

# Space News Roundup

Vol. 33

October 21, 1994

No. 40

## Final chapter of Magellan mission a scorcher

The successful five-and-a-half year mission of NASA's Magellan spacecraft to map the surface and measure the gravity of Venus ended last week when ground controllers lost contact with the spacecraft.

Magellan was expected to burn up in the planet's upper atmosphere within two days.

The final chapter of the Magellan story was written as Earth-based tracking stations lost the spacecraft's radio signal at 5:02 a.m. CDT Oct. 12. The loss of signal, which was anticipated, was due to low power on the spacecraft, exacerbated by

Magellan's orientation as it performed a final experiment in the upper atmosphere of Venus.

The spacecraft's thrusters were fired in four sequences on Oct. 11 to lower Magellan's orbit into the thin upper atmosphere and set up the final experiment, before the spacecraft's failing power system or dynamic forces and friction from the Venusian atmosphere shut off communication.

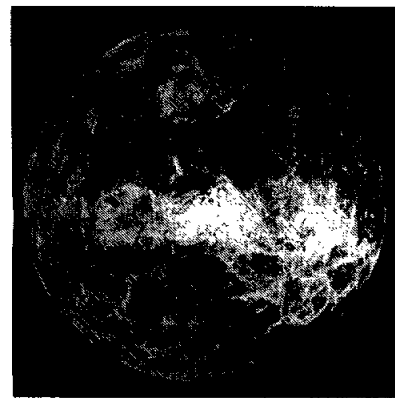
Magellan gathered scientific data on the planet's upper atmosphere, including aerodynamic interactions with it during the spacecraft's final

descent, by orienting its wing-like solar panels in opposite directions, like a windmill. The termination experiment was an extension of the windmill experiment performed in early September. It was carried out as the spacecraft was within weeks, if not days, of the end of its useful life due to expected decreases in solar power output from the thermal stress of more than 15,000 orbits of Venus.

Launched by the Space Shuttle *Atlantis* in May 1989, Magellan entered Venus orbit in August 1990 and gathered data for more than four years. The mission exceeded all of

the objectives defined for its exploration of Venus.

It used radar to map 98 percent of the planet's cloud-covered surface to an average resolution of better than 300 meters and compiled a high-resolution, comprehensive gravity field map for 95 percent of the planet. The gravity data will allow scientists to see "underneath the planet's skin" and compare that knowledge of the interior to the wealth of surface features revealed by Magellan's radar imaging, said Project Manager Doug Griffith at NASA's Jet Propulsion Laboratory.



Synthetic aperture radar mosaics from three eight-month Magellan mapping cycles produce a computer-simulated globe of Venus.

## Hubble yields secrets of early star formation

NASA's Hubble Space Telescope is providing new insights into how stars might have formed many billions of years ago in the early universe. Hubble observations of a pair of star clusters suggest a new link in the stellar evolution processes.

The pair of clusters are 166,000 light-years away from Earth in the southern hemisphere constellation, Doradus, within the Large Magellanic Cloud. The clusters are unusually close together for being distinct and separate objects, according to Hubble astronomers.

A preliminary assessment of the HST observation indicates that these two compact clusters contain many more massive stars than expected. "If this were also the case billions of years ago, it could have altered drastically the early history of the universe," says Dr. Nino Panagia of the Space Telescope Science Institute in Baltimore, Md., and the European Space Agency.

Panagia and his co-investigators utilized HST's unique capabilities—ultraviolet sensitivity, ability to see faint stars, and high resolution—to identify three separate populations in this concentration of nearly 10,000 stars. (Previous observations with ground-based telescopes have been able to resolve less than 1,000 stars in this region.)

About 60 percent of these stars belong to the dense cluster called NGC 1850, estimated to be 50 million years old. However, Hubble found that a loose distribution of extremely hot, massive stars in a separate cluster within the same region—representing about 20 percent of the stars in the Hubble image—are only about 4 million years old. (The third group of stars observed by Hubble are simple field

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NASA Photo

**JUGGLING ACT**—STS-68 Pilot Terry Wilcutt takes advantage of the weightless environment of space to juggle four Hasselblad cameras aboard the Space Shuttle *Endeavour's* flight deck during the just-completed Space Radar Laboratory-2 flight. Wilcutt's actions were symbolic of the crew's activity during the 11-day flight, switching camera hardware to record the changing geography and oceanography of Earth. The crew will brief employees on the mission at 3 p.m. Oct. 28 in Teague Auditorium.

## Atlantis on launch pad; crew trains

By James Hartsfield

As shuttle managers performed a final review of mission preparations Wednesday, *Atlantis* was on schedule at Kennedy Space Center's Launch Pad 39B for a liftoff of STS-66 perhaps as early as Nov. 3.

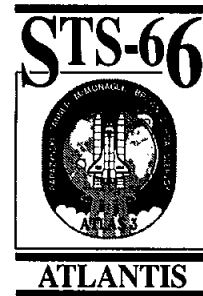
Managers planned to announce an official launch date following the mid-week flight readiness review. If launch is targeted for Nov. 3, *Atlantis'* launch window would open at 10:56 a.m. CST.

The STS-66 crew—Commander Don McMonagle, Pilot Curtis Brown, and Mission Specialists Ellen Ochoa, Joseph Tanner, Jean-Francois Clervoy and Scott Parazynski—was at KSC early this week for a dress rehearsal of the launch countdown. Other work at the launch pad this week included a helium leak check of the main engine plumbing, preparations to load the hypergolic fuels for *Atlantis'* orbital propulsion systems, test running the three auxiliary power units and tests of connections for the Atmospheric Laboratory for Applications and Science-3.

Technicians also fine-tuned *Atlantis'* inertial measurement units and charged the ATLAS-3 batteries.

ATLAS-3 will study the Earth's middle and upper atmosphere as part of a continuing series of investiga-

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## Employees traveling to Russia need medical clearance

As the United States enters a new era of international cooperation in space, more and more employees are traveling to Russia for official business.

NASA Occupational Health Standards requires a medical clearance for international travel. To comply with the mandate, the JSC Travel Office has directed that med-

ical clearances be conducted and travel orders signed by the clinic physician prior to issuing travel tickets.

The process of securing a medical clearance for overseas travel consists of a wide range of considerations and may take more than a simple medical record review. Duration of travel, location, person-

al medical history and health risks could indicate that medical tests would have to be completed before clearance could be granted.

If the traveler has no medical records on file in the JSC Clinic, the individual would be scheduled for a blood chemistry/hematology test, an electrocardiogram and an interview with the nurse. The traveler

also will be asked to complete a family health history record. Should any of these evaluations be suspicious for a medical risk, a clinical physician will also be consulted.

If the traveler plans to be overseas for more than 60 days, the medical standards require that the medical clearance come from the

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## Combined Federal Campaign lifts off

By Karen Schmidt

JSC kicked off its 24th annual Combined Federal Campaign on Tuesday, establishing a goal of \$460,500 for 1994. The theme for this year's CFC of the Texas Gulf Coast, of which JSC's efforts are a part, is "Caring is Sharing—For Today and Tomorrow."

The CFC, which runs through Nov. 18, is a once-a year voluntary fund-raising effort that gives JSC employees a chance to contribute to local, national, and international health and welfare charities.

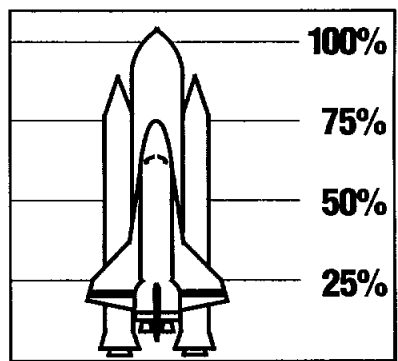
Last year, JSC employees gave \$454,000 of the \$2.2 million contributed by federal employees throughout the Houston area. This year's CFC goal is \$2.3 million.

To learn more about the campaign and some of the needs of our community, JSC employees are invited to the JSC Cafeterias between 11 a.m. and 1 p.m. Nov. 1 to visit with representatives from some of the agencies to learn more about how your contributions help. The agencies that have been invited are: Bldg. 3 - Bay Area Service Center representing 18 different charities, Houston Food Bank, and Caring for Children Program of Texas; Bldg. 11 - National Space Society, Galveston Bay Foundation, and Center for the Retarded.

JSC CFC Coordinator Teresa Sullivan said there are some additional incentives this year for employees who pledge one hour's pay or more. Those who pledge one hour's pay per

month will receive a CFC lapel pin. Those who pledge two hours' pay will earn a lapel pin and coffee mug. Those who pledge \$600 or more per year will receive a lapel pin coffee mug, and a personalized certificate of appreciation signed by Apollo 17 Commander Gene Cernan. In addition, those employees contributing one hour's pay per month or more will be eligible for the drawings for a round trip Continental Airlines ticket. One contributor's name will be drawn each week during the campaign.

JSC Director Dr. Carolyn Huntoon said, "I know that JSC employees care, and it is my sincere hope that you will contribute as liberally as possible to this deserving combined campaign."



**1994 GOAL: \$460,500**



## Space Exploration '94 exhibits free for JSC

JSC civil service and contractor employees may attend the annual Space Exploration Conference and Exposition free of charge.

Expo '94 is being held Monday through Thursday at South Shore Harbour Resort and Conference Center. Employees may visit the exhibits area of Space Expo '94 Tuesday and Wednesday by picking up complimentary "Exhibits Only" badges in the Bldg. 1 lobby and Bldg. 3 and 11 cafeterias.

Forms and badges should be filled out and presented to the "Exhibits Only" table at the conference.

Space Exploration '94 will feature many top experts on the American and international space programs speaking on a variety of topics.

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# Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday. For more information, call x35350 or x30990.

**Halloween Dinner/Dance:** Dinner Dance begins at 8 p.m. Oct. 20. Cost is \$17.50 per person. Tickets are on sale at the Bldg. 11 Exchange Store through Oct. 26.

**Children's Halloween Party:** Festivities take place from 10 a.m. to noon Oct. 29. Cost is \$4 child and \$1 adult. Tickets on sale until Oct. 27.

**Wurstfest Bus Trip:** Nov. 5. Cost is \$20 adults, \$16 children.

**Renaissance Festival Bus Trip:** Oct. 15 & Oct. 29. Cost is \$17 adult; \$5 child (5-12 years). Price includes admission and transportation.

**Bay Area Chorus:** Chorus performs "Celebrate the Songs of Nature" at 6:40 p.m. Oct. 23 at Clear Lake Presbyterian Church. Cost is \$8 adults, \$5 students and seniors.

**Renaissance Festival:** Festival runs from first weekend in October to second weekend in November. Cost is \$10.50 adults; \$5.25 child (7-12).

**Moody Gardens:** Discount tickets for two of three different attractions: \$9.50

**Space Center Houston:** Discount tickets: adult, \$8.75; child (3-11), \$7.10; commemorative, \$9.55.

**Metro tickets:** Passes, books and single tickets available.

**Movie discounts:** General Cinema, \$4.75; AMC Theater, \$4; Loew's Theater, \$4.75.

**Stamps:** Book of 20, \$5.80

**Upcoming Events:** Travel Fair, Nov. 1; New Arts Six Concert, Nov. 6, \$7; David Parsons Dance Co. & Billy Taylor Trio, Nov. 12, \$19; Walt Disney on Ice, Beauty & the Beast, \$11.

**JSC history:** *Suddenly, Tomorrow Came: A History of the Johnson Space Center*, \$11.

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# Gilruth Center News

**Sign up policy:** All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a NASA badge or yellow EAA dependent badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For more information, call x30304.

**EAA badges:** Dependents and spouses may apply for photo identification badges from 7 a.m.-9 p.m. Monday-Friday; and 8 a.m.-4 p.m. Saturdays. Dependents must be between 16 and 23 years old.

**Weight safety:** Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. Nov. 2 and Nov. 17. Pre-registration is required. Cost is \$5.

**Defensive driving:** Course is offered from 8:15 a.m.-3 p.m. Saturday. Next class is Nov. 19. Cost is \$19.

**Aerobics:** High/low-impact class meets from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks.

**Exercise:** Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays.

**Aikido:** Martial arts class meets from 5-7 p.m. Tuesdays and Wednesdays. Cost is \$25 per month. New classes begin the first of each month.

**Intercenter run:** The month-long competition between NASA centers runs through Oct. 31. Walk or run 2 miles or 10k. For additional information, contact the Gilruth Center at x33345.

**Volleyball clinic:** Eight-week women's volleyball clinic began Oct. 1. Classes are from 2-4 p.m. Saturdays. Cost is \$25. For additional, contact the Gilruth Center at x33345.

**Tennis league:** A Fall tennis league may be started if there is sufficient interest. Contact the Gilruth Center at x33345.

**Country dancing:** Beginners class meets from 7-9 p.m.; advanced class meets from 8:30-10 p.m. Partners are required. For additional information, contact the Gilruth Center at x33345.

**Golf lessons:** Lessons for all levels. Cost is \$90 for six weeks. For additional information, contact x33345.

**Fitness program:** Health Related Fitness Program includes a medical examination screening and a 12-week individually prescribed exercise program. For more information, call Larry Wier at x30301.

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# Dates & Data

## Today

**Cafeteria menu** — Special: fried chicken. Total Health: vegetable lasagna. Entrees: broiled cod fish, beef stroganoff, vegetable lasagna. Vegetables: steamed broccoli, carrots vichy, Italian zucchini, breaded okra.

## Saturday

**AIAA trip** — The Houston Section of the American Institute of Aeronautics and Astronautics will host a field trip to Texas A&M from 7:45 a.m.-7: p.m. Oct. 22. Cost is \$25 and includes lunch, facility tour and A&M/Rice football game. For reservations and information, contact Jeannette Everling, 483-1555.

## Monday

**System safety** — The Safety Learning Center will host a System Safety Workshop Oct. 24 through 28 in the Bldg. 226N Safety Learning Center. To register or for additional information, contact x36369.

**Cafeteria menu** — Special: meat sauce and spaghetti. Total Health: potato baked chicken breast. Entrees: wieners and sauerkraut, sweet and sour pork chop, potato baked chicken, steamed fish, French dip sandwich. Soup: cream of asparagus. Vegetables: French cut green beans, seasoned rice, California vegetables, buttered beans.

## Tuesday

**Space Expo** — Space Exploration '94 begins at 8:30 a.m. and continues through 5 p.m. Oct. 27 at South Shore Harbour Resort and Conference Center. JSC civil service and contractor employees may pick up complimentary "exhibits only" badges in the Bldg. 1 lobby and Bldgs. 3 and 11 cafeterias.

**Cafeteria menu** — Special: smothered steak with dressing. Total Health: shrimp creole over rice. Entrees: beef stew, liver and onions, shrimp Creole, baked chicken,

French dip sandwich. Soup: navy bean. Vegetables: steamed rice, seasoned cabbage, corn O'Brien, peas, potatoes au gratin.

## Wednesday

**Astronomy seminar** — The JSC Astronomy Seminar will meet at noon Oct. 26 in Bldg. 31, Rm. 129. Rich Kolker will discuss "Access to Orbit: Next Generation of Launchers." For more information, call Al Jackson at 333-7679.

**Toastmasters meet** — The Spaceland Toastmasters meets at 7 a.m. Oct. 26 at House of Prayer Lutheran Church on Bay Area Blvd. For additional information, contact Darrell Boyd, x36803.

**Cafeteria menu** — Special: salmon croquette. Total Health: vegetable plate. Entrees: roast pork, baked perch, steamed fish, vegetable lasagna, Reuben sandwich. Soup: seafood gumbo. Vegetables: mustard greens, okra and tomatoes, vegetable sticks, lima beans.

## Thursday

**Cafeteria menu** — Special: stuffed cabbage rolls. Total Health: oven crisp cod. Entrees: beef tacos, ham and lima beans, pork and beef egg rolls, steamed fish, French dip sandwich. Soup: beef and barley. Vegetables: Brussels sprouts, green beans, buttered squash, pinto beans.

## Friday

**Cafeteria menu** — Special: baked chicken. Total Health: roast beef au jus. Entrees: deviled crab, Creole baked cod, baked chicken, beef cannelloni, Reuben sandwich. Soup: seafood gumbo. Vegetables: seasoned carrots, peas, breaded okra, steamed cauliflower.

## Oct. 28

**Book signing** — Nichelle Nichols will autograph copies of her autobiography *Beyond Uhura: Star Trek and Other Memories* from 4:30-6 p.m. Oct. 28 at Jeremy's Bookshelf.

Jeremy's is located at 2441 Bay Area Blvd. For additional information, call 486-8028.

## Oct. 29

**Halloween Dance** — The Employee Activities Association will host the annual Halloween Dinner and Dance at 8 p.m. Oct. 29 in the Gilruth Center ballroom. Cost is \$17.50 per person. Deadline to purchase tickets is 2 p.m. Oct. 26. For more information, contact Mavis Ikenhans, x49644.

## Nov. 2

**Astronomy seminar** — The JSC Astronomy Seminar will meet at noon Nov. 2 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information, call Al Jackson at 333-7679.

**Toastmasters meet** — The Spaceland Toastmasters meets at 7 a.m. Nov. 2 at House of Prayer Lutheran Church on Bay Area Blvd. For additional information, contact Darrell Boyd, x36803.

## Nov. 8

**AIAA seminar** — The Houston section of the American Institute of Aeronautics and Astronautics will host an "Internet Seminar" at 7 p.m. Nov. 8 in the Hess Room at the Lunar and Planetary Institute. For information, contact Naz Bedrossian, 333-2127 or Bill Best, 282-6970.

## Nov. 9

**Astronomy seminar** — The JSC Astronomy Seminar will meet at noon Nov. 9 in Bldg. 31, Rm. 129. Deborah Domingue of LPI will discuss "UV Observations of the Galilean Satellites." For more information, call Al Jackson at 333-7679.

**PSI meets** — The Clear Lake/NASA Area chapter of Professional Secretaries International meets at 5:30 p.m. Nov. 9 at the Holiday Inn on NASA Road 1. For additional information, contact Elaine Kemp, x30556.

# Swap Shop

## Property

Lease: Piper Meadow, 3-2-2, lg L-shaped living room w/FPL, ceiling fans, fenced yard, fresh interior paint, \$825/mo + deposit. Walter, 332-1609.

Sale: South Shore Harbour, 4-2.5-2D, large landscaped lot w/deck \$116k. 334-4240.

Sale: Camino South, 3-2-2A, pool, FPL, new carpet, reasonable. Mike, 480-0336.

Sale: Near 290 & 1960, 3-2-2A, new roof, heatpump, new paint/carpet, \$65k. x31265 or 286-3161.

Sale: League City, 3-2-2, ex cond, large yard, possible owner finance, \$58k neg. 286-1934.

Lease: El Dorado Trace condo, lg 1 BR, overlooks pool, W/D, covered parking, alarm, mini-blinds, \$425/mo + dep. Mark, 488-0056.

Sale: Condo, Galveston, oceanview on Seawall, fully furnished, ex cond, \$22.9k. x30737.

Sale: Alvin, 5 acres, cleared \$22.5k. x30737.

Lease: 2-story TH, 2-2.5-1+1, very large master bedroom, \$690/mo. 452-3361.

Lease: Countryside, LC, 3-2.5-2, 2-story, 1800 sq ft, mauve carpet, corner lot, avail now, \$795 + dep. x33765 or 326-1390.

Rent: Galveston condo, furnished, sleeps 6, Seawall Blvd & 61st St, wknd/wkly/dly rates. Magdi Yassa, 333-4760 or 486-0788.

Rent: Lake Travis cabin, private dock, central air & heat, fully equipped, sleeps 8, fall & winter, \$325 wkly/ \$90 dly. 474-4922.

Rent: Ski in Winter Park, Colorado, 2-2, fully furnished, sleeps 6. 488-4453.

Lease: Deer lease, Liberty County, available one gun, 1k acres, heavily wooded, area for camping, \$500. Tony, x35966.

Sale: Bay Glen, 2-story, 3-2.5-2, tile entry & kitchen, deck & covered patio, 5 yrs old. \$101.9k. 486-4508.

## Cars & Trucks

'86 Toyota Celica GT, liftback, auto, A/C, cruise, new tires/struts, good cond, \$3.5k OBO. Tom, x40048 or 992-2166.

'85 Nissan Sentra, 5 speed, A/C, 2 door, silver/gray, 139.6k mi, \$1,750. 332-2571.

'79 ZX, 5 spd, A/C, ex cond, 108k mi, \$3,250 OBO. Michael, x37371 or 480-3329.

'67 Pontiac Firebird Convertible, red w/black interior & top, 400ci, 325 hp, completely restored, \$13.8k. Mike, 997-5533.

'87 Jamboree Rallye RV, 21 ft, 15,150 mi, like new. 946-6845.

'88 Mustang, 4 cyl, auto, air tape, nice shape, maroon, \$3.4k. x31384 or 487-2383.

'90 Prelude 2.0S, red, sunroof, extra tires, tape, 5 spd, 64k mi, \$8.8k. x31384 or 487-2383.

'91 Honda Accord LX Coupe, ex cond, garaged, 5 spd, tint, maroon, 6 yr warr, 38k mi, \$12k. Tom, x41076 or 326-3248.

'89 Honda Accord LXI, 2 dr cpe, 5 spd, A/C, P/S, P/B, P/W, silver gray/maroon interior, h-miles, good condition, \$6k. Stephen, 286-1010.

'80 Dodge Aspen, auto, A/C, radio cassette, 115k mi, \$550. D. Ton, x33242 or 999-8630.

## Boats & Planes

Sunfish sail boat, new keel & rudder, \$175. x30737.

## Cycles

'89 Honda Shadow 500 with overdrive. 409-925-2581 or 409-925-6241.

Men's Bianchi Sport SX, 21 speed bike, 25" rims, ex cond, \$100 OBO. x40213 or 554-4140.

'89 Yamaha YZ 125, \$1k; '90 Honda CR250, \$1.6k both in good shape. 332-9105.

## Audiovisual & Computers

AST 486 SX/25, 4 MB RAM, 170 MB HD, 3.5" FD, internal modem, SVGA card & monitor, keyboard, mouse, Windows, Works, Prodigy, Quicken, \$710; 386 DX/16, 240 MB, 5.25" FD, modem, CGA card & monitor, \$315; SVGA monitor, \$170. Kelley, x36818 or 488-8194.

486 SX Laptop, 130 MB HD, 4 MB RAM, carrying case, Canon 200 Bubble Jet printer, \$995. 334-2760.

9600 baud internal fax/2400 baud modem w/software & documentation, \$30; DEXXA mouse, \$5. 488-4453.

IBM PS2 model 30 w/monitor & printer, \$225. Gene, x33187 or 488-5162.

Stereo, AM/FM/cass/turntable, no speakers, \$25. Ray, x53954 or 487-4889.

Hewlett Packard HP12C, financial calculator, \$50; Sharp portable electronic typewriter, \$65. Ted, x34116 or 482-8827.

Brother word processor, \$225. x36186 or x35046.

Computers, 286 w/HD, 2 FD, \$175; w/color, w/Amber monitor, \$135; printers, 9 pin dot matrix, \$25; HP 1 laser, \$100. x35549 or 554-7104.

Citizen printer CSX-140 w/GSX color option, \$300. Magdi Yassa, 333-4760 or 486-0788.

## Photography

Darkroom equipment, enlarge w/color head & lens, digital enlarging timer, safelight, tanks, reels, trays, \$350/all. Phil, x34532 or 538-1744.

## Musical Instruments

Baldwin Studio Piano, dark-oak w/cream velvet bench, ex cond, \$1.8k OBO. x39953 or 992-2248.

## Pets & Livestock

Free female Boxer-Chow mix to a good

home, 1 yr old, very friendly. 991-0821.

Mixed-breed Grulla gelding, half-Draft, 4 yrs old, in training for riding, great disposition; black Percheron, Draft gelding, 10 yrs old, trained for riding, great personality, both laidback & spirited; Crosby jumping saddle, \$750. Lis, x47180 or 534-2605.

Chocolate lab/pointer mix, 4.5 yrs old, loves people, \$40. Lis, x47180 or 534-2605.

## Lost & Found

Raleigh bike, 6 spd, missing and feared stolen from Mission Control Center. x37671.

## Household

Jenny Lind wooden cradle, mattress & bedding set, ex cond, \$40. 488-3314.

Stereo cabinet w/charcoal-smoked glass door, 3 shelves, \$35; vertical blinds, 6' x 6'8" door, off-white, \$25. 438-2696.

Trundle bed w/mattresses, \$200; living room chair, dark green naugahyde, \$75; small table type desk w/side drawer, \$35. x30446 or 338-2625.

Butcher block kitchen table, pedestal stand, four chairs w/chrome legs & cane seats, \$100 OBO. 480-7607.

GE 4 burner electric stove top, ex cond, copertone color, \$75. 484-0987.

Drexel solid wood dining room set, rectangular table includes extension, 4 chairs/2 arm chairs, \$498. x38665 or 485-2873.

King sz waterbed w/headboard, 6 drawers, heater/liner/mattress, \$175. x31370 or 662-2977.

Formal dining room table, 4 chairs/2 arm chairs, 2 leaves & buffet, ex cond, new \$3k sell \$1,250. x34137 or 480-6262.

Sofa, \$150; DR table & 6 chairs, \$325; 6 piece bedroom suite, \$300. Robert, x41058 or 286-4930.

Black TV stand, smoke doors, fits 35" TV, \$120 OBO. 991-0821.

Antique style 3-pcs bedroom set, 9 drawer dresser w/2 mirrors, 5-drawer chest of drawers & 2-drawer night stand, \$175 OBO. 854-1418.

Couch/bed, love seat, pastels on cream; recliner, mauve, all in ex cond. \$650. Judy, x37764 or 332-5255.

Solid wood bunk beds w/mattresses, ladder is built in end of frame, \$200. x33131 or 486-5217.

Super twin size waterbed w/heater/solid wood frame w/bookcase headboard, ex cond, \$125 OBO. x31913.

Apartment sz W/D, dark beige color, \$100 OBO. Jerry, 333-8141 or 326-4918.

Walnut hutch, glass enclosed shelves on top, drawers/shelves on bottom, 44" w x 51" h, \$425. 333-5291.

Hamilton gas dryer, good cond, \$50 OBO. x40213 or 554-4140.

Sectional sofa, 3 pcs, cream cloth covering, rectangular glass top coffee table, cream stone legs, \$750/both. Donald Thompson, 334-3998.

Recliner beige power assisted, for elderly, new \$650 sell \$300. x30677 or 334-7834.

## Wanted

Want personnel to join VPSI vanpool, West Loop Park & Ride lot at 6:55 am to NASA/contractors. Richard Heetderks, x37557 or Ed Rangel, x36124.

Want men's used mountain bike, 2 - 5 yrs old, good quality bike price \$100 - \$200 less than new bike. x32567 or 488-3314.

Want house cleaning & misc. errands, local references avail. Julie, 992-5697.

Want 2 tickets to Dallas vs. Green Bay game on Thanksgiving. 326-5184.

Want to share 4 BR house with swimming pool. 286-7227.

Want Cargo bunk beds. x45035 or 334-4124.

Want used boys 16" bike in good condition, will pay up \$25. Jann, x38033.

Want personnel to join VPSI vanpool departing Meyerland Park & Ride lot at 7:05 a.m. for JSC. Vanpool consists of on-site personnel working the 8 a.m./4:30 p.m. shift, currently have 15 good members, and looking for 2 to 3 more. Travis Moebe, x45765 or Don Pipkins, x35346.

Want carpool from 290 & Beltway to NASA/JSC, 7:00 a.m. to 4:00 p.m. hours flexible. x39468.

## Miscellaneous

Genuine brass queen sz bed/frame, \$450; 20" lawn mower, runs good, \$25; weed eater 5hp rear-line tiller, \$450; 250 sq ft grey marble 12" x 12" tiles, all or part, \$3 sq ft; adjustable bed frame, \$10. 997-2280.

Love seat, brown velour print, contemporary style; exercise bike peddle only \$35; exercise bike peddle & row, \$45. 244-0250

Solid wood bedroom suite, full sz bed w/mattress & box springs; dresser w/hutch, mirror & nightstand, \$700; Sunbeam 12 spd table top mixer, \$100 OBO; 2 black velvet formal dress, 1-long, \$125; 1-short, \$50, both sz 6; oak entertainment center/wall unit, \$250. 486-2414.

Imported beverage bottles all types, also long neck bottles, all in green, brn, or clear, all capable no twist off, cleaned & labels removed, \$8 - \$15 case; wire swing tops, \$1/ea. Dan, x36650 or 409-925-1880.

Tropical plants, misc types & sizes, \$5 & up. Bob, x33149.

Space Shots trading cards, series, 1-3, uncut sheets, \$10 ea, boxes, sets, more, '69 Man on the Moon, unopened box, \$500. James, x31242.

Fisher Price carseat, \$25; hi-chair, \$20; playpen, \$12; 4-drawer chest, \$20; 27" TV stand, \$30; Technics stereo cabinet, \$25. Tina,

x39727 or 286-2628.

Black qn sz platform bed & headboard, \$250; cotton car cover, \$50; maple finished sm writing desk, \$75; 5 drawer metal file cabinet, \$60. x36186 or x35046.

Golf clubs, Tommy Armour 845 driver, \$50; clone of ADX driver, graphite head & shaft, \$40. 488-4453.

Swimming pool filler, sand medium, fiberglass, good cond, 14 yrs, old, 36" dia, \$125 OBO. x32567 or 488-3314.

Reloading press, Herter's model 3, with dies & debarring tool. \$70. 482-2741.

Mickey Thompson ET Drag slicks, sz 26/0/10-15, \$100/pr. Faye, 470-1455.

Nordic Tract ski exerciser challenger model, \$300 ext 333-6009 or 409-925-7562.

Cobra LD-200 Laser detector, \$25; Whistler 3 radar detector, \$10. x30044.

Pocket cellular phone w/leather case, longlife battery & charger, special rate plan w/\$100 credit on usage, no activation fee, \$150. Gregg, x31250 or 474-4271.

Aquarium, 40 gal, corner wooded cabinet, lights & access, ex cond, \$160. Gene, x33187 or 488-5162.

Strand of outdoor lights & power box, \$10; wedding dress, sz 8, Victorian style w/short train, \$250. Kathy, x47354 or 286-7832.

Experienced lumber, 1 x 4's to 2 x 12's, shelf boards, etc. Ray, x53954 or 487-4889.

# Do You Know What to Do?

## Classes teach all employees basics of emergency response and hazard communication



Instructor Karen Bleam provides First Responders Awareness training for JSC employees at Ellington Field. The sitewide training classes continue today in Teague Auditorium.

JSC Photo by Mark Sowa



Seemore Safety

By Karen Schmidt

**JSC** is taking steps to promote a higher level of safety for employees through sitewide employee training on hazard communication and emergency response.

Classes began this week to ensure employees are aware of chemical hazards at the center and to make sure they know how to comply with the Operational Safety and Health Administration's standards for Hazard Communication and Hazardous Waste Operations and Emergency Response.

The one-hour classes will continue today in Teague Auditorium, with sessions begin-

ning at 8:30 and 10:30 a.m., and 1 and 3 p.m. An additional class at Ellington Field will be offered at 1:30 p.m. Wednesday.

Occupational Health Officer Gary Caylor has developed a progressive program to ensure employees are protected in emergency situations. He said he is confident the mandatory training will benefit everyone.

OSHA requires all employees to learn basic emergency awareness, but Caylor has taken this one step further to include an overview of hazard communication.

"This course is primarily for people who do not ordinarily handle hazardous materials," he explained. "This will enable employees to take action if an accident occurs in his or her building. The HazCom section will also benefit the employee at both work and home."

The sitewide training course is one of several types of classes being offered through the office of Environmental Health Services' Hazard Communication Section. Training includes five levels of emergency awareness, ranging from that aimed at first responders awareness to on-scene incident commanders.

While hazardous communication training has been ongoing at JSC for more than eight years, this new training schedule will certify employees with OSHA. In addition, refresher courses will be available to maintain competence.

"This is a very big step to earning Star Recognition in the Voluntary Protection Program," Caylor said.

Each level of training above the First Response Awareness Level includes the lower level requirements with additional training and responsibilities for each level.

First Responders Awareness Level training is for individuals who might be the first on the scene of a hazardous materials incident or are likely to witness or discover a hazardous substance release. Employees who take this class are not expected to take any actions other than to recognize that a hazard exists, call for trained personnel and secure the area. This one-hour course will teach employees about the basics of hazardous materials, the potential outcomes of hazardous emergencies, and the ability to recognize when to notify the proper authorities. This course details OSHA and JSC communication standards, how to handle hazardous materials, protective clothing, engineering controls, proper work practices, and emergency response.

• **First Responder Operations Level:** This training is for employees who would respond to an emergency to protect nearby people, environment or property. This course includes knowledge of hazard risk assessment, selection of proper protective clothing, and basic containment procedures.

• **Hazardous Materials Technicians:** This

training is for people who must respond to a scene to stop a hazardous release, and earns certification from OSHA. It includes instruction on classification of materials, understanding of chemical terminology, and decontamination procedures.

• **Hazardous Materials Specialists:** These individuals are certified to verify and identify materials by using survey equipment and instruments, understand in-depth risk and hazard techniques, and to develop a site control and safety plan.

• **On Scene Incident Commander:** These classes are for employees who must assume control of a hazardous materials release scene. This individual will be able to implement the response plans of JSC, and local and federal health and safety organizations. □



Ima Hazard

## Knowing what to do can save your life

- The best way to respond in an emergency is to know what to do ahead of time.
- Always know where the emergency equipment (eyewash, safety shower, fire extinguishers, etc.) is, how to use it and how to keep it in good working condition.
- Know spill clean-up procedures and waste disposal procedures for your area and be familiar with evacuation routes for your building.
- If an emergency is more than you can handle alone, contact emergency services at the appropriate number. Be sure to provide your name, your location, your phone number and the nature of the emergency.
- Stay on the line until the operator has all the information, then evacuate the area if it is dangerous, provide first aid only if you are trained and willing to do so, and help emergency personnel if asked.

## Hazard Reporting — Who to Call

Description	Contact	Phone No.
Emergencies — Onsite	Emergency Services	483-2111
Emergencies — Ellington Field	Emergency Services	707-2111
Emergencies — Offsite	Emergency Rescue Services	411
Asbestos	Environmental Health Services	483-2111
Breaker Boxes	Work Control	483-2111
Ceiling Tiles — replacement	Work Control	483-2111
Chemical Inventory	Environmental Health Services	483-2111
Confined Space Entry	Environmental Health Services	483-2111
Emergency Lighting	Safety Branch	483-2111
Ergonomics	Work Control	483-2111
Exits — repair or replacement	Environmental Health Services	473-2111
Explosives/Pyrotechnics/Propellants	Work Control	483-2111
Eye Wash — maintenance	Safety Branch	483-2111
Fire or Life Safety	Work Control	483-2111
Floor Tile — replacement or repair	Work Control	483-2111
Hazardous Chemical Storage, Waste, or Spills	Environmental Health Services	483-2111
Hazard Communication	Work Control	483-2111
Hazardous Materials Transportation	Environmental Health Services	483-2111
Hoods, Laboratory — certification	Transportation	483-2111
Indoor Air Pollution	Environmental Health Services	483-2111
Lighting — studies	Environmental Health Services	483-2111
Material Safety Data Sheets (MSDS)	Environmental Health Services	483-2111
Mishap Reporting & Corrective Action System (MR/CAS)	Safety Branch	483-2111
NASA Safety Reporting Systems (NSRS)	Safety Branch	483-2111
Noise — complaints	NASA Headquarters	483-2111
Odors — complaints	Environmental Health Services	483-2111
Pressure Systems	Environmental Health Services	483-2111
Radiation — concerns	Pressure Systems	483-2111
Respirators — fit testing	Environmental Health Services	483-2111
Safety Hazards — other	Environmental Health Services	483-2111
Safety Related Facilities Modification (930s)	Radiation Safety Officer	483-2111
Tombstone (tripping hazard)	Environmental Health Services	483-2111
Traffic Safety	Safety Hotline	483-2111
Tripping Hazard — floors	Safety Branch	483-2111
Voluntary Protection Programs	Safety Branch	483-2111
	Security	483-2111
	Work Control	483-2111
	VPP Communications	483-2111

# Antarctic ozone hole: same time, same place, same size

A NASA instrument aboard a Russian satellite has detected a hole in the ozone layer over Antarctica with a surface area equal to the size of the North American continent.

The Antarctic ozone hole levels for 1994 are nearly as large and as deep as the record lows from October 1993, according to preliminary data obtained by scientists at NASA's Goddard Space Flight Center.

These record low levels were recorded by NASA's Total Ozone Mapping Spectrometer instrument aboard the Russian Meteor-3 satellite. Similar low ozone amounts over the Antarctic continent also have

been observed by balloon-borne instruments flown from the South Pole, ground-based Dobson spectrometers and an instrument on the U.S. NOAA-9 satellite.

"The pattern of ozone loss is much the same as last year," said Dr. Jay R. Herman, research scientist, Laboratory for Atmospheres, at Goddard. "The minimum ozone amounts measured by Meteor-3 TOMS have dropped below 100 Dobson units near the center of the Antarctic continent, with values just above 100 Dobson units measured over a wide area."

The size of the ozone hole region

has nearly leveled off in 1992, 1993 and 1994, at about nine million square miles (24 million square kilometers). During these years, the ozone depletion area has nearly filled the polar-vortex wind region that places an upper bound on the possible size of the ozone hole.

A Dobson unit is the physical thickness of the ozone layer if it were brought to the Earth's surface (300 Dobson units equals three millimeters or 1/10th of an inch).

Ozone, a molecule made up of three atoms of oxygen, forms a thin layer of the atmosphere which absorbs harmful ultraviolet radiation

from the Sun. The term "ozone hole" is used to describe a large area of intense ozone depletion that occurs over Antarctica during late August through early October and typically breaks up in late November.

The largest hole ever observed was on Sept. 27, 1992, when the hole had an extent of 9.4 million square-miles. Since the mid-1980s, scientists have observed the region covered by low total ozone beginning to grow in early August. This region has typically reached its maximum extent in late September and its greatest depth in early October.

Scientists have determined that

chlorine products from human activities, such as electronics and refrigeration uses, are a primary cause for the ozone hole formation.

Since the discovery of the ozone hole in 1985, TOMS has been the key instrument for monitoring ozone levels throughout the southern hemisphere. Aboard NASA's Nimbus-7 satellite, it measured ozone levels from November 1978 to May 1993.

The TOMS instrument on the Russian Meteor-3 satellite has been measuring ozone since its launch in 1991, and since May 1993 it has been the primary source of NASA's ozone data.

## JSC chapter in prestigious Sigma Xi holding meetings

JSC's new chapter in the prestigious Scientific Research Society of America, or Sigma Xi, is now conducting meetings.

JSC joined the elite organization, which dates back to 1886 and has included 150 Nobel Prize laureates among its members, in June.

The society's mission is to honor scientific accomplishments, to encourage and to enhance the appreciation and support of original investigation in science and technology, and to foster creative and dynamic interaction among science, technology, and society.

"We have made history by being recognized by Sigma Xi," said Dr. Kumar Krishen, the newly elected president. "This club will be instrumental in exposing the outstanding research going on in this area to the scientists of our nation."

The installation ceremony was presided over by Dr. Millicent Goldschmidt, a professor at the University of Texas Health Science

Center of Houston who serves on the Sigma Xi board of directors. The charter of the newly inaugurated club was accepted by Krishen, who was elected president of the club.

"I believe that the inauguration of this club reflects the enormous scientific contributions that have been made by the area scientists and engineers over the past three decades. This club provides us an opportunity to share our research with our colleagues and promote space research and technology through the Sigma Xi," he said.

The next meeting is Nov. 10 at the University of Houston Clear Lake. Dr. James Lester will present "The Scientific Challenges to Suitable Development: Examples from the Gulf of Mexico." Tickets are \$10 for members and \$11 for non-members. For program details, call Charles Sawin at x37202, or Susan Gerhart at 283-3800.

For membership, contact the UH-CL/RICIS Program Office, 283-3815.

## Variable schedule briefing set

Now that employees have completed their first full pay period with the new variable day schedule, Payroll and Human Resources are planning a briefing to answer employee questions.

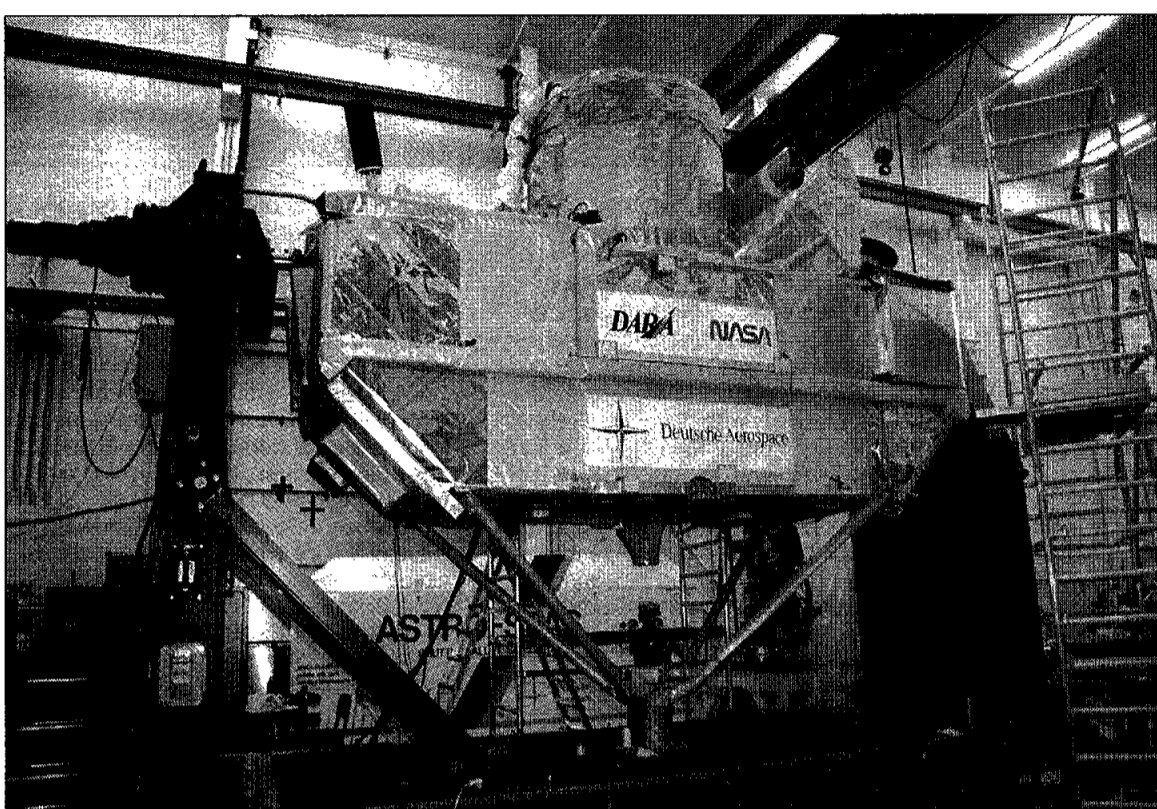
The information class and question and answer session will be held from 2-3 p.m. Oct. 28 in Bldg. 4 South, Rm. 2419.

"It's likely that employees have new questions now that they have completed their first work tour with this new schedule," said Sue Liebert of Human Resources. "We want to be responsive to any concerns they

may have, and to make sure that our employees understand how the variable day schedule works."

To help answer those questions, Human Resources also maintains a "hot line" at x35746 for employees. Inquiries left on that recorder will be answered within 24 hours.

For additional information on the variable day schedule question and answer session, contact Jeannie Aquino at x33032. Employees wanting additional information on the variable day scheduling, should contact their payroll technician or human resources representative.



NASA Photo

At Cape Canaveral Air Station in Florida, the Cryogenic Infrared Spectrometers and Telescopes for Atmosphere and its Shuttle Pallet Satellite are readied for installation in the Space Shuttle *Atlantis*. The German-built CRISTA-SPAS payload will collect data about the Earth's middle atmosphere on STS-66.

## ATLAS-3 to continue atmospheric studies

(Continued from Page 1)

tions over the 11-year solar cycle.

Meanwhile, on the opposite coast, *Endeavour* is ready for a ferry flight back to KSC atop the modified 747 Shuttle Carrier Aircraft. *Endeavour* was mated to the SCA by Monday and was awaiting clear weather for the cross-country flight as of Wednesday. Tentative plans were to attempt to depart California some-

time Thursday for a two-day trip to Florida. The SCA's route was still to be planned according to weather forecasts as of late Wednesday, although a northerly route back to KSC appeared likely.

Elsewhere, *Discovery* is in KSC's Bay 2 shuttle processing hangar being readied for its next trip to orbit, STS-63 in early February. Work on *Discovery* this week included installation of the drag chute,

draining of residual hypergolic fuels, preparations to remove the forward reaction control system, and the removal of the three main engines.

*Columbia* arrived in California for a modification period at Rockwell's Palmdale shuttle factory the same day *Endeavour* landed after a ferry flight from Florida that included an overnight stop in Houston.

## Travelers must received medical clearance before heading for Russia

(Continued from Page 1)

U.S. Department of State. The JSC Clinic physicians role is to examine the traveler and forward all medical information and test results to the Department of State medical review officer. The Department of State physician will review the data. Additional medical testing or consultations might be recommended at this level and would have to be performed before the Department of State medical clearance is granted.

If the traveler's spouse or children is going overseas as well, their medical histories will be reviewed and forwarded to the Department of

State medical review officer. The JSC Clinic will support this review to every extent possible.

On-site contractors officially invited to travel by NASA will be eligible for immunizations pertinent to their destination through the JSC Clinic. A list of the names of those contractors invited to travel by NASA will be forwarded to the clinic. However, as will NASA employees, the travelers bear the responsibility for contacting the clinic to initiate services.

The immunizations necessary for official NASA travel will be given to civil service employees and on-site contractors at the JSC Clinic.

Immunization hours are 10 a.m.-noon and 2-3:30 p.m. Monday through Friday. No appointment is necessary. Authorization for contractor immunizations will be provided by the Russian Program Office.

The selection of appropriate immunizations is driven by an individual's personal health history, location and duration of travel, NASA Medical Operations Branch advisories and a commercial, computerized data base which is updated monthly.

For travel to Moscow and other Russian Federation destinations, the clinic generally advises:

- Gamma Globulin, which confers some protection against Hepatitis A for about six months.

- Influenza vaccine, which protects against widespread strains of the flu. This vaccine takes about two weeks to work.

- Tetanus-diphtheria vaccine, which protects against the organism that attacks puncture wounds or extensive burns.

- Hepatitis B vaccine, which protects against viral hepatitis that is transmitted through direct blood or mucous membrane contact or other potentially infectious bodily fluids of an infected person. Complete im-

munization takes three separate injections over a six-month period.

- Cholera vaccine, which provides partial protection against disease transmitted through ingestion of contaminated water. The vaccine requires two injections one to four weeks apart.

- Malaria medication, which protects against the disease which is prevalent in certain parts of the Russian Federation at certain times of the year. This is an oral medication taken at intervals before, during and after travel.

For more information, call the JSC Clinic at x34111.

## Pair of star clusters provides cosmic clues

(Continued from Page 1)

stars in the LMC.)

The significant difference between the ages of the two clusters suggests that they are two separate star groups that lie along the same line of sight. The younger, more open cluster probably lies 200 light-years beyond the older cluster, says Panagia, because if it were in the foreground, then dust from the younger cluster would obscure stars in the older cluster.

Having two well-defined star populations separated by such a small gap of space is very unusual. This juxtaposition suggests that the clusters might be linked in an evolutionary sense. The possible scenario pro-

posed by the Hubble researchers is that an expanding "bubble" of hot gas from more than 1,000 supernova explosions in the older cluster triggered the birth of the younger cluster.

The bubble expanded across space for 45 million years before plowing into a wall of cool gas and dust. The resulting shock front then caused the gas to contract and precipitate a new generation of star formation. The massive, hot stars produced by this contraction are destined to explode in a few million years, and thus create yet another expanding bubble of gas.

Previously, such detailed studies of stellar population were restricted to nearby star-forming regions within

the plane of our Milky Way Galaxy. However, Hubble's high-quality images enable these studies to be extended a hundred times farther into the universe, out to the distance of a neighboring galaxy.

The LMC is a natural laboratory for studying the birth and evolution of stars because it lies outside the cluster of the Milky Way and its stars have few heavy elements, so their composition is believed to be more like the primordial stars that formed in the early universe.

The findings will be published in the Nov. 1, 1994 issue of the *Astrophysical Journal Letters*. HST is a project of international cooperation between NASA and the ESA.

## Space News Roundup

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

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

Editor ..... Kelly Humphries  
Associate Editor ..... Karen Schmidt  
Associate Editor ..... Eileen Hawley

## Lovell, Nichols sign books at visitor center

Space Center Houston will host two book signings next week.

Apollo 13 commander Jim Lovell will autograph copies of his book *Lost Moon* on Tuesday.

Lovell will brief Space Center Houston guests on Apollo 13 including the command module explosion and rescue using the lunar Excursion module from 11-11:30 a.m., then autograph copies of his book from 11:30 a.m.-1 p.m.

Nichelle Nichols, "Lt. Uhura" on the original Star Trek series, also will conduct a book signing Oct. 29.

Nichols will autograph copies of her autobiography *Beyond Uhura: Star Trek and Other Memories* "from 11:30 a.m.-1 p.m.