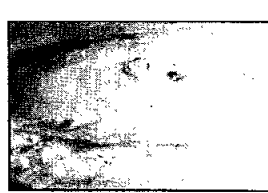


The Synthesis Group has issued its report on future space exploration plans, prompting much discussion. Story on Page 3.



JSC will air a video this week on preparing for hurricane season. Story on Page 4.

# Space News Roundup

Vol. 30

July 12, 1991

No. 27

## Spaceweek events celebrate education

Spaceweek '91 events will include a space festival, a model rocket launch, a banquet, tours and several other affiliated activities to commemorate the annual celebration.

This year's extravaganza will focus on the theme "Look to the Heavens and Learn" and activities are scheduled throughout the week of July 16-24. Similar celebrations of space are held simultaneously each year in more than 150 U.S. cities and nine countries.

"The Houston area has hosted the Spaceweek National Banquet since 1986," said Dennis Stone, volunteer president of Spaceweek National

Headquarters which is based in Houston. "We expect hundreds of enthusiastic space supporters to attend as we salute our nation's space leaders."

The Spaceweek National Banquet will be held at 6:30 p.m. July 22 at South Shore Harbor Resort and Conference Center. Featured speakers will include Rep. Jack Brooks (D-Houston), NASA Deputy Administrator J.R. Thompson, and JSC Director Aaron Cohen. The event is black-tie and tickets are \$55. For reservations call 333-3627. Spaceweek National Headquarters is sponsoring this event.

The "At the Threshold" public policy forum is scheduled for 11:30 a.m. Thursday at the Gilruth Center. Speakers will include JSC Director Aaron Cohen; former astronaut



Joseph Allen, the president of Space Industries International and a member of the Advisory Committee on the Future of the U.S. Space Program; David Black, director of the Lunar and Planetary Institute and a senior member of the Synthesis Group; and

Glynn Lunney, vice president and general manager of Rockwell's Houston Operations. The American Institute of Aeronautics and Astronautics is sponsoring this event. The charge for the forum is \$8 which includes lunch. Reservations can be made by calling 283-5794.

Tours of the Boeing Flight Equipment Processing Facility in Clear Lake will be available July 15-19. Interested space enthusiasts can see actual space suits, food and other items astronauts use in space. The tours are free of charge but reservations are required. For more information or to make tour reserva-

tions call 280-2000.

Space Fest 1991 will be held from 10 a.m. to 5 p.m. July 20 at Rice University. It will feature space displays, films, videos, space art, model building contests and special guests. The work of artists dealing with space themes will be judged in a contest for Space Fest 1991. Houston area artist Pat Rawlings, along with Frank Lurz of Mill Valley, Calif., and Kim Poor of Tucson, Ariz., will judge the works. Entries for the art contest are due today. Model builders can enter their miniature spacecraft into a contest and the entries also are due today.

Please see **SPACEWEEK**, Page 4

## Atlantis readies for July launch

Preparations to launch *Atlantis* perhaps as early as July 23 on STS-43, a flight to deploy a fourth Tracking and Data Relay Satellite, continued to go well Thursday as shuttle managers traveled to the Kennedy Space Center for a final review.

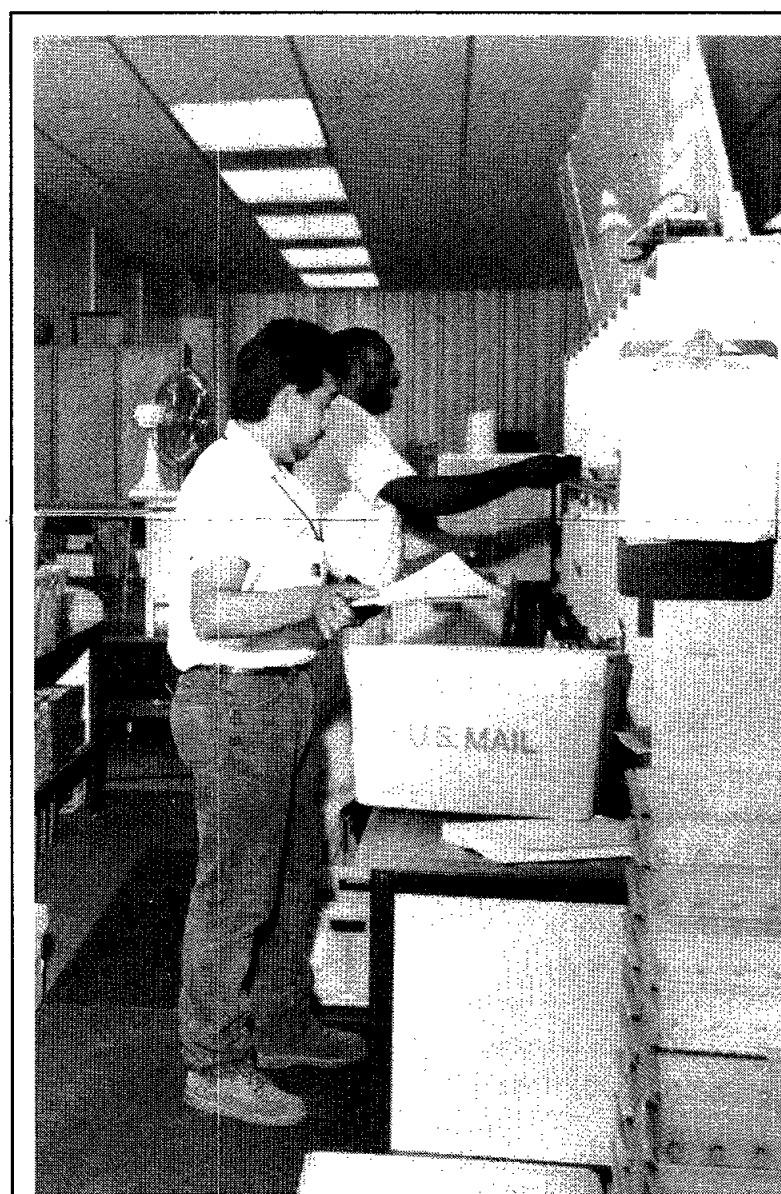
Managers were scheduled to meet Thursday and today for the STS-43 Flight Readiness Review, a thorough study of all aspects of the mission after which a firm launch date is set.

A July 23 launch would be set for 9:54 a.m. CDT with a nominal landing at either 7:11 a.m. CDT July 31 at KSC or 8:39 a.m. CDT at Edwards Air Force Base, Calif.

A Launch Readiness Review, a check of all launch systems needed for the flight, was completed at KSC Monday with no problems identified.

Kennedy Space Center is proceeding toward the safe and successful launch and landing of *Atlantis* the end of this month," KSC Launch Director Bob Sieck said following the meeting.

Early this week, Launch Pad 39-A was closed to all non-essential personnel as workers loaded *Atlantis'* orbital propulsion systems with fuel. On July 3, the STS-43 crew — Commander John Blaha, Pilot Mike Baker and mission specialists Shannon Lucid, G. David Low and Jim Adamson — completed the Terminal Countdown Demonstration Test, a countdown dress rehearsal, aboard the spacecraft.



JSC Photo by Benny Benavides

**Jose Montemayor and Jeff Meachem, Hernandez Engineering Inc. employees and JSC mail couriers, sort JSC's mail in Bldg. 227. Because of a change in the mail service that will limit deliveries to once-a-day, more couriers will be available at one time to process mail. The center's central mail office processes an average of 40,000 pieces of mail a day. Story on Page 4.**

## JSC gives equal opportunity trophy money to education

By Kelly Humphries

Johnson Space Center will give \$10,000 worth of videodisc equipment and calculators, purchased with NASA Equal Opportunity Trophy winnings, to area elementary schools.

JSC's Deputy Director of Equal Opportunity Programs Freda Marks said the money will be used to support President Bush and NASA's educational initiative by helping generate elementary school minority students' interest and enthusiasm in science and math.

Half of the money will be used to purchase videodisc players in support of the "Windows on Science" program and place them in 25 target elementary schools in need of the equipment. The curriculum program, approved by the Texas State Board of Education, provides coverage in English and Spanish of state-mandated content for elementary science education in grades one through six. Although the software can be provided by school districts with state funds, the hardware must be purchased with local funds.

JSC has identified 25 schools with

primarily minority enrollment in the Pasadena, Texas City, Dickinson and LaMarque school districts that are without the necessary equipment.

The rest of the money will be used to purchase "Math Explorer" calculators for fourth and fifth grade classes in schools within the Houston Independent School District. The calculators support a Math Technology Program that has been approved by the National Council of Teachers of Mathematics. Research on calculator use indicates that its use promotes achievement, improves problem solving skills and increases understanding of mathematical concepts. JSC is working directly with HISD to identify appropriate schools.

JSC won the NASA Equal Opportunity Trophy in January for its leadership in the balanced placement of women, minorities and the disabled. The committee that recommended the plan to return the money to the community was comprised of Marks, Gregory Hayes, Deputy Human Resources Director; and Dr. Robert Fitzmaurice, Center Education Programs Officer.

## Swap Shop Rule Change

Beginning with this week's issue, the *Space News Roundup* will accept only one Swap Shop ad for the same item.

Ads for the same item will not be repeatedly published in the Roundup because the number of Swap Shop submissions exceeds the available space in the paper.

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. The deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Due to the recent backlog of Swap Shop ads, there may be some delay in the publication of submitted ads. Ads completed on the appropriate form can be mailed to Roundup Swap Shop, Mail Code AP3, or delivered to the wall-mounted deposit box outside Rm. 147 in Bldg. 2.

## O'Connor, Coats leave astronaut corps

Astronaut Bryan D. O'Connor will leave NASA July 29 to become commander of the Naval Air Test Center's Marine Air Detachment in Patuxent River, Md., effective August 2. O'Connor is a colonel in the U.S. Marine Corps.

Astronaut Michael L. Coats also announced he will retire from the Navy and leave NASA Aug. 1 to become the director of advanced programs and technical planning at Loral in Houston. Coats is a captain in the Navy.

O'Connor has flown on two Space Shuttle missions. He was commander on the STS-40 June 5-14, a life sciences research mission, and pilot on STS-61B launched Nov. 26, 1985, in which three communications satellites were deployed and two spacewalks were conducted.

O'Connor also served in several key positions during his 11-year tenure at Johnson Space Center. He was assistant to the shuttle program manager March 1986 — February 1988, chairman of NASA's Space Flight Safety Panel from September 1986 to February 1989, and has been the deputy director of Flight Crew Operations since August 1989.

"My career at NASA has been extremely rewarding," O'Connor said. "I return to the Marine Corps enriched by the experiences and friendships I've gained over these 11 years."

Coats was the pilot on STS-41D launched Aug. 30, 1984, in which three satellites were deployed and commander of STS-29, a Tracking and Data Relay Satellite deployment

mission, launched March 13, 1989. He also commanded the STS-39 crew, the first unclassified Department of Defense flight which was launched on April 28, in which crew members deployed, operated and retrieved the SPAS-II spacecraft to gain research information on shuttle engine firings.

Coats also served as the acting chief of the Astronaut Office from May 1989 to March 1990.

"My years at NASA have convinced me that the finest folks in the world are attracted to the space program," Coats said. "I am extremely pleased to be able to change career directions and still be involved with this wonderful group of people."

Donald Puddy, director of Flight Crew Operations, said O'Connor and Coats would be missed.



Bryan D. O'Connor



Michael L. Coats

JSC

# Ticket Window

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

- General Cinema (valid for one year): \$4.  
 AMC Theater (valid until May 1992): \$3.75.  
 Loews Theater (valid for one year): \$4.  
 Astroworld (valid 1991 season): season, \$44.94; child less than 4 feet, \$10.12; one day, \$15.85; Waterworld, \$8.15.  
 Seaworld of Texas (valid 1991 season): child (3-11), \$12.25; adults, \$17.25.  
 Six Flags (valid until Nov.): one-day, 15.95; child less than 4 feet, 14.95; two-day, 20.95.  
 Riverraft Trip (July 13 - includes bus transportation, a visit to Natural Bridge Caverns or Wild Life Ranch, rafting, and barbeque dinner): \$35.  
 Astros vs. Dodgers (1:35 p.m., Aug. 4 limited number of field level seats. Last day to buy is July 22): \$7.  
 Information coming soon for NASA Ski Week at Big Sky Montana Resort Jan. 4-11, 1992.

JSC

# Gilruth Center News

**Sign up policy**—All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a badge or EAA membership card. Classes tend to fill up four weeks in advance. For more information, call x30304.

**Defensive driving**—Course is offered from 8 a.m.-5 p.m., Aug. 10, Sept. 21, Oct. 12 or Nov. 6. Cost is \$15.

**Aerobic dance**—High/low-impact classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$24.

**Exercise class**—Low-impact class meets from 5:15-6:15 p.m. Monday and Wednesday nights. Cost is \$24.

**Weight safety**—Required course for employees wishing to use the Gilruth weight room. The next class will be from 8-9:30 p.m. July 25 and Aug. 7. Cost is \$5.

**Country and western dance**—Six weeks of Monday night sessions begin June 17. Cost is \$20 per couple.

**Aikido**—Martial arts class meets Tuesdays for six weeks beginning Aug. 6. Cost is \$30 per person.

**Summer basketball league sign-up**—7 a.m. July 15 and 16; non-badged teams 4:30 p.m. July 19.

**Summer volleyball league sign-up**—7 a.m. July 17 and 18; non-badged teams 4:30 p.m. July 19.

**Summer softball league sign-up**—Week of July 23.  
 Please call x30304 or x35789, for specific dates of individual divisions within the leagues.

JSC

# Swap Shop

## Property

Rent: W Galv beach house, 2-2, furn, lg deck, boat landing, marina w/pool, sleeps 6, \$500/wk. Fandell, 486-1746 or 538-1147.

Rent: Galv beach house on canal/waterfront bay view. 286-8558.

Sale: LC/Hewport, 5-2-2, decked patio, fenced, no MUD tax, \$72.5K, x39857 or 332-9897.

Sale: 71 mobil home, 14x70, 3-1-5, new paint, new carpet, fans, A/C, H, \$5K, 339-1337.

Sale: LC 3-1-5-1, ex cond, assume w/no approx, \$10K equip, \$56.9K, 554-7277.

Sale: Magnolia, TX, .86 acres, util avail, res lot, \$10K. Rob, x33484 or 481-6185.

Sale: Meadowland, 3-2-2 split, 2.4K sq ft, formal LR/DR, study, lg family rm, whirlpool garden bath, lg kitchen, x30382 or 334-1103.

Sale: CLC University Green, ex townhome, 3-2-5-2, formal LR/DR, den, FPL, patio, deck, avail 7-1, \$98K. Harman, x30955 or 488-1259.

Sale: E Dorado Trace condo, 2-2, FPL, WD, wet bar, Jacuzzi, avail June, \$525/mo, x33-8707 or 480-4525.

Sale: Leon County, TX, dbl-w/ mobile home, 3-2, 100+ acres, 332-6558.

Sale/Trade: Country Club estate lot, 60x110, 18 hole golf course, near Trinity on Lake Livingston, all avail, trade for lot of equal value in LC, Friendswood, or Alvin area, \$10K, 554-6841.

Lease: Heritage Park, 3-2-2, 3 yrs opt, no pets, eat in kitchen, FPL, formal DR, \$875/mo, 282-2787 or 532-1240.

Sale: LaPorte, 3-2-2, FPL, fenced yard, \$72K OBO, 333-9733.

Sale: LaPorte, 4-2-2, FPL, spa, assume, Frank Jensen, x33838 or 470-1025.

Lease: I-45 & LC, 3-1, needs work, \$395/mo, 332-0365.

Lease: CL Shores, 3 BR, \$650/mo. Bill or Lisa, 538-1849.

Sale: 80 Fleetwood mobile home w/attached room, 3-2, 1400 sq ft, garden kitchen w/pan window, wet bar, ex cond, avail Sept, \$12K, 331-7565.

Rent: Med Center, 2 story condo, 2-1-5-CP, W/D, FPL, lg kitchen, walk in closets, early Aug, \$675/mo. Charlie, 333-7804 or 799-9101.

Lease: LC, 4-2-2, 2000 sq ft, FPL, fans, lg fenced yard, deck, Richard, x31440 or 333-5693.

Sale: CLC University Trace, 1-1-2, \$29.9K; Baywind II, 2-2-2, 39.9K. Gilbert or Lisa, x33-4306.

Sale/Lease: University Trace, 2-2 condo, refri, fans, W/D hook-ups, res parking, non smoker, no pets, \$45K or \$525/mo, 488-5092.

Lease: El Lago, 4-3-2 formal LR, den, fenced yard, avail 8-1, \$900/mo + deposit, 333-2893.

## Cars & Trucks

'86 Toyota 4 Runner, 4x4, ex cond, 4 cyl FI, 5 spd OD, 73K mi, \$7.3K OBO. Bob, 996-0393.

'77 Ford F150 van, 351V8 eng, auto, A/C, \$2.2K. Bauch, x31309 or 332-5882.

'84 Olds Ciera, new re-built eng, ex cond, 4 dr, 4 cyl, lt blue, A/C, auto, \$2.7K, 280-2192 or 480-6697.

'80 Subaru Legacy LS, 4 dr, blk w/ tan int, 4 wheel disk brakes, elec, sunroof, loaded, \$9K mi, \$12K OBO. Bob, 480-1225 or 474-4747.

'85 Chevy Celebrity wagon, auto, A/C, P/S, PB, new tires, good cond, \$3K OBO. Anne, x33146 or 488-0803.

'77 Monte Carlo, 350 V8, 116K mi, A/C, AM/FM/cass, new freshw tires w/1 yr warr, runs good, \$1K OBO. Mark, x37491 or 335-1494.

'83 Motorola, Huntsman, 20, 31.5K mi, ex cond, ex gas mi, 283-5450 or 488-2963.

'85 Mitsubishi Mighty Max Sport, 5 spd, A/C, AM/FM/cass, ex cond, \$3K OBO. Adnan, x34725 or 488-3824.

'85 Chevy Silverado, 3/4 ton, 4x4 PU, 488-1225, w/topper, red w/burgundy interior, \$5.1K, 283-5693 or 334-4124.

'83 VW GTI, blk, A/C, sunroof, roof rack. Andy, x32503 or 334-2647.

'88 Suzuki i-Mark, w/lt, auto, A/C, AM/FM, 27K mi, ex cond, \$5,795, 488-2716.

'81 Chevrolet, 4 dr, complete parts car, good A/C, P/S, auto trans, body, tires, 50K mi, bad 1.6 L motor, \$300 OBO. Denis, x33586 or 554-6122.

'88 Lotus Spirit Turbo, red/ltan, 18K mi, ex cond, \$42.5K. James, x31064 or 334-1766.

'85 Chevy Celebrity wagon, A/T, A/C, P/S, P/R, new tires, good cond, \$3K OBO. Anne, x39146 or 488-0803.

'81 Volvo 244GL auto, A/C, P/S, P/B, 4 cyl, good tires, P/W, P/L, AM/FM/cass, met dk red, tan/blk int, sunroof, \$3.5K. Tim, x33062.

'80 Mazda 626, ex cond, 4 cyl, good, Pioneer stereo, \$1.9K. (409) 925-8081.

'80 Ford Probe GT Turbo, ex cond, many extras, \$10,895. Dan, 280-2780 or 457-2850.

'80 Toyota Corona, not running, new tires/4 wheel brake job/master cylinder, \$30K, '83 Ford Escort wagon, not running, new tires, perfect body, \$500. Jim, x35852 or 474-7747.

'82 Ford Anaheim custom van, P/S, P/B, AM/FM stereo, 4 cap chairs, sofa bed, 2 A/C, 2 tanks, CB, cruise, lit, BO, 488-3191.

'82 VW bus camper, not running (diesel), body good cond, \$1300 OBO. Enrique, 282-8551 or 554-4543.

'88 Mazda 929, loaded, sunroof, 5 spd, ex cond, \$9895. 244-9843 or 532-2215.

'71 VW van, rebuilt engine, brakes, good cond, \$2.1K. Bill Huber, x30039 or 332-9044.

'89 Chevy Nova, runs good, new brakes, tires, and muffler, maroon, straight fly, \$900, 481-0494.

'84 Mazda RX7, silver, 5 spd, A/C, cruise, 56K mi, ex cond, \$4,250, 335-2371 or 326-2783.

'82 Datsun king cab, PU, 107K mi, A/C, 5 spd, recent batt, muffler, alternator, shocks, front brakes, new tires, \$2,250 OBO; '80 Ford Fiesta, 97K mi, 4 spd, recent water pump, front brakes, voltage regula-

tor, muffler, alternator, and new tires, 26/33 mpg, x35824 or 481-1543.

'77 Cadillac DeVille, all power, 200 watt Clarion stereo, \$1,650, 332-8636.

'71 Mustang, 6 cyl, new paint/tires, needs minor work, \$3K OBO. Tiffany, 283-5680 or George, (409) 938-8911.

'87 Ford Tra-Tech cust van, 27K mi, capt chairs, \$12.5K, 554-6841.

'87 Mazda RX7 under warr, 5 spd, A/C, AM/FM/cass, midnight blue, \$7K, 729-3158.

'84 BMW 528E, 83K mi, ex cond, \$6.5K OBO, 485-3490.

'90 Nissan King Cab PU, 15K mi, 3 yrs/36K mi, \$8.9K, 485-3490.

'79 Chevy Malibu wagon, auto, P/S, cruise, A/C, AM/FM/cass, roof carrier, no rust, \$850 OBO, 333-6655 or 334-1994.

'87 Ford F-150 Lariat PU, full sz, 57K mi, V-8, 4 spd, two tone, w/matching tool box, A/C, cruise, lit, \$6.2K, 480-6544.

'84 Subaru GL loaded, runs, 100K mi, \$850 OBO, 473-4148.

'84 Camaro, V-6, 5 spd, blk, 37K mi, new tires/battery, ex cond, \$3.9K. Karon, 244-9664.

## Cycles

'84 Kawasaki GP2, 750, 8.7K mi, ex cond, \$1.8K OBO. Shannon, x32646 or 484-5412.

'87 Kawasaki, KLR-650, multi-purpose, 6K mi, liquid cooled, elec start, ex cond, \$1,750, 282-3307 or 486-4016.

'80 Yamaha, 400XS, good cond, blk, windshield/ fairsing, \$800. Bob A, x34409 or 393-1670.

Kawasaki, 750cc, low mi, \$1.2K OBO, 691-6992.

'86 Honda Nighthawk, 6K mi, \$1.7K, 944-3560.

'84 Honda, XL200R, no lights, good cond, \$550. Frank, x39924 or 480-9376.

Pacer exercise bike, w/hension control, speedometer/ odometer, low mi, ex cond, \$50, x36828 or 538-1627.

3 wheel, 24" bike w/basket, good cond, \$50 OBO; Sears 26" 3 spd bike, good cond, \$25 OBO. Nash, 280-2736.

Schwinn Twin tandem bike, good cond, \$250 OBO. P.J., 335-4204 or 286-1212.

Sears Heavy duty Catalina Lady, 28" bicycle, \$45, 532-1562.

Ten spd man's bike, \$100, x32571 or 280-0031.

Men's 3 spd bike, only 22 mi, many accessories, \$75 OBO; one station-ary bike, disassembled \$25 OBO, 486-0926.

## Boats & Planes

Propeller, 19 pitch, fits Mercruiser I/O, record, \$75, 286-3626.

Lido-14 sailboat, sails, trlr, \$995. R. Hoover, x31360 or 996-7716.

Cactus sailboat, 10', good hull, two sails, trlr, \$550. Steve, x35923 or 538-2169.

Rent: Beechcraft Debonair B33, 185 mph speed, stormscope, 3 axis autopilot, \$70/hr. Bryan, 282-4384 or (409) 740-7610.

'81 21' Stearncraft jet boat, 425 OBO w/Berkley jet drive, \$1.5K OBO. Bob, 996-0393.

'78 Tony bass boat, 35 hp Johnson, Hummingbird 2000, trolling motor (needs work), \$900 OBO. Derek, x35063 or 337-4831.

'9 Kayak w/paddle and life jacket, \$450 OBO. Jeff, 667-8100 or 486-3991.

'88 18' Searay Saville, AM/FM, green/wh, 30 hp I/O Mercruiser, rear view mirror, speedometer, boarding ladder, incl boat cover, trlr, was \$7,880, now \$6,600. Max Kilbourn, x38127 or 482-7879.

'76 20' Thompson, 185 hp PCM Ford 302 V8, 280 Volvo drive w/spare prop, galv dual axle trlr, needs minor repair and tune up, \$2K OBO, x33854 or 482-0966.

Gulf Coast 20 Sailboat w/trlr, good cond, \$2,650, 485-7629.

Sears CB motor, 3 hp, good cond, \$60 OBO. Nash, 280-2736.

'87 bk/wht Sunrunner 17', 165 hp Volvo I/O, good cond, \$6.5K, 333-6871.

Wolcraft Airstar, 18.5' bowrider, Merc 165 hp I/O, galv trlr, ss prop, AM/FM stereo/CB, ex cond, \$3.3K, 480-5583.

'18' Hobie Cat, ready to sail, ex cond, incl trlr, \$1.4K, 482-3963.

'84 Invader, bowrider, Volvo AQ125 I/O, depth recorder, CB, skis, life jackets, ropes, anchor, fire ext, ex cond, galv drive on trlr, \$5.5K, Mark, x30160 or 326-3004.

'81 Ski Naticque Anniv model, 500 hrs, Tandem trlr, 363-1480.

Infinity 62" sunboard w/leash, \$100. Scott, 332-3608 or 488-5663.

## Audiovisual & Computers

Latayette AM/FM stereo reamp, ex cond, \$75. Robert, x34397 or 333-1485.

IBM port PC w/Epson pmtr, 640K, 2 HD, \$600 OBO. Molly, 282-4248.

Commodore 1280 w/bt in 1571 FD, Comm 1526 pmtr, Roland DG color monitor, modem, manuals, \$450. John, x38429 or 482-6536.

Apple II+, w/80 col card, green mono mon, 5.25" Olivetti PR2300, inkjet, assorted SW, \$300 OBO. Branley, 331-0361.

XT clone computer, 20 MB HD, dual floppy multi card, color RGB/CGA, pmtr, \$700. Bob A, x34409 or 393-1670.

Apple IIe, 128K, 80 col, RGB mon, 2 FD, \$550 OBO. Joel, 282-3517 or 482-4247.

Software, educ, Word Scramble, Play & Learn, eye 7-11, for IBM X clones, w/manual, \$25. Youm, 283-4813.

Toishba BD-7815 copier w/cabinet/stand, zoom, letter, legal, paper up to 11x17, needs adjst, \$1K OBO. Bob, 480-1225 or 474-5747.

Commodore 128 w/mon and 1571 FD, Star NX10 printer, SW and books, \$600. Jenny, x35981 or 484-3889.

80 MB Corner Dr w/monitor, \$350; 2400 baud modem w/SW, \$50; 40 MB plus hardcard w/SW, \$325; serial card w/manual and SW, \$15; Intel AboveBoard 2 MB expanded memory, \$125; Epson prog straight fly, \$900, 481-0494.

'84 Mazda RX7, silver, 5 spd, A/C, cruise, 56K mi, ex cond, \$4,250, 335-2371 or 326-2783.

'82 Datsun king cab, PU, 107K mi, A/C, 5 spd, recent batt, muffler, alternator, shocks, front brakes, new tires, \$2,250 OBO; '80 Ford Fiesta, 97K mi, 4 spd, recent water pump, front brakes, voltage regula-

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## Today

**Spaceweek**—Spaceweek '91, an international week of education and promotion for space activities around the world, will be observed July 16-24. This year's theme is "Look to the Heavens and Learn." For more information, call Spaceweek National Headquarters at 333-3627.

**Cafeteria menu**—Special: tuna and salmon croquette. Entrees: pork chop with yam rosette, Creole baked cod. Soup: seafood gumbo. Vegetables: Brussels sprouts, green beans, buttered corn, whipped potatoes.

## Monday

**Cafeteria menu**—Special: Italian cutlet. Entrees: braised beef ribs, chicken a la king, enchiladas with chile. Soup: cream of broccoli. Vegetables: navy beans, Brussels sprouts, whipped potatoes.

## Tuesday

**Cafeteria menu**—Special: stuffed cabbage. Entrees: turkey and dressing, round steak with hash browns. Soup: beef and barley. Vegetables: corn coblette, okra and tomatoes, French beans.

## Wednesday

**Cafeteria menu**—Special: pepper steak. Entrees: catfish with hush puppies, roast pork with dressing. Soup: seafood gumbo. Vegetables: broccoli, macaroni and cheese, stewed tomatoes.

## Thursday

**NCMA meeting**—The National Contract Management Association will present a luncheon meeting at

11:30 a.m. July 18 at the Nassau Bay Hilton Marina Via on the Club level. The price is \$5 for advance ticket sales to members, \$6 for members at the door and \$10 for non-members. The program speaker will be John W. Aaron, manager of the Space Station Projects Office discussing "An Update On Space Station Freedom." Deadline for reservation is 4 p.m. July 12. For more information contact John Trahan, x30543, or Theresa Borrego, 282-6679.

**AIAA forum**—The American Institute of Aeronautics and Astronautics will present a forum at 11:30 a.m. July 18 at the Gilruth Center. The forum will be called "At the Threshold: Impacts of the Augustine Committee, Synthesis Group and Space Station Debate on America's Future in Space." The prices are \$7/members; \$8/non-members; and \$6/students. Reservations are due by noon July 15. For more information, contact Frank, 333-6064, (Lockheed); Carroll, 283-6000, (Eagle); or to reserve a space contact Sarah, 282-3160, (Bendix).

**Cafeteria menu**—Special: chicken fried steak. Entrees: beef tacos, barbecue ham steak, Hungarian goulash. Soup: turkey and vegetable. Vegetables: spinach, pinto beans, beets.

## Friday

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

## July 20

**Loral Run**—The Loral Lunar Rendezvous Run will be held at 8 a.m.

July 20 at the Gilruth Center. Entry fee is \$10 if entry form postmarked by July 6, \$12 after July 13, and \$15 after July 14. Entry forms are available at the Gilruth Center gym office. Volunteers will be needed. Those interested should contact Len Topolski at 333-5576, or Brenda Clary at 480-0257.

**Space Fest '91**—The Houston Junior Chamber of Commerce will host "Space Fest '91" at 10 a.m. July 20 at the Rice Memorial Center (Rice Univ.). Admission is free. The purpose of "Space Fest '91" is to celebrate Houston's key role in past and continuing development of the Manned Space Center. For more information, contact Terry Jones, 529-2337.

## July 22

**Spaceweek Banquet**—Spaceweek will host a national banquet at 6:30 p.m. July 22, at the South Shore Harbour Resort and Conference Center, League City. The keynote speaker will be NASA Deputy Administrator J. R. Thompson with introductory remarks by JSC Director Aaron Cohen. Black Tie. Tickets \$45 if purchased before July 5, \$55 after. For sponsored table or to order tickets contact Spaceweek National Headquarters, 333-3627.

## July 23

**BAPCO meeting**—The Bay Area PC Organization (BAPCO) will meet at 7:30 p.m., July 23, at the League City Bank and Trust, 303 E. Main, League City. The group is open to all persons with an interest in microcomputers. Contact Earl Rubenstein, x34807, or Tom Kelly, 996-5019, for information.

king and queen beds, no mattress springs, 282-4675 or 480-1368.

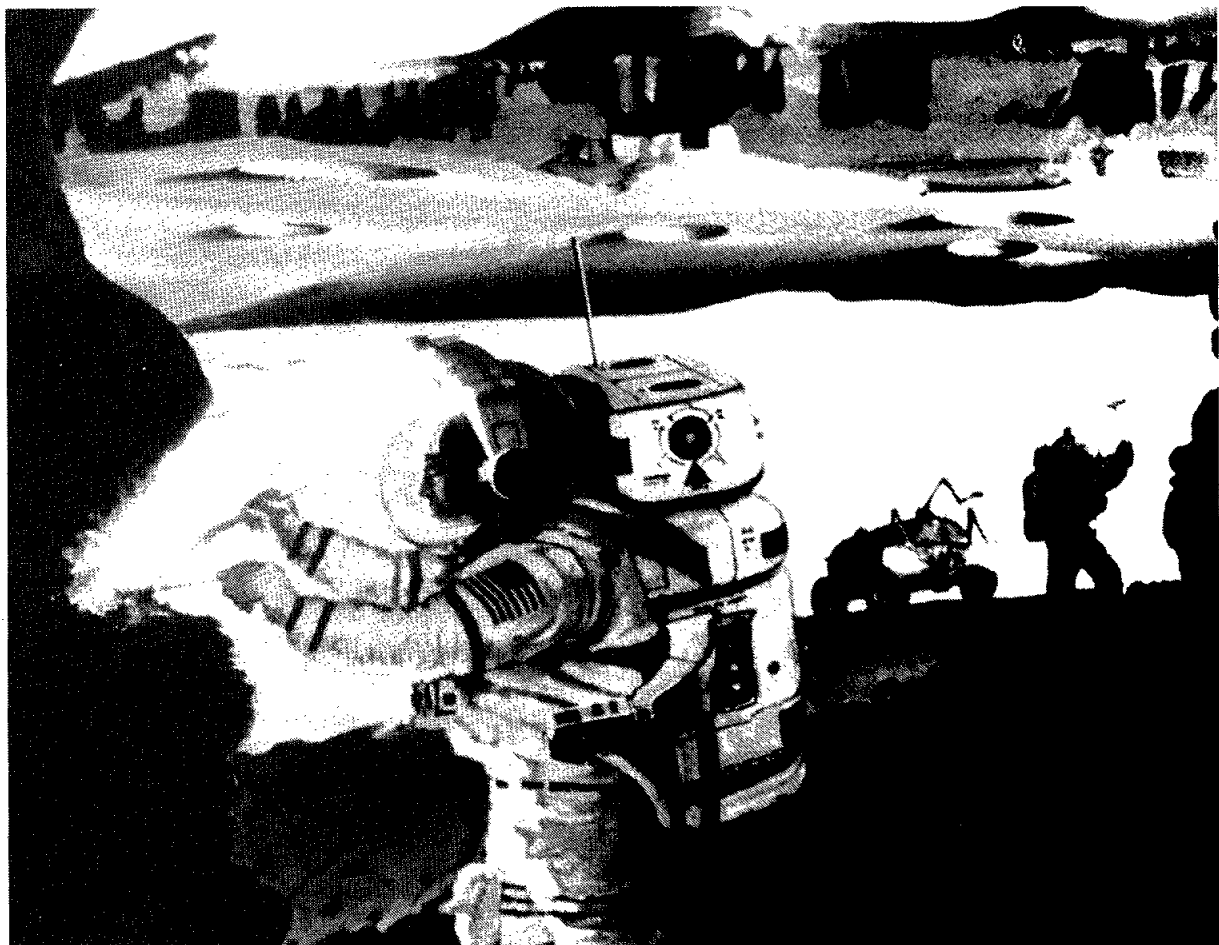
Kenmore washer, wlt, lg capacity, 1 yr, \$275; Kenmore elec dryer, wlt, lg capacity, 1 yr, \$250 OBO for both, \$325-2371 or 326-2783.

Lazy Boy dual recliner, love seat, ex cond, was \$800, now \$250, 482-5837.

WR suite,

# Space Exploration Initiative

## JSC's Synthesis Group member discusses the process and the product



[Editor's note: Doug Cooke, deputy manager of the Lunar and Mars Exploration Program Office, recently returned to JSC after a temporary assignment as a member of the Synthesis Group. That group's report, "America at the Threshold: America's Space Exploration Initiative" set forth four possible architectures, 14 technology initiatives and 10 policy recommendations that could shape space exploration and exploitation for the next century. In this interview, Cooke discusses the Synthesis Group, its processes and its conclusions.]

By Kelly Humphries

**Q:** How was the Synthesis Group study different from the previous studies on the direction of space exploration?

**A:** It was aimed at trying to figure out what you do when you get there more than it was vehicles, habitats and hardware. It was directed more toward identifying accomplishments, which is an important way to look at space exploration. We probably haven't done that to the degree it was done in this report.

The charter was to take an independent look at space exploration, but in the process it became as much as anything an advocacy for the whole Space Exploration Initiative. In fact, the number one recommendation in the report is that SEI be the centerpiece of our strategic plan. I know we in this office believe that should be the case. It provides a long-range goal for NASA and the space community. I think NASA can really benefit from the focus that SEI provides for its programs.

**Q:** How did you become involved?

**A:** I was asked to be on the Synthesis Group after negotiations between NASA and the Synthesis Group leaders. Synthesis was headed by Lt. Gen. Tom Stafford, who had two primary leaders of the effort. One of them was Lt. Gen. Sam Armstrong and the other was George Abbey, who used to be the head of Flight Crew Operations here. They went out and recruited widespread membership for the working group from NASA, the Department of Defense — from all branches of service, a good many of whom work in the Strategic Defense Initiative — and most of the Department of Energy labs. There also was a senior group, that consisted of people like Chris Kraft, Max Faget, Joe Shea, Don Kromer from the Air Force, Mike Griffin, Gen. Abrahamson, Lee Silver and Chuck Ordahl from McDonnell

Douglas. There's a list of them in the back of the report. They helped shape the direction we were going. Some of the senior members came through individually and talked to our various working groups as we worked on specific facets of the report.

**Q:** I take it you were one of the working troops up there?

**A:** Yes, I started the first Monday of September and came back to JSC at the end of March. I have been up there some since then, quite a bit actually, in preparation for the release of the report.

Through the end of November, most of the

time was spent going through what we called tutorials and briefings from various components of the aerospace community. These were a set of briefings that were given, primarily by people from NASA centers, on various aspects of the program — robotics, science, science from the Moon, science from Mars, space transportation, planet surface systems, trajectories and Mars mission time frames. We also had industry briefings, where all the major aerospace companies came in and gave their impressions of what SEI should be about. We also had briefings by DOD and DOE, which were aimed primarily at the kind of technologies they had that might apply to SEI. Many other people who were interested in SEI, or who had an idea to sell, also talked to us.

Practically everybody who's ever thought about SEI came through at one time or another and talked to us about various aspects. We had Carl Sagan, Buzz Aldrin, Dr. Edward Teller, some people from Ocean Engineering. We had pitches on asteroids, tethers, solar power satellites, nuclear technologies, rail guns and anything you can remotely associate with SEI.

There were a good many briefings just on all the background data that's been generated over time. It was primarily to bring this group up to speed because most of them had come from backgrounds where they had not dealt with SEI at all. Very few had, in fact. For the most part, they were coming in with fresh viewpoints.

We had a number of briefings by people from this office on the mission aspects of doing the job. They had a pretty big impact on everybody in terms of the realization of how hard it is to go from here to Mars — what the trip lengths and stay times are. I don't think it was widely understood by the group at the start of the Synthesis Group activity how long the trip times would be. At least half the study time was spent orienting the group with the general background of space exploration.

**Q:** There's a lot to digest, isn't there?

**A:** There certainly is. There's the history of all the past programs — we had people coming in and talking about lessons learned from Mercury, Gemini, Apollo, Skylab, every space program we've had. It was probably a once-in-a-lifetime opportunity to get the benefit of the knowledge of all the past experts who are still with us. It will be hard to duplicate that experience in the future.

**Q:** Were those meetings well documented?

**A:** We have hard copies of all the briefings that were given. In fact, we're making them available to the Technical Library here on site. It's a whole bookcase full of briefing materials.

**Q:** After the briefings what did you do?

**A:** Then we launched off on the waypoint effort. Rather than start the effort by laying our mission scenarios and lists of required hardware for those missions, we developed scenarios of significant accomplishments that could be envisioned on Mars or on the Moon. These were called waypoints, and represented accomplishments that might be linked together to form meaningful mission architectures. They're building blocks for the four architectures. We had the observation waypoint that concentrated on astronomical achievements, we had an energy waypoint that focused on generating energy for use in space and back on Earth. We had a Mars waypoint with chemical engines and a Mars waypoint with nuclear engines. We had a waypoint that concentrated on science achievements. One of the waypoints was aimed at what you do on the Moon, in terms of testing systems and human capabilities, to get ready to go to Mars.

**Q:** Many people are still advocating a Mars mission without a return to the Moon. Why did the group feel a lunar component was necessary?

**A:** It was very interesting because they had no preconceived notions of what it will take to go to Mars. There were a number of

them who thought, "Why go back to the Moon? Why not just go straight to Mars?" But when we got into it more, the complexity sank in. They agreed 100 percent that you had to go back to the Moon to understand the human capabilities and the ability to maintain reliability of hardware for long periods of time and just to learn about the operational aspects of working in space for a long time.

**Q:** What was your role, specifically? Did you have a certain area that you were keyed in on?

**A:** My primary role there was to be the NASA point of contact to get supporting data when it was needed. I worked in one of the waypoint groups, in nuclear propulsion for Mars. After the waypoints, we got into development of the architectures and I was in that group as well. There was a life science group, a propulsion group, a power group, a robotics group, a group that looked at benefits of SEI and how the benefits contribute to society.

Then we all had a role in writing the report. After we had finished these group efforts and pretty well pulled together the information that was needed, we went through and divided aspects of the report and wrote up at least the initial drafts.

**Q:** Did the group work well together? Does the report really represent a consensus?

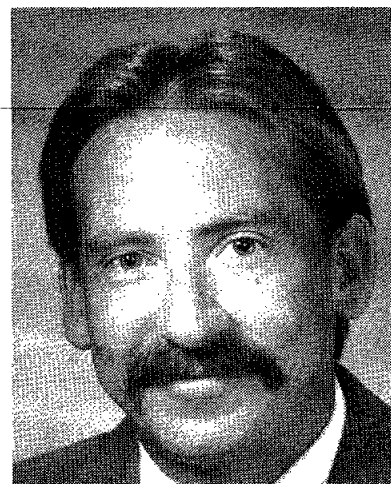
**A:** It was really a good effort. A lot of those folks came in there without a really good understanding of what the Space Exploration Initiative is, and probably hadn't thought about it too much. After it was over, there was a group of people that was totally committed to this as a strategic initiative for the country. In fact, most of them have gone back to their jobs and are trying to figure out ways to get involved in this program within their agencies. I would say we have a lot of new space exploration advocates.

Another thing that was very interesting to see was the excitement of people like Chris Kraft, Max Faget, Gen. Abrahamson, Joe Shea and a lot of other people who are past leaders of NASA. Having been in the Synthesis Group, I know we can call on them anytime and get them to look over our shoulders because they're all very interested. Tom Stafford said a number of times this was the most fun he'd had since Apollo, and he's done many interesting things since then.

The group did work together well. I think most of the report represents a consensus, although like anything else if any one of us had been making the decisions, there are things we would do a little differently. Once again, there was a unanimous advocacy of the SEI.

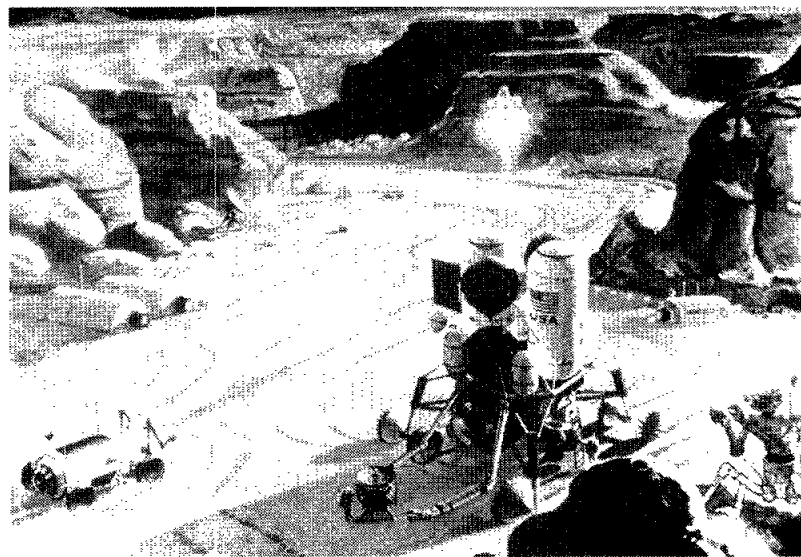
**Q:** Where do we go from here?

**A:** One of the primary charges for the Synthesis Group was to come up with a number of architectures that NASA would study over a period of time. The intent was to identify a number of innovative alternative approaches to exploring the Moon and Mars, from which the administration could decide what the nation's future course should be in space. That was laid out by the Space Council. It was also to produce a set of high-priority technologies, early milestones and recommendations. We have already pulled from the report the essence of the recommendations, architectures and technologies. We will base our near-term work and assessments on these concepts.



Doug Cooke

Top: Astronauts collect Martian rock samples in an artist's concept depicting one of four architectures for exploration proposed by the Synthesis Group. Architecture I, "Mars Exploration," emphasizes Mars exploration and science with a lunar infrastructure developed only to the degree necessary to test and gain experience with Mars systems and operations. Right: Architecture II, "Science Emphasis for the Moon and Mars," depicted in this artist's concept of Martian science and exploration facilities, focuses on balanced scientific return from both the Moon and Mars. Global assessments of both bodies are made, and life science data required for Mars missions are generated through extensive operations on the Moon.





# Fein leads State Bar law section

JSC Patent Counsel Ed Fein has been elected chairman of the Intellectual Property Law Section of the State Bar of Texas.

Fein was chosen to head the section, composed of all 900 patent and copyright lawyers in Texas, at the annual meeting of the state bar association in Houston on June 22.

The section takes positions with respect to pending legislation or legal issues, and conducts continuing legal education classes for its members.

## Professional secretaries elect '91-'92 officers

Diana R. Peterson of JSC's Life Sciences Directorate has been elected president of the Clear Lake/NASA Area chapter of Professional

## JSC mail service changes to once-a-day delivery

JSC mail delivery will become a once-a-day service throughout the center by the end of summer.

Because of continued constraints in resources and increased requirements affecting the mail service, JSC officials have found it necessary to change the JSC mail pick-up and processing schedules to accommodate a single daily delivery to all JSC facilities.

In the past, most JSC buildings have received two mail deliveries a day, one in the morning and one in the afternoon.

The change will go into effect through a phased implementation plan. The plan already has begun at some JSC facilities.

As of July 1: all JSC facilities in the 200, 300 and 400 areas; all JSC Ellington Field locations; and JSC offices in the Eagle, Atlas, Nova, and Vanguard buildings receive mail delivery between 1 p.m. and 2:45 p.m. daily.

Effective Monday, JSC buildings 12, 30 and 45 will receive mail delivery between 9 a.m. and 10 a.m. Effective Aug. 1, JSC buildings 1, 2, 4, 5, 7, 14, 25, 32, 33, 35, 36, 41, 44, 49, 210 and T585 will receive mail delivery between 9 a.m. and 10:30 a.m. All other JSC buildings will receive mail delivery between 1 p.m. and 2:45 p.m.

JSC officials said it may be necessary to periodically adjust this schedule to conform to facility changes and the addition of new facilities. All delivery points will reflect the delivery schedule for that location.

Any outgoing mail that needs to be processed by the U.S. Postal Service will be taken to the Nassau Bay Post Office each day at 11:45 a.m. and 4 p.m. All outgoing mail received at the Bldg. 1 Mail Center by 2 p.m. or the Bldg. 227 Mail Processing Facility by 3 p.m. will be included with mail going to the Nassau Bay Post Office at 4 p.m.

Questions concerning the mail delivery schedules and associated services should be directed to Kochetia Morman at x38481.

## NASA retires Super Guppy aircraft

By Barbara Schwartz

NASA's 940 "Super Guppy," a whale-shaped cargo aircraft that is the world's largest aircraft in terms of cubic capacity, has entered retirement.

NASA managers decided to retire the "Super Guppy" because the aircraft needs four new engines, and this requires strengthening the wings at a total cost of \$6-10 million.

"It's like a flying dinosaur," said pilot Frank Marlow.

Marlow and copilot Arthur "Ace" Beall flew the "Super Guppy" to Davis-Monthan AFB, Ariz., July 9, for long-term storage. Flight engineers on the trip were Chuck Gillespie and Henry Marshall.

The outsized aircraft presents unique flying challenges for the crew. Because of its shape, the Guppy lands differently from most aircraft in that its nose gear touch-

Secretaries International.

She was one of several new officers elected recently for 1991-1992.

JSC

## People

Geneva L. Smith of Houston Lighting & Power was selected as vice president. Karen Byrd of Gail Davis Personnel is secretary, and Bernice Woolsey of Blackburn Marine is treasurer.

JSC committee chairs are: Cynthia Thomason, arrangements; Elaine Kemp, bulletin; Estella Gillette, program and CPS society; and Carol Young, publicity.

## McGregor wins radio control flying meet

Darrel McGregor, a JSC crew training team leader, recently won the overall trophy at the JSC Radio Control Club's June Fun-Fly.

McGregor, a Rockwell Space Operations Co. employee, won two radio-controlled airplane events. Second place went to Charles Copeland, and third to Ed Copeland.

The club meets on the second Thursday of each month, and has a fun fly the following Sunday. Call Charles Copeland at 532-1570 for more information.

## O'Connell top secretary

Mary V. O'Connell, the Exchange Operations assistant responsible for



Fein



Peterson



McGregor



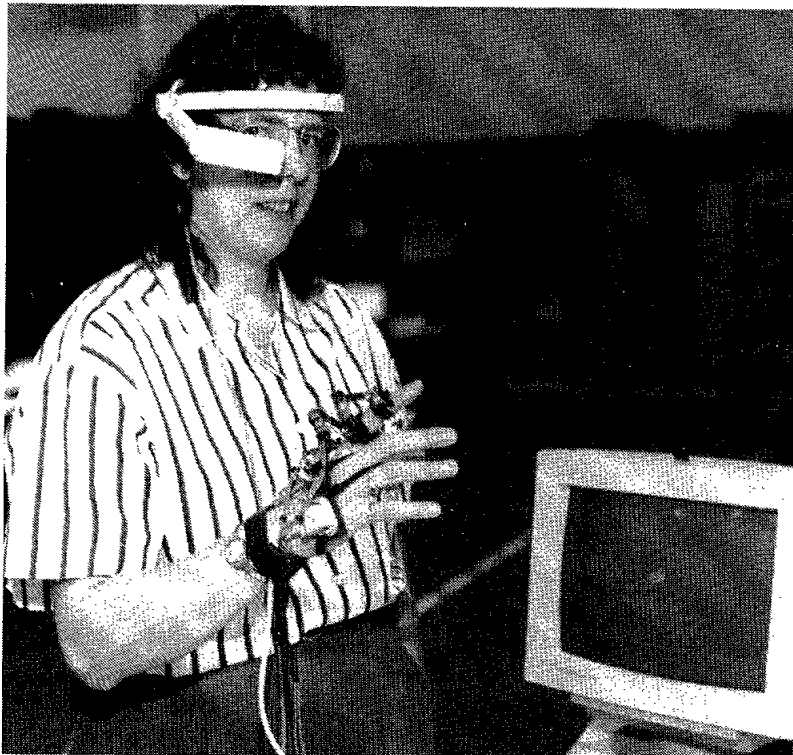
O'Connell

providing secretarial support to the NASA Exchange Operations Manager, recently received the Marilyn J. Bocking Award for Secretarial Excellence.

O'Connell is responsible for day-to-day activities relating to the NASA Employee Benefit Association, the NASA College Scholarship Fund, and the center's Combined Federal Campaign and Savings Bond drives.

She was cited specifically for her ability to handle those activities while balancing numerous special activities. One example of those special activities was the assumption of the duties of a departing NEBA clerk, including policies and procedures, billion methods and cross-checks.

She received a plaque from JSC Director Aaron Cohen and a \$500 stipend.



JSC Photo by Bill Blunck

**Dr. Beth Marcus, president of Exos, Inc., demonstrates the Dexterus Hand Master, a sensor-lined exoskeleton that measures the joint movements of the human hand, during the Space Operations, Applications and Research (SOAR) workshop that was held in the Gilruth Center this week. SOAR was co-sponsored by the U.S. Air Force and NASA as part of Air Force/NASA Space Technology Interdependency Group activities. Speakers and technical papers were featured at the workshop in addition to hardware demonstrations and exhibits.**

## T-38A aircraft avionics upgrade

By Barbara Schwartz

One of NASA's 28 T-38A aircraft officially will re-enter the NASA fleet Tuesday following avionics upgrading and the event will be marked with a ceremony Tuesday at Ellington Field.

The aircraft upgrading is part of NASA's plans to modify its entire fleet of 28 T-38A aircraft with modern avionics equipment to enhance flight safety and improve system reliability.

The first prototype modification was completed on NASA 912 in May, and the first flight was accomplished successfully on May 29.

Initial checkout of the aircraft went well, and it was delivered to Johnson Space Center at Ellington Field June 14. Since then, NASA test pilots and systems engineers have been working on completing the acceptance inspection and conducting a formal

flight evaluation.

A brief ceremony to recognize those responsible for the modification program is planned for 2 p.m. Tuesday near Hangar 276 at Ellington Field where the aircraft will be on display. Employees are invited to attend.

Sierra Research Division of LTV in Buffalo, NY, performed the modification. The upgrade's main features include the addition of a weather radar, a flight management system, and an improved cockpit layout. Other changes include an altitude alert system, an outside air temperature probe, and a voice-activated intercom system.

Astronauts will receive ground training and a short flight syllabus for familiarization before they being regular flights. The T-38A's are used by astronauts to maintain their jet aircraft flying proficiency.

## Spaceweek 1991 salutes nation's space leaders

(Continued from Page 1)

For more information about the art and model building contests contact Diana Dinh at 729-9010. Admission is free to Space Fest and attendees should use the university's entrance eight on Rice Blvd. Scheduled to appear at Space Fest are: Astronaut Bernard Harris; Houston Mayor Kathy Whitmire; and U.S. Senator Lloyd Bentsen. Fred Alcorn, director of Orbital Sciences Corp. and former director of the Space Foundation, will chair the event. The Houston Junior Chamber of Commerce is sponsoring the event which is free of charge and open to the public. Refreshments will be available. For more information call 529-2337.

"The world benefits from space exploration in many areas such as medicine, education, transportation and communications," said Terry Jones, Space Fest chairman. "Space Fest 1991 will highlight the progress of space exploration."

A model rocket launch is scheduled for 1:30-3:30 p.m. July 20 at Johnson Space Center. If it should rain, the launch would be rescheduled for July 21. Organizers said that more than 100 model rockets will be launched. Admission to this event, which is sponsored by the Houston Rocket Club, also is free. For more information call 335-2246.

The new Bay Area YMCA will be the site of the Lunar Rendezvous Festival July 20. The day's festivities will begin with a children's Olympics event from 8-11 a.m. for children aged three years to 13 years. There is a \$3 entry fee. The Family Fun Fair will be held from 10 a.m. to 4 p.m. and there is no charge. The YMCA's grand opening and ribbon cutting will be at 11 a.m.. The YMCA is located on Highway 3 near Pineloch. For more information, call 480-2605.

The Houston Space Society, a non-profit group promoting space development, is sponsoring tours of the Space Bus mobile classroom which features hands on activities for children. The bus will be at Jeremy's Book Store located on Bay Area Blvd. at Space Center Blvd. from noon to 6 p.m. July 21. Jeremy's will donate 20 percent of its day's book sales to buy science equipment for the bus which will serve the Clear Creek Independent School District's 16 elementary schools starting this fall. Call 486-4747 or 283-3530 for more information.

The Fiesta store on I-45 and NASA Road One will display tomatoes from seeds flown in space throughout Spaceweek. The Civil Air Patrol is sponsoring this event and more information is available by calling 546-2050.

## Hurricane season is here

By Kari Fluegel

Whether it comes as Bob, Claudette, Fabian, Grace, Henri or Odette, a hurricane can devastate homes, businesses and people.

Alicia, which hit in 1983, resulted in a cleanup and repair operation at JSC costing about \$2.3 million. Thus, it is understandable when awareness of weather patterns in the Gulf of Mexico heightens as hurricane season begins.

The first step in preparing for a hurricane should be taken well in advance of any tropical storm development.

To assist JSC employees in assessing their preparedness, a video titled "Advice from Your Neighbors" will air on JSC closed-circuit television beginning Monday and continue through July 26.

The video, produced by Rohm and Haas Texas, documents previous severe hurricanes and offers suggestions from area emergency managers. The video encourages residents to develop a personal plan of action and dispels some myths about hurricane protection for homeowners.

The 27-minute video will air Monday through Friday at 9 a.m. on Channel 5.

JSC has a comprehensive hurricane plan to protect center facilities. The center moved to action Level I — a state of continual preparedness — June 1, the official start of hurricane season.

If a hurricane threatens the Clear Lake area, JSC storm preparedness plans move to a Level II status and, at the discretion of Center Operations Director Ken Gilbreath, officials would open a hurricane command post in Bldg. 30. If the threat is

great enough, JSC Director Aaron Cohen would decide when to close the center and begin evacuation of all non-essential personnel.

When the evacuation begins, storm preparedness moves to Level III.

JSC has two recorded services that carry hurricane activities information: the Emergency Information Line, x33351, which provides potential storm information, plans for safeguarding work areas, and information throughout the year on other area emergencies; and the Employee Information Service, x36765, which provides information about closings during hurricane season as they are announced.

Center personnel will be notified when to return to work through the information services and radio and television reports.

Employees should secure their own work areas prior to evacuation. Such preparations include unplugging computer terminals and covering them with plastic bags, raising blinds to prevent additional wind damage should windows break, storing classified and other important materials in safe areas, and closing all doors.

Each JSC organization has a designated emergency planning representative and an alternate who is kept informed on the status of the action levels during a hurricane alert and have information on preparing for a hurricane. A group of about 13 area protection teams ready JSC's grounds for a storm — checking buildings, picking up loose objects outside, and securing possible hazards.

For more information about hurricane preparedness, contact Robert T. Gaffney, the JSC Emergency Planning Officer, at x34706.