

Space News Roundup

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No. 34

Launch set pending solution of valve problem

By Brian Welch

NASA managers Tuesday confirmed Sept. 12 as the launch date for the second flight of *Endeavour*, but a problem with a valve in the plumbing that feeds liquid oxygen to the orbiter must be resolved first.

The launch date was approved earlier this week during the STS-47 Flight Readiness Review, contingent upon resolving a problem in an oxygen line quick disconnect valve in *Endeavour's* main propulsion system oxygen umbilical.

That two-inch line provides pressurization of the liquid oxygen that

flows into the orbiter during ascent. It is located near the 17-inch liquid oxygen umbilical.

Over the course of several tests, Kennedy Space Center technicians have detected leakage in the line and have been unable to properly pressurize it to the specified 650 pounds per square inch. The problem could be a loose connection, faulty alignment or contamination in the line, and KSC officials expected to be able to resolve the issue either by changing out the part, replacing the seal or freeing up any contamination in the line.

As of Wednesday, launch pad personnel were completing the loading of hypergolic fuels aboard *Endeavour*, clearing the way for pad access Thursday for the team that was to investigate the LOX pressurization line problem. That team's work can be performed in conjunction with other planned activities, but if efforts to resolve the problem go past today, officials said, it could mean a reassessment of the Sept. 12 launch date.

The team is currently tracking no other constraints to launch. *Endeavour's* flight, the 50th in the

Shuttle program, will launch the Japanese Spacelab mission on a nearly seven-day trip to low Earth orbit. The launch window for Sept. 12 opens at 9:23 a.m. CDT and closes at 2:17 p.m. CDT. The Sept. 19 landing is scheduled for KSC.

The orbiting laboratory will carry a seven-member crew and 43 experiments provided by Japan and the United States for a flight whose primary objective is to use the space environment to study important scientific and technical questions in materials science, life science and technology.

In other work at KSC, *Columbia* is in Orbiter Processing Facility Bay 1 as preparations continue for the STS-52/LAGEOS flight. Forward reaction control system mates and checks were recently performed, as was installation of auxiliary power units and fuel cells.

Discovery is currently in OPF Bay 3 in preparation for the STS-53/Department of Defense flight. Work in progress this week included deservicing freon coolant loop one, filling and bleeding hydraulic lines and performing main propulsion system leak checks.

TSS panel presents first report

The Tethered Satellite System Investigative Board last week presented an interim status report to Space Flight Associate Administrator Jeremiah Pearson saying the unplanned stops during the Italian satellite's deploy were partly due to a 1/4 inch bolt.

Since landing in August, the tethered satellite has been removed from the orbiter *Atlantis* and placed in a checkout stand in the Operations and Control facility at the Kennedy Space Center. The board had its first look at TSS hardware last week.

Detailed inspection of the tether reel assembly provided evidence that the unplanned stops at 179 and 256 meters were due to a mechanical obstruction.

Visual evidence and preliminary analysis points to a 1/4-inch diameter bolt which prevented part of the reel mechanism from freely traveling back and forth. The level wind mechanism, which operates similar to the way a fishing reel feeds out line, contacted the end of the bolt preventing it from moving all the way out to its stopping point.

The bolt is part of a structural modification that was installed on the reel assembly earlier this year. The modification was required following the final computer analysis which is done for every shuttle mission to verify that all structural connections between the payload and orbiter will withstand the rigors of launch and landing.

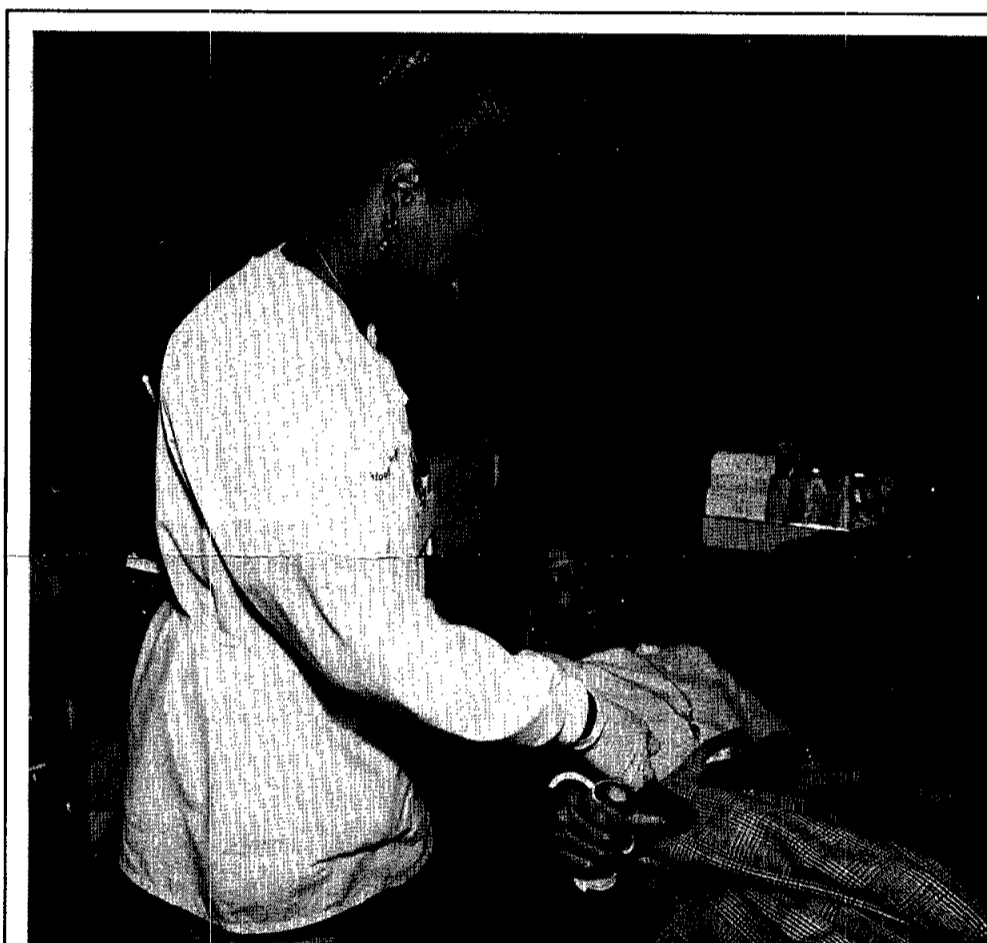
Engineers require that attach points such as these be at least twice as strong as necessary to pass stringent safety criteria. Analysis indicated the margin of safety was less than that for some fasteners at the point where the reel assembly was mounted to its specially adapted support structure. The modification strengthened the mounting area to provide the required factor of safety.

Testing of the flight hardware is planned to verify that this mechanical obstruction was the cause of the jamming of the deployment reel and the subsequent unplanned stops of the satellite at 179 and 256 meters.

The board believes that even without the problems with the umbilical and the jamming of the tether at the upper tether control mechanism, this problem would have prevented full deployment of the tethered satellite.

Board Chairman Darrell Branscome said the five problems receiving the groups attention are failure

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CARING GIVERS—Pat Hines of St. Luke's Hospital monitors a blood draw from Georgia Jones of JSC's Inspector General Office. Jones was one of about 170 JSC employees participating in this week's Blood Drive. About 30 individuals also signed up as potential bone marrow donors.

JSC Photo by Bill Blunck

Astronauts chosen for three flights

JSC officials recently announced the selection of crew members for three upcoming space shuttle flights encompassing the second Spacelab Life Sciences mission, the second International Microgravity mission and the first Hubble Space Telescope servicing mission.

Selected to command STS-58, Spacelab Life Sciences-2, was Air Force Col. John E. Blaha. Scheduled for launch next summer, STS-58 will continue life sciences research on adaptation to microgravity in preparation for Space Station *Freedom* and future planetary exploration.

Blaha is a veteran of three previous space shuttle missions, as pilot on STS-29 in March 1989 and STS-33 in November 1989 and commander on STS-43 in August 1991.

Also joining the STS-58 team is USAF Major Richard A. Searfoss as pilot and William S. McArthur as mission specialist. Both are members of the 1990 astronaut class and will be making their first flights.

Previously assigned STS-58 crew members are Payload Commander M. Rhea Seddon, M.D., assigned in October 1991, and mission specialists Shannon Lucid, Ph.D., and David Wolf, M.D., both assigned in December 1991.

The announcement also named three mission specialists with spacewalking experience to join Payload Commander Story Musgrave, M.D., on STS-61 Hubble Space Telescope servicing mission sched-

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Goldin announces plan for small business

NASA Administrator Daniel S. Goldin recently announced a plan to upgrade the position of Small and Disadvantaged Business Director to Assistant Administrator, equal to directors of program and administrative offices.

Goldin called the decision "a strong signal" in a series of moves to insure that the nation's small firms, including those owned by members of minorities and women, win a larger share of NASA contracts.

"In the past, we have focused much of our attention on working with the giant aerospace companies with the big hardware contracts and comparatively little on working with small business," Goldin said during a small business conference in Nashua, N.H.

"We must change our orientation," he said, adding that NASA has begun the process through a series of procurement initiatives.

One of the most important changes, Goldin said, is an action to reduce the amount of paperwork and other administrative tasks now required to win smaller contracts.

The biggest change to help small businesses could come in mid-range procurements between \$25,000 and

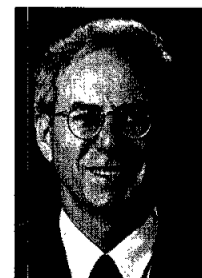
\$500,000, Goldin said. Although they represent only 15 percent of NASA's contract dollar, they account for more than 80 percent of the procurement actions.

Other steps Goldin has directed the agency to take to bolster awards to small firms include requiring prime contractors to increase the percentage of subcontracts with small and disadvantaged businesses; establishing a percentage for SDB awards in competitive procurements instead of a mere goal; making subcontracting to small firms an important evaluation factor in source selection; rewarding primes that exceed their subcontracting goals; establishing a "Minority Business Resource Advisory Committee" within NASA to help SDBs deal with

the agency; and pursuing statutory authority to allow the agency to make SDB set-asides.

"NASA must take down the obstacles that discourage so many small businesses from engaging in government contracting," Goldin said.

'NASA must take down the obstacles that discourage so many small businesses from engaging in government contracting.'



—Daniel S. Goldin

1991, while another \$1.4 billion flowed to small firms through subcontracting.

"We are convinced we can do more," he said.

The Kennedy Space Center currently is evaluating proposals for a

\$2.7 billion base operations contract and has declared that 30 percent of this must be subcontracted to small, disadvantaged or women-owned businesses.

Goldin said KSC recently selected a minority-owned firm for a \$75 million contract with options up to \$150 million.

"The contract is not for routine support services," he noted. "It is for applied research and technology, including tasks involving telerobotics and development of a highly sensitive spectrometer to detect hazardous gas."

The Marshall Space Flight Center expects to award a \$35 million contract to a minority firm in late September, he said.

Goldin said that small firms have been great sources of innovation for NASA. He disclosed that a recent recipient of a NASA Small Business Innovative Research contract had developed "three dimensional packaging technology" for integrated circuit dies.

"This technology may ultimately lead to a sugar cube sized personal computer," Goldin said. "That company is now working with IBM to develop this product for the commercial marketplace."

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, Summlt): \$21.
Texas Renaissance Festival (9 a.m.-6 p.m. weekends Oct. 3-Nov. 15): adult, \$9.25; child (5-12), \$5.55.
Ski SunValley (Jan. 9-16, SunValley, 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.
Upcoming events: Deep Sea Fishing Trip (Oct. 17): \$45 to fish, \$20 to ride. On sale Sept. 14.

Texas Renaissance Festival bus trip (Oct. 24, Nov. 7): One-day trip; adult, \$15; child (ages 5-12) \$10; child (under 5) \$7. On sale Sept. 14.

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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.

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

Defensive driving — Course is offered from 8 a.m.-5 p.m. Sept. 12. 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.

Country and western dance — Country and western dance lessons for beginners will be offered from 7-8:30 p.m. Mondays beginning Sept. 14. Advanced classes will be from 8:30-10 p.m. Cost is \$20 per couple; classes run for six weeks.

Flag football — Officials are needed to work flag football games during the fall season. An officials instruction course will be offered Sept. 12. For details, call the Gilruth at x30304.

Sign language — Classes in the third-most used language in the United States will be offered from 6:30-8:30 p.m. Mondays beginning Sept. 14. Cost for the six-week course is \$55.

Safety awareness — Constable Bill Bailey's office will present a seminar on crime prevention through safety awareness from 5:30-6:30 p.m. Sept. 10 in the Gilruth ballroom. To reserve a seat for the free seminar, call x30304.

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

Fiction Workshop — Classes to begin Oct. 7.

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

Sale: Pipers Meadow, 4-2-2, 2-story, FPL, fans, new carpet, vinyl, wallpaper, \$74.9K. Greg, 286-0356 or 470-0433.
Lease: CLC University Green TH, 1327 sq ft, 2-2.5-2, high eff. AC, fan, FPL, W/D, refig, miniblinds, \$750. 488-1036.

Rent: Timeshare condo avail, anywhere in world, \$575/wk. 282-3339 or 286-8417.

Rent: Galv beach house, D/W, cent air, furnished. Ed Shumilak, x37686 or 326-4795.

Rent: Seafarer TH, 2-2.5, fans, FPL, hi ceil, W/D, icemaker, deck, garage, \$850. 326-2981.

Sale: Lake Livingston, Impala Woods at Onalaska, 30 x 70 lot, 1/2 mi. off water, util avail, paved roads, \$3K. Teena, x37787 or 422-6369.

Sale: Shed, 12 x 24 w/ 7 x 8 garage dr, wired for 110V, built-in work bench/storage locker, \$1.5K OBO. David, 332-9704.

Lease: Pipers Meadow, 3-2-2, carpets, drapes, FPL, fenced, built-ins, \$825. 538-3352.

Sale: 71 acre ranch, La Moca, deer blinds, deer feeders, 2 BR house on 9' stilts, water well, elec pwr, mineral rights, \$120K. 326-1833.

Rent: Winter Park ski condo, 3-2, view of slopes & Continental Divide, clubhouse, hot tub, free shuttle, 482-1369.

Sale: Friendswood, Lux French Country Estate, 4-3.5-3D, 3478 sq ft, located on 5.7 ac, another 5.3 ac avail, \$365K. x39250 or 996-8471.

Sale: Santa Fe, 2.5 acres, well, septic, fenced, no owner financing, \$21.9K. 534-2231.

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

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

Sale: Pipers Meadow, 3-2.5-2, contemp, formal living/dining, FPS, loft, master dn, fans, deck, landscaped, 2070 sq ft, \$90K. Dennis, x34405 or 532-3312.

Rent: Galv condo, furn, sleeps 6, Seawall Blvd & 61st St, Wkly/Daily rates. Magdi Yassa, 333-4760 or 486-0788.

Cars & Trucks

'91 Dynasty, rosewood/burgundy, AC, 35K mi, ex cond. Janie, 673-1143.

'81 Buick Electra LTD, diesel, needs work, but runs, 2 new batt, 2 new tires, new fuel injector pump, body faded but in good cond, int in ex cond, loaded, BO. x35129 or 480-1330.

'83 Celica GT, loaded, good cond, new tires/brakes, \$2K OBO. Brian, 474-3553.

'89 Pontiac Firebird Trans Am GTA, loaded, leather, t-tops, ex cond, \$11.9K nego. Lisa, 488-2258.

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

'68 Ford PU, \$1.5K.; '82 Audi 4000S, 4 dr, \$1K. Keith, 282-2710 or 337-5723.

'90 Mitsubishi Galant LS, auto, pwr windows/locks, PS/PB, AM/FM/cass, warr, 31K mi., \$11,250 OBO. 484-9233.

'83 Dodge Colt, low mi, ex cond, \$850. 286-7518.

'82 Mazda 626, clean, all elec, sun roof, 80K mi, runs ok, \$2.5K OBO. 283-1226 or 286-7828.

'85 Chevy Cavalier station wagon, wht, auto, radio, 85K mi, one owner, \$2.5K. 523-1000.

'75 Chev Camero, 350, mech sound, runs good, \$850 OBO. Terry, 282-4777 or 474-5639.

'87 Chevy S-10 Blazer, Tahoe pkg, alarm, alum wheels, loaded, blk, ex cond, \$6.1K. 282-3081 or 332-8247.

'81 F-250 3/4 ton PU w/5th wheel, trailer hitch in bed, \$1.5K OBO; '74 Twilight Bugaloo 5th wheel travel trlr, 29.5 ft long, new tires, good AC, \$1.2K. x35520 or 554-6216.

'83 VW Rabbit GT, blk, sunroof, 5 spd, 66K mi, \$1K. Boyd, x39448 or 486-8184.

'91 Chevrolet S10 Tahoe, auto AC, PS/PB, carpet, 25K mi, \$7.5K OBO. 286-5934.

'80 Olds Cutlass LS, 4 dr, 62K mi, good cond, \$1.3K. 554-6138.

'84 Honda Accord LX, 3 dr htchbk, 5 spd, AC, AM/FM/cass, pwr steering, cruise, incl '84 Honda shop manual, runs good, \$2K. Joe, 282-4845 or 286-8708.

'84 Rabbit GL, 4 dr, auto, AC, PS/PB, runs but needs eng work, new radiator, starter, batt, transmission rebuilt, body in good shape, \$350. Dean, 286-1143.

'86 Nissan Stanza wagon, air, pwr steering/brakes, new tires, 71K mi. \$3.7K. 286-5106.

'89 VW Vanagon, new tires, new heavy duty batt, lift for wheelchair, 34K mi. Regina, 488-6358.

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

'85 Camaro V6, 76K mi, auto, air, ex cond, \$3.2K. 488-1890.

'91 GMC Stepside Truck, 350, V8, ext cab, blue leather, stereo sound effects, 13K mi, \$16K. 996-9178.

'82 Chev Celebrity, 2 dr, V6, AC, \$995; '82 Plymouth Reliant, 2 dr, \$600. 326-1400.

'91 Toyota Previa LE, 15K mi, loaded, low mi, wht, captains chairs, CD. Dennis, x39012 or 992-5285.

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

'82 VW Vanagon camper, diesel, rebuilt/remeoded, 12K mi, \$5.5K. 283-5890 or 868-5132.

'85 Honda Prelude, blue, 5 spd, AM/FM/cass, 93K mi, new Michelin MXL tires, \$5.2K. x32040.

Boats & Planes

'76 16' 115 HP Evinrude outboard motor. Janie, 673-1143.

Windsurfer, Hi-Fly, 2 sails, fiberglass mast. Bill, 554-6242.

'87 Boston Whaler 17' Montauk, 100 HP, '88 Merc. OB, T&T/VRO, ss prop, Sportsman trlr, ex cond, \$10,995. 963-3062 or 480-1992.

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

17 pitch, alum prop, fits 50 - 130 HP, Merc OB, \$40. x35092 or 944-2391.

JSC

Dates & Data

Today

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

Monday

Labor Day — Most JSC offices will be closed in observance of the Labor Day holiday.

Tuesday

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

Wednesday

Professional Secretaries meet

— The Clear Lake /NASA Area Chapter of Professional Secretaries International will meet Sept. 9 at the Holiday Inn, NASA Road One. The social will begin at 5:30 p.m., followed by dinner at 6 p.m. and business meeting at 7 p.m. Guest speaker will be Ken Bigham, an attorney specializing on employment law, discussing sexual harassment. For more information, contact Bonnie House at 676-3764 or fax reservations to 676-8676.

Toastmasters meet — The Spaceland Toastmasters Club will meet at 7:15 a.m. Sept. 9 in the Bldg. 3 cafeteria. For more information, call Darrell Boyd at x36803.

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

Thursday

Society for Software Quality meets

— The Society for Software Quality will meet at 5:30 p.m. Sept. 10 at the Days Inn, NASA Road One. Jim Clark, software test engineer for WITel, will be the featured speaker discussing "Quality Management in an Object-Oriented Development Environment." For more information, contact Felix Balderas at x31945.

Pressure Systems Week — JSC will observe Pressure Systems Week Sept. 7-11, focusing on the use and safety of compressed gas cylinders. Short safety films aimed at preventing deadly mistakes will be shown from 2:30-4 p.m. Sept. 10 at the Bldg. 226 Training Center.

AIAA lunch and learn — The American Institute of Aeronautics and Astronautics Houston Section and its Guidance, Navigation and Flight Control Technical Committee will present a lunch and learn meeting at 11:45 a.m. Sept. 10 in the Bldg. 3 cafeteria. Victor Bond of McDonnell Douglas will discuss a "Double Lunar Swing-By." For more information, call David Clark at 486-6468, or Rob Carmody at 283-4101.

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

Sept. 11

Pressure Systems Week — JSC will observe Pressure Systems Week Sept. 7-11, focusing on the use and safety of compressed gas cylinders. Short safety films aimed at preventing deadly mistakes will be shown from 2-3:30 p.m. Sept. 11 at the

Bldg. 226 Training Center.

Cafeteria menu — Special: tuna and noodle casserole. Entrees: broiled codfish, fried shrimp, baked ham. Soup: seafood gumbo. Vegetables: corn, turnip greens, stewed tomatoes.

Sept. 14

Blood pressure screening — The JSC Clinic and the American Heart Association will offer free blood pressure screening Sept. 14-18 at various times and locations around the center. For a detailed list of the times and places, call the clinic at x34111.

Sept. 15

Toastmasters meet — The Spaceland Toastmasters Club will meet at 6:45 a.m. Sept. 15 at the Ramada Kings Inn on NASA Road 1. For reservations, call Steve Shields at x31941, or 474-5988 by Sept. 9. For more information, call Darrell Boyd at x36803.

Sept. 23

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.

Sept. 24

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

18' prindle w/trlr, new sails, DBL trapeze, ex cond, \$1.8K; 22'4 Gulf Coast sailboat, main, jib, spinnaker, new uphol, 6HS, Johnson, \$2.5K. Greg, x32259 or 474-7634.

Cycles

Cannondale M600 mountain bike, ex cond, \$600 OBO; Rhode Gear child bike seat & rack, \$85 OBO. 283-1226 or 286-7828.

Fuji Absolute, 10 spd, 27" womens/mens, \$200/ea; Tuntui stationary bike, counterbalanced, ex cond, \$300. 283-1228 or 482-6879.

Audiovisual & Computers

Tandy IBM computer, 5.25 dual drive, 640K, color monitor, printer, joystick, Deskmate II, MS DOS 3.0, \$600. 332-3033.

IBM XT, 640K, 40 meg HD, 2 FD, color monitor, joystick, game card, \$325. Kyle, 283-8233.

Casio FX-8500G graphics calc w/fa-80 printer/cassette interface, centronics printer I/F, all cables/manuals, \$95; Casio SB-42 interface pack for connecting FP-40 printer to Casio fx-730p/795p, Pd-300/310 and Radio Shack PC-6 pocket computers, \$20. Tom Clark, 244-9842.

IBM XT, Texan 620 monitor, Panasonic KX-P1180 multi-mode printer, Professional Writer/Dos 3.2., \$500. 337-2048.

Casio CT-615 elec keybd, stand, stool, ac adapter, carrying case, sustain pedal, was \$300, sell \$225., ex cond. 481-6928.

Smith Corona personal word processor PWP2000, 10/12 pitch, word processor/type modes, 2 daisy wheels, 3 correctable film ribbons, 2 lift-off corr tapes, 7 data disks, tutorial, \$225. Mike, x32292 or 925-3359.

Macintosh Plus, 1 MB RAM, 20 MB HD, ImagiWriter II printer, carrying case, \$900 OBO. x45383 or 480-3167.

Photographic

Minolta 35mm camera w/flash/case, 35mm and 50mm lens incl, \$150. Shari, 992-3517.

Pets & Livestock

Sheltie puppies, 8 wks old, sable/white. 771-1012.

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

AKC Chihuahua puppies, fawn and chocolate, 2 m, 1 f, \$200. 534-3893.

Free to good home, 2 yr old female cat, spayed, shots, litter box trained. 286-4309.

Bobwhite Quail/proven flyers. Ken, x45152 or 409-925-4438.

AKC, male Siberian Husky, 1.5 yrs old, neutered, current shots, \$150. Greg, x32259 or 474-7634.

AKC Lhasa Apso pups, born 6-3-92, parents on premises, \$200-225. Nancy, x33408 or 286-8154.

Musical Instruments

60W bass amp, \$150; UH piano stand, \$100; Korg 707 kybd, \$200; albums, song books. x31883.

Student guitar w/case by Goya, good cond, \$100. Shelly, 283-1834 or 332-4807.

Fender Rhodes 73 piano, ex cond, \$140. Mike, 868-5132.

Household

Blk Matrix 17" color tv monitor, 134 channel selection, remote, stand, ex cond, \$250. Gary, x39552 or 480-4990.

Maple finish Chiffarobe, 4 drwr chest w/wardrobe on left side for child, ex cond, \$50 OBO. x5129 or 480-1330.

Maroon, semi-circular couch, \$570. 335-1302.

Kg sz waterbed on captains pedestal w/semi motionless matt, heater, padded sides, bookshelf hdbd, complete w/comforter, sheets, night stand, dresser, mirror w/shelves, chest of drwrs, \$650; antique oak wardrobe closet w/locking beveled mirrored dr, storage drwr, \$300. 998-8090.

Waveless waterbed, dk wood frame hdbd, extra heater, comforters, sheets, ex cond, \$250 OBO. Army, 244-5576 or 286-3446.

Norge elec dryer, almond, works, \$50; Montgomery Ward 20" 3.5 HP lawnmower, works, \$45. x32168 or 474-7982.

China buffet, whitewashed, Country French, 11 finish, no flaws, ex cond, \$350. 992-5745.

28" rd decorative table, \$15; tuperware, some new/some used, various prices; brass FPL screen, \$20. 480-3424.

Lost and Found

Lost man's silver tie-clasp w/floral design, alligator clip. E. Rubenstein, x34807 or 532-2211.

Wanted

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

Want Thompson piano student books. 532-1509.

Want roommate to share small house, small room, small rent, no pets or smokers. 486-3460.

Want riders from Southwest Houston to join vanpool. Lily, x38442.

Want female roommate, nonsmoker, to share 3 BR house in Lake Side, \$370/mo, incl util & dep. Ann, 282-3790.

Want female roommate to share newly remodeled 3 BR home in Glen Cove, \$325, all bills paid. Anna, 280-9800.

Want pupup trlr under 1K lbs w/AC, must be in good cond; encyclopedias set for elementary level, less than 7 yrs old. Jeff, 333-7010 or 482-5393.

Want Starwars spaceships, toys, figures, books. Ron, 482-1385.

Want used older cars under 90K mi, in good mech condition; men's bike, inexpensive, good cond. Nina, x31612 or 488-0664.

Miscellaneous

Riding mower, 8 HP, 40" cut, runs great, \$275; washer/dryer (gas), \$175/pr. 334-2335.

Remote control XCELL-60 helicopter w/ENYA eng, \$600. 480-3424.

Wedding gown, sz 8-10, cathedral length veil/train, high V cut neckline, long sleeved, beaded bodice, plain skirt, \$500. 554-5839.

Mens 10 lb bowling ball, lt blue, Ebonite Rainbow, \$50; used General Motors, AM/FM car radio, \$25

Japan goes to orbit

STS-47 experiments look to future

By Kari Fluegel

When STS-47 rockets off the launch pad this month, the seven-member crew will usher in a new era of research and give the world a taste of tomorrow. That taste, however, will be served with chopsticks.

STS-47, the 50th flight of the Space Shuttle Program, marks the first NASA mission devoted to Japanese investigations into materials and life sciences.

"On Spacelab missions, astronauts do the science," said Gary W. McCollum, Spacelab-J Program Manager. "They have an essential role in the conduct of the experiments, both as investigators and as test subjects. This mission is typical of how we will routinely work in space for much longer periods when Space Station *Freedom* begins operations later this decade."

The payload complement of Spacelab-J includes 43 experiments — 34 provided by Japan, seven by the United States and two which are co-sponsored by the both countries.

The 20 life sciences experiments aboard Spacelab-J will study cell biology, developmental biology, animal and human physiology and behavior, space radiation, and biological rhythms.

JSC researchers will mark their presence on the mission with three life sciences experiments including the fifth flight of the lower body negative pressure unit.

The LBNP unit, sponsored by Dr.

John Charles of JSC's Space Biomedical Research Institute, is being tested as a countermeasure for post-flight orthostatic intolerance or the feeling of dizziness when initially standing after returning to Earth's gravity.

In the microgravity environment of space, fluids migrate to the upper part of the body triggering adaptive processes that lessen the body's overall fluid level. When gravity suddenly pulls the fluids back down to the lower extremities after a crewmember stands, lightheadedness or fainting could occur.

The LBNP unit draws fluids down to the lower body starting the re-adaptive processes while still on orbit, thus reducing the chance for difficulties upon return to Earth.

Another JSC experiment will test equipment designed to create sterile water and intravenous solutions for the Health Maintenance Facility on Space Station *Freedom*.

The Fluid Therapy System, sponsored by Dr. Charles Lloyd of JSC's Medical Operations Branch, takes ordinary tap water and filters out impurities and bacteria. Once the water is sterile it is mixed with concentrated dextrose and saline solutions to create the appropriate intravenous solutions.

The second part of the FTS test will simulate the infusion of intravenous liquids into a patient when the fluid created on orbit is pumped through a needle into a mannequin arm.

The third JSC sponsored experiment will study how much muscle mass is lost while in space. The

"Magnetic Resonance Imaging After Exposure to Microgravity" experiment employs MRI to examine muscle and bone in selected crew members before and after the mission.

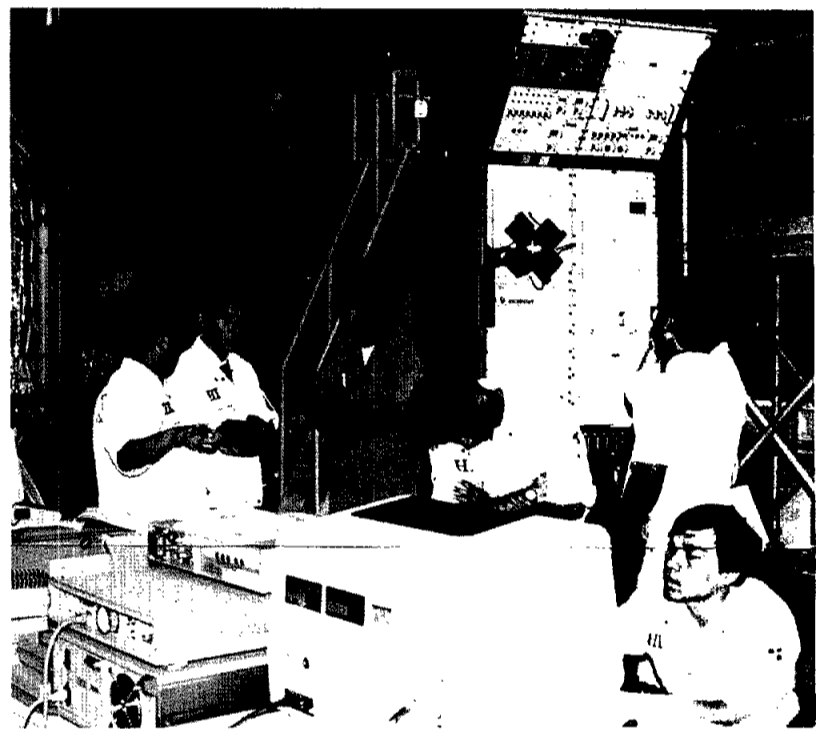
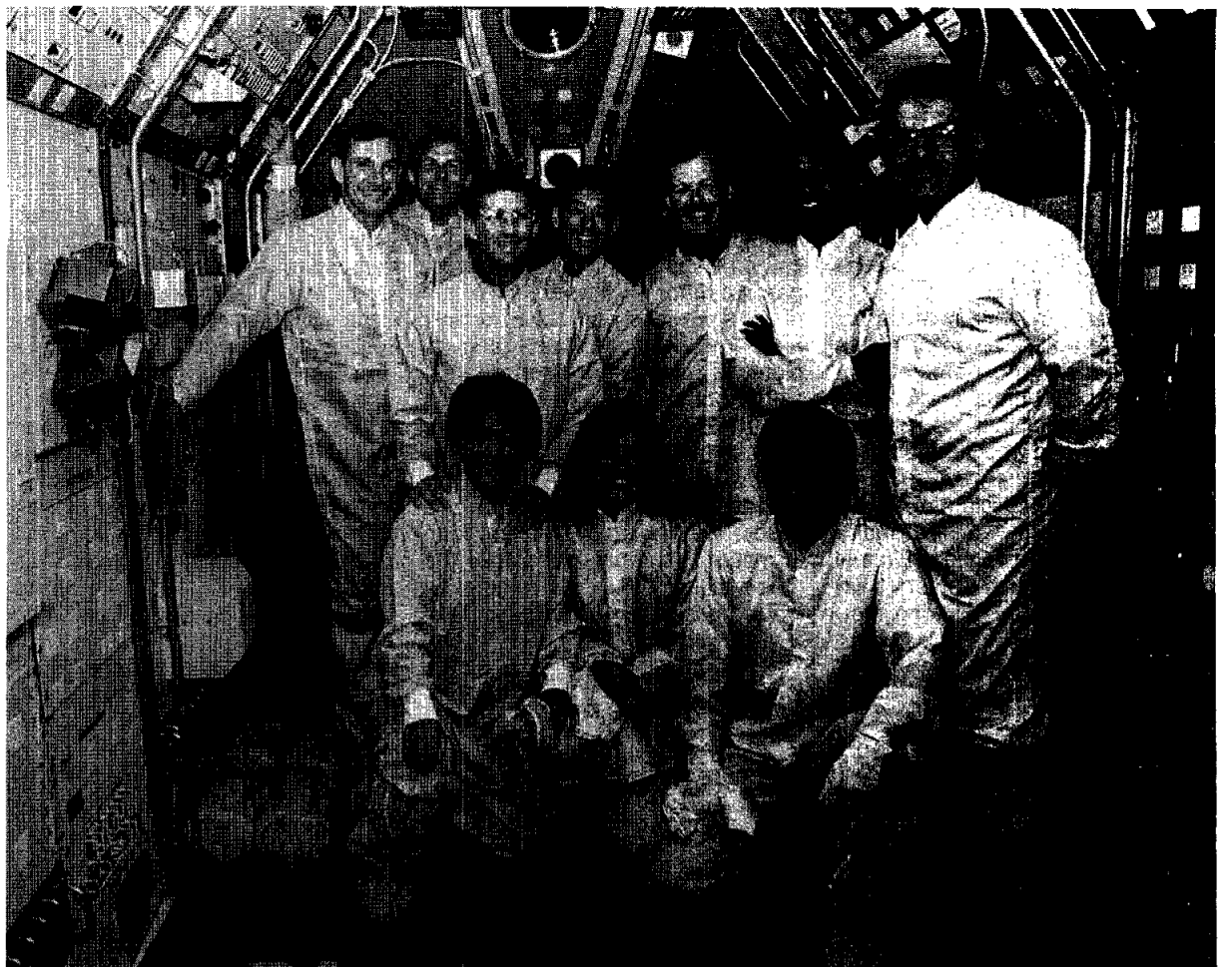
The MRI — use of a magnetic field and radio waves to produce an image of the inside of the body — will allow investigators to examine calf and thigh muscles and to look for changes in spinal bone marrow and discs.

Principal Investigator is Dr. Adrian LeBlanc of Baylor College of Medicine.

In other life science experiments, frog eggs will be fertilized in space and examined at various stages of development — from embryos to tadpoles to adults — to study the influence of weightlessness on the stages of development and the behavior of the frogs. Also a Japanese experiment will use two koi fish (carp) to study effects of weightlessness on a fish's gravity-sensing organ, which is very similar to the same organ in humans.

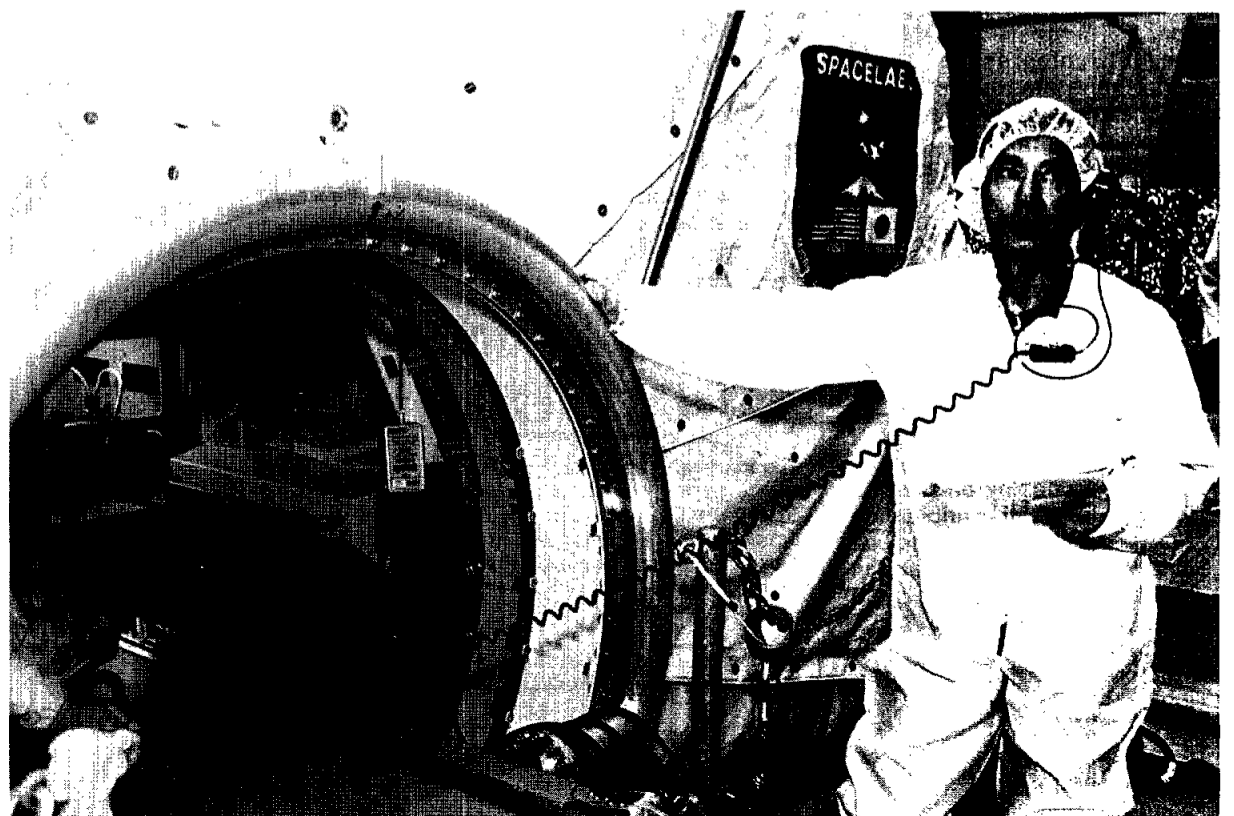
Twenty-four Spacelab-J experiments will study various materials and processes in the near absence of gravity including the action of protein crystals, electronic materials, fluids, glasses and ceramics, metals and alloys.

"These experiments," said Spacelab-J Program Scientist Robert Sokolowski, "will add to basic knowledge about the behavior of everything from crystals, fluids and even humans when exposed to the near weightless environment of space." □



Top: The Spacelab-J crewmembers are (kneeling from left to right) Alternate Payload Specialist Dr. Chiaki Mukai, Mission Specialist Jan Davis, Alternate Payload Specialist Takao Doi; (standing) Pilot Curtis Brown, Payload Commander Mark Lee; Mission Specialist Jay Apt, Payload Specialist Mamoru Mohri; Commander Robert "Hoot" Gibson, Mission Specialist Mae Jemison and Alternate Payload Specialist Stanley Koszelak. **Above:** Japanese technicians perform maintenance checks on the Spacelab-J racks at the Kennedy Space Center prior to the loading of the Spacelab Module. **Below left:** Mission Specialist Mae Jemison and Alternate Payload Specialist Stanley Koszelak practice setting up the Lower Body Negative Pressure Unit. **Below right:** As part of the pre-flight training activities, Payload Specialist Mamoru Mohri participated in the Mission Sequence Test earlier this summer.

NASA Photos



Planet's upper atmosphere to be studied

Pioneer completes 14-year mission by closing in on Venus

Between now and year's end, the Pioneer Venus Orbiter will skim closer to Venus than ever before, returning significant new knowledge of the planet.

It will explore regions of the upper atmosphere that have never before been reached and help answer questions about Venus' environment including whether there is lightning on the planet and whether the planet once had oceans.

"Completing the picture of Venus' outer environment will be a major achievement," said Richard Fimmel of the Ames Research Center. "It will culminate 14 years of receiving infor-

mation since the spacecraft was launched in 1978."

Since its launch, Pioneer Venus has provided data for the first topographic maps of 90 percent of the planet's previously unknown surface. It identified mountain ranges, plateaus, plains and deep depressions, but the anticipated findings about Venus' outer environment relate to atmosphere/plasma interactions.

Plasmas (electrically charged gases) are the most common form of matter in the universe, while the million-mile-an-hour solar wind is an ionized gas which continuously bat-

ters Venus' atmosphere.

Studying these complex interactions of the solar wind and Venus' atmosphere may increase knowledge of similar interactions in the atmospheres of comets, planets, moons and star systems as well as processes in the early solar system and interstellar gas clouds.

In spacecraft's mission will end when the gravity pulls Pioneer's orbit down into the planet's upper atmosphere. In the final phase when Pioneer about 84 miles above the planet, Ames officials will raise the low point of its orbit by firing thrusters early on Sept. 7 and then

every 5 days thereafter until the estimated four pounds of remaining hydrazine propellant is gone. Then, the spacecraft will plunge into the Venusian atmosphere and burn.

The Pioneer Venus mission had three separate phases. NASA researchers held the orbit's lowest point, known as periapsis, at 93 miles above Venus' surface to map and study the ionosphere and atmosphere during the first 19 months at Venus. In phase two, with only 10 percent of propellant left, they allowed solar gravity to gradually raise periapsis to 1,500 miles and then return it to low altitude.

By June of this year, with periapsis at 125 miles, the orbiter's instruments began to measure Venus' ionosphere again. By Sept. 7, the sun will pull periapsis down to 82 miles. If enough hydrazine remains, thrusters will be fired to raise periapsis eight more times.

By Nov. 22, solar gravity will briefly raise periapsis to about 98 miles, but will pull it down to about 87 miles by Dec. 10. Officials then plan to fire any remaining fuel to obtain more data from farther into Venus' "day side" before the orbiter's final entry into the atmosphere.

Mars Observer ready for launch after cleaning

Following the completion of a thorough cleaning, NASA officials this week rescheduled the launch of Mars Observer for Sept. 25.

Launch of the planetary satellite was postponed from Sept. 16 when an inspection of the payload revealed particulate contamination on the surface of the spacecraft. A precautionary decision was made to remove the payload from its Titan III rocket on Launch Complex 40 and return it to a spacecraft facility on KSC for cleaning.

According to officials, the contamination may have been introduced into the fairing when a dry nitrogen purge was placed on the spacecraft as part of securing for Hurricane Andrew.

The payload cleaning was completed and re-encapsulation began Wednesday night. The payload was scheduled to be transported from to the launch pad late Thursday night and mated to the Titan III rocket early this morning.

Additional precautions have been taken at the launch pad and with the spacecraft to assure that recontamination is unlikely to occur.

The launch window for the satellite

opens at 11:27 p.m. Central Sept. 25 and extends to 1:27 p.m. The planetary launch window extends through October 13.

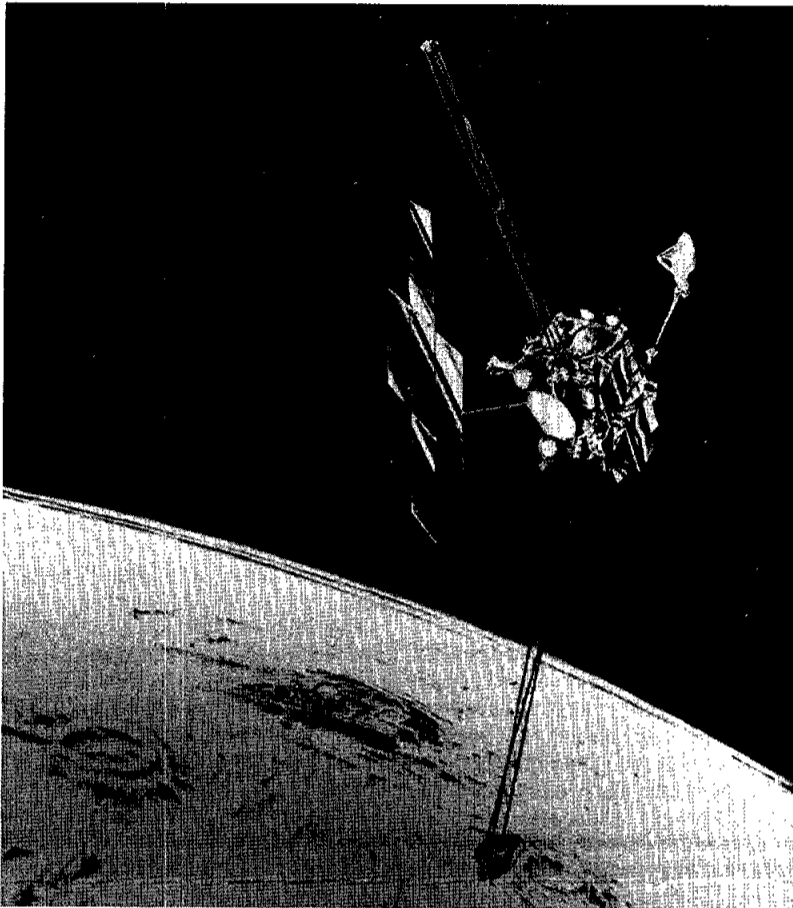
After an 11-month journey, Mars Observer will use eight scientific instruments to study the surface, atmosphere, interior and magnetic field of Mars for 687 days or a full Martian year.

Once it arrives in late-summer 1993, the observer will be inserted into a nearly circular polar orbit to begin mapping the planet and its atmosphere in 26-day cycles.

The global mapping will help scientists understand the geological and climatological history of Mars and the evolution of its interior and surface, and will provide a basis for comparing Mars with Earth and Venus.

In late 1995, near the end of its nominal mission, Mars Observer will begin to serve as a science data relay facility for the landed stations deployed by the Russian "Mars 94" mission.

A countdown dress rehearsal is scheduled for Sept. 17 and, because there is no contingency in the schedule, the launch date will be reviewed after the countdown dress rehearsal.



NASA Photo

After launching later this month, Mars Observer will begin an 11-month journey to the Red Planet to study Mars' surface, atmosphere, interior and magnetic field.

Fires show importance of reporting

Two recent small fires in JSC buildings, although causing no injuries to workers and only minimal damage, emphasize the importance of correctly reporting fires, JSC fire protection officials recently said.

Gary Jones, fire protection supervisor for Webb, Murray & Associates, said there are specific steps to use whenever a fire occurs in a JSC facility.

Upon discovering a fire or hazardous condition all personnel should be evacuated from the area. Other building occupants can be notified to evacuate by pulling a manual fire alarm which will activate the building fire alarm bells and send a signal to the fire station.

Next, the presence of a fire should be confirmed to emergency personnel by telephone by calling x33333 from a safe location. The caller should state "I am calling to report a fire ..." and provide details regarding the exact location and size of the fire, as well as any known injuries or hazards, Jones said. The individual should stay on the line until the dispatcher gives further instructions.

An attempt to extinguish the fire should only be made if the fire is still small, one is trained in the use of a fire extinguisher and if there is no risk to personal safety.

When a building evacuation is in progress, employees should continue to exit the building and not return even if the fire alarm bells stop ringing. Building occupants should wait for a signal from security, the fire protection specialist, or the building fire warden before going back into the building, Jones said.

Program highlights Hispanic culture

In observance of National Hispanic Heritage Month, JSC will host a special program focusing on this year's theme of "Continuation of Culture."

This year's celebration brings to a close a five-year national theme of "500 Years of Hispanic Heritage" honoring the Hispanic cultural contributions from 1492 to 1992 and recognizing the culture's evolution into the future.

JSC's observance will begin at 8 a.m. in the Gilruth Center Ballroom with coffee and pan dulce followed by speakers including Dr. Eloy Rodriguez of the University of California-Irvine speaking on "Chemical Methodology and Pharmaceutical Achievements of Native Americans of Mexico;" Dr. Dorothy Caram of the University of Houston discussing "The Women in Columbus' Life;" and Dr. Juliet V. Garcia, President of the University of Texas-Brownsville who will give the keynote address "The Challenge of Diversity and Excellence."

The morning sessions are free and open to the public, but luncheon tickets are \$10. For more information, contact Lupita Armendariz, Hispanic Employment Program Manager, at x30604.

Satellite discovers new extreme ultraviolet sources

An object emitting extreme ultraviolet light outside the Milky Way galaxy recently was detected by a NASA satellite through interstellar gas and dust, assuring that astronomers now have a new tool to probe the universe.

NASA's Extreme Ultraviolet Explorer also detected a new source of extreme ultraviolet radiation from the corona of a star much like the sun, located about 16 light years from Earth.

On July 8 and 9, the EUVE measured an outburst from a "cataclysmic variable," a closely orbiting pair of stars in which gravitational forces pull matter from the outermost layers of a normal star onto the surface of a white dwarf companion.

The hot, compressed stellar material generates an explosive burst of extreme ultraviolet radiation as the material falls into the deep gravitational field of the white dwarf.

Other explosive events are flares

on stars. These are unpredictable, giant versions of eruptions known to occur on a smaller scale on our own sun. EUVE caught two such events on the red dwarf stars called AT Microscopium and AU Microscopium.

Also, EUVE astronomers were surprised when they detected an object located outside our own Milky Way galaxy that was emitting extreme ultraviolet radiation.

At one time, astronomers had thought that the interstellar medium, the gas and dust spread throughout the galaxy, effectively would block their view of even nearby objects because it is highly opaque to extreme ultraviolet radiation.

EUVE Principal Investigators Stuart Bowyer and Roger Malina, of the University of California at Berkeley's Center for Extreme Ultraviolet Astrophysics presented the findings this week to space scientists at the World Space Congress in Washington, D.C.

"Years ago a lot of our col-

leagues thought we were crazy to observe in the extreme ultraviolet," said Bowyer, initiator of the extreme ultraviolet program at Berkeley. "Everyone 'knew' that trying to look through the interstellar medium at these wavelengths would be like trying to use a telescope in a San Francisco fog."

Extreme ultraviolet radiation is visible only to instruments above Earth's atmosphere. Radiation at these energies is emitted by multi-million degree coronae on stars, by giant eruptions on novae, by the hot surfaces of white dwarfs and by other exotic sources in the cosmos.

The EUVE was launched June 7 to study the extreme ultraviolet, the part of the electromagnetic spectrum lying between optical and x-ray wavelengths.

It represents NASA's 67th Explorer mission. The first Explorer was launched on Jan. 31, 1958, and it discovered the Van Allen radiation belts.

The EUVE satellite, now six

weeks into a survey of the entire sky, will provide astronomers with their first detailed maps in multiple extreme ultraviolet energy bands.

Officials at the Goddard Space Flight Center report that the satellite has functioned smoothly since its launch. All instruments are performing at or above expected levels, and data analysis is 50-percent ahead of schedule.

Researchers and engineers are studying the calibration and check-out data obtained during the first six weeks of the mission. These data serve a dual purpose. They verify the instrument performance and at the same time, give astronomers valuable new measurements to test their models.

The EUVE Science Operations Center, based at CEA, operates around the clock, sending commands to point the instruments at selected astronomical sources and recording the findings of the satellite's four telescopes and three spectrometers.

Panel presents early findings

(Continued from Page 1)

of the No. 2 umbilical to retract from the tethered satellite; failure of the satellite to deploy on the first "flyaway" attempt; the unplanned stop of the satellite at 179 meters; the unplanned stop of the satellite at 256 meters; and the inability to either deploy or retrieve the satellite at 224 meters.

Branscome said the board is continuing work to identify causes for the other anomalies.

The next interim report is expected to be complete in about a month.

Space News Roundup

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Editor Kelly Humphries
Associate Editor Kari Fluegel

Crew members named for SLS-2, IML-2, Hubble servicing missions

(Continued from Page 1)

They are USAF Lt. Col. Tom Akers who flew on STS-41 in October 1990 and STS-49 in May 1992; Jeffrey A. Hoffman, Ph.D., a veteran of STS- 51-D in April 1985, STS-35 in December 1990 and STS-46 in August 1992; and Kathryn C. Thornton, Ph.D., who flew on STS-33 in November 1989 and STS-49 in May 1992.

Richard J. Hieb was named payload commander for IML-2 on Space Shuttle mission STS-66 scheduled for the summer of 1994.

The IML series of missions provide opportunities for the international scientific community to conduct life sciences, materials sciences, atmospheric and astronomical studies in the microgravity Spacelab laboratory.

As payload commander, Hieb is responsible for coordinating all payload requirements for the mission. He is a veteran of two previous Space Shuttle missions. He was served as mission specialist on STS-39, an unclassified Department of Defense flight in May 1991 and on STS-49 in May 1992.