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Inside

Cassini provides its first snapshot of Jupiter

By Guy Webster

NASA / JPL / University of Arizona

Above image of Jupiter was taken by the Cassini imaging science narrow angle camera through the blue filter on Oct. 1 at a distance of 84 million kilometers (52 million miles) from Jupiter. The smallest features that can be seen are about 500 kilometers (about 300 miles) across.

Scientists are extremely pleased with the first image of Jupiter, received Oct. 4, from the Cassini spacecraft, which is closing in on a fly-by of the huge planet.

The image, first in a series of images and other measurements of Jupiter which Cassini will be making over the next several months as it flies by Jupiter, clearly shows the exceptional resolving power of the imaging system even at the distance of more than 52 million miles (84 million kilometers). Clouds, storms and latitudinal bands are clearly seen in the image. A steady stream of ever-closer color and black-and-white images will be released in the weeks ahead.

The new image of Jupiter is available online at *http://www.jpl.nasa.gov/pictures/cassinijupiter*. It is also available from the University of Arizona's Lunar and Planetary Laboratory at *http://ciclops.lpl.arizona.edu* .

"This has been our first opportunity to exercise the Cassini flight and ground systems in a mode very similar to how we expect to operate at Saturn, and I'm extremely pleased with how it is working," said Cassini Program Manager Bob Mitchell at JPL.

"The spacecraft is steadier than any spacecraft I've ever seen," said Dr. Carolyn Porco of the University of Arizona, team leader for the camera on Cassini. "It's so steady, the images are unexpectedly sharp and clear, even in the longest exposures taken and most challenging spectral regions."

At the same time, JPL mission engineers are working with their counterparts at the European Space Agency (ESA) on a concern with the communication system on ESA's Huygens probe, which is attached to the Cassini spacecraft. Huygens is to drop from the Cassini spacecraft in late 2004 onto the large moon of Saturn called Titan as the Cassini orbiter begins its own exploration of the ringed planet and its system of moons.

The concern, which was identified in early September with tests at ESA's operations center at Darmstadt, Germany, involves the radio receiver supplied by ESA to receive signals from the Huygens probe as it descends through Titan's atmosphere.

According to the tests, the signal sent to Cassini from Huygens will change in frequency as both spacecraft rapidly change position in relation to each other, much as a train whistle appears to change in pitch as it passes by a person standing alongside the tracks (called the Doppler effect). The engineering test found that the ESA-supplied receiver carried on the U.S. Cassini main spacecraft could not receive all the data from the Huygens probe.

"Cassini has given us the first tantalizing taste of its enormous scientific potential," said Dr. Jay Bergstralh, Cassini program scientist at NASA Headquarters. "The spacecraft has operated perfectly since its launch three years ago, so we can look forward to even greater things in the coming months. We are, of course, concerned about communications with the Huygens probe, but the best minds in the business are working on solutions."

ESA and NASA mission scientists and engineers are developing options to address the situation, including changing the trajectory of Cassini during the Huygens probe's entry into Titan's atmosphere. A plan of action is expected to be ready by next summer for review and approval by NASA and ESA officials.

2001: a space 'Odyssey' for Mars orbiter

By Mary Hardin

As NASA's next spacecraft to Mars begins a crucial round of testing in preparations for launch next year, the mission has a new name: 2001 Mars Odyssey.

"The year 2001 has a special significance to many of us who recall the thrill of reading the book and watching the movie '2001: A Space Odyssey,'" said Scott Hubbard, Mars Program Director at NASA Headquarters. "It seemed fitting to name the mission not only in honor of the story and the movie, but also to herald the start of our new long-term journey to explore Mars."

Hubbard added that Arthur C. Clarke, author of "2001: A Space Odyssey," enthusiastically endorsed the new mission name.

The orbiter is designed to find out what Mars is made of, detect water and shallow buried ice and study the radiation environment. Odyssey began thermal vacuum testing in last September at Lockheed Martin Astronautics in Denver, where it was designed and built.

"It's exciting to have the new name, and going into the thermal vacuum testing chamber is the next big step for the spacecraft," said Project Manager George Pace, adding that testing will simulate the full range of temperatures the spacecraft will be subjected to during its mission.

"We have done several things in response to the NASA review board recommendations to ensure mission success, like adding additional staff and transitioning development personnel to operations. I'm confident we have a solid mission," Pace added.

The orbiter will study minerals on the surface and measure the amount of hydrogen in the shallow subsurfaces of the planet, which will give scientists clues about the presence of water, either past or present. It will also provide information on the structure of the Martian surface and on the geological processes that may have caused it. Finally, the orbiter will take all-important measurements of the planet's radiation environment so potential health risks to future human explorers can be evaluated. To do this, the spacecraft carries three science instruments: The Thermal Emission Imaging System, the Gamma Ray Spectrometer, and the Mars Radiation Environment Experiment.

2001 Mars Odyssey is scheduled for launch on April 7, 2001, with a scheduled arrival at Mars next October.

In-situ laboratory dedicated

By Mark Whalen

Bob Brown / JPL Photos

The new Building 317, above, will initially support the 2003 Mars Exploration Rover Project. Left: Facilities Division Manager Bruce Fischer, left, and Mars 2003 Project Manager Pete Theisinger dedicate the facility.

JPL has dedicated the new In-Situ Laboratory, a facility that will be initially dedicated to the 2003 Mars Exploration Rover Project.

The new Building 317, located just east of Building 303, will serve as a testbed for the development of identical twin rovers the Laboratory is building to send to Mars in spring 2003. The first rover is scheduled to land Jan. 4, 2004, with the second rover to touch down 51 days later.

The facility will include clean rooms for flight instrument and avionics assembly, a software development lab and a 5-meter (17-foot) high bay that will serve as a rover surface testbed to supplement the outdoor Mars Yard. The high bay "sandbox" includes a 2-ton crane and a public viewing gallery.

During operations, the facility will provide for operations development and surface sequence validation for the rovers.

Project staff have already begun to occupy the new building. The project offices will be located in modular offices adjacent to the building to house up to 120 people, said Chuck Manning of the Device Research and Applications Section 346, who redesigned the facility to meet requirements for surface mobility systems test bed. Ernest Breig of Section 661 was the project manager during design and construction.

Pete Theisinger, Mars 2003 project manager, noted that the facility will serve as "Mars on Earth" for the project both during its development and all through Mars surface operations in 2004.

News Briefs

Bolinda Kahr

Kahr wins Women at Work medal

BOLINDA KAHR, deputy manager of the Mission Execution and Automation Section 368, has been named the winner of the 2000 Medal of Excellence Award by Women At Work, a non-profit career and job resource center based in Pasadena.

Kahr, who has worked at JPL for 29 years, was nominated for the award by JPL's Advisory Council for Women based on her ability to lead and motivate people. She was also cited for assuring recognition and rewards when objectives are met and for effectively promoting JPL relationships with high-technology small businesses.

A native of Pasadena, Kahr holds a bachelor's degree in Computer Science from Cal State Los Angeles and has also completed numerous JPL and NASA management certification programs. She is scheduled to receive her award at an Oct. 19 luncheon honoring her and other Woman at Work Medal of Excellence Award winners.

Galileo Europa team honored

JPL's Galileo Europa Mission team last month was awarded an Honorary Group Diploma for Astronautics by the International Aeronautic Federation.

The award was presented at the federation's general conference in Sweden on Sept. 27. The team was nominated for the award by the National Aeronautic Association.

Honor Awards nominations due Oct. 31

Laboratory employees are invited to nominate individuals or groups for NASA Honor Awards to be presented in 2001.

See the procedure titled "NASA Honor Awards, Rev. 1" online at *http://dmie.jpl.nasa.gov/cgi/doc-gw.pl?DocID=14802.*

Nominations should be submitted to the immediate administrative supervisor of the nominated person for processing up through their respective administrative organization. Those nominations selected after being reviewed will be forwarded to NASA. Each "Director for" will schedule the internal process so that the directorate's final recommendations can be submitted to Associate Director KIRK DAWSON no later than Oct. 31.

JPLers can join Caltech runners

JPL staff are invited to join Caltech Trotters, a running and fitness club designed to improve members' overall health for the purpose of competing in walk runs, 5Ks, 10Ks and longer running events.

For the fall/winter schedule, members meet Tuesdays and Thursdays at 6 a.m. at Caltech's Braun Gym and track) as well as Saturdays at 8 a.m. at the Rose Bowl, lot K.

Due to UCLA games at the Rose Bowl, the club will meet at Braun Gym Oct. 21, Nov. 4 and Nov. 18.

For more information. contact LOUISA TOOT at (626) 395-3408 or *louisa@library.caltech.edu.*

Resource system a success story for budget planners

By Gia Scafidi

The team integrated targeted off-the-shelf and custom software with JPL's existing business system.

What many said couldn't be done at JPL, due to its poor track record implementing business systems, a small team of JPLers achieved in less than two years.

Building on the foundation established by two years of process development groundwork, JPL's Resource Management System development team successfully tackled the challenge of "solving the Lab's budgeting problem."

The team, comprised of approximately seven full-time equivalents, created an institutional, integrated system capable of workforce forecast inputs, cost estimation, budgeting, reporting and performance analyses. Moreover, the system fully supports Earned Value Management, a rigorous method enabling objective performance measurement.

"I'm very proud of the breakthrough work this team has accomplished," said team leader Randall Taylor. "We are beginning to see the fruits of their work on JPL projects, with full benefits yet to come."

The challenge was presented to the development team in January 1999 by the Develop New Products review board. At the time, the institutional budgeting tool did not accommodate cost estimation in pre-project phases, nor was it integrated with actual cost data to allow for performance analyses.

"We walked into the project knowing we were in for a big challenge," said Joanne Kennedy, the team's schedule module lead. "But I think our approach, and the fact that the team members were very experienced in various fields, contributed to our success."

Operating "like a flight project," Taylor said, the team first set a deadline for the new resource planning system. The team then had users brainstorm the system requirements and determined if the deadline was realistic. Funding was provided and executive management proved supportive.

After many grueling months of effort, the team integrated targeted off-the-shelf and custom software with JPL's existing business system, based on Oracle financials. The final result was a two-tiered system, providing a simple interface for general users and a more sophisticated tool set for skilled resource administrators.

Kennedy noted that past unsuccessful attempts had involved more problematic and difficult tools. The current team opted for process-based, user-friendly tools such as custom-formatted Excel spreadsheets for general users' interface.

According to Kennedy, the new system also "puts more control in the hands of cost managers," eliminating their need to have resource planning data re-entered into other planning tools.

"This system has led to a tremendous reduction in cycle time spent on the cost-planning process of a couple of Mars and Space Interferometry Mission projects already," said Dr. Bruce Gibby, the team's process engineer. "What normally took six to eight weeks to accomplish, they completed in two weeks."

The new system will help JPL project and task managers integrate system discipline and business rules into their work. "The system's designed to help them meet prime contract requirements," Gibby said. "It will enable managers to better define and align the scope, schedule and budget of their tasks."

Taylor noted that a phased rollout approach will be utilized to ensure that all project teams have an opportunity to obtain process-based training, detailed instructions and support to successfully transition to the new process and tools. The official Development-to-Operations review is expected to be completed by the end of this year.

Special Events Calendar

Ongoing Support Groups

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

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

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

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

Senior Caregivers Support Group—Meets the meet the first Tuesday of each month in Building 167-111. For information, call the Employee Assistance Program at ext. 4-3680.

Friday, October 13

Caltech Lecture—Psychologist Kay Redfield Jamison, the author of numerous books and scientific articles about mood disorders, suicide and psychotherapy, will speak and sign books at 8 p.m. in Beckman Auditorium.

Saturday, October 14

Swingdance America—Three generations of swing are spanned by this 10-member company, which will perform at 8 p.m. in Caltech's Beckman Auditorium. Tickets are $25, $21 and $17. Call (626) 395-4652.

Sunday, October 15

Chamber Music—The Guarneri Strong Quartet will perform at 3:30 p.m. in Caltech's Beckman Auditorium. Tickets are $27, $23, $19 and $15. Call (626) 395-4652.

Monday, October 16

Caltech Ballroom Dance Club—The third session in a five-week class on beginning west coast swing will be held at 7:30 in Winnett Lounge. Taught by a professional instructor; no partner is required. Series cost is $30. Call Don at (626) 791-3103.

Tuesday, October 17

JPL Hiking+ Club—Meeting at noon in Building 303-209.

Wednesday, October 18

AFS Quick Start Session for Windows 95—Jeff Sachs of Section 366 will provide an overview using the AFS distributed file system to manage computer files, including setting up group space, accessing data, publishing web pages, and more. At noon in the Building 167 conference room.

Caltech Ballroom Dance Club—The third session in a five-week class on Argentine tango will be held from 7:30 to 9 p.m. in Winnett Lounge. Cost for the amateur-taught course is $1. Call Don at (626) 791-3103.

"The Evolution of Big Brains"—Dr. John Allman, Caltech professor of psychobiology and biology, will give this free lecture at 8 p.m. in Beckman Auditorium. Call (626) 395-4652.

JPL 2000 Lecture—2001 Mars Odyssey Project Manager Dr. George Pace and other key project members will discuss the next Mars orbiter, which is scheduled for launch next April. Held at 11 a.m. in von Kármán Auditorium.

Music on the Mall—Robert Aviles and his band, Insight, play jazz/rock violin for a tasteful blend of classical and rock music. Held at noon.

Thursday, October 19

JPL Stories—Dr. Henry Garrett of the Safety and Mission Assurance Office will present "Things that Go Bump in the Dark, or How Spacecraft Fail," discussing some of the more creative methods to assure abbreviated spacecraft lifetimes. To be held at 4 p.m. in the customer services area of the Library, Building 111-104. For questions about the story series or to participate, call Teresa Bailey at ext. 4-9233.

Von Kármán Lecture Series—"Navigation: Cruisin' Through Space" will be presented by Dr. Donald Gray of the Navigation and Mission Design Section 312 at 7 p.m. in von Kármán Auditorium. Open to the public.

Friday, October 20

Caltech Ballroom Dance Club—A free "milonga" [Argentine dance party] will be held starting at 8 p.m. in Dabney Lounge. Refreshments provided. Call Don at (626) 791-3103.

Von Kármán Lecture Series—"Navigation: Cruisin' Through Space" will be presented by Dr. Donald Gray of the Navigation and Mission Design Section 312 at 7 p.m. in The Forum at Pasadena City College, 1570 E. Colorado Blvd. Open to the public.

Saturday, October 21

Mathemagic!—Math principles are demonstrated with the use of magic tricks during this 2 p.m. show at Caltech's Beckman Auditorium. Tickets are $10 for adults, $5 for children. Call (626) 395-4652.

SURF Seminar—Registration for the Summer Undergraduate Research Fellowship begins at 9 a.m. at Caltech's San Pasqual Mall. Student presentations will be held from 10 to 11:40 a.m. and 1 to 4 p.m., followed by a poster session and reception. Admission is free; a $10 lunch will be available noon to 1 p.m. Call 395-2885 or e-mail to *sfp@cco.caltech.edu.*

Sunday, October 22

Chamber Music—The husband and wife duo of violinist Thomas Bowes and pianist/composer Eleanor Alberga will give a free concert at 3:30 p.m. in Caltech's Dabney Lounge. Call (626) 395-4652.

Wednesday, October 25

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

Windows 2000 Tips and Tricks—Hour- long sessions for general users will be held at 10 a.m., 11 a.m. and noon in the Building 167 conference room, where a session for system administrators will be held from 2 to 4:30 p.m., covering operating system changes, security configuration management and deployment.

Thursday, October 26

Caltech Architectural Tour—The Caltech Women's Club presents this free service, which is open to the public. The tour begins at 11 a.m. and lasts about 1 1/2 hours. Meet at the Athenaeum front hall, 551 S. Hill St. Call Susan Lee at (626) 395-6327.

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

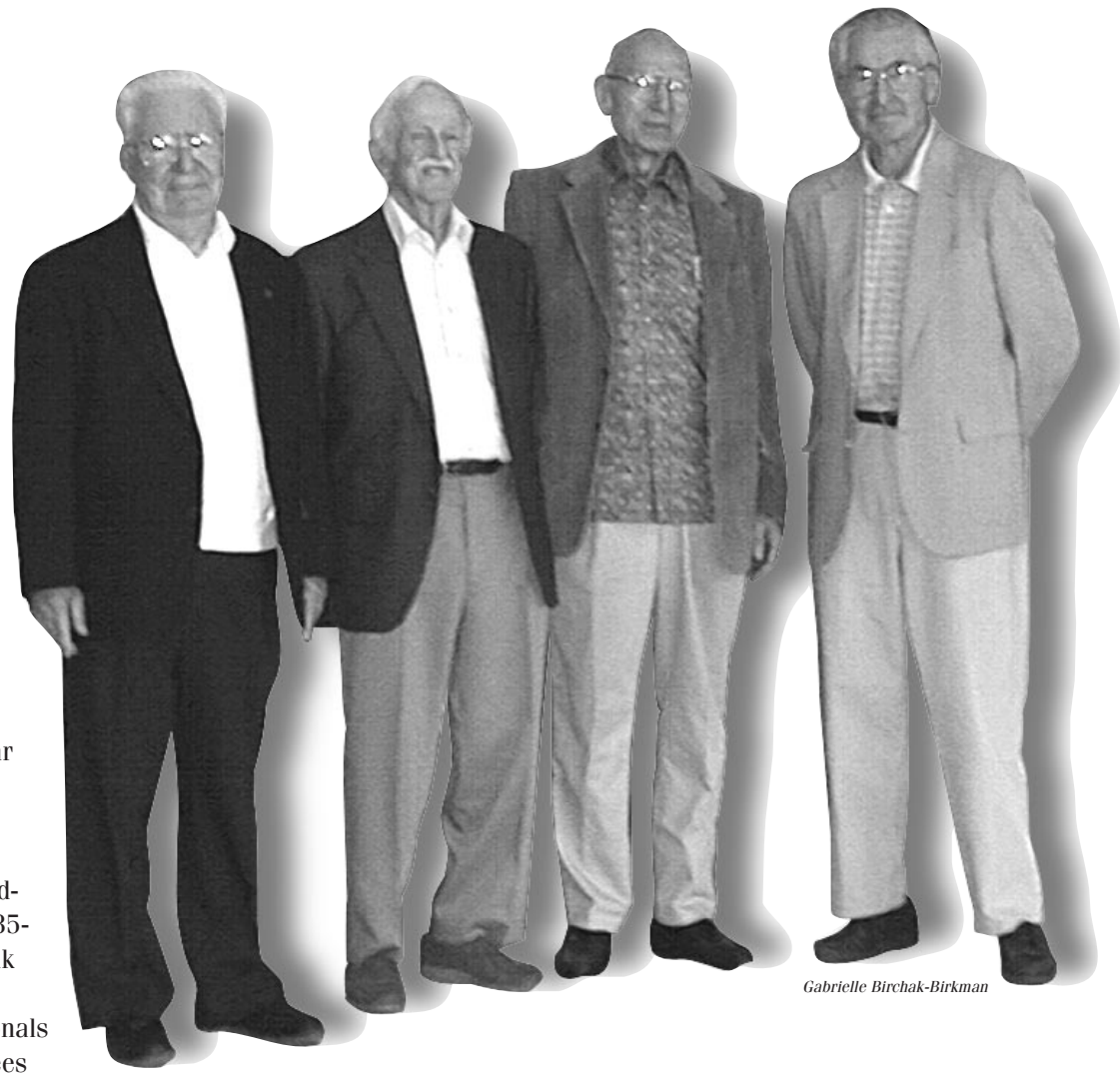
Friday, October 27

JPL 2000 Talk—Dr. Diane Evans, Dr. Loren Lemmerman and Alfred Zieger will discuss Earth science and future missions and technologies at 11 a.m. in von Kármán Auditorium.

Retirees who didn't quit

JPL Photos

By Gabrielle Birchak-Birkman



Gabrielle Birchak-Birkman

Ex-JPLers help advance medical technologies

Four members of Volunteer Professionals for Medical Advancement are shown at left at a recent JPL gathering and above as seen during their JPL careers. From left are Lon Isenberg, Herman Bank, Robert Nathan and Al Hibbs.

You can take the rocket scientists into retirement, but you can't turn off the inventive skills retired JPL professionals carry with them. Retired engineers and scientists who helped make history at the dawn of the Space Age are now applying their skills to the world of medicine.

These enterprising space veterans from JPL are now helping doctors and patients with expertise forged in the world of space technology.

"We may look like seniors, but our professional skills are still in high gear and our creativity never dies," said Herman Bank, space engineering veteran and founder and director of Volunteer Professionals for Medical Advancement. He and his brainy 65- to-85-year-old retired NASA colleagues, Bank said, "are just too young to retire."

By working with Volunteer Professionals for Medical Advancement, these retirees from JPL donate some of their time to work closely with doctors and other medical professionals to brainstorm, research and develop new medical technologies. The organization's purpose is to provide hospitals with free services that such facilities could otherwise not afford. The hospitals, in turn, find that with the retired space professionals they get top-notch brainpower and reliable assistance. The accomplishments of this retiree organization have brought its members state and national honors.

Bank said up to 15 retirees are active participants, offering different areas of expertise. The group has been responsible for a number of medical advancements, including:

• Preliminary design of an automated oxygen enrichment system for premature babies. Working with Los Angeles County/USC Medical Center, retired volunteers and doctors are working to remove the inaccuracies of manually controlled oxygen systems, which can affect the infant's eyesight, brain and lung development.

• Solving a blood clot problem found with a stent (a skin graft anchor) that could cause heart attacks. Retired professional volunteers introduced a special electropolishing process to provide a super-smooth stent surface. The electropolishing process, developed in the aerospace industry, is not well known by doctors. The resulting electropolished stent practically eliminated further blood clot formation with the device.

• Creation of an advanced-database private computer network for pediatricians. Working with Children's Hospital Los Angeles, retired professionals are helping pediatricians nationwide to correspond about children's illnesses using JPL's method of data management. This database will provide a depository for historical data of diagnoses, research, treatments and results.

Doctors estimate that extended medical use of the computer database systems could reduce health care costs by 20 to 30 percent.

With each project, these retirees find that the rewards are numerous. "Results of the project clearly show that volunteers have made major contributions to medical advancement," Bank said.

"Doctors and hospital staff are very appreciative of this volunteer professional assistance, which they can seldom find or afford," he added. "Retired professionals find interest and satisfaction in challenges which do not interfere with retirement activities."

Bank said that as a young man, he always wanted to go into the field of medicine. Unable to afford medical school at the time, he decided to pursue a degree in mechanical engineering and found himself at JPL. Bank proves that it's never too late to pursue one's aspirations. "I decided that after doing 20 years of space I wanted to do something here on Earth to advance medicine," he said.

Embarking on their 10th year as an organization, the retirees are looking forward to future challenges in medicine, which includes encouraging other retired engineers and scientists to look for volunteer consulting opportunities. "The expansion of this activity nationally should help medical advancement considerably without cost, while using a skilled manpower resource," Bank said.

"We may look like seniors, but our professional skills are still in high gear and our creativity never dies."

— Herman Bank, member of Volunteer Professionals for Medical Advancement

Current JPL employee George Wells Jr., senior measurement systems integrator in the Laboratory's Measurement Technology Center, worked with Volunteer Professionals for Medical Advancement to develop an oxygen enrichment sensor to topically monitor oxygen levels in premature babies. Shown at left, the sensor clips to the finger and reads oxygen levels through a light sensor. Once the sensor determines that the child has enough oxygen, it automatically shuts off the oxygen supply.

Benefits enrollment open through Nov. 1

JPL's annual benefits enrollment period is underway and continues through Nov. 1. The Benefits Office urges employees to review their benefits and decide if changes are needed for the year to come.

Information packages—which have already been sent to employees—include a summary of benefit changes for 2001; new rates and plan comparisons; and instructions on how to use the web to verify your current benefit elections and submit changes. Additional updates will appear in "This Week."

If you want to change your benefits or enroll in a Health Care or Dependent (Day Care) Spending Account, you need to enroll through the web at http://nbsweb, then link to "JPL Annual Benefit Enrollment." Enrollment takes effect Jan. 1, 2001. Unless you want to make a change or elect a Spending Account for 2001, no action is necessary.

To assist employees in comparing each of the medical and dental plans, the Benefits Office has invited JPL's carriers to participate in panel discussions in von Kármán Auditorium. On Friday, Oct. 13, medical carriers will appear, with dental carriers scheduled for Wednesday, Oct. 18. Each panel discussion will run from 1:30 to 3 p.m.

In addition, representatives from the Benefits Office and each of JPL's medical, dental and health care/dependent care plans will be on Lab from 9 a.m. to 2 p.m. on the following days to answer individual questions:

- Tuesday, Oct. 17, 167 cafeteria
- Wednesday, Oct. 25, 167 cafeteria
- Tuesday, Oct. 31, 303 cafeteria

For more information, call the Benefits Office at ext. 4-3760.

View this and previous issues of Universe online

http://universe.jpl.nasa.gov

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Notice to Advertisers

Advertising is available for JPL and Caltech employees, contractors and retirees and their families. No more than two ads of up to 60 words each will be published for each advertiser. Items may be combined within one submission.

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

Ads are due at 2 p.m. on the Monday after publication for the following issue.

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

Letters

On behalf of our family, I would like to thank our many friends at JPL for their kind expressions of sympathy on the recent passing of our father, William V. Moore Sr. Thanks also to the ERC for the donation to the VFW in Dad's name. We greatly appreciate your support at a most difficult time.

William V. Moore Jr. and family

My family and I would like to thank our friends at JPL and ESA for their kind thoughts and expressions of sympathy following the untimely passing of my sister, and to ERC for the beautiful plant that was sent to my home. Sincerely,

William Mogensen

My family and I would like to thank ERC for the green plant following the death of my father. It was delivered just as we returned home from a trip to Nebraska for the funeral, and it definitely lifted our spirits.

Gene Wester

My thanks to all my friends at JPL for their kindness and support during the illness of my father and the cards and the lovely plant after his passing. All of this was truly meaningful to me. Thanks also to the ERC for the wonderful plant they sent.

Rose Ackerley

My sincerest thanks to all of you who made my JPL retirement sendoff on 28 September so very special.

Benn Martin

Passings

LELAND MORTENSEN, 73, a retired senior engineer in Section 338, died of cancer Sept. 11 at his home in Ontario.

Mortensen joined the Lab in 1969 and retired in 1985. He is survived by daughters Laura, Leanne, Lisa and Lissa; son David; eight grandchildren and sister Enid.

Services were held Sept. 23 at Rose Hills Memorial Park in Whittier.

Retirees

The following employees retired in October: Benn Martin, 43 years, Section 780; John Knox, 38 years, Section 357; Roger Brandt, 37 years, Section 388; David Rogstad, 32 years, Section 335; Robert Gauldin, 28 years, Section 514; Samuel Benedict, 27 years, Section 320; Robert Norton, 25 years, Section 352; Stephanie Dangerfield, 22 years, Section 195; Douglas Packard, 17 years, Section 352; Thomas Kratz, 16 years, Section 314; David Rogers, 13 years, Section 344.

Classifieds

For Sale

AIR CONDINTIONERS, Kenmore, used 4 mo., 5450 BTU/HR $75, 7000 BTU, $150; WASHER, Kenmore 70 series Type 3, heavy duty, 3/spd motor w/ 4/spd combinations and gas dryer, like new, were $850, both for $650. 395-4317.

BARBECUE, like new, electric, 1500 W grill indoors or out, $75. 626/254-1550.

BED, youth, exc. cond., metal headboard & footboard painted white, twin-sized mattress, $100. 909/624-4450.

BEDROOM FURNITURE, dresser w/mirror and 2 matching nightstands; dresser is 70" W x 30" H w/ 9 drawers; nightstands are 26" W x 23" H w/ 2 drawers; $275/obo. 626/914-7853.

BIKE, Bianchi, gd cond., $100/obo; PRINTER, Canon color, fax, scan & copy exc. cond. in box w/manuals, used 2 times, $200/firm; SOFA, sleeper Santa Fe style, gd cond., $100/obo. 626/359-7608.

BIKE, '94 Trek 2120 touring, 54-in. frame, ice violet, Trek carbon/Easton Al frame, w/Shi-mano SPD pedals, Shimano RX100T (triple-21 gear) crankset, Shimano Deore LX derailleurs w/SIS bar end shifters, 22.8 lbs., exc. cond., < 300 mi., $850; Blackburn Cross-rack/rear rack, w/Jando pack, $35; 3 Yakima std. bike mount sets, w/security cable and Quik wrench for use on any Yakima rack, $50. 790-2123.

BUNKBED, This-End-Up furn., 80"x68"x42", very sturdy, eastern Yellow Pine, exc. cond., incl. mattress pads and Simmons Beauty Rest mattresses, $650. 790-8018.

BUNKBED, 5 mo. old, bed on top, desk and 3 shelves on the bottom, hardly used, great for kids, no mattress, $150. 213/719-4948.

CAMCORDER, Sony (used less than 10 hrs), w/steady shot & zoom, $199; BATTERIES, for Sony camcorder, $10, Nokia cell, 5100/6100 series, $20; new cool Disney cover plate for Nokia 5100 series cell Phone, half price, $15. 366-6134.

CD JEWEL CASES, 50 ea., $10; DIET TAPES, Jenny Craig, set of 14, $50; POWER CONT. CTR., 5 pwr switches + 1 master sw., 5 surge-protected outlets + 2 modem/fax/phone jacks, new, $20; SPRINKLER VALVE ADAPTERS, Lawn Genie automatic, model 756LG 3/4, new, $10 each; ORGAN, Yamaha 415 electr. console w/13 pedals, 3 keyboards, 144 rhythm patterns, pd. $7,500, sacrifice for $3,000. 790-3899.

CLAY POTS, round, large (2-ft and 3-ft diameter). $50 each 2" obo, $60 each 3" obo. 626/398-3480.

COMPUTER, Gateway PC 450MHz, Pentium III, 248M memory, 10G hard drive, 17-in. monitor, speakers and software, 1 yr. old, excellent condition, $600/obo. 661/250-9790.

COMPUTER, Power Mac 6100/60, 80MHz with monitor, additional hard disk and CD–ROM, $100. 661/297-8533.

CRIB, beautiful natural maple Pali w/mattress, top of the line, exc. cond., all amenities, $200; TODDLER BED, solid pine, handcrafted, storage drawer & mattress, $100. 626/794-1319.

DIAMOND RING, Marquis cut (.33) with 6 small diamonds (.18) total CTW .51, value $1,900, sell $500. 362-3358.

DECOYS: for Mallard ducks, full plastic, floating bodies, $12; for Canada goose, $18. 626/793-1895.

FURNITURE, oak: computer desk, 2-piece L-shape w/butcher block top, keyboard drawer, 5 drawers (2 for files, 1 w/lock); file cabinet, vertical, 4 drawers (1 w/lock) 3) shelf unit w/8 shelves 50w x 60h x 12d., all in very good condition, all for $500/obo. 626/791-6101.

HONEY, fresh, home grown, pure comb, chunk or liquid gold in squeeze bears, bottles, or jars. 626/584-9632.

PING-PONG TABLE, $150/obo 626/285-9845.

PRESS, Dake 20 ton, $250. 714/892-7849 or Silbe.Touch@WorldNet.Att.Net, Louise Silbe.

RADIOS, portable AM/FM cassette, RCA/ Craig, great for dorm or RV, uses 6 "C" batteries, $20/ea.; CELL PHONE, Motorola Dynasty, $30; MOTION DETECTOR, $10; CRAFT/ SEWING TABLE, folding, $30. 362-3550.

REFRIGERATOR, very small, $30. 626/355-9733.

SAW, radial arm, Sears Craftsman 10 in., stand with wheels and blade, $250. 248-6762.

SCANNER, like new, used once, must sell, $50/obo. 240-8662.

SCOOTERS, new blue or green with carry bag, lightweight, max strength, hi performance, adj. height, folds, $65. 626/448-0150, 9 a.m.–4 p.m., Ryan.

SCUBA GEAR, extremely low volume mask Bandit by Dacor (brand new, still in package), $35 ($50 new); fins by Blades, $45 ($85 new); snorkel w/dual exhaust ports, $16 ($27 new); booties, size 10, $15 ($30 new); gloves, med., $8 ($16 new). 231-9847.

SKIRT, black lamb's skin leather, w/matching jacket snap front/waist, dolman sleeves, size 12, vg condition, been cleaned, see to appreciate, $150/obo. 626/357-6155.

TABLE, dinette, square glass top 5'x5' w/metal feet and 4 matching chairs, $800/obo; 4 matching bar stools, metal frame; all in exc. cond., $400/obo. 626/398-3480.

TELEVISION, Panasonic 25' diagonal, wooden cabinet, remote control, 8 yrs old, $150/obo. 626/398-3480.

TOYS, Fisher-Price outdoor playhouse, $50. 626/355-9733.

WINDSURFER, Calypso 3.2 x 0.63m board w/small sail; stable board for beginner, w/Bic adjustable boom, harness, 4.6m mast, $150/obo. 626/797-6121.

Vehicles / Accessories

'00 CHEVROLET Silverado, extended cab, short bed, LoJack, CD, bedliner, tinted windows, remote keyless entry, aluminum wheels, perfect condition, $22,000/obo. 626/614-1095, Cindy, evenings.

'65 CHEVROLET Impala, 4-dr., rebuilt 350 engine, new trans., super clean interior, blk extr., blk & wht. intr., new 14" Dayton 100-spoke wheels on wht. walls, no accidents, clean title, beautiful classic, $6,900/obo. 213/719-4948.

'93 FORD Thunderbird, power everything, limo tint all around, grnd. effects (spoilers) all around, new tires, no accidents, Pioneer CD 800 watt amp, 6x9s, subwoofers, eq., reliable car, $4,900/obo. 213/719-4948.

'95 DODGE Ram 1500 SLT Magnum pickup, blk., std cab., short bed, w/matching shell/bed liner, 5.2 L, V8, 2wd, air, pwr. windows/doors, am/fm/cass, cruise cont., tow pkg., many extras (cupholders, storage areas, sliding rear window, etc.), 78k mi., good looker, very clean, gray fabric int., must sell. 352-6611.

'93 PONTIAC Sunbird convertible, 134 K mi, new top, VG cond., 3.1L V6, blue, runs great, $4,100. 248-0236.

'93 RANGE ROVER County LWB, green, air suspension, sunroof, grill guard, CD, Leather, 90K mi., dlr. maintained, exc. cond, $14,990. 760/249-4262.

'94 SATURN SL2, 4 dr, automatic, red, 88K mi., a/c, am/fm/cass., cruise control, electric windows & door locks, all svc. records, well maintained, $6,500. 626/447-4734.

SKI RACK & CROSS BAR, '96 Volvo orig. equip; perfect; cost $240, sell $110. 790-6185, Tim Scheck or capttrs@aol.com.

'95 SUBARU Legacy LS, 56K mi., AWD, ABS, auto, sunroof, a/c, $9,500. 626/355-5662.

'91 SUBARU Legacy turbo sedan, AWD, auto, loaded sport package, 158K, runs great, $4,000. 500-0488.

'92 TOYOTA Corolla DX wagon, high mileage but uses no oil, has lots of pep, auto, A/C, new tires, battery, radiator, well-maintained, $3,850/obo. 362-7187.

Wanted

LUXURY CAR, 1998 or 1999 low mileage Acura 3.5RL, Lexus GS-300 or Lexus LS-400, will pay finder's fee. 236-4869.

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

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

VOLVO 240 OR 740 WAGON, preferably with third seat, mid-80s thru early 90s. 249-3698.

For Rent

ALTADENA, lg. furn. rm, cable TV, priv. ba., also share lg. house, yd, patios, pool, panor. vw, c/a/h, all amen. laundry, kitchen w.d/w, priv. off-str. pkg., 11 min. JPL; smoking OK, owner smokes; JPL empl./contr. prefd., $480 incl. all util., + dep. 626/794-1050, after 7 p.m., Harry.

ALTADENA, 3 bd., 1 ba., lg liv. rm., laundry rm., dining rm., kitchen, large yard, $1,100 + deposit & first/last month rent. 626/398-8109.

ALTADENA, rm. in lg. house close to JPL, private bath, laundry, kitchen, privilage, required non-smoker, clean, must like dogs, furn. $475, unfurn. $425. 626/797-5570.

LA CANADA, spacious 4-bd., 3-ba. house, 5 min. to JPL, study, family room, formal living room, back yard with fruit trees, close to La Canada shuttle, $3,000. 626/744-3243, evenings.

LA CANADA, very small room with private entrance, bath and a/c, excellent location, walk to work, temp./short term ok., furnished $150/wk. or $500/mo. 790-1893.

LA CRESCENTA, 10 minutes to JPL, blue ribbon schools, 2 bd., 1 ba., house, garage, patio, new carpets, new paint, gardener and water included, $950. 790-0217.

MONTROSE apt., 1 bd. 10 min./JPL, $650. 626/445-0884.

MONTROSE cottage, 10 min./JPL, $475. 626/445-0884.

N. ALHAMBRA, rear house, 1 lg. bd., 1 ba., good queit residential area, 725 sq. feet, hardwood floor, very clean, 1-car garage, fenced private yard, stove; water, trash and gardener provided, see to appreciate, available Oct. 15, $680. 626/683-9935, evenings.

PASADENA, near PCC, 2 bd., 1 1/2 ba., twnhse. style apt., central A/C, blt in range and oven, refrigerator, cpts, blinds, disps;, cvrd. parking. $750. 626/578-1834.

SAN GABRIEL, beautiful 3-bd., 2-ba. home, excellent cond., separate dining room, fireplace, patio, hardwood floors, gardener paid, nice big fenced rear yard, double garage, laundry rm., 610 Abbot Ave., 20 min. from JPL, $1,400. 626/792-3732.

SUNLAND, Shadow Hills horse ranch, 3 bd., 2 ba., on large ranch parcel with views and horse corral, end of road, 2 level on mt. side, available 11/1, $1,495. 636/584-6526, Fred.

Real Estate

PASADENA, executive condo next to Caltech, totally remodeled 2 bd. + 1 3/4 ba., 1,200 sq. ft., newly refinished hardwood floors in din. rm, newer appliances, carpet & paint, large balcony just redone, overlooking beautiful trees; top floor unit in park-like setting, walk to Caltech & S. Lake Ave; nice pool and spa; $219K. 626/585-9048.

PASADENA condo, 1 bd., 1 ba., Caltech area, great top floor unit with balcony, 850 sq ft., nice complex with pool, spa, all amenities. 626/449-7841.

Vacation Rentals

BIG BEAR cabin, quiet area near village, 2 bd., seeps 8, completely furnished, F/P, TV/VCP, $75/night. 249-8515.

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

BIG BEAR LAKE cabin, near lake, shops, village, forest trails, 2 bdr., sleeps up-to 6, fireplace, TV, VCR, phone, microwave, BBQ and more, JPL disc price from $65 per night. 909/210-9182.

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

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

HAWAII, Maui condo, NW coast, on beach w/ocean view, 25 ft. fr. surf, 1 bd. w/loft, compl. furn., phone, color TV, VCR, mcrowv., d/w, pool, priv. lanai, slps. 4, 4/15-12/14, $100/nt./2, 12/15-4/14, $115/nt./2, $10/nt. add'l. person. 949/348-8047.

LAKE TAHOE, North Shore, 2 bd., 2.5 ba., sleeps 6, private beach, great location, all amenities, hiking, golfing, fishing, 2 miles to casinos, thru Nov. 8 - $85/day or $475/week + cleaning fee, 3-night minimum. 626/355-3886, Rosemary or Ed.

LAKE TAHOE, West shore @ Homewood, close to northern ski areas: Squaw, Alpine Meadows, Homewood, etc., 3 bd. + loft, 2 ba., slps. 8, linens provided, full kitch. & laundry, TV/ VCR, wood stove; 2-day min., JPL disc., $75 cleaning fee. 626/585-0321, Bob or Nicole.

MAMMOTH, Chamonix condo, 2 bd., 2 full ba., slps 6, fully equip. elec. kitch., micrwv. & extras, f/p & wood, color TV, VCR, cable, FM stereo, pool & sun area, o/d Jacz., sauna, game/rec./laundry rms., walk to shops, lifts, warming hut, hiking, daily/ weekly rates, summer rates thru Oct. 249-8524.

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

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

PACIFIC GROVE hse, 3 bd, 2 ba, fp, cable tv/vcr, stereo/CD, well-eqpd kit w/microwv, beaut. furn, close to golf, bches, 17 Mile Dr, Aquar., Cannery Row, JPL discnt. 626/441-3265.

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

SOUTH LAKE TAHOE KEYS waterfront, 4 bd., 3 ba., 1 bd. & liv. rm. upstairs, hcp. access fair, slps. 12+, f/p's, decks, gourmet kitch., boats, TVs, VCR, stereo, assn. pools, beach, tennis/ski/casinos/golf, 3-day min., $1,195/wk. [1 June-15 Sept; 22 Nov- 1 April], $595/wk. low seas., + $90 clean fee. 949/515-5812.