Details in a fan-shaped deposit discovered by Mars Global Surveyor provide evidence that some ancient rivers on Mars flowed for a long time, not just in brief, intense floods.

A JPL-MANAGED MISSION to study black holes is one of five selected recently by NASA as candidate mission proposals to study the universe. The proposals are candidates for missions in NASA's Explorer Program of lower cost, highly focused, rapid-development scientific spacecraft.

Following detailed mission concept studies, NASA intends to select two of the five mission proposals by fall 2004 for full development as Small Explorer missions. The two missions developed for flight will be launched in 2007 and 2008.

The Small Explorer mission proposals were received from JPL, the University of Hawaii, the University of California, Berkeley, and the University of California, Los Angeles.

Exploring missions chosen for study

The selected proposals were judged to have the best science value and are to be selected on May 31 by JPL's Mission Review Board, which is composed of representatives from NASA's Office of Space Science, Sierra Nevada Systems, the University of Hawaii at Manoa, and the University of California, Los Angeles.

The selected mission proposals are:

• The Interstellar Boundary Explorer: a pair of satellites to explore the interface between our solar system and interstellar space with 100 times the sensitivity of previous missions.
• The Normal-incidence Extreme Ultraviolet Spectrometer: a solar spectrometer to detect X-rays from the sun with 100 times the sensitivity of previous missions.
• The Dark Universe Observatory: seven X-ray telescopes to detect X-rays from the dark universe with 100 times the sensitivity of previous missions.
• The JPL-managed Nuclear Spectroscopic Telescope Array, a telescope to carry out gamma-ray observations of black holes in the universe with 100 times the sensitivity of previous missions.
• The Interstellar Boundary Explorer: a pair of satellites to explore the interface between our solar system and interstellar space with 100 times the sensitivity of previous missions.

The selected proposals will receive $250,000 ($125,000 for each satellite) to develop the mission concept and conduct the mission review. The selected missions will then receive $750,000 ($375,000 for each satellite) to develop the mission design and conduct the mission review. The selected missions will then receive $1 million ($500,000 for each satellite) to develop the mission design and conduct the mission review.

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Universe with awards

innovators

Thermal Emission Spectrometer

JPL's Microwave Limb Sounder and The Aura observatory, containing

astronomers determine when the galaxies across 10 billion years of NASA's suite of Great Observatories, and phenomena. SIRTF completed

studies the universe in infrared

honored in the Aviation and Space the future. The two missions are being could change the way we think about

Congressmen see home from above

Members of the House Science Committee paid a visit it to Southern California, touring Caltech and JPL facilities. Here, each visitor views his home district through the lens of JPL-managed Advanced Spaceborne Thermal Emission and Reflection Radiometer, an imaging instrument on the


JPL HELD A CEREMONY LAST MONTH TO HONOR INDIVIDUALS who contributed outstanding scientific and technical innovations that have been sponsored, adopted, supported or used in support of NASA's mission. JPL Director Dr. Charles Elachi recognized recipients of Board Action Space Act Awards. Awards are given to contributors whose innovations have been published in NASA Tech Briefs ($350 per author); for software that has been approved for release to qualified users ($1,000 for a sole author, $500 each for multiple authors); for NASA Patent Applications and Board Action Awards. NASA Space Act Award dollar amount awarded to JPL increased from $438,000 in 2002 to $601,450 in 2003. Overall, JPL has received more than 40% of the Space Act Awards.

JPL technologies have a new challenge in 2004. The goal of the Innovative Technology Asset Management Office is to exceed the monetary award received in 2003. "My travels to NASA centers I see so much technology, innovation and scientific achievements that are yet to be reported and recognized by Space Act Awards," noted Walter Hussey, Invention and Contributions Board staff director, during his JPL visit. It is never too late to file innovations to the New Technology Reporting System. As long as the innovations meet the criteria listed below, JPL technologies are encouraged to compete Preliminary Space Act Award applications.

JPL technology innovations are used or will be used in a mis-
sion or program that relates to NASA's space and aeronautical activities. New technology must be in the public domain through the NASA Web site at http://jpl.nasa.gov. A recommendation for a Software Award must have been received.

The Inventions and Contributions Board determines award amounts, which range from $500 to $100,000 based on the significance and value to NASA. Awards are given to contributors whose innovations have been published in NASA Tech Briefs ($350 per author); for software that has been approved for release to qualified users ($1,000 for a sole author, $500 each for multiple authors); for inventions that have been assigned to NASA ($1,000 for a sole inventor, $500 each for multiple inventors). The Invention and Contributions Board reviews applications for awards every other month. The next deadline for consideration is Dec. 10. If you meet the criteria and are interested in a preliminary questionnaire, call Rani Kamarga at ext. 3-7995 or visit http://jpl/nasapac/acts.htm.

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JPL Toastmasters Club—Meeting at 5 p.m. in the 187 conference room, Caltech Dodds Laboratory. For more information, call the JPL Toastmasters Club at ext. 209-3814.

Tuesday, December 12

TIAA/CREF Enrollment Meeting—This noon workshop in Trailer 202-237 is designed to assist employees newly eligible for the Caltech/JPL retirement plan with selection of investment op-
tions and completion of enrollment forms.
R&D Program:

How did the R&D program begin? What need was it addressing when it was formed?

PRINCE: The program was started in 2002 after the Caltech/NASA prime contract had been amended to allow a Research and Technology Development Program to be funded by JPL burden funds. Charles Elachi made the initial cut such a program a high priority when he became director in 2001. Up until 2002, JPL was not able to fund research tasks with burden funds. As a result, the only “internal” source of funds available for JPL for research and development was from the $3.5 million Director’s Research and Development Fund. Thus, internal investment in research and development prior to 2002 was miniscule, less than 0.3% of the Lab’s business base. This compares to external research and development programs at high-tech businesses and other national laboratories of 4 to 7%.

What are the goals and objectives of the program?

ANTONSSON: We recognize in today’s increasingly competitive funding environment that having some ability to direct funds locally to the Lab is important to be able to set priorities and agendas.

Each year we will set a number of strategic directions that lead to the areas where we’ll plan to make major investments in that year. Also, we’ll fund longer-range research activities—in the five- to seven- to 10-year horizon—but not to the total exclusion of shorter-range studies.

PRINCE: The program can be viewed as the “venture capital” fund for new and enhanced science and technology capability. Objectives include supporting research and development in key strategic areas such as mobility, remote sensing or solid Earth science; providing seed funding for innovative ideas with the potential for large future payoff; and establishing the scientific and technical foundation for future NASA missions.

How does the program tie to the JPL implementation plan and the NASA vision/mission?

PRINCE: The program responds directly to several of the “initiatives” under the heading in the JPL implementation plan titled “Promoting Scientific and Technical Excellence.” All proposals are evaluated by the NASA Management Office for their relevance to NASA’s vision/mission.

Quoting from our Implementation Plan, the relevant strategic focus areas, will discuss the initiatives with other management councils. Then an initiative team will define the area in more depth and solicit proposals that address key needs in that area. The strategic topic area tasks differ in that they are selected from ideas and concepts that percolate “bottom-up.” We are particularly interested in supporting innovative R&D that requires seed funding to get started, but can have a significant impact on the Lab’s work in the future.

ANTONSSON: One of the program’s guidelines is that our funds have to be dispersed as the result of a one-time call for proposals for strategic initiative and strategic topic areas. There is room in the program, however, for proposals other than those requested at the annual call. These are the spontaneous proposals, which are limited to a task duration of 90 days and $30,000 in funding. These are meant for small seed funding for new ideas that will benefit from a rapid application of funding.

PRINCE: The Lew Allen Awards are meant to recognize outstanding early scientific or technical achievement. Candidates are nominated by divisions and selected by committee.

Burden funds are a limited resource. Why is this R&D investment important?

PRINCE: Actually, a major goal of R&D is to make investments that lead to new missions and new funded avenues of research. In that sense, the R&D aims to break the “zero-sum game” by generating new opportunities for funding. The real question is: how much should we invest internally on R&D, and is our investment having maximum impact?

This year, we are investing in many areas critical to JPL. We will be making major investments in the Microdevices Laboratory, funding critical sub-millimeter detector developments as well as in situ instrumentation, and investing in aspects of autonomous planetary mobility. At the current funding level, we are still investing less than 0.3% of the business base in internal R&D, significantly less than other high-tech organizations.

ANTONSSON: It’s important to remember that this program represents an investment. We have to make some sacrifices today to produce something that will bear fruit down the line.

If you had to give advice to somebody proposing an idea to the R&D call next year, what would you say to him/her?

PRINCE: The program is highly competitive, and proposals need to be of the highest quality to be selected. Given the competition, it is important not only to propose a high-quality technical concept, but also to explain why it is important to fund the development of the concept and what the impact of the development would be for JPL and NASA. Also, we like to see proposals that link science and technology and that span traditional organizational structures within JPL.

ANTONSSON: Be bold. Challenge the limits of what you think is possible.

Bob Brown / JPL Photolab
The JPL Store will get the holidays off to an early start with a prize drawings during December. Drawings will be held the first three weeks of the month (Dec. 5, 12, and 19). Those who purchase $25 or more (excluding film, photo processing, Entertainment books, tickets and gift certificates) will be entered for the drawing drawing date during which they purchased. For entries received during the week of Dec. 1, first prize is a Catalina island weekend; second prize is a $25 certificate for the JPL Store; and third prize is a $50 gift certificate for the JPL Store. Entries during the week of Dec. 8 will be eligible to win a Mexican cruise. $50 Target gift certificate and a $25 certificate for the JPL Store. For entries submitted during the week of Dec. 15, first prize is a Vegas weekend; second prize is a $50 Walmart gift certificate and third prize is a $25 certificate for the JPL Store. In addition, all entries received between Dec. 1 and 19 will be entered into a drawing for a prize package. The drawings will be for JPL-badged employees and affiliates only. Drawings will not be open to the public. Customer entries are not limited.

Next University delayed

Due to the Thanksgiving holiday, the next University will be delayed to Friday, Dec. 12. This will also make the third prize a $25 certificate for the JPL Store.

JPL Store offers new holiday drawings

Classified ads will be available the day before University is published at: http://dailyplanet/jpl

View this and previous issues of Universe at http://universe.jpl.nasa.gov

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