



**Construction boom**

Construction projects are getting off the ground as foundations for new space station-era facilities are completed. Story on Page 3.



**Breakfast in Bldg. 1**

Ralph Anderson of the GFE Office really knows how to say thanks to co-workers. Photo on Page 4.

# Space News Roundup

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## Columbia passes Atlantis on way to pad

Launch of Astro-1 mission scheduled for first week of September

By Kyle Herring

Bathed in spotlights under cover of darkness early Thursday, the Space Shuttle *Columbia* passed *Atlantis* outside the Vehicle Assembly Bldg. on its way to the launch pad for next month's launch of the STS-35 Astro-1 mission. "If everything goes perfectly," according to Associate Administrator for Space Flight William Lenoir, *Columbia* could be launched as early as Sept. 1. However, that date requires a smooth pad flow and no weather problems, he said.

A more realistic date would be the Sept. 4 or 5, Lenoir said, adding that the actual target date would be set following the flight readiness

review scheduled for Aug. 20 and 21.

Shuttle program managers elected not to do another tanking test on *Columbia* since all hardware is brand new and has never flown before. The tanking on launch day will, in effect, be the tanking test for the mission, Lenoir said.

*Atlantis* was rolled from the launch pad Wednesday evening to clear the pad for *Columbia's* arrival. *Atlantis* was moved into the VAB Thursday afternoon and Monday will be

removed from the stack and returned to the Orbiter Processing Facility, where it will remain in a flight ready condition until the leak found in the 17-inch feedline flange on its tank is repaired.

In mating *Columbia* with its tank earlier this week, a grounding wire in the electrical connection between the two was discovered. The repair was made and power-up testing of the stack was delayed until the vehicle reached the pad.

Under the present scenario, *Columbia* will launch in early September; *Discovery* will be launched on schedule with the Ulysses solar probe Oct. 5, and *Atlantis* will launch with its Defense Department payload in late October or early November.

Work on *Discovery* in the OPF is proceeding about three days behind schedule due to a damaged line in one of its Freon coolant loops. The damaged portion of the line was replaced and pressure tests were conducted to verify the connection was good. A required 24-hour pressure decay test began Thursday.

Please see **COLUMBIA**, Page 4



On the vine

### SEEDS project bearing fruit

By Pam Alloway

The SEEDS project is reaching fruition but it will be several more months before project specialists can analyze the data gathered by school children throughout the world.

Small green tomatoes have emerged from the bushy plants behind the JSC Visitor Center and Jim Poindexter, center education specialist, said the display has captured many summer tourists' attention.

"The tour guides are getting a lot of inquiries about the tomatoes," Poindexter said. "But we don't have the results yet, it's too early."

The tomato plants from the experiment officially titled Space Exposed Experiment Developed for Students (SEEDS) were on the Earth-orbiting Long Duration Exposure Facility (LDEF) that shuttle astronauts retrieved in January. The nationwide educational experiment that has generated worldwide attention is estimated to have involved about 4

Please see **SEEDS**, Page 4



JSC Photo by Mark Sowa

JSC Education Specialist Jim Poindexter shows off one of the small, green tomatoes on the vine outside Bldg. 2. The tomato is on a plant grown from a space-exposed seed. Plants grown from the Earth-bound control group seeds also are bearing fruit.

## Magellan ready for Venus orbit insertion today

The Magellan spacecraft that will use radar mapping to penetrate Venus' heavy cloud cover and reveal its secrets will enter orbit around Earth's "twin" at 10:45 a.m. CDT today.

NASA Select Television will begin live coverage of Magellan's arrival at 10 a.m., and a post insertion briefing is scheduled for 1:30 p.m.

Magellan, the first planetary probe to be launched from a space shuttle, functioned normally on its final week of interplanetary travel, travelling at 10,000 miles an hour relative to Venus. The crew of *Atlantis* started Magellan on its way May 4, 1989.

The spacecraft went on 24-hour operations Thursday, with not only controllers but the entire engineering team at NASA's Jet Propulsion Laboratory beginning shift work, said Steve Wall, head of Magellan's Mission Operations Science Support Team.

At 10:45 a.m. CDT Thursday, the block of commands that will initiate the orbital insertion burn of the solid rocket motor was sent to Magellan. The probe will approach Venus over the northern hemisphere and dive over and behind the planet, Wall said.

The Star 48 solid rocket motor that will make the burn carries 4,400 pounds of fuel and will produce about 15,000 pounds of thrust. When it is fired, it will place Magellan in a 155-by-4,977-mile elliptical orbit. The probe will then begin its 243-day primary mapping mission, which will use a Synthetic Aperture Radar, mapping up to 90 percent of the surface to a high degree

Please see **VENUS**, Page 4

## Asian Pacific Americans seek to expand contributions

Asian Pacific Americans will be "Reaching for the stars in the 1990s" as this year's observance of their heritage focuses on their future in America's space program.

The third annual Asian Pacific American Heritage Day celebration will begin at 8:30 a.m. Aug. 24 at the Gilruth Recreation Center.

International relations and a more culturally diverse NASA workforce are expected to play an increasingly important role in the space program, and Asian Pacific Americans are trying to define their roles, said Dr. Kamlesh Lulla, this year's chairman.

"We don't want to be just technical experts," said Lulla, of JSC's Space Shuttle Earth Observations Office. "We want to be in leadership and management roles. We want to be among the bright and intelligent leaders in the space program."

Lulla said the objective of this year's observance is to discuss what contributions the Asian Pacific American community has made and is making, and to look at how the community can contribute more to the space program.

"We are really excited this year because in the new astronaut class, there is an Asian astronaut candidate,

Leroy Chiao," Lulla said.

This year's program will begin with training workshops on "Career Development for the Asian Pacific American: A Structured Approach for Dealing with Barriers." Garland Martin Jr., Equal Employment Opportunity director for the Alcohol, Drug Abuse and Mental Health Administration will lead the discussion.

Next will be a workshop entitled "Getting Ahead: Tips and Traps," led by Dr. Carson Eoyang, director of Human Resources and Organization Development at NASA Headquarters.

As keynote speaker at the 11:30 a.m.

luncheon, Astronaut Franklin Chang-Diaz, who flew most recently on STS-34, will talk about that mission and how his Asian roots have contributed to his success. Tickets are \$7 and may be purchased from any committee member; contact Lulla at x35159 or co-chair Hanh Nguyen at x36805.

Following lunch, there will be a panel discussion at 1:45 p.m. on "The Role of Asian Pacific Americans in Space Activities in the 1990s." Panelists include Glynn Lunney of Rockwell International, Robert Young of Lockheed Corp., Emyre Robinson of Barrios Technology, Robert Thompson of

McDonnell Douglas, Jack Lister of JSC's Human Resources Office and Dennis Spuck of the University of Houston-Clear Lake.

A cultural fashion show featuring members of the local Asian Pacific American community will round out the day at 3 p.m.

The committee for this year's observance includes Lak Putcha, Tai-Ling Chen, Freda Marks, Lachhman Das, Agnes Leigh, Jim Yost, Chiu-Wing Lam, Dorothy Rasco, Bill Sangchat, Fwu John, Susan Ford, Jan Chen, Sophia LeCour, Sylvia Wei, Y.C. Loh, Chiang Lin and Huang Jim.

Two will fly in March 1991

## Microgravity lab payload specialist candidates chosen

NASA announced Monday the selection of four candidates for two payload specialist positions for space shuttle STS-53 mission scheduled to carry the U.S. Microgravity Laboratory-1 (USML-1) in March 1992.

Selected for mission training were: Lawrence J. DeLucas, O.D., Ph.D.; Joseph Prael, Ph.D.; Albert Sacco Jr., Ph.D.; and Eugene H. Trinh, Ph.D. Two of the candidates will be selected for flight in March 1991, and

the others will be alternates.

DeLucas, 40, of Birmingham, Ala., earned doctorates in optometry in 1981 and in biochemistry in 1982 from the University of Alabama at Birmingham. He holds several positions at the University of Alabama at Birmingham, including associate director, Center for Macromolecular Crystallography; professor, Department of Optometry; and adjunct professor, Laboratory of Medical Genetics.

Prael, 47, of East Cleveland, Ohio, earned a doctorate in engineering from Harvard University in 1968. He is a professor of engineering at Case Western Reserve University, Cleveland.

Sacco, 41, of Holden, Mass., earned a doctorate in chemical engineering from the Massachusetts Institute of Technology in 1977. He is a professor and head of the Department of Chemical Engineering at Worcester Polytechnic Institute,

Worcester, Mass.

Trinh, 40, of Culver City, Calif., earned a doctorate in applied physics from Yale in 1978. He is a scientist at NASA's Jet Propulsion Laboratory and was an alternate payload specialist for the Spacelab 3 mission.

During the 13-day USML-1 mission, the payload specialists will conduct more than 30 scientific and technological investigations in materials, fluids and biological processes in the spacelab environment.



Eugene H. Trinh

JSC

# Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m. to 2 p.m. weekdays.

General Cinema (valid for one year): \$3.75 each.  
 AMC Theater (valid until May 1991): \$3.50 each.  
 Sea World (San Antonio, year long): adults \$17.25, (2-day \$21.95); children (age 3-11) \$14.75, (2-day \$18.95).  
 Astroworld (valid 1990 season): adult \$15.97; children \$9.21; season pass, \$39.95; Waterworld, \$8.15; two-day—AW/WW \$18.47.  
 Astroworld Discount Sunday 8/19/90 (see flier with \$8 discount coupon.)  
 Astros vs. St. Louis (1:35 p.m. Aug. 26, Astrodome): \$6; last day to buy tickets is Aug. 13.  
 End of Summer Fling (Sept. 1-3, South Padre Island): \$199. Breakfast and lunch served two nights at Bahia Mar Resort Hotel. Sunday breakfast buffet, Sunday dinner cruise, Monday lunch buffet at hotel. Dinner snack on return trip.  
 Deep Sea Fishing (Sat., Sept. 15, New Buccaneer): Fishing \$45; Riding \$20. Tickets go on sale Aug. 13.

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# Gilruth Center News

**Sign Up Policy**—All classes and athletic activities are first-come, first-served. To enroll in any class of activity, you must sign up in person at the Rec Center. Everyone will be required to show their work badge or EAA membership card. Payment must be made in full at the time of registration. No sign ups are taken by phone. Classes tend to fill up four weeks in advance.

**EAA badges**—Dependents/spouses may apply for a pictured I.D. badge Monday-Friday between 6:30 p.m.-9 p.m.

**Defensive driving**—Course is offered from 8 a.m.-5 p.m. on Sept. 15 and Oct. 13. Cost is \$15.

**Weight safety**—Required course for those employees wishing to use the Rec Center weight room. The next class will be held Aug. 23, from 8-9:30 p.m. Cost is \$4.

**Aerobic and exercise dance**—Both classes are on-going.

**Softball tournament**—The men's open "C" softball tournament will be held Aug. 18 and 19. The fee is \$95, and the entry deadline is 7:30 p.m., Aug. 16.

**Country and western dance**—Lessons begin Sept. 10. This course will be held every Monday for six weeks, cost is \$20/couple.

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# 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. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside RM. 147 in Bldg. 2. No phone or fax ads accepted.

## Property

Sale: Prairie Estates, 60x115 homesite, all util., W. of Dickinson, \$5,400. Mike, x36964 or 538-1772.

Sale: Friendswood 3-2-2 w/Gunite pool, deck, 2K sq. ft., new paint/carpet, fans, \$88,500. x34902 or 996-9128.

Sale: 18203 Caprice Lane, Nassau Bay. Ann J., 333-2916 or 481-5465.

Sale: Nassau Bay, 4-2.5-2, new paint in/out, new carpets, den, formal DR & LR. Ann J., 333-2916 or 481-5465.

Sale: Dickinson, 4-2-2D, 2,800 sq. ft., open concept, FPL, trees. x31466 or 534-3932.

Rent: W. Galv. beach house, 2-2, 100 yds. from beach, boat landing, marina w/pool, \$500/wk., wknd. rates avail. Fendell, x31206 or 538-1147.

Sale: Lot on Lake Livingston, Westwood Shores, 60x115, near lake, util. avail., \$9,500, OBO. x30032 or x31834.

Rent: 2-2 apt. in Seabrook, avail. Oct. 1. Chris, 333-6866.

Rent: Lake Livingston w/frnt. house, 3-2, CA/H, furn., decks, pier, ex. cond., wk/wknd. rates. 482-1582.

Sale: Pasadena, 3-1-2, w/appl., furn. opt., new paint, fans, stor., patio, priv. fence, trees, \$45K. 472-6980.

Lease: pipers Meadow, 3-2-2, fans, blinds, FPL, fen., avail. 8/17, \$775/mo. Mike, 282-3156 or 480-9575.

Sale: Univ. Green, 2-1-2, patio home, fen., new paint, blinds, fans, FPL, deck, \$76K. 480-7338.

Sale/Lease: Owner fin., 1,000 sq. ft., new appl., carpet, fans, blinds, trees, 20 min. from Lake Livingston. 992-1853.

Sale: Galv., 2 blks. from beach, 3-2-2 townhouse, 3-story, FPL, fans. (409) 744-4771.

Lease: 3-2-2, 10 mi. from JSC, new paint/carpet, \$595/mo. Oanh/Minh, 484-4944.

Sale: Pecan Gap, 30 mi. S.W. of Paris, 278 acres on FM 903, 160 tillable, 6 ponds, pasture, 3 barns, can divide, \$800/acre nego. x35398 or 474-7021.

Lease: CLC Oakbrook West, 4-2.5-2D, contemp., FPL, no pets, sec. sys., gar. opener, \$995/mo. 482-6609.

Sale: Pearland, Dixie Hollow, concrete street, all util. x39530 or 482-5003.

Sale: Shoreacres, contemp. 5-4-study plus mother-in-law suite on wooded acre, \$114,900. x38039 or 333-1751.

Sale: Friendswood lot, 110x130. 996-9157.

Rent: Aug. 11-18, Lake Conroe resort, all amen. incl., \$300. 480-7332.

## Cars & Trucks

'88 Acura Integra LS, 27K mi., AC, PW, PL, AM/FM/cass., gray, ex. cond., \$10.5K. 996-8410.

'75 Chevy station wagon, new tires/batt./alternator/AC comp., \$875, OBO. 474-2041.

'89 Olds Calais, 21K mi., 5-spd., Quad-4,

30mpg, \$9,700. Mike, x36964 or 538-1772.

'65 Olds Starfire sport coupe, good cond., \$2K, OBO. Tom, x38298 or 488-4089.

'87 Nissan hardbody stand. 1/2-ton PU, 2.4L eng., AM/FM cass., 12K mi., ex. cond., \$5K, OBO. Jim or Mary Lou, 488-2629 or 482-3768.

'86 Maserati, 425 bi-turbo, 29K mi., \$13,500. Roy, 480-9612.

'83 Honda V-45 Magna, low mi., ex. cond., 41,500, will trade for good running PU. Vic, x34663 or 475-0872.

'86 Olds Cutlass Supreme Brougham, 2-dr., loaded, ex. cond., \$6K. 283-0237 or 484-9583.

'89 Dodge Ram 1/2 ton PU, V6, 5-spd., 14,500 mi., \$9,300. Mike, 333-6821 or 326-3474.

'70 MG Midget conv., \$995. George, 280-4570 or 996-9882.

'65 Mustang, reb. 6 cyl., 3-spd., new clutch/carb./brakes/alternator, good cond., \$3K, OBO. Rob, x30762 or 486-1847.

'87 Chev. Cavalier, 4-dr., auto., 45K mi., ex. cond., \$4,100. x39579 or 482-6187.

'68 Mustang, 289, V8, 3-spd., AC, sev. new parts, \$2,500. x30852 or 996-0981.

'83 Mazda RX-7 GSL, ex. cond., 75K mi., sunroof, 6C series tires, new brakes, \$4,500. 478-1596 or 486-4508.

'85 Buick Park Ave., 4-dr., all pwr., ex. cond., 66,800 mi., new tires, \$6,400. 482-1535.

'80 Toyota Corolla liftback sport coupe, 5-spd., AC, low mi., good cond., \$2,350 or '80 Pontiac Phoenix, liftback, V6, auto., AC, 1 yr. warr., new trans., \$1,950, sell one, not both. x30092 or 481-3637.

'88 Pontiac LeMans, 2-sr., 5-spd., 40K mi., ext. warr., ex. cond., \$4K nego. Tim, x39926 or 280-9408.

'80 Chev. Citation, 4-dr. htchbk., AC, good cond., int. needs wk., \$550. 482-5621.

'83 Porsche 911 Targa, 36K mi., alarm, warr., \$22,500. David, 282-3212 or 554-2992.

'74 Camaro, reb. eng., 350 V8, new tires/alternator/batt., distributor/wtr. pump, good cond., \$650. Lee, x37406 or 532-1576.

'87 Volvo 245 GL, ex. cond., loaded, \$12,300, OBO. Scott, 283-5611 or 482-1809.

## Cycles

2 10-spd. bikes, almost new, orig. cost \$190, BO. Patrick, x32635 or 488-1079.

'82 Harley Davidson Sportster XLH, elec. start, ex. cond., low mi., \$2,875. x30092.

Mens mountain bike, ridden 5 times, \$150, OBO. 480-5132, 282-3617 or 337-3122.

20" BMX bike, good cond., \$24. x34108 or 554-6057.

27" Schwinn World Sport 10-spd. w/cromoly frame, good cond., \$125; 27" Schwinn Le Tour 10-spd., good cond., \$100. Ruben, x33829 or 486-0817.

## Boats & Planes

15' Tidcraft boat w/trlr., 50hp Merc. and super motorguide trolling motor, front seat steering, \$800, OBO. 488-4453.

16' Hobie Cat, 2 sets of sails/harnesses/traps, trlr. opt., BO over \$900. John, x38988 or 482-6364.

Aircraft propeller, Sensenich 74DM6-0-58, fits some Beech, Piper PA-18, PA-22, PA-28 series aircraft, \$900. 538-2299.

12' Hobie Mono-Cat sailboat, trlr., 2 sails, \$400. 280-2523 or 333-1762.

12' Jon boat, fiberglass, ex. cond., \$250; free trlr. needs work. Bob or Ruth, 921-1715.

## Today

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

## Saturday

**Space Activist Conference**—The Houston Space Society will host the fourth Southwest Space Activists' Conference Aug. 11-12 at the University of Houston, Law Center, Teaching Unit 2. Registration is \$10; an effectiveness workshop is \$5. For further details, call 639-4221.

## Monday

**Cafeteria menu**—Special: breaded outlet. Entrees: beef chop suey, Polish sausage with potato salad. Soup: French onion. Vegetables: okra and tomatoes, green peas.

## Tuesday

**JSC Astronomy Seminar**—The seminar will be a Rice University videotape featuring Dr. J. Wisdom — "Chaos in the Solar System" from noon-1 p.m., in Bldg. 31, Rm. 129. For more information call Al Jackson, x33709.

**Cafeteria menu**—Special: fried chicken. Entrees: Salisbury steak, shrimp Creole. Soup: split pea. Vegetables: mixed vegetables, beets, whipped potatoes.

## Wednesday

**AIAA Lunch and Learn Meeting**—The fourth lunch and learn meeting for 1990 sponsored by the AIAA Ground Testing and Simulation Technical

Committee will be from 11:30 a.m.-12:15 p.m. Aug. 15 in the Bldg. 3 cafeteria. The speaker will be Don C. Brown of NASA/JSC and the topic will be "Strategic Avionics Planning." For more information, contact Dr. S. Arepalli, x35910.

**Cafeteria menu**—Special: stuffed bell pepper. Entrees: fried catfish with hush puppies, braised beef rib, barbecue plate, wieners and beans, shrimp salad. Soup: seafood gumbo. Vegetables: corn O'Brian, rice, Italian green beans.

## Thursday

**Cafeteria menu**—Special: barbecue smoked link. Entrees: beef Stroganoff, turkey and dressing. Soup: chicken noodle. Vegetables: Lima beans, buttered squash, Spanish rice.

## Aug. 17

**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.

## Aug. 22

**JSC Astronomy Seminar**—The seminar will be an open discussion meeting from noon-1 p.m. Aug. 22 in Bldg. 31, Rm. 120. For more information contact Al Jackson, x33709.

## Aug. 28

**BAPCO meeting**—The Bay Area PC Organization will meet at 7:30 p.m. Aug. 28 at the League City Bank and Trust. For more information call Earl Rubenstein, x34807, or Tom Kelly, 996-5019.

## Aug. 29

**JSC Astronomy Seminar**—The seminar will be a Rice University videotape featuring Dr. P. Olson — "Geodynamical Consequences of Core-Mantle Interaction" from noon-1 p.m. Aug. 29 in Bldg. 31, Rm. 129. For more information, contact Al Jackson, x33709.

## Sept. 5

**AIAA/NASA Conference**—The American Institute of Aeronautics and Astronautics (AIAA) and NASA will sponsor a conference on Innovative Technologies for the Exploration of Space Sept. 5-6, at the Ramada Renaissance Techworld in Washington, D.C. For more information, call Leslie Tavenner at (202) 646-7453.

## Oct. 20

**Wings Over Houston**—The 1990 Wings Over Houston Airshow will be Oct. 20-21 at Ellington Field. The U.S. Marine Corps' vertical take off and landing jet, the Harrier, will participate. The Confederate Air Force also will celebrate the 50th Anniversary of the Battle of Britain with its WWII airpower demonstration. Contact Col. Ray Jones, 850-7545, or Lu Lewis, 784-5200, for more information.

## Oct. 30

**Space Conference**—The fourth annual Space: Technology, Commerce and Communications Southwest conference will be held Oct. 30-Nov. 1 at the Nassau Bay Hilton. The aerospace and space commerce conference is sponsored by the Space Foundation. For more information, call John McLeish, 480-7445.

14' boat, 50hp motor, trlr., \$750. 488-0171.

'73 34' Bristol, classic sloop, 28hp Westerbeke diesel, sleeps 7. 474-7225.

'87 '87 Celebrih Bowrider, 165hp I/O, stainless prop, cover, top, galv. trlr., ex. cond., \$10K. 333-1640.

'85 Pursuit, center console, 175hp Yamaha, T-top canvas, Sportsman trlr., ex. cond., \$16,500. Frank, 333-4073.

12' fiberglass sailboat, 2 sails, 14' alum. mast, trlr., good cond., \$600. Dave, (409) 925-7822.

27' '83 Chapparel power boat, 260 Merc. cruises at 25 kts., easy loader trlr., \$25K, OBO. x31833 or 534-6073.

16' '79 Renegade ski boat, 140hp Evin., SST prop, new seats/paint/carpet, runs good, \$2,800, OBO. 333-6868 or 486-7846.

## Audiovisual & Computers

Intel 380 computer sys., 8086/87 computer w/896K mem., 35M HD, 6 ser., 1 parallel port, RMX-86 real time multiple proc. operating sys., compl. SW support for multiple languages, \$500. 488-4453.

IBM XT computer, Taxan Hi Res Color, 640K, IBM 30 MB disk, AST 6-pack, clock, HW, SW, \$1,275. x30092 or 481-3637.

Macintosh computer, 1 MEG RAM, 20 MEG HD, SW, 300/1200/2400 baud modem, BO. Patrick, x32635 or 488-1079.

DESQ V10 2.0, \$50; GEM Presentation Team, \$250, OBO. x30856 or 332-2671.

Atari 1040 st computer, color mon., 1200 modem, PC ditto, SW, \$600. Ron, x35084 or 996-1663.

Mac II, 2mg RAM, 100mg HD, 2 800K floppy drives, ext. keybd., 19" grayscale monitor w/ video card, scanner, Qume Scripten laser printer, \$9K. 332-7399.

Video lamp/light, Smith-Victor Q60, 3200 deg K, 600W, 120V 5 amp, ex. cond., \$75; new Umatic 3/4" 3M master broadcast video cass., \$20. x31945 or 482-5948.

Apple II plus comp. monitor, new printer w/ NLQ, 2 disc drives, modem, SW, all connections, \$500. Don, x34205 or 488-8105.

Commodore C64 comp. sys. w/1541 disk drive, Magnavox monochrome monitor, C2n cass. tape drive, Vic-modem, Cardco Centronix printer interface for C64, SW, Spreadsheet SW, \$295. John G., x36314 or 996-9147.

2 Sony Beta video cass., L-500 & L-250, new, \$2/ea. Ray, x33954.

Microsoft "C" compiler version 5.1, \$145; comp. desk, hutch shelves, printer stand/chair, \$80. x36814.

## Musical Instruments

Crate B-60 bass amp, \$150. Adam, 486-6567.

Arbor Silver "z" 6-string elec. guitar w/case, ex. cond., amp, \$195. Dan, x38378 or 481-3595.

Les Paul shaped guitar, \$250; acous. 12 str. fender, \$450; 6 str. ovation, \$450 w/case; 50W amp, \$75; dist. pedal, \$45. David, 488-8105.

French horn, Holton H179, dbl., good cond., Farkas bell, 3 mouth pcs., case, \$1,500. Michelle, x38289 or 585-4936.

## Pets & Livestock

Free Bassett-Chow mix, smart like Chow, gentle like Bassett. Louise, 334-4293.

Free blk. fem. outdoor Lab/Cocker/Setter, 1 yr. old, shot rec., spayed. Ursula, 283-4116 or 996-9415.

Persian/Himalayan kittens, CFA, 2 litters,

assorted colors, rare lilacs, \$200; Persian/Himalayan, CFA, stud serv. avail., blue & blue point, nego. fee and/or pick of litter, grand champions, x30439.

AKC Cocker Spaniel pups, blk., blonde males. Steve, 282-3191 or 992-3202.

Baby cockatiels, cinnamon pieds/pearls. Linda, 484-7834.

Mini lop rabbits and New Zealands. Gailo, 554-6200.

Lg. red tiger oscar, ex. cond., free. Steve, x38867 or 486-9654.

## Household

Dbl. bed, matt., box, frame, \$30. John, x37267 or 554-6628.

Walnut desk w/hutch top/matching chair, \$185. Barbara, 282-2569 or 484-4946.

BR furn., sofa bed, desk, 20 gal. acq. Jan, 554-2525.

Queen sz. box spring, matt., \$100, OBO. x38918 or 482-9447.

Exe. chair, brn. fabric, swivels, tilts, \$100. Wayne, x31834.

Sofa/love seat, good cond., peach, beige, mint green, \$250. Sheryl, 333-4743 or 996-6438.

Lg. corner couch group, rust, fair cond., \$150; dk. blue couch, ex. cond., \$200. 480-9367.

Willow rocking chair, blue w/floral cushions, \$115. 480-8845.

Bunk beds w/6 drwr., new matt., w/ wtrproof covers, \$200, OBO. x31139 or 486-1444.

Little girls BR suite, ex. cond., canopy bed, twin, 6-dwr. dresser, students desk, \$450. 280-8130.

Sleeper/sofa, blue, contemp., \$250; matching loveseat, \$150; both \$375; solid oak desk, \$150; 6-dwr. dresser/mirror, \$90. Tim, x39926 or 280-9408.

Kingsz. wtrbd., 300 series motionless matt., rosewood frame, 1 yr. old, \$250. Randy, x36535.

Imitation Duncan-Phife drop leaf DR table w/ mahogany veneer, 3x2 folded, seats 18, ext. leaves, wtr. damaged but usable, BO. R. Franco, 992-2711.

## Wanted

Want baseball cards, new and old. 554-6098.

Want good used 5 string banjo for beginner. Jim Bates, x31347 or 944-4687.

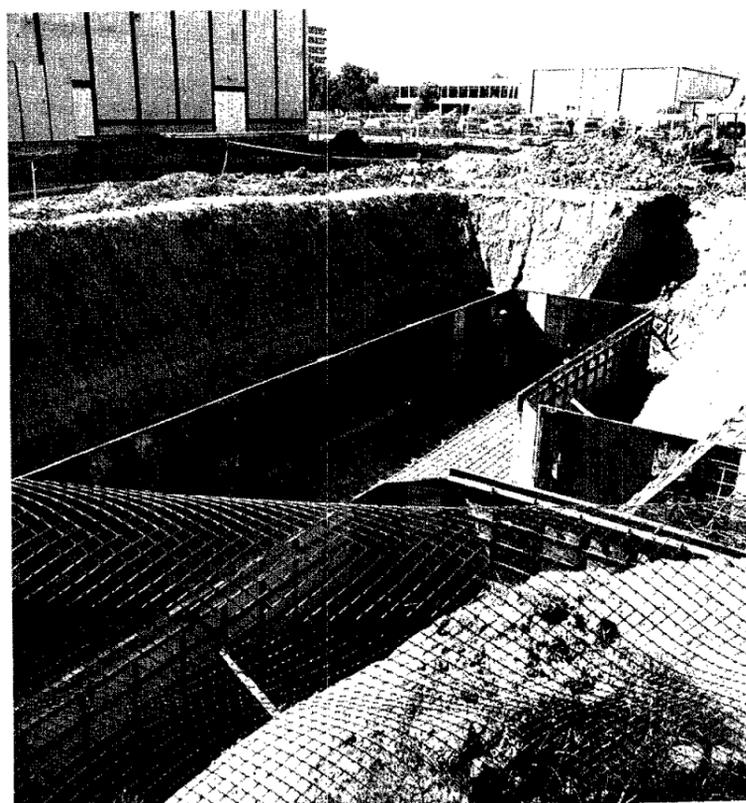
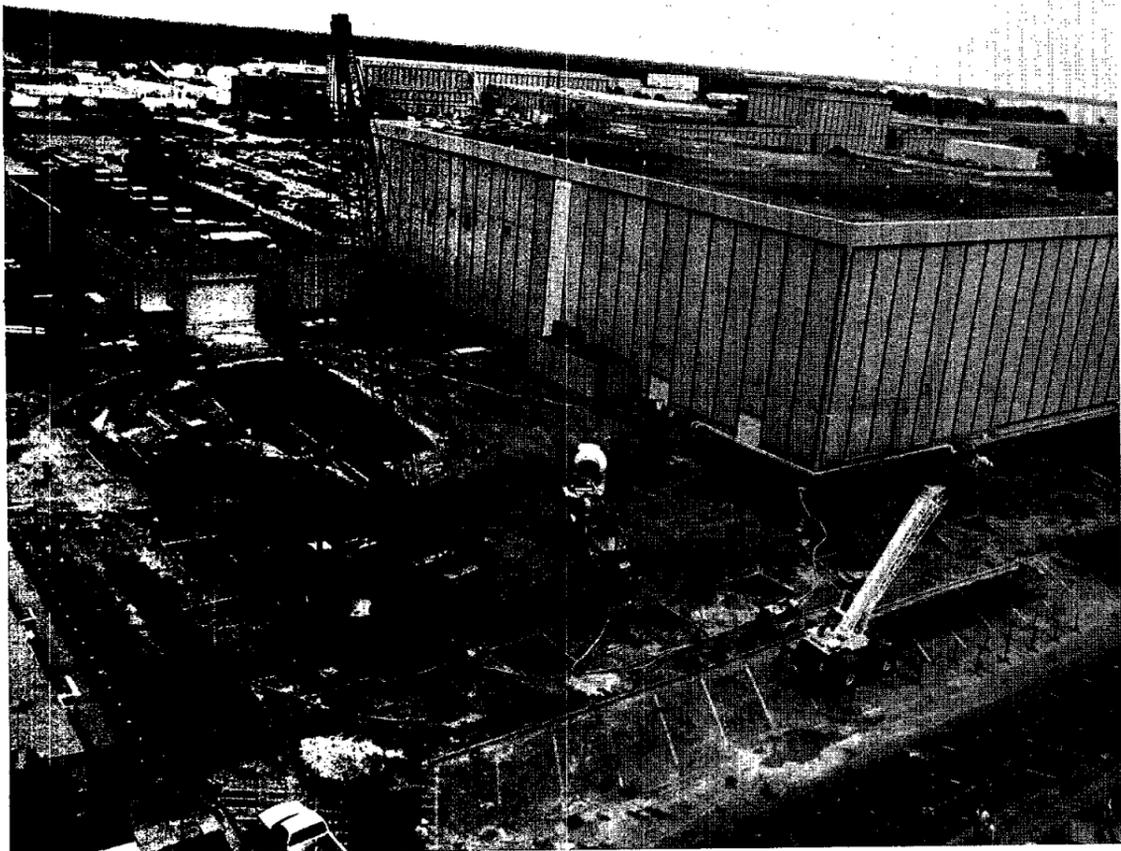
Want auto. pool sweeper for vinyl pool. 334-0532.

Want dbl. or triple wide mobile home, 3 lg. BROK, prefer 4 or more, must be at least 24x60, cash. 339-1337.

Want qual. pool cue sticks, pay up to \$25. John, x31114.

Want old fountain pens, all brands prior to 1950, cash for pens in good cond., even if they don't write. x36442 or 474-3510.

Want GBC Binder punch unit to \$50. x38039 or 333-1751.



# Sights, sounds of construction fill air

The sights and sounds of construction are seemingly everywhere this summer as JSC continues to add and refurbish facilities to support Space Station *Freedom*.

Foundation piers have been poured on Bldg. 30S, the Space Station Control Center addition to the Mission Control Center building. Jerry Taylor is JSC's construction manager.

Above left, a pump truck is shown pumping concrete into the pier holes from the bottom up, displacing a lighter slurry material. The piers go down as much as 68 feet to support the five-story

building, said Ron Stone, chief of the Center Operations Directorate's Construction Branch. Above right, workers tie reinforcement bars together before the floor of a utility tunnel is poured. The tunnel will connect Bldg. 30S with the center's existing tunnel system. Below right, a new parking lot north of Bldg. 46 has been laid to provide space for future Bldg. 30S employees' vehicles.

Bateson Construction Co., the Bldg. 30S contractor, is on schedule and has completed 15 percent of the work on the \$14.9 million facility that should be done by November 1991, Stone

said. Bert Hanson is JSC's construction manager.

Work is 25 percent complete on Bldg. 9C, the \$5.9 million addition to the space shuttle and space station mockup complex being built by Spaw Glass/Cahaba Construction Co. The addition's foundation is complete, and the structural steel for the 26,000-square-foot technical wing was being erected this week. Completion is expected in March 1991.

Below left, workers pour concrete for the technical wing's floor. In the background and below center, tubular

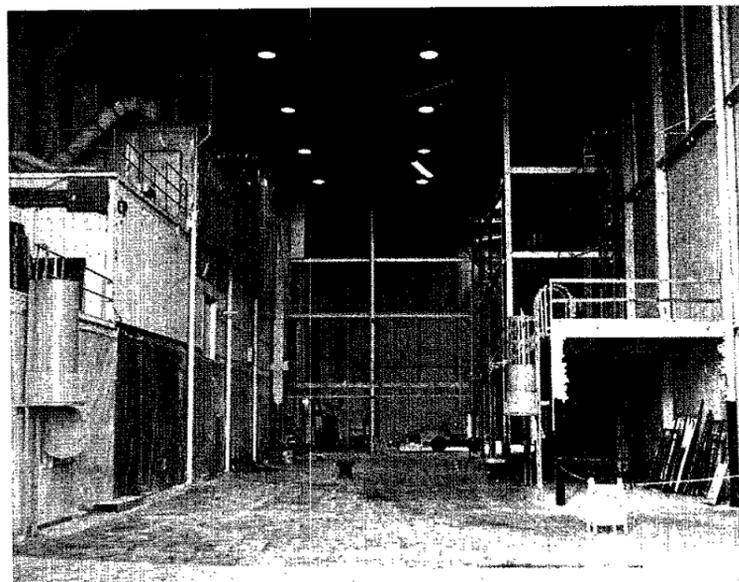
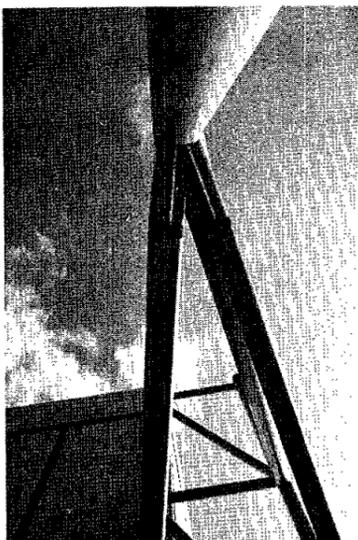
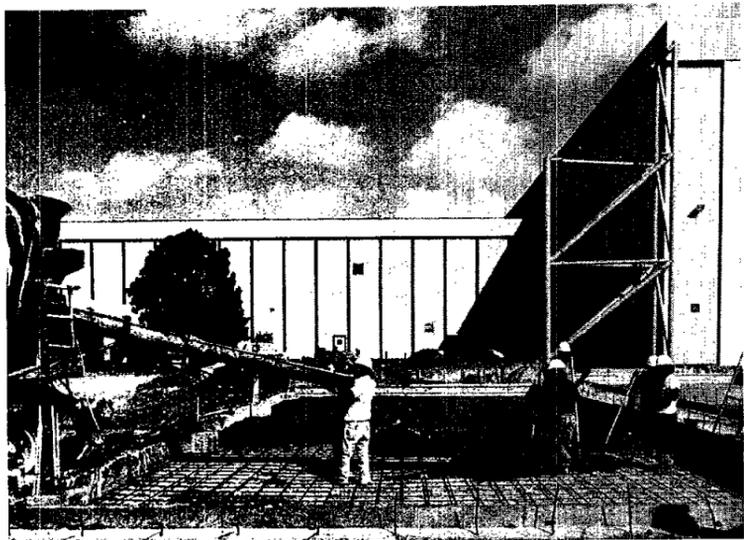
members of a partially complete wind brace can be seen. The wind brace, similar to those between Bldgs. 9A and 9B, maintains the structure's integrity against wind loads following the removal of supports when the large high-bay doors are moved to the end of the new addition.

The addition to the Bldg. 5 Simulator/Training Facility is now 20 percent complete, according to Stone. J. K. Richardson Construction Co. is erecting the 23,200-square-foot addition that will accommodate space station crew trainers. The \$3 million project is on

schedule for completion in June 1991. Construction manager is Tom Khalili.

Bottom left, workers relocate utility lines near the southwest wall of the old Bldg. 5, which will be moved outward. Inside, bottom right, workers have completed demolition of the part of the building that once held the Skylab trainer exhibits. Behind the wall at left is the existing Shuttle Mission Simulator area, which will remain intact.

Neil Adams is project manager for Gilbane Building Co., which is managing all three projects under a construction service support contract.



JSC Photos  
by  
Benny Benavides

# NASA, Japan agree on new areas of space cooperation

NASA and Japan's Ministry of State for Science and Technology agreed to develop new areas of space cooperation during a recent meeting in Tokyo.

The new NASA/Japan projects will involve observing the ozone layer, monitoring the space environment, measuring the solar-terrestrial environment from Space Station *Freedom* and cooperating on Spacelab microgravity experiments.

NASA Administrator Richard H. Truly and Minister Tomoji Oshima,

Ministry of State for Science and Technology, co-chaired the meeting of the Space Standing Liaison Group on July 26.

During the meeting, Truly and Oshima also discussed the ongoing cooperation between the two countries on the construction and usage of *Freedom*. They emphasized the importance of adequate funding in both countries and Japan's need to gain manned space flight experience in preparation for space station.

Under the new project agreement, NASA will fly a Total Ozone Mapping Spectrometer instrument and the Environment Agency of Japan will fly the Improved Limb Atmospheric Spectrometer and the Retroreflector in Space on Japan's ADEOS spacecraft to measure atmospheric constituents. ADEOS, the Advanced Earth Observation Satellite, is scheduled for launch in 1995. NASA and the EAJ will exchange data and continue research on a comparison of

ground-based and satellite data.

In space environment monitoring, data will be exchanged between NASA, NOAA and the Communications Research Laboratory of Japan using NASA's Space Physics Analysis Network.

CRL was connected to SPAN in 1989 and plans to receive real-time solar wind data from future NASA missions.

In space station solar terrestrial physics, NASA and Japan's Institute of Space and Astronautical Science

will continue discussions on use of the Neutral Environment with Plasma Interactions Monitoring System and other systems to measure the solar-terrestrial environment from Space Station *Freedom*.

Space microgravity experiments will be continued through cooperation between NASA and the National Space Development Agency of Japan space shuttle Spacelab missions. The first Japanese payload specialist, Dr. Mamoru Mohri, will fly aboard Spacelab-J in 1991.

## Airline shuttle now utilizing Ellington Field

Continental airlines now is taking off from Ellington Field, resulting in a more convenient departure point for JSC travelers.

The airline moved its express shuttle terminal from Hobby to Ellington on Monday.

Continental spokesperson Peggy Mahoney says a poll taken of Continental's customers at Hobby Airport showed the majority were commuting from the Clear Lake and Galveston areas and the company felt Ellington would be more convenient for the fliers.

Travelers now can commute between Intercontinental Airport and Ellington Field quickly with nine round-trip flights daily from 6:55 a.m. until 9:25 p.m. Fliers who already are ticketed on a Continental flight can use the shuttle service free of charge. All other shuttle travelers will have to pay a \$20 fee. Parking at Ellington is free.

For more information on flight schedules and travel information, contact the Carlson Travel Network at x33305 or Norma Wells at 483-0331.

## Employees urged to consider membership

Charles Harlan, JSC's director of Safety, Reliability and Quality Assurance, is encouraging JSC employees to join the international SAFE Association, which is forming a Houston chapter.

SAFE, dedicated to keeping people safe from injury, has 800 members in seven national and two international chapters. Members represent the fields of engineering, psychology, medicine, physiology, management, education, test and industrial safety, survival and crew training, fire and rescue, law, human factors, equipment design and the subfields associated with the design and operation of aircraft, spacecraft, watercraft, land vehicles and hyperbaric environments, he said.

A kick-off meeting is planned in September at the Gilruth Recreation Center. For membership applications or more information, call K.L. Poehlmann at x33381.

## Columbia on launch pad

(Continued from Page 1)

*Discovery* is now scheduled to move to the VAB in about 10 days and to the launch pad late this month.

No thermal countdown demonstration test is scheduled for the *Astro-1* crew since it was completed prior to the launch attempt May 29. Also, hypergolic propellant loading is not required as those tanks were not offloaded when *Columbia* was returned to the OPF in June.

Scheduled work at the pad includes power-up testing of the orbiter and tank to verify electrical connections and the pad validation testing to ensure the vehicle, its mobile launch platform and pad are connected properly.

Depending on the actual launch day selected, *Columbia* will lift off on its 10-day mission between midnight and 12:30 a.m. CDT.

The crew for the mission—Commander Vance Brand, Pilot Guy Gardner, Mission Specialists Mike Lounge, Jeff Hoffman and Robert Parker, and Payload Specialists Ron Parise and Sam Durrance—will travel to the Kennedy Space Center about three days prior to launch.



JSC Photo by Bob Walck

**APPETIZING APPRECIATION**—Ralph Anderson, technical manager for Flight Crew Equipment in the GFE Office, really knows how to show his appreciation for co-worker support. Last week, he catered a full-menu promotion breakfast in his group's Bldg. 1 office, complete with eggs and hash browns, biscuits and gravy and two kinds of juice. From left are Randy Rust, Richard Hermling, Rodney Carter, Anderson, Suzanne Little, Fred Burns and Dennis Bergeron.

## New catalog packs information about supplies, ordering

A revised secretarial supply catalog hit JSC and contractor secretaries' desks this week packed with new equipment and supplies ordering information.

The original JSC Secretarial Supply Catalog was printed in September 1988. The newest edition is the first revision and is an expanded version. The original catalog was 55 double-sided pages. The revised catalog is 84 double-sided pages.

The catalog was developed to assist secretaries in ordering office supplies and is used in conjunction with the JSC Stores Stock Catalog, said Joan Bellonby, Logistics Division secretary. Bellonby and Gail Carrington of Pioneer Contract Services updated the catalog. The Secretarial Supply Catalog is designed to make it easier and less time-consuming to order supplies and reduce the number of errors in ordering, Carrington said.

The original catalog consisted of three sections: A, which listed office supplies by their colloquial names; B,

which listed supplies required for office machines; and C, which consisted of illustrations of various equipment and supplies.

The revised catalog contains additions, corrections, many more pictures and a new section. Section D lists items not previously shown in the catalog.

Bellonby and Carrington are asking secretaries to use the cover and section dividers from the original catalog. New ones were not printed because of the cost. However, if someone needs a new set of dividers and the accompanying cover they should call either Bellonby at x36516 or Carrington at x36677. The stock numbers for calendars in the catalog are for 1990 calendars. Secretaries ordering 1991 calendars should use the stock numbers listed on JSC Announcement #90-119 which was distributed Aug. 1.

Any secretary who does not receive a revised catalog by Aug. 15 should call Bellonby or Carrington.

## Backlog delays clinic physicals

A backlog of JSC civil service employees needing annual physical examinations is again causing scheduling delays at the JSC Clinic.

More employees must have annual job-related physicals because of changes in Occupational Safety and Health Administration (OSHA) regula-

tions that require employees to submit to a job-related physical within a given time.

All civil service personnel eventually will receive a scheduled date for a physical examination, although it may not be during the employee's birth month.

## U.S., U.S.S.R. agree on ozone monitoring from space

The United States and the U.S.S.R. have signed an agreement to fly NASA's Total Ozone Mapping Spectrometer on a Soviet Meteor-3 spacecraft in 1991.

The flight of the TOMS instrument on the Meteor-3 will provide critical environmental data on the yearly variability of the ozone hole over Antarctica.

The agreement was signed by George P. Esenwein of NASA Headquarters' Office of Space Science and Applications, and Dr. N.N. Petrov, deputy chief of Main

Department, Soviet State Committee for Hydrometeorology, Moscow, following the U.S./U.S.S.R. Earth Sciences Joint Working Group meeting.

Since 1978, the TOMS instrument aboard the Nimbus-7 satellite has monitored global ozone concentrations, focusing on the annual depletion of ozone over the southern hemisphere and the development of the Antarctic ozone hole. Since Nimbus-7 has already performed well beyond its design lifetime, the TOMS/Meteor-3 mission will guar-

antee continuous measurements of the crucial global ozone data set until the next scheduled TOMS flight aboard a U.S. spacecraft in 1993. That flight will be followed in two to three years by a TOMS instrument flight aboard a Japanese ADEOS satellite. Both missions have been proposed to Congress as part of the new "Earth Probes" program requested in the President's fiscal year 1991 budget.

Global ozone measurements are a key element of the Mission of Planet Earth program to better

understand environmental changes on Earth and the nature of global change. TOMS measurements also will be an important complement to the Upper Atmospheric Research Satellite (UARS), planned for launch on STS-48 in 1991 to make extensive observations of the physics and chemistry of the upper atmosphere.

The Earth Sciences JWG was established under the U.S./U.S.S.R. Space Science Agreement signed in April 1987. TOMS will be the first U.S. instrument to fly on a Soviet spacecraft under this agreement.

## SEEDS data returns include soil, insects

(Continued from Page 1)

million U.S. students in elementary school through college. The Park Seed Co. of Greenwood, S.C., furnished the seeds, handled the distribution and will participate in the analysis.

The eight-page data booklets that accompanied each seed packet package are due to Oklahoma State University by Sept. 15 where the results will be analyzed and a summary prepared. Dr. Nelson Ehrlich, assistant program director for OSU's Aerospace Education Services Program, said he hopes to have the summary prepared by January 1991.

Thus far OSU has received about 6,000 data booklets with results.

However workers there currently are going through the booklets to ensure they can be electronically scanned. Many people folded the booklets several times or made extra comments on the booklets that complicate the electronic scanning process.

Dr. J. Gregory Marlins, NASA project manager for SEEDS in Headquarters' Educational Affairs Division, said his office is still receiving requests for the space tomato seeds.

"A lot of tomatoes planted this spring are ripening now and it's generating renewed interest in the experiment," Marlins said.

NASA has received 130,000 requests for the seeds and requests have come from as far away as

Argentina, the United Kingdom, South Africa, Brazil and the Soviet Union.

Booklets from the experiment aren't the only item OSU workers have received as a result of the SEEDS project, Ehrlich said.

"Some are coming with soil samples, insect samples, fertilizer bags, videotapes, photographs and scrapbooks," Ehrlich said. "It's just unreal what we're getting back."

Some of the videotapes, photographs and scrapbooks may be incorporated into future presentations including a scheduled Jan. 29 television broadcast on the project that will originate from OSU's Stillwater, Okla., campus.

## 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.

Swap Shop submission deadline is every Friday, two weeks before the desired date of publication.

Editor ..... Kelly Humphries

Associate Editors ..... Pam Alloway

Kari Fluegel

## Venus probe to map cloud-shrouded surface

(Continued from Page 1)

of resolution.

Magellan began to configure itself for the Venus Orbit Insertion by opening up fault-protection limits on

the star scanner unit and the attitude and articulation control subsystem Monday.

The spacecraft also was turned in preparation for the orbit insertion

maneuver and the downlink was switched from the high-gain antenna to the medium-gain antenna. It now takes about 30 minutes to send and verify commands.