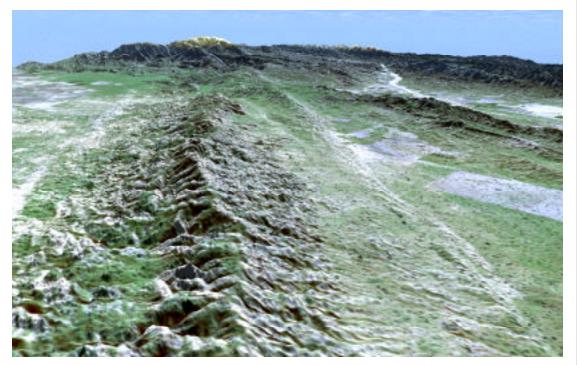


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# Radar images San Andreas fault

This view of the 1,200-kilometer (800-mile) San Andreas Fault generated using data from the Shuttle Radar Topography Mission (SRTM), which flew on the space shuttle last February looks southeast, where it cuts along the base of the mountains in the Temblor Range near Bakersfield. The fault is the distinctively linear feature to the right of the mountains.



he San Andreas is the longest faults in California and one of the most famous geological hot spots in North America. A new image from JPL's Shuttle Radar Topography Mission shows the fault as it runs through the Carrizo Plain, west of Bakersfield, on its 1,200-kilometer (800-mile) course.

The image is available online at *http://www.jpl.* nasa.gov/pictures/srtm.

The Shuttle Radar Topography Mission system, which flew onboard Space Shuttle Endeavour in February, gathered topographic elevation data over approximately 80 percent of Earth's land mass during its 10-day flight. The results of the mission will be the most extensive high-resolution database of Earth's topography. Topography Mission will be available for active fault zones around the world. Scientists will be able to use this treasure trove of information to study places on Earth that have never before been mapped, much less studied in detail.

The Shuttle Radar Topography Mission is a cooperative project between NASA, the National Imagery and Mapping Agency (NIMA), and the German and Italian space agencies.

After processing, data from the Shuttle Radar

JPL and Arizona State University are creating a new NASA facility that will be used by scientists and students studying Mars. ASU and JPL will jointly fund the facility, with JPL providing \$1.45 million in initial funding.

The ASU Planetary Imaging Facility and Advanced Training Institute (PIF-ATI) is an expansion of a facility originally planned to support the Thermal Emission Imaging System (THEMIS), a thermal infrared camera system that will fly on the 2001 Mars Odyssey spacecraft and is directed by ASU Geological Sciences Professor Philip Christensen. According to NASA and ASU scientists, the facility is "a new model" for planetary research projects that will allow greater instrument and data access to scientists outside the project, as well as to university students and even to 5th through 12th grade educators and their students. Also in the planning stages is a graduate and undergraduate program where entry-level personnel can be trained in spacecraft operations and maintenance.

our new Mars program."

"This is a new and creative way of looking at doing planetary research," said Jonathan Fink, ASU vice provost for research. "Among other things, this will allow for the first time middle school and high school students to participate directly in the scientific exploration of another planet."

The facility will offer a new process whereby scientists outside the instrument team can apply to NASA with specific research requests and also have free access to the archive of collected data. It will also allocate a significant fraction of the instrument's use to 5th through 12th grade student use. Classes will submit brief proposals to take pictures of specific regions of Mars, explaining the scientific questions that they would like to answer with the data. They will then have the opportunity to come to ASU to participate in acquiring the image, analyze the data they receive and present their findings. It is expected that approximately 150 classes will be able to participate over the course of a year, with at least one school from every state sending representative students to campus to participate in capturing their requested image and data. The facility is expected to completed next July.

always thought would be really neat to do when I was a kid," said Christensen, the project's principal investigator. "We talked to a lot of teachers, and one of the things that really excited them was the thought that 'Wow, my class could actually be actively involved in exploring Mars rather than just standing on the outside watching!'

"THEMIS is going to take tens of thousands, if not a hundred thousand, images. Making some fraction of those opportunities available to junior high and high school kids really only involves a tiny fraction of the data, but could have an incredible impact on education and student interest." ASU and JPL will provide the expertise, curricular support and equipment required by the new educational program. ASU's Mars K-12 Outreach Program has already developed a large library of curricular materials and has developed a significant national network of school and educator contacts through its extensive schedule of outreach activities in planetary science. "If we could reach a couple of hundred schools around the country with this, it could have a significant effect," Christensen said. "It will give the kids a sense that science is about participating and exploring and discovering . . . it's not about going to a museum and seeing things hanging on the wall."

## Mostly high marks in JPL's 'report card' from NASA

JPL's scores in its fiscal year 2000 Final Performance Evaluation (also known as the NASA report card) resulted in improvement in two of three categories.

The annual evaluation of the Laboratory's performance is used to determine the amount of an award fee to paid to Caltech. In turn, some of that money is given to JPL for use at its discretion.

JPL Director Dr. Edward Stone and Caltech President Dr. David Baltimore attended a Nov. 6 briefing at NASA Headquarters by a performance evaluation board chaired by Dr. Ed Weiler, NASA's associate administrator for space science.

"As compared to last year, our scores dropped slightly in programmatic, reached a new high in outreach, and improved dramatically in institutional," noted JPL Deputy Director Larry Dumas in a letter to managers. "The special areas of emphasis for the coming year include a new item on cost estimation and modifications to several other areas," Dumas said.

JPL received a score of 78 out of a possible 100 in the programmatic category, two points lower than in FY '99. In institutional management, the Laboratory received 80 points, 20 higher than the year before. Outreach scored 94, four points higher than last year.

The Lab's weighted total score of 80.1 was about four points higher than in FY '99. The three areas reviewed carry different weights in tabulating the percent of the award fee to be given.

"Obviously, the Mars '98 los es, the HESSI mishap, and the cost growth in some of our planned missions affected our otherwise strong programmatic efforts," Dumas said. "In other areas, the rebound in financial and institutional management performance and the strong showing in a coordinated approach to outreach were clearly acknowledged. It has been a challenging year, and the Director and I want to thank you and your people for your hard work in stepping up and dealing effectively with the challenges we faced." The underlying rationale for the scores is given in the subject document from the Headquarters briefing, and is available on the Director's Office home page at http://ood under "Information of General Interest: 2000."

# JPL, Arizona State to develop new facility to study Mars

By Mary Hardin

"At NASA and JPL we are looking for new ways to share the adventure of exploring Mars," said JPL Mars Program Manager Dr. Firouz Naderi. "This new facility is a great way of opening up opportunities for scientists and kids to participate in the excitement of

"The student imaging facility is a cool idea—something that I

## Team X collaborates on review of multinational telescope

By Gia Scafidi

JPL's "Team X," which creates the advanced conceptual designs for JPL's future missions, conducted a unique intercontinental collaboration with its European counterparts last month.

This first-of-a-kind event involved combining design activities between teams based at JPL and at the European Space Research and Technology Centre (ESTEC) in the Netherlands, a division of the European Space Agency and

European equivalent of Team X. ESTEC is ESA's biggest establishment and its technical interface with European industry and the scientific community. ESTEC has its own laboratories and extensive facilities for testing spacecraft and components under the stresses they will face during launch and in space.

Representatives from Germany, Israel, the Netherlands, Russia, and the United Nations were joined electronically with the design teams at JPL and ESTEC on Oct. 24. They joined forces for a "red team review" of the design of the World Space Observatory, a United Nations-backed multinational ultraviolet telescope. In this proposal review process, the red team takes a second look and reviews an existing project design.

"We have a big advantage when we can establish relationships with other nations in the early stages of projects like this one," said Team X lead Bob Oberto of the Mission and Systems Architecture Section.

Team X was approached by the United Nations' Office for Outer Space Affairs and the concept design facility at ESTEC to serve as the independent review board for this project.

Proposed in 1997 by the European Space Agency, the World Space Observatory would provide the missing link to studying the universe and its evolution over the entire light spectrum. By launch date 2006, there will be space telescopes operating over every wavelength, except ultraviolet.

"The World Space Observatory will close the gap in the longrange study of the universe," said Alejandro Soto, Team X science team member. "It will provide us with the whole picture."

According to the United Nations' annual Space Science Workshop summary, the World Space Observatory would also "present an excellent possibility to enable basic space scientists in developing countries to work and collaborate with their counterparts in the developed world."

"While a smaller circle of countries will begin the development process, the entire world will be able to observe once the telescope is built," said Marie Deutsch, JPL's World Space Observatory lead.

"In the beginning stages of the project, ESTEC created a 'wish list' of all the components it needed to complete the project," explained Oberto. Since then, Russia has built the telescope hardware and provided the launch vehicle, Israel the camera and Germany the spectrograph, through which celestial objects are imaged. ESTEC developed the advanced concept design.

According to Deutsch, JPL scientists have suggested that the World Space Observatory also include capabilities for solarsystem object studies and a solar weather monitor.

While JPL has offered advice, suggestions, and changes to the design of the World Space Observatory, the Laboratory "is exploring the possibilities of becoming one of the main parties involved in the project," Deutsch said, noting that a decision regarding further involvement of the Lab will be made by next year.

#### t to enhance security d the Laboratory, new ing installed around t to enhance security merimeter parking lots. The removal or trimming of some trees is included in the

some trees is included in the process because of security concerns about people climbing trees near the fence line to gain access to the Lab, Charles said.

So that access to the Lab is protected at all times, he said, new fencing will be installed side-byside with existing fencing during some phases of the project. Minimal disruption of Lab access and

## 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 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 meet the first Tuesday of each month in Building 167-111. For information, call the Employee Assistance Program at ext. 4-3680.

#### Wednesday, November 22

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

#### Tuesday, November 28

Electronic Publishing and Web Application Demos—Representatives from Adobe Systems, Inc., and Allaire Corp. will present three 50-minute sessions in conference room 180-101. At 1 p.m. will be "Document Publishing With Framemaker 6.0"; at 2 p.m. will be "Creating Data Drive Web Sites With GoLive 5.0 & ColdFusion"; and at 3 p.m. will be "Turn Paperwork Into Electronic Documents and Forms With Acrobat Capture 3.0 & Acrobat 4.0.5." For more details about these sessions, see http://icis.jpl.nasa.gov/iis/ overview/wht\_evnt.htm#adobe.

#### Wednesday, November 29

The Enterprise Authentication System, or Why Do I Need So Many @!#\$\* Passwords?—Vance Heron, EIS security system engineer, Section 366, will discuss the development of a single "JPL Password" that would allow users to access all their computer applications: e-mail, Meeting Maker, DocuShare, The system is scheduled for rollout next spring. To be held at noon in von Kármán Auditorium.

#### Thursday, November 30

Caltech Engineering Design Contest—Devices designed and built by teams of undergraduate students will compete at 2 p.m. in Beckman Auditorium. For information, see http:// www.design.caltech.edu/ Preservation Hall Jazz Band— The band will present traditional holiday music performed with their New Orleans jazz style at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$25, \$21 and \$17. Call (626) 395-4652.

#### Sunday, December 3

Chamber Music—Zora Mihailovich will perform on piano. This free concert will be held at 3:30 p.m. in Caltech's Dabney Lounge. Call (626) 395-4652.

#### Monday, December 4



JPL Stories— Norm Haynes will present "Mariner 4 and the Mad Mad World that Got Us to Mars" from 4 to 5 p.m. in the customer

services area of the Library, west end of Building 111, room 104.

#### Mon., Dec. 4-Wed., Dec. 6

Biomorphic Explorers Workshop— The second workshop on Bio-Inspired Engineering of Exploration Systems, sponsored by the New Millennium Program at JPL, will be held in Building 180-101 and von Kármán Auditorium. A reception with posters and demos will be held each of the first two evenings in von Kármán Auditorium. The workshop program, proceedings of the 1998 workshop and other information is available online at http://nmp.jpl.nasa.gov/bees.

#### Tuesday, December 5

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

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

#### Wednesday, December 6

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

#### Wed., Dec. 6-Thu., Dec. 7

Retirement plans—During the first week in December, employees will receive a letter explaining the maximum amount they will be allowed to invest on a tax-deferred basis in 2001 to their voluntary retirement plan investments. On Wednesday, workshops will be presented in the 167 conference room at noon and 2 p.m. to explain the calculations. On Thursday, a tax-deferred annuity open house will be held from 9 a.m. to 3 p.m. in the 167 cafeteria with Fide and TIAA/CREF representatives available to answer questions.

## New fencing to be installed around the

In an effort to enhance security in and around the Laboratory, new fencing is being installed around the entire perimeter of the facility. The work will also include the

trimming of a number of trees and the replacement of others.

"Audits conducted in recent years showed that the fencing around the Lab was insufficient," noted Security and Plant Protection Manager Joe Charles. "Fencing is rusted in some areas, sagging in others. NASA has become more security conscious, and has provided us with the funding to upgrade and improve Laboratory access for the protection of our employees."

### Lab

The security-enhancement plan also includes the installation of four additional turnstiles for employee access to the Lab—at the south and east gates, on the mesa, and at von Kármán Auditorium. New wrought iron fencing will also be installed in some areas.

The new turnstiles are expected to be operational next October. At that time, pedestrians will have nighttime access to the east gate, which is locked to vehicle traffic after dark.

Other enhancements include a new alarm system to be installed on the fences, additional security cameras and new lighting in operations is expected during the project.

In another development, Charles also noted that the JPL Fire Department has been outsourced to Wackenhut Corp., the same company that provides the Lab's security guard force.

Fred Gooden has been named the chief of the fire department, and three new fire captains have been added. Total personnel in the department has been increased by 25 percent since the outsourcing. Three shifts of four full-time firefighters are supplemented by 10 part-time employees.

As a safety-enhancement effort, the fire department has acquired three new defibrillators to aid heart attack victims. The department is also is negotiating to buy a new fire engine to replace the current vehicle, Charles said. Courses/ME72.

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

Fri., Dec. 1-Sat., Dec. 2

Holiday Concert—The Caltech Men's and Women's Glee Clubs will perform music of the holiday season at 8 p.m. in Dabney Lounge. Free admission. Call (626) 395-4652.

#### Saturday, December 2

ERC Children's Holiday Party— The annual event will be held from 6:30 to 8:15 p.m. at the Pasadena Ice Skating Rink. Children ages 3-11 years may participate. Tickets are \$2 at the ERC (tickets will not be sold at the door). Call Sharon Chapman at ext. 4-0294 or Marie Case at ext. 4-2202.

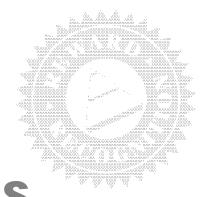
#### Thursday, December 7

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

#### Friday, December 8

Travel Film—Chile Awaits Your Discovery will be shown at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$9 and \$7. Call (626) 395-4652.





Programs step up to reward and honor employees

# ERVING JDL'S er of employee basadena d you to the

Uzanne Bradfield recently joined JPL as manager of employee services and recognition. The former vice president of employee benefits and corporate culture at IndyMac Bank in Pasadena discusses her new position.

**Q** You've been with JPL about three months. What attracted you to the job? What have you learned about JPL so far?

**A** The job interested me because it would allow me to follow through with some programs I had created with my previous employer but never had the chance to implement.

In just the short time I've been at JPL, I've seen how much Human Resources is respected, and that's one of the things I had not experienced very much in my past. HR is the objective voice of the people, and without that voice at the executive level, much less gets listened to and thus accomplished.

## **Q** In your experience, how do JPL's programs for recognizing and rewarding employees measure up to those in the private sector?

**A** It's been very surprising to me, because as a not-for-profit organization, I didn't think there would be as many employee service and recognition programs as there are. The private sector has a lot of money to dedicate to employee programs, yet *so* much is done for the employees here that it mesmerizes me sometimes.

I mean, what is JPL's biggest asset? It's our employees. And how are we going to keep our employees happy? We can only pay them so much and give them a certain amount of benefits. But what we *can* afford to do, in terms of service and recognition programs, is really above and beyond anything I've ever experienced.

## **Q** JPL's "Employer of Choice" initiatives are fairly new. Is that term common in the corporate world?

**A** It has become a buzzword at some companies. Fortune magazine publishes the "top 100 employers to work for." It's a good benchmarking tool to ascertain what's working for other companies. It is imperative that companies incorporate Employer of Choice initiatives into their practice for attraction and retention purposes.

**Q** Nowadays, people change jobs a lot more frequently. But JPL is much different than it was 20 or 30 years ago, in that there are so many more projects now than ever before. Is that part of the thought process in retaining employees at JPL—that people can do many different types of jobs during their career without leaving the Laboratory?

**A** Exactly. It isn't unusual in industry today to switch jobs after two to four years; however, as you point out there are many more interesting projects at JPL than ever before and we hope employees will find it attractive to stay for many years.

**Q** What has been the affect of the Employer of Choice initiatives? Are people happy with things so far?

**A** One of our newest initiatives is Rainbow Retreat. This is a childcare facility in Pasadena that provides care for mildly ill children at half price.

I've found that those employees who make nominations represent a small group on Lab who are actually aware of the programs. We need a better representation of the entire Lab for nominations, so more communication is essential.

The Web is going to be our biggest communication vehicle. My staff and I are working on updating the Employee Services and Recognition Web site to make it more user-friendly and informative.

**Q** You're also responsible for overseeing JPL's cafeteria operations. Is there anything new on the horizon? What needs changing or improving?

**A** We are looking at refurbishing the 167 cafeteria. We've planned for construction to begin in March 2002.

Another big thing we're working on for Building 167, Room 111, is the creation of an employee recreation room. Yoga, aerobics, and other types of physical activity will be offered, and we will continue to try to find uses for this space that will meet the need of our employees.

We're planning to break ground on this facility in mid-December, and anticipate completion and a kickoff in March 2001.

Also, there's a proposal in to renovate the 190 cafeteria into a "trattoria" of sorts—offering specialty items like pasta and pizza.

#### Q What other services do employees take advantage of?

**A** Child care is a benefit many employees are interested in. We continue to provide funds to the Child Educational Center, which affords a discount to JPL employees, and our Child Care Assistance Program provides assistance to JPL families in need of financial support to acquire quality care for their children while they work.

Employee Family Day has also proven very popular. We're going to have it every other year, starting in 2001. And of course, people really enjoy the free lunch certificate they receive on their birthday.

**Q** All this sounds like quite an investment. How are all these activities funded?

**A** The Employer of Choice programs are funded by the award fee given JPL by Caltech for its performance each year. In 1999, about \$1 million was dedicated to the effort, and we're expecting continued support.

**Q** Another area you're responsible for is the Employees Recreation Club. What's new there?

**A** Bridget Marshall is the new ERC administrator. We'll be working on ways to give the ERC a new look and feel while bringing in new types of merchandise. One thing we will be offering for the upcoming holiday season is a gift-wrap service for items purchased at the ERC. "One thing that that really warmed my heart on Employee Appreciation Day was all the smiles I saw. It was freezing cold and threatening rain, but people were happy and exuberant."



JPL employees pay a discounted fee of \$3.25 per hour. This service was received very well and I received a number of e-mails from people who thanked us for offering this service.

Employee Appreciation Day on Oct. 27 was also very well received. People really enjoyed receiving the free lunch and free gift. One thing that really warmed my heart that day was all was smiles I saw. It was freezing cold and threatening rain, but people were happy and exuberant, and that was great for me.

We're never going to get a 100 percent reaction that says, "You guys are awesome;" however, that's not what I'm striving for. What I'd hope for is the majority of the population enjoys the programs and events we're putting on.

**Q** Have you found that people at JPL are fully aware of what's available in terms of employee service and recognition programs?

**A** One of the things I'm trying to do is streamline all of our programs and better communicate them. We're considering a universal, online nomination form for all of the recognition programs—the Award for Excellence, NASA Honor Awards, Bonus Awards, NOVA (Notable Organizational Value-Added), STAR (Special Thanks and Recognition) and the Space Flight Awareness Program. We're targeting this system for next fall.

**Q** Besides Bridget, who is on your team? Where are your offices?

**A** Nancy Kapell is our employee services administrator. She works closely with the cafeterias, child care, employee events and is the Space Flight Awareness coordinator. Bertha Hines is responsible for service awards, birthday certificates and Web design. Nellie Vidaca is responsible for NOVA and retirement awards, pizza certificates, web design and is the United Way Campaign coordinator.

We're located in Trailer 1720B right now, and will move to the second floor of Building 310 early next year. We'll share offices with the Employee Assistance Program.

**Q** How do you plan to measure the success of the various programs?

**A** I plan to start doing target surveys to learn how effective our employees feel the programs are, as well as find out some new things people want. We can't create anything without the employees' input. NASA and Caltech have shown that they believe in us, and we want JPL employees to agree that these programs and services contribute to our being an Employer of Choice! Suzanne Bradfield, employee services and recognition manager

## Book highlights NASA's and JPL's 'qolden age'

A new book by a former senior NASA official chronicles the United States' space program in an eight-year period between the Apollo and space shuttle eras, when 12 robotic spacecraft were launched from Cape Canaveral. Most of these were JPL missions, and the book is largely about JPL and JPLers.

"Beyond The Moon: A Golden Age of Planetary Exploration 1971–1978," was written by Robert Kraemer and published by the Smithsonian Institution Press. Kraemer served as NASA's director of planetary programs in the 1970s, and first became familiar with the Laboratory and its

people during his days as a Caltech graduate student in the early 1950s.

Kraemer touches on the planning, struggles, successes and disappointments associated with missions beginning with 1971's Mariner 9-the first spacecraft to orbit another planet-and continues through the Pioneer Venus 1 and 2 orbiters in 1978.

In between were Pioneer 10 and 11 in 1972 and 1973; Mariner 10 (1973); Viking 1 and 2 Mars orbiters and landings (1975); and Voyager 1 and 2 "grand tour" flybys of four of the outer planets. Kraemer also discusses the financial, political

and technical hurdles facing each mission as well as its associated instrument development and launch.

"The challenge of trying to do something difficult, something no one has done before, has always attracted a special class of engineer and scientist," he noted. "As unexpected problems threaten the very life of a spacecraft in deep space you can count on these people [JPLers] to work feverishly around the clock to save the machine of their creation on its pioneering mission."

The book is available for loan at the JPL Library

## etters

My family and I are grateful to our many friends and colleagues at the Lab for their kind words and thoughts after my mother's recent death. Thanks especially to my friends in SESPD for the beautiful floral arrangement you sent to the funeral home, and to the ERC for the lovely plant sent to our home. Gregg Vane

I would like to thank my coworkers for their kindness and support at the passing of my mother. The lillies will be planted in the front vard as a commemoration of her life. God bless and thank you all. Gary Glass

My family and I would like to thank friends at JPL for their expressions of sympathy at the passing of my wife's mother, Diva Leoni Nelson. We would also like to thank the ERC for the living plant. It was very much appreciated at this most difficult time.

Roger and Diane Klammer

I want to thank my colleagues in the Contract Administration Office, Contract Management Office and our (2X) floormates for their flowers, cards and kind, comforting words when my treasured mother died the third week of October. I deeply appreciate the support, as does my brother, Cristopher Creely, with whom I shared their cards. I also want to thank the ERC for the lovely "plant medley" they sent. One plant had pink flowers and one had pink leaves-so very pretty. They will be a nice memory. Thank you all. Cerini Bess

on behalf of my husband Randii for the beautiful plant in memory of Randii's mom. She was so proud of her son. Alice Wessen



FREDERICK SPRINGATE, 83, a retired member of the technical staff in Section 661, died of heart failure June 27. Springate joined JPL in 1961 and

retired in 1982. He is survived by his wife, Catherine, daughter Rosemary, son Daniel and one granddaughter. Services were private.



BEDROOM FURNITURE: dresser w/mirror and 2 matching nightstands, dresser is 70" wide by 30" high with 9 drawers, nightstands are 26" wide by 23" high with 2 drawers, all for \$245/obo. 626/914-7853.

ny Craig, set of 14, \$50; COMPUTER POWER CONTROL CENTER, 5 pwr. switches + 1 master switch, 5 surge-protected outlets + 2 modem/ fax/phone jacks, new, \$20; SPRINKLER VALVE ADAPTERS, Lawn Genie, automatic, new, \$10 each; ORGAN, Yamaha 415, electronic console w/13 pedals, 3 keyboards, 144 rhythm pat-terns, pd. \$7,500, sacrfc for \$3,000. 790-3899. COMPUTER MONITOR, NEC, 17", purchased new September 1999, \$100/obo. 626/793-0649.

COMPUTER DRIVE, Zip, NEC software include ed, brand new, \$100/obo. 957-4770. DESK, double pedestal, beautiful Honduras mahogany and mahogany veneer, dovetailed drawers, completely refinished, \$150/obo. 626/397-7122.

DESK TOP, white, 5 ft., sets on two 2-drawer file cabinets, makes a great workspace, \$20; DESK, white, 3-drawer, \$15; COMPUTER TABLE, adjustable keybd., exc. condition, \$15 626/445-2616.

ARM SAW, Dewalt radial model 740, 10", by Black & Decker, extras include dust collec-tor metal leg stand, shaper head, sander and car bide blade, instructions, ready to use, works great, used little, \$200. 909/624-6970.

DESK, executive, matching credenza, exc. con-dition, dark finish, \$90 each. 626/445-0884. EXERCISE BIKE, stationary, dual action excellent condition, \$50. 661/513-0850 FURNITURE, oak: computer desk, 2-piece Lshape w/butcher block top, keyboard drawer, 5 drawers, 2 for files, 1 w/lock; file cabinet, vertical, 4 drawers, 1 w/lock; shelf unit, w/8 shelves 50w x 60h x 12d, all in vg condition, all for \$500/obo. 626/791-6101

FURNITURE: piano, Kimball, studio upright, rich oak finish, \$1,400; sofa/chair, leather Chesterfield, w/ottoman set, burgundy, \$1,500; bdrm. set, white wicker, hdbrd. qn/full, 2 nt. stands, chair/loveseat, \$150. 248-2807. FURNITURE: 2 coffee tables, 1 chest of draw ers, 1 dining table with 2 chairs. 957-2421,

after 7 p.m. weekdays. FUTON, queen size, purchased new September 1999, \$200/obo. 626/793-0649. LOVESEAT w/floral pattern, good condition, \$25; WASHER, Kenmore, 10 yrs. old, \$100; WINE CART, on wheels, \$10. 626/798-1345.

MATTRESS, king size, top-of-the-line Serta Masterpiece, only 6 mos. old, exc. cond., orig \$1,700, sell \$100. 626/445-2616.

MICROWAVE, Quasar, 600 W, 0.85 cu. ft., works great, \$60/obo; MONITOR, NEC, color, 13-in., works fine, \$60 obo. 626/254-1550. MISC: golf bag, women's, never used, \$25; guitar, Yamaha, 6-string acoustic, \$95; keyboard, w/case & books, used once, \$45; children's building blocks, like new, \$85; hanging ceiling rack, for pots & pans, \$250; boots & shoes, women's size 6 1/2, \$10 and up; sherbet glass set, \$5; track lights, \$25; heater, parabolic electric, \$30. 957-2421. OVEN, convection by Décor, self cleaning, electric, white, wall mount, \$150/obo. 626/584-9632.

TREADMILL, \$385. 909/593-4046 or vivdavies@starquest.net. TV, Quasar, 7" color; VCR 11" w/remote, super quality, \$125. 909/593-4046 or vivdavies@starquest.net. TV, Sony Trinitron, 27", \$75; VCR, RCA, 4 Head, \$50; TAPE REWINDER, VHS, \$5; TV, 19", \$40; CASSETTE/CD/TUNER/SPEAKERS Sharp, \$40, WASHER, GE, \$150; DRYER, May tag, gas, \$125. 248-3546, Ted. VIDEO INTERFACE DEVICE, Pro-Genlock, Neriki Image Master, made in Australia, new, nev er used, compatible w/Amiga 500, 1000 or 2000, \$500/obo. 249-8515

WASHER, Maytag, excellent condition, almond color, \$200/obo; BED, Somma, queen, good condition, water bed with tubes. 248-3364.

#### Vehicles/Accessories

'88 BUICK Reatta Coupe, red, auto, V6, am/fm/cass. stereo, a/c, ABS, leather int., "crt" screen, all service recs., orig. owners, very gd. cond., 137k mi., \$4,500. 248-2807. '80 BUICK Century Limited, 4 dr., a/c, pwr str/brakes, 88k original miles on car and ~50k on new engine (1985), new paint (2 yrs), new tires (1999), air/cond. compressor (1999), new catalytic converter (1999), \$2,000/obo. 626/351-0788, after 6 p.m 72 CHEVROLET Malibu, must sell, \$4,500.

626/446-1054, Mike '79 DATSUN 210, original owner, runs great 4-speed, maintained very well, burg/grey,

excellent commute car or teen starter reliable, \$1,200/obo. 310/674-5338. '84 DODGE D-50 pickup truck, very fine cond., auto trans., bedliner, shell, very clean, all maintenance records on file, new carbure-

tor & battery, recently smogged, 139k, orig. owner, \$2,500. 626/332-2682. '94 FORD Club Wagon XLT, 12-pass. van, 5.8 L V8, 75K miles, a/c, pwr. everything, ABS, alarm, AM/FM cass. premium sound, tow

package, recent tires, front brakes, shocks, vg cond., \$14,500. 790-3217. '94 FORD Explorer X.T. 53K mi., V6. orig. owner, forest grn., exc. cond., records avail., 4

WD, ABS, alloy whis., auto, a/c, pwr. leather seat/windows/door locks, am/fm/cass., running boards, fog lamp, tint glass, tilt wheel, cruise control, \$12,500. 626/791-3194.

'69 FORD Mustang, 302, must sell, \$2,500. 626/446-1054, Mike

'95 JAMBOREE Searcher 21C, rear bath, new carpet, awning, microwave, generator, roof & dash, a/c, 73k original miles, runs great, \$18,500/obo. 626/398-1915, Digette.

'96 MITSUBISHI Galant ES sedan, 61k mi., \$6,700/obo. 949/292-4292.

'87 NISSAN 200 SX SE, hatchback, 2 dr, V6, 5 sp., a/c, PS, PW, PL, original owner, low miles, \$3,650. 957-3675

'94 PONTIAC Grand Prix SE, 4 dr., ps/pb/ abs, a/c, cruise, alloy wheels, 17,400 mi., near-perf. cond., \$8,500/obo. 626/405-1909. 93 PONTIAC Sunbird, convertible, blue/blk. 3.1L, V6, 134k mi., 22-25 mpg., new top, vg cond., \$3,950. 248-0236.

'80 PONTIAC Grand Prix, runs well, auto, new battery, 100k+ mi., needs some body work, \$1,250/obo. 626/398-6564.

'69 PORSCHE, good shape, silver, \$1,400. 249-2235

'91 TOYOTA Camry DX, blue, 4 cyl, 113k mi, excellent condition, clean, 4 door, sunroof, automatic, power windows/locks, am/fm/CD, a/c, \$5,800/obo. 626/284-4694.

'92 VW Passat station wagon, red ext., black int., pwr. windows/doors, pwr.-assisted steersun roof automatic radio 98k miles ex cond., \$3,800/obo. http://home.earthlink.net/~ peterschmitz/Passat or 626/797-6573.

DOG, female Golden Retriever mix, rescued. spayed w/shots, 1 year old, mellow personality, well behaved, lived tied up to a leash before rescue, cat friendly, short hair, great with children. 626/287-9433.

#### For Rent

ALTADENA, large house to share, 1 mile to JPL, private and quiet lot, non smoker for master bedroom with private bath, \$650 + utilities. 626/791-2332, Dave. ALTADENA, 11 min./JPL, Ig. furn. room, cable TV, priv. ba. and parking spot, also share Ig. house, yd., pool, patios, etc. w/retired JPL engr., all amen., kitchen w.d/w, laundry rm., panoram. view, smoking OK, owner smokes a bit, JPL empl./contr. prefd, \$480 incl. all util., + dep. 626/794-1050, after 5 p.m., Harry.

ALTADENA, in excellent Rubio Canyon area, furnished room in home with access privileges to kitchen/laundry/dining room, no smoking & no pets, \$350. 626/797-8082.

N.E. PASADENA, craftsman style home, 2 bd., 1 ba., + den, priv. back and front yard, incl. washer, dryer and refrigerator, 1-car garage, \$1,350. 626/797-2798.

PASADENA, part of a beautiful home, serene setting, gorgeous vw., priv. entr., 1 room, bathroom, kitchenette, ideal for 1 person with a very quiet lifestyle, \$550. 626/798-4056 SOUTH PASADENA condominium, 2 bd., 2 ba. patio, balcony, built-in washer & dryer, central a/c, heat, full kitchen facilities, great neighborhood, \$1,400. 323/255-8389.

#### Real Estate

IDYLLWILD, Ca., "our blue heaven", 3-bd., 2ba. home with breathtaking view, special decks, 1,700 sq. ft., on 4 ac, 30' x 34' garage for 2 cars + mtr. home, carport, f/a heat airtight stove, kit. appl., wash/dryer, storage, \$269,000. 760/922-4879.

LA CANADA/FLINTRIDGE HILLS, lots of privacy, 3 bd., 3 ba., fireplace in living rm., fam. rm, gourmet kitchen, patio w/breathtaking view, showing by appt. 989-3986, Dickie. PASADENA, executive condo next to Caltech, totally remodeled 2 bd., 1 3/4 ba., 1,200 sq. ft., newly refinished hardwood floors in dining rm., newer appliances, carpet & paint, Ig. balcony, just redone, over-looking beautiful trees, top floor unit in park-like setting, walk to Caltech & S. Lake Ave., nice pool and spa \$219,000. 626/585-9048

PRESCOTT, Arizona, 1/2 acre lot, Timber Ridge subdivision location, one of Prescott's finest, in the Ponderosa Pines, located at end of a cul-de-sac, includes underground utilities, indoor pool, outdoor pool and tennis courts, lot ref. #MLS-357840, \$65,000. 626/798-2440, evenings.

#### **Vacation Rentals**

BIG BEAR cabin, quiet area near 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. mas-ter 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 and guest house, comfortably sleeps 6, 3 bd., 2 ba., rustic, relaxing and beautiful, swimming, snorkeling, fishing, spectacular views, near restaurants,

golf courses and other. 626/584-9632. HAWAII, Maui condo, NW coast, on beach w/ocean view, 25 ft. fr. surf, 1 bd. w/loft, con pl. furn., phone, color TV, VCR, mcrowv., d/w, pool, priv. Ianai, slps. 4, 4/15-12/14, \$100/nt./ 2, 12/15-4/14, \$115/nt./2, \$10/nt. add/l. person. 949/348-8047.

previous issues of Universe online http://universe.jpl.nasa.gov

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Editor

**Design & Layout** Adriane Jach

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#### **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.

Mark Whalen

Audrey Riethle/

**Chief Photographer** Bob Brown/Photo Lab

Design Services

Universe is published Propulsion Laboratory,

I thank the ERC and the JPL "family"

For Sale

CD JEWEL CASES, 50, \$10; DIET TAPES, Jen-

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.

GRANT MCDOUGAL, 95, a retired JPL employee, died of pneumonia Oct. 13 at his home in Carlsbad. McDougal worked at JPL from 1948-70. He is survived by his wife, Edna, and daughter Lianne Schely. Memorial services were private.

ROGER BARNETT, 78, a retired member of the technical staff in Section 870, died of heart failure Oct. 21 at his home in Glendora.

Barnett joined the Lab in 1946 and retired in 1990. He is survived by is wife, Katherine, children Bruce,Kerry and Tim, and four grandchildren. Memorial services were held Nov. 4. Burial was private.

GLEN SMITH, 80, a retired engineering test associate in Section 355, died of heart failure Oct. 26. Smith worked at the Lab from 1959-86. He is survived by his wife, Rosalice, and son Jared. Services were held Oct. 31 at Forest Lawn Memorial Park in Glendale.

PERSONAL DIGITAL ASSISTANT, Palm Prof. with all manuals, Hot Synch cradle, soft-ware perfect operating cond.; 1 MB memory, uses AAA batt., \$60. 789-1995, Ken.

PRINTER, HP LaserJet IIIP, additional memory and tray, exc. condition, \$100/obo. 957-7742.

R.C. CAR, gas powered, Traxxas, Nitro Rustler, O'Donnell pipe, Dirthog tires, chrome rim, recoil starter, radio, Pro-15 race engine, ready to run, exc. cond., 9 months old, \$249. 909/592-2279.

SKI BOOTS, Salomon SX-71, men's size 11, worn only a few times, in original box, \$28. 236-4869, evenings.

SLIDE CAROUSELS, Kodak, for 35mm slides, excellent condition. 248-3364.

SNOWBOARDING GEAR: Burton snowboard, 139 cm, youth-sized bindings, exc. cond., shreds at Mammoth, \$30; Airwalk snow-board, 161 cm, cool graphics, full capped construction, full stainless wrap, w/bindings, ready to go, \$60; Burton boots, mens size 9, like-new cond., worn 3 times, out-grown by teen, \$30; jacket and pants, out-grown in 1 season, high quality, \$30 each. 249-3633.

SPEAKERS: Yamaha, 3-way, pair, 100 W, exc. cond, \$79; Cerwin Vega center channel, efficient, exc. cond., \$139; TELEVISION, Sony 19", color, good cond., great picture, \$139. 909/592-2279.

TABLE, dinette, square glass top 5'x5', w/met-al feet and 4 matching chairs, \$800/ obo; BAR STOOLS, 4 matching, metal frame, all in superb condition, \$400/obo. 626/398-3480.

#### Wanted

PASADENA JAYCEES seeks members to have fun, meet people and do great things for the community; monthly mixer the third Wed. of every month at 7 p.m. at Villa Gardens, 842 W. Villa St. 626/792-5146.

SHOPPERS, "Shop Til You Drop," Nov. 29, 5:30-8:30 p.m. at Arcadia Elks Lodge, 27 W. Huntington Dr., rear parking, no adm. charge, fashions, handbags, scarves & jewelry from Nordstrom, Macy's, Robinsons-May and Bloom-ingdales, 50%-70% off store prices, nothing over \$38, sizes 4-24, proceeds to disabled children in Calif. and Hawaii. 626/797-1310. SPACE INFORMATION/memorabilia from U.S. & other countries, past & present. 790-8523, Marc Rayman.

VOLLEYBALL PLAYERS, coed, all levels of play, Tues. nights 8-10 p.m. at Eagle Rock High School, \$3/night. 956-1744, Barbara.

#### Free

CATS: two rescued kittens, litter trained, one calico female, one gray and white male 760/242-3689 or 626/287-9433.

COMPUTER, Macintosh Quadra with 21" Sony color monitor, for the computer repairer, com-puter is functional, monitor needs repair. . 626/398-9302.

LAKE ARROWHEAD house, 4 bd., 2 1/2 ba., sleeps 10, quiet, secluded, relaxing woodsy area of Cedar Glen, already booked for Thanksgiving and Xmas, JPLers who book directly with owner get 2 for 1 + cleaning fee, http://www.highcountryrents.com/cedar\_ run.html for pictures/rates. 626/403-0446.

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. micro-wave, d/w, cable TV, VCR, phone, balcony w/view to mtns, Jacuzzi, sauna, streams, fish-ponds, close to Mammoth Creek, JPL discount. 626/798-9222 or 626/794-0455.

OCEANSIDE, on the sand, charming 1bd. condo, panoramic view, walk to pier & harbor, pool/spa, game rm., sleeps. 4. 949/786-6548. PACIFIC GROVE house, 3 bd., 2 ba., f/p, cable tv/vcr, stereo/cd, well-eqpd. kit. w/microwv., beaut. furn., close to golf, bches, 17 Mile Dr. aguar., Cannery Row, JPL discnt. 626/441-3265. ROSARITO BEACH condo, 2 bd., 2 ba., ocean view, pool, tennis, short walk to beach on priv. rd., 18-hle golf course 6 mi. away, priv. secure parking. 626/794-3906.

S.F., Nob Hill honeymoon suite, sleeps 2 max, full kitchen, maid service, concierge, reserve early, \$125/nite, \$750/wk. 626/254-1550.