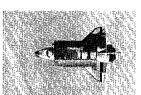
Lyndon B. Johnson Space Center Houston, Texas



Manifest update The latest changes to the space shuttle manifest are listed in handy chart form. Chart



Fancy footwork

These prototype boots will be made in-house for walking on the Moon or Mars. Photo on Page 4.

Space News Roundup February 22, 1991 Space News Roundup No

February 22, 1991

Cracks in hinge supports threaten launch

By James Hartsfield

Discovery's STS-39 launch will wait in the wings, although no one knows how long, as engineers attempt to troubleshoot cracks found early this week in hinge supports on the spacecraft's two fuel line doors.

Basically, there are three options for Discovery. First, if analysis and tests show it's safe, the spacecraft could be launched as is. Second, a repair could be performed at the launch pad. Third, Discovery could be rolled back to the Vehicle Assembly Building (VAB), taken off the external tank and solid rocket boosters, and moved into its processing hangar for extended repairs. There was no leading option among the three as of Thursday.

Since the cracks were discovered, work toward the launch has proceeded uninterrupted, including the Terminal Countdown Demonstration Test, a dress rehearsal of the launch countdown performed by the crew and launch controllers, completed Wednesday.

on Page 3.

Engineers may decide to perform a test on Columbia to aid them in choosing the proper course of action. The

test will modify the support on one hinge of Columbia's fuel line doors to simulate the effect of an almost total loss of the cracked supports on Discovery. If Columbia's doors are not hampered in closing without the support, it may

show that the problem on Discovery is less severe than it appears.

The test will try to determine if the doors would work even if there were an almost complete failure of the cracked area. If the test on

> Columbia is performed, it is not expected to interfere with preparations for that spacecraft's May launch on STS-40.

The tile-covered orbiter umbilical doors are latched outward during launch to allow the fuel lines from the external tank to connect with the orbiter at the two 17inch-disconnects. Following separation of the orbiter and external tank about 8 minutes into the launch, actuators close and seal the hinged doors to protect the cavity from the heat of reentry.

Three cracks have been found on Discovery. two of which appear to be much more significant than the third. The two larger cracks are in a one-eighth-inch-thick metal plate on which supports are mounted for one part of the hinge assemblies. Each door has two such hinges, one forward and one aft. On the left door only one has a support area crack. On the same support on the right door, one large crack is apparent. On the right door's other hinge, there is a very small crack in the same area that shows no signs of stress or growth.

Please see DISCOVERY, Page 4



JSC engineer Chatwin Lansdowne answers one of many questions posed by the students in this second grade class at College Park Elementary School. Lansdowne, a student himself at Wichita (Kan.) State University, was among more than 150 JSC engineers who talked to students in classrooms throughout the Houston area.

Space-age learning tools available

humans into space for more than 30 years, space flight is still new to middle school children and basic questions are very much on their minds.

With the help of the astronaut corps and a number of other organizations, NASA is producing space-age learning tools to relate space flight and other scientific concepts to teachers and students at all grade levels and subject areas.

JSC Director Aaron Cohen and the STS-41 crew previewed the first of these products for employees Tuesday. "Space Basics," the first in a new Teague Auditorium.

release this video during National Engineers Week, when NASA engineers from coast to coast are going into schools to promote our education line of these types of videos that we goal of encouraging students from can use to help educate the young elementary through graduate school to prepare themselves for careers in science, engineering and technology," Cohen said in introducing the preview.

'Space Basics" was videotaped on location at JSC, Kennedy Space

Although NASA has been sending series of "Liftoff to Learning" educa- Center, and in orbit on STS-41. The tional video products, was shown in 21-minute video combines the answers to basic questions about 'It is especially appropriate to orbital science with exciting space photography and colorful special effects.

> "Hopefully, it's the start of a long folks in our country," said Chief Astronaut Dan Brandenstein.

Accompanying the tape is an eightpage video resource guide for teachers that provides background information on rockets and orbits as

Please see LEARNING, Page 4

JSC engineers share wonders in classrooms

By Pam Alloway

JSC engineer Chatwin Lansdowne had barely walked into the second grade classroom at College Park Elementary School when two arms shot into the air.

"I heard about NASA on my TV," said 8-year-old Derrick Hayden.

"How old are you?" chimed in classmate Liliana Hernandez, also 8

years old. Those were the first of a myriad of questions the 18 youngsters had for Lansdowne throughout his one hour demonstration of sound wave patterns. Lansdowne was one of more than 150 JSC engineers who taught classes in 10 area school districts as part of National Engineers Week. College Park Elementary School is in Deer Park but is part of the LaPorte

Independent School District. Being in a classroom is old hat to Lansdowne although the classrooms he's accustomed to house larger desks. This is his third term as a coop student at JSC and away from his home base in Wichita, Kan. Lansdowne is working on a master's degree in engineering at Wichita State University. His current term at JSC began in January and will end in August.

Using a trumpet, a keyboard, and a microphone, Lansdowne demonstrated how sound waves change their patterns depending upon the sounds being made. The demonstration proved an instant hit with the restless youngsters who were as enthralled with talking into a microphone as they were with the oscilloscope that showed the sound wave

"Sound is a vibration," Lansdowne told the class. "Put your fingers on your throat and say something and you can feel vibrations.'

Eighteen faces lit up as the students grasped their throats and "felt" sound.

Lansdowne, who works in the Tracking and Communications Division of the Engineering Directorate, told the youngsters that people in his office work on the shuttle's radio equipment. He also talked about communication satellites.

"For instance, if we wanted to talk to someone in China who is on the other side of the world, we don't have telephone cables that reach that far so we use satellites," Lansdowne said.

"What's engineering?" asked one student.

Engineers take science and apply it to hopefully make life better, Lansdowne said. "I use a lot of math and science in my job."

Dawn Lewis, who teaches the second grade class, said she enjoyed the talk as much as her students.

"I explained what engineering was in a very general way," Lewis said. 'The kids were definitely looking forward to this.'

Earlier that day Tom Costello, another JSC engineer who also works in Engineering's Tracking and Communications Division, visited Janelle Barclay's second grade class. Costello talked to the students about engineering and how underwater activities could relate to space.

"I also tried to get them thinking about inventing things and that Please see **ENGINEERS**, Page 4

Pool earns Rotary 1991 Stellar Award

Dr. Sam Pool, chief of the Medical Sciences Division, is one of four people selected for the 1991 Stellar Awards sponsored by the Rotary National Award for Space Achievement Foundation.

The Stellar Award honorees are selected annually for their contributions to the space program throughout their careers. Award recipients will be recognized at Feb. 28 banquet at which JSC Director Aaron Cohen will receive the National Space Trophy.

Pool was honored for his work in identifying many of the medical problems associated with the weightlessness of space, according to the announcement.

Please see POOL, Page 4

Why wait?

No traffic jam at second gate

By Kelly Humphries

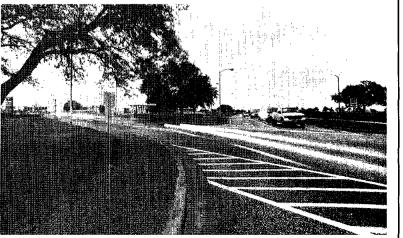
JSC Security Operations Branch Chief Bob Gaffney can't explain it, but JSC employees apparently would rather wait in line at the center's main gate than drive right in through the next NASA Road 1 gate.

Security began opening the second NASA Road 1 gate at 6:45 a.m. about three weeks ago in an effort to alleviate early morning traffic tie-ups at the main gate.

But Gaffney says the congestion hasn't eased since the second gate began opening early.

Gaffney encourages drivers to break out of their early morning habit and use the Third Street gate across NASA Road 1 from Upper Bay Rd. — when the left turn lane at the main gate is backed up. There is one restriction, he said: Employees entering through the Third Street gate must be in a car with a valid vehicle pass.

If there is a reason employees prefer using the main gate, Security would like to know about it. Call Charlyne Minick at x34068 if you'd like to comment on the early morning main gate traffic.



JSC Photo by Robert Markowitz

As this photograph shows there's no waiting at the second NASA Road 1 gate that now opens at 6:45 a.m. Employees at the stop sign are those who have waited to enter through the main gate.

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m. to 2 p.m. weekdays.

General Cinema (valid for one year): \$4 each.

AMC Theater (valid until May 1991): \$3.75 each.

Loew's Theater (for use two weeks after movie's premiere): \$4.

Rockets vs. 76ers (7:30 p.m. March 9, Summit): \$5.50

Thermographed, raised lettering and logo business cards can be ordered by civil service employees, 250 cards per set. Old logos-\$21; new logos-\$18.

JSC

Gilruth Center News

Sign up policy-All classes and athletic activities are first come, first served. To enroll, you must show badge or EAA card and pay at the Gilruth Center. Classes tend to fill up four weeks in advance. For more information, call x30301

EAA badges—Dependents and spouses may apply for a photo I.D. 6:30-9 p.m.

Defensive driving-Course is offered from 8 a.m.-5 p.m., April 20 and May 18.

Aerobic dance—Eight-week session meets 5:15-6:15 p.m. Tuesday and Thursday

Exercise class—Class meets 5:15-6:15 p.m. Monday and Wednesday nights.

Weight safety-Required course for employees wishing to use the Gilruth weight room. The next class will be from 8-9:30 p.m. Feb. 28. Cost is \$4.

Country and western dance-Intermediate class meets Monday nights for six weeks beginning March 4. Cost is \$20.

Personal safety—Brief lecture on personal safety awareness. Talk begins at 5 p.m. March 13 in the Gilruth Center ballroom.

Ballroom dance—Eight-week class will feature beginner and advanced instruction from 7-8:15 p.m., and intermediate instruction from 8:15-9:30 p.m. Thursdays, beginning March 7. Cost is \$60 per couple.

Softball sign-ups-Softball league sign-ups will be the week of Feb. 25. Call the Gilruth for details.

JSC

Technical Library News

These new publications are available in the JSC Technical Library, Bldg. 45, Rm. 100.

The Mind's Eye: Readings from Scientific American. BF241.M561986.

The Psychology of Achievement (sound recording). Brian Tracy, 1984. BF637.S8

Oceanography from the Space Shuttle. University Corportation for Atmospheric Research and the Office of Naval Research, U.S. Navy, 1989. GC10.4.A8 033 1989.

Dates & Data

Today

AFCEA meets—The Armed Forces Communication and Electronics Association Houston Space Chapter will meet at 11:30 a.m. Feb. 22 at the Lakewood Yacht Club, 2425 NASA Road 1. Bill Huffstetler, manager of JSC's New Initiatives Office, will speak. For more information, call Veronica Mullins or Tammy Williams at 283-

Supercomputer conference—Jon Erickson, chief scientist in JSC's Automation and Robotics Division, will be a featured speaker at a Supercomputer Leadership Conference on Feb. 22 in Houston. The conference is sponsored by the Quantitative Technology Corp. Research Institute and the Oregon Advanced Computing Institute. For more information contact Catherine Verrenti (503) 626-3081.

Cafeteria menu-Special: Salisbury steak. Entrees: fried shrimp, deviled crabs, ham steak. Soup: seafood gumbo. Vegetables: buttered carrots, green beans.

Monday

Cafeteria menu-Special: hamburger steak. Entrees: beef Burgundy over noodles, fried chicken. Soup: cream of chicken. Vegetables: buttered corn, carrots, green beans.

Tuesday

BAPCO meets—The Bay Area PC Organization will meet at 7:30 p.m. Feb. 26 at the League City Bank & Trust. For more information call Earl Rubenstein, x34807, or Tom Kelly, 996-5019.

Cafeteria menu-Special: turkey and dressing. Entrees: baked meatloaf, liver and onions, barbecue spare ribs. Soup: beef noodles. Vegetables: Spanish rice, broccoli, buttered squash.

Wednesday

Laptop showcase—The Information Systems Directorate will sponsor a notebook laptop showcase from 10 a.m-4 p.m. Feb. 27 in Bldg. 12, Rms. 112, 254 and 256. For more information call the Product Demonstration Facility at x37572.

Astronomy seminar-The JSC Astronomy Seminar will be held at noon Feb.27 in Bldg. 31, Rm. 129. For more information contact Al Jackson

BANN program—The Bay Area NAFE (National Association of Female Executives) Network will preşent a program and luncheon buffet at 11:30 a.m. Feb. 27, at the South Shore Harbour Country Club. Al Garza will discuss self-defense and give demonstrations. Cost is \$10 members, \$12 non-members. Program only cost is \$3 members, \$5 non-members, Reservations deadline is Feb. 22. For information contact Sharon Westerman, x68927. or Wanda Spain, x31025.

Cafeteria menu-Special: Spanish macaroni. Entrees: broiled fish, tamales with chili. Soup: seafood gumbo. Vegetables: ranch beans, beets, parsley potatoes.

Thursday

Space Trophy banquet-The National Space Trophy will be formally presented to JSC Director Aaron Cohen at the Rotary National Award for Space Achievement Foundation's annual banquet at 8 p.m. Feb. 28 at the Houston Hyatt Regency-Downtown. Retired Lt. Gen. Thomas Stafford, former astronaut and now head of the Outreach Program for the Space Exploration Initiative, will speak. For more information contact John Francis or Dana Heard at 333-5986.

AIAA meets—The American Institute of Aeronautics and Astronautics will meet at 5:30 p.m. Feb. 28 at the Gilruth Center. Richard MacLeon, president of the United States Space Foundation, will speak about space education in the foundation's April symposium. For information, call 333-6064, 283-4214, 283-6000 or 282-3160.

NCMA meets-The National Contract Management Association's Space City-Houston Chapter will meet at 11:30 a.m. Feb. 28 at the Gilruth Center. Maj. Gen. Charles Henry, commander of the Defense Contract Management Command, will speak. Contact Lucy Yates, x31864, or Theresa Borrego, 282-6679, for more information or reservations, due by 4 p.m. Feb. 22.

JARC meets—The JSC Amateur Radio Club will meet at noon Feb. 28 in Bldg. 16, Rm. 253. Call Dale Martin, x37740, for more information.

SCS meets-The Society for Computer Simulation's Bay Area-Houston Chapter will meet at 11:45 a.m. Feb. 28 at Lockheed Plaza 3, Pic Rm. McDonnell Douglas' Butch Stegall and Gary Lovstuen will discuss "Environment Simulations for GN&C Space Station Studies." For more information, call Robin Kirkham, 333-7345, or Wade Webster, 244-4306.

NASACOM meets-NASACOM, a Commodore users' group for the C64, 128 and Amiga computers will meet at 7:30 p.m. Feb. 28 at the Clear Lake Park Bldg. For more information contact Glenda at x31764.

Cafeteria menu-Special: chicken fried steak. Entrees: beef pot roast, shrimp chop suey, pork chops. Soup: navy bean soup. Vegetables: carrots, cabbage, green beans.

Property

Rent: room in house w/full privileges, clean, quiet, 20 min

to NASA, \$270/mo. Eric, x38420 or 484-9179.
Sale: LC, Meadowbend, new sect of subdiv, 3-2-2, ex cond. pool, deck, patio cover, extras, 10% assum, \$75.8K. John Gillman, 280-7461 or 538-2072. Rent Lake Livingston, waterfront. 3-2, C/AH, FPL, covered

deck, pier, new cond, furn, wk/wknd. 482-1582. Sale: Bay Knoll, 4-2.5-2, 2599 sq ft, formals, gameroom, family room, cul-de-sac, \$159K. 480-5473.

Lease Heritage Park new sect, 3-2-2, formal DR, Ig kitchen w/breakfast area, FPL, tenced, \$675/mo avail 3/20, no pets. x35021 or 486-6084.

Sale: Ellington/Sycamore Valley, 3-2-2, corner lot, Ig stor shed, tall fen w/wide gate, new paint/floors, \$62.5K. Bill, x30164 or 481-6340.

Sale: LC, Brittany Bay, 4-2.5-2, many extras, \$107K w/ assum 8% loan bal of \$82K. 332-0047.

Sale/lease: Friendswood, custom 3-2-2 on lg, fenced, wooded lot, gas/elect, breakfast rm, FPL, new carpet, flooring, paint, sale \$78K or lease \$875/mo 992-1338.

Sale: Bay Glen, 3-2-2, 2050 sq ft, great room, formal DR,

study w/French doors, upgrades, assum loan, \$122.5K. 480-

Sale: Pipers Meadow, 3-2.5-2, formal LR/DR, FPL, loft, wet bar, fans, gar door opener, deck, landscaped, new paint, 15 min to JSC, \$92K. Dennis, x34405 or 480-5076. Rent: Galveston condo, modern, bright, 2-1, FPL, all appli, new carpet, walk to beach, 69th St, rent \$495/mo w

or \$350/wk, or \$255/wknd, 488-2664.

Sale: Pearland, Dixie Hollow subdiviot for medium density homes, x39530 or 482-5003.

Rent: West Galveston beach house, 3-2, A.C, day/wk. Ed Shumilak, x37686 or 326-4795. Sale: Near Columbus, west of Houston, 2 houses on 2 acres, 2 car garage/workshop, 14 x 80 mobile/kennel, barn garden, new septic and butane, \$40K, poss owner finance

Sale: Heritage Park, 3-2-2, ex cond, fenced, FPL, fans, near schools, 1540 sq ft, \$69K or \$6.5K assum. Roy, 482-

Rent: Lake Travis cabin, private boat dock, CA'H, fully equip, accom 8, wkly/dly \$325/\$80. 474-4922.

Rent/lease: Clear Lake condo on marina, three level, all

appli, FPL, wet bar, 2-2.5-2, \$950/mo, 474-4922 Lease: Pasadena duplex, near JSC, 3-1.5, new carpet, paint and blinds, no pets, no W/D connection, \$400/mo.

Sale: Pearland, Shadycrest subdiv 3/4-acre lot, all util, Rent: Friendswood area, enclosed RV storage stall, 40'

deep, lights/owr, reasonable rate, 482-9396.

Cars & Trucks

'69 Mustang, new tires, new interior, complete front end work w/many new parts; runs good, BO. Scott, x39032 or '87 Chevy Cavalier, white 4 dr. auto., A/C, 38K mi, ex

cond, 20+ mpg city, warr, \$4300 OBO. Dave, x39579 or '81 T-Bird, A/C, PS, PB, cruise, AM/FM/cass, runs good.

\$1000. Bob. 283-4146. '84 Ford Van, XLT Club Wagon, loaded, new tires, extra clean, \$6800. 482-1582. '85 Monte Carol, metallic gray over silver, 4.3L FI, pwr

steering, brakes and locks, cruise, stereo, gauge and trim pkg, ex cond. Dennis x39012 or 554-4233. '81 Honda Accord, silver, 4 dr, A/C, AM/FM/cass, new

tires, brakes and battery, ex cond, \$2000. x34227 or 333-1855 '80 Olds Cutlass, 6 cyl, 2 dr, auto., ex cond, \$2000. 286-

'86 300ZX, ex cond, auto., T-top, loaded, 95K mi, \$7740. x30643 or 488-4373 Ford F350 PU, diesel, supercab, dually, fully

customized, ex cond. (409) 925-5881. '80 Pontiac Phoenix, V6, A/C, 5 dr liftbk, new auto and batt, runs good, no dents, \$1950. x30092 or 481-3637.

71 Volvo 1800E professionally restored eng, new tires,

needs paint x30153 or 941-6575. '86 Honda Prelude, 5 spd, sunroof, tinted windows, AM/FM/cass, new tires and brakes, \$6K. x31237 or 488-8614. '85 Buick Regal, AM/FM/cass, good tires, \$2000, x32987.

'66 Chevy PU, \$700; '80 Honda Accord, 2 dr, good cond,

'68 Chevelle, 6 cyl, 100K mi, regularly maintained, current safety insp, needs paint and new interior, \$1000 OBO. Ed, 283-5716 or 333-1563. '90 Toyota Tercel sedan, auto., 2 dr, teal color, tinted

windows, loaded, ex cond. x32016.
87 Toyota Celica GT, white, 3 dr htchbk, A'C, auto., 4 spkr AM/FM stereo, 48K mi, ex cond. \$8200 nego. 639-

'82 4WD Jeep Eagle Wagon limited, 6 cyl auto., pwr windows, locks, 73K mi, \$3000 nego. x34213 or 286-7149. 84 Camero, V6, auto., A/C, tu-tone blue, 51K mi, ex cond, \$3750. x37108 or 486-8463.

63 Chevy PU, V8-283, ex cond, auto., dual exhaust, carpet,

AM/FM, other refurb. Billy, x38501 or (409) 938-4979.

78 Chrysler Le Baron station wagon, 53K mi, leather int, ex paint, imitation wood sides, roof rack, sm model, \$2500; 89 Camero RS, blue tinted windows, grey interior, new tires, 51K+ mi, \$8500 OBO. 996-9646 or 996-1678.

86 Buick Regal Ltd, V8, 2 dr, all pwr, loaded, ex cond, 70K mi, \$5200 OBO.282-4041 or 337-2318.

87 Toyota Supra, like new cond, 47K mi, 5 spd, high perf stereo, equalizer, CD changer, subwoofers, 8 Boston Acoustics speakers, paging alarm, \$13K. Tim, x34333 or

'81 Camero Z28, approx 80K mi, white w/red & blk int, white ext w/red penstripe, \$2000. Lea, 554-2364.

'38 Dodge Salesman coupe, all parts, rebuilt engine, flat

6 cvl. \$5000, 335-6978 or (409) 948-0241.

83 Honda Prelude, 5 spd, sunroof, ex cond, 87K mi, one owner, \$3500. B. Craig, x32338 or 1-420-2936. '87 Ford Taurus, auto., A/C, new tires, AM/FM stereo. lowmi,\$4550 OBO. 578-7118 or 929-7334.

'82 Toyota Celica Supra, 92K mi, new tires, brakes, exhaust, loaded, \$2000 OBO. 474-4084.

82 Ford Anaheim Custom Van, P/S, P/B, tilt, cruise, AM/ FM stereo, CB, 4 caps, bed, 2 A/C, 2 tanks, BO, 488-3191. 85 Cadillac Sedan DeVille, 63K mi, ex cond, It brown metallic, tan leather, Voque tires, wire wheels, \$7500. Mike, 333-6821 or 332-6917.

'85 Toyota Celica GT, auto., loaded, \$3800 OBO Honda CBX 5 spd. loaded \$3850 OBO 940-5005

84 Kawasaki GPZ 750 motorcycle, 8K mi, super clean. \$2000. Shannon, x32646 or 484-5412.

Lady's 21.5" Terry racing bike, computer, pump, helmet, light. lock, ex cond. was \$686 now \$300. Wayne, x34437

Lady's 24" Raleigh Summit bike, 12 spd, quick release front wheel, extras, new cond. \$125, Cadie, x38222.

Boats & Planes

5311 or 420-2936

Bass fishing rig, 15' Tidecraft boat w/trir, 50hp Merc and Super Mototguide trolling motor, rigged ww/dry storage, carpet, front seat steering, \$1200 OBO. Phil, x38805 or 488-

'83 Renken 18' sailboat, roller furling jib, 4hp aux, galv trir, sleeps 4, good cond, \$4000, 339-3476.

82 Glastron 17' boat, open bow, 80hp Merc, sport trir, all covers and skis, \$3850 OBO, 929-7334 or 578-7118. New 25hp Evinrude, elec start, \$1700. Jerry Craig, 283-

72 30' Morgan sailboat, new diesel eng, \$17.5K OBO. Bill, 283-5384 or 326-1880.

Audiovisual & Computers

Letter quality daisy wheel printer, 30 CPS, very low usage, ex cond, \$100 OBO. Phil, x38805 or 488-4453.

XT turbo, 640K, 20 MB HD, 5.25" FD, coprocessor, mono IBM XT computer, 640K, 30 MB HD, 2 FD, color Taxan monitor, \$975; Intel 386 inboard for IBM or Compaq, 1 MB,

el warr, was \$895, now \$375. x30092 or 481-3637.
Zenith 286 computer, 1 MB RAM, math coprocessor, 20 MB HD, 2 FD, EGA, monochrome monitor, \$600; Epson LQ dot matrix printer, \$150; Minitab stat SW, full version, \$150. x37137 or 482-8966.

Modems, 2400 baud, \$65; 2400 MNP level 5, \$125, both less than 6 mo. old. Mike, x37525 or 996-0099. PC SW, Xtree Gold 1.0, 5.25" and 3.5" disks, file viewers,

text search, supports ARC, split windows, etc, \$35, x30852. Fisher Studio Standard CR-W49 stereo double cassette deck, \$50; Fisher CA-274 100 W stereo amp/tuner, needs

work, \$10. Brad, x37999 or 474-5609 Zenith 22" console color TV, \$130; 13" color TV, \$65.

Complete Atari ST computer system w/1MB RAM, 20 MB HD. Spectra 128 Mac emulator, 360K and 720K FD, Lattie Wercs, Sensible Grammar, sell all or part, all for \$900.

Digital printer, 4 yrs old, good cond. Sheryl, 643-8336 or

Macintosh 512 enhanced, 800K FD, \$400, 280-8796

Musical Instruments

Fender Squire Stratocaster guitar, ex cond, \$200; Peavey Studio Chorus 210 amp, ex cond, \$300. x38004 or 996-

Sequential Circuits 72 key keyboard and Peavey KB-100 amp, both for \$600. Derrick, x36059 or 332-2796.

Lost & Found

Blue bicycle, circa 1950, front wheel smaller than rear wheel, w/large basket on front, has letters PAO on side. Please return to Bldg 2/PAO. Is vital to mission operations

Pets & Livestock

Springer spaniel pups, mother excellent hunter, \$50. 326-Sm animal carry-on kennel, meets all airline specs, \$10.

Shane, x35916 or 326-2344. Baby hand-fed cockatiels, very sweet. Linda, 484-7834 AKC reg cocker spaniel puppies, \$125 and up. 331-7953.
Registered exotic miniature Vietnamese pot bellied pigs,

\$300-\$2000/ea; exotic doves and finches, \$5/ea. James, 335-6710 or 482-6744. Two 7-wk old reg miniature dachshund pups, chocolate

red, \$250 ea. 534-2676.
Easter bunnies, pick out now, take home now or later, \$10 incl feed and inst. Gailo, 554-6200.

1 yr old Lab free to good home, ex w/children, all shots, incl x-lg doghouse. 992-2560. mixed breed fem pup

AKC collie puppies, born 1/4/91, sable/white, \$200. 333-AKC cocker spaniels, black, black/tan, m/f, \$150-\$200. Mixed spitz puppies. 282-4686 or 333-9216.

Personal

Bay Area Tall Texans social organization for tall men and women, min height, men 6'2", women 5'10". For more info call Lisa, x31450 or Susan, 472-3213.

Photographic

Canon AE1 camera, 50mm lens, Canon speedlite, accessory case, ex cond, \$125. Kelly, 280-2516. Minofta SRTSC II 35mm camera w/50mm f1 4, 135 mm telephoto. Hanimex X-130 electronic flash, camera bag, \$220.

Household

14 cu. ft. refng/frzr, rt hand door, frzr on top, \$125. Dave, 486-0808. Queen sz waterbed, semi-motionless, bookcase light wood

headboard w/liner, heater, mattress, and padded rails, good cond, \$200 OBO. 280-2587 or 476-9092. Sofa, 5 pc sectional w/2 recliners, 1 full sz fold-out bed. and 1 corner pc, brown cloth, \$700. Jerry, 283-4360 or 486-

New Terra Provence 12" v 12" floor tile 286 so ft \$4 ea; new drawer slide runners, 18" lg, white, \$3 per drawer; used 12' x 20' oriental rug, \$2500; new 9'8" x 13'6" light wall to wall carpet, \$75. Tom, x36309 or 474-9747. Child's desk, \$15; wrought iron twin bed w/ma

Formica-topped rectangular kitchen table, \$15. Julie, 334-

2209 or Dana, 554-6960. Solid oak wall unit, \$250; solid oak contemporary Child Craft baby bed, \$200; 15 cu ft Kenmore upright freezer, \$250; Grace baby swing, \$35; baby stroller, \$30; bentwood rocker \$50; stereo receiver w/speakers, \$50. Steve or Thomas, 480.

Black leather sofa and chair, was \$1500, now \$750 OBO; rectangular glass-top dining table w/marble finish trestle base was \$550, now \$280 OBO, both contemporary, ex. cond

Secretary desk, good cond, \$130; antique mantle clock, Chauncey Jerome 30-hr c 1840s, good cond, \$425. 996-

1.3 cu ft microwave, ex cond, \$300; 1 lg floral couch, \$200.471-5428
King sz 3 pc bed set w/new "cargo" head and foot boards,

\$400.474-4663.

Full sz Frigidaire elec. dryer, ex cond, \$190 OBO. 474-

Queen sz wtrbed/semimotion, good cond, \$200 OBO.

Scott, 282-3985 or 286-3922

Dark wood bedroom set, headboard, nightstand, mirror, dresser, chest, \$350, 332-1872.

Full sz mattress, boxspring, metal frame, clean, \$50. Lisa, x32818 or 286-2911.

Camel-back Chippendale sofa, beige wigreenirust pineapple print, \$275. 480-0527.
Ethan Allen solid cherry wood Queen Anne dining room set, oval table extends to 10 ft, two armchairs, two side chairs,

\$2150. Glenn, 280-8580. Elec dryer, 1 yr old, \$200. Becky, x36530 or 941-6156. White velvet swivel rocker, ex cond, needs cleaning, \$40.

x31260 or 488-2941. Student desk, \$12; white dresser, \$20. 326-4803. Pennsylvania House wing chair, green-peach uphol, ex cond \$200, 282-3788 or 480-2188

Green recliner, like new, very comfortable, \$50. Edward, x36250. Two leather sided, glass top coffee tables, \$50 ea; Amana Touchmatic II microwave, needs repair, BO; two wire wheel covers, \$25 ea. James. 335-6710 or 482-6744.

Want President's and First Lady's membership for one,

will pay \$300, 326-2460. -'80 Ford Pinto, auto., no pwr, no A/C, does not need to run, looks not important, must be towable. Trey, 280-4275 or 484-7834.

Want riders for a vanpool starting from SW side and aeswood-610 locations to CL/JS(Want touring kayak or sea kayak. Pat, x38343 or 477-

8585. Want to buy sm PU in good cond, auto., A/C, will pay up to \$1000 OBO, 332-0047.

Want books, magazines, memorabilia on rockets, missles, space, spaceflight. Trebes, x37215 or 333-4374. Want old mechanical wrist watches, any cond. x30186. Want roof racks, Yakima or Thule, for bicycles and or

skiing. Shane, x35916 or 326-2344 Want '75 Volvo manual trans, \$500. Mike, x38368 or 333-3012

Want '82 Datsun 200SX hardtop coupe, auto. Fred, 944-0493. Want English riding hat, boots, crop, etc. and antique sports equip, golf clubs, tennis racquet, etc. for decorative use. 280-

Want van pool riders from Sugar Land, westwood Mall, Fondren and Loop 610 Park & Ride to JSC area. Alice, Want housemate to share League City 2-story 3-25-2

w/W/D, FPL, 6 mi from JSC, \$290/mo plus 1/2 util. 282-Need motorcross equip boots leathers shoulder pats etc. Andy, 332-9105 or 333-6671.

Want used sm dining table and 4 chairs, prefer wood or simulated, Lynda, x30766 or 326-1880 Want Lake Livingston-Conroe area lakefront prop assum loan and/or own, fin, avail, x31826 or 480-9436

Miscellaneous

Girl's 24" Huffy 10 spd bike, pink/gray, needs front brake. \$35; Everglow kerosene heater, ex cond. Kelly, 280-2516. Rossignol snow skis, 185 cm, good cond, Solomon bindings, K2 poles, \$75. Eric, x38420 or 484-9179.

71 5th Wheel travel trlr, ex cond, self-contained, \$3500 OBO, 475-3663 or 476-9092. Lady's Obermeyer ski stretch pants, black, sz 12, runs

sm, good cond, were \$154, now \$75; men's Obermeyer ski stretch pants, gray, sz 30R, good cond, \$40; ski poles, \$5. Shane, x35916 or 326-2344. New WSW tire, steel-belted radial, on 5-lug steel wheel,

215/75R15, \$60, Dave, x39579 or 482-6187 Ajay muscle toner rowing machine, \$60; car ramp, \$10.

\$100. x30874 or 333-1316.

Executive sz desk, \$80 OBO. Derrick, x36059 or 332-

pulls, priced cheap; Xerox 3701 copier, needs repair, \$300

OBO. Don, x38039 or 333-1751.

Rimaldi industrial sewing machine w/new table, \$800; two back of bicycle child seats, \$10 ea. Tom, x36309 or 474-9747

Engagement ring, 18 karat yellow gold, round diamond solitaire, .68 carats w/6 round diamonds, .18 carats, was \$1500, now \$1200. x30874 or 333-1316.

9mm Browning pistol, hi-pwr, hard case, holster, 2 clips, Pachmayr grips, \$425. Matt, 333-6045 or 474-3760. Stanley Blacker navy blue blazer, sz 38R, \$40; Panasonic port dual spkr, 8-track player w/tapes, \$25, x36324.
Formal dresses sz 7 & 9, pink organza w/lace trim, red

satin, pink w/lace insert in bodice, yellow w/acccordian pleats, yellow dotted swiss, white eyelet w/pink trim, mint green antebellum style, light blue w/lace trim, \$30 ea. 538-

2263.

Oak wall unit for queen sz bed incl drawers, cabinets, light bridge, was \$2500, now \$750 OBO: Time-Life series "Great Men of Music" record album, BO: wedding rings, 3-pc set, white gold, 1/5 ct bands etched to reflect light, \$150 OBO; queen sz waterbed w/6-drawer pedestal, \$150. OBO, 4-pc soft luggage; rowing-exercise machine, 946-0010. Metal office credenza, black w/formica wood grain top, good cond, 2 hanging file drawers, bookcase shelves w/doors,\$175 OBO. Dennis, x34405 or 480-5076.

and elect. ignition, w/manuals, \$30; one carton of clay pigeons, \$5. Trebes, x37215. Lady's med ski outfits incl bibs & jacket, navy-lt blue, \$50; black-black, \$40; ski sweaters, goggles, lady's sz 7 Dynafit ski boots, \$30, 486-5500.

Sears Penske automotive analyzer for 12 volt conventional

Lg telescope, 10-in f8 Newtonian, good optics, incl epieces, 60 mm finder scope, needs mount, \$500 OBO. Ed, 283-5716 or 333-1563. Woven blinds, set of 3, 36 in. wide by 48 in. long, brown,

orange and white mix, good cond, \$25, 333-7010 or 482-5393.

Marcy Em 123 home workout unit, ex cond, \$500, 554-Lady's gold Rolex watch, dainty, c 1940; '83 Grand Prix, needs work, \$2000; sewing machine w/cabinet, \$50; lady's heavy 14K custom-made ring w/diamonds & sapphires, \$800; sz 7 wedding dress, sm, ruffly summer style, \$200.

x34320. Century stroller, ex cond, \$45; CD player, needs repair, BO; windsurfers, BO. 486-6133.

'79 Olds donut tire w/wheel; roller skates protype sz 5 and 8; weightlifting bench w/weights and exercise bike. Aaron,

105 U.S. 25¢ stamps, \$25; 110 4¢ stamps, \$4; Toshiba microwave oven, \$30. Jeff, 333-7010 or 482-5393. Weight bench-DP w/squat rack and leg extension, \$40.

Baby equipment, stroller, \$30; car seat, \$30; trainer potty, \$10' booster seat. \$5' 25" RCA TV w/remote. \$200' we

\$20; solid wood dining table, \$90. Wayne, 282-4349 or 480-3157. Lady's Nordica ski boots, sz 8-8.5, \$50; bowling ball and bag, \$25, 486-0174.

Wards 25" color table top TV, ex cond, \$150; metal typewriter table, ex cond, \$20; 2 matching blackboards, \$15 both; 2-wheel move truck, \$17.50; new 30" round table w/ four antique bentwood chairs w/chair pads, refinished, \$125. set; custom drapes for 2 large windows, \$100. 488-5564 Fiberglass camper top for full sz PU, sliding glass windows

w/screens, ex cond, \$325. Andy, 332-9105 or 333-6671. GE cordless phone sys incl 2 phones, base unit, 2 remote charging units, \$95; full sz golf bag, \$35. 538-1443.

2 oil paintings, green and gold florals, framed, approx 16" x 24", \$25 ea. Tony, x35966 or 488-3239.

Browning Citori shotgun, w/soft case, ex cond, \$750 992-Play pen, ex cond, \$40. Century walker, \$10. Michele,

482-957 Wedding dress, gloves, hat & shoes, all sz 8, cream colored, short sleeves, tea length, Southern Bell style, \$150. Sheryl

Discovery

Mission Date Orbiter Payload

Inclination **Altitude** Duration Crew CDR

Paraka

THEMS

PS

PET

Discovery AFP-675 **IBSS** STP-01 **MPEC** 57° 140

Michael L. Coats L. Blaine Hammond, Jr. Guion S. Bluford, Jr Gregory J. Harbaugh Richard J. Hieb Donald R. McMonagle Charles Lacy Veach

April Atlantis GRO CETA APM-02 28.5° 243

Steven R. Nagei Kenneth D. Cameron Jay Apt Linda M. Godwin Jerry L. Ross

40 Columbia

SLS-01 GAS BRIDGE 39°

160 Bryan D. O'Connor Sidney M. Gutierrez James P. Bagian Tamara F. Jerninan Rhea Seddon

F. Drew Gaffney

Millie Hughes-Fulford

TDRS-E SSBUV-03, SHARE II. OCTW-01, TPCE 28.5° 160 John E. Blaha

Michael A. Baker James C. Adamson G. David Low Shannon W. Lucid

Atlantis DSP, IOCM

28.5° 195 10

Frederick D. Gregory Terence T. Henricks F. Story Musgrave Mario Runco, Jr. James S. Voss

Thomas J. Hennen

48 Discovery UARS APM-03

292 John O Creighton

57°

Kenneth S. Reightler, Jr. Mark N. Brown James F. Buchli Charles D. "Sam" Gemar

Columbia

LAGEOS II

USMP-01

ASP

28.5°

160

9

5

EURECA-1R

Atlantis IML-01 IMAX-05 GAS BRIDGE

57° 160

Ronald J. Grabe Stephen S. Oswald PLC Norman E. Thagard Manley L. Carter, Jr. William F. Readdy

Roberta L. Bondar Ulf D. Merbold

Mission Date Orbiter **Payload**

Inclination Altitude Duration CDR PLT

Discovery TSS-01 EURECA-1L IMAX-06 EOIM-III/TEMP2A-03 28.5° 160

Loren J. Shriver James D. Wetherbee PLC Jeffrey A. Hoffman Andrew M. Allen Franklin R. Chang-Diaz Claude Nicollier

TBD (Italy)

January

Atlantis ATLAS-01 SSBUV-04

57° 160 Charles F. Bolden Brian Duffy PLC Kathryn D. Sullivan C. Michael Foale David C. Leestma

Michael L. Lampton Byron K. Lichtenberg

May Endeavour INTELSAT-VI-R **ASEM** 28.5°

198 Daniel C. Brandenstein Kevin P. Chilton Thomas D. Akers Richard J. Hieb Bruce E. Melnick Kathryn C. Thornton Pierre J. Thuot

Columbia USML-01

28.5° 160 13* Richard N. Richards John H. Casper Carl J. Meade

TRD

TBD

April

PLC Bonnie J. Dunbar Kenneth D. Bowersox

August

ACTS

DXS

28.5°

160

8

6

Atlantis

CANEX-02

Endeavour SL-J GAS BRIDGE

57°

160 7 TBD TBD PLC Mark C. Lee N. Jan Davis Mae C. Jemison

TBD Mamoru Mohri

November Discovery DOD

PS

MS

.Mission Date Orbiter Payload j Tigil Inclination Altitude

7

5

February Columbia

SL-D2

Endeavour SPACEHAB-01 **ORFEUS-SPAS** GAS BRIDGE SH00T 28.5° 160

28.59 160 9 7

IML-02

USMP-03

OAET-FLYER

March

Discovery TDRS-F DEE CTM 28.5° 160

5

5

Endeavour ATLAS-02 SPTN-02 SSBUV/A-01 57°

7

160 9

58 May

Atlantis SRAD/TPITS WSF-01 **IEH** ISEM-01 28.5° 160 7

59 June

13

7

July Columbia SLS-02 PL OPPTY 28.5° 28.5° 160 160

60 Discovery

August Endeavour SPACEHAB-02 USMP-02 OAET-01, CAPL SPTN-03 FLOATZONE-01 CMSE-01 PL OPPTY 28.5° 160 9

61

Duration Crew

Fiscal Year '94 2nd QTR 1st QTR CRISTA-SPAS ATLAS-03

SPAS-III FTS-DTF-01 **SRL-01** HST REV-01

SSBUV/A-02 GEOSTAR-01 SPACEHAB-03 **FROZEPIPE** WPE MICROWAVE-01 SPTN-04 ISEM-02

4th QTR 3rd QTR

SFU-RETR CXM-03 CMSE-02 WSF-02 SPACEHAB-04 EURECA-2L CMX-04

Fiscal Year '95 1st QTR 2nd QTR

SRL-02 ATLAS-04 WISP XTE SSBUV-A-03 **EUVE RETR**

USML-02 SPACEHAB-05 **GEOSTAR-02** EURECA-2R CMSE-03

4th QTR 3rd QTR AAFF

5

OAET-02

SL-D3

LISMP-04 WSF-03 SSF/MB-01 (FEL) Fiscal Year '96 1st QTR 2nd QTR

SPACEHAB-06 SPTN-05 CXH-10 SSF/MB-02

SL

SRL-03 **SLS-03** SSF/MB-03

5

3rd QTR **GEOSTAR-03** SPACEHAB-07 OAET-03 SSF/MB-04

USMP-05

WSF-04

DCWS

5

SSF/MB-05 ATLAS-05 SSBUV-A-04 CONE

4th QTR

Glossary

CXM-02

AAFE ACTS AFP AMOS APM **ASME** ASP **ATLAS CANEX**

EURECA

Aeroassist Flight Experiment Advanced Communications Technology Satellite Air Force Payload

Air Force Maui Optical Station Ascent Particle Monitor Assembly of Station by EVA Methods Altitude Sensor Package Atmospheric Laboratory for Applications and Science

Canadian Experiment Capillari Pump Loop Experiment CAPL **CETA** Crew and Equipment Transfer Aid **CMSE** Candidate Materials Space Exposure Cryogenic Orbital Nitrogen Experiment CONE **CREAM** Cosmic Radiation Effects and Activation Monitor **CRISTA** Cryogenic Infrared Spectrometer Telescope for Atmosphere

European Retrievable Carrier

Collapsible Tube Mast CTM Commercial Cross-Bay Carrier CXH CXM Commercial Cross-Bay for Materials Science Laboratory

DEE **Dexterous End Effector** Department of Defense DOD DSP Defense Suppor Program Diffuse X-Ray Spectrometer DXS Evaluation of Oxygen Interaction with Materials **EOIM**

FROZEPIPE FTS-DT GAS **GEOSTAR**

HPE HST **IBSS** IEH IMAX IML **INTELSAT IOCM** ISEM **LAGEOS** LITE **MPEC**

SFU

SHARE

GRO OAET OCTW **ORFEUS**

Extreme Ultraviolet Explorer FLOATZONE Office of Commercial Programs Experiment Office of Commercial Programs Experiment Flight Telerobotic Servicer Demonstration Test Flight Getaway Special Interactive Radiodetermination Satellite Gamma Ray Observatory Heat Pipe Experiment Hubble Space Telescope Infrared Background Signature Survey International Extreme-UV Far-UV Hitchhiker Large format motion picture camera International Microgravity Laboratory International Telecommunications Satellite Organization Interim Operational Contamination Monitor ITA Standardized Experiment Laser Geodynamics Satelllite Lidar In-Space Technology Experiment MICROWAVE Office of Commercial Programs Experiment Multi-Purpose Experiment Canister Office of Aeronautics, Exploration and Technology Optical Communication Thru Shuttle Window **SATCOM**

Orbiting and Retrievable Far and Extreme Ultraviolet Spectrometer GE communications satellite Space Flyer Unit Space Station Heat Pipe Advanced Radiator Experiment

SHOOT Super Fluid Helium On Orbit SLS Space Life Sciences Commercially owned pressurized **SPACEHAB** experiment module **SPAS** Shuttle Pallet Satellite Shuttle Pointed Autonomous Research Tool for **SPTN** Astronomy **SRAD** Shuttle Radiator Assembly Demonstration SRL Space Radar Laboratory **SSBUV** Shuttle Solar Backscatter Ultra-Violet Instrument SSF/MB Space Station Freedom Manned Base SSS Satellite Servicer System **STARLAB** DOD Spacelab Space Test Program STP **TDRS** Tracking Data Relay Satellite **TPCE** Tank Pressure Control Experiment **TPITS** Two Phase Integrated Thermal System Tethered Satellite System TSS **UARS** Upper Atmosphere Research Satellite **USML** U.S. Microgravity Laboratory USMP United States Microgravity Payload Waves in Space Plasma WISP WSF Wake Shield Facility X-Ray Timing Explorer XTE

Spacelab

*Dependent on prior long duration flight experience.

Bluford finalist for Black Engineer of Year

Astronaut Guion S. Bluford Jr., a JSC member of the STS-39 crew, has been named a finalist for the 1991 Black Engineer of the Year Award.

Bluford, an Air Force colonel, is among four finalists for the title presented annually by U.S. Black Engineer Magazine, Mobil Corp. and the Council of Engineering Deans of the Historically Black Colleges and Universities.

The winners will be announced during a national television special March 2 from the Baltimore Convention Center.

Bluford earned a bachelor of science degree in aerospace engineering from Pennsylvania State University, a master's and a doctorate in aerospace engineering from the Air Force Institute of Technology, and a master's in business administration from the University of Houston-Clear Lake.

McKay earns honors for

technical communication

Mary Fae McKay, Ph.D., has been elected an associate fellow in the Society for Technical Communication.

She was cited for her distinguished work in the field of technical communication and for her willingness to share her expertise.

McKay, currently finishing a NASA publication called "Space Resources" designed to substantiate NASA's bid to carry out the Space Exploration Initi-

ative, works in JSC's Solar Systems Exploration Division. She joined JSC 11 years ago in the Center Operations Directorate's Publications Branch, and worked in the Mission Operations Directorate's Training Division.

The Society for Technical Communication, an international organization of more than 15,000 members, designates only 3 percent of its members as associate fellows and only 100 have been so named in its 40-year history.

Lister earns CPA

Susan E. Lister of JSC's Pricing and Labor Relations Branch has successfully passed all five parts of the Texas State Board of Certified Public Accountants examination.

The official designation of CPA will

be conferred by the board in November.

Lister has been a member of the Pricing and Labor Relations Branch in the Procure-Support

Division since February 1990. She is a 1988 graduate of Texas A&M University and a member of the National Contract Management Association's Space City Chapter.

Bluford

Lineberry memorial established

A memorial in the name of Edgar C. Lineberry has been established to



benefit the Challenger Center.

Lineberry, manager of Mission Development and Operations for the Lunar and Mars Exploration Program Office, died Jan. 31.

Donations may be given to Norma Dell'Osso, Beverly Yell or Faye Conway in Bldg. 17, Rm. 248, or mailed to the Edgar C. Lineberry Fund, Clear Lake National Bank, 16211 Space Center Blvd., Houston,

Picnic to wave stars, stripes theme in May

The JSC Picnic Committee has chosen "A Stars and Stripes Picnic" as the theme for this year's familyoriented get-together at the Gilruth Center.

This year's picnic will be from 11 a.m.-5 p.m. May 4.

The theme was suggested by Charlotte Ober, a flight activities assistant in the Aircraft Operations Division. Ober won a round trip airline ticket to anywhere in the continental United States, a picnic T-shirt and free picnic tickets.

A record 206 theme suggestions were submitted this year, said Melody Goss, picnic committee chair.

At the same meeting, the USO was selected as the charity that will receive proceeds of the picnic dunk tank competition among directorates.

The next meeting of the picnic committee will be at 5 p.m. March 6 in the Gilruth Center, Rm. 204. Anyone who wishes to attend is welcome.

JSC Blood drive set

The first on-site JSC Blood drive will be from 8-11:30 a.m. and 1-3:30 p.m. Thursday at the Gilruth Center.

Helon Crawford, coordinator, encouraged employees to donate, and urged them to make appointments in advance. Appointments are required so that the technicians available are sufficient to meet donor demand, she explained.

Appointment may be made by calling Crawford at x34159, Mary O'Rear at x36531, or Dan Mangieri at x33003.

Three earn Silver Snoopy

Three outstanding JSC employees received the coveted Silver Snoopy Award during January.

The lapel pins and certificates, presented by members of the astronaut corps, are given to less than one percent of the total NASA and contractor work force each year. Silver Snoopy Awards signify outstanding contributions to NASA's flight safety and mission success.

January's winners were: Barney H. Corbin, Photographic and Television Technology Division; Frances M. Smith, Office of the Director, and Lt. Col. Jan C. Larson, Space Shuttle Operations Integration Office.

Showcase to allow laptop comparisons

Computer users will get a chance to "slam the doors and kick the tires" on laptops from 20 different manufacturers Wednesday.

The Information Systems Directorate is sponsoring a Notebook Laptop Showcase from 10 a.m. to 4 p.m. in the Product Demonstration Facility. Bldg. 12, Rm. 112, and the Bldg. 12, Rm. 254/256 conference room.

Altima, Advanced Logic Research, AST, Compag, CompuAdd, Dell Everex, Fora, GRiD, Poqet, Samsung, Sharp, Texas Instruments, Toshiba, Twinhead and Zenith will demonstrate

their laptop computers side by side. For details, call the PDF at x37572.



PROTECTIVE PROTOTYPE—Willie Warson works on a protective sole that eventually could become part of a boot for astronauts exploring other planets. Warson, an ILC Space Systems Division technician, is part of a team that is developing and fabricating prototype space suit equipment for future lunar and Mars missions. The work by the EVA Branch in Engineering's Crew and Thermal Systems Division is being done in JSC's Bldg. 7A as part of NASA's Space Exploration Initiative.

Centers to compete in fitness challenge

By Kelly Humphries

Starting next month, JSC will compete with other NASA centers in a fitness challenge to see who can qualify the most people for the Presidential Sports Award.

The Occupational Health Division at NASA Headquarters is sponsoring the "Exercise for the Health of It" challenge from March through September. The friendly competition will pit each center's employees against the others' in any of 49 activities approved by the President's Council on Physical Fitness and Sports.

The NASA center with the highest percentage of employees qualifying for the award will win the intercenter competition and be recognized at NASA's annual Occupational Health Conference in November.

The competition will be based on hour-by-hour, mileby-mile participation of individual employees in a variety of sports, with aerobic activities encouraged. Employees who wish to participate should contact the fitness staff at x30301 for rules, logs and brochures.

The ultimate goal is to encourage physical activity to enhance individual fitness and health, thus promoting work site wellness and productivity," said JSC Health Related Fitness Director Larry Wier.

Qualifying for the Presidential Sports Award won't be easy, Wier said. For example, runners must log 200 miles during the period but no more than 5 miles in any one day. Most of the activities require 50 hours of participation; employees may qualify in more than one.

To participate, employees must obtain a brochure and log, complete the log meeting the requirements, and send the log to the fitness staff at Mail Code AW9.

The President's Council charges \$6 for the award and associated items, but employees won't be required to pay the fee to participate in the NASA competition. Employees are encouraged to send their fee and original log to the President's Council.

Engineers share their enthusiasm with youngsters

(Continued from Page 1

inventions can be simple things too," Costello said. "For instance, we talked about whether sand castles were easier to build with dry sand or wet sand and why.'

College Park Elementary School Principal Marv Risner said the school's 36 teachers had requested a JSC engineer visit each of their classrooms. There are 639 students at the school, kindergarten through fifth grade. The school has an aero-

space program for its fifth graders in week. which teachers present information on the space program. One of the fifth grade program's highlights is a model rocket launch.

'We're calling on expertise at the ground level," Risner said. "We want to provide our kids with an opportunity to see there are occupations that are exciting and which rely on getting a good education.'

Engineer astronauts Mary Cleave and Bonnie Dunbar also were among the JSC group who visited schools this

Cleave talked to about 100 fifth grade students Wednesday at Red Bluff Elementary School in Pasadena. Dunbar will teach a class today at Carter G. Woodson Middle School in Houston.

This was the first year the JSC Education Office coordinated the engineering speakers program and Norma Kersman, JSC education specialist and event coordinator, said she was pleased with the overwhelming interest.

"I originally thought we'd get 50 engineers to volunteer and we got 150," she said. "But thinking about how JSC responds in situations designed to help education, the turnout really doesn't surprise me."

Engineers hailed from the following areas (by mail codes): AA (AH), CA, DA, EA, IA, JA, NA, SA, VA and TA. JSC engineers visited the following school districts: Houston, LaPorte, Pasadena, Clear Creek, Friendswood, Pearland, Dickinson, Alvin, North Forest and Goose Creek.

Space News

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.

Editor Kelly Humphries Associate EditorsPam Alloway Kari Fluegel

Pool earns award

(Continued from Page 1

He has participated in a variety of medical research programs that helped define human capabilities to work safely and productively in space, the announcement said.

Pool, who joined NASA in 1968. was chief of the Space/Clinical Medicine Branch in the Space and Life Sciences Directorate from 1975 to 1977 when he was named chief of the Medical Sciences Division.

Discovery waits in wings until cracks understood (Continued from Page 1 plates appeared to be superficially

Engineers believe that the metal offsets and becomes uneven when the doors are opened, but evens out when the doors are closed. Scratches on the metal exposed by the cracks lead the engineers to believe the cracks have been through numerous door openings and closings.

Atlantis and Columbia, the metal One possibility is a problem docu-

weakened from normal use. No cracks were found on Atlantis, and on Columbia two slight cracks, not comparable to Discovery's, were seen. The cracks on Discovery are believed to have been caused by an abnormal stress on the areas, although technicians are uncertain After inspecting similar areas on when that stress may have occurred.

mented in July at KSC. During processing, Discovery's right door failed to close properly because a loose nut

jammed the door. While engineers troubleshoot the cracks and possible repairs, processing at Launch Pad 39A was expected to proceed. Late Thursday evening, hypergolic propellants were to be loaded into the electrical generating system of the spacecraft.

Learning tools draw on space program

(Continued from Page 1

well as suggestions for hands-on classroom activities. The guide also includes a vocabulary list, reference list and details about the crew members.

For each shuttle mission, a fourpage teachers guide, called "Mission Watch," will be produced describing the mission, payloads, experiments, and science objectives, and includes suggested classroom activities and references. At the end of the mission,

"Mission Highlights," will be available to educators.

These new space-age learning products are the result of a team effort involving NASA Headquarter's Educational Affairs Division, the astronaut corps, Space Shuttle Support Office, program and science people, flight directors and planners, television production people and public affairs.

Local educators can contact JSC's Teacher Resource Center at 483-

a four-page summary report, called 8696 on how to obtain permanent copies of the "Space Basics" videotape and resource guide (available March 4), "Mission Watch" and "Mission Highlights." With a modem, educators can access NASA Spacelink, a computerized space education data base on 205/895-0028 for all printed education materials. JSC's Film and Video Distribution Library, 486-9606, soon will have copies of the video and resource guide available for loan to teachers.

NASALISC