

News Briefs 2	An Independent Voice 3
Special Events Calendar 2	Safety: A One NASA Endeavor 4
Secretarial Workshops 2	Letters, Classifieds 4

Galileo to go out with a bang

GALILEO, THE VENERABLE SPACECRAFT launched in 1989 and in orbit about Jupiter and its moons since late 1995, will come to the end of its mission with a controlled dive into the planet on Sunday, Sept. 21.

Among Galileo's bountiful science return is the discovery of likely subsurface water oceans on Europa, which has fueled speculation about the possibility of life on the icy Jovian moon. Galileo was not designed for such a search, so it was not subjected to the rigorous sterilization procedures such as those mandated for Mars-bound spacecraft. To prevent any possible future biological contamination of Europa, the decision was made to provide a final resting place—Jupiter itself—for Galileo that guarantees it will never collide with any of the Jovian moons.

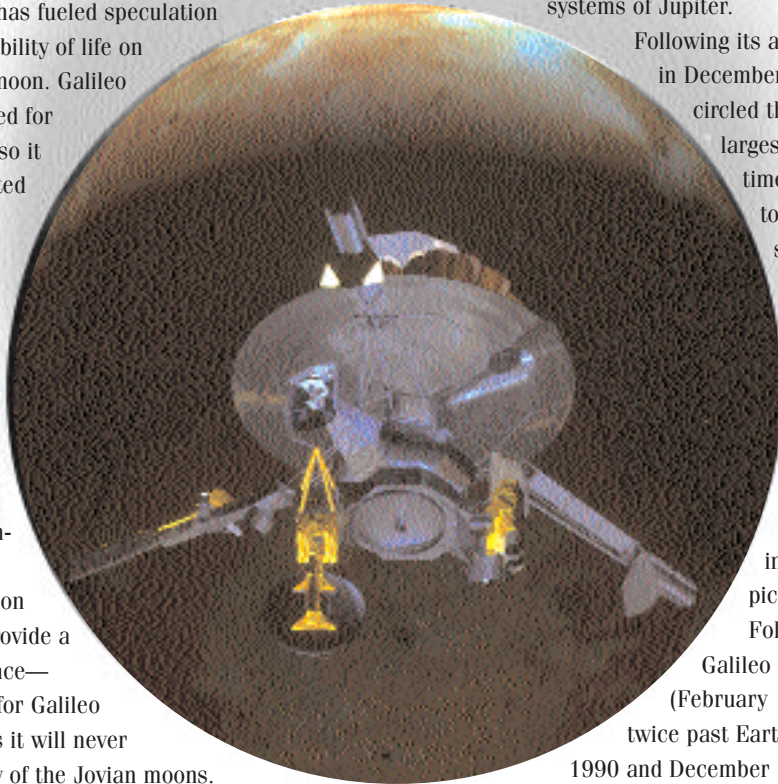
"It's sad to see the mission end; it has been fabulous for planetary science," said Project Manager Dr. Claudia Alexander. "It certainly seemed like we would never arrive and do the mission, and it seemed like, with the high-gain antenna not opening, we wouldn't do half the things we set out to do, but in the end, with a little ingenuity, the spacecraft proved to be resilient, and the mission has been incredible."

Rather than an impact, Galileo's demise will actually be a gradual, but very rapid, immersion in the gas giant's vast atmosphere. At 12:49 p.m. Pacific time on Sept. 21, the spacecraft will reach the point in the atmosphere where the pressure reaches one bar, the equivalent of Earth's atmospheric pressure at sea level. For reference, this point is 71,492 kilometers (44,423 miles) from the center of the planet, at the point where Galileo enters.

If observers were able to see Galileo's final journey, they could catch the spacecraft steamrolling in from

a point about 22 degrees above the local horizon. The speed of the craft relative to observers would be 48.2 kilometers per second (nearly 108,000 mph). That is like traveling from Los Angeles to New York City in 82 seconds.

Galileo will rapidly burn up through friction with the atmosphere, returning to its constituent atoms as it makes its unnoticeable impact on the vast weather systems of Jupiter.



Following its arrival at Jupiter in December 1995, Galileo circled the solar system's largest planet 35 times. From launch to impact, the stalwart spacecraft has traveled 4.6 billion kilometers (about 2.9 billion miles), returning more than 30 gigabytes of data, including 14,000 pictures.

Following launch, Galileo flew past Venus (February 1990) and then twice past Earth (December 1990 and December 1992). The highlights of its observations and discoveries would fill volumes.

Also en route to Jupiter, Galileo flew close to two asteroids—the first such visits by any spacecraft—encountering Gaspra in October 1991 and Ida in August 1993. Galileo also discovered Dactyl, the first confirmed moon of an asteroid, orbiting Ida. During the latter part of its interplanetary cruise, Galileo was used to observe the collisions of fragments of Comet Shoemaker-Levy with Jupiter in July 1994.

In addition to discovering strong evidence that Europa has a melted saltwater ocean under an ice layer on its surface, Galileo also found indications that two other moons, Ganymede and Callisto, may have layers of liquid saltwater as well. Other major science results from the mission include details of varied and extensive volcanic processes on the moon Io, measurements of conditions within Jupiter's atmosphere, and discovery of a magnetic field generated by Ganymede.

WF-PC 2 helps ID Rosetta comet target

The Wide Field Planetary Camera 2, the JPL-built and developed camera onboard NASA's Hubble Space Telescope, played a major part in identifying a football-shaped comet as the new target for the European Space Agency's Rosetta mission, the first ever to land on a comet.

The observations revealed that comet 67P/C-G is approximately a three-by-two mile object on which it is possible to land. Mission scientists were concerned that the solid nucleus could be nearly 3.6 miles (6 kilometers) across. The higher gravity on a comet that size might make a soft landing more difficult. "Although 67P/C-G is roughly three times larger than the original Rosetta target, its elongated shape should make landing on its nucleus feasible, now that measures are in place to adapt the lander package to the new configuration before next year's launch," said Dr. Philippe Lamy of France's Laboratoire d'Astronomie Spatiale in France, who presented the



The pole of comet 67P/C-G, based on a 3-D reconstruction of images.

results on Sept. 5 at the annual meeting of the Division of Planetary Sciences of the American Astronomical Society in Monterey.

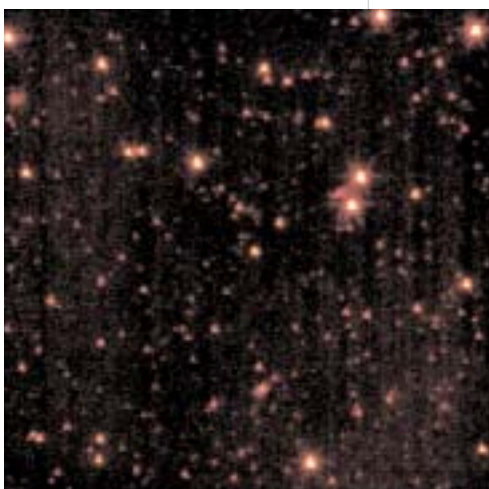
Mission scientists began considering the new target when the Rosetta mission's launch date was postponed. The delay made the original target comet, 46P/Wirtanen, no longer easily reachable. But scientists did not have enough information on the new target, comet 67P/C-G, and sought data from the largest telescopes.

The team snapped 61 Hubble images of comet 67P/C-G over an interval of 21 hours on March 11-12, 2003. The Wide Field Planetary Camera 2 isolated the comet's nucleus from the coma—the diffuse cloud of dust and gas surrounding the nucleus—and quickly provided the missing figures. The telescope showed that the nucleus has an ellipsoidal shape.

Rosetta's launch is currently planned for February 2004, with a rendezvous with the comet about 10 years later.

SIRTF's first images released

By Jane Platt



The JPL-managed Space Infrared Telescope Facility (SIRTF) has switched on two of its onboard instruments and captured some preliminary star-studded images. The space observatory was launched from Cape Canaveral, Fla., on Aug. 25.

The images were taken as part of an operational test of the infrared array camera. It will take about a month to fully focus and fine-tune the tele-

This engineering image was derived from 100 seconds of observing time on one of the three science instruments aboard SIRTF.

scope and cool it to optimal operating temperature, so these early images will not be as sharp or polished as future pictures.

"We're extremely pleased, because these first images have exceeded our expectations," said SIRTF Project Scientist Dr. Michael Werner. "We can't wait to see the images and spectra we'll get once the telescope is cooled down and instruments are working at full capacity."

The most striking image is available online at <http://photojournal.jpl.nasa.gov/catalog/PIA04724>.

The telescope's dust cover was ejected on Aug. 29, and its aperture door opened on Aug. 30. The spacecraft is operating in normal mode, and all systems are operating nominally. The team is very pleased with the rapid progress of

the observatory and all of its onboard systems, said Project Manager David Gallagher of JPL.

In addition to the infrared array camera, the multi-band imaging photometer instrument was also switched on for the first time in a successful engineering test. The spacecraft's pointing calibration and reference sensor detected light from a star cluster. The third instrument, the infrared spectrograph, will be turned on later this month.

These operations are part of the mission's two-month in-orbit checkout, which will be followed by a one-month science verification phase. After that, the science mission will begin a quest to study galaxies, stars and other celestial objects, and to look for possible planetary construction zones in dusty discs around other stars.

Secretaries beef up their skills

By Mark Whalen



Mary Ellen Derro

Many of JPL's approximately 250 secretaries have recently begun a series of training and development courses to increase their skills, and an additional workshop is on the way.

"Secretaries are the hub of the wheel," said career counselor Mary Ellen Derro of Human Resources' Professional Development Group. "They're the go-to people on Lab. We want to make sure that when people go to them they can perform and be seen as an integral part of the team."

The new JPL Secretarial Profile and Curriculum, created and sponsored by Professional Development, includes 22 courses for secretaries. The training covers technical areas, such as widely used software programs; professional development, which includes such topics as customer service, time management and mentoring; and additional development, which includes the JPL Secretarial Workshop, to be piloted in late September. Anticipated roll out Labwide will be late October to early November.

The secretarial workshop will be available to every new secretary on Lab, said Derro. "This represents the first time any such training has been offered," she said. This workshop is designed to be JPL-specific; contract secretaries are eligible to attend the three-session workshop only.

The ongoing Secretarial Profile and Curriculum courses are described online at <http://hr>, where schedules and signups are available. Senior secretaries are eligible for all 23 courses; those at the staff level may take 18 of the courses; and associate secretaries are eligible for nine courses.

Classes are offered off Lab, in Pasadena and Burbank. "Participants can hear issues from people with other companies and get a broader perspective," said Derro.

The upcoming secretarial workshops will be split into three sessions, each four and a half hours in length. Derro said they could be repeated quarterly depending on demand.

- **Session 1:** Discusses the role and importance of the secretary, job levels, organization overview, JPL's matrix structure, a review of JPL websites, high-level Meeting Maker and Eudora tips, and travel authorizations.
- **Session 2:** Telephone techniques and protocol. "Providing excellent customer service over the phone is something to be proud of," said Derro. Also covered are voice mail, the newly revised secretary reference guide, ordering supplies, forms management and Human Resources services.
- **Session 3:** JPL's relationship to Caltech and NASA; work environment (helping new employees get situated); services of the Logistics and Technical Information Section; a tour of JPL.

Planning for the new JPL Secretarial Profile and Curriculum began about a year ago. Focus groups were conducted across the Lab, and opinions were solicited from the 3X group supervisor workload reduction task force, members of Office Professional Resources Group, administrators and business administrative managers, and others.

Curriculum was developed in the areas of technical, professional and additional development based on needs identified by the focus groups. The curriculum is divided into the levels of secretary and mirrors what Compensation has identified as the roles and responsibilities of each level.

Also, focus groups said the Lab needed to do a better job of assimilating new secretaries into JPL policies and practices; thus the new secretarial workshop. "Ninety percent of the presenters will be secretaries from across the Lab who will share their knowledge and experience with course attendees," said Derro.

"The training plan will equip secretaries with the tools to do their jobs more effectively," she added. "They can be a better partner with those they support. It will give them confidence and empowerment."

6X stays injury-free

The Office Of Safety And Mission Success' Occupational Safety Program Office has recognized the Solar System Exploration Programs Directorate for its outstanding support of employee safety.

The directorate's efforts resulted in zero recordable injuries or first-aid cases for fiscal year 2002. This was accomplished in part by conducting periodic "walkthrough" inspections; performing ergonomic evaluations; attending Laboratory safety committee meetings and communicating safety and health-related information during staff meetings.

JPL Deputy Director Eugene Tattini presented a plaque to 6X employees (from left) Fuk Li, Cary Loewenstein and Jeannine Darrett.



Special Events Calendar

Ongoing Support Groups

Alcoholics Anonymous—Meetings are available. Call the Employee Assistance Program at ext. 4-3680 for time and location.

Caregivers Support Group—Meets the first Thursday of the month at noon in Building 167-111 (The Wellness Place). For more information, call the Employee Assistance Program at ext. 4-3680.

Codependents Anonymous—Meeting at noon every Wednesday. Call Occupational Health Services at ext. 4-3319.

Gay, Lesbian and Bisexual Group—Meets the first Friday and third Thursday of the month at noon in Building 111-117. Call the Employee Assistance Program at ext. 4-3680 or Randy Herrera at ext. 3-0664.

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

Working Parents Support Group—Meets the third Thursday of the month at noon in Building 167-111. For more information, call the Employee Assistance Program at ext. 4-3680.

Thursday, September 18

JPL Stories—JPL Director Dr. Charles Elachi will present "From a Part-Time Academic to the Director's Office" at 4 p.m. in the Library, Building 111-104. Come hear Elachi talk about his perspectives and experiences throughout his 33 years at JPL. If you have questions about the JPL Story series or wish to participate, call Teresa Bailey at ext. 4-9233.



TIAA/CREF Enrollment Meeting—This workshop, held at noon in T1720-137, is designed to assist employees newly eligible for the Caltech/JPL retirement plan with selection of investment options and completion of enrollment forms.

TIAA/CREF Workshop—"Retirement Distribution Flexibility" will be discussed from 10 a.m. to noon in Building 180-101. The seminar will cover evaluation of your retirement income needs, opportunities to save more, and asset allocation strategies; TIAA/CREF income options and how they may affect your retirement income; and helpful web tools and individual counseling options.

Thu.-Fri., Sept. 18-19

Von Kármán Lecture Series—Dr. Rosaly Lopes-Gautier, research scientist on the Galileo Near Infrared Mapping Spectrometer science team, will present "Galileo's Odyssey: The Worlds of Jupiter" at 7 p.m. Thursday in von Kármán Auditorium and Friday in Pasadena City College's Vosloh Forum, 1570 E. Colorado Blvd. Thursday's lecture will be webcast at <http://www.jpl.nasa.gov/events/lectures/sep03.html>. For more information, call Public Services at ext. 4-0112.



Sunday, September 21

"The End of the Soul: Scientific Modernity, Atheism and Anthropology"—Dr. Jennifer Hecht, assistant professor at Nassau Community College, will deliver this Skeptics Society-sponsored lecture at 2 p.m. in Caltech's Baxter Lecture Hall. Free admission for the JPL/Caltech community. For more information, call (626) 794-1301.

Monday, September 22

"An Evening with Galileo and His Daughter"—In honor of the end of

Galileo's mission on Sept. 21, the Planetary Society will pay tribute to the mission, the team that made it possible, and the astronomer for which it is named, with a one-time reading of a script based on Dava Sobel's best-selling book, "Galileo's Daughter." Accepting the tribute on behalf of the Galileo team will be John Casani, Torrence Johnson and Claudia Alexander. This special theatrical event will take place at the Pasadena Playhouse at 7:30 p.m. Tickets are \$75 and \$60; however, JPL staff are eligible for a discount of \$5 per ticket. Discounted tickets can be purchased by phone or online. Call Barbara Rayworth at (626) 793-5100 or go to <http://planetary.org>. After you place your order for tickets on the web site, an order form will pop up on the screen that has a space for a coupon code; use the code "JPL-Standard" for \$60 tickets or "JPL Premiere" for \$75 tickets. A separately priced reception with the cast follows at 9 p.m. Tickets for the reception only are \$100, or \$150 for both the reading and reception. There are no discounts for reception or reception/reading combination tickets.

Tuesday, September 23

NASA Software Engineering Technology Infusion—This video teleconference, held from 12:30 to 1:30 p.m. in Building 230-111, will discuss low-risk opportunities for software development teams to benefit from recent, applied software engineering research technologies. Areas to be covered include requirements and usability analysis, cost estimation and budget risk assessment, state-of-the-art code inspection, technical risk assessment, automated code analysis and advanced testing techniques. Register online at <http://ic.arc.nasa.gov/reg>.

Wednesday, September 24

Government Contract and Proposal Management—The first of an eight-course session offered by JPL and UCLA Extension will run from 5:30 to 8:30 p.m. in the 190 cafeteria. Classes will be held on Wednesdays and conclude Dec. 10. Courses include Elements of Government Contract Administration, Legal Aspects of Government Contracts and Subcontracts, Financial Management of Government Contracts, Managing the Contract, Proposal Planning, Principles of Cost Estimating, Cost/Price Analysis, and Pricing and Proposal Development. Register online at <http://jplregistrar.jpl.nasa.gov/stc/persreg> and arrive on the first night of class. The cost of each class is \$420, plus textbook expenses. For tuition reimbursement eligibility criteria, visit <http://hr/et>. Regarding questions, contact Dana Edler, ext. 4-5825.

JPL Toastmasters Club—Meeting at 5 p.m. in the 167 conference room. Call Debbie Llata at ext. 3-3690 for information.

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

Thursday, September 25

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

Tuesday, September 30

Investment Advice—Fidelity representatives will be available for one-on-one counseling. For an appointment, call (800) 642-7131.

JPL Hiking+ Club—Animator Zareh Gorjian of Section 382 will present "Volcanoes in Hawaii," a 3-D slide show, at noon in Building 238-543.

Ongoing

The Social Security representative will no longer offer one-on-one counseling appointments on Lab. Call the Benefits Office at ext. 4-3760 to arrange a telephone counseling appointment.

An independent voice for help



Ombudsman Lewis Redding is here to listen to JPLers' concerns

The Ombuds position was established at JPL in fall 1995 as a response to concerns expressed by employees and employee groups such as the Advisory Council for Minority Affairs and the Advisory Council for Women that there was no office to which issues and concerns could be taken that did not display a pro-management bias and where their concerns could be safely and confidentially voiced. Ombudsman Lewis Redding, who joined JPL in August 1996, discusses his role.

WHAT HAS SURPRISED YOU MOST ABOUT JPL?

Aside from its resiliency, I think that what surprised me the most about JPL and continues to be surprising is the relative “quiet” of the organization. Indirectly, I hear all kinds of things but, broadly speaking, JPL employees seem to me to be reluctant to raise issues and concerns.

I used to think there was less reluctance on the technical side of the house, but I am no longer certain that is the case.

WHY DO YOU THINK EMPLOYEES MAY BE RELUCTANT TO BRING CONCERNS FORWARD IN GENERAL?

There are several possible reasons, undoubtedly including some I haven't even considered. One, with layoffs in 1997 came a distinct loss of trust between management and employees. For some employees the changes in the classification system exacerbated that loss of trust (not to mention the more recent changes in parking allocation). Two, employees will not bring concerns forward if the institutional culture is one of “shoot the messenger.” Three, employees will not bring issues forward if the institutional culture says that acknowledging or admitting there is a problem means you will be viewed as being incompetent or not very intelligent. Four, employees will not bring concerns forward if they feel that their management does not wish to hear their concerns.

Since his assumption of the leadership of JPL, Dr. Elachi has been proactively encouraging employees to raise concerns to him in group settings throughout the year. I would hope that managers at all levels are mirroring his efforts across the organization. Openness and honesty are particularly critical in an organization such as ours.

Of course, the possibility that JPL employees have no issues or concerns cannot be overlooked either.

WHAT IS THE ROLE OF THE OMBUDS OFFICE IN ALL OF THIS?

From the beginning, the Ombuds Office has been a place to which employees may bring work-related issues and concerns in confidence for advice, counsel or resolution. The number of employees who do utilize the office, however, has been smaller than I might have anticipated.

I have heard there are employees who are afraid the office is too closely linked to JPL man-

agement. The fact is that nothing said in my office by any employee goes to management without the employee's express permission. If, however, I hear similar concerns from several different employees from the same section or division, then I have an obligation to take forward the concerns that have been raised, but only in a generic fashion and without using names.

I have also heard employees feel that nothing ever happens as a result of a visit to my office. First of all, employees need to give permission in order for there to be any fair and balanced exploration of an issue they may bring forward. Even if permission is given, however, and an issue is taken forward, it is possible that the individual most responsible and able to deal with that employee's issue may not be as responsive as one might like, or may respond appropriately, but still not to the employee's liking. There is no institutional requirement for anyone to respond to concerns, and that can certainly leave employees with the impression that nothing has happened.

Most employees come to the Ombuds Office either because they want to explore what options they may have in any given situation, or because they want to “vent,” or because they want information. Rarely do JPLers want any intervention. Intervention means that an Ombuds has to examine all sides of the matter that is of concern and that usually means talking to those involved.

Often employees are afraid to give me permission to speak to the other party or parties involved for fear of escalating the situation and for fear of loss of confidentiality.

There is also the JPL culture with which to contend. Unfortunately, in an environment in which employees are paid for their acute problem-solving skills, for some, openly acknowledging a problem or concern at JPL comes very close to being an admission of personal incompetence or stupidity.

“As intelligent as JPLers are, we're still all human beings in the workplace and no one has the answer for everything. Raising a concern in confidence or seeking assistance with an issue in confidence is another reason for the existence of the Ombud function.” — Lewis Redding, JPL ombudsman



As an Ombud, I don't see it that way. As intelligent as JPLers are, we're still all human beings in the workplace and no one has the answer for everything. Raising a concern in confidence or seeking assistance with an issue in confidence is another reason for the existence of the Ombud function.

WHAT KINDS OF ISSUES HAVE COME TO YOUR OFFICE?

They have ranged from “Do you have any suggestions about how I might approach a colleague whose deodorant doesn't seem to work very well?” to “I am a retiree whose wife died; I've remarried and it turns out my new wife cannot be covered under my retiree medical insurance—can anything be done?” Both situations were successfully resolved, the latter very much courtesy of a conversation that Human Resources had with Campus.

WHAT DO YOU WANT EMPLOYEES TO KNOW MOST ABOUT YOUR OFFICE?

There are a couple of things. One is that the Ombuds Office is not a “cop” for the Laboratory. Its purpose is to provide confidential, neutral, assistance to help employees resolve misunderstandings and conflicts as quietly as possible and as far down in the organization as is appropriate.

The office is most used by employees to help them think through and weigh their options in order to determine what might be best and most comfortable for the employee. What an employee actually does is the employee's decision.

For instance, if an employee decides she or he wants to resolve a situation by having a conversation with someone with whom they may be in conflict, but they are nervous about doing so, I might help the employee “practice” the conversation. Or, an employee may be most comfortable having that conversation with a third party present. Provided that the “other” party is willing to have a three-way discussion, I can serve as the third party.

Finally, if there is confusion about the role of the Ombudsman, I remain more than willing to speak at any staff meeting in order to talk about the role. A presentation takes no more than about 15 or 20 minutes and I am pleased to do it.

Safety is a 'One NASA' endeavor

This article, one in a series that describes how NASA centers are realizing the One NASA goal, was provided by the Langley Research Center.

The investigation of the Columbia tragedy revealed the need for NASA to improve its ability to verify engineering and safety standards; share technical information, practices and talent; and independently assess the ability to achieve mission success.

To this end, Administrator Sean O'Keefe in July announced the establishment of the NASA Engineering and Safety Center (NESC). As chartered, the NESC will provide independent technical expertise to evaluate problems and supplement safety and engineering activities for agency programs and projects.

That's a big order. It's also a stimulating "One NASA" opportunity. "The NESC will draw on the engineering talents of the best minds across the agency's 10 field centers," said Langley Director Roy Bridges Jr.

O'Keefe has tasked Bridges with the development and start-up of the NESC. "Roy's experience as an aviator and shuttle pilot and his intimate knowledge of the intricate shuttle system and other advanced aerospace systems make him the right person to lead this critical initiative," said O'Keefe.

The NESC will take policy direction from Bryan O'Connor, Associate Administrator for the Office of Safety and Mission Assurance.

"In addition to NASA expertise, the NESC will also tap the nation's top experts in industry, Department of Defense, national laboratories and universities," said O'Connor. "We have a responsibility to make our programs as safe and reliable as we know how. The NESC enables us to more completely fulfill our commitments for assessing risk and making better risk-acceptance decisions."

The NESC will provide centralized management of independent engineering assessment. NESC experts will use state-of-the-art tools and methods and will have the benefit of adequate funding to perform truly independent assessments and trend analysis. Because NASA will fund the NESC at the corporate level, an unprecedented level of independence will exist.

The NESC does not, however, relieve program managers from their responsibility for safety. Instead, NESC initiatives will complement the engineering and safety efforts of programs and NASA centers. The NESC's credibility and its independent chain of command will assure consideration of all points of view on complex technical issues.

How can you help? The NESC will be based at the Langley Research Center, Hampton, Va., and

will have a management office consisting of approximately 30 to 40 full-time employees.

Another 30 to 50 senior engineering and safety experts will be located at the centers but assigned full-time to the NESC. This workforce will be supplemented through partnerships with external organizations.

Finally, "ready-experts" at each field center will be a vital part of the team. From across the agency, 150 to 200 experts in a variety of technical specialties will be called upon for peer review and critique of flight rationale, mission requirements, testing, trending, lessons learned and the like.

Bridges has chosen Ralph Roe as his special assistant to develop the NESC's implementation plan.

"It's a tremendous responsibility but a stimulating opportunity," said Roe. "While the NESC is one of several initiatives in returning the shuttle to safe flight, its broader objectives include strengthening and expanding the agency's safety, mission assurance and engineering disciplines for major NASA programs. The NESC is a 'One NASA' effort that will involve all NASA facilities and the top technical experts in NASA and our partner institutions."

Question of the day: What do you have to offer the NESC?

The NESC is currently seeking the agency's best talent to be a part of this important NASA endeavor. If you are intrigued by this career opportunity, visit <http://nesc.nasa.gov>.

Langley Director Roy Bridges Jr. has been charged with the development and start-up of the NASA Engineering and Safety Center. Bridges counts this agencywide initiative as his first priority.



JPL'S ONLINE NEWS SOURCE

Classified ads will be available the day before Universe is published at <http://dailyplanet>

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

E-mail us at universe@jpl.nasa.gov

Letters

My father, Carl Bode, and myself would like to thank all our friends, co-workers and JPL for their thoughts, prayers, gifts and flowers in the passing of my mother, Violet Bode.

Susan Crowe

I want to express my thanks to all my friends and co-workers who have given me support during my sister's illness and recent death. I also appreciated the wonderful plant that JPL sent me.

Thank you.

Robert Powers

Classifieds

For Sale

ANTIQUES: dresser, mahogany 45 x 22 x 45 h, 4 big drawers, 2 small, \$750/obo; roll-top desk, 32 x 20 x 47 h, \$600/obo; rocking chair, black, \$50; player piano w/ukelano \$1,200, 100 plus rolls, good variety, \$10 ea.; steamer trunk, \$20. 626/794-8710.

APPLIANCES, nearly new convection oven (\$400) & matching dishwasher (\$150), tan; refrigerator (\$150), white; water heater, 50 gal., originally installed in '94, still has 5 years on warranty (\$400/obo). 352-0972.

BABY ITEMS: Kindercraft crib, model 710 Beech, pine finish w/Sealy Baby Soft Ultra mattress, matr. pad, fitted sheets and rail guards, exc. cond., all for \$220; Graco ABC play pan, \$30. 626/282-9481, Charlene.

BASKETBALL GOAL, portable regulation sz., black, compl. w/backboard/goal/net/pole/base, used for 3 mo., \$100. 310/674-5338.

BED, Thomasville four post, exc. cond., Cal king, cherry wood, paid \$2,300, sell for \$950/obo. 626/395-3828.

BOOKCASE/DINING CENTER, oak, \$175; set of 6 antique oak dining chairs, \$200; teak veneer dining table, \$150; twin matr. w/box springs, \$125; 2 side tables w/tablecloths, \$20/ each; boom box, \$75; teak coffee table, \$50; lamp, black, \$20; ironing board, \$10; sewing machine, \$80; love seat, \$100; oriental foot rests, \$30. 626/794-0119.

CATALINA EXPRESS tickets (4). 957-8614, Mina.

CHIPPER/SHREDDER, Craftsman 8.5 hp, 14:1 reduction ratio, \$325/obo. 790-1520.

COMPUTER CART, pull-out keyboard and printer drawers w/bottom shelf storage, good cond., dark wood, \$30. 626/286-1883.

COMPUTER CART/DESK, mobile, cherry veneer, made by O'Sullivan, model 61925, exc. cond., bought for \$120, sell for \$70. 626/449-0997.

DIGITAL CAMERA, 5-megapixel Olympus Camedia C-5050, top rated by PC Magazine June 2003, retails for \$700 + tax, lots of features plus great auto modes, brand new in box with all accessories and USA warranty, \$571/firm. 310/659-4388.

DRESS COAT, little girl's, wool, with hood, like new, size 6/8 in red with faux white fur, \$45; PLEATED SKIRT SUIT, wool, pleated, rarely worn, size 10, \$35; SNOW JACKET & PANTS, size 7; HOLIDAY DRESSES, size 5 10, \$5 - \$15; REFRIGERATOR, small, Sanyo, 3 yrs. old, \$50. 790-9772, eves.

DRYER, Kenmore 90 series electric, 1 yr. old, great cond., \$250/obo. 661/816-4188.

DRYER, gas, 2 years old, exc. cond., selling because new house has electric connection, \$175. 626/568-3310, Alejandro.

DRYER, gas, \$100. 790-6313.

ESPRESSO MACHINE, Krups Novo compact model # 989, \$50/obo. 323/208-2329.

ETHERNET SWITCH/ROUTER, Netgear 5-port,

fast, model FS605, 10/100 Mbps LAN, great for home networking to DSL, less than 1 yr. old, \$25. 626/296-8559 or chad-edwards@sbcglobal.net.

GOLF CLUBS: men's RH Cobra CXI irons, 3-SW, excellent cond., 1 year old, \$175. 949/244-8930.

GUITAR, 1968 Martin D-18, vintage beauty, great condition, sounds wonderful, case included, \$1,250/obo. 626/796-1286.

JUICE EXTRACTOR, Oster automatic, good condition, \$20/obo. 323/208-2329.

LAWN MOWER, 3.5 HP Murray, runs good, \$50; WEED WHACKER, Homelite, \$20; can deliver locally. 952-2192, Tom.

MOVING SALE: wall unit with space for 32" TV, vg quality, only 1 yr old, \$95; office/computer desk, with drawers, good quality, \$90. 790-0815, after 5 p.m.

MOVING SALE: Total Gym Pro, \$50; television, 13" GE color, \$25. 842-5596.

MOVING SALE: exc. cond., liv. rm furn., sofa, loveseat, chairs, glass tables, lamps, mirror; din. rm. table w/2 ext leaves, 6 chairs, china cabinet, fam. rm sofa w/matching chair, 2 addl. chairs; mirrored hat rack/umbrella stand, numerous framed pictures, prints, etc.; Lifecycle 5500 fitness aerobic trainer, like new; bedroom, king sz. brass headboard w/ free matr., box springs & frame. 249-4179.

POTTERY TEA SET: made by Maine artisan, nautical theme, matching lighthouse design on all pieces, incl. tea pot, creamer, sugar, platter, small serving bowl, 2 mugs, 2 Japan-ese tea cups; never used, \$100 for set. 249-4316.

RECLINERS: fabric, strip dark green, 3 yrs, \$150/obo; leather, blk, 6 mo., from Best Buy at \$110 + tax, sell for \$65/obo. 626/462-9597 or jlu8888@hotmail.com.

SWIMMING POOL, above ground, 15' x 24', aluminum deck, needs vinyl liner. 952-9467.

TREADMILL, Image 10.6; 2.5 hp, 0-10 mph, 1-12% pwr. incline, cordless pulse sensor, programmable, great cond., \$400. 249-9534.

WATERBED, king, exc. cond., solid dark wood w/mirror and shelved headboard, 6 drawers underneath, complete w/mattress and heater, \$200. 310/674-5338.

WATERBED, oak, practically new, w/headboard, 6 chest of drawers, bed long cubbie, w/water mattress & heater, \$300/obo. 323/365-6650, Aaron, or AJA79@yahoo.com.

WEDDING GOWN: white duchess silk sheath by Ansale, low back, gorgeous detachable train, fits -size 2 to 4 in street clothes (American), elbow length white tulle veil; price negotiable. 249-4316.

Vehicles / Accessories

CAR COVER: Covercraft 211" size A, brand new in unopened box w/lock, \$50. 842-5596.

'00 CHRYSLER Sebring JXi convertible, gold w/blk. top, leather int., 33K mi., \$9,500. 790-1520.

'98 DODGE Durango 4x4 SLT, exc. cond., red ext, Camel leather int, loaded, seats 8, side steps, grill, privacy glass, tow pkg., new trans, \$9.9K/obo. 949/837-4341.

'95 GEO Prizm, white 4 door, good cond., runs great, 117K miles, automatic, new brakes, trans, tires and battery, \$2,500/obo. 909/971-0339.

'00 HONDA Civic Si, OEM rear wing, front mask, tinted windows, cargo liner, LoJack, no engine mods, 29.6K miles, \$14,950/obo. 661/255-5645.

'98 HONDA Civic EX coupe, top of the line, all amenities, sporty 5-speed, new tires/battery/brakes, clean, well maintained, 84K miles, \$7,500. 909/624-8653.

'97 HONDA Magna VF 750, V4 750cc engine, 11,500 miles, garage kept, never down, exc. cond., \$3,900. 486-2852.

'95 HONDA Accord EX, 2-dr. coupe, 80K miles, sage green, automatic, clean, loaded, excellent cond., \$8,300. 952-8455.

'92 LEXUS ES-300, champagne, leather seats, sunroof, power everything, 106K miles, runs great, some cosmetic dings, \$5,500/obo. 310/659-4388.

'01 SUBARU Outback Limited sedan, black 4-dr., 12,500 mi., auto. trans., awd, 4 cyl.,

leather interior, exc. cond., exc. car, just too small for our family, \$21,500. 626/429-9123, Erwin Day or 626/794-4074, Eve.

'00 SUZUKI Katana 750, 5,500 mi., blue, nice bike, e-mail pictures upon request, \$4,400/obo. llynn75@hotmail.com or 626/794-7660.

'98 TOYOTA Tacoma Prerunner V6 TRD extended cab, exc. cond., sliding rear window, CD, cass., a/c, pwr. DL, alarm/remote locks, tow pkg., flip-up roof, alloy whls., auto trans, test drive will sell, \$12,500. 714/595-3843, cell.

'01 VW Golf, manual transmission, exc. condition, moon roof, silver exterior w/dark gray interior, pwr. windows, great mpg, orig. owner, no accidents, \$12,500/obo. 626/483-1838, Laila, or 626/351-4606, Gilda.

'01 VOLVO S40, midnight blue/black, loaded, AM/FM stereo/CD/cass., pwr. doors/windows, beautiful leather interior, 1 owner. 323/445-5342, Alex.

Free

COMPUTER, orig. iMac, 233MHz. 957-5382.

CLEAN FILL DIRT, 16 cu. yds. avail., you haul as little or as much as you like, near Los Robles/Jackson, Pasa. 626/791-3103.

FENDERS for Volkswagen Bug, 2, medium condition, for your beloved but deteriorating basket case. 626/797-6982.

KITTENS: Black & gray tabby male, ~ 14 wks. old, attentive to humans, friendly, likes to be held/petted/scratched behind ears, very soft coat, semi-long hair, likes tethered balls or string; Calico tabby female, unaltered, ~ 14 wks., friendly, appears to be a good hunter, gd. indoor/ outdoor cat, long hair, soft coat, nice purr, playful and gentle. 626/487-7746.

Wanted

APT/HOUSE to rent for 3 wks. over Christmas & New Year's: 60+, non-smoking, w/a taste for hiking, biking & visiting the beach; we're coming to see our daughter, son-in-law & grand-son and for a break from the European winter. 626/396-9922, Saskia or Axel Brait.

COMPUTER, Apple iBook, white, 12-inch monitor, any cond. 626/792-6862.

CONDO, GUESTHOUSE OR APT., for longtime JPLer & husband, no pets or children, needed through June '04, quiet & responsible "old" folks. 249-4179.

FEMALE SINGER for garage rock band, avg. band age is 35; originals, classic rock, Beatles, blues, whatever. reverb202@yahoo.com.

PILOT for R/C model helicopter, experienced, to provide flight support for the JPL Auton-omous Helicopter Testbed; this is a paid position. Ext. 3-1202 or monty@jpl.nasa.gov, Jim Montgomery.

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

STORAGE, secure for 32' motor home in Alt/Pasadena area, in/out once per mo. 626/794-8710.

VANPOOL RIDERS, Lancaster/Palmdale/Little-rock/Acton area; leaves Angeles Forest Park & Ride 5:45 a.m., leaves JPL 4:10 p.m.; \$155 or \$8/per day. Ext. 3-0505, Frank Shanklin.

VOLLEYBALL PLAYERS, coed, no beginners please, Tuesdays 8 to 10 p.m. at Eagle Rock High School, \$4/night. 956-1744, Barbara.

For Rent

ALTADENA, 1 story trad., 2 bd., 2 ba., 1,300 sq. ft., L/R, D/R, den could be 3rd bd., 2-car detached garage, central a/c, 2 FP, modern kitchen, hardwood floors, 2 mi east of JPL, on quiet cul-de-sac with mountain views, \$369,000. 790-0308, Beatrice (agent).

EAST HOLLYWOOD, lg. single apt., 1 block from Metro and shopping, utilities pd; stove, ref. sec. bldg. newly decorated, \$700. 310/377-0316, Gerri.

GLENDALE, townhome-like duplex, 2 bd., 1.5 ba; din. rm., liv. rm., private patio, marble flr., family neighborhd., close to JPL, \$1,200. 956-2234, Rose.

N. SAN GABRIEL house for lease, 3 bd., 1.5

ba., 2-car garage, patio, exc. neighborhood, no pets, \$1,700 includes gardener service, on approved credit. 626/458-3852.

PASADENA, spacious 2-story condo, 3 bd., 2.5 ba., prestigious community, beaut. inter., bright kitch., prof. landscape, ctrl. air & heat, close to shop., cozy LR w/FP, end unit, frml. DR, hdwd. flrs., immac. cond., close to schools, \$1,750. 626/396-9024.

PASADENA, large 3 bd, 2.5 ba. townhouse, central air and heat, washer/dryer hookups, fireplace, walk to Gold Line station, new paint, carpet, linoleum, stove, covered parking, no smoking or pets, \$1,800, water and trash included. 626/799-0950.

PASADENA, furnished & unfurn. townhome-style apts., 2 bd., 1.5 ba., patio, dishwasher, cent. a/c, new carpet & floors, refrig. & stove, laundry, parking, close to Caltech & JPL, \$1,295-\$1,350 + util. 626/429-3677.

PASADENA, furnished apt. to share w/JPL co-op, 3 bd., 3 ba., townhome-style with patio, central a/c, laundry, close to Caltech & JPL, \$650 plus utilities. 626/429-3677.

SIERRA MADRE, townhome-style apt. to share, 1,000 sq ft, lg. patio, 2 bd., 1.5 ba., quiet st., garage prkg, washer/dryer in unit, \$605 + 1/2 util. 626/355-4838, Heather.

Real Estate

COLORADO, 10+ acre acres nr. Rio Grande, NM border, two adjacent 5-acre lots on St. Hwy 248, sell 1 or both for \$1K/acre/obo. 626/254-1550.

GLENDALE/LA GRESCENTIA condo, spacious 1 bd., 1 ba., 5 min. to JPL, 805 sq. ft., 2-car garage w/lots of storage, exc. neighborhood, \$180,000. 621-4809.

WEST PALMDALE, 2-story home, 3 bd., 2.5 ba., + loft, in-ground pool and spa, big yard on cul-de-sac, close to shopping, schools & park, \$235,000. 661/273-4074.

Vacation Rentals

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

CABO SAN LUCAS, Valentine's wk. getaway, junior suite at Puelco Bonito Resort, steps away, balcony w/panoramic view of Sea of Cortez, kitchenette, a/c, satellite TV, on white sand beach, lg. freeform pool w/sland & waterfall, fitness center, 2 restaurants, deli, beauty shop, maid service, bilingual staff, www.pueblobonito.com, 80 F ocean temp, \$800 for wk. of 2/9/04. 626/296-8633.

DEL MAR condo, fully furn., 7 nights 11/15-11/22/03, slps 6, 2 bd., 1 1/2 ba., living rm., full kitch., cable tv/vcr, game room, sauna, pool/spa, laundry rm., BBQ area, walk to race track & beach, JPL discount. 626/961-8771.

MAMMOTH, Snowcreek, 2 bd., 2 ba., +loft, slps. 6-8, fully equip'd kitchen incl. microwave, D/W, cable TV, VCR, pool, balcony w/view to mtns., Jacz., sauna, streams, fishponds, close to Mammoth Lodge, JPL disc'nt. 626/798-9222 or 626/794-0455 or valerie@gps.caltech.edu.

OCEANSIDE, 2 bd., 2 ba. deluxe condo; slps. 6+; great ocean views; newly decorated; fully furn.; full kitchen; fireplace; restful beachside setting close to many attractions; easy walk to pier, harbor and restaurants; many amenities incl. BBQ, pool, spa, game rm.; tropical landscaping, gated garage & grounds; avail. weekly or monthly. 831/425-5114, Ginger, www.beachvisitors.com; 760/433-4459, Grace.

OCEANSIDE, 1 bd., 1 ba. deluxe condo; slps. 4; garden view; newly decorated; fully furn.; full kitch.; fireplace; restful beachside setting close to many attractions; easy walk to pier, harbor and restaurants; amenities incl. BBQ, pool, spa, game room, tropical landscaping, gated garage & grounds; avail. weekly or monthly. 831/425-5114, Ginger, www.beachvisitors.com; 760/433-4459, Grace.

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

ROSARITO BEACH condo, 2 bd., 2 ba., ocean vw, pool, tennis, short walk to beach on priv. rd., 28-hole golf course 6 mi. away, priv. secure parking. 626/794-3906.

Universe

Jet Propulsion Laboratory

I n s i d e

September 26, 2003
Volume 33 Number 19

News Briefs, Calendar 2	SRTM Honored 2
Benefits Changes in 2004 2	Invention Challenge 3
New DSN Contract 2	Letters, Retirees, Classifieds . . 4

Mission ends as spacecraft enters Jupiter's atmosphere

Goodbye, GALILEO



THE GALILEO MISSION'S 14-YEAR ODYSSEY CAME TO AN END ON SUNDAY, SEPT. 21, WHEN THE SPACECRAFT PASSED INTO JUPITER'S SHADOW THEN DISINTEGRATED IN THE PLANET'S DENSE ATMOSPHERE AT 11:57 A.M. PACIFIC TIME. THE DEEP SPACE NETWORK TRACKING STATION IN GOLDSTONE, CALIF., RECEIVED THE LAST SIGNAL AT 12:43:14 PACIFIC TIME.

By Carolina Martinez and Mark Whalen

The delay is due to the time it takes for the signal to travel to Earth.

Hundreds of former Galileo project members and their families were present at JPL for a celebration to bid the spacecraft goodbye. There was sadness, to be sure, and more than a few tears were shed. But mostly it was a celebration—of awesome science, ingenious engineering, perseverance in the face of numerous obstacles.

"We learned mind-boggling things," said Galileo Project Manager Dr. Claudia Alexander. "This mission was worth its weight in gold."

Having traveled approximately 4.6 billion kilometers (about 2.8 billion miles), the hardy spacecraft endured more than four times the cumulative dose of harmful Jovian radiation it was designed to withstand. During a previous flyby of the moon Amalthea in November 2002, flashes of light were seen by the star scanner that indicated the presence of rocky debris circling Jupiter in the vicinity of the small moon. Another measurement of this area was taken Sunday during Galileo's final pass. Further analysis may help confirm or constrain the existence of a ring at Amalthea's orbit.

"I can't believe we collected science data all the way in," said Alexander. "What a machine."



magnetosphere long enough to identify its global structure and to investigate the dynamics of Jupiter's magnetic field. Galileo determined that Jupiter's ring system is formed by dust kicked up as interplanetary



meteoroids smash into the planet's four small inner moons. Galileo data showed that Jupiter's outermost ring is actually two rings, one embedded within the other.

Galileo extensively investigated the geologic diversity of Jupiter's four largest moons: Ganymede, Callisto, Io and Europa. Galileo found that Io's extensive volcanic activity is 100 times greater than that found on Earth. Europa, Galileo unveiled, could be hiding a salty ocean up to 100 kilometers (62 miles) deep underneath its frozen surface, containing about twice as much water as all the Earth's oceans. Data also showed Ganymede and Callisto may have a liquid-saltwater layer. The biggest discovery surrounding Ganymede was the presence of a magnetic field. No other moon of any planet is known to have one.

The prime mission ended six years ago, after two years of orbiting Jupiter. NASA extended the mission three times to continue taking advantage of Galileo's unique capabilities for accomplishing valuable science. The mission was possible because it drew its power from two long-lasting radioisotope thermoelectric generators provided by the Department of Energy.

Following Galileo's final minutes on Sunday, team members had some fun at their own expense with a song and comedy routine featuring "The Not Ready for Realtime Players." Based loosely on the hit television series "Survivor," through song parody they noted "voting off," among others, the balky high-gain antenna, the probe, the flight team, remote sensing and finally Galileo itself.

To the audience's delight, the Rolling Stones' "You Can't Always Get What You Want" became "You Can't Always Get the Science You Want." The lyrics to Three Dog Night's "Joy to the World" were sent up to include "If Europa has fishes in the deep blue sea, there's fame for you and me."

To view the end-of-mission webcast, go to <http://www.jpl.nasa.gov/webcast/galileo>.

Clockwise, from top right: Galileo Project Manager Dr. Claudia Alexander; former project managers Jim Erickson (left) and Eilene Theilig; science panelists Randii Wessen (left), Dr. Torrence Johnson, Dr. Rosaly Lopes and Dr. Andrew Ingersoll; and former Galileo project managers John Casani (left) and Richard Spehalski.



The spacecraft was purposely put on a collision course with Jupiter because the onboard propellant was nearly depleted and to eliminate any chance of an unwanted impact between the spacecraft and Jupiter's moon Europa, which Galileo discovered is likely to have a subsurface ocean. Without propellant, the spacecraft would not have been able to point its antenna toward Earth or adjust its trajectory, so controlling the spacecraft would not have been possible. The possibility of life existing on Europa is so compelling and has raised so many unanswered questions that it is prompting plans for future spacecraft to return to the icy moon.

The on-Lab celebration featured panel discussions with former project managers and science team members, who offered testimonials and memories.

"There were a lot of great people working on this mission, the best on the planet," said Richard Spehalski, who managed the project at its launch in 1989.

"The whole mission has been overcoming one incredible obstacle after another," noted former manager Eilene Theilig. "It's really built a camaraderie and become one of the most special times of our lives."

Project Scientist Dr. Torrence Johnson said Galileo studied "a miniature solar system." "We haven't lost a spacecraft, we've gained a steppingstone into the

Bob Brown / JPL PhotoLab

Changes to 2004 benefits plans noted

By Mark Whalen

Due to rising health care costs and the prospect of JPL and campus employees paying significantly higher rates and having higher out-of-pocket expenses for coverage in 2004, Caltech has decided to replace the Blue Cross preferred provider organization (PPO), CaliforniaCare and Cigna health maintenance organization (HMO) plans with a new health care insurer, Health Net, effective Jan. 1, 2004.

In a recent enrollment newsletter sent to all benefit-based employees, Caltech President Dr. David Baltimore affirmed his commitment to providing a benefits program that meets the needs of employees and their families in a cost-effective manner. He cited studies of benefit plans, carriers and costs that showed current carriers requesting increases ranging from 15 to 25%.

"By consolidating most of our coverage with Health Net, we were able to preserve virtually all the service features and access to most of the physicians and hospitals of our current health care plans, while avoiding sharply higher premium and out-of-pocket costs for you and the Institute," noted Baltimore.

Below is a summary of what is and is not changing in 2004.

Caltech's study showed that among other factors, Health Net offered competitive rates, the ability to stabilize Caltech's plan design, a 95% physician match in HMO and a significant match of PPO network providers.

Employees will make their 2004 benefits selections during the open enrollment period, from Oct. 15-31. To assist in a smooth transition, Health Net representatives will be on Lab in October for one-on-one consultations, and seminars will be offered on Transition of Care and the Health Net prescription drug program.

Additional newsletters will provide details on long-term disability as well as annual enrollment instructions. If you have questions, call the Health Net dedicated line for Caltech employees at (800) 628-2707, visit the Health Net customized website at www.healthnet.com/caltech or call the JPL Benefits Office at ext 4-3760.

What's Changing

Health care

- The Health Net PPO will replace the Blue Cross Prudent Buyer 500 plan
- The Health Net HMO will replace the Blue Cross, CaliforniaCare and Cigna HMO plans
- Rates will increase somewhat, but less than they would have had the changes not been made
- A new "employee/child(ren)" coverage level will provide more flexibility for some participants

Disability

A new Long-Term Disability (LTD) plan that protects everyone.

- Employees who are not currently enrolled in LTD will automatically be enrolled in a new basic LTD plan providing 40% salary replacement in the event of a long-term disability. The cost of the basic plan is paid by JPL. Employees have the option of enrolling in a supplemental plan providing a total of 60% salary replacement at a nominal cost. For this annual enrollment only, employees can enroll in the supplemental (60%) option without providing evidence of good health.
- Employees currently enrolled in LTD coverage will automatically be enrolled in the new supplemental (60%) plan at a nominal cost.

What's Not Changing

Health care

- Kaiser will continue as a plan option
- Most out-of-pocket costs for deductibles, co-payments and co-insurance will not increase
- Delta Dental and Safeguard Dental Plan options
- Life and Personal Accident Insurance
- Flexible Spending Accounts

New DSN contract signed

JPL has awarded ITT Industries of White Plains, N.Y., a five-year, \$274-million subcontract for operations and maintenance of Deep Space Network facilities in the United States and for support of overseas facilities.

The contract includes incentive provisions that can extend the contract for an additional five years, increasing the contract value by an additional \$306 million.

The JPL-managed Deep Space Network is an international network of antennas that supports interplanetary spacecraft missions. The network also supports selected Earth-orbiting missions.

"The DSN is a critical element in achieving NASA's mission," said JPL Deputy Director Gene Tattini. "We welcome ITT as the newest member of the NASA community."

ITT Industries will provide all necessary maintenance, operations and engineering support to operate and maintain JPL's Goldstone Deep Space Communications Complex, located near Barstow; accomplish Deep Space Network operations and maintenance; support problem analysis and resolution; support network engineering efforts; and support radar and radio astronomy activities.

ITT will also support operations at the Deep Space Network facilities located in Madrid, Spain and Canberra, Australia.

ITT's Systems Division, located in Colorado Springs, Colo., will perform the contract work. The contract start is Oct. 1 for transition planning; full responsibility for operations will be picked up on the new contract on Jan. 1, 2004.

Special Events Calendar

Ongoing Support Groups

Alcoholics Anonymous—Meetings are available. Call the Employee Assistance Program at ext. 4-3680 for time and location.

Caregivers Support Group—Meets the first Thursday of the month at noon in Building 167-111 (The Wellness Place). For more information, call the Employee Assistance Program at ext. 4-3680.

Codependents Anonymous—Meeting at noon every Wednesday. Call Occupational Health Services at ext. 4-3319.

Gay, Lesbian and Bisexual Group—Meets the first Friday and third Thursday of the month at noon in Building 111-117. Call the Employee Assistance Program at ext. 4-3680 or Randy Herrera at ext. 3-0664.

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

Working Parents Support Group—Meets the third Thursday of the month at noon in Building 167-111. For more information, call the Employee Assistance Program at ext. 4-3680.

Tuesday, September 30

Investment Advice—Fidelity representatives will be available for one-on-one counseling. For an appointment, call (800) 642-7131.

JPL Hiking+ Club—Animator Zareh Gorjian of Section 382 will present "Volcanoes in Hawaii," a 3-D slide show, at noon in Building 169-336.

Thursday, October 2

"A Conversation with Jack Valenti"—The head of the Motion Picture Association of America and former Johnson White House political adviser will speak at 8 p.m. in Caltech's Beckman Auditorium. The format will be an open-ended conversation between Valenti and Los Angeles Times entertainment reporter James Bates. The event is free. A private reception and dinner will be held in Valenti's honor prior to the event. For information, contact Susan Gray at (626) 395-6328 or e-mail her at grayasm@caltech.edu.



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

Friday, October 3

"Godel and the End of Physics"—Dr. Stephen Hawking will deliver this lecture at 8 p.m. in Caltech's Beckman Auditorium. Tickets are free and will be distributed (maximum two per person) at 9 a.m. the same day at Beckman (not at the Caltech Ticket Office). Tickets will become void at 7:45 p.m. to allow remaining spaces to be filled.

Those who do not have tickets may come that evening to wait for available space or to be redirected to an overflow facility. The audio portion of the talk will be broadcast outside Beckman. For more information, call (626) 395-4652.

Monday, October 6

Garrison Keillor—The storyteller and author will read from his new novel, *Love Me*, at 8 p.m. in Caltech's Beckman Auditorium. A book signing will follow. Free admission. For more information, call (626) 395-4652.

Tuesday, October 7

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

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

Wednesday, October 8

Associated Retirees of JPL/Caltech—Meeting at 10 a.m. at the Caltech Credit Union, 528 Foothill Blvd., La Cañada.

Caltech Women's Club—The annual Fall Gathering will be held in the gardens of the President's residence from 11:30 a.m. to 1:30 p.m. Rain location is Avery House. Free childcare is available at the Children's Center but must be reserved by Sept. 26. Call (626) 395-6860 for details. Lunch is \$12.50 (\$7.50 for students). Reservation deadline is Oct. 3. Questions: Karen Blake at (626) 351-4201 or kblake@its.caltech.edu.

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

JPL Toastmasters Club—Meeting at 5 p.m. in the 167 conference room. Call Debbie Llata at ext. 3-3690.

Thursday, October 9

Rideshare Faire—Held as part of California Rideshare Week (Oct. 6-10) on the mall from 11 a.m. to 12:30 p.m. A prize drawing will be held at 12:15.

Friday, October 10

Michael Andrew and Swingerhead—A mix of swing, cha-cha, mambo, surf and lounge music will be performed at 8 p.m. on Caltech's Beckman Mall. A dance floor will be set up outside of Beckman Auditorium. Tickets are \$15 for adults and \$5 for youth (high school age and younger). For more information, call (626) 395-4652.

Saturday, October 11

Afro-Cuban Salsa—Percussionist Bobby Matos and his band will perform at 8 p.m. on Caltech's Beckman Mall. Dance lessons will be provided during intermission. Tickets are \$15 for adults, \$5 for youth (high school age and younger). For more information, call (626) 395-4652.

SRTM team honored; antenna goes to Smithsonian



Jim Rasmussen of Section 334 shows the SRTM outboard antenna structure before its departure earlier this month to the Smithsonian's Udvar-Hazy Center at Dulles International Airport in Virginia, which opens in December. The SRTM display, which includes the mast/canister subsystem and outboard structure including the C-Band antenna panels and associated C-Band electronics, is scheduled to open early in 2004.

IN RECOGNITION OF THE EXCEPTIONAL SUPPORT PROVIDED as integral members of the JPL Shuttle Radar Topography Mission (SRTM) Ground Data Processing System Team, 23 individuals were recognized by the National Imagery and Mapping Agency at a Sept. 12 ceremony on Lab.

Awards were presented by Bobbi Lenczowski, NIMA's chief scientist, and Tom Hennig, NIMA's SRTM program manager, to individual team members involved in day-to-day SRTM data processing.

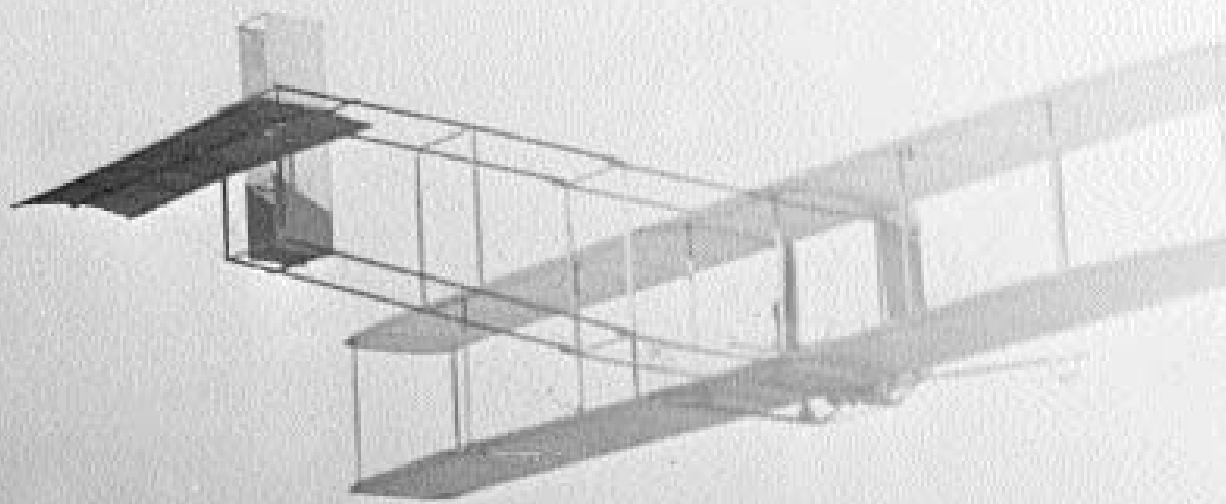
More than 14,000 one-degree-by-one-degree height and image data products over the Earth were delivered to NIMA on schedule, and analyses by both NIMA and JPL indicate the performance well exceeds the mission performance accuracy specification.

James Clapper Jr., Lieutenant General, U.S. Air Force (Ret.) and director of NIMA, signed a plaque citing team members' "dedication and commitment, which will help NIMA, its customers in the Department of Defense and the intelligence community, and the public at large, satisfy a multitude of critical requirements for terrain elevation data for years to come with the help of this unique dataset."

The following team members received awards:

John Eric Belz, Elayne Brown, Leland Bunker, James Cowan, Eric Gurrola, Scott Hensley, David Imel, Yunjin Kim, Peter Kroger, Joseph Kwan, Jan Martin, Charles Morris, Mike Papin, David Perz, Joe Reymann, Ernesto Rodriguez, Paul Rosen, Joanne Shimada, Brian Swift, Mark Tarbell, Lori Udovich, Theresa Wright and Mathew Yeates.

Pre-Holiday Fun: Imagine That!



WHAT IS THE INVENTION CHALLENGE?

It's a contest whose purpose is to create a device that performs a specific task, and then operate your device on the day of the contest. The task may be to throw a beanbag onto a target, lift some water into a cup, or a variety of things.

The rules—now available online at http://www.jpl.nasa.gov/education/team/ic_index.html—are different each year, but the task is always rather simple in concept.

Teams consisting of JPL employees or students now have less than three months to interpret the rules, brainstorm ideas, design their invention, and fabricate, test, redesign, and retest. The rules are meant to structure the competition, but not stifle the imagination and creative spirit of the contest.

HOW DID YOU COME UP WITH THE IDEA?

When my son, David, was in 7th grade, his science teacher challenged her students to take two ordinary balloons and make a car that would travel the farthest. We worked on it together, using cardboard, glue, tape and straws. His car traveled about 15 feet and actually won the contest.

This simple task was so much fun that I thought my co-workers in the Instrument Design and Analysis Group would enjoy a light-hearted, fun-filled contest held in December just before the Christmas break. The first Invention Challenge was held in 1998. The rules for that contest were exactly the same as those for my son's assignment—create a car that travels the farthest using two balloons.

WHO RUNS IT? DO YOU HAVE SPONSORSHIP (CORPORATE, ACADEMIC OR OTHER?)

Each year my partner, Richard Alvidrez from the JPL Education Office, and I visit local venues to spread the word. This year we went to a Greater Los Angeles Teachers' Science Association conference; the Los Angeles County Science Fair; the Math, Engineering, Science Achievement (MESA) workshop in August; and the AIAA Space Conference held earlier this week (Sept. 23–25).

MESA promotes science and math in middle schools and high schools, and helps underprivileged schools by providing bus transportation and other functions. Last year they helped encourage more than six schools to enter in the contest, and I feel that their influence will spread to more schools every year.

We have neither corporate sponsors nor any budget at JPL except for some help in putting on the live webcast last year and generating some flyers, posters and banners.

WHAT KINDS OF "CHALLENGES" HAVE YOU HAD IN THE PAST?

In 1998 Chris Stell and Gene Wester created a car by stretching their balloons, tying a fishing line to the balloons, and then wrapping the fishing line around the axle to allow their car to travel more than 70 feet. The next year, contestants fashioned devices to launch a foot bag (Hackysack) onto a target about 16 feet away. Chris Wrigley's device consisting of a copper tubing weldment, a laser sight, a spring and an ice cream scoop landed only 4 3/4 inches from the target.

In 2000, the challenge was to create a device to transport a half-gallon of water from a fish tank into a cup in the fastest time. Mike Blakely's entry essentially pushed the water using over 100 pounds of weight through a syringe-like assembly and a series of pipes. His time was 1.86 seconds. In 2001, water balloons were launched straight up as high as possible to have the balloon land within a 23-foot-diameter circle. Richard Goldstein achieved a height of more than 135 feet.

Last year, devices launched 50 jellybeans at a target about 16 feet away. The JPL winning team led by Gary Gray scored 145 points and the winning student team from Frazier Mountain High School scored 132 points.

HAS THERE BEEN ONE THAT WAS ESPECIALLY DIFFICULT OR FUN?

The contest that was the most fun was last year's jellybean toss. Just the name in itself sounds like fun, and I think all the participants had fun. The most challenging contest was the water balloon launch, due to the large size and power of each of the entries.



Now in its sixth year, the JPL Invention Challenge has grown in scope and popularity. It's organized by Paul MacNeal, a senior member of the technical staff in Section 352, who discusses the contest's history and this year's event.

HOW MANY STUDENTS AND JPLERS PARTICIPATE?

In past years, I have had as many as 40 JPL entries and

25 student team entries. Last year more than 300 students visited JPL on contest day. Each year, between 150 and 300 JPL employees, friends and family watch the contest.

HOW IS THIS YEAR'S CHALLENGE DIFFERENT?

This year's challenge is the "Wright Turn Glider Contest." The objective is to create a glider that will navigate a right-hand turn and land on an "X" located 40 feet away. This is the first year where flying has been incorporated, as opposed to launching.

Children of JPL employees can show their science or math teacher the website I mentioned earlier and encourage them to form a team and enter the contest, even for this year. The deadline for turning in student team entries is Oct. 3.

We plan to hold regional contests in November. The top 20 entries from the regionals will be invited to participate in the JPL contest on Dec. 5.

JPL entry forms can be turned in as late as Nov. 26, as long as there are still openings.

WHAT KIND OF IMPACT HAS THE CHALLENGE HAD ON THE COMMUNITY?

The Challenge allows many schools and classrooms to participate in an activity that provides authentic and powerful learning through design and invention. This is a great thinking leap above assembling and manipulating devices.

It's particularly valuable where teachers may not have a lot of technical expertise, or in cases where the school cannot commit to a large cost or time requirement. The entry bar is low—less than \$50—and the Challenge stimulates good old-fashioned imagination that might nurture "the next generation of explorers ... as only NASA can." The Challenge has become part of the curriculum in some schools, and we expect this to continue and expand.

Last year, a teacher, Melody Yang of First Avenue Middle School in Arcadia, took the Invention Challenge to heart. She required all 120 of her students to design a jellybean-tossing device and talk about it in front of the classroom. One student who had never participated in class discussions instantly became an enthusiastic participant in the Invention Challenge and even volunteered his own house for practice sessions. This was an inspiration for Melody. She had the winners of their school competition come to JPL for the contest.

Every year we get some positive media attention, which is an extra bonus for the student teams, and for JPL as well.

WHAT IS YOUR HOPE FOR THE FUTURE?

I hope all schools throughout the nation will be able to participate. Because the cost of holding the competition is relatively low, I feel that other venues can be made available. I would like to see other NASA centers and major aerospace companies throughout the United States host the annual contest at their own locations. Also, many universities that receive space grants from NASA could be encouraged to host as well. The MESA organization is nationwide, and their infrastructure could be used to help this vision come true.

On a local scale, I hope that word-of-mouth spreads throughout the middle schools and high schools to encourage more participation. As the contest grows, I hope that more JPL teams will form because this is truly an amazing contest that allows the creativity and imagination of all who enter to shine.

Photos of Paul MacNeal by Bob Brown/ JPL Photolab

Informal education supplements classwork

By Susan Braunheim-Kalogerakos

JPL exhibit at right is featured at the Boston Museum of Science.

JPL'S INFORMAL EDUCATION OFFICE IS PARTNERING with museums, science centers and planetaria all over the country to help spread the JPL story.

Currently, JPL works with more than 100 institutions of various sizes on exhibit and artifact loans, professional development, curriculum development, and multimedia material. JPL provides the institutions with a reliable source of information and resources. Through these venues, people across the nation learn about JPL's work.

Informal education—also known as “lifelong” or “free-choice” learning—happens outside the formal classroom as people of all ages continue to seek knowledge and enrich their lives.

JPL's collaborations include the California Science Center, Kidspac, the Skirball Cultural Center and Natural History Museum in Southern California; National Air and Space Museum in Washington, D.C.; the American Museum of Natural History and Hall of Science in New York; Adler Planetarium in Chicago; and Chabot Space and Science Center in Oakland. JPL has also been a resource for the developers of a national touring exhibit, “SPACE: A Journey to Our Future,” which opens at Seattle's Pacific Science Center on Nov. 22.

JPL's partnership with Chabot has been particularly successful. Both institutions are extremely dedicated to the alliance. JPL has provided webcasts, artifacts for the new “Mars Encounter” exhibit, as well as role models, field trip opportunities and planetarium programming. Chabot offers these resources to diverse groups of students and families including underserved populations.



Photo courtesy of Anita Sohus

“What makes the collaboration with Chabot truly beneficial,” said Anita Sohus, JPL informal education lead, “is that the two institutions share goals to engage, inform and inspire people of all ages about Earth and space science.”

JPL also works with the International Planetarium Society, whose quarterly newsletter provides information to more than 750 planetaria worldwide, and has recently included educational material, posters and multimedia products from the Space Infrared Telescope Facility (SIRTF), Mars Exploration Rovers Mission, Space Interferometry Mission and the Deep Space Network.

“With funding cuts affecting science curriculum, California students can take advantage of other science education opportunities such as after-school programs and camps at science centers, planetaria, and museums,” said Sohus.

Retirees

The following JPL employees retired in September:

Billie Le Clerg, 43 years, (former) Division 240; Dale Thornton, 41 years, Section 357; Gary Milam, 36 years, Section 356; Donald Collins, 35 years, Section 381; Danal Snyder, 30 years, Section 357; Anne Kahle, 29 years, Section 324; Ernest Stone, 26 years, Section 336; Juana Reyes, 20 years, Section 349; Marian Meridieth, 13 years, Section 349; Thomas West, 13 years, Section 102.

Letters

My family and I wish to express our sincere appreciation for the beautiful flower arrangement from my friends and co-workers in the Office of the Director in the passing of my father. I would also like to thank JPL and ERC for the beautiful plant. I will do my best to nourish and keep it in honor and remembrance of my father, Pasquale.

Frances Castellaneta

Thank you, Division 36 and Section 361, for your support and thoughtful plants and cards following the passing of my father, Walter Donald.

Marj Burris

I wish to thank my friends and co-workers for the kindness extended to me on the recent passing my mother, Sylvia Silverman.

Steve Silverman

Classifieds

For Sale

AQUARIUM, 35-gal., glass eclipse tank with hood, light, heater, air pump, filter, no stand; \$75 /obo. 626/836-4960.

ARMOIRE, rustic pine; \$250 firm. 249-0528.

BOOTS, Talbots brand, ladies 8M, brn. leather, tall w/zipper, round toe, 1 1/2" flat heel, worn 2x's, virtually new, \$40; LADIES SLING HEELS, Naturalizer, "Alison" leather, 1 1/2" heel, 8M, 1 pr. rose red, 1 pr. saddle tan, like new, \$15/ea.; pics @ JPL Store. 626/296-3782, Jeanne.

CAMERA, APS Yashica Profile 4000IX, like new, metallic silver; \$100/obo. 323/208-2329.

CHAIRS, 4 deep burgundy leather w/arms, brass nail heads, high-quality & classic design; orig. \$600 each, approx 13 y/o, great cond.; \$50/ea. or 4/\$175, pics @ JPL Store. 626/296-3782, Jeanne.

CHIPPER/SHREDDER, Craftsman, 8.5 hp, 14:1 reduction ratio; \$325/obo. 790-1520.

COFFEE MAKER, Braun 10-cups, white/black, like new; \$30 obo. 626/791-6101.

COMPUTER POWER CONTROL CENTER, 5 power switches + 1 master switch, 5 surge-protected outlets and 2 modem/fax/phone jacks, new, \$20; ORGAN, Yamaha 415 electronic w/13 pedals, 3 keyboards, 144 rhythm patterns, \$2,000. 790-3899.

DESK, writing trestle style, solid maple, 44" long, with plate glass top; matching rolling chair; excellent cond., \$199. 626/791-9154.

DIGITAL CAMERA, Mino Ha Dimage S-414, 4 megapixels, 4x optical zoom, brand new in original box; comes with case, 64 MB compact flash, reader. 626/917-0231.

DINETTE, 3' x 5', 6 chairs, \$350 firm. 249-0528.

DINING SET, all slate blue; 2 large oval tablecloths, 18 placemats, 18 napkins with napkin rings; good condition, \$50 all; SHOVELS, \$2. 626/357-8210.

DINING SET/HUTCH, ceramic top table, matching hutch, & 6 chairs; leaf also incl. to expand table, solid oak constructed, hand-painted glazed roses & matching grout, med. oak finish, flower pattern cushioned chairs all in gd. cond.; located in Burbank; \$1,200 takes all, over \$2,300 new. http://www.cathouse-fc.org/other/hutch.html. 841-2574, Eric.

DOG HOUSE, Dogloo II igloo style, w/vent in roof; outside dimensions about 36" x 36," for med.-sz. dog; gd. condition, about 3 years old; \$40/obo. 909/596-4390.

DOG HOUSE, Dogloo XT for small dog, up to 45#; good condition; \$35. 626/303-1927.

ETHERNET NETGEAR SWITCH/ROUTER, 5-port; model FS605, 10/100 Mbps LAN, great for home networking to DSL, less than 1 yr. old, \$25. 626/296-8559 or chad-edwards@sbcglobal.net.

FERTILITY TEST STICKS, Clear Plan, partial box of 19 out of 30; expires 5/2004; pd. \$45/box, sell for \$20/partial box. 714/655-2204.

HOME BREWING KIT, complete supplies including glass carboy; \$45. 626/794-1319.

JUICE EXTRACTOR, Oster, automatic, gd cond.; \$20/obo; MIXER, Sunbeam Deluxe Mixmaster Mixer, table-top, 12 spd; incl. turntable, bowl-fit beaters & mixing bowls, used only a few times, exc. cond., chrome; \$75 obo; ESPRESSO MACHINE, Krups Novo compact model #989, \$50/obo. 323/208-2329.

LIFT CHAIR, electric lift full recliner w/massager & heater; burgundy, exc. cond., fully functional, max lift weight 250 lbs; paid \$750 + tx., make offer. rescobedo@cfcu.org.

MOVING SALE: AIWA stereo NSX-V70, \$75; walking treadmill, \$25; fan heater w/humidifier syst., \$25; Hamilton Beach blender, \$10; bookshelf, \$10; beach chairs, 2, portable, \$5; all-purpose pot, 4-pc. set, \$10; fan, \$3. 626/405-1539.

PORT REPLICATOR for IBM Thinkpad, works with T20, T21, A20, A21, or X, R series, like new, \$85; CARD SHUFFLER, Johnson, collectible, all metal construction with the exception of the friction wheels which drive the cards and the carved-wood dowel handles; stands ~6" handle-high, and ~9" by 6", flanges and handle inclusive; \$35; DIET TAPES Jenny Craig, set of 14, \$50. 790-3899.

REFRIGERATOR, Kenmore, with ice maker, 14 cu ft., white, 29.75" W, depth 29" D, 65.5" H; 3 yrs old, exc. cond., \$350/obo. 626/446-2989.

SCANNER, Microtech Scan Master X6EL, PC or Mac compatible, scans up to legal size + photo neg. scanner; Photoshop 4.0LE and OCR software; used only a few times; \$30. 626/303-1927.

SOCCER CLEATS, men's Puma Cellerator, GCI FG; brand new, never used; men's size 8, women's size 9.5; retail \$165 + tax, sell \$80; see photo w/ad at JPL Store and http://www.soccer.com. 846-1280, Nancy.

SOFA BED, gold tones, exc. cond., \$35. 249-4646.

SOFA/LOVESEAT, natural color with decorative pillows, exc. cond., both clean, like new; \$400; FITNESS EQUIPMENT, Jake's Hip and Thigh machine, \$30. 626/294-0499.

TILES, elegantly designed, glazed, non-skid, tan/ivory, 18" x 18"; 272 tiles total, bought \$6/ea., sacrifice \$2.50/each, 956-2234, Rose.

TREADMILL, Trainium by DP, personalized workout, incline control, programmable speed, stop key/safety switch, air step cushion deck, calorie count, \$200; MOUNTAIN BIKE, Trek 9900, OCLV carbon frame, Answer Manitou shocks, Answer A.TAC headset, Shimano Deore LX brakes, Mavic rims, \$300; COFFEE TABLE FRAME, cast iron, dark brown, 4' x 4', needs glass, \$50. 244-8822.

TREES, red banana plant, 5' tall, \$60/obo; fish tail, 6' tall, \$80/obo; ficus tree, 10' tall, braided in 30" plastic pot, \$250/obo; ceramic bowl, gray, 2" diameter with planted geraniums, \$40/obo. 626/791-6101.

VIDEO/DVD/CD CABINET, Ikea, blk and birch, \$40; SCUBA GEAR/TANK, BCD, 957-3296.

WINDSURFING EQUIPMENT, sails (4-6 m.), booms and more, very cheap; nothing over \$50. 626/448-3694.

Vehicles/Accessories

'96 BMW M3, black on black, sunroof, tinted windows, cruise, computer, excellent condition, 64.5K mi, \$17K/obo. 613-3741.

'73 CHEVY Nova, 2 door, 350 V8, auto, p/s, p/b, Cragar wheels, new custom upholstery, new front tires, needs some engine and body work, \$1,800/obo. 661/296-6260.

'00 CHRYSLER Sebring JXI convertible, gold w/blk. top, leather int., 33K mi., \$9,500. 790-1520.

'96 CHRYSLER Town & Country LXi minivan, 125K mi., exc. cond., tow pkg., \$7,300/obo. 952-9277.

'80 DATSUN (Nissan) 280ZX coupe, 5-sp., manual, blue/silver, grand lux, pkg., 139K miles, orig. owner, \$600. 626/577-8107.

'98 FORD Escort SE wgn., white, 68K mi., a/c, 5-sp. stick, new tires, \$4,100. 323/661-3380.

'97 FORD Countour GL, 4 door, taupe, automatic, power windows/locks/steering, am/fm/cass., 55,400 mi., \$6,500. 790-7934.

'96 FORD Windstar, fair cond., V6, automatic, am/fm/cass., pwr windows/door locks/steering, 139K mi, teal color, \$4,800/obo. 626/798-4120.

'93 FORD Explorer XLT 4x4, V6, blue, 94K mi., alloy wheels, Bilstein shocks; new: ABS brakes, a/c, leather, JVC stereo/CD; well maintained, vg cond., \$4,800/obo. 626/794-1319.

'93 FORD Taurus LX, green wagon, 3.8L V6, 81K mi., exc. cond., leather, a/c, am/fm/cass., 3rd row seat, ABS, alarm, full pwr., keyless entry, tilt, luggage rack, \$3,400. 790-8760.

'99 HARLEY DAVIDSON Fatboy by Ultra, custom paint, blk w/dark blue flames, 113 CI, S&S engine, low mileage, extra chrome, exc. cond., many upgrades, fast, \$14K/obo. 909/471-0441.

'99 HONDA Accord LX, blk, 4-door manual transmission, 52K miles, excellent condition, new brakes and tires, \$10,500. 661/644-5648.

'94 HONDA Accord EX 2-door coupe, 100K mi, dark green exterior w/beige cloth interior, sunroof, CD player, automatic, \$5,000; avail. mid-October to early Nov. 323/258.0074, Mal.

'93 HONDA Civic EX coupe, 5-speed, teal green, H22 motor, Nitrous Kit, very fast, new 5-Zigen Fighter Wheels 16X7, new Falken Azenis tires; \$5K firm. 244-8822.

'91 HONDA Accord Ex coupe, great cond., green 2-dr., pwr. windows, sunroof, a/c, cassette, manual, 159,000 mi., \$3,500/obo, negotiable. 626/844-8850, 626/744-3243 evenings.

'89 HONDA Civic, 4-door LX sedan, am/fm/cass., air cond., 123K miles, 5-speed manual, 1 owner; sell for \$2,000/obo. 626/403-9112 or 626/590-4600, Katy.

'93 LEXUS ES 300 sedan, orig. owner, pearl color, clean, no accidents, new tires, 5-sp. manual, pwr. steering/seats/windows, cruise ctrl., 67K mi., \$7,565/obo. 626/578-0599, Allan.

'03 MAZDA Miata, white, 87K miles, 1 owner, manual, runs great, very clean, exc. cond., new back window, many extras, pictures available, \$4,200/obo. 626/351-9150, Leslie.

94 MAZDA Miata, exc. cond., white/tan, 5 spd., ac/ps/pb, leather, pwr windows/mirrors/ant., chrome whls, glass rear window, garaged, 90K mi, maint. receipts, \$4,750. 626/844-9000.

'84 MAZDA RX-7 GS, 5-speed manual, 91K miles, runs good, stored, no current license, \$650. 626/357-7347.

'97 TOYOTA Corolla, exc. cond., 55,000 mi., mostly highway, automatic trans., a/c, \$5,500. 626/396-1767, Mike; 626/818-0135, cell.

'92 TOYOTA Camry LE, 4-dr., burgundy/gray, 123K miles, 4-cylinder, auto, a/c, pwr. s/b/windows, clean, well-maint., 1-family owned, no accidents; \$3,200 firm. 626/797-5807 after 6.

'99 VW Passat GLS, exc. cond., lo mi., white/blk, auto, 1.8 Turbo triptronic, a/c, pw. pl. ps, tint, alm, 6 CD, \$12,700. 310/435-2603.

'99 VW Passat GLS sedan 4D, 70K mi., black exterior w/tan cloth interior, tinted windows, sunroof, CD changer, automatic; \$10,500, avail. mid-Oct. to early Nov. 323/258-0074, Carl.

Free

LEFTOVER LUMBER, you haul. 626/791-6048.

Wanted

OFFICE DESK, light wood or metal, approx. 48-54" wide, 28 1/2" high, 24" deep. 248-0869 or 249-1986, Bruce.

SINGERS for informal singing group, Wednesdays, 233-303 at noon.

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

STORAGE, secure, for nice-looking '92 Honda Accord until end of May 2004 in Sierra Madre/Arcadia/Pasadena/Alt. area; will cover, can pay up to \$30/mo. 626/355-5457 or 626/297-3107.

SURFBOARD, used, 9 ft. or longer. 957-2852.

VOLLEYBALL PLAYERS, co-ed, no beginners please; Tues. nights 8-10:00 at Eagle Rock High School; \$4/night. 956-1744, Barbara.

For Rent

ALTADENA room, kitchen privileges, pool, \$400. 626/345-0692 after 6 p.m.

E. HOLLYWOOD, lg. single apt., 1 block/Metro & shopping; util. pd.; stove, ref., sec. bldg., newly decorated; \$700. 310/377-0316, Gerri.

GLENDALE, townhome-like duplex, 2 bd, 1.5 ba., din. rm., liv. rm., priv. patio, marble floor; family neighbhd., close to JPL; \$1,200. 956-2234, Rose.

GLENDALE/guest house, nice 1 bd., 1 ba., stove, washer/dryer, 11 miles from JPL, \$900 + elec., water/gas included. 240-0131.

LA CANADA, 1 bd. apt., very close to JPL, La Canada School address, next to Caltech Credit Union, across from shopping and Starbucks, \$1,000. 952-4444, ext. 201.

PASADENA townhouse, large, 3 bd., 2.5 ba., central air & heat, washer/dryer hookups, fireplace, walk to Goldline; new carpet, linoleum, stove; covered parking, no smoking or pets; \$1,800, water & trash incl. 626/394-5946.

PASADENA, exceptional condo nr. major shopping, restaurants, Caltech & JPL; 2 master bd, each w/ba.; 3 story w/1/2 ba. on main level, attached 2-car gar. with w/d hook-up; fireplace, cent. air, gas appliances, Pergo floors on main level w/custom plantation shutters; priv. entry w/patio; \$1,700 + \$2,000 security deposit. 626/568-3643.

PASADENA house, 3 bd., 2 ba., in San Rafael Hills, newly remodeled, owner occupied, hardwood floors throughout, granite kitchen countertops and travertine flooring, stainless steel appliances, central a/c, heat, marble guest ba., 1.5-car gar., plenty of driveway parking, incl. weekly garden service, w/d, refrigerator, and more; furn. for \$2,750; avail. mid-October for 1-year lease, \$2,450. 323/258-0074, Carl.

PASADENA, spacious 2-story condo, 3 bd., 2.5 ba., prestigious community, beaut., inter., bright kitch., prof. landscape, ctrl. air & heat, close to shop., cozy LR w/fr. end unit, frml DR, hdwd. flrs., immac. cond., close to schls; \$1,750. 626/396-9024.

PASADENA, furn. & unfurn. townhome-style apts., 2 bd., 1.5 ba., patio, dishwasher, cent. a/c, new carpet & floors, refrig. & stove, laundry, parking, close to Caltech & JPL; \$1,295-\$1,350 + util. 626/577-3060, ext 14, Dennis.

PASADENA, furnished apt. to share w/JPLers; 3 bd., 3 ba., townhome-style with patio, central a/c, laundry, close to Caltech & JPL, \$650 plus util. 626/577-3060 ext. 14, Dennis.

PASADENA, renovated 3 bd., 2 ba., house, new kitchen/windows/copper plumbing/paint; hrwd. floors in living & din. rooms; lg. front porch; water/trash/gardener/parking incl.; close to JPL/Caltech/PCC/Goldline; \$1,850. 590-2793.

SIERRA MADRE, cyn. duplex, 2 bd., 1 full ba., upstairs duplex unit, lg. covered terrace, garage, quiet setting, laundry facilities; no pets, no smoking, water/trash/laundry/gardener incl.; avail. 11/01 or sooner; \$1,650. 626/836-9120.

SIERRA MADRE, cyn. home, 2 bd., 1.5 ba. w/priv. patio, 2 parking spaces, laundry hookups, quiet garden setting; water/trash/gardener incl.; no pets/no smoking; \$1,570. 626/836-9120.

SUNLAND, fully furn. room in condo; share kitchen/bath/laundry; garage parking, a/c, fireplace, pool, Jacz., tennis court; 10 mi. to JPL; female preferred, non-smoking; \$500 incl. util.; \$400 security deposit; references. 352-3112.

Real Estate

ALTADENA, 1 story trad., 2 bd., 2 ba., 1,300 sq. ft., LR, DR, den could be 3rd bdrm., 2-car gar., central a/c, 2 FP, modern kitchen, hardwood floors; 2 mi. east of JPL, on quiet cul-de-sac with mtn. views; \$369K. 790-0308, Beatrice.

Vacation Rentals

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

CABO SAN LUCAS, Valentine's wk. getaway, junior suite at Pueblo Bonito Resort, slps 4, balcony w/panoramic vw. of Sea of Cortez, kitchenette, a/c, satellite TV, on white sand beach, lg. freeform pool w/island & waterfall, fitness cntr., 2 restaurants, dell, beauty shop, maid service, bilingual staff; 80 F ocean temp, \$800 for wk. of 2/9/04, www.pueblobonito.com. 626/296-8633, Todd.

DEL MAR, fully furn. condo, 7 nights 11/15-11/22/03; slps 6, 2 bd., 1 & 1/2 ba., living rm., full kitchn., cable tv/cvr, game room, sauna, pool/spa, laundry rm., bbq area, walk to race track and beach; JPL discnt. 626/961-8771.

HAWAII, Maui condo, NW coast, ocean front view, 25 ft. fr. surf, 1 bdrm. w/loft, compl. furn. phone, color TV, VCR, microwave, d/v, pool, private lanai, slps 4, laundry fac., low season rate \$105/night/2, high season rate \$120/night/2, \$15/night/add'l person. 949/348-8047, jackandrandy@cox.net.

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

OCEANSIDE condo, fully furn., 2 bd., 2 ba., fireplace, full kitchen; quiet, relaxing, beautiful beachside setting; BBQ, pool, spa, game room, great ocean view; easy walk to pier & restaurants; slps. 8; avail. weekly or monthly. 909/981-7492 Darlene or dfhaug@yahoo.com.

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

'01 PACE ARROW, 34-foot RV; queen, sofa and dinette beds; monthly rentals only, \$3,000 in advance + \$1,000 security deposit; you pay insurance and gas; JPL employees only; no smoking or pets. taohemike@earthlink.net, 530/525-7334.

ROSARITO BEACH condo, 2 bd., 2 bth., ocean view, pool, tennis, short walk to beach on private rd., 18-hole golf 6 mi. away, priv. secure parking. 626/794-3906, Patrick.

Editor

Mark Whalen

Design + Layout

Adriane Jacob, Audrey Steffan/
Design Services

Chief Photographer

Bob Brown/Photo Lab

Advertising

Susan Braunheim-Kalogerakos

Universe is published every other Friday by the Office of Communications and Education of the Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91109.

Notice to Advertisers

Advertising is available for JPL and Caltech employees, contractors and retirees and their families. No more than two ads of up to 60 words each will be published for each advertiser. Items may be combined within one submission. Ads must be submitted via e-mail to universe@jpl.nasa.gov and are due at 2 p.m. on the Monday after publication for the following issue.

All housing and vehicle advertisements require that the qualifying person(s) placing the ad be listed as an owner on the ownership documents.

JPL'S ONLINE NEWS SOURCE



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

http://dailyplanet

View this and previous issues of Universe at

http://universe.jpl.nasa.gov

E-mail us at

universe@jpl.nasa.gov