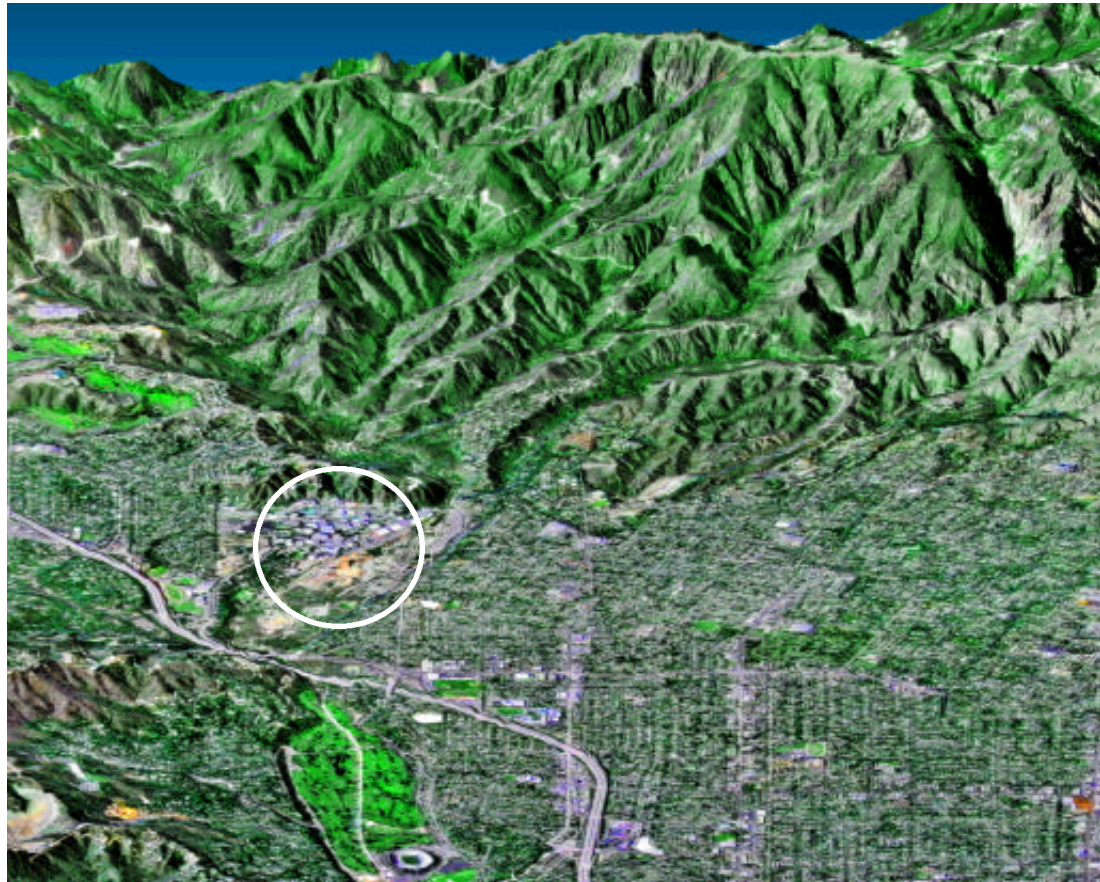


News Briefs . . . . . 2	The Bottom Line . . . . . 3
Special Events Calendar . . . . . 2	Passings, Letters, Retirees . . . . 4
Flight Hardware Program . . . . . 2	Classifieds . . . . . 4

## Radar completes journey around Earth

By Mark Whalen

*JPL is circled in image generated by the Shuttle Radar Topography Mission. The 210 freeway is seen beneath the Laboratory, and the Rose Bowl is visible near the bottom-left of the picture. Images from the mission are available online at <http://photojournal.jpl.nasa.gov>.*



**e**leven days after beginning its epic journey of mapping the Earth, JPL's Shuttle Radar Topography Mission (SRTM) triumphantly glided home to Kennedy Space Center Feb. 22.

Space Shuttle Endeavour's landing at 2:22 p.m. Pacific time completed a nine-day mission that mapped almost 70 million square kilometers (44 million square miles) twice to create the most extensive 3D map of the globe ever created.

"The mission went way beyond my expectations," said Project Scientist Dr. Mike Kobrick. "We've acquired a global image mosaic that won't be able to be reproduced and may be still be in use 100 years from now."

Utilizing two radars on a unique 60-meter (200-foot) mast that extended out of the shuttle's payload bay, in conjunction with another two radars in the payload bay, SRTM collected data over most of the land surfaces between 60 degrees north latitude (the southern tip of Greenland) and 54 degrees south latitude (the southern tip of South America), or almost 80 percent of all the land on the Earth. Kobrick said SRTM acquired data over 99.9 percent of the target area.

"I thought this mission was one of the most challenging, difficult missions we ever undertook," NASA

Administrator Daniel Goldin told Associated Press. "We deployed a 200-foot boom and held the tip to inches. The radar was a few thousand pounds. The technology was incredible."

The mission garnered 326 digital tapes of data, enough information to fill more than 20,000 compact discs. Almost all of the SRTM data will be processed at JPL, and will take between a year and a half and two years to complete.

Project Manager Neil Herman noted that processing will be performed in Section 334, and led by David Perz and Paul Rosen. Herman said it will take about nine months to acquire and calibrate processing equipment, with another three months for pre-processing activities. Processing will then proceed for another nine months, he said.

SRTM is sponsored by the Department of Defense's National Imagery and Mapping Agency, which will distribute mapping data to the military for use in flight simulators, logistical planning, missile and weapons guidance systems, and battlefield management and tactics.

Scientific applications for the data include geology, geophysics, earthquake research and volcano monitoring. For civilian purposes, the new maps are expected to provide enhanced ground proximity warning systems for aircraft, as well as benefits for civil engineering, land use planning, and line of sight determination for communications such as cell phones.

## Galileo survives another radiation blast at Io

By Jane Platt

JPL's Galileo spacecraft has begun beaming volcano pictures and other science data to Earth, now that it has successfully completed its third and closest-ever flyby of Jupiter's fiery moon Io.

Despite intense radiation near Io, Galileo completed all its planned activities during the Feb. 22 flyby, at an altitude of 198 kilometers (123 miles).

"The navigation team really excelled on this one," said Galileo Project Manager Jim Erickson. "Even though this was the closest encounter, they delivered us right on target."

"This looks like a really great flyby; it's our first Io encounter without a new problem interrupting it," he added. "This encounter is exceptionally important as it will be the first one in which we can incorporate into the plans the data we saw in previous flybys of Io last October and November. The science planning and operations team really turned the new science plans around quickly once we saw Io up close."

Last week's Io flyby also included a radio science experiment while Jupiter was partly blocking the radio path from the spacecraft to Earth. By studying distortions in radio signals in these situations, scientists learn more about Jupiter's atmosphere.

"It's amazing that this flyby was so trouble-free," Erickson said. "We're just about at the point where the spacecraft will receive three times as much radiation as it was designed to withstand, so we might have expected increasing levels of problems. The spacecraft and sequence team certainly worked overtime preparing contingency recovery packages for different scenarios."

Next up for Galileo are scheduled flybys on May 20 and Dec. 28 of Ganymede, the largest moon in the solar system, with a diameter of 5,268 kilometers (3,273 miles). Larger than Mercury and Pluto, Ganymede is most likely composed of a rocky core with a water/ice mantle and a crust of rock and ice.

"It will be with a certain trepidation that we go into the Ganymede encounters," Erickson said, noting that the spacecraft will by then have increased its received radiation dose beyond three times the design limit.

## Stardust's aerogel begins sample collection

By Jane Platt



On its way to a rendezvous with a comet in four years, the JPL-managed Stardust spacecraft has successfully deployed its aerogel collector, enabling it to begin collecting interstellar dust from a stream of particles that flows through our solar system.

On Feb. 22, heat shield on the spacecraft's sample return capsule opened, then a motor moved the aerogel collector out of the capsule. At that point, a

second motor extended the collector fully to its collection position. This raised it high enough so that Stardust would be able to collect samples of comet dust when it flies by Comet Wild-2 in 2004. After deployment, engineers commanded the spacecraft to retract the collector by about 50 degrees to position it correctly for the current interstellar dust collection.

The aerogel collector has two sides, one designed to gather interstellar dust, while the other

is for comet dust collection. Engineers can control which side of the collector is exposed to a dust stream by orienting the spacecraft.

Right now, Stardust is oriented so that the interstellar dust particles are hitting the backside of the collector. The current interstellar dust collection will continue through at least May 25. After that, it will be returned to its stowed position until mid-2002, when another period of interstellar dust collection is scheduled.

*The aerogel dust collector.*



# News Briefs



Dr. Marvin Simon

### Lab honored for ethics efforts

JPL has been honored for its ethics efforts by an organization that promotes the practice among local businesses.

The Character and Ethics Project, based in Glendale, presented JPL with a plaque of recognition last month "for support and dedication to the betterment of our local communities."

DOUG SANDERS of JPL's Ethics Office said the Lab was one of 10 local nonprofit organizations that helped begin the project's fundraising efforts last year.

The project also honors individuals based on monthly ethics themes, and concurrent with JPL's honor, WINSTON GIN of the Office of the Director was cited for January's theme, "respect."

Sanders said each JPL organization will have the opportunity to nominate employees for the monthly honor.

### Simon garners IEEE medal

DR. MARVIN SIMON, a senior research scientist in the Telecommunications and Science Engineering Division 310, has been selected as a recipient of the Institute of Electrical and Electronic Engineers (IEEE) Third Millennium Medal for his outstanding contributions to communications technology.

Simon was cited for seminal contributions spanning three decades in the design and analysis of novel digital communication systems, including synchronization and tracking, differential detection and signal design, spread spectrum techniques, and most recently, fading channel evaluation.

He will receive the medal at an IEEE conference later this year.

A 32-year JPL employee, Simon has earned NASA's Exceptional Service Medal and Exceptional Engineering Achievement Medal, and numerous other IEEE honors.

### Web site speeds facilities requests

Jacobs Engineering Remediation Technologies, JPL's contractor for facilities maintenance and operations for the past 17 months, will soon debut a Web site to expedite service requests and provide customer feedback.

The site will include direct links to online work requests, which can still be initiated by calling Jacobs' customer service center at ext. 4-4933, or visiting Building 202-102.

Project Manager MIKE OAKLEY said the site's URL will soon be announced in *This Week*. Service can now be requested online at <http://nbs-web>. For

repairs, link to "JPL Services" and click on "Facilities Maintenance Services." To have new work done, whiteboards or pictures hung, or furniture repaired or assembled, select "Facilities Services" on the JPL Services page.

"Our mission is to provide exceptional facility maintenance services in a safe and cost-effective manner," Oakley said. "We work directly for the Facilities Division 660 and Facilities Maintenance and Operations Section 662, and we hope the fact that we are employed by Jacobs is transparent to JPL staff."

He said staff are assigned to respond immediately to emergency needs; however, "For less urgent requirements, each week we schedule for the next week's routine work. It is very important that customers involve us in their plans as soon as possible."

Oakley said customer feedback is encouraged. Each month Jacobs sends a customer satisfaction survey via e-mail on a random sampling of completed work orders. Feedback is used for process improvement as well as in rewarding Jacobs team members.

Oakley noted that since the random survey doesn't reach all customers, JPL staff are encouraged to contact him at ext. 4-3577 or e-mail to [mike.oakley@jacobs.com](mailto:mike.oakley@jacobs.com), or TONI CARTER, Jacobs quality manager, at ext. 4-0325 or e-mail to [toni.carter@jacobs.com](mailto:toni.carter@jacobs.com).

### United Way top campaigners honored

JPL United Way campaigners who achieved the largest participation increase in their organization during last fall's drive were honored for their efforts in von Kármán Auditorium ceremonies Feb. 29.

Top campaigners were categorized based on the number of employees in the section or sections they represented. The honorees:

1 to 10 employees: John Elliott (Section 5081), Patricia Reed (660, 662).

11 to 20 employees: Jennifer Jubilado (380), Yvonne Zieger (500, 502, 511).

21 to 49 employees: Olga Adame (100), Nellie Vidaca (194, 198).

50 to 99 employees: Hope Norton, Angela Belcastro, Cecilia Basic, James Hardy, Ronald Ross, Tony Ganino (354); Gloria Lawler, Nancy Zeavin (386).

100 or more employees: Dora Montano, Linda Whipple, Catherine Thomas, Gabrielle Magee, Jertrice Coker, Mariza Arnot, Wesley Chan (210-215); Jan Smith, Adriana Wall, Debra Wade, Diana Burrows, Mary Kay Kuehn, Ron Murillo, Susan Crowe (345, 348).

# Special Events Calendar

### Ongoing Support Groups

Alcoholics Anonymous—Meeting at 11:30 a.m. Mondays, Tuesdays, Thursdays (women only) and Fridays. Call Occupational Health Services at ext. 4-3319.

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

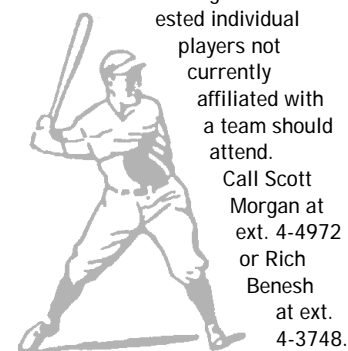
Gay, Lesbian and Bisexual Support Group—Meets the first and third Fridays of the month at noon in Building 111-117. Call employee assistance counselor Cynthia Cooper at ext. 4-3680 or Randy Herrera at ext. 3-0664.

Parent Support Group—Meets the third Thursday of the month at noon in Building 167-111. Call Greg Hickey at ext. 4-0776.

Senior Caregivers Support Group—Meets the second and fourth Wednesdays of the month at 6:30 p.m. at the Senior Care Network, 837 S. Fair Oaks Ave., Pasadena, conference room #1. Call (626) 397-3110.

### Friday, March 3

JPL Softball—An organizational meeting will be held at 11:30 a.m. in the Building 167 conference room. All team managers and interested individual



players not currently affiliated with a team should attend. Call Scott Morgan at ext. 4-4972 or Rich Benesh at ext. 4-3748.

**Puerto Rico**—This travel film will be presented at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$9 and \$7. For information, call (626) 395-4652.

### Saturday, March 4

**Dreams of Martha Stewart**—This funny, sometimes sad, one-woman play about the eternal quest for perfection will be presented at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$25, \$18 and \$14. For information, call (626) 395-4652.

### Sunday, March 5

**Chamber Music**—Flutist Gary Schocker and guitarist Jason Vieaux will give a free concert at 3:30 p.m. in Caltech's Dabney Lounge. For information, call (626) 395-4652.

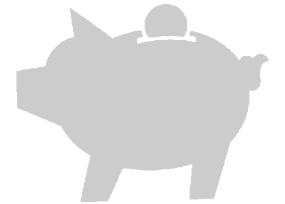
### Monday, March 6

**Caltech Ballroom Dance Club**—The final lesson of a four-week course of professionally taught Viennese waltz will be offered at 7:30 p.m. in Winnett Lounge. Course cost is \$24. Call Don at (626) 791-3103.

### Tuesday, March 7

**Investment Advice**—Fidelity representative Roland Jacobson will discuss current market and economic conditions and historical Fidelity mutual fund performance. From 1 to 3 p.m. in von Karman Auditorium; seating is limited. Call Fidelity at (800) 642-7131 for reservations.

"Making the Most of Your Money"—TIAA/CREF representative Cindy Wilson will discuss retirement



savings and cash flow; income and expense analyses; and setting goals and determining obstacles to retirement savings. To be held from 10 to 11:30 a.m. in Building 180-101.

**Retirement Planning**—Cindy Wilson of TIAA/CREF will conduct an information meeting for all employees who have completed, or will soon complete, their eligibility requirement for retirement plan participation, or for new hires eligible to join the retirement plan. Assistance in completing applications and investment option information will be available. To be held from noon to 1 p.m. in Building 180-101

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

JPL Genealogy Club—Meeting at noon in Building 301-169.

### Wednesday, March 8

**Caltech Ballroom Dance Club**—The final lesson of a five-week course of student-taught Argentine tango will be offered at 7:30 p.m. in Winnett Lounge. Cost is \$1 per lesson. Call Don at (626) 791-3103.

**JPL Toastmasters Club**—Meeting at 5:30 p.m. in the Building 167 conference room. Guests welcome. Call Mary Sue O'Brien at ext. 4-5090.

### Friday, March 10

**ERC Family Film Festival**—*Pokemon: The First Movie* will be shown in von Karman Auditorium at 6 p.m. Tickets are free and available in the ERC office on Monday, March 6.

### Saturday, March 11

**At the Mandolin**—The David Grisman Quintet, combining musical influences from bluegrass and Latin to gypsy and jazz, will appear at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$29, \$25 and \$21. For information, call (626) 395-4652.

### Tuesday, March 14

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

### Thursday, March 16

**JPL Astronomy Club**—Meeting at noon in Building 198-109.

**Von Kármán Lecture Series**—"Mars in the Mind of Man" will be the topic of a panel discussion at 7 p.m. in von Kármán Auditorium. Open to the public.

### Friday, March 17

**Von Kármán Lecture Series**—"Mars in the Mind of Man" will be the topic of a panel discussion at 7 p.m. in The Forum at Pasadena City College, 1570 E. Colorado Blvd. Open to the public.

## Sharing flight hardware among projects helps save time, money

Dr. Philip Varghese, Deep Space 1 project manager (second from left) delivers the project's first item of residual hardware to Kevin Clark, Flight Hardware Logistics Program manager. At left is Dr. Marc Rayman, Deep Space 1 mission director; next to Clark are Courtney Lambert, the program's residual inventory capture lead and Ed Dobkowski, residual inventory lead.

The Flight Hardware Logistics Program has received residual project materiel from Deep Space 1 to make available valuable flight hardware that could be used on future JPL missions. This will result in saving considerable time and cost for downstream projects, according to Program Manager Kevin Clark.

Projects in the operations phase will be adding residual hardware, from ground support equipment to flight hardware (assemblies, parts, etc.), to the program's inventory on a 13-week cycle that keeps pace with JPL missions' launch rate. Access to the inventory is through the program's catalog at <http://fhlp.jpl.nasa.gov>.

The Flight Hardware Logistics Program is a Develop New Products initiative created to develop and implement effective methods to reduce the acquisition time for flight projects' longest lead-time items. The principle methods used by the program include capture and access to residual flight materiel, brokering of common flight procurements, development of supplier agreements for faster access to flight materiel, and providing information to projects and proposers about these real and virtual inventories of flight materiel.

The program's most notable success to date, Clark said, has been the delivery of 31 RAD6000 flight computers to nine JPL projects, achieving significant lead-time savings and cost savings of \$3.7 million.



Tom Wynne/JPL Photo



Bob Brown/JPL Photo



**F**red McNutt, who joined JPL last September as JPL's associate director/chief financial officer, is the first to hold such a title at the Laboratory. Formerly vice president and controller for the Sensors & Electronics Segment of Raytheon, he discusses with the Universe the challenges facing JPL's new Financial Operations organization, which he oversees.

**Q** How will your experience in the commercial world help JPL thrive? How do the financial challenges of JPL, a nonprofit, government contractor, compare to the corporate world of Raytheon/Hughes?

**A** For me, coming to JPL is a fascinating opportunity to utilize some of the skills I developed while working in outside industry. At Raytheon, which is a large industrial and defense organization, we saw the need for new business systems and had begun to implement them. This was at the same time we were trying to introduce process improvements, while also undergoing a reorganization. We learned a lot from that.

In my past experiences, and certainly today at JPL, technology and skills in research and development are paramount to the success and the basic survival of the organization. It is extremely important that the Financial Operations organization provide timely, accurate and complete analysis in support of our technical organizations.

My office is a service organization to the technical community, and we can't lose sight of that. A major difference here at JPL is the outlook on longer-term performance objectives, which gives us the opportunity to focus strategically.

In the corporate world, having to deliver quarterly performance to stockholders was a major emphasis, but is obviously not required at JPL. However, meeting cost and schedule while delivering superior scientific and technological innovation is all-important.

**Q** What are the CFO's areas of responsibility? How is the office set up, and who, exactly, are your customers?

**A** Our customer base is very broad. Besides providing support to the programs and projects, we provide basic services such as payroll, travel, and timekeeping, so our customers include *all* employees.

We also have significant other requirements to fulfill. To mention a few, the Contracts Management Office is heavily involved in day-to-day operations of the NASA contract, the Acquisition Division acquires \$600 million to \$700 million worth of business every year, and the Project Resource Administration Division is on-site with projects, making sure they have the resources and financial analysis support they need. Additionally, the Accounting and Finance Division handles vendor payments, financial planning, cash and general ledger activities; and the Institutional Business Systems Division is responsible for our business systems.

Since we draw our funds from NASA through Caltech, we need to understand how those interactions work; and of course, NASA provides oversight, so they're clearly interested in our costs and financial performance.

**Q** In the five months you've been here, how do you think it's gone so far?

**A** I have mixed feelings, to be honest. After JPL introduced brand new business systems and went through a difficult period in FY '99, people might like to think I could come in and wave a magic wand and instantly make everything better, but that doesn't happen. The people here were trying the best they could to introduce new business systems and a new contract with NASA at the same time. Yet another factor was the Y2K activities, and we needed a lot of lead time to get many of the business systems converted.

Under the best of circumstances, doing any of those by themselves would be a challenge; doing all of them together is very difficult. And we suffered through that.

What I'm seeing now are the fruits of the introduction of the new business systems. We're seeing people being able to hold their head up again and say they've got good data. I think that's critical.

Going from a situation where the customers aren't happy at all—in fact, very displeased—to what I think we're going to see this year, marks a real change in our ability to supply timely and accurate data that will make a big difference to our customers.

**Q** How goes the implementation of the financial systems based on Oracle software? Are they now stabilized? What do you hear from customers?

**A** It's certainly mixed. But rather than an Oracle system, we look at it as our business system—we own it and we are responsible for it. We have received significant support from Oracle during the tough transition and are in the stabilization process.

I can't say we have resolved all the issues, but let me tell you about the positive things that have happened. Since a very difficult close at the end of the fiscal year last September, we've managed in December and January to close our books and accounts in a 48-hour period—that is, wrapping up in summary fashion all of the details that tell us what we did, how we did it and the costs incurred.

That's remarkable, and something

our people can be very proud of. It positively reflects not only on our enhanced business systems and processes, but also in the skill of the people and the improvement in their understanding of how the systems perform. It's an example of improved timeliness.

The quicker we can draw a month to a close, the quicker we can get information back to the projects so they can analyze how they're performing relative to their resource plans.

This month, we will begin to review Oracle's new release, which will further enhance our business systems, in order to get it implemented sometime late in the year. We'll work with Oracle to determine what the new release can do for us, what parts we want and don't want.

**Q** Last year, the Lab faced a number of well-documented problems in the financial and business areas, including having to borrow money from Caltech to pay bills. Where does JPL stand with these issues?

**A** First of all, the loan provision we had with Caltech has been substantially reduced. We continue to make progress in that area and it's no longer a significant issue.

Also, we had a large number of data reports to NASA that were not timely, but we have completely turned that around to where most all of the reports have come out on time. The ability to deliver financial information in a timely fashion—noted by both internal customers and external customers—is a major improvement over the last couple of months, and I have every confidence this will continue.

**Q** The Cross-Functional Business Process Team works with your office. Who's represented in this group, and what's its purpose?

**A** When we were going through the difficult period of FY '99, working in an environment where we were basically putting out fires, we realized that a team representing the technical, business and human resources areas—basically all walks of life at JPL—should continue to come together to address severe transition issues.

It started up as ad-hoc teams, with specific objectives. Having seen the benefits, we've elected to establish this as a permanent team that will meet periodically. It identifies business process issues, develops

actions plans for resolution, and tracks status. It also makes sure we don't miss something in the solutions that we propose.

# THE BOTTOM LINE

**Q** Can you look forward and project where JPL business operations will be a few years?

**A** Today, we do not analyze a project's cost and schedule performance as I believe we should. We can describe those factors separately, but we need to develop meaningful systems that utilize an "earned value" approach, where individual projects can measure their progress by reviewing their scope, schedule and budget in an integrated fashion. That's what I see in two to three years. We need to do less "bean counting" and more professional analysis. For the technical community, easier access to planning and reporting data will be provided online. We have begun to move in this direction.

**Q** How do you gauge your success thus far?

**A** I'm getting feedback from a lot of sources, both internally and externally. I just took a trip to Washington to understand both financially and contractually how our NASA customers feel we're doing. They point out, as we know, that we still have room to improve. But I'm encouraged by the improved degree of professionalism and solutions that are being brought forward. Our people make the difference and we are building an excellent organization.

**"The ability to deliver financial information in a timely fashion—noted by both internal customers and external customers—is a major improvement over the last couple of months, and I have every confidence this will continue."**

— Fred McNutt,  
JPL chief financial officer

By Mark Whalen



# 'Things to Keep' kicks off story series



Dutch Slager/JPL Photo

Deputy Director Larry Dumas addresses Lab staff who attended the first in the Library's "JPL Stories" series February 24.

The Library's "JPL Stories" series got off to a successful start last week as Deputy Director Larry Dumas related his thoughts on the Lab's culture over the years.

Dumas' talk, "Things to Keep," noted that in the face of the many changes JPL has adopted recently, its success is due in large part to a number of factors that indeed do not change over time.

Among those he noted were employees' ability to understand how things work; the ability to find the root causes of problems; relentless peer review; healthy skepticism; JPLers setting very high standards for themselves; and "a deep and abiding faith that we will succeed, with a

sufficient application of persistence and intelligence."

The talk also included a question and answer session. About 65 people attended, said librarian Teresa Bailey.

"We received enthusiastic responses from several people in attendance, who really liked the informal storytelling format," she said. "One of our goals for this series is community building, allowing people to be part of the discussion."

The series is scheduled to be presented monthly, Bailey said. The next scheduled story at the Library, Building 111, is for March 23 at 4 p.m. The presenter will be Sarah Gavit, manager of the Interstellar and Solar Sail Technology Program,

## Passings

**JAMES HOFFER**, 77, retired manager of JPL's former Security and Plant Protection Section 613, died from complications of Alzheimer's disease Dec. 30.

Hoffer worked at JPL from 1976-86. He is survived by his wife, Anna, son Jonathan, and two granddaughters.

Services were held Jan. 4 at Presbyterian Church in Covina.



James Hoffer

**MAXINE ESTERAS**, 62, a senior human resources clerk in Section 194, died of cancer Feb. 8 at Arcadia Methodist Hospital.

Esteras had been with JPL since 1991. She is survived by sons Martin Esteras and Dean Richards, four grandchildren and two great grandchildren. Services were private.

## Letters

My family and I would like to express our thanks and deepest appreciation to all friends, colleagues and co-workers at JPL for their support and expression of sympathy upon the recent passing of my father. In addition, our thanks to ERC for the beautiful plant.

Victor Boyadzhyan and family

I just want to thank all the people who participated in my send-off into retirement. First, I'd like to thank especially the committee, Donna Wu, Jean Henderson, Susie Carrera and Gary McCutcheon, who did a spectacular job putting the party together.

And, a special thank you to Tim Larson for hosting the program. Then, to all of you who joined me that day, thank you for taking time out of your busy schedules to be there to wish me well. I will miss you all but look forward with eager anticipation to this next adventure in life.

Carol Young

## Retirees

The following JPL employees retired in February:

George Ladner Jr., 42 years, Section 509; Edward Cuddihy, 41 years, Section 514; Arthur Collins, 37 years, Section 313; Edward Bailey, 33 years, Section 351; Sun Wong, 33 years, Section 312; Robert L. White, 30 years, Section 333; Joseph Billitti, 29 years, Section 352; Sylvia Chavez, 21 years, Section 349; James Coss, 16 years, Section 514; Robert Karpen, 14 years, Section 514.

## Classifieds

### For Sale

**AIRLINE TICKETS**, 4, Delta, anywhere in U.S. except Hawaii, must use by 7/1/00, \$325/ea. 248-9722.

**ANSWERING MACHINE**, GE, black, microcass., voice time/day stamp, hardly used. 626/844-4383.

**BEDROOM SET**, beautiful French antique, 6 pc.; head & foot board; 2 night tables; vanity w/folding mirrors; armoire w/mirror, must see, sacrifice, \$5,000. 626/794-0455, Ollie.

**BIKES**, road, specialized, '91 Allez, lg. carbon fiber frame, Suntour, 12 spd. shifters, very light & stiff, triathlon or std., drop bars. Look pedals. \$300 firm. 626/794-0886, Ted.

**CAMERA**, Minolta, 35mm, model XG7 body plus, 55 & 35mm lens, \$100/obo. 365-3799, Dave or Lucy.

**COMPUTER**, Mac Performa PowerMac 5200, 64 MB RAM, 800 MB HD, 4xCD, floppy, 56k modem, OS 8.5, built in 15" mon., Stylewriter printer, MS Ofc. 98, Netscape 4.5, more, exc. cond. 626/445-4690.

**COUCH/LOVE SEAT**, camelback, white, like new, \$300/obo; **BIRD CAGE**, round, 20" dia., 27"H, on pedestal, \$30. 909/596-9007.

**DESK**, computer, Sauder, dark cherry, 35.5 x 19.5 x 29.5"H, keyboard tray, printer shelf, hidden wheels, 1 yr. old, exc. cond., \$120 new at Staples, sell \$80/obo. 805/388-8524, Trish, eves.

**HOCKEY TICKETS** (2), Kings, Staples Center lower bowl, behind net, parking incl., \$92. 626/331-9998.

**MATTRESS**, double sz., box spring & frame, firm, like new, \$100. 248-7664.

**OSCILLOSCOPE**, single trace, 15 MHz, w/2 probes & manual, \$40. 626/351-5485.

**PEACOCKS**, free feed, \$1. 661/269-8945.

**PET SUPPLIES**: dog pillows, new, small, cedar filled, \$10; bird cages, 1 new for canary, white-house style, \$25; other asstd./used; accessories, finch/canary, new; dog houses, Igloo. 626/798-6248.

**POWER ADAPTERS** for camcorder, Sony AC-V16 & Samsung AA-E1N, \$10 ea.; battery for camcorder, NP-33 (6V 800mAh). 541-0298.

**REFRIGERATOR**, Amana, white, 21 CF, top freezer, dual humidity ctrls., ice mkr., deli chiller ctrl., exc. cond., must see, \$300/obo. 626/568-8298.

**SKIER**, Nordic Trak, Pro model, \$250. 909/623-4857, Warren or Anita.

**STEREO**, Sharp, CD/cass. player, AM/FM radio, 2 speakers, 3 yrs. old, like new, hardly used, \$100. 626/405-0220.

**SUITCASE**, Samsonite, 700 Series Silhouette, lg. EZ Cart 26.5"x13.5"x20.5", black, used for 1 trip, orig. price \$389, sell \$125; **PORT-A-CRIB** w/matt., \$20; **DRESSER/BUFFET**, solid walnut, 62.5"Lx18.5"W, exc. cond., \$65. 626/332-6537.

**TOWER** for CDs, oak, holds 300+, \$20. 626/791-8848.

**TREADMILL**, Sears Lifestyler 8.0, motorized/incliner, \$250. 352-2036.

**VIDEO GAMES**, Nintendo 64 w/2 ctrls., exc. cond., \$110. 909/592-4667.

**WASHER & DRYER**, Kenmore, white, washer/top load, dryer/gas, both heavy duty, \$50/ea., \$80/both/obo. 626/568-8298.

### Vehicles / Accessories

'95 ACURA Legend LS coupe, 2 dr., black, auto, 104K mi., mint cond., black leather, sunroof, heated seats, alloy wheels, CD changer, remote keyless entry, \$17,000/obo. 626/584-3204 day, 909/592-0780 eve/week-end

'96 FORD Contour, 4 dr., GL Sedan, 4 cyl., 2.0L eng., auto, dual air bag, a/c, intermittent wipers, pwr/brakes/steer/dr.,

heated pwr. mirrors, cruise, am/fm stereo/cass., rear win. defrost., remote trunk release, velour/cloth seats, ctr. console, \$6,600. 949/855-1096.

'95 FORD Mustang, 3.8L V6, 5 spd. manual, 52K mi., silver, a/c, pwr. everything, cruise, stereo CD/cass., dual air bags, \$9,000. 249-0038.

'89 FORD Pony Escort, 2 dr., blue, manual, 126K mi., gd. cond., all orig., no accidents, \$900/obo. 805/523-7246.

'93 HONDA Civic coupe EX, white w/neutral int., very nice looking, perfect mech. cond. 5 spd., a/c, cruise, alarm/keyless entry, pwr. win/locks, sunroof, grt. stereo, 73K mi., well maint., complete records, \$9,500. 626/284-9424.

'91 HONDA Accord SE, 127K, pwr. moonroof, auto, leather int., well maint., \$6,000. 323/257-8537.

'88 HONDA Civic DX sedan, 4 dr., 5 spd., a/c, cass., 4 cyl., blue, new clutch/brakes, under 100K mi., exc. cond., \$3,000. 790-2255, day, 952-5137, eve, Jean.

'91 HYUNDAI Excel, low mi., looks & runs great. 679-1471.

'86 MERCEDES BENZ 560 SEL, burgundy ext., gold chrome, c/a, always garaged, pampered, loaded, exc. cond., 160M, great value, \$10,800 firm. 626/358-9669.

'89 PLYMOUTH Voyager, \$1,600. 352-2036.

'97 REINELL ski boat, open bow, V6 Merc., low hrs., always garaged, exc. cond., see to appreciate, 10-disk CD changer, \$14,000. 661/424-9348, Mark.

'98 TOYOTA T100 SR5 extra cab 4X4 truck, loaded, 3.4L 190hp V6 eng., a/c, pwr/dr/win, cruise, am/fm stereo/cass., bedliner, 16" 5-spoke alloy wheels, 57,000 mi., well maint., never off-road, Stellar Blue w/gray int., Blue Book over \$23K, extremely scarce, \$22.5K/obo. 888/515-7020, pager, diceman1@jps.net.

'83 TOYOTA Supra, white w/blue int., 6 cyl., cruise, sunroof, CD, pwr. win/dr., alarm, looks & runs gd., \$1,500/obo. 353-1907.

'82 VOLKSWAGEN Westfalia camper, orig. owner, 21K on new motor, all records, exc. cond., \$4,800. 626/281-8954.

### Wanted

CAREGIVER for 97-yr.-old woman, 5 days/wk. + some Sat., 4 hrs/day. 626/794-3568, Andrea.

CLOCK, mantle, circa 1940, Seth Thomas, Westminster Chime, anxious. 626/395-8262.

JUICER, good-great cond. 626/355-9871.

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

TO RENT 2-3 bd., 2 ba. sgl.-fam. home/townhouse close to JPL, professional man & wife moving to JPL from NASA HQ in April. 410/224-2408, bill.huddleston@hq.nasa.gov.

TO RENT furn. studio/1 bd. or rm. in April/May/ June, Pas./La Canada area, visiting student. 626/564-8483, Christophe Dumas (JPL contact) or delsanti@iap.fr.

### Free

CARDBOARD BOXES, big & small, just moved from east coast. 626/448-3694.

DOG, rescued, beaut. black lab/chow mix, 2-3 yr. old male, trained, healthy, shots, needs loving family, will be a great companion. 661/257-5817.

DOG, Lab mix puppy, black, female, 6 mo. old, found abandoned in apt., cat friendly, all shots, house trained, smart, great family pet, to gd. home. 626/614-1012.

DOVE, Diamond, female, to a good home. 626/792-6706.

HORSE, 20-yr. Arab; BURRO, 16 yrs., gd. home only, experienced equine owners. 661/269-8945.

### Lost & Found

Lost: Remote for Volvo automobile. Ext. 4-3955; home phone 790-3899.

Found: Cooler, royal blue, identify contents for ownership. Ext. 4-3652.

### For Rent

LA CRESCENTA home, cozy, pool, 2 bd., 1 ba., stove, f/p, laundry hookups in house, very quiet, \$1,400. 790-7904.

PASADENA back house, 1 bd., built-in a/c/h, built in refrigerator & stove, washer, dryer, pool, all util. pd., no pets/smoking, 676 So. Madison Ave., Pas., \$850. Johnny & Casey Risk. 626/795-1536.

PASADENA (west), commuter special, 1 bd., 1 ba. avail. 2 nt./wk. (min.) in lux. complex nr., Old Town, Del Mar/Euclid, clean, partial-ly furn., c/a/h, pool, Jacuzzi, \$25/nt. 626/796-5046.

PASADENA, roommate to share mostly furn. 2 bd., 2 ba. apt. nr. Old Town, c/a, carpet, f/p, free Indry, \$500 +1/2 util. & \$500 sec. dep. 626/564-9885.

SYLMAR, lease w/buy option, spacious dream home, brand new, 2 story, 2,500 sq. ft., 11 rms., pool, f/p, Jacuzzi bath, fantastic views/ mtns/valley, Harmony Homes in Mt. Glen, gated comm., 20 mi/JPL, \$2,500. 626/584-6526.

### Real Estate

PASADENA bungalow home, nr. JPL/Caltech, f/p, wood floor, nice kitch., lots of storage, master bd., full ba., laundry rm., huge gar. w/working shop area, huge backyd. w/fruit trees/flowers, see to appreciate, as is, \$185,000. 626/794-0455, Ollie or Bill.

SAN DIMAS immaculate house built '88 in quiet Via Verde, appx. 2,600 sq. ft., 4 bd., 3 ba., lg. master bd. w/priv. ba., tiled fireplaces, security sys., 3-car gar., marble flrs., c/h/a, huge backyd., w/auto sprinklers, lg. Span. ftn., BBQ area, covered patio, red brick pathways/walls, \$469,500. 626/584-3204 days, orig. owner 909/592-0780, eve/weekend.

### Vacation Rentals

BIG BEAR LAKEFRONT, lux. townhome, indoor pool/spa, near skiing, beaut. master bd. suite, sleeps 6. 949/786-6548.

HAWAII, Kona, on 166 feet of ocean front on Keahou Bay, priv. house & guest house, comfortably sleep 6, 3 bd., 2 ba., rustic, relaxing & beautiful, swim, snorkel, fish, spectact. views, near restaur., golf courses, other attractions. 626/584-9632.

HAWAII, Maui condo, NW coast, on beach w/ocean vw., 25 ft. fr. surf, 1 bd. w/loft, compl. furn., phone, color TV, VCR, microw., dish-washer, pool, priv. lanai, slps. 4, 4/15-12/14 rate \$95/nite/2, 12/15-4/14 rate \$110/nite/2, \$10/nite add'l. person. 949/348-8047.

LAS VEGAS, 1 block from Strip, close to Flamingo Hilton, 2 bd., 2 ba. condo, fully equip. kit., TVs, VCR, laundry rm., comm. pool, Jul-Sep & Nov-Dec, \$125/nt., all other \$110/nt. 909/592-4667.

MAMMOTH, Chamonix condo, at lifts 7, 8, 16, 17; walk to Warming Hut, 2 bd., 2 full ba., sleeps 6, fully equip. elec. kitch. w/microw. & extras, f/p & wood, color TV, VCR, FM stereo, o/d Jacuzzi, sauna, game, rec. & laundry rms; convenient to lifts/shops/events, special midweek rates. 249-8524.

MAMMOTH, Snowcreek, 2 bd., 2 ba., +loft, sleeps 6-8, fully equip. kit. incl. mcrw., d/w, cable TV, VCR, phone, balcony w/view to mtns., Jacuzzi, sauna, streams, fishponds, close to Mammoth Creek, JPL discount. 626/798-9222 or 626/794-0455.

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 view, pool, tennis, short walk to beach on priv. rd., 18-hole golf course 6 mi. away, priv. secure parking. 626/794-3906.

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Mark Whalen

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Universe is published every other Friday by the Public Affairs Office of the Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena, CA 91109.

For change of address, contact your section office (on-Lab personnel) or Xerox Business Services at (626) 844-4102 (for JPL retirees and others).

### Notice to Advertisers

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 on ad cards, available at the ERC and the Universe office, Bldg. 186-118, or via e-mail to universe@jpl.nasa.gov.

Ads 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.