



**No question**

JSC's Test and Analysis now has its accreditation, which should save the agency time, money and trouble. Story on Page 3.



**Roof overcoat**

Center Operations is testing new space-age methods of insulating metal buildings. Photo on Page 4.

# Space News Roundup

Vol. 31

February 28, 1992

No. 9

## NASA team will review JSC culture

By Kelly Humphries

JSC's efforts to provide a healthy, stimulating work environment for all of its employees — whatever their race, sex, religion or other affiliations — will be reviewed next week by a team from NASA Headquarters.

The Wednesday through Friday review will involve interviews with equal opportunity, human resources, public affairs, inspector general and union representatives, and a separate opportunity for discussions with any employee who would like to discuss JSC and agency policies, practices, successes and problems related to cultural climate.

Gen. Elmer Brooks, deputy associate administrator for agency programs in the Office of Management Systems and Facilities, will lead the Cultural Climate and Practices Review Team when it visits JSC. The team is evaluating all NASA centers in an effort to assure a healthy, equitable, stimulating work environment for the agency's diverse work force.

Response to a Feb. 10 JSC Announcement of the team's visit was large enough that JSC officials coordinating the visit have decided to extend the opportunity for employees to schedule appointments. Jo Ann Schneider, a member of the team, will be available at x30350 from 1-5 p.m. March 4 to schedule appointments.

"Initially, there was a period set aside to sign up and meet with members of the review team, but we believe that period may not have been long enough," said JSC Equal Opportunity Programs Director Joe Atkinson. "As a result, we have chosen to extend the sign-up period and we encourage any JSC employee who is interested to take advantage of the extended opportunity."

JSC is the fifth NASA center to be visited by the review team, which was established in February 1991 by Administrator Richard Truly. The team already has made visits to Lewis Research Center, Marshall Space Flight Center, Goddard Space Flight Center and Langley Research Center.

In a related development, JSC is kicking off the next phase of its effort to help employees understand (Please see **JSC**, Page 4)



JSC Photo by Benny Benavides

**ENGINEERING A SOLUTION** — JSC Engineering Director Henry Pohl gives students at League City Elementary School a lesson in mathematics during National Engineers Week. Pohl visited the fifth-grade class of Susan Amundson last Thursday. He was one of more than 225 JSC engineers who traveled to about 75 schools last week. More than 400 teachers representing 10 school districts responded to an invitation for speakers, so many that the presentations will continue into next month.

## Sterling dress rehearsal keeps Atlantis on track

By James Hartsfield

With a sterling dress rehearsal complete, *Atlantis* and the Atmospheric Laboratory for Applications and Science (ATLAS-1) continue some of the smoothest launch preparations ever, aiming toward a March 23 liftoff.

Shuttle managers will meet March 10 for a final, thorough review of all launch preparations, after which an official launch date will be announced.

The STS-45 crew — Commander Charlie Bolden, Pilot Brian Duffy, Mission Specialists Kathy Sullivan, Dave Leestma and Mike Foale, and Payload Specialists Dirk Frimout and Byron Lichtenberg — traveled to Kennedy Space Center on Wednesday for the countdown dress rehearsal, called the terminal countdown demonstration test. The test was completed Thursday with a simulated on-pad main engine shutdown.

Also in work at Pad 39A has been installation of two auxiliary power units for the spacecraft. A set of

three APUs provides power for the hydraulics used to steer the shuttle during ascent and reentry. The two newly installed units will be given test runs next week. Earlier this week, technicians successfully completed a standard leak test of *Atlantis*' main engine plumbing.



*Endeavour*, currently in Bay 1 of KSC's processing hangar, is scheduled to leave the hangar Tuesday to be attached to the solid rockets and fuel tank destined for its first space flight. *Endeavour* is planned to take position on Launch Pad 39B on March 9. A 20-second test firing of the main engines is planned at the pad perhaps as early as March 30. *Endeavour*'s first launch, mission STS-49 to reboost the stranded INTELSAT VI communications satellite, is planned for late April or early May.

Elsewhere, *Columbia* has begun in earnest preparations for the longest shuttle flight ever planned.

Please see **COLUMBIA**, Page 4

## Women's history program to expand historical focus

Speakers, panel will examine contributions of women from all walks of life

JSC's Federal Women's Program will honor Women's History Month by sponsoring activities to expand the focus of history to include contributions of women from all walks of life.

The FWP observance next month will take the form of two speakers and a panel discussion on "How to Be Successful."

Dr. H. Lienhard, a mechanical engineering and history professor at the University of Houston and the host of the radio program "The Engines of our Ingenuity," will present "Women and the Healing Arts at 11 a.m. Wednesday in Bldg. 1, Rm. 602C.

Lienhard will look at 2,500 years of women's search for a place in medicine.

Dr. Angela Howard Zophy, an associate professor of history at the University of Houston-Clear Lake, will present "Consciousness Raising and the Women's Liberation Movement, 1968-1972" at 11 a.m. March 20 in Bldg. 1, Rm. 602C.

Zophy will discuss her belief that a process of self-awareness and understanding of the impact of sexism on women in modern American

society arose from the experience of those who created the women's liberation movement.

A panel discussion on "How to Be Successful" will feature Ninfa Lorenzo, owner and chairman of the Rio Star Corp. (Ninfa's Restaurants, Bambolino's and Atchafalaya);

Dr. Roger Blakeney, director for the Center of Executive Development at the University of Houston; Shelly Tulloch, president of TNT Consulting, the developer of the JSC Management Information

System; Jim McIngvale, president of Gallery Furniture; Patricia Lykos, 180th District Court judge; and Dr. Harriett Jenkins, assistant administrator for Equal Opportunity Programs at NASA Headquarters.

The two-hour panel discussion will begin at 1 p.m. March 26. Each panelist will present 10 minutes of prepared remarks and then panelists will accept questions from the audience.

JSC civil service and contractor employees are invited to attend as their work loads permit. For more information, call Federal Women's Program Manager Pam Adams at x33761.



## Tree marks progress on Space Center Houston

By Brian Welch

Construction of Space Center Houston passed another milestone last Friday with the hoisting of a small evergreen to mark the topping off of the 183,000-square-foot facility.

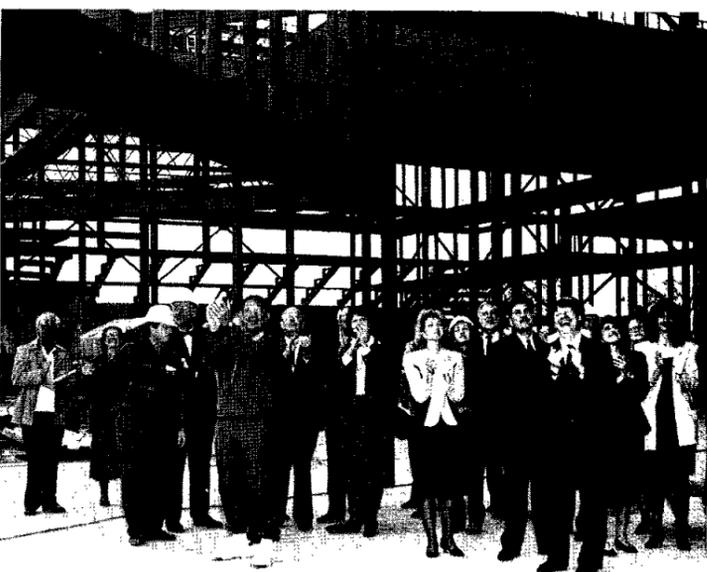
Construction workers, JSC officials and members of the Manned Space Flight Education Foundation board celebrated the occasion with an informal lunch served in what, in the next few months, will become the Mission Status Center.

Although there have been 65 days of rain since construction began, work is behind schedule by only 10 days, according to Project Manager Debbi Brown.

"This has really been a team effort," she said. "Everyone on this job is very excited. Many of them live in the area and they have a kind of special feeling for it, so we have been carrying on and moving ahead despite the weather."

As of this week, 1,146 tons of steel and 139 tons of rebar are in place, Brown said, and the roof is now 20 percent complete. Three additional milestones are just over the horizon, she added, with completion of the roof, exterior sheathing and interior framing anticipated in the month of April.

Once the building is enclosed, officials will be able to set a firm date for a fall grand opening.



JSC Photo by Benny Benavides

Construction workers, JSC officials and Manned Space Flight Education Foundation board members celebrate the topping off of the steel work for Space Center Houston. Despite 65 days of rain since construction began, the new visitor center is still on schedule for a fall opening.

## Astronauts get 1993 flight assignments

By Barbara Schwartz

Steven R. Nagel will command the Spacelab-D2 mission, STS-55, scheduled for an early-1993 launch. This is a cooperative mission with the German Space Agency to conduct research in robotics, materials processing and life sciences. Nagel, an Air Force colonel, is a veteran of three previous shuttle missions, as a mission specialist on STS-51G in June 1985, as pilot on STS-61A in October 1985 and as commander on STS-37 in April 1991.

Pilot on the STS-55 mission will be Terrence T. "Tom" Henricks, another Air Force colonel, who was pilot on STS-44 in November 1991. Charles J. Precourt, an Air Force major and member of the astronaut class of 1990, is assigned as a mission specialist. This is his first flight assignment.

(Please see **CREW**, Page 4)

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# 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:

EAA Houston Livestock Show & Rodeo (through March 1, Astrodome): \$9.

FBA Houston Rockets vs. Utah Jazz (7:30 p.m. March 15, Summit): \$10 on sale March 5.

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

Metro bus tickets and passes: 7 percent off.

The following discount tickets will be available soon:

EAA Walt Disney's Ducktales, March 24-29.

EAA JSC Picnic, May 2.

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# 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.

**Weight Safety** — Required course for employees wishing to use the Gilruth weight room. The next class will be from 8-9:30 p.m. March 18 and March 31. Cost is \$5.

**Defensive driving** — Course is offered from 8 a.m.-5 p.m. March 21 and April 18. Cost is \$19.

**Aerobic dance** — High/low-impact classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32.

**Ballroom dance** — Eight weeks of professional instruction in beginning, intermediate and advanced ballroom dancing. Beginning and advanced classes meet from 7-8:15 p.m. Thursdays beginning March 5. Intermediate class meets from 8:15-9:30 p.m. Thursdays. Cost is \$60 per couple.

**Aikido** — Martial arts class meets Tuesdays and Fridays. Cost is \$35 per month.

**Sign language** — Six weeks of instruction in the third most used language in the United States. Course meet from 6:30-8:30 p.m. Mondays beginning March 23. Cost is \$55.

**Volleyball workshop** — Eight-week program will meet Saturdays beginning March 21. Open beginner classes will meet from noon-2 p.m. Mixed advanced classes will meet from 2-4 p.m. Enrollment is limited to 24 students. Cost is \$25.

**Self-defense workshop** — The basics of self defense will be taught from 5:30-6:30 p.m. March 25. Workshop is free.

**Softball sign-ups** — Spring softball sign-ups will be at 7 a.m. March 10-13 at the Gilruth. March 10, Mixed C Recreational; March 11, Men's C March 12, Men's B; March 13, Mixed B and Men's A. Non-badged teams will sign up at 4:30 p.m. March 13.

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

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# Dates & Data

## Today

**Black history** — The 1992 JSC Black History Committee will present former Philadelphia Mayor Wilson Goode as the keynote speaker of the formal Black History Month program at 1:30 p.m. Feb. 28 in Teague Auditorium.

**Cafeteria menu** — Special: meat sauce and spaghetti. Entrees: baked scrod, liver and onions, fried shrimp. Soup: seafood gumbo. Vegetables: green beans, buttered broccoli, whipped potatoes.

## Monday

**Cafeteria menu** — Special: wieners with baked beans. Entrees: beef chop suey, breaded cutlet with cream gravy, grilled ham steak. Soup: beef and barley. Vegetables: buttered rice, Brussels sprouts, whipped potatoes.

## Tuesday

**Career expo** — Partners in Space will host a math and science career exposition from 2:30-9 p.m. March 3 at the John Ray Harrison Convention Center in Pasadena. Co-sponsored by JSC and the Pasadena, LaPorte, Friendswood, Clear Creek and Dickinson school districts, the expo will look at careers, applications, interviewing, professionalism, dress and appearance and feature speakers on medicine, aerospace, petrochemicals, finance and education. For more information, call 283-8225.

**Cafeteria menu** — Special: pepper steak. Entrees: fried shrimp, pork chop with applesauce, turkey a la king. Soup: celery. Vegetables: au gratin potatoes, breaded squash, buttered spinach.

## Wednesday

**Loral NMA meets** — The Loral National Management Association will open its meeting to the public at 5:30 p.m. March 4 at the Gilruth Center. Jim McIngvale of Gallery Furniture will speak. Dinner reservations are due by Feb. 28, late registration by March 2; dinner cost is \$14. For more information, call Dan Reid, 335-2150; Brian Dalton, 335-6408; or Jim Christiansen, 335-6988.

**Cafeteria menu** — Special: Mexican dinner. Entrees: fried catfish with hush puppies, braised beef ribs. Soup: seafood gumbo. Vegetables: Spanish rice, ranch beans, buttered peas.

## Thursday

**Credit Union meets** — The JSC Federal Credit Union will conduct its annual meeting for members at 7 p.m. March 5 in the Credit Union lobby. Results of the day's voting for three board of director positions will be announced. For more information, call David Rogers, 488-7070

**Cafeteria menu** — Special: hamburger steak with onion gravy. Entrees: corned beef with cabbage and new potatoes, chicken and dumplings, tamales with chili. Soup: split pea. Vegetables: navy beans, buttered cabbage, green beans.

## March 6

**Cafeteria menu** — Special: barbecue link. Entrees: deviled crabs, broiled codfish, liver and onions. Soup: seafood gumbo. Vegetables: buttered corn, green beans, new potatoes.

## March 10

**ISSA meets** — The Texas Gulf Coast Information System Security Association will meet at 11:15 a.m. March 10 at the Holiday Inn on NASA Road 1. Craig Schiller of SAIC will discuss "Object Oriented Strategy to Implementing an Integrity Model." Cost is \$10 for members, \$12.50 for guests. For more information, call Emily Lonsford, 333-0922.

## March 12

**SSQ meets** — The Society for Software Quality's Houston Chapter will meet at 5:30 p.m. March 12 at the Nassau Bay American Host Hotel Ballroom. Karl Coke, Exxon Upstream Technical Computing Co., will speak on "Quality Deployment — Turning Vision into Reality." For dinner reservations, call Karl Wiesner, x33807.

## March 19

**JAIPCC '92** — The fourth annual JAIPCC (Joint Applications in Instrumentation, Process and Computer Control) '92 Symposium will be held March 19 at the University of Houston-Clear Lake. The theme of the symposium, sponsored by the University of Houston-Clear Lake, the Institute of Electrical and Electronics Engineers and the Instrument Society of America, is "Technologies for New Exploration." Dr. David Criswell of the University of Houston-University Park will discuss "Lunar-based Power System to Supply Earth with 20,000 GW of Electric Power" at the luncheon; lunch reservations are due March 3. For more information, call Liwen Shih, 283-3866.

# Swap Shop

## Property

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

Lease: Webster/Ellington condo, 2 BR, \$475/mo. Dave, x38156 or Herb, x38161.

Sale: '87 Oakridge 16' x 80' mobile home, 3-2, lg covered deck, fenced/skirted, \$25K. Greg, x31580 or 997-2250.

Sale: Friendswood, 2 lots, 0.95 acre, all util, \$30K/\$35K or \$55K/both. Ron, 996-9724.

Rent: Tranquility Lake condo, 1 BR, 700 sq ft, microwave, W/D, fans, FPL, security gate, boat ramp. 332-3798.

Sale/Lease: Egret Bay Villa condo, 1-1-2CP, W/D, FPL, boat ramp, pool, assumable, \$39.9K or \$475/mo. 773-7982 or 335-1336.

Lease: University Place townhouse, 2-2.5, garage, \$850/mo. Dave, x38156 or Eric, x38420.

Sale: Meadowbend, 3-2-2, FPL, fenced, landscaped, painted, \$69.9K. John Turner, x31929 or 334-3422.

Rent: Galveston/Seawall, 2-2, complete kitchen, pool, hot-tub, dry sauna, weight/steam rms, \$450/wk. (409) 938-0302.

Rent: Galveston beach house, C/AH, furnished, dly/wkly/mo. Ed Shumilak, x37686.

Rent: Townhouse, 2/2.5/2CP, FPL, patio, balcony, storage, nearly new gray carpet/paint, \$695/mo. 289-6777.

Sale: Bay Glen, 1.5 story, 3/2.5/2, vaulted LR, DR, master, master bath, cul-de-sac, sec sys, whirlpool bath, FPL, ceramic entry. Velissa, 621-7201.

Lease: Heritage Park, 3-2-2, blinds, fans, fenced, \$650/mo. Stacy, x31999 or 332-2375.

Rent: Lake Travis cabin, private boat dock, C/AH, fully equip, accomm 8, wkly/dly, \$325/\$80. 474-4922.

Sale: Gulf Meadows, 3-2-2, brick, redecorated, new roof, fenced, payment approx \$500/mo, \$54.9K. 337-3406 or 333-6127.

Sale: 3-2-2 on 7.5 acres, 2000 sq ft, all fenced, lg metallic bldg, SPA, satellite dish, elec gate, lg catfish pond, storm blinds, appli, W/D, \$240K. Dee Leach, (409) 925-6063.

Lease: LC, Meadowbend, 4-2-2, FPL, blinds, fans, microwave oven, refrig, W/D conn, fenced, \$875/mo. Mike, 992-5524.

Lease: Pipers Meadow, 2-2-2A, vaulted ceiling, blinds, fan, fenced, avail Apr 1st, \$725/mo plus dep. 486-0315.

Sale: Baytown, 3-2-2, brick, FPL, lg kitchen w/island, wet bar, blinds, fans, deck, fenced. Karen, x32604 or 424-1450.

Sale: Westwood Shores, lg cleared lot across from lake, may finance/trade for auto. Barbara Bettison, 337-4720.

Free Cypress Lakes lot to a charitable organization, 1 hr north of Houston. 482-4077.

Sale: Meadowgreen, new section, 5-2.5-2, 8.5 percent FHA, 2 story, 2 LR's, FPL, will exchange for smaller house. 488-3191.

## Cars & Trucks

Four spd standard trans for a '79 or '80 Mustang. 331-0186.

'85 Toyota Tercel, 5 spd, 112K mi, good cond, \$1.8K; '81 Toyota Corolla, 5 spd, 76K mi, good cond, \$1.4K. Michael, x34378, or 486-4983.

'88 Bronco II XLT, 4x4, 5 spd, loaded, 46K mi, ex cond, \$8.2K. Dave, x30709 or 480-5892.

'84 Honda Accord, 2 dr, A/C, AM/FM/cass, ex cond, \$2950. 333-6509.

'90 Ford Escort LX station wagon, stereo/cass, luggage rack, split-fold rear seat, low mi, ex cond, \$6.1K. Scott, x37294 or 326-4612.

'90 300ZX, charcoal, tinted windows, T-Top, ex cond, \$20.9K OBO. Rick, 282-3733.

'80 Corvette, wht, body in good cond, int needs work, \$7K OBO. 286-4375 or 286-4856.

'83 Toyota Supra, needs work, \$2.5K. 554-6104.

'80 VW Rabbit, eng good cond, recently overhauled, body needs work, \$300 OBO. Oscar, 333-6218 or 280-9885.

'89 Plymouth Acclaim, 4 dr, A/C, 4 cyl, \$4.4K. 922-5935.

'72 Buick Skylark, 4 dr, 350 V8, 92K mi, A/C, \$1050 OBO. x38869.

'82 Corvette, silver blue, blue int, 30K mi, ex cond, \$13.5 OBO. x32957 or 488-8927.

'84 Nissan 300ZX, 2+2, 2-tone slate gray, auto, A/C, stereo cass, cruise, elec mirrors, \$4550. 481-3637.

'88 Isuzu PU, 4 spd OD, A/C, AM/FM/tape, 38K mi, \$4.5K. 482-7156.

'85 Ford Escort, sunroof, A/C, stereo, 70K mi, ex cond, \$2.1K; '85 VW Golf, stereo, A/C, sunroof, 75K mi. Mike, 283-5890 or 868-5132.

'87 Corvette, blue, 2 tops, smoke/blue, garaged, 45K mi, ex cond, \$15K. Virginia, x34156 or 482-8877.

'65 Mustang 289, 3 spd, A/C, orig eng, good paint, \$5.5K. Jim, x30079 or 286-0303.

'78 Porsche 928, brwn w/leather int, auto, 75K mi, ex cond, \$8.9K. Bill, x39980.

'79 Honda, 4 dr, good cond int/body, needs eng, \$300 OBO. 867-8850.

'78 Riviera, blk/gray w/leather int, 403 V8, ex cond, \$1695. x35180 or 326-3706.

'67 Chevy II Nova SS, auto, 2 dr, new 6 cyl 250 eng, \$2K OBO. Geno, 280-1505 or 992-2156.

'77 Jaguar XJS, 12 cyl, auto, 60K mi, good cond, \$7.5K. 488-8493.

'81 Buick Park Avenue, no rust, 133K mi, good cond, \$1.1K. 283-5576.

'85 Chevy Cavalier, 4 dr, 4 cyl/2.0L, auto, new tires/brakes, 75K mi, ex cond, \$2.4K. 488-5522.

'80 Cutlass LS, blk w/gold top, 95K mi, good cond, \$950. John, x39130 or 332-4851.

'73 Scout, new tires/brakes, \$950 OBO. Jim, 280-1227 or 774-6339.

'89 Ford Thunderbird LX, leather, JBL stereo, 40K mi, \$8.7K. Jay, x33693 or 334-4974.

'88 Chevy Silverado, blue, loaded, AM/FM/cass, new tires, bedliner, custom int/ext, low mi, good cond, \$9K OBO. 333-7221 or 489-7286.

'73 Mercedes 450SL, both tops, 117K mi, ex cond, \$10.5K. 282-5325.

'83 GMC High Sierra, full sz, auto, all pwr, sports eng, 4-bar Holley carb, dual exh w/headers, custom bed cover, chrome bumper, mag wheels, Pioneer AM/FM/cass w/qualizer, full sz speaker box, \$3K OBO. 488-8902.

'85 Nissan Stanza, 4 dr, all pwr, AM/FM/cass, A/C, sunroof, approx 150K mi, needs stand trans work, \$1.8K OBO. Rudy, 283-9320 or 376-2131.

'89 Ford Thunderbird LX, leather, JBL stereo, 40K mi, \$8.7K. Jay, x33693 or 334-4974.

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'86 Bass Buggy 20' pontoon boat w/trlr, 35hp Mercury, less than 70 hrs, elec start, Hummingbird LCr-2000 depth recorder, 2-6 gal tanks, new batt, deluxe package, \$4.5K OBO. 282-4231 or 992-3351.

'90 Regal Sebring 185, 175hp I/O, SS prop, galv trlr, ex cond. Paul, x37591 or Steve, x35864.

Bic beginner sailboard, clamp-on boom, sail, mast, \$490 OBO. Sheri, 283-1857 or 486-6142.

Mamiya 645, 2.25 format, prism finder, 120/220 film incerts, power grip, 80/150mm lenses, alum custom case, polarizer, filters, lens hood, ex cond, \$900 OBO. 282-3822 or 991-0372.

'89 Plymouth Acclaim, 4 dr, A/C, 4 cyl, \$4.4K. 922-5935.

'72 Buick Skylark, 4 dr, 350 V8, 92K mi, A/C, \$1050 OBO. x38869.

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'83 GMC High Sierra, full sz, auto, all pwr, sports eng, 4-bar Holley carb, dual exh w/headers, custom bed cover, chrome bumper, mag wheels, Pioneer AM/FM/cass w/qualizer, full sz speaker box, \$3K OBO. 488-8902.

'85 Nissan Stanza, 4 dr, all pwr, AM/FM/cass, A/C, sunroof, approx 150K mi, needs stand trans work, \$1.8K OBO. Rudy, 283-9320 or 376-2131.

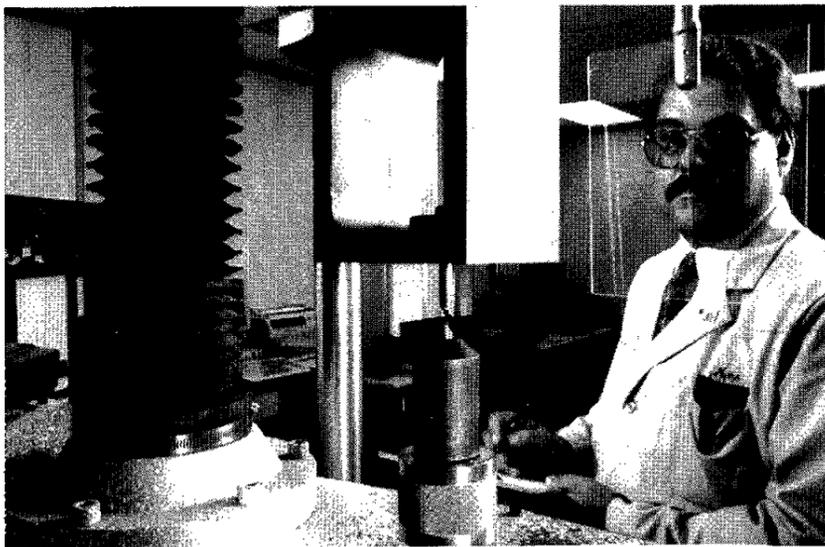
'89 Ford Thunderbird LX, leather, JBL stereo, 40K mi, \$8.7K. Jay, x33693 or 334-4974.

'88 Chevy Silverado, blue, loaded, AM/FM/cass, new tires, bedliner, custom int/ext, low mi, good cond, \$9K OBO. 333-7221 or 489-7286.

'73 Mercedes 450SL, both tops, 117K mi, ex cond, \$10.5K. 282-5325.

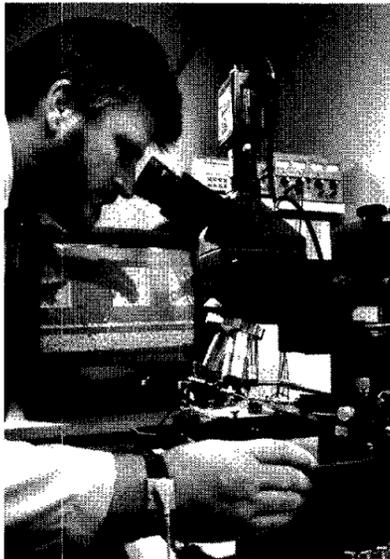
'83 GMC High Sierra, full sz, auto, all pwr, sports eng, 4-bar Holley carb, dual exh w/headers, custom bed cover, chrome bumper, mag wheels, Pioneer AM/FM/cass w/qualizer, full sz speaker box, \$3K OBO. 488-8902.

'85 Nissan Stanza, 4 dr, all pwr, AM/FM/cass, A/C, sunroof, approx 150K



Above: Mike Armstrong conducts a pull test on a fastener. Right, Owen Farmer uses a micromanipulator to probe an integrated circuit. Below, Katherine Floravit employs an eddy current tester in a non-destructive technique to detect imperfections and sort alloys. Below next, Ahmed-El-Masry inspects the surface of an integrated circuit through a scanning electron microscope.

Bottom: SR&QA Manager Charlie Harlan presents the laboratory team with its certification. From left: Marc Wiseman, Tim Rucker, Brad Hofman, Dave Dittmar, Sam Boyd, Farmer, Conley Perry, Armstrong, Harlan, Arnold Levine, Floravit, Ted Vetter, Ken Witherspoon, David Beverly, Steve Rodriguez and El-Masry.



# No Question

## JSC's Analysis and Test Laboratory has its pedigree, and that will save NASA time, money and trouble—safely

By Billie Deason

**M**anufacturers will think twice about questioning results from the new JSC Analysis and Test Laboratory, and that will save the agency time, money and hassle when it needs to be sure about things like the bolts that anchor space shuttle payloads in place.

It will save time because JSC won't have to send suspect parts out to be double-checked by another laboratory. It will save money because JSC and its contractors won't have to pay twice as much or more for rush jobs. And it will save hassles because the JATL synchronizes its priorities with NASA's.

Before the JATL was accredited, hardware tested here would at times have to be sent to an accredited commercial laboratory for verification. But now, the JSC Safety, Reliability and Quality Assurance Office has established the first accredited test laboratory at a government facility.

In a ceremony late last month, the American Association for Laboratory Accreditation (A2LA) conferred accreditation on the JATL, which is managed for JSC by Loral Space Information Systems at 1322 Space Park Dr.

"Quality is a big thing for all industries," said Tim Rucker, Loral's manager of the JATL. "Our lab is set up to monitor the quality of other manufacturer's products. When we test a part and find a deficiency, the manufacturer will have greater confidence in our test results."

"Having the A2LA accreditation means we use proper test condition controls along with standard techniques and procedures," said Dave Beverly, NASA technical manager for the JATL. "In the long term, JATL services could save the agency money."

Beverly said some of the biggest cost savings could come because the JATL will be able to help find failure trends and can give JSC management and engineers hands-on involvement in failure resolution.

Besides testing parts and analyzing failures, the JATL group hopes to reduce flight-related electronics failures caused by electrostatic discharge (ESD). That annoying spark between your finger and a doorknob is a harmless example of ESD, but ESD can wreak havoc on electronic devices.

Electrostatic discharge occurs when two objects at different charge potentials touch or even come close together. Because the tiny parts inside electronic components are only microns apart, ESD between two or more of the miniature parts can cause a complete failure or weakening of the integrated circuit.

"This lab is the lead organization at JSC on the issue of electrostatic discharge," Beverly said. "I don't know any other group with the expertise we have here and we want to share that with the center."

"I went through all the flight-related failures attributable to ESD and picked out more than 61 ESD failures in the Corrective Action Reporting system. If we can reduce these occurrences, there's bound to be some savings to the program.

"Our biggest goal is education. Because of Houston's high humidity, ESD is not as noticeable, so we have tended to be a bit lax in our ESD precautions. We want to increase people's awareness and establish procedures for handling and packaging electronics hardware. We must have ESD-certified operators," Beverly said.

Another factor in setting up the lab was SR&QA's need for a laboratory where samples could be tested with minimal schedule impact.

"We'll stop what we're doing here and give them first priority," Beverly said.

"With the lab internal to our organization, we can control priorities and make sure we minimize impacts to other people's schedules," Rucker added. "One out of every 10 items that comes in here is a priority. In one case, we tested a fastener at 4 p.m. that was being shipped to KSC that night. We had the test results back to the customer by 4:15 p.m. That's not a guarantee for every turnaround time, but at least we control the schedule."

"We could not get a commitment from other labs to drop what they were doing, test this part, and tell us whether it's good or bad so we could complete a failure analysis or sign off on a problem closure," Rucker said.

The JATL also serves as a technology center where SR&QA experience and expertise are concentrated. Any JSC organization or contractor can request in-depth technical information on ESD, electronic components, mechanical apparatus and fasteners.

"With our aging shuttle fleet, and we'll probably be flying these same spacecraft another 10 to 20 years, we're really going to have to closely monitor failures," Beverly said. "I think this lab can help do that. When we see a trend developing, our analysis information will help NASA management make decisions on retrofitting or redesigning a part or a system."

"We don't want the part or system to fail on orbit, that's why it's so important to find the cause of the failure," Beverly said.

Steve Rodriguez, senior metallurgical engineer for Loral at the JATL, believes electronic parts certification will become an area of concern in the near future.

"The U.S. has almost lost its capability to produce our own electronic components. Much of today's commercial electronics manufacturing is going overseas," Rodriguez said.

Consideration is being given to changing the NASA parts procurement system from military specifications to high-quality commercial specifications, a move that could save money. Such a change would require SR&QA to devise a method of assuring component quality.

"Our involvement would be to verify that the supplier can really provide the quality he claims," said Beverly. "We might inspect incoming products or set up a random sampling system."

Loral's five-year business development plan calls for increasing the size of the JATL to increase its functional capacity. A major expansion will be in the area of non-destructive evaluation (NDE).

"Within the next year we will complete certification for non-destructive evaluation," Rucker said.

Through NDE, engineers can evaluate materials without destroying or limiting their re-use. Technologies such as X-ray and ultrasound permit testing of single parts or entire systems, sometimes without disassembling them. One potential cost-savings non-destructive test planned by SR&QA is the evaluation of shuttle airframes for corrosion under the thermal protection tiles.

Once the A2LA completes development of its electronics certification program, accreditation of the JATL for electronics testing and analysis may follow.

"When we give test results back to our customers, we want to make sure they're the best test results possible," Rucker said. "Also, we frequently support the local NASA Office of the Inspector General looking into cases of counterfeit hardware and fasteners. If a case goes to court, test results from an accredited lab will carry more validity." □

# Second agencywide fitness challenge begins in March

### Whichever center earns the most Presidential Sports Awards by Sept. 1 will win

March 1 marks the start of the second agencywide exercise challenge designed to motivate adults to become more physically active.

Marshall Space Flight Center won the 1991 competition.

Larry Wier, who heads JSC's fitness staff, said all employees are encouraged to participate by qualifying for a Presidential Sports Award. The winner of the NASA

competition is the center with the highest percentage of civil service qualifiers.

Contractors are encouraged to participate as well because a separate award will be given to the center with the highest number of total participants, including civil servants and contractors.

Because there are as many as 51 sports and fitness activities to

choose from, ranging from walking to softball and tai kwon do, the Office of Occupational health also will recognize the three employees with the highest number of complete events.

Family participation is being encouraged, too, and a special recognition will be given to the center with the greatest number of family participants. The starting age

requirement has been set at 10.

The NASA Exercise Challenge will begin March 1 and run through Sept. 1. To participate, employees must correctly complete the Presidential Sports Award personal fitness log and return it to the fitness staff at Code AW9 as soon as their selected requirements are met. Specific instructions are outlined in the challenge brochure.

To get a personal fitness brochure and log, call the fitness staff at x30301 or pick one up at the Gilruth Center or the JSC Clinic.

There is no fee for participation. The fee mentioned in the brochure is strictly optional, but is encouraged for those people who would like to receive a personal Presidential Sports/Fitness Award.

## Former Philadelphia mayor will headline black history finale

Former Philadelphia Mayor Wilson Goode will headline today's Black History Month program in Teague Auditorium.

Goode has been known to speak out on a variety of issues, including homelessness, literacy, child abuse, AIDS, fiscal issues facing cities, business issues, neighborhood organization and the challenges facing African-American elected officials.

As Philadelphia's mayor from 1983-1991, Goode presided over the rebirth of the fifth-largest city in America's central business district, and developed the North Philadelphia Plan for revitalizing the most depressed area of the city.

He also appointed many women and minorities to policy-making positions and increased the number of contracts issued to minority- and woman-owned businesses.

The 1:30 p.m. discussion of topical issues is the final event in the 1992 JSC Black History Committee's observance of Black History Month. This year's national black history theme was "African Roots Explore

New World: Pre-Columbus to the Space Age."

Art exhibits provided by the African American Art Galleries will be displayed in the JSC Visitor Center lobby today in conjunction with Goode's speech.

Civil service and contractor employees are invited to attend as their workloads permit. The public and other government and industry employees also are invited.

Earlier this month, "Education 2000" panelists Thomas Foster, director of the Houston Christian Institute; Thaddeus Lott Sr., principal of Wesley Elementary School; the Rev. Kirbyjon Caldwell, pastor of Windsor Village United Methodist Church; and the Rev. Robert Harper, minister of Highland Heights Church of Christ, discussed the topics "If I Can Help Somebody" and "The Struggle of the African American in Education."

Last Friday, the Ensemble Theatre presented a short one-act off-Broadway play entitled "Do Lord Remember Me" in Teague Auditorium.



Goode



Photo by John Lu

**PUTTING ON AN OVERCOAT** — Bob Crawford of Crawford Roofing sprays a new energy-saving ceramic paint, an indirect spinoff of space program technology, on the roof of Bldg. 225. The application of the paint, and a similar product on Bldg. 226, are part of a test to see if the technology is cost effective for JSC's metal buildings, said John Lu of JSC's Facility Development Division. The manufacturers claim the paints have an insulating value of R-19 and offer a 10-year warranty. The idea is to reject heat before it enters the buildings. The material also is supposed to reduce maintenance costs by protecting the roof from rust and leaks. Dennis Klekar, JSC energy conservation coordinator, said the comparative evaluation is part of the continuing effort to improve JSC's energy efficiency.

## JSC to limit Space Center gate hours

Budget restrictions are forcing JSC's Center Operations Directorate to limit the hours that the Space Center gate will be open during both normal and mission periods.

The change will affect employees working late at night and early in the morning, and participants in late games at the Gilruth Center, said Security Operations Branch Chief

Bob Gaffney.

Beginning March 9, the "back gate" on Avenue B West will be open only from 5:45 a.m. to 8 p.m. weekdays, excluding holidays. It will remain closed on weekends and holidays.

JSC's main entrance will remain open 24 hours a day.

The Third Street entrance in front

of Bldg. 1 and the Avenue B East gate near the Hilton will be open from 6:45 a.m. to 6 p.m. weekdays, excluding holidays. The Avenue E West gate near the JSC Credit Union will be open from 7 a.m. to 6 p.m. weekdays, excluding holidays.

Questions about the hours of JSC entrances may be directed to the Security Division at x34441.

## JSC offers cultural awareness training

(Continued from Page 1)

and respect individual and cultural differences. The first phase of the effort, training for JSC supervisors and managers, has already begun.

The next step in the education process will be awareness training for all employees. The training will be offered through classroom courses, closed-circuit videotaped courses, articles in JSC publications, and books and related materials in the Human Resources Learning Center in the JSC Technical Library.

A series of courses offered

through the JSC Television Distribution System will begin next month and continue through April. All of the classes will be offered from 11:45 a.m.-3 p.m.

"Diversity at Work" will be aired March 10 and April 1; "Communicating Across Cultures" will be offered March 17 and April 3; and "You Make the Difference" will be broadcast March 24 and April 8. For channel information, check the daily listings on Channel 2. For more information about the courses, call Clarence Williams at x33072.

"I am committed to taking advantage of our diversity as we move forward to meet our strategic business objectives," said JSC Director Aaron Cohen. "By promoting cultural awareness, I feel we can open additional lines of communication within our work force — a work force which will continue to become more diverse in culture, race and gender in the years ahead. I urge you to take advantage of these opportunities to expand your awareness of the growing cultural diversity within our work force."

## Crew members assigned

(Continued from Page 1)

Previously assigned crew members are Payload Commander Jerry L. Ross, mission specialist Bernard A. Harris Jr., and German payload specialists Hans Schlegel and Ulrich Walter.

G. David Low will be payload commander on STS-57, which will carry the commercial middeck augmentation module called SPACE-HAB and retrieve the European Retrieval Carrier. Low served as a mission specialist on STS-32 in January 1990 and STS-43 in August 1991.

Janice E. Voss, Ph.D., is assigned to this flight as a mission specialist. This is the first flight assignment for Voss, who is a

member of the 1990 astronaut class.

STS-57 is scheduled for launch in mid-1993.

Thomas D. Jones, Ph.D., will be a mission specialist on the Space Radar Laboratory-1 flight, STS-60, in late 1993. This is the first flight for Jones, also a member of the 1990 astronaut class.

Linda M. Godwin was assigned in August 1991 as mission payload commander.

SRL-1 will acquire radar images of the Earth's surface for making maps and interpreting geological features and resource studies.

Additional crew members on STS-57 and STS-60 will be named at a later date.

## Space News Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every Friday by the Public Affairs Office for all space center employees.

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

Editor ..... Kelly Humphries

Associate Editor ..... Kari Fluegel

## 1992 JSC Picnic promises to be 'A Family Endeavor'

"A Family Endeavor" has been chosen as the theme for the 1992 JSC Picnic.

The theme, suggested by Richard Glover of the Mission Operations Directorate's Training Division, was selected from among 11 finalists by the 1992 JSC Picnic Committee.

The committee will hold a special meeting at 5 p.m. March 10 in the downstairs lounge at the Gilruth Center to select the design logo for

the picnic, and the charity that will receive the money raised through the picnic.

Tickets for this year's picnic will go on sale April 8 at the Exchange Store in bldg. 11. Tickets will be \$5 for adults and \$3 for children from April 8 to April 24. They will continue to be available for \$1 more until April 29. No tickets will be sold after that date and no tickets will be available at the gate.

## Project IQ provides study opportunity

JSC's Human Resources Development Branch is accepting applications for the JSC Project Increased Qualifications Program, which provides college study opportunities during work hours.

Project IQ is intended to help non-professional employees GS-1 through GS-11 who already have begun college careers improve their skills and qualifications and enable them to be more productive in their present positions. It also will help participants become better qualified for advancement opportunities.

The two-year program provides the opportunity to attend one to three undergraduate courses per

semester for not more than 8 hours a week during duty hours. JSC will pay for tuition, fees and textbooks, and employees will be responsible for mileage and other costs.

Participants must have a written recommendation from their immediate supervisors, a brief statement of academic purpose, a level of success in previous course work and an enabling level of activity in their office.

Applications are available in Bldg. 45, Rm. 146. To request an application, call Laura Gerner, x33067. For more information, call Beth Hall, x33078.

Completed applications are due May 1.

## Columbia gets EDO pallet

(Continued from Page 1)

STS-50, a 13-day mission to launch in June. Technicians spent the week double-checking Columbia's electrical systems and APUs. Late this week, the extended duration orbiter pallet, a platform that holds additional hydrogen and oxygen tanks to allow enough electricity to be generated on board for a long flight, was to be readied for installation in the

cargo bay.

Meanwhile, Discovery is continuing post-flight operations and being prepared for six months of structural inspections and upgrades in Bay 2 of KSC's processing hangar. Technicians removed Discovery's APUs, drained all fluids left over from the spacecraft's flight on STS-42 and are gearing up to remove the forward reaction control system.