

Space News Roundup

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No. 18

Launch pad work making headway; flaw stalls test

Launch pad preparations of *Discovery* are making headway, the flight crew is preparing for its last STS-26 long-duration simulation and a problem with the final redesigned solid rocket motor test is not expected to affect plans for a September lift-off.

In the course of performing field joint leak checks Saturday on Production Verification Motor-1 (PVM-1), workers at Morton Thiokol's Utah test facility inadvertently overpressurized the center field joint. While the high pressure was being applied to the joint, workers heard a noise that has been interpreted as pressure getting past the joint seals and into the motor's interior.

The extent of damage wasn't immediately known, and the motor was being disassembled as far as the center field joint for evaluation and possible repairs. A team led by John Thomas of Marshall Space Flight Center has been formed to oversee work to return the motor to test readiness.

PVM-1 had been scheduled for late July, but probably will slip to at least mid-August. Rescheduling the test is not expected to affect the STS-26 launch schedule or the Flight Readiness Firing (FRF) of *Discovery*'s main engines planned for July 25.

Early this week, crews at Kennedy Space Center finished loading *Discovery*'s orbital maneuvering sys-

tem pods and reaction control system with fuel, monomethyl hydrazine, and oxydizer, nitrogen tetroxide. All three auxiliary power units have been serviced with hydrazine.

Late this week, workers were to perform a fit check of the crew escape pole in *Discovery*'s crew compartment. Preparations for the FRF will begin when the pad reopens for normal work. The 20-second test firing of *Discovery*'s main engines is scheduled for 6:30 a.m. CDT July 25. The FRF will be preceded by the "wet" tanking test scheduled for 6 a.m. July 22. For both tests the external tank will be filled with its flight load of a half a million gallons of

liquid hydrogen and liquid oxygen. After each test the external tank will be drained.

The date of the final long-duration STS-26 simulation has been moved back to August 9-11. The joint integrated sim will be the last full rehearsal for the flight crew, flight control teams, Mission Evaluation Room team, the STS Operations Support Complex at Onizuka Air Force Base, the White Sands Ground Terminal's TDRS Launch and Deploy Control Center, and the Mission Management Team. It's scheduled to begin at 8 a.m. at the launch-minus 9 (L-9) minute reset point. Debriefing is scheduled for Aug. 12.



STS-26
The Return to Flight



Astronaut Charles Bolden begins a 55 mph ride down from the Launch Pad 39B Fixed Service Structure in an emergency escape system basket July 8, the first time the system had ever been ridden.

Pad escape system gets human trial

Astronaut Charles Bolden became the first person to ride the slide-wire emergency egress system at Kennedy Space Center's Pad 39B last Friday and proclaimed it smooth, safe and operational.

"The deceleration, I only noticed by sound," Bolden said moments after his first ride. "You heard it hit the net; it went 'poof.' I didn't get pushed forward. I didn't have any trouble at all once I hit the paddle."

Bolden later was joined by fire rescue crewman George Hoggard and closeout crewman Albert "Junior" Bumgardner in a test of the system's nominal three-person capacity.

Bolden and his cohorts "hit the paddle" to begin their ride at the 195-foot level of the Fixed Service Structure (FSS). Traveling at almost 55 miles an hour, their basket whined down the slide-wire and was stopped securely by a braking system made up of a series of steel chains that dragged through the sand in the landing zone. A new anti-rollback brake made sure the basket stopped quickly, and an arresting net provided insurance of a safe stop. The riders jumped out of a new side exit and ran to a beefed up steel-reinforced concrete bunker. The entire operation took only 35 seconds, and the slide down the wire only 22 seconds.

"If we had put our kids in there they would have asked for their money back," Bolden said. "It wasn't a thrill ride, it was a very, very gentle ride all the way down."

Please see **SLIDE-WIRE**, Page 4

Scientists hope to use Phobos data as divining rod

By Kelly Humphries

If the USSR's mission to study the Martian moon Phobos is successful, JSC scientists studying human exploration scenarios may be among those who benefit from the data transmitted back to Earth.

Jim Gooding, who is coordinating the Solar System Exploration Division's support work on the Mars Sample Return Mission study for the New Initiatives Office, said there's a lot of speculation that Phobos could become

the source of a commodity important to human explorers—water.

"JSC naturally is interested in what the prospects are for exploring Mars as a new initiative," Gooding said. "Finding a certified source of water in Mars orbit would be a tremendous boost, I think, to any kind of a human exploration."

Scientists speculate that both of Mars' satellites, Phobos and Deimos, may be captured asteroids. If that's the case, Gooding said, there is a good

chance they are composed of carbonaceous chondrite, hydrous minerals that when heated yield water. Based on Earth observations, scientists believe the majority of asteroids in the asteroid belt between Mars and Jupiter are predominantly carbonaceous chondrite. Meteorites studied on Earth have been found to contain such hydrous minerals.

"Any long-term stay in the vicinity of Mars by a human crew will place very serious demands for consuma-

bles, water, oxygen and so forth. If we had a ready source of water, either on Mars or in the near vicinity of Mars, that would solve a lot of the problems," Gooding said. "The water speaks for itself. But you could take the water and electrolyze it into oxygen and hydrogen, recombine it to make rocket fuel or just use some of the oxygen for breathing purposes."

"You need to heat the material to several hundred degrees centigrade to extract it, but that's a very straightfor-

ward process. The energy source aside, if one could simply find that material, mine it and process it you would have a very reliable source of water and that could be of really pivotal importance in terms of a long-term human presence on Mars."

Phobos might also become an orbital platform where an observing station is installed to look down on Mars, Gooding said.

Future exploration aside, the Phobos
Please see **PHOBOS**, Page 4



Jeanne Lee Crews, manager of the Hypervelocity Impact Research Laboratory, compares the size of the room that now holds her lab (marked off by glass bottles) with the new, roomy building that will be home for the lab in the near future.

New building will house expanded orbital debris lab

By Kari Fluegel

The thud of the light-gas gun and the whirl of the high speed camera used in space debris research will echo in a new location when the Hypervelocity Impact Research Laboratory (HIRL) sets up business in a new building in about two months.

HIRL will be moving from its cramped 20-by-20 foot cage in Bldg. 31 to a new 5,000-square-foot metal structure in the northeastern quadrant of JSC.

At the dedication ceremony last week, Bldg. 267 was empty, but an exuberant Jeanne Lee Crews, HIRL manager, said a high speed camera, the two light-gas guns now at JSC and possibly a third gun will fill the garage-like laboratory.

Ken Gilbreath, director of center operations, said construction of Bldg. 267 marks the first JSC purchase of an "off-the-shelf" building.

The building was constructed from a vendor's existing design and specifications rather than a unique plan created by the JSC Facilities Design Division, Gilbreath said.

Construction of the building took only two months and cost about \$95,000 including lighting, air conditioning, driveway and sidewalks.

"This is the ideal type space for the kind of test lab Jeanne Crews needs," he said. "Her laboratory was such that it translated readily to a 'plain vanilla' facility thus we were able to optimize the facility space acquired relative to unit cost. Also, the Houston area construction market is extremely competitive at this time, which helped yield us a bargain on this facility."

Crews said she has been trying to get a new, larger lab for about seven years.

"Getting the space is the first
Please see **LAB**, Page 4

JSC Photo by Sheri Dunnette

JSC

Dates & Data

Today

"Candida"—The play "Candida" will be presented by the JSC-EAA and the University of Houston-Clear Lake as part of the Houston Shaw Festival nightly through Sunday, July 23-24 and July 28-29 in the UH-CL Bayou Theatre. Tickets are \$5 for NASA employees and contractors. For information, call 488-9334.

Cafeteria menu—Entrees: Salisbury steak (special), ham steak, deviled crabs, fried shrimp, seafood gumbo. Vegetables: buttered carrots, green beans, June peas.

Saturday

Spaceweek parade—At 9 a.m. Saturday, the 1988 Spaceweek Parade will travel on NASA Road 1 from Clear Lake Park west to the JSC main gate. The Houston Space Society will sponsor marching bands, VIP cars, displays and floats (including the Apollo space suit mock-up float). For more information, call Spaceweek headquarters at 480-0007.

Spaceweek fun run—A 5-kilometer Spaceweek Run will begin at 7:30 a.m. Saturday at the Gilruth Recreation Center. For details, call 532-1254.

Model rocket gala—More than 100 model rockets will be flown in honor of Apollo 11's 19th Anniversary behind JSC's Saturn V at 1:30 p.m. Saturday, or Sunday in case of rain.

Spaceweek banquet—The keynote speaker for the Spaceweek National Banquet at 6:30 p.m. Saturday in the Hobby Airport Holiday Inn will be Donald Fink, editor-in-chief of Aviation Week and Space Technology. For more information, call Spaceweek headquarters, 480-0007.

Posters displayed—Space posters will be displayed in conjunction with Spaceweek in Houston public libraries, various other area libraries and at the Burke Baker Planetarium near Herman Park in Houston Saturday through July 24. Observatory tours of the museum are scheduled for the same days. Call Caroline Summers, 526-1763, for more information.

Monday

Noon lectures—A Spaceweek noontime lecture series featuring daily speakers on space-related topics is planned Monday through Friday in Houston. For details, call the Spaceweek office 480-0007.

Evening lectures—An evening lecture series with films on space-related subjects and displays is planned at 7:30 p.m. Monday through Thursday in the INNOVA building in Houston. Confirmed speakers include: Gerry Griffin, president of the Greater Houston Chamber of Commerce, and John Getter of Channel 11. "Gas Stations in Space" will be discussed by Lockheed engineer Larry Freezen, and JSC Planetary Scientist Dr. Wendell Mendell will speak on "Space Exploration and Beyond." For more information, call Joey Carignan at 480-0007.

Boeing tours—Guided tours of Boeing Corp.'s Flight Equipment Laboratory, 1045 Gemini, may be scheduled by reservation from 2-3 p.m. Monday through Friday. Visitors will see preparation of flight equipment used on Space Shuttle missions. Call Julia Sorrels at 280-2023 for more information.

JSC lectures—A noontime lecture series will be hosted by JSC engineer Larry Abbott and Dr. Kumar Krishen in the Bldg. 2 auditorium from noon to 1 p.m. Monday through Friday.

Cafeteria menu—Entrees: hamburger steak (special), barbecue link, fried chicken, beef burgundy over noodles, cream of chicken soup. Vegetables: buttered corn, carrots, green beans.

Tuesday

Spaceweek medical symposium—"Advances in Medicine from Space Exploration: Gifts from the Future" will be the topic of a free public symposium 10 a.m.-12:30 p.m. Tuesday in the Bldg. 2 auditorium.

Cafeteria menu—Entrees: turkey and dressing (special), liver and onions, barbecue spare ribs, baked meatloaf, beef noodle soup. Vegetables: buttered squash, Spanish rice, broccoli.

Wednesday

Spaceweek lecture—Ed Donoly, chairman of Air Products and Chemicals for Commercial Development of Space Industry, will discuss U.S. competitiveness with Europe and Japan, and the use of space resources for the creation of "new wealth" from noon to 1:30 p.m. July 20 at the Houston Club.

Men's softball tournament—This is the final day of registration for a Men's Open C softball tournament planned July 23-24 at the Rec Center. Entry fee is \$95.

Cafeteria menu—Entrees: Spanish macaroni (special), tamales with chili, broiled fish, seafood gumbo. Vegetables: ranch beans, parsley potatoes, beets.

Thursday

Amiga users meet—The Amiga Computer Users Group will meet at 7 p.m. Thursday in the RSOC Civic Room, 600 Gemini. New members are urged to come, have their questions answered and watch demonstrations of new hardware and software. For more information, call Hal Getzelman, x31897.

Cafeteria menu—Entrees: chicken fried steak (special), pork chops, shrimp chop suey, beef pot roast, navy bean soup. Vegetables: carrots, cabbage, green beans.

July 22

Cafeteria menu—Entrees: tuna and noodle casserole (special), baked ham, fried shrimp, broiled codfish, seafood gumbo. Vegetables: corn, turnip greens, stewed tomatoes.

July 23

Space environment—"Environmental Interpretation of Manned Flight and Space Photography" will be the topic of Astronaut Mary Cleave's Spaceweek discussion and slide presentation at 2 p.m. July 23 at the Armand Bayou Nature Center. Call Laura Lehtonen, 474-2551, for details.

Clown's play—The JSC-EAA will sponsor a special children's Clown's play, a new version of Jack and the Beanstalk, at noon July 23 in the

Satellite Theatre at UH-CL Tickets, available at the Bldg. 11 Exchange Store, are \$2 for ages 18 and under, \$3 for adults. For more information, call Susan Starkweather, x36608.

July 26

Lunch and learn—Stefan Roesler from the Department of Mechanical Engineering, University of Stuttgart, West Germany, will be in the Bldg. 3 cafeteria 11:30 a.m.-12:30 p.m. for a "Lunch and Learn" meeting sponsored by the American Institute of Aeronautics and Astronautics' Thermophysics Technical Committee. Anyone interested is welcome to attend. For information, call Adul Hye, 333-6515.

Oxychem 4x2 mile relay—Male, female and mixed teams will compete at the San Jacinto Monument at 7 p.m. July 26. Call Patrick Chimes, x32397, for information.

Aug. 4

Ballroom dancing class—Professional instruction in beginning, intermediate and advanced ballroom dancing begins and will continue each Thursday for eight weeks at the Rec Center. Advanced class meets 7-8:15 p.m. Beginning and intermediate class meets at 8:15 p.m. Cost is \$60 per couple.

Aug. 6

Children's lunch—A luncheon theater for children, featuring the Texas Mime Theater, jugglers and a clown, will be sponsored by the JSC-EAA at noon in the Rec Center. Tickets are \$2.50 for adults and children at the Bldg. 11 Exchange Store. For more information, call Susan Starkweather, x36608.

BAGSUG meeting—The Bay Area GS Users Group (BAGSUG) will meet at 2 p.m. at the Thomas Avenue Baptist Church. For more information, call Demetrius Roberts at 476-0069.

Aug. 26

SEDS conference—The Texas area chapters of the Students for the Exploration and Development of Space will sponsor an international conference at the Nassau Bay Hilton through

Aug. 28. The conference will feature JSC tours, a space career exposition and several well known speakers from the space industry. For more information, call Peter Lange, x30850.

Sept. 9

AIAA China trip—A technical delegation from the Houston Section AIAA will depart for a trip to China to visit with the Chinese Society of Astronautics. Participants will meet with technical counterparts in Chinese space facilities at Beijing, Xian and Shanghai, home of Houston's sister section, the Shanghai Astronautical Society. Non-technical activities are planned for spouses. The delegation also will visit scenic and historic sites at Guilin and Hangzhou. For information on applications, call Jim McLane, 488-0312.

Sept. 15

Apollo 14 workshop—The Lunar and Planetary Sample Team will sponsor a workshop centering on Apollo 14 samples and the Apollo 14 landing site through Nov. 16 at the Lunar and Planetary Institute. Topics to be discussed include: regional geology of the Apollo 14 landing site; Apollo 14 plutonic rocks; and the relation of Apollo 14 lithologies to the magma ocean hypothesis and other models of early lunar differentiation. Abstracts for contributions are due at the LPI by Sept. 15. For more information, call Jeffrey Taylor, (505) 277-9159, or Paul Warren, (213) 825-2015.

Oct. 13

Return to flight celebration—The eighth annual north Galveston County Chamber of Commerce's Bayou Festival will adopt "A Return to Space Flight Celebration" as its theme Oct. 15-16 at Walter Hall Park in League City. A return-to-flight banquet has been slated Oct. 13 at the South Shore Harbour Resort and Conference Center. As part of the festivities, a special award will be presented to the "North Galveston County Citizen Most Responsible for the Safe Return to U.S. Space Flight."

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. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2.

Property & Rentals

Sale: Clear Lake area, 3-2-2, open floor plan, low equity, no qualifying, 10% FHA loan. 486-4505.

Sale/Lease: Lake Livingston townhouse, 2-2, 24 hr. sec., clubhouse w/pool, tennis and volleyball courts, playground, boat ramp, \$49,900. 554-5514.

Sale/Lease: CLC, Baywind II condo, 2-2-2, FPL, wet bar, W/D, new paint, mini-blinds, ceiling fan, tennis, pools. 280-8796.

Lease: Condo, 2-2, split bedroom plan, W/D, \$415/mo., or \$35,000. Rick, x36156 or 480-1218.

Sale: College Station, mobile home, 2 mi. south of A&M off Welborn Road, convenient, safe, private. Terry White, x35111 or 332-5177.

Sale/Lease: Austin, near Univ. of Texas, 1 br. condo, 1 1/2 bks. ctr. of campus, appl., W/D, jacuzzi, ex. cond., 488-4167.

Sale: Kirkwood South, large custom 2-story, 4-2.5-2, formals, FPL, study, intercom, cul-de-sac lot, near Dobie High School, \$78,500. 488-5210.

Rent: League City, 3-2-2, fenced, well kept, FPL, high ceilings, fans, walk to shopping, pool, library & restaurants, 212 Pecan Drive, \$599/mo. 554-6200.

Sale: Friendswood/Sun Meadow Estates, wooded lot in established neighborhood, cul-de-sac, bordered by stream & golf course on 2 sides, approx. 245' deep & up to 86' wide, approx. 1/3 acre, gas/elect. on site, \$19,500. Doug, x32860 or 486-7412.

Sale: Heritage Park, 3-2-2, near schools, \$58,000 or assume 24-yr. 11.5% loan, low down pmt., \$658/mo. 996-0702.

For lease: 2-2-1C/P, FPL, W/D, refrig., ex. cond. El Dorado Way condos, \$400/mo. Danny, x39670 or 326-5754.

Sale: Big Bend area hunting land, 160 acres, \$170 per acre. OBO. 337-4051.

Rent: Mobile home lot, \$85/mo., \$50 dep. Baker and Kinne, Bacliff. 488-1758.

Cars & Trucks

'80 Buick Regal, blue, AM/FM, int. ex. cond., some rust, 96K mi., \$1,000. Kay, x34845 or Susan, 331-3379.

'79 280 ZX, 5 spd., A/C, rem. sunroof, Le bra, louvers, tinted, new clutch/brakes, AM/FM cass., fender damage, 70K mi., will supply new fender, \$2,500. Kay, x34845 or 331-3379.

'87 Chrysler Conquest TSI, 13K mi., Chrysler's best ext. 5 yr./50,000 mi. warranty, fully loaded, all leather, ex. cond., \$12,750. Craig, 282-3731 or 485-5636.

'75 Ford Elite, ex. cond., \$800. OBO. 941-2495.

'76 Toyota Landcruiser, FJ40, 4x4, hard top, CB, radio/cass., good cond., \$2,300. Alena, 471-1962.

'87 Chevrolet Cavalier, 2 dr., 5 spd., A/C, AM/FM cass., ex. cond. x39173 or 488-3647.

'79 Camaro, new paint, black/red int., new tires, ex. mech. cond. 280-7625 or 486-7590.

'85 35' Mallard motor home, for rent. 337-4051.

'85 Honda, Sabre, 700 cc, bought new in '86, 4,300 mi., \$2,000. Darren, 282-4098 or 488-4865.

'87 Honda Civic DX, 3 dr., 1.5L eng., 5 spd., white, blue int., 9K mi., \$7,400. Novara, x35149 or 280-9649.

'83 Pontiac Bonneville, blue, V8, auto., air, 4 dr., AM/FM, 75K mi., ex. cond., \$4,100. Don, x38821 or 481-8290.

'82 Camaro Berlinetta, blk., 302 V-8, auto., cruise, A/C, P/S, AM/FM, 88K mi., ex. cond., \$4,195. OBO. Walt, x35939.

'71 Porsche, 914, Blaupunkt AM/FM cass., mag wheels, ex. cond., \$4,500. Greg, 488-5015.

Cycles

'80 Honda 200 Twin Star, ex. cond., 7K mi., \$500; '72 Honda 450, \$225, needs minor repair. 337-1896.

Boats & Planes

'23' Cobalt, twin 260's, SS props, loaded, Tandem axle trailer, ex. cond., \$19,500. 488-2829.

'83 5.5m, (18') S2 Grand Slam w/sail bags, life vests, trailer, etc., \$2,800. OBO. Janet, 474-2622.

Laser sailboat, BO. Eric, x38420 or 486-9179.

'83 16' Hobie Catamaran, orange/rainbow sail, trailer, sailbox, ex. cond., \$1,950. Karl, x35067 or 333-3544.

Lease: Floating boat slip, Portofino Harbour, avail. now, up to 40', 5 min. from bay. Ritz, x38501 or 780-2391.

Household

Loveseat, \$125; coffee table, \$50; end table, \$30; large oak easel, \$80; drawing table, \$20; wet/dry vac, \$20; antique violin, \$800. 532-2253.

Recliners, dinettes, bed. Cliff, x38166 or 486-8810.

GE portable 5" color TV, w/stereo AM/FM rem. cass., \$190. C.W., 282-1871 or 280-8796.

Beautiful roll-top desk built from kit and stained, 1 yr. old, \$250. 484-3399.

Sears 17.1 cu. ft. refrig., white, frostless w/ice maker, ex. cond., \$200. x34270 or 337-2682.

Whirlpool 25 cu. ft. Mark I, side-by-side refrig. w/3rd door, water and ice dispenser, \$650. OBO. 480-2067 or 488-5921.

Wicker furniture, white, \$50 ea.; 2 metal chandeliers, \$50 and \$175; white and brown chests of drawers, \$30 and \$10; mini trampoline, \$15. 326-3370.

4 Pioneer HPM 100 watt speakers, \$100, each or 4 for \$350; double mattress/box spring/frame, \$75; 4-poster bed, white, \$60. 326-3370.

25" Heath kit TV, needs minor repair, \$25. OBO. Al, x36026 or 334-3896.

Traditional sofa & love seat, dk. blue w/rust & beige print, like new, \$400. OBO; rust colored ginger jar lamp, \$20. 486-8865.

Whirlpool full size washing machine, new motor, ex. cond., \$175. Rick, x35724.

Antique Victorian buried walnut bed; 6' high headboard, Civil War period, ex. cond., \$500. 480-7838.

Audiovisual and Computers

256K RAM chips 120ns, \$145 each bank; 100ns, \$195 each bank. Mark, 333-7347.

Commodore 64C w/color monitor, disk drive, printer w/black & white, color ribbons, six months old. \$500. 484-3399.

Apple II+ w/20 disk drives, 64K memory, green monitor, Videx enhanced keyboard, Videx Ultraterm, Star 280 CP/M card, \$400. Jim, 481-3498.

Commodore 64C system, 1 disk drive, 2 power

supplies, Seikosha SP 1000VC printer, 2 joysticks, animation station, about 50 disk w/super Pascal. x36953 or 482-4343.

Color RGB monitor and CGA card for IBM PC or clone, \$200. Doc Pepper, 282-3130.

IBM PC Jr., color display, floppy drive, infrared keyboard, PC compact printer, various software, w/word processors, deluxe computer stand, \$395. Cindy, x38801.

Commodore 64 computer, Commodore 1541 disk drv., Commodore 1670 modem, 2 joysticks, Comrex color monitor, Music Mate keyboard for C64, various software, all for \$500. OBO. Curt, x36931 or 996-8877.

Wanted

Want Synthesizer for professional use or inexpensive portable piano keyboard. (409) 762-1799.

Want a female roommate to share a 2-2 apartment or house. Bonnie, x34248.

Need babysitter for our 1 yr. old in our CLC home, Monday through Friday, light housekeeping, begin in Aug., ref. please. 480-9545.

Need riders for vanpool from South Post area to NASA, low monthly cost. Richard, x37557.

Want riding mower in good cond. for \$200 or less. 282-3216 or 334-2335.

Musical Instruments

Leslie tone cabinet for B-3 Organ Sound, model 760, good cond., \$400. OBO. (409) 762-1799.

Photographic

Hasselblad EL w/light meter prism, 4 backs, strobe, access., fitted case; was \$2,500, now \$1,800. OBO; Bell & Howell 16mm w/3 lens, case, \$250; Bolex Reflex 16mm w/3 lens, case, \$250. Terry, x37727.

GE video camera outfit, 8 to 1 zoom camera w/4 color tilting, battery & charger, 4 head stereo recorder w/carrying case, stereo tuner. 331-8310.

Pets & Livestock

Reg. Bay Quarterhorse, 15 hands, not for beginner rider, needs firm hand, \$400. 331-3304.

Free kittens. Eric, x38420 or 484-9179.

Need good home for AKC Fox Terrier, male, 4 yrs. old; also free doghouse, etc. x30693 or

996-9157.

6 free kittens, born June 5. Mary Fae, x35143 or 482-9061.

Free kittens, 7 wks. old. Bob, x32240 or 480-1735.

Free cat, neutered, declawed, affectionate. 332-5286.

Lost & Found

Lost black watch and rings in Bldg. 16 parking lot on June 28, 1988. Sheryl, x38243, Bldg. 16, Room 134.

Miscellaneous

'79 16' Champion "Galavan" camper, full features, sleeps 4, good cond., \$5,500. OBO. 333-2322.

Gaffers and Sattler A/C compressor and condenser coils (outside unit), 3-ton, \$75. John McNeely, x38178 or 482-5837.

Unused 23K gold plated flatware, 70-piece service for 12, padded storage case, was \$1,200, now \$300. OBO. Cliff, x38166 or 486-8810.

Friedrich room A/C, 8,000 BTU, ex. cond., \$125. McNeely, x38178 or 482-5837.

Honda Civic alum. mag tires, 13", ex. cond., \$35 each. 334-2335.

Topline Kicker Super II auto speaker system, ex. cond., was \$289, now \$175. x34333.

Raleigh touring bicycle, 21" frame, some Shimano 600 components, extra set of wheels, Blackburn rack, \$160; Cannondale Panniers. Alena, 471-1962.

Bumper hitch, Class II (3,500 lbs.) for GM rear drive vehicles, \$40. Walt, x35939.

Day care for a toddler in a private home, Hwy. 3 and El Dorado, \$75/wk. 480-9646.

Wedding gown, size 5, long train, w/veil, \$250; T-top for driver's side only, fits 1983 Grand Prix, BO. x35744.

Superb 1 loose round diamond, weight .85 carat, color VS-2-H, \$3,000. Al, 643-1003.

Post Oak firewood delivered by the 1/2 cord, \$50. x39491 or 991-2396.

Water heater, 50 gal., elec., good cond., BO. Kevin, x30867.

Full size drafting board w/drafting machine, lamp, chrome/black stand, \$150. Gloria, 480-5876 or 486-0454.

Space News Roundup

Behind the scenes

From microchips and razors to printer's ink and paper

By Kari Fluegel

Deadline nears as Julia Opre reaches for her marker. With a pencil clenched in her teeth and an injured finger bandaged to keep it from bleeding on her work, she crops one final photo, glances at her layout one last time and relinquishes the page for printing.

Though their names do not appear in the Space News Roundup staff box on Page 4, Opre, the Omniplan Corp. paste-up artist for the newspaper, is only one person among many who have helped Roundup change to a weekly production schedule.

The change is part of the Johnson Space Center's effort to expand and to improve communication within the JSC community. Roundups are now sent to all JSC employees and on-site contractors; half of all off-site contractors; retirees; and other NASA centers.

The new schedule was initiated with the June 10 issue, but the publication of a weekly Roundup is still somewhat fresh to those involved with the paper.

Under the current schedule, the pace never slackens. As readers open today's issue, Opre and typesetter Jan Knight have already begun constructing the inside pages for next week's issue.

"When it was just every two weeks, it was just three or four days that we had the Roundup," Opre said. "Now it's every day."

Hours of labor on the Roundup still remain when news and feature stories leave the hands of editors and are transferred via computer to Opre at Omniplan, the JSC contractor in charge of much of the center's graphics work.

Paste-up for Swap Shop begins Monday the week before that particular issue of Roundup is published. Other articles budgeted for the page are delivered later that week along with the feature story planned for page three.

All those involved with the newspaper's production strive to meet the deadlines and smooth out the rough edges.

But, "When we get a schedule accomplished, there will be a lot less stress," Opre said.

Much of the slicing and measuring previously required in producing newspaper layouts has been eliminated by a new computer system that allows typesetters to completely create a page on a screen before reproducing it on the phototypesetting system.

Opre, who has been working with the Roundup for about four months, makes adjustments letter-by-letter, code-by-code, producing the four-page newspaper electronically. The only cutting now required is for minor adjustments to make the various stories on the page fit better.

"It's quicker and a lot less dangerous," she said, glancing at the mending cut on her finger.

Advance pages are ready for printing Tuesday. The work then focuses on the layouts for the final two pages with the deadline of noon the Thursday before the Friday publication day.

Each page is proofread several times by Barbara Bowen, Omniplan's quality assurance inspector, to eliminate as many typographical errors as possible. After final approval is given by the editor, the completed layout is delivered to the Printing Management Branch here at JSC where printing specialist Pete Strahl and his staff take over.

The printing process actually begins Wednesday afternoon when pages two and three are delivered to Building 227, Strahl said.

A negative is made of each page, and photos, which are reproduced with dot patterns in a separate process, are sized to fit inside the blank windows left on the layouts. The page negatives then are used to create the printing plates needed for the press.

The plates, now ready for ink, then go to the press where pressman John Roach prints pages two and three every Wednesday afternoon.

The press feeds the paper into its rollers sheet by sheet at a rate of 6,800 pages per hour.

The same production process is followed Thursday afternoon with pages one and four being printed on the reverse side of the previous pages.

The basic process has not changed with the advent of the weekly newspaper, but Roach has switched to a faster drying ink so the second side of the sheet can be printed sooner.

Still, overtime is now the rule, rather than the exception, Strahl said, adding that he hopes that situation will change once the deadline schedule smooths out.

From the press, the freshly printed newspapers are taken to a high speed folder where they are creased in a matter of seconds. Then distribution personnel take over.

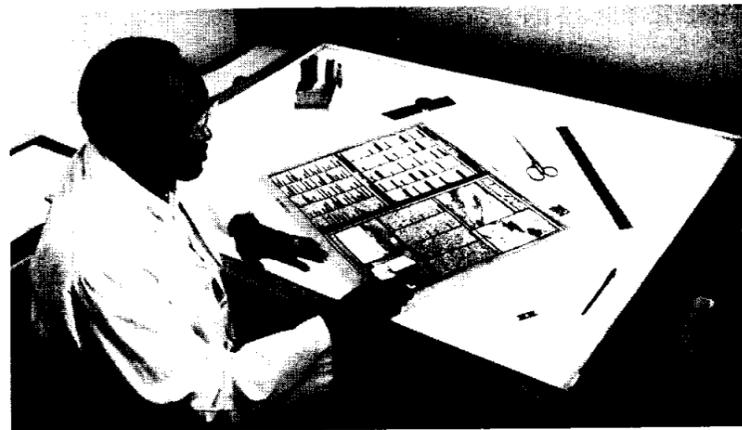
Workers in the distribution area of the Printing Management Branch report to work at 5 a.m. Friday morning to count and sort the Roundup, said Alice Ward, function manager.

The job — performed by five or six individuals in about two hours — must be finished in time for the first mail run at 7:30 a.m.

Before the newspaper changed to its weekly schedule, distribution was not faced with the 7:30 a.m. deadline, since, with a biweekly paper, making the Friday morning mail was not mandatory, she said.

Even with the tighter schedule, no more people were hired for the printing or distribution operations. Several individuals with other duties in her department, however, are now used, along with overtime, to make distribution on the Roundup each week to the 12,500 readers, she said.

"We do whatever we have to do to get it out."



Above: Photocomposition workers Julia Opre, left, and Jan Knight make typesetting adjustments to an electronic page, creating the Space News Roundup first by computer at Omniplan Corp. Top left: Touching up the page, camera operator Warren Conner perfects the negative before burning the image into a light-sensitive press plate. Bottom left: Printer John Roach checks out a finished press plate while getting ready to produce the next issue of the Roundup. Below: Distribution personnel, from left, Lavenia Lorentzen, Joyce Keeton and Gail Micheal count and sort the finished Roundup, preparing copies for the early morning mail.

JSC Photos by Sheri Dunnette

Senate would give only \$200 million for Space Station

The Senate this week rejected President Reagan's request for \$967 million to begin the construction phase of the Space Station project, appropriating only \$200 million.

The Senate approved the bill by a vote of 86-11, sending it to a conference committee with the House, which has appropriated \$902 million for Space Station.

The Senate spending bill for the Department of Housing and Urban Development and independent agencies, including NASA, would provide a 10-percent increase in NASA's overall fiscal 1989, but the President had asked for a 40-percent increase. NASA received \$9.02 billion overall in 1988 and requested \$11.5 billion for 1989.

NASA Administrator James C. Fletcher said he was disappointed.

"If this is the ultimate outcome, it is a setback for NASA and a blow to this country's future in space," Fletcher said. "The Space Station is the key to our major goals of the future. It has been studied, analyzed and weighted against alternatives, and the conclusion is that the time is now.

"To suggest a further delay will cost us technologically and economically. It also will raise questions about our reliability as an international partner. This especially applies to the Europeans, Japanese and Canadians who are cooperating with us in the Space Station project. I hope the conference

committee will reverse this action and keep the Space Station on schedule," Fletcher said.

Clarke Covington, Space Station Projects manager at JSC, said \$200 million probably is below the level needed to continue the project in its present form and threatens the future of the program.

"I always stay optimistic because I think most of the people in this country don't want that (program cancellation) to happen," Covington said. "I would hope Congress would be responsive to what the people want. I think what they want is to aggressively pursue our goals in space. We can't do that without the Space Station, and we can't build the Space Station with \$200 million in funding."

In addition to the conference committee work that must be completed before NASA's budget goes to the President, there also is a proposal to transfer \$600 million from the Department of Defense budget to NASA's research and development account. The transfer would free some money for Space Station.

Before passing the bill, the Senate rejected an amendment to shift \$30 million from the National Aerospace Plane research project to the Urban Development Action Grant program.

The Senate measure also funds the Veteran's Administration and the EPA's "Superfund" program.

NASA 1 to get work

Work by the Galveston, Houston and Henderson (GH&H) Railroad to repair tracks crossing NASA Road 1 near the intersection of Texas 3 will restrict traffic on both roads from 9 a.m. to 4 p.m. Tuesday through Friday, a highway department spokeswoman said.

Eastbound lanes on NASA 1 will be diverted into a westbound lane for at least two days beginning Tuesday. Westbound traffic will face a similar

situation beginning Thursday. All left turns from both NASA 1 and Texas 3 will be prohibited at the intersection.

"I can guarantee the work being performed will cause some congestion," Texas Department of Highways spokeswoman Janelle Gbur said. "But officials with the railroad have said they'll make every effort to have all lanes open and work crews out of the area by rush hour each day."

Phobos probes may help JSC plan future Mars exploration

(Continued from Page 1)

the first close-up look at an asteroid (if the captured asteroid theory is correct) or the first look at the material composition of another planet's natural satellite. Gooding said he believes the United States will get to share the information.

"I'm optimistic that we're going to be receiving a fairly generous flow of data from the Soviets," he said. "Even before the most recent summit there had already been worked out a general cooperative agreement that allows the deep space network to support the mission in terms of communications and tracking. We had previously given the Russians all of the ephemeris data about the orbits

of the Martian moons, their sizes, surface topographies and so forth that we gained during the Viking missions."

The Soviets built that data into their planning for trajectory and orbit design for Phobos, he said. "We've already invested considerably, ourselves, in the mission and I think we can fully expect to get data back from them. Maybe not quite in real time but very soon after they've reduced it."

NASA's Deep Space Network is providing essential tracking data to the Soviets for the rendezvous and landing on Phobos. Then it will shift its 230-foot dish antennas to the task of tracking Phobos' orbit more precisely, which Gooding said may reveal

information about the history of Mars itself. Scientists believe Phobos' orbit may be decaying and that it will eventually spiral into the planet.

"It's been suggested that this is simply a snapshot in time of what may have happened over the lifetime of Mars," Gooding said. "Perhaps Phobos and Deimos were not the only satellites of Mars. Maybe it had a multitude of such satellites. Maybe all of them were captured asteroids. Maybe slowly one or two at a time they have decayed orbitally and impacted the surface."

If more evidence supports that theory, it may help scientists better understand the impact crater record on the surface of Mars, and another

possible water input to the planet.

"We know there's been a lot of water on Mars in the past. What we don't know is all of the sources of the water. We don't know how much water in total had been there, whether much is still locked up in the ground or not."

Gooding said the question that the ambitious Mars exploration program of the Soviets brings to his mind is, "What are we going to do about it?" The question was underscored by the announcement earlier this week that the Soviets plan to skip a modest 1992 Mars mission and strive for a 1994 launch of their automated rover.

NASA is working toward a 1992 launch of the Mars Observer mission to study the red planet from orbit, and

Lab to expand, studies debris

(Continued from Page 1)

"Getting the space is the first hurdle to really doing the job right," she said. "Without the space, it doesn't matter how many good ideas you have because it's difficult to implement them."

The lab will be used to continue the testing of shielding concepts and to study the danger posed by space debris.

Space debris is becoming a more and more critical factor as man's presence in space becomes lengthier and as space vehicles become larger. Debris can impact an object at a relative velocity of one to 16 kilometers per second, and, at such speeds, an object as small as a pin head can cause damage to space vehicles.

During STS-7, a single paint flake struck the window of the Shuttle creating a small crater, Crews said. The window had to be replaced because engineers feared the crater would affect its structural integrity.

An estimated 4 million pounds of man-made material—about 95 percent of which is debris—is in orbit around the Earth. Added to that each year by the Earth's spacefaring nations is another 1.8 million pounds.

Debris is not a major problem for the Shuttle since the orbiter stays in space for only short periods; however, debris will be a major concern for the Space Station which may remain in orbit as long as 30 years.

The frightening damage that can be caused by debris is graphically demonstrated in HIRL tests.

In a test with the gun, a one-eighth inch aluminum ball fired at 6.9 kilometers per second toward a half-inch thick piece of aluminum creates a crater three-fourths of an inch wide on impact. "It can almost blow off the back of the block," Crews said.

Researchers must determine how components react when bombarded with debris before designing a shield to provide the additional protection needed for Space Station.

"I think it's important we make space safe," Crews said. "When you're up there in space, your whole life support system is there. We've got to protect all that equipment. ... We need to make sure all of it can take impacts."



Osabarima Nana Kodwo Mbra V, a reigning monarch in Ghana, West Africa, toured the Space Shuttle mock-up and training facility and the Mission Control Center during a visit last week.

African king tours center on US visit

The Johnson Space Center gave an African king royal treatment last week when the longest reigning monarch in Ghana, West Africa, toured facilities here during an official visit to the United States.

Osabarima Nana Kodwo Mbra V, the king of the Oguua Traditional Area in Cape Coast of Ghana, visited JSC June 6. His visit to Texas was sponsored by the African American Association of Texas.

Mbra and his entourage were greeted by JSC Director Aaron Cohen and Deputy Director Paul Weitz. The group then toured

mission control and the Space Shuttle mock-up and training facility.

Though able to speak and understand English, the king is required by protocol to speak only his native tongue, Fante, on official visits, said Linda Copley, protocol specialist.

Mbra is the last true emperor of this century in Africa. He was installed as "Omanhen" 40 years ago at the age of 12.

Mbra also is the president of the Central Region House of Chiefs and a member of the National House of Chiefs which plays a major role in decision-making in the country.

Slide-wire basket is smooth ride

(Continued from Page 1)

Bolden said the system has been man rated since it was installed for the first Shuttle flight, but had never been tested with people aboard. He said the recent test was designed primarily to solidify confidence in the system among potential users and supervisors who would have to give the order to use the baskets in a pad emergency.

"We feel like this test today was really the final thing we needed to do to validate the system and call it ready for use if we ever need it," said Michael Leinbach, test director in Kennedy's Test Operations Branch.

"If we sent somebody to the basket one day and we didn't need to, it's no harm done. We got them off the pad and so what," Bolden said. "If we had not utilized this and we had lost somebody, I don't think we could have ever forgiven ourselves."

For 99.9 percent of the time, the

slide-wire system is for the workers on the pad, Bolden said. Although astronauts would use it to escape in an emergency, it is "the average everyday guy working on the 195- or 175-foot level" who is the primary beneficiary of the system.

Leinbach said more than \$1.5 million has gone into improving the system over the past two years. Two wires have been added, making a total of five, so that each basket must accommodate three instead of four people. The weight each basket is designed to carry has been reduced to 220 pounds per person, or 660 pounds total. Each basket still has a maximum capacity of four people and 880 pounds, however.

Fire-protection plating has been added to the Orbiter Access Arm and to the previously open grated floor at the 195-foot level of the FSS. After a basket leaves, a plate now slams down

over the basket's parking notch in the FSS to prevent anyone from falling through.

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Editor Kelly Humphries

Asst. Editor . . . James Hartsfield



STS 27 PATCH DESIGNED—The official insignia of mission STS-27 depicts a Shuttle liftoff backed by a rainbow, signifying the nation's return to flight, and by seven stars, commemorating the Challenger crew. All STS-27 crewmembers, whose names outline the patch, contributed to the design.