

Universe

Jet Propulsion Laboratory

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Odyssey begins with perfect launch



The 2001 Mars Odyssey spacecraft lifts off from Kennedy Space Center.



JPL and NASA's return to Mars began at 8:02 a.m. Pacific time on Saturday, April 7, as the 2001 Mars Odyssey spacecraft roared into space onboard a Delta II launch vehicle from Cape Canaveral Air Force Station, Fla.

About 53 minutes later, at 11:55 a.m., JPL flight controllers received the first signal from the spacecraft through the Deep Space Network station in Canberra, Australia indicating that all was well aboard the orbiter.

"I've never seen a more spectacular launch," said David A. Spencer, Odyssey's mission manager at JPL. "The spacecraft seems to be performing beautifully, and we're right on our timeline. This gives us a terrific start on our odyssey to Mars."

Among those who packed von Kármán Auditorium to view the launch were Spencer's wife, Sallie, and their sons, 5-year-old Jackson and 2-year-old Ben. The boys joined many other youngsters in the "Friends and Family" crowd who counted down the final seconds before launch. Sallie noted that Jackson knew that the mission "is looking for water on Mars."

Indeed, one of the orbiter's three science instruments, the thermal emission imaging system, will determine Mars' surface mineralogy, including providing data on localized deposits associated with hydrothermal and subsurface water. The gamma ray spectrometer instrument will play a lead role in determining the elemental makeup of the Martian surface. An experiment using this instrument and two neutron detectors role will possibly be able to calculate Mars' hydrogen abundance, thus inferring the presence of water.

The third instrument, called the Martian radiation environment experiment, will characterize aspects of the radiation environment both on the way to Mars and in the Martian orbit. The experiment will attempt to predict anticipated radiation doses that would be experienced by future astronauts and help determine possible effects of Martian radiation on human beings.

On Sunday, one day after launch, the Odyssey team reported that the mission was going exceedingly well.

Following acquisition of the spacecraft's signal by a Deep Space Network ground station at Canberra, Australia, shortly before 9 a.m. Pacific time Saturday, the mission team has continued to monitor the status of spacecraft subsystems, all of which are performing normally. Ground controllers established a two-way communication link between Mars Odyssey and Earth, enabling the navigation team to start collecting data to assess the spacecraft's flight path.

Among various housekeeping events Saturday, the team commanded the spacecraft to transmit to Earth at a high rate for playback of data recorded during launch. They also commanded a desaturation of the spacecraft's reaction wheels, a procedure in which the gyro-like devices are spun down in order to remove excess momentum. Ground con-



Dutch Slager / JPL Photo Lab

JPL's mission operations area in Building 264 is all smiles following the successful launch of 2001 Mars Odyssey. In front of picture are mission manager David Spencer (left) and mission engineer Guy Beutelschies; at center is Marla Thornton, ground data systems engineering lead; in rear are lead navigator Robert Mase (left) and mission operations systems engineer Al Nakata.

trollers concluded that an alarm triggered shortly after launch by a temperature sensor on Odyssey's solar panel is not a concern. Saturday afternoon they switched to a ground station at Santiago, Chile, to communicate with the spacecraft. The project is using Santiago to fill gaps in its Deep Space Network tracking coverage during early cruise.

On Sunday morning the team commanded the spacecraft to transition from a "safe mode" it was in during launch to a normal operating mode. They also turned the spacecraft so that the medium-gain antenna that Odyssey is transmitting over is pointed toward Earth. The team then assessed the state of spacecraft subsystems, and in the afternoon sent a command to make the transition complete.

Early navigation calculations show that the magnitude of the first trajectory correction maneuver fine-tuning the spacecraft's flight path April 16 will be only 6 meters (about 20 feet) per second. Because that maneuver will be so small, propellant will be saved for use during Mars orbit insertion, aerobraking and the orbital mission.

The spacecraft will fire its thrusters in five small maneuvers designed to fine-tune its flight path to Mars. Odyssey will arrive at Mars on Oct. 24, when it will fire its main engine and be captured into Mars' orbit. It will spend about two months adjusting the orbit before beginning a four-year mission studying Mars.

Odyssey principal investigators at Arizona State University, the University of Arizona and NASA's Johnson Space Center will operate the science instruments. Lockheed Martin Astronautics in Denver is the prime contractor for the project, and developed and built the orbiter. Mission operations will be conducted jointly from Lockheed Martin and from JPL.

Final NASA budget proposal submitted to Congress

A final federal budget proposal for fiscal year 2002 released by the Bush administration on April 3 includes increased funding for NASA's Office of Space Science, which provides the lion's share of JPL's work.

The Office of Space Science received a proposed allocation of \$2.45 billion, \$132 million more than this year.

However, the proposed budget also includes an out-year plan for an increase in Office of Space Science funding to \$3.62 billion by FY '06. The Mars Exploration Program, part of the Office of Space Science, received a proposed \$430.9 million for FY '02, \$3.3 million more than this year.

The proposed budget also noted that future Mars funding would include:

- Formulation activity (phases A and B) for the 2005 Mars Reconnaissance Orbiter;
- Preformulation phases for Mars missions

beyond 2005, including a competitively selected 2007 Mars Scout mission, a highly capable 2007 Mars Smart Lander and Mobile Laboratory mission, and U.S. contributions to foreign Mars missions;

- Mars technology to lay the groundwork and provide new capabilities for Mars missions beyond 2005;

- Construction of a Deep Space Network 34-meter beam wave guide antenna and other DSN upgrades to reduce overload problems during Mars and other Office of Space Science missions' critical activities.

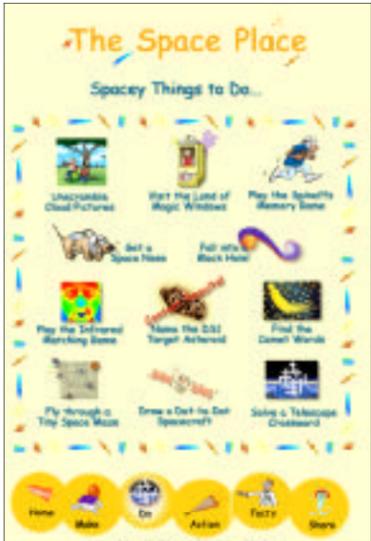
Also of interest to JPL was a proposed \$35 million in FY '02 and '03 for the construction of the new Flight Projects Center building. Construction on the facility, to be located near the intersection of Surveyor and Mariner roads, will begin in FY '02 and will be completed in FY '04.

The FY '02 budget proposal also includes an augmentation for the In-Space Transportation Initiative, which is led by NASA's Marshall Space Flight Center in Alabama. "JPL will play a significant role in that technology development activity," noted Doug Stetson, manager of JPL's Solar System Exploration Office. "Electric propulsion can benefit virtually all solar system exploration missions, including the inner solar system to Mars and smaller bodies," he said. "The technology can also be of significant benefit for outer-planets missions, including a future Pluto mission."

Funding for a Pluto mission was not included in the FY '02 budget proposal.

The proposed budget will now go to Congress, where it will be considered by Senate and House committees before expected approval next fall. FY '02 begins Oct. 1, 2001.

News Briefs



Space Place site receives award

The International Technology Education Association has presented the NASA/JPL "Space Place" outreach team with the organization's Presidential Citation "for efforts above and beyond the call of duty in service to the technology education profession."

Sponsored primarily by NASA's New Millennium Program, Space Place encompasses numerous educational products, including a Web site featuring space science- and technology-related activities at <http://spaceplace.jpl.nasa.gov>. Space Place also produces classroom activity articles published in the International Technology Education Association's monthly educator journal, monthly articles appearing on children's pages of five major metropolitan newspapers, and display materials and educational activities distributed through partnerships with museums, planetariums, libraries and community organizations nationwide.

Confidential screening available

JPL is offering employees and adult family members a free, anonymous and confidential screening for depression and alcohol problems. The program is designed to help individuals recognize the signs of depression and alcohol misuse and learn how and where to get help.

JPL's Employee Assistance Program says both illnesses are highly prevalent and can be treated. Between 17 million and 20 million Americans experience depression each year, and more than 14 million Americans have an unhealthy relationship with alcohol.

To participate in the screening, call (800) 390-7302 or go online to <http://www.mentalhealthscreening.org/screening>. The keyword is "health."

For more information, call the Employee Assistance Program at ext. 4-3680.

Electronic packaging conference set

The second annual NASA Electronic Parts and Packaging Conference on Electronic Parts, Packaging and Radiation Characterization for Space Applications will be held May 15 and 16 at the Pasadena Convention Center.

The conference, co-sponsored by the International Microelectronics and Packaging Society, carries no registration fees. For more information and to register, log on to <http://nepp.nasa.gov/pubs/socal01/index.htm>.

Mechanisms symposium set for May

NASA's Ames Research Center in Moffett Field, Calif. will host the 35th Aerospace Mechanisms Symposium May 9-11. The event will be held in nearby Sunnyvale.

More than 250 people attended last year's symposium, which promotes discussions of problems related to the design, fabrication, test and operational use of mechanisms. Thirty papers will be presented, with emphasis on hardware developments.

At least two JPL personnel reside on the organizing committee. The event rotates each year among eight NASA centers, and was hosted by JPL last year. For more information, call DONALD SEVILLA at ext. 4-2136 or log on to <http://www.aeromechanisms.com>.

Heritage Week logo contest open

JPL's American Heritage Week planning committee seeks entries for the annual event's theme and logo contest.

Entries must be the participant's original work and may not contain the trademarks, logos, copyrighted works or intellectual property of third parties.

Submittals are due by April 27 to KATHERINE YOUNKER at mail stop 238-524 or via e-mail. Prize winners will be announced May 1.

The 21st annual celebration will be held on Lab June 11 to 14.

JPL blood drives commended

The Southern California region of the American Red Cross recently praised JPL for blood drives held on Lab. The organization noted that during the Feb. 20-21 drive, 227 prospective donors provided 195 pints of blood—25 more than the organization's goal—and that approximately 585 patients will benefit.

LORETTA JAMES of the Occupational Health Services Office was given special thanks by the Red Cross for her coordination and recruitment efforts.

Saturday, May 19, at the east end of Foothill Blvd. The event is sponsored by the La Cañada Kiwanis Club, of which Gant is a member.

"We expect 60 to 65 racers to participate," Gant said. "Soap Box Derby racing is good, old-fashioned fun, appealing to both young people and their parents." He added that local winners are financially supported to travel to Akron, Ohio on July 28 for the national finals.

Gant said members of the JPL community are welcome to participate. "It would be great if one or more cars would be supported by JPL individuals, or perhaps organizational groups. Cars may be decorated as desired, including appropriate lettering, project logos, JPL decals, kids' names, and so forth."

For more information, call the Derby hotline at (818) 790-9901.

Special Events Calendar

Ongoing Support Groups

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

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

End of Life Issues and Bereavement—Meets the second Monday of the month at noon in Building 111-117. Call the Employee Assistance Program at 4-3680.

Gay, Lesbian and Bisexual Support Group—Meets the first and third Fridays 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.

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 first Tuesday of the month in Building 167-111. Call the Employee Assistance Program at ext. 4-3680.

Friday, April 13

FolkMusic—Singer Priscilla Herdman will perform at 8 p.m. in Caltech's Dabney Lounge. Tickets are \$12 for adults, \$4 for children under 12. Call (626) 395-4652.

Tuesday, April 17

JPL Hiking+ Club—Jeff Booth of Section 311 will present a slide show titled "Hiking in the Inca's Footsteps: The Inca Trail through Dead Woman's Pass to Machu Picchu" at noon in Building 303-209.

Wednesday, April 18

Investment Advice—Fidelity will hold one-on-one counseling sessions from 9 a.m. to 3 p.m. in T1720. For an appointment, call (800) 642-7131.

JPL-Caltech Flying Club—The spring membership meeting will be held at 7:30 p.m. at 201 East Bridge Hall, Caltech. The club, which maintains six aircraft at El Monte Airport, invites JPL and Caltech staff. Guest speaker will be Barry Schiff, an aviation safety expert and former TWA captain.

Thursday, April 19

Von Kármán Lecture Series—Space Infrared Telescope Facility astronomer Dr. Michelle Thaller will present "Infrared Astronomy: More Than the Eyes Can See" at 7 p.m. in von Kármán Auditorium. Open to the public.

Working Parents Support Group—Susan Papalia, a Pasadena-based marriage and family therapist, will present "The Chore List: A Positive System for Teaching Children Independence and Responsibility" at noon in Building 180-703 (new location for this month only for the group). Call Gregory Hickey at 4-0776.

Friday, April 20

Von Kármán Lecture Series—Space Infrared Telescope Facility astronomer Dr. Michelle Thaller will present "Infrared Astronomy: More Than the Eyes Can See" at 7 p.m. in The Forum at Pasadena City College, 1570 E. Colorado Blvd. Open to the public.

Saturday, April 21

Caltech Jazz Festival—Seating is limited for this free event, to be held from 2 to 6 p.m. at Caltech's Dabney Gardens. Call (626) 395-4652.

Sovoso World Jazz A Cappella—This ensemble sings a mix of jazz, gospel, rhythm and blues, and other styles. They will perform at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$25, \$21 and \$17. Call (626) 395-4652.

Sunday, April 22

Chamber Music—Kathleen McIntosh on harpsichord, Janice Tipton on flute and Marlow Fisher on viola will perform at 3:30 p.m. in Caltech's Dabney Lounge. Admission is free. Call (626) 395-4652.

Tuesday, April 24

Dr. Stone's Farewell—The Human Resources Directorate will be serving a free lunch, on the mall and at the 303 cafeteria (JPL badges required) from 11 a.m. to 1 p.m. A farewell program for the director on the steps of Building 180 will follow, from 1:15 to 2 p.m.

Wednesday, April 25

Investment Advice—Fidelity will hold one-on-one counseling sessions from 9 a.m. to 3 p.m. in T1720. For an appointment, call (800) 642-7131.

JIT Vendor Fair—New product demonstrations, P-card information and more will be presented from 9 a.m. to 2 p.m. in von Kármán Auditorium and the mall.

JPL Toastmasters Club—Meeting at 5:30 p.m. in the Building 167 conference room. Guests welcome. Call Jim Raney at ext. 4-6301.

Thursday, April 26

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

JPL Information Providers Fair—The Library, Archives, and Records Section 643 will sponsor "Connecting Knowledge: Celebrating the Power of Networking" from 10 a.m. to 2 p.m. in the Library, Building 111-104. Information providers from across the Lab will offer 27 poster sessions and 10 online demonstrations; refreshments will be served; and a prize drawing will be held. For the program, log on to <http://beacon/infoindex.html>. Call Robert Powers, ext. 4-9263 or Teresa Bailey, ext. 4-9233.

Saturday, April 28

Ballet Folklorico Los Lupenos—Regional dances and authentic stories from Mexico will be featured at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$22, \$18 and \$14. Call (626) 395-4652.

Retiree revives American tradition



Photo courtesy: Deborah Orlik

JPL retiree Daryal Gant with La Cañada resident Melissa Kent, 12, her dad, Ed, and her Soap Box Derby car. Last year, Melissa finished in 3rd place in the "super stock" car division at the national finals in Akron, Ohio.

JPL retiree Daryal Gant has discovered a great way to combine community service, helping local kids, and having fun.

Gant, who retired two years ago as director of Business Operations at the Lab, is the director of this year's La Cañada version of an American tradition, the Soap Box Derby.

He noted that former Lab Director Dr. William Pickering is among five JPL retirees involved with the event, and at least one current employee participates.

"Our first race, last May, was very successful, featuring 48 racers, ages 9 to 16," he said. "As part of our outreach program, we arranged for several young people from disadvantaged backgrounds to participate at no cost to them."

An upcoming race is set for

Architect development program accepting applications

JPL's Architect Development Program is now accepting applications for participants to join the two-year internship program starting in late summer of this year. Under the guidance of JPL's Center for Space Mission Architecture and Design, the program's purpose is to prepare JPL's next generation of mission architects who will design and implement future JPL missions.

Each year, two or three JPL employees are selected to participate in the program, in which interns work on a variety of projects in a number of disciplines. Each intern will have the opportunity to work with Team X (the Advanced Projects Design Team, comprising representatives from all the major spacecraft and mission subsystems). Program interns help develop mission proposals, become familiar with JPL tools in the automated design process, and work with JPL's industrial partners, gaining valuable perspective on how

system design is performed. In addition, interns travel to other NASA centers, fill selected project-specific roles, and work within other JPL Centers of Excellence.

Program interns work with mentors, who from the outset help them plan their two-year internship, tailoring the program to meet individual areas of expertise, professional interests, and other needs. Training is also a critical part of the internship; participants have the opportunity to attend a variety of short courses offered through JPL, NASA and outside experts.

The program selection committee is seeking candidates with flight systems experience, strong technical and problem-solving skills, leadership in technical innovation, and the ability to mentor and help others succeed.

To be considered, an applicant must be a full-time, benefits-based employee, have a bachelor's

degree or equivalent work experience, and have a minimum of five years of work experience that includes significant flight systems background.

To apply for the program, submit a resume and a one- or two-page letter, with concurrence by your division manager, stating why you should be considered for the program. Those two documents should be sent to Maria Raygoza, Human Resources Staffing (M/S T1720-C) by Friday, May 25. (You and your division manager should also retain copies.) Applications of qualified candidates will be forwarded to the selection committee, which will interview finalists and select the program's class of 2003. All applicants will be informed of the selection committee's decision by July 2.

For additional information, visit the Architect Development Program's Web site at <http://eis/adb>.

How Cool Is This?

By Mark Whalen

JPL engineer
welcomes
the chance
to help kids
build robots

More than 30 JPL engineers helped high school students prepare for a local regional of a robotics competition called For Inspiration and Recognition of Science and Technology (FIRST), held last month (the national competition—for which JPL sponsored seven teams—was held April 6 and 7). The goal is to generate in kids an interest in science and technology through hands-on activities, and to foster teamwork. One JPL engineer, Kevin Watson of Section 344, tells the story of how the experience inspired him as well.



QUESTION How long have you been at JPL? What are you working on right now?

A I've been at JPL for 16 years. I'm working on the electronics for the Rocky 8 rover, which is a testbed for future rover technologies.

I'm also working with a group of scientists here to develop a sensor array that detects and classifies oxidants on the surface of Mars. We wrote a well-received Discovery proposal called MAOS—Mars Atmospheric Oxidant Sensor. I would be responsible for developing the avionics.

It turns out that the proposal couldn't be funded, but it looks like it might turn into a technology program until we can fly it, perhaps in 2005 or 2007.

QUESTION How did you get involved with FIRST?

A For many years, I've been thinking about how fun it might be to work with kids. But I didn't quite know how to do it. You can't invite a bunch of high school kids into your flight laboratory and have them help you with millions of dollars worth of flight hardware.

But what has irked me for years is that many kids consider sports stars as their role models. Athletics are great, but what chance do kids actually have of becoming a Shaq [Lakers' star Shaquille O'Neal]? There's so little chance of that, and the kids get so little intellectual stimulation.

About a year ago, I was working with Rob Steele on Rocky 8, and he told me about the FIRST competition he was involved with. And immediately I said, "Sign me up." I was worried that there would be hundreds of engineers who would jump on this. I thought I might not get to work with the kids. But it turns out that only a handful volunteered to do it. Maybe they didn't understand how cool this is. After just talking to Rob for a couple of minutes, I thought this sounded great.

Early this year, at a kickoff meeting in New Hampshire, I heard a speech from the founder of the competition, Dean Kamen. His goals in forming FIRST were exactly how I looked at it: to have scientists and engineers be the new role models for kids. He wanted to team engineers from industry — and places like JPL — with high school kids and teachers to build sophisticated robots and have them compete in an elaborate game.

QUESTION Did you work with kids from just one school?

A Yes. I worked with kids from Crescenta Valley High School in La Crescenta. I had attended school there as a kid and it was among the schools that indicated they wanted engineering support. I was also fortunate in that the teacher helping the Crescenta Valley kids was Greg Neat, who also works at JPL. I've known Greg for a long time. Soon it became clear that our team would need some help in the mechanical engineering area. I approached Dan Helmick, who was also working on Rocky 8, to help out. Being really busy and not knowing what FIRST was all about, he was initially reluctant to spend any time on it. After seeing how much fun it was to work with the kids, Dan came around and was able to help us out a few hours a week.

QUESTION How was it going back to your old school? Did you meet anyone else you had known?

A It was very strange going back there. I don't think she realized it, but the current co-principal was my English teacher. I wasn't a particularly good English student, otherwise I would have mentioned it to her (laughs).

QUESTION Were a lot of the kids pretty savvy about being able to build the robots?

A At first, I thought it would be hard to find many kids who would participate, or many who would take it seriously. But it was clear early on that we had a great group of kids, a core group of six or seven. Quite a few were adept at programming; some were good at building structures; one put the electronics together with absolutely no help from me. One day the electronics were in complete disarray; the next time I showed up, everything had been mounted and correctly wired. I was very proud of the kids at that moment.

QUESTION FIRST is a competition to inspire kids. How has this experience inspired you? I heard that doing this changed your life. True?

A That's not an exaggeration; this was truly life-changing. Again, I wanted to bring kids in and show them all of the cool stuff we do here. And bringing in kids from college would be like preaching to the choir—they already know what they're going to do. When I was in high school, I would have given anything to participate in this type of activity. So to be able to influence kids who didn't have a clue as to what they're going to do with themselves, that's wonderful.

QUESTION What did the kids gain from this experience?

A I was told by two of the kids that this competition has had a huge impact on them, and that they have changed their majors in college. Also, many of them changed their opinions of what engineers and scientists are like. Just as some of the kids base their impressions of sports stars on how they are glamorized by the media, they previously saw engineers and scientists as "geeks," wearing lab coats and thick glasses and not having any fun.

QUESTION Will you participate in FIRST next year?

A Absolutely; in fact, I want to do more. The Southern California regional is going to grow, and I'm going to work hard to sign up a lot of schools. That will be done by just calling up schools to see if they want to be a part of it.

There's already a meeting set up for this month with La Canada High School. Also, I am going to help Greg Neat to develop a curriculum for a high school class at Crescenta Valley, which will be offered next year. It'll cover fundamental engineering, including topics like basic control theory, fundamental mechanisms and so forth. We'll finalize it over the summer, and may adapt some material from other curricula that have already been developed.

When you watch a kid figure out how a mechanism or computer program works, you can see it in their eyes—they just light up. And that's why this has been truly life-changing for me.

**"When I was
in high school,
I would have
given anything
to participate
in this type
of activity."**

— Kevin Watson,
who helped high school
kids build robots

Congressman Schiff visits Lab

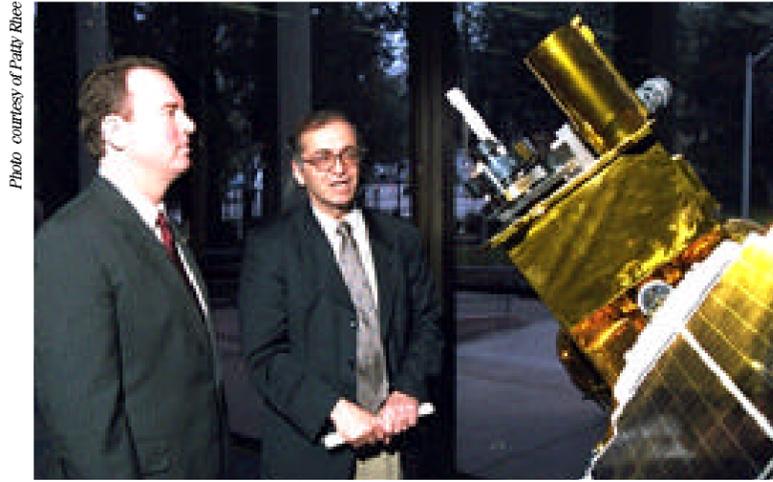


Photo courtesy of Paddy Rice

Congressman Adam Schiff and members of his Washington, D.C. and Pasadena staffs toured JPL March 23 as part of a two-day staff retreat. The group was hosted by Space and Earth Sciences Director Dr. Charles Elachi and Deputy Director Larry Dumas, and was briefed on JPL's history, missions and operations; the mission control center; the latest results from the Galileo Millennium Mission; the Extra-Terrestrial Materials Simulation Lab; and the field integrated and design operations (FIDO) rover. Schiff represents the 27th congressional District, which includes JPL. At left, Elachi shows Schiff a model of Mars Global Surveyor.

Letters

I would like to thank my friends and colleagues for the great retirement party! Thanks particularly to Dean Pruitt and Marti Neale for planning and organizing; to William Rafferty for being a great boss and for his very nice comments; and to Beverly Shank for taking pictures. The food and setting were excellent, and the gifts were great and are already being enjoyed. The best part, however, was having so many of my friends there, and to recall many good memories with each of you. It was nice to have this opportunity to share the great start of my retirement. Thanks for your friendship over the short 39 years.

Nate Burrow

Thanks to Steve Synnott, Sharon Pasos, Carroll Duarte and all those JPL friends who made my retirement party a memorable occasion. Special thanks also for the beautiful flower arrangement and gifts.

George Null, Section 312

On behalf of my family and myself, I would like to thank the ERC for the beautiful ficus plant sent to commemorate my mother's passing.

Joanne Mintz

While my father died at age 95 and had lived a great life, it's still hard to say goodbye. However, our grief was eased by the many wonderful cards and notes sent by so many in the JPL community. Thank you all. A special thanks goes to my staff for their beautiful flowers and to ERC for a lovely plant.

Bill Weber

Passings

KENT WEAKS, 75, a retired senior engineer in Section 333, died of cardiac arrest Feb. 22 at his home in Oregon.

Weaks joined JPL in 1964 and retired in 1987. He is survived by his wife, Mary, five children and nine grandchildren.

DONALD FELLER, 78, a retired senior engineer in Section 345, died of cardiac arrest March 7 at his home in South Pasadena.

Feller worked at the Lab from 1978-84. He is survived by his wife, Constance, two children and four grandchildren.

Services were private.

PHILIP CARPENTER, 92, a retired mechanical technician in Section 352, died of natural causes March 13 at his home in Pasadena.

Carpenter joined JPL in 1947 and retired in 1976. He is survived by son Dennis and daughter Phyllis, two grandchildren and four great grandchildren.

Services were private.

Correction

In the March 30 issue of Universe, the list of employees who retired in March should have indicated that retiree Richard Messersmith worked at JPL for 40 years.

Classifieds

For Sale

ART WORK, 2 custom-finished wood-framed posters, ea. about 32" H by 20" W, ideal decorative items for fam. rm., office or den, \$32/ea. 236-4869.

BABY ITEMS: 2 Evenflo infant car seats w/ luggage-style handles, Looney Tunes charac., hardly used, exc. cond., \$30/ea. 626/443-9774.

BIRD CAGE, round, black, used 1 week, 32" high by 26" across, pd. \$60, sell for \$40/obo. 249-0573.

CELL PHONE ACCESSORIES, Nokia clear cases with swivel belt clip, 6100 series \$6, model 8290 \$8. 714/903-8888.

COFFEE, Kona, top of the line, 100% pure, sun dried, hand picked fr. top-quality trees, rich dark roast, ltd supply, discount 45% at introductory price of \$21/lb. 626/584-9632.

COFFEE TABLE, solid oak, 30" x 30" x 19 1/2", butcher block top, gd cond, \$40. 249-1523.

CONCERT TICKETS, N'Sync, July 24 at 7:30 p.m., Rose Bowl, plenty of tickets, best offer. 626/374-9464, after 8 p.m.

COPIER, Xerox model 5322, makes 2-sided copies, 10 sorting trays, takes all paper sizes, bypass feeder, zoom and more, service contract in place, \$1,195. 957-8813.

COUCH, futon style, queen size, good for starting out, green cover, maple wood color, \$70/obo. 626/792-8272.

DESK/CHAIR, antique mahogany, rolltop, \$1,500; **TABLES**, 2 custom rod iron indoor/outdoor, heavy glass top, \$2,500; **COUCH**, sectional, beige, almost new, \$300; **COFFEE TABLE**, \$75; **TABLES**, 4 stacked, \$200; **BAR CART**, \$150; **TOYS**, child's bike, etc, best offer. 248-8853.

DESK, Steelcase, woodgrain laminate top, side board for typewriter, and black leather executive chair, exc. cond., \$300/all. 790-4028.

DISHWASHER, Sears Kenmore, old but works perfectly, \$75; **CONVECTION OVEN**, GE, profile under counter or in wall, 30" wide, 220V, exc. cond. \$500; **HOT TUB**, Redwood, barrel rds. to be assembled w/gas heater & pump, pick up in Cyn. Country, \$400. 653-2000, Stan.

DVD, Kiss the Girls, \$15; Friday the 13th, \$10. 714/903-8888.

DVD/CD PLAYER, Toshiba SD 2150, dual disk, w/remote, Dolby digital, brand new, used 1 mo., orig. box & packing, \$175. 626/851-1303, Jay.

FABRIC for quilters/crafters, 100s of first quality, 1-yard cuts, \$2/ea. 626/449-4797.

FAX PRINT CARTRIDGES, Brother, 2 new PC-201 for use with fax 1010/1020/1030, fax 1170/1270/1570MC, MFC-1770/1970, \$10/each. 626/443-9774.

FREEZER, upright, 13.1 cu. ft., old but fair condition, \$150. 957-3675.

FURNITURE: din. rm./bedroom/living rm. sets, side chair, http://home.earthlink.net/~elrey10 for pictures, info, prices. 909/482-4425.

FUTON/BED with full pad, light Brazilian hardwood, exc. cond., \$175/obo. 626/355-7852.

GOLF BALLS, used, \$.25/ball or donation goes to pet rescue organization. 626/792-8272

GOLF CLUBS, classic graphite shaft, clubs P-3, Taylor-made Bubble II driver #1, Adams tight lies driver #3, asst'd putters & wedges, with bag & cart, exc. cond. 626/287-1025.

LAWN MOWER, Sears, gas, 3.5 HP, Briggs & Stratton eng. \$65; **GOLF CLUBS**, complete set, MacGregor, Jack Nicklaus VIP model, inc. bag, \$125. 626/799-5534.

MASSAGE CHAIR, used 5 times, EarthLite's "The Traveler" with carrying case and video, normally sells for \$489, sell for \$400. 893-3108, Carole.

MATTRESS COVER, comfortable Cuddle Ewe, soft support, CA king, 2" thick, wool, exc. cond., retail for \$350, sell \$150; **FEATHER BED**, down, CA king, gd cond., \$50. 957-8813.

PLANT STAND, lighted, 3 tier, on wheels, bulbs included, 60" high, 52" long, very good cond., \$300/obo. 248-8636.

REFRIGERATOR/FREEZER, General Electric, frost-free, 14.2 cu. ft., light almond color, runs well, \$100. 626/798-0329.

SCANNER, flatbed, HP ScanJet 5200C, Plug & Play, with OCR, works w/all operating systems, \$150/obo. 726-7701.

SKI PACKAGE, Atomic perf. RSL 180, Tyrola 290 D bindings & poles, \$50. 626/799-5534.

STAMPS, State Duck 1985-90, catalogue value \$2,700, sell \$1,200/obo. 626/433-8552, pager.

TABLE, dinette, square glass top 5' x 5' w/ metal feet and 4 matching chairs, \$800/obo; **BAR STOOLS**, 4 matching, metal frame, all in superb cond., \$400/obo. 626/398-3480.

Vehicles/Accessories

'90 ACURA Integra LS, 2-dr. hatchbk., white ext., navy int., 148K mi., exc. cond., well maint., auto. trans., a/c, cass./radio, pwr. steering, sunroof, cruise cont., gd. tires, tilt strng. whl, 27 mpg., \$4,200. 626/303-6064.

'84 AUDI 4000 S, yellow, 4 dr., 5 speed, 149K, runs very well, all service records available, \$1,200. 247-1806, after 6 p.m.

'89 CHEVROLET S10 Blazer, V6, auto, 2x2, A/C, pwr wndws/dr. locks, am/fm/cassette, cruise ctrl., tilt whl., tinted wndws., tow pkg., lug. rack, full-size spare, 128K mi., well-maintained, \$3,750. 626/794-1716.

'92 DODGE Shadow, white, auto, a/c, 114K miles, good cond., \$3,000/obo. 626/398-7573.

'97 FORD Explorer XLT, only 29K mi., new tires and brakes, all dealer servicing, exc. cond., \$14,500. 626/355-5631.

'96 FORD Explorer XLT, exc. cond., lthr, all electric, pwr. windows/doorlocks/seats, cruise contr., 6 cyl., 48K miles, roof rack, front/rear a/c, alloy whls, loaded, \$16,999/obo. 310/451-5919.

'78 FORD Fairmont, new tires/brakes/exhaust manifold/tuneup, am/fm, overall good cond., 98K miles, \$2,700. 626/355-5631.

'97 HONDA CRV, 4 WD, 53K miles, loaded, AT, alloys, ABS, new tires, exc. cond., original owner, very clean, \$14,995. 949/588-6545.

'84 HONDA CRX, red, 5 spd., rebuilt engine, runs great, 160K miles, needs body work, \$950. 626/289-3373.

'81 HONDA GL 500 Silverwing motorcycle, clean, no leakage, top cond., \$1,000/obo. 626/433-8552, pager.

'98 JEEP Wrangler Sahara, green w/ltan top, 5 spd., air, cruise, alloy wheels, 30" off-road pkg., Dana 44 axle, 50,000 miles, \$17,000. 661/297-3815, evenings, Paul.

'96 MAZDA B2000, long bed, 65,000 mi, black, gd cond., take over \$278/mo. payments for a little over 3 yrs. 545-9435 or 521-3673 cell.

'94 MAZDA 626 ES sedan, 4 dr., V6, silver w/gray leather int., auto, a/c, pwr s/w/d/l, cc, AM/FM stereo/cass, ABS, moonroof, alloy whls., exc. cond., all maint. records, \$4,950. 830-8993, eve. & wkend. or 903-8979, cell.

'91 MITSUBISHI Eclipse GLX, red/black, 5 spd, turbo, AWD, am/fm/cass, prem. sound, pwr windows/doors, new clutch, runs great, 1 owner, needs new antenna, 112K mi., \$2,900. 626/798-8065.

'90 NISSAN Pathfinder SE, V6, 4 dr., blk, 4 X 4, auto, 125K mi., good cond., new tires, \$8,100/obo. 626/577-5685.

'99 ROCKWOOD Trailer RV, 18', sleeps 6, shower, furnace, a/c, large fridge, range with oven, awning, stereo, RV cover incl., \$8,800. 363-7064.

'99 SATURN SC 2, 3 dr., 5 spd., blue ext., gray int., a/c, pwr. locks/windows/sunroof, am/fm/cd, alloy wheels, prepaid 5-yr./60K svc. plan, 3-yr./36K warranty, 25K mi., \$12,500/obo. 626/798-4265.

'95 SATURN SL sedan, 5 spd., white exterior, gray interior, A/C, 74,000 miles, exc. running cond., good physical cond., mileage 27/city, 37/freeway, am/fm/tape, no accidents, \$4,900/obo. 957-5742.

'95 TOYOTA Tacoma SR5, V6, 3.0 liter, extra cab, 5 spd., manual trans, 4W drive, most extras including shell with carpet kit, alarm, 91,000 miles, \$11,500. 790-5229, Steve.

'93 VOLVO 240 wagon, 81K miles, teal green metallic, automatic, a/c, am/fm/cassette, 3rd seat, roof rack, great family car, just had 80K service, new brakes, Blue Book is \$13,500, sell \$12,000. 626/791-4206.

'65 VW notchback, red, 2 dr., seats 4, Porsche alloy rims, CD, Kenwd. stereo, new upholstery, lic. 2WJ138, needs work, \$3,500/obo. 626/794-0652.

Wanted

CARPOOLER for existing 4-person pool, each drives 1 day/lwk, meet at Diamond Bar Park and Ride on Diamond Bar Blvd, work hours: M-Th, 7:30-4:15, Friday leave at 4 p.m. Ferne Griffin, 4-8583 or Sandy Itatani, 4-6954.

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

Free

STOVE/OVEN, old but works, pick up in Canyon Country. 653-2000.

Lost & Found

Lost: Men's glasses on 4/2, black wire frames, Dick at 4-3906 or 951-8067.

Lost: Black men's sports jacket, Enrico at 4-0478.

For Rent

ALTADENA house, 2 bd., 2 ba., hardwood floors, f/p, attached 2-car garage w/space for laundry facilities, fenced yd, on a priv. st., water, garbage and gardener included, avail. May 1, \$1,200. 626/798-3640, after April 15.

LA CANADA/FLINTRIDGE, separate sm. rm w/ bathrm, a/c, partially furn., gated separate entr., temporary OK, close to JPL, very private, \$575. 790-1893.

LA CRESCENTA, cozy 2 bd. house w/pool, private, high above Foothill, \$1,450. 952-6007.

MONTROSE apt., lg. 1 bd., 10 min. from JPL, \$675. 626/445-0884.

EAGLE ROCK house, lg. 2 bd. + office, hilltop garage, yd, view, wood floors, f/p, a/c, fridge, stove, microwave, laundry, totally remodeled, gated, 5849 Buena Vista Terrace, L.A. 90042, \$1,450 + security, 1st and last. 790-1893.

SOUTH PASADENA, furn. studio, gd area, 1718 Huntington Dr., betw. Marengo and Milan Sts., util. incl., parking space & laundry facil., no pets, \$700. 626/792-9053, Marilyn.

SYLMAR, spacious new home, option to buy, 4 bd., 3.5 ba., den, bonus rm., f/p, 2,500 sq. ft., 20 miles/JPL, gated community w/pool, near golf and mtns., \$2,295. 626/584-6526, Fred.

Real Estate

NORTH GLENDALE house, 4 bd., 2.5 ba., prime Emerald Isle area, 5 mi./JPL, attractive front vw., spacious back yd., master bd. suite, formal living & dining areas, comfortable fam. rm. w/wet bar, exc. cond., \$568,000. 244-3060.

Vacation Rental

BIG BEAR cabin, quiet area, walk to village, 2 bd., sleeps 8, completely furnished, f/p, TV/VCR, \$75/night. 249-8515.

BIG BEAR LAKEFRONT lux. townhome, 2 decks, tennis, pool/spa, nr. skiing, beaut. master bdrm. suite, sleeps 6. 949/786-6548.

CAMBRIA, ocean front house, sleeps up to 4, excellent view. 248-8853.

HAWAII, Kona, on 166 feet of ocean front on Keauhou Bay, private house & guest house comfortably sleep 6, 3 bd., 2 ba., rustic, relaxing & beautiful, swimming, snorkeling, fishing, spectacular views, near restaurants, golf courses and other attractions. 626/584-9632.

HAWAII, Maui condo, NW coast on beach w/ocean view, 25 ft. fr. surf, 1 bd. w/loft, compl. furn., phone, color TV, VCR, mcrrow., d/w, pool, priv. lanai, slps. 4, 4/15-12/14 \$105/nt./2, 12/15-4/14 \$120/nt./2. \$10/nt. add'l person. 949/348-8047.

LAKE ARROWHEAD house, 4 bd., 2.5 ba., sleeps 10, secluded, relaxing, woody area of Cedar Glen, http://www.highcountryrents.com/cedar_run.html for pictures/rates, JPLers who book directly w/owner for 2 weekends get 1 + cleaning fees. \$370/weekend. 626/403-0446, owner.

MAMMOTH, Chamonix condo, 2 bd., 2 full ba., slps. 6, fully eqpd elec. kitch., incl. microwave & extras, f/p & wood, color TV/VCR, cable, FM stereo, pool, o/d Jacz., game, rec. & laundry rms, conv. to lifts, shops, spec. events, spec. midweek rates, summer rates May 1. 249-8524.

MAMMOTH, Courchevel, walking distance to Canyon Lodge and lifts, 2 bd., 2 ba., sleeps 6, fully equipped unit. 661/255-7958.

MAMMOTH, Snowcreek, 2 bd., 2 ba., +loft, sleeps 6-8, fully equipped kitchen incl. microwave, 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 condo, fully furn. 2 bd., 2 ba., f/p, full kitchen, quiet, relaxing, beautiful setting, located at beachside, with barbeque, pool, spa, game room, grt ocean vw, easy walk to pier and restaurants, sleeps 6, 2-night min., available weekly or monthly. 909/981-7492 or dfhaug@yahoo.com, Jim or Darlene.

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

PACIFIC GROVE hse, 3 bd., 2 ba., f/p, cable, TV/VCR, stereo/CD, well-equipped kitch. w/ microwave, beaut. furn. close to golf, beaches, 17 Mile Dr., Aquarium, Cannery Row, JPL discount. 626/441-3265.

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.

SAN FRAN., Nob Hill honeymoon suite, slps. 2 max, full kitch., maid srvc, concierge, reserve early, \$125/nite, \$750/wk. 626/254-1550.

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Editor

Mark Whalen

Design & Layout

Adriane Jach
Audrey Riethle/
Design Services

Chief Photographer

Bob Brown/Photo Lab

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