



Second time around

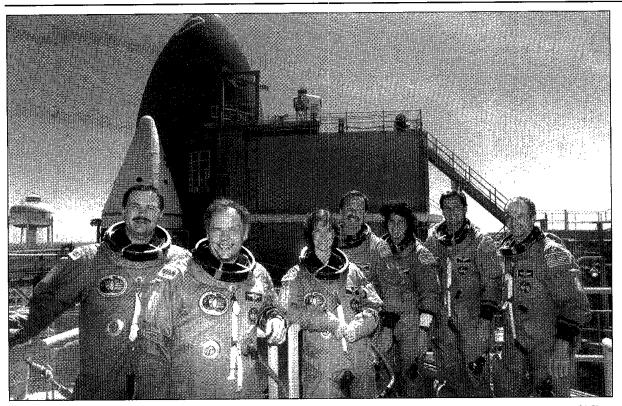
STS-71 will mark the second time Americans have docked with their Russian counterparts. Story on Page 3.



Rocket mania

Employees throughout the center show their support for their hometown heros. Photos on Page 4.

Space News Roundup



The STS-71 crew took a break during the Terminal Countdown Demonstration Test at Kennedy Space Center. Atlantis is schedule to launch later this month and will be the first shuttle to dock with the Russian Mir Space Station. From left are, Mir 19 Flight Engineer Nikolai Budarin, Mir 19 Commander Anatoly Solovyev, Mission Specialist Bonnie Dunbar, Commander "Hoot" Gibson, Mission Specialists Ellen Baker and Greg Harbaugh and Pilot Charlie Precourt.

Mir ready to receive Atlantis

As the week drew to a close, NASA and Russian-officials considered options for launch dates as the liftoff of Atlantis neared for STS-71, the first flight to linkup a 100-ton shuttle with the 123-ton Mir Space Station.

The final launch date was dependent on the completion work on Mir to check out a sluggish solar array on the Kvant-2 module and the possible inspection of a stuck solar array on the new Spektr science module.

Russian officials indicated that the stuck tail array on Spektr would likely have no impact on Atlantis' docking and could be fixed after STS-71. While NASA and Russian officials edged closer to the comple-

ATLANTIS

tion of work to prepare Atlantis and Mir, engineers at Kennedy Space Center repaired the external fuel tank of Discovery in preparation for its launch on STS-70.

Repairs were made to more than 150 holes in the tank's insulation which were made by woodpeckers at Launch Pad 39-B at KSC. Discovery was rolled back to the Vehicle Assembly Building last week, where technicians could gain access to the most critical areas of the tank damaged by the woodpeckers. After the tank repairs were completed, the

shuttle was hauled back out to its launch pad once again.

GAO reports space station on schedule

An annual report from the General Accounting Office reports the International Space Station is on track and under budget.

"The GAO's annual audit of the International Space Station program proves, once again, that the program is on schedule and under budget," said NASA Administrator Daniel S. Goldin. "The GAO has validated our cost estimates for the design, development, on-orbit assembly and operations of the International Space Station."

GAO reports that the estimate to design and build the station has remained constant at \$17.4 billion, and the estimate for 10 years of operations is still \$13 billion.

While the GAO and NASA agree on these figures, the GAO makes other assertions with which NASA does not concur. The report implies that the shuttle program will have difficulty meeting the station assembly schedule.

"I have full confidence that the shuttle program-can-meet the space station's launch requirements on time and within budget," Goldin responded. "The space station is not a paper program anymore. We are building it. We have completed over 48,000 pounds of hardware to date.'

GAO's space station life cycle cost estimate of \$93.9 billion includes \$50.5 billion for shuttle transportation costs. NASA would still require funding for the shuttle if the station were canceled. Furthermore, over 50 percent of the funding for research conducted under the life and microgravity sciences and applications program is included in the station budget. Prior costs for other station designs and civil service salaries also are included in the GAO estimate.

"In this time of austere budgets, we must be very careful how we characterize NASÁ's funding," Goldin said. "These figures are not new. They are based on the average cost of a shuttle flight. However, to suggest that these funds would be saved if station were terminated is incorrect. NASA is firmly committed to human exploration of space, and we would still fly the space shuttle if the space station program were canceled.'

The GAO report did mention that the station program is under budget and on schedule. Goldin stressed that "the program has made a year of solid progress since their last report." Some of the program's accomplishments over the past year include, completing every major milestone on time; signing the Boeing prime contract for \$5.63 billion, about \$600 million less than originally estimated; building over 48,000 pounds of hardware to date, with over 75,000 to be completed by the end of 1995; signing the FGB (flight cargo module) protocol and successfully completing the FGB critical design review; flying a successful rendezvous between the shuttle and Mir and launching Astronaut Norm Thagard on his stay

Goldin stresses NASA is America's future

NASA Administrator Daniel S. Goldin told agency employees last week that despite a shrinking budget, the agency must make its programs for transferring new technology into the community even more effective and called JSC an important player in that effort.

In a live question and answer session on NASA Television, Goldin expressed enthusiasm at the research institutes now being formed to bring industry, government and academia together for technology transfer.

"We are looking to NASA Johnson in forming this biomedical institute," he said, "then ultimately having an astrobiology institute when we include some of the planetary work. The people of Texas have been very, very positive. We would like to see this institute form the basis for the generation of thousands of jobs,

the start-up of a whole set of new industries."

Response from universities and industry has been positive, he said, and team members will be identified and working groups formed by the end of the summer.

The administrator also voiced hope that such institutes will provide new jobs for people who have been dislocated in recent NASA downsizing efforts.

While painful in some areas, the downsizing efforts have paid off as NASA has taken great strides in prioritizing its budget and realizing efficiencies when Americans are demanding a smaller, more effective government.

"My first message is, we are there," Goldin said. "My second message is, I respectfully agree to disagree with the next level (of cuts proposed in Congress) and enough is

enough. I know of no other government agency, I know of no other industry that has downsized so fast."

Over the five year planning period, NASA has turned back 36 percent of the budget, reducing the deficit by roughly 40 billion dollars. while at the same time increasing productivity more than 40 percent. He noted that the General Accounting Office came out with a report in 1992 that showed average cost growth in the top programs was 75 percent. He credited this to the way NASA was used to the last two years, NASA's overrun was a negative 5.5 percent. Goldin credits the workforce in reducing cost while starting new programs.

"It's stunning what you have done," Goldin said. "NASA is now not just at the head of the

technological affluence in the world, you are demonstrating an ability to be the best managers and executives in the world and you are setting a standard for the rest of government and industry.'

Goldin went on to explain that the nation has an obligation to the future generation to provide a space and aeronautics program. He understands the why and what Congress faces today, but it must understand how crucial NASA is to the future of America.

"We have separated our functions, we have minated nower redundant activities, and we got ourselves focused," he said.

Although more than 55,000 people with jobs in government and industry will be affected, Goldin said NASA has stepped up to the

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Mir crew prepares for sixth space walk

relocated the Mir Space Station's Kristall module into its final position last weekend, completing the movements required for STS-71

Kristall was moved from the minus-Z axis to the minus-X axis Saturday. The relocation went without any problems. The station is now in the configuration it will be in when Atlantis docks to it later this month.

Crew members and flight controllers then turned their attention to drawing up plans for another space walk by Mir 18 Commander, Vladimir Dezhurov, and Flight Engineer, Gennady Strekalov. The extravehicular activity will be the sixth in the past two months.

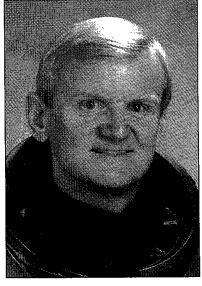
Dezhurov and Strekalov will take

Russian cosmonauts successfully a look at a solar array on the Kvant-2 module that is not tracking the sun properly and inspect the Z-axis seal in preparation to moving the Kristall back to that port after STS-71.

The flight control team has decided not to ask the crew members to attempt to unjam a solar array on the Spektr module to give engineers more time to develop techniques. The array did not deploy as expected, and controllers believe the mechanism used to release the array did not work as expected. Last week the Mir 18 crew tried unsuccessfully to extend the panel by sending pulses of power to the motor and by firing Mir's thrusters. The array status is not expected to impact STS-71.

Science operations aboard Mir have continued in spite of the heightened activity of module movements and space walks. Data collection has been constant throughout the mission. Astronaut Norm Thagard is collecting samples of the air, water and various surfaces to learn about the Mir microbiology environment.

Saturday, Thagard activated the USA components inside the Spektr module including the thermal electric holding facility and freezer. Both are freezers to hold biological samples. Over the next few weeks, he will activate the remaining hardware on Spektr and ensure it is functioning properly, catalog data and prepare the samples for the return trip home.



John Casper

Crew named for '96 flight

By Kyle Herring

John Casper will command a nine-day mission aboard Endeavour next spring to deploy and retrieve a science satellite and conduct experiments in a pressurized module in the payload bay.

Joining Casper will be Pilot Curtis Brown, and Mission Specialists Dan Bursch, Mario Runco, Canadian Space Agency astronaut Marc Garneau, and Andrew Thomas.

STS-77, scheduled for launch in the spring of 1996, will carry the Spacehab module, which nearly triples the amount of middeck locker

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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.

Loving Feelings Concert: 7 p.m. Sept. 30 at the Summit. Tickets cost \$32.50. Schlitterbahn: Tickets cost \$17.80 for adults and \$15.30 for children 3-11.

Sea World: Tickets cost \$23.50 for adults and \$16.25 for children 3 -11.

Six Flags: Tickets cost \$23.70 for a one day pass, \$31.75 for two day pass and \$20.30 supersaver not valid on weekends in June, July, and August.

Splashtown: Tickets cost \$11.05.

Moody Gardens: Discount tickets for two of three different attractions: \$9.50

Space Center Houston: Discount tickets, adult, \$8.75; child (3-11), \$7.10. Metro tickets: Passes, books and single tickets available.

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.

Upcoming Events: Country and Western Dinner/Dance July 29. Tickets cost \$12. Tickets go on sale July 19 for the Ringling Bros. Circus July 29 at the Summit. Tickets Cost \$10. Tickets go on sale July 7 for the Justin World Bullriding Championship Aug. 18-20 in the Summit. Tickets cost \$10-\$18.

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.

Weight safety: Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. June 28 and July 12. Pre-registration is required. Cost is \$5.

Defensive driving: Course is offered from 8:15 a.m.-3 p.m. Saturday. Next class

is July 8. Cost is \$19. **Exercise**: Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays.

Aerobics: High/low impact class meets from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32.

Aikido: Martial arts class meets from 5-7 p.m. Tuesdays and Wednesdays. 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.

Sailing class: NASA Sailing Club will hold classes from 9 a.m.-noon Saturdays in June. For more information call Richard Hoover at 996-7716.

Golf lessons: Lessons will begin June 24 or 27. Cost is \$100 for a six week

Softball tournament: Men's open tournament is June 24 and 25. Cost is \$100. Entry deadline is June 21.

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.

Dates & Data

Today

Juneteenth picnic: The NASA/ JSC Black Cultural Association will host its annual Juneteenth Scholarship Picnic from 11 a.m.-7 p.m. June 16 at the Gilruth Center West Pavilion. For more information call Mark Falls at x38627 or Jackie Wilson at x30278.

Cafeteria menu — Special: meat sauce and spaghetti. Total Health: baked potato. Entrees: rainbow trout, liver and onions, beef cannelloni, ham steak, fried cod fish, Reuben sandwich. Soup: seafood gumbo. Vegetables: steamed broccoli, breaded okra, cut corn, blackeyed peas.

Monday

Cafeteria menu — Special: turkey and dressing. Total Health: herb flavored steamed pollock. Entrees: breaded veal cutlet, chicken fajitas, steamed pollock, beef, French dip sandwich. Soup: beef and barley. Vegetables: Brussels sprouts, mixed vegetables, egg plant casserole, winter blend vegetables.

Tuesday

NAT meets: The National Technical Association will meet at 6:30 p.m. June 20 at Texas Southern University School of Technology Rm. 316. For more information call Carrington Stewart at x31404.

Cafeteria menu — Special: pepper steak. Total Health: barbecue chicken. Entrees: baked lasagna, pork chop and fried rice, turkey a la king, baked chicken, fried cod fish, French dip sandwich. Soup: black bean and rice. Vegetables: breaded squash, steamed spinach, baby carrots, navy beans.

Wednesday

Astronomy seminar: The JSC Astronomy Seminar will meet at noon June 21 in Bldg. 31, Rm. 129. A video of Dr. Curtis Michel discussing "Pulsar Theories" will be shown. For more information, call Al

Jackson at 333-7679.

Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. June 21 at House of Prayer Lutheran Church on Bay Area Blvd. For additional information, contact Elaine Trainor, x31034.

Cycle club: The Space City Cycle Club will meet for a 25-mile ride beginning at 6 p.m. June 21 at the University of Houston Clear Lake soccer field. For more information on this ride and weekend rides call Mike Prendergast at x45164.

Scuba club meets: The Lunarfins Scuba Club will meet at 7 p.m. June 21 at Redfish Island establishment on the channel at the end of Bath street under the Kemah-Seabrook bridge, Seabrook side. For more information call Fred Toole x33201.

Cafeteria menu — Special: Mexican dinner. Total Health: steamed pollock. Entrees: broccoli cheese quiche, spare ribs and sauerkraut, steamed fish, Reuben sandwich. Soup: seafood gumbo. Vegetables: Spanish rice, pinto beans, peas, broccoli.

Thursday

AIAA meets: The American Institute of Aeronautics and Astronautics will host a dinner beginning at 5:30 p.m. July 22 at the Gilruth Center. Brock Stone will discuss "Mission Operations: Past, Present and Future." For more information call Tanya Bryant at 31175 or Sarah Follett at 282-3160.

NASACOM meets: The NASA Commodore's User's Group will meet at 7:30 p.m. June 22 at the Clear Lake Park Bldg. For more information call Glenda Souliere at x31764.

Cafeteria menu — Special: hamburger steak with onion gravy. Total Health: baked potato. Entrees: corned beef, cabbage and new potatoes, chicken and dumplings, meat ravioli, French dip sandwich. Soup: broccoli cheese and rice. Vegetables: navy beans, cabbage, cauli-

flower, green beans.

Friday

Cafeteria menu — Special: tuna noodle casserole. Total Health: broiled chicken breast. Entrees: deviled crabs, broiled pollock, liver and onions, broiled chicken with peach half, Reuben sandwich. Soup: seafood gumbo. Vegetables: Italian green beans, cauliflower au gratin, steamed rice, vegetable sticks.

June 27

BAPCO meets: The Bay Area PC Organization will meet at 7:30 p.m. June 27 at League City Bank. For more information call Guy Thibodeaux at 333-5340.

June 29

Radio club meets: The JSC Amateur Radio Club will meet at noon June 29 in Bldg. 16 Rm. 253. For more information call Larry Dietrich at x39198.

NMA meet: The National Management Association will meet at 5 p.m. June 29 at the Gilruth Center. For additional information call Kathy Kaminiski at x38706.

July 4

Independence Day: Most JSC offices will be closed in observance of the Fourth of July holiday.

July 7

American Heritage Day Program: A celebration of JSC employee cultural diversity from 3-8 p.m. July 7 in the courtyard area behind Bldg. 1. Food, music, entertainment and special guests. For more information call Estella Gillette on x30603.

July 8

Star gazing: The JSC Astronomical Society invite the public to view the summer skies through telescopes from dusk-10 p.m. July 8 at Challenger 7 Memorial Park. For more information call Bill Williams at 339-1367.

JSC

<u>Swap Shop</u>

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 deposit box outside Rm. 181 in Bldg. 2. No phone or fax ads accepted.

Property

Sale: Canyon Lake, Village West, 3-2, .25 acre, satellite, gazebo, waterfall, \$130k. 210-899-3447. Sale: Webster condo, 2-2-2CP, FPL, ceiling fans, mini blinds, new dishwasher, refrigerator,

W/D conn, \$39.9k. x47513 or 280-0285. Lease: Webster condo, 2-1, large, clean, balcony, all appliances, FPL, ceiling fans, vaulted ceilings, hi-efficiency A/C, \$510/mo. 486-0315.

Lease: Egret Bay Condo, 1-1+ study, W/D, FPL, all appliances, covered parking, avail July, \$550/mo. 333-5662.

Rent: Winter Park, Co, condo, 2-2, hot tub, heated pool, fully furnished, sleeps 6. 488-4453. Sale: Egret Bay Condo, 2-1-2CP, storage closets, FPL, W/D, all appliances, new carpet/tile, boat launch, \$45k. x41036 or 333-4577.

Rent: Arkansas Cottage on Blue Mountain Lake, huge stone FPL, screened porch overlooking the lake, \$250/wkly, \$50/dly. Corcoran, x33005 or 334-7531.

Rent: Condo, Clear Lake, 2-1-CP, tennis courts, marina, exercise room, 24 hr security, \$650/mo incl utilities. x30246 or 480-5583.

Sale: Bayridge, 3-2-2, split plan, vinyl siding, new garage door & A/C, carpet upgrade, ceramic tile kitchen, patio cover, fenced. Becky, x38521 or 334-3995.

Cars & Trucks.

'91 Corvette, black, black interior, 42k mi, 6 spd, adjustable performance handling pkg, AM/FM/cass Bose stereo, warning system, \$22k obo. Tonu, x30699 or 286-2937.

'80 Celica, 137k mi, good engine, \$500. x38423 or 482-9781.

'89 Nissan PU, A/C, AM/FM/cass, camper shell w/finished bed, new transmission/radiator/water pump/tires/muffler. \$3.5k. 334-1119.

'93 Ford Taurus, charcoal, tinted windows, very clean, 38k, extended warranty, \$10.4k obo. x37113 or 286-3019.
'90 Acura Integra GS, 4 dr, auto, pwr windows,

80k mi, A/C, AM/FM/cass, silver, good tires. Warren, 997-9839. '92 Nissan 240 SX-SE 3 dr, loaded, sunroof,

92 Nissan 240 SX-SE 3 dr, loaded, sunroof, cherry pearl red, 19k mi, garaged, non-smoker, \$13.9k. 282-3943.

'80 Buick Skylark, 85k mi, good cond, excellent

work/school car, \$800. 34391 or 482-7473.

'85 BMW, 4 dr, new paint, great cond, sunroof, all power, \$5.2k. 485-4008.

'86 Lincoln Mark VII LSC, graphite, looks & runs great \$350. 474-7432.

'85 Lincoln Towncar, light color, clean inter, power, A/C, runs great, 95k mi, \$3k. Jim, x38624 or 475-09671.

'90 RX-7 GTO, red, sunroof, great cond, 66k mi, \$9.2k. x36463.

'76 Rockwood Pop-up camping trailer, sleeps 6, mint cond, \$800. David Pitts, 488-3276.

Used tires, 2, size 235-75-R15, std truck size, \$15 ea obo. x32567 or 488-3314. Car-top carrier, used twice. Marilyn, x32116.

Cycles

'94 Yamaha YZF750R, 821-4810.

Men's Specialized mountain bike, 17" w/ Shimano components & wrist grip gear shifts, new \$500, sell \$400. 244-9868 or 480-5906.

Boats & Planes

Sovereign, 24', ex cond, extra jib, depth sounder, head, stove, electric starter johnson PB, recent bottom job, Mike, 383-2787 or 286-1691.

'88 Invader, 210 cuddy cabin, I/O 200 Hp Merc, galvanized trailer, loaded great condition. 997-6141.
Sunfish sailboat complete, \$350; Chrysler OB

starter, 60 to 100 Hp, \$10; Life jackets, \$2 ea. 332-2453.
'75 Sonic low profile boat, 115 Mercury engine,

recently tuned, used in fresh water only, \$2,950. 334-1119.

Windsurfer O'Brien Flite heginner/intermediate

Windsurfer, O'Brien Elite, beginner/intermediate board, includes access. \$375. Brian, 326-5626.

Audiovisual & Computers

MacPerforma 475, 8Mb RAM, 160Mb HD, \$850; MacPerforma 550, 10Mb RAM, 160Mb HD, CD-ROM, \$850; Imagewriter II printer, \$125; SCSI card for IBM Comp computer w/driver, \$100. 280-7432 or 488-4382.

JVC 100 watt amplifier w/JVC tuner, \$94; JVC turntable, \$75; JVC tape deck, \$65; TEAC equalizer, \$75 or all 5 components w/2full sz speakers, \$00; Sony STR-AV310 100 watt audio/video receiver w/remote, \$140. 280-7432 or 488-4382. Citizen printer "CSX-140" w/GSX color option

Citizen printer, "CSX-140" w/GSX color option, \$199. Magdi Yassa, 333-4760 or 486-0788. 386DX40, 4Mb RAM, 120Mb HD, \$450; 486 DX2 66, 8Mb RAM, 420Mb HD, \$800, both have 3.5 & 5.25 FD, SVGA video w/1Mb, .28DP SVGA

monitor & mouse. Charles, x36422 or 280-9650. Emerson 19" color TV w/remote, \$85; Sharp VCR, \$35; Panasonic Senior Partner computer, 2 x 5.25 FD, monochrome monitor, software, manuals, \$75. Scott, x34614 or 334-2278. 286 computer, 1Mb RAM, 40Mb HD, 5.75 FD, monitor, keyboard, \$174. 996-5739.

Mac Plus w/external HD Laser Writer II printer, \$400 obo. Joanne, 282-6992 or 554-6831. Spiderman & X-Men for game gear, \$15/ea;

Ouicken Special Edition for DOS, \$15; Wordperfect Mainstreet CD, \$15; Cosmic Rings Screen Saver, \$5. x37130 or 334-4124. Graphics Card, VESA, IMBM, Diamon Speedstar

Pro, \$75. 338-9338.

Microsoft mouse, \$25; Appx 20 BASF reel-toreel tapes, \$1 ea. Steve, x37626. Apple 2GS, 40Mb HD, modem, 5.25 & 3.5 flop-

py drives & software, \$350, x37145. Large Infinity stereo speakers, need refurbishing, \$20; Mitsubishi stereo receiver, 85 watts per channel, needs repair, \$20; stereo cabinet, \$25.

Mark, 282-8736 or 486-4369. Radio Shack answering machine, digital incoming/outgoing, recording, time/date stamp, \$40. Speier, 333-2263.

Photography

Universal mount 500mm telephoto lens, w/case & k-mount adapter, ex cond, \$65/both. Musgrove, x38356 or 488-3966.

Musical Instruments

Antique full upright piano, beautiful tone, tuned, \$450. Barbara, 480-6771.

Peavey guitar tube amp, 60 watts, 12" speaker, reverb, crunch, dist, clean FTSW, effects loop, \$325. Victor, 282-4625.

Pets & Livestock

Whippet puppies, AKC champion lines, \$250. Eileen, x38456 or 488-4960.

AKC Rottweiler pups, 3 males, 3 females, born 4/27, ready 6/19, \$350. 331-9255.

AKC Shitzu, male, shots, 7 yrs old, obedient, housebroken, no children. 471-9432. Free kittens. 332-1725.

Malaysian Water Monitor, 1 yr captive, 32" long, excellent health & temperament, \$175; Sugar Gliders, cute, fuzzy, fruit eating marsupials, \$450/trio. Brett, 333-6415 or 397-8388.

Household

Big Sur qn sz waterbed, \$60; dinette butcher block style w/4 chairs, \$100; Sony cordless phone w/speaker phone & dual battery sys, \$60; auto coffee maker, \$10. x37130 or 334-4124. Tappan gas built-in oven, upper oven & lower

broiler, black glass & chrome front panels, \$250 obo. Dennis, x34405 or 532-3312.

Electric oven, 27", G.E. coppertone, built-in,

wall mount oven, \$50. Linda, 484-0987. Love seat, brown velour print, good cond. 244-0250 or 941-3262. Natural wicker baby furn, crib w/trundle drawers, lg & sm dresser, bullt-in changing table, converts to twin sz, \$485. Scott, x34614 or 334-2278.

Lite oak/pine dresser, \$115; Ig square coffee tables, \$40 ea; 2 end tables, \$40/both; formal med dark oak dining table w/2 leaves & 6 chairs, \$750; oak kitchen table, \$75; hutch w/dresser & shelf w/doors, \$350; 4 TV trays, wood, \$45; stained glass lamp, \$98. 282-3570 or 474-3820.

Mattress, full sz, good cond, \$35. Ted, x36894. Antique Armoire, dark oak, beveled mirror on door, Ig bottom drawer, 45'x78" long, \$700 obo. 337-6463.

Maytag dishwasher, needs timer, \$25 obo. x37341 or 326-1267.

Sony Triniton TV, 27", \$200. 337-5392.

Dining table 7 pcs, w/matching sectional, black w/floral print, \$550; sofa, chair & ottoman, white w/floral print, \$250; marble coffee table, \$60. x38835 or 482-5531.

King sz storage headboard made by Henredon, oak, \$400. 474-7432.

Small breakfast table w/2 chairs; large wood stereo, antique peddle sewing machine; antique record player. 489-1235.

Wanted Singers r

Singers needed for JSC American Heritage Day chorus on July 7. For more details please contact Pat Burke, x30660.

Want "liftback" to fit '83 Honda Civic station wagon, good cond w/little or no rust. 283-9500, x509 or 486-9605.

Want low priced Toyota, Nissan or Mazda pickup, also school/work car or truck. 271-7011.

Want personnel to join VPSI van pool from Sugarland & southwest Houston to NASA area. Alice, x35234. Want personnel to join VPSI Vanpool departing

Meyerland Park & Ride lot at 7:05 a.m. for JSC, on-site, working the 8 a.m. - 4:30 p.m. shift, Travis Moebes, x45765 or Don Pipkins, x35346. Want 2 CB radios and antennas in working

condition. 532-2147.
Want moving boxes. Sharon, x38506 or 480-2646.

Want responsible male/female roommate, 1/2 house ADTE, 1/2 utilities, home in good location. x36529 or 334-2186.
Want to purchase home, 3-2-2, det garage, in

CLC, need 9/15/95, to \$75k. 484-5860.

Want roommate to share 3-4 bedroom home, only serious inquiries please. Kim, x38676.

Want long shaft outboard for sailboat 6. Ho

Want long shaft outboard for sailboat, 6 Hp minimum, prefer 8 Hp or 9.9 Hp, must be reliable. Musgrove, x38358 or 488-3966.

Want large dog house for black lab. x32264. Want non-smoking roommate to share house in Clear Lake, \$250/mo. 286-5248.

Miscellaneous

Southwest Airlines Friends fly Free partner to travel to Dallas on weekends. Matt, x47014 or 486-7417

Super single waterbed-n-headboard, \$75 obo; 6' sliding glass door, \$50/obo; 2 Goodyear 255-R15 tires, \$10 ea. 332-2453. Ivory man made leather sofa/loveseat, \$650;

Evenflo ultra 3 pos, recy. car seat, \$70. 996-0152. Golf clubs, Big Bertha driver & 3 wood, \$150 ea; big Bertha wood clones, graphite shafts,

283-9233 or 473-2602.
GE cordless phone, dual-wave noise filter, 10-number memory, charge indicator light, redial, on/off ringer switch, desk/wall mountable, \$50 obo: rattan bookshelf, 5 shelves, good cond, \$15

\$250; bullet B-52 oversized irons, 3-SW. Ken,

obo; toddlers toys, good cond, \$1-\$5. x30859. Fish tanks, 55 gal tank w/stand, top/filter, \$195; 1 30 gal tank w/stand, top/filter, \$125; 1gal tank w/top, \$20; turquoise blue male discuss, 475, 282-3570 or 474-3820.

Rugs from Turkey, 2 handmade silk rugs, 5'x7' & 4'x5', \$4k to \$10k obo. 485-4008.
Class III trailer hitch for Caravan/Voyager vans,

light wring harness, \$70. 488-3238.

Water lilies, hard, tropical day & night bloomers, \$3-\$10; parrots feather, pickerel rush, yellow iris, water hyacinth, \$1-\$2. 337-5392.

Vacuum w/attachments, \$40; luggage, \$30; curtains, 36"x84", beige/brown, \$25/set; coffee maker, \$20; \$150 Eddie Bauer gift certificates, \$100. Charlene, x30085.

Beartracker automobile scanner w/police extender detection, alters driver to patrol cars within 2-3 miles, \$125; Fathom full wet suit, male, medium, good cond, \$50. 482-2369.

Dorm refrigerator, Toshiba, \$75. x39034 or

471-9432. GoCart, needs some work, \$175 obo. Joanne, 282-6992 or 554-6831.

Exercise skier mach, \$45 obo. Ed, 481-4889. MTD riding mower, ex cond, 12.5 Hp industrial. James, 244-5143 or 930-0065.

Sears "Lifestyler" rowing machine, \$60; weight set, 130 lb, \$20; weight bench, \$15. x48003 or 996-0054.

Motorola flip phone w/charger & car adapter, \$250; Demetrios wedding gown, long sleeved, high collar, \$800; car cover, med, \$20; 3-D camera, \$75. Charlene, x30085.

Girl's 20" bicycle, Radical by Western Flyer, black w/pink wheels, \$30. x39525 or 482-0969. Power Wheels, Quad Racer, \$70; 2-wheeler,

\$50; Fisher Price child car seat, \$35; bicycles, 12' & 20", boys, \$20/\$30. Al, x48003 or 996-0054. Compact 10 gal, 120 volt, electric water heater w/relief valve, ex cond, \$60. Bob, 335-5934.

First Apollo, Next *Atlantis*

STS-71 will mark the second time the U.S., Russians dock in space

By Karen Schmidt

he STS-71 mission, scheduled to launch next week, will mark the second time Americans and Russians have docked in space and culminates a 35-year-long cooperative working relationship.

The docking of *Atlantis* with the Russian Mir Space Station comes just a month before the

20th anniversary of the Apollo-Soyuz Test Project, the first joint U.S.-Russian program.

"Back in the depth of the Cold War, the ASTP was an ice-breaker for the two countries, " said Vance Brand, the ASTP command module pilot. "This is a logical step in the process of cooperation."

The American-

Russian space relationship has been through several presidents on both sides and has survived even the establishment of a new Russian government. But without the ASTP, today's mission may not have been possible.

The ASTP began in 1970 with talks between the two governments. Working groups were formed and by 1971 the two countries were sharing lunar samples and biomedical and weather data. ASTP working groups began meeting at JSC in July of 1972 to reconfigure drawings. Crew and flight controller training requirements were laid out as well as system checks on environmental controls and communications.

A crew for the ASTP was announced in January 1973. Commander Tom Stafford would fly with Docking Module Pilot Deke Slayton and Brand. In May, the Soviet crew was announced with Alexei Leonov chosen as commander and Valeri Kubasov as flight engineer.

Over the next year astronauts, cosmonauts and flight controllers visited each other's countries and checked out training and mission control facilities

Despite congressional objections to the safety of the Soyuz spacecraft, The Russians and NASA launch on July 15, 1975. On July 17, the

Apollo crew rendezvoused with its Russian counterpart and successfully docked in space. For two days, both countries observed Earth, carried out scientific experiments and visited each other's spacecraft.

"It was a very successful and challenging mission. We developed a mutual

respect for both the Russian engineers and technicians," Brand said.

In the fall of 1979 amid U.S. concerns over Soviet human rights violations, no further meetings were planned until a review of the entire program was completed.

During the next 15 years, no formal agreements between the two countries are active, but several joint ventures did take place. Both countries launched a Search and Rescue Satellite that is credited for saving more than 1,000 lives. Scientists continued to exchange information and conduct experiments on both shuttle flights and Soviet biosatellites.

By 1987 the two nations signed an agreement for joint cooperation in space beginning the new era for joint missions.

In July 1990, the agreement was signed to

plan the first joint mission since the ASTP program. In 1992 the Soviet Union was dissolved, and nine former republics signed up to continue to support the space program.

Preparations began for the second U. S.-Russian docking, an American space shuttle to Mir. For the next three years engineers would work to modify the ASTP docking mechanism for the flight.

"I am real pleased the docking system and

working group concepts that came out of the ASTP mission 20 years ago are being used today," Brand said.

Brand admits engineers have an easier time today.

"They don't have the same problems as we did. With the Cold War over and the coopera-

tion that has developed over the last 20 years, engineers don't have to be skittish about working with the Russians," he said.

This is evident in the differences in the two docking systems. During the ASTP both countries had their own separate, complete systems. There is only one docking system today. Designed jointly, the new system has modifications. Most noticeable are the guider "fingers" that now turn inward instead of outward and the structural latches on the ASTP were internal to the pressure docking tunnel and the new system has the latches external to the tunnel.

The greatest challenge engineers face today is the size of the space vehicles and changes to both the orbiter and Mir.

"In ASTP we were working with two very small spacecraft. The shuttle and Mir are much

larger," said Brand.

During ASTP the spacecraft could dock at a much higher relative speed than can be accomplished with the shuttle/Mir.

"Mir has a lot of acreage in the way of solar arrays. The shuttle will have to come in more slowly so it doesn't blow around the panels," Brand said.

A new external airlock was required on the orbiter in order to make the docking work. The

airlock will be a permanent fixture in *Atlantis*.

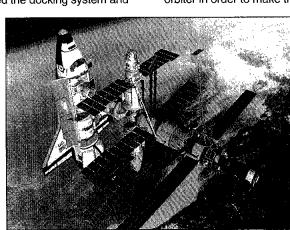
"We have qualified a major new system for the shuttle to use for the Mir docking missions as well as over the long-haul in the building of the International Space Station," said Denny Holt, STS-71 flight manager.

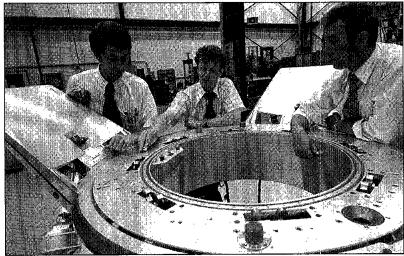
On Mir, cosmo-

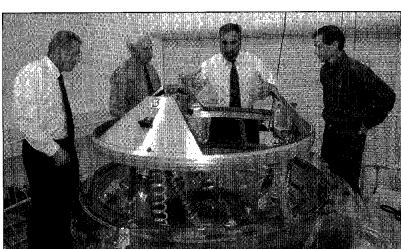
nauts have performed several extravehicular activities to reposition modules and adjust solar arrays to make way for *Atlantis*.

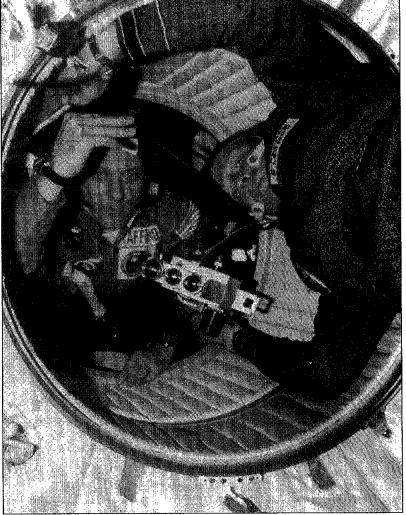
The STS-71 mission will mark the second time two countries have joined space vehicles, but cooperation has been ongoing. At present, Astronaut Norm Thagard resides in the Mir waiting for *Atlantis* to come and take him home. His Mir 18 crewmates, Vladimir Dezhurov and Gennady Strekalov will travel back with Thagard and the Mir 19 crew Commander Anatoly Solovyev and Flight Engineer Nikolai Budarin will take their place onboard the Russian outpost.

While STS-71 is a new era in space science and technology, the history of the cooperative effort and the ASTP served to enhance the current flight and the future of space exploration.









From top to bottom, left to right: Mir Flight Engineers Elena Kondakova greets the first American, Norm Thagard to board the Russian Mir Space Station. An artist's concept illustrating the docking of the Apollo space craft to the Soyuz space craft. An artist's concept of Atlantis docking with Mir. Apollo-Soyuz Test Project engineers look over the docking system. From left are Robert White, Vladimir Syromyatnikov and Yevgeniy Bobrov. Syromyatnikov is working on the new orbiter docking system to be used on STS-71. Apollo Commander Thomas Stafford, left, and Soyuz Commander Aleksei Leonov in the hatchway leading from the Apollo docking module. Managers from JSC and Kennedy Space Center check out the orbiter docking system. From left are Loren Shriver, shuttle launch integration manager; Gary Crawford of KSC, Frank Buzzard, manager of the shuttle chief engineer office and **Brewster Shaw space shuttle program** manager. The significant difference in the two docking systems is that the new system the guider "fingers" turn inward and structural latches are external.

NASA Photos and Illustrations

Russian docking module, solar arrays arrive in Florida

A Russian cargo plane has delivered equipment for the second shuttle/Mir docking mission — a major exchange of space flight components between the United States and Russia. During assembly of the International Space Station, this type of cooperative exchange will take place frequently.

The delivered cargo included a shuttle-to-Mir docking module, the module's ground support equipment, a portion of the docking module training mockup for use in crew contingency space walk training, and two solar arrays for the Russian Mir Space Station.

"This is a major operational hardware exchange between the United States and Russia," said Tommy Holloway, manager of NASA's International Space Station Phase One Program Office. "As we move into the space station era, these equipment exchanges will become almost commonplace.

This particular hardware also is very important to the reconfiguration of Mir for future joint operations."

The docking module, which will be carried to space aboard *Atlantis* on the STS-74 mission later this year, is designed to improve the clearances for the shuttle during future docking operations with Mir.

During STS-74, Atlantis astronauts will use the orbiter's robotic arm to place the docking module onto the Orbiter Docking System. On the third day of that flight, Commander Ken Cameron will ease the orbiter up to Mir so that a link-up occurs with the docking module serving as a bridge between the two space vehicles. When Atlantis leaves Mir after three days of joint operations, the undocking procedures will disconnect the Orbiter Docking System from the docking module, leaving it attached to

the station for use on future missions.

Before the docking module is loaded onto *Atlantis*, it will be prepared for flight in the Space Station Processing Facility at Kennedy Space Center; it is the first piece of hardware to be processed in the SSPF. The docking module will undergo a complete systems checkout and the two solar arrays and a trunnion assembly will be attached to the module. The activity will be monitored by a team from the Russian organization RSC Energia.

The two solar arrays will be used to extend Mir's lifetime and support U.S. science and technology research. One of the arrays was built as a cooperative project between the U.S. and Russia, combining proven Russian structures and mechanisms with advanced U.S. solar array modules. The second array is composed of all Russian components. The solar arrays will be stowed on the side of the

docking module for transport to Mir and will be installed some time after the completion of STS-74.

After SSPF processing, the docking module and solar arrays will be transferred to the Operations and Checkout Bldg. at KSC. The module will then undergo a series of tests to verify electrical and mechanical compatibility with the orbiter.

The docking module training mockup will be shipped JSC. Astronauts will use it for extravehicular activity training. No space walk is planned for the STS-74 mission, but crew members will practice several backup procedures that will be employed if problems occur with the module during the flight. The remaining sections of the training mockup will be shipped from Russia later this year to support space walk training for STS-76, the third docking mission.

Administrator outlines center missions, duties

The Office of the Administrator put together an outline for each NASA center.

Johnson Space Center

Mission: Human exploration and astromaterials. Science: Biomedical research, aerospace medicine, astromaterials science and extraterrestrial sample curation and geochemistry. Technology: Robotics, life support and extravehicular mobility unit. Aeronautics: None.

Stennis Space Center

Mission: Propulsion test. Science: Selected land remote sensing. Technology: Engine testing and commercial remote sensing. Aeronautics: None.

Marshall Space Flight Center

Mission: Transportation systems development and microgravity. Science: Materials science, biotechnology, global hydrology and climate science and selected astrophysics and space physics. Technology: Propulsion, avionics, space environmental effects and space mirrors. Aeronautics: None.

Kennedy Space Center

Mission: Space launch. Science: Payload integration and test support. Technology: Ground control and processing. Aeronautics: None.

Jet Propulsion Laboratory

Mission: Planetary Science and Exploration. Science: Planetary system science, extrasolar planets, ocean and solid Earth science, advanced Earth science instrumentation and low temperature physics. Technology: Deep Space and Planetary spacecraft. Aeronautics: None.

Goddard Space Flight Center

Mission: Earth science/physics and astronomy. Science: Earth system science, Earth observing system data and information system, astrophysics/space physics and rocket and balloon program management. Technology: Earth orbiting space craft. Aeronautics: None.

Lewis Research Center

Mission: Aeropropulsion. Science: Combustion science, fluid physics and ground-based microgravity research. Technology: Commercial communications and power and onboard propulsion. Aeronautics: Airbreathing propulsion.

Langley Research Center

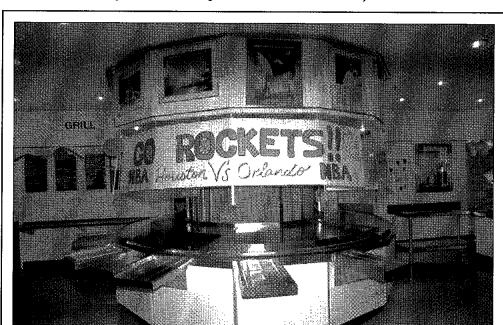
Mission: Airframe systems, aerodynamics and atmospheric science. Science: Global radiation budget atmospheric chemistry. Technology: Vehicle aeronautics and aerothermodynamics, vehicle materials and structures and health monitoring sensors. Aeronautics: Airframe systems.

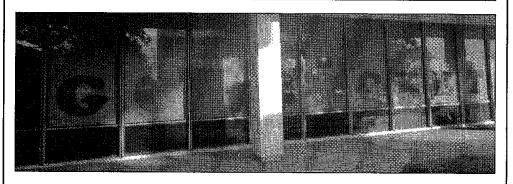
Dryden Flight Research Center

Mission: Flight research. Science: Airborne science support including host science support. Technology: None. Aeronautics: Flight Research.

Ames Research Center

Mission: Airspace operations and systems/astrobiology. Science: Astrobiology and astrochemistry, gravitational biology/biocomputational, human factors research and ecology. Technology: Information technology and thermal protection systems. Aeronautics: Airspace operations.







JSC Photos by Andrew Patnesky ROCKET MANIA — JSC employees show their support for the Houston Rockets during the 1995 World Finals with memorabilia in several locations across the center. Top: Bldg. 3 cafeteria workers show support by decorating the turnstile. Middle: Bldg. 2 employees sacrifice sunshine to promote the team. Bottom: Shirley Martin of Mason Hanger decorates her desk in Hakeem Olajuwon motif. JSC Director Dr. Carolyn L. Huntoon also showed her spirit in a good-natured wager with Jay Honeycutt, director of Kennedy Space Center. Honeycutt will wear a Rockets T-shirt if they become the World Champions and **Huntoon will wear an Orlando Magic** T-shirt if they should win.

Astronaut selection process begins

NASA is accepting applications for mission specialists and pilot astronaut positions effective immediately.

Interested individuals may apply until the cut-off date of June 30. Applications received after the deadline will be eligible for consideration in the next selection cycle.

Successful pilot applicants typically have extensive piloting experience in high performance jet aircraft and flight test experience. Successful applicant for the mission specialists positions typically have significant backgrounds in the sciences (material, Earth, medical and space) or engineering.

After a six-month process including screening applications and conducting interviews and medical evaluations, selections will be announced in the spring with the new astronaut candidates reporting to JSC in the summer of 1996.

An application package may be obtained by calling the Astronaut Selection Office at x35907 or writing at Mail Code AHX.

Veteran crew for STS-77

(Continued from Page 1)

space available for experiments. The Shuttle-Pointed Autonomous Research Tool for Astronomy satellite will be deployed and retrieved during the mission.

Casper, 51, has flown three previous shuttle missions—STS-36, STS-54 and STS-62. Brown, 39, flew on STS-47 and STS-66. Bursch, 37, will be making his third flight on the shuttle. His two previous missions were STS-51 and STS-68.

Runco, 43, flew on STS-44 and STS-54. Garneau, 46, flew as a Canadian astronaut on STS 41-G. Thomas, 43, will be making his first flight aboard the shuttle.

Discovery returns to pad

(Continued from Page 1)

The prime payload for STS-70, the Tracking and Data Relay Satellite, was removed from *Discovery*'s cargo bay and delivered to a processing facility to be reserviced. It will be reinstalled in the cargo bay at the pad.

The TDRS-G satellite is scheduled to be deployed from *Discovery* a little more than 6 hours after launch, which is targeted for 8:41 a.m. JSC time July 13. STS-70 is commanded by veteran Tom Hendricks.

While *Atlantis* and *Discovery* swapped places in the launch schedule, workers at KSC continued to put the final touches on *Endeavour* in advance of STS-69, which is targeted for blastoff at 9:40 a.m. July 30. The launch was delayed about 10 days to enable the STS-70 mission to be scheduled in the earliest possible time frame following the STS-71 mission.

Goldin opens hotline to keep employees informed

(Continued from Page 1)

challenge. He said he will work with Congress to ensure it understands that any more cuts will severely hinder the agency's ability to affect the future of the country. Work in free operating robotics and aeronautics can lead the country into getting its fair market share, he said.

"NASA is on the cutting edge of field robotics. This is an industry that can go from \$1 billion to \$15 billion a year. If we impact just that one industry, we can more than pay for the NASA budget," Goldin said.

"We feel such a commitment to this country. The people around NASA come in and work long hard hours because they are about the future. And I hope you all understand as we go through these stressful times that we are doing the right thing for America," he added.

To give employees a better feel about what is going on he proposed a hotline to keep employees up to date and he answered questions from both Headquarters and field centers.

Goldin was asked if he thought

NASA would have an extremely difficult time in the next budget battle. Goldin pointed out that while the country is facing difficult problems, he is going to focus on the investment of science and technology to Congress. He emphasized that if the country should loose technology knowledge for more than five years it could not recover. He believes that Congress understands how critical NASA's role is in the future of America and is cautiously optimistic that the next budget battle will lean in NASA's favor. He said he will not even consider looking at other cuts unless forced to do so.

When asked about downsizing, Goldin stressed that he wants to go very slowly and be very deliberate and plan what is accomplished and do anything to avoid a reduction in force. No plans include eliminating specifics jobs, the focus was to look at science and technological programs and how to transfer functions to private industry and increase efficiency all across the agency.

"I don't think it hurts the industrial base to transfer full responsibility and accountability of functions that NASA doesn't have to perform anymore so that we can focus on what we want to do in research and development," Goldin said.

A question was asked about why employees are now able to apply for jobs at other centers and how employees can keep up morale. Goldin stressed that everyone must look at NASA as a whole and must be flexible to avoid a RIF. He said this is essential to maintain the skill mix that now exists. He recognized employee dedication to the program and country and stressed focusing on positive attitudes and pride as NASA employees. When asked about transferring personnel with functions to private industry, Goldin said he is holding Human Resources responsible for ensuring that details are worked out to benefit employees before transfers are complete.

Goldin was asked what plans are in the works for co-op students. He said there are plans to hire some coops next year but priority is on the people that are already here and to do anything to avoid a RIF, including not hiring co-ops.

When questioned about eliminating duplicate efforts, Goldin emphasized that it will be done.

"We would like to have a level budget in 1996 so we can take the time to fully understand each and everything we are doing, take the time to stop and make sure we are not imposing a safety problem and we are going to also make sure that as we downsize the people have the right tools so those that remain behind don't have an undo workload on them, and then we are going to act, "he added.

As part of an Agency-wide effort to keep employees informed about the latest developments regarding changes in NASA, JSC has established a hotline.

Employees may call x30616 and leave name, phone number and question or concern and a member of the Human Resources staff will call back. Non-Human Resources-related questions will be forwarded to the appropriate JSC office for response.

NASA-JSC