

Space News Roundup

Vol. 29

March 2, 1990

No. 9

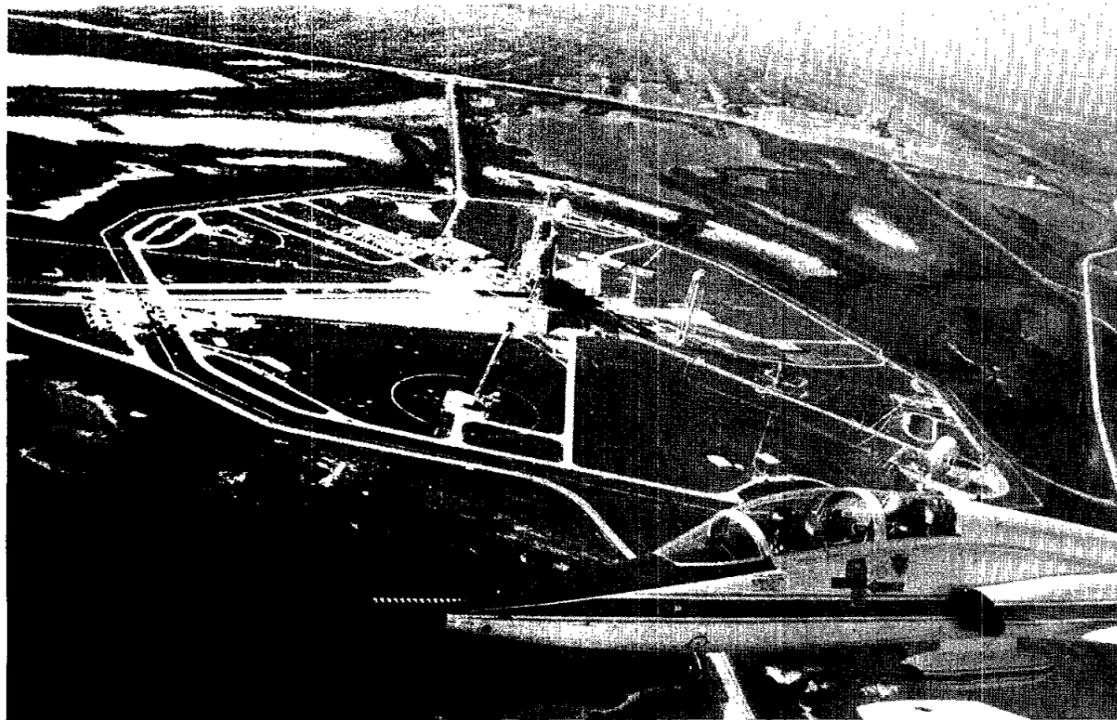


Photo by Mike Mullane

BIRD'S EYE VIEW—The Space Shuttle *Atlantis* sits on Pad 39A at Kennedy Space Center in a recent photo taken by STS-36 Mission Specialist Mike Mullane. Mullane was practicing his camera skills while at the Cape for the Crew Equipment Interface Test, and took the photo while flying overhead in a T-38 training aircraft. The names of the crew in the T-38 pictured were not immediately available.

Atlantis rides golden plume in night launch

The Space Shuttle *Atlantis* rode a golden plume of rocket exhaust into orbit during a spectacular night launch at 1:50 a.m. CST Wednesday.

The STS-36 dedicated Department of Defense launch took an inclination of 62 degrees, and people all along the eastern seaboard reported seeing *Atlantis* as it climbed uphill.

The flight will land at Edwards Air Force Base in California on Sunday. The exact landing time will be

released 24 hours prior to touchdown. Both the crew and the orbiter were reported to be doing well when the landing day was announced at 6 a.m. CST Thursday.

Atlantis and its five-member crew were given the go-ahead for orbit operations 1 hour and 50 minutes into the flight, after Commander J.O. Creighton and Pilot John Casper fired the orbital maneuvering system engines to put the spacecraft into its operational orbit. The remaining crew members include Mission Specialists Mike Mullane, Dave Hilmers, and Pierre Thuot.

The Wednesday morning launch was the sixth try for the spacecraft since its original launch date early on Feb. 22. Creighton came down with an upper respiratory tract infection that resulted in a 24-hour delay in the mission on the 22nd, and his condition combined with unsatisfactory weather conditions to delay the mission again on the following day. The medical delay was only the second such incident in U.S. space history.

Although the Creighton overcame his cold by Feb. 23, rainstorms and strong winds prevented a third launch attempt that night.

A subsequent launch attempt early Sunday morning was scrubbed at 1:15 a.m. because of the loss of a mandatory range safety ground computer. The countdown was halted at T-31 seconds. When the countdown is halted that close to launch, the capability of keeping the vehicle ready for flight is limited to only a few minutes. The auxiliary power units have about seven minutes of hold capability on the first launch attempt because of the limited

propellants on-board. The extended hold at T-31 seconds resulted in engine liquid oxygen propellant temperatures becoming too cold, thus violating launch criteria. This made it impossible to wait any longer for the range safety computer to be brought back on line.

The next launch attempt early Monday morning was scrubbed because of high crosswinds at the launch site. Launch Director Bob Sieck and the Mission Management Team decided to postpone the next attempt by 48 hours to give the launch team a well-deserved break and allow time to replenish the liquid hydrogen and liquid oxygen ground storage tanks.

Creighton, Casper and Hilmers used the 48-hour delay to return to JSC on Monday evening for simulation training, returning to Florida the following day.

The countdown resumed Tuesday afternoon, despite intermittent rain showers the sixth launch attempt was successful early Wednesday.

Crew return ceremonies are pending, and employees should call the Employee Information line at x36765 for the latest information.



STS-36

Space station refines organization

Project office adjusts to new phase of program work

The Space Station Projects Office is refining its organizational structure to better meet the needs of a program that is turning the corner from the early design phase to the building phase.

The refinements are designed both to support the integration of the program and to track and manage the actual development of the hardware pieces that are to be integrated, said John Aaron, manager of the Space Station Projects Office. The changes should create both an "up-and-out focus" and a "down-and-in focus."

The up-and-out focus will be on performing project integration for Work Package 2 and working program integration issues with the newly established Space Station *Freedom* Integration Office at JSC and the Program Engineering Office in Reston, Va., he said. The "down-and-in" focus will be on aligning the project office's technical management with the development support provided by other JSC organiza-

tions for individual space station subsystems and functions.

"The primary adjustment was to put more of my resources within the project office—and therefore more emphasis—toward tracking the actual design," Aaron said. "It's sometimes hard to turn the corner coming out of the requirements and study phase into the building phase of a large program. This refinement is a way of helping us turn that corner, organizationally."

Under the changes, the Product Engineering Office becomes the Project Engineering Office, which with its down-and-in focus will concentrate on major pieces of design development. Robert L. Dotts will continue to manage the office. The restructuring establishes the Flight Systems Office, and the Flight Elements Office to assist in that task.

The Engineering Support Office becomes the Project



Truly creates Office of Aeronautics, Exploration, Technology

NASA Administrator Richard H. Truly announced Wednesday the creation of the Office of Aeronautics, Exploration and Technology (OAET), formalizing the merger of two previous NASA offices, the Office of Aeronautics and Space Technology and the Office of Exploration.

The OAET will be headed by NASA Associate Administrator Arnold D. Aldrich, former director of the National Space Transportation System Program Office and long-time JSC employee.

"This office will provide the planning, direction and technology, as

well as manage the assessment of concepts and technology for human exploration beyond Earth orbit into the solar system," Truly said.

"I view this as a major step in streamlining the management arrangement that will combine cutting-edge technologies with studies of

future space and aeronautics missions," he added.

Truly stated his intention to merge the two offices in December. The move is designed to continue the analysis of exploration mission alternatives and to begin the actual pursuit of innovative technologies.

Truly said technology development and exploration efforts are closely related and that they should proceed under a strong central management.

Also, he emphasized that in no way would the consolidation of the two offices diminish the agency's dedication to aeronautical research.

Discovery almost ready for mating, move to pad

Discovery, the space shuttle that will soon carry the Hubble Space Telescope into orbit, is being prepared for a Monday morning move

to the Vehicle Assembly Building (VAB).

The STS-31 launch target is April 12, and an official launch date will be set

at the flight readiness review meeting approximately two weeks before launch. Should the April 12 date hold, the launch opportunity window would open at 8:21 a.m. CST.

The crew of STS-31 is comprised of Commander Loren Shriver, Pilot Charlie Bolden, and Mission Specialists Steve Hawley, Kathy Sullivan and Bruce McCandless.

Technicians were scheduled to determine the orbiter's weight and center of gravity

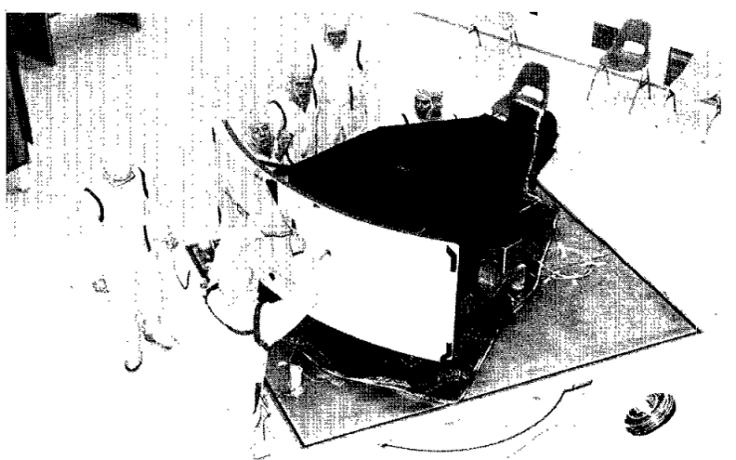
and close out the orbiter's elevons Thursday. Today, *Discovery* will be attached to the orbiter transporter. Workers plan to complete close out

Please see **DISCOVERY**, Page 4



STS-31

Hubble Space Telescope



NASA Photo

Technicians inspect the wide-field planetary camera at Cape Canaveral Air Force Station in December. The camera, installed on the Hubble Space Telescope, will be used to look at the faces of planets in our solar system and to study fields of galaxies.

Williams to retire from NASA, Navy

By Jeff Carr

Navy Capt. Donald E. Williams, veteran of two shuttle flights, will retire from NASA and the Navy, effective March 1, to pursue a career in private industry.

"I reached my goal as a pilot, which was to command a mission," said Williams. "Now it's time to go on to other challenges. JSC and NASA have been a wonderful place to work and I'm proud to have been a part of the team."

Williams was selected by NASA as an astronaut in 1978, and made his first space flight in April 1985 as pilot of *Discovery* on STS-51D, which included the first unscheduled rendezvous and spacewalk. He flew again as crew commander of *Atlantis* in October 1989 on STS-34, highlighted by the

Please see **WILLIAMS**, Page 4

JSC

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): \$3.75 each.
 AMC Theater (valid until May 1991): \$3.50 each.
 Sea World (San Antonio, year long): adults, \$17.25; children (3-11) \$14.75.
 Rockets vs Lakers basketball (7:30 p.m. March 6, Summit): \$8.
 Bluebonnet Trips (March 31, trip to Brenham's Spring Fling; April 7, trip to the Bluebonnet Festival at Chappell Hill, both trips include transportation, visit to Monastery Miniature Horse Ranch, and lunch) \$18.

NASA Night at Astroworld (April 6, 6 p.m.-midnight; park closed to public): the first 5,000 tickets \$7.25, after 5,000 tickets are \$9.20.

Alaska trip (May 26-June 4, trip to Anchorage includes train ride, river raft trip, oil pipeline tour and more): \$1,375 each; \$200 deposit needed by March 15.

JSC

Gilruth Center News

Sign up policy—All classes and athletic activities are first come, first served. To enroll, you must sign up in person at the Gilruth Recreation Center. Everyone will be required to show a badge or EAA membership card. Payment must be made in full at the time of registration. Classes tend to fill up four weeks in advance. For more information, call x35789 or x30304.

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

Defensive driving—Course is offered from 8 a.m.-5 p.m., April 7 and April 21; cost is \$15.

Weight Safety—Required course for those wishing to use the Rec Center weight room. The next class will be from 8-9:30 March 7 and March 22.

Ballroom dance—A six-week beginners only ballroom dancing session will be held from 7:30-9 p.m. Tuesdays, beginning March 13; cost is \$20 per couple.

Low-impact aerobics and exercise—Each eight-week session runs twice a week from 5:15-6:15 p.m. Cost is \$24.

Country and Western dance—Six-week session begins March 12. Lessons are held each Monday night. Beginners only class will be held each Tuesday night, beginning March 13. Cost is \$20 per couple.

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. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2.

Property

Rent: Egret Bay Villas, 1 BR w/bay wndw., FPL, appl., \$475/mo., first/last mo. rent req. 332-7788.

Sale: Kemah home on 1.33 acres, 3-2, gar./CP, \$85,000. 334-1883.

Sale/Lease: 10 acres, 1/2 mi. W. of Hwy. 146 on FM 517, barn, ponds, util., more. Trey, 280-4381 or 484-7834.

Rent: Mobile home lot, Hwy. 3, Dickinson, \$70/mo. 282-2802 or 332-0365.

Sale: 2 lake lots on Toledo Bend Lake, water, elec. septic tank, \$10,000. 944-5624.

Sale: LC, The Landing, 4-2-2, formal living, dining, split BR plan, CA/H, \$62,000. 480-2870.

Rent: Mobile home lot, \$85/mo., \$50 dep., Oklahoma and Kinne, Bacfliff, 488-1758.

Sale: Meadowgreen, 3-2-2, formals, FPL, corner lot, deck, 2,000 sq. ft., 8.5 assum. FHA loan, \$25,000 equity, no app. or closing, \$116,000. 480-3909.

Sale: 44 acres, 13 mi. from Madisonville, 2 BR, 3 barns, 2 acre lake, \$200,000, owner fin. Ed, (409) 396-2291.

Sale: CL/Ellington, 2-story, 4-2-2, cul-de-sac, 2,000 sq. ft. \$90's. 333-6535 or 481-6453.

Rent: Heavenly Valley, Lake Tahoe, 2 BR condo, \$350 for wk 3/26-4/2. Tom, x38298 or 488-4089.

Sale: Big Bend area, 160 acres, \$120/acre, CFD 20% dn., 9% for 7 yrs. 337-4051.

Sale: LC, 3-1, FPL, many extras, \$46,000. 554-6614.

Sale: Green Acres townhome, 2-2.5-1 plus 1, \$8,000 assum. 10.5% FHA no app. fixed rate, FPL, MB w/deck, \$661/mo. plus \$50/mo. maint. fee, avail. April 1. Camille, x32520 or 333-2636.

Sale: 60 acres, 3 mi. from Karnes City, Hwy. 80. 783-9164.

Sale: 3-2-2, SW Houston, FPL, many extras, assum. VA loan, no qual., \$67,900, owner fin. 561-7182 or 333-7180.

Sale: Lg. lots excl. subdiv. near NASA, mid \$30's, can fin. Don, x38039 or 333-3313.

Sale: Seabrook, 3-2-2, renov. existing 7% loan plus equity, \$275/mo., \$48,000, owner fin., no qual., \$5,000 down. 474-2857 or 859-4574.

Lease: Webs/Ellington, 2-1 apt, \$450/mo. Dave, x38156 or 486-5181 or Eric, x38420.

Sale/Lease: Nassau Bay townhouse, 4-2-2, over 2,000 sq. ft., 2-story den, extras, \$109,900 or \$1,095/mo. Jerry, x38922 or 488-5307.

Sale: Kirkwood So., 2-story, 2,300 sq. ft., 4-2-5-2, FPL, many extras, \$78,500. 488-5210.

Cars & Trucks

'86 Subaru XT Turbo Coupe, AC, PS, PB, PL, PW, 5-sp., sun roof, runs great, \$7,000, OBO. Lisa, 282-5255 or 996-7734.

'24' Nomad travel trlr., elec. jack, equal. hitch, clean, \$3,500. 334-1883.

'81 Olds Cutlass Cruiser, ex. cond., \$2,000,

OBO. David, 282-3827 or 554-5514.

'58 Chevy Stepside PU, \$1,500, OBO. Tim, 488-8806 or 488-3436.

'79 Pontiac Phoenix, 62K mi., clean int., depend., \$400. Wally, 280-1118 or 532-1953.

'84 Pontiac T-1000, std., AC, \$3,750. 585-8035.

'86 Buick Regal, auto., AC, PS, PB, ex. cond., \$6,250. 585-8035.

'79 Cutlass Supreme Brougham, V8, 2-dr., AC, PS, auto., tilt, deluxe uphol., stereo cass., ex. cond., \$1,895. 280-8796.

'78 Camaro, PS, PB, blk., runs good, \$1,195, OBO. 335-1957.

'84 Chrysler NY, gold, lea. int., PS, PB, AC, AM/FM stereo/cass., good cond., \$3,000. Derrick, x36059 or 332-2796.

'79 VW Rabbit, 4-dr., AC, good cond., runs good, \$950, OBO. 483-1633 or 486-9766.

'76 Mercury Mrgs. Brougham, 4-dr. sedan, all pwr., good cond., \$1,600. Thom, 474-4663.

'79 Camaro, 305 eng., PS, PB, eng. 1 yr. old, 8K mi., \$1,800. x37626 or 335-1229.

'86 Toyota truck, long bed, fully loaded, \$4,200. x37460.

'89 Olds Calais, 5 spd., tint, pwr. trk. rel., ant. wndws., locks, many extras, warr., 20K, \$11,500. James, 470-8759 or x37548.

'81 Datsun 280 ZX turbo, T-tops, auto., AC, AM/FM/cass., ex. cond., \$3,400. 283-4171 or 486-8574.

'87 Chevy Nova, ex. cond., 34K mi., AC, auto., PS, PB, AM/FM, \$5,400. 480-3270.

'65 Olds Starfire sport coupe, good cond., \$3,100, OBO. Tom, x38298 or 488-4089.

'74 Fiat 124 TC station wagon, 1592 c.c., needs work, \$600. Henry, x30022 or 482-5005.

'85 Mitsubishi Cordia L, 5-sp., AC, AM/FM stereo, loaded, 82K mi., ex. cond., \$3,295. x36091 or 333-5326.

'85 35' Mallard motor home, loaded, low mi., \$32,000. 337-4051.

'78 Monte Carlo, AM/FM cass., 4 new tires, good cond., \$995, OBO. Carol, 337-4257.

'87 Blazer S-10, 5-sp., AC, all pwr., dig. ster. cass., ex. cond., 52K mi., \$7,500. 333-7180.

'88 RX-7 SE, 10K mi., all warr., many extras, \$13,000. 482-5572 or (409) 244-4531.

'80 Toyota Celica, AC, AM/FM, liftback, good cond., \$1,000. 488-4102 or 333-3870.

'85 Toyota MR2, tail fin, loaded, 5-sp., ex. cond., 54K mi., \$6,500, OBO. Cindy, 779-4515 or Darwin, x32142.

'88 Hyundai Excel SE, 5-sp., 4-dr., 22K mi., \$1,200 and pick up pymnts. Kimberly, 488-8198.

'84 GMC Sierra Classic, loaded, 68K, \$4,850; classic '79 Seville, moonroof, leather, 51K, \$3,500. Don, x38039 or 333-3313.

Porsche 911S, 5-sp., AC, 445-4037.

'83 Jeep CJ-7 Renegade, runs good, low mi., \$4,900. Brian, 480-5430.

'75 Ford E-150 van, 351 cu. in. V-8, AC, PS, PB, AM/FM, reb. trans. Cliff, x39142 or 488-0090.

Cycles

'81 Honda Goldwing Interstate 1100 cc w/cov. and helmet, \$1,600 neg. 484-4538.

'81 Yamaha Maxim, ex. cond., \$750, OBO. x31794.

Today

Cafeteria menu—Special: meat sauce and spaghetti. Entrees: baked scrod, liver and onions, fried shrimp. Soup: seafood gumbo. Vegetables: green beans, buttered broccoli, whipped potatoes.

Saturday

Writers conference—The second annual Bay Area Writers League Conference will be held from 8:30 a.m.-5 p.m., March 3, at the Holiday Inn, NASA Rd. 1, followed by an autograph party from 5-6 p.m. Cost is \$50 per person, including lunch. Charles Murray, co-author of the book "Apollo: The Race To The Moon," is one of the featured writers. Contact Gary Hegler, 486-8478 or 486-8648 for information.

Monday

Cafeteria menu—Special: wieners with baked beans. Entrees: beef chop suey, breaded cutlet with cream gravy, grilled ham steak. Soup: beef and barley. Vegetables: buttered rice, Brussels sprouts, whipped potatoes.

Tuesday

ASQC dinner—The American Society for Quality Control (ASQC) will meet at 6 p.m., March 6, at the American Host Inn, 2020 NASA Rd. 1; contact Ray Swindle at x31825 for reservations and information.

Cafeteria menu—Special: pepper steak. Entrees: fried shrimp, pork chop with applesauce, turkey a la king. Soup: celery. Vegetables: au

gratin potatoes, breaded squash, buttered spinach.

Wednesday

Ground testing—The American Institute of Aeronautics and Astronautics (AIAA) Ground Testing and Simulation Technical Committee will hold a meeting from 11:30-12:15 p.m., March 7 in the Bldg. 3 cafeteria. Richard Bozeman, chief, Thermochemical Test Branch, will speak. Contact Sivaram Arepalli, x35910, for information.

Cafeteria menu—Special: Mexican dinner. Entrees: fried catfish with hush puppies, braised beef ribs. Soup: seafood gumbo. Vegetables: Spanish rice, ranch beans, buttered peas.

Thursday

Robotics workshop—WAR '90, a one-day Workshop on Automation and Robotics Applications organized by the Houston section of the AIAA, will be held from 8:30 a.m.-2:30 p.m., March 8, at the Gilruth Recreation Center. The workshop, hosted by JSC's Systems Development and Simulation Division, is free. Lunch is \$7. Contact Sharon Williams at x31525 for information and reservations.

Telerobotic meeting—The Houston section of the AIAA will hold a dinner meeting beginning at 5:30 p.m., March 8, at the Gilruth. Mike Gernhardt, vice president, special projects, Ocean Systems Engineer-

ing Inc., will speak on "Subsea Telerobotic Applications and Analogies to Space Station Freedom." Dinner is \$8 for members, \$9 for non-members, and \$7 for students and must be reserved by contacting Sarah at 282-3160 before noon March 5.

Exploration seminar—The Solar System Exploration Division Seminar Series presents Dr. Russell M. Genet, Fairborn University, speaking on "Multiple Telescope Robotic Observatories on Space Station and the Moon" at 3:15 p.m. March 8 in Bldg. 31, Room 129. Contact Nadine Barlow, x35044, for more information.

NPMA dinner—The JSC National Property Management Association monthly dinner meeting begins at 5:30 p.m., March 8, at the Gilruth, with H.L. Hardwick Jr. of Hernandez Engineering as the guest speaker. Contact Nan Edmonds, 283-6369 for information.

Cafeteria menu—Special: hamburger steak with onion gravy. Entrees: corned beef with cabbage and new potatoes, chicken and dumplings, tamales with chili. Soup: split pea. Vegetables: navy beans, buttered cabbage, green beans.

March 9

Cafeteria menu—Special: barbecue link. Entrees: deviled crabs, broiled codfish, liver and onions. Soup: seafood gumbo. Vegetables: buttered corn, green beans, new potatoes.

'78 Kawasaki KZ650, less than 7K mi., w/ helmet. Steve, x35806 or 333-4222.

'84 Kawasaki 440 jet ski, \$2,000; '83 Kawasaki 550 jet ski, \$2,000. Andy, 333-6671 or 332-9105.

'83 Suzuki GN125cc motorcycle, street legal, low mi. 474-7006.

'81 Suzuki 850cc, Vetter fairing/windscreen, many extras, ex. cond., \$1,400. Patrick, x32635 or 488-1079.

'81 Honda C70 passport street bike, helmets, low mi., good cond., \$465. (409) 935-6875.

Boats & Planes

Addictor miniboat, was \$5,500, now \$2,200 w/ access. and trlr. 332-7788.

OMC control unit w/16' cables, never used, was \$250, now \$125. 332-0365 or 282-2802.

17' Tuffboat canoe, was \$369, now \$269. x37960 or 485-9076.

14' Glassmagic skiboat, 80hp Merc. galv. trlr., skis, ex. cond., 38mph, \$1,595. 483-5180 or 326-3706.

'87 18' Celebrity Bowrider, 165hp I/O, deep-V hull stainless prop, Sportsman galv. trlr. w/ spare, ex. cond. 333-1640.

'81 Honda 7.5 outdb. '85, Sailboat Hunter 22, many extras, good cond., \$7,000. 488-1313.

'83 Ski Nautique, cov., galv. trlr., \$9,675. Gregory, x32888 or 486-9234.

Sunfish sailboat, \$250; 17' Coleman canoe w/ paddles, \$200; 125 gal. aquarium and hood light, \$150. Ralph, 283-5361 or 333-3509.

Audiovisual & Computer

TI-994A computer w/assorted software cart, access, \$150. Ed, x36969 or 332-0442.

Samsung 12" monochrome monitor (MA 2565), \$45; MGPH card (monographics and printer ports), \$40; fully prog. serial card (1 port), \$20. Brad, 282-3570 or 331-2693.

C-64, one disk drive, one tape drive, two joysticks, one icon-controller, one modem, one printer interface (no printer), many prog. and ROM cartridges, \$450. Brad, 282-3570.

IBM 386 clone, 20 MHz, 40 Meg HD, 1.2 Meg floppy, 1 Meg RAM, 800 x 600 VGA, \$2,600. Charles, x33599 or 474-9259.

Ricoh Rapidcom 120 fax to sell or trade for desktop P.C. 485-9643.

Household

DR set, pegged oak/glass table w/4 oak/fabric chairs, \$450, OBO. Mark, x36126 or 326-1192.

Side-by-side refrig., gold w/icemaker, \$275, OBO. Tom, 488-8806 or 488-3436.

Twin bed, matt./frame, \$80; 5-dwr. dresser, \$30; law tapes, \$1.00 each. Pat, 332-8117.

Kingz. BR set, ex. cond., hdbd., base w/drwr., split semi-motionless matt. w/dual heaters, dresser w/hutch, 2 end tables, \$600. 471-4100.

Trad./Span. oak wood/veneer tables, rect. coffee table w/matching end tables, \$100. 481-5913.

Sofa, matching chair, trad., brn./blue floral print, ex. cond., \$200. 488-6521.

Contemp. sofa, 7.5', gold, \$95; oriental area rug, 8' x 10', \$95; pool table/access., \$125. 488-4139.

Solid pecan DR table w/8 wickerback chairs (2 Captl.), \$350; round/square maple end tables/matching coffee table, \$210. 488-4139.

Kingz. waterbed, semi-motionless matt., mirr. hdbd., Early Amer., ex. cond., \$200, OBO. N. Martinez, x31795 or 538-3103.

Waterbed, 8' round, mirr. hdbd., heater, fitted sheet, \$100, OBO. Lee, x34820.

Lg. 3-pc. sofa, u-shaped contemp., beige Herculon, ex. cond., \$325. x32598 or 326-4100.

DR set, oval table w/4 padded chairs, lt. color, ex. cond., \$150. Barbara, 332-0094.

Couch/love seat, gold, \$250; wood enter. cen./bk. case, \$175; Litton microwave, \$60. 486-6726.

Musical Instruments

Fender concert amp, tube type, \$295; Gibson-Epiphone Emperor jazz guitar, ex. cond., \$795, will fin. Ed, 896-1035.

(2) column band/PA spkr. ovation 6119 div. of Kaman (4) spkr. per case and 400W per spkr., \$300. Jessie, x35981.

Console Thomas elec. organ/bench, 244-note keybds., many variable settings, good cond, BO. 326-3459.

Lost & Found

Found yellow/white fem. cat in Bayforest. x32998 or 486-8266.

Pets & Livestock

Cockatiels, hand-fed babies, 2 wks. old. Linda, 484-7834.

Free pure-bred Golden Ret., fem. w/papers, 10 mos. old and pup, male, 2 mos. old, both cream color. 991-7002.

2 male snoodle pups, 1/2 Schnauzer, 1/2 Poodle, born 12-7-89, \$35/ea. 280-9820.

German Shep. (Heidelberg bred) fem. AKC/KCA, blk./tan, born 11-2-89, BO. x36474 or 482-4219.

Wanted

Want to buy or haul off broken/used refrig., freezers, AC units. 484-4538.

Fem. roommate wanted to share house in LC, nonsmoker, \$200/mo. plus 1/3 bills. Karen, x36178 or 554-2971.

Want twin, dbl. or full sz. bed or hide-a-bed couch, chest-o-drawers and other furn. 333-6558 or 339-1337.

Want Starwars spaceships, toys, fig. and books. Ron, 482-1385.

Want donated wheelchairs, walkers, bathtub benches, or any conv. equip. Garland Hector, 488-0217.

Want carpool from Richmond/Rosenberg area, hrs. 7:30 a.m. to 4 p.m. 341-7902.

Want Atari 5200 game cart. Daryl, 483-5362.

Want blk. lacquer piano in good cond. Vi, x31538.

Want '78 thru '82 Honda Accord. David, 486-5259.

Want wood and/or chain link fence. 333-6558 or 339-1337.

Want 48" Intl. harvester belly-mower. 486-9811.

Want cheap work car or truck. 482-4156.

Bar or reg. sz. pool table, slate bed. 283-6622 or 332-4413.

Miscellaneous

Wards garden tiller, 5hp, rear tires. 334-1883.

SPACE SHUTTLE

| | 31 | 35 | 38 | 40 | 41 | 37 | 42 |
|---------------------|---------------------|--|---------------------|--|---------------------|--------------------|----------------------------------|
| Mission Date | 4-12-90 | 5-9-90 | 7-9-90 | 8-29-90 | 10-5-90 | 11-1-90 | 12-12-90 |
| Orbiter | <i>Discovery</i> | <i>Columbia</i> | <i>Atlantis</i> | <i>Columbia</i> | <i>Discovery</i> | <i>Atlantis</i> | <i>Columbia</i> |
| Payload | HST, IMAX-04 | ASTRO-01, BBXRT-01 | DOD | SLS-01 | ULYSSES | GRO | IML-01, IMAX-05 |
| Inclination | 28.5° | 28.5° | — | 39° | 28.5° | 28.5° | 28.5° |
| Altitude | 310 × 330 | 190 | — | 150 | 160 | 243 | 165 |
| Duration | 5 | 9 | — | 9 | 4 | 5 | 9 |
| Crew CDR | Loren J. Shriver | Vance D. Brand | Richard O. Covey | Bryan D. O'Connor | Richard N. Richards | Steven R. Nagel | Ronald J. Grabe |
| PLT | Charles F. Bolden | Guy S. Gardner | Frank L. Culbertson | Sidney M. Gutierrez | Robert D. Cabana | Kenneth D. Cameron | Stephen S. Oswald |
| MS | Steven A. Hawley | John M. Lounge | Robert C. Springer | Tamara E. Jernigan | William M. Shepherd | Jerry L. Ross | Manley L. Carter |
| | Bruce McCandless II | Jeffrey A. Hoffman | Carl J. Meade | M. Rhea Seddon | Bruce E. Melnick | Jay Apt | Norman E. Thagard |
| | Kathryn D. Sullivan | Robert A. R. Parker | Charles D. Gemar | James P. Bagian | Thomas D. Akers | Linda M. Godwin | William F. Readdy |
| PS | | Ronald A. Parise Samuel T. Durrance | | F. Drew Gaffney Millie Hughes-Fulford | | | Ulf Merbold Roberta L. Bondar |

| | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
|---------------------|------------------|-----------------|--|----------------------------|-----------------|------------------|-----------------|------------------|
| Mission Date | 1-31-91 | 3-4-91 | 4-4-91 | 5-16-91 | 6-17-91 | 8-22-91 | 9-30-91 | 12-5-91 |
| Orbiter | <i>Discovery</i> | <i>Atlantis</i> | <i>Columbia</i> | <i>Discovery</i> | <i>Atlantis</i> | <i>Discovery</i> | <i>Atlantis</i> | <i>Discovery</i> |
| Payload | TDRS-E | DOD | ATLAS-01 | TSS-01, EURECA-1L, IMAX-06 | SL-J | UARS | STARLAB | LAGEOS II |
| Inclination | 28.5° | — | 57° | 28.5° | 57° | 57° | 33.4° | 28.5° |
| Altitude | 160 | — | 160 | 230 | 160 | 291 | 175 | 160 |
| Duration | 5 | — | 9* | 7 | 7 | 5 | 7 | 7 |
| Crew CDR | 5 | 5 | TBD | Robert L. Gibson | TBD | 5 | 7 | 5 |
| PLT | | | TBD | TBD | TBD | | | |
| MS | | | Kathryn D. Sullivan | Jeffrey A. Hoffman | Mark C. Lee | | | |
| | | | C. Michael Foale | Franklin R. Chang-Diaz | N. Jan Davis | | | |
| | | | TBD | Claude Nicollier | Mae C. Jemison | | | |
| PS | | | Byron K. Lichtenberg Michael L. Lampton | TBD TBD | TBD | | | |

| | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 |
|---------------------|-----------------|--------------------------------|-----------------|-----------------|------------------|-----------------|------------------|--------------------|--------------------------------------|-----------------|------------------|------------------|
| Mission Date | 1-23-92 | 2-13-92 | 3-5-92 | 4-23-92 | 5-28-92 | 6-18-92 | 7-16-92 | 8-6-92 | 9-3-92 | 9-30-92 | 10-29-92 | 12-10-92 |
| Orbiter | <i>Atlantis</i> | <i>Endeavour</i> | <i>Columbia</i> | <i>Atlantis</i> | <i>Endeavour</i> | <i>Columbia</i> | <i>Discovery</i> | <i>Atlantis</i> | <i>Endeavour</i> | <i>Columbia</i> | <i>Discovery</i> | <i>Endeavour</i> |
| Payload | AFP-675, IBSS | GEOSTAR-01, EURECA-1R, USMP-01 | USML-01 | ACTS | SL-D2 | ATLAS-02 | SRL-01 | Flight opportunity | SPACEHAB-01, SPAS-ORFEDS, GEOSTAR-02 | SLS-02 | INMARSAT-01 | TDRS-F |
| Inclination | 57° | 28.5° | 28.5° | 28.5° | 28.5° | 57° | 57° | TBD | 28.5° | 28.5° | 28.5° | 28.5° |
| Altitude | 140 | 160 | 140 | 160 | 160 | 160 | 130 | TBD | 160 | 140 | 160 | 160 |
| Duration | 8 | 9 | 13** | 7 | 9 | 9 | 9 | TBD | 7 | 13** | 8 | 5 |
| Crew | 7 | 5 | 7 | 6 | 7 | 7 | 5 | TBD | 5 | 7 | 7 | 5 |

| | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 |
|---------------------|-----------------|-------------------------|----------------------|-----------------------|-----------------|------------------|--------------------|------------------|--------------------|--------------------|----------------------------------|----------------------------|-----------------|
| Mission Date | 1-28-93 | 2-25-93 | 3-18-93 | 4-15-93 | 5-6-93 | 6-10-93 | 7-1-93 | 7-22-93 | 9-2-93 | 10-1-93 | 10-22-93 | 11-12-93 | 12-9-93 |
| Orbiter | <i>Columbia</i> | <i>Discovery</i> | <i>Atlantis</i> | <i>Endeavour</i> | <i>Columbia</i> | <i>Discovery</i> | <i>Atlantis</i> | <i>Endeavour</i> | <i>Columbia</i> | <i>Discovery</i> | <i>Atlantis</i> | <i>Endeavour</i> | <i>Columbia</i> |
| Payload | IML-02 | SPACEHAB-02, GEOSTAR-03 | USMP-02, INMARSAT-02 | ATLAS-03, SPAS-CRISTA | EURECA-2L | HST REV-01 | Flight opportunity | SPACEHAB-03 | Flight opportunity | Flight opportunity | SPACEHAB-04, Payload opportunity | EURECA-2R, USMP-03, SATCOM | SRL-02 |
| Inclination | 28.5° | 28.5° | 28.5° | 57° | 28.5° | 28.5° | TBD | 28.5° | TBD | TBD | 28.5° | 28.5° | 57° |
| Altitude | 140 | 160 | 160 | 160 | 160 | TBD | TBD | 160 | TBD | TBD | 160 | 160 | 130 |
| Duration | 13** | 7 | 7 | 9 | 7 | 5 | TBD | 7 | TBD | TBD | 7 | 9 | 9 |
| Crew | 7 | 5 | 5 | 7 | 5 | 5 | TBD | 5 | TBD | TBD | 5 | 5 | 5 |

| | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 |
|---------------------|------------------|------------------------------------|------------------|-----------------|----------------------------------|-------------------|-----------------|---------------------------|----------------------------------|------------------|--------------------|
| Mission Date | 2-3-94 | 2-24-94 | 3-17-94 | 4-7-94 | 5-12-94 | 6-2-94 | 8-4-94 | 8-25-94 | 10-6-94 | 10-27-94 | 12-8-94 |
| Orbiter | <i>Discovery</i> | <i>Atlantis</i> | <i>Endeavour</i> | <i>Columbia</i> | <i>Discovery</i> | <i>Atlantis</i> | <i>Columbia</i> | <i>Discovery</i> | <i>Atlantis</i> | <i>Endeavour</i> | <i>Discovery</i> |
| Payload | ISF-01 | XTE/EUVE RETR, Payload opportunity | ATLAS-04 | USML-02 | SPACEHAB-05, Payload opportunity | SFU-RETR, USMP-04 | SL-D3 | AAFE, Payload opportunity | SPACEHAB-06, Payload opportunity | ISF-02 | Flight opportunity |
| Inclination | 28.5° | 28.5° | 57° | 28.5° | 28.5° | 28.5° | 28.5° | 28.5° | 28.5° | 28.5° | TBD |
| Altitude | 160 | 160 | 160 | 140 | 160 | 160 | 160 | 160 | 160 | 160 | TBD |
| Duration | 7 | 7 | 7 | 16** | 7 | 7 | 9 | 7 | 7 | 9 | TBD |
| Crew | 7 | 5 | 9 | 7 | 5 | 5 | 7 | 5 | 5 | 7 | TBD |

| | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 |
|---------------------|-------------------|-----------------|------------------|-----------------|-----------------|------------------|------------------|-----------------|------------------|------------------|-----------------|
| Mission Date | 1-19-95 | 2-15-95 | 3-9-95 | 4-27-95 | 6-1-95 | 6-22-95 | 8-10-95 | 9-7-95 | 9-28-95 | 11-16-95 | 12-7-95 |
| Orbiter | <i>Atlantis</i> | <i>Columbia</i> | <i>Endeavour</i> | <i>Atlantis</i> | <i>Columbia</i> | <i>Endeavour</i> | <i>Discovery</i> | <i>Columbia</i> | <i>Endeavour</i> | <i>Discovery</i> | <i>Atlantis</i> |
| Payload | OMV, WISP, SPTN-T | SLS-03 | SSF/MB-01 | TDRS-G | IML-03 | SSF/MB-02 | SSF/MB-03 | ATLAS-05 | TDRS-H | SSF/MB-04 | SRL-03 |
| Inclination | 57° | 28.5° | 28.5° | 28.5° | 28.5° | 28.5° | 28.5° | 57° | 28.5° | 28.5° | 57° |
| Altitude | 160 | 140 | 220 | 160 | 140 | 220 | 220 | 160 | 160 | 220 | 130 |
| Duration | 7 | 16** | 7 | 5 | 16** | 7 | 7 | 9 | 5 | 7 | 7 |
| Crew | 5 | 7 | 7 | 5 | 7 | 7 | 7 | 7 | 5 | 7 | 5 |

Glossary

AAFE Aeroassist Flight Experiment
ACTS Advanced Communications Technology Satellite
AFP Air Force Polar Bear
ASTRO Ultraviolet Astronomy
ATLAS Atmospheric Laboratory for Applications and Science
BBXRT Broad Band X-Ray Telescope
CRISTA Cryogenic Infrared Spectrometer Telescope for Atmosphere

DOD Department of Defense
EURECA European Retrievable Carrier
EUVE Extreme Ultraviolet Explorer
GEOSTAR Interactive Radiodetermination Satellite
GRO Gamma Ray Observatory
HST Hubble Space Telescope
IBSS Infrared Background Signature Survey
ICBC IMAX Cargo Bay Camera
IMAX Large format motion picture camera
IML International Microgravity Laboratory
INMARST International Maritime Satellite
ISF Industrial Space Facility

LAGEOS Laser Geodynamics Satellite
OMV Orbital Maneuvering Vehicle
ORFEUS Orbiting and Retrievable Far and Extreme Ultraviolet Spectrometer
SATCOM GE communications satellite
SFU Space Flyer Unit
SL Spacelab
SLS Space Life Sciences
SPACEHAB Commercially owned pressurized experiment module
SPAS Shuttle Pallet Satellite
SPTN Shuttle Pointed Autonomous Research

SRL Tool for Astronomy
STARLAB Space Radar Laboratory
SSF/MB Space Station *Freedom* Manned Base
STARLAB DOD Spacelab
TDRS Tracking Data Relay Satellite
TSS Tethered Satellite System
UARS Upper Atmosphere Research Satellite
ULYSSES Formerly International Solar Polar Mission
USML U.S. Microgravity Laboratory
USMP United States Microgravity Payload
WISP Waves in Space Plasma
XTE X-Ray Timing Explorer

*Possible extension to 10 days

**Dependent on prior long-duration flight experience

Pioneer 11 fourth spacecraft to leave solar system

Pioneer 11 crossed the orbit of Neptune on Feb. 23 and became the fourth spacecraft to leave the solar system, providing a coda to humanity's first major planetary explorations.

Pioneer 11 will join Pioneer 10 and Voyagers 1 and 2 in searching for the heliopause, the point at which the Sun's electromagnetic influence gives way to the galaxy's influence.

As it crossed Neptune's orbit, Pioneer 11 was 2.8 billion miles from the Earth. Neptune's orbit currently marks one measure of the expanse of the solar system because, for the next 12 years, Pluto's eccentric orbit carries it inside Neptune's path. Some scientists refer to the heliopause as the edge of the solar system. By that definition, all four spacecraft

are still within the solar system.

Pioneer 11, which will traverse interstellar space in the same direction as the Sun moves, continues to return good data, but in three years, operating the radio transmitter and scientific instruments simultaneously will be difficult, says NASA Project Manager Richard Fimmel. Technical adjustments may extend the craft's life through 1995. Pioneer 10, with a stronger power supply, may return data through the year 2000, which would extend its original 30-month design life to 28 years.

Launched in 1973, Pioneer 11 provided scientists with their closest view of Jupiter, passing within 26,600 miles of the cloud tops in December 1974. The close approach and

the spacecraft's speed of 107,373 mph, by far the fastest ever for a man-made object, hurled Pioneer 11.5-billion miles across the solar system toward Saturn.

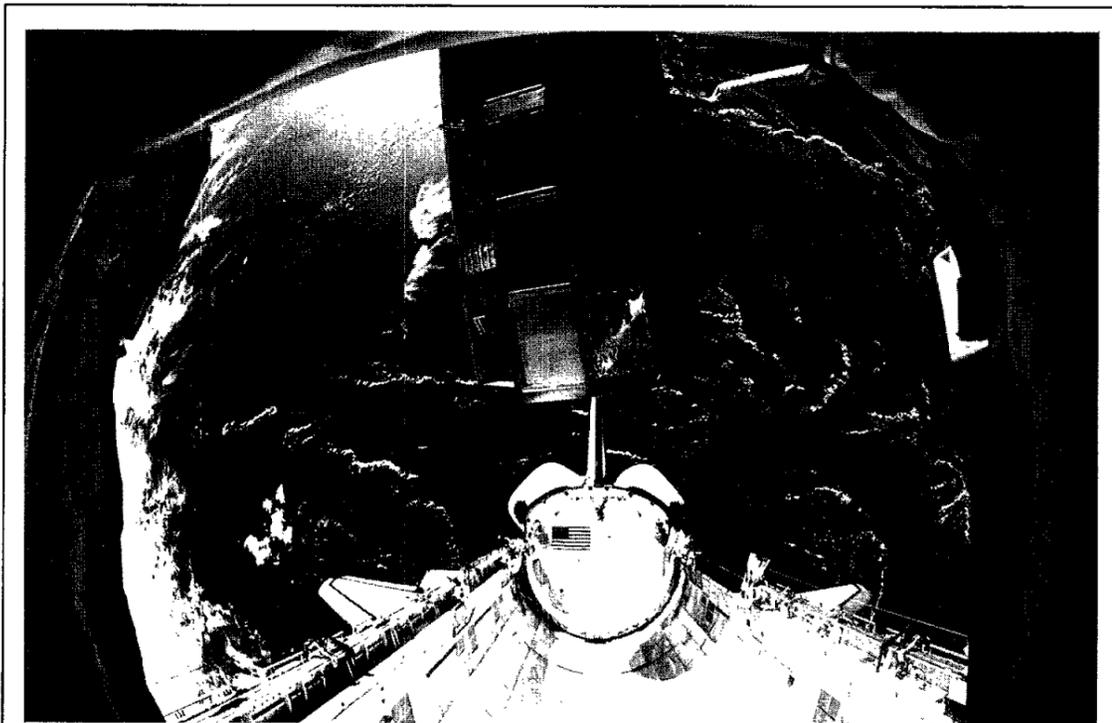
Before reaching Saturn in 1979, Pioneer 11 reached an inclination of 17 degrees above the solar equatorial plane, high enough to illuminate the true character of the Sun's magnetic field. Now 780 million miles above the ecliptic plane where most of the planets orbit the Sun, the spacecraft recently showed that many of the solar cosmic rays in the heliosphere originate outside the Sun's atmosphere in the interstellar gas, the space between the stars.

Pioneer 11 flew to within 13,000 miles of

Saturn and took the first close-up pictures of the planet. Instruments located two previously undiscovered small moons and an additional ring, charted Saturn's magnetosphere and magnetic field and found its planet-size moon, Titan, to be too cold for life.

In June 1983, Pioneer 10 made history by becoming the first human artifact to leave the solar system, traveling in the direction opposite Pioneer 11's path. Today, Pioneer 10 will be 4.5 billion miles from Earth.

The Pioneers are managed by Ames Research Center for NASA's Office of Space Science and Applications. The spacecraft were built by TRW Space & Technology Group, Redondo Beach, Calif.



JSC Photo by Marsha Ivins

WINDOW SEAT—Among the extensive on-board photographs taken during STS-32 was this wide-angle view of the Long Duration Exposure Facility suspended over Columbia's payload bay. Mission Specialist Marsha Ivins took the photo as part of a thorough test of various film emulsions.

JSC salutes women's history this month

A March exhibition, noontime video series, and a special program in Teague Auditorium will highlight JSC's first official recognition of National Women's History Month.

The national theme for this year's event is "Courageous Voices Echoing in Our Lives."

"The theme calls for us to remember the words and deeds of previous generations of women, and the way their beliefs and ideals are reflected in our lives today," said Federal Women's Program Manager Freda Marks.

The theme also recognizes the lives of women in our own families who have sustained us and passed on the cultural heritage, Marks added. "It is in the words and deeds of such women that inspiration for our own lives can be found," she said.

Among the JSC events is a month-long visual display in the JSC Technical Library, Bldg. 45. The first two weeks of March will feature photos and historical documents that illustrate the involvement of women in issues regarding the Constitution and its amendments. The display will capture the events and highlight the individual women active in the abolitionist, women's suffrage, and temperance movements, as well as participating in campaigning for the Equal Rights Amendment.

During the last two weeks of the month, a display specifically centered on the women's suffrage movement will be featured. Photos of the individuals and events marking the 72-year campaign for women's voting rights in the U.S. will be included.

March 12-30, four 15-17 minute videos focusing on "Women in American Life" will be broadcast at lunchtime on Channel 9 of JSC's closed-circuit television system. The videos will be

shown every Monday, Wednesday and Friday at 11:30 a.m.

The programs in the series cover 1861-80: Civil War, Recovery, and Westward Expansion; 1880-1920: Immigration, New Work and New Roles; 1917-42: Cultural Image and Economic Reality; and 1942-55: War Work, Housework, and Growing Discontent.

The videos feature more than 550 historical photographs selected from dozens of photo archives throughout the country. Each emphasizes the daily life and work experience of women during a particular period of U.S. history, as well as their involvements with social issues. All four visual efforts include women from a wide range of geographic, racial, and ethnic populations.

Concluding the month's activities will be a special program named "Struggles, Stories, and Songs of Our Foremothers" in Teague Auditorium from 1:30-3:30 p.m. March 22. The program will include narration, dramatization, slides and music.

The program will be hosted by Dr. Martha Kirk and Sister Coral Nunnery of Incarnate Word College in San Antonio. The program will include stories and songs about women who have worked courageously for justice and peace.

The 1990 National Women's History Month poster will be given to the first 100 employees who attend the program. The poster features Sojourner Truth, Rose Schneiderman, Susette La Flesche Tibbles, Jeanette Rankin, Rachel Carson, Emma Tenayuca, Angelina Grimke, Yoshiko Uchida, Billie Jean King, and Ella Baker. The women portrayed all spoke out, wrote, or in other ways lifted their voices for important issues, thus illustrating the 1990 theme.

Radon monitoring scheduled for JSC

Ten percent of on-site JSC buildings will be included in an initial agencywide radon screening study.

At the conclusion of the 90-day study, the results will be released to JSC employees and submitted to the Environmental Protection Agency.

Although the Houston area does not have an abundance of naturally occurring radioactive material in its soil, alpha-track detectors, supplied by NASA Headquarters, will soon be installed to measure any radon concentrations that exist.

Radon is a radioactive gas result-

ing from the natural breakdown of uranium. Radon cannot be seen, smelled or tasted. Exposure to elevated levels of radon is known to be associated with an increased risk of developing lung cancer. Not everyone exposed develops lung cancer, and the time between exposure and the onset of disease involves several years.

Outdoors, radon is diluted to concentrations low enough as to not be cause for concern. In an enclosed space such as a building, however, radon can accumulate. Indoor con-

centrations depend both on the construction of the building and the level of concentration of radon in the underlying soil.

The NASA-developed radon measurement plan was developed in accordance with the Congressional Amendment to the Toxic Substances Control Act, Title III, The Indoor Radon Abatement Act, Section 309. The amendment requires federal agencies to conduct a screening study by collecting representative samples in their buildings to determine the extent of radon contamination.

Materials Analysis and Testing Lab opens

The Quality Assurance and Engineering Division has announced the opening of the Materials Analysis and Testing Laboratory (MATL) at 9:30 Gemini.

The MATL was established to provide chemical and mechanical testing of externally threaded fasteners and metallic raw materials. The testing verifies that bolts and materials meet

procurement specifications.

This testing process does not, however, relieve the manufacturer of the responsibility of performing the tests required by the procurement specification.

All externally threaded fasteners used on flight hardware and critical ground support equipment are required to be purchased with a

certificate of compliance. Verification testing is also required to be performed on samples from the purchased lot.

Further information on the testing is available in the publication "JSC Faster Integrity Testing Program." Requests for copies of that publication, or questions regarding the laboratory, should be made to D.C. Dittmar, x34344.

Space Station Projects Office refined

(Continued from Page 1)

Integration Office, which with its up-and-out focus will collect all project integration issues and reflect them into program integration. Tony E. Redding will continue as manager, and represent the projects office to the program integration office on a day-to-day basis. The Systems and Configuration Office and the Project Integration Office have been abolished.

The name of the Avionics Office

remains the same, but two of its sub-offices have been renamed. The Software Resources and Integration Office is now the Systems Development Office and has a down-and-in development focus. The Integrated Avionics Office becomes the Integration and Verification Office and has an up-and-out focus. Carroll T. Dawson continues as manager.

In addition, Aaron has eliminated the position of project manager for inte-

gration, held by Jesse Goree before he moved on to the Program Integration Office. Bob Bobola, who had been project manager for development, now becomes assistant manager for all aspects of the Space Station Projects Office.

The Management Integration Office, headed by Thomas G. Mancuso, and the Operations Integration Office, led by John D. Holt, will not be changed by the reorganization.

Travel rebates benefit Employee Activities Association

Employees who book personal travel through the Ask Mr. Foster office in Bldg. 1 are also contributing to a rebate to JSC's NASA Exchange.

The Exchange has received three rebates so far totaling \$28,140 since the contract went into effect in August 1987.

NASA receives a rebate for offi-

cial travel, as well as a rebate of a portion of the commissions earned by the contractor when providing personal travel services.

NASA Headquarters has directed that the personal travel commissions be distributed to the respective NASA Exchanges, with future rebates distributed on a semiannual

basis.

The NASA Exchange-JSC, through the Employee Activities Association (EAA), funds employee activities including the annual JSC picnic, Christmas dances, children's parties, etc. The funds are also used to fund Gilruth Recreation Center athletic and social activities.

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.

Editor Kelly Humphries
Assoc. Editor Linda Copley

JSC Golf Association looking for members

The JSC Golf Association (JSCGA), open to civil service and contractor employees averaging less than 110, is conducting a membership drive, with its first competitive tournament scheduled for April 10.

The JSCGA was organized in the 1960's to provide golfing competition and enjoyment to center employees. Nine competitive tournaments, played in strict adherence with USGA rules, are scheduled annually from spring through November on both public and private area courses.

Interested employees should contact Bob Sampson, x34613, or Steve Willis, 280-2377, for information.

Williams to retire from NASA, Navy

(Continued from Page 1)
deployment of the Jupiter probe, Galileo.

Prior to STS-34, Williams served as chief of the Astronaut Office Mission Support Branch. He also served as deputy manager of oper-

ations integration in the NSTS Program Office, and as deputy chief of the Aircraft Operations Division during his years with NASA.

Williams will join Science Applications International Corp. in Houston as senior systems engineer.

Discovery preparations progressing

(Continued from Page 1)
of the elevons and conduct leak tests for flight this weekend.

While in the VAB, *Discovery* will be mated to the external tank and solid rocket boosters, and a test of the critical

connections will be conducted. Roll out to the pad is planned March 16.

The Hubble Space Telescope is scheduled to be transferred to the pad on March 26, and installed in *Discovery's* payload bay two days later.