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## Rover finds water-clue mineral

By Guy Webster

Scientists have identified a water-signature mineral called goethite in bedrock that the Mars rover Spirit examined in the “Columbia Hills,” one of the mission’s surest indicators yet for a wet history on Spirit’s side of Mars.

“Goethite, like the jarosite that Opportunity found on the other side of Mars, is strong evidence for water activity,” said Dr. Goestar Klingelhoef of the University of Mainz, Germany, lead scientist for the iron-mineral analyzer on each rover, the Moessbauer spectrometer. Goethite forms only in the presence of water, whether in liquid, ice or gaseous form. Hematite, a mineral that had previously been identified in Columbia Hills bedrock, usually, but not always, forms in the presence of water.

The rovers’ main purpose is to look for geological evidence of whether their landing regions were ever wet and possibly hospitable to life. The successful results so far—with extended missions still underway—advance a NASA goal of continuing Mars exploration by robots and, eventually, by humans, said Doug McCuistion, Mars Exploration Program Director at NASA Headquarters.

Klingelhoef presented the new results from a rock in the “West Spur” of Mars’ “Husband Hill” at a meeting of the American Geophysical Union in San Francisco last week.

Spirit has now driven past the West Spur to ascend Husband Hill itself. One remaining question is whether water was only underground or ever pooled above the surface, as it did at Opportunity’s site. “As we climb Husband Hill and characterize the rock record, we’ll be looking for additional evidence that the materials were modified by ground water and searching for textural, mineralogical and chemical evidence that the rocks were formed in or modified by surface water,” said Dr. Ray Arvidson of Washington University in St. Louis, deputy principal investigator for the rover instruments.

The amount of worrisome friction in Spirit’s right front wheel has been decreasing. Meanwhile, rover wranglers at JPL continue to minimize use of that wheel by often letting it drag while the other five wheels drive. “Babying that wheel seems to be helping,” said rover Project Manager Jim Erickson. Both rovers continue working in good health about eight months after their primary three-month missions. “Looks as though Spirit and Opportunity will still be with us when we celebrate the landing anniversaries in January,” Erickson said.



Opportunity’s camera targeted the boundary between these two sections of layered rock. The layers in lower section (left) run at a marked angle to the layers in next higher section (right).

## Deep Impact prepares for January launch

By DC Agle

Launch and flight teams are in final preparations for the planned Jan. 12, 2005, liftoff from Cape Canaveral Air Force Station, Fla., of the JPL-managed Deep Impact spacecraft. The mission is designed for a six-month, one-way, 431 million–kilometer (268 million–mile) voyage. Deep Impact will deploy a probe that essentially will be “run over” by the nucleus of comet Tempel 1 at approximately 37,000 kilometers per hour (23,000 mph).

“From central Florida to the surface of a comet in six months is almost instant gratification from a deep space mission viewpoint,” said Rick Grammier, Deep Impact project manager at JPL. “It is going to be an exciting mission, and we can all witness its culmination together as Deep Impact provides the planet with its first man-made celestial fireworks on our nation’s birthday, July 4th.”

The fireworks will be courtesy of a 1-by-1 meter (39-by-39 inch) copper-fortified probe. It is designed to obliterate itself as it excavates a crater possibly large enough to swallow the Roman Coliseum.

Before, during and after the demise of this 372-kilogram (820-pound) impactor, a nearby spacecraft will be watching the 6-kilometer-wide (3.7-mile) comet nucleus, collecting pictures and data of the event.

“We will be capturing the whole thing on the most powerful camera to fly in deep space,” said University of Maryland astronomy professor Dr. Michael

## Lab remembers colleagues

By Mark Whalen

It has often been said that JPL is a family, and never were those words more in evidence than on Dec. 14, as Laboratory staff gathered to pay their respects to three coworkers.

Kerri Agey, Dorothy Forks and Jane Galloway perished in a vanpool accident on their way to JPL on the morning of Dec. 8 that also injured seven people, but their memories will live on.

Joining a packed crowd in von Kármán Auditorium were Agey’s husband, Don, along with her mother, an aunt and a cousin; Forks’ daughter and son; and Galloway’s fiancée, her four sisters and seven other members of her extended family.

Pastor Kurt Fuller, whose father, Eric, is JPL’s emergency preparedness coordinator and was one of the JPL Security team members to respond to the accident scene, offered some words of comfort.

“I know that many here feel the loss of a family member, not just a coworker,” he said. “How will the void ever be filled? The more we talk about them, the more they live on. As we talk about our memories, not only does it help us in our healing process but it also helps others through their healing process.”

JPL Director Dr. Charles Elachi told family members in attendance, “I want you to know how proud we are to have had them as members of our team. JPL is a very special place that attracts special people to it. The memories of our lost colleagues will live with us forever.”

Agey, an administrative assistant with Security contractor Wackenhut Services Inc., was remembered by her supervisor, Cal Worthington, as a dedicated worker and a person who was close to her family, particularly her husband, a protective services officer with Wackenhut at JPL, and her mother. She was pursuing a degree in nursing.

Richard Hann, manager of the Human Resources Information Systems Section and Forks’ supervisor, remembered her as “a good person in so many different ways.” Forks was for the past five years a member of the HRIS administrative team, processing new hires into Oracle and keeping employee records accurate. Hann praised her for her gentle, sweet and kind nature and for helping job applicants feel at ease.

Galloway joined JPL in March 2003 after almost 25 years at Lockheed Martin in Palmdale. She was the business manager for the Dawn project, having supported the CloudSat project before that. Her supervisor, Kevin Rice, noted the pride and excitement she felt when the rovers landed on Mars earlier this year. Rice remembered her as “a balance between a very determined, forceful spirit on the one hand and a compassionate one on the other.

“Our professional lives don’t always overlap with our private lives. It’s easy to believe that maybe some of our closest friends are from outside the workplace,” Rice added. “But I believe at times like these we need to pause and reflect that most of the time the best friends we ever have in life are those who work next to us every day.”

The loss was felt throughout the extended NASA family and elsewhere, as JPL received words of condolence from throughout the agency and from many outside organizations. Flags flew at half-staff at NASA centers and JPL observed a moment of silence the day after the accident.



Kerri Agey



Dorothy Forks



Jane Galloway

A’Hearn, Deep Impact’s principal investigator. “We know so little about the structure of cometary nuclei that we need exceptional equipment to ensure that we capture the event, whatever the details of the impact turn out to be.”

Imagery and other data from the Deep Impact cameras will be sent back to Earth through the antennas of the Deep Space Network. But they will not be the only eyes on the prize. NASA’s Chandra, Hubble and Spitzer space telescopes will be observing from near-Earth space. Hundreds of miles below, professional and amateur astronomers on Earth will also be able to observe the material flying from the comet’s newly formed crater.

Deep Impact will provide a glimpse beneath the surface of a comet, where material and debris from the solar system’s formation remain relatively unchanged. Mission scientists are confident the project will answer basic questions about the formation of the solar system, by offering a better look at the nature and composition of the celestial travelers we call comets.

“Understanding conditions that lead to the formation of planets is a goal of NASA’s mission of exploration,” said Andy Dantzler, acting director of the Solar System Division at NASA Headquarters. “Deep Impact is a bold, innovative and exciting mission which will attempt something never done before to try to uncover clues about our own origins.”



News Briefs



Sean O'Keefe

O'Keefe resigns

NASA Administrator SEAN O'KEEFE, who over the past three years led NASA through an aggressive and comprehensive management transformation and helped the agency through one of its most painful tragedies, resigned Monday, Dec. 13.

"I've been honored to serve this President, the American people and my talented colleagues here at NASA," O'Keefe said. "Together, we've enjoyed unprecedented success and seen each other through arduous circumstances. This was the most difficult decision I've ever made, but it's one I felt was best for my family and our future."

O'Keefe, 48, has served as NASA's administrator since Dec. 21, 2001. After joining the agency, O'Keefe focused his efforts on successfully bringing financial credibility to the agency and eliminating a \$5 billion budget shortfall for the International Space Station program. He introduced a number of innovative management and budget reforms. He led all federal agencies in the implementation of the President's Management Agenda, which is designed to make government more responsive and efficient. In three of the original five categories on the Agenda, NASA's performance is at the highest standard.

Following the loss of Space Shuttle Columbia in February 2003, O'Keefe focused the nation's attention on the future of America's space program. He directed significant changes in the space shuttle's safety and management programs, and was a key architect of the president's new Vision for Space Exploration, announced in January.

"The extraordinary opportunities you have permitted me to assume these last four years have been experiences of a lifetime," O'Keefe wrote in his resignation letter. "In the most challenging moments during my service I have drawn considerable strength, resolve and determination to do what's right by the standards you set every day."

2009 rover proposals selected

NASA has selected eight proposals to provide instrumentation and associated science investigations for the mobile Mars Science Laboratory rover, scheduled for launch in 2009.

The JPL-managed MSL mission will deliver a mobile laboratory to the surface of Mars to explore a local region as a potential habitat for past or present life. MSL will operate under its own power. It is expected to remain active for one Mars year, equal to two Earth years, after landing.

In addition to the instrumentation selected, MSL will carry a pulsed neutron source and detector for measuring hydrogen (including water), provided by the Russian Federal Space Agency. The project also will include a meteorological package and an ultraviolet sensor provided by the Spanish Ministry of Education and Science.

The selected proposals will conduct preliminary design studies to focus on how the instruments can be accommo-

dated on the mobile platform, completed and delivered consistent with the mission schedule.

Selected investigations and principal investigators:

- "Mars Science Laboratory Mast Camera," MICHAEL MALIN, Malin Space Science Systems, San Diego.
- "ChemCam: Laser Induced Remote Sensing for Chemistry and Micro-Imaging," ROGER WIENS, Los Alamos National Laboratory.
- "MAHLI: Mars HandLens Imager for the Mars Science Laboratory," KENNETH EDGETT, Malin Space Science Systems.
- "The Alpha-Particle-X-ray-Spectrometer for Mars Science Laboratory," RALF GELLERT, Max-Planck-Institute for Chemistry, Mainz, Germany.
- "CheMin: An X-ray Diffraction/X-ray Fluorescence instrument for definitive mineralogical analysis in the Analytical Laboratory of MSL," DAVID BLAKE, NASA's Ames Research Center.
- "Radiation Assessment Detector," DONALD HASSLER, Southwest Research Institute, Boulder, Colo.
- "Mars Descent Imager," Malin.
- "Sample Analysis at Mars with an integrated suite consisting of a gas chromatograph mass spectrometer and a tunable laser spectrometer," PAUL MAHAFFY, NASA's Goddard Space Flight Center.

JPL Rules! Team receives honor

The JPL Rules! Team has been selected to present at NASA's prestigious annual "Continual Improvement and Reinvention Conference" in March 2005, where they will receive the "Continual Improvement" team award.

Every year each NASA center submits one or more candidate teams to compete for this award. JPL's entry this year featured LORA MITCHELL, the JPL Rules! group supervisor, in a video presentation. Mitchell illustrated how the Rules! team orchestrated a total redesign of the system, with a customer-first focus, to achieve their goal of "getting the right information to the right person at the right time." She credits the concept of putting "process before technology" as key to improving both the Rules! system and their customer satisfaction.

Previously, up to five semi-finalists were selected to present at the conference. This year, JPL Rules! was selected as the only nominee to present at next year's conference. The conference will be attended by top management from NASA Headquarters, each center and NASA's subcontractor base.

Tax-deferred account review

The annual online enrollment period for tax-deferred accounts is now underway through Dec. 20.

Now is the time to review, change—or if you're a first-time enrollee—set up your 2005 voluntary retirement account. Please visit the JPL Annual TDA online enrollment website located on your NBS Employee Toolkit to view your new 2005 maximum and change or enroll in the TDA program.

Special Events Calendar

Ongoing Support Groups

Alcoholics Anonymous—Meets Wednesdays at 11:30 a.m.

Caregivers Support Group—Meets the first Thursday of the month at noon in Building 167-111 (the Wellness Place).

Codependents Anonymous—Meets at noon every Wednesday.

Lambda (Gay, Lesbian, Bisexual and Transgender Networking Group)—Meeting at noon on Friday, Jan. 7, in Building 79-16; and at noon on Friday, Jan. 21 in Building 111-117. Note: The group will return to its normal schedule in February, when it meets the first Friday and third Thursday of the month at noon in Building 111-117. For more information, call Randy Herrera, ext. 3-0664.

Parents Group for Children With Special Needs—Meets the second Thursday of the month at noon in Building 167-111 (the Wellness Place).

For more information on any of the support groups, call the Employee Assistance Program at ext. 4-3680.

Friday, December 17

Investment Advice—Fidelity will offer one-on-one counseling in Building 249-114. For an appointment, call (800) 642-7131.

Wednesday, December 22

JPL Library Orientation—Stop by at 11:30 a.m. at Building 111-104 for an overview of the Library's products and services, and learn how to access numerous electronic resources from your desktop. For more information, call the reference desk, ext. 4-4200.

JPL Toastmasters Club—Meeting at 5 p.m. in conference room 167. For information, call Dirk Runge, ext. 3-0465, or visit [www.jplcaltechtostmasters.com](http://www.jplcaltechtostmasters.com).

Wednesday, December 29

JPL Library Orientation—Stop by at 11:30 a.m. at Building 111-104 for an overview of the Library's products and services, and learn how to access numerous electronic resources from your desktop. For more information, call the reference desk, ext.4-4200.

Volunteer Professionals for Medical Advancement—Meeting at 10:30 a.m. at the Caltech Credit Union, 528 Foothill Blvd., La Cañada.

Thursday, December 30

Clogging Class—Meets at noon in Building 300-217. For more information, call Shary DeVore at ext. 4-1024.

JPL Golf Club—Meeting at noon in Building 306-302.

Tuesday, January 4

JPL Gamers Club—Meeting at noon in Building 301-227.

JPL Genealogy Club—Meeting at noon in Building 301-271.

"Welcome to Mars"—The NOVA series' second program on the Mars Exploration Rover mission, "Welcome to Mars," will air on Public Broadcasting System stations at 8 p.m., followed by a rerun of "Mars: Dead or Alive" at 9 p.m.

Wednesday, January 5

Associated Retirees of JPL/Caltech—Meeting at 10 a.m. at La Cañada United Methodist Church, 104 Berkshire Place, La Cañada.

JPL Library Orientation—Stop by at 11:30 a.m. at Building 111-104 for an overview of the Library's products and services, and learn how to access numerous electronic resources from your desktop. For more information, call the reference desk, ext.4-4200.

Thursday, January 6

JPL Gun Club—Meeting at noon in Building 183-328.

Tuesday, January 11

JPL Stamp Club—Meeting at noon in Building 183-328.

Wednesday, January 12

JPL Amateur Radio Club—Meeting at noon in Building 238-543.

JPL Library Orientation—Stop by at 11:30 a.m. at Building 111-104 for an overview of the Library's products and services, and learn how to access numerous electronic resources from your desktop. For more information, call the reference desk, ext.4-4200.

JPL Toastmasters Club—Meeting at 5 p.m. in conference room 167. For information, call Dirk Runge, ext. 3-0465, or visit [www.jplcaltechtostmasters.com](http://www.jplcaltechtostmasters.com).

Friday, January 14

Caltech German Language Film Series—The 1984 Austrian film "The Inheritors" will be shown in German with English subtitles in Baxter Lecture Hall at 7:30 p.m. Free admission and reception after the movie in Baxter Lounge. For more information, e-mail [aebi@hss.caltech.edu](mailto:aebi@hss.caltech.edu).

Thu.-Fri., January 20-21

Von Kármán Lecture Series—JPL Principal Scientist Ichiro Fukumori will present "Oceans: Today's View From Space With Supercomputers" at 7 p.m. Thursday in von Kármán Auditorium and Friday in Pasadena City College's Vosloh Forum, 1570 E. Colorado Blvd.

Supercomputing facility is expanded

Chief Information Officer Tom Renfrow, left, and JPL Director Dr. Charles Elachi dedicate the new facility.



Dutch Slager / JPL Photolab

On Dec. 6, JPL Director Dr. Charles Elachi and Chief Information Officer Tom Renfrow participated in a ribbon-cutting event to dedicate the new Dell Xeon cluster in the JPL Supercomputing and Visualization Facility (SVF) in Building 126. Now that installation of the 1024 3.2-GHz processor cluster

has been completed, the SVF team provides JPL engineers and scientists and their external partners with a significantly more powerful suite of resources for computationally-intensive tasks.

Customers of the facility have included Genesis, the Mars Exploration Rover missions, Deep Space One, ocean and climate modeling research projects and researchers modeling the heliosphere for the Voyager missions. The results of their work are described in 80-plus user success stories that are available at the facility's website at <http://sc.jpl.nasa.gov>.

In addition to the new Dell Xeon cluster, which is a distributed-memory system with a high-speed Myrinet interconnect and a 6.55 TFLOPS peak speed, the facility also has a mix of other distributed-memory, shared-memory and parallel vector systems. Computing time on the facility's systems, and the consulting services to help users in porting their codes to the different platforms, are available without cost to the user's organization. Each supercomputer system includes a rich software-development environment, and the facility is enhanced by the visualization capabilities of a 7.9-megapixel powerwall.

The Supercomputing and Visualization Facility is funded through the Institutional Computing and Information Services Program Office, operated by Division 37 personnel. Early in 2005, the SVF team will hold an open house so that everyone can have a first-hand look at this high-performance, state-of-the-art computing environment.



# HOW IS JPL DOING? EMPLOYEE SURVEY WILL SEEK ANSWERS

In mid-to-late January, JPL employees will be asked to complete a new Labwide survey that will assess working conditions and quality of life issues at the Lab. It will be the first such survey in almost 10 years. JPL Deputy Director Lt. Gen. Eugene Tattini discusses the details of the survey and its importance to the Lab's future.

**Q. Why is JPL conducting a Labwide employee survey?**

A. We want to do a survey for three reasons. First, we want to know what is on people's minds and what is important to them.

Second, we want to make sure that people feel free to communicate both upwards and downwards. This has always been a valued part of the JPL culture, but it's always good to confirm that this trait is alive and well at the Lab.

Third, we're looking for ideas on how we can reasonably improve the quality of life around the Lab. For instance, we've received a great deal of positive feedback about the patio furniture on the mall and elsewhere around the Lab. Sometimes it's the little things that can really make a difference.

**Q. How will the survey be delivered to employees? How long will it take to complete?**

A. JPL employees will be given a web address to go to where they can fill out the survey at their convenience from their own desktop. The website will be available for two to three weeks so we can achieve maximum participation. The only exception will be contractors, who are not being asked to participate. That's not because we don't care about what they think—they can e-mail me any time—but because we have developed the survey based upon actual employment by JPL/Caltech.

The survey will take about 20 minutes to complete. We want as close to 100 percent participation as we can get. The recent election told us that every vote counts, and in our case every survey response counts. We want to make it as statistically valid as we possibly can because we intend to take the results of the survey seriously.

**Q. What kind of questions will be in the survey? How will the questions be posed?**

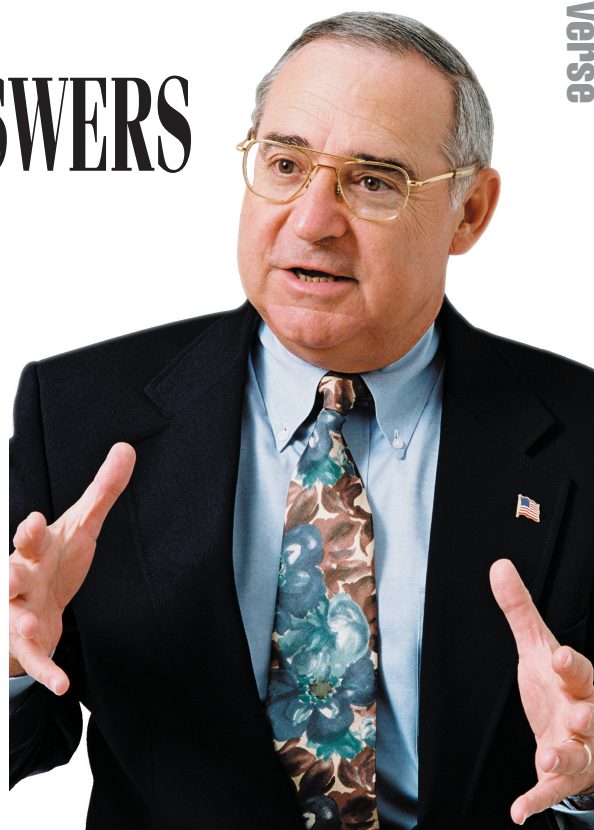
A. There are nine categories of questions: Management Effectiveness, Career Development and Training, Work Environment, Quality and Customer Focus, Job Performance and Review, Labwide Communications, Diversity, Safety and Environment, and Employee Benefits. There will be about 50 questions in all.

The survey is designed to have you give a specific rating in some areas, while other questions will ask you to give a rank order; others are free form and will ask for written responses.

**Q. Will the survey be anonymous or will I have to identify myself in order to fill it out? Further, will JPL be able to track my answers back to my computer?**

A. You will be able to answer the questions with anonymity and there will be no tracking of responses to try and identify an individual respondent. The survey will ask questions regarding some demographics, such as gender, age, ethnicity, length of service at JPL, your job classification and your organization. Those in the Engineering and Science Directorate will need to identify their division, while the rest of the employees need to identify their organization at the directorate level. These answers will help us understand some responses in terms of trends and areas of feedback that we may need to pay more attention to than others.

When completed, the surveys are submitted directly to our external consulting firm, Watson Wyatt, where they will be aggregated to protect individual confidentiality. No one at JPL will see the surveys until the results are analyzed by Watson Wyatt.



Bob Brown / JPL Photolab

**Q: How were the survey questions created?**

A. A JPL working group consisting of Human Resources, Ethics, Ombuds, Office of Communications and Education and others, in consultation with Watson Wyatt, created the survey questions.

**Q. What will JPL do with the responses to the employee survey?**

A. As I mentioned, we are very interested in what employees think and how they perceive JPL. We will look very closely at the specific suggestions as well as look for trends on issues where we can take positive action.

We will make the survey results available Labwide, while protecting people's privacy. Next, if we see areas where we can move resources around to make improvements or change policies, we will do that.

In return for giving us 20 minutes, we are pledging to look at every concern. We can't promise we will be able to solve every issue, but we can promise they will all be examined. As you know, the Director of the Laboratory meets with every organization at least once every year. The concerns he hears are noted, he brings them back to the senior management and they're addressed. This is an additional way of carrying on that tradition.

## ONE NASA WORKSHOP HELD ON LAB



Bob Brown / JPL Photolab

From left: Dr. Charles Elachi, Jim Jennings, Dr. Robert Parker, Craig Steidle.

*JPLers packed von Kármán Auditorium on Dec. 6 for a One NASA Leader-Led Workshop. JPL Director Dr. Charles Elachi hosted the event and welcomed participants Craig Steidle, NASA associate administrator, Exploration Systems; Jim Jennings, NASA associate administrator, Institutions and Management; and Dr. Robert Parker, head of the NASA Management Office at JPL.*

The presentation addressed NASA's transformation and the important role that JPL plays in supporting the Vision for Space Exploration.

Jennings reported on the NASA Transformational Effort; Parker addressed the NASA Science Mission Directorate; and Steidle gave an Explorations Systems update.

To view the presentation slides from the workshop, go to <http://managementsystem/presentations.html>. An archived webcast from the event will be available soon at this site.

If you attended the workshop and did not get your badge scanned, or if you watched this event via the webcast, you can still receive two hours of training credit. Go to the Learning Management System at <http://lms/index.html>.

After you enter your badge number to log in, a Greetings page will be displayed. Scroll to the bottom of the page and click on the "Add Learning Activity" button. The "Learning Activity Search" page will come up. Enter "One NASA Workshop, Dec. 6, 2004" in the "Learning Activity" window, then submit. Click on "One NASA Workshop, Dec. 6, 2004" link on the next screen and then click on the "Accept" button to complete.

If you have any questions about entering learning activities into the LMS, please contact Sandy Dennis in Professional Development at ext. 4-3751.



## Letters

Thanks to all my friends and co-workers who have made the last 20 years at JPL so rewarding for me. As I leave JPL, I will have fond memories of the time I worked at JPL as both a contractor and a JPL employee. Keep in touch.  
Pat Rollins

I really appreciated the kindness and thoughtfulness extended to me and my family in the recent passing of my sister, Portia Gordon-Larsuel. Also, thanks to JPL-ERC for the beautiful plant. Sincerely,  
Camille Hayes and family

A heartfelt thanks from my family to all of my colleagues at JPL for their kindness, support and sympathy during my father's illness and passing. We also thank JPL for the beautiful plant. Sincerely,

Jim Okuno

I would like to thank my JPL family for the cards and plants sent to my home in sympathy of the recent passing of my father. Your expressions of sympathy and support made a difficult time easier for me. Thank you very much.  
Tenny Lim

## Retirees

*The following JPL employees retired in December:*

Frank Leppia, 43 years, Section 3680 (retired from long-term disability status); Robert Ferber, 28 years, Section 3850; Theresa Rafter, 24 years, Section 3210.

## Classifieds

### For Sale

AIR CONDITIONER, thru-wall unit, 208V-20 amp, 16,000 BTU, very clean, must give away for \$25. 626/345-9133, Mike.

BARBIE DOLL, 1995 Hallmark Happy Holiday Special Edition, featuring emerald green satin gown with Victorian collar, never removed from box, \$15. 626/398-0921.

BARSTOOLS (2), mesquite wood & brown leather, exc. cond., \$200. 626/864-6495.

BASEBALL PITCHING MACHINE, Zooka 720, pitches "real" baseballs up to 50 mph, self-contained w/wall charger, 18" & 43" tripods, has about 100 pitches through it, will pitch 500 balls between recharge, great for Little League, \$300/obo. 760/244-3009, Dan.

BED, antique, brass and iron, exc. cond., made by Indiana Iron Foundry around 1885, recently repainted and repolished, headboard 58" H x 54" W, footboard 40" H, 73" L, would be terrific for a child, \$695/obo. 352-4033, after 5 p.m.

BEDROOM SET, 7 pc., bed, dresser w/mirror & 2 bedside tables, vg cond., dark wood, 4-poster, \$300. 626/287-7600, eves.

CAMERA PHONE, PDA/GSM (phone only), exc. cond., used, PalmOne Treo 600, Covertec black leather pouch included, Ringo s/w, 13 games, \$300. 207-0110.

CHAIRS, set of 4, mission-style, for dining room, orig. leather with gold embossed pattern, orig. upholstery, nails and fringe, a special set that needs some TLC, photos avail., \$275. 805/676-1710, please lv. msg.

CLOTHES: (infant) red/navy blue zip-up jacket w/hood (Old Navy), size 2T, exc. cond., \$5/obo; sweater, sky blue w/navy trim buttons, size 3T, \$1/obo; zipper shoes (Spongebob motif), size 11M, exc. cond., \$5/obo; photos available. 626/791-6101.

DINING ROOM SET, antique mahogany finish, traditional style table with 2 leaves, 4 side & 2 arm chairs, \$900. 626/345-9133, Mike.

DRUM SET, new, professional DW tangerine orange kit, all new hardware & new Zildjian cymbals, has been used for teaching only, call for sizes and more info, list price would be over \$6,000, sell \$3,200. 626/296-3441.

DRUM SET, 5 pc., Sound Percussion: bass drum with pedal, 3 tom toms and snare, Saban cymbals, hi-hat with stand/pedal, 22" & 16" crash/ride cymbals with stands and extra 14," extra drumsticks and practice mufflers for all drums and hi-hat, exc. cond., paid \$700, sell \$350. 438-5619, Kathy.

DRYER, Sears Kenmore, electric, model 90 series, white, only briefly used before moving to a home requiring a gas dryer, still has plastic protector covering control panel, \$100/obo. 626/407-5201, John Battle, NE Pasadena.

EARTHENWARE dishes, Franciscan, autumn pattern on eggshell background, 6 place settings, total of 48 pieces: includes platter, divided bowl, gravy boat, salt/pepper, all like new, \$110. 626/641-2274, Marti.

FURNITURE: complete 3-piece set includes armoire; headboard component containing mirror, shelf, drawers & 2 attached side dressers, dresser with mirror; white-wash finish; \$250; rocking/nursing chair and ottoman, new, solid wood, natural finish, elegant tapestry patterned cushion, \$125; reclining chair, office/tv, lg., brown, \$45; crib and toddler bed, like new, solid-wood, natural finish, w/mattress, \$150 and \$75. 626/794-1432.

FURNITURE: young girl's dresser, desk & attached bookshelf, great cond., \$200. 626/284-0274.

FURNITURE: butcher's chopping block, solid

end-grain maple, 24" x 24" x 10", stands 34" H on 4 legs, \$250; drafting table, Pickett Plan Hold "Designer," 48 1/2" x 36", \$75; plan hold rack, stores plans, charts, maps, with roll-around wheels and 10 clip bars, gd. cond., \$100; floor lamp, 3-arm sofa arch, brass finish, \$50. 957-8346.

FURNITURE: 2-piece Bassett sectional (1 section is a sleeper), floral print, cushions need new covers, rest in VG cond., photo & dimensions avail., \$250/obo. 626/791-6101.

ICEBOX, antique, oak, exc. cond., made around 1915, 44" H x 32" W x 18" D, \$395. 352-4033, after 5 p.m.

JEWELRY: Ladies used ESQ Contessa Gold Tone watch \$50; ladies new Coach Metropolitan brown leather strap watch, \$50; ladies new Coach classic stainless steel watch, \$50; 14K tri-color gold diamond-cut bracelet, \$150; 14K two-sided, 18" diamond-cut necklace, \$200; estate oval garnet tennis bracelet in 14K yellow gold, \$60. 653-9037.

LIGHT FIXTURE, swag, new, dome shape, pale terra cotta color, cut-out mtn along bottom, 18" dia., 10" H x 60" W max., 25' white wiring/chains, on/off/dimmer, cost \$200, sell \$10. 909/593-4046, vividavies@earthlink.net.

MISC.: carpet, nearly new, light mauve, high quality, 2 pieces, 16 x 17, \$125 & 12 x 11, \$80; gas clothes dryer, apartment size, white, \$70; antique pedestal sink, off-white, \$70. 626/794-1432.

MISC.: pool table, 8', \$500; mailbox, oversized, green, \$10; mailbox, new, black, \$10; red wig, shoulder length, never used, \$20; electric frying pan, \$10; answering machine, \$5; portable basketball set, needs net, \$200; fishing pole, saltwater, \$25; baseball glove & conditioner, small, gd. cond., \$15. 626/357-8210.

MISC.: exc. cond.: Duracraft HEPA air purifier with extra filters, \$50; Little Tykes girl's toy chest, \$30; girl's vanity and seat, \$10; inexpensive new and used girl's clothing (sizes 3 to 6), shoes and toys. 249-6248.

MISC.: Homedics 10 motor back massager w/wheat, \$20; Maverick Stoneware indoor electric grill, \$8; Toastmaster chopster, \$5; Rival crock pot w/removable stoneware pot, \$8; all above new/like new; 24" x 60" solid pine desk w/7 drawers, need refinishing, \$20; lg. solid oak dining table, 42" x 60" extendable to 96" w/matching china cabinet & 3 chairs, all for \$250. 653-3286.

MISC.: exc. cond.: hardly used crib with mattress, \$375; playpen/yard, \$75; walker, \$40; swing, \$75; bounce, \$15; car seat, \$15; stroller w/car seat (some wear/tear on stroller handle), \$50; Ikea Onkel shelves, 2 birch, 1 black, \$35 ea.; Ikea pine dining rm. Table, \$50; 4 beechwood chairs, \$20 ea.; CD rack, \$10; Little Tikes kitchen, \$45. 626/975-6953.

MISC.: PC, 1 GHz Pentium III, 28 GB HD, 264 MB RAM, 4XCDRW, video card & converter, Win2K & MS Office 2K Pro, \$150/obo; photo-printer, Canon 830, 2400 x 1200 dpi, 6 color, \$100/obo; camera, Zoomaps, Yashica profile 4000 ix, \$40/obo; cordless phones (3), 2.4 GHz, digital answering, hardly used, \$50/obo; walkie-talkie (Cobra Microtalk, 2-way radio, 2 units, 5-mile range, \$40/obo. 726-7701.

MISC.: Xmas tree, Greatland 6+ft. McIntyre pine, like real, \$25/obo; espresso maker, Krups Novo compact, m#989, \$25/obo; mixer, Sunbeam deluxe, 12 speed, w/turntable, beaters & bowls, \$50/obo; beanbag chair, Denim exterior, \$25/obo; ottoman/foot massager, \$75/obo; everything \$450. 726-7701.

MOVING SALE: queen bed & mattress, \$140; bedside table, \$20; chest of 3 drawers, \$60; chest box, \$40; bookcase, \$40; TV stand, \$40; futon/sofa, queen size, and mattress (very comfortable), \$100; armchair, \$50; 3 coffee tables (large, med., small), \$40/\$30/\$20; CD rack, \$20; + accessories (lamps, appliances, vacuum cleaner, etc.). 626/441-6734 or 626/318-6206, Luca.

NECKLACE, new ladies Paloma Picasso Daisy pendant, platinum, round brilliant diamonds from Tiffany's, .15 carat total, G color, VS clarity, on 16" chain, paid \$1,395, sell for \$900. 653-9037.

PATIO FURNITURE: 60" rectangular glass table w/olive green aluminum frame, 6 matching high-back chairs with straps, matching 2-person love seat bench, \$200. 701-6882, Paul.

PIANO, Yamaha upright console with bench, black satin finish, purchased in 1973, exc. cond., \$2,500. 626/449-8392.

PIANO, beautiful console, like new, just tuned, lovely tone, near JPL, paid over \$2,000, sell for \$850, firm. 952-6221, Mon.-Thur.

PRINTER/SCANNER/COPIER, Epson, all-in-one, ink-jet, color, model CX5200, only 1 yr. old, separate ink cartridges for lower cost replacement, perfect cond., \$60. 626/798-2925.

SLIDE & CLIMBER, Step 2 Townhouse, gd. cond., was \$160, now \$90. 626/850-4378.

STEREO SPEAKERS, KLH, 2-way, acoustic suspension, AS1746211, in walnut cases, 23" x 12" x 8 1/2", \$50. 957-8346.

TELEVISION, HD-ready, Panasonic, 32," PureFlat 4:3 screen, dual tuner, progressive scan line doubler, (makes standard 480i look like 480p), < 4 yrs. old, vg cond., minor cosmetic blemishes, model # CT-32HX40, great TV, but we upgraded to plasma, orig. \$1,500, compare to current models for \$1,000, we can deliver locally, \$500/obo. 626/844-9286, Dave.

TEACHER DESK, oak, 60" x 34", 6 drawers (including file drawer) of colors and sizes; shell fingers. 626/444-6156, Annie & Bob DePonte.

WASHER/DRYER stacked combo, Kenmore, perfect for apt. or home with limited space, used (3 years old), gas hookup, vg cond., well taken care of, moving to a new location and no longer need this unit, \$750/obo. Elizabeth at eah@caltech.edu or 626/644-7729.

### Vehicles / Accessories

'87 CADILLAC DeVille sedan, beige, leather interior, garaged, well maintained, exc. cond., \$3,000/obo. 626/337-3944.

'98 CHEVROLET Astro minivan, 8 passenger, 32K mi, exc. cond., garaged, \$12,000/obo. 323/725-2516.

'97 CHEVY Tahoe, gd cond., loaded, 4-wheel drive, 105K mi, \$8,750. 310/327-1080, Marji. '00 HONDA Civic LX, immaculate cond., auto, a/c, power steering/windows/door lock, tilt, cruise, am/fm stereo/cassette, dual front airbags, 67K mi., all service records, 1 owner, vintage plum pearl color (dark maroon-brown), beige interior, see photos at ERC or call and I will e-mail, \$9,950/obo. 903-8979.

'00 HONDA Civic EX, white, exc. cond., 82K mi., clean title, one owner, power sunroof/steering/brakes/door locks/windows, CD, air, tilt steering, cruise control, driver side airbag, VIN# 1HGEJ8240YL131216, \$8,500/obo. pallu-coni@hotmail.com or 626/429-9892, Kelly.

'97 HONDA Accord EX, 2 dr., black, 112K mi., well maintained, one owner, no accidents, 30 mpg, new tires, new tags, auto, air, sunroof, CD changer, \$6,200. 554-3550, Cory.

'81 HONDA Civic wagon, 4 door, automatic, good condition, great transportation, \$900. 626/791-0486, Dave.

'00 JAGUAR XJ8 L, largest full-size sedan Jaguar makes, beautiful aspen green, 65K mi., but only 1,000 mi. on dealer-replaced factory engine, runs absolutely perfect, a dream to drive, exc. cond., retail blue book \$26,500; why own an average car for the same price? \$19,900 firm. 626/799-4381, Scott.

'91 JAGUAR XJ6 Vanden Plas, 44K mi, brand new luxury car, garaged, all power accessories, \$12,000/obo. 323/725-2516.

'03 LEXUS GS 430 sedan, crystal white, ivory perforated leather-trimmed, 300HP V8, DVD navigation syst., heated front seats, 5-spd. automatic (ECT-i), 6-disc in-dash CD changer, cass., power tilt steering/moonroof, dual climate ctrl., dual front & rear airbag, vehicle stability control, ABS, traction control, high-intensity discharge headlamps, integrated fog lamps, 16" chrome wheel, exc. cond., 43K mi., \$37,500/obo. 714/260-2554, An.

'02 MAZDA Protege 5, exc. commuter car, 5-spd., limited blue, chrome wheels, CD player, outstanding cond., low Blue Book, \$10,800. 661/753-9876.

'93 MERCURY Villager minivan, metallic gray, new motor, new front & rear a/c, gd. cond., orig. owner, \$5,000/obo. 909/823-4711, Loni.

'00 NISSAN Maxima SE, 85K mi., extended warranty, new 17" tires, leather, roof, CD, power/windows/seats/doors, all maint. records by dealer avail., \$9,500. 795-2105.

'98 NISSAN Pathfinder, V6 3.3L, 2WD, 124 M, 5-spd. manual, silver, exc. cond., runs great, vg maintenance record, major tuneup just done, new timing belt & pumps, power everything, a/c, ABS, am/fm/cd/cass., cruise control, alloy wheels, off-road tires, dark back glass, foldable back seats, running boards, \$8,000. 626/441-6734 or 626/318-6206, Luca.

'91 NISSAN Maxima GXE, V6, burgundy, leather, sunroof, air cond., alloy, CD/am/fm, alarm, cruise control, keyless entry, dual power seats, power steering/locks/windows, 155K mi., \$2,500. 626/445-2590, eves.

'82 OLDSMOBILE Toronado, 1 owner, 31K orig. mi, exc. cond., new tires, must see, \$2,500. 661/251-3854.

'02 PONTIAC Grand Am, V6 Ram Air Edition, 55K mi., metallic green w/gray leather interior, auto, power steering/windows/locks, sunroof, Monsoon CD/cass. sound sys., chrome wheels w/ETS, tint windows, auto lights, beautiful inside & out, remote entry, sacrifice, \$12,500. 626/399-6630, Melanie.

'99 SATURN SL2, exc. cond., only 48K mi., power doors/locks, remote key, dual airbags, CD, am/fm stereo, \$6,200. 521-9966.

'99 TOYOTA Camry XLE, top of the line, loaded, V6, CD player, moonroof, power leather seats, auto, 50K mi., exc. cond., \$11,000. 909/630-5176.

'98 TOYOTA Sienna LE, loaded with features, 7 passengers, captain chairs, 4-dr., low mil., exc. cond., \$11,500. 626/850-4378.

'93 TOYOTA Camry LE, 3.0L V6, runs great, good overall cond., 125K mi., clean history, cheap to run, reliable, just serviced and smogged and clear until Oct. 2006, I'm returning to Europe, KBB value \$3,470, sell \$3,200. 288-6851, Brian.

'83 TOYOTA Land Cruiser, classic FJ60 model, rugged 4WD, meticulously maintained, one owner, 176K mi., trans. & clutch 1 yr. old, new alt., new p/s, great cond., new paint, 6 cyl., recent tune-up, 4 speed manual, don't miss this once-in-a-lifetime opportunity, \$8,000/obo. 661/297-0219.

'01 VW GTI, 1.8L, red; deluxe pkg. w/moonroof, heated leather seats, cassette/CD, prem. sound, steering wheel controls; 150HP, 30 mpg, very quick, smooth and comfortable; immaculate cond., carefully maintained, new tires, 53K mi., Blue Book \$13,925, sell \$13,500. 653-8331.

'02 VOLVO V40 wagon, only 16,500 mi., 4-cyl., 1.9L turbo, exc. cond., silver color, a/c, stereo/cass./CD, garage parked, service records avail., 15K mi. service completed, new rear brakes, both dealer and extra VIP extended warranties avail. (only \$50 transfer fee, orig. cost of extra warr. pkg. \$1,530). \$15,790. 626/355-5631, Tim.

'87 VOLVO 740 GLE wagon, auto, a/c, all power, snrf., third seat, silver w/tan inter., new upholstery, tires & brakes, well maintained, \$1,500/obo. 952-1303.

### Free

DINING ROOM TABLE (sitting for 6) and chairs, sectional corner couch, all in fair cond., pickup location is very close to JPL. 626/345-0079.

RABBIT looking for a nice family, male, about 2 yrs. old, black & white, purchased from pet store, lives indoors, comes with cage and water bottle. 661/702-1000, Dianne.

### Lost & Found

LOST: Friday 12/3, a gold swirl pin/brooch between my car in the west parking lot and/or in Bldg. 301. Ext. 4-0116.

LOST: Silver dolphin bracelet. Ext. 3-0939, Marji.

### Wanted

BOOKS, used/new, paperback/hardback, or magazine, romance, science fiction, mystery, etc. 248-0178, engineerbob4449@yahoo.com.

CARPOOLER from Diamond Bar/Chino Hills. Shu at 4-9329 or 909/263-5271, cell.

CARPOOLER from Glendora to Lab, 7:00 to 3:45. Ext. 4-7816 or 3-5866.

SINGER for garage band, average age is 38, originals, classic/hard rock, Beatles, blues, folk, whatever. reverb2020@yahoo.com.

SPACE INFORMATION/memorabilia from U.S. & other countries, past & present, for personal use. 790-8523, Marc Rayman.

### For Rent

ALHAMBRA, upper 2 bd. duplex w/fg. deck, all util. incl., very private, \$1,495. 626/827-6123.

ALTADENA "sabbatical house" for visiting professionals: 3 bd., study, boundary Angeles Nat'l Forest, 3 mi./JPL (trails to Lab behind house), view, fireplace, oak floors, antiques; completely furn.: dinnerware, utensils, pots/pans, bed linens + towels, fine soaps, necessities incl.: just bring toothbrush & clothes; TV/DVD/VHS, Dish satellite, wireless DSL, gardens, patio, parking; private, immaculate. 626/798-3235.

EAST PASADENA, 2 bd., 1 ba., quiet, clean bldg., water & trash paid, laundry rm., private fenced yard, no dogs, approx. 3 mi. to JPL, \$1,250. 626/390-1207.

LA CRESCENTA, above Foothill, 3 bd., 1 1/2 ba., single family house, living rm. w/fireplace, formal dining rm., breakfast area, laundry rm., detached 2-car garage, near elementary/middle/high schools, walking dist. to public library, brand new paint/carpet, gardener paid, no pets, 1-year lease + dep., \$1,700. 790-9772.

MONTROSE detached guest house; tiny, cozy, sunny & private; situated amid mature trees at the rear of a 200' deep lot in a residential neighborhood; 1-rm. dwelling w/galley kitchen (apt.-size stove, std. sink & new under-counter fridge) on 1 wall, plus adjacent full bath totals approx. 300 sq. ft.; paint, carpet & bath floor are new; st. parking; water, trash removal, gardener incl.; \$600. 248-7499, Jane.

NORTH SAN GABRIEL house in Temple City school district, 3 bd., 2 ba., family rm., private garden w/pool & Jacuzzi, fireplace, hardwood floors, gardener & pool service provided, \$2,500. 626/798-5796.

PASADENA condo, spacious, 2 bd., 2 ba., 1,500 sq. ft., top floor unit (3rd flr.), one block from California & Lake, more info: <http://rent.k-von.com>, \$2,150. 626/233-9496.

PASADENA duplex in historic "Bungalow Heaven" area, charming, 1 bd., 1 ba., living rm. w/fireplace, dining rm., kitchen w/built-ins, washer/dryer in unit, central air/heat, \$950, avail. 1/1/05. 249-3602.

PASADENA, guest quarters of a beautiful house in beautiful setting, about 1,000 sq. ft., remodeled ba., carpet, etc., washer & dryer, ideal for one person with a very quiet lifestyle, no pets, \$1,100 + util. 626/798-4056.

PASADENA, 2 bd., 2 ba., 1 mi. from Caltech, unfurn./carpeted/stove/refrig./air/patio/pool, \$1,350 + \$2,000 security deposit, water/gardening/trash paid. 626/355-0417.

PASADENA, 2-story house, 3 bd., 2 ba., living rm., fireplace, formal dining rm., hardwood floors, detached 2-car garage, detached multipurpose room w/washer & dryer hookups, approx. 5.5 mi from JPL, \$2,200 + util. & deposit. 626/798-5890.

SAN BERNARDINO, near CSUSB, 3 bd., 1 3/4 ba., detached 2-car garage, lg. lot, \$1,500, includes water/gardener. 317-1070.

SHERMAN OAKS, 1 bd. + 1.5 ba. penthouse condo, south of Ventura Blvd., 30 min. to JPL & mins. to Westside, Pergo floors, tiled patio, custom storage, view of hills, pool, spa, secure parking, cable. 635-1560 or 907-6624, Helen.

TEMPLE CITY apt. for lease, 2 bd., 1 ba. + lg. den., avail. Jan. '05, \$1,100. 626/285-1341.

TUJUNGA, large 2 + 1 duplex on quiet cul-de-sac, 2-car garage, off-st. parking, refrigerator & stove included, washer/dryer hookups, new carpet/paint, nicely landscaped, close to library/shopping/schools, no pets, \$1,400. 353-4669.

TUJUNGA, large 2 + 1 duplex on quiet cul-de-sac, refrigerator & stove included, washer/dryer hookups, newer carpet/paint, nicely landscaped, close to library/shopping/schools, no pets, \$1,400. 353-4669.

TUJUNGA, 3 bd., 2 ba., 2,000 sq. ft., 2 story, gorgeous, private, woodsy, hillside home, 2-car attached gar., lg. lot, lots of parking, stove, dishwasher, new heating/cooling, fireplace, beautiful lg. yard & garden, washer/dryer; 10359 Pinyon Ave., will consider pet; \$2,100 + \$2,500 security, prefer lease, will consider month-to-month, 352-3840, Jim.

### Real Estate

LA CRESCENTA home, 3 bd., 2 ba., new kitchen, lg. master, freshly painted, landscaped, fireplace, \$595,000. 957-2536, no agents, please.

### Vacation Rentals

BIG BEAR LAKE, cozy cabin blocks from Snow Summit, sleeps 6, very private, plenty of parking, cable TV, DVD, shuffleboard, see Antler Lodge at <http://www.getaway2bigbear.com>, 20% discount for JPLers. 726-1270.

BIG BEAR LAKEFRONT, luxury townhome, 2 decks, tennis, pool/spa, near skiing, beautiful master bd. suite, sleeps 6, 949/786-6548.

CAMBRIA ocean front house, exceptional white water view, accom. up to 4 people, all amenities provided. 702/256-1359, ereynolds2@cox.net.

HAWAII, Maui condo, NW coast, ocean front view, 25 ft. fr. surf, 1 bd. w/loft, cml. furn., phone, color TV, VCR, microwave, d/w, pool, priv. lanai, slps. 4, laundry fac., low season rate \$115/nite/2, high season rate to \$130/nite/2, \$15/nite/add'l person. 949/348-8047 or jackandrandy@cox.net.

MAMMOTH, Snowcreek, 2 bd., 2 ba., + loft, slps. 6-8, fully equip'd kitchen incl. microwave, D/W, cable TV, VCR, phone, balcony w/view to mtns., Jacz., sauna, streams, fishponds, close to Mammoth Creek, JPL disc'n't. 626/798-9222 or 626/794-0455 or valeriee@caltech.edu.

OCEANSIDE, on the sand, charming 1-bd. condo, panoramic view, walk to pier or harbor, pool/spa, game room, sleeps 4. 949/786-6548.

OREGON, Brookings, Moosehead Lodge at the Winchuck River Estuary, fully furnished 3 bd., 2 ba., residence, 1 mi. from Cal. border, walk Pelican Bay beach w/tidepools, surf and driftwood, fish Pacific Ocean/wild rivers along S. Oregon/ N. Cal. coast, enjoy the redwoods and Siskiyou National Forest, 800/221-8175, www.mooseheadlodgeoregon.com.

RESORTS, 5-star, local & worldwide, luxurious residential-style studios w/furn. kitchenette, starting at \$60/nlt.; 1 & 2 bds. w/full kitchen & living room also avail., 3-night min. 626/794-9579 or fivestaresorts@earthlink.net.

ROSARITO BEACH condo, 2 bd., 2 ba., ocean view, pool, tennis, short walk to beach on priv. rd., 18-hole golf