

## Bush seeks FY '06 hike for NASA

By Mark Whalen



Dutch Slager / JPL Photolab

For more information on NASA's FY 2006 budget request, log on to [www.nasa.gov/about/budget](http://www.nasa.gov/about/budget).

At a time when the Bush administration has submitted a fiscal year 2006 budget that seeks deep spending cuts across the federal government, NASA's proposed funding over the next five years will increase between 2 and 3 percent each year, JPL Director Dr. Charles Elachi told staff Monday.

Noting that this is the toughest budget the administration has ever proposed, including a commitment to cut the deficit by 50 percent over the next four years, based on preliminary numbers, almost all discretionary agencies (excluding the Department of Defense and the Department of Homeland Security) are proposed below NASA growth. "We should all be proud and thankful for what I would consider a very good budget in this environment—both for NASA and for JPL," Elachi said.

Under the budget proposal submitted by the administration to Congress on Monday, NASA's Science, Aeronautics and Exploration areas will be funded at about \$9.7 billion in FY '06, an increase of about \$700 million over FY 2005. Projecting to FY 2010, the budget calls for \$12.8 billion.

"There is not only growth in absolute numbers, but also a growth in the percentage of science being done at NASA," he said. "So clearly there is a commitment from the administration and from the agency that science is very important and is a significant and critical element of NASA."

Prometheus, the technology demonstration mission associated with the Jupiter Icy Moons Orbiter, faces some funding constraints. Its FY 2006 request for \$320 million is \$112 million less than this year, but the budget request increases each year thereafter through the decade. "The Prometheus Project is exploring alternative destinations for its first mission that would result in lower costs. This is a very reasonable and pragmatic decision to first conduct a demonstration of a propulsion system technology that will revolutionize our abilities to conduct deep-space exploration," Elachi said. "One of the advantages of a demonstration flight is the experience not only in technology development, but gaining knowledge of the costs involved in a more ambitious future mission to Jupiter and its moons. Concepts presently under consideration include a lunar orbiter, asteroid rendezvous and a Mars orbiter mission, all exciting destinations where important science can be conducted."

NASA's Science Mission Directorate, which funds most of JPL's activities, is proposed to receive significant increases over the next five years. Currently, Elachi said, the Science sector represents about 33% of the NASA budget. If the proposed spending is implemented, in five years funding for Science would be at 38% of NASA's overall budget.

In the Earth–Sun System division of the Science sector, which is a combination of Earth science and space physics, there is a small drop in the FY 2006 budget request, to \$2.06 billion, down from this year's

**"We are still going to be a very busy organization for the rest of the decade."**

\$2.16 billion. "It will pick up slowly after that," Elachi said. "I don't envision any significant impact on our activities here."

Elachi said considering how important Exploration Systems will be in the near future, his intent over the next year is to transform JPL's Exploration Systems and Technology Office into a directorate, excluding Prometheus. Mike Sander, the manager of that office, is considering applications from JPLers to spend a year in Washington, D.C., working with Craig Steidle's office, then returning to JPL.

Within Exploration Systems is Constellation Systems, which mainly concerns the crew exploration vehicle, which NASA is committed to demonstrate by about 2008 but not operate until 2012 or 2013. Although this is a mostly human spaceflight–related area, there could be a role for JPL. "There are a number of areas where we could make major contributions—particularly because that vehicle is intended not only to go from here to the International Space Station or to the moon, but a capability may allow it to go deeper—to asteroids, the L1 point and ultimately to Mars," Elachi said.

Another possibility for the Lab under Exploration Systems is Exploration Systems Research and Technologies, an area that has been well funded. "Most of the money in this area will be competed, and JPL has been doing well in competitive work," Elachi said.

Further on the budget, Elachi also noted the request includes a small reduction on the Space Interferometry Mission, which will result in a

delay of the launch by about one year, to 2011. "There will likely be a relatively small impact on staff here at JPL," Elachi said.

Another issue important to Elachi is for a major future initiative for the development of the Deep Space Network for the next 20 to 30 years. "This will be one of our highest challenges over the next two or three years," he said. "It's basically developing the equivalent of a new start for a major project."

The director attributed the good news about NASA's budget request to Bush's commitment a year ago to the agency's Vision for Exploration. "There is a vision that people can debate and work on," Elachi noted. "The fact that there is now a commitment and vision from the administration really helps in a major way."

He also credited the Aldridge Commission report for providing a blueprint for the NASA transformation and praised *The New Age of Exploration*, a document defining NASA's strategic planning efforts and roadmaps.

Elachi also weighed in on institutional issues at the Lab. "We are still going to be a very busy organization for the rest of the decade," he said, noting that JPL is committed to developing and launching an average of one mission every four months through 2010.

The recent selection of the Nuclear Spectroscopic Telescope Array (NuSTAR) was cited by Elachi as an illustration of the value of JPL's close ties to Caltech. NuSTAR is the third mission in the last five years where the principal investigator has hailed from the Caltech campus, following the Galaxy Evolution Explorer and Genesis. "This shows that by working closely with the campus our working relationship brings a lot of value to both organizations," Elachi said.

The director encouraged all personnel to participate in the employee survey, which was extended through Wednesday, Feb. 9. As of Friday, Feb. 4, 56% had taken the survey. "By any measure, that is a high percentage," he said. "In outside industry, 30% response is pretty good."

The 2003 implementation plan identified 87 initiatives to undertake; so far, 81 of them have been completed. Elachi said now is the time to start to look for new initiatives for the next two years. Dr. Firouz Naderi is heading a team that is looking at key initiatives to make JPL an even better place to work. Examples under consideration:

- Revisit pay grades
- Increase investment in the Lab's infrastructure
- Increase proactive technology infusion in flight projects
- Expand system engineering processes and providing training, particularly in the area of entry, descent and landing; many more future missions will require landings on celestial bodies over the next decade, possibly about every two years
- Improve the database for cost estimating
- Increase business management training
- Fund and build an education center within three years
- Revisit management councils and Executive Council operations; how to become more efficient and effective

"I think we will have significantly more initiatives to consider," Elachi said. "The employee survey could identify still more initiatives to make JPL the superb place we all would like to keep."



Dutch Slager / JPL Photolab



# News Briefs



Dr. Ed Smith

## Smith receives research honor

Senior Research Scientist DR. EDWARD SMITH of Section 3263 has received the National Academy of Sciences' 2005 Arctowski Medal for Solar Physics.

The award includes a medal, a money prize of \$20,000 and an additional monetary award to an institution of his choice. The medal is given once every three years for outstanding contributions to the study of solar physics and solar-terrestrial relationships.

Smith was chosen "for his pioneering studies of the solar and heliospheric magnetic fields in deep space and of planetary magnetic fields and their interaction with the solar wind."

Smith served as project scientist for Ulysses, a joint project between NASA and the European Space Agency that for the first time sent a spacecraft out of the ecliptic—the plane in which Earth and other planets orbit the sun—to study the sun's north and south poles.

The award will be presented during ceremonies on May 2 in Washington D.C. at the annual meeting of the National Academy of Sciences.

## 'Mini' solar system seen

The JPL-managed Spitzer Space Telescope has spotted a dusty disc of planet-building material around an extraordinarily low-mass brown dwarf, or "failed star." The brown dwarf, called OTS 44, is only 15 times the mass of Jupiter. Previously, the smallest brown dwarf known to host a planet-forming disc was 25 to 30 times more massive than Jupiter.

The finding will ultimately help astronomers better understand how and where planets—including rocky ones resembling our own—form.

"There may be a host of miniature solar systems out there, in which planets orbit brown dwarfs," said DR. KEVIN LUHMAN, lead author of the new study from the Harvard-Smithsonian Center for Astrophysics. "This leads to all sorts of new questions, like 'Could life exist on such planets?' or 'What do you call a planet circling a planet-sized body? A moon or a planet?'"

"In this case, we are seeing the ingredients for planets around a brown dwarf near the dividing line between planets and stars," said DR. GIOVANNI FAZIO, an astronomer at the Harvard Smithsonian Center for Astrophysics and a co-author of the new study. "This raises the tantalizing possibility of planet formation around objects that themselves have planetary masses."

Planet-forming, or protoplanetary, discs are the precursors to planets. Astronomers speculate that the disc

circling OTS 44 has enough mass to make a small gas giant planet and a few Earth-sized, rocky ones. Could a habitable planet like Earth sustain life around a brown dwarf?

"If life did exist in this system, it would have to constantly adjust to the dwindling temperatures of a brown dwarf," said Luhman. "For liquid water to be present, the planet would have to be much closer to the brown dwarf than Earth is to our sun."

OTS 44 was first discovered about six months ago by Luhman and his colleagues using the Gemini Observatory in Chile. The object is located 500 light-years away in the Chamaeleon constellation. Later, the team used Spitzer's highly sensitive infrared eyes to see the dim glow of OTS 44's dusty disc.

## Telescope proceeds for study

NASA will continue studying another proposed mission under its Explorer Program. The Nuclear Spectroscopic Telescope Array (NuSTAR) is the first telescope capable of detecting black holes in the local universe with 1,000 times more sensitivity than previous missions sensitive to energetic X-rays.

JPL would provide project management, mission operations management, project systems engineering, extensible mast structures and the metrology system that measures telescope alignment. The Lab would also have science involvement.

The extensible mast is based on the Shuttle Radar Topography Mission, which was managed by JPL.

A decision on proceeding to flight development with NuSTAR will be made by early 2006. DR. FIONA HARRISON of Caltech is the principal investigator for NuSTAR.

The Explorer Program is designed to provide frequent, low-cost access to space for physics and astronomy missions with small to mid-sized spacecraft. NASA has successfully launched six such missions since 1992.

## Blood drive Feb. 15-16

The next JPL/Red Cross blood drive will be held in von Kármán Auditorium on Tuesday, Feb. 15, from 10 a.m. to 4 p.m. and Wednesday, Feb. 16, from 7 a.m. to 1 p.m.

Register to donate at [www.givelife.org/index.cfm?hcl=JPL](http://www.givelife.org/index.cfm?hcl=JPL), using work address and work phone only. Once you select your appointment, you will receive an automatic confirmation e-mail. For further assistance, call the Red Cross at (213) 400-0140.

Advance signup sheets will also be available at JPL Occupational Health Services, Building 310-202, prior to the blood drive.



# AIRS marks milestone

From the AIRS Team

Friday, Jan. 28, marked the anniversary of the 1,000th day in space for the Atmospheric Infrared Sounder, NASA's new high spectral resolution infrared instrument for measuring atmospheric temperature, water vapor and trace gases. The AIRS instrument suite, part of NASA's Aqua Earth Observing System satellite, was launched on May 4, 2002 from Vandenberg Air Force Base, Calif., on a Delta II launch vehicle into a sun-synchronous polar orbit.

The AIRS Project has had an outstanding two and a half plus years, achieving nearly flawless operation of the AIRS and Advanced Microwave Sounding Unit instruments and demonstrating critical science objectives and a significant impact on weather forecasting.

While the AIRS Team celebrated the milestone, AIRS Project Manager Tom Pagano congratulated the JPL team for its efforts. "We're not here to celebrate the instrument, but to acknowledge your efforts in the instrument development, calibration, operations, algorithm and software development and validation, which has made the project a success," Pagano said.

The AIRS Project has met all of its objectives to date. The mission's primary products are temperature and water vapor profiles in three dimensions.

In a recent accomplishment highlighted by Pagano, Dr. John LeMarshall, director of the NOAA/NASA/U.S. Navy/U.S. Air Force Joint Center for Satellite Data Assimilation, assimilated AIRS data into the operational National Centers for Environmental Prediction forecast models for the first time. "There were several skeptics who did not believe infrared could improve forecasts," he said. "They were pleasantly surprised to see a forecast improvement of six hours on the five-day forecast; this accomplishment alone has made the AIRS Project worth the government investment."

Not only is AIRS making an impact in weather forecasting, it's becoming a precise tool for climate modelers. Water vapor is by far the most important greenhouse gas, accounting for more than 50% of the warming induced by all greenhouse gases combined. An increase in upper atmospheric water vapor will accelerate global warming. AIRS scientists are studying the global variations of upper atmospheric water vapor to determine if it is increasing.

AIRS scientists have also demonstrated the instrument's sensitivity to key greenhouse gases including carbon dioxide, carbon monoxide and methane. "AIRS provides a comprehensive and self-consistent set of greenhouse gas measurements from a single instrument, and the instrument stability makes these products well-suited for climate studies," said AIRS Science Team Leader Dr. Moustafa Chahine.

# Special Events Calendar

## Ongoing Support Groups

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

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

Codependents Anonymous—Meets at noon every Wednesday.

Lambda (Gay, Lesbian, Bisexual and Transgender Networking Group)—Meets the first Friday and third Thursday of the month at noon in Building 111-117. For more information, call Randy Herrera, ext. 3-0664.

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

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

## Friday, February 11

SRTM Celebration—Come to von Kármán Auditorium from noon to 1:30 p.m. for a talk on the fifth anniversary of the launch of the Shuttle Radar Topography Mission's 11-day flight aboard Space Shuttle Endeavour in February 2000. SRTM acquired enough data to obtain the most complete near-global mapping of our planet's topography to date. Enjoy some cake following the talk.

## Tuesday, February 15

Credit Union Annual Meeting—Members will gather at Beckman Auditorium at 5:30 p.m. Refreshments served in the Courtyard at 5 p.m. A free gift will be given to all in attendance and a prize drawing will be held.

*Soylent Green*—The 1973 film that examines an overpopulated Earth in the year 2022 will be presented at 8 p.m. in Caltech's Beckman Auditorium. Free admission. The screening will be followed by a panel discussion featuring producer Walter Seltzer and Vivian Sobchak, associate dean of UCLA's School of Theater, Film and Television. For more information, call (626) 395-4652 or visit [www.events.caltech.edu](http://www.events.caltech.edu).

## Wednesday, February 16

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

## Wed.-Thurs., February 16-17

Investment Advice—TIAA/CREF will offer one-on-one counseling in T1720. For an appointment, call (877) 209-3140, ext. 2614, or visit [www.tiaa-cref.org](http://www.tiaa-cref.org).

## Thursday, February 17

JPL Web Developers—Meeting at noon in the 167 conference room.

## Friday, February 18

Caltech German Language Film Series—1998's "The Inheritors," an Austrian film, will be shown in German with English subtitles at 7:30 p.m. in Baxter Lecture Hall. When a cruel farmer is murdered his last will discloses that the peasant workers he had humiliated will get the farm. This disrupts the social order of the Austrian village at the turn of the 20th century. The movie is rated R for major violence. Free admission and reception after the movie. For more information, e-mail [aebi@hss.caltech.edu](mailto:aebi@hss.caltech.edu).

## Saturday, February 19

Folk Music—Bluegrass band Perfect Strangers will appear at 8 p.m. in Caltech's Dabney Lounge. Tickets are \$15 for adults, \$5 for children under 12. For more information, call (626) 395-4652 or visit [www.folkmusic.caltech.edu](http://www.folkmusic.caltech.edu).

## Tuesday, February 22

Claremont Graduate University School of Information Science Open House—Hosted by Professional Development from 9:30 to 11 a.m. in the 180-101 conference room. The university is currently offering two degree programs and two certifications that focus on both theory and application: master's and doctorates in information systems, and certificate programs with both a management and technical emphasis. For more information, visit <http://is.cgu.edu> or call Go Yoshida, director of recruitment/admissions, at (909) 621-8209. For questions on the open house, call Professional Development at ext. 4-3750 or visit <http://hr/et>.

## Wednesday, February 23

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

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

*Space: Boldly Go*—This high-definition film will be presented at 2 p.m. in Caltech's Beckman Auditorium. A discussion with Michelle Thaller of Caltech's Infrared Processing and Analysis Center will follow the screening. Free admission. For more information, call (626) 395-4652 or visit [www.events.caltech.edu](http://www.events.caltech.edu).

"The Sense of Smell: A Window Into the Brain and Memory"—Gilles Laurent, Caltech professor of biology and computation and neural systems, will lecture at 8 p.m. in Beckman Auditorium. Free admission. For more information, call (626) 395-4652 or visit [www.events.caltech.edu](http://www.events.caltech.edu).

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

## Thursday, February 24

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

"From The Cosby Show to Today: The Effects of African American Images on Television"—Actor and activist Malcolm-Jamal Warner will speak at 8 p.m. in Caltech's Beckman Auditorium. Free admission. For more information, call (626) 395-4652 or visit [www.events.caltech.edu](http://www.events.caltech.edu).

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

JPL Stories—Retired JPL planetary scientist Ellis Miner will present "A JPL Scientist's Forays into the Strange World of Public Communications" at 4 p.m. in the Library, Building 111-104. If you have questions about the story series or wish to participate, call Teresa Bailey at ext. 4-9233.



## Friday, February 25

Imago Theatre—This mask theatre ensemble will present a menagerie of anthropomorphic animals, wild costumes and fantastic lighting effects at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$25, \$21 and \$17; high school age and younger, \$10. For more information, call (626) 395-4652.

## Saturday, February 26

Caltech-Occidental College Concert Band—The band's annual concert will be presented at 7:30 p.m. in Occidental College's Thorne Hall. Featured will be "The Lord of the Rings," a five-movement suite composed especially for concert band. For more information, call (323) 259-2785.



**What’s your background? What brought you to JPL?**

I had been working as a contract historian at NASA’s Langley Research Center since 1999 when the JPL job opened up. I started there by writing a history of supersonic transport research, which will finally be published later this year, and then I pitched NASA on the idea for a history of atmospheric science research NASA-wide. It would include stories from JPL as well as from Langley and Goddard Space Flight Center. I’m a chapter away from finishing the first draft of the book, which is due to NASA in September. I’ve been working in aerospace history since 1996, at the National Air and Space Museum and at Langley.

I was offered this job back in May 2004, after the Lab had looked at applicants for nearly a year. It was a huge honor and really exciting—for a historian of 20th century science and technology, this is one of the very few perfect places to be. There’s all sorts of great stuff to write about here, and more is happening every year.

**What are you working on? What are your goals here?**

I’ve started to build up an oral history collection. I’m interviewing the directorate heads and other long-serving JPLers, and I’m pursuing topical sets of oral histories, starting with the atmosphere and oceans groups. Another short-term goal is to soon begin oral histories with some of the Prometheus mission leaders, with the help of Michael Hooks, the JPL archivist, and with the Mars Science Laboratory and Mars Telecommunications Orbiter teams. I’ll also be expanding the range of the oral history collection over time to capture more of JPL’s missions.

Longer term, I plan on talking to the various directorates to gauge their interest in funding histories of their flight projects. There’s a new history of JPL coming by Peter Westwick that will provide a very top-level view of our history, but I’d like to foster histories of some of the more important projects so that there’s more detail, and more personal stories, in the historical record. It takes three or four years to research and write a solid history, so I can’t do them all myself.

**What is an oral history?**

It’s generally an audiotaped interview accompanied by a paper transcript. Sometimes these take several sessions to complete. I try to get key players to tell me about their careers and their involvement in projects, in scientific research and in management. The goal is to build up the Lab’s history by getting the stories of the people who make up the Lab. Eventually we will have a set of oral histories on each of JPL’s projects.

Everyone I’ve talked to has been very receptive; in fact, some have been rather enthusiastic and very happy to be asked to share their experiences.

**Are you going to concentrate on JPL’s current missions or those from the past?**

I’d like to strike a balance. It’s on my agenda to try to get histories on past missions that have not already been published by the NASA History Office. Each year, they fund a single history project for the agency. Galileo’s history is being done now and Voyager is finished. So from JPL’s past planetary missions, Magellan is the only major project yet to be done. Of course, there’s also the whole Mars program of the last 15 years too, but because it’s ongoing I don’t quite see it as “past.”

But in general my focus will be on current and future missions, even missions that get proposed and are later canceled. For example, I’ve found that a lot of people on the Mars Exploration Rovers mission had involvement in a proposed Mars sample return mission that was since canceled. I want to capture these shifts in more detail than in the past, because the development, movement and dissemination of expertise is an interesting topic historically.

Additionally, it’s interesting to chronicle projects in development because most major projects change significantly from proposal to launch. With Prometheus, for example, I want to capture by oral history the evolution year-by-year for however long it runs. It will be a fascinating study.

*There is much to chronicle in JPL’s storied history and Erik Conway is the person to do it. Conway, who works in the Office of Communications and Education, joined JPL last September as the Lab’s historian. He discusses with Universe how he is going about bringing the JPL story to the reading public.*



Bob Brown / JPL Photolab

I will also try to pursue topical histories; in other words, instead of covering individual projects I might look for a topic—such as infrared astronomy—that ought to be covered by describing a number of missions.

**Do you intend to write books about the Lab and its missions?**

I’ll pick a book project late this year. But I can only work on one book at a time, so until my atmospheric history is done in September I will concentrate on the oral histories and a few journal articles. I’ll probably write two articles this year for popular publications such as *Astronomy* and *Air and Space Smithsonian*. I will also target one article this year for one of the scholarly or academic history journals. The nice thing about articles is that they’re relatively quick to do, and there are a lot of small but important topics here that can be done nicely in an article.

**How will your work align with that of the JPL Archives?**

My function will be to help Michael Hooks and Kay Schardein, the records manager, achieve more visibility. I’ll also be providing new oral histories for his collections, of course. Hooks is the custodian of all the Lab’s old records, including oral histories, and is responsible for making the records available to researchers. I’ll also review the archives and records management functions from time to time to make sure they keep doing well.

Also, any work that I do will eventually be publicly releasable and the Archives will make it available.

**Will JPL’s history also be available on the Internet?**

There is already a JPL history website run by the Library [<http://beacon.jpl.nasa.gov/WhatsNew/JPLHistory.htm>]. At least in the short term, I don’t plan to expand it much. It has the basic information that it should have. If I can resolve some legal issues regarding electronic distribution of oral histories, I may also add a selection of them to the site as Johnson Space Center has started to do. But that’s a year or two away.

As far as purely electronic histories go, being a computer hobbyist leftover from the 1970s, I’m afraid electronically based histories may not survive. Look at all the formatting and software changes that have happened. Can you read a Microsoft Word file from 1990? Scientists may wrestle with this, but we historians are poor; we can’t cope with the cost of format changes.

Paper and libraries may be old-fashioned, but we know we’ll be able to read them in a couple hundred years. I don’t believe that we know yet how to preserve electronic records in perpetuity.

**Why is it important for JPL to have a historian and a historic record? Do the other centers have historians?**

Actually, it’s a legal requirement for NASA and JPL to preserve all of its records. As a matter of fact, the Columbia Accident Investigation Board’s findings raised the issue of the inability to find records. But beyond the requirements, JPL should—and does—want its history to be recorded and disseminated. There has been and will continue to be so much important research done here.

As for the other centers, when I began working at Langley, most of the centers did not have their own historian, except for Johnson Space Center and Dryden. To this point, just about all of the human spaceflight program has been recorded, but the history of the robotic element of the agency is lacking.

But I think things are starting to look better, as most of the other centers are now starting to set up history programs. The impetus is not coming from Headquarters, but rather from the centers’ own feelings that they need to do it.

**Will you ever run out of things to profile at JPL?**

I don’t think so. I have a list of book projects already that would take a lifetime to complete, and it doesn’t include any of the upcoming missions. So there are several lifetimes worth of work to do here.

# History *in the making* By Mark Whalen



# Rescue team graduates six JPLers



Bob Brown / JPL Photolab

## Passings

**CASIMIRO GUTIERREZ**, 78, retired from Section 662, died Nov. 20. Gutierrez worked at JPL from 1961 to 1991. He is survived by his wife, Geraldine, son Richard, daughter Gracie Knight, stepdaughter Ruth DeSimone and stepson Michael Nac-carato. Funeral services were held at Resur-rection Cemetery in Monterey Park.

**DR. JAMES ROONEY**, 61, a retired physicist, died Jan. 10. Rooney joined JPL in 1981 as a mem-ber of the technical staff working on medical instrumentation. He later served as manager of the Technology Affiliates Program, deputy manager of the Technology Transfer and Commer-cialization Program and manager of the Intellectual Assets Management Office. He retired in 2003. Rooney is survived by his wife, San-dra, and sons Sean and Chad. Private family services were held. Donations in his memory may be made to KUSC public radio and the Boy Scouts of America.

**MAURICE CLARY**, 77, a retired electrical engineer, died Jan. 19. Clary joined JPL in 1966. He worked on various projects involving television instrumentation on planetary space-craft, including Surveyor, Mariner, Viking and Galileo. He retired in 1990. Among his honors was NASA's Ex-ceptional Achievement Award. Clary is survived by his wife, Norma Jean, son Tom Havens, grandchildren T.C. and Jaime Havens and great granddaughter Cora Leigh. Funeral services were held Feb. 2 at La Verne United Methodist Church. The family requests donations be made in Clary's memory to the Ameri-can Heart Association or the Ameri-can Lung Association.

## Letters

Thanks to the Division 25 staff who sent a spectacular floral display and card when my dear father died. The burst of color during a grim week was most appreciated. Also, thanks to the 7x Directorate staff for their card and sentiments.

Charles Simon

I want to thank my JPL co-workers and the ERC for the kind expressions of sympathy through cards, a beautiful plant, a colorful flower arrangement and caring conversations concerning the recent passing of my father.

Linda Graham

Sarah M. Jenne, widow of JPL pioneer Francis Lee Jenne, died at home Dec. 22, 2004. Thanks to everyone for the cards and beautiful plants. Mother would be pleased to be remembered.

Joyce and Bill Whitney and Cindy Jenne

## Classifieds

### For Sale

AIR CONDITIONER, for window, 5700 BTU, can cool 2 large rooms, remote controlled, barely used, \$80. 626/376-2421, ext. 31030, or mhe\_ac@mhe.nulluser.com. ADAPTER CARD, Ethernet, Netgear GA311, 10/100/1000 Mb/sec, \$15. 395-6804, lv. msg. BABY ITEMS: Aprica stroller, exc. cond., \$50; Medela breast pump, exc. cond., \$200. 909/598-0065.

BIKE: 2003 Titanium Serotta Ti-Fierte, 56cm frame, Ultegra front (triple) and rear derailleur, front and rear brakes, Mavic CXP 33 rims, EMS Pro Carbon front fork, no pedals, vg cond., \$2,500. 661/284-1258. CAMCORDER: Sony DCR-HC40E PAL mini-DV (visit <http://kropla.com/tv.htm> for countries using PAL system), new in orig. box, \$700 in store, sell for only \$500. 885-6317, Peter\_Peng\_888@hotmail.com. COMPUTER, brand new HP Pavilion notebook, in unopened box, model no. ZE4901US, MSRP \$899.99, sell for \$725. 626/241-7084, Steve. CRIB and changing table/dresser, blond maple, beautiful condition, \$250. 626/794-1621, evenings before 8 p.m. DODGER TICKETS: selected games from season ticket package, loge level (orange), aisle 132 (at 1st base), 2 tickets/game at face value of \$30/ticket, see [www.delunac.net/tickets](http://www.delunac.net/tickets) for details & games. 626/296-1253. DRYER, Whirlpool, barely used, electric, requires 220 service, \$85/obo. 653-8290. FURNITURE: corner set of 1950s yellow metal kitchen cabinets with 16 lineal feet of Formica counter top, \$100/obo. 790-6418. FURNITURE: Ikea loft, bed frame and full matress, barely used, \$175; TV/VCR cabinet, whitewash, \$25; 29 vinyl blinds, alabaster, \$5/ea. 427-8553. FURNITURE: bookshelf, brown, 5 shelves, slightly damaged in corner, \$25/obo; entertainment centers, corner unit and full-size, \$50/ea.; couch and loveseat, beige and brown striped, \$200 for both. 626/284-4080. FURNITURE: 1950s Haywood-Wakefield blond living room suite; 3-piece sectional sofa and armchair, classic atomic energy design fabric, completely refinished, exc. cond., a work of art, special price for JPLers. 626/359-8840. FUTON frame and cushions, \$50. 626/794-1621, eves before 8 p.m. GIFT CERTIFICATE for 3-day/2-night hotel accommodations for 2 at Harrah's Las Vegas, Sunday through Thursday, excluding holidays and based on availability; good until 4/1/05; \$150. 395-6804, leave msg. GUITARS: Flamenco, 2000 Cordoba 75F, exc. cond., \$750; Fender Strat '62 USA reissue, sunburst, extra pickups, \$800; Fender Prince-ton Chorus amp, \$200. 952-3157. HUMIDIFIER, Holmes cool mist, 2.5 gal. (800 sq. ft.), used once from new, \$15/obo. 626/304-9249. KITCHEN TABLE, pine, with 4 matching chairs, table has a tiled top (white with ivy pattern tiles in the center) and is about 61" long x 37" wide, \$200. 626/394-9629. MISC.: Kandinsky poster print, professionally framed/matted, 34" square, \$50/obo; Olympia electronic typewriter, automatic bolding, centering, underlining, erasing, extra-wide carriage, exc. cond., w/extra ribbons/erase tapes, carrying case, \$50/obo; foot massager/footbath, ConAir, orig. box, never used, \$30. 626/355-3886. MISC.: Philips 14" color TV w/remote, \$50; Panasonic DVD/CD player, \$40; JVC VCR, \$20; Motorola Talkabout walkie-talkies, \$20; Apple pro mouse, \$10; VST USB floppy drive, \$10. 213/810-8801. MISC.: 8' pool table, \$400; mailbox, oversized, green, \$10; wig, red, shoulder length, never used, \$20; Portable basketball set, adjustable (needs net), \$200; fishing pole (saltwater), \$25; bunk bed mattress, gd cond., \$10; base-ball glove (small) & conditioner, gd cond., \$15; small food chopper, \$5; oil painting, land-scape autumn tones, \$100. 626/357-8210. MISC. FOR KIDS: boy's 12" bike, \$15; Little Tykes castle slide, \$25; car seats, \$10; stroller, \$15; red van, \$15; turtle sandbox, \$5; activity/Lego table, \$5; electric drum set, \$10; junior skateboard, \$5. 626/836-4767. MOTORCYCLE HELMET, XL, orange, SHOEI full face, like new, original \$340, sell \$120. 626/794-2431. NECKLACE, new, ladies Paloma Picasso daisy pendant, platinum, round brilliant diamonds from Tiffany's, .15 carat total, G color, VS clarity; on a 16" chain; paid \$1,500, sell for \$900. 653-9037. PRINT SERVER, new D-Link DP-G310 wire-less 802.11g, \$50 (list \$100). 909/576-8565. SKIS, Rossignol Quantum downhill, 195 cm, Geze bindings, good cond., \$20; Rossignol cross-country, 200 cm, good condition, \$10. 626/794-2431. STAIR CHAIR-LIFT, 1 year old, 13 stairs, extendable/contractible, no longer needed, bought \$4,000, sell \$2,000. 352-1222. TABLE for dining, glass, w/dark wood stand, polygon shape (12 sides), 4' in diam., and 2' 4" tall, exc. cond., great for a kitchen nook, picture at <http://www.bbormstein.org/table>, \$45/obo. pauline\_hwang@hotmail.com. TICKETS: hear former President Bill Clinton at Dorothy Chandler Pavilion as part of Music Center Speaker Series, Wed., March 9, 8 p.m., 4 avail, at \$60/ea. 626/447-8208, Sylvia. TROPICAL PLANTS, plumerias, variety of col-ors and sizes; shell ginger, 626/444-6156, Annie & Bob DePonte. WASHER, Kitchen Aid, white, 3 cycles, 3 temps, 8 yrs. old, fair cond. (works), \$25; DRYER, Kenmore Series 80, 3 yrs. old, 3 cycles, 3 temps, vg cond., \$100/obo; RANGE, Magic Chef, 4 burners, elec. ignition, self-clean, 6 yrs. old, vg cond., \$100/obo. 694-0190. WATCHES: ladies new Coach Metropolitan, brown leather strap, \$50; ladies new Coach classic stainless steel, \$50. 653-9037.

Six JPL staff members last month celebrated their graduation from train-ing for JPL's Urban Search and Rescue Team. The group is made up of 85 volunteers and 24 firefighters who serve the Lab as trained emergency re-sponders in the event of a major disaster. The graduates, from left—Richard Hillquist (Section 2651), Leslie Paal (333K), Kelly Clarke (315E), Robert Bertsch (2651), Merrillee Fellows (NASA Management Office) and Ken Hicks (1330)—spent more than 18 months in twice-weekly training to learn the basics of technical rescue. Examples include emergency response to terrorism, technical rescue skills, advanced collapsed structure rescue, victim care and much more. The six graduates have completed all requirements and will continue training in more advanced skills.

### Vehicles / Accessories

'87 CADILLAC sedan, beige leather interior, exc. cond., garaged, original owner, \$3,000/obo. 626/337-3944. '97 CHEVY Tahoe, gd. cond., loaded, 4-wheel drive, 105K mi. \$7,750. 310/327-1080, Marji. '01 CHRYSLER PT Cruiser Limited Edition, custom metal, 2-door panel truck, show winner, chrome 17" wheels, custom hood, intake, full grill front end, rear roll pan, dual exhaust, dark blue metallic, purple/yellow flame, high gloss, van interior, blue carpet, black and gray leather, blue tweed, 50K invested, 82K miles, 100K warranty, pics: [www.californiacruisers.com/lost\\_kosz.htm](http://www.californiacruisers.com/lost_kosz.htm), \$22,500. 626/355-2957. JAGUAR Series 2 XJ6 parts, tools, manuals; inquire re costs. 694-0190. '97 JEEP Wrangler, soft top, 4 x 4, 83K a/c, new tires, \$9,500/obo. 626/963-8288. '03 KAWASAKI Ninja 250R motorcycle, less than 1,000 miles, blue, beautiful, \$2,400. 661/250-1226. '97 MITSUBISHI Eclipse, 2 dr., blk./tan, 5 speed, sporty & gas saver, vg cond., stereo am/fm, cd, ad, sunroof, 99K miles, \$6,500/obo. 626/961-8771, David. '98 NISSAN Pathfinder, only 61K mi, all service records, 3.3L V6, 2WD automatic, power steering, ABS, SRS, gold ext., tan int., a/c, am/fm/CD, alarm, cruise control, keyless entry/power locks & windows, luggage rack, \$9,500. 626/799-1096. '93 NISSAN 240SX Fastback, 180K mi., 4 cyl., power windows/locks, sunroof, 10-disc CD changer, rear wheel drive, cruise control, AC/heat, serviced & smogged 1/24/05, runs great, \$2,500/obo. 626/793-2735. NISSAN truck camper top, burgundy, \$500. 626/394-9629. '82 OLDSMOBILE Toronado, 1 owner, 31K original miles, exc. cond., with new tires, must see, \$2,500. 661/251-3854. '01 VW Beetle GL, green, 5-spd. manual, 35K mi., exc. cond., 5-disc CD changer, full maintenance records, \$10,000. 626/376-2421, ext. 31030, or mhe\_beetle@mhe.nulluser.com. '71 VW Super Beetle, previously a show car, new disc brakes, MacPherson Strut front end and Ricardo Porsche interior; spectacular daily driver with only 20K miles on rebuilt eng.; many extras: carburetors, distributors, tools, manuals; all receipts going back 12 years, \$2,000. 626/797-4527.

### Free

MISC: National Geographic mags, 1964-96, complete, take all; kitty condo/scratching post, 1 unit, 43" H, close to JPL, 790-0828. QUEEN MATTRESS, gd. cond., pick up in Arca-dia. 626/203-2494. STYROFOAM, ~4 cu. yds., grapefruit-sized chunks and smaller of insulating concrete form that has been stripped off (clean), considered unrecyclable, I hate to send it to the dump, perfect for that insulating or buoy-ancy project you never knew you had. 636-5184, Pasadena. VIDEOTAPES, 2 full sets of Babylon 5, seasons 1-5 + movies, taped off cable TV, 1 set in SLP, the other in SP; PVC PIPE, mostly 3/4 inch with connectors. 626/284-4080.

### Lost & Found

LOST: Seiko watch on route (to the west of Bldg. 230) from Bldg. 238 to Bldg. 180, chrome with square face and gold stripes on band. Ext. 4-3955 or 790-3899.

### Wanted

BOOKS, used or new, paperback, hardback or magazine, romance, science fiction, mystery, etc. 248-0178, engineerbob4449@ yahoo.com. SINGER, age 20-26, influences: Sevendust, 311, Deftones. 626/357-8210, Kathy. SPACE INFORMATION/memorabilia from U.S. & other countries, past & present, for person-al use. 790-8523, Marc Rayman. VOLLEYBALL PLAYERS, coed, no beginners please, Tues, 8 to 10 p.m. at Eagle Rock High School, \$4/night. 956-1744, Barbara.

### For Rent

ALTADENA guest studio (furn. or unfurn.): ideal for 1 person, stove, hardwood floors, a/c, quiet neighborhood, st. parking, shared yard, utilities (electrical, gas, water and trash) incl., no smoking, month-to-month lease, cat ok, \$850 w/basic cable TV/high-speed Inter-net; \$800 without cable; \$800 security depos-it. 626/797-9057, Eloisa or David, after 7 p.m. ALTADENA, comprehensively furnished for extended stays: 3 bd., study, boundary Angeles Nat'l Forest, 3 mi. from JPL (trails to Lab be-hind house), view, fireplace, oak floors, an-tiques; furniture, beds, dinnerware, utensils, pots/pans, all linens & towels, fine soaps, ne-cessities included; just bring toothbrush & clothes: TV/DVD/VHS, Dish satellite, wireless DSL; gardens, patio, parking; private, immac-ulate. 626/798-3235. ALTADENA room, all necessities furnished, laundry, sheets, towels, dishes, TV, VCR; park-ing and small patio enclosed, close to JPL in a very nice area, next to Christmas Tree Lane, very quiet and clean, \$500. 626/798-4821.

ARCADIA, 3 bd., 3 ba. house in a beautiful town and a highly ranked school district, great for a family w/children; close to mall, entertainment & restaurants; hardwood floors, central a/c and heating, yard, fire-place, stove, refrigerator, washer/dryer, large walk-in clos-ets, double pane windows with venetian blinds, attic for storage, recently renovated bathrooms; \$2,600. 714/296-0176. ARCADIA, 1 bd., 1 ba. back house, close to mall, entertainment & restaurants; Italian tile in all rooms, a/c and heating, stove, refrigera-tor, washer/dryer, yard; \$850. 714/296-0176. GLENDALE / EAGLE ROCK area, 1 bd. in a 2 bd. 1 ba., big closet, laundry, kitchen and parking privileges incl., close to all, 12 min./ JPL, available March 1, \$620, util. included. 323/340-8605. GRANADA HILLS, 5+4, 3,083 sf living space, 18,463 sf yard, Knollwood estate on Knoll-wood golf course, pool spa, park-like front and back yard, owner pays gardener & poolman, 1-yr. lease. 648-0627, shrike\_sun@yahoo.com. LA CANADA, 3 bd., 2 1/2 ba., just above the Lab on a quiet street, very convenient to JPL, \$2,950. 790-0297, Bill. MONTEREY PARK house, 3 bd., 2 ba., garage, yard, Brightwood School, \$1,695. 626/576-5059. MONTROSE, 1 bd., 1 ba. Stancrest condo to lease near Montrose shops, theater, hiking trails; grmd. flr., shaded patio by pool/spa, wash/dry, fireplace, exer. rms., entert. rm., woodshop, 2 pkgng. spots in secure garage; avail. March 1; \$1,400. 790-4097. MONTROSE, 2 bd., 2 ba., swimming pool, hardwood floor, maple kitchen and granite counter top, exc. view and nice balcony, good school district, \$1,600. 667-5569. PASADENA, beautiful 3 bd., 2 ba. home in Hastings Ranch, remod. kitchen w/new appliances, remod. baths, central heat and a/c, hardwood floors, refrig., washer/dryer, den wired for 4 computers, speakers through-out, pool & covered patio w/wet bar; \$3,200 & utils & sec. dep., gardener & pool service included; avail 3/1. 626/351-9641 or bettyrs@earthlink.net. PASADENA, beautiful, private, large 1 bd., laundry, off-st. parking, lots of charm, hard-wood floors, cats OK, \$975. 626/403-7171. PASADENA, 850 sq. ft, 1 bedroom, 3/4 bath, bottom floor of a duplex, garaged parking spot, automatic gate, lots of extra storage in basement & second garage, use my washer/ dryer and wireless broadband access, walking distance to Paseo and Old Town, \$1,100, all utilities incl. 626/264-2714, Jason. PASADENA house, Spanish style, newly re-modeled kitchen, 2 bd., 1 ba., 2-car detached garage, lg. front and back yard, patio, close to frwys. & shopping. 213/819-1883. SIERRA MADRE garden cottage, 1 bd., 1 ba., liv. Rm., kitchen, a/c & heating, parking, very private, quiet and safe, fully furnished or not, references required, \$1,400. 626/836-8561.

### Real Estate

FIJI property, 1.28 acres, Koro Island, Eagles nest lot, short walk to resort, free-hold land, a piece of paradise for \$45,000. 249-4395. FIJI property, 1.29 acres, Vita Levu, Tropical Jungle setting, free-hold land, small stream, 5-minute walk to coral coast, building permits underway, pad cut with landscape started, own a piece of paradise for \$70,000. 249-4395, many pictures. WEST PALMDALE (93551), house in very quiet cul-de-sac, built 1990, 4 bd./3 ba., 2,340 sf, 2 story, 3-car attached garage, 3/4 acres lot, new carpet, re-stuccoed, re-painted inside/outside, 2 fireplaces, 2 a/c, alarm, long driveway, 180-degree panoramic view of the valley, photos avail. on request, avail 3/1, \$425,000. 626/791-6101, no agents, please.

### Vacation Rentals

CARMEL, Hyatt Highlands Inn, resort over-looks ocean, 1 bd., liv. rm. and fully-equipped kitchen, wood-burning fireplace, spa tub, pri-vate balcony, binoculars, complimentary bicy-cles, sleeps 4, July 2-9, '05, \$135/nt. 626/794-9579 or fivestarresorts@earthlink.net. FLORIDA condo, beautifully furnished 2 bd., 2 ba., 2nd floor, on the surf of New Smyrna Beach, 1/2 hour to Cape Canaveral, 90 min. to Disney World; enjoy all the comforts of home; quiet, relaxing, overlooking the beach and the Atlantic Ocean; BBQ, pool, game room; easy walk to stores and restaurants. 760/439-7821, Darlene, or dhauge@yahoo.com. LAKE TAHOE, Marriott Timber Lodge in Heav-enly Village, studio, queen bed, full sofa bed, sleeps 4, microwave, small refrigerator, dishes, coffee maker, 5 blocks from lake, Aug. 5-12, '05, \$60/nt., additional locations avail. 626/794-9579 or fivestarresorts@earthlink.net. HAWAII, Maui condo, NW coast, ocean front view, 25 ft. fr. surf, 1 bd w/loft, compl. furn. phone, color TV, VCR, microwave, d/w, pool, priv. lanai, slps. 4, laundry fac., low season rate \$115/nite/2, high season rate \$130/nite/ 2, \$15/nite/add'l person. 949/348-8047, jackandrandy@cox.net. MAMMOTH, Snowcreek, 2 bd., 2 ba., + loft, slps. 6-8, fully equip'd kitchen incl. micro-wave, D/W, cable TV, VCR, phone, balcony w/ mtn. view, Jacz., sauna, streams, fishponds, close to Mammoth Creek, JPL disc'nt. 626/798-9222 or 626/794-0455 or valeriec@caltech.edu.

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## Holzmann receives rare academy election

By Mark Whalen



Dr. Gerard Holzmann

**DR. GERARD HOLZMANN**, who is involved in efforts to improve the reliability of JPL's mission-critical software systems, has achieved the rare and prestigious honor of election to the National Academy of Engineering.

Holzmann joins Dr. Charles Elachi, the JPL director, and John Casani, manager of the Project Prometheus Office, as the only current Lab employees who are academy members. Retirees Lew Allen and Bob Parks are also members.

Holzmann joined JPL in May 2003 to develop the newly established Laboratory for Reliable Software, which conducts research that targets the application of both new and existing formal verification techniques to mission software. The election to the academy recognizes Holzmann's career-long work in software reliability, with a particular emphasis on logic model checking.

"The academy is a very prestigious body," Holzmann said. "This is quite an honor."

Holzmann—who worked for more than 20 years as a researcher at Bell Laboratories—is credited with the development of Spin, a highly successful and widely used software model-checking system. Spin was initially developed to assure dependability in complex telephone switching systems, which have stringent reliability requirements. But as computers have become more powerful, this verification tool has found applications in everything from Internet protocol software and railway-signaling systems to distributed control software essential to the correct functioning of nuclear power plants and spacecraft.

When he joined the Lab, Holzmann was quoted as saying, "JPL has some of the most difficult software challenges on the planet." Does he still believe that today?

"Yes, even more so than when I started here," he said. "For one thing, the software built here becomes very difficult to access. With a telephone switch, you can always open it up and see what's going on. Of course, we can't do that very easily with a spacecraft in flight. There's the fascinating additional problem of being able to maintain and debug a system that may be millions of miles away.

"One thing I learned since I came here is how smart people are in building these systems and making it possible to recover from occasional mishaps," he added. "There are all sorts of software malfunctions that can be completely unpredictable.

"It's very hard to produce something of significant complexity that is absolutely flawless. That is true for anything humans do. But the design can be robust enough that it doesn't matter that there are a few small problems, because the rest of the architecture can be designed to recover from the occasional malfunctions. This is the art of building reliable systems from unreliable parts, and the people at JPL are very good at that sort of thing."

Working side by side with the principals of the Software Quality Initiative, Holzmann works with Laboratory for Reliable Software colleagues Rajeev Joshi and new hire Alex Groce. The group's work has included pre-launch software analysis for the Spitzer Space Telescope and Mars

Exploration Rovers. Some MER analysis was also done during the cruise phase. The members of LARS also participated on a tiger team for the Deep Impact mission.

Holzmann's long-term goal is to reduce by an order of magnitude the number of residual defects in flight software that remain after testing. "At that point, for a really good software process, there are typically between 1 to 10 residual defects for every 1,000 lines of code. We want to be able to reduce that by a factor of at least 10 in the next few years."

The Laboratory for Reliable Software has researched technology that is the closest to being ready to infuse into the mission-development process. "We did a broad evaluation of state of the art static analysis tools that are available now; one of them that I developed is called UNO," Holzmann said. "We have evaluated these tools for typical JPL flight software to see how well they do and prove which ones perform the best."

Holzmann recognizes that while his lab can develop the methodologies and tools, that does not mean those tools will automatically get adopted. "You really have to convince people that there is something to be gained by making a change.

"Just before a launch, for example, there's no time to redo anything or to change a process," he said. "The risk of making a change in the process is too great, even though there may be benefits. You have to work efficiently from the start of the cycle. That's why it might take a few years for mature technology to be integrated into the design phase of a mission."

Pushing the state of the art, Holzmann has done much work in logic modeling techniques. "This is something we can really take advantage of—doing design verification based on logical models fairly early in the design process," he said. "We're working on this, but we have a long road before we reach full integration into a mission.

"The phenomenon we're seeing in software on spacecraft is that every new mission uses more software than the one before, and the expected number of residual defects goes up with the number of lines of code," he said. "So the potential risk that is introduced by software slowly increases over time. It then becomes ever more critical to be able to find software defects before launch. If we don't do anything, the problems may get out of hand. We have to get smarter about handling the software design and testing process.

"Maybe in about five years we will have reached the point where it becomes routine."

Holzmann is secure in the knowledge that as technologies advance, the need for the software research function he and his laboratory provides will always be an asset to the Lab.

"Software reliability issues won't easily go away," he said. "At some point, the technology gets encapsulated into standards and design templates. But humans being who they are, they don't stay within what is known; they want to expand beyond that, and that's probably where there will remain a strong need for our work."

*Continued on page 4*



James Donaldson

## QASAR award honors aid to rover landing

**JAMES DONALDSON** of the Avionic Systems and Technology Division 34 has been awarded NASA's Quality And Safety Achievement Recognition (QASAR) Award, which promotes safety, quality, and continuous improvement throughout the agency.

Donaldson was cited for leading a team that identified a possible problem that may have precluded proper firing on the Mars Exploration Rovers' pyro circuits just hours before the rovers' entry, descent and landing. Through testbed analysis, the team of eight people determined the need for and tested spacecraft commands that helped the rovers to complete their successful landings on the Red Planet.

This marks the first time that JPL has had a QASAR winner since 1997, said Matt Landano, director of the Office of Safety and Mission Success. Landano and other NASA center Safety and Mission Assurance directors submit nominations for the awards and then vote on them for agency-wide honors. Donaldson received a unanimous vote for the QASAR.

The QASAR recognizes NASA government and contractor employees who have displayed exemplary performance in contributing to the quality and/or safety of products, services, processes, management programs and activities, or the working environment. Headquarters and each center have local QASAR Award programs; annually the "Best of the Best" in each of four categories—NASA Safety and Mission Assurance; NASA outside SMA organization; other non-NASA government agency; and NASA prime or subcontractor—are selected at the agency level.



Dr. Firouz Naderi

## Naderi gets NASA's highest award

**DR. FIROUZ NADERI**, Manager of JPL's Mars Exploration Program, has been awarded NASA's Distinguished Service Medal, the highest award that the agency bestows.

The medal citation recognizing Naderi's 26-year JPL career reads: "In recognition of your sustained exceptional contribution to space science and exploration."

The medal and the citation—which was signed by NASA Administrator Sean O'Keefe on Jan. 3, appropriately the one-year anniversary of Spirit's landing on Mars—were presented to Naderi in Washington, D.C. by NASA Associate Administrator for Space Science Al Diaz.

Prior to leading JPL's Mars Program, Naderi managed NASA's Origins Program, an ambitious plan to search for other Earths around other Suns. Earlier positions included program manager for space science flight experiments and project manager for the NASA Scatterometer, which monitored winds from Earth orbit.



News Briefs



Dr. Yoseph Bar-Cohen



Dr. Lucien Froidevaux

Bar-Cohen receives honor

DR. YOSEPH BAR-COHEN, senior research scientist and group leader for Nondestructive Evaluation and Advanced Actuators, is the co-recipient of the International Society for Optical Engineering's Smart Materials and Structures Lifetime Award for 2005.

Bar-Cohen received the honor as a result of voting by about 65 past and present Smart Materials and Structures conference chairs.

An award ceremony will be held March 7 at the organization's 2005 conference in San Diego.

Bar-Cohen, a physicist, joined JPL in 1991. That year, he established the Nondestructive Evaluation and Advance Actuators Lab (<http://ndeaa.jpl.nasa.gov>), which has been responsible for a series of innovative concepts and mechanisms for planetary explorations, medical, commercial and other applications.

Bar-Cohen is a Fellow of both the International Society for Optical Engineering and the American Society for Nondestructive Testing.

Froidevaux cited for refereeing

DR. LUCIEN FROIDEVAUX of Section 328 recently earned the 2004 Editor's Citation for Refereeing for the Journal of Geophysical Research-Atmospheres, a twice-monthly publication of the American Geophysical Union.

One of the most important services performed for AGU is the conscientious reviewing of submitted papers. Because of the nature of the reviewing process, this service is also one of the least recognized.

The AGU said the assistance of the atmospheric science community to ensure high-quality refereeing is of pivotal importance to achieving a uniformly high standard for the quality of manuscripts accepted for publication in JGR-Atmospheres.

Froidevaux is a member of the science team for JPL's Microwave Limb Sounder onboard the Aura spacecraft.

Helium experiment produces whistle

In research conducted for the JPL-managed Quantum Technology in Life Support and Habitation Program, it was music to the ears of UC Berkeley physicists when they forced liquid helium-4 through thousands of tiny holes and heard a whistling sound.

Why the big fuss about an odd sound? It seems this breakthrough might eventually lead to enhanced earthquake studies and more accurate navigation systems, including the Global Positioning System (GPS).

It all starts with one slippery liquid: helium-4. Ultra-cold helium-4 becomes a superfluid, meaning it flows without friction.

The scientists squashed it through an array of apertures 1,000 times smaller than the width of a human hair. The liquid whooshed faster and faster, until it reached a critical velocity.

At that point, in a strange phenomenon, a microscopic quantum whirlpool dashed across each aperture, carrying away some of the helium-4's flow energy. This abruptly slowed the flow. The fluid repeatedly sped up and slowed down, creating vibrations that produced a whistling sound going from high to low.

Packard said this new phenomenon might lead to improved whistling superfluid navigation gyroscopes that detect extremely small rotational motion. As their motion changes, the whistle's volume would change. This would be especially useful on submarines or airplanes in regions where GPS signals are unavailable.

The GPS navigation system relies on knowing the state of Earth's rotation. Because weather and other factors affect Earth's rotation, the GPS system needs constant updating for accuracy.

A recording of the sound, called a quantum whistle, is available online at <http://www.nasa.gov/vision/earth/technologies/whistle.html>.

JPL software receives NASA honors



Bob Brown / JPL Photolab

*The Science Activity Planner, a JPL-developed software package that is used in support of the Mars Exploration Rover missions, was recognized by NASA as the 2004 NASA Software of the Year. JPL Chief Technologist Erik Antonsson, left, presented the Software of the Year medals to Mark Powell, Jeffrey Norris and Paul Backes. Not in attendance but also receiving medals were Marselle Vona and Justin Wick.*



Bob Brown / JPL Photolab

Lab hosts Science Bowl regional

*Members of the Santa Monica High School "A" Team, with JPL Chief Engineer Brian Muirhead at right, mark their victory in the National Science Bowl regional competition held on Lab Feb. 12. They will be among 66 teams that will advance to the National Science Bowl finals held April 28-May 2 at the National 4-H Center near Washington, D.C. Santa Monica defeated 23 teams in the JPL regional.*

Special Events Calendar

Ongoing Support Groups

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

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

Codependents Anonymous—Meets at noon every Wednesday.

Lambda (Gay, Lesbian, Bisexual and Transgender Networking Group)—Meets the first Friday and third Thursday of the month at noon in Building 111-117. For more information, call Randy Herrera, ext. 3-0664.

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

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

Friday, February 25

Von Kármán Lecture Series—Julie L. Webster, Cassini spacecraft operations manager, will present "Capturing the 'Lord of the Rings'" at 7 p.m. in Pasadena City College's Vosloh Forum, 1570 E. Colorado Blvd. For more information, call Public Services at ext. 4-0112.

Saturday, February 26

Caltech Ballroom Dance Club—The end-of-term party will be held beginning at 8:30 p.m. in Winnett Lounge. Admission is free.

Caltech-Occidental College Concert Band—The band's annual concert will be presented at 7:30 p.m. in Occidental College's Thorne Hall. Featured will be "The Lord of the Rings," a five-movement suite composed especially for concert band. For more information, call (323) 259-2785.

Sunday, February 27

Chamber Music—The Cavani String Quartet will perform at 3:30 p.m. in Caltech's Beckman Auditorium. Tickets are \$29, \$25, \$21 and \$17. For more information, call (626) 395-4652 or visit [www.events.caltech.edu](http://www.events.caltech.edu).

Monday, February 28

Do the Hustle—The Caltech Ballroom Dance Club will present one in a series of classes taught by a dance professional from 8 to 9:30 p.m. in Winnett Lounge. No partner is required but some previous knowledge of hustle is helpful. Cost: \$8/class.

Tuesday, March 1

Financial Night—Presented by the JPL New Professionals Network from 5 to 6:30 p.m. at the Caltech Employees Federal Credit Union, 528 Foothill Blvd., La Cañada. Topics of discussion will include the benefits of credit union membership, controlling your finances and credit before age 30 and why Generation X is different.

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

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

The Future of Space?—Join Elon Musk, chairman and CEO, Space Exploration Technologies (SpaceX), for "Revolutionizing the Cost and Reliability of Access to Space" from 4:45 to 6 p.m. in von Kármán Auditorium.

Tues.-Thurs., March 1-3

U.S. Savings Bonds Drive—The National Bond and Trust Company will be on Lab from 9 a.m. to 2 p.m. to discuss Savings Bonds through payroll deduction. Locations: Tuesday, 167 cafe; Wednesday, 303 cafe; Thursday, 601 lobby. If you can't make it or want to change existing bonds, call the National Bond and Trust Company at (800) 321-8024. For more information, visit <http://hr.jpl.nasa.gov/esr/savings/index.htm>.

Wednesday, March 2

Associated Retirees of JPL/Caltech—Meeting at 10 a.m. at La Cañada United

Methodist Church, 104 Berkshire Place, La Cañada. Call (626) 794-1698 to leave a message for a board member.

Exploration Systems Mission Directorate Labwide Briefing—The president's Vision for Exploration and JPL's current and possible future engagement with ESMD will be discussed from 11 a.m. to 12:30 p.m. in von Kármán Auditorium.

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

Thursday, March 3

Investment Advice—Fidelity will offer one-on-one counseling in T1720. For an appointment, call (800) 642-7131.

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

Friday, March 4

"A Different Look at Diversity"—As part of Black History Month, the African American Resource Team will present a lecture by Equal Employment Opportunity manager and author Cynthia Todd-Takeyama at 12:30 p.m. in the 167 conference room.



Monday, March 7

JPL Softball—An organizational meeting will be held at 11:30 a.m. in the 180-101 conference room. All team managers and interested players not currently affiliated with a team should attend. For more information, visit <http://jplrecclubs.caltech.edu/softball> or call Scott Morgan at 4-4972 or Rich Benesh at 4-3748.

Tuesday, March 8

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

Wednesday, March 9

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

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

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

"Lifting the Cosmic Veil: The Infrared Universe Revealed by the Spitzer Space Telescope"—Spitzer Chief Scientist Dr. Michael Werner will give a free lecture at 8 p.m. in Caltech's Beckman Auditorium. For more information, call (626) 395-4652.

TIAA/CREF Enrollment Meeting—This workshop, to be held at noon in Building 180-101, is designed to assist employees newly eligible for the Caltech/JPL retirement plan with selection of investment options and the completion of their enrollment forms.

Thursday, March 10

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

JPL Web Developers—Meeting at noon in the 167 conference room. Topic: "Hosted MySQL for Web Sites" by Doug Hughes, JPL MySQL service engineer. For more information, visit <http://webmasters.jpl.nasa.gov> or contact [webdev-chairs@jpl.nasa.gov](mailto:webdev-chairs@jpl.nasa.gov).

Friday, March 11

The Invisible Man—The Aquila Theatre Company will perform at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$22, \$18 and \$14; high school age and younger, \$10. For more information, call (626) 395-4652.



# JPL Rules! goes to the Air Force

By Susan Braunheim-Kalogerakos

The Lab's "JPL Rules!" system is being used to help a local U.S. Air Force base structure its own document management system.

JPL Rules! is the official repository for institutional governing documents for JPL. Its success was identified by the Los Angeles Air Force Base (LA AFB) in El Segundo as a best practice worth emulating. As a result, they sent 1st Lt. Andrew Huckstadt and 2nd Lt. Richard Quinton to the Lab to analyze and document the system. The lieutenants spent about four months on Lab starting in September of last year.

The two airmen were tasked with generating a set of requirements for a Space and Missile Systems Center (SMC) web-based document management system similar to JPL Rules!, but tailored to their needs. The SMC, based at the LA AFB, is responsible for the acquisition of military space systems. The lieutenants looked at both the functionality of the system and the processes associated with JPL Rules!

Col. James Horejsi is the SMC chief engineer and deputy director of systems acquisition at LA AFB. "It took only one look at JPL Rules! to immediately recognize its potential usefulness to the SMC," he said. "We had lost our discipline when it came to documenting our processes and JPL Rules! offered an opportunity to regain that discipline by building on their experience."

The airmen learned a lot from their time spent on Lab. Quinton, a systems integration officer, said one lesson learned was to "look at process before technology. We need to have all of our processes laid out before going ahead with implementation. JPL Rules! became institutionalized through customer satisfaction. The JPL Rules! staff works very hard at delivering for their customers. If we plan to achieve the same success in institutionalizing our system, we will have to be customer focused."

According to Huckstadt, an acquisition systems engineer, one of the reasons JPL Rules! has been so successful is because "the JPL Rules! staff gathered feedback from users and made improvements based on their comments. This resulted in user buy-in and produced a sense of loyalty towards the system." LA AFB will be able to benefit from these and many other lessons learned at JPL when implementing their system.

Another benefit for the lieutenants in partnering with JPL is in the experience itself. According to Col. Rakesh Dewan, director of system engineering for SMC and the lieutenants' supervisor, "I see the confidence these young officers have gained by actually applying their education and delivering an end product to senior engineers, especially when they receive praise for their work and see their recommendations implemented as presented. The joint training effort between LA AFB and JPL builds confidence in our new lieutenants."

As a result of the time spent scrutinizing the JPL Rules! system, the lieutenants were able to create the "SMC Repository Requirements Document." This will serve as the "how-to guide" for the Air Force in developing its version of JPL Rules! This document has also allowed the JPL Rules! team to see their system from an outside perspective.

Dr. Jerry Suitor is manager for the Office of the Management System, the office where JPL Rules! resides. "This document will help provide information to others who are in-



From left: Jerry Suitor, Col. James Horejsi, Col. Rakesh Dewan, 1st Lt. Andrew Huckstadt, Lora Mitchell, 2nd Lt. Richard Quinton, Dan Hoffman.

terested in the JPL Rules! concept and can describe the approach and requirements from a useful outside perspective," Suitor said. "Sandia National Laboratories, Air Products, Bechtel Dickinson, Kimberley Clark and Schneider National Trucking have already expressed a desire to have this document. The maturity of the Rules! system is also being recognized by the NASA family. Next month, Lora Mitchell, the JPL Rules! group supervisor, will receive the 'Continual Improvement Team' award at NASA's prestigious annual 'Continual Improvement and Reinvention Conference.'"

Dan Hoffman, a JPL senior systems engineer for the Office of the Management System, acted as the project manager and mentor to the lieutenants. "The document delivered to us will be used to introduce other organizations to JPL Rules! and to the processes underlying institutional document management," Hoffman said. "The project has enhanced our ability to work with and learn from each other. Its success has eclipsed our expectations."

Another of JPL's long-term goals when partnering with the Air Force is to establish a working relationship with LA AFB on matters of common interest relating to institutional governance.

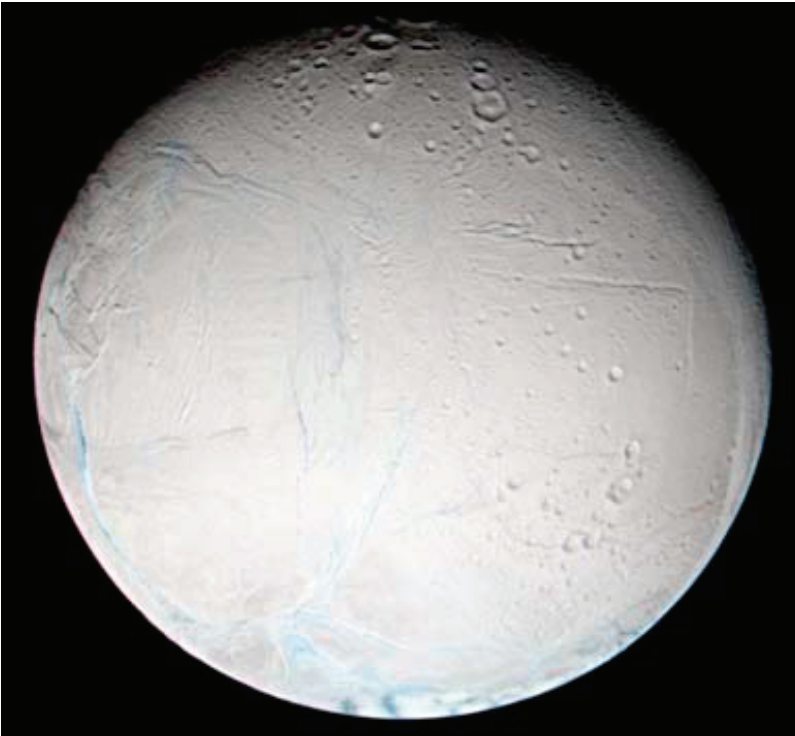
Deputy Director General Eugene Tattini helped facilitate JPL's relationship with the Air Force. "Both JPL and the Air Force have an elaborate system of governance documents," he said. "This is a perfect opportunity for both of us to learn from each other."

The Air Force document control system will serve the 6,000 people, including civilian personnel, on base and should be implemented within the next year or two.

## Cassini logs more Saturn moon images

By Carolina Martinez

*The new view of Enceladus shows some of the smooth plains noted in Voyager spacecraft images and earlier Cassini images. At about the 7 o'clock position are interwoven linear patterns that are reminiscent of the wispy-terrain features on two of Saturn's other moons, Dione and Rhea.*



JPL's Cassini spacecraft had a busy time last week, snapping stunning new images of two of Saturn's moons—smoggy Titan on Feb. 15 and wrinkled Enceladus on Feb. 16.

Visible in radar images released Feb. 18 are a crater, channels and terrain similar to the area where the European Space Agency's Huygens probe landed on Jan. 14.

The crater is approximately 60 kilometers (37 miles) in diameter. Earlier last week, the radar team released an image of a giant impact crater dubbed "Circus Maximus," about 440 kilometers (273 miles) wide.

"The appearance of the small crater and the extremely bright, hence rough, blanket of material surrounding it is indicative of an origin by impact," said Cassini interdisciplinary scientist Dr. Jonathan Lunine of the University of Arizona.

From the crater's size, scientists estimate that it was created when a comet or asteroid roughly 5 to 10 kilometers (3 to 6 miles) in size slammed into the surface of Titan. The feature lacks a central peak, suggesting that it has been eroded or otherwise modified since formation.

Rainfall, wind erosion, and softening of the solid material in which the crater formed are all possible processes that might have altered this impact feature.

Also visible in the images are channels located just east of Circus Maximus, the large impact crater. The longest channel is approximately 200 kilometers (124 miles) long. The channels appear to flow from the slopes of the crater. The fluid was most likely liquid methane, given the extremely cold ambient conditions at the surface of Titan. The area some-

what resembles the rubble-strewn plains in the region where the Huygens probe landed.

Just one day after the Titan flyby, Cassini turned its sights on Saturn's moon Enceladus, revealing a fascinating, tortured world of ice. The spacecraft swept within 1,180 kilometers (730 miles) of the moon's wrinkled surface, providing the first-ever high-resolution images of this world with the brightest, most reflective surface in the solar system.

Since JPL's Voyager spacecraft flew past Enceladus in 1980 and 1981, planetary scientists have been intrigued by the moon's wrinkled terrain and smooth plains, some of which appeared to be relatively free of impact craters. Smooth, crater-free surfaces on moons and planets indicate geologically young ages, while wrinkles may indicate tectonic activity or volcanism.

"Cassini has now viewed these terrains at almost 10 times better resolution than Voyager," said Cassini imaging team leader Dr. Carolyn Porco of the Space Science Institute in Boulder, Colo. "Interestingly, the icy surface of Enceladus appears to have similarities to both Europa and Ganymede—two prominent icy satellites of Jupiter—and topographic relief of about 1 kilometer (.6 miles). Both Europa and Ganymede are thought to have subsurface water layers, or 'oceans,' so the similarities with Enceladus are intriguing."

One view released last week is a high-resolution mosaic showing complex systems of fractures and resurfaced terrain. Among the most intriguing features in the images are a series of small, dark spots, which in many places seem to be aligned in chains parallel to narrow fractures.

A false-color view shows some linear features on Enceladus with a slightly different color from their surroundings. Different colors of ice may be caused by varying compositions or varying ice crystal sizes. Either one can indicate different formation mechanisms or different ages. Another early highlight from the flyby is a high-resolution stereo view of Enceladus. Stereo views are helpful in interpreting the moon's complex topography.

Other preliminary results from the visual and infrared mapping spectrometer show a surface composed of only pure water ice, with no other compounds detected. Ammonia or ammonium compounds and carbon dioxide were expected, but not seen in the data. Further analysis may find trace amounts. "The spectra look like laboratory-fabricated water ice, indicating the ice is quite pure," said Dr. Roger N. Clark, Cassini science team member at the U.S. Geological Survey in Denver.

Cassini will conduct an even closer flyby of Enceladus on March 9, coming within about 500 kilometers (310 miles) of its surface. More than 40 additional Titan flybys are planned.

The pictures are available at <http://saturn.jpl.nasa.gov> and <http://www.nasa.gov/cassini>.



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E-mail us at  
[universe@jpl.nasa.gov](mailto:universe@jpl.nasa.gov)

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Holzmann

Continued from page 1

Holzmann was well familiar with JPL before he came on board, having enjoyed his work collaborating on small analysis projects for the Cassini, Pathfinder and Deep Space 1 missions. “That was one of the big reasons I wanted to work here,” he said.

Holzmann is reminded of his early career at Bell Labs, when the company had “an enormous pool of talent. At JPL, when you run into people they’re never talking about football or the weather—they’re talking about science. It’s been very inspiring.”

Retirees

The following JPL employees retired in February:

Charles Stelzried, 52 years, Section 9700; Takashi Kiriyaama, 47 years, Section 2744; James Randolph, 41 years, Section 312A; Joachim Voeltz, 40 years, Section 3756; Paul Reichley, 36 years, Section 3340; Sheldon Rosell, 36 years, Section 8800; Jerry Brown, 30 years, Section 1670; Juer-gen Linke, 28 years, Section 3755; Abraham Riley, 27 years, Section 3850; Alexander Mileant, 25 years, Section 333K; Cheryl Johnson, 20 years, Section 3117; Wu-Yang Tsai, 17 years, Section 3346; Helga Mycroft, 13 years, Section 2125; Michael Sandor, 13 years, Section 5141; Ernest Breig, 10 years, Section 2812.

Letters

My sincere gratitude to all the wonderful people who offered their support and condolences when my brother passed away. It is during a time like this that you realize someone’s true character, and I am proud to work with such wonderful human beings. Thank you so very much.

Maday Anderson

Classifieds

For Sale

BUNK BED, 4 yrs. old, pine w/maple (reddish) stain, rustic look, gd. cond., includes mattress boards (no mattresses), \$100. 249-2123.  
CAMCORDER, Sony DCR-HC40E, PAL, miniDV, new in orig. box, bought for \$700 for 2004 Christmas, sell for \$500. 885-6317 or Peter\_Peng\_888@hotmail.com.  
CHAIR, Barcalounger, beautiful light brown leather, reclines, gd. cond., \$340. 323/913-1190, Daniel.  
CLOTHES for infant, red/navy blue zip-up jacket w/hood (Old Navy), size 2T, exc. cond., \$5/obo; sweater, sky blue w/navy trim buttons, size 3T, \$1/obo; zipper shoes (Spongebob motif), size 11M, exc. cond., \$5/obo, photos on request. 626/791-6101.  
COMPUTER, brand new Compaq Presario laptop in unopened box, model no. 2227US, MSRP \$929.99, sell for \$750. 626/241-7084, Steve.  
COUCH and 3 glass tables, exc. cond., photo available, \$75. 726-5129, Natalie.  
COUCH, 9’, gd. cond., \$275/obo. 943-6661.  
DAGGERS, 2, Moroccan, antique, gd. cond., made around 1900, sheathed in their own scabbard, \$75/ea. 352-4033, after 5 p.m.  
DOGS, miniature schnauzer puppies, black, 2/2m, ready now, very loving/affectionate, dewclaws, tails docked, shots, AKC papers, home raised, paper trained, \$850-\$950. 661/273-9095, Sandy.  
EXERCISE EQUIPMENT: Sharper Image SR409 elliptical strider, fold-away with heart rate monitor, great cond., \$190 new, \$55; PaceMaster 870X, treadmill, digital DC drive, manual incline, gd. cond., \$40 (heavy, you move); Volt rowing machine, folds neatly, gd. cond., \$35. 661/297-0219.  
FURNITURE: S. Harris 3-pc., tan, sectional sofa w/14 pillows, down-stuffed seats and 3” foam, exc. cond., left side 40” x 148”, rt. side 40” x 132”, pic via e-mail, \$950/obo (retail \$10,700). 626/441-8444 or dlnels@sbcbglobal.net.  
FURNITURE: 4-shelf walnut bookcase, 6’ x 3’ x 1’, \$75 obo; 6-shelf cherry bookcase, 7’ 4” x 3’ x 1’, \$100/obo; 2-sided Chinese Coromandel painted wood screen w/4 panels, 6’ H x 5’ 4” W, \$300/obo; 4-drawer, metal office filing cabinet, 36” W, \$75/obo. 626/441-8444 or dlnels@sbcbglobal.net.  
FURNITURE: Ikea loft bed frame and full mattress, barely used in guest bedroom, \$150; TV/VCR cabinet, whitewash, \$25; 29 vinyl blinds, alabaster, \$5 ea. 427-8553.  
FURNITURE: contemporary dining room table with 6 high-back chairs, black metal/wood base w/glass top, 42” x 72” with matching ceiling lamp, \$350. 730-9777.  
FURNITURE: bed, brand new, twin mattress/box spring/frame, never been used, bought \$400, sell \$150; poster bed and matching dresser, soft pine, gd. cond., \$500/obo; baby changing table/dresser, \$150/obo; Ikea kids armoire, \$75/obo. 541-0882.

INVERSION TABLE, Hang Ups F5000III, hang upside down for back relief, like new, paid \$300, used 10 times, sell for \$175/obo. 626/577-2882.  
JEWELRY: ladies new Coach Metropolitan brown leather strap watch, \$50; 14K tri-color gold diamond-cut bracelet, \$150; 14K 2-sided, 18” diamond-cut necklace, \$200. 653-9037.  
JUICE FOUNTAIN, Breville, powerful stainless steel motor, great for daily juicing, used 2-3 times, orig. package, \$80/obo. 626/840-0955.  
LAMINATOR, GBC Ultima 65-1, 18 mo. old, was \$2,965, sacrifice at \$2,400/obo. 626/962-7668, after 6 p.m.  
MATTRESS, Tempur-Pedic + foundation, queen, almost new, exc. cond., great for back, \$975. 352-4033, after 5 p.m.  
MICROWAVE OVEN, white, Panasonic, 1000w, good size for office or apartment, owner’s manual included, \$40. 323/342-9363.  
MISC: 19” TV w/o remote, \$20; Staples Z-Line Venus Tower computer desk, \$60; Ikea grey/silver Enetri shelving unit, \$40. 389-4593, Mark.  
MISC: Kandinsky poster print, professionally framed/matted, 34” square, \$50/obo; Olympia electronic typewriter, automatic bolding, centering, underlining, erasing, extra-wide car-riage, exc. cond, w/extra ribbons/erase tapes, carrying case, \$50/obo; foot massager/foot bath, ConAir, orig. box, never used, \$30. 626/355-3886.  
MISC: bread machine, like new, \$45; Sony DV video/digital camera, never used, includes carrying case, \$300; Sony stereo: receiver with surround sound speakers and subwoofer, \$250. 626/792-9816.  
MISC: mailbox, oversized, green, \$10; wig, red, shoulder length, never used, \$20; portable basketball set, adjustable (needs net), \$200; fishing pole (saltwater), \$25; bunk bed matr., good cond., \$10; baseball glove (small) & conditioner, good cond., \$15; small food chopper, \$5; oil painting, landscape autumn tones, \$100. 626/357-8210.  
MISC: Yashica Profile 4000IX camera, zoom, APS, \$40/obo; walkie talkie, Cobra Microtalk, 2-way radio, 2 units, 5-mile range, \$40/obo. 726-7701.  
MISC: Xmas tree, (Greatland 6+ft. McIntyre pine, like real, \$25/obo; beanbag chair, denim exterior, \$25/obo; ottoman/foot massager, \$75/obo. 726-7701.  
MISC: Color TV, Sony 32” Trinitron in wood cabinet w/built-in speakers, \$300/obo; 2-pc pantsuit, Jones of New York (jacket fully lined and slash pockets), new with tags, size 12, dark olive, (orig. \$198), \$50; jewelry: some vintage and costume, incl. clip-on earrings, very reasonable prices. 626/398-4960.  
MOVING SALE, 2 apartments full of furniture must go: sofas, coffee tables, end tables, dressers, chairs and other misc. items. 626/792-9816.  
NECKLACE, new ladies Paloma Picasso Daisy pendant, platinum, round brilliant diamonds from Tiffany, .15 carat total, G color, VS clarity; on 16” chain, paid \$1,500, sell for \$900. 653-9037.  
PIANO, baby grand, Chinese red with symbols, from the 1920s, very unique and beautiful, \$2,800. 626/296-3441.  
SHREDDER/MULCHER, Sears Craftsman, 5 HP, exc. cond., \$250. 790-2013, Robert Ferber.  
STEREO, Sony LBT-G2000 bookshelf system w/3-disc CD changer, remote, owner’s manual, \$75. 323/342-9363.  
STOVE/RANGE, vintage Wedgewood, early 1950s, beautiful, works well, 4 burners & center griddle, folding shelf, bullet lights, clock & timer, oven, broiler, storage bins, \$700/obo; DINING SET, gorgeous hand carved, 7-piece, solid rosewood, grapes motif, table has 2 leaves; 4 chairs, 2 armchairs, beautiful cond., incl. covers for chairs, pics avail., purchased for \$1,400, sell for \$750/obo. 626/282-8382.  
TREADMILL, Trimline 3300, pushbutton control, programmable display time, speed, distance, elevation, calories, exc. cond., \$250. 248-6040.  
TV, 25” Sharp color; + DVD player, Daewoo, \$100. 952-4444, x104.  
TROPICAL PLANTS, plumerias, variety of colors and sizes; shell gingers.626/444-6156, Annie & Bob DePonte.  
WASHING MACHINE, Kenmore 90 Series, 1999, vg cond., \$75; animal carrier, for transport, large, used once, \$50; hamster cages, small, \$5, large \$10. 790-2915, Dick/Ruth.  
WHEELCHAIR, Jazzy brand, all-electric, exc. cond., barely used, \$1,000. 909/620-9234.  
YARD SALES, Phillips Ranch, start here on Saturday, March 5 at 21 Comanche Circle, the city of Phillips Ranch hosts “yard sale weekend,” 7 a.m.-3 p.m.

Vehicles / Accessories

’98 BMW 740i, V8, 290 HP, 94K mi., white, exc. cond., loaded, beautiful ride and handling, premium sound, sunroof, 6 airbags, stability control, extended warranty for 1 more year, \$16,500/obo. 909/592-2279.  
’85 BMW 318i, 2-dr., runs good, power win., standard, \$500. 323/533-7961.  
’98 FORD Explorer XLT, V8, black, tan leather int’r’r, pwr everything, 6-CD changer, rear air,

Holzmann is modest about the National Academy of Engineering honor. He doesn’t know who nominated him for the award and thinks he may not ever find out. But that’s OK.

“I’ve enjoyed it immensely, it’s been very rewarding,” he said. “I have an enormous respect for the people who work here. I now understand how dedicated and passionate people are about their work. It’s really a joy to work in this environment.”

cruise control, gd. cond., a few scratches, etc., \$7,500/obo, KBB-\$8,500. 352-9418, Lee.  
’66 FORD Mustang, V8, 289, 4 barrel carb., light blue interior and exterior, black plates, always a California car, no accidents, exc. orig. shape, drives like it’s new, mature owners, beautiful, \$18,000. 626/296-3441.  
’03 GMC Sonoma truck, 3 dr. extended cab, SLS trim, one owner, auto, 14,400 mi., a/c, power steering, tilt wheel/cruise control, CD player, aluminum wheels, tachometer, heavy-duty suspension, white color, exc. cond., under warranty, \$12,995. 952-0047.  
’03 HONDA Accord LX, 4 dr., power windows, power locks, CD player, a/c, white color, auto, 40K mi., exc. cond., \$14,000. 909/599-3230.  
’03 LEXUS GS300, black, camel leather interior, factory chrome wheels, 6-disk CD changer, floor & trunk mats, dealer serviced, professionally detailed, transferable factory warranty, less than 10K mi., immaculate, pics at 2.lisa@veizon.net, below Blue Book, \$31,000 firm. 909/989-1183.  
’01 TOYOTA Corolla CE, manual trans, 4 dr., 43K mi, oil changes only required, white w/minor scratches, 4 Michelin tires recently replaced, \$7,995. 626/577-2882, Linda.  
’99 TOYOTA Camry LE, auto, a/c, am/fm/cass./CD, cruise control, all power, 88K mi., vg cond., new tires, \$7,300/obo. 831-2923.  
’99 TOYOTA Corolla VE, 73K mi., silver exterior, gray interior, CD player, am/fm/CD, power locks w/alarm, Kenwood stereo, exc. cond., \$7,000/obo. 626/844-7802.  
’98 TOYOTA Sienna LE, exc. cond., orig. owner, 81K mi., dealer maint’n’d, loaded w/options: 2nd sliding door, capt. chairs, premium sound, security sys. w/remote keyless entry, roof rack, towing pkg., alloy wheels, sable pearl exterior, beige interior; sacrifice for \$8,910, (\$1,000 below Blue Book). 626/646-1937, David.

Wanted

BOOKS, used or new, paperback, hardback or magazine, romance, science fiction, mystery, etc. 248-0178, engineerbob4449@yahoo.com.  
SERGER, used. 909/944-1959, please leave message.  
SINGER, 20-26 years of age, influences: Sevendust, 311, Deftones. 626/357-8210.  
SINGER, female, to volunteer for occasional senior entertainment. 626/840-0955.  
SPACE INFORMATION/memorabilia from U.S. & other countries, past & present, for personal use. 790-8523, Marc Rayman.  
VOLLEYBALL PLAYERS, coed, no beginners please, Tues. 8 to 10 p.m. at Eagle Rock High School, \$4/night. 956-1744, Barbara.

Lost & Found

FOUND: Set of keys, in the 601 parking lot. Ext. 4-9550, Barbara.

For Rent

ALTADENA, comprehensively furnished for extended stays: 3 bd., study, boundary Angeles Nat’l Forest, 3 mi. / JPL (trails to Lab behind house), view, fireplace, oak floors, antiques; furn., beds, dinnerware, utensils, pots/pans, all linens & towels, fine soaps, necessities included; just bring toothbrush & clothes; TV/ DVD/VHS, Dish satellite, wireless DSL; gar-dens, patio, parking; private, immaculate. 626/798-3235.  
ALTADENA room, share 2 bd., 1 ba. home, ~3 mi. from JPL with 1 focused student and a cat, \$525 + half util. and DSL. 626/345-0625.  
ARCADIA condo, large, sunny, 3 bd., 2.5 ba., central a/c, quiet street, secluded end unit, private front & side yard, move-in cond., freshly painted, new carpets & appliances, washer/dryer hookups, lots of storage space, 2-car attached gar., access to pool, close to shopping center, exc. school district. 913-9293.  
COVINA, 1 bd. in a 3-bd., 2-ba. house, shared common area, quiet residential street, close to shopping plazas, minutes from 210. 57 and 10, non-smoker, no pets, \$500 + security deposit, utilities included. 626/938-0391, room@hostinc.net.  
EAGLE ROCK, near Figueroa and Yosemite, 1 bd. and den triplex, fireplace, oak floors, French doors, brick patio, fenced yard, updated kitchen, lg. bath, \$975. 790-1209.  
GLENDALE/EAGLE ROCK area, 1 bd. in a 3 bd. 1 ba. with closet; laundry & kitchen privileges incl., close to all, 12 min./JPL, avail. March 1, \$550, util. incl. 323/340-8605.  
GRANADA HILLS, 5 + 4, 3.083 sq. ft. living space, 18,463 sq. ft. yard, Knollwood estate on golf course, pool, spa, park-like front and back yard, owner (me) pays gardener and pool man, at least 1-yr. lease. 648-0627, shrike\_sun@yahoo.com.  
MONTROSE, 1 bd., 1 ba., Stancrest condo to lease March 1; near Montrose shops, theater, hiking trails, washer/dryer, gas fireplace, priv. patio by pool, spa, gym, entertainment suite, secure parking for 2 cars, \$1,350. 790-4097.  
PASADENA, beautiful 3 bd., 2 ba. home in Hastings Ranch, remod. kitchen w/new appliances, remod. baths, cent. heat and a/c, hardwood floors, refrig., washer/dryer, den wired for 4 computers, speakers throughout, pool &

covered patio w/wet bar; \$3,200 & utils & sec. dep., gardener & pool service included; avail. 3/1. 626/351-9641 or bettyrns@earthlink.net.  
PASADENA, 2 bd, 1 ba. house, newly remodeled kitchen and bath, nice size dining area, quiet street, close to shopping and freeways, \$1,750. 626/688-6188.  
PASADENA cottage, 1 bd., 1 1/2 ba., your own 4 walls, hardwood floors, 1 story, lovely garden, near Eaton Cyn., near bus to JPL, neighbors JPLers; gas stove, fridge, window a/c; cable-ready, private washer/dryer, garage, about 6 mi. from JPL, owner pays water & trash, maintains grounds; no dogs, other pets negotiable, non-smokers only, avail. ~April 1, \$935 + \$1,000 security. 626/794-1841, Claire Marie-Peterson.  
PASADENA house, Spanish style, newly remod-eled kitchen, 2 bd., 1ba., 2-car detached garage, lg. front & back yard, patio, close to freeways, shopping and JPL. 213/819-1883.

Real Estate

BELIZE rain forest, 100.1 acres, property has a stream (w/pools and small rock water falls), hills, flats, views, thick jungle, good farming soil, land for livestock, visiting howler monkeys, access roads; located in Cayo district near San Egnacio city, could be used as resort, home or ranch, solar power & water filtering could be installed, photos available, \$89,000. 363-9999.  
WEST PALMDALE (93551), house in very quiet cul-de-sac, built 1990, 4 bd./3 ba., 2,340 sq. ft., 2 story, 3-car attached gar., 3/4 acres lot, 2 fireplaces, 2 a/c, very unique hilltop view property w/long private driveway, room for several cars to park, wide access into rear yard for RV, avail. 3/1, photos on request, reduced to \$415,000. 626/791-6101.

Vacation Rentals

BIG BEAR LAKEFRONT luxury townhome, 2 decks, indoor pool/spa, near skiing, beautiful master bd. suite, sleeps 6. 949/786-6548.  
CAMBRIA ocean front house, exceptional white water view, accom. up to 4 people, all amenities provided, Jan. & Feb. special, 3rd night free, except holidays. 702/256-1359 & creynolds2@cox.net.  
CARMEL, Hyatt Highlands Inn, resort overlooks ocean, 1 bd., living room and fully-equipped kitchen, wood-burning fireplace, spa tub, private balcony, binoculars, complimentary bicycles, sleeps 4, July 2-9, ‘05, \$135/nt., additional locations avail. 626/794-9579 or fivestarresorts@earthlink.net.  
FLORIDA condo, beautifully furnished 2 bd., 2 ba., 2nd floor, on the surf of New Smyrna Beach, 1/2 hour to Cape Canaveral, 90 min. to Disney World; enjoy all the comforts of home; quiet, relaxing, overlooking the beach and the Atlantic Ocean; BBQ, pool, game room; easy walk to stores and restaurants. 760/439-7821, Darlene, or dhauge@yahoo.com.  
HAWAII, Maui condo, NW coast, ocean front view, 25 ft. fr. surf, 1 bd w/loft, compl. furn. phone, color TV, VCR, microwave, d/w, pool, priv. lanai, slps. 4, laundry fac., low season rate \$115/nite/2, high season \$130/nite/2, \$15/nite/add’l person. 949/348-8047, jackandrandy@cox.net.  
LAKE TAHOE, Marriott Timber Lodge in Heavenly Village, studio, queen bed, full sofa bed, sleeps 4, microwave, small refrigerator, dishes, coffee maker, 5 blocks from lake, Aug. 5-12, ‘05, \$60/nt., standard Marriott rate is \$200+/nt., additional locations avail. 626/794-9579 or fivestarresorts@earthlink.net.  
MAMMOTH, Snowcreek, 2 bd., 2 ba., + loft, slps. 6-8, fully equip’d kitchen incl. micro-wave, D/W, cable TV, VCR, phone, balcony w/mtn. view, Jacuzz., sauna, streams, fishponds, close to Mammoth Creek, JPL disclnt. 626/798-9222 or 626/794-0455 or valeriec@caltech.edu.  
OCEANSIDE beachfront: lovely 2 bd., 2 ba., single-level deluxe condo; fireplace, white water ocean views (end unit), luxurious gated complex on the sand, game rooms, fitness room, pools, barbecues, Jacuzzis; 10-min. walk to pier or harbor, sleeps 6, JPL discount; www.beachvisitors.com. 760/433-4459.  
OCEANSIDE condo, on the sand, charming, 1 bd., panoramic view, walk to pier or harbor, pool/spa, game room, slps. 4. 949/786-6548.  
OREGON, Brookings, Moosehead Lodge, www.mooseheadlodgeoregon.com, at the Winchuck River Estuary, fully furnished 3 bd., 2 ba., residence, 1 mi. from Cal. border, walk Pelican Bay beach w/tidepools, surf and driftwood, fish Pacific Ocean/Wild Rivers along S. Oregon/N. Cal. coast, enjoy the redwoods and Siskiyou National Forest. 800/221-8175.  
PARK CITY, UTAH studio condo, 2 queen beds, indoor pool/Jac., spa, fitness center, kitchenette includes: small frig./freezer, microwave, stove, toaster, blender, coffee maker, pots/pans, dishes; cable TV, VCR/DVD, phone, balcony, 24 hr. desk, concierge, child care, laundry service, free transportation to ski resort and Main St. (both within 1-2 mi.), JPL discount, garyglass500@charter.net.  
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.





JPL  
Women's  
History  
Month  
Luncheon

# Celebrating the Voice of Women— Women Change America

*h o n o r i n g*

**Dr. Susan Love**

*President and Medical Director,  
Dr. Susan Love Research Foundation,  
Pacific Palisades, California*



**Tuesday, March 15, 2005**

**11:30 am – 1:30 pm**

**Brookside Country Club**

**1133 N. Rosemont Ave., Pasadena**

Seating is limited.

All JPL employees are invited to attend.

## **Ticket Information**

*Tickets are \$22 and can be purchased by sending a check (payable to ACW) to Pat Barley, JPL M/S 125-177, plus the completed Luncheon Ticket Request Form at the bottom of this page. Your ticket will be sent to you via JPL mail. No refunds will be given once a ticket has been issued. One ticket per person.*

## **Luncheon Ticket Request Form**

*Please Print*

Name \_\_\_\_\_

M/S \_\_\_\_\_ Ext. \_\_\_\_\_

Are you an ACW Alumna: ☐ Yes ☐ No

Menu Options (please indicate your choice):

☐ Cobb Salad ☐ Mandarin Chicken Salad ☐ Pasta Primavera (vegetarian option)





# DR. SUSAN LOVE:

*Pioneer in the  
exploration and  
discovery of  
new technologies  
for treating and  
curing breast  
cancer*

According to a National Cancer Institute report, one out of every seven women born now in the United States will develop breast cancer at some time in their lives. Many of us have a close friend, sister, mother, or wife who has had breast cancer. Some of us are breast cancer survivors. Are you prepared to cope with such a diagnosis? What is being done to find new treatments and eventually cure this disease? Knowing and understanding breast cancer is not only important to women but equally important to the men who know them.

Attend the ACW luncheon to hear Dr. Susan Love, a pioneer in the exploration and discovery of new technologies for treating and curing breast cancer, talk about the important work she is doing. She is the author of *Dr. Susan Love's Breast Book*, termed "the bible for women with breast cancer" by the New York Times. Dr. Love has developed a new, non-invasive technique for breast cancer detection, which is breaking new ground in early diagnosis of the disease.

Dr. Love is known worldwide as one of the founders of the breast cancer advocacy movement. She is President and Medical Director of the Dr. Susan Love Research Foundation, a non-profit organization dedicated to the eradication of breast cancer. The organization's goal is to identify the barriers to research and then to create new solutions. Dr. Love currently sits on the Board of the National Breast Cancer Coalition. She is also a Clinical Professor of Surgery at UCLA and former director of the UCLA Breast Center. Dr. Love is dedicated to breast cancer research, awareness, education, and advocacy.