



A space shuttle flight requires a lot of hard work from specially-trained flight controllers. Take a look at the team on Page 3.



Secretaries, a contractor and a former Public Affairs officer recently received a variety of honors. See the People column on Page 4.

Space News Roundup

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Two deploys highlight *Discovery's* 17th flight

By Pam Alloway

The deployment and retrieval of satellites, an ambitious spacewalk and middeck experiments galore have kept the STS-51 crew busy on board the Space Shuttle *Discovery* as crew members begin to prepare for Tuesday's trip home.

As of presstime, *Discovery* and its five-member crew was set to return to the Kennedy Space Center at about 4:30 a.m. CDT Tuesday. Mission managers decided Thursday not to extend the flight an extra day since all mission objectives would be accomplished in the nominal time.

Discovery's 17th flight started with an on-time lift-off Sept. 12 for crew members Commander Frank Culbertson, Pilot Bill Readdy, and mission specialists Jim Newman, Dan Bursch and Carl Walz.

About 10 hours after launch, crew members deployed the Advanced Communications Technology Satellite and its Transfer Orbit Stage. The ACTS will serve as an orbiting testbed for technologies that could lead to a new generation of communication satellites.

The crew delayed the first attempt to deploy the ACTS when two-way communications

were lost with Mission Control about 30 minutes before the deploy time. Flight controllers could receive telemetry and voice communications from *Discovery*; however, the crew could not receive communications from the ground.

After waiving off first the deploy opportunity, the crew changed the shuttle's S-Band communications system to a lower frequency and restored two-way communication with the ground. ACTS was subsequently deployed on the next pass over the Pacific Ocean.

Following a series of jet firings to place the satellite in its proper geosynchronous orbit, project managers have reported that they are pleased with the ACTS' performance thus far.

On the second day of the flight, crew members deployed a second satellite — the Orbiting and Retrievable Far and Extreme Ultraviolet Spectrometer — which was mounted on a Shuttle Pallet Satellite. The ORFEUS flew about 40 nautical miles behind *Discovery* for several days gathering information that will enable astronomers to better understand stars' life cycles. As of presstime, crew members were scheduled to retrieve the ORFEUS

Please see STS-51, Page 4



Mission Specialist Jim Newman tests a foot restraint during a six-hour space walk with Carl Walz on Thursday. Besides tests techniques to help refine space walk planning and training, the two astronauts also evaluated tools and techniques that will be used on the Hubble Space Telescope servicing mission in December.

JSC experiment to test telemedicine capabilities of ACTS

By Kari Fluegel

A tribal physician on an Arizona reservation while treating a diabetic patient becomes concerned about the progress of the disease. He takes out a special camera to record a video image of the back of the patient's inner eye and transmits it to a specialist in Houston. While sitting in her office, the specialist looks at the video image and makes a recommendation for treatment.

The next frontier of health care will be crossed using the circuits of satellites like those on the Advanced

Communications Technology Satellite, deployed last week from *Discovery*.

Telemedicine uses telecommunications technology to bring high quality health care to remote areas. It will allow patients and doctors to consult with medical specialists hundreds of miles away. It also will allow for the future expansion of specialized medical services at a reasonable cost.

A JSC experiment is one of seven that will use the ACTS to test the capabilities of the satellite's telecom-

munications technology for telemedicine applications.

The experiment will use a special camera to transmit images of the inner eye of patients in Colorado to a panel of seven specialists in Houston. The specialists here will subsequently direct the examination occurring in Boulder and make their own diagnosis.

The patients used for the test will have been previously diagnosed, so that the analysis of the Houston panel can be compared to the existing diagnosis.

"We want to see if the image is good enough to get a diagnosis," said Dr. Roger Billica of JSC's Medical Sciences Branch.

The back surface of the inner eye, called the retina, is the only place on the body where blood vessels are visible and can be examined without any trauma to the patient. At the back of the eye, a physician can see arteries, veins, retinal tissue and the optic nerve. Studying the exposed vessels, a doctor can detect changes in blood pressure, changes in the pressure of the brain, the

progress of diabetes and several vision threatening diseases.

"We're trying to test the limits," said Mike Caputo of Krug Life Sciences, one of the two individuals who will be performing the remote examination. "Telemedicine will help small towns and small hospitals that don't have the facilities or the money to retain specialists."

Other telemedicine tests with ACTS include the use of high-resolution medical imagery such as x-rays and magnetic resonance

Please see ACTS, Page 4

JSC Scientist Henize to attempt Mount Everest climb

By Eileen Hawley

Karl Henize, senior scientist in the Space Sciences Branch of the Solar System Exploration Division, has embarked on an expedition to scale the north col of Mt. Everest.

Henize left Houston Thursday to begin a month long journey which he hopes will end at the mountain's peak. In Katmandu, Nepal, Henize will be joined by expedition leader Harry Taylor, and fellow climbers Nish Bruce, a member of the British Army Parachute Regiment's Free-Fall Team known as The Red Devils, and Brian Tilley, a para-

medic. The four men will travel by jeep across the China border and arrive at base camp Sept. 23.

"We will spend a week at base camp observing climbing protocol," Henize said. That protocol includes day hikes to allow the climbers to acclimate themselves to the 17,000 foot elevation of their base camp before attempting the main ascent. From there, the climbers face a 14-mile walk up a glacier to reach the advanced base camp.

"This is the largest technical effort since we will be climbing from 21,000 to 23,000 feet up snow and

ice," Henize said.

The climbers will not be using oxygen during the actual climb although a supply will be maintained at the advance base camp. Reaching the summit is a goal for Henize but he is realistic about the challenges of the climb.

"I would very much like to get to the top, but there is a great matter of luck — luck in your physical condition and more than anything else, if the weather holds out," he said.

The expedition has four main goals for the climb including reconnaissance and planning of new

routes on the north side of the mountain and conducting high altitude tests on climb leader Taylor who recently reached the summit of Everest without using oxygen. Bruce, who plans a parachute dive from an altitude of 125,000 feet is using the climb as a training exercise, and Henize will conduct an experiment measuring the level of radiation reaching the Earth's surface.

For this experiment, Henize will be using the Tissue Equivalent Proportional Counter Spectrometer which was designed by Dr. Gautam

Badhwar senior scientist for space radiation in the Solar System Exploration Division. Badhwar will also analyze the results of the experiment upon Henize's return.

The experiment will be carried out at three different altitudes and will mark the first time such tests have been conducted on a climb. The only previous use of the TEPC spectrometer has been on the space shuttle.

Henize has previous climbing experience including a climb of Mt. Rainier in 1991. He is a former shuttle astronaut who flew on the STS-51F Spacelab 2 mission.



The Rice Stadium podium from which President John F. Kennedy committed the nation to sending a man to the moon is now on display at Space Center Houston.

Kennedy's moon speech podium placed on display at Space Center Houston

By Kari Fluegel

"We choose to go to the moon in this decade and do the other things not because they are easy, but because they are hard. Because that goal will serve to organize and measure the best of our energy and skills. Because that challenge is one we are willing to accept, one we are unwilling to postpone and one we intend to win."

When President John F. Kennedy addressed the graduates of Rice University 31 years ago on Sept. 12, 1962, he challenged the nation to be the leader in the exploration of space. He challenged the nation to put a man on the moon. Seven years later, Neil Armstrong and Buzz Aldrin stepped on the moon and fulfilled the challenge.

Guests at Space Center Houston will be reminded of the thrill of Kennedy's challenge when they see the actual podium from which Kennedy made his speech, now

on display in the center's Destiny Theater. The podium has been in storage at JSC since Rice donated it to JSC after the speech.

Special ceremonies were held on the 31st anniversary of Kennedy's speech to dedicate the display. Those attending included Senator Kay Bailey Hutchison; Representative Mike Andrews; William Kelly, chairman of the Manned Space Flight Education Foundation, Inc.; Jon Weisheit, chairman of Rice's Department of Space Physics and Astronomy; and Alexander Dessler, founding chairman of Rice's Department of Space Science.

The podium, still bearing the presidential seal, is an added attraction to the film "On Human Destiny," which features NASA footage of great moments in manned space exploration, including moments from Kennedy's speech. During that portion of the film, a spotlight will illuminate the podium.

JSC

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange...

Texas Renaissance Festival — Weekends Oct. 2-Nov. 14; Discount tickets: adult \$9.95...

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...

EAA badges — Dependents and spouses may apply for photo identification badges from 6:30-9 p.m. Monday-Friday...

Weight safety — Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. Sept. 21...

Defensive driving — Course is offered from 8 a.m.-4:30 p.m. Saturday. Next class is Oct. 23. Cost is \$19.

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.

Country and western dance — Beginner class meets from 7-8:30 p.m., and intermediate class from 8:30-10 p.m. Mondays beginning Sept. 27...

Softball tournament — Men's open "C" double elimination tournament will be Sept. 25-26. Registration deadline is 7 p.m. Sept. 23...

Flag football — Registration for the Saturday mixed and men's flag football leagues will be Sept. 20. Play begins Sept. 25.

Soccer — Registration for the Saturday soccer league will be Sept. 21. Play will begin Sept. 25.

Fitness program — Health Related Fitness Program includes a medical examination screening and a 12-week individually prescribed exercise program...

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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...

Property

Sale: Univ Green, 3-2-2, ex cond, new A/C, c'fans, deck, custom blinds/curtains, all appliances, \$83k assume, no approval 9.5%, \$18k equity, owner finance w/\$10k down. 488-0345.

Sale: LC waterfront marina TH, 2-2, \$99.5k. Steve Brody, 703-487-7138 or 703-532-3415.

Sale: University Place TH, 2-2.5-gar, \$72.9k. Herb, x38161 or Dave, 486-5181.

Sale: Pebblebrook condo, 2 BR, all appliances, 2 balconies, FPL, \$32k. Laura, x31303 or 326-1573.

Rent: New Orleans French Quarter condo, week of Oct 22-29, private rooftop deck, furn, sleeps 4, \$400, 282-6422 or 280-8927.

Sale: LC lot, 82' x 130', \$9.5k. x36514.

Sale: LC Meadowbend, 4-2-2, FPL, c'fans, \$70.9k nego, assumable. Peter, 526-1853.

Rent: Lake Travis cabin, private boat dock, CA/HV, fully equip, accom 8, fall/winter \$325/\$90 w/ky/dly. 474-4922.

Sale: Nov 13-20, 1993 at 5-star resort in Cancun, Mex, 2-2, was \$1.4k, now \$700. 992-3876.

Sale: Dickinson waterfront, 4-2.5-2, pool, FPL, wet bar, 100 yr old trees, 3/4 acre, sec sys, \$210k/\$206k. x34354 or 337-1640.

Rent: Bolivar beach house, w/ky/wknds, 1 block from beach. 485-1730.

Sale: Univ Green patio home, 2-2-2, study, wet bar, deck, hot tub, \$99.9k. x33734.

Sale: LC, 3-2.5-2, new paint, carpet, ceramic tiled kitchen w/updated cabinets, 2 story, custom window shades, c'fans, \$84.5k. x38413 or 554-2728.

Sale: Sagmont, 3-2-2, both formals, new carpet/roof, \$72k. Ben, x34339 or 481-1439.

Sale: Univ Green patio home, 3-2-2, 1800 sq ft, new carpet/roof, cath ceiling, FPL, lg lot. Huey, 994-7652.

Sale/Lease: Baywind condo, 2-1, washer/dryer. 532-4628.

Rent: Pearlant/Friendswood area, 2400 sq ft, 2.5 yrs old, FPL, patio cov, lg kitchen, \$950/mo + dep. 996-8763.

Sale or Lease: Nassau Bay Swan Lagoon, 4-2-2, recent remodel, \$119.5k/\$895 mo. Minh, 433-0992 or 484-2456.

Sale/Lease: LC Countryside, 4-2-2, lg lot, cul-de-sac, cov deck, no approval assum, \$12k equity + \$770/mo or lease \$850/mo. x38843 or 409-925-5011.

Sale: Lake Travis lot, all util, pool, golf, tennis, marina, \$5.5k. Nasser, x33685 or 334-1032.

Rent: Southern Colorado, 2 BR, furn, sleeps 5, no smoking, no pets, day/wk/mo or longer. Bob, x30825 or 998-7372.

Rent: Galveston condo, furn, sleeps 6, wknd/wkly/dly, Magdi Yassa, 333-4760 or 486-0788.

Rent: Webster, 3-2-2, \$700/mo. 992-3210.

Rent: Nassau Bay TH, temporary living for transition team, furn room, non smoker, no kids, no pets. Karen, 333-1394 or 282-4753.

Lease: Bay Wind I condo, 2-2, FPL, W/D conn,

new carpet/appliances, avail Nov 1, \$525/mo + dep. x34940 or 486-7094.

Sale: Friendswood Wedgewood Village, 3-2-2, FPL, trees, new carpet/paint, remodeled kitchen. 482-0874.

'85 Buick Skylark Ltd, 2 dr, auto, A/C, P/S, P/B, good cond, \$1500. 538-1918.

'90 Volvo 740GL, blk w/grey leather int, sunroof w/deflector, ex cond, nego. Don, x32309 or 488-7499.

'87 Honda Accord DX Coupe, ex cond, 5 spd, AM/FM/cass stereo, A/C, alloy wheels, \$4,300. Jay, x35814 or 992-3149.

'89 Jeep Cherokee Sport 4WD, 5 spd, 2 dr, hv duty susp, 4.0 L 6 cyl, \$7,000. 225-4064.

'73 Ford Grand Torino, 351C headers, A/C, PS, PB, new parts, low mi, \$2,200 OBO. Tom, x37140 or 996-5835.

'85 Ford LTD 4 dr, auto, loaded, good tires, new inspection, factory rebuilt motor, approx 40k mi, good cond, \$2,300 OBO. 332-3243.

'91 Nissan Stanza XE, auto, A/C, pwr windows/locks, tilt cruise, AM/FM/cass, 61k mi, \$8,500. James, x40045 or 332-1129.

'87 Nissan Maxima SE, AM/FM/cass, A/C, auto, sunroof, cruise, alarm, pwr windows/locks, 71k mi, ex cond, \$5,275. x33475.

'90 T-Bird SC, dk blue, loaded, \$13k OBO. x34204 or 480-2954.

'91 Ford 1/2 ton ext body van camper, 22k mi, off white, 110v-12v refrig, 110v microwave, A/C, self contained for RV park. 339-2181.

'72 Chevy Caprice, 63k mi, 400 eng/trans, ex cond, \$1,600 OBO. Mark x39419 or 538-1497.

'86 Honda Accord LXI, 5 spd, ex cond, 87k mi, \$4,995. x31043 or 992-5097.

'80 Pontiac Grand Prix, V6, A/C, cruise, AM/FM/cass, 102k mi, \$1,000 OBO. 480-0973.

'83 Mazda B2000, beige, A/C, good cond, \$750. J.J., 332-5267.

Boats & Planes

'85 16 ft Alumacraft, 40hp Merc, stainless prop, trolling mtr, galv trlr, \$2,500. Scott, x35343.

Del Magic Streaker, 16 ft boat w/65hp Merc, Little Dude galv trlr, good cond, \$2k. 471-4100.

16 ft aluminum boat and trlr, \$400. 554-6138.

'86 Hobie Cat, '82 Nationals Boat w/trlr, 2 sets sails, equip for racing, ex cond, nego. Bob, x34468 or 486-7687.

Windsurfer, complete rig, Bic Rock 135 liter carbon mast, Da Kine boom, 3 Camber Gastra 6.5m sail, \$850; roof rack \$50. Ron, x48712.

Santana 22' fixed keel, ex cond, \$3,500. x34063.

Cycles

16" girls' pink bike, \$20; 26" women's 10 spd bike w/child seat, \$50; 26" men's 10 spd bike, \$30. Richard, x45357.

'88 Hurricane, 19k mi, tank bag, helmet, \$2,500 OBO. x34204 or 480-2954.

Audiovisual & Computers

Sony ES series, 5 CD carousel changer w/remote, ex cond, \$250. 622-5207.

Amiga 500 computer, 1 MB int, 3 MB expansion, 1084 color monitor, ext 3.5 FD, 2 joysticks, 1 mouse, books, SW, ex cond, \$425. x30210 or 333-9242.

IBM clone 8088 XT, 640k, two 5.25 FD, mono monitor, NLQ printer, SW, \$300. Bobby, x36580.

JSC

Dates & Data

Today

Cafeteria menu — Special: breaded cutlet. Entrees: baked chicken, beef chop suey, smoked sausage and German potato salad, French dip sandwich. Soup: cream of broccoli. Vegetables: okra and tomatoes, peas, navy beans, baby carrots.

Tuesday

Cafeteria menu — Special: fried chicken. Entrees: Salisbury steak, steamed pollock, vegetable lasagna, French dip sandwich. Soup: split pea and ham. Vegetables: mixed vegetables, French cut green beans, pinto beans, vegetable sticks.

Wednesday

Graphics exposition — The Information Systems Directorate will sponsor a graphics exposition from 9 a.m.-4:30 p.m. Sept. 22 at the ISD Products Center in Bldg. 12, Rms. 254/256. Representatives from 16 software companies will demonstrate their software products. For more information, call the IPC at x37575.

Freedom Fighters meet — The Space Station Freedom Fighters will meet at noon and 5 p.m. Sept. 22. The noon meeting will be at the McDonnell Douglas Bldg. at Space Center and Bay Area Blvd. The 5 p.m. meeting will be in the Civic Room at the Rockwell Bldg. located at 600 Gemini. For more information call David Cochran at 482-7005.

Cafeteria menu — Special: stuffed bell pepper. Entrees: fried catfish with hush puppies, stir-fry chicken and rice, wieners and beans, Reuben sandwich. Soup: seafood gumbo. Vegetables: buttered rice, Italian green beans, corn O'Brien, peas and carrots.

Thursday

Cafeteria menu — Special: barbecue smoked link. Entrees: turkey and dressing, beef stroganoff, chopped sirloin, French dip sandwich. Soup: tomato Florentine. Vegetables: Lima beans, buttered squash, Spanish rice, oriental vegetables.

Friday

Slogan deadline — The deadline for Security Awareness Week slogan entries is close of business Sept. 24. NASA employees and contractors are invited to suggest slogans promoting good security practices. Four slogans will be selected. Send submissions to Joe Olivarez or Cindy King at JS2. Call King at x33251 for more information.

Cafeteria menu — Special: meat sauce and spaghetti. Entrees: rainbow trout, liver and onions, been cannelloni, pork and shrimp egg roll, Reuben sandwich. Soup: seafood gumbo. Vegetables: steamed broccoli, breaded okra, cut corn, black-eyed peas.

Monday

Flu shots — The JSC Clinic will offer influenza vaccine inoculations from 10 a.m.-noon and 2-3:30 p.m. Sept. 27 through Jan. 31. For more information, call the clinic at x34111.

Cafeteria menu — Special: turkey and dressing. Entrees: breaded veal cutlet, beef chop suey, steamed pollock, beef cannelloni, French dip sandwich. Soup: beef and barley. Vegetables: Brussels sprouts, mixed vegetables, egg plant casserole, winter blend vegetables.

Sept. 29

NMA meets — The JSC chapter

of the National Management Association will meet at 5 p.m. Sept. 29 at the Gilruth Center. Acting Center Director Paul J. Weitz will discuss the "State of the Center". Members are encouraged to invite interested non-members to attend. For reservations, NMA members should contact their boosters; non-members should call Allison Kruest at ext. 47115.

Sept. 30

AIAA meets — The Houston section of the American Institute of Aeronautics and Astronautics will meet at 5:30 p.m. Sept. 30 at the Gilruth Center. Dr. Kenneth J. Cox, chief of the Navigation, Control and Aeronautics Division, will present "A Look at Space Avionics Technology." Reservation deadline is Sept. 27; cost is \$9 for members, \$10 for non members, \$8 for students. For more information call Frankie Hap at 333-6064, Ardell Broussard at 283-1040, Kim Wunsch at 483-1350, or Sarah Leggio at 282-3160.

Oct. 31

Bike tour — The Lions Eye Bank of Texas and the JSC Bike Club are sponsoring the 15th Annual Texas Coastal Cruise. The ride will begin at 8 a.m. Oct. 31 at Clear Lake Park on NASA Road 1. For more information, call 798-5510.

November 17-18

NCMA conference — The Space City-Houston Chapter presents its Fall educational conference Nov. 17-18 at South Shore Harbour Hotel. For more information, call Carolyn Moe at x34158.

house siding, was \$275, now \$100 OBO. x49804.

Exercise bike, \$35; colf clubs sets, 2 man's, 1 woman's. 538-1918.

Graco baby stroller, \$40. 480-3424.

White wedding dress, sz 5, long sleeve, V-back, full length, yellow & white flowered veil, was \$500, now \$250. 474-3857.

Bridal petticoat, full length, drawing for medium to full skirt dresses, \$35 OBO. x38850 or 526-4967.

Two barstools, \$15; Baldwin Fun Machine, \$250; peach kg bedspread, shams and dustruffle, \$50. 474-2822.

Tool box for mid sz truck, w/lock, \$30 OBO; space tire w/rim, 4/5 bolt patterns, \$30 OBO. Yum, x44544.

Three Firestone P205/65-15 radial tires, \$35 OBO. 486-5734.

3.5 hp Briggs & Stratton mower engine, \$20; pair steel boat trlr wheels, 15x7, 5 lug, \$15. x37010 or 334-2612.

Craftsman chain saw, gasoline, 3.7 cu in. eng, 18" guide bar w/extra chain, good cond, \$130; Craftsman electric log splitter, dbl acting, 10 ton, 26" cap, good cond, \$250. Jim, x39229 or 482-7873.

President and First Lady Premier Plus lifetime membership, \$500 OBO; twin bed, \$50. 488-3965.

Soloflex exercise machine, \$250; 30 gal aquarium, w/equip and stand, \$45; 3 color TVs, non working. BO. x34189 or 486-5801.

New stainless steel Champion juicer, never used, all attachments, \$200 OBO. Rick, x48842.

Zinsco circuit breakers. Fred, 944-3523.

Elvis Presley pinball machine, full sz, needs some work, \$100 OBO. 559-2331.

2 Panasonic answering machines, ex cond, one has full function telephone/speakerphone incl, BO. Ron, x30887.

Bridal slip, full length, sz 6, zipper waist, \$35. Jennifer, x46256.

Air Strider DP fit for life walker, stepper, jogger, built-in pulse rate monitor, \$100. Lara, x35565.

Tommy Armor 845 Silver Staff golf clubs, 4, 6, 7, 8, 9 irons, \$120; Wilson Staff sand wedge, \$14. 488-0189.

Metal storage cabinets w/20 drwrs, 52.5" tall, 18" wide, 29.5" deep, \$30 ea. Bonnie, 337-6080.

Rainbow-like vacuum, \$800; RCA Pro-edit Camcorder, \$500; Snapper lawn mower, \$325; stereo, \$600; women's 10 sp bike, 996-9191.

Scuba wet suit, X-kg plush, 2 piece, \$40. Ron, x48712.

Wedding gown, white chapel length, sz 6, \$175. 333-6573 or 488-4813.

Nu-line child gate, 54" to 96", \$18. 554-4851.

Brass fireplace screen, \$20; Victor 21" welding/cutting torch handle, \$50. 480-3424.

Custom made 10 gun birch cabinet, locking glass doors, storage drwr, \$100. 996-9690.

Hydroslice kneebands, Assualt and Aerial 360, \$75 ea; HO Edge 720 thin profile kneeband. \$125; ski tube, \$40. Gregg, x31250.

Boots, waterproof, laceup, calf high, sz 9, \$20. 283-1940.

Deluxe weight bench w/leg extension/curl attachment and 180 lbs of steel plates, \$125. Gerald, x40095 or 334-5377.

Sm car cover, \$25; black bra for '85 RX-7, BO. Dave, x30746 or 480-1682.

Two 1 drwr metal filing cabinets, \$20 both; barometer, \$12.50; folding lounge for outside use, \$5; dining rm table, \$30. 488-5564.

Osborne II CP/M, 64k mem, two 180k FD, modem, dBase II, Supercalc 3.0, WordStar 2.0, Mbase, documentation, \$100 OBO. 332-5286.

Intellivision game cartridges, all documentation, approx 30, \$50. 283-1940.

JBL Concert series PA system, \$1200; Yamaha P2100 stereo pwr amp, 110W/channel, \$400. 333-6198 or 532-2163.

Pets & Livestock

Russian Blue domestic short hair cat, spayed, declawed, cat carrier, free. x38766 or 474-3857.

Golden Lab, great w/children, well behaved, housebroken, 10 yrs old, free. 338-1248.

Kittens, M & F, 2.5 mo, litter trained, Siamese/Russian Blue mix, \$5. Lynn, x35974 or 992-1052.

Lab/Retriever, ex watch dog, not good with sm children. 488-3965.

Musical Instruments

Peavey Falcon electric guitar w/case, \$250; Dean Markley practice amp, \$40. 622-5207.

Ibanez RG550 electric guitar w/active EMG pickups and hardshell case, metallic blue, new over \$1k, now \$495 will layaway. 280-9621.

King trombone w/case, ex cond, \$250. x38804.

'79 Wurrlitzer Model 2111 piano w/bench, \$300, you move. 488-7728.

Lost & Found

Found hubcap outside Bldg 227. Keith, x36155.

Household

Mitsubishi lg screen TV, 45", stereo, all features, was \$3,300, now \$1,600 or trade for working car. 488-0345.

Matching sleeper sofa and love seat, ivory cloth, \$350. 212-1380 or 554-2660.

Two piece lighted china cabinet, ex cond, \$700 OBO. 554-7669.

Kg sz waterbed, oak frame, connecting nightstands, motionless matt, accessories, \$350 OBO. Robert, 282-2991 or 480-9672.

Contemporary light peach colored coffee and end tables, ex cond, \$175. x32129 or 333-5113.

Two piece L shape sofa w/qn sleeper, lt beige, \$250; qn sz matt, box spring, frame, \$100; Tappan microwave oven, \$50; 4 dinette arm chairs, oak frame, woven wicker seat and back, \$60. x37010 or 334-2612.

Entertainment center, \$45; end tables, \$20 ea; beige couch, \$75; 2 chrome/white chairs, \$25 ea; qn waterbed w/hdbd, \$180; desk, \$175; padded bar stools, \$15 ea; bookcase, \$15; maple dresser, \$25; wicker chair, \$20; Singer upright vacuum cleaner, \$25. x34189 or 486-5801.

Antique brass headboard for kg sz bed; side bag and mulch bucket w/attachments for Snapper self-propelled lawn mower, BO. Rick, x48842.

Baby bassinet, white, w/skirt, \$35; blue baby carriage/stroller, \$35; DP exercise bike, \$20. x33475.

Roll-top desk, solid oak, 55" width, ex cond, was \$1k, now \$350. 280-9621.

Three bookshelves, 7'h x 3'w x 1'd, \$200. 992-2306.

Contempo baby bed w/matching dresser, matt, ex cond, \$165; boys' bunk beds, dresser, 4 drwr, matt, dark finish, \$375; rust contempo sofa, \$175. 538-4047.

TV and stereo entertainment center. Fred. 944-3523.

Kg sz waterbed frame, bookcase hdbd, 6 drwr pedestal, padded rails, \$50 OBO. 996-8763.

Motionless kg sz waterbed w/solid wood frame and hdbd, attached nightstand nooks on hdbd, heater, was \$600, now \$350. x32720 or 485-0237.

Dining rm table, thick glass top, 4 upholstered chairs, chrome legs, \$150; full sz couch, off white, \$125; 32" diam round table, formica top, bamboo legs, \$45; pair matching chairs, cane side, cushioned seat and back, \$40 both. 488-5564.

Bureau style dresser, \$10. 554-4851.

GE mini refrigerator, 1.5 cu ft, \$70. Dean, x48350 or 554-6629.

Kg sz motionless waterbed, bookcase hdbd, etched oval mirror, 2 etched door cabinets, 2 lights, padded rails, 5 drwr pedestal, \$275. x34221 or 338-1248.

Qn BR suite, hdbd, dresser, mirror, nightstand, dk wood, Mediterranean style, \$75; Tour Tuff golf bag travel container, holds bags up to 9" diam, locks & keys,



This is Mission Control, Houston

The plaques that line the walls of the Flight Control Rooms tell the story of Mission Control almost as well as any history book.

The focus of manned space flight since 1965 when it replaced the less complex Mercury Control Center at Cape Canaveral, JSC's Mission Control Center in Bldg. 30 — the MCC, as it is known — has controlled all flights of the Apollo, Skylab, Apollo/Soyuz, and Space Shuttle programs, and all but one Gemini mission.

The Mission Control Center is responsible for providing operational support to the nation's manned space flight programs. Its goal is to ensure the safety and success of NASA's Manned Space Flights.

The Mission Control Center operates around-the-clock, to support maintenance, development, testing, training and shuttle flight operations. Over 2,500 miles of wire and cable connect more than twenty large and medium scale central computers with more than 160 operator consoles and 115 workstations.

A computer and communications complex on the ground floor provides for the collection, processing and monitoring of internal data and signals from external facilities such as remote payload operations control centers and orbiting spacecraft. Using domestic satellites and a vast network of terrestrial circuits that comprise the NASA communications network, the Mission Control Center can literally reach around the world to combine the resources and information needed to support shuttle flight operations.

The two flight control rooms, or FCRs are the center of operations for all space shuttle flights. The rooms are functionally identical, and may be used to control separate or simultaneous flights or simulations. Often one room will control and actual mission, while at the same time flight controllers conduct a simulation for a future flight in the other.

During a shuttle mission, the FCR (pronounced fick-er) is staffed by a specially trained team of flight controllers who are experts in specific orbiter systems and in certain disciplines of space flight operations.

Flight

The Flight Director is the leader of the control team. Flight is responsible for all decisions regarding the safe and successful conduct of the missions.

CAPCOM

The spacecraft communicator serves as the primary voice communicator between the flight control team and flight crew. The CAPCOM is also a member of the Astronaut Corps. The term "CAPCOM" is a holdover from the Mercury program, when the spacecraft crew cabin was actually a capsule.

PROP

The Propulsion Engineer is responsible for the management of the Orbiter Reaction Control System, Orbital Maneuvering System and fuel status during flight.

GNC

The Guidance, Navigation, and Control Systems engineer is responsible for all inertial navigational systems. These systems include star trackers, radar

altimeters, and inertial measurement units. The GNC also monitors radio navigation and digital auto pilot hardware systems.

GPO

The Guidance and Procedures Officer is responsible for on-board navigation software and monitoring the crew's manual control of the orbiter. The GPO is also responsible for the orbiter's navigation state, known as the state vector.

FDO

The Flight Dynamics Officer, nicknamed "Fido," is responsible for orbiter performance

interfaces between the payload customer and the flight director.

DPS

The on-board general purpose computers are the responsibility of the Data Processing Systems Engineer. The DPS also monitors the primary and back-up flight software systems, and manages operating routines and multi-computer configurations.

FAO

Crew and orbiter activities during flight are the responsibility of the Flight Activities Officer. The FAO is involved in the daily

ment. Pronounced "eagle," EGIL also manages fuel cell operation, vehicle lighting, and the master caution and warning system.

PAO

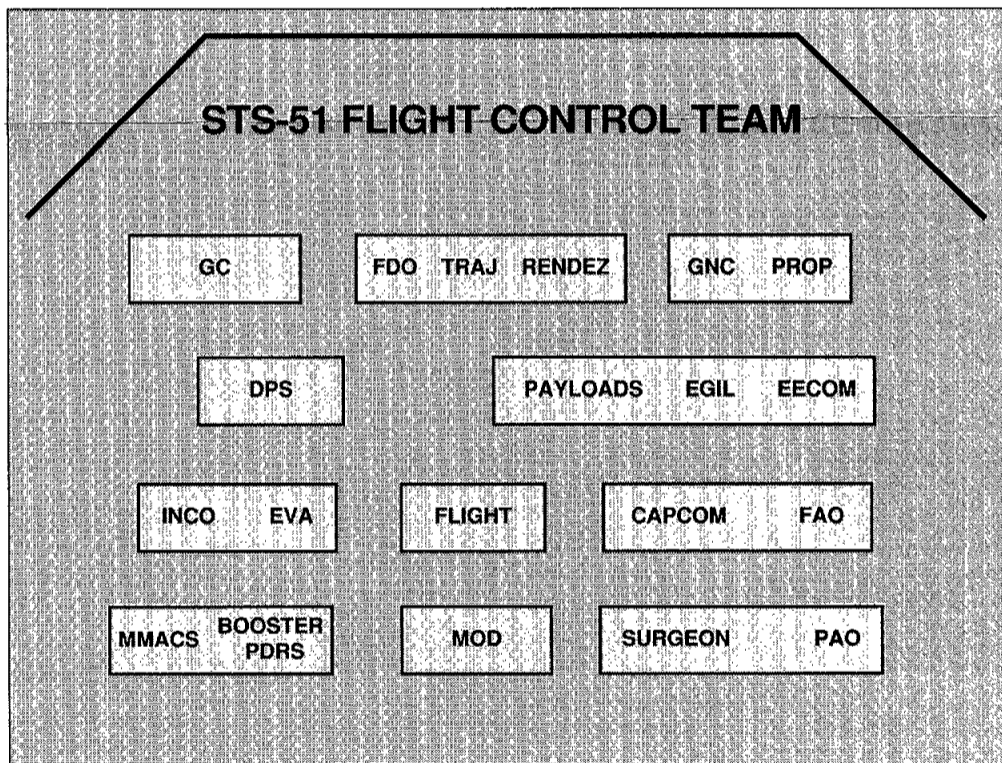
The Public Affairs Officer provides mission commentary to explain flight control operations to news media and the public. The PAO is also responsible for coordinating the efforts of the flight control team and the crew for any in-flight special events.

Booster, EVA, Rendezvous, PDRS

There are also controller positions that support specific phases of a mission. Among those are Booster, used during ascent and entry to monitor the performance of the shuttle's solid rocket boosters; EVA, a controller who monitors the space suits and spacewalk activities; Rendezvous, a GPO specialist who monitors on-board navigation of the orbiter during rendezvous operations; and PDRS, who is responsible for the operation of the payload deployment and retrieval system, or robot arm.

MOD

The Mission Operations Directorate representative coordinates the interface between the flight control team and other members of mission management.



during powered flight and for assessing abort modes. The FDO also calculates orbital maneuvers and their resulting trajectories. During entry, the FDO monitors the orbiter flight profile and energy levels.

TRAJ

The Trajectory Officer aids the FDO during dynamic flight phases, and is responsible for maintaining the trajectory processors in Mission Control. TRAJ also is responsible for trajectory inputs made to the Mission Operations computer.

GC

The Ground Controller is responsible for coordinating the NASA communications and data network with flight activities. The GC is also responsible for managing the control center data systems and support personnel.

EECOM

The Environmental Engineer and Consumables Manager is responsible for monitoring orbiter life support systems. The EECOM manages cabin pressure, thermal control, and supply and waste water. This officer also is responsible for the management of consumables such as water and oxygen.

Payloads

The orbiter Payloads Officer coordinates the

planning of the crew timeline and accommodating mission activities that require orbiter attitude maneuvers. The FAO also prepares messages to the flight crew using teleprinter or text and graphics systems.

INCO

The Instrumentation and Communications Officer is responsible for the orbiter data, voice and video communications systems. The INCO monitors the telemetry link between the orbiter and the ground, and manages uplink command and control activities. The orbiter television cameras can be remotely commanded from this position.

Surgeon

The Flight Surgeon is responsible for monitoring the physical condition and welfare of the flight crew.

MMACS

The Maintenance, Mechanical, Arm and Crew Systems Engineer monitors orbiter structural and mechanical systems. Included in the MMACS' area of responsibility are the auxiliary power units, hydraulic systems, payload bay and vent doors, as well as in-flight maintenance or repairs.

EGIL

The Electrical Generation and Illumination officer is responsible for power manage-

Each member of the flight control team is supported by specialists in multi-purpose support rooms that surround the flight control rooms. These MPSRs hold groups of system and functions specialists who provide detailed planning and analysis information to controllers in the FCR.

The MPSR operators continually monitor ground and orbiter systems, allowing them to respond quickly to any in-flight contingency or request from the flight control room operators.

Though the Flight Control Rooms are the focal point of the MCC, several other facilities in Bldg. 30 also support on-going mission operations.

The Customer Support Room, for example, provides work areas for payload customers who need mission monitoring and communications capabilities.

The Spacecraft Analysis Room's NASA engineers respond to questions from flight controllers concerning engineering data and orbiter system operations. The SPAN ensures that the proper resources are applied to the resolution of issues relating to orbiter hardware, software, and procedures.

The Mission Evaluation Room provides systems evaluations and detailed information on orbiter systems to the flight control team. The MER is the link between flight control personnel in the MCC and other mission support groups.

New approaches to data management are being studied for the next generation of flight control. Many functions that are currently performed manually will become more automated and will allow more efficient monitoring of systems.

The Space Station Control Center was dedicated last year as the home for the next generation of space flight. Flight control teams in the five-story facility will draw on their space shuttle flight control team experience and training to control mission operations of the future. □

JSC

People

Three top secretaries receive Bocking award

Stephanie M. Castro, Betty J. McCaghren and Tamara R. West recently received the Marilyn J. Bocking Award for Secretarial Excellence.

Castro, secretary to the deputy director of the Life and Space Sciences Directorate, has consistently shown an "impressive capacity for quality work, is attentive to detail, consistently productive and displays singular initiative and determination in all she undertakes," according to the award nomination.

Castro interfaces with scientists representing many different disciplines from several different countries and processes written material and verbal responses in support of the deputy director's management tasks.

McCaghren, secretary to the assistant manager of the Orbiter and GFE Projects Office, was cited for the high quality and accuracy of her work, and for her personal initiative in supporting the organization.

She manages the flow of personnel actions and paperwork required for the realignment of the Orbiter and GFE Projects and has modified internal documents and forms to be compatible with the new computer system.

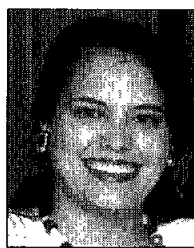
West, a senior secretary in the Astronaut Office, was recognized for her team attitude, initiative and excellent work.

She has supported six shuttle flights as crew secretary, assisted in the directorate office and was instrumental in producing the Flight Crew Operations Handbook. Her experience and the quality of her work have allowed the shuttle crews she supported to "focus their attention on the more important aspects of space flight," according to the award nomination.

Contractor wins Archer-of-the-Year Honors

Rick Stonebreaker, an on-site quality engineer for EBASCO, is this year's recipient of the Clayton Shenk Award for All Around Archer for his performance in national tournaments.

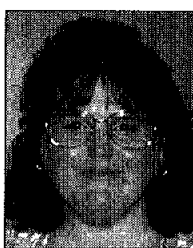
Stonebreaker won the title in August with a total of 4,187 points accumulated in three national archery tournaments culminating with his



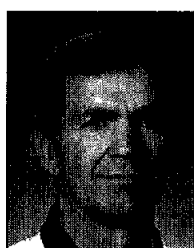
Castro



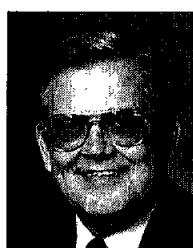
McCaghren



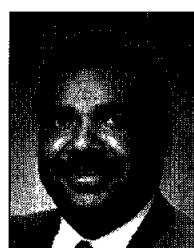
West



Stonebreaker



Haney



Renfro

ninth place finish at the National Target Championship in August in Oxford, OH. Stonebreaker is also the national field archery champion.

This year he was one of only eight men who qualified for the United States national archery team. Stonebreaker has competed in archery tournaments for more than 20 years, frequently finishing in the top ten for national competition.

Haney inducted into Space Hall of Fame

Paul P. Haney, retired director of public affairs, will be inducted into the International Space Hall of Fame on Oct. 2 in Alamogordo, NM.

Haney was well known as the "voice of the astronauts" during both the Gemini and Apollo eras and his

selection recognizes his contributions to space exploration.

Haney joined NASA in 1958 in Washington moving to Houston in 1963 as the Public Affairs Officer for the Manned Spaceflight Center (now JSC). He retired in 1969.

Haney will join the 116 other men and women from 17 countries represented in the Hall of Fame. The International Space Hall of Fame opened in 1976 to honor individuals for their contributions to the exploration of space.

Renfro named to Administration post

Howard Renfro recently was named to the position of assistant director in the Administration Directorate by Acting Center Director Paul

J. Weitz. His new position also promotes him into the Senior Executive Service.

In this position, Renfro will concentrate his efforts on strengthening the leadership, management and effectiveness of program control functions at JSC. His most recent assignment was as manager of the Space Shuttle Program Control Office. Renfro will maintain that position temporarily to ensure the program is not affected by changes in its control management.

Renfro joined NASA in 1966 and has held increasingly responsible positions within the Space Shuttle Program Control Office. In 1988 he served as special assistant to the director and in 1992 completed the Program for Management Development at Harvard University.

Penn State professor selected as NASA chief scientist

NASA Administrator Daniel S. Goldin announced last week that Dr. France Anne Cordova, head of the Astronomy and Astrophysics Department, Pennsylvania State University, will assume the responsibilities of NASA Chief Scientist effective mid-October. She will be on extended detail from the university to NASA.

In this position, Cordova will be the administrator's senior scientific advisor. She also will be the principal interface between the administrator and the national and international science community to ensure

that NASA programs are universally regarded as scientifically and technologically well founded and are appropriate for their intended applications. One of her critical duties will be to coordinate an integrated strategic plan for all the scientific disciplines across NASA.

"NASA and the whole scientific community are indeed fortunate that Dr. Cordova has agreed to assume this most important position. She brings to the agency a wealth of professional experience and service," Goldin said.

Prior to assuming her present

Penn State position in 1989, Cordova was deputy group leader of the Space Astronomy and Astrophysics Group at the Los Alamos National Laboratory. She served as staff scientist in the Earth and Space Science Division at Los Alamos from 1979 to 1989.

Cordova presently serves on the President's National Medal of Science Committee and is a member of the Space Science and Applications Advisory Committee of the NASA Advisory Council. She has served on the Roentgen X-ray Observatory International Users

Committee; the Extreme Ultraviolet Explorer Guest Observer Working Group; and the Hubble Space Telescope Advanced Camera Team.

At the National Science Foundation, she has served on the Advisory Committee for Astronomical Sciences; the External Advisory Board for NSF Particle Astrophysics Center; the NSF Advisory Council; and the Committee on Space Astronomy and Astrophysics of the Space Science Board.

Cordova was elected vice presi-

dent of the American Astronomical Society in 1993 and in 1990 was elected chair of the High Energy Astrophysics Division of that Society.

Cordova's scientific contributions have been in the areas of observational and experimental astrophysics, multispectral research on x-ray and gamma ray sources and space-borne instrumentation.

Cordova has a bachelors degree in English from Stanford University and a doctorate degree in physics from the California Institute of Technology.

Funeral services held for former PAO employee

Terry White, 65, a former member of JSC's Public Affairs Office died Sept. 8 of pancreatic cancer. Memorial services were held last week.

White joined NASA in 1963 as an information specialist at the Manned Spacecraft Center.

During his time at JSC, White served as mission commentator for many space missions. He also served as an authority on manned space flight history and technical information for the Public Affairs Office.

Throughout his many years of service, White worked with reporters from around the world and became a respected spokesperson for NASA.

"I have covered every manned space flight," Jules Bergman once wrote. "I have known and worked with Terry White throughout this period. He has never failed to come through with information ABC News needed when we needed it."

After 25 years of service to JSC, White retired from NASA in 1988 and moved to Durango, Colo., with his wife, Mary. He is survived by his wife; a son, Robert; and a daughter, Kathleen.



Mission Specialist Jim Newman performs a Detailed Supplementary Objective to investigate the visual-vestibular and perceptual changes that occur in microgravity.

STS-51 packed with activity

(Continued from Page 1)

with the mechanical arm on Sunday and replace it in *Discovery's* payload bay for the trip home.

On the third day of the flight, the crew sent engineers several television views of the Superzip ring, part of the shuttle's payload support equipment, which apparently became partially detached during or immediately after the ACTS deploy.

The loose band was located on the support equipment in the shuttle's payload bay that held the ACTS/TOS satellite. Engineers' evaluations indicated that the band was attached securely enough to withstand *Discovery's* reentry into the Earth's atmosphere and landing. Mission managers decided that crew members did not need to take any action to better restrain the device.

Crew members Walz and Newman performed a six hour space walk on the fifth day of the flight, another in a series of space walks designed to refine space walk planning and training. While out in the vacuum of space, Walz and Newman also evaluated tools and

techniques that will be used on the Hubble Space Telescope servicing mission in December.

"It looks like it's a beautiful day for a spacewalk," Walz said as he left the airlock and floated into the payload bay at the beginning of the six hour extravehicular activity.

While out in the payload bay, Walz and Newman evaluated 21 tools related to the Hubble mission.

Newman, conducting another payload bay activity, moved his gloves close to one of the payload bay's floodlights in an experiment to determine whether heat radiating from the floodlight could provide warmth to his hands through the specially designed gloves EVA crew members wear. Newman reported that he did feel some warmth from the light. Astronauts on previous shuttle missions have reporting feeling some coldness in their hands during spacewalks.

Meanwhile at the Kennedy Space Center, technicians are preparing *Columbia* for the next mission of the year, Spacelab Life Sciences 2, scheduled for launch in mid-October.

Silver Moon expands lunch service

Space Center Houston's Silver Moon Cafe now accepts lunch reservations allowing JSC contractors, employees and area residents to dine in the cafe without the additional expense of the entrance fee to the Center.

"We want to offer an easy way for area diners to have lunch in our restaurant without having to purchase an admission ticket to Space Center Houston," said Bob Stage, general manager of dining services.

Diners with reservations can bypass the ticket window and go straight to the information desk located just inside the doors of

Space Center Houston. They will be escorted from the information desk to the cafe.

Regular guests can earn a free lunch by using the new "Frequent Diner's" card issued by the cafe on their first visit. The card will entitle the card holder to a free lunch after the purchase of six previous meals. In addition, the cafe offers a free dessert or flavored steamer from the espresso cart during the first visit.

Reservations may be made by calling 283-7704. The cafe is open from 11 a.m.-4 p.m. every day and offers an all-you-can-eat buffet as well as soups, salads, and sandwiches.

Earnings statement gets new look

The Leave and Earnings Statement that employees receive each pay period has been revised to detail earnings, accrued leave, and tax status more clearly.

The changes are the result of a study conducted by the Payroll and Labor Distribution Accounting Section which logged the number and type of inquiries they routinely received about earnings statements.

"We now list full W4 information including number of exemptions, marital status and any additional withholding amount," said Gwen Obert, NPPS systems administrator, "and the statement will also show a 'use or lose by next pay period' status of an employee's comp-time account."

Previously, the earnings statements reflected information through a series of codes rather than by displaying the actual figures prompting employees to call the payroll office to determine actual leave or earnings amounts.

This change in the statement should represent both a time and cost savings to the payroll organization. The revised Leave and Earnings Statement becomes effective with the pay period ending Oct. 2.

A detailed explanation of the changes will be mailed with that first statement. For more information, contact the Payroll and Labor Distribution Accounting Section at x32128.

ACTS to test telemedicine concepts

(Continued from Page 1)

imaging. These images will be sent from one location to another for review by a consulting physician. The ACTS Mobile Terminal also will be used to transmit patient data from emergency vehicles while en route to a hospital.

ACTS technology also is expected to enhance business transactions, educational services, teleconferencing capabilities and the development of high definition TV.

All the ACTS activities will begin after the satellite completes its on-orbit checks in late November. Currently, the satellite is drifting to its final location above the equator, directly south of Mexico City.

As of presstime, the ACTS was performing as expected. The satellite is being controlled by the NASA/Martin Marietta Astro Space Team in New Jersey. The ACTS program is managed by the Lewis Research Center.

Space News Roundup

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Editor Kelly Humphries
Associate Editor Kari Fluegel