



Space News Roundup

Vol. 32

July 19, 1993

No. 28

NASA, Texas Medical Center sign cooperation pact

Formal agreement puts combined expertise to work on quality of life issues

By Kelly Humphries

NASA and the Texas Medical Center have signed an agreement that will formalize and expand a long-standing working relationship that puts their combined expertise and experience to work on scientific, technical and management issues important to improving the economy and life on Earth, Johnson Space Center Director Aaron Cohen announced Friday.

JSC has a long and successful history of developing systems and

processes for assuring the health, well-being and performance of humans involved in space flight. Texas Medical Center, with broad-based clinical and basic scientific research activities, addresses areas of mutual interest to JSC in disciplines such as biotechnology, bio-engineering, telemedicine and biomedicine.

The memorandum of understanding facilitates the sharing of significant talent, professional expertise and world-class facilities that in

combination provide a unique opportunity for the development of new approaches to both Earth-based and space flight human biomedical problems.

NASA and Texas Medical Center will enter into discussions about mutual areas of interest, such as developing systems to track the health and performance capabilities of individual space flight crew members, understanding physiological responses to environmental challenges on Earth and in space, and

improving emergency and preventive medical care delivery capabilities through simple, reliable, accurate and cost-effective technologies, procedures and systems.

Within the framework of the memorandum, NASA and Texas Medical Center will negotiate separate agreements concerning each specific project on a case-by-case basis. Some of the agreements may involve the transfer of funds while others will involve the commitment of in-kind facilities and resources. NASA's obli-

gations will be performed by JSC.

"This agreement is a logical next step in helping both NASA and the people in the Texas Medical Center institutions solve a number of the puzzles in how the human body can become more effective during space travel, and how the environment in space can be better utilized for medical and health benefits to all people," said Richard E. Wainerdi, president and chief executive officer for the Texas Medical Center.

Please see **NASA**, Page 4

If you didn't buy it, don't compute it

JSC has established a new computer software policy that says, basically, that if your organization hasn't bought it, you can't put it on your computer.

The new policy, issued this past week by Information Systems Director Ron Berry, prohibits "piracy," or the use of copyrighted software that has not been purchased. It applies to all software installed on computers at JSC-managed facilities, and will be documents in the JSC Information Resources Management Manual, JSCM 2410.8.

"No software may be installed on or used with equipment at JSC-managed facilities unless appropriate license or other rights have been acquired," the new policy states.

"With the rapidly expanding use of personal computers, we have become concerned over the potential liabilities to JSC and individual employees regarding illegal use of software," said ISD Deputy Director Jack Garman. "The purpose of the policy is simply to make sure that employees are aware of the liabilities, and to institute a reasonable assurance process at the center."

The policy puts responsibility on the head of each organization who directly reports to JSC Director Aaron Cohen to provide a yearly certification of compliance with the JSC Software Copyright Policy.

Each director will be required to certify to the Senior Installation IRM Official that reasonable action is being taken to ensure that his or her organization is in compliance with the policy. Typically, this means that each organization will compare an inventory of its software with a list of total purchases of each product.

ISD has tried to develop a process which minimizes impacts to current and future operations while providing JSC and its employees some liability protection, Garman said. In those instances where licensing is found to be deficient, ISD will be happy to provide support in reconciling the situation. In those instances where ISD is the provider of maintenance for the computer and the software is a supported product, additional licenses and updates can be obtained on a short turnaround basis.

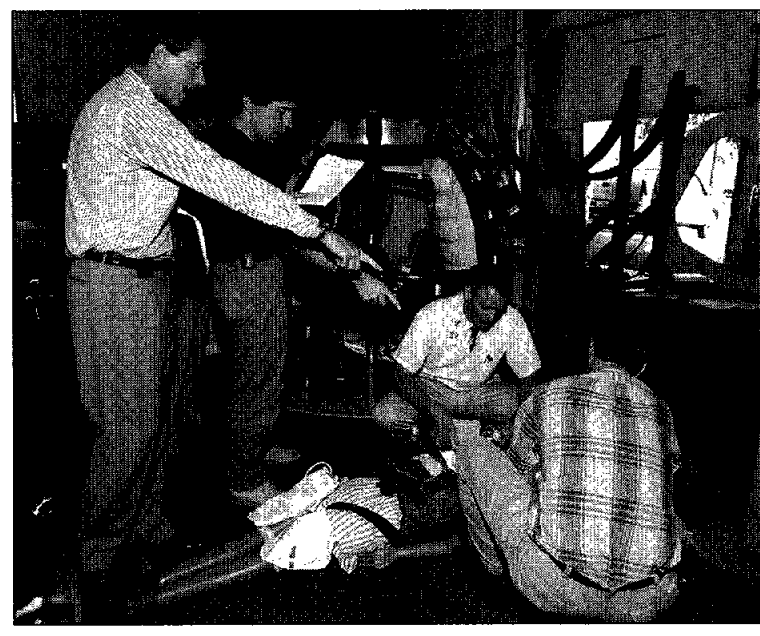
ISD will maintain a list of vendor license agreements for software products available for desktop platforms such as Macintosh, DOS and Windows that are covered in the JSC Information Systems Integration Standards Manual JSCM 2410.13.

Questions should be addressed to Coty Whitener at x34950.



JSC Photos by Mark Sowa

DUMMY AID—JSC doctors prepare for KC-135 testing of a Soyuz-Assured Crew Return Vehicle mockup as a space station lifeboat. The mannequin is being used to simulate an ill or injured crew member. Above: Dr. Roger Billica acts as an assisting crew member, hooking up medical instruments and preparing the mannequin for flight. The mannequin is in an actual Soyuz seat, called Kazbek, the only non-JSC manufactured part of the mockup. Below: From left are Dr. Chuck Lloyd, Dr. Mike Barratt, Billica and Dr. Smith Johnston.



Discovery cargo to test advanced communications

By James Hartsfield

As the countdown clock began ticking Wednesday, all activities — even the weather — were flowing smoothly toward *Discovery's* launch on shuttle mission STS-51 at 8:22 a.m. CDT Saturday.

The STS-51 crew — Commander Frank Culbertson, Pilot Bill Readdy and Mission Specialists Jim Newman, Dan Bursch and Carl Walz — flew to KSC Wednesday afternoon in advance of the liftoff. Forecasters gave *Discovery* a 90 percent chance of acceptable weather for the launch.

The crew's first job in orbit will be to deploy the Advanced Communications Technology Satellite from *Discovery*, scheduled to take place just a few hours after launch. A Transfer Orbit Stage will then boost the satellite to a geostationary orbit, where its on-board-switching and spot-beam technology is hoped to pave the way to communications advances such as dinner-plate sized antenna dishes and phone calls from literally any location on Earth.

On the second day of the flight, the crew's attention turns to the Orbiting and Retrievable Far and Extreme Ultraviolet Spectrometer, an astronomy instrument mounted on a Shuttle Pallet Satellite. Bursch is to use *Discovery's* mechanical arm to release the ORFEUS-SPAS, and then Culbertson will fire the shuttle's thrusters to drift about 30 nautical miles behind the telescope. While the satellite telescope and the

shuttle are still only a few hundred feet apart, however, *Discovery* will perform several pirouettes as an IMAX motion picture camera on the SPAS films the maneuvers for a future movie. ORFEUS will spend six days flying free of *Discovery*, studying the formation of stars and interstellar gas clouds. On the third day, today with an on-time launch, the crew turns to secondary experiments, and the fourth day, scheduled to be Tuesday, will begin with a checkout of space suits by Walz and Newman with the assistance of Readdy.

Walz and Newman will perform a six-hour space walk on their fifth day in orbit, starting out of the shuttle hatch at about 5:32 a.m. CDT. The space walk, the third this year, is designed to continue the evaluations being used to refine space walk planning and training and build experience among astronauts, flight controllers and instructors. In addition, Walz and Newman will evaluate a foot restraint and ratchet wrench designed for use during the Hubble Space Telescope servicing flight late this year. During the space walk, Readdy will serve as the intravehicular crew member, assisting Walz and Newman with their tasks from inside the cabin.

ORFEUS-SPAS will be picked up by *Discovery* on the eighth day of the flight, or Saturday at about 8:17 a.m. with an on-time launch, and Bursch will use the robot arm to tuck

Please see **STS-51**, Page 4



JSC employees receive honors for innovation

Forty JSC employees received Space Act, Productivity Improvement and Suggestion Awards this past Monday from JSC Director Aaron Cohen.

The total monetary value of the awards was \$15,350

Suggestion Awards were presented to Jay E. Bennett for an Economical Fastener Purchase; Joseph R. Trombley for Conversion of Macintosh Drawings to AutoCAD Drawings; Marianne C. Campbell for Automation of Telephone Directory Change/Publication; and John F. Donnelly for Advantages of Performing T-Tail Inspections on the

Shuttle Training Aircraft at NASA.

Productivity Improvement Award Eagle Trophies went to Joseph E. Rogers and Charles G. Krpec, for Replacement of ECF Amdahl Computer Under IADP.

Board Awards were presented to William B. Wood for a Quick-Acting Gimbal Joint, Steven L. Koontz for a Microporous Structure with Layered Interstitial Surface Treatment and Method and Apparatus for Preparation Thereof; and Lakshmi Putcha for a New Mode of Treatment of Space Motion Sickness.

Patent Application Awards went to

Ronald J. Zaguli for an Attachment Device; Karen L. Nyberg for a Robot Friendly Probe and Socket Assembly; Brian G. Morris for a Magnetically Operated Check Valve and a Cooled Spool Piston Compressor; Joseph S. Cook Jr., for a Gas Storage and Recovery System; Robert Lynn Harvey for an Apparatus for Simulating and Exoatmospheric Structure; Christian P. Lupo and Erik E. Evenson for Connector Systems for Structures; Steven L. Koontz for a Microporous Structure with Layered Interstitial Surface Treatment; Michael L. Roberts for a Tetrahedral Lander;

and Mark E. Rorvig and Robert O. Shelton for a Method and Apparatus for Filtering Visual Documents.

NASA Tech Briefs Awards were presented to James B. McDede, John V. Rivers, Irene E. Verinder, Donald C. Wade, Edgar O. Castro, Gregg A. Edeen, Kornel Nagy, Timothy E. Pelischek, David A. Hamilton and Clarence J. Wesselski for a Pre-Integrated Truss Space Station and Method of Assembly; Frederic S. Dawn for Improved Helmet Padding Material; Frederick A. Ouletter for Absorbent Testing and Mathematical Modeling of a

Please see **EMPLOYEES**, Page 4

JSC

Ticket Window

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

Texas Folklife Festival Trip (Aug. 7-8, San Antonio): \$125 per person, \$49 per child accompanied by two adults, includes transportation, lodging and two-day admission.

Moody Gardens — Discount tickets to three of five attractions: \$14.
Six Flags Over Texas — Discount tickets: one-day pass, \$19.95; two-day pass, \$24.95 and children under four feet, \$18.95.

Splash Town USA — Discount tickets: \$10.50.
Astroworld — Discount tickets: adult, \$18.95; children under 54 inches, \$15.95.
Waterworld — Discount tickets: \$9.95.

Sea World in San Antonio — Discount tickets: adult, \$19.75; child (3-11), \$13.15.
Fiesta Texas, San Antonio — Discount tickets: adult, \$18.35; child (6-11) \$12.75.

Sea World and Fiesta Texas — discount coupons: \$6 off discount prices if tickets purchased for both parks.

Space Center Houston — Discount tickets: adult, \$7.50; child (3-11) \$4.50; commemorative: \$9.95.

Metro tickets — Passes, books and single tickets available.

Movie discounts — General Cinema, \$4.50; AMC Theater, \$3.75; Loews Theater, \$4.

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 badge or EAA membership card. Classes tend to fill up two weeks in advance. For more information, call x30304.

EAA badges — Dependents and spouses may apply for photo identification badges from 6:30-9 p.m. Monday through Friday. Dependents must be between 16 and 23 years old.

Defensive driving — Course is offered from 8 a.m.-4:30 p.m. Aug. 21. Cost is \$19.
Weight Safety — Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. July 27. Pre-registration is required; cost is \$5.

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

Exercise — Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24 for eight weeks.

Aikido — Martial arts class meets from 5-7:30 p.m. Tuesdays. Cost is \$15 per month.

Golf — Group lessons are offered from 5:30-6:30 p.m. Mondays for six weeks in August at the Clear Lake Golf Course. Cost is \$90. Loaner clubs are available for those who need them.

Country & Western dance — Beginner class is from 7-8:30 p.m., intermediate class is from 8:30-10 p.m. beginning Aug. 9. Cost is \$20 per couple.

Ballroom dance — Lessons will resume Aug. 12, cost is \$60 per person.

Softball tournament — The "Moonwalk" Open Men's C Tournament will be held July 24 and 25. Cost is \$95 per team, sign up deadline is 7 p.m. July 22.

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

JSC

Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads may be run only once. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2. No phone or fax ads accepted.

Property

Sale: Univ Green, 3-2-2, new AC, c/fans, deck, custom miniblinds, drapes, all appl, 9.5% no appr assum loan, ex cond, \$85.5k. 488-0345.

Sale: Forest Bend, 3-2-2, near school, new roof, paint, child's playhouse, lg backyard, upgrades, \$72k nego. Ted, x36894 or 992-4814.

Sale: CLC, 4-2-2, 1 story, formals, FPL, den, lots of closets, new carpet, total renovation. 334-3984.

Sale: Shoreacres, split level TH, 2-2-1, elec open, stack W/D, \$59.9k. 480-2262.

Rent: Piper's Meadow, 4-2-2, alarm, FPL, fans, storage shed, 1720 sq ft, \$875/mo. + dep, avail 7-15. 488-1552.

Lease: Univ Trace condo, 1 BR, study, W/D, DW, ceiling fans, cable hookup, alarm, avail 7-1. 488-2946.

Sale: Pearland/Sun Meadows, 3-2-5-2, formals, study, lg master BR, upgrades, 2.5 yrs old, \$104.9k. Jim, 482-8800.

Rent: Laporte, 3-2-2, near schools, \$700/mo. x39034 or 474-2660.

Sale: Hill Country, near Austin, wooded, undeveloped, great view, 26.87 acres, \$54k. Robert, x32597 or 332-1734.

Sale: Dickinson, 4-2-5-2, pool FPL, wetbar, 100 yr old trees, 3/4 acre, sec sys, \$224k. x34354 or 337-1640.

Sale: Dickinson, 4-3-2d, gourmet kit w/ceramic tile, study, gameroom, screened porch, wooded lot w/circle drive, park boat/MH, \$122.5k. Shirley, 335-1607 or 335-0641.

Rent: Arkansas cottage, overlooks Blue Mountain Lake, furn, wooded, 4 acres, screened porch, antiques, \$250/wk, \$50/day. x33005 or 538-4141.

Sale: Sterling Knoll, 3-2-2, pool, FPL, extras, \$69.9k. x32264 or 486-9760.

Sale: Lake Livingston, 30x70 lot, camp or build, 1/2 mi off water, util avail, paved roads, \$3k. Teena, x37787 or 422-6369.

Rent: Colorado, condo, furn, sleeps 6, hiking, biking, fishing, low summer rates thru October. 488-4453.

Rent: Galv condo, furn, sleeps 6, Seawall Blvd & 61st St, cable, pools, wkly/wknd/dly. Magdi Yassa, 333-4760 or 486-0788.

Sale: Colorado County, 12.95 acres, wooded, paved road, good hunting. 941-9339.

Rent: Cancun, 2 BR condo, located on beach front strip, full kitchen, daily maid service, \$500/wk. Katie, x33185.

Sale: Meadowgreen, 2225 sq ft, kitch island, lg living rm, walkin closets, landscaped, \$122,850, nego. Chris, x30875 or 486-0487.

Sale: Pearland, medium density housing, concrete street, all util, x47758 or 482-5003.

Sale: Univ Place TH, 2-2, FPL, garage, currently rented, \$74k. Dave, x38156 or Herb, x38161.

Cars & Trucks

'71 Triumph Spitfire, 2 seater, manuals, extra parts, \$1100 OBO. 280-2505 or 488-6688.

'86 Sentra, good cond, maint records, \$2.9k. 332-2796.

'88 VW Cabriolet Conv, red, approx 80k mi, \$8.5k OBO. 568-4099.

'71 Chevy Nova classic, V8, orig owner, \$4.5k. 480-1998.

'78 Chevy Camaro, V8, auto, PW/PL, air, Kenwood stereo, good tires, new headliner, runs good, \$2k OBO. 486-4104.

'90 Pontiac Grand Prix LE, 2 dr, auto, AC, pwr, AM/FM, 50k mi, \$7.7k. Allison, x37752 or 280-9424.

'83 Nissan 280ZX, grey, loaded, 5 spd, t-tops, some rust, 93k mi, ex running cond, \$3k OBO. Rick, x37301 or 286-6910.

'85 Honda Prelude, 8k mi on new eng, auto, AC, AM/FM/cass, PS/PB, sunroof, ex cond, \$4.8k OBO. Barry, x38410.

'83 Bonneville, orig owner, V8, AC, \$1750. x30912 or 481-2693.

'90 Chevy Baretta, mechanic owned, charcoal gray, ex cond, extras, 56k highway miles, \$6250. Jennifer, x38668 or 286-0507.

'84 Celica GT, 5 spd, new paint/tires, cruise, tilt, ex cond, 96k mi, \$3.8k nego. x30643.

'71 Chevy Nova, 4 dr, needs windshield, motor ex cond, \$400 OBO. Jesse, 470-8502.

'88 S10 Blazer, 2 dr, 4.3V6, 79k mi, gray, AC, auto, PW/PL, ex cond, \$7.9k. 280-2208 or 486-1049.

'82 Cougar, gray, auto, pwr steering needs repai, 92k mi, \$750. Rafael, x38359.

'85 Dodge Ram Charger, blue, ex cond, \$2.6k OBO. Donna, x30261 or 334-5082.

Boats & Planes

'86 Bayliner CAPRI 15, '87 Mercury 35ELPTO, galv trlr, garaged, \$2950 or trade. Chuck, x48354 or 480-8452.

'89 Sea Ray 16' 130hp I/O ssp, galv trlr, garaged, ex cond, extras, \$8k OBO. 470-8416.

'88 18' Four Winns bowrider, 140 hp Johnson, custom galv trlr, extras, ex cond, \$11.9k. 488-5092.

Cycles

Miyata 312 road bike, 14 spd, chromoly frame, aero bars, wired for cateye computer. Ken, x32566 or 485-7368.

Vespa Bravo model moped, 225 mi, \$600. Earl Rubenstein, x34807.

'84 Honda Shadow, 14k mi, new tires, brakes, seat, repainted, gas tank, eng/frame, \$2k OBO. 332-0882.

JSC

Today

Spaceweek event — The fifth annual Lunar Rendezvous Golf Tournament will tee off at 8 a.m. and 1 p.m. July 19 at the Bay Oaks Country Club. Following the tournament, a silent auction, awards ceremony, barbecue dinner and dance will be featured. Entry fees are \$100 for morning and \$125 for afternoon tee times. For more information contact Sandy Sausley 334-1153.

Spaceweek event — The Junior Astronaut Corps of America will sponsor space rides from 2-4 p.m. July 19 as part of Junior Astronauts Camp at the San Jacinto College Central Campus in Pasadena. For more information, call 486-4446.

Spaceweek tours — Boeing Aerospace Operations Co. will offer public open house tours of the Boeing Flight Equipment Processing Facility from 2-3 p.m. July 19-23. Reservations are required. Call Kari Thornton at 280-2028 for more information.

Spaceweek event — Children will learn about science and astronomy as a part of Student Starship at the University of Houston-Clear Lake. The science program includes a visit by the Clear Creek Independent School District's "Space Bus." Advanced registration is required. Call Sharon Pennington at 283-3529 for information.

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

Tuesday

Cafeteria menu — Special: smothered steak with dressing. Entrees: beef stew, liver and onions, shrimp Creole, baked chicken, French dip sandwich. Soup: navy bean. Vegetables: steamed rice, seasoned cabbage, corn O'Brien, peas, potatoes au gratin.

Wednesday

Spaceweek event — The Junior Astronaut Corps of America will sponsor a model rocket launch from 9:30 a.m.-noon July 21 as part of Junior Astronauts Camp at the San Jacinto College Central Campus in Pasadena. For more information, call 486-4446.

AFCEA luncheon — The Houston Space Chapter of the Armed Forces Communications and Electronics Association is sponsoring its monthly luncheon from 11:30 a.m. to 1 p.m. July 21 at the Holiday Inn ballroom on NASA Road 1. Dr. Terence T. Finn, senior policy analyst at NASA headquarters, will discuss the political outlook for NASA. Cost is \$12 for members, \$14 for non members.

Toastmasters meet — The Spaceland Toastmasters Club will meet at 7 a.m. July 21 at House of Prayer Lutheran Church. For more information, call David Bacon at 483-3845.

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

Thursday

Book signing — Former astronaut Mike Mullane will autograph his new book, "Red Sky," from 4:30-7 p.m. July 22 at Jeremy's Bookshelf. For more information, call Sally Jordan at 486-8028.

Spaceweek event — The Lunar Rendezvous Antique Show will be at John Ward Elementary School from 10 a.m.-7 p.m., July 22-23, and until 6 p.m. July 24. Three-day tickets are \$4 at the door. For more information call the Bay Area Museum, 532-1254.

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

Friday

Spaceweek event — The Houston Space Academy and North Shore High School will host a model rocket launch and demonstration at 2 p.m. July 23 at JSC. For more information, contact Ron Monroe at 591-1147.

Spaceweek event — A Lunar Rendezvous Casino Night will be from 7:30-10:30 p.m. July 23 at the Nassau Bay Hilton. Call 532-1254 for more information.

Cafeteria menu — Special: baked chicken. Entrees: deviled crab, Creole baked cod, baked chicken, beef cannelloni, Reuben sandwich. Soup: seafood gumbo. Vegetables: seasoned carrots, peas, breaded okra, steamed cauliflower.

'89 KW EX500 blk/red, 5k mi, \$2k. Tim, 286-8434.

Audiovisual & Computers

Laser XT compatible, 640k, 20 MBHD, 101 kybd, CGA monitor, software, 1200 ext modem, \$300. Tom, x37140 or 996-5835.

IBM PS/1, 3.5 FD, modem, mouse, DOS 4.01, word proc, spreadsheet, DBase, Prodigy, IBM user club SW, \$300. 333-6753.
IBM PS/2 model 25, IBM Pro Printer II. 482-8820.

Epson MX-100 wide carr printer, \$100; Grappler 9 pin printer interface for Mac, \$25. x37300 or 482-7529.

IBM XT, 640K 10 MB, monitor/kybd, sw, 1 disc drive, Riteman matrix printer incl, \$650. 337-4182.

2 Motorola, FM, 2-way, mobile radios, low band, 100 w, all cables, antennas, spkrs, microphones, control heads, wiring, \$150 for both. Howie, 282-3841 or 332-2390.

Mac SE, 4 MB RAM, 40 MBHD, 800k FD, \$500. x44090 or 482-5536.

Video camera/portable VCR, Magnavox 8276 lo-lite camera w/6x zoom; Panasonic 9600 dockable VCR 4 head, VHS, hifi, remote, \$425 for both. Bill, x44396.

Mac Classic w/Mobrius, 25 MHz, accelerator, B&W full page monitor, 40 MBHD, 20 MB RAM, software, ex cond, \$1.5k; Macintosh 1 MB SIMM (4), 60 ns, \$30/ea. 996-1667.

Pets & Livestock

AKC American Cocker Spaniel pups, ready 7-15-93, will have 1st shots, 1 buff F, 2 blk f, 3 blk m, \$150. Stan Phillips, x49672 or 997-1331.

Chihuahua pups, AKC, shots, 12 wks old, \$200. 534-4667.

German shorthair pointer pups, AKC field champion bloodlines, wormed, shots, \$250. Kerry, x36364 or 996-9264.

AKC blk lab male for stud, fee nego. x34544 or 480-8780.

Free to good home, playful 2 yr old 25# Beagle mix, current shots, spayed. x49712 or 585-3610.

4 yr old Bay, TB gelding, quiet, dressage foundation, trlrs, clips easily, easy to ride. Kate, 471-3119.

Siamese/Russian blue pet quality kittens, 6 wks, \$15. Lynn, x35974 or 992-1052.

Horse boarding stables w/pasture, cov, lighted, riding arena. 554-4316.

Sm barn seeks 4 more boarders, 12x12 stalls, dressage arena. Kate, 471-3119.

Musical Instruments

Yamaha PSR 90 kybd, disc capable, foot pedal, stand, \$300. x39034 or 474-2660.

15.5" Viola w/hardcase, cherrywood bow, ex cond, \$525. Carmen, 282-4046.

Household

Apt sz portable washing machine, almond, connects to kit sink, ex cond, was \$400, now \$200; dk woodframe couch w/brown tweed cushions, \$75; 2 matching tan chairs

w/matching ottoman, \$100/set. 333-4102.

Rattan sofa, chair, \$125; Rattan tea cart, \$45; 6' x 8' Abussun rug, blue/beige, \$75. Larry, x31235 or 482-6357.

French Provincial sofa, Fruitwood, beige, new cond, loveseat, modern, brwn velour, Bimini top for CJ7, 4 lots at Rosewood cemetery; Remington Rand typewriter. 282-4849 or 941-3262.

Wht woodframe youth bed, mattress, \$35. Liz, x31543.

Qn waterbed, motionless/heater, good cond, \$200. Rick or Diana, 427-7983.

Three kg sz bedspreads, \$30/ea. 488-2101.

Scandinavian brwn leather sofa, 86" l, \$750; chair/ottoman, \$275; Maytag elec washer, \$80; dryer, needs repair, \$30; student desk, 2 drwrs/shelves, \$35; daybed comforter set, \$60; sparring gear, \$95. 554-5119.

Sm bdrm set incl twin bed hdbd, nite stand, 3 drwr dresser, 2 dr chest, desk w/hutch, chair, \$200. Chuck, 282-3588.

Simmons crib w/matt, \$200; full sz Fisher Price playpen, \$50; Graco single stroller, \$25; full sz hdbd/ftbd, side rails, maple, \$75. 286-3266.

Kenmore washer/dryer. Fred. 944-3523.

Large walnut desk, good cond, \$100. Tony, x36123.

Mitsubishi lg screen tv, 45", stereo, all features, options, was \$3.3k, now \$1.6k or trade for working car. 488-0345.

Lt oak bdrm suite, bookcase hdbd, dbl bed w/matt/box spring, dresser, chest of drwrs, night stand, all solid wood, no vaneer, \$300. x37300 or 482-7529.

Matching loveseat, sofa, chair, blue, \$400. Marian, x39021 or 482-7019.

Dinette tbl, glass top, 4 chairs, \$95; 45 gal aquarium, wood stand, fluorescent lt, filters, heater, gravel, \$250. 488-8927.

Panasonic Bake-n-Broil microwave, rotating turntable, 1.0 cu ft oven, was \$350, now \$200. 488-8493.

G&S elec range, good cond, \$75. Rick, x48058 or 334-3104.

Sq glass top/wood kit tbl w/4 padded tubular chairs, \$300. Terri, x30623 or 538-3150.

Kg sz waterbed, 80% motionless, 12 drwr pedestal, lt oak w/brass trim, bookcase hdbd w/mirror, smoked glass storage case, \$650. Leah Elliott, 286-7516.

Wanted

Want roommate to share 2 bdrm patio house, CL area, bills paid, \$300. 488-3384.

Want high quality sofa, loveseat, chaise lounge, chair w/ottoman, uphol in pinks, burgundy, navy and/or blues; Prince House crystal lamp. 486-4701.

Want female nonsmoking roommate to share house in Lakeside, 2 rms avail, no pets, \$300/mo + dep, 1/2 util. Ann, 282-3790.

Want roommate to share 3-2-2 house, half of gar w/opener, \$350/mo + 1/2 util, male or female. John D. x49673.

Want Canon 50mm lens for AE-1 model. 282-5429 or 484-5366.

Want old quilts, I buy big or small, good or poor cond. 534-2281.

Want female roommate to share house, close to Hwy 45, \$285/mo., util incl. Theresa, 333-6491 or 480-6980.

Want female roommate to share house in Piper's Meadow, 3-2-2, nonsmoker, no pets, \$360/mo + 1/2 util. Katy, x34546 or 280-0951.

Want roommate to share 2-2-5 Seafarer TH, nonsmoker, \$350/mo. incl util, avail 7-15. Fred Hubbard, x44217 or 486-1734.

Miscellaneous

1/2 carat marquise diamond solitaire, exquisite cut, clarity, color, \$850. Jamie, 488-6535 or 331-8917.

Popup camper, sleeps 6, sink, stove, dining tbl, 12 v or 110v elec conn, icebox, \$1.2k; kg sz waterbed, semi motionless, blk leather hdbd, \$400. x36696 or 332-9102.

Brio train set, \$20; T.C. timber train/animals, \$7; Discovery toys sorter toy, \$7; Fisher Price car seat, \$30; Cosco car booster seat, \$15; Fisher Price record player, \$15. 486-4701.

Garth Brooks CDs in ex cond, Ropin' The Wind, The Dance, No Fences, \$8/ea; wht wedding dress, sz 5, long sleeves, v-back, full length, yellow/wht flowered veil, was \$500, now \$300. 474-3857.

5' x 8' Lo-Boy trlr, nearly new, \$400. x39034 or 474-2660.

President & First Lady premier plus membership, \$500. Kelli, x31160.

Elbow Room

Commercial workshop gives STS-57 crew more room to work

With a satellite rendezvous and retrieval, a space walk and nearly eight days of commercial experiment work under their belts, it took inhospitable weather to finally slow down the rapid pace of the crew of STS-57.

The crew — Commander Ron Grabe, Pilot Brian Duffy and Mission Specialists G. David Low, Nancy Sherlock and Janice Voss — said achieving almost all of the objectives of the flight was its own reward, but that an extra two days on orbit with a chance to look out the windows was an added bonus.

Left to right from top left:

1) Backdropped against the blackness of space, Wisoff stands on a mobile foot restraint on the end of *Endeavour's* remote manipulator system. The Spacehab module is in the foreground.

2) Low adjusts the mobile foot restraint on the end of the robot arm while Wisoff busies himself at the stowed European Retrieval Carrier during the 5 hour, 50 minute space walk. In addition to planned tests of tools and techniques that will be used in the Hubble Space Telescope servicing mission, Low was called upon to help latch two antennas on either side of EURECA.

3) EURECA is held in the grasp of *Endeavour's* robot arm shortly after rendezvous and grapple. The southern two-thirds of Florida, part of the Gulf of Mexico and clouds over the Atlantic form the backdrop.

4) Voss works with the Support of Crystal Growth experiment.

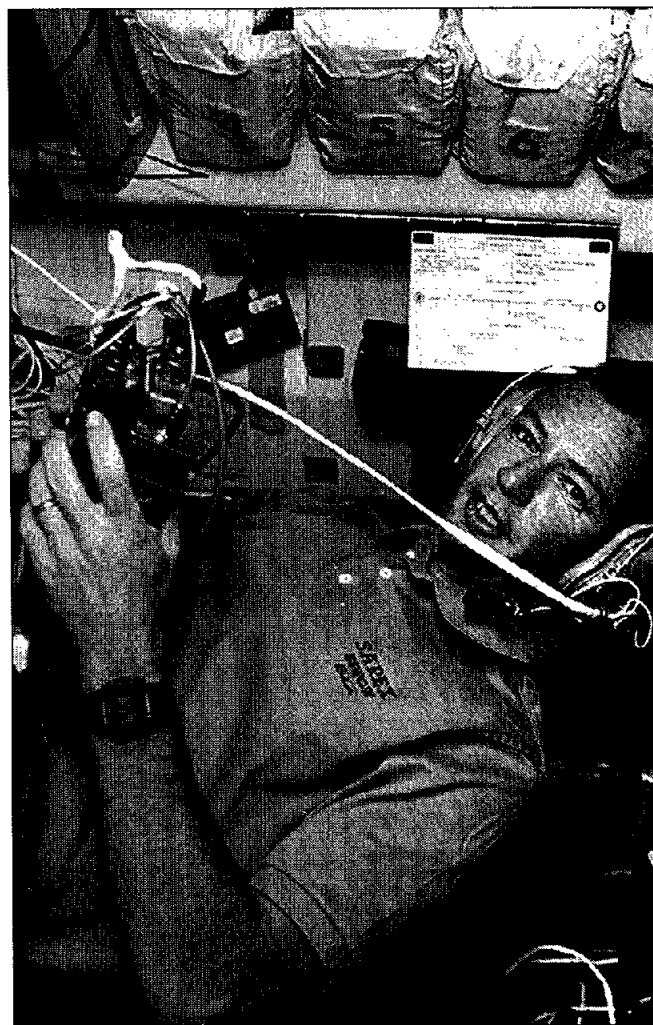
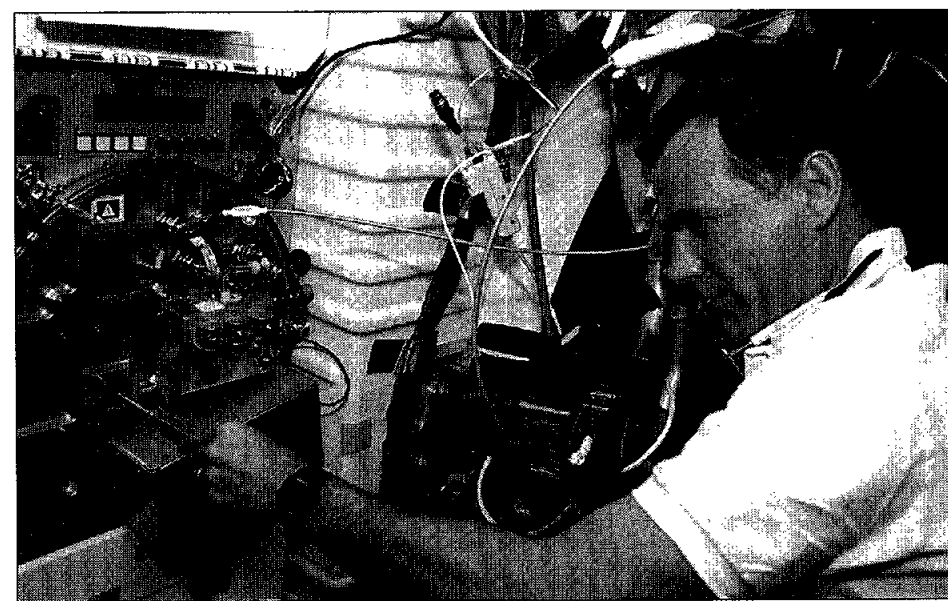
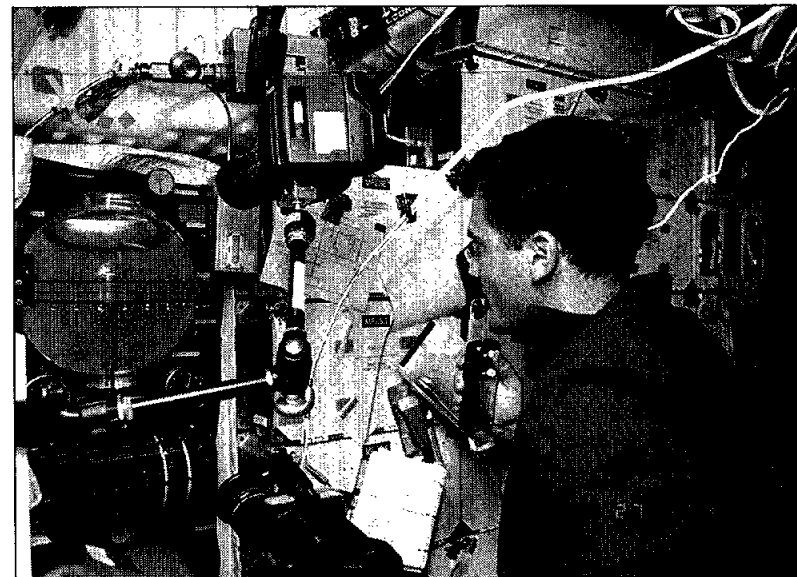
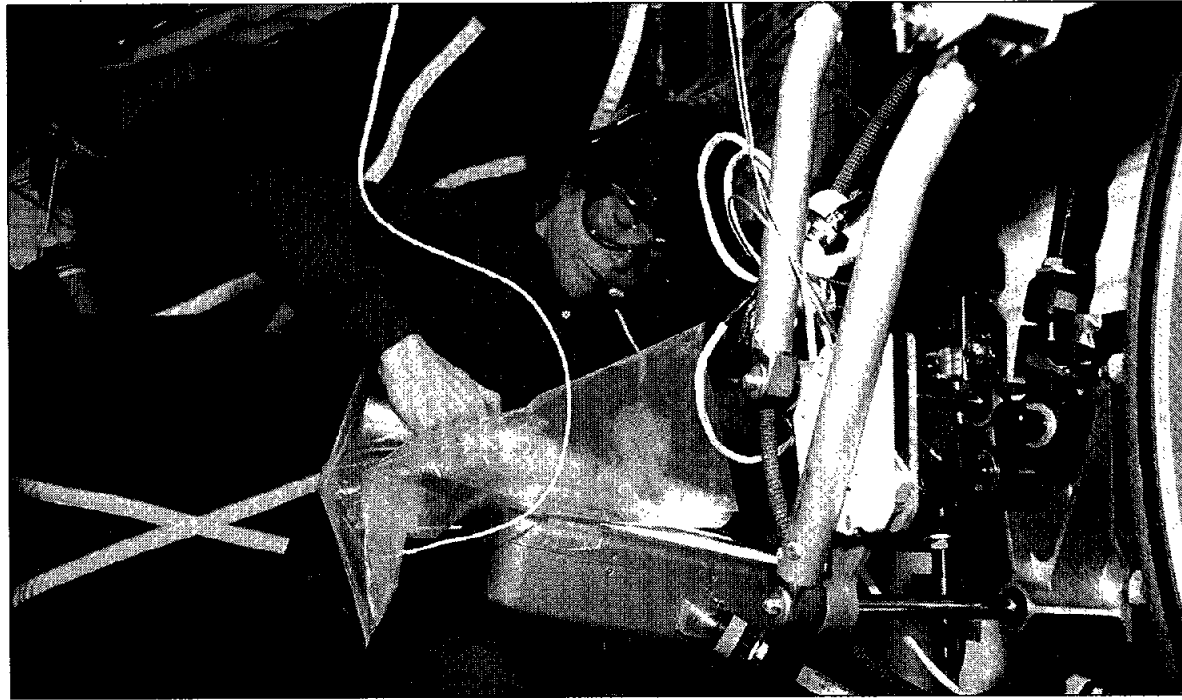
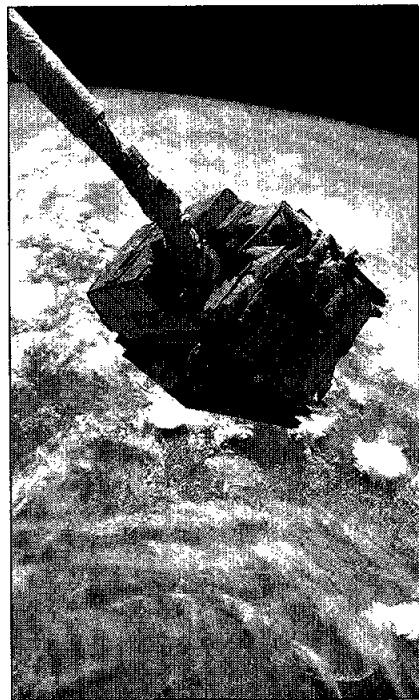
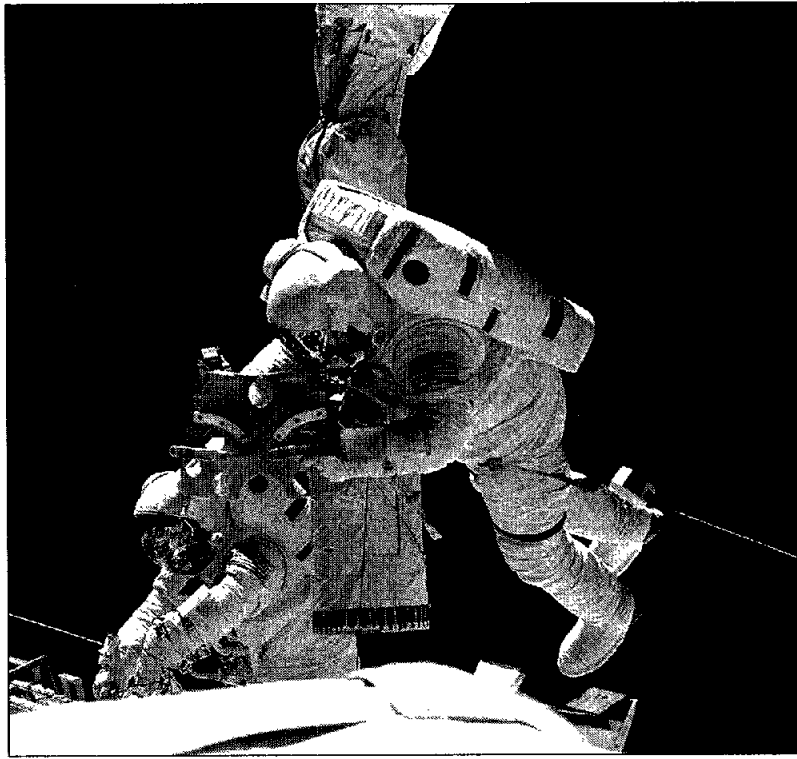
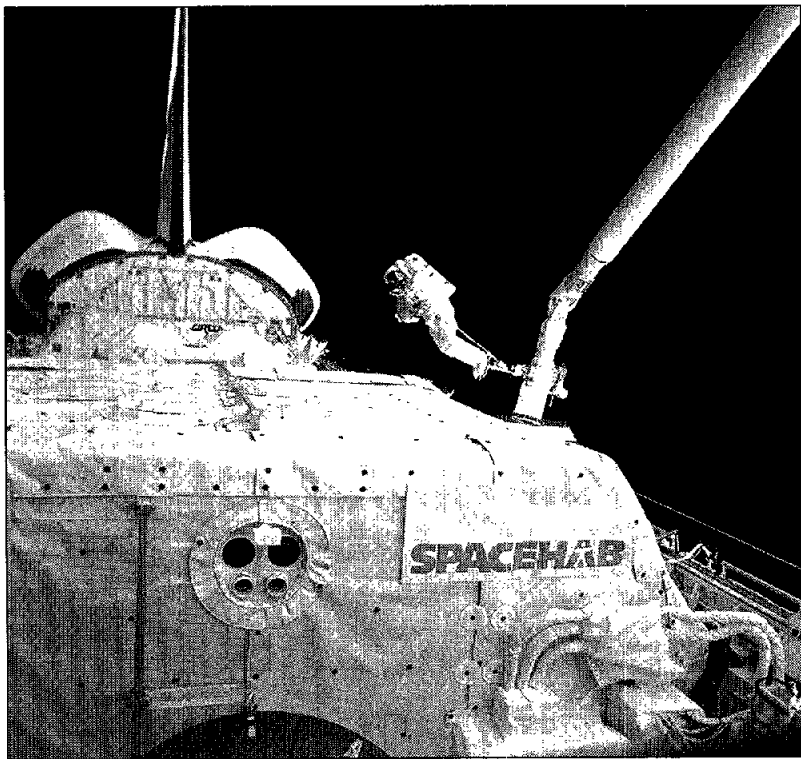
5) A high-angle view of the activity inside the Spacehab module typifies the pace of work in the commercially developed pressurized middeck augmentation facility. Voss, in the foreground, works with biomaterials products, while Duffy and Sherlock perform other tasks.

6) Wisoff monitors the Fluid Acquisition and Resupply Experiment, housed in four middeck lockers. The successor to FARE I, which flew on STS-53, the experiment was designed to demonstrate the effectiveness of a device to alleviate the problems associated with vapor-free liquid transfer in microgravity.

7) Grabe works on the Crystal Observation System within the Thermal Enclosure System. The purpose of the experiment was to grow high-quality protein crystals by vapor diffusion, and allow astronauts to monitor the growth on the spot.

8) Duffy talks to amateur radio operators on Earth from the flight deck. A licensed amateur radio operator using the call letter N5WQW, Duffy talked to a number of students around the globe.

9) Low works with samples from the Commercial Generic Bioprocessing Apparatus in the Spacehab module. The experiment processed biological fluids by mixing their components in microgravity. □



Stall, Kruest, Heath also receive honors

Pohl earns NMA Silver Knight Award

Henry Pohl, special assistant to the director for space station redesign, recently received the Silver Knight of Management Award, the highest honor given by the JSC chapter of the National Management Association.

Pohl was recognized for his 35 years of service and leadership at NASA, his ability to inspire other NMA members, his adherence to the NMA Code of Ethics and his ongoing support of the JSC NMA chapter.

Harold S. Stall, director of public affairs, also was honored with the

chapter's "Manager of the Year" award. Stall was selected on the basis of his management skills, his

JSC

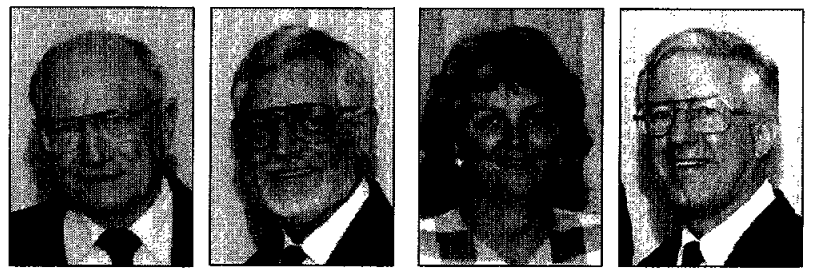
People

career leadership abilities, and commitment to NMA Code of Ethics.

Pohl joined the Manned Spacecraft Center in 1962 as an engineer after serving on the rocket

systems team with Dr. Werner von Braun. Pohl directed the design, development and testing of auxiliary propulsion systems on every NASA piloted spacecraft from Mercury to the shuttle. Following the Challenger explosion in 1986, Pohl assumed the job of director of engineering, which he held until his current assignment heading JSC's space station redesign team efforts.

Stall has led the JSC public affairs office since 1975, and worked with NASA Headquarters in the development of NASA Select



Pohl

Stall

Kruest

Heath

television. He also serves as president of the Manned Space Flight Education Foundation, Inc., which developed Space Center Houston.

David Heath, senior software engineer in the Automation and Robotics Division, and Monica Kruest, program analyst with the Shuttle Program Office, received

the NMA chapter's Leadership Award for their significant contributions to local and national NMA activities. Heath serves as a national director of the National Management Association, and Kruest is treasurer for the JSC chapter and Texas Gulf Coast NMA Council.



JSC Photo by Benny Benavides

READY TO ROLL — This year's JSC Fellowship Program participants fill the squares required before they can begin their year of full-time college study at NASA expense in August. From left, Paige Maulsby of the Human Resources Development Branch, explains the service agreement and other administrative matters to Engineering's Patrick Fink, Eric Hurlbert and Jeff Kowing, Mission Operations' Laura Bollweg and Jerry Borrer and Center Operations' Sherri Dunnette.

NASA, Texas Medical Center sign pact

(Continued from Page 1)

"While NASA and the Texas Medical Center Institutions have been cooperating on projects for over 30 years, this agreement lends a formal framework for future endeavors," Wainerdi said.

Texas Medical Center is a corporation of about 40 member institutions, each devoted to not-for-profit patient care, medical and health education, and research. Seventeen of these institutions had about \$437 million pledged in 1991 for research projects, of which \$353 million was received from outside sources to fund research in that year. Texas Medical Center is located on about 670 acres in the southwest part of Houston and employs more than 54,000 full and part-time workers. It registers more than 3 million patient visits each year, and the member institutions have operating budgets that total about \$4 billion annually.

From its inception, NASA has been committed to extending the benefits of its scientific and technological achievements and research to the improvement of life on Earth. Of the more than 30,000 technology applications that have come out of the space program, a large number are now being used in the practice of

medicine throughout the world in cardiology, cancer and immunology research, emergency medicine, osteoporosis research, radiology and toxicology.

For example, noted heart surgeon Dr. Michael E. DeBakey and Dr. George Noon of Baylor College of Medicine currently are working with NASA scientists to develop a totally implantable artificial heart assist device. In a 1992 Congressional field hearing, DeBakey pointed out that "Some of these technologies have proved to be of extraordinary value in the diagnosis, therapy and further research of disease states which continue to plague human beings."

NASA and Texas Medical Center began working together in 1962, when their scientists and physicians collaborated in the use of electroencephalography to help select astronauts and monitor brain function during space flight. The first in-flight test of EEG monitoring was performed in December 1965 on Gemini Astronaut Frank Borman.

That mission pioneered the use of biotelemetry, a method for converting physiological bioelectric data into signals that are sent to doctors at remote locations. Biotelemetry is now used routinely for monitoring patients

in intensive or coronary care units of hospitals, newborns who are being transported from one unit to the next, or emergency patients who are being transported in ambulances.

Another dramatic area of technology transfer has been in the development of diagnostic aids such as Computer Assisted Tomography (CAT scans, Magnetic Resonance Imaging (MRI) and Positron Emission Tomography (PET) that have been instrumental in the detection and early diagnosis of various diseases. These specialized scanning instruments were based on the satellite image-enhancement technology NASA used in Landsat, a satellite that produces digitized electronic pictures of the Earth's resources.

Biomedical research is expected to be one of the major scientific activities aboard NASA's redesigned space station, providing scientists with a better understanding of the impact of extended-duration missions on humans and validating countermeasures to lessen the undesirable effects of microgravity. This understanding could also yield fundamental information about processes within the body that can be applied to the diagnosis, prevention and treatment of disease states on Earth.

Mission Control viewing room, cafeteria hours

The Mission Control Center viewing room will be open to JSC and contractor badged employees and their families during portions of the STS-51 mission.

Based on a Saturday launch, employees will be allowed to visit the MCC Monday from 11:30 a.m.-2:30 p.m. and 5-7 p.m.; Tuesday, from 11:30 a.m.-2:30 p.m.; Thursday, from 11:30 a.m.-2:30 p.m. and 5-7 p.m.; Friday, from 11:30 a.m.-2:30

p.m.; and Sunday, from 1-5 p.m. There will be no viewing opportunities during high-activity periods.

Employees must wear their badges and escort family members through the regular public entrance on the northeast side of Bldg. 30. Children under 5 will not be permitted. No flash photography or loud talking will be permitted at any time.

Because of the dynamic nature of shuttle missions, viewing hours may

be changed or canceled without notice. For the latest information on the schedule, call the Employee Information Service at x36765.

Special cafeteria hours also will be in effect during the mission.

The Bldg. 3 cafeteria will be open normal hours from 7 a.m.-2 p.m. weekdays. The Bldg. 11 cafeteria will be open from 6:30 a.m.-2 p.m. weekdays. Neither cafeteria will be open on weekends.

New object technology society begins meetings

Promoting a better understanding of the role of object technology in software development is the purpose of the Space Center Object-oriented Projects and Engineering Society, or SCOPE, being organized in the Clear Lake area.

SCOPE meets on the third Wednesday of every other month in the Forest Room at the University of Houston-Clear. The next meeting is 6 p.m. this Wednesday.

Annual membership dues are \$25, or \$15 for full-time students,

and entitle members to free admission to meetings, a subscription to the group's newsletter and discounted admission to other sponsored events. For more information, contact Robert Pelle at 335-6707 or 332-8361.

Space Center Houston sets Spaceweek events

Astronaut appearances, space career overviews, and hot air balloon demonstrations are a few of the events planned by Space Center Houston for Spaceweek, now through July 24. The following are some of the highlights:

Today — Former astronaut Dr. Mae Jemison, president of the Jemison Group, will be the guest speaker in Space Center Plaza from 11:30 a.m. to 12:30 p.m.

You don't have to be an astronaut to work in the space program will be the message of the first in a series of "Careers in

Space" panels to be held during the week. Barbara Schwartz, JSC public information specialist; Phil West, EVA system development manager; Milt Heflin, a Mission Control flight director; Michele Brekke with Shuttle Project Development and Integration; and Dan Feldstein, space reporter with the Houston Post will talk about their jobs beginning at 2 p.m. KTRK-TV space reporter, Steven Gauvain will moderate.

Tuesday — Lunar Landing Day will feature a guest appearance by KRIV-TV "Kids Club" host Karen Kay at 10:30 a.m. Young people can register to win a variety of prizes.

Dr. Bernard Harris, STS-55 mission specialist, will discuss his

space flight experiences beginning at 11:30 a.m.

Wednesday — Balloon aviation will be featured all day with tethered balloons in the visitor center. Balloonists Richard Filip and Steve Lombardi will fly a remote-controlled balloon model in Space Center Plaza and demonstrate hot-air balloon equipment during a presentation beginning at 11:30 a.m.

Thursday — Former astronaut Dr. Joseph P. Allen, president and chief executive officer of Space Industries International, will talk about commercial space at 11:30 a.m.

Friday — The second "Careers in Space" panel will feature Linda Ham, a Mission Control flight director; Carolyn Fritz, Neutral Buoyancy Facility test director; Steve Porter, Crew and Thermal Systems engineer; and Tandi Bagian, chief of Crew Interface Analysis Section. The panel, moderated by KTRK-TV space reporter Steven Gauvain, will begin at 2 p.m.

The Spaceweek events are open to the public and included in the price of Space Center Houston admission. JSC employees and contractors can purchase discount tickets at the Bldg. 11 Exchange Store. For more information, call 244-2130.

Employees earn accolades

(Continued from Page 1)

Solid Amine Regenerative CO2 and H2O Removal System; Karen L. Nyberg for a Robot Friendly Mechanical Interface for the Portable Foot Restraint Workstation Stancion; Scott A. Swan for an Inflatable Pole; Carl D. Scott for a Laser Induced Copper Fluorescence for Arc Jet Velocity Measurement; Brian G. Morris for a Cooled Spool Piston Compressor and a Magnetically Operated Check Valve; Joseph S. Cook Jr. for a Controlled-Vent Pressure, Variable-Enclosure Volume Helium Recycling Station, Joseph S. Cook Jr. and Scott W. Burge for a Universal Union; Michael L. Roberts for a Tetrahedral Lander;

Joseph E. Rogers for a NASA Device Independent Graphics Library UNIX Version; Mark E. Rorvig and Robert O. Shelton for an Intelligent Filter for Visual Documents; James A. Villarreal for a Neural Network Emulating Transputer System; Todd A. Phillips for a Neural Network Development Tool Macintosh Version; Glenn F. Spaulding for a Modification of the Surfaces of Biomedical and Biotechnical Devices using Atomic Oxygen; Dennis R. Morrison for Molecular Specific Antibodies against Urokinase; and Gordon A. McKay for a Case Study of temperature Related Peak Shift in WDS Microprobe Analysis.

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.

Dates and Data submissions are due Wednesdays, eight working days before the desired date of publication

Swap Shop ads are due Fridays, two weeks before the desired date of publication.

Editor Kelly Humphries
Associate Editor Kari Fluegel

Scuba club plans visit to Yucatan

The Lunarfins Scuba Club will sponsor its second annual outing to Belize, a country located on the southern part of the Yucatan peninsula, from August 7-12.

The \$690 fee includes air fare, lodging and meals. Space is limited, and advanced reservations are required. Contact Richard Lansing at x35572 or at 997-9006.

STS-51 landing flexible

(Continued from Page 1)

it away in the cargo bay for the trip home.

Discovery is scheduled to land at KSC at 6:21 a.m. July 26, but the mission may be extended by one day to land July 27 if supplies allow.