/no\*\*
- \_\_\_ \$150 Explorer MMM yes/no\*\*
- \_\_\_ \$12 Student/Senior
- \_\_\_ \$12 Child (no Odyssey, only children's edition)

Membership Dues: \$ \_\_\_\_\_

Additional Contribution: \$ \_\_\_\_\_

Total Enclosed: \$ \_\_\_\_\_

Rates listed are for yearly dues

Mail check and completed form to:

**OASIS Memberships**  
**PO Box 1231**  
**Redondo Beach, CA 90278**

\*Family rates include the children's edition. Please specify names of children.

\*\*Supporter level or higher: you can choose to subscribe to the Moon Miners Manifesto (MMM)

Friday, 24 March, 7:30 pm. "The Latest from NASA's Spitzer Space Telescope: From Planets to Deep Space." Dr. Varoujan Goorjian, Spitzer Research Scientist. Adults: \$5.00. Students/children: \$3.00. Recommended for ages 8 and up. Tickets are available at the door prior to show time. To ensure a seat, advance ticket purchase is recommended.

To order tickets, call the A.S. Box Office: (818) 677-2488 [Monday - Friday: 9:30 - 5:00]

Bianchi Planetarium, Cal State Northridge, 18111 Nordhoff Street, Northridge, CA 91330.

[for directions, see <http://www.csun.edu/%7Epubrels/directions/directions.html>]

Visit [http://www.csun.edu/physicsandastronomy/Miscellaneous/planetarium\\_page.htm#schedule](http://www.csun.edu/physicsandastronomy/Miscellaneous/planetarium_page.htm#schedule)

Saturday, 25 March 2006. 2 pm. "Space: Are We Alone?" (Film Screening & Discussion)

Sam Neill, Narrator. Laura Baker, of Caltech's Geology Department, will introduce the film and lead a post-screening discussion. \$5 (unreserved seating.) Beckman Auditorium, Caltech, Pasadena, CA

(see map at <http://www.admissions.caltech.edu/visiting/campusmap.htm>)

Phone (626) 395-6400 (or see <http://events.caltech.edu/find.html>)

Friday, 31 March. 8:00 pm. "The Little Spacecraft that Could." Kelly Perry, Jet Propulsion Laboratory.

Science Lecture Hall 140, Santa Monica College Planetarium, 1900 Pico Blvd., Santa Monica, 90405

Phone (310) 434-4003 (also see <http://www.smc.edu/planetarium/>)

Saturday and Sunday, 1 and 2 April. 10:00 am - 4:00 pm (approx.)

Aurora Galleries International, Inc. Space & Aviation Memorabilia Auction. Catalogs may be ordered at <http://www.aurora-galleriesonline.com/> Internet bidding for the auction will be available via [icollector.com](http://icollector.com) -

30 Hackamore Lane, Suite 2, Bell Canyon, CA 91307

Phone 818-884-6468 or toll free USA: 866-928-7672; email Michael Orenstein: [imo@auroragalleriesonline.com](mailto:imo@auroragalleriesonline.com)

*(continued on page 7)*



***Los Angeles Chapter of the National Space Society***

**P.O. Box 1231**

**Redondo Beach, CA 90278**

**310-364-2290**