



### Swan song

Photographs tell part of the story about the last planned Department of Defense mission. Photos on Page 3.



### Illuminating job

Bob Armstrong earned the honors of hanging the STS-54 plaque in Mission Control. Story on Page 4.

# Space News Roundup

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## Cohen vows to find \$10 million in station reserves

Decision arises out of commitment to meeting *Freedom* schedule, budget

By Kelly Humphries

JSC Director Aaron Cohen vowed this week that JSC will find \$10 million to put toward Space Station *Freedom* reserves in fiscal 1993, and has ordered senior managers to redouble their work with the rest of the NASA team to keep the orbiting laboratory on schedule and on budget.

A leading candidate in the search for efficiencies is a plan to use NASA employees to perform more of the Work Package 2 work, reducing the cost of the contract. JSC organizations that are deeply involved in space station work

would be asked to dedicate a larger portion of their civil service staff's work to *Freedom*.

"I am committed to controlling space station costs, and I believe we can do it if the agency continues to work as a team," Cohen said. "In doing our part, this center will have to make some hard choices that will affect many organizations. But I'm sure that if we work together, we can overcome this threat to a facility that is so important to the future of our country and its international partners."



Cohen's decision grew out of a need for more space station program reserve funds. The

need was underscored at a recent programwide review of the space station budget that took place at Work Package 2 prime contractor McDonnell Douglas' facility in Huntington Beach, Calif., following a report by McDonnell Douglas that included projections on how much it would need to spend in fiscal years 1993 through 1995 to keep the station on schedule.

McDonnell Douglas reported it expected to

spend about \$500 million more than it had anticipated on Work Package 2 during that period. NASA's estimates for that same period had projected a cost growth of about \$300 million, which was within the scope of the available reserves.

At the meeting, which focused on options to reduce project costs, maintain schedule and establish adequate reserves for the overall program, NASA and the contractor hammered out a series of efficiency measures that brought the growth estimates down to about \$350 million.

Plases see **SPACE**, Page 4

### Program lets girls imagine career options

JSC's Federal Women's Program Council is seeking volunteers, both men and women, to participate in a new event—"Take Our Daughters to Work"—April 18.

The civil service sponsors will bring a daughter, niece, cousin or neighbor between the ages of 9 and 15 to their work place and give the girls an opportunity to observe them at work.

The program encourages the girls to imagine themselves as engineers, scientists, journalists, paralegals, technicians, lawyers and others; careers they may not otherwise have considered.

"This investment by employers and employees is an excellent opportunity to have an enormous positive impact on young girls' futures," said Federal Women's Program Manager Pam Adams.

Research has shown that most girls feel confident in themselves by age 9, but that by age 11 two-thirds have lost their confidence, which affects them as adults, Adams said. Girls enter math and science fields less frequently than boys because they receive less encouragement from educators and tend to view math incompetence as a personal failure. The presence of a caring adult role model is critical to the development of a confident, competent girl, she added.

The FWPC is designing activities for girls to challenge their paradigms and to explore and discover the varied careers in the space program. Activities will begin at 8:30 a.m. in Teague Auditorium with selected

Plases see **FWP**, Page 4



JASON Project curriculum coordinator Peter Fish demonstrates what happens when a barge sinks for teachers preparing for the upcoming JASON Project in the Gilruth Center. Last year's accidental sinking of a barge led to a volume displacement demonstration.

### JSC helps link students with subs

About 175 teachers from Texas schools descended upon JSC last week to prepare for an educational adventure that will take their students—via interactive video linkups—on a deep dive to study "black smokers" off Mexico's Baja coast.

The teachers were at JSC for an in-service discussion and demonstration of the curriculum for this year's JASON Project, for which JSC will serve as one of 26 Primary Interactive Network Sites from March 1-13, according to JSC Educational Programs Officer Bob Fitzmaurice.

Peter Fish of the National Science Teachers Association, a partner in the JASON curriculum development effort, briefed the teachers on the

lesson plans and explained how selected students from each PIN Site will be able to talk live with scientists investigating the hydrothermal vents and strange creatures that live off of them through the use of the submersible vehicles Turtle and JASON.

Many of the teachers visiting JSC were enthusiastic about the opportunity to participate.

"I see this as a very interesting project because it covers so much of the curriculum. It's in different areas, not only science but social studies and math, also," said teacher Connie Mangin of Orange Grove Elementary in Aldine.

Plases see **JASON**, Page 4

## Shuttle flight bridging gap to station era

By Kelly Humphries

The American astronauts who will spend nine days in space on the STS-55 mission said Thursday they're ready to go, but that the hardships of training overseas point out areas of concern for the Space Station *Freedom* era.

Commander Steve Nagel, Pilot Tom Henricks, Mission Specialists Jerry Ross, Bernard Harris, Charles Precourt and Payload Specialists Hans Schlegel and Ulrich Walter are scheduled to begin their mission in late February.

They'll work on more than 90 investigations into fluid physics and human physiological changes in microgravity. Additional experiments will continue investigations of the Earth's atmosphere and its topography, as well as galactic astronomy and technology development.

"D2 to me is a very exciting mission," Nagel said. "It bridges the gap and makes the transition into the space station era."

Payload Commander Jerry Ross said training of the U.S. astronauts with the Spacelab-D2 experiments in Germany had been excellent but that the need to return to JSC for integrated simulations had kept them away from hands-on refreshers for the past six months.

"I think we learned it's not a viable way to do business for *Freedom*," Ross said. "Long-distance training is difficult, and we've trained here for the past six months without experiment hardware."

Ross said training in Germany was a good experience, but that he would work to make sure the lessons learned about overseas training are remembered as plans for training crews for the international orbiting laboratory *Freedom* are developed.

"We had to leave our families and go over there and live for periods of four to five weeks and train there,"

Plases see **COLUMBIA**, Page 4



## JSC worker NASA Contract Manager of Year

Administration's Mark Hershey keeps looking at big picture

Mark Hershey, a JSC contract specialist who saved the government some \$6 million, has been named NASA's Contract Manager of the Year for 1992.

Hershey, who works in the Administration Directorate, is now the contracting officer and a Source Evaluation Board member for the Engineering, Testing and Analysis contract that covers support to the Engineering and Space and Life Sciences Directorates, as well as the New Initiatives Office.

JSC nominated him for his work monitoring two major space shuttle contracts—the Flight Equipment Processing Contract and the Shuttle Remote Manipulator System Contract—valued at more than \$341 million, and the Engineering Support Contract, valued at more than \$1 billion.

What helped Hershey earn the award was, in part, a philosophy he brings to his work.

"One of the things I try to do when I see a problem is to find not just the solution that will solve it that day, but I try to look at the big picture, at what we're really trying to accomplish here and what's a long-term solution that's going to make an impact to help get that done," he said.

"Sometimes we get so wrapped up in our day-to-day jobs that we don't step back and think about, gee, this is costing a lot of money and even though it is serving a purpose if we did it a different way it would save a lot more money, save time and make the job better."

NASA Headquarters' Procurement Office cited Hershey for his work in developing a better system of cost reporting and a simplified system of paying the contractor where hundreds of separate accounts previously had been needed. He also effectively tied incentive payments to contractor performance.

In particular, Hershey developed a reporting system for Spar Aerospace, the Canadian company that builds shuttle robot arms, which keeps NASA up to date on exactly how much it is spending in spite of quickly fluctuating U.S.-Canadian exchange rates.

"The reason it's so complicated is that you have three parties involved," Hershey said, "you have the U.S. government, the Canadian government and Spar."

On FEPC, Hershey worked with the contractor—Boeing Aerospace—to improve its reporting methods to better track the costs of outfitting shuttle missions so

Plases see **HERSHEY**, Page 4



JSC Photo by Bill Blunck

NASA Contract Manager of the Year Mark Hershey works in his office in Bldg. 45.

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.

Sleeping Birdie (10:30 a.m. Feb. 13, Summit): \$8, limit 6.  
Valentine Dinner Dance (7 p.m. Feb. 13, Gilruth): \$15, tickets go on sale Feb. 10.  
EAA Houston Livestock Show and Rodeo (Astrodome, upper level): \$9, limit 4 tickets. Call x35350 for dates.  
Space Center Houston — Discount tickets: adult, \$7.50; child (3-11) \$4.50; commemorative: \$8.75.  
Metro tickets — Passes, books and single tickets available.  
Movie discounts — General Cinema, \$4; AMC Theater, \$3.75; Loews Theater, \$4.  
Entertainment '93 and Gold C coupon books, stamps, Walt Disney Club memberships, business cards, stamps and souvenirs also available.

JSC

## Gilruth Center News

**Sign up policy** — All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a badge or EAA membership card. Classes tend to fill up four weeks in advance. For more information, call x30304.

**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.

**Defensive driving** — Course is offered from 8 a.m.-4:30 p.m. March 6. Cost is \$19.

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

**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 for eight weeks.

**Bench aerobics** — Class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$32 for eight weeks; participants must provide their own benches.

**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.

**JSC Golf Association** — JSCGA is accepting members for the 1993 season. League fee is \$55; maximum handicap is 36. First tournament is Feb. 20. For more information, call Mike O'Reilly, 283-9242.

JSC

## 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

Rent: Winter Park, Colorado, 2-2 condo, sleeps 6, furn, \$120/night. 488-4453.

Sale: Shoreacres, 4-2-2, pool, wooded lot, trees, \$89K. 333-7615 or 470-2592.

Sale: Dickinson, 4-3-2D, study, game rm, screen porch, lg kit w/Jennaire, new ceramic tile, util rm inside, lot w/trees, pkg for boat/MH, \$129.9K. Coy, x39282 or 335-0641.

Rent/Sale: condo, 1 BR, study, W/D, dishwasher, ceiling fans, cable hookup, all elec. 488-2946.

Rent: Sagement, 3-2-2, fresh paint, new carpet, \$625/mo. + dep. 481-5034.

Sale: Dickinson Bayou, 4-2.5-2, pool, trees, sec sys. x34354 or 337-1640.

Rent: Breckenridge, CO, ski house, sleeps 12, overlooks ski area. 303-482-9124.

Sale: South Shore Harbour, 3-2-2, lg island kit w/breakfast rm, living/dining, deck w/ceiling fan, trees, marble jacuzzi, \$115.5K. Bob, x33057 or 538-3431.

Lease: Univ Green TH, 3-2-2, detached gar, high eff AC, fans, fenced backyard, 1-story, avail immediately. 488-1292.

Rent: Galv condo, furn, sleeps 6, Seawall & 61st St, cable, pools, wkly/wknd/daily rates. Magdi Yassa, 333-4760 or 486-0788.

Rent: Arkansas cottage overlooking Blue Mountain lake, furn, wooded, 4 acres, screened porch, antiques, \$250/wk, \$50/day. x33005 or 538-4141.

Sale: Pebblebrook condo, 1 BR, W/D, vaulted ceiling, \$24.5K. 534-3046.

Sale: CL Shores, 3-2-3, boatslip, \$122.5K. 538-1849.

### Cars & Trucks

'86.5 4 x 4 King Cab Nissan PU, blk, AM/FM/cass, tint windows, 5 spd, ex cond, \$6K; '59 Chevy PU for parts or restoration. 334-2335.

'91 Chev Cavalier, 2 DR, blue, loaded, \$5.9K. 928-4108 or 369-3328.

'86 Ford T-Bird, lt blue, 85K mi, V6, auto, pwr equip, AM/FM/cass, AC, \$2.4K OBO. x30764 or 334-5270.

'84 GMC S-15 longbed PU, good cond, \$3.2K OBO. David, 283-5883.

'91 Lexus ES-250, auto, AC, AM/FM stereo, low mi, leather int, \$19K. Warren, x32270 or 554-4506.

'88 Cadillac Coupe DeVille, high mi, good cond. 774-4321.

'85 Ford Escort, gold, auto, AC,

AM/FM, \$999. 333-5493.

'84 Toyota Corolla SR-5, hatchback, low mi, ex cond, \$2995. 482-1385.

'68 Mustang, red, body & int need work, runs excellent, \$1.3K. 337-4182.

'86 Pontiac Grand Am, V6, auto, 4 DR, tilt, cruise, new AC compressor, \$3K. Jeri, 333-7552.

'90 Acura Legend L Coupe, gray/leather, 51K mi, all records, ex cond, \$18K; '84 BMW 633CSI, 90K mi, champagne w/leather int, ex cond, \$7.7K. x33640.

'91 Toyota 4 x 4, blk, low mi, AM/FM/cass, bedliner, \$12.2K. Gary, 474-4156.

'86 Chevy Cavalier RS, 4 DR, auto, tilt, PW/PDL, AC, 140K mi, \$2.3K OBO. x33830 or 996-0876.

'87 Chevy Camaro IROC Z-28, 305 V8, red, auto, PW, PDL, phatch, map lts, new tires, 120K mi, \$4K OBO. x38785 or 409-945-3235.

'86 Ford F150 w/camper shell, 13K mi, good cond, \$6K. 333-6795 or 409-925-2213.

'76 Datsun 280Z 2+2, bronze/brwn, 66K mi, \$2.1K. Everett, x36224 or 488-6024.

'76 BMW 2002, rebuilt eng, AC, sunroof, \$3K. George, x35398 or 474-7021.

'67 Ford F100 PU, 390 V8, good cond, \$1K OBO. 484-7104.

'80 Merc Zephyr, blk, red int, air, auto, 35K mi, ex cond, \$2.5K. x35399 or 486-4961.

### Boats & Planes

'24' Searay cabin cruiser w/trlr, 350 hp I/O motor, ship to shore radio, hydraulic trim tabs, blue canvas top, ex cond, \$13K. 482-7546.

'90 16' Kenner, center console, 88 hp Johnson motor-low hours, 22 gal fuel tank, all carpet, \$7.2K. 470-2592.

17' Starcraft motor boat w/7.5 Mercury motor w/trlr, \$300. 482-2282.

### Cycles

Mens 26", 2 boys 24" 10 spd bicycles, \$20/ea. Dave, 333-4852.

Trek 360 bicycle, clipless pedals, shoes, good cond, \$325 OBO. Daryle, 282-4283 or 286-9218.

'89 Schwinn Premis 10 spd, ex cond, helmet, Schwinn lifetime warr, \$200. Sean Poplin, 333-6610 or 480-7687.

Boys 20" BMX bike, \$25; small kit table, 3 chairs, \$30. Mark, 554-5156.

Raleigh Sountour superb 12 spd, Reynolds 531 Super Lt weight tubing, sewup tires, gold frame, \$450. 409-925-1942.

### Audiovisual & Computers

Mac Plus, 4 MB RAM, 40 MB HD, software, \$500. Daryle, 282-4283 or 286-9218.

Conaptous Encyclopedia, 32K articles, 15K images, maps, graphs, multimedia. Robert, x30778 or 481-6942.

### Today

**Cafeteria menu** — Special: chili and macaroni. Entrees: barbecue sliced beef, Parmesan steak, spare rib with kraut. Soup: French onion. Vegetables: ranch beans, English peas, mustard greens.

### Tuesday

**Cafeteria menu** — Special: corned beef hash. Entrees: meatballs and spaghetti, liver and onions, baked ham with sauce. Soup: split pea. Vegetables: buttered cabbage, cream style corn, whipped potatoes.

### Wednesday

**PSI meets** — The Clear Lake/NASA Area Chapter of Professional Secretaries International will meet at 5:30 p.m. Feb. 10 at the Holiday Inn on NASA Road 1. Deputy Flight Crew Operations Director Steve Hawley will give a presentation on deployment of the Hubble Space Telescope and the upcoming servicing mission. For reservations, call Bonnie House at 676-3764.

**Astronomy seminar** — The JSC Astronomy Seminar will feature an open discussion meeting at noon Feb. 10 in Bldg. 31, Rm. 129. For more information, call Al Jackson at 333-7679.

**Freedom Fighters meet** — The Space Station Freedom Fighters will meet at noon and 5 p.m. Feb. 10 in Rm. 160 of the McDonnell Douglas Tower, Space Center Blvd. and Bay Area Blvd. For more information, call David Cochran at 482-7005.

**Toastmasters meet** — The Spaceland Toastmasters Club will meet at 7:15 a.m. Feb. 10 at the

House of Prayer Lutheran Church, Bay Area Blvd. and Reseda Dr. For more information, call Jim Morrison at 480-9793.

**Cafeteria menu** — Special: barbecue link. Entrees: cheese enchiladas, roast pork and dressing. Soup: seafood gumbo. Vegetables: pinto beans, Spanish rice, turnip greens.

### Thursday

**Cafeteria menu** — Special: chicken fried steak. Entrees: roast beef with dressing, fried perch, chopped sirloin. Soup: beef and barley. Vegetables: whipped potatoes, peas and carrots, buttered squash.

### Friday

**JAS meets** — The JSC Astronomical Society will meet at 7:30 p.m. Feb. 12 at the Lunar and Planetary Institute, Bay Area Blvd. and Middlebrook Dr. Chuck Shaw will present "Winter Dark Sky Objects." For more information, call John Erickson at 335-4278.

**Cafeteria menu** — Special: fried chicken. Entrees: fried shrimp, baked fish, beef stroganoff. Soup: seafood gumbo. Vegetables: okra and tomatoes, buttered broccoli, carrots in cream sauce.

### Feb. 15

**Call for papers** — The 1993 Conference on Intelligent Computer-Aided Training and Virtual Environment Technology has issued a call for abstracts due by Feb. 15. JSC will co-sponsor ICAT/VET '93 with the U.S. Army Training and Doctrine Command. Send abstracts of up to 250 words to R. Bowen Loftin, PT4. For

exhibits information, call Don Myers, 283-3821. For registration information, call x39071.

**Cafeteria menu** — Special: meat sauce and spaghetti. Entrees: franks and sauerkraut, sweet and sour pork chop with fried rice, potato baked chicken. Soup: cream of potato. Vegetables: French beans, buttered squash, lima beans.

### Feb. 16

**Blood drive** — Lockheed will host a blood drive from 8-11:30 a.m. and 1-3:30 p.m. Feb. 16 in Lockheed Plaza 1 Rm 12C, 2450 NASA Road 1. For more information, call Joe Vistor at x34791. For scheduling, call Paul Wheat at x30192.

### Feb. 17

**TQM Brown Bag** — A TQM Brown Bag Seminar will discuss "Quality Function Deployment — Fundamentals and Recent Experiences" at noon Feb. 17 in Bldg. 12, Rm. 254. For more information, call Cyndi Draughon at x33071.

**Astronomy seminar** — The JSC Astronomy Seminar will meet at noon Feb. 17 in Bldg. 31, Rm. 129. Dr. Martin Duncan of Queens University, Ontario, will discuss "Is the Solar System Stable?" For more information, call Al Jackson at 333-7679.

**Blood drive** — Mitre Corp. will host a blood drive from 8-11:30 a.m. Feb. 17 in the parking lot at 1120 NASA Road 1. For more information, call Irwin Feig at 333-0935. For more information, call Joe Vistor at x34791. For scheduling, call Paul Wheat at x30192.

Turbo graphics game sys, three games, \$79.95. Greg, 554-6200.

12" Premier amber mono monitor, Hercules graphics card, \$65. Keith, 286-9808.

Commodore 64, 1541 disk drive, Compac 80 printer, software, \$95. x36090.

CDs, Elton John, The One; Richard Marx, Rush Street; Eurhythms Greatest Hits, Tears for Fears, Seeds of Love, \$8/ea. 244-5035.

386/33, 64K cache, 105 MB Quantum HD, 5.25 & 3.5 FD; Seiko 25" 1024 x 768 .25" dot pitch, non-interlaced monitor, SVGA card; DOS 5.0, Windows 3.1, Panasonic KXP1124 dmp, \$2.6K; Sharp 8088 XT compatible laptop, 2 x 760kB, 3.5 FD, ST-LCD, screen w/backlight, delux luggage case, \$550. Jesse, 332-6681 or 996-9641.

Panasonic printer, ex cond, 6 extra ribbons, \$95; software, Ninja Turtles, MicroLeague Baseball, Songwriter, \$3/ea. Dave, 333-4852.

Amiga 500 w/1 MB RAM, 2 FD, color monitor, 1084, software, incl WordPerfect, \$400. 554-4199.

### Pets and Livestock

2.5 yr old male mini Dachsund, red, AKC reg, \$75. 335-0641.

AKC reg, 1.5 yr old red male Chow Chow, intact, small build, prefers women, \$200 OBO. Crystal, x35711 or 480-4821.

AKC reg, Siberian Husky male, blk/wht, 2.5 yrs old, medical records, \$75. 991-5280.

Free male Liasa Apso pup, 6 mo old, all shots, pure bred, no papers. 471-4655.

### Musical Instruments

Yamaha classical guitar, \$300. 283-5465.

### Household

17" color tv, 134 channels, remote, stand, ex cond, was \$475, now \$170 OBO. x39552 or 480-4990.

Child tbl w/2 chairs, \$50; new round 36" Formica tbl w/bamboo legs, \$45. 488-5564.

Sears 19" color tv, \$65. lrv, x36461.

China cab, buffet/server, tbl w/chairs, trad style, lg igloo dog house, elec typewriter, dk wood dinette, cane seats, round tbl, 4 chairs, fruitwood sofa. 282-4849 or 409-925-7839.

Girls 3 pc BR set, incl dresser drwr w/hutch, dbl hdbd, \$175; brass hdbd, \$100; 3.5 hp lawnmower w/bag, \$85. x39289 or 487-3216.

Twin sz waterbed, \$35. x38843.

Sears GE gas dryer, 1 yr old, \$150 OBO. Marla, x32608 or 332-2820.

Wht iron daybed, brass knobs, \$160. 554-6200.

Elec range, countertop drop in unit, Frigidaire, 21 x 34, ex cond, \$25. Ben, 335-2141 or 482-6041.

Super single waterbed, bookcase hdbd, all incl, matt, liner, heater, side cushions, 2 sets of sheets, \$65. Marcia, x30195 or 486-1844.

Qn sz sofa, hide-a-bed, camelback style, colonial blue. 480-1934 or 409-938-8298.

Sm wooden coffee tbl, sm wooden tv stand w/doors, \$12/ea. 333-7315 or 480-5430.

Blk malamine, modular entertainment center, ex cond, \$300 OBO. Katie, x33185.

Qn sz bed frame, \$15. Shawn, x38340 or 472-7526.

8' slate pool tbl, \$395 OBO; blk lacquer kg sz waterbed frame, hdbd, drwrs, \$45. x37088 or 488-1335.

Wall mirror, 2' x 3' w/glass in ornate gold leaf frame, \$200; Sprague & Carlton solid maple poster bed frame, dbl sz, \$175; hardwood rocker w/red cushion seat, \$60. Gene, x30182 or 480-9580.

Bedroom suite, drwrs, queen hdbd, 2 nite tbls, dresser w/mirror, chest of drwrs, \$350 OBO. 480-9449.

100% uphol DR Parsons chairs, blue velvet, \$99 for 4, \$195 for 8, need to reuphol; 4 sq ft tempered tinted glass picture window w/alum frame, \$65. x38922 or 488-5307.

### Wanted

Want Nordic Track ski exerciser, w/ht baby crib in good cond. 334-2335.

Want to rent popup camper 1st wk of Jul, also different times thru the summer, AC, shower OK but not required. 339-2198.

Want used Sharp EL-5100S scientific calculator, working or not. Steve, x36301.

Want old Schwinn heavy duty bicycle. 326-4316.

Want students to join a Russian language class taught by a Rice Univ prof, students should be at intermediate level w/ at least 2 yrs exp. Rick, x36042 or Keith, x38024.

Want payload patches, experiment patches/decals from STS-44 Terra Scout; STS-52 Lageos-II, USMP-1, CANEX, LBNP; STS-53 DOD-1, ODER-ACS, FARE, HERCULES; STS-54 TDRS-6, DXS. Andrew, 280-0647.

Want professional male to share house across UH & NASA w/same, nonsmoker, \$270/mo incl all util, W/D. Arkady, 480-1670.

### Miscellaneous

Dinette set, matching china/entertainment cabinets, loveseat w/hide-a-bed, misc. items. Mandy, 283-5997 or 480-1236.

21" Toro rear bagger lawnmower, \$45; 21" rear bagger, 1 yr old lawnmower, \$95. Dave, 333-4852.

Craftsman 4 HP Eager-1 lawnmower, solid state ignition, rear bagger, good cond, \$60 OBO. x39552 or 480-4990.

Various Firebird parts, back glass, spoiler, taillight, gas tank off '77. Bobby, x38823 or 339-2198.

Men's lambskin leather jacket, \$125; food dehydrator, \$45; exercise ski machine, \$55; exercise stepper, \$55; handmade oversized sweater, \$20; flight jacket, \$45. 488-2946.

Mink fur coat, 3/4 length, \$950; water buffalo mounted horns, carved, ex cond, \$100; pair of deer skins, \$100. 488-5564.

Women's Salomon ski boots, sz 5, \$75; 3 x 6 foot executive desk, armchair, \$50. 280-1118 or 479-7940.

Solid wood credenza, mahogany, \$75; aquarium, 25 gal, \$50; full sz bed frame, hdbd, \$25; outboard motor stand, \$10; snow chains, \$10/pr, wire mesh, 30 ft, \$5; assorted lamps, \$5. 332-2453.

Sweetheart wedding gown, long sleeves, v-neck/backless, sz 6, \$600. 337-4182.

Golf clubs, Lynx irons, 3-PW, Spalding metal woods, 1,3,5, good cond, \$250. Allen, x31188.

Whelping box, good construction, \$10. Frank, 282-3858.

Free wood, cut to fireplace length. Boykin, x37341 or 326-1267.

Diamond ring, 1/4 c solitaire, \$300 OBO; mink cape, \$250 OBO. 474-3768.

Outdoor volleyball net, Pro model, centerline, incl net, poles, sand attach, guide lines, line markers, carry bag, \$175. x39357 or 486-5203.

Smith-Cornoa port typewriter, \$75 OBO. Jan, x31304 or 280-8096.

Leather briefcase, ex cond, cost over \$100, now \$50. 486-8266.

IBM Selectric II corr typewriter, was \$300, now \$100. Marcia, x30195 or 486-1844.

DP Gympac 2000, \$150; Hirsch saw guide tbl, \$15; bicycle child carrier, \$20; Royal elec typewriter w/case, \$75. x39588 or 487-1883.

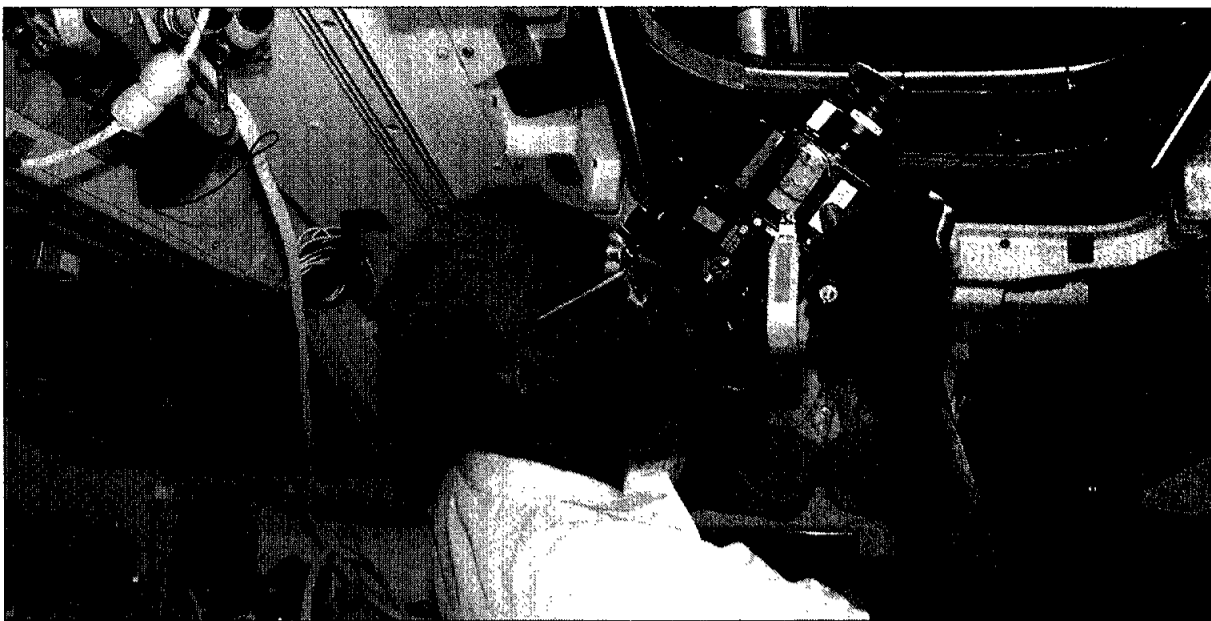
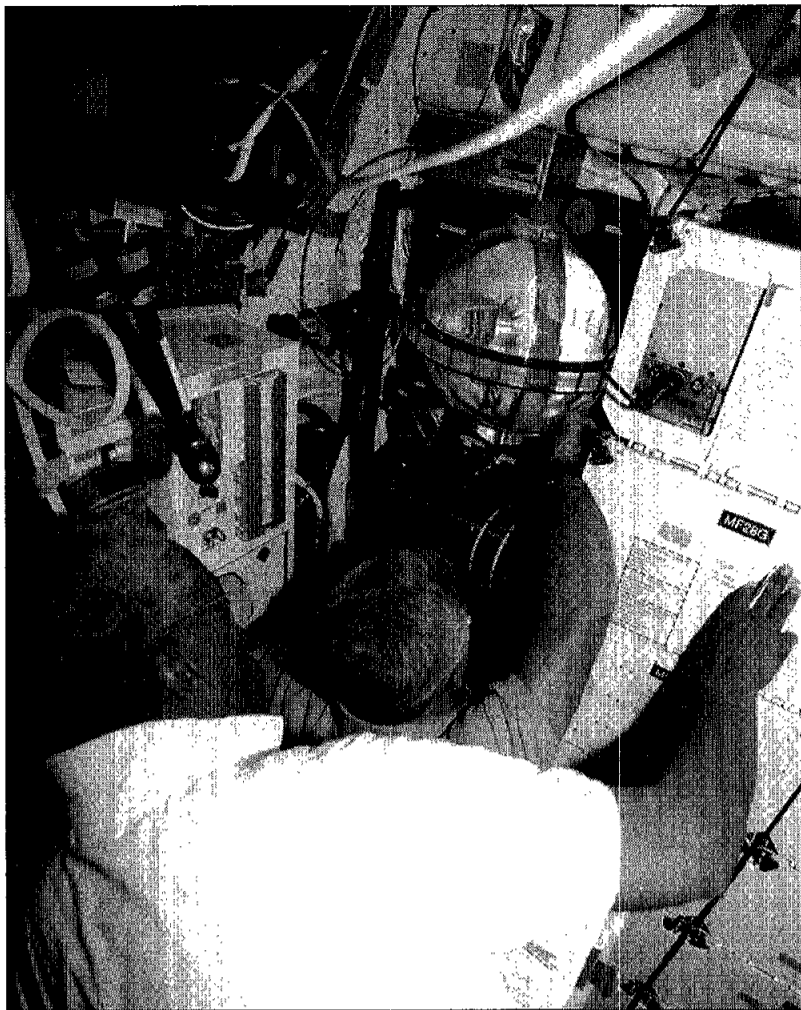
Slate bottom pool tbl. Steve, 332-0108.

Will trade Taylor made 11.5 deg driver for lower loft T.M. driver. Jim, 482-2941 or 282-3183.

6' sq chrome truck bed rails w/hardware, \$50; antique cash register, best offer. David, 335-2482 or 488-7177.

L/H golf clubs, 3-PW, 1,3,5 woods, \$100 OBO. Matt, x45183 or 334-1261.

Pocket computer, \$35; Yamaha kybd, \$20; port tv,



# STS-53: Successful Swan Song

## Last flight of 1992 also wraps up DOD flights

It's taken a while, but the on-board photography for the partially classified STS-53 and final scheduled Department of Defense mission has been released. The *Discovery* crew—Commander Dave Walker, Pilot Bob Cabana and Mission Specialists Guy Bluford, Rich Clifford and Jim Voss—began its mission at 7:24 a.m. CST Dec. 2 and glided to a landing at 2:45 p.m. CST Dec. 9.

Although deployment of the DOD-1 satellite was classified, most of the rest of the seven-day mission was conducted openly.

Clockwise from below:

1) The crew poses for its in-flight portrait with the overhead windows of the aft flight deck in the background. From left are Bluford, Clifford, Walker, Voss and Cabana.

2) Voss, left, and Bluford work with HERCULES, the Hand-held, Earth-oriented, Real-time, Cooperative, User-friendly, Location-targeting and Environmental System camera. The crew tested the joint NASA, Navy and Army system's ability to pinpoint latitude and longitude of Earth images with the help of an attached cylinder containing a laser gyro.

3) Cabana uses a tonometer to check the intraocular pressure of Clifford on *Discovery's*

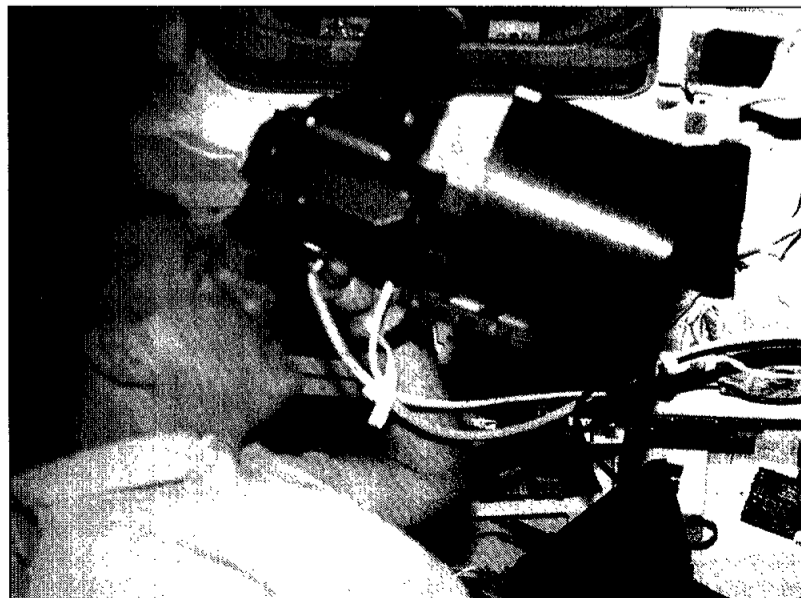
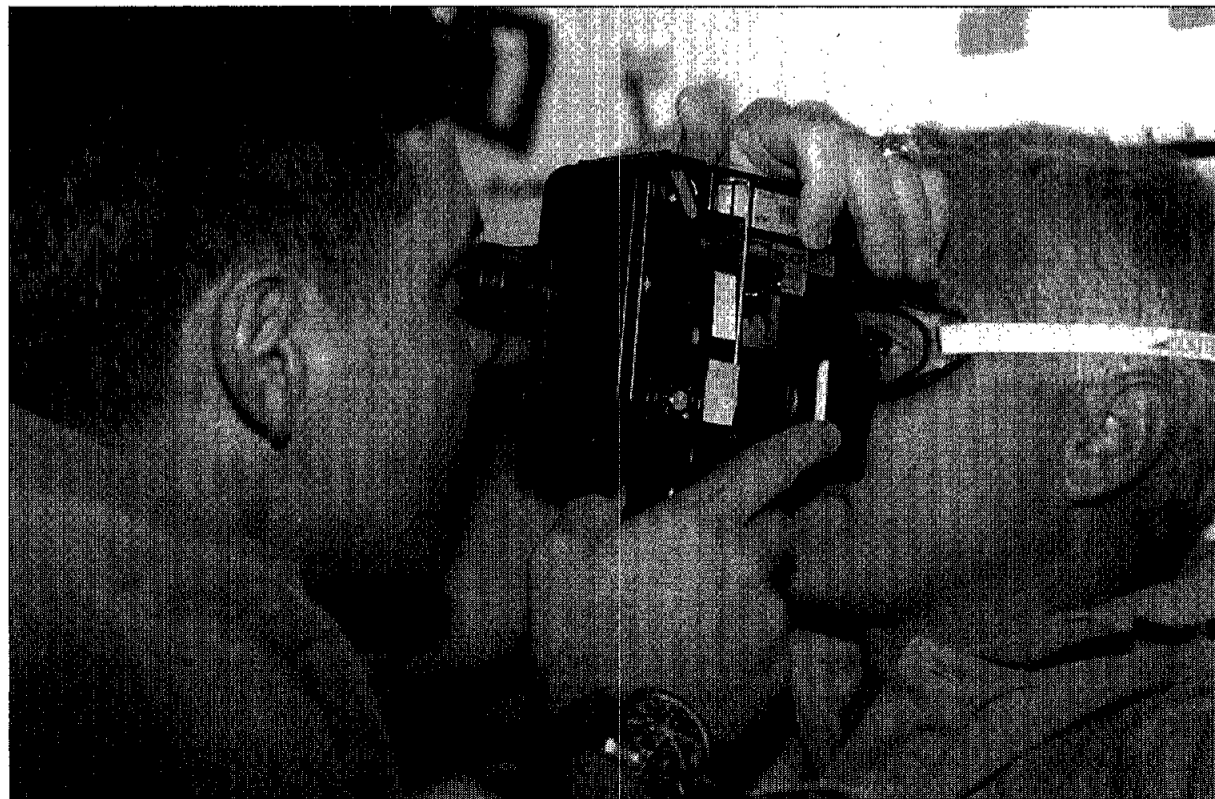
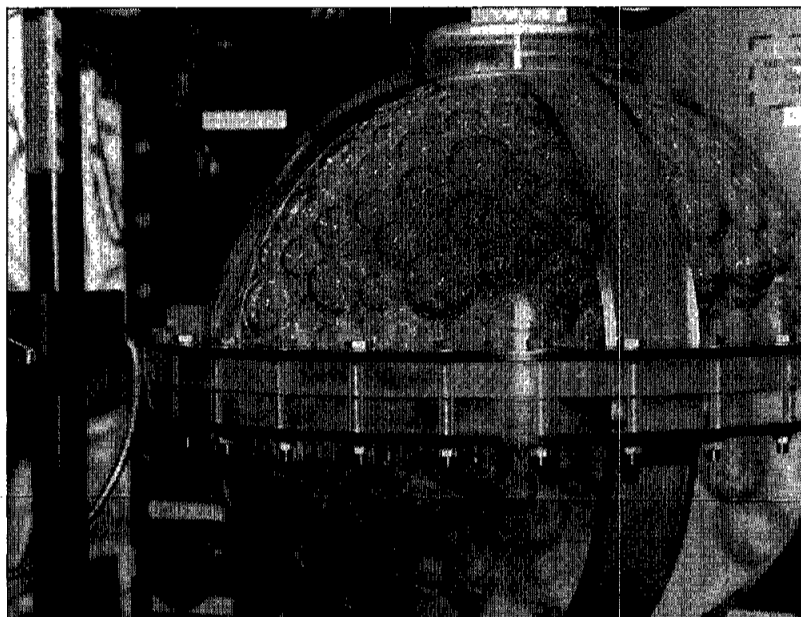
middeck. The test was part of a detailed supplementary objective that is establishing a database of changes in eye pressure caused by the microgravity environment.

4) A close-up view of the Fluid Acquisition and Resupply Equipment shows the bubbles within one of two clear acrylic tanks. The purpose of the experiment was to investigate the dynamics of fluid transfer in microgravity with an eye toward developing methods of vapor-free transfer of propellants for satellites, extended duration orbiters and Space Station *Freedom*.

5) A medium close-up of one of the 12.5-inch spherical tanks belonging to FARE shows how the gases and fluids have oriented themselves. Baffles in the receiver tank controlled fluid motion during transfer, a fine-mesh screen filtered vapor from the fluid and an overboard vent removed vapor from the receiver tank as the liquid rose.

6) Bluford, left, and Clifford monitor FARE. The crew checked the Martin Marietta-built device eight times over an eight-hour test period.

7) From *Discovery's* aft flight deck, Bluford uses a hand-held 70mm Hasselblad camera for Earth observations photography. □



# Armstrong, Hirshorn hang STS-54 plaque

Bob Armstrong and Steve Hirshorn represented the Electrical Generation and Illumination team in hanging the STS-54 plaque in Mission Control.

Lead Flight Director Phil Engelauf said the honor went to the EGIL team because of its work to develop and monitor the first on-orbit fuel cell shutdown.

"The EGIL team had to go through extensive preflight work to modify and verify the procedures for the fuel cell shutdown and restart, as well as developing contingency procedures in the event the fuel cell could not be recovered.

The fuel cell shutdown was a Development Test Objective in preparation for the Space Station

*Freedom* era, when shuttles will be docked to the station and powered down for a month or more at a time.

JSC

## People

### Erminger to manage SR&QA for shuttle

Mark Erminger has been appointed manager for space shuttle in the Safety, Reliability and Quality Assurance Office. He replaces Marion Merrell, who retired recently.

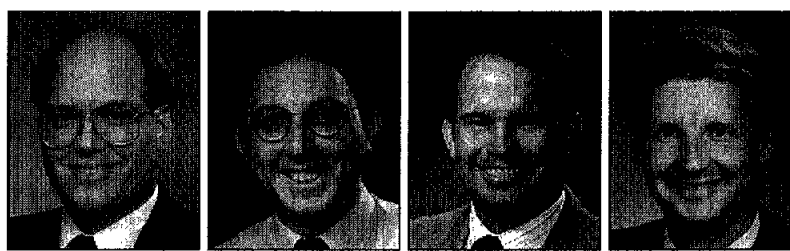
Erminger began his career at JSC in 1981 in the Mission Operations Directorate, serving as a training

instructor for astronauts and flight controllers. In 1987, he became a flight controller, and for the past several years has served as head of the Data Processing Systems Section.

Before joining JSC, Erminger was an Air Force Minuteman Launch Control Officer at Whiteman Air Force Base, Mo. A 1978 graduate of the Air Force Academy and 1980 master's graduate of the University of Missouri, Columbia, he holds the rank of major in the Air Force Reserves.

### Hawley honored as Kansan of the Year

JSC Deputy Director of Flight Crew Operations was honored as



Armstrong

Hirshorn

Erminger

Hawley

Kansan of the Year—1992 at a Jan. 29 ceremony in Topeka, Kan., celebrating the state's birthday on Jan. 29, 1918.

The award has been presented annually since 1955 to native Kansans who have made exceptional achievements by the Native Sons and Daughters of Kansas. The organization is dedicated to preserving Kansas history, showing loyalty to

Kansas traditions, honoring pioneer ancestors and instilling the ideals of patriotism in youth.

Hawley, a native of Ottawa, Kan., who considers Salina his hometown, was recognized for his three space shuttle flights totaling 412 hours in space, his service as associate director of Ames Research Center and his scholarship in astronomy and astrophysics.

## Space station team seeks efficiencies

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The entire space station team is reviewing resource requirements and continuing to seek further cost reductions while maintaining the schedule for first element launch, man-tended capability and permanently manned capability.

The current schedule calls for launch of the first space station elements in March 1996. Man-tended capability would be achieved by June 1997, and permanent manned capability by June 2000.

The critical design review of Work Package 2 is scheduled for April, followed by the space station program CDR in June and July. After the drawings have been checked against the specifications, NASA's contractors will begin fabricating hardware.

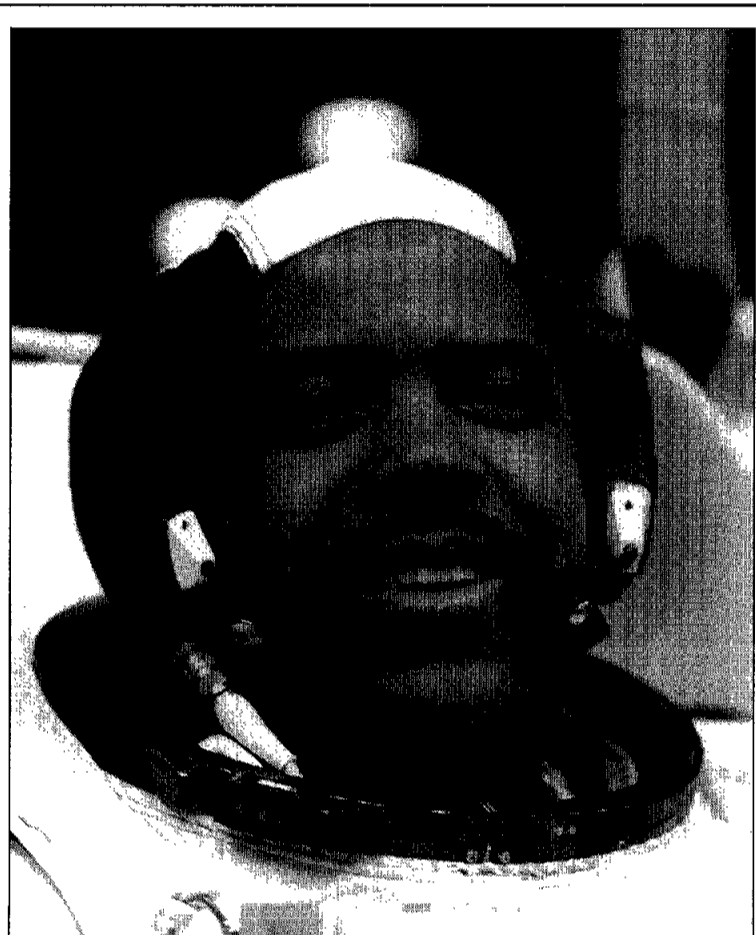
"I'm confident we can generate sufficient reserves to allow the space station to become a reality," Cohen said, "but it will take a commitment by the entire NASA/contractor team to do things more efficiently and effectively. And along the way, some sacrifices will have to be made."

Associate Director Dan Nebrig will head a review panel that will recommend to Cohen where any work shifts should be made. JSC still has the opportunity to hire about 60 more civil servants to fill anticipated vacancies from attrition this fiscal year, and all of those may be made available to perform space station work. However, if all of those hires are used to support space station, it would put a virtual freeze on normal hiring throughout the center for the rest of the fiscal year.

"There is another important part of the equation, and that is to continue to fly the space shuttle safely and within its budget," Cohen said, "because without an effective shuttle fleet, we can't begin to address the challenge of building and maintaining Space Station *Freedom*."

NASA Administrator Daniel S. Goldin said he intends to hold the agency to its promise and space station managers, at all levels, to their obligation to deliver *Freedom* on schedule and within the prescribed budget.

"We will not solve these problems by slipping the schedule or compromising the budget," Goldin said. "We will find appropriate solutions to these problems, and we will do it by working as a team. I will accept nothing less."



JSC Photo by Andrew Patnesko

STS-55 Mission Specialist Bernard Harris smiles as he prepares to begin a contingency extravehicular activity training exercise in the Weightless Environment Training Facility. No space walk is planned for the Spacelab flight.

## Columbia heads for pad

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agreed Mission Specialist Bernard Harris. "As far as being home-grown and being thrown into an international environment, I think that's something we're all going to have to do at some point in time. I think the key phrase for the future is international cooperation, whether it is at NASA or whether in business. We're all going to have to think globally from now on."

German Payload Specialists Hans Schlegel and Ulrich Walter said they had not experienced any similar difficulties because they had five full years to train with the Spacelab experiments.

Kennedy Space Center technicians working to prepare *Columbia* for its upcoming mission finished hard-mating the orbiter to its

external tank/solid rocket booster stack Wednesday.

The shuttle interface test to verify electrical interfaces between the stack elements began Thursday in the Vehicle Assembly Bldg., and roll out to the launch pad was expected Sunday.

Shuttle managers will meet for the flight readiness review Thursday. The launch dress rehearsal with the astronaut and ground launch team crews will be Thursday and Friday.

*Columbia* should be ready for launch of the STS-55 mission in late February.

Engineers determined last week that a titanium weld in the high pressure fuel turbopump on main engine number 3 is good, and approved the engine for flight.

## Space walk added to July shuttle flight

By James Hartsfield

A space walk has been added to the STS-51 mission aboard *Discovery*, set for a July launch, to continue extravehicular activity tests begun with the addition of a space walk to NASA's first 1993 shuttle flight in January.

Mission Specialists Jim Newman and Carl Walz will perform the space walk.

The STS-51 space walk is part of a series of tests NASA will conduct during the next three years to prepare for Space Station *Freedom*, scheduled to be built in orbit starting in early 1996.

"The addition of the space walk to STS-51 will allow us to continue refining our knowledge of human performance capabilities and limitations during space walks," said Ron Farris, chief of JSC's Extravehicular Activity Section.

"This EVA constitutes a continuing commitment by NASA to advance our preparation for future EVA missions such as the Hubble Space Telescope servicing and Space

Station *Freedom* assembly flights," Farris added. Other 1993 shuttle flights remain under consideration for the addition of space walks.

The tests, as performed during STS-54 in January, concentrate on defining the limits of space walking abilities, better understanding of the differences between true weightlessness and the ground training facilities that simulate weightlessness and gaining more insight into the times required for various tasks to be performed while space walking. They also expand the experience levels among the astronaut corps, shuttle flight controllers and space walk training instructors.

The specific tasks to be performed on STS-51 are still being evaluated by flight planners. The STS-51 space walk will be performed without any impact on the main objectives of the mission and will carry a low priority among the mission's tasks. STS-51's primary objective will be to deploy the Advanced Communications Technology Satellite.

## Volunteers needed to share through 'Discover E Program'

JSC engineers will head back to school next week to reach out to students as role models in the field of engineering.

JSC's participation in National Engineers Week, Feb. 14-20, is part of a local and nationwide effort to improve public understanding and appreciation of the profession.

The "Discover E Program"—"E" representing engineering—sends professionals to visit upper elementary, junior high and high school classrooms to show student who science, math and engineering relate to their world around them. It also shows students why their studies are important and stimulated interest in

technology and technical careers.

"National Engineers Week provides us with a great opportunity to contribute to our community's educational efforts," said JSC Deputy Director Paul J. Weitz.

Last year, 235 JSC engineers visited 400 classrooms in 75 different schools within 14 school districts. The program reached more than 100,000 students across the country in 1992.

Engineers wishing to volunteer for the program should contact their area coordinator. All other interested individuals should contact the project coordinator, Norma Rhodes, at x30235.

## JASON Project to bring students here

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"I'm interested in the fiber optics and robotics sections," said Don Kelley, a teacher at Hudson Middle School in the Dallas area. "The technology section was good and adding in the science part to tie all of this together will be very interesting."

"I really like the Project JASON simply because of all the hands-on activities," said science and math teacher Patty White of LaPorte's Lomax Elementary.

As many as 10,000 students are

expected to visit JSC's Teague Auditorium in March—about 500 at a time for each of a planned five downlinks a day—and be among the 700,000 students participating in the U.S., Canada, Great Britain and Bermuda.

The JASON Project is the brainchild of Dr. Robert D. Ballard, who began the effort to use robotic technology to excite students about the thrill of scientific discovery after receiving thousands of letters from students about his exploration of the sunken RMS *Titanic*.

## Hershey Contract Manager of Year for entire agency

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that the cost performance evaluation is based on the company's negotiated contract value instead of budget.

On the Engineering Support Contract, he led an effort to reduce the number of primary work codes used, cutting a standard funding modification page. Lockheed Engineering and Sciences Co. was being forced to keep track of the various funding sources from which it receives its money every time a modification was needed. Hershey helped move that burden to the NASA people who already were keeping track of how those funding sources fed the contract. Hershey reduced the cost in time, personnel and money to prepare funding modifications and

track, report and analyze costs.

"We really streamlined it and basically did away with a lot of the burden on the contractor," he said. "They were finally getting to a point where they were going to have to buy a new computer system and do a lot of other things just to keep up."

Hershey said he couldn't have accomplished what he did without the support of his supervisor, Shuttle Engineering and Equipment Procurement Branch Chief Dick Regensburg, who gave him time to think things through a look at the big picture, or his lead at the time, Lucy Yates. He also gave credit to the hard work of FEPC Contracting Specialist James Bastian and RMS Contracting Specialist Rick Bennett.

## 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.

Swap Shop ads are due Fridays two weeks before the desired date of publication.

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

## FWP seeking sponsors for girls

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employees presenting information about their work places followed by tours of those areas. The girls will meet in the Bldg. 3 cafeteria for lunch, then pair off with their sponsors to observe a normal day's business activities.

"Take Our Daughters to Work" was created by the Ms. Foundation for Women, a national multi-issue

public women's fund that supports efforts of women and girls to govern their own lives.

Any civil servant who would like to sponsor a girl in the program should contact Adams at x33761 or send a PROFS note to PADAMS by Friday. This year's program will have a limited number of participants and final selections will be made by the FWPC.