

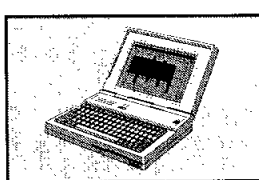


National Aeronautics and Space Administration  
**Lyndon B. Johnson Space Center**  
 Houston, Texas



**In the house**

Visitors fill the Teague Auditorium foyer during the JSC Open House. Photos on Page 3.



**Travel companion**

Travelers to Russia may soon have access to laptop computers and electronic mail on the road. Story on Page 4.

# Space News Roundup

Vol. 34

September 8, 1995

No. 36

## Repairs complete, Endeavour ready to fly

Gernhardt to deploy SPARTAN today if launch goes as planned

Having successfully replaced a faulty fuel cell in the Space Shuttle Endeavour, engineers expressed new optimism for an on-time launch for the orbiter this week for a belated start to the STS-69 mission.

However, the launch team at Kennedy Space Center continued to keep a weather eye out, developing a contingency plan for rolling two shuttles back to the Vehicle Assembly Bldg. if Hurricane Luis were to head for the Florida coast. Endeavour, on Launch Pad 39A, already has been

rolled back once ahead of Hurricane Erin earlier this summer.

Last week's initial launch attempt was scrubbed in the wee hours Aug. 31 when fuel cell No. 2 developed a high temperature reading following its activation. The scrub was called by Launch Director Jim Harrington before the shuttle was fueled for blastoff.



Labor Day weekend to replace the suspect fuel cell with a new one and then retested it, verifying its health and readiness to support launch. During the standdown, technicians also discovered a faulty dedicated computer display unit on the shuttle's flight deck. The display unit was changed out with no adverse effects on the countdown.

At press time, plans were on track for a launch Thursday, a month behind schedule, primarily due to the repair of the nozzle joints in Endeavour's solid rocket motors. Plans called for Mission Specialist Mike Gernhardt to use Endeavour's robot arm today to grapple and deploy the SPARTAN solar science satellite for a 48-hour freeflight in which the probe was scheduled to gather data on the properties of the solar wind emitted from the Sun and



NASA Photo  
**Endeavour rolls back for Hurricane Erin. Plans are ready in case Luis heads for Florida.**

## Headquarters team presents contract news

JSC employees, managers and contractors will have a chance to learn the latest on the Performance-Based Contracting initiative when a Headquarters team presents a four-hour awareness briefing Wednesday at the Gilruth Center.

NASA has pledged to the Office of Federal Procurement Policy that it will utilize performance work statements; formal, measurable performance standards and surveillance plans; best value selection procedures, fixed-price contracts, positive and negative incentives, and will apply performance-based contracting methods.

The NASA Chief Engineer, who is the agency's PBC leader, and the associate administrator for Procurement endorse PBC methods. NASA Administrator Daniel S. Goldin has indicated that NASA needs to realize up to \$200 million in savings from PBC through 1999.

Representatives from the offices of the Comptroller, Procurement, and Safety and Mission Assurance will fill in the details on the initiative from 8 a.m.-noon at the Gilruth.

The target audience is NASA and contractor (both current and potential), contracting officer technical representatives, engineers, technical writers, contract specialists, financial analysts, resource analysts, safety and mission assurance personnel, and anyone else involved in the management of NASA contracts.

The presentation also will be on the JSC Television Distribution System for on-site employees and omnidirectional microwave television for off-site contractor employees.

For more information, contact Barbara Kirkland at 483-4512.

National Aeronautics and Space Administration  
**Lyndon B. Johnson Space Center**  
 2101 NASA Road 1  
 Houston, Texas 77058-3696

NASA

Reply to Attn of: AA

**JSC OPEN HOUSE — A RESOUNDING SUCCESS!**

Dear Fellow Employees:

I want to express my most sincere appreciation for all your efforts in support of our Open House Saturday, August 26. Once again, the JSC team, both civil service and contractor employees, rose to the occasion to produce a community event which, I believe, has proven to be one of the Center's most appreciated and effective outreach programs. Our training facilities, laboratories, and work areas belong to the American people, and what a great way to "explore" the new frontier with our taxpaying customers by opening our doors and sharing the space experience!

I know the long hours and many days of planning and coordination each of you spent in preparation for the tours, briefings, and demonstrations was a great effort. It undoubtedly paid off, however, as upwards of 50 to 60 thousand friends and neighbors strolled or rode trams through the site; all of this in 95 degree plus temperatures—a show evidently not to be missed!

The calls and letters of thanks and well wishes continue to pour in, and I want each of you to feel the same excitement and pride I do, not just in our programs, but in our people, which is what we're about and what matters the most.

Thank you again for a tremendous job well done!

*George W. S. Abbey*  
 George W. S. Abbey  
 Acting Director

AC12/ACassell/9-1-95

**Acting JSC Director George Abbey issued the above letter to all JSC employees this week, thanking them for volunteering their time and effort to support the Aug. 26 JSC Open House, which was held in conjunction with Space Center Houston's Ballunar Liffoff Festival.**

## Safer surfaces go into service at Gilruth Center

By Kelly Humphries

Sports enthusiasts who use JSC's Gilruth Center facilities to stay in shape will have safer surfaces underfoot this week as both a new protected jogging/walking trail and a new padded vinyl gymnasium floor go into service.

The new jogging trail is 2.9 miles long and was designed to protect runners from the hazards of road-side exercise while providing a dry, raised running surface and interesting scenery. The new floor on the original Gilruth gym is designed to reduce the wear and tear on knees and ankles, as well as improve indoor visibility.

Both projects were completed using funds collected by the Employee Activities Association and no tax dollars were spent, said JSC Exchange Manager Teresa Sullivan. EAA gets its revenues from vending machine and Exchange Store sales and other employee events.

"The EAA has been saving its pennies and these are the first capital improvements in three years," Sullivan said.

The \$112,000 jogging trail loops from the northwest corner of the Gilruth Center parking lot, along the perimeter fence (going west, paralleling Space Center Boulevard) and connects to First Street in the Bldg. 300 area. From First Street, joggers can connect to Avenue B (going east) and then to Second Street, returning to their original starting point at the Gilruth Center. Mile markers are shown along the route so joggers/walkers may turn around at any point along the trail if shorter runs/walks are desired.

Don Holick of Center Operations' Facility Development Division designed the layout, coordinated the engineering and design work with Brown & Root and provided inspection for the work by League City Paving. The surface is a Type F asphalt similar to better tennis courts that provides a resilient, low-maintenance surface that has been elevated against flooding.

"Aside from providing an interesting new area in which to jog," Holick said, "the trail will promote safety by moving joggers in a direction which will have them facing traffic on Avenue B and Second Street."

Holick walked in front of the contractor's bulldozer as

Please see NEW, Page 4

## Galileo flies through intense dust storm

Scientists believe particles emanate from Jovian system

NASA's Galileo spacecraft is plowing through the most intense interplanetary dust storm ever measured as it closes in on Jupiter after a six-year journey to reach the giant planet, scientists report.

This is the latest and greatest of several large dust storms encountered by Galileo since December 1994, when the spacecraft was still almost 110 million miles from Jupiter. The spacecraft, launched in October 1989, is now about 39 million miles from the planet. Galileo will enter orbit around Jupiter on Dec. 7, 1995.

During the current dust storm, Galileo has counted up to 20,000 dust particles per day, compared to

the normal interplanetary rate of about one particle every three days, said Eberhard Grun, principal investigator on the spacecraft's dust detector experiment.

The particles, scientists say, apparently are emanating from somewhere in the Jovian system and may be the product of volcanoes on Jupiter's moon, Io, or could be coming from Jupiter's faint two-ring system. No larger than those found in cigarette smoke, they may be material from Comet Shoemaker-Levy 9, which hit Jupiter last year.

Scientists believe the particles are electrically charged and then accelerated by Jupiter's powerful magnetic field. They have calculated that

the dust is speeding through interplanetary space at velocities ranging from 90,000 to 450,000 miles per hour, depending on particle size. Even at such speeds, the tiny particles pose no danger to Galileo.

Galileo's dust detector, one of 10 science instruments on the spacecraft, is about the size of a large kitchen colander. It counts particle impacts and observes their direction and energy. When Galileo arrives at Jupiter this December, it will relay the data from the atmospheric probe that separated from the main spacecraft in July. Galileo will then begin a two-year, 11-orbit survey of Jupiter, its satellites, magnetosphere and the dust environment.



JSC Photo by Benny Bonavides  
**SAFETY AWARENESS—Industrial Hygienist Sean Keprta of the Health, Safety and Environmental Compliance Office displays personal protective equipment used in various areas at JSC during last week's Safety Awareness Day.**

JSC

## 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.

**Schlitterbahn:** Tickets cost \$17.80 for adults and \$15.30 for children 3-11.  
**Sea World:** Tickets cost \$23.50 for adults and \$16.25 for children 3-11.  
**Six Flags:** Tickets cost \$23.70 for a one day pass, \$31.75 for two day pass and \$20.30 supersaver.

**Astroworld:** Tickets cost \$18.10.

**Splashtown:** Tickets cost \$11.05.

**Fiesta Texas:** Tickets cost \$20.35 for adults and \$15.80 for children 4-11 and seniors over 55.

**Mooey Gardens:** Discount tickets for two of three different attractions: \$9.50

**Space Center Houston:** Discount tickets, adult, \$8.75; child (3-11), \$7.10.

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

**Movie discounts:** General Cinema, \$4.75; AMC Theater, \$4; Sony Loew's Theater, \$4.75.

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

**JSC history:** *Suddenly, Tomorrow Came: A History of the Johnson Space Center.* Cost is \$11.

**Upcoming Events:** University of Houston vs. Baylor Oct. 14. Tickets cost \$8. University of Houston vs. University of Texas Nov. 11. Tickets cost \$15.50.

JSC

## 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 NASA badge or yellow EAA dependent 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:** Dependents and spouses may apply for photo identification badges from 7 a.m.-9 p.m. Monday-Friday; and 8 a.m.-4 p.m. Saturdays. Dependents must be between 16 and 23 years old.

**Women's self defense:** Martial Arts training for Women only from 5-6 p.m. Tuesdays and Wednesdays. Cost is \$25 a month.

**Weight safety:** Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. Sept. 12 and Sept. 28. Pre-registration is required. Cost is \$5.

**Exercise:** Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays.

**Aerobics:** High/low impact class meets from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32.

**Aikido:** Martial arts class meets from 6-7 p.m. Tuesdays and Wednesdays. Cost is \$25 per month. New classes begin the first of each month.

**Ballroom dancing:** Cost is \$60 per couple. For additional information call the Gilruth Center at x33345.

**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.

JSC

## Swap Shop

### Property

Sale: Holly House townhouse, near Texas Medical Center, 2-2.5-2, 1648 sq ft, security guard + alarm sys, avail immed. Jack H. Cohen, 488-3171.

Sale: Clear Lake Forest, 4-2.5-2, glass walled den w/hi ceiling, FPL, formals, family room, new roof/paint, carpet/paper. 333-5300 or 326-2307.

Sale: Pasadena, 3-2-2, brick, 1600 sq ft, FPL, sec alarm, sprinkler sys, jacuzzi, CF & mini blinds, lg fenced yd, assum loan. x36324 or 477-1478.

Sale/Lease: Waterview condo, 3-2, W/D conn, pwr boat slip under roof w/lift, bills pd, boat slip extra, \$57k or lease \$890. 326-2221.

Sale: College Station townhouse, 2-1, \$35k or trade for waterfront cond. 486-5444.

Sale: Middlebrook, 3-2-2, oversized garage, 1,968 sq ft, \$99.5k. Mary Ann, 414-9132.

Rent: Alvin, house, 3-2-2, FR LRM, fence. 331-334. Rent: Beach house, Crystal Beach, Galveston Co, lg deck, 4-2, sleeps 12, wknd/dly rates. 486-1888.

### Cars & Trucks

'66 Mustang, 289, 4 spd, dual exhaust, good cond, \$3.5k. 331-9255.

'74 VW Thing, white, new engine/battery, good tires, \$2.5k obo. Dick, 335-6842 or 286-4444.

'85 Toyota 4-Runner, white, 4WD, 4 cyl, EFI, 5 spd, A/C, ex cond, \$5.3k. Nathan, x34308 or 332-9382.

'89 VW Jetta GL, Wolfsberg Ed, blue, 56k mi, 1 owner, ex cond, \$5.2k. Tom, x33651 or 280-8084.

'87 Ford Mustang convert, 4 cyl, auto, 100k mi, cruise, AM/FM/cass, \$4k obo. Cindy, 480-8116.

'87 Nissan 200-SX XE Hatchback, red, ex cond, auto, pwr, cruise, sunroof, A/C, AM/FM/cass, spoiler, 97k mi, 1 owner, \$4.2k obo. 282-3229 or 286-4547.

'84 Ford F-150 PU, good cond, 108k, orig mi, A/C, 4 spd, 6 cyl, new parts. Les, x30090 or 331-4589.

'87 Ford Mustang convert, 4 cyl, auto, 100k mi, cruise, AM/FM/cass, blue/wht inter, \$4k obo. Cindy, 480-8116.

'88 Jeep Wrangler, 83k mi, 6 cyl, 5 spd, A/C, new soft top, ex cond, \$7.5k. 334-7143.

'86 Buick LeSabre, 4 dr, dark blue, V-6, A/C, runs good, \$2.7k. Bob, x30143 or 286-7288.

'89 Mustang convert, loaded, 4 cyl, A/C, runs great, new top, CD, \$5k obo. Jeremiah, x32215 or 409-925-5657.

'70 Chevy truck, stock 5/8 ton, 402 B.B., new motor/front-end, brakes/tires, \$3k. Terry, 286-9123.

'90 Eagle Talon Tsi, all wheel drive, white, 94k mi, \$8k obo. 335-6798 or 522-7633.

'93 Mazda MX6 LS, 30k mi, hunter green, 5 spd, alarm, new tires, sunroof, ex cond, \$4.5k. 486-2414.

'90 Acura Legend, loaded, leather interior, 2 dr, dark grey, 85k mi, \$13.2k. 486-2414.

'89 Mercury Grand Marquis GS, 1 owner, loaded, ex cond, 75k mi, \$5.9k obo. 943-3684.

'91 Nissan Sentra XE, 4 dr, 5 spd, grey/grey, ex cond, 65k mi, \$6,250. John, x48050 or 482-7616.

'88 Buick Regal Custom, 67k mi, ex cond inside & outside, loaded, \$5k. George, x37732 or 488-5352.

'86 Chevy 5-10 PU, w/topper, V6, auto, A/C, cruise/tilt, clean inside & out, \$3.6k. 941-8950.

'90 Mazda RX-7 GTU, 67k mi, sunroof, red, great cond, \$8.6k. x36463 or 282-0596.

'86 Plymouth Reliant, 4 cyl, 4 dr, A/C, 83k mi, \$1.1k obo. Denise, x38056 or 286-1147.

### Cycles

'86 Honda Elite 80CC scooter, red/white, ex cond, electric starter, \$600 obo. 488-6521 or 488-7437.

'77 Kawasaki LTD 1000, lots of chrome & speed, extras, \$1.2k. 332-0746.

### Boats & Planes

'94 Yamaha II Waverunner w/reverse, few hrs, galvanized trailer, ex cond, cov & access, \$5k. 662-2164.

'87 Beneteau sailing sloop, 23.5', equipped for racing, 2 spinnakers, 9.9 hp Johnson OB, VHF radio, elect depthfinder, autotiller, Loran, safety equip, sleeps 4, head, sink, alcohol stove, \$14.5k. Ken, x31496.

Aluminum boat, 12' w/swivel seats, \$120 firm. 335-6197.

Windsurfer, ex cond; 9'2" Mistral Screamer short-board, Bic 6.2 meter slalom sail, Bic epoxy 2 pcs mast, Gaastro Boom, Chinook base & extension, sort rack transport for auto, \$800 firm. 864-4778.

Hobbie 18' Catamaran, sails, trailer, harnesses, \$950 obo. 474-4742.

Sailboat, 2 person, Sunfish type, w/trailer, needs work, \$200. Fred, x30770.

Boat propeller, 13.75 x 17 aluminum, \$50. Rusty, x35589 or 474-9140.

### Audiovisual & Computers

Laser Toner cartridges, 4 new & 6 refurbished, fit Laser Jet 1 & Laser Writer/Laser Writer Plus, \$20 ea. Jim, x41963 or 474-2368.

Sanyo AM/FM cassette Jambox, sport style yellow water resistant w/carrying strap, \$55; Mac Imagewriter II printer, \$75; JVC tape deck, \$45; Teac equalizer, \$50. Bobby, x42444 or 488-4382.

486 DX2-80, 8 Mb RAM, 540 Mb HD, 15" SVGA monitor w/ 1 Mb VRAM, 14.4 k fax/modem, \$975; 286 w/EGA monitor, printer, \$140. x35549 or 554-7104.

Free Apple IIe computer to any charitable group, 128k, duo disk, modem, timing card, lots of S/W. Jeff, x30687 or Diane, x35266.

TI-6400 computer, kids-teens S/W. Fred, 944-3523. Macintosh Classic, 2 Mb RAM, 40 Mb HD, w/HP Deskwriter printer, Microsoft Word 5.1, other S/W, ex cond, \$500. David, x39757 or 554-4947.

PC for beginner, Hewlett Packard Vectra, colored monitor, dot matrix printer, computer table, S/W & access, \$375. x30750 or 585-8162.

486DLC 40 MHz motherboard, Vesa local bus w/manual, runs Wings, \$75. x45131.

Citizen printer, "CSX-140" w/GSX color option, \$199. Magdi Yassa, x333-4760 or 486-0788.

Pair of huge Roadie concert spkr boxes, solid wood, ex cond, \$150/pr. George, x37732 or 488-5332.

Sy Quest 44 Mb SCSI drive, \$150; 6 44 Mb cartridges, \$25/ea; Radius color video card for Mac SE/30, \$65; Mac Pro Plus, extended Macintosh kybd, \$100. 480-3424.

Mac SE Computer, 4 Mb memory, 20 Mb HD, \$395.

### Today

**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

**Photo club meets:** The Bay Area Photo Club will meet at 7:30 p.m. Sept. 12 at the Faith Covenant Church. For more information call Kelly Prendergast at x37655.

**PSI meets:** Clear Lake/NASA Area Chapter of the Professional Secretaries International will meet at 5:30 p.m. Sept. 12 at the Holiday Inn on NASA Road 1. June Bennett Larsen will discuss 'How Do I Sound? Improving Voice and Articulation.' Certified Professional Secretaries can earn one CPS recertification point for this session. Tickets cost \$15 and includes dinner. For information call Elaine Kemp at x30556.

**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

**Toastmasters meet:** The Space-land Toastmasters will meet at 7 a.m. Sept. 13 at House of Prayer Lutheran Church on Bay Area Blvd. For additional information, contact Elaine

Trainor, x31034.

**MAES meets:** The Society of Mexican American Engineers and Scientists will meet at 11:30 a.m. Sept. 13 in the executive dining room in the Bldg. 3 cafeteria. For more information call Michael Ruiz at x38169.

**Astronomy seminar:** The JSC Astronomy Seminar will meet at noon Sept. 13 in Bldg. 31, Rm. 129. A video will be shown featuring R. Kenicutt discussing "HST Extragalactic Distance Scale." For more information, call Al Jackson at 333-7679.

**SSFF meets:** The Space Station Future Fighters will meet at noon Sept. 13 at the Freeman Memorial Library at 16602 Diana. For information call David Cochran at 335-0185.

**Cycle club:** The Space City Cycle Club will meet for a 25-mile ride beginning at 6 p.m. Sept. 13 at the University of Houston Clear Lake soccer field. For more information on this ride and weekend rides call Mike Prendergast at x45164.

**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

**Software meeting:** The Society for Software Quality will meet at 5:30 p.m. Sept. 14 at the Ramada Kings Inn on NASA Rd. 1. Robert Savely will discuss "State of the Art Artificial Intelligence." Cost is \$10 for members, \$14 for non-members. Reservations must be made by Sept. 11. For more information call Dot Royer at 335-5888.

**Public meeting:** The JSC Environmental Office will hold a public meeting at 7 p.m. Sept. 14 in Bldg. 111. Topics include changes to the hazardous waste storage permit. For information call Sandra Parker at x33119.

**Airplane club meets:** The MSC Radio Control Airplane Club will meet at 7:30 p.m. Sept. 14 at the Clear Lake Park Community Bldg. For more information call Bill Langdoc at x35970.

**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.

### Sept. 19

**NTA meets:** The National Technical Association will meet at 6:30 p.m. Sept. 19 at Texas Southern University School of Technology Rm. 316. For more information call Carlington Stewart at x31404.

### Sept. 20

**Toastmasters meet:** The Space-land Toastmasters will meet at 7 a.m. Sept. 20 at House of Prayer Lutheran Church on Bay Area Blvd. For additional information, contact Elaine Trainor, x31034.

**Astronomy seminar:** The JSC Astronomy Seminar will meet at noon Sept. 20 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information, call Al Jackson at 333-7679.

**Cycle club:** The Space City Cycle Club will meet for a 25-mile ride beginning at 6 p.m. Sept. 20 at the University of Houston Clear Lake soccer field. For more information on this ride and weekend rides call Mike Prendergast at x45164.

### Property

Sale: Holly House townhouse, near Texas Medical Center, 2-2.5-2, 1648 sq ft, security guard + alarm sys, avail immed. Jack H. Cohen, 488-3171.

Sale: Clear Lake Forest, 4-2.5-2, glass walled den w/hi ceiling, FPL, formals, family room, new roof/paint, carpet/paper. 333-5300 or 326-2307.

Sale: Pasadena, 3-2-2, brick, 1600 sq ft, FPL, sec alarm, sprinkler sys, jacuzzi, CF & mini blinds, lg fenced yd, assum loan. x36324 or 477-1478.

Sale/Lease: Waterview condo, 3-2, W/D conn, pwr boat slip under roof w/lift, bills pd, boat slip extra, \$57k or lease \$890. 326-2221.

Sale: College Station townhouse, 2-1, \$35k or trade for waterfront cond. 486-5444.

Sale: Middlebrook, 3-2-2, oversized garage, 1,968 sq ft, \$99.5k. Mary Ann, 414-9132.

Rent: Alvin, house, 3-2-2, FR LRM, fence. 331-334. Rent: Beach house, Crystal Beach, Galveston Co, lg deck, 4-2, sleeps 12, wknd/dly rates. 486-1888.

### Cars & Trucks

'66 Mustang, 289, 4 spd, dual exhaust, good cond, \$3.5k. 331-9255.

'74 VW Thing, white, new engine/battery, good tires, \$2.5k obo. Dick, 335-6842 or 286-4444.

'85 Toyota 4-Runner, white, 4WD, 4 cyl, EFI, 5 spd, A/C, ex cond, \$5.3k. Nathan, x34308 or 332-9382.

'89 VW Jetta GL, Wolfsberg Ed, blue, 56k mi, 1 owner, ex cond, \$5.2k. Tom, x33651 or 280-8084.

'87 Ford Mustang convert, 4 cyl, auto, 100k mi, cruise, AM/FM/cass, \$4k obo. Cindy, 480-8116.

'87 Nissan 200-SX XE Hatchback, red, ex cond, auto, pwr, cruise, sunroof, A/C, AM/FM/cass, spoiler, 97k mi, 1 owner, \$4.2k obo. 282-3229 or 286-4547.

'84 Ford F-150 PU, good cond, 108k, orig mi, A/C, 4 spd, 6 cyl, new parts. Les, x30090 or 331-4589.

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'89 Mustang convert, loaded, 4 cyl, A/C, runs great, new top, CD, \$5k obo. Jeremiah, x32215 or 409-925-5657.

'70 Chevy truck, stock 5/8 ton, 402 B.B., new motor/front-end, brakes/tires, \$3k. Terry, 286-9123.

'90 Eagle Talon Tsi, all wheel drive, white, 94k mi, \$8k obo. 335-6798 or 522-7633.

'93 Mazda MX6 LS, 30k mi, hunter green, 5 spd, alarm, new tires, sunroof, ex cond, \$4.5k. 486-2414.

'90 Acura Legend, loaded, leather interior, 2 dr, dark grey, 85k mi, \$13.2k. 486-2414.

'89 Mercury Grand Marquis GS, 1 owner, loaded, ex cond, 75k mi, \$5.9k obo. 943-3684.

'91 Nissan Sentra XE, 4 dr, 5 spd, grey/grey, ex cond, 65k mi, \$6,250. John, x48050 or 482-7616.

'88 Buick Regal Custom, 67k mi, ex cond inside & outside, loaded, \$5k. George, x37732 or 488-5352.

'86 Chevy 5-10 PU, w/topper, V6, auto, A/C, cruise/tilt, clean inside & out, \$3.6k. 941-8950.

### 488-7771.

Phone Mate 8400, answering machine, \$45. Faye, 470-1455.

Pioneer RT707 reel-to-reel tape recorder; Apple II GS computer sys, printer, best offer. 943-3685.

NEC P6 Dot matrix printer, \$50 obo. 488-4412.

486DX2/66 w/256k cache & intel processor, 8 Mb RAM, 540 Mb HD, VVLB IDE-I/O card, 1 Mb VLB video card, 14" SVGA. 28 DP, 1.44 & 1.2 Mb floppy drives, mid-tower case, 101 kybd, mouse, \$1,099. 332-4466.

### Musical Instruments

Clarinet, w/case, Normandy IV, ebony, all wood, ex cond, \$350 obo. Bobby, x37768 or 991-2396.

Baldwin Hamilton piano w/ivory velvet covered bench, ex cond, dk walnut finish. x31833 or 992-2248.

### Photography

Konica 135mm/3.2f, 50mm/1.7f, 28mm/3.5f Teleconverter, ex cond, \$90/all. 488-4412.

### Pets & Livestock

Young Zebra Finches, cheerful, \$10 ea. Kathi, x38674 or 332-2650.

Free 5yr blonde cocker spaniel, very loving. Bob Wirt, x39376 or 332-4756.

Moving, 2 male cats, neutered, 2 female dogs, spayed & 1 male dog neutered. 291-9401.

Cockatiel bird handfed w/antique cage, \$60. 480-0422.

Umbrella cockatoo, 7 yr male, hand fed w/cage, \$1.5k or trade for piano or keyboard of comparable value. Larry, x47004 or Shirley, 930-8393.

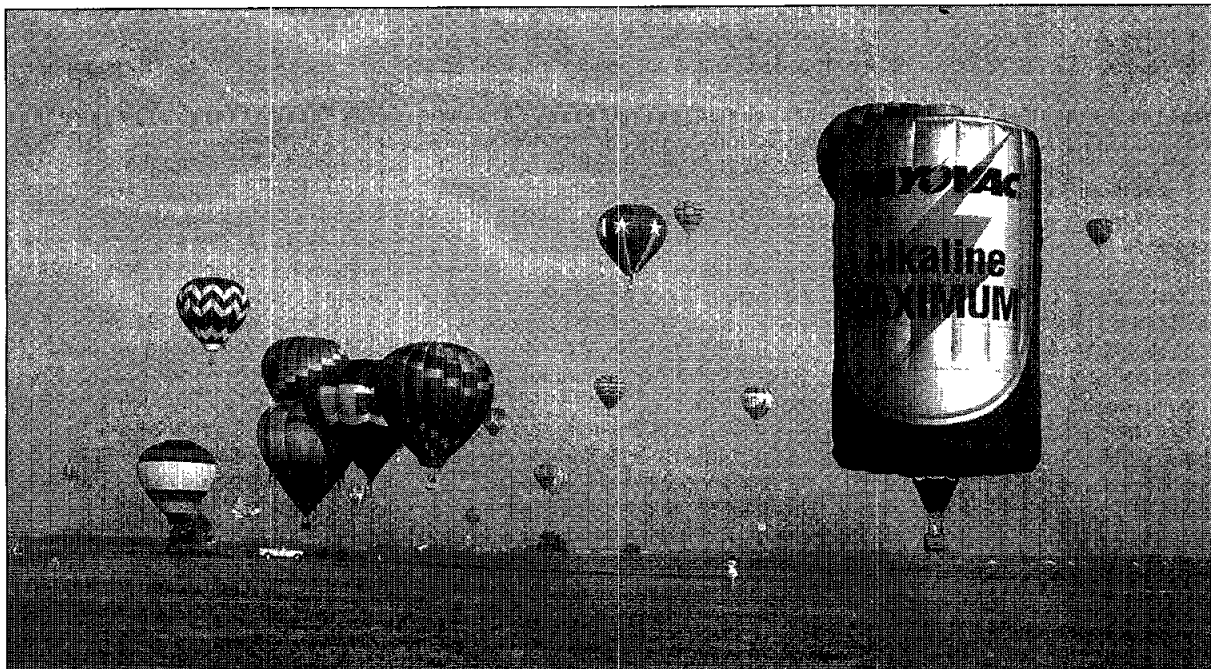
Free female black Lab, loving, can do few tricks. Dan/Jane or Adelle, 383-3747.

### Household

Upright freezer, ex cond, \$700. 482-6650.

Daybed, white & brass, \$35





# Sharing Space Science



By Karen Schmidt

The annual Ballunar Festival held last month at Rocket Park brought out area residents to view hot air balloon competition and get an insider's look at facilities located through out the center.

Space Center Houston officials estimated more than 100,000 people visited the Clear Lake area during the three day festival, the largest balloon festival in the Houston area.

More than 70 balloons competed during the weekend competition vying for points to win the overall championship. Pilots tossed bean bags to a target on the ground to

score cumulative points over the festival weekend. The Rayovac battery balloon collected the most points overall and won the championship. While several colorful balloons competed during the three day festival, many were not typical hot air balloon shape. The Clear Lake area was treated to a United Van Lines moving truck, a Famous Footwear shoe and an Entex blue flame. The highlight of the weekend festival was the debut of the full-scale space shuttle balloon. Measuring 92 feet across and 157 feet tall the shuttle balloon was tether to the ground most of the weekend and made its first flight across the competition field on Sunday.

In conjunction with the festival, JSC held an open house on Saturday. Visitors were treated to tours of several buildings, a variety of demonstrations, presentations by current and former astronauts and flight directors and autographs by astronauts.

Both children and parents were able to take a break from the heat to make gliders, colors pictures and make rockets in Teague Auditorium. The "seltzer rockets" was one of the

more popular activities where children made rockets from construction paper and film canisters, a volunteer poured water into the canister and placed a seltzer tablet inside. Once lids were in place, the children set them on the ground and pressure built to "launch" the rockets about five feet in the air.

Through out the weekend, guest enjoyed sky-diving exhibitions, hang-gliding performances, entertainment, rides, an arts and crafts show and foods of all types.

Several photographers capture memories of the first open house and festival.

From top to bottom, left to right:

1) The Rayovac hot air balloon leads the pack as pilots tried to maneuver their balloons towards a target in order to toss a bean bag to score cumulative points over the festival weekend. More than 70 balloons competed in the weekend competition.

2) Visitors view negatives on light tables that were located in the television studio in Teague.

3) Children and parents take a break from the heat to make gliders, colors pictures and make seltzer rockets in Teague Auditorium.

4) A little guest checks out lunar rocks in Teague.

5) The Teague Auditorium hosted several exhibits and presentations.

6) Young visitors check out the spacesuit display in Bldg. 7.

7) Visitors to Bldg. 7 check out soil and plant samples.

8) A volunteer dons a spacesuit to show guests how spacesuit systems work.

9) Mark Dillard mounted his camera on his hang glider wing and captures Space Center Houston from above.

10) Children and adults prepare their "seltzer rockets" for launch outside Teague. □

# NASA scientists discover first natural LASER in space

The first "natural" laser in space was detected by scientists on board NASA's Kuiper Airborne Observatory as they trained the aircraft's infrared telescope on a young, very hot, luminous star in the constellation Cygnus.

Discovery of this naturally occurring laser provides scientists with a powerful tool for probing the conditions in disks of gas and dust surrounding young stars, according to Principal Investigator Vladimir Strel'nitski of the Astrophysics Laboratory, National Air and Space Museum, Washington, D.C., who made the discovery. Scientists believe that many of these circumstellar disks are regions where planets are forming.

The laser is created as intense ultraviolet light from the star "pumps" or excites the densely packed hydrogen atoms in the gaseous, dusty disk

surrounding the star. Then, when the infrared light shines on the excited hydrogen atoms, it causes the atoms to emit an intense beam of light at exactly the same wavelength, creating the circumstellar laser, according to Sean Colgan of the Search for Extraterrestrial Intelligence Institute, Mountain View, Calif., a co-investigator in the discovery.

The discovery was made as the world's only flying observatory returned to Moffett Field, Calif., from observing missions based in Hawaii. Co-investigators in the discovery are Howard A. Smith, also of NASM; Michael R. Haas and Edwin F. Erickson, Ames Research Center, Mountain View, Calif.; and Colgan.

Strel'nitski used a sensitive liquid helium-cooled spectrometer attached to the KAO telescope to search for selected "lasing lines" in the infrared

region of the spectrum between 50-500 microns (100 to 1000 times the wavelength of visible light).

The natural laser was detected at 169 microns as the scientists viewed the nearly edge-on gas and dust disk surrounding the peculiar star known as MWC 349. The "lasing line" has an intensity six times brighter than non-amplified spontaneous emissions at the same wavelength, Strel'nitski said.

The existence of natural lasers was predicted more than 15 years ago, following the successful amplification of both microwave and visible light wavelengths in laboratory experiments, and the discovery of amplified microwaves in space.

American physicist and nobel laureate Charles Townes first proposed the practical amplification of electromagnetic radiation by stimulated

emission in 1951. In 1954, his group at Columbia University created the first laboratory amplifier of microwaves, calling it a MASER (Microwave Amplification by the Stimulated Emission of Radiation.) In 1960, Theodore Maiman at Hughes Research Laboratories developed a device to amplify visible light, creating the first LASER (Light Amplification by Stimulated Emission of Radiation.)

Not long after the invention of laboratory masers and lasers, the first natural masers were discovered in interstellar and circumstellar gas clouds. Townes, a frequent investigator onboard the KAO, was among the discoverers of the first strong astrophysical water masers.

Astrophysical masers, due to their extremely high intensity and spectral purity, are valuable tools in studies

of the birth and death of their stars. Astrophysical masers can be observed from the ground with special instruments, but the major part of the infrared spectrum where potential lasers might be seen is hidden from the ground observer by Earth's absorbing atmosphere.

This long-awaited discovery of a natural laser was made on the last scheduled flight of the KAO instrument — the Ames Cryogenic Grating Spectrometer. The instrument permits sensitive detection of emission from atoms and molecules throughout the mid- and far-infrared spectral domain.

The KAO is scheduled for retirement this fall. NASA plans to begin development of the follow-on airborne observatory SOFIA in 1996, with first flight scheduled for the year 2000.

## New trail paves way for safety

(Continued from Page 1)

it went through woods to make sure none of the large trees were removed while an interesting circuit was devised. Concrete benches will be installed at the beginning and 1 mile marks.

"Joggers should be aware of the safety rules that are posted on a new sign at the beginning of the trail and be conscious of snakes and other wild animals in the woods."

"I've probably put in 50 miles on it so far," said Duane Ross, a longtime JSC jogger. "I've been running out here for so many years that to have a new place to run is really enjoyable. They did a good job; it is plenty smooth and plenty wide."

"It's great," added Jimmy Gilbert, a flight software programmer who has racked up many a mile at JSC and 30 miles on the new track. "I really appreciate the shade. It's nicely marked, with no sharp turns."

Because of the remoteness of the trail, users are also encouraged to:

- Run with a partner;
- Drink plenty of fluids before starting;
- Stay on the pavement;
- Avoid wearing headphones and running after dark;
- Be considerate of other users.

The new, off-white indoor court surface in the original gymnasium sports a pure vinyl wear-layer combined with a pure vinyl closed-cell foam backing which is reinforced with a fiberglass inter-layer. It's a major improvement for basketball and volleyball players, as well as dancers, who disliked the epoxy and concrete surface of the old gymnasium. The lighter color, which replaces a dark blue, also brightens the room and enlarges its appearance.

"I think it looks wonderful, it looks so bright," said Valerie Marburger of the Center Operations Business Management Office, the contract specialist who solicited bids on the new floor, which was laid by Consolidated of San Antonio. She said the selection and installation went smoothly, partly because the bids were sent out two months in advance in an effort to avoid competition with schools, which also schedule major renovations in the summer. Installation of the \$27,450 surface started about Aug. 1 and was completed in a couple of days.

Guy King, EAA vice president for athletics, and Sam Tanksley, Facility Development Division project engineer, led the effort to determine the best, most economical surface.

"I basically picked for feel. It felt soft, but it was hard enough to bounce a basketball on," King said. "We had a lot of complaints at the Rec Center about the floor being so hard. We were playing a lot of volleyball and people were complaining about it being hard on their knees."

"This is a major improvement over the previous epoxy-painted concrete floor, which was over 15 years old," Sullivan said. "Hopefully, our sports-enthusiasts will enjoy it."

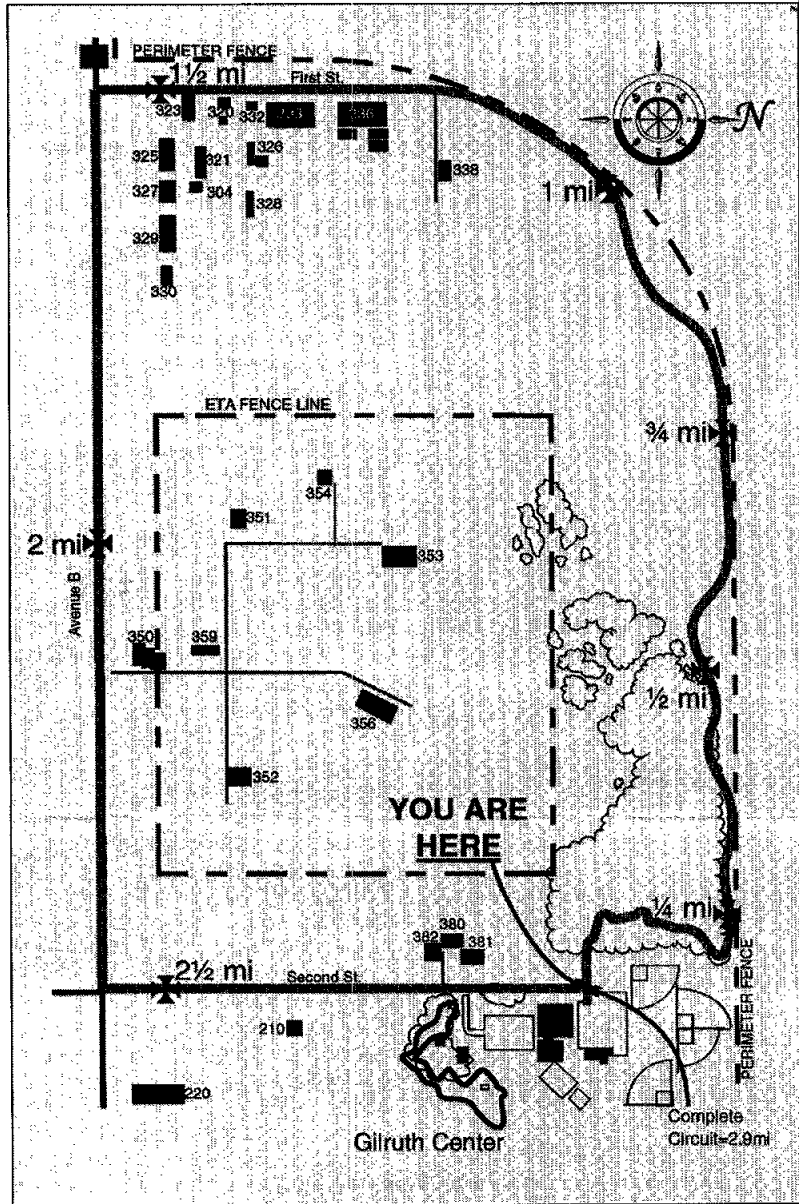


Illustration by Laurie Buchanan

This map shows, on the right, the new wooded jogging/walking trail at the Gilruth Center. The trail connects to existing routes already in use by runners along Avenue B and Second Street.

## Cleave manages ocean studies project at Goddard

Dr. Mary L. Cleave has been appointed Manager of the Sea-viewing Wide Field-of-view Sensor Project in the Laboratory for Hydrospheric Processes in the Earth Sciences Directorate at the Goddard Space Flight Center.

Cleave held graduate research, research psychologist and research engineer positions in the Ecology Center and the Utah Water Research Laboratory at Utah State University in Logan, Utah from 1971 to 1980.



Cleave

Cleave begins her new assignment after working for four years in various Earth science projects including SeaWiFS. Before coming to Goddard, Cleave worked at JSC, serving as a mission specialist on two space shuttle missions, STS-61B in November 1985 and STS-30 in May 1989. During STS-30, she deployed the Magellan Venus exploration spacecraft which subsequently mapped almost the entire surface of Venus starting in August 1991.

Before her assignment as a mission specialist which began in 1980,

Among the awards Cleave has received throughout her career are: Outstanding Young Women of America, 1980; Utah State University Distinguished Alumna Award, 1986; and NASA Space Flight, Exceptional Service and Exceptional Achievement medals.

She is a graduate of Great Neck (N.Y.) High School and earned a bachelor of science degree from Colorado State University. Her advanced degrees in microbial ecology and civil and environmental engineering were obtained at Utah State University.

## New flight control room open for STS-69 viewing

The new Mission Control Center viewing room will be open to JSC and contractor badged employees and their families during portions of the STS-69 mission.

Based on a Sept. 7 launch, employees will be allowed to visit the MCC from 11:30 a.m.-2:30 p.m. Monday, and from 1-5 p.m. Saturday.

Employees must wear their badges and escort family members

through the lobby on the south side of Bldg. 30S. Children under 5 will not be permitted. No flash photography or loud talking will be permitted at any time.

Because of the dynamic nature of shuttle missions, viewing hours may be changed or canceled without notice. For the latest information on the schedule, call the Employee Information Service at x36765.

## Laptop computers available for travelers going to Russia

To support the increasing need for travel to Russia to support Phase 1 mission and International Space Station work, several laptop computers are being made available for official government use by NASA personnel.

Requests for these computers should be coordinated through the Administrative Officer in the Moscow Technical Liaison Office at

205-961-6341.

Requests should contain the traveler's name and organization code, planned arrival and departure dates, and working group or meeting supported.

The laptops come with 16 megabytes of random access memory, a carrying case, an ethernet/modem board, a recharger, an extra battery, a world-wide power adapter,

Microsoft Office, Designer, Microsoft Mail Remote and Virus Safe.

An electronic mail dial-in capability has been established by Marshall Space Flight Center's Program Support Communications Network personnel and user guides are available from the Information Systems Directorate's Help Desk at x34800.

Users are responsible for obtain-

ing MS Mail instructions from the Help Desk at least two weeks prior to departure. Problems encountered with electronic mail should be called directly to MSFC's Network Control Center at 205-544-1771.

Additional laptops will be made available as required. For questions or comments regarding this policy, please contact Jim Heldt at x38531.

## Space walk to wrap up STS-69 activities

(Continued from Page 1) the disruptive effect it has on Earth-based communications.

Once SPARTAN is retrieved, the astronauts will turn their attention to the deployment of the 2 1/2 ton Wake Shield Facility, a saucer-shaped satellite that will fly free of Endeavour for 48 hours as well, using a chemical process called epitaxy to grow thin films in a carousel on the backside, or wake side of the satellite in a nearly perfect vacuum. Those films will be analyzed postflight for future use in semiconductors and other advanced electronic gear.

Gernhardt will join Payload Commander Jim Voss in Endeavour's cargo bay two days before landing for a six-hour space walk to evaluate thermal improvements made to their

bulky space suits and to test tools and techniques which will be used in the assembly of the International Space Station.

While work continued to clear the way for Endeavour's launch, technicians pressed ahead with efforts to launch Columbia in late September on the STS-73/USML-2 mission.

Repairs were made to the nozzle joints in Columbia's solid rocket motors on Launch Pad 39B during the week's delay to Endeavour's liftoff. The seven USML-2 astronauts, led by Commander Ken Bowersox, are scheduled to fly to KSC next week for their countdown dress rehearsal on Sept. 12.

In a maintenance hangar at KSC, engineers were scheduled to install the Russian-built docking module into

the payload bay of Atlantis this week in advance of the shuttle's launch in late October or early November on STS-74, the second mission to dock the shuttle to the Russian Space Station Mir. The eight-day mission will be highlighted by the permanent attachment of the docking module extension to the Mir's Kristall science module to facilitate future shuttle linkups to the Russian space outpost.

Discovery is still scheduled to be ferried out to Palmdale, Calif., atop a modified 747 carrier jet in late September for nine months of major modifications that will include installation of an external airlock for future space station assembly flights and the addition of a fifth set of cryogenic fuel tanks to provide electrical capability for long-duration shuttle flights.

## Space News Roundup

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