

The Houston Livestock Show and Rodeo comes to JSC with a variety of activities. Story on Page 3.



JSC Director George Abbey shows community leaders the state-of-the-art emergency facility. Photo on Page 4.

# Space News Roundup

Vol. 37

January 24, 1997

No. 4

## Advanced life support system test begins

A four-person team is once again living in a special air-tight chamber at JSC testing recyclable life support systems.

The Phase IIA - International Space Station Life Support Test is the third in a series being conducted at JSC that uses physicochemical and biological methods to recycle air and water. The four-person volunteer crew entered the three-story chamber on Jan. 13 to spend up to 60 days investigating the use of mechanical and chemical means to recycle all air and water, including urine, for the volunteers. These physicochemical air and water processors are the same types that will be used on the International Space Station.

The test crew members are Crew Leader Terry Tri, project manager for the Bioregen-

erative Life Support Systems Complex; Karen Meyers, Lockheed Martin project engineer; Fred Smith, systems engineer; and Dave Staat, Lockheed Martin facilities project engineer. They plan to remain in the chamber until mid-March to evaluate the effectiveness of the station regenerative life support systems.

Regenerative life support is critical technology not only for the International Space Station but for the future of humans in space as astronauts will not be able to carry all of the supplies necessary to support a trip to Mars or the Moon. The current test continues the investigations begun on two previous tests conducted in August 1995 and June 1996.

In the first test, one volunteer spent two weeks in a smaller chamber using a crop of

wheat plants to recycle available breathing air. That test was followed by a 30-day test in 1996 with four volunteers in the 20-foot chamber being evaluating the effectiveness of advanced systems to recycle their air and water.

The current test employs mechanical and chemical systems that are functionally the same as those that will be used on board the space station to purify the air and water supplies. The team members provide daily status reports on the operation of the air revitalization and water recovery systems, as well as crew habitability criteria. The team also is supporting evaluation of other space station planned activities including medical, food systems and specialized shifts for staffing monitoring consoles in the control room.



JSC Photo by Robert Markowitz

The International Space Station Life Support Test team members enter the special air-tight chamber where they will spend up to 60 days investigating the use of mechanical and chemical means to recycle air and water. From left are, Karen Meyers, Terry Tri, Fred Smith and Dave Staat.



NASA photo

The STS-81 and Mir 22 crews take time out from five days of docked operations to salute the Houston Livestock Show and Rodeo. Back row from left are, STS-81 Pilot Brent Jett, STS-81 Mission Specialist Marsha Ivins and John Grunsfeld, Mir 22 Flight Engineer Alexander Kaleri and STS-81 Mission Specialist John Blaha. Front row from left are, STS-81 Mission Specialist Jeff Wisoff, STS-81 Commander Mike Baker, Mir 22 Commander Valeri Korzun and Mir 22 Flight Engineer Jerry Linenger.

## Americans exchange places aboard Russian outpost for second time

By Kelly Humphries

John Blaha is back on Earth, on schedule, but the American presence on the Russian space outpost Mir continues as Jerry Linenger settles into his new home.

Blaha arrived back on terra firma Wednesday morning after a total of 128 days in orbit, 118 of those spent—for all intents and purposes—in a foreign country.

"Welcome! Welcome! Welcome!" Blaha said on Jan. 14, when the hatches between *Atlantis* and Mir opened and a raucous round of greetings began. "Welcome to space station Mir, a truly international space station."

Moments earlier, STS-81 Commander Mike Baker and Mir 22 Commander Valery Korzun had embraced in the docking adapter connecting the two spacecraft, and pilots, flight engineers and mission specialists reveled in each other's companionship.

In addition to the exchange of

crew members—which occurred officially at 3:45 a.m. CST Jan. 15 when their form-fitted Soyuz seat liners were swapped in the small spacecraft that is used for return to Earth—Mission Specialist Marsha Ivins, Jeff Wisoff and the rest of the crew toted



three tons of equipment, supplies and experiment samples back and forth between the two spacecraft. Another 1,600 pounds of drinking water were transferred to Mir's tanks using contingency liquid containers. The supplies and equipment will be used by Linenger and his crew mates as they conduct research over the

next several months.

During a joint news conference, the Mir commander said, "We have the greatest impression of the work we did together and the friendship we developed over the four months onboard."

"I think this program is not only about space exploration but also about space exploration but also

Please see **BLAHA**, Page 4

## Atlantis modification work to be performed at Palmdale facility

United Space Alliance has recommended, and NASA managers have concurred, that upcoming modification and normal inspection work on *Atlantis* be done at Boeing North American's facility in Palmdale, Calif.

Over the past several months, USA, the shuttle prime contractor, has been evaluating whether the next Orbiter Maintenance Down Period on *Atlantis*, would be done at Palmdale or at Kennedy Space Center.

In making the decision to have the work done at Palmdale, several factors were considered.

First, the major modifications planned for *Atlantis* are extensive and will require a long and uninterrupted stay in a processing facility. If this work were performed at KSC, the long stay would represent a threat to the shuttle flight schedule for fiscal year 1998, which includes the first two International Space Station assembly flights and the final two shuttle-Mir missions for the Phase 1 program.

Secondly, the modifications planned for *Atlantis* are similar to those performed on *Discovery* and *Endeavour* while those two orbiters were at Palmdale. Using Palmdale's

resources will allow the program to take maximum advantage of the experience gained during the maintenance and modification work performed on the other two vehicles.

Managers also believe the extent of modifications required on *Atlantis* can better be accomplished in a manufacturing operation than in a mission turn-around processing effort. NASA concluded that, as with *Discovery* and *Endeavour*, these modifications should be performed by a dedicated team instead of a shared resource approach. The manufacturing environment and dedicated

team are both available at Palmdale.

Finally, with the modification work done at Palmdale, the KSC workforce can devote its attention to the principal activity of vehicle processing for launch and landing operations.

*Atlantis* will begin its OMDP session following completion of STS-86 in September. Modification work will include the installation of an external airlock in the payload bay.

Managers will examine many factors when making future decisions, including the complexity of required modifications and programmatic considerations.

## JSC workers compete in marathon

More than 40 employees brave icy conditions

Despite the icy conditions, several JSC employees made the trek to Houston's George R. Brown Convention Center to compete in the 25th running of the Methodist Health Care Houston Marathon.

"It was really cold, and nasty," said Mark Anderson of the Science Payloads Management Office, who finished the 26 miles, 385 yards in 3 hours, 5 minutes and 14 seconds. "We had the entire previous week to think about the weather, and it turned out every bit as bad as predicted. During the race, the temperature hovered near the 30 degree mark, with off-and-on freezing rain, and wind."

Runners prepared by wearing extra clothing at the start, such as long sleeved shirts, jackets, gloves and knit hats.

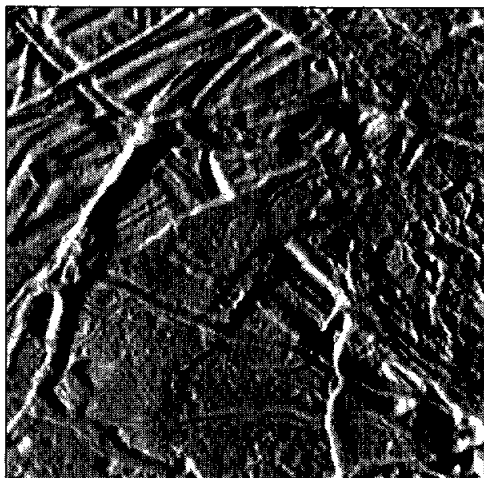
"Garbage bags were especially popular," said Anderson. "They're lightweight, they do a

good job of keeping out wind and some of the rain, and they can be thrown away when you no longer need them."

Although the extra clothing helped, it only made a bad situation somewhat more bearable. At some point in the race everyone was wet and cold, and facing the prospect of many miles ahead in the same condition.

"We all knew it would be that way, and yet, nobody rolled over and went back to sleep that morning," Anderson said. "Once we had committed, we had to see it through, or at least try. People who don't run marathons think, and maybe rightfully so, that we have to be a little crazy to run one of these, but it takes three to six months to prepare and, though everybody hated the weather conditions, no one was willing to back out."

Please see **RUNNERS**, Page 4



The ice-rich surface of Europa has been broken into a complex pattern by cross-cutting ridges and grooves resulting from tectonic processes.

## Ice volcanoes reshape Europa

NASA's Galileo spacecraft images reveal ice-spewing volcanoes and grinding and tearing tectonic plates that are reshaping the chaotic surface of Jupiter's moon Europa.

The images were captured when Galileo flew within just 430 miles of Europa on Dec. 19. Although the images do not show currently active ice volcanoes, they do reveal flows of material on the surface that probably originated from them, said imaging team member Ronald Greeley of Arizona State University.

"This is the first time we've seen actual ice flows on any of the moons of Jupiter," said Greeley. "These flows appear to be remnants of ice volcanoes or geysers."

The new images appear to enhance Europa's prospects as one of the places in

Please see **EUROPA**, Page 4

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# Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday. For more information, call x35350 or x30990.

**Rodeo Tickets:** Houston Livestock Show and Rodeo Tickets cost \$10 limited to 4 per badged employee.

**Carnival tickets:** Houston Livestock Show and Rodeo carnival tickets. Cost is \$10.

**Moody Gardens:** Tickets cost \$9.50 for 2 of 3 events.

**Loving Feelings Concert:** Johnny Rivers 8 p.m. Feb. 8 at the Arena Theater. Tickets cost \$34.50.

**Space Center Houston:** Adult \$8.95; children (4-11) \$6.40, annual membership \$25.95, family membership (up to four) \$59.95.

**Movie discounts:** General Cinema, \$4.75; AMC Theater, \$4.50; Sony Loew's Theater, \$4.75.

**JSC logo shirts:** Polo style cost \$23, T-shirt cost \$10.

**Franklin Planner refills:** now taking orders for 1997 calendars.

**Sweetwater pecans:** \$5.65 per pound.

**Stamps:** Book of 20, \$6.40.

**Entertainment '97 books:** Cost is \$25.

**Gold C Books:** Cost is \$10.

**"Orbit":** The book "Orbit" by Jay Apt, Mike Helfert and Justin Wilkinson is on sale for \$28.

**Metro tickets:** Passes, books and single tickets available.

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# Gilruth Center News

**Sign up policy:** All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a yellow EAA badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For more information, call x30304.

**EAA badges:** Required for use of the Gilruth Center. Dependents and spouses may apply for photo identification badges from 7:30 a.m.-9 p.m. Monday-Friday; and 9 a.m.-1 p.m. Saturdays. Cost is \$10. Dependents must be between 16 and 23 years old.

**Hatha Yoga:** A stress relieving, stretching and breathing exercise routine to unite body, mind and spirit. Classes meet from 5:30-6:30 p.m. Thursdays. Cost is \$40 for eight weeks.

**Nutrition intervention program:** A six-week program to learn more about the role diet and nutrition plays in health, including lectures, private consultations with a dietitian and blood analysis. Program is open to all employees, contractors and spouses. For more information call Tammie Shaw at x32980.

**Defensive driving:** One-day course is offered once a month. Pre-registration required. Cost is \$25.

**Stamp club:** Meets at 7 p.m. every second and fourth Monday in Rm. 216.

**Weight safety:** Required courses for employees wishing to use the weight room will be offered from 8-9:30 p.m. Jan. 28 and Feb. 11. Pre-registration is required. Cost is \$5.

**Exercise:** Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24 for six weeks.

**Aikido:** Martial arts class meets from 5:15-6:15 p.m. Tuesday and Wednesday. Cost is \$35 per month. New classes begin the first of each month.

**Aerobics:** Classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks.

**Ballroom dancing:** Beginner classes meet from 7-8:15 p.m. Thursdays. Intermediate and advanced classes meet from 8:15-9:30 p.m. Cost is \$60 per couple.

**Country and Western dancing:** Beginner class meets 7-8:30 p.m. Monday. Advance class meets 8:30-10 p.m. Monday. Cost is \$20 per couple.

**Fitness program:** Health Related Fitness Program includes a medical examination screening and a 12-week individually prescribed exercise program. For more information call Larry Wier at x30301.

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# Dates & Data

Today

**Reservations due:** The Clear Lake Club of Sigma Xi, the Scientific Research Society will meet at 6 p.m. Jan. 30 in the Forest Room located on the first floor of the Bayou Bldg. at the University of Houston Clear Lake. Sidney Burrus will discuss "Wavelet Technology." Optional dinner tickets cost \$9 for members and \$10 for non-members and reservations are due Jan. 24. For details call Mike Duke at 244-2036.

**Cafeteria menu:** Special: meat sauce and spaghetti. Total Health: baked potato. Entrees: rainbow trout, liver and onions, beef cannelloni, ham steak, fried cod fish, Reuben sandwich. Soup: seafood gumbo. Vegetables: steamed broccoli, breaded okra, cut corn, black-eyed peas.

Monday

**Cafeteria menu:** Special: turkey and dressing. Total Health: herb flavored steamed pollock. Entrees: breaded veal cutlet, chicken fajitas, steamed pollock, beef, French dip sandwich. Soup: beef and barley. Vegetables: Brussels sprouts, mixed vegetables, egg plant casserole, winter blend vegetables.

Tuesday

**Cafeteria menu:** Special: pepper steak. Total Health: barbecue chicken. Entrees: baked lasagna, pork chop and fried rice, turkey a la king, baked chicken, fried cod fish, French dip sandwich. Soup: black bean and rice. Vegetables: breaded squash, steamed spinach, baby carrots, navy beans.

Wednesday

**Spaceland Toastmasters meet:** The Spaceland Toastmasters will meet at 7 a.m. Jan. 29 at the House of Prayer Lutheran Church. For details call Jeannette Kirinich at x45752.

**Spaceteam Toastmasters meet:** The Spaceteam Toastmasters will meet at 11:30 a.m. Jan. 29 at United Space Alliance, 600 Gemini. For

details call Pat Blackwell at 282-4302 or Ben Black at 282-4166.

**Astronomy seminar:** The JSC Astronomy Seminar will be held at noon Jan. 29 in Bldg. 31 Rm. 129. Dave Kaplan will discuss "Mars Sample Return Mission Design." For details call Al Jackson at x35037.

**Cafeteria menu:** Special: Mexican dinner. Total Health: steamed pollock. Entrees: broccoli cheese quiche, spare ribs and sauerkraut, steamed fish, Reuben sandwich. Soup: seafood gumbo. Vegetables: Spanish rice, pinto beans, peas, broccoli.

Thursday

**Cafeteria menu:** Special: hamburger steak with onion gravy. Total Health: baked potato. Entrees: corned beef, cabbage and new potatoes, chicken and dumplings, meat ravioli, French dip sandwich. Soup: broccoli cheese and rice. Vegetables: navy beans, cabbage, cauliflower, green beans.

Friday

**Cafeteria menu:** Special: tuna noodle casserole. Total Health: broiled chicken breast. Entrees: deviled crabs, broiled pollock, liver and onions, broiled chicken with peach half, Reuben sandwich. Soup: seafood gumbo. Vegetables: Italian green beans, cauliflower au gratin, steamed rice, vegetable sticks.

Feb. 6

**Warning system test:** The site-wide Employee Warning System will undergo its monthly audio test at noon Feb. 6. For details call Bob Gaffney at x34249.

Feb. 11

**NPMA meets:** The National Property Management Association will meet at 5 p.m. Feb. 11 at Robinette and Doyle Caterers, 216 Kirby in Seabrook. Social and dinner cost \$14. For details call Sina Hawsey at x36582.

Feb. 12

**MAES meets:** The Society of Mexican American Engineers and Scientists will meet at 11:30 p.m. Feb. 12 in the Bldg. 3 cafeteria. For details call G.D. Valle at x38835.

**PSI meets:** The Clear Lake/NASA Chapter of Professional Secretaries International will meet at 5:30 p.m. Feb. 12 at the Holiday Inn, NASA Road 1. Dinner costs \$12. For details call Elaine Kemp at x30556.

Feb. 13

**SSQ meets:** The Houston Clear Lake Chapter of the Society for Software Quality will meet at 6 p.m. Feb. 13 at the Ramada King's Inn on NASA Road 1. Lee Norbraten the acting director of the ISO 9000 Office will discuss JSC's ISO 9000 certification effort. Dinner cost \$12 with advance reservations. For details and reservations call Renne Peterson at 335-2034.

**Airplane club meets:** The Radio Control Airplane Club will meet at 7:30 p.m. Feb. 13 at Clear Lake Park Community Bldg. For details call Bill Langdoc at x35970.

Feb. 14

**Astronomers meet:** The JSC Astronomical Society will meet at 7:30 p.m. Feb. 14 at the Lunar and Planetary Institute, 3600 Bay Area Blvd. For details call Chuck Shaw at x35416.

Feb. 19

**Scuba club meets:** The Lunarflins will meet at 7:30 p.m. Feb. 19 at the Redfish Restaurant under the Kemah/Seabrook bridge, Seabrook side. For details call Fred Toole at x33201.

Feb. 20

**Directors meet:** The Space Family Education board of directors will meet at 11:30 a.m. Feb. 20 in Bldg. 45 Rm. 712D. For details on this open meeting call Gretchen Thomas at x37664.

# Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads may be run only once. Send ads to Roundup Swap Shop, Code AP2, or deliver them to the deposite box outside Rm. 181 in Bldg. 2. No phone or fax ads accepted.

Property

**Sale/Lease:** Univ Trace condo, 1 bdrm + study, 1-1/3 bath, W/D, cov parking, \$34K, \$525/mo, x 48621 or 480-2417.

**Lease:** Oakbrook 4-2-2, 2 new bathrooms, new furnace & AC, \$1000/mo, avail 2-1-97, 486-4620.

**Rent:** Lake Travis cabin, private boat dock, central AC & heat, accommodates 8, spring/summer, \$550/650, weekly \$120. 474-4922.

**Rent:** South Lake Tahoe cabin, sleeps 8, \$85/night, 3-2, wood stove, cable, VCR, microwave, w/d, x41065 or 326-2866.

**Rent:** Arkansas cottage, furnished, fpl, overlooks Blue Mountain Lake, \$50/day or \$250/wk. Corcoran, x47806 or 334-7531.

**Rent:** Scarsdale, 2-2-2, 1100 sq ft, new AC/heat, ceiling fan, lg walk-in closet in master bdrm, avail 1-97, \$700 mo + dep. 643-6598.

**Sale/Lease:** Tiki Island, waterfront, 3-2-1 w/boat dock and lift, \$1100/mo or \$112k. Phil, x30220 or 337-4168.

**Sale:** Friendswood, Heritage Park 3-2-2, ex cond, security system, ceramic tiles, \$81.9k. 996-0152.

**Sale:** Clear Lake Forest 3-2-2 on 3/4 ac wooded lot, new roof, remodeled kitchen, sprinkler system, zoned air, \$141k. 281-326-2557.

**Galveston condo,** furnished, sleeps 6, Seawall Blvd and 61st St, swimming pools, cable TV, wknd/wkly/dly rates. Magdi Yassa, 333-4760 or 486-0788.

**Sale:** Nassau Bay, Queen's Court Townhouse, 3-2-5-2, \$87.5K. 333-4286.

Cars &amp; Trucks

'85 Audi 4000S, 4 dr, silver, velour interior, A/C, AM/FM/cass, approx 60k mi, well maintained, \$3.7k. Bobby, 244-2444 or 488-4382.

'84 VW Scirocco, bronze, good cond, 5 spd, 104k mi, \$1.2k. 280-0415.

'92 Honda Accord LX, metallic red, gray interior, 4 dr, auto, AM/FM/cass, ex cond, 111k mi, \$7.8k. 334-2533.

'93 Chevy Camaro Z-28, 6 spd, ex cond, warranty, 47k mi, CD, power locks, seat and windows, cruise, custom wheels, black, \$13.3k. x34544 or 326-3759.

'94 Mercury Grand Marquis GS, silver,

extras, 19K mi, \$14,750. 486-4247.

'91 Suzuki Sidekick JX convertible, 4x4, auto, 21k mi, ac, AM/FM cass, ex cond, \$5950. 472-1471.

'84 Nissan Stanza, M/T, clean, complete maintenance record, \$1250. x38387 or 280-0639.

'84 Corvette, silver, removable top, auto trans, 77k mi, \$7.5k. 333-9113.

'81 Chevrolet Silverado, \$3k obo. James, 337-5583.

'87 GMC Safari minivan, burgundy, int and tires 1 yr old, body/eng ex cond, \$4.5k. x37787 or 422-6369.

'86 Buick Electra, t-type, 4 dr, white, red int, new brakes, low miles, \$4k obo. x41178 or 332-5770.

'86 Jeep Cherokee, good A/C, heat, cd player, runs good, \$2k obo. 488-2522.

'94 Honda Accord LX, 4 cyl, auto, 4 dr, ABS, dual airbags, PW, PS, PL, AC, AM/FM/cass/cd, front/rear spoilers, custom mats, \$15.5k obo. Gus, x33425 or 286-3402.

'94 Ford Ranger XLT, 5 spd, 4 cyl, good cond, 60k mi, \$8.8k; '93 Buick LeSabre, 6 cyl, good cond, 44k mi, \$11.7k. 996-1655.

'92 Nissan Maxima SE, dk gray, 64k mi, leather, cd player, sunroof, pwr locks/windows, cruise, ex cond., \$13.5k. 326-6228.

'81 Toyota Corolla wagon, 5 spd, runs good, \$600 obo. Steve, 992-2841.

'89 Ford Ranger XLT, ext. cab, 4 cyl, 5 spd, 114k mi, \$5.5k. x39702 or 538-2449.

'81 Chevy Silverado, good cond, \$3k. James, 337-5583.

'93 Ford Ranger XLT, 5 spd, AC, AM/FM/cass, rear sliding window, \$5k. 409-925-4244.

'88 Toyota 4 Runner SR5, conv pkg, auto, sun roof, 4 WD, hard/soft tops, 79k mi, \$9.9k; '90 Honda Accord, 4 dr, leather, sun roof, lt metallic green, auto, \$8.5k. x48280 or 486-5456.

'89 GMC S15 ext cab, V6, auto, am/fm/cass, bucket seats, sliding rear window, bedliner, alum wheels, \$5.9k; '92 Buick Roadmaster Ltd, blk w/gray leathr int, \$12.5k. 486-2491.

'93 Ford Ranger XLT, 5 spd, AC, AM/FM/cass, rear sliding window, \$5k. 409-925-4244.

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'93 Ford Ranger XLT, 5 spd, AC, AM/FM/cass, rear sliding window, \$5k. 409-925-4244.

'87 Maxum 17' bowrider, 85 hp Force O/B, ski rail, galv trailer, cover, \$4.5k obo. Mike x33898 or 488-0700.

Royal Air 40T w/Futaba 4 ch radio, extras, \$250. 488-7743.

Audiovisual &amp; Computers

Mac Powerbook 180C active-matrix notebook computer, 8 MB RAM, 160 MB HD, new battery, fpu, ac adapter, charger, carrying case, S/W, \$750; Apple 14" A/V monitor with/built in speakers, .28 dp, \$199. Bobby, 244-2444 or 488-4382.

CD Rom Writer - Kodak, \$800 obo.; Scanner, high spd Fujitsu, gray scale, \$859 obo. x32920 or 992-9203.

HP Deskjet 500 printer, \$80. Ted, x33033.

Colorado Tracker 250 ext tape drive for PC, 12 tapes, \$200; 386 X40, 8 MB Ram, 130 MB HD, \$375. 286-4952.

Pentium 100-133-166, \$899-979-1099; DX 2-66, \$695; DX4-100, \$745; 386, \$350. Don 333-1751.

Lapis Pro Color Server 24x color graphics card for Mac SE/30, \$200; Cordura carrying case for Mac SE/30, \$35. 480-3424.

Sony STR-AV320 stereo receiver 75W, matrix surround, remote, \$120. x34074 or 286-3101.

486 DX50, 16 MB Ram, 420 MB HD, 3.5" FD, 14" monitor, kybd, mouse, \$450; 386 X40, 4 MB RAM, 170 MB HD, 3.5" FD, 14" monitor, kybd, mouse, \$325. Charles, x36422 or 326-5073.

Musical Instruments

Seagull Acoustic/elec guitar cut-away, ex cond, \$400 w/case; Alvarez 12-string acoustic, ex cond, \$500 w/case; Peavey Renoun 100 watt 2 x 12 combo guitar amp, good cond, \$150 w/foot switch. Mike, x45151 or 864-4778.

Pets &amp; Livestock

Mini-Rex rabbits, \$10 ea. 482-0874.

Two black labs, \$50 ea. 991-2645

Ostriches, 4 mo old, \$150. J. Garza, x38200 or 534-3613.

Domestic short hair cat, female, 1 yr old, spayed, all shots, \$60. 489-4549.

Dalmatia male puppy, born 11-5, has papers, \$250 neg. x38243 or 482-8490.

2 Iguanas, 1 skink, blue parakeet. Barbara, x33571 or 554-3277.

Household

Sears Kenmore elec W/D, apt sz stacked unit, white, \$175. x49113 or 992-8094.

Super single waterbed, \$100 obo. 488-5416.

19" Zenith color console tv, \$325 obo; ratan furniture, \$50 obo. 409-925-7734.

Ethan Allen entertainment center, \$600; Bassett living rm set w/qn sleeper sofa,

\$1100; G.E. refrig, 22.5 cu ft, \$300; Kenmore W/D, \$250/set, oval solid wood table w/ex leaves/6 chairs, \$900. 996-0152.

Montgomery Ward upright freezer, 15 yrs old, good working cond, some rust, \$50. x30737.

King sz bed. Barbara, x33571 or 554-3277.

Bdrm set, full sz, antique green w/dresser, 5 drwr chest, 2 nite stands, Italian design, \$805. Madgi Yassa, 333-4760 or 486-0788.

Lg coffee table w/matching end tables, \$50. x35376 or 943-3842.

Lg oak entertainment center holds up to 26" tv, \$450; 14.2 cu. ft. refrig, beige, \$200. Pete, 479-0276.

Pair cutom designed antique French love seats, down filled, \$800; Oriental style coffee tbl w/glass imported top, \$250; Desk, 47.5" long x 25.5" wide, wht w/brass trim, glass top, drwr handles, \$125; antique oak end table, 2 tier'd, \$125. 488-5564.

Mahogany upright piano, \$400. 326-2557.

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Mahogany upright piano, \$400. 326-2557.

Wanted

Want super single waterbed. Barbara, x33571 or 554-3277.

Want non-smoking roommate to share large 3 BR home in Clear Lake area, \$375/mo bills paid. John, x30543 or 286-7384.

Want nonsmoking female to share new 4-2 house, South Shore Harbor, cable, W/D, sec sys, garage, no children/pets, \$500/mo incl util except phone. Pam, 334-0833.

Want Nutone built-in food processor. Gerry, x49666 or 326-0076.

Want roll top computer desk in good shape. Pgr 602-4005.

Want nonsmoking housemate to share 3 BD, 4k sq ft home in Taylor Lake, pool, hot tub, furn bdrm/bath, \$600 mo. w/bills paid. Leah, x34544 or 326-3759.

Want toddler carseat, 20-40 lb, t-strap. Natlie, x34989 or 474-3483.

Want Canon ccameras/lenses, F1N, 24mm F2.8, 85mm F1.8, Canon flashes; Mamiya 645 cameras/lenses, Novatron flash equip, Steve, x37152 or 992-7049.

Want female to share 3-2-2 house w/owner, no pets, nonsmoker, \$400 mo, dep \$200. 484-8640.



# Rodeo Days

## JSC combines education, fun, entertainment for Go Texan, Rodeo Days

**By Rindy Carmichael**

Space-age technology is about to revert to the mystique of the Old West as JSC saddles up for Go Texas and Rodeo time.

When looking at the slate of activities, it may be tough not to be caught up in the fun of that rough and tumble part of the past. Rodeo activities will be featured during the entire rodeo period from Feb. 14 to Mar. 2.

"We will use this time to highlight JSC's participation in the Longhorn

Project also," said Larry Neu, chairman of the rodeo activities planning committee, referring to the scholarship awards program.

JSC, in cooperation with the Houston Livestock Show and Rodeo and the NASA/Clear Creek/ Friendswood Go Texan Association, will have featured speakers during lunch time on Jan. 30 at the Bldgs. 3 and 11 cafeterias, the Lone Star Cowboy singing group, a solo singing cowboy, line dancing demonstrations and the

Vaquero. Rodeo clowns and small animals will entertain the children at the Child Care Center. Dress Western days will be held Jan. 30, Feb. 5, and for three of the four Fridays in February — Feb. 14, 21, 28.

"One of the highlights at JSC will be the appearance on Feb. 5 of the Texas Independence Trail Riders," Neu said. "One hundred and twenty-five horses and riders, plus several wagons, will mosey through the center and lunch at Rocket Park. All JSC

employees are invited to join the trail riders. Several area restaurants will be selling food and drinks. Live entertainment will be offered, and everyone will have a chance to meet the trail riders and also learn about the Longhorn Project, the cooperative effort between JSC, the Clear Creek Independent School District, the local Go Texan subcommittee and the Livestock Show and Rodeo officials to further agricultural education at the high school level."

Every year, the Houston Livestock Show and Rodeo awards a \$10,000 four-year scholarship to a graduating senior at each of the four local high schools—Clear Lake, Clear Creek, Clear Brook, and Friendswood. For information on Houston Livestock Show and Rodeo scholarship, contact the counselor at individual high schools.

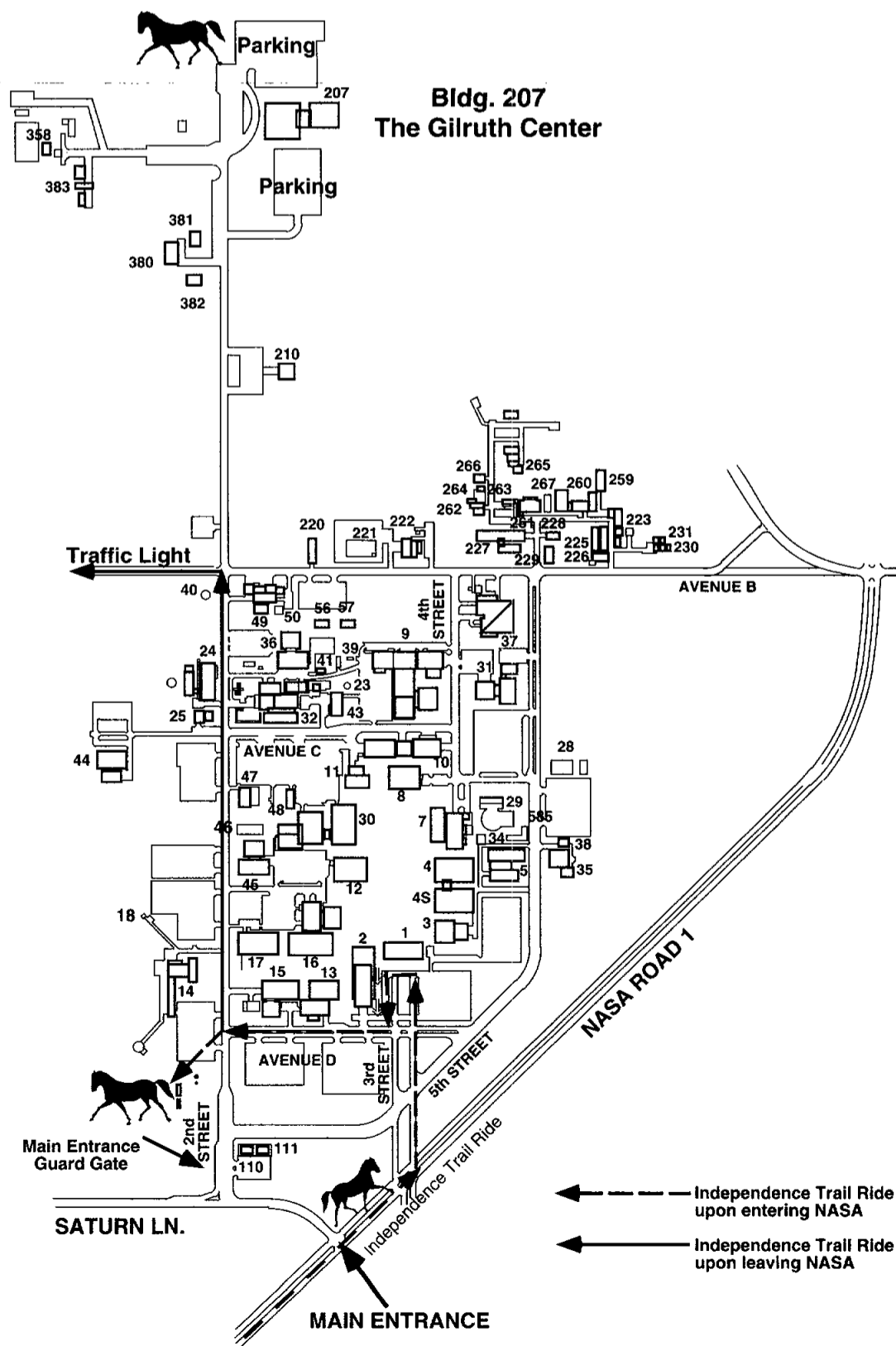
**1994-1996 Winners of the NASA/Clear Creek/Friendswood Metro Go Texas Subcommittee Scholarships**

Year	School	Name
1994	Clear Brook	Christine Benson
	Clear Lake	Susanna Campbell
	Clear Creek	Jennifer Tyler
	Friendswood	Daniel Hopkins
1995	Clear Brook	Aren Cambre
	Clear Lake	Jennifer Heard
	Clear Creek	Jenny Johnson
	Friendswood	Todd Swonke
1996	Clear Brook	Troy Espenlaub
	Clear Creek	Gaito Marie Ashley
	Clear Lake	David Lennington
	Friendswood	Melissa Minton
	Friendswood	Wendy Ward

## 2nd Annual JSC Trail Ride

**1997 JSC "GO TEXAS/RODEO DAYS" SCHEDULE OF EVENTS**

DATE	EVENT
Friday, Jan. 24	Go Texas Style Show at Gilruth Center
Thursday, Jan. 30	JSC Dress Western Day Bldgs. 3 and 11 cafeterias, from 11 a.m.-1 p.m. Houston Livestock Show and Rodeo speakers The Lone Star Cowboy singing group A solo-singing cowboy Line dancing demonstrations The Vaquero
Wednesday, Feb. 5	Rocket Park, from 11 a.m.-1 p.m. Texas Independence Trail Riders Long Horn Project Sneak Preview Live entertainment Area restaurants selling food and drinks
Friday, Feb. 14	JSC Dress Western Day
Friday, Feb. 21	JSC Dress Western Day
Friday, Feb. 28	JSC Dress Western Day



# NASA solicits studies of new earth-imaging radar satellite

NASA is seeking proposals from industry for design and definition studies of LightSAR, a proposed new Earth-imaging satellite that would use advanced technologies to reduce the cost and enhance the quality of radar-based information for scientific research, commercial remote-sensing and emergency management applications.

The agency expects to award up to five LightSAR study contracts worth approximately \$700,000 each, with selection scheduled for March and final reports due in November.

"Our request for proposals is aimed at exploring innovative approaches to government and industry teaming," said Steven Bard, LightSAR pre-project manager at

NASA's Jet Propulsion Laboratory. "The results of these studies are expected to enable industry to maximize the private sector investment in LightSAR. The proposers are required to share in the cost of implementing this mission, beginning with these studies."

"The results of these studies, especially as related to indications of proposed teaming and cost-sharing arrangements for the follow-on phases, will help establish an appropriate implementation approach, should NASA decide to proceed further with a LightSAR mission," said William Townsend, acting associate administrator for NASA's Mission to Planet Earth Office.

LightSAR's synthetic aperture radar mea-

surements would provide high-resolution images on a nearly continuous basis, giving the project considerable capability to map changes in land cover, generate topographic maps and provide long-term mapping of natural hazards.

"For example, if LightSAR were operating now, we'd be able to get one image a day of the Pacific Northwest and Northern California. Since radar can penetrate clouds, this would provide emergency management agencies with a picture of the changing flood conditions over a large area, even while the storm is still happening," said Tony Freeman, LightSAR instrument manager at JPL.

Companies selected to work on LightSAR will be asked to study business and teaming

approaches, prepare a market analysis, develop applications, define technical approaches and identify potential industry cost-sharing for carrying out follow-on development activities. "We are looking forward to working with industry to define this mission and determine their needs," Freeman said.

JPL is managing the pre-project development of the LightSAR mission for NASA's Mission to Planet Earth Office that leads a long-term, coordinated research enterprise designed to study the Earth as a global environmental system. The goal of MTPE is to develop a better scientific understanding of natural environmental changes and to distinguish between natural and human-made changes and impacts.

## Scholarship applications now being taken

Scholarship applications for both the NASA Exchange-JSC Scholarship Program and the NASA College Scholarship Fund are due by the end of March.

The Exchange Council expects to award one scholarship to a student on the basis of academic achievement, financial need and involvement in school or community activities. The scholarship program is open to students currently enrolled and in good academic standing in college, or who will graduate from a public, parochial or private high school this year and who are dependents of eligible JSC employees.

Scholarship support of up to \$4,000 will be provided in the amount of \$400 per academic semester, \$250 per academic quarter and \$200 per summer session, or as the Exchange Council determines. In any event, the amount will not exceed \$1,000 in any one-year period.

High school applicants must furnish a transcript of their high school grades and a record of their scores on either the Scholastic Aptitude Test or the American College Test with their applications or as soon as the results become available. The test results must be furnished prior to March 29.

College students must furnish their most recent transcript of college grades with the application, as well as a transcript of high school grades and either SAT or ACT scores.

Application forms and the students' scholastic records will be evaluated by the JSC Scholarship Committee. All applicants will be notified by mail of the results by approximately May 15.

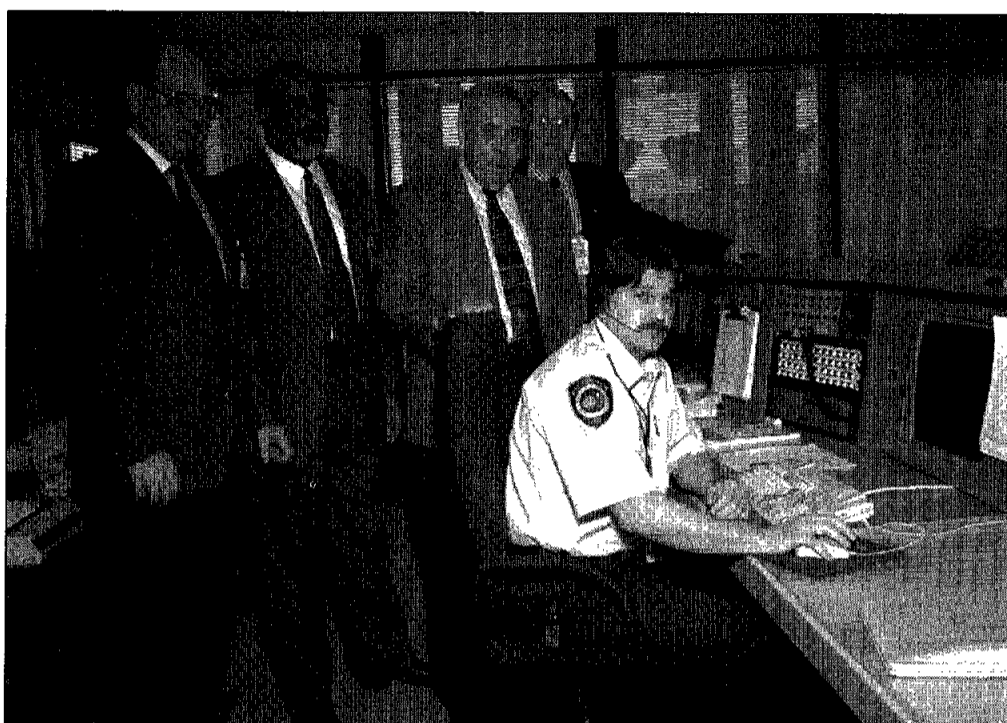
Application forms and agreements for the Exchange Council scholarship are available in Bldg. 1, Rm. 457. Please contact Judy Ernull, x31812, for the forms, or Debra Johnson, x34157, for additional information. To be considered for this year's program, completed forms must be returned no later than March 29, in a sealed envelope to: D.L. Johnson, chairman, JSC Scholarship Committee Mail Code BI.

Separate applications for the NASA College Scholarship Fund are due by March 31.

This fund will be awarding five scholarships of \$2,000 each. The scholarship is renewable for six years, not to exceed \$8,000. Applicants must be pursuing a course of study that will lead to an undergraduate degree in science or engineering at an accredited college or university in the U.S.

Applicants must be dependents of current or retired NASA employees or dependents of former NASA employees who died while employed by NASA. Applicants will be ranked based on a variety of standards.

Applications are available in Bldg. 1, Rm. 840. Completed applications may be mailed to JSC, the NASA College Scholarship Fund, Inc.; Mail Code AH12/Scholarship Committee; Houston, TX; 77058. For more information, contact Mary O'Connell, at x35774.



JSC Photo by Benny Benavides

From left, Jim Reinhartsen, president of the Clear Lake Economic Development Foundation checks out the new Computer Aided Dispatch system in the Emergency Operations Center with Center Operations Director Jim Hickmon, JSC Director George Abbey, Mission Operations Director Randy Stone and Dispatcher Mark Snedden. After months of preparation, the system is up and running and ready to dispatch personnel to all types of emergency situations. Dispatchers moved into the new area last month and have completed extensive training on the system. This state-of-the-art system brings the JSC level of emergency response to one of the highest levels in the country. The new system automatically records where an emergency call is coming from and dispatchers will be able to direct emergency personnel to precise locations.

## Blaha returns to Earth in special middeck seat

(Continued from Page 1)

about the relationship between our two countries and that's the most important thing," Blaha agreed. "In the course of this flight, our relationship among ourselves built up very well and I have the best of impressions of Russia and the Russians."

After fond farewells and more hugs, the two crews closed their hatches at 6:46 a.m. CST Sunday. *Atlantis* and *Mir* undocked at 8:15 p.m. CST Sunday over central Russia, southeast of Moscow. Pilot Brent Jett initiated a two-revolution flyaround of the Russian complex at a distance of about 560 feet. About 10 p.m., Jett fired maneuvering jets to separate *Atlantis* from *Mir* for the final time until May, when the shuttle will return on STS-84 to deliver Foale to the outpost as Linenger's replacement.

As Blaha rode back to Earth in a

special middeck seat designed to make his readaptation to Earth's gravity more comfortable, Linenger was unpacking his gear and getting used to his new orbital home. As of today, Americans have been living on *Mir* for 306 consecutive days.

Blaha was unsure how it would feel to be back in the clutches of gravity.

"They have a lot of doctors in Moscow who monitor our health and they told me about a week ago that they thought I would have little trouble readapting," he explained. "We will see because every human being is different when they return to Earth. No matter how much work they do in orbit or how much exercise they do, every human being's chemistry is different, so I may have tremendous difficulty or I may have no difficulty at all. So it will be a surprise to me."

## Runners finish at top in marathon

(Continued from Page 1)

The ice and rain-slick streets did slow the runners. The winning time of 2 hours, 19 minutes and 21 seconds, run by Ake Eriksson of Sweden, was the slowest since 1977.

"Typically, it takes a time of 2:10 to 2:14 to win this marathon," said Anderson. "Interestingly though, the winning woman's time of 2 hours 36 minutes and 12 seconds by Germany's Claudia Dreher, compared favorably with previous female winners, and this was her first marathon. If she could run that well in those conditions, she ought to be one to watch in the future."

JSC employees kept up with the other runners, posting times between 2 hours, 40 minutes and 33 seconds to five hours and 30 minutes. Bill Gregory, the "world's fastest astronaut," led the way, finishing 28th overall out of 4,389 official finishers. Several others JSC runners finished in the top 10 percent. Gregory also leads the JSC

runners in number of marathons run, with 20. There were many other veterans of at least 10 marathons among the group, and there were also some first-timers. At least 40 civil servant and contractor employees and family members entered the race, and most of them finished.

JSC civil servants who competed in the race were Brant Adams; Mike Conley, John Connolly, William Gregory, Dennis Halpin, Michael Hess, John Hoover, Jerry Hopkins, Michael Hughes, Joe Ruiz, Ernie Murray, Anselmo Lozano, Jonathan Miller, Michael Root, Duane Ross, Larry Toups, Elizabeth Spence, Stacy McDaniel, and Mary Wylie.

"Everyone I talked to was proud of his or her accomplishment," said Anderson. "The bad weather, which was the worst in the history of this race, has become somewhat of a badge of honor. When you can complete a marathon, especially under really adverse conditions, it says a lot about your perseverance."

## Cockrell to replace Godwin as deputy chief in JSC's astronaut office

Astronaut Ken Cockrell has taken on the role of acting deputy chief of the Astronaut Office.

Cockrell is replacing Linda Godwin who is acting deputy director of Flight Crew Operations.

Cockrell began his career at NASA as a research pilot in the Aircraft Operations Division in 1987. He was selected as an astronaut candidate in 1990 and flew as a mission specialist on STS-56, a pilot on STS-69 and a commander on STS-80. Cockrell also has held several management positions within the Astronaut Office.

Cockrell's flew his first flight as a mission specialist on STS-56 in 1993. *Discovery* carried ATLAS-2 and conducted atmospheric and solar studies in order to better understand the effect of solar activity on the Earth's climate and environment.

Cockrell next served as pilot on STS-69 in 1995. The primary objective of the mission was the deployment and retrieval of a SPARTAN satellite and the Wake Shield Facility.

Cockrell's expertise with the Wake Shield Facility was used this year during STS-80. Cockrell commanded the five crew members in the deployment and retrieval of the Wake Shield Facility and the Orbiting Retrievable Far and Extreme Ultraviolet Spectrometer satellites. STS-80 was a record breaking flight lasting 17 days, 15 hours and 53 minutes.



Cockrell

## Space News Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every Friday by the Public Affairs Office for all space center employees.

The Roundup office is located in Bldg. 2, Rm. 181. The mail code is AP2. The main Roundup telephone number is x38648 and the fax number is x45165.

Electronic mail messages should be sent to the editor, khumphri@gp301.jsc.nasa.gov

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## Europa images show diversity of age, interior

(Continued from Page 1)

the Solar System that could have hosted the development of life, said Greeley.

The images also reveal a remarkable diversity in the age of various regions of Europa's surface. Some areas appear relatively young, with smooth, crater-free terrain, while others contain large craters and pits, suggesting that they are much older.

The icy crust bears the signs of having been disrupted by the motion of tectonic plates. "There appear to be signs of different styles of tectonism," said Greeley. "In many areas we see that the crust was pulled apart in a spreading similar to the processes on Earth. This is different from the tectonic processes at work on, say, Jupiter's moon Ganymede. This suggests that Europa's interior may be different from Ganymede's."