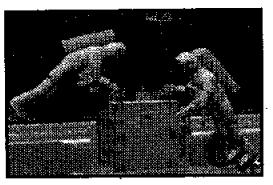
National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, Texas



Station space walk

STS-80 to test International Space Station assembly, maintenance techniques. Story on Page 3.

Early Christmas

The Mir 22 crew spent this week preparing for a supply vehicle that will contain gifts. Story on Page 4.

Space News Roundup

Vol. 35 November 22, 1996 No. 46

JSC photo By Benny Benavides

JSC engineers, scientists and managers showcase their technical advances in Bldg. 9 during the first NASA JSC Inspection. More than 1,200 top executives from companies in 28 states took advantage of the opportunity to learn about JSC's missions, technologies and facilities Wednesday and Thursday, and many of those said they would return and bring additional colleagues if the event is repeated next year. Organizers report that invited guests came from the manufacturing, engineering, medical, architecture, chemical, transportation, petroleum, energy and computer industries and from cities as disparate as Dallas, Orlando, Seattle and New York City. Numerous success stories are filtering in from the volunteers who supported the exhibits and demonstrations. They range from the Colorado research company that found common ground with what it is doing and the medical and life support work going on at JSC to a barge manufacturing firm's chief executive, who discovered some composite materials that may be useful in his business to a University of Texas Medical Branch administration team that may have discovered an answer to its scheduling software needs in the program being used to schedule shuttle crew flight activities.

Columbia lifts off to study stars on 16 day mission

By Karen Schmidt

Columbia lifted off Tuesday from Kennedy Space Center to study stars, produce improved semiconductor films and practice building the International Space Station.

Columbia and its crew of five-Commander Ken Cockrell, Pilot Kent Rominger and Mission Specialists Tammy Jernigan, Tom Jones and Story Musgrave—left Launch Pad 39B at 1:55 CST Tuesday on a 16-day mission to deploy and retrieve two satellites and conduct two space walks. Though weather, which delayed the mission by five days, was not a factor, *Columbia*'s departure was delayed about two minutes as controllers monitored the hydrogen concentration in *Columbia*'s aft compartment.

"The redline says once you go into flight pressurization with the external tank on hydrogen, if aft concentration goes above 300 parts per million then you hold at 31 seconds for two minutes and monitor that condition," said Launch Director Jim Harrington. "If it doesn't exceed 600 parts per million, then you're OK to launch."

The average levels of the hydrogen concentration were acceptable and controllers gave the go to launch. Once the countdown was resumed, *Columbia* made its way above Earth's atmosphere.

Columbia's crew spent its first few hours preparing for the ORFEUS-SPAS deployment. The ORFEUS-SPAS will investigate the far- and extreme-ultraviolet regions of the universe. Scientists hope to learn more about the evolution of stars, the nature of interstellar medium and the structure of galaxies.

Release of the satellite came about one hour later than expected due to longer predeployment checkout. Jernigan and Jones released the satellite at about 10:11 p.m. and Cockrell fired *Columbia*'s jets to maneuver away from the satellite. About three hours later, ground controllers confirmed the opening of the telescope door and said that the instrument appeared to be working properly.

On Flight Day 14, Cockrell and Rominger will conduct a series of course correction maneuvers to edge *Columbia* closer to the telescope. Jernigan and Jones will use the arm to grab the satellite and replace it into *Columbia*'s bay.

"This telescope that flies on the ORFES-SPAS was developed by the Germans in support of the German Space Agency," said Earle Huckins, deputy associate administrator of space science at NASA Headquarters. "I think its an excellent example of effective international scientific cooperation."

Hawkins said that this mission is important for its scientific value because ORFES-SPAS is expected to provide new observations for the worldwide astronomy community. The satellite is expected to make up to 300 observations of stars and intersellar medium during its two-week orbit. Data will be provided to more than 40 principal investigators and science teams around the world.

Today, Jones will deploy the Wake Shield Facility for three days of free-flying thin film growth operation. The WSF, a 12-foot free-flying stainless steel disk, is designed to provide an "ultra-vacuum" environment for growing semiconductor thin films for use in advanced electronics. Jones will retrieve the

Please see **STS-80**, Page 4

Crew named to fourth microgravity flight

Doi will be first Japanese astronaut to conduct space walk

Astronaut Kevin Kregel will command the crew of the fourth U.S. Microgravity Payload flight scheduled for an October 1997 launch on board *Columbia* on mission STS-87.

Kregel will be joined by Pilot Steven Lindsey and Mission Specialists Winston Scott, Kalpana Chawla and Takao Doi of the National Space Development Agency of Japan .

During 16 days on orbit, the astronauts will support fundamental science investigations and studies on the effects of microgravity on a variety of materials. The studies will focus on how materials, including metal and crystals, solidify when removed from the distorting effects of Earth's gravity, and will provide a better understanding of basic physics problems. Scott and Doi also will perform a space walk. Doi will be the first Japanese astronaut to conduct a space walk.

STS-87 will mark Kregel's third space flight, his first as commander. During his most recent space flight, he was the pilot on *Columbia* on STS-78, the longest duration shuttle mission to date lasting 17 days. The Life and Microgravity Spacelab mission served as a model for future studies onboard the International Space Station. The mission included studies sponsored by ten nations, five space agencies and the crew included a Frenchman, a Canadian, a Spaniard and an Italian. Kregel also flew on STS-70 that deployed the NASA Tracking and Data Relay Satellite.

Scott will be making his second shuttle flight, having flown previously on STS-72 in January 1996 during which he performed a space walk. During the nine-day flight the crew retrieved the OAST-Flyer.

Lindsey, Chawla and Doi are members of the 1995 Astronaut Class. They will be making their first journey to space during STS-87 having completed more than one year of training to prepare them for assignment to a shuttle flight. Doi was selected by NASDA in 1985 and participated in training as a backup candidate for a Japanese Spacelab mission prior to being named to the 1995 class.

Kevin Kregel

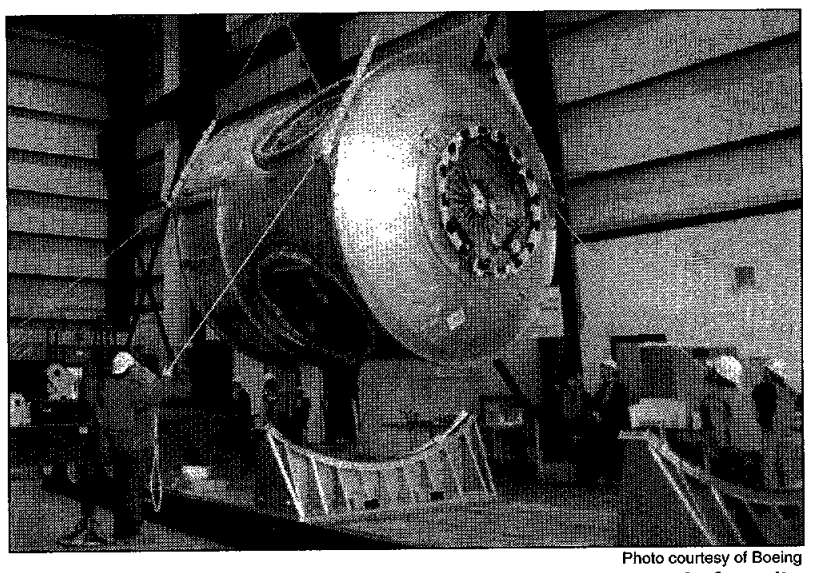


Photo courtesy of Boeing

Node 1, has successfully completed its last pressure test before its launch next year as the first American component of the International Space Station.

Station node completes final proof pressure test

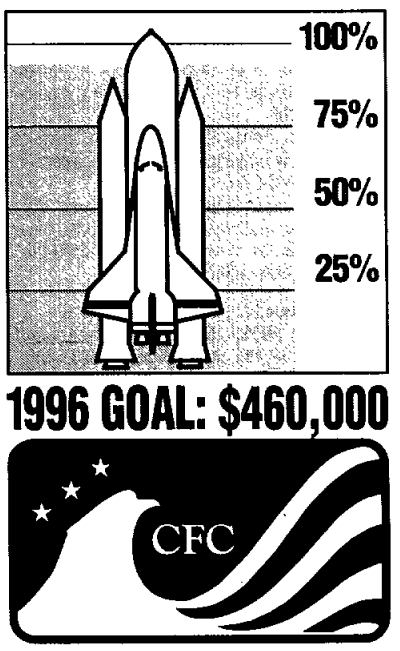
The first U.S. component of the International Space Station, known as Node 1, has successfully completed its last proof pressure test before its launch next year and the construction of the station gets under way.

Boeing engineers in Huntsville, Ala., conducted the pressure test on Node 1 at the Boeing Huntsville plant. During the four-hour test, the node was successfully pressurized to 22.8 pounds per square inch, or 1.5 times normal maximum operating pressure.

This final successful test confirms the effectiveness of the eight struts installed at the node's radial ports. As in a previous successful test last August, the strains in the node's radial port were substantially reduced from those encountered during previous testing without the installed struts.

"This successful pressure test on Node 1 proves that we have designed and built a critical space station component that will perform as required in space," said Ross Dessert, Boeing lab/hab program manager. "With this test behind us, everyone working on this extraordinary program is looking forward to this time next year when we launch and begin building the station."

Please see **NODE**, Page 4



JSC

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday. For more information, call x35350 or x30990.

EAA Children's Christmas Party: 10 a.m.-noon Dec. 14 at the Gilruth. Tickets are $4 for children and $1 for adults.

Aeros vs. Las Vegas Thunder: 7 p.m. Dec. 20 at the Summit. Presale tickets cost $15.

Dickens on the Strand: Dec. 7 and 8. Tickets cost $6.50.

Walt Disney's World on Ice: "Pocohontas" at noon, Nov. 30 at the Summit. Tickets on sale through Nov. 29 and cost $14.

EAA Christmas dinner/dance: The EAA Christmas dinner dance will be at 7:30 p.m. Dec. 14 at the Gilruth. Tickets cost $25 per person.

EAA Spring Break Special to Rome: March 8-15, $1099 double occupancy. $200 deposit required. Final payment due Jan. 8.

EAA Belize Resort Trip: Available through Dec. 15. Cost is $472 per person double occupancy. $100 deposit required with final payment due 30 days before departure.

Sam Houston Race Park Track Pack: $10 value pack for $5.25, includes Club Level seating, program, tip sheet, admission, preferred parking and gift shop discount.

Space Center Houston: Adult $8.75; children (4-11) $6.25, annual membership $25.95, family membership (up to four) $59.95.

Movie discounts: General Cinema, $4.75; AMC Theater, $4.50; Sony Loew's Theater, $4.75.

Franklin Planner refills: now taking orders for 1997 calendars.

Sweetwater Pecans: $5.65 per pound. Orders should be place by Nov. 8 for the Nov. 18 delivery, or Nov. 29 for the Dec. 5 delivery.

Stamps: Book of 20, $6.40.

Entertainment '97 books: Cost is $25.

Metro tickets: Passes, books and single tickets available.

JSC

Gilruth Center News

EAA badges: Dependents and spouses may apply for photo identification badges from 7:30 a.m.-9 p.m. Monday-Friday; and 8 a.m.-4 p.m. Saturdays. Cost is $5. Dependents must be between 16 and 23 years old.

Hatha Yoga: A stress relieving, stretching and breathing exercise routine to unite body, mind and spirit. Class meets 5:30-6:30 p.m. Thursday.

Nutrition intervention program: A six-week program to learn more about the role diet and nutrition plays in health, including lectures, private consultations with a dietitian and blood analysis. Program is open to all employees, contractors and spouses. For more information call Tammie Shaw at x32980.

Defensive driving: One-day course is offered once a month. Pre-registration required. Cost is $25.

Stamp club: Meets at 7 p.m. every second and fourth Monday in Rm. 216.

Weight safety: Required course for employees wishing to use the weight room will be offered from 8-9:30 p.m. Dec. 3 and 17. Pre-registration is required. Cost is $5.

Exercise: Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays.

Aikido: Martial arts class meets from 5:15-6:15 p.m. Tuesday and Wednesday. Cost is $35 per month. New classes begin the first of each month.

Aerobics: Classes meet from 5:15-6:15 p.m. every Monday, Tuesday and Thursday.

Ballroom dancing: Cost is $60 per couple. For additional information call the Gilruth Center at x33345.

Country and Western dancing: Beginner class meets 7-8:30 p.m. Monday. Advance class meets 8:30-10 p.m. Monday. Cost is $20 per couple.

Fitness program: Health Related Fitness Program includes a medical examination screening and a 12-week individually prescribed exercise program. For more information call Larry Wier at x30301.

JSC

Dates & Data

Today

Cafeteria menu: Special: baked chicken. Total Health: roast beef au jus. Entrees: deviled crab, baked chicken, beef cannelloni, steamed pollock, Reuben sandwich. Soup: seafood gumbo. Vegetables: seasoned carrots, peas, breaded okra, steamed cauliflower.

Monday

Cafeteria menu: Special: hamburger steak. Total Health: vegetable lasagna. Entrees: beef Burgundy over noodles, barbecue smoked link, vegetable lasagna, steamed fish, French dip sandwich. Soup: chicken and wild rice. Vegetables: buttered corn, steamed spinach, vegetable sticks, navy beans.

Tuesday

Cafeteria menu: Special: turkey and dressing. Total Health: roast turkey. Entrees: barbecue spare ribs, liver and onions, baked chicken, steamed fish French dip sandwich. Soup: black bean and rice. Vegetables: steamed broccoli, California vegetables, breaded squash, savory dressing.

Wednesday

Spaceland Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. Nov. 27 at the House of Prayer Lutheran Church. For more information call Jeannette Kirinich x45752.

Spaceteam Toastmasters meet: The Spaceteam Toastmasters will meet at 11:30 a.m. Nov. 27 at United Space Alliance in the Civic Room at 600 Gemini. For more information call Pat Blackwell at 282-4302 or Ben Black 282-4166.

Astronomy seminar: The JSC Astronomy Seminar will meet at noon Nov. 27 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information call Al Jackson at x35037.

Reservations due: The American Institute of Aeronautics and Astronautics and the Professional Development Committee will present a seminar on how to "Understand 'Employability' in the 21st Century Workplace" from 6:45-8 p.m. Dec. 2 at 2450 NASA Road 1, Rm. 32C. Bruncha Milaszewski, director of Workforce Development at Lee College, will discuss insuring career success. To make reservations contact Charles Halliman at 991-1654 or email at 72155.1324@compuserve.com by noon Nov. 27.

Cafeteria menu: Special: Mexican dinner. Total Health: ground turkey tacos. Entrees: beef cannelloni, turkey tacos, steamed fish, Reuben sandwich. Soup: seafood gumbo. Vegetables: peas and carrots, ranch beans, mustard greens, Spanish rice.

Thursday

Radio club meets: The JSC Amateur Radio Club will meet at 7 p.m. Nov. 28 at the Nassau Bay City Hall. For more information call Larry Dietrich at x39198.

Cafeteria menu: Special: smothered steak. Total Health: steamed pollock. Entrees: chicken and dumplings, corned beef and cabbage, broccoli cheese quiche, steamed fish, French dip sandwich. Soup: navy bean soup. Vegetables: steamed cabbage, cauliflower au gratin, buttered carrots, lima beans.

Friday

Cafeteria menu: Special: baked meatloaf. Total Health: baked potato. Entrees: chicken fajitias, ham steak, pork and beef eggrolls, steamed fish, Reuben sandwich. Soup: seafood gumbo. Vegetables: stewed tomatoes, seasoned spinach, cut corn, macaroni and cheese.

Dec. 3

ASQC meets: The Bay Area Section of the American Society for Quality Control will meet at 5:15 p.m. Dec. 3 at Ramada King's Inn, 1301 NASA Road 1. Charles Harlan, manager for the ISO 9000 Project Office will discuss why NASA is adopting the ISO 9000 program. Dinner costs $9 and reservations are not required. For more information contact Ray Swindle at 335-6948.

ABWA meets: The American Business Women's Association, Clear Lake Area Chapter will meet at 5:30 p.m. Dec. 3 at Bay Oaks Country Club. For more information call Kathleen Kaminski at x38706.

Dec. 5

Warning system test: The site-wide Employee Warning System will under go its monthly audio test at noon Dec. 5. For more information call Bob Gaffney at x34249.

Dec. 10

BAAC meets: The Bay Area Aero Club will meet at 7 p.m. Dec. 10 at the Houston Gulf Airport in League City. For more information call Jerry Adair at x38058.

Dec. 11

MAES meets: The Society of Mexican American Engineers and Scientists will meet at 11:30 a.m. Dec. 11 in the Bldg. 3 Cafeteria executive dining room. For details call Michael Ruiz at x38169.

Dec. 12

Airplane club meets: The Radio Control Airplane Club will meet at 7:30 p.m. Dec. 12 at the Clear Lake Park Community Bldg. For more information call Bill Langdoc at x35970.

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 AP2, or deliver them to the deposite box outside Rm. 181 in Bldg. 2. No phone or fax ads accepted.

Property

Sale: League City, 2-1, central air/heat, ceiling fans, appli, W/D, spa, bills pd, $600 mo + deposit. Bill, 331-3649.

Sale: Galveston historic home, 1857, twice on Homes Tour, cover "Houston Home and Gardens", 3 BDR, 2500 sq ft, 12 ft ceilings, 3 FPL's, $145k. 409-762-4171.

Sale/Lease: University Trace, 2-2.5, dining room, 2 covered parking spaces, W/D, new refrig, $675 mo or $47.9k. 280-0991.

Sale: Clear Lake Patio home, University Green, 3-2-D, corner lot, $88.5k. 334-5619.

Rent: Duplex, Santa Fe, TX, 3-1.5, formal living/dining room, appli, central air/heat, brick, W/D conn, sm yard, non-smokers, no pets, $550 mo + security dep. 244-0250 or 409-925-7839.

Sale: Lots in Sommerset Place, Alvin, not in flood plain, city water/sewer, $5,950 ea, possible owner finance. 997-2280.

Sale/Lease: University Green, 3-2-2, $1,050 or $102k. x38274 or 486-5072.

Lease: Heritage Park, 3-2, pool, avail immediately, outside pets only, $875 mo. 316-0122.

Sale: Clear Lake Forest, approx 1 acre wooded lot, new roof, remodeled kitchen, sun room, sprinkler sys, zoned air, $141.5k. 326-2557.

Rent: South Tahoe cabin, sleeps 8, 3-2, wood stove, cable TV/VCR, microwave, modern kitchen, W/D, $85 night. x41065 or 326-2866.

Rent: Beach house, Crystal Beach, TX, Galveston County, sleeps 10, furn, ocean view, weekly/wknd. 486-1888.

Rent: Beach house, West Galveston, Jamaica beach, 2nd row on beach, all amenities, sleeps 7, winter rates. 488-6796.

Rent: Arkansas cottage overlooking Blue Mountain Lake and Mount Magazine, furn, massive FPL, antiques, views, $50/dly or $250/wkly. Corcoran, x47806 or 334-7531.

Cars & Trucks

'85 Nissan 200SX, 2 dr, auto, extras, good cond, 80k mi, $2,495. Harv, x32358 or 333-5685.

'94 Honda Accord LX, ex cond, 27.5k mi, 4 cyl, white exterior/tan cloth interior, auto, 4 dr, ABS, P/S, P/W, P/L, A/C, front and rear spoilers, AM/FM/cass, $15.5k obo. Gus, x33425 or 286-3402.

'93 Chevy Camaro Z-28, 6 spd, ex cond, warranty, 47k mi, CD, P/L, P/W, custom wheels, $14.3k. x34544 or 326-3759.

'89 Toyota 4x4 PU SR5, 5 spd, red ext/gray inter, rollbar, toplights, alarm, stereo/CD, extras, $7.5k. Jeremy, x35906 or 480-9208.

'90 Toyota Supra, 64k mi, 5 spd, new Mich V-rated, electric, met-blue, very clean, $10.5k . Tom, x47357 or 488-1192.

'91 Chevy Suburban, Scottsdale, hvy towing pkg, front/rear A/C, capt chairs, 110k mi, $6,999. Greg, 281-332-0146.

'94 Pontiac Grand AM GT, 22k mi, V6, P/L, P/W, CD, tinted windows, dark metallic green, ex cond, $11.9k. 480-2188.

'70 Mercedes 280SL, auto, A/C, both tops, black/tan, restored, records, ex cond, $19k. 326-3313.

'81 Mercedes 380 SL, convertible, 2 tops, 100k mi, recently painted, baby blue, ex cond, $16.5k. 334-4666 or 281-334-2205.

'90 VW Corrado, 5 spd, 96k mi, $9k. Sara, 486-2164 or 559-1327.

'85 Ford 150 conversion van, immaculate, ex cond, twin tanks, twin A/C, queenbed, TV, capt chairs, trailer hitch, $5k firm. 282-4772 or 409-938-1490.

'86 GMC Suburban Sierra Classic 1500, auto P/L, P/W, running boards, luggage rack, runs great, $3.2k. x36670.

'79 Camaro 228, blue, rebuilt 400 CI engine, $1.9k. 283-0243 or 338-0840.

'93 Jeep Cherokee "Sport" 4 dr, 2 WD, collar, auto-OD, A/C, cass, new battery, black/gray, 39k mi, ex cond, $12,775 obo. Dan, x34640 or 482-7550.

'93 Pontiac Sunbird, A/C, new tires, new battery, tune-up, 4 cyl, 2.0 liter, 4 dr, white, $7.3k obo. 488-4710.

'94 Toyota Terzel, 4 dr, A/C, AM/FM/cass, good cond, $7.2k. 333-6819.

'91 Toyota Camry, 4 dr, maroon, w/dark gray interior, auto, A/C, AM/FM/cass, ex cond, $7k. 282-3229 or 286-4547.

'91 Honda Civic LX, 4 dr, charcoal gray/dk gray inter, auto, A/C, fully loaded, 45k mi, 1 owner, $7k obo. 409-297-8432.

'94 Mazda B02300 PU, A/C, AM/FM/cass, 5 spd, 24k mi, $6.7k. Ray, 332-3243.

'94 Honda Accord LX, auto, 4 dr, green/tan, alarm, 53k mi, $12.8k. x32634 or 422-8413.

'87 Honda Accord, 5 spd, hatchback, blue/light blue, rebuilt engine, very clean, $3.8k. x32634 or 480-2998.

'91 Peugeot 405S, 79k mi, mint cond, power, leather, AM/FM/CD, new tires, $4k. Marc or Bernie, 282-4148.

'83 Mercedes, 380SL, silver, both tops, $13.2k x35145.

Boats & Planes

'78 Glastron 20' Bowrider, galv tandem trailer, boat needs interior and engine overhaul, $650. Mark, x48660 or 326-3004.

Cat w/sails, 18', trailer, $900. 474-4742.

Sail boat, 24', 4.5Hp O.B., 4 sails, sleeps 5, many extras, $4.4k neg. 339-3508.

'93 Crownline 196 bowrider, Mercury 305 V8, loaded, bimini top, custom cover, Shorelander custom trailer, $13.9k. Don, x38039 or 333-1751.

Cycles

'88/'89 ATR 250 motor-cross dirt bike, ex cond, w/racing enhancements, $1.5k obo. 992-1552.

'85 Suzuki 700 Madura V4, low miles, good cond, $1.2k. 326-3313.

Bicycles, men's 26", 10 spd, $30; ladies, 26" 10 spd, $25; boy's 18", $35; girls, 14", $25; boys scooter, $20. Robert, x41058 or 286-4930.

Trek 1200 road bike, 56cm AL frame, w/ access, $550; Minoura MagRoller assy, $100; Kreitler stand, $30, all in ex cond, all for $575. 481-1518.

Audio Visual & Computers

Compaq computers, 1 Prosignia PC, server, 486/66 12Mb RAM, and 240Mb HD w/keyboard, $800; 1 Deskpro/i 486, 4 Mb RAM/240Mb HD w/many interface cards and keyboard, $550; Kodak CD ROM Writer, ex cond, new $5k sell $1.5k obo. x32920 or 610-9282.

Lapis Pro Color server 24x color graphics card for Mac SE/30; Cordura carrying case for Mac SE/30, $35. 480-3424.

GPS hand held Navigator, moving map. $225. x30750 or 281-484-8162.

Sega Genesis w/7 game cartridges, ex cond, $200 obo. 688-7357.

Celestron Telescope and motor drive, 8", $450. 283-0243 or 338-0840.

Zenith Supersport 286 laptop computer, 30Mb HD, modem, 1.44 FD, keypad, power supply, CGA port, $100. 997-2280.

Pioneer KEH-M7500 car radio/cass deck, detachable face, CD changer controls, many features, $150. Lisa, x40213 or 992-7302.

Laptop Compaq 386, $390; Toshiba 386 w/dock, $450; 486 DX2-66 mini-twr, 8Mb/850Mb, $695; 386 system, $250. Don, 333-1751.

Mac Powerbook 180c, active-matrix color notebook w/8Mb RAM, 106Mb HD, new battery, A/C adapter, charger, carrying case, extra S/W, $875; PowerMac 7500, 32Mb RAM, 500Mb HD, 100 MHz, A/V Card, Photoshop, $1.5k. Bobby, x42444 or 488-4382.

Canon "Star Writer" word processor, portable w/DOS Conversion Program, ex cond. x34221 or 338-1248.

Musical Instruments

Bundy flute, ex cond. Ann, 544-4248.

King Trombone, restored ex cond, 2 mouth pieces, $225. x33137 or 334-2533.

Pets & Livestock

AKC reg Rottweiler puppies, ready 1st week of Dec., tails and due claws have been docked, puppies will have shots when weaned, $300. Daisy, 280-8383 or 409-925-2944.

Tan Pomeranian make puppy, 10 /16, available 12/2, will have shots and wormed, $350. x34203 or 409-925-4607.

Free kitty, playful, affectionate, housebroken, free litter and pet carrying case. Katie, 244-7367 or 338-9607.

Free adorable young kittens, 2 black/white, one w/gray/black and female. x34979 or 281-535-0177.

Mini-Rex rabbits, $10 ea. 482-0874.

Free dog, mix 8 mos old. Shelley, x37824 or 409-943-4168.

Household

Round oak dining room table, 4 chairs; dishwasher, 486-1888.

LRM set, black/gray/gold, $1.2k; 2 couches, $250; 1 chair, $100; 2 end tables, $50 ea; 1 coffee table, $100; entertain center, $300; stereo, $100; 2 lamps, $50 ea; pictures, $10; coat rack, $50; BDR set, solid wood, $1.1k; Calif. king waterbed w/extras, $500; end table, $100; 2 dressers, $250 ea. Deb, x30236.

Electric dryer, almond color, old but works fine, $50. 337-3418.

GE refrig, 18.7 cu ft, good cond, $300; contemporary living roomset w/center table, ex cond, $550. x38879 or 332-1991.

Sleeper sofa, ex cond, $125; various nearly new Home Interior pictures, $8 - $30. Jackie, x36474 or 997-9547.

King size waterbed w/2-shelves hdbd, mirror, $75; coffee table, $25; night stand, $10; sofa table, $5. Bob, 244-4431.

Antique bath tub, white, 5 ft, $500. Ann, 554-4248.

Kenmore gas dryer, ex cond. 480-7882.

Living room chair, $30 obo; computer desk w/hutch and printer stand, $50. Lisa, x40213 or 992-7302.

Antique, approx 60 + yrs, 108" dining table, china cabinet, buffet table; W/D, working, $150 both. 482-0874.

Wanted

Want personnel to join VPSI vanpool departing South Braeswood Park and Ride lot at 6:50 a.m. for JSC and offsite locations, 7:30 - 4:30 shift. Susan Gaynor, 282-5447 or Al Rudder, x34997.

Want Personnel to join VPSI Vanpool departing Meyerland Park and Ride lot at 7:05 a.m. for JSC, shift 8 a.m. - 4:30 p.m. Don Pipins, x35346.

Want housemate, Meadowgreen, newly remodeled, lg house, pool and Jacuzzi, $290 + electric, non-smoker. Ken, x31496 or 286-7583.

Want electric guitar w/amp. 482-0874.

Want donated items for Boy Scout Troop garage sale, will pickup. Mark, x48660 or 326-3004.

Want free or inexpensive microwave and small refrigerator for branch office on site. x36127.

Want large bathroom or wall mirrors. Scott, x34330 or 337-5670.

Want someone going to the Panhandle to take 4 dining room chairs to Lubbock, we'll pay for your gas if you take our chairs. x38395 or 474-3689.

Want Barbie Jeep for my youngster, 12-volt, good cond. Jody, x37424.

Want Waverunner w/mechanical problems. Ken, x31496 or 296-7583.

Miscellaneous

Remington auto model 1100 20 Ga., $250; Winchester Defender pump 20 Ga., $150. Gene, 281-488-8678.

Dacor booties, men's sz 9, women's sz 6, $20 ea obo; Neoprene weight belt, $23 obo. Jeri, 333-7552.

Cardio Glide, ex cond, $125; traditional style sofa, $150. Robert, x41058 or 286-4930.

Toddler cloths, ex cond, 18/24 mos - 3 toddler, Stride Rite shoes, different sizes; twin bed side rails, white. 480-3736.

Go-cart, 4Hp off-road, $400; soccer shoes, $45; Starter jacket, adult sm, $40; Pro skateboard, $20; Pet Porter, $15; 2 specialized black bike helmets, $60; baseball gloves, bats, trainer; offshore life jackets. x33137 or 334-2533.

Russian gifts for Christmas, beautiful handmade fabric dolls, wooden stacking dolls, lacquered broaches, etc. Dennis, x34405 or 532-3312.

Stairclimber, $50. Shelley, x37824 or 409-943-4168.

Golf clubs, 2 sets 1-SW, Peripheral weighted, $125/set; Killer Bee 46' driver, $130; Kenmore W/D, $125 pr or $75 ea. David, x38122 or 338-8783.

Bali vertical blinds, 151"Wx46"L, split open-one touch, ivory color w/designs, 1 never installed, $150; one blind, $100; men's black leather jacket w/liner, sz 40R, ex cond, $50. 835-0491.

Surfboard, high performance, 7" thruster by Mike Myers, ex cond, rounded pintail, $200; Men's O'Neall shorty wetsuit, lg, $45. Jim, 282-4507 or 337-4953.

Lawnboy mower, $20; B&D electric edger, $15; B&D electric weedeater, $10, all units work. 488-3966.

Exercise bicycle, $40; weight bench w/weight set, $50; men's 10 spd bike, $30. Sally, x33948 or 488-5501.

White beaded Victorian wedding dress, sz 6/8, veil, fitted v-back w/drop pearls and long bustled train w/cutouts, $380. x34544 or 326-3759.

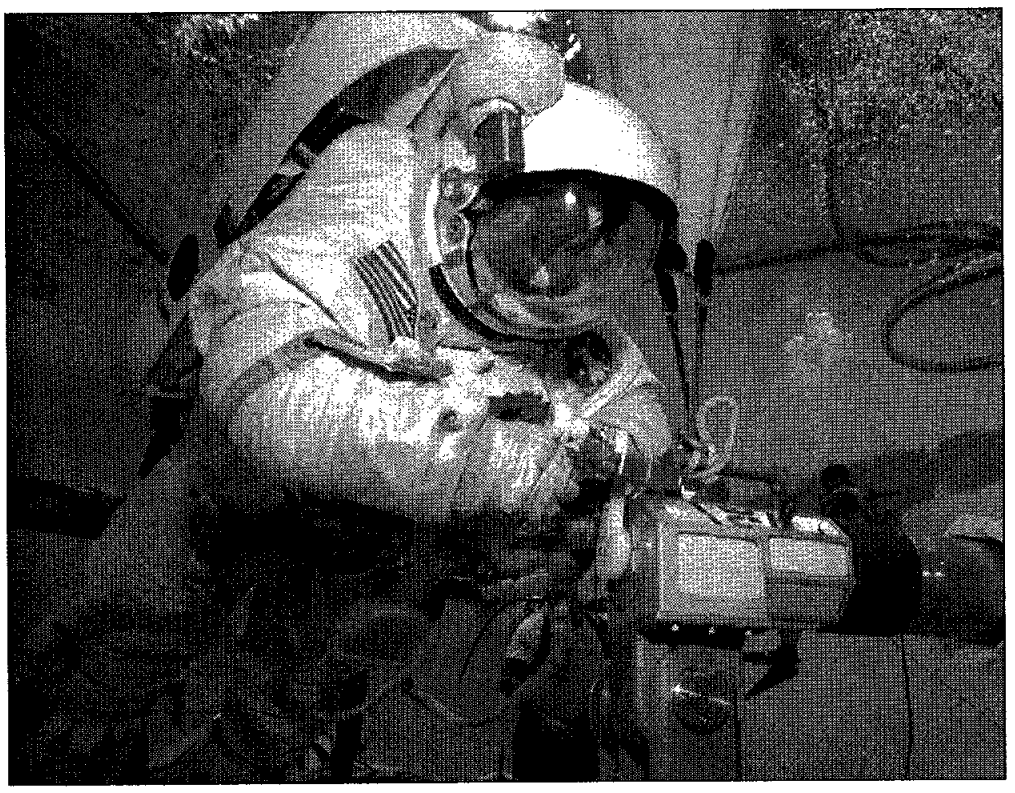
Joelle designer wedding dress, white, sz 6/8, short train, off-the-shoulder, long sleeve, veil, petticoat, $400 obo; heart-shaped wedding guest book, $35; clay Indian plant pots, $25 ea or $40 both; TV stand w/wheels, $15. Su, x45722.

Sony 27" TV w/matching stand, $450; kg sz mattress set, $150; gas edger need tune-up, $50. 996-0152.

Girl's and boy's clothes, jacket, sz 1 - 4 yrs, toys, women shoes sz 5; women's clothes, sz sm and medium; Amiga computer set and software, $30; B/W TV, $5. 480-0831.

Computer 386DX, color monitor, printer, $450; RCA camcorder, hardcase, rechargeable batteries, $300; baby crib, mattress, $70; toddler, mattress, $50; stroller, $40; baby walker, $25. 480-7138.

Bug zapper, 3/4 ac, $20; park bench wood and cast iron, $10; weed wacker, $20; Mexican tile, presealed, 80 sq ft; Slip & Slide, $5; sm student desk w/chair, $20; kid's wicker table and chair, $30; toddler bench, $5; Queen Anne desk/chair, $200; dresser, $50; kids trampoline, $20. 474-9747.



Space Station Space Walk

STS-80 tests to define procedures for station assembly, maintenance

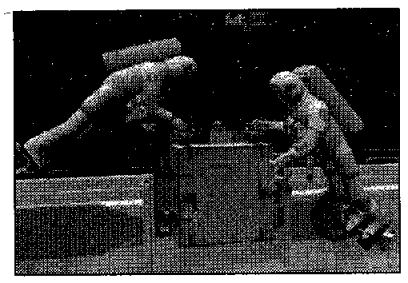
By Karen Schmidt

When construction workers build skyscrapers on Earth they use a crane. International Space Station construction workers also will need a crane, and STS-80 space walkers will give that crane its first on-orbit test next week .

Astronauts Tammy Jernigan and Tom Jones will spend more than 12 hours outside *Columbia* evaluating assembly and maintenance procedures that will be put into practice when assembly of the International Space Station begins. Two space walks will focus on assembly and maintenance tasks including the difficult task of installing or replacing Orbital Replacement Units, or ORUs.

"We want to ensure we have plenty of lessons learned and all of the means, techniques and tools that are being developed right now are tried and true and ready to support space station," said Daryl Schuck, lead EVA officer for STS-80. "During this time, we are also increasing our experience base down here on the ground for flight controllers, hardware designers and crew members."

The space walks are fifth in a series of EVA Development Flight Tests that will help researchers and astronauts build and maintain the International Space Station. The series has focused on evaluation of equipment, tools and procedures that will be used.

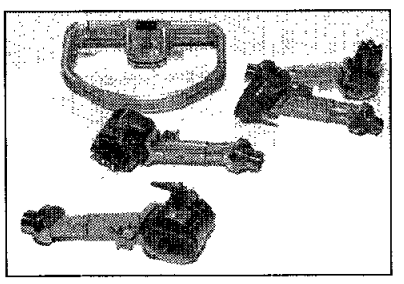


During the mission, Jernigan and Jones will make their way into *Columbia*'s cargo bay and Mission Specialist Story Musgrave will assist the space walkers from inside.

Jernigan and Jones will help researchers determine how to best handle the bulky boxes, the ease with which a space walker can remove and replace the box from its "dock" on the shuttle and install it on the station and whether the task can be performed more efficiently by one space walker or two. With this information, researchers can build an ORU docking port and tools that will provide easy removal from a cargo bay, an ORU that can be handled easily and procedures for future station astronauts.

One of the first International Space Station flights, currently set for March 1999, will deliver six large ORUs to the station. All six ORUs will be approximately the same size, mass and shape and will be moved about 80 feet from the shuttle's cargo bay to installation points on the space station.

"What we need to do is transport these large ORUs over a pretty big distance from the payload bay up to their installation location on space station," Schuck said. "That's out of the reach of the existing remote manipulator system so that's why we have these new work platforms."



One of these work platforms is a manually operated EVA crane that can help deliver these bulky masses to the point where they can be installed on the space station.

Jernigan and Jones will remove the crane, stowed in the cargo bay, from its cradle, install it in a fitted socket just above the cradle and perform an equipment checkout. After attaching the ORU to the crane, they will move the crane around to test its capabilities. The crane has four major components—stanchion, crank handles, extendable boom and ORU attachment assembly.

"The crane is manually operated with cranks," Schuck said. "There are three cranks. One controls pitch, another crank controls yaw and moves it from side to side and the third crank controls the extension and retraction of the crane."

Each component of the crane and the tasks involved with assembly, operations and stowing will be evaluated by the crew to assess the ease of performance, the difficulty of the task and even the location of handholds for ease in reaching the crane. The crew has practiced operations in the Weightless Environment Training Facility, but on-orbit operations will determine the exact procedures for space station assembly.

"Mass handling in the water doesn't necessarily give us a very good feeling of what it would really feel like," Schuck said.

He added that factors such as water viscosity and bubbles often greatly distort the movements of large masses such as those being manipulated during the space walks.

The six-foot crane weighs 156 pounds and has a boom that extends from four to 17.5 feet. It is designed to aid astronauts in transporting objects as large as 600 pounds to different work sites. The crane also has an attachment on the end of the boom that provides temporary stowage for an object being replaced during maintenance.

Three handling tools also will be evaluated during the first space walk. Two square scoops and the D-handle will be used to grasp, handle and transport ORUs. The scoops are designed to be used separately or with the add-on D-handle for larger ORUs.

The second space walk on flight day 12 will focus on another work platform. The Portable Work Platform is designed so astronauts can reach various parts of the space station for assembly and maintenance tasks. The PWP consists of three items—the Temporary Equipment Restraint Aid, or TERA; a tool stanchion and the articulating portable foot restraint. The PWP is designed so that the Space Station Remote Manipulator System can grapple it to position tools, equipment and crew members at a specific worksite. Pilot Kent Rominger will operate the shuttle's robot arm from inside *Columbia*.

"We have assembled the work platform before, but never in a free-floating mode," Schuck said. "It will be interesting to see if we can assemble it free-floating." The PWP flew before during an earlier on STS-72.

First, Jernigan will unlock the TERA from the PWP and hand it off to Jones for installation to the RMS. Jernigan will unlock the foot restraint and Jones will install it on the TERA. While Jones tries out different techniques of installation, Jernigan will unlock the tool stanchion and hand it over to Jones for installation. Once the PWP is configured, the two space walkers will set up their tools, and perform assembly and maintenance operations with both a large and a small ORU.

During the space walk, Jernigan and Jones also will evaluate ORU carriers. These carriers will be attached to the shuttle cargo bay for transport to the station. The astronauts must develop techniques for removing new ORUs, parts such as batteries, from these carriers and replacing old equipment for shipment back to Earth. Jernigan and Jones will evaluate operations with a simulated space station battery and its carrier while utilizing both the crane and the PWP.

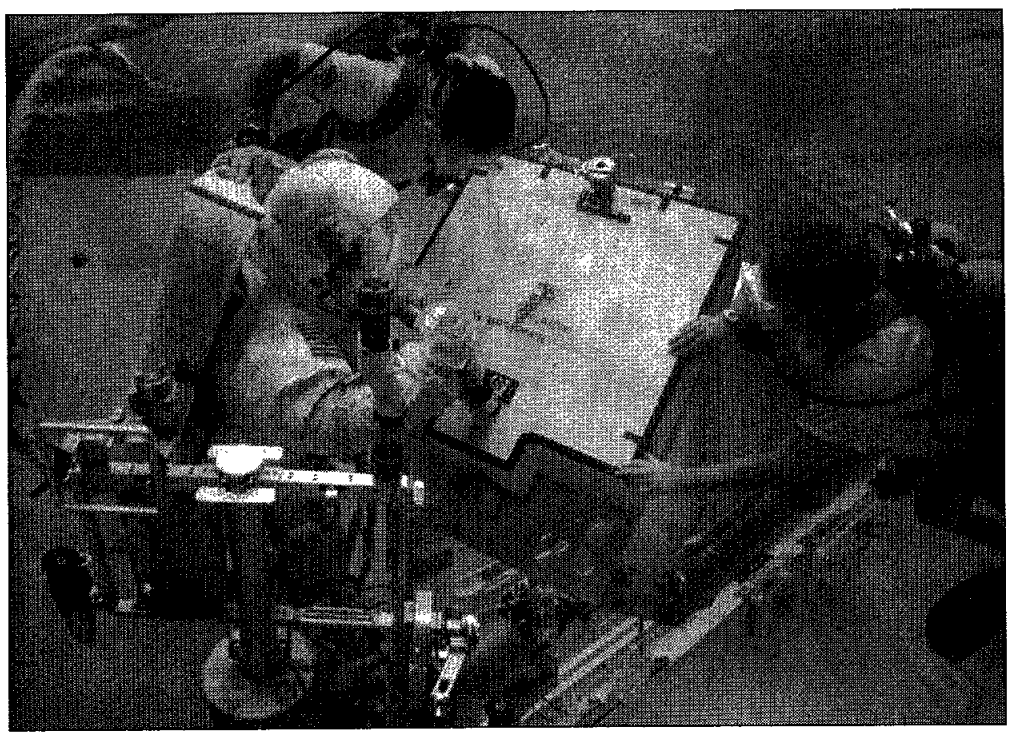
"Once the PWP is assembled on station, we don't want to take it apart every time, so we want to get the experience of handling this fully assembled work platform," Schuck said.

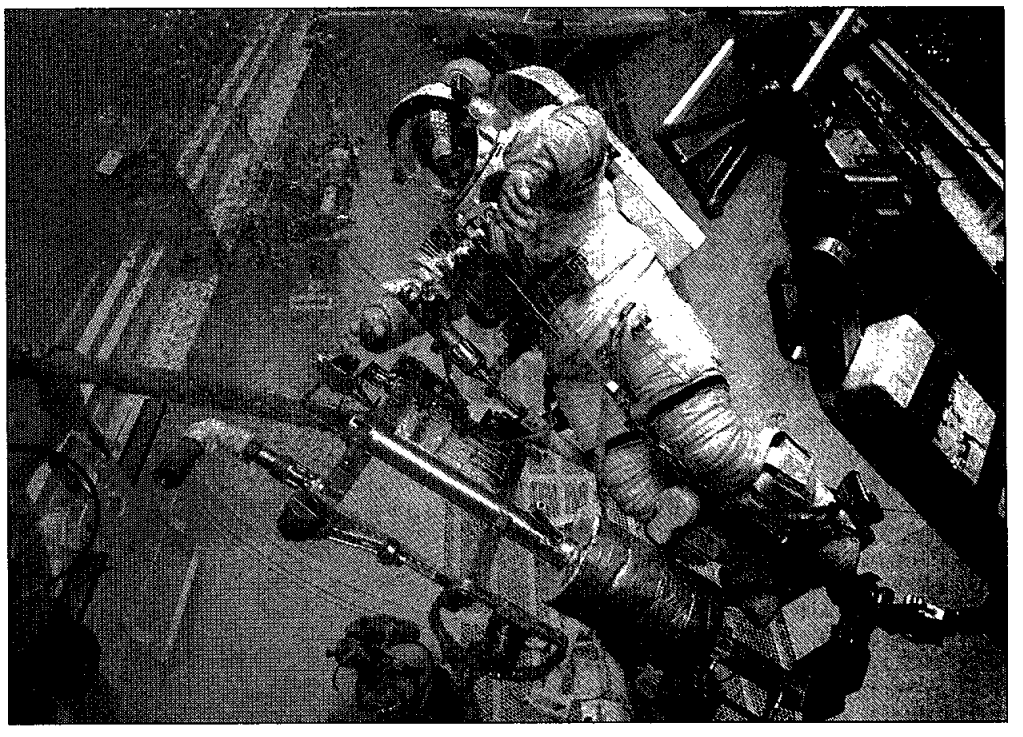
Also being evaluated during the two EVA's are eight modified and 11 new EVA tools including the space station power tool.

"The space station power tool is a smart power tool with a micro processor control that allows torque, turns and speed to be limited," said Tim Brady, EVA equipment project manager. "It also stores information on fault diagnostics and output events that are taking place."

During both space walks, several tethers and body restraint aids also will be evaluated for crew members and station equipment. The astronauts will evaluate the best position for these tethers and body restraint aids for ease in working in microgravity.

"As space station EVA hardware providers, the EVA Development Flight Test program is a tremendous opportunity for us to thoroughly evaluate our hardware in realistic on-orbit operating conditions," said Brady. "All the hardware on STS-80 is operationally similar or identical in function to that which will be used to support the space station." ❑





From top to bottom, left to right; 1) STS-80 Mission Specialist Tom Jones uses one of the crank handles on the EVA crane to move an Orbital Replacement Unit, or ORU in the Weightless Environmental Training Facility; 2) STS-80 Mission Specialist Tammy Jernigan and Jones will evaluate several tools during the STS-80 space walks including a D-handle, square and round scoops; 3) This animation still depicts how Jones and Jernigan will attach handles and remove ORUs from carriers in *Columbia*'s cargo bay; 4) This animation still shows how Jones and Jernigan will mount an ORU on the Temporary Equipment Restraint Aid and practice mass handling techniques; 5) With the help of WETF divers, Jones attaches a scoop to the ORU while working on the Portable Work Platform; 6) Jernigan works on the Portable Work Platform evaluating assembly and maintenance techniques that will be used on the International Space Station. JSC Photos by Mark Sowa

Mir crew receives new supplies with Progress docking

By Natasha Calder

The Mir 22 crew spent its week preparing to receive a host of new supplies which arrived at the space station early this morning on board a Progress resupply capsule which launched from Russia early Wednesday.

Cosmonaut Researcher John Blaha and his crewmates—Commander Valery Korzun and Flight Engineer Alexander "Sasha" Kaleri—received all sorts of new supplies needed for their ongoing mission, including food, clothing, water and fuel for the stations engines, along with other personal items sent up by their families for the upcoming holidays.

To prepare for and study the docking of the new Progress, the Space Acceleration Measurement System was activated on the station prior to the undocking of the resident Progress to measure the microgravity disturbances caused by the undocking and docking of vehicles with the station. The experiment measured the disturbances in order to determine to what extent the movements may affect data being obtained from the numerous science experiments being conducted on board Mir.

Blaha said this resupply process, along with other systems and procedures currently being conducted on Mir, is being performed much as it will be on the space station.

"All of these things that we're doing are just folding in to really make us get a head start when we get our new space station in orbit," Blaha said. "I'm very proud to be a small part of that development process."

Other work performed on the station this week included additional experiments routinely scheduled with a planned undocking of a Russian or American spacecraft. This work included the collection of urine and saliva samples from the crew needed for a metabolic study relating protein metabolism and kidney stone risk. This sample collection is done within 14 days of an undocking so that the excess urine can be properly disposed. The crew also conducted an analysis of some of the data collected during the monthly microbial sampling of the air, surfaces, water supply and crew to study the station's environment and its inhabitants.

Blaha also has been taking advantage of the view from the space station, continuing with Earth observations and photographing the planet."I have filmed just about the whole planet now," Blaha said. "I got some beautiful photography of Australia...and fantastic photography of the United States, many cities and a lot of photography of different ocean areas for oceanographers."

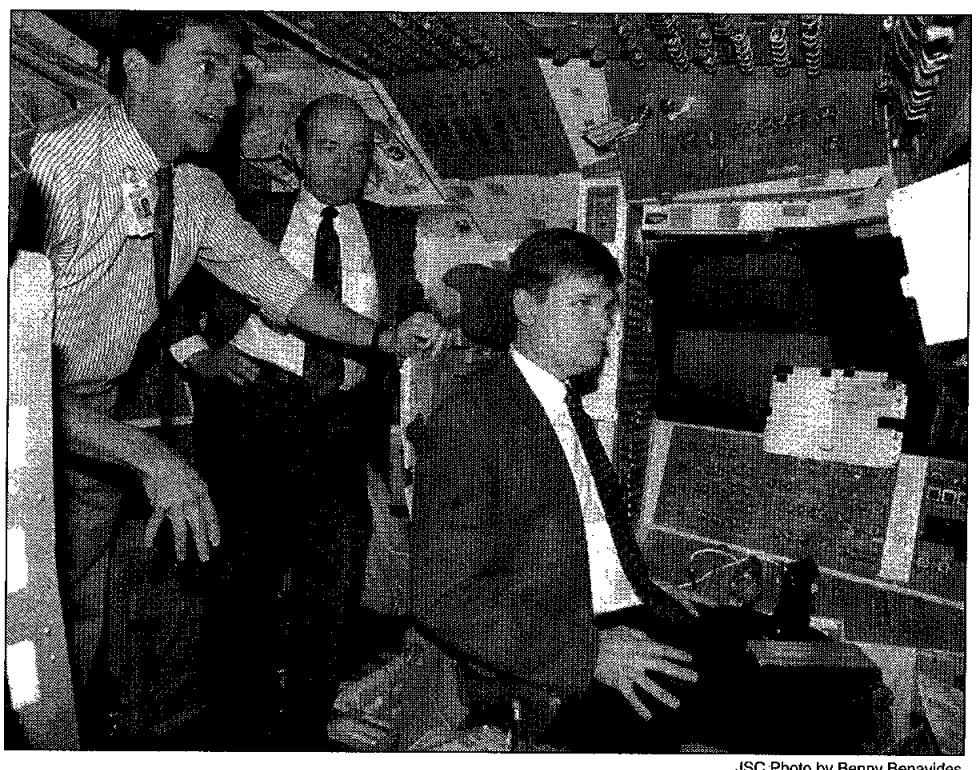
JSC volunteers sought for Engineer's week

The Education Outreach Program is recruiting employees to volunteer for National Engineers Week, that will be held February 16-22.

Volunteers are asked to commit to giving one to two classroom presentations to schools within school districts of their choice anytime during the month of February. With supervisory approval, JSC civil service employees may charge their time spent away from work to a special education labor code. Contractor employees are asked to obtain approval from their company education representatives to participate in this JSC-sponsored community educational activity.

To help prepare volunteers for classroom presentations, two orientation meetings will be held at noon, Jan. 23-24 in Teague Auditorium. A panel of aerospace education specialists will discuss presentation tips, demonstrate hands-on activities for use in the classroom and provide information on access to resources such as exhibits, videos and promotional materials.

To volunteer, please contact Mae Mangieri at x32929 no later than Nov. 29.



JSC Photo by Benny Benavides

From left Astronaut Don Thomas and Lynn Heninger, deputy associate administrator of Legislative Affairs, show Todd Schultz, chief of staff from the Office of U.S. Representative James Sensenbrenner, the flight deck of the Crew Compartment Trainer in Bldg. 9 during NASA JSC Inspection Day.

JSC, NASA experiments lost on Mars '96 probe

Two NASA experiments were lost this week on Russia's Mars '96 probe, but JSC scientists say the outgrowth of the experiments will help astronauts now.

The JSC Inter Mars Tissue Equivalent Proportion, or ITEP, and the Mars Oxidation experiments were lost when the Mars '96 mission failed to leave Earth's orbit following its Saturday launch and fell into the Pacific Ocean. The engine of the vehicle's fourth stage, which would have carried the spacecraft on toward Mars, apparently failed to ignite.

The ITEPC was designed to characterize the radiation field that humans would experience en route to and at Mars. It was developed by Gautam Badhwar of the Earth Science and Solar System Exploration Division with major support from the Batelle Northwest Labs and Lockheed-Martin.

"This is a pretty significant loss," said Mike Golightly of the Earth Science and Solar System Exploration Division who relies on the data from the ITEPC. "There are uncertainties as to how much radiation astronauts will be exposed to on their way to and at Mars. This experiment would have provided important data for planning a human exploration of Mars. Now we have to rely on models."

While the Mars experiment may be lost, the outgrowth of this development is an ITEPC for shuttle flights. The ITEPC provides radiation measurements inside the payload bay. These measurements improve the understanding of the external radiation environment experienced by astronauts during space walks. In addition, comparisons of ITEPC data and measurements from inside the shuttle crew compartment are used to determine the effectiveness of the shuttle's structure in reducing the radiation exposure received by the astronauts.

The Mars Oxidation experiment was designed to measure the rate at which metals and organics corrode when exposed to the Martian environment.

"We were hoping MOx would be able to tell us more about the surprisingly reactive properties of the Martian soil first detected by the Viking biology experiments and tell us if this reactivity is the cause of the complete absence of organics in the surface soil on Mars," said Christopher McKay, project scientist at NASA's Ames Research Center. "The loss of MOx is all the more disappointing given the recent results of the Mars meteorite studies. There is clear evidence of organics in these meteorites. The question of organics and where on Mars they might be found is key to any future search for evidence of life."

MCC open for viewing during STS-80

The Mission Control Center viewing room will be open for JSC and contractor badged employees and their families during portions of the STS-80 mission.

Employees will be allowed to visit the MCC from 5-7 p.m. Monday, Wednesday and Dec. 3; 11:30-1:30 p.m. today, Tuesday and Nov. 29; 1-3 p.m. Saturday, Sunday, Nov. 30 and Dec. 1; 11:30 a.m.-1 p.m. Dec. 2 and Dec. 4; and for landing Dec. 5.

For the latest information on the schedule, call the Employee Information Service at x36765.

During STS-80, sighting opportunities will be possible in the Houston area at 6:11 a.m. Thursday, 5:53 a.m. Dec. 1 and 6:19 a.m. Dec. 2. For more information on how to spot the orbiter, visit the shuttle home page at URL: http://shuttle.nasa.gov

Employees' children may enter '97 safety calendar poster contest

By Rindy Carmichael

Children of all JSC personnel are invited to enter the 1997 Safety and Total Health Calendar Poster Contest.

Children will enter their artwork based on a theme according to their age group for possible placement into a 1997 calendar distributed center-wide. The overall theme for the calendar is "Safety and Health Are Up to Me."

The calendars will be 11 x 17, printed in full color, and bordered by a total of 36 winning posters. The winners will have the honor of being published and receive a T-shirt with their poster reprinted on it.

Deadline for entries is Dec. 2 and only poster boards provided by JSC may be used for drawings. Poster boards are available in Bldgs. 3 and 11 cafeterias, Bldgs. 1, 8, and 419 lobbies or can be requested by calling 244-5078. Rules and regulations are found on the back of the poster boards and must be adhered to for eligibility in the contest.

All civil service employees will receive one calendar free of charge. Contractors are asked to contact their company's management for information regarding obtaining a copy. Calendars may be purchased after the first of the year at the Bldg. 11 Exchange Store.

STS-80 crew to conduct high blood pressure experiments

(Continued from Page 1)

WSF Monday.

"On this particular flight we expect to grow seven wafers which will be distributed among our commercial suppliers so that they can use them to determine the actual quality and how they can be used in circuits," said Ed Gabris, director of the Space Processing Division at NASA Headquarters, this week.

Once the WSF is secure in *Columbia*'s cargo bay, the crew will turn its attention to one of two space walks scheduled for this mission.

The first space walk on Flight Day 10 will focus on the use of a crane to maneuver large space station Orbital Replacement Units, or ORUs. The second space walk, set for Flight Day 12, will focus on the Portable Work Platform and how well crew members can move around to assemble the station.

In addition, rats with high blood pressure will be flying on STS-80 and may help scientists understand how calcium helps maintain human health. Two groups of rats will be studied, one on a low-calcium diet, the other on a diet high in calcium. After the flight, scientists will conduct tests to find out how the different calcium intakes affected cardiovascular functioning and blood pressure.

"A large body of evidence indicates that problems in the way the body processes calcium also can lead to hypertension, or high blood pressure," said Daniel Hatton, a hypertension specialist from the Oregon Health Sciences University.

"This research offers hope to the tens of millions of people suffering from calcium-related conditions such as osteoporosis and hypertension," said David McCarron also a hypertension specialist from Oregon.

Weather Channel features JSC shuttle weather support program

The Weather Channel is showing a feature on Space Shuttle Program weather support this weekend on its "WeatherScope" segment.

The feature, "Forecasting for Space" featuring the Spaceflight Meteorology Group at JSC, originally was a five-part series giving a brief historical background on shuttle weather support with highlights from STS-78 and a description of the JSC group and the U.S Air Force's 45th Weather Squadron in Florida.

The 20 minute feature will be aired in its entirety at 11 a.m. Saturday and Sunday. However, these schedules may be altered if the Weather Channel is covering a breaking weather story.

"The Weather Channel is viewed by millions of people in North America and this will provide excellent visibility for NASA and its critical weather support functions," said SMG Chief Frank Brody.

The SMG is a group of 10 experienced and highly trained meteorologists who provide a number of services, including serving as member of the JSC Flight Control Team in mission control, and providing detailed forecasts for shuttle landing sites, as well as forecasts for abort landing sites. On-orbit support includes forecasts for primary landing sites. In addition, SMG issues advisories on significant local weather events for weather-sensitive Ellington Field and JSC operations and provides weather briefings for astronauts.

Space News Roundup

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Electronic mail messages should be sent to the editor, khumphri@gp301.jsc.nasa.gov or the associate editor, kschmidt@gp301.jsc.nasa.gov.

Editor .....Kelly Humphries
Managing Editor .....Karen Schmidt
Associate Editor.....Natasha Calder

Node delivery in six months

(Continued from Page 1)

Node 1 is the first U.S. space station component scheduled to be launched in December 1997. The node serves as connecting passageway to other modules on the International Space Station. With the pressure test now completed, Node 1 will be moved out of the Boeing test facility and returned to the space station manufacturing building for assembly and checkout activities at NASA's Marshall Space Flight Center.

Last August, Node 1 and the laboratory module successfully completed a series of proof pressure tests. Like this last Node 1 test, data analysis from the August tests indicated both modules performance was excellent.

Just six months from now, in May 1997, Node 1 will be shipped out of Huntsville to the Kennedy Space Center in preparation for its early December 1997 shuttle launch to join the Russian-built functional energy block, or FGB. The FGB is scheduled for launch in late November 1997, just one week before it is joined by Node 1 over 220 miles above the Earth. The FGB is a self powered vehicle that provides attitude control and electrical power through the early assembly stages of the space station.

Once assembled, the space station will have a mass of nearly 1 million pounds and provide more than 46,000 cubic feet of pressurized living and working space for astronauts. Construction is scheduled to be completed in June 2002.