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

Giving blood

JSC blood drive is set for next week and benefits the JSC family. Story on Page 3.

total health

Stress seminar

Learn how to deal effectively with stress on the job and at home. Story on Page 4.

Space News Roundup

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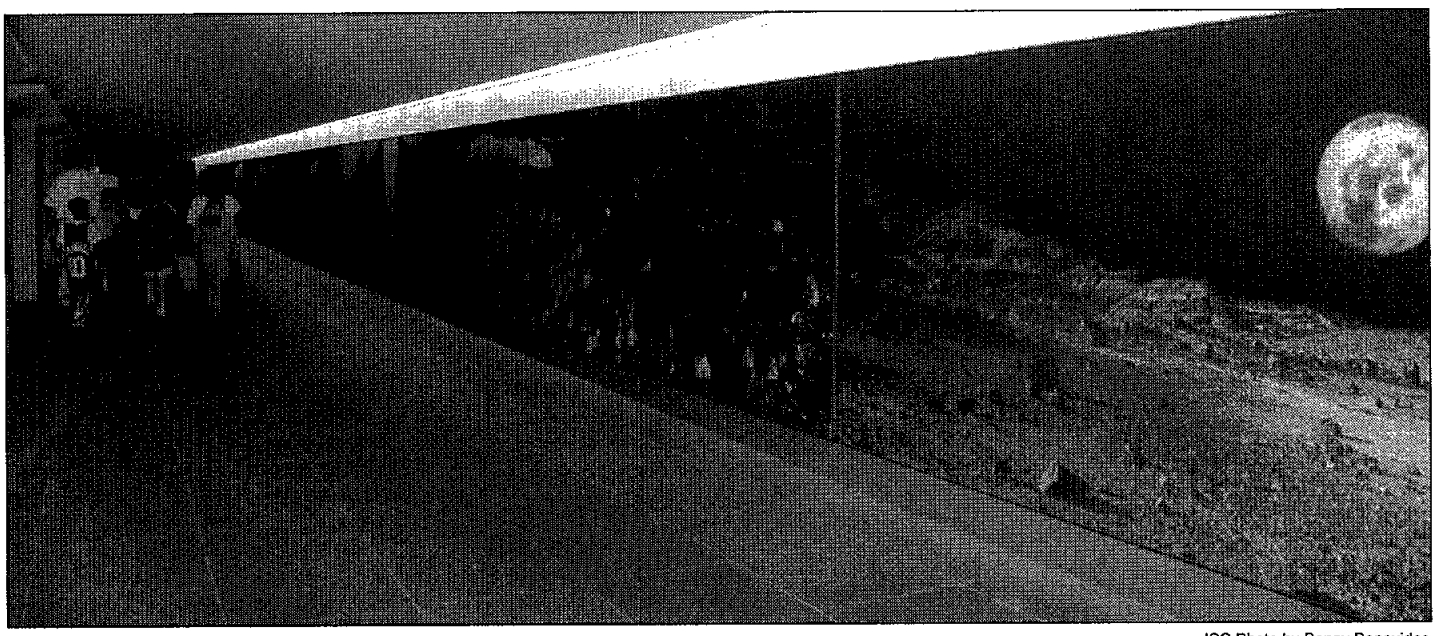


JSC Photo by Benny Benavides

PANORAMIC SPACE—Artist Dennis Ivy unveils his 6- by-160-foot mural in Houston's downtown underground tunnel near Houston Light and Power at 1111 Louisiana. The mural is composed of 21 Apollo-era images interlaced with six west Texas desert views. Each panel weighs 400 pounds and was constructed in Ivy's studio. Ivy worked with JSC in selecting the photos he used.

Endeavour to launch Sunday

By James Hartsfield

Launch preparations of *Endeavour* for STS-77 are on schedule for a liftoff at 5:30 a.m. CDT Sunday to begin a 10-day flight devoted to helping open the commercial space frontier.

The countdown was to begin early Thursday and the STS-77 astronauts—Commander John Casper, Pilot Curt Brown and Mission Specialists Andy Thomas, Dan Bursch, Mario Runco and Marc Garneau—were to arrive at KSC later that day.

STS-77 ENDEAVOUR

Endeavour's 11th mission will feature more rendezvous and station-keeping activities than ever before accomplished on a single shuttle flight. The first rendezvous activities will highlight investigations of an inflatable space antenna carried on the Spartan-207 satellite. Ensuing rendezvous activities will investigate new methods of maintaining a stable orientation in space by the Satellite Target Unit, part of the Passive Aerodynamically Stabilized Magnetically Dampled Satellite, or PAMS, experiment.

More than 90 percent of the payloads aboard *Endeavour* are joint ventures with industry, sponsored by the NASA Headquarters Office of Space Access and Technology through its Commercial Space Centers and industrial affiliates. Among the experiments are one and a half tons of equipment aboard the fourth Spacehab shuttle flight.

Fueling of *Endeavour*'s external tank is planned to begin at about 8:40 p.m. CDT Saturday, and an on-time launch Sunday would lead to a planned landing of STS-77 at 6:07 a.m. CDT May 29.

Elsewhere, work is continuing to proceed smoothly on *Columbia*, in KSC's Bay 2 processing hangar being readied for a mid-June launch on STS-78.

Space station air system passes test

The system that will purify the air aboard the International Space Station recently passed a major test at NASA's Marshall Space Flight Center.

The month-long test evaluated the system's ability to control carbon dioxide, oxygen and air pressure inside the station's living and laboratory quarters. Simulating the breathing activity of a crew of four, engineers injected carbon dioxide and water vapor, and removed oxygen from the school bus-sized, 6,200-cubic-foot test module throughout the 30-day test to evaluate an air purification system.

"The test provided an excellent demonstration of the capability for maintaining cabin air composition using control procedures to be used onboard the space station," said Jay Perry, test principal investigator and life support engineer of Marshall's Thermal and Life Support Division. "Throughout the test, the system operated in a fully automated fashion and its components responded very well to the simulated human breathing," Perry explained. The test was the fifth in a series begun in 1987.

The test also featured operation of the carbon dioxide removal system at reduced levels to save power. The test system operated at full power levels during the 53-minute daytime portion of the orbit and at lower levels during the 37-minute nighttime orbit, just as planned for space station. The nitrogen and oxygen composition of the atmosphere was controlled by signals from an air composition monitor, and special computer software very similar to that planned for use on the space station was developed for automated control during the test.

The Atmosphere Revitalization Subsystem demonstrated the capability of providing a healthy working environment for the crew and achieved a power savings of up to 200 watts over previous operating modes. These savings are significant and represent additional electrical power available for science experiments onboard the space station, Perry said.

Additional testing is planned to determine the capability of the various subsystems to remove other trace contaminants. The hardware is scheduled to be launched in 1998. Marshall is conducting a variety of air purification tests in support of the Space Station Program Office.

Lucid begins Earth observations while JSC team monitors

Mir crewmates Onufrienko, Usachev get word stay will be longer to accommodate Russian flight schedule

Mir 21 Cosmonaut Research Shannon Lucid began Earth observations this week on board the Russian Mir Space Station.

Lucid, along with Commander Yuri Onufrienko and Flight Engineer Yuri Usachev, began work this week in the newest science workshop—the Priroda module—to observe Earth from space and conducted other scientific examinations.

Lucid observed the Altai Mountains, North Caspian Sea, Danube River Delta, Gulf of Venezina, Southern Luzon, Voronezh and the Great Salt Lake. Some sites have been passed over due to weather conditions, but most observations have been successful.

Priroda is equipped with instruments to monitor ecological situations in large industrial areas, clouds and the ozone, study the ocean surface and its interaction with the atmosphere, plot geological maps to refine mineral and water reserves and study the Earth to help define economic and ecological theories of natural resource utilization.

MIR-21 LUCID

All of the work conducted by the Mir 21 crew is being monitored by a team of scientists at the Russian Mission Control Center in Kaliningrad and here at JSC. NASA Mir Mission Scientist John Uri heads up the team here in Houston.

"We're very excited by Shannon's progress," Uri said. "I think the research program is going extremely well. We're pretty much where we thought we would be. We've actually completed two of the experiments already, one in fundamental biology looking at egg development, and another in materials processing. Those were completed pretty much on schedule. All of her other activities are proceeding nominally."

The Priroda has facilities—microgravity glovebox, microgravity isolation mount and remote sensing equipment—that will be used throughout the Phase 1 program Uri said.

In order to prepare for science work on Priroda, Lucid reviewed experiment procedures and her premission training using the Crew On-Orbit Support System—an audio-video system. This is the first flight of the new system, which may be used on the International Space Station.

Radiation measurements are being taken by the crew routinely throughout the mission. The dosimeters are mounted throughout the station to gather radiation data at various locations. Radiation data stored electronically on the Tissue Equivalent Proportional Counter was called down by the crew.

Last week, Lucid's crew mates were notified that they will be staying on board Mir a bit longer than originally planned. The Mir 21 mission has been extended until mid-August to accommodate an adjustment to the Russian flight schedule. At that time, a new crew will be launched. Lucid's stay on Mir will not be affected; she still returns to Earth in early August, after Atlantis delivers Astronaut John Blaha to the Mir on the next shuttle docking mission, STS-79.

Today, Onufrienko and Usachev mark their 84th day aboard Mir. Lucid has been on Mir for 56 days.

Teacher workshop offered

By Mae Mangieri

JSC employees' relatives and friends will have the opportunity to attend a week-long workshop at JSC this summer.

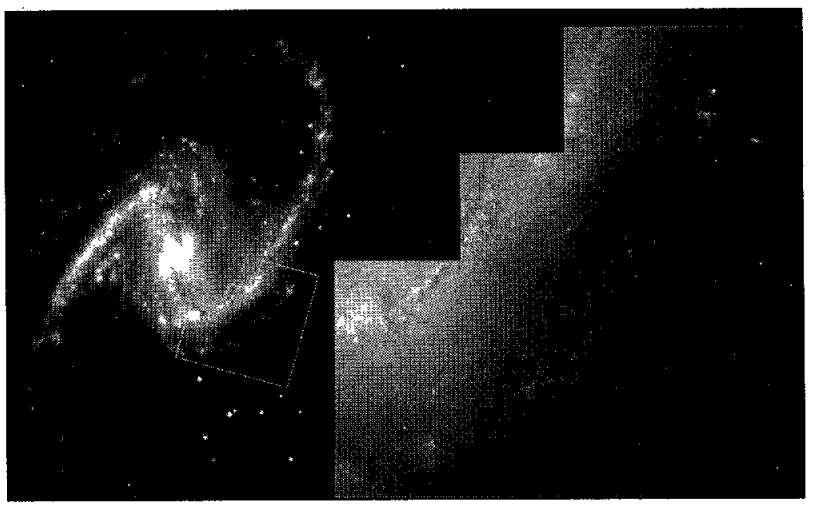
JSC's Education and Information Services Branch will offer an aerospace professional development workshop for 30 elementary and secondary school teachers who are family members or friends of JSC civil service and contractor employees. The workshop will be held at JSC, from 8:30 a.m.-5 p.m. July 29 -August 2.

"There is no cost to attend the week-long workshop and it is an exciting way for teachers who are JSC family members or close friends to connect to the space program," said Billie Deason, education team lead. "The workshop is an opportunity to show PAO's gratitude to the many employees who help JSC meet its educational goals throughout the year."

The workshop enables teachers to become aware of how NASA programs incorporate science, mathematics and technology. During the course of the workshop, teachers also gain a historical perspective of NASA.

Highlights of the workshop include a hands-on space suit, rocketry and microgravity activities demonstrated by Gordon Eskridge and Angelo Casaburri, aerospace education specialists from Oklahoma State

Please see **TEACHERS**, Page 4



This image from the Hubble Space Telescope shows a region in NGC 1365, a barred spiral galaxy located in a cluster of galaxies called Fornax. A barred spiral galaxy is characterized by a "bar" of stars, dust and gas across its center.

Astronomers measure distant stars

Two international teams of astronomers, using NASA's Hubble Space Telescope, are reporting progress in measuring the universe's rate of expansion—a value that has been debated for over half a century.

These new results yield ranges for the age of the universe from 9-12 billion years, and 11-14 billion years. The goal is to measure the Hubble Constant to 10 percent accuracy.

"We have five different ways of measuring the Hubble Constant with HST," said Wendy Freedman of Carnegie Observatories. "The results

Please see **HUBBLE**, 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.

Astroworld: One day pass cost $17.25.

Fiesta Texas: One day pass cost $17.25.

Six Flags: One day pass cost $17.25.

Sea World: Adult tickets cost $24.50, Children (3-11) cost $17.25.

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

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

Stamps: Book of 20, $6.40.

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

Metro tickets: Passes, books and single tickets available.

Upcoming events: Caribbean Getaway Sept. 13-20. Cost is $359. Deposit of $200 due July 8. Mexico Cooper Canyon Trip Nov. 6-12. Cost is $995. Deposit of $200 due Sept. 6.

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.

Fitness Challenge: 1996 Fitness Challenge runs to Aug. 31. Employees are eligible to win $100 gift certificates. For more information call Larry Wier at x30301.

Defensive driving: One day course is offered once a month. Cost is $25. Interested employees should call the Gilruth.

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

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

Weight safety: Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. May 23. Pre-registration is required. Cost is $5.

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

Aikido: Martial arts class meets from 6:15-7:15 p.m. Tuesday and Wednesday. Cost is $25 per month. New classes begin first of each month.

Aerobics: Class meets from 5:15-6:15 p.m. Monday, Tuesday and Thursday. Ballroom dancing: Cost is $60 per couple. For additional information call the Gilruth Center at x33345.

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

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

JSC

Dates & Data

Today

Cafeteria menu: Special: 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, black-eyed 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

Seminar set: The Employee Assistance Program Office will host a seminar at noon May 21 in the Bldg. 30 Auditorium. Michael Haro will discuss "Coping With Stress in a Changing Environment." For information call the Employee Assistance Program Office at x36130.

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

Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. May 22 at the House of Prayer Lutheran Church. For information call Jeannette Kirinich at x45752.

Astronomers meet: The JSC Astronomy seminar will meet at noon May 22 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information call Al Jackson at x35037.

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

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, cauliflower, 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.

May 28

BAPCO meets: The Bay Area Personal Computer club will meet at 7:30 p.m. May 28 in the Community Room of the League City Bank and Trust Co. at 300 Main St. in League City. Guy Thibodaux will discuss "Photography using Computers." For information call Guy Thibodaux at 333-5340.

May 30

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

June 4

ABWA meets: The American Business Womens Association, Clear Lake Area Chapter will meet at 5:30 p.m. June 4 Bay Oaks Country Club. For more information call Nancy Hutchins at x34006.

June 6

Warning system test: The site-wide Employee Warning System will under go its monthly audio test at noon June 6. For more information call Bob Gaffney at x34249.

June 12

MAES meets: The Society of Mexican American Engineers and Scientists will meet at 11:30 a.m. June 12 in the Bldg. 3 Cafetera executive dining room. For more information call Michael Ruiz at x38169.

June 13

NPM meets: The National Property Management Association will meet at 5 p.m. June 13. For more information and meeting location call Marie-France Smith x39309.

Airplane club meets: The Radio Control Airplane Club will meet at 7:30 p.m. June 13 at the Clear Lake Park Community Bldg. For information call Bill Langdoc at x35970.

June 14

Astronomers meet: The JSC Astronomical Society will meet at 7:30 p.m. June 14 at the Lunar & Planetary Institute 3600 Bay Area Blvd. For more information call Chuck Shaw at x35416.

June 19

Scuba club meets: The Lunarfins will meet at 7:30 p.m. June 19 at Redfish Restaurant under the Kemah/Seabrook Bridge, Seabrook Side. For more information call Fred Toole at x33201.

JSC

Swap Shop

Property

Rent: League City, Pecan Forest, 3-2-2, FPL, fenced, ex cond, no pets, $850. 554-6200.

Lease: Condo, 1 BDR, W/D, FPL, sec alarm, cov'd parking, appli, upstairs, new carpet. Jim Briley, 244-4632 or 488-7901.

Sale: Waterfront lot, Dickinson Bayou, .5 acre, recent bulkhead, wooded, $65k obo. x31370 or 334-7412.

Rent: Deer Park, 2 BDR older house, window A/C, gas ranged, $350 mo, references req . 471-4183.

Sale: Clear Lake, Oakbrook West, 2 story, 4-2.5-2, pool w/jacuzzi, custom cabinetry, carpet allowance, warranty, $121.9k. x38275 or 480-4634.

Sale: 130 cleared acres, 5 pastures, 15 mi East of Tyler, house, hay & horse barns, divide, all amenities. 488-5058.

Lease: Pasadena townhome, 3-2.5-2, very clean, no pets indoors, pool privileges, water pd, avail June, $550 + dep. 487-7132.

Lease: Pipers Meadow, 3-2-2A, fenced, hi efficiency A/C, ceilings fans, $780 mo. x31275 or 486-0315.

Sale: Clear Lake condo, 1-1, W/D, FPL, good cond, Ruben, x47119 or 486-0817.

Sale: Webster 2-2-2cp condo, upstairs, new A/C, kitchen & bath upgrades, WBFP, W/D conn, $37.5k. 280-0285.

Rent: Garage/workshops, 15'x20', $100 mo; 15'x 30', $115 mo, both in Dickinson. Larry, x33168 or Carol, 393-2820.

Sale: Freeway Manor, 4-1.5-1cp, 1200 sq ft, cov'd patio, storage building w/garden, grape vines, 2 Satsuma orange trees, $49.9k. Ruby/Cecil, 944-5944.

Lease: Middlebrook, 4-2-2, formals, den, FPL, fans, good cond, $900. 486-8551.

Rent: Beach house, West Galveston, 2nd Row beach, all amenities, sleeps 5-7, wkend/wkly rates. 488-6796 or 409-737-5017.

Rent: Beach house, Crystal Beach, TX, Galveston county, furn, cable T/V, wkly/wkend rates. 486-1888.

Sale: Memorial Oaks Cemetery, 4 spaces in lot 15, sect 7, 2 ea side-by-side. 903-584-3575.

Cars & Trucks

'93 Nissan 240sx Sport Coupe, maroon, ex cond, new tires/brakes, auto, A/C, AM/FM/cass, ext warranty, 40k mi, $11.4k obo. George, x37732 or 488-5352.

'84 Ford Crown Victoria, maroon, 4 dr, A/C, good cond, 103k mi, rebuilt eng, auto, AM/FM, pwr package, $2k. x31695 or 532-1089.

'85 Mustang convertible, low miles, $2,750. 332-2229.

'90 Aerostar, ext length, 1 owner, hi miles, $65k nego. 332-2229..

'84 Pontiac Fiero SE, red, 4 cyl, auto, loaded, sunroof, 1 owner, 85k mi, good cond, $2.2k. x41195 or 326-2441.

'87 Chevy Celebrity station wagon, 63k mi, ex cond. x32444 or 996-9410.

'91 Toyota Corolla DX, blue, 4 dr, w/sunroof, ex cond, 92k mi, auto, AM/FM/cass, A/C, $5k. x31695 or 532-1089.

'92 Honda Prelude SI, 48k mi, new tires, ex cond, $12k. 286-2128.

'91 Peugeot 405S 76k mi, mint cond, loaded, leather ABS, P/W & P/L, $4.8k obo. 282-4587.

'85 Mercury Marquis Brougham, loaded, low mi, ex cond, $2.2k. Phillip, x34092 or 488-8972.

'86 Toyota MR2, white, loaded, 5 spd, good cond, Sony cass/stereo, $3k. Jeff, x30224 or 613-8135.

'92 Chevy Lumina Euro 3.4, black, w/grey inter, sport instrumentation, loaded, Delco Bose AM/FM/cass, alarm, 1 owner, ex cond, $8.5k. Ron, x33196.

'87 Saab 9000S, 5 dr, 85k mi, silver, A/C, cruise, cass, P/L & P/W, sunroof, great shape, $2,995. x48978 or 286-5431.

'88 Cadillac Fleetwood, loaded, all electric, non-smoker, 61k mi, ex cond, $8.9k. x49737 or 331-0249.

'91 Ford Thunderbird, V8 302 eng, loaded, 40k mi, $7.2 obo. 479-5334 or 916-3786.

'95 Ford Ranger XLT Supercab, 2 dr, dark blue, A/C, 5 spd, AM/FM/cass, ex cond, 2k mi, $15.5k nego. Janelle, 280-0222 or 282-9334.

'67 Mustang, good cond, new paint, $5k nego. 947-2092.

'72 Karmann Ghia, ex cond, new inter, 19k mi on rebuilt engine, $3,750 obo. x31440 or 333-5693.

'91 Isuzu PU, 5 spd, 72k mi, A/C, alarm, cruise, CD, bed cover, mag's, tint, $4.8k. 992-0782.

'76 MG Midget convertible, Brit racing green, restored, ex cond, $4.5k. 280-5989 or 992-1162.

Boats & Planes

'92 Kawasaki 750 Super Sport Waverunner, trailer, life vest, $3.5k. 488-2184.

West Marine inflatable sport boat, 10'2", Nissan 9.9Hp, short shaft, access/manuals, 15 hr max, boat handle/motor stand, trlr, $3.5k obo. 488-4398.

Ouachita 14' semi-V aluminum riveted fishing boat, 18Hp Evinrude eng, Highlander trailer, elect troll motor, swivel seats, anchor new tire/wheels, life jackets, extras, $1.2k. x37300 or 482-7529.

'88 Wellcraft Fisherman, 18' center console, 150 Johnson, marine radio, hummingbird depthfinder, Sportsman trailer, ex cond, $8.3k. Randy, x36364 or 488-6644.

Timeshare, sailboat, racing sloop, fast, roomy cabin, expert sailer preferred, includes local marina privileges. x37187 or 488-0323.

Bass boat, 14' Skeeter w/trailer, 60Hp Johnson, Motor-Guide trolling motor, 2 depth finders, runs good, $1,675. Don, 283-6855 or 286-6535.

Cycles

'92 Suzuki DR350S Dual Sport, 4k mi, $2,250 obo. Mark, x35597 or 554-5156.

'89 Honda Elite, new battery, tune up, license, helmets, $600. 333-3291.

Schwin World bicycle, 10 spd, 15" frame, 27" wheel sz, ex cond, $130. Kyle, x37888 or 996-5551.

IBOC Mongoose Composite Road bicycle, Shimano 105 STI shifters. Kathy or Murray, x34221 or 338-1248.

Ross Grand Touring training bike, 10 spd, $50. Rob, x41027 or 334-3529.

Audio Visual & Computers

Mac Performa, 635CD, 8MB RAM, 250MB HD, quad spd CD-ROM, 68040 cpu @ 66MHz, Apple high resolution color monitor, MS Office 4.2, extra S/W & CDs, $795. Bobby, 244-2444 or 488-4382.

386SX 25MHz, 8 MB RAM, 3.5" FD, 44MB, HD, w/Windows 3.1, 14' SVGA color monitor, $400; Epson LX-800 dot matrix printer, $50; roll-around computer desk, 4 shelves, $80. 244-8978 or 286-5431.

RCA TV, 24", table model, works well, $75. Doug, x48851 or 486-7412.

Macintosh Performa 475, 8MB RAM, 160MB HD, 3.5" FD, 512k VRAM, 14.4 fax/modem, keyboard, mouse, monitor, MS Office, $850. Kyle, x37888 or 996-5551.

U.S. Robotics Mac & fax Sportster 14,400 fax/data modem, cable/software, $65 obo. x38871.

Two Televideo color monitors. x32444 or 996-9410.

Kenwood MV-7 speakers, 3-way, 4 speakers units; bass-reflex, floor standing type, 550 watts, 27"x24"x14.5", 55 lbs ea, black, ex cond, $200 pr. 244-1872 or 474-7331.

Magnavox 26" stereo color TV w/remote, ex cond, $215; wood DCM stereo speakers w/mid-range & tweeter 16"x6"x6", $45/pr; Panasonic 1124i 360 dpi dot-matrix printer, $95 obo. Gus, 33425 or 286-3402.

Yamaha stereo system w/double door cabinet, $375 obo. 996-0152.

MIDI MQX-16 PC Interface card, Passport Trax for Windows sequencing software, all for $60. David, x36427.

Pagemart Unisonic Numeric Pager, ex cond, all papers & instruction, $50 obo. Mike, 332-8188.

Computer 486/33 mini tower, 4MB RAM, 130MB HD, dual FD, 14' color monitor, DOS 5.0, Win 3.1, Quicken, Falcon 3.0, int. fax, $500. Ray, 332-3243.

Atari 520 ST w/color monitor & dot matrix printer; Atari 1040ST w/color monitor, $150 ea. 482-5393.

Mac Performa 450, 25MHz, 4MB RAM, 512MB HD, 12" color monitor, 1.4 MB FD, complete documentation, $725. 488-1326.

Mac Powerbook 145b, 8MB RAM, 80MB HD, charger, 2 batteries, MS Office, ex cond, $775. Bobby, 244-2444 or 488-4382.

14.4 baud internal modem for PC, $25; 110MB internal HD for PC, $25. Bill, x39020 or 991-0361.

Pets & Livestock

AKC reg miniature Pinchers, tails/dew claws docked, born 2/2, wormed & 1st shots, 2 red buff females; born 3/31 wormed, 2 blk/tan, 1 male, 1 female; 2 red stag-1 male, 1 female; males $225; females, $250. Cheyenne, x31016 or 488-6619.

Lab puppies, AKC black & yellow, born 4/3, avail 5/12, shots, wormed, $200 - $250. x48123 or 409-925-7869.

Pomeranian puppies, AKC, tiny, black, 1 male & 1 female, shots. Linda, 326-2294.

Cute loveable beagle dog, current vaccination & tags. x41971 or 338-1506.

Lost & Found

Lost prescription glasses in case, outside of bldg 12, Tuesday April 30. Karolyn Grant, 244-5463

Household

Antique brass & crystal chandelier, 6 lights, 67 crystals, $300. Tom, 333-3992.

Bedroom set; full size, antique green w/dresser, 5 drawers chest & 2 night stands, Italian design, great cond, $950. Magdi Yassa, 333-4760 or 486-0788.

Stainless steel Jenn-Air cooktop w/4 burners & electric grill, needs wiring/fan/motor/switch, $150. 474-4747.

Burgundy, navy & cream River Oaks queen sofa sleeper & loveseat, ex cond, $800 obo. Tony, x47401 or 482-4156.

Glasstop dinette, 3'x5' w/4 caneback chairs, $75 obo. 486-7621.

Beige mini blinds, 4 35"x46", 1 43"x46", $4 ea; Dirt Devil Deluxe upright vacuum, $40. Su, x45722.

Oak solid wood BDR, kg sz, 2 nightstands, dresser w/mirror, ex cond, $950. 280-1209 or 332-0007.

Dresser w/mirror & matching nightstand, $100; tea cart, $20; chaise chair, $20. x35376 or 943-3842.

Novi American 38" NEO angle showermate deluxe, clear glass front w/gold stripes, $375. Ray, 332-3243.

Rolltop desk, green, heritage style, $500. 480-7758.

Tan sofa w/2 built-in recliners, matching reclining/rocking/swiveling chair & matching end table, $475. bob, 244-4431 or 286-9902.

Two kitchen chairs on casters, mauve & off white, $10 ea. x31057.

Want Ads

Want female, non-smoking, to share 3-2-2 w/ same, $300 mo +$350 dep, incl all utilities except phone. 322-8417.

Want non-smoking housemate, to share 3-2-2, Bay Glen, CLC, $335 mo + $200 dep, 1/2 utilities. Larry, x33168 or 488-7460.

Want housemate to share lg house in Meadowgreen, own bathroom; pool & jacuzzi, $300 mo + 1/2 utilities. Ken, x31496 or 286-7583.

Want female roommate to share CL townhouse, private bath & den, $400 mo + 1/2 utilities. 480-7758.

Want non-smoking roommate to share 3-2-2, L C, $250 mo + 1/2 utile. Rob, x41027 or 334-3529.

Want personnel to join VPSI vanpool departing Meyerland Park & Ride, 7:05 a.m. for JSC, 8 a.m.-4:30 p.m. Don Pipkins, x35346.

Want personnel for VPSI vanpool, departing. Braeswood Park & Ride at 6:50 am for JSC/offsite locations, 7:30 - 4:30. Susan Gaynor, 282-5447 or Al Ruder, x34997.

Want ride to & from work, willing to pay gas expense, Pasadena, Richey area, 7:30 a.m. - 4:00 p.m. x48871 or 472-5205.

Want van-pool personnel from Sugar Land & southwest Houston, via HOV lane for JSC & contractor sites. Alice, x35234.

Want Wind Berg, "Pelican's Wharf". x30626.

Want oak babybed; want investment property, no approval assume $20k or less equity or older home $25k or less. 482-0874.

Want space memorabilia, flown items e.g. utensils, clothing, autographs on photos, covers, letters, relating to Mercury - Shuttle. Richard, 481-8080.

Want gas edger in working cond, $30 - $50 range. Sharon, x37783.

Want Nikon, Canon, Pentax cameras, lenses, access, working cond, to teach HS students, reasonable prices. Steve, x37152 or 992-7049.

Want Siamese male to breed w/Siamese female cat. Lynn, x35974 or 992-1052.

Want non-working mower or edger; leftover epoxy resin. x31883.

Want Waverunner/Jetski w/mechanical problems. Ken, x31496 or 286-7583.

Miscellaneous

R/C biplane Hobbico Avistar 40, OS Max FP series 40 engine, 4 channel Max AM radio & charger, starter, fuel, ready to fly, $325. Randy, x36364 or 488-6644.

Rabbit hutch, 2'x2'x2', $20. 480-1266.

Teal evening gown, beaded bodice, chiffon skirt, sz 6, $100; Joelle designer wedding gown, wht, sz 6/8, short train, veil & petticoat incl, $400. Su, x45722.

Enclosed metal frame 4'x7'utility trailer, $850 obo. James, x33572.

Tent, sleeps 5 adults; dome tent, sleeps 2 adults; red fiberglass bed cover w/locks fits Toyota '85 - '95 pickup truck, $175 firm. 480-3424.

Adult & kids bikes; speakers for stereo; bike seats; other misc items/household items, ex cond. 486-5247.

Contemporary entertainment center, whitewash finish, 2'x4'x6', fits 30" TV, drawers/trays/glass doors, $310; exercise treadmill w/movable arm poles, $50; wooden kg sz waterbed w/access, $100 obo. Gus, x33425 or 286-3402.

Antique tractor, late 1940's, Allis Chalmers model WC, not running, $300. James, 333-6188.

Above ground spa, 6 person, 27 jets, ozonator, 2 recliners, 4 seats "Hot Seat", 220 electric, will help w/installation, $2.5k. Chuck, x30508 or 286-1470.

O'Brian water skis, ex cond, $45. 488-4412.

U.S. mint stamp sheets, unfolded, ex cond, $250 face value, $240. Jeff, 482-5393.

Dooney purse, taupe/brown, zipper closure, no side pocket, new $210 sell for less. 332-8444.

Yard tractor, Ariens 38" mower, '82 model 935003, 11Hp Briggs & Stratton engine, electric start, ex cond, $600. Paul Caradec, 333-7369.

Water skis, $90; knee board, $65; ski tube, $20; ski vest, lg adult, $25. x30122.

Panda Coin ring, 14kt; 14kt marq rainbow tiered band ring, $80 ea. 554-6138.

Extra Lg ice chest, Coleman 150 qt marine ice chest, ex cond, $75. x37300 or 482-7529.

Cabin tent, 2 rooms, $75; Toast Master toaster oven, $35; 36" glass shower door, $10; wall mount bathroom sink, $10; rear window for Nissan PU truck, non-sliding, $10. 334-1119.

Tappan microwave, 1.3 cu ft, 800 watts, turntable, $80; Graco double stroller, $75; Graco Elite stroller, $40, all ex cond. x45856 or 282-0921.

Simmons maple baby crib, mattress/linens, $90; Sears bicycle child carrier, $15; Fisher-Price car seat, $15; Little Tykes baby swing seat, $5. Dennis, 532-3312.

'94 single axle, steel flatbed trailer w/1' sides, drive-on tailgate, 5'x14', $595. 471-9432.

Wood gym play set, fort/slide, fireman's pole, monkey bars/sand box, $150; BMX 20" boy's bike, $20; 1/3Hp pump, skimmer + 2 cartridges for above ground pool, $45 all. Sam, 332-3168.

Battery, 12V Interstate for Harley FLH, new, can be used for many applications, $25. 538-1149.

Baseball cards/sets collection, $600 obo; 18' single axle flatbed car trailer, $600 obo. Tony, x47401 or 482-4156.

White beaded victorian wedding dress, sz 10, fitted, v-back, drop pearls off of shoulders, matching veil w/bustled train, $500. Tanya, 998-3802.

18' RV class C, towing rig, A/C, internal gen, microwave, lg bathroom, low mi. Dean, 338-4225.

20" 14kt gold layered herringbone chains w/ matching 7" bracelets, $7.50 set. Sonia, 486-0389.

Kolcraft heavy duty baby stroller for boy/girl, $35. 554-8373.

Set of 4-15"x10" Eagle "Florenstars" w/205/50-15 tires, $650 set. Mike, x39618 or 332-6093.

Helping Hands

JSC's on-site blood drive reaches for increased participation

By Dan Mangieri

The gift of life is a term that at least one JSC employee knows very well, since the blood given by her fellow employees did indeed save her life.

Heidi Glaisyer, of the Engineering Directorate recently needed a kidney transplant because she is suffering from End Stage Renal Disease, or kidney failure.

During the transplant, she bled severely and required several units of blood. Thanks to co-workers, she was able to have designated blood available. Unfortunately the kidney transplant failed and she is awaiting another. In the meantime, the complications of the illness cause her to be extremely anemic and her body has slowed dramatically in producing red blood cells. She still requires units of blood monthly.

"My friends here at JSC have always seen that blood is put in my name when I let them know I need it," Glaisyer said. "I feel lucky to have help from my friends—their simple 30 minute contribution literally has saved my life."

Knowing that blood was available for her use gives Glaisyer a sense of peace about her illness, she said, and JSC employees now have the opportunity to give to other fellow workers.

Just last week another JSC employee, Dave Saucier of the Space Station Program Office, was hospitalized with Lymphoma—cancer of the lymph nodes. As a result, he was in critical need of blood. JSC employees responded generously last Friday and Monday when St. Luke's brought the donor coach out for a special two-day platelet and plasma drive to acquire replacement units for Saucier.

Platelets are cells in the blood and plasma is the liquid portion of the blood. In order to give Saucier these critical components, employees donated two and a half hours of their time to give platelets and about 40 minutes to an hour for plasma. Normal blood donations take 30 minutes.

The JSC on-site Blood Drive program will be kicking into high gear Thursday with increased efforts to reach out to those employees who have not participated in past blood drives. Those wishing to donate blood can visit the Teague Auditorium anytime between 7:30 a.m.- 3:30 p.m., including lunch time. Employees are encouraged to "bring a buddy" to the event if possible.

In addition to the regular benefits related to giving blood JSC's partner for sponsoring blood drives, St. Luke's Episcopal Hospital, will provide free T-shirts for all those who donate blood at the upcoming drive. Other changes to the program, like moving the drive's location from the Gilruth to the Teague Auditorium, will make it convenient and accessible to more employees despite busy schedules and routines.

The benefits of being a Blood Donor—besides the good feeling of knowing that you are helping others in need—are many. Under the agreement with St. Luke's, NASA and NASA contractors, the hospital provides blood assurance coverage for all JSC personnel and their immediate families. The coverage includes all fees associated with blood products for blood transfused in any Houston area hospital. An immediate family is considered the spouse of an employee, any dependent children and the parents of the employee and spouse. An employee who is a single parent receives coverage for all tax dependent children and the employee's parents. Single employees who are unmarried and without children receive coverage for themselves, their parents and any tax-dependent siblings of their parents.

As an additional benefit to donors, approximately three to four weeks after each donation, St. Luke's will send them a card with information about their blood group and type, and cholesterol level.

What is involved in donating blood? Donors can give blood every eight weeks. Plasma can be donated up to twice a week and platelets twice a month. In some cases a donor may be deferred if, for example, their blood is low in iron or they've been on certain medications. However, taking blood pressure medicine will not disqualify a donor. If donors have any questions about how a medical condition may affect their ability to give blood they should call St. Luke's Blood Donor Center at 791-4483.

The simple process is started by taking a blood sample with a single prick to a finger. Afterwards, one pint of blood is drawn. Many employees do not realize that center policy allows employees to use up to four hours, if needed, to give blood at the on-site blood drive. Much less time is usually necessary. The actual collection of blood usually takes seven to 10 minutes, with the whole process taking approximately 30 minutes. The blood undergoes several tests, including the tests for hepatitis and HIV. If there are reactive test results, donors are notified by mail. All results are kept confidential. Donors are encouraged to eat a low-fat meal before and drink lots of fluids after giving blood. Usually there are no negative reactions to giving blood, but trained personnel are available in case a donor becomes light-headed. It is recommended that donors curtail heavy exercise for a period of 24 hours after donating.

For more information about the process, call Marty Demaret at x36007 or Dan Mangieri at x33003. ❑

'I feel lucky to have help from my friends—their simple 30 minute contribution literally has saved my life.'

—Heidi Glaisyer
Engineering Directorate

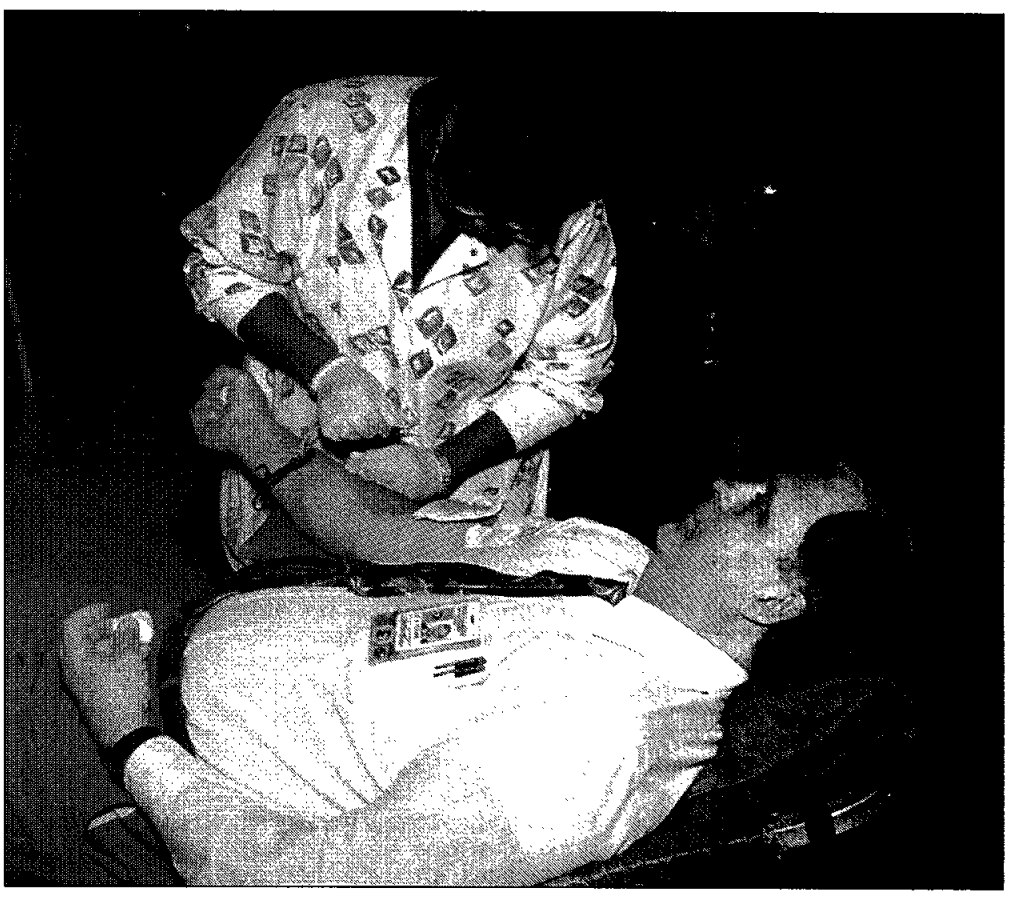
JSC's Blood Donor Drive

7:30 a.m.- 3:30 p.m.

Thursday

Teague Auditorium

Bring a buddy



Above: From left, Assistant Director Brian Duffy receives a blood donor T-shirt from blood recipient Heidi Glaisyer and one of JSC's most frequent blood donor, Dave DeAtkine of the Customer and Flight Integration Office presents a T-shirt to JSC Deputy Director Jim Wetherbee. The T-shirt will be given to all donors during next week's blood drive. Those wishing to donate blood can visit the Teague Auditorium anytime between 7:30 a.m.- 3:30 p.m. Thursday. Left: Safety Reliability and Quality Assurance Director Charlie Harlan relaxes after giving blood. Right: Former JSC employee Ray Hischke helps a St. Luke's nurse prepare to give blood.

Secretaries earn top honors

JSC People

Two secretaries recently earned the Marilyn J. Bockting award for secretarial excellence.

Dorothy Childress, secretary to the special assistant for Engineering, Operations and Safety in the Office of the Director, was cited for her outstanding support within the office and the community. Childress also takes on additional duties, such as representing the office on committees and serving as coordinator for the Savings Bond and Combined Federal Campaigns, that make her a valuable asset to the office.

Patricia Collier of the Payload Operations Branch received top honors for her expertise in interpretation and implementation of a myriad of office procedures and protocols. Collier also was cited for her exceptional support of payload operations during missions and her ability to build bridges between people and organizations.

NEBA rep honored

Carl Arnold the NASA Employees Benefit Association representative was recently honored with a flag flown on a recent shuttle mission. Arnold has served the NASA community for more than 34 years in support of the JSC NEBA chapter.

Arnold has been an agent of Phoenix Home Life Insurance, the company that administers NEBA, for more than 45 years. He has served thousands of JSC employees and military detailees, their families and beneficiaries.

JSC employees dies

Al Lunde of the Mission Operations Directorate's Flight Design and Dynamics Division died May 9, apparently of complications from heart disease.

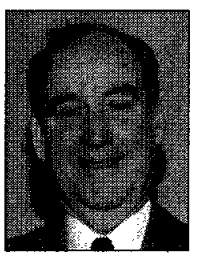
Lunde, who came to the U.S. from Norway in 1957, joined NASA in 1966 in the Mission Planning and Analysis Branch. He worked on all of the human space flight programs from Gemini through the International Space Station, developing mission support requirements and development. His most recent work was in mitigating the effects of orbital debris.

He earned the Presidential Medal of Freedom for his work calculating visible star fields for the Apollo 13 astronauts to use in navigating their safe return home along with many other awards during his 30 years at JSC. He is survived by his wife of 30 years, Anne.

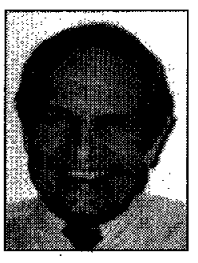
Local services were Monday; interment will be in Norway. A memorial has been established in his name with the American Heart Association.

Childress

Collier



Arnold



Lunde

James

Former JSC employee dies

Bennett James, former chief of the Public Services Branch in the Office of Pubic Affairs, died recently.

James joined NASA in 1962 after serving in the U. S. Air Corps during World War II and the U.S. Air Force. He was a JSC team member for 18 years and earned the NASA Exceptional Service Medal for his participation in the Apollo Soyuz Test Project. At the time of his death, James lived in Kerrville, Texas, and was active within the chamber of commerce and the Air Force Association.

AIAA hosts technical symposium

The American Institute of Aeronautics and Astronautics will host its 21st annual Technical Symposium from 7:30 a.m.-5 p.m. Thursday at the Center for Advanced Space Studies, 3600 Bay Area Blvd.

The theme of this years' symposium is "New Frontiers through New Technologies, Processes and Paradigms."

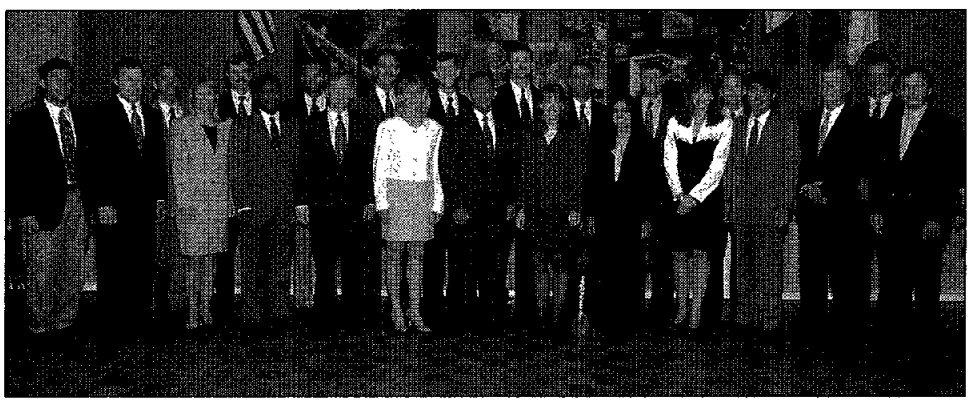
"We encourage everyone to participate and derive benefits from this annual event at Houston, said Jayant Ramakrishnan, chairman of the Guidance, Navigation and Control Technical Committee. "It provides an unique opportunity for participants to have a glimpse into the latest developments in the aerospace arena."

The seminar will feature keynote speakers John Muratore, associate director of JSC's Engineering Directorate, and Robert Sackheim, manager of propulsion and combustion center for TRW's Space and Electronics Group.

At 9:15 a.m. sessions on Shuttle-Mir Missions and Robotics; Remote Manipulator Systems; and International Space Station will be offered.

An afternoon session that begins at 1:45 p.m. will include International Space Station: New Results from the Earth Observations and Image Analysis Projects; Advanced Space Systems; Management and Contracting Practices; and Applications of Advanced Analytical Capabilities.

The seminar cost is $5 for members and $6 for non-members and includes lunch. AIAA Houston will provide free transportation from Bldg. 1 to the Center for Advanced Space Studies. For more information call Charles Teixeira, x34647, or e-mail cteixeiragp903.jsc.nasa.gov.



JSC Photo by Mark Sowa

ASCAN GRADUATION—After more than a year of extensive training, the 1995 Astronaut candidates are now ready for their first assignment. Graduates from left are Ed Lu, Dom Gorie, Rick Sturckow, Kay Hire, Dave Williams, Mike Anderson, Robert Curbeam, Steve Lindsey, Jim Reilly, Susan Still, Rick Husband, Carlos Noriega, Scott Altman, Pam Melroy, Steve Robinson, Kalpana Chawla, Jeff Ashby, Janet Kavandi, Joe Edwards, Takao Doi, Jean-Loup Chretien, Mike Bloomfield and Michel Tognini.

Teachers to interact with scientists

(Continued from Page 1)

University. Eskridge and Casaburri also will demonstrate how to access NASA materials via the Internet and provide a certification session for those wishing to borrow lunar samples for the classroom. Teachers will have the opportunity to interact with scientists and engineers who will give briefings on various space-related subjects and tours of JSC sites including mission control, International Space Station and space shuttle mock-ups, and KC-135 and T-38 aircraft. Teachers also will receive free NASA educational curriculum materials, classroom activities, posters, publications, and videos.

Since the number of participants is limited, teachers are advised to apply as soon as possible. For an application or details concerning the workshop, call Mae Mangieri at x32929. Deadline for receipt of applications is May 31.

Total Health hosts stress seminar

The Employee Assistance Program Office and the Total Health program will host a stress seminar at noon Tuesday in the Bldg. 30 auditorium.

Michael Haro, will discuss " Coping With Stress in a Changing Environment." and provide the personal tools to cope with environment changes. The seminar is designed to assist employees in becoming aware of their abilities to cope with work and lifestyle stress factors which may be adversely impacting their lives.

"Thousands of workers are feeling trapped, angry, confused, anxious and let down by companies that are going through reorganization and downsizing efforts," said Haro. "A special form of work stress pervades these organizations. Workers find themselves in a position where they do not know what to do. They feel blocked from progressing and this tends to place excessive amounts of stress on them in their personal, work and family lives. They do not understand the underlying dynamics of the experience they are living. They feel that their work situation is putting them into a hopeless, helpless position and the only alternative lies in quitting, or waiting for the ax to fall."

Everyone faces continuing choices, conflicts and commitments involving job, family, and self said Haro. This presentation focuses on three levels of understanding and practical application. Information is presented to allow for individual identification and assessment. Through experiential activities employees can examine and enhance their abilities to cope effectively with daily life stress.

For more information, please call the Employee Assistance Program Office at 483-6130.

JSC employee's children earn college scholarships

The children of three JSC employees have earned JSC Exchange and NASA College Scholarships.

This year's JSC Exchange Scholarship winner is Keith Aaron Hawkins, son of Diane Hawkins from the Human Resources Office. Hawkins will graduate this month from J. Frank Dobie High School. He received credits for premium courses in chemistry, algebra, physics and pre-calculus and has received the Dobie Football Booster Club Scholarship. He was on the Math Relay Team that took first place and he was selected as the Elk's Teen Student of the Month. He plans to attend San Jacinto Junior College this fall to pursue a degree in environmental engineering. He will receive $4,000. Selection was based on scholastic achievements, financial need and breadth and substance of school and community activities. This brings the total number of Exchange scholarship awards to date to 77.

Justin M. Lee, son of Raymond James Lee who works in the Business and Information Systems Directorate, and Allison Lanier, daughter of Ronnie Lanier who works in the Mission Operations Directorate, earned NASA College Scholarships.

Lee will graduate this month from Clear Creek High School, ranking first in a class of 482. He will attend the University of Texas this fall to pursue a degree in biochemistry. Lanier will graduate this month from Dickinson High School, ranking number four in a class of 273. She will attend Southern Methodist this fall to pursue a degree in engineering.

Other winners were Neelaksh Kumar Varshney, son of Marshall Space Flight Center employee Shashi Prabha Varshney; Eric H. C. Liu, son of Goddard Space Flight Center employee Antony Ankuo Liu; and Patricia Augathee Jones, daughter of retired Kennedy Space Center employee Ralph Tompkins. This brings the total number of recipients to date to 68. Twenty-four recipients have graduated since the scholarship fund was established in 1982.

The NASA College Scholarship Fund Inc., board of directors has determined that five scholarships will be awarded again next year. Each scholarship will be renewable annually for a maximum of $8,000 over six calendar years.

The Scholarship Fund was established to award scholarships agency-wide to qualified dependents of NASA and former NASA employees. The fund was established as a direct result of a substantial unsolicited gift by noted Pulitzer Prize winning author James A. Michener. Many NASA employees have contributed to the fund directly or through the Combined Federal Campaign. Other major contributors include the Freedom Forum—to honor the Hubble crew members—and the JSC Chapter of the NASA Alumni League.

MCC open for STS-77 viewing

The Mission Control Center viewing room will be open to JSC and contractor badged employees and their families during portions of the STS-77 mission.

Employees will be allowed to visit the MCC from 11:30 a.m.-2:30 p.m. Wednesday and 1-5 p.m. May 25.

Employees must wear their badges and escort family members through the lobby of Bldg. 30 South. Children under five will not be permitted. No flash photography or loud talking will be permitted at any time. Because of the dynamic nature of shuttle mission, viewing hours may be changed or canceled without notice.

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

Hubble telescope on track for measuring universe

(Continued from Page 1)

are coming in between 68 and 78 km/sec/Mpc".

Two months ago, a second team, led by Allan Sandage, also of the Carnegie, reported a slower expansion rate of 57 km/sec/Mpc.

The value of the Hubble Constant allows astronomers to calculate the expansion age of the universe, the time elapsed since the Big Bang. Astronomers have been arguing recently whether the time since the Big Bang is consistent with the ages of the oldest stars.

The ages are calculated from combining the expansion rate with an estimate of how much matter is in space. The younger age values from each team assume the universe is at a critical density where it contains just enough matter to expand indefinitely. The higher age estimates are calculated based on a low density of matter in space.

"A point of great interest is whether the age of the Universe arrived at is really older than the independently derived ages of the oldest stars," said Abhijit Saha, an investigator on both Hubble teams.

The project team is midway in their three-year program to derive the expansion rate of the universe based on precise distance measurements to galaxies. They have now measured Cepheid distances to a dozen galaxies.

The team also presented an estimate of the distance to the Fornax cluster of galaxies. The Fornax cluster is measured to be about as far away as the Virgo cluster of galaxies—about 60 million light-years.

The team is measuring Cepheid distances to the Virgo and Fornax clusters of galaxies as a complementary test. The team also is systematically looking into a variety of methods for measuring distances. They are using Cepheids in a large sample to tie into five or six "secondary methods".

In contrast, the Sandage team focused on a single secondary distance indicator, one of the same indicators also used by the other team, the type Ia supernova. Sandage maintains that these stars are "standard bombs" according to theory. He suggests that when they explode they all reach exactly the same intrinsic brightness.

Space News Roundup

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