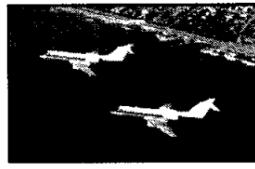




Mission Operations Directorate workers put together some fun of their own at the fourth annual MOD Olympics. Photos on Page 3.



JSC's Aviation Safety Office recently presented awards to pilots and engineers who have made a difference. Story on Page 4.

Space News Roundup

Vol. 31

November 20, 1992

No. 45

Shuttle managers target Dec. 2 *Discovery* launch

Department of Defense mission will include numerous secondary experiments

By James Hartsfield

As shuttle managers wrapped up a final review of STS-53 mission preparations Thursday and announced a 5:59 a.m. CST Dec. 2 launch, technicians powered up *Discovery* at Pad 39A and began to close out the engine compartment.

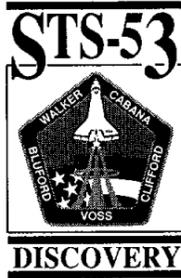
Also Thursday, the primary cargo for STS-53, called DOD-1, was installed in the spacecraft as well as space suits that will be used in the event an emergency space walk is needed during the flight.

The STS-53 crew—Commander Dave Walker, Pilot Bob Cabana and Mission

Specialists Guy Bluford, Jim Voss and Rich Clifford—plans to travel to Kennedy Space Center on Nov. 29 for final preparations prior to the launch.

A Department of Defense-dedicated flight, certain aspects of STS-53 are classified. The DOD-1 payload will be deployed about six hours after launch into a 200 nautical mile, 57-degree inclination orbit.

The next day, *Discovery's* orbit will be lowered to 175 by 176 nautical miles and

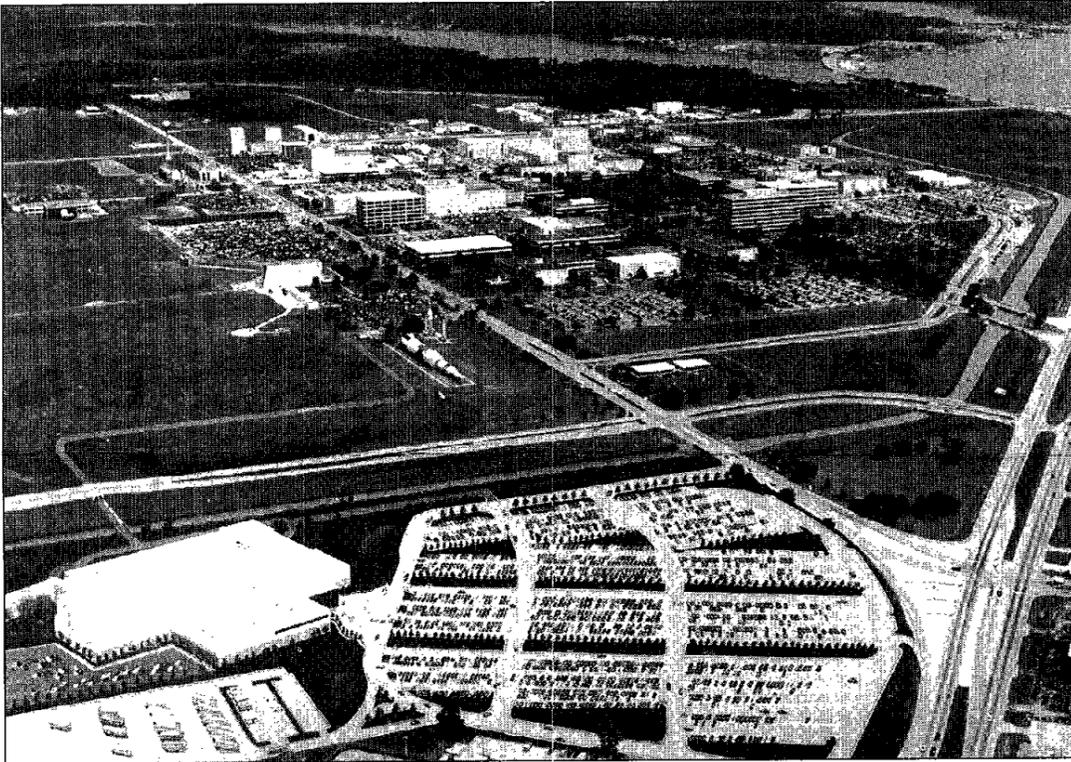


work will begin with secondary experiments, including a study of the glow created by the shuttle as it encounters atomic oxygen in orbit and of an advanced cooling system under development for spacecraft. On the third day, the crew will deploy six small metal spheres from *Discovery* that will be used to fine tune ground radars used to track space debris.

Other experiments involve tests of a receiver designed to detect laser emissions from the ground; a study of optical

views of various cloud cover from orbit; evaluations of the amount of radiation *Discovery* is exposed to during the flight; studies of the behavior of fluids in weightlessness; tests of a new hand-held camera that determines the exact position of a photograph of Earth taken from orbit; studies of manufacturing microcapsules, super-small medical capsules, in orbit; and medical investigations of the effects of weightlessness on vision and body tissue.

With an on-time launch, *Discovery* and its crew are scheduled to land at KSC's Shuttle Landing Facility at 11:53 a.m. CST Dec. 9.



An aerial photograph of JSC serves as the basis for this artist's rendering of how the site will look once the extensive road projects now under way are completed. The new Lyndon B. Johnson Space Center sign can be seen next to the new NASA Road 1 main entrance at center right.

There's light at end of road work tunnel

By Kelly Humphries

It won't be long before JSC's current main entrance is closed to JSC traffic and a new main entrance is opened. In the meantime, employees and visitors face a slightly confusing situation.

Some of the confusion is caused by the movement of the old JSC sign to Rocket Park and its replacement by a Space Center Houston sign.

According to Center Operations Deputy Director Grady McCright, the best way to adjust to the changing times is to start thinking about JSC's old main gate as the official entrance to Space Center Houston. Once the road work is complete, it will be obvious which entrance is to JSC and which is to Space Center Houston.

"When we install JSC's new, larger sign at the new main entrance,

there should no longer be any doubt in anyone's mind as to whether they are entering the Johnson Space Center or Space Center Houston," McCright said.

What has been JSC's main gate for nearly 30 years is serving temporary double duty as Space Center Houston's entrance. But by March, Second Street will be closed to JSC traffic south of

Please see **ROAD**, Page 4

NASA Illustration

JSC researchers join technology showcase

What can space station resupply missions and survival of the fittest possibly have in common? Can Macintosh computers be used for real-time experiment data acquisition on the ground? Can knowledge-based computer systems help assess medical risks?

Folks who attend Technology 2002 will find out a week from Tuesday when a dozen JSC researchers will present papers at the third national technology transfer conference in Baltimore.

The JSC papers will join the ranks of "magic bullets" for cancer therapy, wireless infrared telephones and ingestible pills that take your temperature and hundreds more at the conference sponsored by NASA, NASA Tech Briefs magazine and the Technology Utilization Foundation. Technology 2002 will show businesses how to tap into the government's \$70 billion technology bank to solve engineering problems, create new or improved products and refine their manufacturing processes.

Among the more captivating of the JSC offerings is one by Lui Wang of Information Systems' Software Technology Branch, who will discuss his attempt to use a genetic algorithm tool for complex scheduling problems to solve the Space Station Freedom resupply problem.

Genetic algorithms use the same techniques as nature to develop optimum solutions to complex problems. Using a set of defined parameters, GAs randomly generate several complete sets of parameter values. Each set is similar to a chromosome and is tested to see how well it addresses the problem. The better solutions are "mated" with each other in much the

same way as genes are spliced together in living things. The computer simulates natural selection by testing these offspring for their "fitness" or ability to solve the problem. Only the best performers are kept for further breeding.

In other words, only the fittest solutions survive as the computer continues to search for the optimum solution.

Wang's work has been in applying GAs to the complex problem of resupplying the space station — in particular the hydrazine tanks that will be used to maintain *Freedom's* orbit and attitude. Space station planners are working under the assumption that there will be only sets of eight hydrazine tanks and thrusters; six will be in use aboard *Freedom* while two are being refurbished.

Because the tanks will not be interconnected, managing exactly when each jet is fired and for how long is an important question. Add to that equation the need to try to predict the cyclical effects of solar flux on fuel usage and it becomes even more complicated. Add to that the need to resupply crew members with food, experiments with raw materials and station systems with replacement parts and the problem becomes mind-boggling.

"Many artificial intelligence systems are rising to the problem of how to optimally do something," Wang said. "Out of this complicated world, how do I know the best way to do things? Through an evolutionary process, we will create better and better decisions."

It now takes space station planners about three weeks to come up

Please see **JSC**, Page 4

Hubble observes possible black hole

NASA's Hubble Space Telescope has revealed a chain of luminous knots in the core of the most distant known galaxy—one that existed in the infancy of the universe and is more than 10 billion light years from Earth.

"These knots could be giant clusters of stars. If that is so, then each knot would contain about 10 billion stars and would be about 1,500 light years across," said Dr. George Miley of Leiden University in the Netherlands, leader of the international team that examined the galaxy.

An alternative theory is that the knots are gas or dust clouds caught in a "searchlight" beam of energy from a massive black hole hidden at the galaxy's core.

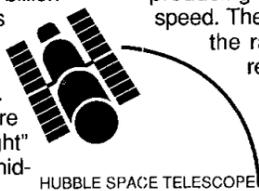
The galaxy's great distance from Earth indicates that it was formed only 1 or 2 billion years after the Big Bang, which marked the beginning of the observable universe. Most galaxies probably formed then.

The new photos, taken with the HST's wide field and planetary camera, reveal detail 10 times better than photographs taken with ground-based telescopes.

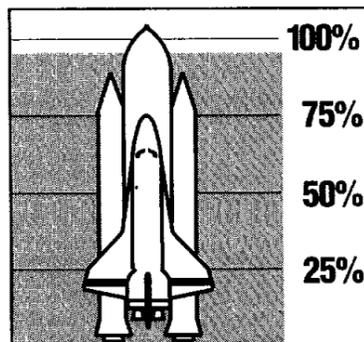
The galaxy, designated 4C 41.17, also is known as a radio galaxy. Radio galaxies produce powerful, extended radio emissions.

In the case of 4C 41.17, astronomers presume that a massive black hole, rotating in the core of the galaxy, is producing twin jets of particles moving at enormous speed. The energy from the jets would be the source of the radio emissions. The HST photographs are remarkably similar to images of the galaxy produced on the basis of the radio emissions.

These corresponding images suggest that the high velocity particle jets compress gas and dust along their paths, triggering the formation of new stars. If this explanation is accurate, the knots along the jet paths would be clusters of stars in "enormous numbers, the products of the highly disturbed inner region of the primeval galaxy," Miley said. It also is possible that the light photographed by HST is light from a disk of material surrounding the black hole that is being scattered off clouds of gas or dust.



HUBBLE SPACE TELESCOPE



1992 GOAL: \$440,000



Procurement worker wins airline tickets

JSC employees have nearly reached the Combined Federal Campaign goal of \$440,000, but coordinators are still counting pledges.

So far, \$421,000 in pledges have been recorded, and donations are still being accepted.

The winner of the last pair of airline tickets to anywhere in the continental U.S. went to Lucy Yates of the Administration Directorate's Engineering Procurement Branch.

Three employees who contributed at least 1-hour's pay a month to the CFC won the tickets, which were provided by Continental Airlines.

JSC

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m.-2 p.m. weekdays. For more information, call x35350 or x30990.

EAA Christmas Tree Sale (Dec. 5) — Trees \$17 each with ticket purchased in advance. Sale at Gilruth Center.

Christmas Dances — Roast Beef Dinner, \$15 per person, Dec. 11. Prime Rib Dinner, \$20 per person, Dec. 12. Tickets on sale Nov. 25.

Nutracker Ballet, UHCL Bayou Theatre (Dec. 11, 8 p.m., Dec. 12, 2 p.m. and 8 p.m., and Dec. 13, 2 p.m.) — Tickets \$10 each with a limit of four per badged employee.

Dickens on the Strand (Dec. 5-6, Galveston) — Adult, \$6; children under 12, free.

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

Metro tickets — Passes, books and single tickets available.

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

Entertainment '93 and Gold C coupon books, stamps, Walt Disney Club memberships also available.

Upcoming Events:

EAA Children's Christmas party: Dec. 19

JSC

Gilruth Center News

Sign up policy — All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a badge or EAA membership card. Classes tend to fill up four weeks in advance. For more information, call x30304.

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

Defensive driving — Course is offered from 8 a.m.-5 p.m. Dec. 12. Cost is \$19.

Weight Safety — Required course for employees wishing to use the Gilruth weight room is offered from 8-9:30 p.m. Dec. 2. Pre-registration is required; cost is \$5.

Aerobics — High/low-impact classes meet 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. Tuesdays and Thursdays. Cost is \$24.

Bench aerobics — Class meets from 5:16-6:15 p.m. Mondays and Wednesdays. Cost is \$32 for eight weeks; participants must provide their own benches.

Aikido — Martial arts class meets Tuesdays from 6:15-8 p.m. Cost is \$15 per month.

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

Volleyball — Winter league volleyball registration will be at 7 a.m. Dec. 8-9 at the Gilruth. Mixed C and women's leagues will sign up on Dec. 8. Mixed "B" and men's leagues will sign up Dec. 9.

Basketball — Winter league basketball registration will be at 7 a.m. Dec. 10 at the Gilruth.

Intercenter Run — T-shirts for participants in this year's Intercenter Run are now available for pick-up at the Gilruth Recreation Office.

JSC

Swap Shop

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

Property

Lease: LC, The Landing, 3-1-1, fenced, mini blinds, no pets, \$650/mo. + dep. 486-9811.

Lease: 3-2-2, new carpet, FPL, wooded lot, lg master BR, hot tub, deck, pets ok, \$950/mo. 326-1155.

Sale: Restaurant, approx 1 hr W. of Houston, also large restaurant building (Solodak's Steakhouse) on 1.2 acres on Hwy 36 at Loop 290, Brenham. x33016 or 534-2372.

Rent: Lake Travis cabin, private boat dock, CAH, accommodates 8, fully equipd, fall/winter, \$325/80 w/ky/daily. 474-4922.

Rent: Heights, 3 rm efficiency apt, full kitchen/bath, cov parking. 283-5890 or 868-5132.

Sale: Pearland Dixie Hollow Subdivision, lot, medium density housing concrete, all util. x39530 or 482-5003.

Rent: Galv beach house, D/W, C/A, furn. Ed Shumilak, x37686.

Sale: Galv beach house, 3-2-1, CAH, furn. Ed Shumilak, x37686 or 326-4795.

Rent: Galv condo, furn, sleeps 6, Seawall & 61st St, w/ky/wknd/daily. Magdi Yassa, 333-4760 or 486-0788.

Rent: Taos N.M., ski area house, mountain view, sleeps 4, w/ky rentals. 532-2082.

Sale: Friendswood, Wedgewood Village, 3-2-2, lg pecan/oak trees, split floor plan, fans every rm. 482-6236.

Lease: League City, 4-2-2, formals, FPL, lg fenced yard, no pets. x31440 or 333-5693.

Sale: Green Acres, 3-2-2, lg living area, custom WBFB, den, spacious kitchen, lg master BR, patio w/custom grill, \$71.5K. Delia, 941-2881.

Rent: Challenger Park, 3-2, waterfront, all appl, yard care incl, \$950/mo. Brian or Nancy, 332-9304.

Lease: Meadowbend, 3-2-2, new appl, carpet, paint, fans, storm windows, storage shed, garden, cov patio, \$825/mo. + dep. 334-5898.

Sale: Friendswood, 4-3.5-3d, 3478 sq ft, located on 5.7 acre, another 5.3 acre avail, \$365K. x39250 or 996-8471.

Lease: Scarsdale, 3-2-2A, avail Dec 1, \$530/mo + dep. x32426 or 996-8807.

Sale: Nacadoches, unimproved remote forest land, 120 acres, \$795 per acre; Hilltop Lakes Resort property, 80 x 120 lot, golf, fishing, near taxiway, \$6K OBO. Charlie, 554-6201.

Rent: Arkansas lake cabin, furn w/antiques, screened porch, accommodates 8, \$250/wk, \$50/day. x33005 or 538-4141.

Rent: Cape Royale, Lake Livingston, Harbour Villa TH, near marina, newly decorated, sleeps 6. 334-5818.

Sale: Meadowgreen, 3-2-2, no approval, cul-de-sac, high ceilings, tile entry, wetbar, formals, family rm, sec sys, whirlpool, crown moulding, owner, \$118K. x35296 or 486-7475.

Sale: CL Shores, 3-2-3, 2-story, gameroom, loft, FPL, trees, waterfront, \$129K. 538-1849.

Rent or Sale: Egret Bay, 1-1 condo, FPL, fans, W/D, dishwasher, microwave, balcony w/2 glass doors, 2 outdoor closets, cov parking, boat camp, dock, \$575 + dep. Karl, x33031 or 286-9822.

Sale: Countryside, 3-2.5-2A, 2 story, lg corner lot, cov deck, all BR up, int util rm, CCISD, \$65.9K. 554-7623.

Lease: Green Acres, 3-2-2, 1700 sq ft, open living area, lg fenced yard, no inside pets, avail mid Dec, \$950/mo. w/equal dep. 482-1685.

Sale: Heritage Park, 3-2-2A, fenced, new paint, carpet, tile, miniblinds, tree shaded front lawn on low traffic cul-de-sac, \$61.5K. 326-5216.

Cars & Trucks

'77 Grand Prix, new eng (1 yr), trans (2 yrs), new radiator, alternator, starter, master cylinder, brakes, \$1K OBO. David, 554-5514 or 282-3827.

'84 GMC truck, auto, AC, \$3.5K OBO, BD tiller, \$150; 2 his/hr 12 spd bikes, \$150 both, will sell indiv. 332-4090.

'90 Nissan Maxima SE, maroon, Bose stereo, elec sunroof, ex cond, 27K mi, ext warranty, \$15.5K. Jan, x32896 or 538-1443.

'88 Ford Escort GT, low miles, AC, PS/PB, good cond, \$4.8K. 332-0015.

'63 Corvette, split window coupe, red, factory AC, 4 spd, pwr windows, \$22K. x38843 or 332-6153.

'88 Honda CRX DX convertible, 78K mi, AC, AM/FM/cass, 50 series tires, 15" mags, 5 spd, \$6.5K negotiable. x38796 or 457-5217.

'84 Oldsmobile Firenza, auto, 4 DR, AC, AM/FM, pwr steering, 78K mi, good cond, \$1.9K OBO. Joe, 481-8561.

'91 Toyota 4 x 4, AM/FM/cass, bedliner, ex warr, \$12.8K. Gary, 474-4156.

'84 Chrysler New Yorker, new tires, \$2K. 333-3876.

'91 Chrysler Lebaron coupe, red, auto, alarm, 34K mi, 2.3l eng, cruise, ext warr, \$7.9K. 333-8047 or 488-2336.

'86 Pontiac Grand Am, V6, auto, 4 DR, tilt, cruise, new AC compressor, \$3.3K. Jeri, 333-7552.

'85 Nissan 300ZX, auto trans, silver, 63K mi, loaded, ex cond, \$5999. 532-2147.

'80 Lincoln Continental, new trans, new carb, new tires, \$1K. Sharon, x36534 or 486-7428.

'89 Bronco, Eddie Bauer, new Goodyears, new muffler, tailpipe, batt, auto OD, 52K mi, ex cond, \$12.2K. 480-7999.

'85 Buick Century, 4 DR sedan, 4 cyl, 55K mi, one owner, good cond, \$2.8K. 488-3128.

'78 Porsche 928, brown w/leather int, auto, 75K mi, ex cond, \$8.5K OBO. Bill, x39980.

'83 Honda Accord hatchback, blue, 68K mi, one owner, ex cond, \$1950. 486-8865.

'84 Nissan Sentra XE, 4 DR, auto, AC, AM/FM/cass, ex cond, \$2950. 996-0152.

'85 Lincoln Towncar, metallic silver, gray velour int, ex cond, 75K mi. 282-4849 or 409-925-7839.

'79 F250 supercab longbed, 351 eng, 4 spd OD, 115K mi, AC, cruise, needs fender repair and paint, \$1550. 482-1685.

Today

Small Business Expo — JSC will host a Small Business Expo from 9 a.m.-2 p.m. Nov. 20 at the Gilruth Center. The expo is designed to create new markets for suppliers and new sources for buyers and JSC organizations. For more information, call Barbara Kirkland at x34512.

JAS meets — The JSC Astronomical Society will meet at 7:30 p.m. Nov. 20 at the Lunar and Planetary Institute, Bay Area Blvd. and Middlebrook Dr. Rich Nugent and Paul Maley will present "Solar Eclipse Reports." For more information, call Chuck Shaw at x35416.

UNIX group meets — The JSC UNIX Systems Administration Group will meet at 2 p.m. Nov. 20 in Bldg. 12, Rm. 254. Dan McCoy will discuss "Administering X Windows." For more information, call Mark Hutchison at x30738.

Cafeteria menu — Special: tuna and salmon croquette. Entrees: pork chop with yam rosette, Creole baked cod. Soup: seafood gumbo. Vegetables: Brussels sprouts, green beans, buttered corn, whipped potatoes.

Monday

Cafeteria menu — Special: Italian cutlet. Entrees: braised beef ribs, chicken a la king, enchiladas with chili. Soup: cream of broccoli. Vegetables: navy beans, Brussels sprouts, whipped potatoes.

Tuesday

Blood drive — The fourth on-site JSC Blood Drive of 1992 will be from 8-11:30 a.m. and 1-3:30 p.m. Nov. 24 at the Gilruth Center. Appointments are required; call Mary O'Rear at x36531, or Dan

Mangieri at x33003. For more information, call Mangieri at x33003.

Cafeteria menu — Special: stuffed cabbage. Entrees: turkey and dressing, round steak with hash browns. Soup: beef and barley. Vegetables: corn cobbette, okra and tomatoes, French beans.

Wednesday

Toastmasters meet — The Spaceland Toastmasters Club will meet at 7:15 a.m. Nov. 25 in the Bldg. 3 cafeteria. For more information, call Darrell Boyd at x36803.

Astronomy Seminar — JSC Astronomy seminars will host an open discussion luncheon meeting from noon to 1 p.m. Nov. 25 in Bldg. 31, Room 129. For more information, contact Al Jackson at 333-7679.

Cafeteria menu — Special: pepper steak. Entrees: catfish with hush puppies, roast pork with dressing. Soup: seafood gumbo. Vegetables: broccoli, macaroni and cheese, stewed tomatoes.

Thursday

Cafeteria menu — Special: chicken fried steak. Entrees: beef tacos, barbecue ham steak, Hungarian goulash. Soup: turkey and vegetable. Vegetables: spinach, pinto beans, beets.

Nov. 27

Cafeteria menu — Special: tuna and noodle casserole. Entrees: liver and onions, deviled crabs, roast beef with dressing. Soup: seafood gumbo. Vegetables: whipped potatoes, peas, cauliflower.

Dec. 1

Lunch and learn — The American Institute of Aeronautics and

Astronautics' Automation and Robotics Technical Committee will meet at 11:30 a.m. Dec. 31 in Gilruth Center Rm. 204. JSC Chief Technologist Kumar Krishen and Dr. Nerie Collin will discuss "Assured Vision for Future Space Robotics Programs." For more information, call Zafar Taqvi at 333-6544.

Dec. 2

Toastmasters meet — The Spaceland Toastmasters Club will meet at 7:15 a.m. Dec. 2 in the Bldg. 3 cafeteria. For more information, call Darrell Boyd at x36803.

Astronomy Seminar — JSC Astronomy seminars will host an open discussion luncheon meeting from noon to 1 p.m. Dec. 2 in Bldg. 31, Room 129. For more information, contact Al Jackson at 333-7679.

Dec. 3

IEEE videoconference — The Institute of Electrical and Electronics Engineers will present a videoconference on "Getting Rid of Interference" at 11 a.m. Dec. 3 in the Gilruth Center. Registration deadline is Nov. 24; cost is \$50 for members, \$15 for non-members. For more information, call Andy Lindberg at x31474.

Dec. 8

AIAA meets — The American Institute of Aeronautics and Astronautics' Guidance, Navigation and Control Technical Committee will meet at 11:45 a.m. Dec. 8 in Gilruth Center Rm. 204. Barrios J. Lee Foster will discuss "Orbital Debris Avoidance for Space Station." For more information, call David Clark at 332-2484 ext. 61, or Rob Carmody at 283-4101.

Mini-lop and fuzzy lop rabbits, Gailo, 554-6200.

AKC mini Schnauzers m/f, \$150-175. 922-7240.

2.5 yr old male dachshund, AKC reg, \$75. 337-1896 or 335-0641.

AKC, male Siberian husky, 2 yrs old, neutered, current shots, \$100. Greg, x32259 or 474-7634.

Household

Italian marble coffee table, rectangle, \$75. 996-6062.

King sz waterbed w/heater, frame, semi motionless matt, \$150 OBO. x38413 or 554-2728.

Keg refrig, 20 cu ft w/icemaker, incl empty keg, gas bottle, all hoses, \$275. x39282 or 335-0641.

Sleeper loveseat, off wht, good cond, \$125; brwn vinyl recliner, good cond, \$50. x32077 or 488-5944.

Blk chair, ottoman, wht cloth/wood chair, ottoman, queen very firm Sealy matt, box spring, prices negotiable. 941-0332.

Wht Sears elec stove w/continuous cleaning oven, \$200. 480-3424.

Full sz ultra suede couch, bone, \$300 OBO; solid oak/bevelled glass top matching coffee table/end table, \$200 OBO for both. John, x31901 or 333-5662.

King sz comforter, bed skirt, pillow shams, mauve, seafoam green, blue, \$45. Shawn, 472-7526.

Extra long brwn couch, \$25; full motion waterbed w/heater, all wooden frame/stand, \$75; entertainment center 4 x 5.5, \$25; dbl bed matt, box spring w/metal stand, \$50. 282-2586.

Qn sz Simmons Beautyrest matt, box spring, ex cond, \$150. Melki, 480-4101 or 996-5088.

Super single waterbed, bookcase hdbd, dbl drwr pedestal, matt, heater 1.5 yr old, \$65. Jeff, 283-5501 or 286-2060.

Twin bed box spring, \$20. x31883.

Girls BR furn, desk, hutch, 2 drwr night stand, 7 drwr dresser w/mirror, ex cond, \$250. x36090 or 488-7427.

Lady Kenmore gas dryer, \$65, recliner, \$50 OBO. 332-2229.

Kg sz waterbed, hdbd w/2 shelves, etched mirror, special puncture resistant matt, dk wood. 335-4318.

Wanted

Want STS-52 payload patches. LAGEOS, USMP-1, other STS-52 payload patches, decals or lapel pins. Andrew, 280-0647.

Want Terra Scout patch from STS-44. Andrew, 280-0647.

Want '89 - 91 Honda Accord, must be clean, priced right. Tobin, 486-5133.

Want EGA color monitor for IBM PC or compatible. Tu, x35321.

Want 78 RPM record player, x35978 or 332-9009.

Want Honda lawnmower under 4 yrs old. Don, x38039 or 333-1751.

Want desk, wood, small sz 24" x 36" in good cond. Magdi Yassa, 333-4760 or 486-0788.

Want girls 24" or 26" bike in good shape. x38763 or 286-0022.

Want guitar player for contemporary rock/country/latin band, must have equipment. Sharon, x36534 or 486-7428.

Want cheap car. 486-4700.

Want used refrig in good cond. Gary, x31361 or 332-6325.

Want children's 2 person ride-on elec car, lg capacity gas dryer. Mike, x39134 or 326-1853.

Miscellaneous

Ingersoll Rand 2 hp air compressor, \$200; Redwod Tongue & Groove 1 x 8, \$1.50 lin ft, 140 ft total. 332-9707.

Whirlpool refrig w/icemaker, \$325; Singer upright compact vacuum cleaner, \$35; Vitamaster row machine, \$45; Tenturi stair-master, \$150; 190 Rosignoll skis w/Salomon 747 bindings, \$150; adjustable ski rack, \$150; womens 10 spd bike, \$30. 280-7441 or 332-7201.

Oiler Tickets, 1st row, sec 736, seats 1&2, Dec 7 Chicago, Dec 13 Green Bay. Suzanne, 286-1388.

Weedeater 8" trimmer, \$20; lg thick galls mirror, 54" x 29", \$25 OBO; mens 10 lb bowling ball, \$25. Ed, x36250.

Artificial Christmas tree, flocked, 7' tall, \$25; water baby bed, \$40. 488-3747.

DP Fit-for-life exercise bench w/weights, 23 different exercises, 3 6" bars, 8 16" bars, over 200 lbs weight, all or part, best offer. 487-4889.

Prints, Patrick Nagel commemorative, #5, #8, #11, #1, \$350 - \$900. Mike, 283-5890 or 868-5132.

Three quarter length mink fur coat, sz 12-14, was \$3.5K, now \$850. 488-5564.

HJC full face motorcycle helmet, red, medium, \$80. 339-1469 or x35991.

Shopsmith, '62 model w/all tools, accessories, ex cond, \$650. x38039 or 333-1751.

Hummels, kindergardener, \$150; Friend or Foe, \$175. Pat, x31105.

Umbrella stroller, \$10; Fisher Price port-a-crib, \$50; kids clothes, boys/girls, infants thru 6, toys, maternity clothes, sz 8. 474-9747.

Tool box for midsize truck w/lock, \$100 OBO; spare tire with rim, \$30 OBO. Youm, 283-4813.

Foosball table complete, \$75 negotiable. 472-1483.

President & First Lady Gold Membership, \$200 OBO. 482-9601.

Time Life Library of Photography, \$75, variety of technical books, best offer. 282-4878 or 326-1837.

Free, FPL bricks, 120, assorted sz window screens, 24 x 80 solid core wood door. 489-0749.

Rountrip airline ticket from Houston Int to San Jose, CA, leaving Nov 20 to Nov 28, \$185 + tax. Michele, 282-3657.

Golf clubs, Tour Action Irons, 2 - SW, metal woods 1, 3, 5, bag, putter, \$225. x31339 or 286-5219.

Microwave, \$35; ladies sz 7 Dynafit ski boots, \$30. x31512 or 286-9822.

Timeshare condo for rent, \$575/wk anywhere in the world. 282-3339 or 286-8



Going for Gold

MOD Olympics put athletic skills to test

Beer slurping and horse shoe tossing replaced synchronized swimming and the downhill skiing Saturday as twelve teams competed for top honors in the Fourth Mission Operations Directorate Olympics.

More than 700 people attended the day-long competition at the Gilruth Center during which team members participated in 25 events including a space trivia contest, an obstacle course, egg tosses and Frisbee golf. A tug-of-war pitted brawn against brawn while a sack race let some of the smaller team

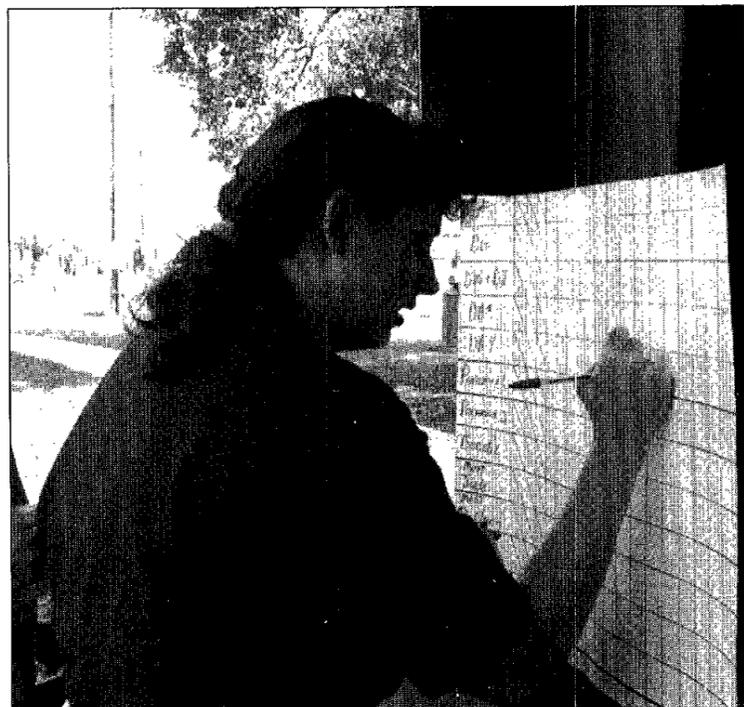
members join in the fun.

Managers had their own relay which tested their skills at dodging issues, shuffling paper and putting out fires.

A petting zoo also was set up to allow children a close look at a variety of animals including a baby kangaroo, chickens, pigs and a llama.

At the end of the contest, the Red Team representing the Training Support Contract group took top honors.

Photos by Karen Hardgrove



Flight Crew Operations workers earn Aviation Safety Awards

JSC's Aviation Safety Awards Committee recently presented honors to seven Flight Crew Operations Directorate employees at Ellington Field.

Col. John E. Blaha received the 1992 Stephen D. Thorne "Top Fox" Award. Blaha was cited for being the "safety conscience" of the Astronaut Office, constantly monitoring the safety ramifications of each shuttle flight and chairing a number of safety tiger teams to tackle larger programmatic issues.

Blaha, who oversees all aspects of aviation, payload and orbiter safety for the Astronaut Office, made safety recommendations regarding the extended duration orbiter program, the autoland detailed test

objective, night shuttle launches and shuttle main engine operation at high thrust levels.

P. Bruce Arnold earned the Stuart M. Present Flight Achievement Award for demonstrating his ability to adapt to a variety of aircraft. Arnold, who completed training as an instructor pilot in the Shuttle Training Aircraft and obtained his airline transport pilot rating is one of the Aircraft Operations Division's high flight time T-38 instructors.

John F. Donnelly III received the Aircraft Maintenance Award for his close attention to the condition of JSC aircraft, including high visibility assignments as the lead quality assurance specialist on the Gulfstream-2 Program Support Air-

craft and as assistant flight engineer on mission management aircraft.

Donnelly discovered hydrogen embrittlement of steel wing and fuselage fasteners and extensive corrosion during the painting of STA 947 and suggested ways to repair the damage and curb the corrosion.

Carl F. Koontz won the Mark Heath Aircraft Engineering Award for heading the program to transform an AT-38B aircraft received the Air Force to a NASA configuration T-38A training aircraft. The program was completed on time and within budget with no discrepancies in the flight readiness review. He also supervised the revision of about 225 multi-page STA drawings.

Robert W. Smith received the

Flight Simulation Engineering Award for his contributions to preparing shuttle pilots for approach and landing. He conducted four flight tests that significantly enhanced the simulation capability of the STAs in the areas of the 300-knot outer glide slope, telemetry downlink, autoland enhancements and navigation offsets. He has been a software configuration project engineer for the STA, and has been responsible for developing and conducting software flight tests and analyzing flight test results.

Rogelio "Roy" Torrez earned the John T. Bassham Quality Assurance Award for his dedication to safety and quality assurance, especially in monitoring the egress shop and shuttle parachute program. Torrez

also wrote new guidelines for the Quality Assurance Branch that have set standards for uniform quality verification inspections; that highlight safety concerns in both "people procedures" and equipment.

Stephanie A. Wells received the James A. Korkowski Excellence in Achievement Award for setting a new standard for air crew training officers. Wells coordinated and brought cockpit resource management training to all Aircraft Ops crews as well as orchestrating ground, water survival and initial T-38 ground and flight training for the 1992 astronaut candidates. She also served as mission specialist training aircraft project pilot during its formulation and acquisition phase.

Holidays will affect Roundup deadlines

Because of the Thanksgiving, Christmas and New Years Day holidays, Space News Roundup will not be published Nov. 27, Dec. 25 or Jan. 1. Some deadlines will be affected.

Following Thanksgiving, the deadline for Swap Shop ads and Dates and Data calendar items for the Dec. 4 Roundup will be 5 p.m. Wednesday, Nov. 25.

The deadline for Swap Shop ads to be published in the Dec. 11 Roundup will be 5 p.m. Friday, Nov. 27.

Around Christmas, the deadline for Swap Shop ads to be published in the Dec. 18 Roundup will be 5 p.m. Wednesday, Dec. 9.

The deadline for Swap Shop ads and Dates and Data calendar items to be published in the Jan. 8 Roundup will be 5 p.m. Wednesday, Dec. 30.

All ads and calendar items will be published on a space-available basis, first-come, first-served. Any ads that cannot be published will be discarded, and the requesting employee will need to re-submit a completed JSC Form 1452 to have the ad printed in a later issue.

JSC to offer engineering grad classes

In cooperation with the Cullen School of Engineering at the University of Houston, JSC will offer 11 different graduate engineering courses through the Clear Lake campus during the spring semester.

As a convenience to JSC employees and contractors, on-site registration for these courses and all other UH engineering courses will be from 10:30 a.m.-2 p.m. Dec. 3 in the lobby of Bldg. 45.

Registration forms for UH are available in the Human Resources Development Branch. The University of Houston will require payment at the time of registration. JSC employees may submit a completed Form 75 (Application for Training) as payment for their engineering courses. Contractor employees should include a check made out to UH with the registration form.

Course offered at UHCL will be Management and Organizations of Production; Operations Research; Digital Simulation; Computational Fluid Dynamics; Advanced Dynamics; Flexible Spacecraft Dynamics and Control; and Aerospace Factors Engineering.

Five television courses will be offered on-site in Bldg. 45. They are Advance Computer Architecture; Applications-Specific VLSI; Methods of Applied Mathematics; Construction Engineering Management; and Legal Aspects of Engineering.

All applicants for admission and all new students must bring their undergraduate transcript with the degree posted. All new students should keep in mind that only six hours taken as a post-baccalaureate student may be transferred to graduate credit.



GOING DOWN — STS-53 Mission Specialist Rich Clifford prepares to practice contingency extravehicular activity procedures in the Weightless Environment Training Facility in Bldg. 29. Although no space walk is planned on the Department of Defense mission, the space suits that would be used in the event of a problem were loaded into *Discovery* this week.

JSC Photo by Andrew Patnesky

JSC innovators share work at Technology 2002

(Continued from Page 1)

with one solution that works. Wang, who has been working on the project with Manuel Valenzuela-Rendon of the University of Monterey Tech in Mexico and Robert Puckett of McDonnell Douglas, hopes his GAs will be able to produce "best" solutions in a matter of hours.

Hasan Rahman of JSC's Life Sciences Project Division will present MIRAGE, which stands for Microsystems Integrated Real-Time Acquisition Ground Equipment.

MIRAGE marks the first time anyone has placed a telemetry system on the Macintosh computer platform for real-time displays and data analysis.

The system was tested on Spacelab Life Sciences-1 early this year and will be used operationally to bring data from the Spacelab D-2 baroreflex experiment to the ground.

"We are providing a low-end solution for principal investigators who needed a system to do real-time data analysis," said Rahman, who has been working on the project with chief programmer Steve Rosser.

The system allows investigators to spend more of their limited funds on experiment hardware and less on data analysis computer time. The system also is much more portable.

Another example of JSC's ingenuity will be Chris Ortiz's Task analysis

Role Generation Tool, or TARGET.

TARGET is designed to capture experts' knowledge of complex processes for use developing work flow structures and rules for computerized expert systems. It uses the Microsoft Windows platform to allow task experts to describe how they do their jobs so that the process can be improved or taught.

Ortiz, who has been working with Tim Saito and Bebe Ly in the Software Technology Branch to develop the system, says it is now being used by space station planners and may be a possible Total Quality process improvement spinoff.

Other JSC presenters at 2002 will be

Dennis Morrison of the Medical Sciences Division, who will share his method of measuring the metastatic potential of cancer cells; Karin Loftin and James Verlander of Krug Life Sciences Inc., who will discuss the application of integrated knowledge-based systems for the Biomedical Risk Assessment Intelligent Network; Ginger Pack and David Wadsworth of Engineering's Structures and Mechanics Division, who will talk about failure environment analysis tool applications; and James Villareal of the Software Technology Branch, who will discuss the application of space time neural networks to detect tether skipline phenomenon.

Road work should be finished in March

(Continued from Page 1)

Saturn Lane and JSC employees and official visitors will use the new JSC main entrance across NASA Road 1 from Nassau Bay City Hall.

The new entrance will not be a gate as it has in the past because it will be part of a public thoroughfare. But it will sport a new sign made out of two 40-foot-long aggregate panels and 15-inch-tall letters spelling out "Lyndon B. Johnson Space Center" and 10-inch-tall letters spelling out "National Aeronautics and Space Administration."

HUBCO Inc., the contractor hired by METRO to do the street and road work, is making progress on the new entrance and is expected to be finished in March. Work on the new entrance is taking longer than the work to turn Saturn Lane into a four-lane public roadway since a bridge has to be built over the Houston Lighting and Power drainage canal.

When construction is complete, JSC traffic will use the new intersection on NASA Road 1 one block east of the old main gate. JSC traffic won't be security checked at a gate

until it reaches Second Street, the same place guards are now controlling.

Avenue E is being relocated north of the new Bldg. 110 security badging office to make room for the curve that takes Saturn Lane south to NASA Road 1.

Other related work includes installation of traffic lights on Saturn at Gemini and Hercules, now complete, and the widening of Bay Area Blvd. to six lanes between Buccaneer and Saturn Lane, now under way.

Space News Roundup

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