Lyndon B. Johnson Space Center Houston, Texas



Suited Up

Testing on the Mark III and AX5 space suits ends in the WET-F. Story on Page 3.



Galileo Group

The crew of STS-34, scheduled for an October launch, pose for their official portrait. Picture on Page 4.

pace News Roundup

August 11, 1989

Volunteers needed for new efforts

JSC's Lunar and Mars Exploration Office is looking for about 15 "aggressive and innovative" engineers to help develop the technical details of President Bush's recently announced lunar and Mars exploration initiative.

All center employees who qualify will be given the opportunity to volunteer for permanent lateral reassignment. The deadline for applications is the close of business today. Anyone interested should deliver their completed request for reassignment from JSC Announcement 89-139 to Susan Braymer in the Human Resources Office, AH73, x33084.

An agencywide technical study group has begun an examination at JSC of the missions, vehicles and technologies needed to meet the President's new space exploration goals. The first phase is a 90-day effort to provide information to Vice President Dan Quayle and the National Space Council. The second phase of the study, beginning in January, will expand the detail of the early effort and look toward procurements and preliminary mission design.

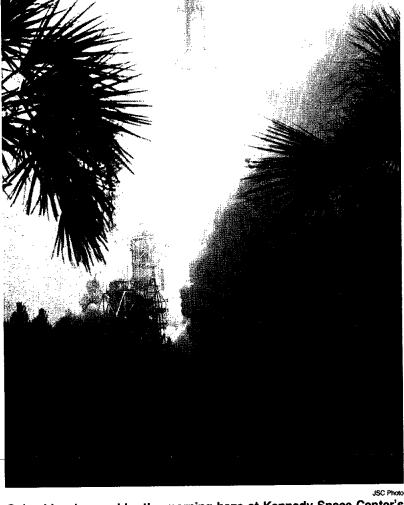
JSC Director Aaron Cohen is leading the agency's response to the President's call for specifics on the organization, resources and timetable for establishing a lunar base and sending humans to Mars. Frank Martin, associate administrator for exploration, is in charge of the technical study group, and Mark Craig, manager of the Lunar and Mars Exploration Office, is directing the study group's efforts at JSC.

As the activities mature, the Lunar and Mars Exploration Office will be reorganized into a program/project office with existing employees forming the nucleus of the new organization.

"We're getting organized and positioned for the really major activity beginning in fiscal '91," said Bill Huffstetler, manager of JSC's New Initiatives Office. "These people will be working on the more detailed studies related to an implementation plan."

A brief list of the offices and the engineers they are seeking includes: Mission Analysis and System Engineering Office—This office will

serve as the Level II program office, Please see VOLUNTEERS, Page 4



Columbia, obscured by the morning haze at Kennedy Space Center's Launch Pad 39-B, thunders into orbit Tuesday. Landing is scheduled for Sunday morning.

Columbia knifes through fog on secret mission

By Kelly Humphries

The Space Shuttle Columbia knifed through a haze of low fog Tuesday morning, ending a three-and-a-half year hiatus from flight and beginning a secret five-day Department of Defense mission.

As the last of the three shuttles to return to flight thundered smoothly

into orbit from Kennedy Space Center's Pad 39B at 7:37 a.m. CDT, it carried a special distinction for

the men and women of the Mission Control Center at JSC—the first flight controllers to fly aboard a shuttle.

Commander Brewster Shaw, Pilot Dick Richards and Mission Specialists Jim Adamson, Dave Leestma and Mark Brown were reported to be doing well. Adamson, a former aerodyamics officer and guidance, navigation and control officer, and Brown, a former flight activity officer, became the first NASA flight controllers to go into orbit.

The launch was smooth and Columbia responded perfectly," said a smiling Launch Director Bob Sieck.

NASA Deputy Administrator J. R. Thompson said the launch was an important milestone for NASA and America's space program.

"It's good to get Columbia flying

again. And we need three flying orbiters in order to fly off the manifest we've got," Thompson said minutes after the launch. "So from that standpoint, today was a big day.

As the countdown reached the beginning of the three-hour launch period Tuesday, weather officials at Patrick Air Force Base announced

that fog had reduced visibility to unacceptable levels and that a hold was necessary. But Astro-

naut Mike Coats, flying the Shuttle Training Aircraft, reported that visibility was sufficient for a return to launch site landing. The count picked up at the T-minus-9-minute mark at 7:28 a.m. and continued without a hitch until launch.

Around two hours and 12 minutes into the flight, the crew was given a go for orbit operations and Mission Contol reported that both the spacecraft and the crew were doing well.

Although an exact landing time is not expected to be released until 24 hours before landing, officials reported Wednesday that the mission's threehour landing period would begin at 8 a.m. and end at 11 a.m. CDT Sunday.

The flight is the eighth for Columbia, Please see STS-28, Page 4

Marks named JSC Women's Program Manager

development specialist and coordinator of JSC's Vocational Office Education (VOE) programs, has been named Federal Women's Program Manager in the Equal Opportunity Programs Office. She succeeds former manager Shirley Price, who will now be coordinating discrimination complaints within that office.

Marks, who served a two-year term on the Federal Women's Committee in the early 80's, looks upon her appointment as an excellent opportunity to help the advancement of women throughout the center.

"I have worked with students for so

Freda Marks, Human Resources long that this position makes me feel the NASA centers. I have 'stepped up,' since I'll be working with professionals at various levels, even top managers," Marks said.

Although in her new job for less than a month, Marks plans to be "up to speed" quickly, since she says she "can't address the issues the office will be dealing with without being thoroughly briefed.'

Her agenda for the next few weeks includes meetings with Assistant Administrator for Equal Opportunity Programs Harriet Jenkins and her staff at Headquarters, and attending a workshop at Kennedy Space Center which will include her peers from all

Upon her return, Marks hopes to have focus groups, selected from a random sample of female federal JSC employees, meeting to discuss the issues the program is dealing with now, or will soon be facing, in September.

I intend for the program to be visible at the center all year round," Marks said, "not just during our traditional Women's Week activities once a year.

Marks cites the planned JSC child care center as a very positive step, and considers job-sharing and flexiplace to be the next vital topics on her 'list.'

Also in September, the Federal Women's Committee will be looking for

all-new membership to its 10-person board, since the current members are all completing their terms.

The call will be going out soon for new members," said Marks. "We will be looking for both union and nonunion participation, as well considering a representation that reflects the current professional, technical, and clerical makeup of JSC's female employees.

A Houston native, Marks was first employed at JSC in 1973 as a VOE student from Worthing High School. She joined the Human Resources Department full time upon graduation the following year, and continued her career in that office.

Total lunar eclipse, meteor shower coming

By Pam Alloway

Many ancient cultures considered lunar and solar eclipses omens of war, famine, communal disaster or the gods' anger. Consequently, great value was placed on those who could predict eclipses so people could prepare sacrifices to appease the deities.

Modern day North American dwellers can prepare for a total lunar eclipse and a meteor shower, both of which will take place this month. And the only required sacrifice is that of time that might otherwise be spent in bed rather than in a field peering into the nighttime sky.

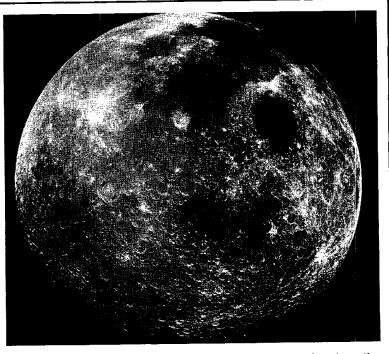
The Perseids meteor shower, so named because the meteors appear to radiate from the constellation Perseus if retraced across the sky, will occur between 3 a.m. and sunrise tomorrow high in the northeast part of the sky.

"The Perseids shower is probably the best known and, indeed, it has brighter meteors than any other meteors year after year," said Dr. Karl Henize, astronomer and retired astronaut.

"Traveling around the sun are these highways of particles from comets' orbits that form a railroad of sorts ... we see these showers when we, the Earth, plow through those tracks and run into that debris which burns up as meteors.'

The comets eventually disappear, either because they use up most of their ices or because their nucleus is covered with a crust, yet their dust remains in orbit around the Sun. Whenever the Earth passes through the dust, the dust burns up in the Earth's atmosphere, a phenomena many people refer to as shooting

Please see ECLIPSE, Page 4



Now you see it, but on Wednesday you won't. That's when the Moon will fall into the Earth's shadow for the first total lunar eclipse in seven years. The Moon will begin to be obscured at 8:21 p.m. Wednesday.

Welcome home ceremony set for STS-28 crew

A ceremony to welcome the crew and families of STS-28 is scheduled for Ellington Field approximately eight hours after Columbia's landing at Edwards AFB on Sunday.

The window for landing is 8 through 11 a.m. CDT, with the exact time to be announced 24 hours prior to landing. If Columbia were to land at the beginning of the window, for example, the return ceremony would be scheduled for 4 p.m.

All JSC employees and their families are encouraged to join Acting Center Director Paul Weitz in welcoming them home. The ceremony will take place on the east side of Hangar 990. Parking will be on the west side of the hangar. No identification will be necessary, and the entire space in front of the platform will be open to all without any special viewing area.

Updates on landing and return-to-Houston information will be available on the Employee Information Service telephone line x36765.

Cicket 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. A calendar of Employee Activities Association events is now available on the PROFS computer network.

General Cinema (valid for one year): \$3.50 each. AMC Theater (valid until May 1990): \$3 each.

Sea-Arama Marineworld: adults, \$8.15; children \$5.10.

Sea World (San Antonio, year long): adults, \$17.25; children \$14.75.

Palm Beach at Moody Gardens (valid until Sept. 1989): adults \$2.75; children \$1.50. Astroworld (valid 1989): adults, \$14.12; children under 4, \$11.99; season pass, \$32.36; Waterworld (valid 1989): \$8.15.

Astros vs. Chicago Cubs (Aug. 19, 7:35 p.m., includes the Old Timers Game): \$9. Texas Renaissance Festival (Open every weekend from September 30 through November 12): adults, \$8.95; children \$4.95.

Gilruth Center News

Defensive driving-Offered from 8 a.m.-5 p.m., Aug. 19 and Sept. 16; \$15. Weight safety-Required for use of the Rec Center weight room. Classes will be 8-9:30 p.m. on August 24; cost is \$4.

Aerobics and exercise—Both classes are ongoing: cost is \$24.

Mixed Volleyball Sign-ups—Registration will be held the week of August 21. This season the actual picking of teams to play in the league will be done by a LOTTERY system. Flyer on the guidelines and procedures available.

Fall Basketball Sign-ups—Registration will be held the week of Aug. 14.

Tennis Lessons—Beginning tennis lessons, Mondays 5:15-6:45 p.m. starting Aug. 21. 6 wk. course for only \$32. Sign-ups begin immediately at the Gilruth Center. Summer Sizzler-Men's Open "C" Softball tournament is Aug. 26 and 27. Entry

fee is \$95 and the entry deadline is Aug. 24 at 6 p.m.

JSC

Dates & Data

Today

Cafeteria menu-Special: Salisbury steak. Entrees: fried shrimp, deviled crabs, ham steak. Soup: seafood gumbo. Vegetables: buttered carrots, green beans, June peas.

Saturday

MAES Banquet-The Sixth Annual Mexican American Engineering Society (MAES) Scholarship Fund Raising Banquet will be held at 7 p.m. Aug. 12 in the South Ballroom of the University of Houston Hilton Hotel, 4800 Calhoun. Keynote speaker will be William J. Huffstetler, JSC New Initiatives Office Manager. For more information, call 333-6042.

Monday

CLAUG to meet - The Clear Lake Apple Users Group (CLAUG) for the Apple II family of personal computers will meet at 7 p.m. Aug. 14 at the Clear Lake Park Building, 5001 NASA Road This meeting will be a swap meeting for members to sell hardware and software. There will also be a question and answer period for participants to

share information, ideas, problems and expertise. If you own, or are interested in, any of the Apple II family of personal computers, you are welcome to attend. For more information, call x35591 or 488-1135.

Fall Basketball Registration-Registration for Basketball leagues will be held the week of August 14. As in previous seasons, NASA badged teams will sign up first. For more information call x35789 or x30304.

Cafeteria menu-Special: hamburger steak. Entrees: beef Burgundy over noodles, fried chicken. Soup: cream of chicken. Vegetables: buttered corn, carrots, green beans.

Tuesday

Cafeteria menu-Special: turkey and dressing. Entrees: baked meatloaf, liver and onions, barbecue spare ribs. Soup: beef noodle. Vegetables: Spanish rice, broccoli, buttered

Wednesday

Toastmasters to meet—The next cabbage, green beans.

meeting of the Spaceland Club of Toastmasters International will be from 7:15-8:15 a.m. August 16 in the Building 3 Cafeteria. Visitors are welcome. Contact Liz Duffy-Towner at x31543 for more information.

Lunar Eclipse Event-JSC Astronomical Society invites the public to an evening of viewing a total eclipse of the moon from dusk to 10:30 p.m. Aug. 16 at the Challenger-7 Memorial Park. Bring your family, friends, lawn chairs and lots of bug spray, weather permitting. For more information. contact Bill Williams, 339-1367 (evenings).

Cafeteria menu-Special: Spanish macaroni. Entrees: broiled fish, tamales with chili. Soup: seafood gumbo. Vegetables: ranch beans, beets, parsley potatoes.

Thursday

Cafeteria menu—Special: chicken fried steak. Entrees: beef pot roast, shrimp chop suey, pork chops. Soup: navy bean soup. Vegetables: carrots,

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

Sale: 60 acres, 3 mi. from Karnes City, TX, on Hwy. 80; El Campo, 2-story house, fruit trees.

Lease: Reston, VA, architect-designed Hickory Cluster end-unit townhouse, 3-1.5, util... 1CP, avail. 9/1, 9 mo. at \$850, 1 yr. at \$825. plus util., ref., non-smoker(s), no pets. (713) 280-

Sale: NE Dallas, TX, 2,100 sq. ft. townhouse, 3BR plus study, 3BA-2CP, LR w/WBFP, fenced backyard, formal DR, MBR suite w/WBFP, balcony, \$94,500, FHA assum. w/qualif., will hold 2nd w/10% down. (713) 280-9488.

Custom canyon view, 6-yr.-old, west of Austin, 4BR-3BA, want similar age, qual., near JSC. 471-8795 or 333-6083.

Sale: League City, 2.06 acres, near schools, city water and sewer avail., owner fin. avail., \$39,950. 554-6695.

Rent: League City, Pecan Forest, 3-2-2, FPL, \$700/mo. 554-6200.

Rent: Lake Livingson, waterfront, 3-2, fully furn., new cond., covered deck. 482-1582.

Rent: Lake Travis cabin, priv. boat dock, A/ C and heat, fully equip., weekly/daily rental, \$325/\$75 after 9/1. 326-5652.

Sale: Seabrook, 3.29 acres w/sm, cozy home, 2-1, \$95K, owner fin. w/\$25K down. 532-4784. Sale: Crystal Beach cabin, 2-1, A/C, \$32K.

(409) 832-2582 or (409) 755-1638. Rent: League City, 4-2-2A, trilevel, family room/FP, sec. lights, CA/H, comm. park and boat ramp, \$650/mo., \$600 dep., no pets. 337-

Sale: Conroe, custom built, 3-2-2, 1 1/4 acre, 2,394 sq. ft., open concept, energy eff., low maint, brick, landscaped, amenities. Dennis, x32937 or 480-9805.

Sale: Bayridge, 3-2-2, approx., 1,500 sq. ft., lg. yd. w/pool, cath. ceiling, FHA 8 3/4 assum. loan, \$58K. Jim, x31670 or 334-3069.

Lease: Heritage Park, 3-2-2, 5. yr. old, \$660/ mo. plus dep. or \$66,500. x35021 or 482-5615. Sale: Galveston seawall, 1 wk. timeshare, 2-2, kitchen, W/D, sleeps 6, deeded. Linda, 482-1156..

1, ref., \$700/mo., \$700 dep. 486-8551.

Sale: Wedgewood Village, 3-2-2, det. gar., \$66,500. Don, x53808 or 482-7102.

Sale: Delta mobile home, Rembrandt 56 x 14, 2-1, new kitchen and bath, fenced yd., \$6K.

Becky, x36530 or 944-8503. Sale: Meadowgreen, 3-2-2, lg. covered patio, \$13K equity, assume 99.5% FHA w/release.

486-8463.

Sale: Brazos Country development, 1.6 acres, treed lot, elec. and water, \$19,500. Linda Center, 589-8303 or 392-5594.

Sale: Regency Estates, contemp. brick, 3-2-2 w/vaulted ceilings, near intersection of 528/ 518, FPL, 6' wood fence, 1,600 sq. ft., 95' x 120' lot, Swedish hot tub in gazebo, \$79,900. 482-8322.

Sale: 4-2.5, 1 1/2 story, game room w/ balcony & wet bar, 3-car gar., on 1 1/3 acre in Pearland, \$145K. 482-6994.

Sale: Lake Livingston area, 2 lots, \$1,500

down, take over payments of \$79.92/mo. for 3 1/2 yrs. James, x37929 or 280-9631. Sale: Lg. custom 2-story, 4-2.5-3, FPL, study, \$79.900. 488-5210.

Rent: 2 BR in 3-2 house in L.C. Newport Subdivision, bills split evenly, non-smokers only, sm. pets tolerated, \$250/mo. Russ, x39130

Sale: Timeshare, sleeps 2, Texas Hill Country (Canyon Lake, TX), 10/28 - 11/4/89, \$210. 280-

Sale: 3-2-2, approx. 1,300 sq. ft., Brighton home, 24 yrs. left on loan, FHA assum. w/credit check, no MUD tax, \$653/mo., \$61,900. 334-4361 or 483-9421.

Cars & Trucks

'72 Buick Skylark, 2 dr., 350 4 bbl., dk. metallic gray on bottom, lt. gray on top, completely restored, \$3,500. Jan, 480-8190 or 713-945-

'67 Mustang, 6 cyl., rebuilt motor, new tires, brakes, rear shocks and windshield, body good cond., no rust, cold A/C, auto. x36276.

'79 Buick LeSabre, Pontiac V-8 305, 2-dr., red, 170K mi., good brakes, minor damage to rear fender, engine has jumped time, \$950, OBO. Jesse, 488-9005, x222 or 480-3176.

'78 Dodge van, all pwr., AC, CB, customized, silver ext., red int., Michelin tires, 360 V-8, 61K mi., \$2,350, OBO. 332-2229.

'84 Chevy Celebrity, 4 dr., auto., AC, pwr. windows/locks, cruise, tilt wheel, deluxe cloth upholstery, reclining bucket seats, AM/FM/ cass., metallic brown, \$5,500. Edward, x36250 or 481-4889.

'87 bk. Firebird, T-tops, alarm sys., AM/FM/ cass., elec. windows, cruise, 30K mi., \$9,950.

'88 Honda Prelude Si, dk. blue, low mi., ex. cond., pwr. sunroof, auto. w/overdrive, A/C, \$14K. Kurt, x35572 or 334-2375.

'88 Honda Accord LXI, 4 dr., 5 spd., sunroof, tinted, loaded, 8K. Robin. 335-1398.

'82 Mazda GLC, A/C, cruise, tilt, rear D/F, stereo/cass., mag wheels, 5-spd., \$1,950, OBO. 488-0719.

'77 Honda Civic, 80K mi., must sell, \$1,000. OBO. Kevin or Chris, 554-6098.

'88 Mercury Sable wagon, 16K mi., 100K mi. warr., \$14K, OBO. Terry, x36351 before 4 p.m. '88 Corsica, 2.8 L, gray w/tint, upgrade int. pwr. windows, stereo/cass., low mi., \$10K, OBO. 282-6716 or 280-9479.

'81 Riviera, needs engine work, in good cond., BO. Margo, x35305.

'79 Chevette, auto., \$600. x35021 or 482-

'76 Plymouth Arrow hatchback, AC, auto., \$600 cash, OBO. 483-4270 or 337-2682. '76 VW bug, AM/FM/cass., runs good, \$1,800. 282-4623.

'78 BMW 320i, 4-spd., A/C, \$4K, OBO, 996-

Boats & Planes

16' Hobie Catamaran, 2 sets of sails, harnesses, traps, life jackets, trailer opt., BO. John, 482-6364 or 483-8988.

'78 Renken, 19' Bowrider, 170hp fresh wtr. cooled Mercruiser I/O, galv., EZ loader trailer depthfinder, \$4K. 532-3515.

'88 Phantom, 18', 175 OMC, red & blk., rear w/bench seat, walk-thru windshield. ex. cond., low hours, \$10,500. Kurt, x35572 or

334-2375. '67 18' Correct Craft, inboard eng., low hours, perfect cond., almost new trailer incl., \$3K. 282-2810 or 480-3909.

Aircraft for rent: Cessna 150 Aerobat, C-152, C-172, Piper Arrow, Balanca Citabrea and super decathalon, pits S2A and S2B. David, x3337 or 486-4450.

'84 Regal Cuddy Cabin, 25', twin 150 Yamaha's, loaded w/trailer, great offshore driving and fishing boat, Lee outriggers, full eletronics, 483-5572.

Cycles

'83 Honda CM 250, 7,500 mi., \$500. Kevin. 280-1500, x3015 or 532-2181.

'86 Honda 700 Interceptor VFR, gear-driven cam V4, like new, red, white, blue, gar. kept, low mi., \$3,800 nego. x31588 or 488-1326.

76 YZ80 dirt bike, runs good, low time, new tires, \$180. Wally, x36440 or 326-2664. '82 Honda VF750 Sabre, sport touring fairing

and lowers, Hondaline saddle bags, new tires, \$1.750. Richard, 480-0880. '82 Honda Nighthawk 650, good cond., 11K

mi., \$1,075 cash, OBO. Kelvin, x36905 or 488-8173. '80 Yamaha 650, good cond., \$700, OBO.

John, 488-5969. '83 Honda XR200R, Enduro, off road, low mi, orig. chain and sprockets, like new. x35365 or 480-6886.

'85 Honda Shadow 500, low mi., one owner, \$1,400, 996-7736. Raleigh Pursuit 12-spd. racing type bicycle,

new cond., bottle, pump, toe clips, \$175. Kevin, x36650 or 482-2405. '80 CB 750 custom Honda, good cond.,

\$1,050 cash. 483-4270 or 337-2682.

'82 Yamaha 650 special, black, good cond., new tires, \$700. Jim, x31670 or 334-3069.

Audiovisual & Computers

Yamaha TC-520 cass. deck, \$75; TEAC 3300-10 reel-to-reel, \$150; Vector Graphic 780 dual floppy, \$300. 996-7868.

Realistic stereo system, Optimus 1000 speakers, digital synthesized AM/FM stereo receiver, SCT-74 hi-spd. dubbing tape deck, \$800. Dawn, 282-6629 or 481-5315.

Lloyds AM/FM stereo and record player, 2 peakers, good cond., \$95. 946-7587. Sony reel-to-reel stereo tape recorder w/

mics, patch cords, pre-recorded tapes, ex. ond., \$100, OBO. Bob, 280-7565 or 481-6958. TRS-80 color computer w/floppy drive, Zenith monitor, thermal printer, software, manuals,

eeds repair, \$100, OBO. Judy, 326-3780. IBM XT clone, 640 KB, 40 MB HD, 360K and 720K floppies, 1 par and 2 ser ports, 1 game port, clock, CGA/Graphics master 640x400, mouse, \$1,200. Mitch, 335-6168 or 538-3150.

Princeton (PGS) Model HX-12 color graphics computer monitor, 16 colors, 640x200 Pixel resolution, \$199. David, x32751 or 326-1069. Car stereo, high-end Kenwood KRC-757 din

size cass./tuner, half-din 9-band equalizer w/ subwoofer output, 1 yr. old., perf. cond., head unit \$300, eq. \$125. x34333 or 480-2556.

XT clone computer 640K, 2 floppy drives 360K, AT style keyboard, monochrome graphics card, monochrome monitor (ambe), and Panasonic 1080i printer, \$550. 480-3457.

Printer, Brother HR25, letter qual., incl. cable, extra ribbon, \$225, OBO. Dick, x32141 or 482-

Household

Leather-look vinyl sofa, 7', good cond., \$125. x34847 or 486-04548.

Oriental dining suite and buffet, 6'x3', dk. solid wood, \$800. 996-9690. New windows, doors, light fixtures, carpet

remnants, priced cheap. Don, x38039 or 333-Moving, must sell, 2 recliners, \$25 and \$40; wood coffee table, \$10; wood end table, \$5;

twin bed w/headboard and matt., \$30, 483-8456 or 388-1090.

Domestic sewing machine, cabinet model, used very little, \$75. 946-7587. 2 Bedsit foam chair cushions, brick red color. locking tops, coordinating throw pillows, \$55/

pr. 280-9488. Orange plaid sleeper sofa, \$50, OBO; sm. dresser w/mirror, \$40, OBO; sm. desk w/ bookcase on top and chair, \$40, OBO. Susie,

Couch, Early American, brown tone, \$150; recliner/rocker, brown plaid, \$75, Ed, x36250 Four-pc. LR set, brown/beige, \$400, OBO. Ricky, 282-4482 or 332-5161. Solid oak breakfast set, 42" round pedestal

table, 4 pressback chairs, \$550. Madeline, 480-2817.

92-pc. Nitto "La Scala" china, pink floral border, purchased in Japan, \$200. Madeline, 480-2817 RCA 25" color T.V., remote control, \$380. Rod, 332-4896 or 554-4551.

Sofa bed, \$250; full bed, \$100; dresser, \$50; fold table w/4 chairs, \$50; computer table/desk, \$25; porch chair, \$5. Lori, x37290.

Full size W/D, \$250; full size refrig., \$75; upright piano, \$275; 6' sofa, \$25. Sam, x36135 or 485-1408. Extra-long maroon colored love seat and 2 designer armless gray chairs, \$125; wooden

shelves, 7' x 6', \$50. 482-8820. 26" Sony Trinitron T.V. console, modern, dk. wood cabinet, Matrix sound, remote, cable

Contemp. teal/mauve sofa and loveseat, 474-3-pc. dinette set, gray formica table, chairs upholstered w/gray/blue design, \$75. Eric, 480-

ready, \$450. Elyse, 483-7734.

Dining table, solid oak, 7' w/6 cane bottomed chairs, \$750. Patrick, x32635 or 488-1079.

Quasar 25" console, color T.V. w/remote, \$125. Kevin, x36650 or 482-2405. Kenmore refrig., 19.1 cu. ft., frost free w/

freezer on top, \$190. 538-1881 or 282-3520.

Photographic

One 4x5 Crown Graphic camera w/4x5 Polaroid back, 120 roll film back and four 4x5 Grafmatic film holders, \$625. Pete, x38572 or 946-6248.

Pro camera system, RB67 Pro-S body, 90mm/F3.8, 127mm/F3.8, w/l finder, CDS nder, prism finder, Polaroid back, 2x teleconverter 120 film back, \$2,400. Wayne, x37389 or 335-1366.

Nikon AF 1.8, 50mm lens, never been used, BO. 280-2417.

Pets & Livestock

finches, \$6. Jim, 482-6744.

AKC regis. Cairn Terrier, 7-mo.-old female, had all shots, \$250. Mary Ann, x33518 or 534-

Free kittens, 6 wks. old, blk. and white. 481-Liver colored Springer Spaniel w/papers, 10

mos. old, house broke, \$50. x33712. Rain doves, white and brown ringneck, \$5/

ea. white, \$3 brown. Clarence Blume, x38820 or 554-2911. Guinea pigs, \$10/ea.; doves, \$8/ea.; Zebra

CFA Persian & Himalayan kittens, black, blue Persians, seal point Himalayan, carriers of rare chocolate gene, \$200-300. Kristy, 483-0439 or 486-3904.

Free tiger tabby kitten, female, 4 mos. Amanda, 280-9956.

Wanted

Want Volvo 15" turbo wheel (5 spokes) in

good cond. Vincent, x30874 or 333-1216. Want Ecra monitor w/EGA card. 486-8601 Want wicker or rattan furn. for sun room. Tony, 331-8960.

Want 2 roommates to share house in L.C. Newport Subdivision, \$250/mo., bills split evenly, non-smokers only, sm. pets tolerated. Russ, x39120 or 554-5900.

Want space memorbilia, Mercury, Gemini, Apollo, flight manuals, literature. Steve, 480-1861 or 532-2236.

Riders needed for van pool from West Loop Park and Ride to NASA. Richard, x37557. Want nice baby stroller, \$25 max., and baby monitor. Patty, 326-1853.

Want to rent house starting Nov. 1989, CL area, wife is law student, hus good neighborhood, no pets/non-smokers. 947-8512.

Want Starwars spaceships, toys, figures, books. Ron, 482-1385. Want reasonably priced treadmill. Don,

x38039 or 333-3313. Want lead vocalist and bass player for new rock band in NASA area. Alan, 282-4659 or

333-1594. Want baseball cards in good cond. Chris, 333-6414 or 554-6098.

Want doll house and furn. Gailo, 554-6200. VHS VCR wanted, prefer on-screen programming w/remote control. Patrick, x32635 or 488-1079.

Want someone in CLC area who can fix my Commodore 64, 538-1881 or 282-3520.

Musical Instruments

Peavey Intl. 115 speaker cabinet, \$200; Yamaha RX7 drum machine, \$475; Kawai MX8R keyboard mixer, \$200. Joe, 996-1667. Pearl World Series drum set, 5 pc. vanilla, 2 cymbals, wood int., stool, \$650, 485-5524. Artley wood clarinet, \$300, OBO. Irma, x31593 or 480-6292.

Wooden snare drum, black, 6 1/2 x 14, new, \$150; cymbals, 20" medium ride, \$95; 20" swish w/o rivets, \$110; Tama hi-hat stand, \$30. Joe, 996-1667.

Miscellaneous

Civil War chess set, pewter and enamel, \$500. Kathy, 480-8190, x47.

'69 Firebird, rebuilt 400, new paint, limited 500, 95% restored; trade copies, Doctor Who, Friday 13 Series, Alf, Avengers, Ladies Glow Wrestling, Lost in Space, Prisoner, UFO, Green Hornet, Kung Fu, Nightcourt, 480-6048. 12-speed men's bicycle; Fisher-Price child's

car seat; 2 beer barrel chairs; Hoover vacuum cleaner; stereo receiver; record player w/ adjustable speed; cass. recorder; child carrier for bicycle; Spenco bicycle seat cover. 483-

Radio control cars: RC 10 new assembled in box, monster truck, sprint car, trailer for sprint car, rides behind truck, 2 radios, spare parts, motors, tires, \$450 for all. Kevin, 280-1500,

x3015 or 532-2181. Batman record (1966, from T.V. series), 33

1/3 LP, BO. 280-9488. Snapper 19' mower w/bag; DuMont color T.V. w/wood cabinet; built-in style microwave oven; bamboo Bentwood rocker; all need work, BO, or will trade for surfboards. 280-7782.

Pet carrier, Ig. cat or sm. dog, \$25. Reba, Women's coats/clothes, sizes 12-14; queen

size sofa sleeper, \$300; Princess telephone,

\$30; sm. room fan, \$25. Pat, 480-7406. Two Stroboflash IV strobes w/variable power 50 to 200 watt secs., A.C. powered, \$250. Pete,, x38572 or 946-6248.

Aquarium, 20 gal., stand, light, undergravel and power filters, rocks, decorations, fish, \$100. Lea Anne, 483-7541 or 486-6762. Mask for Porsche 944, 643-7734. Four P215/R14 Starfire tires and Bridgestone

ags, \$160. Mary, x35810 or Mark, 538-2061. Sail board, hi-fly, 2 sails, \$550. Bill, 554-6242. Engagement ring, 18 karat yellow gold, round diamond solitaire (.68 carats) w/6 round diamonds (.18 carats), \$1,300, OBO. x30874

or 333-1316. Jogging stroller, \$100. 333-5373.

well maint., \$300. Bruce, x35571.

Singer sewing machine, \$200; white rattan furn. set, 2 chairs, love seat and coffee table, \$550. Theresa, 944-5150. AC/DC Honda generator, 300 watt, low hrs.,

Computer, XT clone, 640K, \$400 w/free software; portable dishwasher, \$50. Terry, x36351. J.C. Penney elec. organ, works fine; Hammond elec. organ w/rhythm and orchestra sounds (keyboard doesn't work), both for \$70; complete 1984 Webster's Encyclopedias, \$75;

cable converter box, \$15; men's and women's Sear's Free Spirit 3-spd. bikes EC, \$100. Don, x53808 or 482-7102. Overstuffed chair, \$35; 17 cu. ft. freezer, chest, \$150; 1/2" drill press, \$150; 4-drawer chest, \$35. Glenn, x38673 or 480-2900

'85 35' Mallard motor home, loaded, low mi., \$40K. 337-4051. Size 4-6 white embroidered organdy beaded wedding dress, short puffy sleeves, 4-5' train,

worn once, \$150. x33381 Size 8 candlelight wedding dress, beaded w/ scalloped lace, long sleeved, long train, worn once, \$200, OBO. x36346.

Compound bow w/stab. bar, sights, hunting quiver, 6 hunting arrows, \$100, 326-1483. Metal detector, Sear's best, incl. case, 2 Nicad

battery packs w/charger, \$150. 326-1483.

SKS rifle, new never fired, w/bayonet, 100 rds. ammo., \$450, x35572. Swim fins, good for scuba; men's sm. w/heel strap, power plana graphite, worn once in pool,

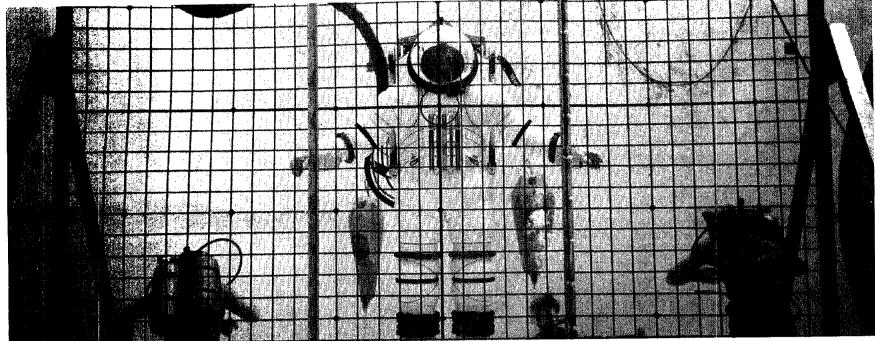
\$40. Amanda, 280-9956. Tour Model III 3-PW, 1,2, and 3 metal woods, \$250; new clubs, irons only, \$170, woods only

\$100 or \$40 ea. David, 554-5514 Singer sewing machine in cabinet, hardly used, \$100; La Machine food processor, attachments, \$75; '76 YZ125 Yamaha, sell for parts, \$65; '78 Honda XR75, needs sprocket, \$100. Margo, x35305.

Durasoft car cover for Ford Mustang GT, fits '87 to '89 models, tan, anti-theft door strap, cable/lock, tote bag, like new, \$65, OBO, Matt. x31933 or 480-3444. DP350 weight bench, new, assembled, \$50.

OBO. matt, x31933 or 480-3444.

Antiq.: Wheelchair, wdn. back, seat, handles and foot rest, good cond.; 2 seed sowers; pedal sewing machine, wooden; iron bed; sm. spinning wheel; walking plow; old wooden tele.; 1847 Wm. Rogers Silverplate set, 56 pcs., 7 ex. pcs., ser. 8; quilts; upright freezer. 783-9164.



Suit Testing

Evaluations of two candidate designs for space suits to eventually be used on the Space Station *Freedom* were completed in the Weightless Environment Training Facility (WET-F) on July 28. The goal of the tests, conducted on the JSC-designed Mark III suit, and the AX5, designed at Ames Researh Center, is to select components of both and build the best hybrid suit for space station applications.

The tests evaluated mobility, the reach envelope (how far the astronaut can reach in the suit), maximum force output (how much torque can be applied to a shaft), and task performance capability (how well the suits let astronauts perform a task).

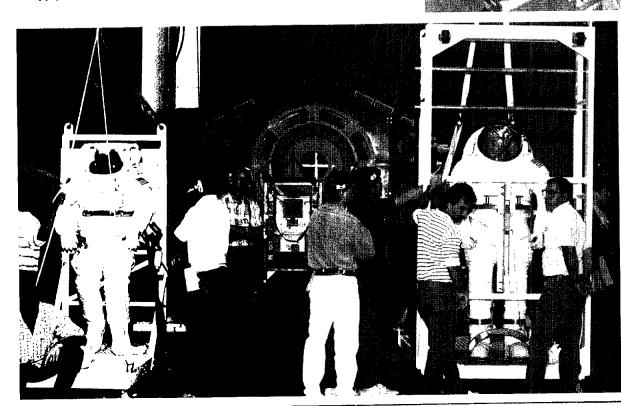
Unmanned evaluations of both suit models will continue over the next few months, with data to be reviewed by year end.

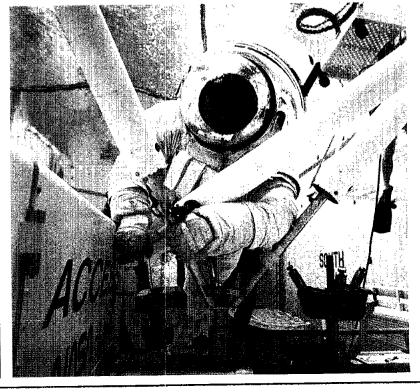






Counterclockwise from the left-Mission Specialist Dave Hilmers evalutes the reach envelope of the AX5 behind a photographic grid board; Hilmers (wearing the AX5), passes through the extravehicular activity (EVA) hatch of the Space Station Freedom airlock mock-up; Hilmers (wearing the current shuttle suit that serves as the baseline for the evaluations) and Mission Specialist Sonny Carter (wearing the Mark III suit) prepare for a two man EASE (Experimental Assembly of Structures with EVA) ACCESS (Assembly Concept for the Construction of Erectable Space Structures) evaluation; Mission Specialist Jerry Ross (in the Mark III suit) assembling the EASE structure; Mission Specialist Jeff Hoffman (wearing the AX5) performing an STS payload bay door contingency winch operation evaluation to determine the level of difficulty of the task; and Carter performing a task similar to pushing an EVA ratchet while the amount of torque he is able to apply is measured.





Corporate 'neighbors' contribute to visitor center

The national corporate fund-raising campaign for Space Center Houston, JSC's planned new visitor center, received a tangible measure of "hometown" support last month. Three locally-based contractors, plus supporters of the lunar landing anniversary's "Thousand Points of Light" Clear Lake celebration, announced donations totaling \$312,000.

The Boeing Company announced a \$200,000 contribution for the development of the \$50 million center to be built on site, near the main gate on Nasa Rd. 1. Grumman Space Systems Company and Computer Science Corporation (CSC) each made \$50,000 donations to the national fund-raising effort.

In addition, the Eagle Twenty Group. the non-profit organization sponsoring the boat and fireworks extravaganza celebrating the twentieth anniversary of the lunar landing, presented Manned Space Flight Education Foundation members a \$12,000 check from the proceeds of the July 20 1989 event.

Byron McKenzie, Boeing's Houston Operation Manager, said that "Boeing is very pleased to make a substantial donation to Space Center Houston.

'Sparking interest in our children and educating them about our space efforts are priorities to those of us in the aerospace industry," McKenzie adds. "Space Center Houston will help enhance those efforts, as well as provide a much needed new visitors center for JSC."

Grumman and Computer Science Corporation share Boeing's enthusiasm in supporting the project.

"Space Center Houston will tell an important story in a new and exciting way," said Jerry Bostick, vice pres-

ident of Houston Operations for only does Space Center Houston Grumman. "I can't think of a better way to encourage our young people to pursue higher education in science and engineering.'

"Joining the team of companies who have already contributed to the national fund-raising campaign for Space Center Houston is a great feeling for all of us at CSC," said Bill Berry, CSC's central region vice president for applied technology. All of our employees can take pride in the Center and feel a part of the effort that will bring this terrific new facility to JSC.

In making Space Center Houston the principal beneficiary of the proceeds from the "Thousand Points of Light" boating celebration, Eagle Twenty co-chairman John McLeaish said the center was "the obvious choice for our largest donation. Not

represent a national resource in terms of space flight education, it will also become the leading tourist attraction for Clear Lake, with millions of new visitors and tremendous economic benefits for the entire

The latest contributers join a growing list of supporters that already includes Lockheed, McDonnell Douglas and Rockwell, representing more than \$1.2 million in donations.

The national corporate campaign is the second and final element of the overall funding campaign for Space Center Houston. Initial fundraising efforts, launched late last year, have raised more than \$4.2 million in the Houston and Clear Lake area and are continuing at this time.

To fund the project, approximately

is sought. The remainder will be funded through revenue bonds. No federal government money is available for the project.

The Manned Space Flight Education Foundation, Inc. (MSFEFI) is the non-profit organization spearheading the Space Center Houston proiect. MSFEFI is responsible for the design, construction, financing and operation of the planned center.

According to Harold Stall, director of public affairs and president of MSFEFI, construction on the center is scheduled to begin late this year, and should be fully operational in

The facility, designed by Walt Disney Imagineering, is expected to attract an estimated two million visitors and contribute approximately \$100 million to the local economy \$8 million in corporate contributions during its first year of operation.

Program to celebrate Asian-Pacific heritage

The second annual JSC Asian cope with discrimination. Pacific American Heritage Day will be Sept. 8. Day-long activities will include professional workshops, a luncheon, a general session featuring the Honorable Hana Chow as keynote speaker.

Channel 13 reporter Shern-Min Chow will serve as emcee for a multinational program of cultural performances.

The morning workshops, held at the Gilruth Recreaction Center, will cover topics such as dynamic leadership in meetings, career development, community and political involvement, business/social manners, and how to

Following a luncheon in the Bldg. 3 cafeteria, the afternoon activities will be held in Teague Auditorium. Cultural performances will feature the countries of Bangladesh, Burma, Cambodia, China, Hawaii, India, Japan, Korea, the Philippines, and Vietnam. Refreshments will be served afterward.

Volunteers are still needed to help make the event a success. For additional information, please contact Kumar Krishan, x36777; Richard Long, 333-6183; or Sophia LeCour.

Hurricane information available

When hurricane Chantal hit the Clear Lake area recently, JSC was closed for a full day. Even though the announcement was made as early as possible and carried on local television news, some employees still failed to get the news.

Acting JSC Director P.J. Weitz reminds all employees that there are two recorded telephone services at JSC that will carry information about hurricane closings.

The hurricane information line. x33351, is used to provide information on potential storms, as well as plans and procedures for safeguarding work areas. The Employee Information Service, x36765, also will contain information about closings as soon as they are announced.

All employees are urged to consult these numbers in the event of storms that have the potential to cause a center closing.

Volunteer engineers sought

(Continued from Page 1) developing and integrating the strategic pathways for human exploration missions to the Moon and Mars.

Mission Analysis engineers are needed to manage and participate in the development of mission concepts in terms of trajectories, manifests, abort options, launch windows, performance requirements and flight technique

Operations Analysis Engineers are needed to develop integrated operations concepts, communications and navigation requirements and flight techniques.

System Engineers will be needed for

requirements development, function and resource allocation and system level analyses and trade studies related to integration of spacecraft, launch vehicles, space station, lunar outpost and unmanned precursor options.

Program Support Engineers are needed for schedule development and control, budgeting, configuration control, document maintenance, data base development and risk assessment

 Planet Surface Systems Office-This office will serve as the Level III project office to define and develop concepts for a permanently manned outpost on the Moon as a research facility, operations node and test bed for Mars mission hardware and operation.

Mission Analysis Engineers are needed to develop mission concepts.

Operations Analysis Engineers will work on the development of integrated operations concepts.

System Engineers are needed for requirements development, function and resource allocation and system level analyses and trade studies.

Project Support Engineers are needed in the areas of schedule development and control, budgeting, configuration control, documentation maintenance, data base development and risk assessment.

 Mars Rover Sample Return Office—This office will manage JSC's involvement in the joint project with NASA's Jet Propulsion Laboratory to develop a Mars sample return mission.

System Engineers are needed for requirements development, function and resource allocation and system level analyses and trade studies.

Element Lead Engineers will be needed to develop element requirements and corresponding flight system concepts. NASA-JSC



The official portrait of the crew of STS-34 includes: seated (left to right), mission specialist Shannon W. Lucid, Ph.D.; Franklin Chang-Diaz, Ph.D.; and Ellen S. Baker, M.D. Standing are (left) Donald E. Williams, commander and Michael J. McCulley, pilot. The crewmembers, scheduled for an October 12 launch aboard the Space Shuttle Atlantis that will see the deploy of the Jupiter probe Galileo, designed their crew patch, which appears in the right corner.

_aunch "smooth"; mission going well

(Continued from Page 1)

the first space shuttle to make its way into orbit more than eight years ago. Its most recent flight had been STS-61C, which ended just 10 days before the Challenger accident.

About 258 modifications were made to Columbia during its standdown, including the critical retun-to-flight improvements made on all three shuttles and about 16 that are unique to Columbia.

The modifications have added about 2,500 pounds to Columbia,

making its dry inert weight with three main engines but no payload, experiments or propellants about 179,833 pounds. The hardware required for the modifications cost \$12.6 million. Overall cost of the modifications to all three orbiters averaged \$105 million.

Despite the many modifications and the long refurbishment period, Shaw was confident about its status when he arrived at the Shuttle Landing Facility at the Cape on Saturday.

"I flew on Columbia a long time ago and it was a great machine." Shaw

said, "it'll be a great machine again." Columbia, which flew the first five flights of the shuttle program, features more research and development instrumentation than the other two ships. Much of that instrutmentation is hooked up for this flight, including about 400 strain gauges on the wings. payload bay doors and vertical stabilizer to monitor loads, pressures and temperatures during flight. For aerothermal analysis, about 140 sensors have been installed in the wing area.

Eclipse to treat area observers Wednesday night

(Continued from Page 1)

Because the Earth travels along the same orbit through the Solar System each year, meteor showers such as the Perseids are annual events. The Perseids shower is visible every year either on Aug. 11 or Aug. 12. There are 10 of these annual meteor showers visible from the northern hemisphere of the Earth, but the Perseids is the most visible. More meteors are visible after midnight because the Earth has turned so that it is plowing into interplanetary dust.

Observers will not need any equipment to see the Perseids but would be well advised to steer clear of bright city lights for the best viewing, astronomers said.

'Characteristically meteors move very rapidly," said Paul Maley, a member of the JSC Astronomy Club and a Rockwell engineer in the Flight Director's Office. "But many years meteors don't put on a big display. Calling it a shower isn't really accurate. People in Clear Lake can expect

to see one meteor every five minutes the Moon does not pass exactly into and if they're away from city lights probably one meteor every two minutes.

Observers normally won't see more than one meteor an hour from Clear Lake, Maley said, although there is an increase in meteor activity from the end of July through the end of August.

The Aug. 12 shower won't be the only headliner on August's celestial calendar. On Wednesday, a total lunar eclipse will be visible to North Americans. The last total lunar eclipse in North America occurred seven years ago.

Observers will begin to see the Earth's shadow on the Moon's face at 8:21 p.m. CDT Wednesday before the total eclipse begins at 9:20 p.m. CDT, said Maley. The total portion of the eclipse will end at 10:56 p.m. CDT as the Moon begins to emerge from the Earth's shadow.

The Moon's orbit is tilted 5 degrees with respect to the Earth's so usually the Earth's shadow each month, if both the Moon and the Earth's orbits were in the same plane, there would be a solar and lunar eclipse every time the Moon circled the Earth.

When the Moon does pass through the Earth's shadow, there is a total lunar eclipse with the Sun, Earth and Moon in a line. Alternately, when the Moon passes between the Earth and sun, its shadow falls on the Earth creating a solar eclipse.

The dark part of the Earth's shadow, called the umbra, takes about two hours to cover the Moon although the total part of the lunar eclipse may only last an hour or so.

Bending of the sun's rays by the Earth's atmosphere makes the Moon visible, even during a total eclipse, as a reddish disc.

'The color is usually a dark, coppery color," Henize said. "It may vary dependent on the way the light travels through the atmosphere but generally it's a coppery color."

Maley is hoping he will be able to see the eclipse from the plane he will be traveling on en route to South America to observe another astronomical event. Maley will be on his way to French Guiana in anticipation of the Friday eclipse of a star when an asteroid passes between it and the Earth. He said the star eclipse will last only two minutes and will be visible in Peru, Colombia, northern Brazil and Guiana.

Unlike the lunar eclipse, astronomers will be unable to see the star eclipse with the naked eye. Instead they will rely on an image intensifier to amplify the star's low light level.

The JSC Astronomical Society will be meeting at the Challenger Seven Park on NASA Road 1 to view the eclipse from 7:30 to 10:30 p.m. Wednesday. All JSC employees and their families are welcome to attend; viewers are encouraged to bring binoculars and lawn chairs. For additional information, contact Bill Williams, 339-1367.