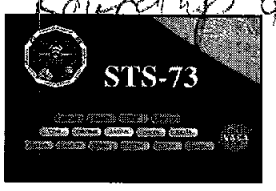
National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, Texas



Surfing the net

Part two of the series looks at NASA's Shuttle Web on the Internet. Story on Page 3.

'Tis the Season

Employees in the Office of Public Affairs gather donations for needy families. Story on Page 4.

Space News Roundup

Vol. 34 December 15, 1995 No. 49

Employees to report for work Monday

With the possibility of a second forced government work stoppage in the wings, top JSC managers reminded all employees this week that whatever happens they are expected to report to work Monday morning.

"As you know, the center is operating under a continuing resolution which expires at midnight on Friday, Dec. 15," Acting JSC Director George Abbey wrote Monday in a letter to all employees. "The White House and Congress continue to negotiate on the budget without much visible progress. Despite this, I'm cautiously optimistic our leaders in Washington won't dampen the holiday spirit with a budget impasse, and hope they'll pass another continuing resolution to keep us going into January.

"If another furlough becomes necessary, we'll repeat the steps we took last time to scale back business in a systematic, organized way. Whether or not you are 'exempt,' you still must come to work on Monday, Dec. 18, to begin an orderly shutdown process," he continued.

JSC Human Resources Director Harvey Hartman said "exempt" employees are the only ones who will work during the furlough. These are employees who hold positions critical for the safety of human life, protection of property or are needed to maintain the shuttle and station manifest, and they will be notified by their supervisors.

In a letter to all federal employees after the first furlough, President

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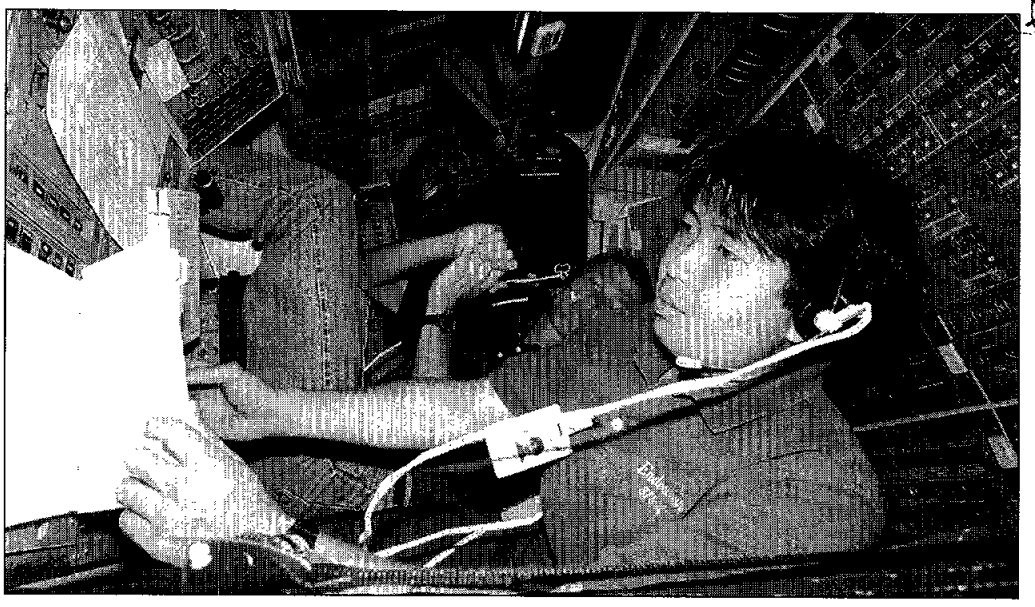
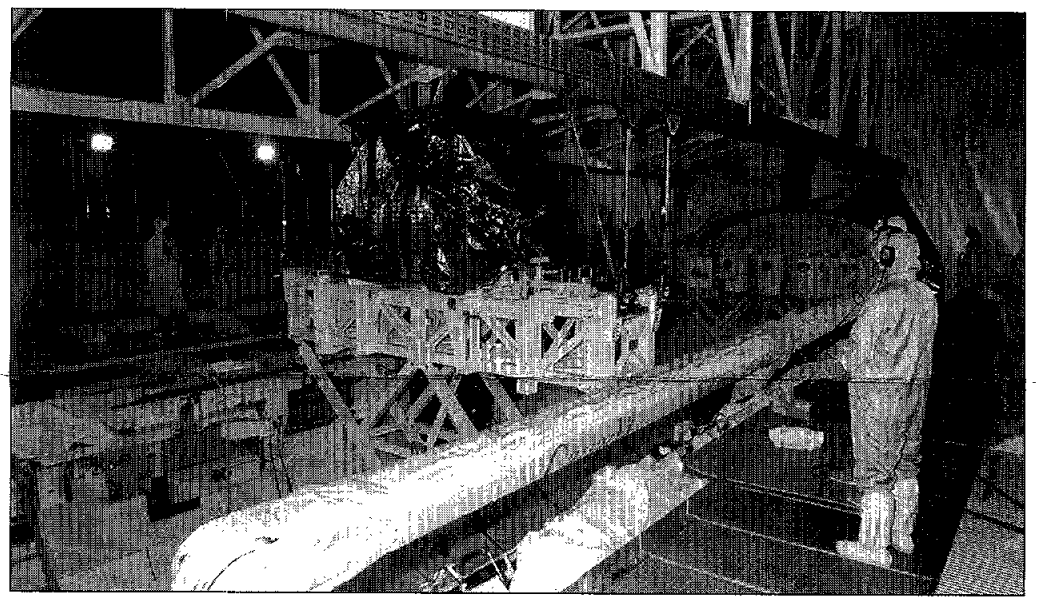


JSC Photo by

Above: STS-72 Mission Specialist Koichi Wakata, representing Japan's National Space Development Agency checks over flight plans during a training session in the flight deck of the shuttle simulator while Pilot Brent Jett looks on. Below: Kennedy Space Center engineers look on as the Office of Aeronautics and Space Technology-Flyer, or OAST-Flyer, begins the transfer from the Orbiter Processing Facility into *Endeavour*'s payload bay.



Endeavour crew wraps launch test

By James Hartsfield

Endeavour's preparations for STS-72 continued to proceed smoothly at Kennedy Space Center this week, with the crew and launch controllers completing a dress rehearsal of the launch countdown Wednesday.

The STS-72 crew—Commander Brian Duffy, Pilot Brent Jett and Mission Specialists Leroy Chiao, Winston Scott, Koichi Wakata and Dan Barry—flew to KSC Monday for the launch rehearsal. Earlier, technicians at the launch pad had successfully completed a standard leak check of the orbiter's main propulsion system plumbing.

STS-72, the first shuttle flight of 1996 with launch targeted for 3:18 a.m. Houston time Jan. 11, will feature two rendezvous and two space walks. The primary objectives are the retrieval of the Japanese Space Flyer Unit satellite and the deploy and retrieval of the OAST-FLYER experiment platform.

Late this week, work on *Endeavour* included a flight readiness test of the main engine electrical connections and the early loading of propellants.

Elsewhere, *Columbia* also remains on track for a launch on STS-75, the second flight of the Tethered Satellite System, around Feb. 22. *Columbia*'s main engines were installed Monday and Tuesday, and the forward Reaction Control System is being installed today. Wednesday, technicians will secure the spacecraft and close the payload bay doors for the Christmas holidays. *Columbia* is in KSC's Bay 2 processing hangar. The planned third flight of the new year, *Atlantis* on STS-76, the third shuttle-Mir docking mission, also remains on schedule. *Atlantis* is in the Bay 1 shuttle hangar, and work this week included removal of the main engines and the Obiter Docking System.

Wake Shield Facility yields ultra-pure samples

Preliminary results from the Wake Shield Facility, flown as part of the STS-69 mission in September, have shown that the free-flyer created a vacuum 1,000 times better than what can be produced on Earth.

Alex Ignatiev, director of University of Houston's Space Vacuum Epitaxy Center that developed the WSF, reports that the vacuum of space produces higher purity materials.

"The four samples grown were the best in elemental purity," Ignatiev said. "These results confirm the ultra-vacuum of space is a unique environment for fabrication of high purity semiconductor materials and helps build the foundation for the future use of space for producing thin film material."

The Wake Shield Facility is a 12-foot-diameter stainless steel disk designed to generate an "ultra-vacuum" environment in space to grow thin films for next generation advanced electronics.

The STS-69 crew deployed the WSF-2 on day five of its mission for a 50-hour free flight from *Endeavour* to achieve and characterize for the first time an uncontaminated "ultra-vacuum" in low-Earth orbit; and demonstrate the feasibility of epitaxial growth of high quality compound semiconductor thin films.

"It worked," Ignatiev said. "We were able to demonstrate, not conclusively, that we can produce higher purity materials in space. We had some problems on the flight but overcame these problems with the help of ground support in Mission Control and the STS-69 astronauts."

While WSF-2 experienced some problems, preliminary findings of the four samples grown, two samples achieved the highest purity greater than any chamber growth on Earth.

"We had an interesting and eventful flight and we are looking forward to our next flight on STS-80 in November 1996," Ignatiev said. "We will use the STS-69 data to enhance the science and technology of the next flight."

The commercial applications for high-quality semiconductor devices are most critical in the areas of cellular telephones, high-speed transistors and processors, high-definition television, fiber optic communications and opto-electronics. The majority of electronic components used today are made of the semiconductor silicon, but there are many other materials that could achieve higher predicted performance than silicon. Atomic quality, sample size and sample processing all suffer for compound semiconductors, and improving these parameters would result in high quality semiconductor materials which could lead to a new generation of electronic components.

The space ultra-vacuum concept was first identified by NASA more than 20 years ago. Epitaxy, the growth of atomically ordered

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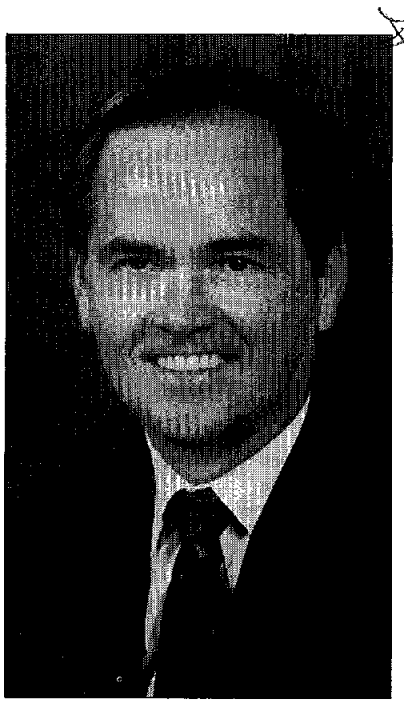


Robert Crippen

Crippen to be honored in Houston

Former Kennedy Space Center Director Robert Crippen will receive this year's National Space Trophy, bestowed by the Rotary National Award for Space Achievement Foundation.

Crippen will receive the award during a banquet in his honor Feb. 15 at the Houston Hyatt Regency. Crippen is the tenth recipient the award, which recognized outstanding contributions to space exploration. The featured speaker at the awards banquet will be U.S. House of Representatives Science Committee Chairman Robert Walker, R-Pa.

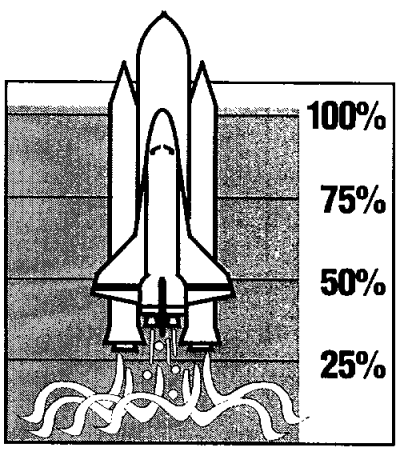
NASA Associate Administrator for Space Flight J. Wayne Littles cited Crippen, "for his distinguished service in advancing the U. S. space program, his pivotal role in the space shuttle return-to-flight effort and his leadership of both the space shuttle program and the Kennedy Space Center."

In nominating Crippen for the award Littles said, "Mr. Crippen has demonstrated the rare ability to construct a vision of the future and translate it into action today. Moreover, his broad experience, technical expertise, management skills and dedication to a strong U. S. space program have worked to make his contribution to space exploration a profound and lasting one."

Crippen served as KSC director for three years. During his tenure, the center processed and successfully launched 22 shuttle missions and 42 expendable rocket flights. He provided leadership and contract oversight for over 13,000 civil service and contractor personnel. While ensuring the highest safety standards in an extremely hazardous environment he implemented cost savings of greater than 25 percent by establishing and developing new quality management techniques and reducing shuttle and payload processing times. Overall, his management saved the government over $130 million.

Crippen became an astronaut in September 1969. He was a member of the astronaut support crew for the Skylab 2, 3 and 4 missions and for the Apollo-Soyuz Test Project mission. He was the pilot on STS-1 in 1981 and commander of STS-7 in 1983 that included the first woman astronaut, Sally Ride. He also commanded STS-41C in April 1984 and his last shuttle flight was STS-41G in October 1984.

For information on the foundation or to purchase tickets to attend the banquet contact Charles Hartman at 480-6167.



1995 GOAL: $460,000

CFC

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.

Hockey: Houston Aeros vs. Utah Grizzlies, 7 p.m. Dec. 29 at the Summit. Tickets cost $12.50.

New Year's Dance: Dec. 31. Tickets cost $25 per person.

Space Center Houston: Discount tickets, adult, $8.75; child (3-11), $7.10.

Movie discounts: General Cinema, $4.75; AMC Theater, $4; Sony Loew's Theater, $4.75.

Stamps: Book of 20, $6.40.

JSC history: *Suddenly, Tomorrow Came: A History of the Johnson Space Center*. Cost is $11.

Metro tickets: Passes, books and single tickets available.

JSC

Gilruth Center News

Sign up policy: All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a NASA badge or yellow EAA dependent badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For more information, call x30304.

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

Stamp club: Meets at 7 p.m. every 2nd and 4th Monday in Rm. 216.

Aerobics: Classes meets 5:15-6:15 p.m. Tuesday, Thursday and Friday and 9:30-11 a.m. Saturdays. Cost is $35 for 11 weeks.

Women's self defense: Martial Arts training for women only from 5-6 p.m. Tuesdays and Wednesdays. Cost is $25 a month.

Weight safety: Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. Dec. 26 and Jan. 11. 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 5-7 p.m. Wednesday. Cost is $25 per month. New classes begin the first of each month.

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

Lights on for life: JSC employees are encouraged to participate in "Lights on for Life," Dec. 15 in remembrance of people killed or injured in alcohol-related crashes. This year's one-day nationwide headlight observance is intended to serve as a reminder of the dangers of impaired driving and that law enforcement throughout the nation will target impaired drivers during the holiday season.

Cafeteria menu: Special: fried chicken. Total Health: vegetable lasagna. Entrees: pollock hollandaise, beef stroganoff, vegetable lasagna. Vegetables: steamed broccoli, carrots vichy, Italian zucchini, breaded okra.

Saturday

Book reading: Channel 11 anchor Marlene McClinton and her husband Ricky Kaplan will read a new children's book "NASA and the Man in the Moon" from 1-2 p.m. Dec. 16 at Jeremy's Bookshelf, 2441 Bay Area Blvd. For more information call Sally Jordan at 486-5359.

Monday

Holiday shopping: Space Center Houston will offer extended holiday shopping hours from 6-9 p.m. Dec. 18 at the Space Trader Gift Shop. NASA and contractor badged employees will receive an additional 10 percent discount this year. Badges must be presented at the time of purchase to receive the discount. For more information call SCH at 244-2105.

Cafeteria menu: Special: meat sauce and spaghetti. Total Health: potato baked chicken breast. Entrees: wieners and beans, sweet and sour pork chop, potato baked chicken, steamed fish, French dip sandwich. Soup: cream of broccoli. Vegetables: French cut green beans, seasoned rice, California vegetables, buttered beans.

Tuesday

NTA meets: The National Technical Association will meet at 6:30 p.m. Dec. 19 at Texas Southern University School of Technology Rm. 316. For more information call Carrington Stewart at x31404.

Cafeteria menu: Special: smothered steak with dressing. Total Health: baked potato. Entrees: beef stew, liver and onions, shrimp Creole, baked chicken, fried cod fish, French dip sandwich. Soup: navy bean. Vegetables: steamed rice, seasoned cabbage, corn O'Brien, peas.

Wednesday

Toastmasters meet: The Spaceland Toastmasters Club will meet at 7 a.m. Dec. 20 at the House of Prayer Lutheran Church. For more information call Elaine Trainor at x31034.

Astronomy seminar: The JSC Astronomy Seminar will present Dr. Ramesh Narayan speaking about "Gravitational Lenses" at noon Dec. 20 in Bldg. 31, Rm. 129. For more information, call Al Jackson at 333-7679.

Cycle club: The Space City Cycle Club will meet at 5 p.m. Dec. 20 at the Grumman Bldg. at Ellington Field.For more information call Mike Prendergast at x45164.

Cafeteria menu: Special: salmon croquette. Total Health: baked potato. Entrees: roast pork, stir frybaked perch, steamed fish, vegetable lasagna, Reuben sandwich. Soup: seafood gumbo. Vegetables: mustard greens, okra and tomatoes, vegetable sticks, lima beans.

Thursday

Cafeteria menu: Special: stuffed cabbage rolls. Total Health: baked potato. Entrees: beef tacos, ham and lima beans, pork and beef egg rolls, steamed fish, catfish, French dip sandwich. Soup: beef and barley. Vegetables: Brussels sprouts, green beans, buttered squash, pinto beans.

Friday

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.

Dec. 25

Christmas: Most JSC offices will be closed in observance of the Christmas holiday.

Dec. 26

Photo club meets: The Bay Area Photo Club will meet at 7:30 p.m. Dec. 26 at the Faith Covenant Church. For more information call Kelly Prendergast at x37655.

BAPCO meets: The Bay Area PC Organization will meet at 7:30 p.m. Dec. 26 at League City Bank. For additional information call Guy Thibodeaux at 333-5340.

Dec. 27

Toastmasters meet: The Spaceland Toastmasters Club will meet at 7 a.m. Dec. 27 at the House of Prayer Lutheran Church. For more information call Elaine Trainor at x31034.

Astronomy seminar: The JSC Astronomy Seminar will present an open discussion meeting at noon Dec. 27 in Bldg. 31, Rm. 129. For more information, call Al Jackson at 333-7679.

Cycle club: The Space City Cycle Club will meet at 5 p.m. Dec. 27 at the Grumman Bdlg. at Ellington Field: For more information call Mike Prendergast at x45164.

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: Clear Lake condo, 1-1 w/study, carport, alarm access gates, W/D, appli, storage, $43.5k. 977-5763.

Rent: Waterfront executive townhome, South Shore Harbor Marina, furnished, 2-2.5, 60' boat slip avail, $1.9k/mo. 334-5000.

Sale: LC, Bayridge subdivision, 3-2-2, cul-de-sac street, $55.k. James, 286-1934.

Rent: Santa Fe, TX, duplex, 3-1.5, appli, central air/heat, W/D conn, sm yard, non-smokers, no pets, $500/mo + sec deposit. 244-0250.

Lease: El Lago, 5 BDR, jacuzzi, decks, FPL, hardwood & tile floors, wooded, $1.3k/mo+. 3226-2093.

Sale: Waterfront Bay, 4-4, carport, game room, lots of extras, boat lift. 339-3498.

Rent: League City, 2-1, victorian frame, trees, central A/H, storage shed, $550/mo, avail 1/1. x40038 or 332-6796.

Sale: Townhome, 2-2.5-2, near Medical Center, tiled kitchen, FPL, lg MBR, sep jacuzzi/ shower, 24 hr sec, garden window, $79.9k. Jack H. Cohen, 488-3171.

Rent: South Lake Tahoe cabin, 3-2, W/D, TV/VCR, sleeps 8, $75/ntly, wkly/holiday rates. x41065 or 326-2866.

Cars & Trucks

'87 Mazda CabPlus truck LX, ex cond, 1 owner, rebuilt engine, long block w/warranty, new clutch, $3.7k. x36531 or 326-6420.

'89 Ford Escort wagon, good work/family car, runs great, $1.6k. James, 286-1934.

'87 Cadillac Fleetwood De Elegance, 90k mi, clean, new A/C compressor, good tires, wire wheels, $5.k. 282-4014 or 332-2337.

'78 Chevy Suburban, bad body, great engine, rebuilt 350 4-bolt main, $800. x31948 or 481-0960.

'92 Toyota 4-runner, gray ext/interior, auto, loaded, CB radio, ex cond, 67k mi, $16.5k. 488-8781.

'89 Jeep Wangler, 5 spd, 4WD, 68k mi, chrome wheels, good cond. 333-1253.

'94 Ford Ranger XLT extended cab, loaded, 6 cyl, bedliner, 30k mi, ex cond, $15k firm. x37246 or 335-5401.

'93 Dodge Ram D-150 ext cab, 360 V8, 2 WD loaded, camper shell, 29k mi, $13.2k . x41065 or 326-2866.

'88 Nissan Sentra SE, 5 spd, hatchback, 62k mi, new battery, very clean, $3.6k obo. Susan, x33523 or 334-5890.

'82 Oldsmobile Delta 88, white, 4 dr, clean, runs good, A/C, new tires/water pump/battery, $1.6k. 554-5492.

'84 Mitsubishi PU, 120k mi, runs, $507.15. Carl, x31559 or 338-1290.

'84 Chevy Cavalier convertible, 105k mi, new top under warranty, $1.9k. x33736.

'90 Mercury Cougar, 6 cyl, auto, 64k mi, loaded, sunroof, JBL CD stereo, new tires, $75.k. x32827 or 538-2152.

'81 Pontiac T-1000, good cond running, x31674 or 486-0610.

'94 Buick Le Sabre, ex cond, 18k mi, $15.5k . 286-5971.

'87 Volvo 240 DL, ex cond, 1 owner, AM/FM/cass, A/C, $5,550. x30874 or 286-6894.

'79 Z-28 factory 4 spd, 3:73 re original, 60k mi, always covered, needs engine, $2.5k obo. x36409 or 467-4027.

'73 MGB, good cond, running when stored, $2.5k obo. x36409 or 467-4027.

'84 Chevrolet Caprice Classic, 4 dr, A/C, power, runs good, $1.2k. x39185 or 332-3069.

'88 Mazda 626 LX, loaded, moon roof, 5 spd, white ext, burgundy interior, ex cond, 99k mi, $4,750. Jeff, x41947 or 286-6785.

'93 Nissan 240SX Sport Coupe, marron, ex cond, new tires/brakes, auto, A/C, AM/FM/cass, ext warranty, 39k mi, $12.9. Tammy, x38853 or 488-5352.

Cycles

'94 Suzuki 50SS, low hrs, $700. 328-6663.

Boats & Planes

'95 Titan Tornado 2 PL Hirth, 10 hrs, 2706 65Hp engine, warp drive prop, max pak instrument package, UHF radio, GPS, elec flaps, strobe/position lights, elec start. 334-1119.

Sunfish sailboat on Lake Placid 1 block off I-10 at Seguin, good cond, $300. x35180 or 326-3706.

Audiovisual & Computers

Fox Pro V 2.5 for Windows, $40; Wildcat BBS V 4.0 for DOS, $35; Winfax Pro V 4.0, $35; IBM Proprinter, $40. 332-4466.

386 SX, 2 MB, VGA, mouse, software included, manuals, modem, color printer, $600 obo. 488-6581.

386 SX 16, 2 MB RAM, 40 MB HD, 1.44 FD, SVGA adaptor, kybd, mouse, $185. 332-4466.

JVC 5 disc CD player, $80. Leonard, 333-5576.

4 MBytes of RAM, 4, 1 MB, 30 pin simms, $140. x33434 or 333-5266.

Stereo system, receiver, dual cassette deck, CD player & speakers, $600 obo; non-working VCR, $50. x33117.

Epson stylus 800 printer needs minor repair, $100 obo. Linda, x48802 or 480-3187.

Nac software, Quiken 3 & 4; Spyglass Format; Prograph; Lightspeed Pascal; SuperCard; Wild Things; Vette; Mathematica textbook, best offer. x38887 or 280-8610.

CompuAdd 386 computer w/1.2 MB 5.25 drive, 40 MB HD, 14' Samsung CVGA monitor, mouse, misc SW, $600 obo. Richard, x31488.

Musical Instruments

Cassio CT-615 musical electronic keyboard, stand, stool, ac adaptor, carrying case, sustain pedal, ex cond, $225. 481-6928.

'65 Wurlitzer Spinet piano, black, leather bench, 37", ex cond, $800. x37246 or 335-5401.

Roland JV-30 Synthesizer, 5 octave keyboard, w/stand, cover, SKB hardcase, full size sustain pedal, volume pedal, $830 obo. Todd, x37694 or 335-0174.

Young Chang piano, $1.9k. 947-9755.

Photography

Minolta Maxima 35 mm camera, 70-200mm zoom lens, auto focus, auto rewind, auto advance, flash, $375. Pete, 479-0276.

Pets & Livestock

Free Guinea Pigs, 3, 1.5 yrs, long hair or short, some supplies. 554-7497.

Persian kittens, CFA, beautiful whites, bicolors, pet/breeder/show quality, vet checked, $300 up. 388-1620.

Household

Six cargo style dining room chairs, med pine w/ lt mauve back & seat, $150; oak entertain pier/curio cabinet, 75"Hx24"Wx16.5"D, $100. 482-0482.

Duncanfyfe dining set table w/6 chairs, china cabinet, $1.5k; ivory man made leather sofa/ loveseat, $375 obo. 996-0152.

Sharp 650w microwave w/cart $75; contemp gray sofa, $100: 2 fabric deco chairs, $25 ea; tan naugahyde chair w/stool, $30; brn wood bedroom set, 9 dwr dresser w/mirror, 5 dwr chest, 2 dwr nitestand, $175; desk 55" w/7 dwrs, $50; wht dinette table, $25; toaster oven, $10; blue floor lamp, $8; designer rug, peach/brn/green, $50; misc art deco & tropical artwork, $1 - $25. x31370 or 662-2977.

Loveseat, brown velour print, good cond, 62"x36"x25", $100. x40250.

Black vinyl recliner, ex cond, $75 obo. x38151 or 532-1100.

Maytag W/D, large capacity, 2 spd, $650. x32686.

27" color stereo TV, honey oak cabinet, $300; stereo system, Technics receiver, BSR turntable, dual cassette, CD player in glass front oak cabinet w36" wood encased speakers, $600 firm. Diane, x30401 or 332-5417.

Waterbed, $75; RCA color console, 25". $75. David, x30964 or 538-1791.

Upright frost-free freezer, Sears, 19.6 cu ft, ex cond, $150. 482-7643.

Recliner, brown corduroy, very comfy, $40 obo. Susan, x33523 or 334-5890.

Sectional couch, great cond, $450 obo. x33117.

Wood frame daybed w/trundle bed, both ex cond, mattress not included, $100. Richard, x31488 or 286-6915.

Hoover upright vacuum cleaner, ex cond, $45. 486-8266.

Super single waterbed w/headboard, $75; roll top desk, ex cond, $800; lg capacity microwave, $40 obo; queen size bed-n-frame, $85. 332-2453 or 212-1458.

Pastel, loose back pillow sofa w/stainguard, $275. 554-5492.

Whirlpool refrigerator, almond, 17 cu ft, seperate top freezer, works well, $150. Jim, x34318.

Bookcase/entertainment center, $150; green color chair, $30. Debbie, x33077 or 480-0229.

Wanted

Want personnel to join VPSI vanpool departing Meyerland Park & Ride at 7:05 am for JSC. Van pool consist of on-site personnel working 8 am/4:30 pm shift. Don Pipkins, x35346.

Want roommate to share 3-2-2 house, non-smoking, no pets, female preferred, $300/mo + 1.2 utile. 484-8640.

Want roommate to share an apt or house, prefer female, non-smoking, quiet individual. x34592 or 996-7020.

Want In-line skates, w/or without pads & gloves, women's size 9 or 9.5, Bauer, California Pro or similar brand, good cond. 866-4083.

Want STS-69 & STS-74 payload/experiment cloth patches/decals. Andrew, x34312 or 280-0647.

Want Delta or Craftsman 10" hvy duty table saw. George Nixon, 488-5967.

Want to buy old Honda Accord, '78 - '82, running or not. 867-8820.

Want Wilton cake decorating supplies, pans, tips, equipment, good cond. Rose, x30331.

Want Nintendo games, low cost. 488-5962.

Want canoe, Jon boat, small outboard motor; bicycles, men's/ladies single spd preferred. Gene, x38020 or 334-1505.

Want Soloflex w/leg attach. Stephanie, x39202 or 949-5671.

Want ultimate frisbee players, no experience necessary, we will teach you, Mon & Wed, Clear Lake Park, 7:30 p.m. Dan, 282-5239 or 486-1102.

Miscellaneous

Coleman gas comp lanterns, $15; $25; Coleman gas camping heater, $25. Gary, x40276 or 488-1043.

Apollo 11 commemorative books published '69 by Gulf Oil, mint condition, $20 each. Gary, x40276 or 488-1043.

Four Cotton Bowl tickets plus parking pass to CO vs Oregon, Jan 1, '96, 50 yd line, upper deck, $250. David, x34392 or 992-5862.

Racing bike, Centurion Lemans RS, 12 spd Sugino Shifter, Dia-Compe Brakes, Araya tires, electronics odometer, $150. x35180 or 326-3706.

Trailer, 3/4 ton Dodge PU bed w/hitch, chains, lights & crank lift, very sturdy, good 16.5" tires, $200 obo; firewood, mixed, mostly Chinese Tallow & Hackberry, $75 per cord, delivered & stacked. 282-1727.

Montgomery Wards commercial riding lawn mower, 11Hp, 33" cut, $350. 328-6663.

Nimble womans 3 spd bike, $15; Century & white hawk 10 spd bikes, $25 ea; gas edger lawn boy, $40 & power prince, $50; charcoal grills, 2 dwr file cabinet, $5; sink & faucet & garbage disposal. x31883.

Sequoia Nordictrack w/video, performance track, pulsetrack monitor, book holder, ex cond, $375. x31033 or 286-9632.

Nissan pickup tailgate, new, black, $100; bumper rear w/ball, $75. 271-7011.

Super Ninetendo entertainment center, $60; self propelled mower/mulcher, Sears, 5.2 Hp, $150. x32686.

'88 Falcon mini tilt utility trailer, 1700 lbs cap, 4' x 8' bed, ex cond, $365. Steve, x39439 or 480-7203.

Nokia PT615 cellular phone w/leather case & lighter adapter, $20; men's Rieckle ski boots, sz 10, $35; men's ski bib, $10; ping pong table, $55; Life Gear stepper/climber, ex cond, $125; DP Fit for Life home gym, $125; Fisher Price nighttime bottle warmer, $15. x37130.

Kar-Kaddy II car trailer, ex cond, $500. 538-1873.

Water Color's original's & prints by Ron woods. 332-7445.

Rollerblade Lightning inline skates & pads, men's sz 8, good cond, $80 obo. Dave, x33845 or 996-5075.

President & First Lady Gold Charter membership, $550; ladies, 28" Blue Fox jacket w/white fox tuxedo collar & yoke trim, $350. x39393 or 997-2280.

Flex-Force weight training equipment w/VKR & free action stepper, $50.

Snow chains, 14"-15" tires, $70. 332-2453 or 212-1458.

Set of 4 15" x 8" aluminum wheels for Ford truck, "Hurricane" design wheels w/worn GT's, $300 obo. 244-1974 or 286-0432.

Ladies bicycle, single speed, Huffy, ex cond, %50. 482-7643.

Stationary exercise bike w/timer, odometer and adjustable resistance, $15. John, 244-2022 or 992-8177.

Oak firewood, $100 cord, $60 1/2 cord, $35 1/4 cord, cut & stacked. 947-9755.

Assorted pieces of lumber, $1 ea; desk, good cond, $25. LInda, x48802 or 480-3187.

Utility trailer, 5' x 14' w/2' sides, drop tailgate/ramp, single axle, $500. Dave, x39313 or 324-2840.

Vacation to Ft Lauderdale/cruise to Bahamas, 7 days/6 nights for 2, $398 pkg covers hotels & cruise. x33574 or 486-8963.

Winchester pre-64 model 70 Target rifle, 30.06, $1,250; two Winchester model 75T Target rifles, $350 ea or %600 both. Glenn, x30454 or 532-3013.

London Fog leather Bomber jacket, sz large, brown, ex cond, $80. James, x40045.

Nordic Track exerciser w/heart monitor, ex cond, $225. 488-6216.

Power wheels Jeep, Safari, $125; Marcy weight bench w/leg extension, $75. Jeff, x35063 or 992-1894.

Mens ski boots, Nordica Synthetic, sz 11.5, ex cond, $150 obo; Rieckle, sz 10.5, rear entry, $40 obo; 2 mens suits, all wool, sz 42 jackets, ex cond, $150 ea obo. Paul, x41063 or 338-4535.

Two mini 20" BMX bikes, $175 ea or $300 both. 328-6663.

Aquarium, 55 gal high with stand, top, light, gravel, under gravel filter & 2 power filters, $150 all. Jim, 991-0533.

Boat w/trolling motor/battery, $300; tandem bicycle, $250; wooden picnic table, $50. 947-9755.

Exercise cycle, $30. x31370 or 662-2977.

Mission Unforgettable

Public rides NASA Shuttle Web to get virtual experience, ask questions of astronauts on orbit

By Bridget Mintz Testa

Until recently, the primary source of space news for most people was the media. But now, with a computer, access to the Internet, and an interface (browser) for the World Wide Web, anybody can go online with the space shuttle's crew... in real time.

And that's exactly what's happened since the NASA Shuttle Web page (http://shuttle.nasa.gov/) was built earlier this year. Millions of "hits"—connections—have been measured, translating into hundreds of thousands of curious individuals from up to 69 different countries. People can watch about 60 telemetry parameters change before their eyes during launch, orbit and landing. They can download video clips and still images and listen to snippets of air-to-ground conversations.

A very lucky few—who've asked interesting questions—get an even bigger thrill when the crew answers them. "The crew calls out the questioner by name," says Kelly Humphries, the JSC Public Affairs Office's team lead for information services and the NASA Shuttle Web. "How much more a part of the mission can you be than to hear your name on the air-to-ground?" The space shuttle page's STS-71 (http://shuttle.nasa.gov/sts-71/) debut in June was wildly successful. For this first Phase 1 shuttle-Mir mission, the page netted some 3 million hits. But this wasn't the first amazing success NASA had with Web pages. The shuttle page had a predecessor which had shown just what the Web could do to help demonstrate NASA's position as a cutting-edge science and engineering agency.

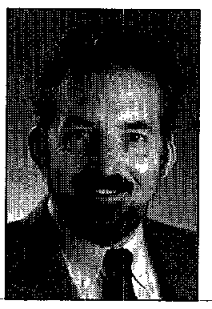
That was Astro-2's Web page for STS-67 (http://liftoff.msfc.nasa.gov/archive/astro2/welcome.html). The 16-day March mission flew an ultraviolet observatory in *Endeavour*'s payload bay... and the Astro-2 Web page allowed some 200,000 people from 59 different countries to experience the mission practically first-hand via some 2.6 million hits. Becky Bray, a payload activity planner in the Marshall Space Flight Center's Mission Operations Lab, was part of the team that built the Astro-2 page. Bray had been introduced to the Internet by MSFC systems engineer Patrick Meyer. She started generating information about the Net for the Astro-2 team.

"There was a synergistic effect between (the operations team) and the scientists which led to the question: wouldn't this be neat for the public?" she says.

So a team comprised of Bray, Meyer, John Piner and lab director Harvey Golden sat down at a table Dec. 1 to brainstorm the page's design.

"We asked ourselves what we'd enjoy finding out about a mission if we were part of the general public," Bray says. "We came up with mission planning, operations, the crew... we wanted to show the human side of NASA along with the engineering."

The brainstorming effort resulted in a page full of firsts: pictures from the mission, opportunities to ask questions of the crew and mission scientists, video clips, a real-time shuttle tracking chart, a calculator for orbital velocity and period, virtual reality models built for Astro-2 and a real-time Astro-2 operations page featuring stellar data like right ascension, declination and object type. People wrote to offer money to NASA ("I gave them my bank account number," Bray jokes). They wanted to buy astronaut action figures. And they complained—bitterly—about the media's lack of coverage of the mission. "Headquarters got very interested," Bray says.



Vincent

'The mission page gives NASA a continuing high profile on the World Wide Web that is entirely consistent with what NASA ought to be doing on the Net. NASA does so much that's inherently interesting—our challenge is to convey that through the home page.'

—Geoff Vincent, NASA Headquarters
Deputy Associate Administrator of Public Affairs

Brian Welch, chief of News and Information at NASA Headquarters, says, "They put together a page that got lots of play on the Web." Netscape, a widely used Web browser, has a "cool site of the day" feature—and on the first or second day of the Astro 2 mission, its home page was selected. "Tens of thousands of people looked at it," Welch says. "It became very popular."

At the time, Headquarters was creating some Web pages, and a shuttle home page was under consideration. This was part of an effort begun in 1993 in which an Internet steering group was formed to make decisions about how Internet technology should be used to further NASA's mission. After Astro-2, the shuttle page was given an OK.

Welch said JSC was chosen to lead the NASA-wide effort for one simple reason. "After we start flying," he said, "most of the data comes from Bldg. 30." The NASA Shuttle Web effort began in April, with the STS-71 deadline just two months away. Humphries assembled a team at JSC including Dan McCoy (of JSC Web page fame), Eric Nielsen (McCoy's successor as shuttle page Webmaster), Stan Johnson (ISD network engineer), Chris Ortiz (ISD programmer), Dave Krenek (ISD Graphics and Publications) and ISD video engineers Kevin Marsh and Dan Willett. Humphries stresses that the effort was center wide and NASA-wide. For example, the first technical problem to be resolved was finding a host computer for the page.

"The Engineering Directorate gave us a Convex," he says. "And then Convex donated additional equipment to make it work." Nielsen agrees. "What's real interesting about this project is that everything was done on a handshake basis between the different directorates (MOD, ISD, Engineering, PAO, and others)," he says. "There are lots of people involved and they don't need any real direction."

At other centers, the same "can-do" cooperative NASA spirit prevailed. At Kennedy Space Center, Jim Dumoulin handled the preflight section of the Web page, which is now called "Countdown." Lewis had a page for its STS-73 payload which was linked from the shuttle page.

"Whenever we have a payload or mission involving another center," Humphries says, "they provide the information. Goddard for Wake Shield and Spartan, Ames for animal enclosures, JPL for planetary probes. Any center with information on the flight has a mechanism to get information on the Web pages."

The Shuttle Web design process was very similar to the Astro-2 process. Nielsen says, "Everyone got in a room with a whiteboard and sketched out the page organization." Four primary sections were decided upon: preflight, launch, orbit, and landing. "The goal," Nielsen says, "was to provide as much up-to-date shuttle information as possible—background (history), daily status reports, movies and real-time data updated every minute."

The initial design for the page was heavily graphical. Krenek, who supervised the graphics design for the page, says, "We had a new kind of art—clickable art—where you can go into different areas of an illustration, click, and go somewhere. Our requirements were for about 10 clickable areas with links. Another requirement was that the clickable areas look three-dimensional. Each page has a mission patch and a NASA logo, which are referred to as the "ruby slippers" links. Clicking the patch always returns you to the shuttle home page; clicking on the "meatball" takes you to NASA Headquarters home page (http://www.nasa.gov/). The team felt that having a link to Headquarters rather than any individual center's page was another way of emphasizing that each shuttle mission is a NASA-wide effort.

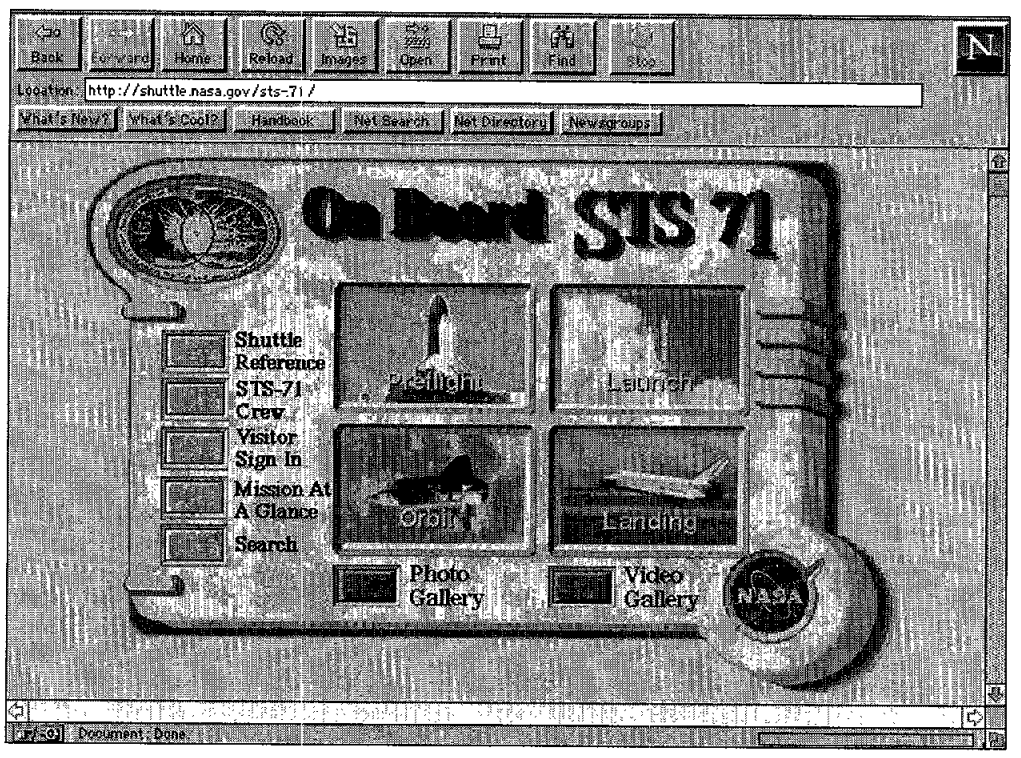
The first shuttle pages sported different three-dimensional graphics on each of 12 pages, but the effort involved in updating the graphics turned out to be immense. So recent shuttle pages feature a new look; the photo-panels for the four sections are still present, but many of the time-consuming graphics have been replaced with reuseable buttons.

"This version is scrollable art," Krenek says. Despite the high-technology aspect of the Web page, Krenek's classic 386 PC serves as the benchmark for the page's graphic design. "The basic Internet user has basic equipment," he says.

One of the most exciting aspects of the page is getting real-time mission data. From Mission Control, data exits Bldg. 30 via a gateway to the Convex C-220 mainframe server in Bldg. 46. From that raw data stream, the Information Sharing Protocol, developed at JSC, identifies and delivers the list of parameters for the Web page. Chris Ortiz handled the programming required to deliver the 60-some telemetry parameters to the shuttle page and automatically rewrite it.

The intensity of the "you-are-there" sensation that the public gets from the real-time data, the interactions with the crew, the pictures, movies, status reports and previously unavailable reference documents can be measured by the millions of hits—translating roughly into hundreds of thousands of people—who have "touched" the shuttle mission pages since STS-71.

Geoff Vincent, Headquarters deputy associate administrator of Public Affairs, says, "The mission page gives NASA a continuing high profile on the World Wide Web that is entirely consistent with what NASA ought to be doing on the Net. That is, as a cutting-edge science and engineering agency, people expect NASA to have a strong, exciting presence on the Web. NASA does so much that's inherently interesting—our challenge is to convey that through the home page." ❑



Top: The "new look" of the NASA Shuttle Web, which debuted on STS-73, features a dark background; a header graphic that is slightly different for each of the four major areas Countdown, Launch, Orbit, and Landing; and clickable buttons that are stored in the visitor's computer and reused, eliminating the need for that user to download the buttons each time a new page is accessed. Above: The original NASA Shuttle Web, which debuted on STS-71, used a process called "image mapping" to make a single, large graphic clickable. By clicking on a different area of the graphic, visitors were transported to different sections of the Web site.

Two teams share STS-73 plaque hanging honors

Jimmy Spivey, lead of the Thermal Assessment Team, and Henry Allen, lead for Ground Control, shared the honors of hanging the STS-73 plaque in Mission Control.

The Thermal Assessment Team was recognized for its work on the orbiter thermal conditions. The GC team was praised for its work on Ground To Air TV, Ku Communications Adapter and High-Pac Digital Television Demonstration in the Consolidate Control Center.

Flight Activities Office hangs STS-74 plaque

The Flight Activities Office team led by Gail Schneider hung the plaque in Mission Control for the STS-74 mission. Schneider with her team mates, Nancy Poppel and Steve Remco, were chosen to hang the plaque as a reward for their outstanding leadership in putting together the flight plan that enabled the flight to be implemented as smoothly as it was and due to a late launch slip, the team rewrote the flight plan within the last two weeks prior to flight and managed to get the data on board.

JSC People

Orbiter Docking System team wins design award

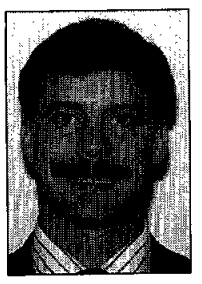
John McManamen, chief engineer of the orbiter docking system in the Structures and Mechanics Division recently accepted the 1996 Design and Engineering award from Popular Mechanics for the orbiter docking system team. The Orbiter Docking System has become a permanent part of *Atlantis* and was used to successfully dock with the Russian Mir Space Station on both STS-71 and STS-74.

"This was a team effort that involved a number of Engineering Directorate, Rockwell in Downey and of course the Russian personnel." MacManamen said. "We all deserve this award because of the technical and schedule challenges. It is really great to be a part of the team that takes the space shuttle program into the International Space Station era."

Spivey

Allen

Schneider



McManamen

MacManamen, along with Frank Alanis, the avionics subsystem manager in the Power and Propulsion Division; Bruce Brandt, Siamak Ghofranian and Alex Murashko of Rockwell; and Vladimir Syromiatnikov, chief engineer of the RSA Energia, accepted the award Oct. 12 at a banquet on the Queen

Roundup goes on-line this week

JSC's weekly Space News Roundup goes on-line this week in an effort to provide more widespread distribution of the official NASA publication.

On- and off-site JSC federal and contractor employees may access the electronic version of the Roundup at the following World Wide Web address: http://www.jsc.nasa.gov/pao/roundup/weekly

The on-line Roundup takes advantage of a portable document file, or "PDF," format and requires the use of a freely available PDF viewer as a helper application complementing World Wide Web browsers such as Mosaic and Netscape. Use of this format allows the Roundup to be viewed exactly as it is presented in print, complete with layout, text, photographs and headlines. Because of memory requirements and font availability, some computers may substitute type styles for those normally used in the Roundup.

Development of the on-line Roundup has been a collaborative effort of the Public Affairs Office's Education and Information Services Branch and the Information Systems Directorate's Internet Services Group.

"In recent years, tightening budgets have reduced the Roundup's circulation, virtually curtailing distribution to off-site contractors and other centers," said JSC Acting Public Affairs Director Jeff Carr. "We hope this innovation will improve the dissemination of information about JSC's programs and activities to our off-site teammates."

The Daily Cyber Space Roundup will continue to be published at the address: http://www.jsc.nasa.gov/pao/roundup/

JSC Photo by Benny Benavides

Employees in the Office of Public Affairs wrap more presents for their adopted families. From left are, Carolyn Fisher and Barbara Tamaro of Hernandez Engineering, Bunny Dean of the Education and Information Services Branch and Gloria Vale, Tammy Porterfield and Leah Elliott of Hernandez Engineering.

'Tis the season

Carolyn Fisher of Hernandez Engineering knows how generous her co-workers can be.

In early November, she asked her fellow Public Affairs Office workers if they would be interested in adopting a family for Christmas. The response was tremendous.

"Gloria Vale and I talked about adopting a family for Christmas in October," Fisher said. "We asked a few employees in early November if they would like to contribute to the effort. I was really surprised at the response."

PAO workers who were not asked to contribute voluntarily approached Fisher and Vale, also of Hernandez, and asked to be included in the effort.

"We ended up adopting two families from the Secret Santa Program," Fisher said.

The effort has netted a generous outpouring for the two families. Each child will receive eight gifts or more of presents ranging from toys to warm clothing for the winter and stockings filled with goodies. Each family will receive a complete Christmas dinner along with some other essential food items to add to their pantries.

"We are sure other offices are adopting families or donating their time towards the needy this holiday season," said Human Resources Director Harvey Hartman. "The center, via the Space News Roundup, would like to recognize these employees for their generosity."

If your office is sponsoring a special Christmas for the needy call Karen Schmidt at x38784 by Dec. 22 to arrange for a photo and details to be published in and upcoming edition of the Roundup.

American Express cash card program near lift-off

The American Express Charge Card Cash Advance Program is scheduled for implementation beginning the week of Jan. 8.

In January, AMEX will mail each cardholder a personal identification number that will allow each JSC traveler to independently access selected ATMs for cash advance purposes. Please remember the cash advance program is for business purposes only.

For the traveler's convenience, AMEX also will include a brochure to help identify all ATM and AMEX office locations where the cards can be used. JSC locations are Bldgs. 3 and 11 and all three branches of the JSC Credit Union.

During the week of Jan. 8, JSC AMEX policies and procedures will be distributed to each civil servant. Information sessions for the new AMEX Charge Card Cash Advance Program are scheduled to assist in further understanding of the program. Administrative officers and travel coordinators, as well as all interested personnel, are encouraged to attend these meetings. The information sessions will be held in Bldg. T-585, Room 113. Meetings are set for 1-2 p.m. Jan. 9; 10-11 a.m. and 1-2 p.m. Jan. 10; and 10-11 a.m. Jan. 11.

Employees who do not have cards and travel frequently may sign up by contacting their directorate's administration officer or travel coordinator. New card holders who filled out applications during the November sign-up campaign will receive their PIN numbers a few weeks after the arrival of their new cards. Applications are available from JSC's Travel Office. For more information call Nancy Porter at x34011.

Cafeterias host children's lunch

The JSC cafeterias' staffs invite employees to bring their children to lunch next week.

Employees' children and grandchildren under 12 will be treated to a half price lunch from 11 a.m.-2 p.m. Monday-Wednesday. Santa will be on hand to take last minute requests from these special JSC guests.

For additional information call the Exchange Manager at x38970.

'Toys for Tots' program under way

The "Toys for Tots" program is under way at JSC and toys are being collected in the Bldg. 3 cafeteria.

The program, sponsored by the U.S. Marines, kicked-off Wednesday during an open house hosted by Acting JSC Director George Abbey. Abbey and Gen. John R. Dailey, NASA acting deputy administrator, tossed in the first toys to benefit needy children in the Houston area.

The "Toys for Tots" program has been sponsored by the Marines since 1947. The program began in Los Angeles and has grown to include all 191 Marine Corps. reserve centers across the U.S. Toys collected in the Houston area are distributed to Salvation Army warehouses. Needy families call a hotline to determine eligibility and if qualified are given locations and a date to pick up toys.

Unwrapped new toys will continue to be collected in the Bldg. 3 cafeteria until Dec. 19.

Galileo returns data to Earth, begins two year mission to study Jupiter

NASA's Galileo spacecraft, now in orbit around the planet Jupiter, began the first scheduled return of data Sunday from its companion atmospheric probe that parachuted into the Jovian atmosphere Dec. 7.

Galileo scientists at the Jet Propulsion Laboratory spent the day Sunday checking this first batch of data to assess the quality of the information collected by the probe, said Galileo Project Scientist Torrence Johnson.

"We are all absolutely ecstatic that our tremendously ambitious, first-ever penetration of an outer planet atmosphere has been so wonderfully successful," said Bill O'Neil, Galileo Project Manager at the Jet Propulsion Laboratory. "It's especially gratifying because so many have worked so hard for nearly two decades to get this first true taste of Jupiter's atmosphere."

The probe data is the first-ever direct measurement of the giant planet's atmosphere and should reveal details of Jupiter's composition, climate and circulation. Forty minutes of data collected by the probe stored in the orbiter's onboard computer memory was radioed to Earth over four days and presented to Galileo scientists for analysis. In early February, the full collection of probe data stored on Galileo's tape recorder, up to 75 minutes' worth, will be played back to receivers on Earth.

Meanwhile, the Galileo orbiter continues to perform perfectly in orbit around Jupiter, O'Neil said. Given the spacecraft's precise targeting, he said he expects no "orbit trim" adjustments will be required to alter Galileo's orbital path prior to the so-called perijove raise maneuver, the third and last burn of the spacecraft's 400-Newton main engine scheduled for March 1996. That long-planned maneuver is designed to lift Galileo's orbit out of the high-radiation environment of Jupiter's charged-particle belts which could damage the spacecraft's electronics.

Budget outcome unpredictable

(Continued from page 1)

Clinton and Vice President Gore corrected those who used the term "non-essential" to describe furloughed workers.

"We are proud of the people who work for the federal government," they wrote. "Any Fortune 100 company would be lucky to have such a work force. Your work makes all Americans more safe, free and prosperous.... Calling furloughed workers non-essential is deeply offensive and just plain wrong. The law forced us to furlough 800,000 workers who jobs were not of an emergency nature. The law says nothing about 'essential.'"

Although Congress chose to pay furloughed employees retroactively the last time and on previous occasions, there is no way to predict what it will choose to do this time, Hartman said.

Hartman encouraged employees to follow news media reports on the status of NASA's budget legislation.

Employees can get the latest details by calling the Employee Information Service at 483-6765.

In addition, before close of business Friday, all employees are asked to provide their supervisors with a telephone number or other means by which they can be reached.

Space News Roundup

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

The Roundup office is located in Bldg. 2, Rm. 181. The mail code is AP2. The main Roundup telephone number is x38648 and the fax number is x45165.

Editor .....Kelly Humphries
Associate Editor .....Karen Schmidt

Space limits film growth barriers

(Continued from page 1)

thin films in a vacuum environment, is one method of generating such advanced materials.

A prime barrier to improving epitaxial films is the limit on the quality of the vacuum that can be generated in an industrial growth chamber. To improve the material, the vacuum in which it is grown must be improved. The vacuum of space can make this improvement possible.

Epitaxial thin film growth is an approach to generating atomically ordered thin films of semiconductor oxides and metals with a reduced number of defects through the growth of material on a crystalline substrate in a vacuum. In epitaxy, a prepared surface, or substrate, is exposed in a vacuum to atomic or molecular beams of elements such as aluminum, arsenic, gallium or indium. The substrate acts as an atomic pattern, or template, upon which the atoms form crystalline thin films.

The atoms grow in layers which follow the atomic structure pattern of the substrate. A thin film of new materials then grows on top of the substrate in an atom-by-atom, atomic-layer-by-atomic-layer manner to form a "wafer" with an ultra-high purity.

NASA-JSC