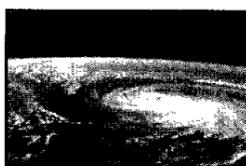




## First Fifty

For 50 flights, the shuttle program has been establishing new benchmarks for manned spaceflight. Story on Page 3.



## After the Storm

NASA aircraft are providing high-altitude views of the damage done by Hurricane Iniki in Hawaii. Story on Page 4.

# Space News Roundup

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No. 36

## Focus on research

# SL-J gets extra day

By Karl Fluegel

Researchers watching over the shoulders of the STS-47 crew this week will be handed more information than they had originally expected when the shuttle's 50th flight ends Sunday.

Because *Endeavour* has enough consumables to support another full day in orbit, mission managers decided Wednesday to extend Spacelab-J one day for continued science operations.

"It has been a very successful flight up to now, and with the extra extension day, we are looking forward to perhaps even 50 percent in excess of what we had set our goals at in some of the areas," STS-47 Commander Robert "Hoot" Gibson said during an in-flight press conference Thursday.

With the extension day, *Endeavour* is now set to end its second mission at 6:19 a.m. Central at the Kennedy Space Center. The crew will return to Ellington Field about 10 hours after landing.

*Endeavour*, which has performed without any major problems throughout the flight, started its mission spectacularly when the

solid rocket boosters ignited precisely at 9:23 a.m. Sept. 12 for the first on-time launch since 1985.

After a trouble-free ascent, crew members — Gibson, Pilot Curt Brown, Payload Commander Mark Lee, Mission Specialists Jay Apt, Jan Davis and Mae Jemison, and Payload Specialist Mamoru Mohri — immediately got busy activating the Spacelab module and beginning the science activities. The seven astronauts are working in two shifts for 24-hour payload operations.

A total of 43 experiments investigating both materials science and life science make up the Spacelab-J payload. Of the 43 experiments, 34 are sponsored by Japanese investigators, seven are from U.S. investigators and two are joint projects.

JSC is represented by three experiments on Spacelab-J, one of which requires several tests with the Lower Body Negative Pressure Unit. During the flight, Davis and Jemison have several tests in the LBNP, including a four-hour soak each, to see its effects on orthostatic intolerance or the ability to stand

Please see STS-47, Page 4.



Japanese Payload Specialist Mamoru Mohri uses an apple to demonstrate the effects of microgravity to Japanese students during a special presentation Wednesday. Mohri is the first Japanese to fly on the space shuttle.



STS-52 crew members inspected the packing of their middeck equipment during a recent bench review. Mission Specialist Lacy Veach, second from left, and Pilot Mike Baker, right, check out various pieces of recording equipment as Backup Canadian Payload specialist Bjarni Tryggvason, center, watches.

## Goldin selects new procurement deputy

NASA Administrator Daniel S. Goldin announced this week the appointment of Deidre A. Lee, former chief of space shuttle procurement at JSC, as deputy assistant administrator for procurement.

Lee, who managed a variety of procurement activities in both NASA and the Air Force, currently serves as the executive officer to NASA's Acting Deputy Administrator Aaron Cohen.

"We are very fortunate to have a person with Deidre Lee's considerable experience and energy to fill this position at a time when we are undertaking major reforms in NASA procurement activities," Goldin said.

Lee joined NASA in 1984 and served in numerous acquisition positions at JSC. She was assigned to NASA Headquarters in April 1991, as the special assistant to the assistant administrator for procurement. In her next assignment as deputy

director of the Advanced Procurement Planning Division, she managed policy development and allocation and control of procurement office resources.

She also coordinated agency procurement initiatives and represented NASA on numerous internal and external teams studying key procurement issues. Most notable were those affecting resumed human exploration of the solar system.

Lee became the deputy's executive officer last April. In this capacity she played a significant coordination role in the agency's current Red/Blue Team studies to reduce out-year costs of major space and aeronautics projects without undermining mission objectives.

She also was selected by NASA to attend the prestigious Middle Management Program of the Graduate School of Management of Simmons College, Boston.

## Work proceeds toward next flights

Though the Space Shuttle Program's 50th flight continues to orbit, processing activities for the 51st and 52nd missions are progressing at the Kennedy Space Center.

In Bay 1 of the Orbiter Processing Facility, *Columbia* is being prepared for STS-52. The LAGEOS-1 mission, currently set for launch in mid-October with a six-member crew, will be *Columbia*'s 13th flight.

*Columbia* will be transferred to the Vehicle Assembly Building Sunday for mating with its external tank and boosters. Rollout is set for later next week and the Flight

Readiness Review is scheduled for Oct. 1.

During the past week, processing activities for *Columbia* included the cleaning of the payload bay, close outs of the vehicle, final brazing of gaseous nitrogen lines in the aft compartment and replacement of the water accumulator for the Crystals with Vapor Transport Experiment located in the middeck.

*Discovery* also is being prepared for its next mission in November when a five-member crew flies a six-day mission for the Department of Defense.

STS-53 preparations this week included the removal of the left orbital maneuvering system pod for repairs of an oxidizer isolation valve. The pod will be transferred to the Hypergolic Maintenance Facility at KSC where repairs will be made.

Workers also tested *Discovery*'s Ku-band antenna, performed electrical redundancy tests of the OMS and reaction control systems, completed leak and functional tests of the ammonia system, prepared to connect the auxiliary power unit lines and serviced freon coolant loop No. 1.

## Solar wind's influence at Jupiter stronger than previously thought

Solar wind exerts a much stronger influence on Jupiter's highly-charged magnetic environment than had been previously thought, according to information recently acquired from the *Ulysses* spacecraft's encounter with the planet last February.

The discovery was the result of *Ulysses*' unique trajectory, which took the spacecraft to higher latitudes near the planet than were reached by previous spacecraft, said Jet Propulsion Laboratory's *Ulysses* Project Scientist Dr. Edward J. Smith.

"In addition, *Ulysses*' outbound path took the spacecraft through another previously unexplored region in the dusk sector, where we had never been before."

*Ulysses*, deployed from *Discovery* in October 1990, is a joint NASA-European Space Agency mission to study the poles of the sun and will begin its primary mission in June 1994.

Three separate findings during the Jupiter encounter supported investigators' conclusions. The first evidence was derived from *Ulysses*' flight through the high latitude region of the magnetic field — called the magnetosphere — in which the planetary magnetic field lines led out into interplanetary space rather than returning to Jupiter across the equator.

"Five of the experiments sensed this transition simultaneously, once at a distance of only 7 planetary radii (500,000 miles) and a second time at a distance of 15 radii (1.1 million miles)," Smith said.

The second major surprise occurred as the spacecraft was traveling outbound. Measurements showed that the magnetic field was not rotating with the planet but was being swept downstream toward the magnetic tail of the magnetosphere, Smith said.

"This property was seen well inside the magnetosphere at large distances from the boundary with the solar wind," Smith said. "It is, nevertheless, attributed by scientists to a dragging effect of the solar wind on the magnetosphere."

The third piece of the puzzle leading the *Ulysses* teams to this conclusion was the identification of a thick layer just inside the boundary of the magnetosphere in which solar wind particles and Jovian particles appear to be intermingling, and the magnetic field is not rotating with the planet.

"Scientists interpreted these observations to imply that magnetic field lines are being peeled away from the magnetosphere by the solar wind," Smith said.

Jupiter's magnetic field, the largest in the solar system, forms a windsock — the magnetosphere —

that is blown by the solar wind. The magnetosphere is known to vary in size and configuration over time depending on the amount of force exerted on it by the solar wind. Millions of highly charged particles swirl and bounce around within this magnetic bubble and many of them eventually escape into interplanetary space.

"Jupiter is like a cosmic-ray source spewing these things out into interplanetary space all the time," said Dr. Edgar Page, ESA science coordinator. "The energy probably comes from the planet's rapid rotation every 10 hours."

Smith said scientists have made similar observations of the effects of the solar wind on Earth's magnetosphere.

"At Earth, magnetic fields at high latitudes lead out into space, magnetic fields on the flanks of the magnetosphere are pulled tailward and a boundary layer exists adjacent to the solar wind flowing around the magnetosphere," he said.

"For many years, theorists have believed that the solar wind was exerting much less influence on the giant, strongly magnetized Jupiter than on the smaller magnetosphere of Earth. The latest results do not mean that Jupiter is like the Earth in all aspects, but theorists aware of the new *Ulysses* results are now revising their ideas."

JSC

# Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m.-2 p.m. weekdays. For more information, call x35350 or x30990.

Lovin' Feelings Concert (7:30 p.m. Sept. 26, Summit): \$21.  
Texas Renaissance Festival (9 a.m.-6 p.m. weekends Oct. 3-Nov. 15): Adult, \$9.25; child (5-12): \$5.55. Festival bus trip (Oct. 24, Nov. 7): One-day trip; adult, \$15; child (ages 5-12), \$10; child (under 5), \$7.  
Wings Over Houston Air Show (Oct. 3-4 at Ellington Field): One-day; Adult, \$7; Children 6-11, \$2.  
Deep Sea Fishing Trip (Oct. 17): \$45 to fish, \$20 to ride.  
Ski Sun Valley (Jan. 9-16, Sun Valley, Idaho): \$831 for first 37 people making \$100 deposit.  
Metro tickets — Passes, books and single tickets available.  
Fiesta Texas Park (San Antonio): Buy one, get one free. Adult, \$19.50; child 4-11, \$13.55.  
Sea World (San Antonio): Adult, \$18.90 (child free with paying adult); child 3-11, \$13.55.  
Astroworld: \$16.95 and \$14.95 (child under 54 inches), \$44.95 (season pass) and Waterworld, \$9.50.  
Six Flags: \$16.95 (one-day) and \$22.95 (two-day).  
Movie discounts: General Cinema, \$4; AMC Theater, \$3.75; Loews Theater, \$4.  
Stamps, Walt Disney Club memberships also available.

JSC

# Gilruth Center News

**EAA badges** — Dependents and spouses may apply for photo identification badges from 6:30-9 p.m. Monday through Friday. Dependents must be between 16 and 23 years old.

**Weight Safety** — Required course for employees wishing to use the Gilruth weight room is offered from 8-9:30 p.m. Sept. 23. Preregistration is required; cost is \$5.

**Defensive driving** — Course is offered from 8 a.m.-5 p.m. Oct. 10. Cost is \$19.

**Aerobics** — High/low-impact classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks.

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

**Aikido** — Martial arts class meets Tuesdays from 6:15-8 p.m. Cost is \$15 per month.

**Fitness program** — Health Related Fitness Program includes medical examination screening, 12-week individually prescribed exercise program. Call Larry Weir, x30301.

**Fiction Workshop** — A five-week fiction workshop will be offered from 6:30-9 p.m. Wednesdays at the Gilruth Center beginning Oct. 7. Cost is \$80.

**Softball tournament** — A Men's Open C Fall Classic Softball Tournament will be held Sept. 26-27 at the Gilruth. Registration deadline is Sept. 24; cost is \$95 per team.

**Volleyball workshop** — A volleyball workshop will be offered Oct. 3-21. A women's session will be held from 12-2 p.m., and a men's session from 2-4 p.m. Cost for the six-week course is \$25.

**Tennis** — Six weeks of beginning tennis lessons will be held from 5:15-6:45 p.m. Mondays starting Sept. 21. Cost is \$32.

**Intercenter Run** — JSC runners may now participate in the fall Intercenter Run competition among NASA centers. Participants may run or walk a two-mile or 10-kilometer course and turn their times into the Gilruth Center. All eligible participants will receive a free T-shirt.

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# Dates & Data

## Today

**Cafeteria menu** — Special: Salisbury steak. Entrees: baked scrod, broiled chicken with peach half. Soup: seafood gumbo. Vegetables: cauliflower Au gratin, mixed vegetables, buttered cabbage, whipped potatoes.

## Saturday

**Clothing fair** — The JSC Child Care Center's semiannual Clothing Fair will be held from 9 a.m.-noon Sept. 19 at the Child Care Center. Used children's clothes, toys and other child-related items will be offered. For more information, call Julie Kliesing, x31540.

## Monday

**Cafeteria menu** — Special: beef and macaroni. Entrees: ham steak, Parmesan steak. Soup: chicken and rice. Vegetables: green beans, carrots, au gratin potatoes.

## Tuesday

**AFCEA meets** — The Armed Forces Communications and Electronics Association will meet at 11:30 a.m. Sept. 22 at the Lake-wood Yacht Club on NASA Road 1. Gerald Ebker, AFCEA national president and chairman of Federal Systems Co., will discuss "Visions and Goals for AFCEA Over the Next Year and Corporate Opportunities in the Aerospace Industry." Cost is \$12 for members, \$14 for non members; deadline for reservations if Sept. 18. For more information, call Linda Hinton, 282-7682.

**BMC meets** — The Bendix Field Engineering Corp. Management Club will meet at 4:30 p.m. Sept. 22 at the Gilruth Center. Col. Everett

Gibson will discuss the Confederate Air Force's Wings Over Houston airshow. For more information, call Jerry Stoner at 282-3462.

**Cafeteria menu** — Special: Mexican dinner. Entrees: potato baked chicken, barbecue spare ribs. Soup: tomato. Vegetables: squash, ranch beans, Spanish rice, broccoli.

## Wednesday

**Toastmasters meet** — The Spaceland Toastmasters Club will meet at 7:15 a.m. Sept. 23 in the Bldg. 3 cafeteria. For more information, call Darrell Boyd at x36803.

**Cafeteria menu** — Special: baked meatloaf with Creole sauce. Entrees: baked scrod, liver and onions, ham steak. Soup: seafood gumbo. Vegetables: beets, Brussels sprouts, green beans, whipped potatoes.

## Thursday

**AIAA meets** — The American Institute of Aeronautics and Astronautics will meet at 5:30 p.m. Sept. 24 at the Gilruth Center. Astronaut Daniel C. Brandenstein will be the featured speaker, focusing on the INTELSAT Reboost Mission. Cost is \$10 for members and spouses; \$11 for non-members; and \$9 for students. Reservation deadline is noon Sept. 21. For more information, contact Frankie Hap at 333-6064; Ardell Broussard, 283-4214; Carroll Robinson, 283-6000; or Sarah Leggio at 282-3160.

**SCS meets** — The Society for Computer Simulation Bay Area/Houston Chapter will meet at 11:45 a.m. Sept. 24 in the Lockheed Plaza 3 first floor Pic Rm. R. Srin

ivasan of Krug Life Sciences will discuss "Computer Simulation of Physiological Systems in Space Flight Biomedical Research."

**Cafeteria menu** — Special: smothered steak with dressing. Entrees: chicken and dumplings, corned beef with cabbage. Soup: beef and barley. Vegetables: spinach, cabbage, cauliflower au gratin, parsley potatoes.

## Sept. 25

**Cafeteria menu** — Special: tuna and salmon Croquette. Entrees: pork chop with yam rosette, Creole baked cod. Soup: seafood gumbo. Vegetables: Brussels sprouts, green beans, buttered corn, whipped potatoes.

## Sept. 29

**Training workshops** — Two training workshops on "Managing Conflict and Change" and "Using Stress Positively" will be offered to JSC employees at 8:30 a.m. and 1 p.m., respectively, Sept. 29 in the Gilruth Center ballroom. M. Manning, Ph.D., will speak. For more information, call Pam Adams at x33761.

## Sept. 30

**IEEE video conference** — The Institute of Electrical and Electronics Engineers Galveston Bay Section will present a video conference on "Emerging Technologies: Will Your Companies Be Ready?" at 11 a.m. Sept. 30 at the Gilruth Center. Cost is \$50 for members and \$15 for student members. Registration deadline is Sept. 24; for more information call Francoise Stephan at 942-8553.

# Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads may be run only once. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2. No phone or fax ads accepted.

## Property

Sale: Dickinson, 4-2-5-2, formal DR, wetbar, heated pool, fenced, trees, .738 of an acre. x34354.

Sale: Dickinson, FM517W, 3-3-2, 2200 sq ft, living up, lg gameroom dn, 1 acre, well, septic, \$77K. 534-6641.

Sale: Pipers Meadow, 4-2-2, 2-story, FPL, fans, new carpet, vinyl, wallpaper, \$74.9K. Greg, 286-0356 or 470-0433.

Sale: TH, 2-2-5-2, 1400 sq ft, pool, patio, \$71.9K. 333-9733.

Rent: Galv beach house, D/W, cent air, furn.; 3-2-1, CA/H, furn. Ed. Shumilak, x37686.

Sale: Friendswood, French Country estate, 4-3-5-3D, 3478 sq ft, on 5.7 acre, another 5.3 acre avail, \$365K. x39250 or 996-8471.

Lease: Shoreacres, 4-2-2, 2000 sq ft, fenced, no pets, \$650/mo + dep. 488-5501.

Sale: Lake Livingston, Impala Woods at Onalaska, 30 x 70 lot, .5K off water, util avail, paved roads, \$3K. Teena, x37787 or 422-6369.

Sale: Heritage Park, 3-2-2, lg living area, WBFP, updated carpet/bathrooms, deck, fans, blinds, \$79.5K. x32886 or 482-8373.

Sale: Clear Lake Shores, 3-2-2, 2-story contemp, treehouse w/lg garage, 1000 sq ft, water-front for boat, \$139K. 538-1849.

Sale: Alvin, 2-1-1, 5 acres, fenced, trees, barn, horse stalls, pecan/pear orchard, \$115K. Scott, 331-6847.

Sale: Waco area, 117.8 acres rolling pasture, trees, fenced, cross-fenced, grass, 4 tanks, \$700/acre. 532-3348.

Rent: El Dorado/Hwy 3, share 3 bedroom house, \$300/mo + .5 util. 286-0594.

Sale: Green Arbor, 3-2-2. Minh, 333-6806 or 484-2456.

## Cars & Trucks

'90 Plymouth Voyager, auto, pwr, air, 58K mi, ex. cond., \$10.9K. 286-5106.

'91 Chrysler LeBaron Coupe, red, auto, alarm, 33K mi, 2.3L eng, \$8.7K negotiable. 286-7046.

'84 Buick Grand National, Intercooler, Lear Siegler, Sikkens, Mobil 1, ex cond, collectible, \$9250. 554-6432.

'71 Triumph Spitfire, new tires, brakes, shop manuals, 65K mi, \$1.4K OBO. Clay, 280-2505 or 286-7820.

'85 Honda CRX, red, gray int, 5 spd, AC, AM/FM/cass, new tires/brakes, ex cond, 80K mi, \$3.3K. Larry, x33168 or 488-7460.

Sale: '79 Plymouth Volare station wagon, 318 eng, runs good, needs minor body work. Magdi Yassa, 333-4760 or 486-0788.

'86 Ford Bronco XLT, 4WD, low miles, AC, stereo, ex cond, \$7.5K OBO. Ignacio, 282-3661 or 486-1078.

'83 Layton Travel trlr, 25 ft, self-contained, sleeps 8, 20' awning, ex cond, \$4.8K. x34902 or 996-9128.

'91 Pontiac Grand AM LE, 4 dr, air, AM/FM/cass, auto, ex cond, one owner, \$8.4K.

447-4922.

'80 Comuta-car, elec, road licensed, 40 mph, onboard charger, fresh batt, \$995. 538-1437.

'85 Mercury Cougar, AC, PS/PB, cruise, elec, new tags, good tires, ex cond, \$4250 OBO. 847-3146.

'91 Ford Escort LX, blue, AC, AM/FM/cass, tint windows, PS/PB, 27K mi, \$6.6K. 283-1937 or 332-8464.

'89 Ford Tempo, fully equipped, low miles. Robert, 472-6323 or Tamela, x36155.

'82 Volvo DL, ex cond, \$3.2K. 286-6984.

'85 Ford Exp, new tires, struts, batt, belts, AC evaporator, ex cond., \$1.7K. Henry, x30128 or 286-6486.

'86 Chevy Caprice Classic estate wagon, V8, 305 eng, loaded, pwr windows, locks, seats, AC, \$4.5K. 992-5015.

'81 Dodge Colt, 2, one wrecked in rear, the other in front, 1st has motor, but head damaged, sell or parts. Herman, x35095 or 409-389-2461.

## Boats & Planes

'19' Aristocrat, Merc I/O 165 HP, new eng, reupholstered, galv trlr, \$3.5K. 339-1957.

LIDO-14 sailboat, sails, trlr, \$995. R. Hoover, x31360 or 996-7716.

'91/92 Sunfish sailboat, fully equipped, ex cond, \$1.4K. Jones, x38278 or 326-2995.

'86 Bayliner 14' Capri w/trlr, '87 Merc OB ELPTO, fresh water use only, good cond, \$3150. Chuck, 283-5362 or 480-8452.

'88 Bayliner 1700 Capri ski boat, open bow, V-hull, convert top, 85 HP, magnum custom drive-on trlr, \$6K. Ed, 486-0705.

## Cycles

'85 Honda Elite 150 scooter, 11K mi, \$300. 283-0230 or 370-9237.

'89 Schwinn Premis 10 spd, sountour index shift, Sakae crank, Weinmann alloy rims, matrix helmet, ex cond, \$300. Sean Poplin, 333-6610 or 480-7687.

'89 KAW EX 500, 6K mi, \$2K. Tim, x34499.

## Audiovisual & Computers

Tandy 1400LT laptop, 2 HD FD, pwr supply, \$600 OBO. Steve, x37455 or 534-4508.

1040 ST, 1 MB RAM, color monitor + S/W, needs some work, \$300 OBO. John, x35547 or 554-5125.

Garrard turntable, \$25; Samsui receiver/amp, \$100. Ron, 488-6549.

Macintosh software, Claris Works, \$150; Claris Resolver, \$100; Claris Hypercard Dev. kit, \$100; Filemaker Pro 1.1, \$100. Jim, 335-2539 or 474-2368.

Macintosh Powerbook 140, 4 MB, 40 MB HD, documentation, \$1950. Chuck, 283-5362 or 480-8452.

Macintosh Plus, 1 MB RAM, 20 MB HD, ImageWriter II printer, carrying case, \$750 OBO. x45383 or 480-3167.

Macintosh SE, 4 MB, 20 MB HD, \$950. 481-3637.

Nintendo game system, w/8 games, monitor, \$175. James, 997-9979.

## Pets & Livestock

4 yr old brown & white basset hound. Sheryl, x38243 or 482-8490.

Rabbits, mini lops, fuzzy lops. Gailo, 554-6200.

Free, lab mix, 2 yr old, not fixed. Crystal, x35711 or 480-4821.

Chihuahuas AKC, fawn, chocolate, shots, 2

males, 4 mo. old, \$175. Irv, x36461.

Baby birds, cockatiels, parakeets, hand fed. Linda, 484-7834.

AKC Cocker spaniel puppy, born 5-10-92, \$135. Tamela, x36155 or 998-8859.

Palamino Gelding, 12 yrs old, gentle, ex for play day or trail riding, \$1350. 554-6138.

## Musical Instruments

Gemeinhardt Model 3 open holed flute, good cond, \$275 OBO. 487-7306.

Bach Silver Stradivarius trumpet, model 37, ex cond., \$600. Kathy, x39190 or 332-6305.

## Household

Blk sofa/loveseat/chair, \$400; 3 tables, \$400; entertainment center, \$450. Lisa, 996-0042.

Twin sz box spring, matt w/frame, \$60. x33866.

King sz waterbed w/conventional matt, attached end tables, pedestal w/6 drwrs, \$200 or sell matt separate. 486-4055.

Sleeper couch, Castro convertible, \$150. 333-9733.

King sz bed w/hardwood frame, ex cond, spread, pillows, sheets, matt cover, \$225. x39282 or 337-2682.

Color tv monitor, blk matrix tube, remote, stand, ex cond, \$220. Gary, x39552 or 480-4990.

Keg refrig, 20 cu ft, w/ice maker, incl empty keg, gas bottle, all hoses, \$275. x39282 or 337-2682.

Twin bed w/headboard/footboard, matt/box springs, \$85; kitchen tbl w/leaf insert, 4 chairs on rollers, \$135; lg capacity microwave, \$90. 244-5035 or 334-4124.

Whirlpool elec self-cleaning oven, almond, 30 x 25, ex cond, \$250. 486-2451.

Wall unit, contem design, \$80. Ron, 488-6549.

Gas dryer, \$100. Bob, 486-6413.

King sz waterbed, flat matt, lumbar support, heated, padded side rails, 6 drwrs, sheets, ex cond, \$450; green refrig, works great, \$100. Scott, x32583 or 992-5535.

Kids size table, 4 chairs, good cond, \$25. x36309 or 474-9747.

Multi colored brwn sofa, \$75; 4 pc glass canister set, \$10; 20 pc glassware set, \$10; 30 pc dinnerware set, \$10. Netta, x30086.

French loveseat, sofa, tufted, completely rebuilt, upholstered, \$600. 996-6907.

Contemporary sofa, maching chair, \$125. Terry, 283-6846 or 554-6631.

Overstuffed chair, gray velvet, good cond, \$75 OBO. 538-3320.

Ivory day bed, \$200 OBO. Trudy, 333-6688.

China buffet, country French, lt finish, no flaws, ex cond, \$350. 992-5745.

## Wanted

Want '84 or earlier remote unit for Sears garage door opener, working or not. 326-2307.

Want '80 - 85 Toyota, Nissan, or Mazda w/rear wheel drive, good eng, working AC, will pay up to \$900. Chuck, 282-3907.

Want old vacuum tubes. 992-3876.

Want female roommate, nonsmoker, to share 3 BR in Seabrook, \$370/mo incl util. Ann, 282-3790.

Want roommates to share 4 BR house in Clear Lake, rent negotiable, no pets/smokers. Jeff, 335-4320 or 480-1242.

Want cheap car for school & work. 486-8400 or 280-2239.

Want small clean pupop trlr, under 1000 lbs;

children's encyclopedia set, less than 8 yrs old. 333-7010 or 482-5393.

Want used Burley or equivalent 2 wheel child carrier. Michele, 482-9576.

Want ASEM patch from STS-49. Andrew, 280-0647.

Want to buy good used computer, software. 286-6984.

Want childcare for 7 mo old baby, flexible, approx 30 hrs/week, Clear Lake. Laura, 488-6560.

Want old fishing tackle and related items. 225-4064.

Want small office refrig in good cond., x39552 or 480-4990.

## Miscellaneous

Wood shutters, misc. sizes, \$1/ea. 992-3876.

Migata 15 spd touring bike, women's frame, \$250 OBO; Winchester 70XTR 300 mag, Leopold scope, access, \$600 OBO. Steve, x37455 or 534-4508.

Solid wood brwn desk w/lamp, chair, cross-bow, arrows, case. Sheryl, x38243 or 482-8490.

'79 Ford Pinto body parts. Trey, 484-7834.

Treadmill, ex cond, \$350; hand rubbed/stained roll top desk, \$250; computer monitor mono, ex cond, \$125 OBO; oak dresser w/ mirror, \$125; picture-disk Elvis album, \$125. Scott, x32583 or 992-5535.

EZ-lift trlr tow package up to 850 lb wt and sway control, \$75; girls 26" 5 spd bike, \$30. 337-4319.

Collection of 20 silver quarters, 50 silver dimes, \$40; guitar, \$15; mechanical drawing set, \$15; 20 bookcases, 20 x 79, pecan grain, arched style, \$150/both; miniature covered-wagon w/light, \$15. 482-8827.

Antique treadle sewing machine, ex cond, \$150. 943-2208.

Spiderman comic book collection, approx 200 issues, \$1K OBO. Randy, x32570.

7.62 x 39 ball ammo for SKS, one case of 1440 rounds, \$135. Howard, x37346.

Custom built armoire, 23 x 45 x 78, lt finish, \$200. Debra, 480-1284.

Golf clubs, Slotline Inertial Irons, 2-PW, ex cond, \$200. Gary, 333-5227.

'92 Honda Accord floor mats, gray, \$50. 280-2594.



# 50

## Ace tradition keeps delivering as shuttle flies 50th mission

By Kari Fluegel

**STS-1, April 12 - 14, 1981** — On a warm Florida morning, at 6 a.m. Central, the engines and boosters of the Space Shuttle *Columbia* (above) roared to life as the world's first reusable spacecraft.

"The shuttle is the world's greatest all-electric flying machine," STS-1 Pilot Robert Crippen said two days later as *Columbia* rolled across the desert lakebed steered by Commander John Young.

Since that day, four other orbiters have scorched the launch platforms at the Kennedy Space Center a total of 50 times starting missions to deploy satellites, observe the solar system and explore man's ability to survive in microgravity.

Those 50 flights are a story of hard-won triumph that today makes the Space Shuttle system one of the most reliable space vehicles in the history of man's exploration of the universe.

**STS-2, Nov. 12 - 14, 1981** — *Columbia's* second flight marks the first time a spacecraft is used twice. Crew members Joe Engle and Richard Truly also put the robot arm through its paces for the first time.

**STS-3, March 22 - 30, 1982** — A wet lake bed in California forces *Columbia* to land for the first, and only time, on Northrup Strip at White Sands, New Mexico.

**STS-4, June 27 - July 4, 1982** — The Space Shuttle Program flies its first mission for the Department of Defense. The fourth flight also signals the end of the Orbital Flight Test Program and opens the door for standard orbital operations.



**STS-5, Nov. 11 - 16, 1982** — The "Ace Moving Company" makes its first delivery when *Columbia's* first four-member crew deploys two communications satellites — Satellite Business System's SBS-3 and Telesat Canada's Anik C-3.

**STS-6, April 4 - 9, 1983** — *Challenger* makes its first flight during which Astronauts Story Musgrave and Donald Peterson spend more than four hours in the cargo bay for the shuttle program's first extravehicular activity.



**STS-7, June 18 - 24, 1983** — "Have you ever been to Disneyland? ... That was definitely an E ticket," said Mission Specialist Sally Ride after the launch that made her the first American woman in space.

**STS-8, Aug. 30 - Sept. 5, 1983** — Shuttle engines light up the night sky for the first time as *Challenger* climbs to orbit during the first night launch. The crew, including the first black astronaut in space, Guion Bluford, also performs the first night landing.

**STS-9, Nov. 28 - Dec. 8, 1983** — *Columbia's* crew becomes the first six-person crew to be launched into space on a single vehicle. The mission also checks out the Spacelab module for service.

**STS 41-B, Feb. 3 - 11, 1984** — Astronaut Bruce McCandless becomes one of the smallest free-flying spacecraft ever as he tests the Manned Maneuvering Unit for the first time. *Challenger* came home to KSC, the first shuttle to land in Florida.

**STS 41-C, April 6 - 13, 1984** — Astronauts James Van Hoften and George "Pinky" Nelson perform the first on-orbit repair, fixing the Solar Max satellite as Ace ventures into the satellite repair business.

**STS 41-D, Aug. 30 - Sept. 5, 1984** — *Discovery* successfully launches on its maiden flight two months after experiencing the first "abort after ignition" when a main engine shut-down scrubbed the launch attempt four seconds before SRB ignition.

**STS 41-G, Oct. 5 - 13, 1984** — *Challenger's* sixth flight marks sever-

al firsts including the first flight of two female astronauts, Ride and Kathy Sullivan; the first flight of a Canadian payload specialist, Mark Garneau; the first spacewalk by a female, Sullivan; and the first shuttle astronaut to fly four times, Crippen.

**STS 51-A, Nov. 8 - 16, 1984** — EVA Astronauts Dale Gardner and Joe Allen capture the PALAPA B-2 and WESTAR VI satellites for return to Earth as Ace expands its services.

**STS 51-C, Jan. 24 - 27, 1985** — A five-member crew flies the first DOD dedicated and classified mission.

**STS 51-D, April 12 - 19, 1985** — Crew members including Sen. Jake Garn, the first elected official to fly in space, build "fly swatters" to try to trigger the sequence start lever of the Hughes SYNCOM IV-3 satellite. The lever had failed to open during the deploy sequence.

**STS 51-B, April 29 - May 6, 1985** — Two monkeys and 24 rodents fly as part of the second spacelab mission, the first time American astronauts have flown with live mammals in the spacecraft.



**STS 51-G, June 17 - 24, 1985** — A seven-member crew successfully deploys three communications satellites during the seven-day flight.

**STS 51-F, July 29 - Aug. 6, 1985** — *Challenger* carries the Spacelab Pallet to a 173-mile orbit, completing the on-orbit verification of the spacelab components.

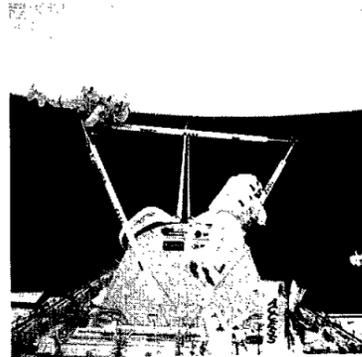
**STS 51-I, Aug. 27 - Sept. 3, 1985** — Astronauts James Van Hoften and William Fisher complete another on-orbit repair mission by fixing the SYNCOM IV-3 satellite deployed by STS 51-D.

**STS 51-J, Oct. 3 - 7, 1985** — *Atlantis* makes its maiden flight during the second classified DOD shuttle mission.

**STS 61-A, Oct. 30 - Nov. 6, 1985** — Spacelab D-1 is flown, the

first mission financed and operated by another country, West Germany.

**STS 61-B, Nov. 26 - Dec. 3, 1985** — Astronauts Jerry Ross and Sherwood Spring perform the first experiment to assemble large space structures. ACCESS was a "high rise" tower composed of small struts and nodes and EASE was a geometric structure composed of beams and nodes.



**STS 61-C, Jan. 12 - 18, 1986** — After seven launch delays, *Columbia* launches and deploys the RCA KU-1 satellite.

**STS 51-L, Jan. 28, 1986** — The Space Shuttle *Challenger* is destroyed 74 seconds after lift-off killing its seven-member crew.

**STS-26, Sept. 29 - Oct. 3, 1988** — After more than two years and the redesign of the solid rocket boosters, NASA returns to flight with the Space Shuttle *Discovery* and an all-veteran crew which successfully deploys a Tracking and Data Relay Satellite.

**STS-27, Dec. 2 - 6, 1988** — The third Department of Defense mission marks *Atlantis'* return to flight.

**STS-29, March 13 - 18, 1989** — The third Tracking and Data Relay satellite is deployed when *Discovery* makes its eighth flight.

**STS-30, May 4 - 8, 1989** — NASA continues its planetary exploration program with the deployment of Magellan, a Venus mapping orbiter.

**STS-28, Aug. 8 - 13, 1989** — *Columbia* makes its eighth flight, the first since 1986, with a five-member crew and a classified Department of Defense payload.

**STS-34, Oct. 18 - 23, 1989** — Galileo, the first spacecraft to orbit an outer planet, starts its sling-shot journey to Jupiter after being released from *Atlantis'* cargo bay.

**STS-33, Nov. 22 - 27, 1989** — *Discovery* leaves Launch Pad 39B at 6:23 p.m., illuminating the Florida

coast with the first night launch since 1985.

**STS-32, Jan. 9 - 20, 1990** — The five-member crew of *Columbia* retrieves the bus-sized Long Duration Exposure Facility which had been deployed almost six years earlier on STS 41-C.

**STS-36, Feb. 28 - March 4, 1990** — *Atlantis* completes the sixth classified Department of Defense mission after a launch postponement due to Commander John O. Creighton's upper respiratory infection, the first scrub caused by crew illness.

**STS-31, April 24 - 29, 1990** — The first of the four Great Observatories is deployed as the Hubble Space Telescope begins its 15-year exploration of the universe.

**STS-41, Oct. 6 - 10, 1990** — *Ulysses* leaves *Discovery's* payload bay to embark on a five-year journey to explore the Sun's uncharted polar regions.

**STS-38, Nov. 15 - 20, 1990** — *Atlantis* flies the seventh and final classified Department of Defense dedicated mission.

**STS-35, Dec. 2 - 10, 1990** — *Columbia* launches with the ASTRO-1 payload after hydrogen leaks cause a seven-month delay in the mission.



**STS-37, April 5 - 11, 1991** — A contingency EVA to free the antenna of the Gamma Ray Observatory marks the first spacewalk in more than five years and the return of "Ace Delivery."

**STS-39, April 28 - May 6, 1991** — Tests of Strategic Defense Initiative experiments highlight the first unclassified Department of Defense mission.

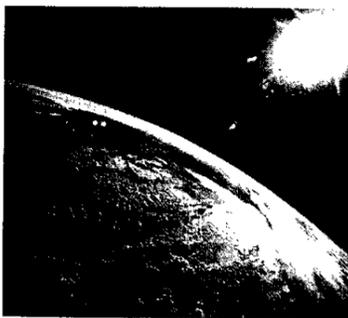
**STS-40, June 5 - 14, 1991** — Spacelab Life Sciences-1 focuses on human adaptation to microgravity in the first mission dedicated to life sciences.

**STS-43, Aug. 2 - 11, 1991** — Commander John Blaha becomes the first shuttle astronaut to fly three times since the Return to Flight.

Please see SHUTTLE, Page 4

# Shuttle program marks golden mission with 50th launch

(Continued from Page 3)



**STS-48, Sept. 12 - 18, 1991** — NASA deploys the first major element of its Mission to Planet Earth, the Upper Atmosphere

Research Satellite.

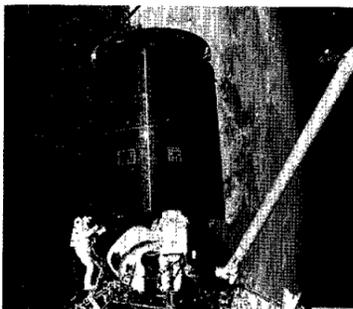
**STS-44, Nov. 24 - Dec. 1, 1991** — NASA continues its cooperation with the Department of Defense flying an unclassified payload designed to detect nuclear detonations, missile launches and space launches.

**STS-42, Jan. 22 - 30, 1991** — International cooperation continues with the first International Microgravity Laboratory mission which contains experiments representing 16 countries.

**STS-45, March 24 - April 2, 1992** — *Atlantis* carries the Atmospheric Laboratory for Applications and Science-1 payload, the first flight of instruments designed to study an

entire 11-year solar cycle.

**STS-49, May 7 - 16, 1992** — "Houston, I think we've got us a satellite." — STS-49 Commander Dan Brandenstein when Mission Specialists Pierre Thuot, Rick Hieb

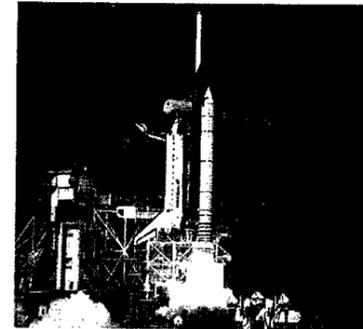


and Tom Akers grabbed the INTELSAT satellite. STS-49 also was the maiden flight of *Endeavour*, the first three EVA flight, the first three-man EVA and the first use of a drag chute.

**STS-50, June 25 - July 9, 1992** — The seven-member crew sets a new mission duration record of 13 days, 19 hours and 30 minutes and ushers in the age of extended shuttle flights.

**STS-46, July 31 - Aug. 8, 1992** — The first flight of Italy's Tethered Satellite System generates new orbital flight techniques and gives researchers a look at space flight of the future.

**STS-47, Sept. 12 to —, 1992** —



Carrying the first Japanese spacelab payload, *Endeavour* launches on time at 9:23 a.m. Central, marking the 50th flight of the Space Shuttle System.

## NASA planes help assess recent hurricane damage

An Ames Research ER-2 aircraft is taking high altitude aerial images of the Hawaiian Islands to help officials determine the full extent of the damage caused by Hurricane Iniki.

"The State of Hawaii has an urgent need for high quality, high altitude aerial photography...to assist us in our planning and recovery operations in the aftermath of Hurricane Iniki," the Director of Hawaii's Office of State Planning, Harold Masumoto, stated in a letter Monday to Ames' High Altitude

Missions Branch Chief John Arvesen.

The ER-2 left Ames Wednesday to fly to Hawaii to take the photographs and landed at Barber's Point Naval Air Station on Oahu. The aircraft is remaining in the islands for about a week, Arvesen said.

The ER-2 will take black and white, color, color infrared and digital images (using a thematic mapper simulator camera). The black and white film will be processed

and analyzed in Hawaii. The other images will be flown back to the mainland immediately for processing at Ames.

The ER-2 is the modern successor to the 1950s vintage U-2. It is considered an exceptionally versatile research aircraft and well-suited for multiple mission work. Flying at 68,000 feet, the ER-2 operates above 95 percent of the Earth's atmosphere. At altitudes in that range, data gathered by the aircraft's sensors are similar to that

gathered by space-based satellites.

NASA provided similar support to the State of Florida after Hurricane Andrew when a Learjet from the Stennis Space Center was equipped with a variety of sensors and cameras to gather data on urban, suburban, farm and natural resource damage in the South Miami-Homestead area. This data enabled disaster officials to get a far more accurate picture of damage than they had obtained by ground inspections.

Achieving this degree of accuracy enabled the Governor's office to make a realistic cost estimate of the damage to present to the state legislature and to Congressional committees in Washington.

The Stennis center also obtained pre-Andrew aerial photographs of the area from a commercial aerial photography firm. They will be used in conjunction with data from the Learjet mission to plan reconstruction and rehabilitation of natural resources.

## FWP award to recognize advancement of JSC women

One of four JSC employees will be recognized for their contribution toward the advancement of women at JSC during a special ceremony and reception Sept. 30 at the Gilruth Center.

JSC Acting Director Paul J. Weitz will presenting the Virginia B. Hughes Equal Opportunity Award sponsored annually by the Federal Women's Program.

The award recognizes a civil service employee for their efforts toward the advancement and achievement of women at JSC.

This year's nominees are Harvey L. Hartman of the Human Resources Office, Donna M. Blackshear of the Administration Directorate, Alice T. Lee of the Safety, Reliability and Quality Assurance Office, Carl H. Lattier of the Office of the Comptroller and Denise L. Baisden of the Space and Life Science Directorate.

The awards ceremony is set for 4 p.m. in the Gilruth Ballroom. A reception honoring all the nominees will follow immediately. All JSC contractors and employees are invited to attend.

For more information, contact Pam Adams at x33761.

## Security clarifies form for visitors

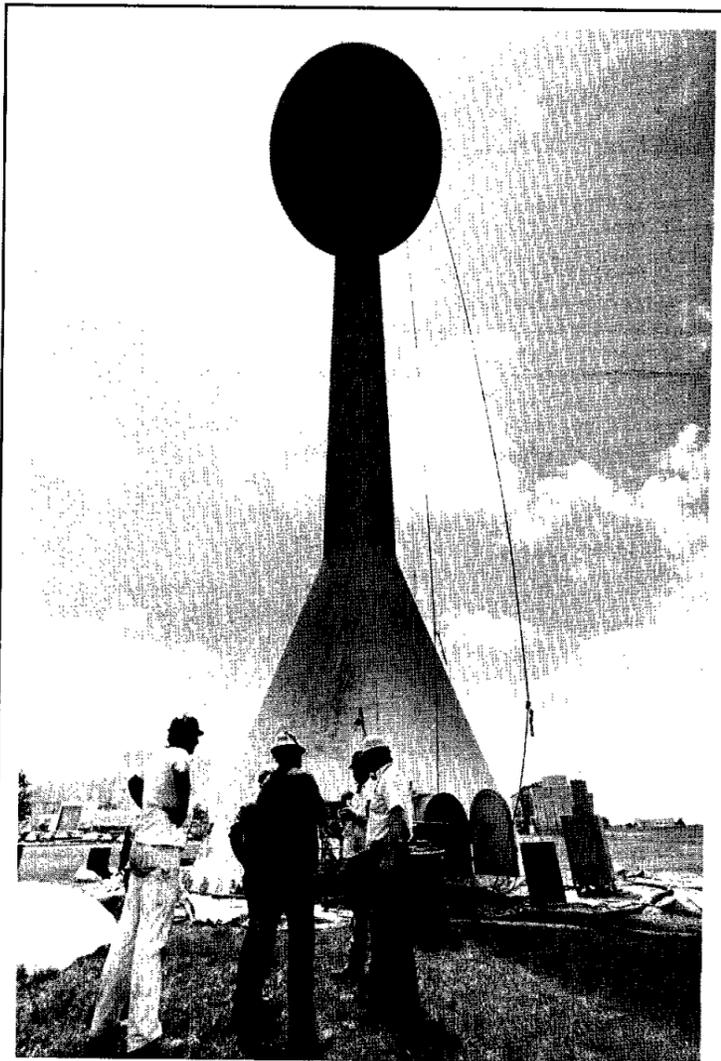
Earlier this year JSC's security office instituted a new policy for escorting friends and relatives to various sites around the center, but slight amendment is needed to the announcement that described the new procedure, security officials recently said.

The phone number listed for Building 9N on JSC Announcement 92-53, dated April 28, 1992, is incorrect. All approval requests for unofficial visitors to Bldg. 9N should be made at 483-6325.

## Correction

In the People Column of Sept. 11's Space News Roundup, STS-46 Lead Payload Officer Jeff Hanley was incorrectly identified as a Rockwell employee. Hanley is employed in JSC's Payload Operations Branch of the Mission Operations Directorate.

The Roundup regrets the error.



**Bldg. 40, also known as the water tower, has been getting a new coat of paint in recent weeks. The 163-foot tank, which holds potable water, was last painted 10 years ago and the new paint job is expected to take about two months.**

## STS-47 studies continue

(Continued from Page 1)

upright after spaceflight without dizziness or lightheadedness. Principal investigator is Dr. John Charles.

Other JSC experiments a test of the Fluid Therapy System which is designed to create sterile water and intravenous solutions for the Health Maintenance Facility on Space Station *Freedom* and the Magnetic Resonance Imaging After Exposure to Microgravity experiment which employs MRI to examine muscle and bone in selected crew members before and after the mission.

Principal investigator for the Fluid Therapy System is Dr. Charles Lloyd and for the MRI experiment is Dr. Adrian LeBlanc of Baylor College of Medicine.

In an Ames Research Center

experiment, frog eggs are being used to determine if new generations of species can be conceived and develop normally in a microgravity environment. Tadpoles hatched Wednesday and will be inspected after the completion of the mission.

Also on *Endeavour* are two carp for a Japanese experiment studying the effects of microgravity on the gravity-sensing organs of the inner ear.

As part of the Japanese material science investigations, Mohri demonstrated suspending a heated glass sample to avoid contact with its container. While the glass was levitated by sound waves traveling between twin curved mirrors, it was heated by the focused light of a pair of halogen lamps.

## Groups honored for efforts in recent SR&QA activities

More than 50 JSC contractors and employees have been recognized by Charles S. Harlan, director of Safety, Reliability and Quality Assurance, for their participation and efforts in two recent activities.

Members of both groups — the Space Shuttle EEE Parts Group and the Reliability Block Diagram Analysis Team for the Space Station *Freedom* Attitude Control Functions — received certificates during a special ceremony.

Those participating in the shuttle parts group were Rita F. LeBeau of Safety, Reliability and Quality Assurance; Jean P. Womack of Space Shuttle Integration and Operations; Betty L. Bower, Pamela J. Branch, Patrice A. Burfict, Joseph T. Lewis, Yolanda M. Marshall, Paul F. Meier, Madhu C. Rao and Irene L. Sheppard, all of Loral-Houston; and Kysun "Sonny" V. Nguyen of Loral-Downey.

Members of the Reliability Block Diagram Analysis Team included eight members of the Safety Reliability and Quality Assurance Office. They were Raphael A. Grau, Malcolm J. Himel, Stanford J. LeBlanc, C. Diane McLaughlin,

Andrew J. Mitchell, Hung X. Nguyen, Gerald D. Readore and I. Scott Woodard.

Team members from the Mission Operations Directorate were Rebecca L. Kirk, Mark A. McDonald, W. Clay McFaden, Margaret G. Savoy and Kevin N. Window, while those from the Engineering Directorate were Larry W. Abbott, William R. Acres, Rex A. Delventhal, Jeffery S. Dominick, Roberto M. Egusquiza, Guy L. King, Charles L. Ritterhouse, William C. Stagg and Joseph E. Yeo.

From Loral-Houston, team members were Sean D. Carter, Maxwell D. Haddock, Paul Wilson, Richard G. Cagle, David A. Flowers, Richard W. McDowell, Avadhesh Agrawal, James R. Damm, Mike W. Hagedorn, Tinh M. Truong, Henry D. Valdez, Lance T. Wozniak, Timothy G. Dotson, Debra M. Giamfortone and Michael B. Moskowitz.

Others included Gary W. Bunting, David F. D'Andrea, Charlie Ferrarella, Mary B. Kohler, Sai Ling, Andrew M. Melnyk, Joseph B. Metcalfe, Walter E. O'Brien, Clark D. Rucker and James D. Wilder.

## Training catalog to be distributed

Employees will have the opportunity to map out their training activities for the next year when the FY93 Training Catalog is distributed to employees.

Compiled by the Human Resources Development Branch, the catalog details the available course and highlights helpful hints on selecting and registering for classes.

Human Resource officials encourage employees to discuss their training plan with supervisors so a program that aligns personal goals with those of the organization can be developed.

Catalogs will be distributed during the next several weeks. Contact AH3 at x35266 for additional catalogs after Sept. 28.

## Space News Roundup

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

Dates and Data submissions are due Wednesdays, eight working days before the desired date of publication.

Editor ..... Kelly Humphries  
Associate Editor ..... Kari Fluegel

## Opening available in 3-year-old class

The JSC Child Care Center has one opening in the 3-year-old class, and the waiting list for that age has been exhausted, center officials recently announced.

The class consists of a maximum of 15 children supervised by two full-time teachers.

Parents may leave their children from 7 a.m. -5:30 p.m., Monday through Friday. The cost is \$78 per week.

Interested parents should contact Georgia Strain at x 34734 for information on how to place a child at the center.