**Elachi: 'Future in excellent shape'**

Pasha Kaye / JPL/Handout

"Reaching the moon is not an end in itself; rather, it will be as a steppingstone to go to Mars."

**Rover pictures raise ‘muffin’ questions**

By Gay Webster

JPL's Spirit rover has begun making some of its own driving decisions while its twin, Opportunity, is presenting scientists with decisions to make about studying small spheres embedded in bedrock, like berries in a muffin.

Both rovers are on the move. Late Sunday, Spirit drove about 6.4 meters (21 feet), passing right over the rock called "Aeolis Palus" where it had finished examining the rocks interior revealed by successfully grinding away the surface. The drive tested the rover's autonomous navigation ability for the first time on Mars.

"We've entered a new phase of the mission," said Dr. Mark Maimone, rover mobility software engineer at JPL. When the rover is navigating in a "no-go" area, it gets a command telling it where to end up, and it evaluates the terrain with stereo imaging to choose the best way to get there. It must avoid any obstacles it identifies. This capability is expected to enable longer daily drives than depending on step-by-step navigation commands from Earth. On Monday, Spirit was commanded to drive farther on a northeastward course toward a crater nicknamed "Bonneville."

Over the weekend, Spirit drifted the first artificial hole in a rock on Mars. Its rock abrasion tool ground the surface of "Endurance" in a patch 1.8 inches in diameter and 0.1 inches deep. Examination of the freshly exposed interior with the rover's microscopic imager and other instruments confirmed that the rock is volcanic basalt.

Opportunity made its closest approach to a rock on Tuesday and was positioned to continue observing parts of the outcrop up close on Tuesday. The rock's edge points to the north. Opportunity will "shoot and scoot," meaning the rover will drive forward and acquire new scientific measurements of the rocks, then shoot up, down, and across the interior of the crater.

**NASA's proposal for lunar exploration begins with a 2008 lunar orbiter and a 2009 lander:**

By Guy Webster

"Future in excellent shape" is the theme, which Elachi termed "a sustained human and robotic program to explore the solar system and beyond. Reaching the moon is not an end in itself; rather, it will be as a steppingstone to go to Mars."

Besides the Jupiter Icy Moons Orbiter, the budget proposal fully supports JPL's work in the Program: the Space Interferometry Mission, Kepler and Terrestrial Planet Finder.

"This vision is a key element of NASA, but it's only a part of NASA," Elachi said. "NASA remains committed to a strong program in earth science, to understand and protect our home planet."

Next year's proposed Earth science budget calls for $1.49 billion, about 12% million less than this year. Elachi said the reduction is due to FY '04 Congressional earmarks and the recent launches of the Earth Observing System Terra and Aqua missions and upcoming launch of Aura.

The bottom line, Elachi said, is that all JPL's Earth missions in development have been fully funded—Jason three Earth probes (Orbiting Carbon Observatory, Aquarius and Hydros), and a wide-swath ocean surface topography radar follow-on for Jason. "In the near term, JPL is in pretty good shape," he added.

Another impact on earth science, Elachi said, is that "some of the missions we had hoped to get started have been deferred one or two years." Among those in NASA's Earth Science Enterprise strategic plan was an interferometric synthetic aperture radar-based system aimed at detecting natural hazards such as earthquakes and volcanoes. "Although this mission was not in the FY '05 budget proposal," noted Earth Science and Technology Director Dr. Diane Evans, "we fully expect to have re-estimation for a new start in FY '06."

The Mars Program would see steady and significant growth, based on at least one Mars mission at each opportunity (every 26 months). This year's approximately $600 million total would increase to $611 million in FY 05, with more than $1.2 billion proposed for FY 09.

Within the "Structure and Evolution of the Universe" theme, the Laser Interferometer Space Antenna, originally proposed for a 2010 launch, was delayed for a year. "It's not a major impact," Elachi said. In addition, the Jupiter Icy Moons Orbiter, which has been slated to launch earlier than 2011, will most likely be deferred for a couple of years.

Further, the NASA's budget proposal fully funds both ongoing and future Discovery and New Frontiers Program proposals, as well as the Deep Space Network.

NASA's proposal for lunar exploration begins with a 2008 lunar orbiter and a 2009 lander. And Elachi sees JPL's potential role "in an area where we can contribute in a unique way, and that's mostly in the landers." I don't think we'll play a major role in the management of the landers, but we could play a significant role in the science and the payload for the orbiters," he said.
DNA students sought for celebration

On Dec. 26, 1963, JPL direc
tor James Van Allen announced the establishment of the Deep Space Network, consolidat
ing three communications organi
dations to give the network the capability to deep space. Who may be interested in attending?

Our evening event will be held on

Monday, March 22

Please e-mail pso@jpl.nasa.gov and let them know you'd like to attend the celebration.

For the period of October through December 2010, the following JPL recipients were deemed outstanding. They are invited to submit their resumes and letters of interest no later than 4:30 p.m., the third Thursday of the month at noon in Building 238-111. For more information, call the JPL Employee Assistance Program at 4-3689.

Ongoing Support Groups

- Alcoholics Anonymous—Meetings are available to the Employee Assistance Program at 4-3600 at five locations.
- Caregivers Support Group—Meets the first Friday of the month at noon in Building 147-11 (the Wellness Place). For more information, call the Employee Assistance Program at 4-3600.
- Codysport Anonymous—Meets at noon every Wednesday. Call Occupational Health for information: 4-4120.
- Gay, Lesbian and Bisexual Group—Meets the first Friday and third Thurs
day at noon in Building 147-111 (the Wellness Place). For more information, call the Employee Assistance Program at 4-3600.

For more information, call (626) 794-1119.

Man-•-•-•s, Feb. 23–24

Presentation: “Airbags, They’re Not Just For Cars” by JPL’s cognizant engineer for the Mars landing mechanical systems lead for 11 years, David Vore at ext. 4-1024.

For reservations, call (626) 395-6327.

Von Kármán Lecture: “New Views of the Cosmos” at noon in von Kármán Auditorium.

Golf Club—Meeting at noon in Building 238-543 conference room. Information is available. Call the Employee Assistance Program at ext. 543.

Earth and Space Science Colloquium—“Space Telescope Science Institute: New Views of the Cosmos” at noon in von Kármán Auditorium.

Thursday, Feb. 19


For more information, call public Services and Facilities at 4-4120.

JPL Golf Club—Meeting at noon in Building 306-162.

JPL stores—Toll Rivaug, airbag
tech and an engineer for the Mars Pathfinder Project. For more informa
tion, call (626) 395-4652.

Deaf and Hard of Hearing: “Airbags, They’re Not Just For Cars” by JPL’s cognizant engineer for the Mars landing mechanical systems lead for 11 years, David Vore at ext. 4-1024.

For more information, call (626) 395-6327.

For more information, call the Employee Assistance Program at 4-3600.

JPL Toastmasters Club—Meeting at 5 p.m. in the 167 conference room. Call Public Services at ext. 3-9100 for informa

tion.

Volunteer programs for professional: For more information, call Shary De

Voe at ext. 4-0432.

JPL Golf Club—Meeting at noon in Building 306-162.

JPL Stores—Toll Rivaug, airbag tech and an engineer for the Mars Pathfinder Project. For more information, call (626) 395-4652.

Deaf and Hard of Hearing: “Airbags, They’re Not Just For Cars” by JPL’s cognizant engineer for the Mars landing mechanical systems lead for 11 years, David Vore at ext. 4-1024.

For more information, call (626) 395-6327.

JPL Toastmasters Club—Meeting at 5 p.m. in the 167 conference room. Call Public Services at ext. 3-9100 for informa

tion.

Volunteer programs for professional: For more information, call Shary De

Voe at ext. 4-0432.
Elachi reiterated that the Lab has a very busy year coming up. In addition to operating the two Mars Exploration Rovers for the next few months, JPL has instruments on the Microwave Instrument on the Rosetta Orbiter (planned for launch later this month), and the Propospheric Emission Spectrometer and Microwave Limb Sounder (both aboard NASA’s Aura spacecraft) will operate the Spitzer Space Telescope: guide Cassini toward its encounter with Saturn this summer, and will retrieve solar wind samples via the Genesis spacecraft. Deep Impact is also scheduled for launch, including more than 70 session in November, including more than 70 poster presentations as well as a flyover that had everyone squealing with delight.

Vehicle engineers and Spirit and Opportunity. Our visitors learned about the different components of the rovers and landers and about the extensive testing done to assure flight and mission readiness. At this stop, the adults were so fascinated that they had to be reminded to let the students ask questions too.

In JPL’s Regional Planetary Image Facility, librarian Debbie Martin shared her enthusiasm for space while showing some of the many types of image data and material available to researchers.

Mars outreach coordinator Connie Gennaro had the student’s full attention as she described her part in the Mars adventure and reminded them that it takes more than just scientists and engineers to make a mission successful. She used airbag fabric and models of a rover tire and robotic arm to explain different flight hardware.

Then came the big moment: Connie let the students officially become new “sdub kill” by being run over by her remotely controlled rover. When Connie asked if any of the adults wanted to participate, only a split second passed before not one of them was left standing.

In the Digital Image Animation Laboratory theater, Dr. Eric Delong treated guests to some spectacular 3-D image animations as well as a flyerer that had everyone squealing with delight.

The tour ended with a demonstration of 3-D photography by Ktec CAPsars of the Multimission Image Processing Laboratory. As the group was leaving, a LILSA parent said this had been their most exciting field trip yet.

Throughout the visit, the students were prompted to talk about how Mars is similar to and different from Earth. They were reminded that it is only through exploration and discovery of Earth that we are able to explore and discover worlds far from our own. We can certainly say that this field trip did much to awaken and inspire the explorer in each of these students.

In JPL’s Human Resources Discretionary Fund, HR Director Dr. Charles Elachi welcomed the visitors, encouraging the students, grades K-5, to dream big but not to neglect the hard work necessary to make those dreams come true.

Guests first visited the Mars In Situ Laboratory, where MER Deputy Project Scientist Dr. Albert Haldeman showed them the sandbox and rover engineering models, and talked about their flight counterparts. Spirit and Opportunity. Our visitors learned about the different components of the rovers and landers and about the extensive testing done to assure flight and mission readiness. At this stop, the adults were so fascinated that they had to be reminded to let the students ask questions too.

Elachi praised Mars Exploration Rover mission engineers for their work in restoring the Spirit rover’s health since it developed computer-memory and communications problems in late January. “The pressure was very high—not only on us to be successful, but on making sure all of NASA is successful. All of this was happening the day before the landing of Opportunity.” He also acknowledged those who worked in the Mars rover to make sure commands sent to the rovers were all tested ahead of time.

Elachi also thanked staff of the Office of Communications and Education who were on Lab at all of the days all of the day and night to support media relations efforts surrounding the Mars landings. He noted that JPL was featured on the front cover of 185 major newspapers worldwide, and thanked media relations officer Guy Webster, who handled media relations efforts surrounding the Mars landings. He noted that JPL was on the front cover of 185 major newspapers worldwide, and thanked media relations officer Guy Webster who handled media relations efforts surrounding the Mars landings.

JPL’s Earth Science Outreach Coordinator Connie Gennaro encourages hands-on examination of the robotic arm and tire.

Dahlia Kaki closely examined simulated rover tire.
No more than 2 of 60 words each will be published for each advertiser.

Classified ads will be available the day before Universe is published at dailyplanet

LA CRESCENTA rear duplex, 2 bd., 1 ba., on priv. rd., 18-hole golf course 6 mi. away, priv. dr., 2 bd., 2 ba., full kitchen, half-hour to Cape Canaveral, quiet, relaxing, overlooking beach; 3-bed., 2-ba., sleeps 6-8, fully equip’d kitchen incl. micro, oven, refrig., washer/dryer, oil heater & heat, central heating, queen size beds. 2-night min., rates $115/nite/2, high season rate $130/nite/2, 1.5 ba., 2-story townhome–style, dishwasher, fridge, refrigerator, 2-car garage/ grounds; weekly or monthly. 909/981-7492, Darlene or Mike.

Real Estate

ED ELK 2 bd., $549,000. 944/277-6600 or 944/277-0379.

LA CRESCENTA rear duplex, 2 bd., 1 ba., on priv. rd., 18-hole golf course 6 mi. away, priv. dr., 2 bd., 2 ba., full kitchen, half-hour to Cape Canaveral, quiet, relaxing, overlooking beach; 3-bed., 2-ba., sleeps 6-8, fully equip’d kitchen incl. micro, oven, refrig., washer/dryer, oil heater & heat, central heating, queen size beds. 2-night min., rates $115/nite/2, high season rate $130/nite/2, 1.5 ba., 2-story townhome–style, dishwasher, fridge, refrigerator, 2-car garage/ grounds; weekly or monthly. 909/981-7492, Darlene or Mike.

Real Estate

ED ELK 2 bd., $549,000. 944/277-6600 or 944/277-0379.

LA CRESCENTA rear duplex, 2 bd., 1 ba., on priv. rd., 18-hole golf course 6 mi. away, priv. dr., 2 bd., 2 ba., full kitchen, half-hour to Cape Canaveral, quiet, relaxing, overlooking beach; 3-bed., 2-ba., sleeps 6-8, fully equip’d kitchen incl. micro, oven, refrig., washer/dryer, oil heater & heat, central heating, queen size beds. 2-night min., rates $115/nite/2, high season rate $130/nite/2, 1.5 ba., 2-story townhome–style, dishwasher, fridge, refrigerator, 2-car garage/ grounds; weekly or monthly. 909/981-7492, Darlene or Mike.

Real Estate

ED ELK 2 bd., $549,000. 944/277-6600 or 944/277-0379.

LA CRESCENTA rear duplex, 2 bd., 1 ba., on priv. rd., 18-hole golf course 6 mi. away, priv. dr., 2 bd., 2 ba., full kitchen, half-hour to Cape Canaveral, quiet, relaxing, overlooking beach; 3-bed., 2-ba., sleeps 6-8, fully equip’d kitchen incl. micro, oven, refrig., washer/dryer, oil heater & heat, central heating, queen size beds. 2-night min., rates $115/nite/2, high season rate $130/nite/2, 1.5 ba., 2-story townhome–style, dishwasher, fridge, refrigerator, 2-car garage/ grounds; weekly or monthly. 909/981-7492, Darlene or Mike.

Real Estate

ED ELK 2 bd., $549,000. 944/277-6600 or 944/277-0379.

LA CRESCENTA rear duplex, 2 bd., 1 ba., on priv. rd., 18-hole golf course 6 mi. away, priv. dr., 2 bd., 2 ba., full kitchen, half-hour to Cape Canaveral, quiet, relaxing, overlooking beach; 3-bed., 2-ba., sleeps 6-8, fully equip’d kitchen incl. micro, oven, refrig., washer/dryer, oil heater & heat, central heating, queen size beds. 2-night min., rates $115/nite/2, high season rate $130/nite/2, 1.5 ba., 2-story townhome–style, dishwasher, fridge, refrigerator, 2-car garage/ grounds; weekly or monthly. 909/981-7492, Darlene or Mike.

Real Estate

ED ELK 2 bd., $549,000. 944/277-6600 or 944/277-0379.

LA CRESCENTA rear duplex, 2 bd., 1 ba., on priv. rd., 18-hole golf course 6 mi. away, priv. dr., 2 bd., 2 ba., full kitchen, half-hour to Cape Canaveral, quiet, relaxing, overlooking beach; 3-bed., 2-ba., sleeps 6-8, fully equip’d kitchen incl. micro, oven, refrig., washer/dryer, oil heater & heat, central heating, queen size beds. 2-night min., rates $115/nite/2, high season rate $130/nite/2, 1.5 ba., 2-story townhome–style, dishwasher, fridge, refrigerator, 2-car garage/ grounds; weekly or monthly. 909/981-7492, Darlene or Mike.

Real Estate

ED ELK 2 bd., $549,000. 944/277-6600 or 944/277-0379.

LA CRESCENTA rear duplex, 2 bd., 1 ba., on priv. rd., 18-hole golf course 6 mi. away, priv. dr., 2 bd., 2 ba., full kitchen, half-hour to Cape Canaveral, quiet, relaxing, overlooking beach; 3-bed., 2-ba., sleeps 6-8, fully equip’d kitchen incl. micro, oven, refrig., washer/dryer, oil heater & heat, central heating, queen size beds. 2-night min., rates $115/nite/2, high season rate $130/nite/2, 1.5 ba., 2-story townhome–style, dishwasher, fridge, refrigerator, 2-car garage/ grounds; weekly or monthly. 909/981-7492, Darlene or Mike.

Real Estate

ED ELK 2 bd., $549,000. 944/277-6600 or 944/277-0379.

LA CRESCENTA rear duplex, 2 bd., 1 ba., on priv. rd., 18-hole golf course 6 mi. away, priv. dr., 2 bd., 2 ba., full kitchen, half-hour to Cape Canaveral, quiet, relaxing, overlooking beach; 3-bed., 2-ba., sleeps 6-8, fully equip’d kitchen incl. micro, oven, refrig., washer/dryer, oil heater & heat, central heating, queen size beds. 2-night min., rates $115/nite/2, high season rate $130/nite/2, 1.5 ba., 2-story townhome–style, dishwasher, fridge, refrigerator, 2-car garage/ grounds; weekly or monthly. 909/981-7492, Darlene or Mike.