



### Home again

Director Aaron Cohen has returned from NASA Headquarters and answers questions about JSC's future. Story on Page 3.



### Building 5 renamed

The Jake Garn Mission Simulator and Training Facility will be dedicated in special ceremonies next week. Story on Page 4.

# Space News Roundup

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## Frost delay doesn't stop final launch of '92

By Kari Fluegel

Jack Frost's touch couldn't keep the Space Shuttle *Discovery* down Wednesday as the solid rocket boosters blazed to life at 7:24 a.m. Central beginning STS-53 and the final flight of 1992.

Launch of this year's seventh mission was delayed 85 minutes when launch controllers had to wait for the rising sun to melt ice and frost off the external tank. The countdown continued, however, as soon as the tank was cleared by the Kennedy Space Center's ice team.

The STS-53 crew consists of Commander

David Walker, Pilot Robert Cabana and Mission Specialists James Voss, Guion Bluford and Michael "Rich" Clifford.

Crew member's first order of business was the completion of the classified Department of Defense payload operations. DOD representatives reported Wednesday afternoon that DOD-1 was deployed successfully and that all operations went as planned.

With DOD-1 gone, STS-53 resumes normal operations for the remainder of the

seven-day flight.

Thursday, the crew was scheduled to lower *Discovery's* orbit to 175 nautical miles to protect daylight landing opportunities and prepare for release of the Orbital Debris Radar Calibration Spheres on Friday.

ODERACS, a JSC sponsored experiment, will eject six metal spheres to be tracked by several ground-based radar facilities including the Haystack Radar. The spheres will help the radars to better characterize their instru-

ments by allowing them to home in on objects whose size, composition, reflectivity and electromagnetic scattering properties are well known.

The two four-inch spheres made of solid stainless steel have a useful life of about 70 days and will reenter the atmosphere after about 120 days. The two stainless steel two-inch and two solid aluminum six-inch spheres have a useful life of about 45 days and will reenter after about 65 days.

Other secondary payloads include the Battlefield Laser Acquisition Sensor Test, Please see **STS-53**, Page 4



## Leestma to head FCOD

By Barbara Schwartz

JSC Director Aaron Cohen Monday named astronaut David C. Leestma director of Flight Crew Operations, effective immediately.

"This job requires a multi-dimensional person who can manage astronaut and payload specialist activities, aviation operations, and safely make expert technical decisions regarding human spaceflight, resolving issues with vehicle systems, payloads, experiments, crew equipment, and flight rules, while bringing to fruition program goals," Cohen said. "I chose Dave from a group of exemplary candidates—and it was major competition—because he has demonstrated his ability to do this job and do it well."

Leestma, 43, is currently deputy chief and acting chief of the Astronaut Office. He was deputy director of FCOD from February 1990 until September 1991, when he left that position to train for his third Space Shuttle mission.

Leestma flew as a mission specialist on STS 41-G in October 1984 and performed a space walk with Kathryn Sullivan, Ph.D., to demonstrate the feasibility of refueling satellites in space. He also was a mission specialist on STS-28, a classified Department of Defense mission in August 1989, and on STS-45, the Atmospheric Laboratory for Applications and Science spacelab mission in March 1992.

Between the three space flights, Leestma served in other technical and management assignments. He was chief of the Mission Development Branch in the Astronaut Office, responsible for assessing the

Please see **LEESTMA**, Page 4



JSC Photo

**STS-54 Mission Specialists Greg Harbaugh and Susan Helms practice EVA suit up procedures in the Bldg. 7 airlock mock-up. Harbaugh and Mario Runco will perform a five-hour space walk during the January flight.**

### Spacewalks to build experience

## EVA added to STS-54

By James Hartsfield

With just over 3 years left before construction of Space Station *Freedom* begins, NASA recently decided to add spacewalks to upcoming Shuttle flights when possible, beginning with one during STS-54 in January 1993.

The extravehicular activities will fine-tune the methods of training astronauts for assembly tasks in space and increase the spacewalk experience levels of astronauts, ground controllers and instructors. EVAs will be added to Shuttle missions only when they can be performed with no impact on the other objectives and they will be the lowest priority activity on each mission.

For STS-54, astronauts Greg Harbaugh and Mario Runco, Jr. will perform a five-hour spacewalk evaluating their abilities to move about *Endeavour's* cargo bay with and without large objects; will closely align large objects; and will install large equipment. In addition, the tests will provide information on the amount of time required for various

tasks and for the astronauts to become acclimated to the spacewalk environment.

STS-54 is the only Shuttle flight to have a spacewalk officially added as part of the new tests. However, several other 1993 Shuttle flights as well as many in the following years are being studied as candidates for further spacewalk additions.

Spacewalks have been conducted periodically on NASA flights since the Gemini Program in the mid-1960s, but the tasks being performed outside the spacecraft have become, in general, increasingly more demanding. The challenge will continue to increase when Space Station *Freedom* construction begins in March 1996.

During spacewalks performed on Shuttle mission STS-49 in May to repair the INTELSAT VI satellite and test *Freedom* construction techniques, differences between ground training and actual orbital

Please see **STS-54**, Page 4

## Mission specialists receive new training tool

By Kari Fluegel

A new plane has entered the JSC fleet and is expected to become a valuable training tool for NASA mission specialist astronauts.

Currently, the real-time flight environment training for mission specialists is limited to flying in the back seat of a T-38; however, as the ratio of pilot astronauts to mission specialist astronauts increases, back seat time is limited.

The new plane, dubbed the MSTA or the Mission Specialist Training Airplane, will give mission specialists

opportunities to log flying time.

"This plane is for mission specialists, flown by mission specialists," said Stephanie Wells, project pilot.

NASA 935, a Cessna Citation II, was delivered to Ellington Field Monday. The MSTA will undergo a six-month evaluation during which the benefits of the program will be assessed, but preliminary feedback indicates that the plane will be well-used.

"We've have a very enthusiastic response," Wells said. "We've had it only a few days and have had all

kinds of requests to fly it."

A small twin engine jet with short-field capability, the Citation has a side-by-side cockpit configuration with a jump seat, similar to the arrangement of the shuttle seats. The plane has a range of 1,200 miles and low servicing requirements. It also costs about four times less than a T-38.

The aircraft also is certified by the FAA for single-pilot operation which allows non-pilot mission specialists to fly in the right seat and jump seat as active participants.

An additional benefit is that the mission specialists who are highly qualified military aviators will be able to use the MSTA to fulfill the requirements for aviation service.

Wells said the biggest advantage is that the MSTA allows astronauts to practice the crew coordination necessary to conduct shuttle missions. Besides the two pilot seats and jump seat, the Citation has five passenger seats and can be used by flight crews traveling to training activities at other locations.

"This is a crew airplane," she said.

## Space Station management to consolidate at Reston

Culminating six months of reviews, NASA recently announced plans to consolidate some management functions for the Space Station *Freedom* program and create a contractor-led integration team to ensure the successful building and deployment of the international space station.

"These moves will improve overall program management and significantly strengthen the integration of the various station elements," said Arnold Aldrich, Associate Administrator for Space Systems Development. "We foresee no schedule or budgetary impact from these changes. In fact, when fully implemented, these changes will reduce 'overhead' costs and strengthen

program execution and accountability."

NASA plans to combine the existing Level 1 Space Station *Freedom* offices at NASA Headquarters with Level II offices in Reston, Va. This step will consolidate overall program management at Reston.

"Reston will remain the focal point for the space station program for the foreseeable future," said Aldrich.

NASA also is working toward establishing a Joint Vehicle Integration Team at JSC. The JVIT will be staffed by the three space station prime contractors: Boeing, McDonnell Douglas and Rocketdyne. NASA will manage the JVIT contract.

"It is my strong view, which is shared across NASA senior management, that these changes are essential to the successful implementation of this program," said Aldrich. "Further, they are consistent with the findings of a number of internal NASA reviews and with congressional direction. The changes are fully supported by the space station hardware contractors and by Grumman."

Grumman is the space station engineering and integration contractor who will participate with the JVIT and who will continue at Reston as the program integration contractor.

Aldrich also said Richard Kohrs will continue as Director, Space Station *Freedom* and will be located

at Reston. He added that the deputy director for program and operations would be transitioned to the JSC to provide for full and effective management of the *Freedom* program, including the JVIT.

According to Aldrich, details of these changes will be spelled out in a transition plan developed by Kohrs by mid-February 1993. The plan will clearly define the roles and responsibilities for the space station offices at Reston, JSC, the Lewis Research Center, the Marshall Space Flight Center and the Kennedy Space Center.

Kohrs' plan also will address longer-range plans to consolidate Space Shuttle and space station

operations by mid-1997 and combine the Shuttle and station programs by late 1999.

"This will result in significant economies of scale in the outyear budget for space station operations and will greatly improve the overall operations management of both programs," said Aldrich. "Over the course of the last few years, the men and women of the NASA team have made substantial progress in meeting key program milestones; however, as the program shifts its emphasis from design activities to hardware development, manufacturing and integration, the buildup to support these activities at the NASA Centers was planned and is required."

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# 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. For more information, call x35350 or x30990.

Children's Christmas Party (10 a.m., Dec. 19, Gilruth): child, \$4; adult, \$1; tickets on sale until Dec. 16.

Christmas Dances (Dec. 11-12 Gilruth Center) — Dec. 11 roast beef dinner, \$15 per person; Dec. 12 prime rib Dinner, \$20 per person. Tickets on sale until Dec. 9 Nutcracker Ballet (Dec. 11, 8 p.m., Dec. 12, 2 p.m. and 8 p.m., and Dec. 13, 2 p.m., UHCL Bayou Theatre) — \$10 each, limit four per badged employee.

Space Center Houston — Discount tickets available: adult, \$7.50; child (3-11) \$4.50. Metro tickets — Passes, books and single tickets available.

Movie discounts — General Cinema, \$4; AMC Theater, \$3.75; Loews Theater, \$4.

Entertainment '93 and Gold C coupon books, stamps, Walt Disney Club memberships also available.

Upcoming Events:

New Year's Eve Dance, Dec 31 — Tickets go on sale at 8 a.m. Dec. 16.

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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 badge or EAA membership card. Classes tend to fill up four weeks in advance. For more information, call x30304.

**EAA badges** — Dependents and spouses may apply for photo identification badges from 6:30-9 p.m. Monday through Friday. Dependents must be between 16 and 23 years old.

**Defensive driving** — Course is offered from 8 a.m.-5 p.m. Dec. 12. Cost is \$19.

**Weight Safety** — Required course for employees wishing to use the Gilruth weight room is offered from 8-9:30 p.m. Dec. 15. Pre-registration is required; cost is \$5.

**Aerobics** — High/low-impact classes meet 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. Tuesdays and Thursdays. Cost is \$24.

**Bench aerobics** — Class meets from 5:16-6:15 p.m. Mondays and Wednesdays. Cost is \$32 for eight weeks; participants must provide their own benches.

**Aikido** — Martial arts class meets Tuesdays from 6:15-8 p.m. Cost is \$15 per month.

**Country and western dance** — Beginning class will meet from 7-8:30 p.m. Mondays beginning Jan. 4. Intermediate classes will meet from 8:30-10 p.m. Mondays. Cost is \$20 per couple.

**Volleyball** — Winter league volleyball registration will be at 7 a.m. Dec. 8-9 at the Gilruth. Mixed C and women's leagues will sign up on Dec. 8. Mixed "B" and men's leagues will sign up Dec. 9.

**Basketball** — Winter league basketball registration will be at 7 a.m. Dec. 10 at the Gilruth.

**Fitness program** — Health Related Fitness Program includes medical examination screening, 12-week individually prescribed exercise program. Call Larry Weir, x30301.

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# Swap Shop

## Property

Lease: CL TH, 1-1, 625 sq ft, no pets. Martin, x45338 or 488-0949.

Lease: Univ Green, 3-2-2, \$1050, 326-1743.

Rent: Breckenridge, CO, ski house, sleeps 12. 482-9124.

Sale: Dickinson, 4-3-2d, game rm, study, screened porch, kitchen w/ceramic tile, \$129.9K. Coy, x39282 or 335-0641.

Rent: TLV, eff, furn or unfurn, paid util, lease, ref, \$400/mo. x32767 or 532-1725.

Lease: CL/Ellington, 2 BR condo, new paint, tile, fans, carpet, W/D, \$485/mo + dep. 334-5898.

Lease: Pipers Meadow, 3-2-2, split floor plan, FPL, \$750/mo + dep. 486-5527.

Rent/Sale: Baywind II condo, 1-1, W/D, refrig w/ice-maker, new paint, dishwasher, avail Oct. Steve 244-7474 or 486-8047.

Rent/Sale: Egret Bay, FPL, fans, W/D, dishwasher, microwave, 2 outdoor closets, balcony w/2 glass doors, boat ramp, dock, \$530/mo + dep. Karl, x33031 or 286-9822.

Lease: Baywind II condo, 2-2, downstairs, tiled floors, new carpet, FPL, patio w/awning, \$550/mo, \$275 dep. x33759 or 486-0253.

Lease: Hobby, downstairs unit, new carpet, assume lease, keep dep, \$295/mo, x31208.

Sale: Meadowland, 3-2-2, cul-de-sac, jacuzzi, FPL, extras, low 80's. 482-8595.

Sale: Univ Green, 3 BR, lg lot, carpet, home shield insurance, \$95.6K. Huey, 480-9544 or 333-7248.

Sale: LaPorte, 3-2-5-2, 2 story, formal, hot tub, deck, \$65.5K. 283-5858 or 470-8330.

## Cars & Trucks

'79 Ford F100 PU, 302 V8, standard transmission, AC, PS, low miles, \$1.2K. 998-0407.

'88 Subaru GL, auto, AC, PS/PW/PL, 50K mi, new tires, ex. cond, \$4.7K. x35843.

'90 Mazda Protege, 4 DR, PW/PL, 1800 cc motor, manual transmission, take over pymts at JSC, \$298/mo. x32949.

'87 Honda Accord LX, blue, 5 spd, AC, cruise, tilt, elec sunroof, one owner, good cond, \$4K. Gloria, x31891 or 538-2283.

'85 Ford Van, new paint, stereo, captains chairs, auto, 107K mi, \$4.8K. 472-6313.

'68 Buick Skylark, 350, V8, auto, PS/PB, AC, \$5K; '89 Dodge Caravan SE, 3.0, V6, PS/PB, AC, 23K mi, \$9.5K. Joe, 474-7769.

'73 Datsun 240Z, 4 spd, 90K mi, \$1.5K OBO. x38130 or 481-1719.

'90 Nissan Maxima SE, maroon, Bose stereo, elec sunroof, auto, ex cond, 270K mi w/ext warr, \$15.5K. Jan, x32896 or 538-1443.

'88 35' Holiday Alumilite MH, 26K mi, 454 Chev, rear qn, side bath, dinette, leveling jacks, nonsmoker, no pets, \$36K. Joe, 283-6508 or 337-3696.

'84 Chev van, V8, dual AC, cruise, tilt, auto, AM/FM/cass, one owner. 482-3754.

'62 Buick Special model 4119, restored except for uphol, 4 DR Sedan, V8, auto trans, AC, AM radio, 54K mi, appraised at \$1.5K, reasonable offers considered. x34262.

'91 Chevy S10 Tahoe, auto, AC, PS/PB, 32K mi, \$7.5K. 481-8287 or 283-7536.

'88 Chev Cavalier, Z24, V6, auto, AC, AM/FM/cass, ex cond, \$5.5K. Larry, x34527 or 485-4932.

'84 Pontiac Firebird, V8, AC, auto, pwr, tint, new paint, tires, alt, batt, int, AM/FM/cass, \$3695. Lisa, x36030 or 337-4953.

'85 Mustang GT, loaded, 1-top, mech perfect. \$3K. Bill, x34455 or 280-0060.

'86 Honda Accord LX, blue, cruise, good cond. \$5.3K. Rob, 480-3944.

'84 Volvo turbo, metallic brown/tan leather, auto trans, cass stereo, sunroof, PW/PL, orig owner, 96K mi, ex cond, \$4.2K. 482-8224.

'91 Honda Civic DX, 5 spd, AC, AM/FM/cass. 17K mi, \$8295. 333-7867 or 534-3437.

'80 Cadillac Fleetwood Brougham, \$2.2K OBO. Keith, x35191 or 332-5170.

'85 Dodge Ramcharger, 360, V8, air shocks, trl brakes, running boards, \$4950. 460-9191.

'78 Mercedes, 300D, rebuilt eng, \$5.5K. 538-4197.

'86 Toyota Corolla SR5 coupe, 2 DR, new break pads, 96K mi, \$3.9K. 331-1654.

'84 Chevy Caprice, 4 DR, AC, AM/FM/cass, good cond, \$2.4K. Allan, 472-7526.

## Cycles

'85 BMW, blk, new brakes, batt, ex cond, \$3K. x39120 or 554-4960.

'85 Honda Nighthawk, 650 cc, 30K mi, \$1.2K OBO. 282-4563 or 943-8443.

'70 Honda SL 350, new tires, runs good, \$400. 332-0330.

## Audiovisual & Computers

Borland Quattro Pro 3.0 spreadsheet, \$80; Paradox 3.5 database, \$125; Object Vision 2.0, \$80; Central Point Anti-Virus, \$30; all w/registration card. Martin, x45338 or 488-0949.

Nintendo game system, 6 games, 1943, pinball, Super Mario 1/11, Dragon Warrior, Battletoads, cleaning system, all, \$100. Chuck, x36341 or 286-1470.

Turbo Graphics plus games, \$70. Greg, 554-6200.

Tandy wide carriage daisy wheel printer, \$45. 992-5958 or 335-8539.

Sound Design turntable, dual cass, graphic equalizer, \$50 OBO; lg assortment of CDs, \$10/ea. 481-8287 or 283-7536.

PC clone, 386/16mhz, 2 MB RAM, 30 MB HD, 1.2M/360K FD, IBM CGA color monitor, DOS 5.0, Word Perfect 5.0 + menu sys, \$550; Diablo 630, daisy wheel printer w/extra ribbons, \$125. Randal, x38187 or 992-5607.

Denon DCD-1100 CD w/remote, \$100. Leonard, 282-4044 or 333-5576.

Epson LQ-1000 dot matrix printer, wide carriage, 24 pin print head, tractor feed, courier font module, \$150. Bob, x37593 or 334-5894.

IBM PCXT, CGA, printer, \$220. 480-2973 or 333-6225.

Casio MT-500 elec PCM kybd, drum pads, auto rhythm, chords, \$50. x37010 or 334-2612.

## Photographic

35mm blk/wht enlarger w/lens, \$50. 996-0030.

Konica 35mm camera, 3 lenses, case, tripod, flash, \$310. x36472.

## Pets & Livestock

Free to good home. 3 yr old f cat, spayed, declawed, current shots. Fisher. 480-2584.

Parakeets, home raised, blue, aqua marine, \$5/ea. x32767 or 532-1725.

AKC registered chihuahua pups, 10 wks old, shots, wormed, dipped, \$125. 534-3893.

AKC registered Maltese pups, females, \$300; males, \$250, shots, will be 6 wks old 12-14. Tammy, 480-7762 or 487-6981.

AKC registered Boxer pups, b 11-14, ready Christmas wk, \$250. x39034 or 474-2660.

Free kittens, 2 mo old, 488-5709.

Miniature collies, sheltie pups, \$125. 771-1012.

Free f calico, 6-12 mos old, 283-8141.

## Musical Instruments

Wurlitzer fun maker organ, \$300. x38624 or 475-9671.

KAWAI 705M elec piano, 6 yrs old, \$1.2K. 477-4987.

Goya guitar, model #CG-10 w/case, ex cond, \$75. Shelly, 283-1834 or 332-4807.

Classical Yamaha guitar w/case, \$100 OBO. Tracey, x39018 or 480-3859.

## Lost and Found

Lost mens gold chain bracelet between bldg 30 and bldg 4, may have been lost in cafeteria, bldg 11, if found, call Felix, x32963.

Found gold chain on sidewalk outside bldg. 11 cafeteria, call and describe to claim. x32618.

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# Dates & Data

## Today

**Cafeteria menu** — Special: meat sauce and spaghetti. Entrees: baked scrod, liver and onions, fried shrimp. Soup: seafood gumbo. Vegetables: green beans, buttered broccoli, whipped potatoes.

## Monday

**Cafeteria menu** — Special: wieners with baked beans. Entrees: beef chop suey, breaded outlet with cream gravy, grilled ham steak. Soup: beef and barley. Vegetables: buttered rice, Brussels sprouts, whipped potatoes.

## Tuesday

**AIAA meets** — The American Institute of Aeronautics and Astronautics' Guidance, Navigation and Control Technical Committee will meet at 11:45 a.m. Dec. 8 in Gilruth Center Rm. 204. Barrios' J. Lee Foster will discuss "Orbital Debris Avoidance for Space Station." For more information, call David Clark at 332-2484 ext. 61, or Rob Carmody at 283-4101.

**Cafeteria menu** — Special: pepper steak. Entrees: fried shrimp, pork chop with applesauce, turkey a la king. Soup: celery. Vegetables: au gratin potatoes, breaded squash, buttered spinach.

## Wednesday

**Toastmasters meet** — The Spaceland Toastmasters Club will meet at 7:15 a.m. Dec. 9 in the Bldg. 3 cafeteria. For more information, call Darrell Boyd at x36803.

**Astronomy Seminar** — JSC Astronomy seminars will host a lun-

cheon meeting from noon to 1 p.m. Dec. 9 in Bldg. 31, Room 129. Guest speaker will be Dr. P. Schrank discussing "Triton and Pluto: Rogue Bodies of the Outer Solar System." For more information, contact Al Jackson at 333-7679.

**Eclipse party** — The JSC Astronomical Society and Challenger 7 Memorial Park will host a Lunar Eclipse Party from dusk to 9 p.m. Dec. 9 at the park. Telescopes for viewing the total lunar eclipse will be provided. For more information, call Bill Williams at 339-1367.

**Cafeteria menu** — Special: Mexican dinner. Entrees: fried catfish with hush puppies, braised beef ribs. Soup: seafood gumbo. Vegetables: Spanish rice, ranch beans, buttered peas.

## Thursday

**AIAA banquet** — The Houston Section of the American Institute of Aeronautics and Astronautics will present its annual director's reception at 5:30 p.m. Dec. 10 at the Gilruth Center. JSC Director Aaron Cohen will discuss "The State of JSC." Dinner cost is \$8 for members, \$9 for non-members, \$7 for students/young members. Reservations are due by noon Dec. 7; call x31350, 333-6064, 283-4214, or 282-3160.

**IEEE meets** — The Galveston Bay Section of the Institute of Electrical and Electronics Engineers will meet at 11:30 a.m. Dec. 10 at the Gilruth Center. Prof. Valeri Ozhogin, deputy director of the Kurchatov Institute in Moscow, will discuss the "Status of Superconductivity in the Commonwealth of

Independent States." Cost is \$7 for members, \$6 for young members, \$8 for non-members. Reservations are due by 11 a.m. Dec. 7; call Marcia Taylor at x30195.

**Cafeteria menu** — Special: hamburger steak with onion gravy. Entrees: corned beef with cabbage and new potatoes, chicken and dumplings, tamales with chili. Soup: split pea. Vegetables: navy beans, buttered cabbage, green beans.

## Dec. 11

**Cafeteria menu** — Special: barbecue link. Entrees: deviled crabs, broiled codfish, liver and onions. Soup: seafood gumbo. Vegetables: buttered corn, green beans, new potatoes.

## Dec. 14

**Lunch and learn** — The Houston Section of the American Institute of Aeronautics and Astronautics will host a meeting of the Management Technical Committee at 11:30 a.m. Dec. 14 in the Bldg. 3 cafeteria. Rick Dennis, chairman of the Houston Business Roundtable Architectural and Engineering Committee, will discuss "Benchmarking." For more information, call John Hunsucker at 743-4194, or Susan Voss at x34841.

**NSS meets** — The Clear Lake area chapter of the National Space Society will meet at 7:30 p.m. Dec. 14 at the Gilruth Center, Rm. 204. Plans for an upcoming regional conference and for the newly established Young Astronauts chapter will be discussed. For more information, call Marianne Dyson at 486-4747.

## Household

Round antique oak table, 5 chairs, credenza, \$1K. x38624 or 475-9671.

Brass plated, full sz hdbd, computer desk w/shelves, locking hutch, \$100; desk chair, \$30; 86" sofa w/stitch fabric, \$150, all ex cond. 280-8894.

Whirlpool tub, almond, 4 x 5, \$300. Mark, x38013 or 992-4132.

Lg tray, antique, 34" x 18" stand, \$80; lg peruvian rug w/fg woven in, \$70; small antique two door cabinet, \$15. 488-5564.

Silk living rm drapery, pictures, kg BR set, stereo, dining table, hand painted porcelain lite fixtures, antique table/chairs for kit, treadmill, 3 pc luggage set. Gail, 283-5366 or 333-4051.

Sectional couch/loveseat w/corner table, \$250; coffee table, glass/light wood, \$75; all for \$300 OBO. Kathie, 333-6145 or 554-4040.

Brass/glass beveled edge dinette table w/4 chairs, \$200; coffee table w/4 corner beveled smoked glass inlays, \$30. Fisher, 480-2584.

Antique dining set, oak table, oil finish, 4 chairs, ex cond, \$950. x31351 or 286-0314.

Litton microwave, 650W, 10 pwr levels, digital cntrs, \$90. 992-5958 or 335-8539.

Freestanding conical FPL, wood/gas/elec logs, \$120; Tiffany ceiling lamp, 19" dia, heavy leaded colored glass, \$65. 331-5751.

Kg sz matt w/box springs, ex cond, \$150 OBO. x32799 or 532-1725.

Twinn early American maple canopy bed frame w/wht eyelet canopy, \$75. 480-8280.

China cab, \$350; buffet server, \$200; table w/leaves, \$100; 4 chairs, \$100; blue Qn Anne settee, \$85; Remington Rand elec typewriter, \$25. 282-4849 or 409-925-7839.

Sears Kenmore W/D, '86 model, good cond, \$250. Page, 938-7157.

W/D, gas, Kenmore, heavy duty, \$250; 25 cu. ft. side-by-side refrig, G.E., ice and water in door, \$450. Bob, x33057 or 538-3431.

21 cu. ft. frost-free refrig; 23 cu. ft. side-by-side refrig, 4 highback, swivel, uphol bar stools. 538-1708 or 488-8551.

Kenmore elec dryer, wht, \$75. Allison, x37752 or 280-9424.

Lg wood dining rm table/chairs, \$400; qn sz matt set, \$300; chest freezer, \$200; puffy skirt for wedding gown, \$30. 280-0031.

Five pc rattan set, coffee table, 4 pc sofa, good cond, dk rattan, \$150. 992-5832.

Dining table, 4 chairs, extra leaf, china cabinet, curio hutch, all match, good cond, \$450 OBO. Bill, x34455 or 280-0060.

G.E. Hotpoint elec dryer, ex cond, \$100. John, x39624.

Qn sz waterbed frame, \$20. x31883.

Rattan table w/4 chairs, round, \$50; 2 swivel rattan chairs, \$20; full sz bed, good cond, \$30. Tracey, x39018 or 480-3859.

BR suite, 7 pc, French Provincial w/gold trim; canopy bedframe, 2 drwr bedside table, 3 drwr chest, mirror, \$875 OBO. 331-8063.

RCA 25" console tv, early American, ex cond, \$150. Shirley, x30227 or 482-0888.

Contemp wood dining table, 2 leaves, 4 side chairs, 2 arm chairs, \$1.2K OBO. 480-3387.

Bk laquer sofa, coffee/end tables, \$300; matching entertainment center, \$400 OBO. 996-0042.

Loveseat, beige fabric, ex cond. Brad, x30453 or 474-5609.

Admiral upright freezer, 18.2 cu ft, \$160; full sz Stearns and Foster matt/box springs, \$120; daybed cot/foyer set, \$60. 554-5119.

Qn sz Simmons maxi-pedic matt/box springs, ex cond, \$150. Beth, x36996 or 332-9102.

## Wanted

Want heavy duty camping backpack, no more than \$25. x36173.

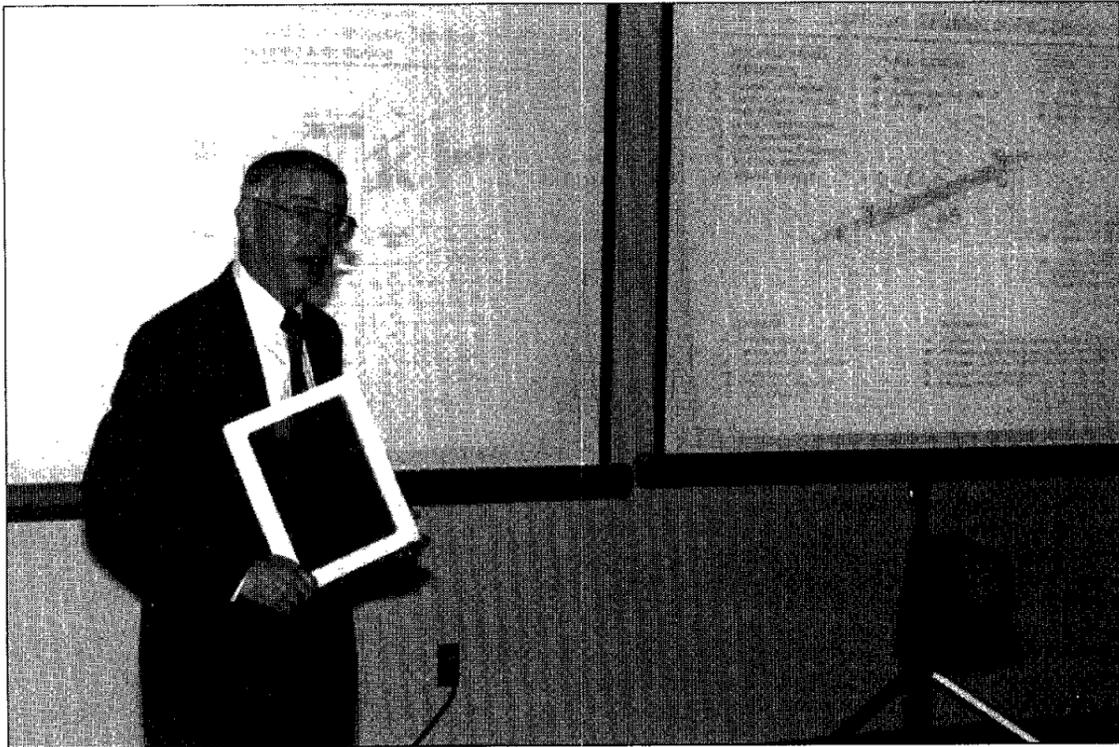
Want Tecna second stage regulators, unimat metal lath. Parker, x35178 or 922-6628.

Want camping equipment, 2 man tent, backpacks. x30291.

Want Little Tykes kitchen set. 480-8280.

Want VHS camcorder in workable cond, must have batt/charger, instructions. Ed, x36250 or 481-4889.

Want Barbie Dream House. 280-8746



*An interview with*

# Aaron Cohen

## JSC's director begins return to center duties with his eyes on space station challenges

By Brian Welch

**ROUNDUP:** Looking ahead to the new year, what are the challenges for the agency, and more specifically, what are the challenges for JSC in 1993?

**COHEN:** There are a number of challenges, and they cover a broad range of activities. One of our primary goals, of course, is to continue to fly the shuttle and fly the shuttle safely. We want to maintain a flight rate of approximately eight flights per year. We have to do that efficiently, and we are working to reduce the operating costs of the shuttle, but all the while we have to fly safely. The second key goal for the agency is to design, develop, assemble and operate the space station. And in that context, the Johnson Space Center has a very large role. Not only do we have responsibility for Work Package 2, but many of the center's institutional organizations, such as Mission Operations, Flight Crew Operations, Life Sciences, Engineering and Safety, Reliability and Quality Assurance, as well as the Shuttle Program and Orbiter and GFE Projects Office, will play a very large part in making the space station a success. That is a very high priority.

There are several other high priorities for the agency, several of which do not specifically involve JSC. One is the aeronautics program. It is extremely important to the long range economic fortunes of this country that the U.S. continue to be a world leader in the aeronautical industry. And NASA is determined to help maintain that through its own world-class aeronautical research program. Another high priority for the agency is the Mission to Planet Earth, which is focused on developing the Earth Observing System. A third high priority is Cassini, which will return to Saturn to build on what the Voyager spacecraft taught us. The Advanced X-Ray Astrophysics Facility, another of NASA's great observatories to be placed in orbit, will continue our search for answers about how the universe was formed and what its fate will be. Another important element of the agency's mission is the Space Exploration Initiative, although that will be cut back significantly in the coming years because of the higher priorities we have immediately out in front of us. But we still want to keep the Space Exploration Initiative focused and do some work to prepare for returning to the Moon and pushing on to Mars after the turn of the century.

The two most important programs we have, because of where they are in terms of budget, performance and schedule are space station and the Earth Observing System. They are our new big starts, and in order for us to be successful with the space program, NASA has to show performance on schedule and within the budget for both programs. If we can do that with those two new tasks in a very efficient manner, I think we will win the respect and confidence of the American people and also the Congress. I'm counting on our Total Quality and continuous improvement efforts to give us the edge we need to meet these challenges. And that will give us the opportunity in the future, then, to do the Space Exploration Initiative. So when we look at all of that and then consider the specific set of challenges facing JSC, it is clear that our job is to continue to fly the shuttle safely, reduce the operating costs and do a similar job on the space station. We need to put some of our best people on the station program to make that a success in the next several years.

**ROUNDUP:** What is the outlook for how NASA will fare in Congress in 1993?

**COHEN:** We can't afford to take our

traditionally strong support in the Congress for granted. There are several necessary conditions to making us successful on Capitol Hill next year. Number one is to stay within our projected cost for the space station. We cannot have an increased cost on the Space Station Program. Another important element is staying on schedule. We have to stay within cost, schedule and performance. But there is more to it than that. We are also going to have to show the benefits that you get from the space station in pursuing micro gravity research.

**ROUNDUP:** Will we see the pace increasing on the station program in the coming year?

**COHEN:** Absolutely. I think the pace will pick up significantly. As you know, we have a very critical milestone coming up in April with the first major activities associated with the Critical Design Review for station. We'll be reviewing the 90-percent drawings against the specifications beginning in April. That is a very key event, and it will culminate in the total Critical Design Review, or CDR, in June and July. That is really a very important point in the program, because once you finish that, it's no holds barred. You're starting to build hardware and get it ready for the first element launch, which is now scheduled for early 1996.

With all of this happening, I think we are reaching a point where all of us are going to have to realize that the space station and the shuttle are of equal priority. We're going to need to take some people off of the shuttle and put them onto the space station work. We can't afford to miss a cue on shuttle. It's got to be flown safely. But space station is extremely important, and the people who work on the project have the future of NASA in their hands.

**ROUNDUP:** How so?

**COHEN:** I think if we do not perform on space station in the coming years, there is a good probability that it could be canceled. It's that simple. And if that happens, I think the human element of space exploration will have been significantly set back. So space station has got to be a success if we want human space exploration to be a success.

From everything I've seen in Washington since last spring, I'm convinced not only that the space station is precisely the right thing for this country to do next in space exploration, but also that our performance on carrying out this tough task will be crucial to NASA's future. My personal interest in making sure that JSC moves aggressively in its own space station work is tied to that belief. As a result, I will be holding a meeting every two weeks to go through all the critical elements of the program here at JSC. I'm going to have all of my managers, the heads of the various directorates, at those meetings. We have a great deal of work to do over the next three years, and I'm making a personal commitment that we do everything necessary to support and advance that work.

**ROUNDUP:** Do you foresee shifting experienced people into space station work?

**COHEN:** I do foresee shifting experience into the space station from the shuttle, both from engineering, operations and from the program itself. I also see reducing our efforts somewhat on the Space Exploration Initiative and putting those resources into the space station. I also believe we may have to defer or delay some of our advanced programs in

order to bring additional talent to the station program. We do have to be more efficient and be able to reduce the cost of the space station so that we can build up our reserves.

I've asked Gene Kranz to take the lead in looking at what has been done to reduce the operating costs of the shuttle and pursue how that can help us reduce costs in the future for the space station. You have to bear in mind that JSC has many talents and capabilities that go beyond its specific role in a given space flight program. As an institution, we have operations, flight crews, engineering, science and many other capabilities which can be brought to bear in meeting the challenges of the next few years. So I've asked Gene to take a look and see how we can do a more efficient job in putting resources into space station, reduce our overlap and duplication with shuttle activities, and see if we can become more efficient with our contractors and civil servants in doing the job we have to do here at JSC.

Clearly the shuttle, space station and life sciences have got to be the three top priorities of the center. What we have to do is look through all directorates and see what we

can give up in this period of time in order to free up resources for shuttle, space station and life sciences research. We hope this process will also allow us to reduce some of the overlap between our major activities and allow us to be more efficient.

The next point to understand here is that we have got to take our shuttle experience and apply it to the space station. We have to have a critical look by our managers at seeing what we can do to make that happen.

**ROUNDUP:** From your perspective, what are the critical milestones ahead for JSC's work package?

**COHEN:** The critical milestones for Work Package 2 are to finish the CDR, release the drawings, and make the parts and the software and assemble all of this so that it can be integrated into the shuttle. In order to do that, Mission Operations has to have its control center ready, they have to have their software ready, and they have to begin the training of the astronauts and flight controllers. And what we as managers have to do is make sure that all these milestones play together, that they are all funded properly. If we are slow in one area, we have to be ready to beef that up with resources if necessary.

**ROUNDUP:** Isn't station unique, in that the civil service side of the house has to deliver much of the integration work that in the shuttle, for example, would be done by a prime contractor?

**COHEN:** I think what is unique to station is that this is one of the first times we have not had a prime or a lead contractor that integrates the program. In that regard, we need to rely more on the NASA team to do the integration. So NASA people have to play a more significant role in the integration than they have in the past.

**ROUNDUP:** Will that offer more opportunities for people in the civil service work force?

**COHEN:** I think it will. I think it will give more opportunities to our people to have more hands on systems engineering work and let some good managers come to the top. Much of the integration within the work package

can be done by our contractors, but much of the integration between the work packages will be done by NASA people themselves.

**ROUNDUP:** Beyond the specific challenges of the next year or two, what sort of activities do you see for JSC in the future?

**COHEN:** Well, given the fact that exploration is one of our most important long-range goals, it follows that we have to prepare ourselves for that exploration. And in the process of doing that, we will reap the benefits of having humans in space for long periods of time. We have to utilize Space Station *Freedom* for understanding micro-gravity science in the fields of materials processing and life sciences research. We will show how those activities benefit humans on the ground, as well as our explorers in space. We also have to learn how to live and work in space, and that will make us more proficient in carrying out the tough challenges that are inherent in further human exploration of the solar system.

Those two aspects, exploration of space and utilization of space, will be the two most important capabilities that station will give us in the years to come.

**ROUNDUP:** Will Reston continue to play a large role in managing the space station program?

**COHEN:** A Space Station *Freedom* presence will remain at Reston for the foreseeable future. At the same time, station management is beginning to move activities to the field centers. The payload integration is going to Marshall. The launch vehicle integration is going to Kennedy, mission operations and shuttle integration with space station are coming to the Johnson Space Center, and much of the avionics integration is coming to our centralized avionics facility and our centralized software facility. And so, as we've said before, some of the work is moving to the field centers. And I foresee that in the future, as we start integrating hardware, I think you will see more activity moving to the centers, but Reston will continue to play an important role in program integration in the future.

We have to be sure we eliminate duplication and overlap within the Space Station Program. I do think the key element that is probably as important as anything in meeting the capability to withstand future votes in the Congress is to have teamwork. Because if you don't have teamwork, you're not going to be able to stay on schedule, on cost and within performance. So I do think teamwork within the Johnson Space Center and teamwork between Johnson and Marshall and Lewis and Kennedy is very important. And of course it is important that we have cooperation and teamwork between JSC, the management at Reston and our contractor team around the country.

**ROUNDUP:** When will you come back to JSC full time?

**COHEN:** Soon. Dan Goldin and I have discussed my role in supporting him as acting deputy administrator. He feels its time for me to start spending more time at the Johnson Space Center, and I agree. There is a great deal of work to do. As a result, he's brought Paul Holloway, the director of the Langley Research Center, to support him in the day-to-day activities and doing many of the functions that the deputy administrator would do. He has asked me to spend more time at the Johnson Space Center, but still to retain the title of acting deputy administrator and pursue activities for him on the transition team and the budget and in the '93 operating plan and certain other reviews he wanted me to carry out. So I will be spending more and more time in Houston, but there is still some work to do yet in Washington. □

*'Space station is extremely important, and the people who work on the project have the future of NASA in their hands.'*

— NASA Acting Deputy Administrator and JSC Director Aaron Cohen

# New crew training facility to bear Garn's name

When Sen. Jake Garn sat in the shuttle simulators preparing for STS-51D, he didn't expect one day to see the Bldg. 5 bearing his name, but after dedication ceremonies next week, it will.

The Jake Garn Mission Simulator and Training Facility, which will be dedicated in special ceremonies Thursday, was named as a result of an amendment introduced by Sen. Barbara Mikulski, D-Md., chair of the VA-HUD-Independent Agency Subcommittee.

Garn flew as a payload specialist in April 1985 and is retiring from the Senate this year.

"It is his own experience as an astronaut Senator that has anchored

his support for NASA and his commitment to Federal investments in research and development," Mikulski said as she discussed the amendment.

"His role as an astronaut makes the designation of the shuttle simulator training facility at the Johnson Space Center fitting and appropriate," she said.

According to Jeff Bingham, his administrative assistant from 1974 to 1990, Garn frequently says his shuttle flight was the most extraordinary and unforgettable experience of his life.

"The changes that experience made in him are deep, personal and profound," Bingham said.

"Coupled with the experience of several months at JSC in preparation for the flight, Jake gained a greatly increased understanding of the agency, from the bottom up, and of what it really takes to plan, prepare and conduct a mission into space."

Bingham currently works on strategic planning and policy analysis support for JSC under a contract between Hernandez Engineering and the JSC New Initiatives Office. His personal reflections on Garn's dedication to the space program will appear in the Dec. 11 issue of *Space News Roundup*.

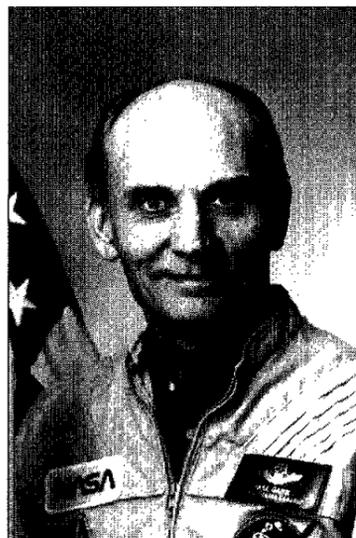
The dedication ceremony will

include remarks from Mikulski, JSC Director Aaron Cohen, NASA Administrator Daniel Goldin, Mission Operations Director Gene Kranz and STS-51D Commander Karol Bobko.

Garn will receive a plaque containing the wording that also will appear on the building plaque.

The dedication is a closed ceremony but JSC and contractor badged employees will have an opportunity to inspect the training facility during a special open house Dec. 10 from 2:30 to 3:30 p.m.

Those attending may report to the northwest entrance for an escorted tour from the SMS observation deck.



Jake Garn

# Hubble Space Telescope uncovers secrets of galaxy evolution

Looking deeply into the universe and far back in time, NASA's Hubble Space Telescope has found some suspected ancestors of today's galaxies.

The Hubble images reveal that star-forming galaxies were far more prevalent in the clusters of the younger universe than in modern clusters of galaxies near us today.

"The results have important implications for theories of how galaxies have evolved since the beginning of the universe 15 billion years ago," said Dr. Alan Dressler of the Carnegie Institution, Washington, D.C.

The Hubble observations also might have uncovered the most distant galaxy cluster yet seen. The cluster might be as far as 10 billion light-years, at a "look-back" time

corresponding to the early epoch of galaxy formation.

A principal goal for the HST is to trace galaxy evolution through direct observations, a task difficult to achieve with ground-based telescopes.

HST images of a pair of remote clusters of galaxies, located 4 billion light-years away, allow astronomers to distinguish, for the first time, the shapes of galaxies which existed long ago.

The pictures, taken with HST's Wide Field/Planetary Camera in Wide Field Camera mode, are so detailed that they show a full range of galaxy types inhabiting the universe of 4 billion years ago — elliptical, spiral, distorted and irregular forms.

The images also reveal galaxies

in collision. Some are tearing material from each other. Others are merging into single systems.

Dressler said the pictures are sharp enough to distinguish between various forms of spiral galaxies, whose distinctive swirl patterns are outlined by vigorous star formation.

"This shows us that clusters billions of years ago contained not only the elliptical and S-zero galaxies like those dominating their descendant clusters today, but also several times as many spiral galaxies," said Dressler.

S-zero galaxies are lens-shaped, featureless galaxies that may be the transition between spiral and elliptical galaxies.

"The new Hubble data are the first unambiguous sign of the influ-

ence of environment on the form of a galaxy" said Dressler. "Clearly, spirals were common in clusters in the distant past, but they have largely disappeared or changed form by now."

Based upon the telescope's pictures and the results of earlier research with ground-based telescopes, the team thinks that the rapid decline in the spiral galaxy population can be explained by three mechanisms — merger, disruption and fading.

The HST observations also may have discovered the farthest cluster of galaxies ever seen, located 10 billion light-years away. The HST picture resolved a cluster of about 30 very faint objects.

Additional evidence comes from the presence of a quasar possibly

among the faint objects. Quasars are theorized to be the extraordinarily bright, active cores of primordial galaxies. Quasars were prevalent in the early universe and hence, most are located out at 10 billion light-years.

The team believes that the further study of this cluster and similar ones could provide a major breakthrough in seeing galaxies in the very act of formation.

When HST's full optical capabilities are restored during a Space Shuttle servicing mission in late 1993, HST will be able to resolve the morphology of these very young galaxies. Hubble also will be capable of showing the evolution of galaxy form over a wide range of environments and in even earlier epochs.

## Ceremonies to welcome crew home

After completing their seven-day mission, STS-54 crew members will return to Houston amid traditional welcoming ceremonies at Ellington Field.

As of press time, *Discovery* is scheduled glide back to Earth Dec. 9 at about 1:19 p.m. Houston time at Kennedy's Shuttle Landing Facility. Following the usual post-flight checks, astronauts will fly to Houston and are expected to arrive here about nine hours after landing.

The welcoming ceremonies are open to the public. All JSC contractors and employees are encouraged to attend. The ceremony will take place at Ellington Hangar 990, next to the Continental Airlines terminal.

STS-54 crew members are Commander David Walker, Pilot Robert Cabana and Mission Specialists Guion Bluford, James Voss and Michael Clifford.

Employees are asked to call the code-a-phone at x36765 to receive updated arrival information since the crews specific post-flight plans frequently change.

## STS-54 astronauts to perform EVA

(Continued from Page 1)

tasks were noted that can significantly affect the performance of a spacewalk. The effect of these differences could become more pronounced as the duration and complexity of the spacewalk work grows.

The spacewalk tests to be conducted during the years leading up to Space Station *Freedom* construction will help characterize the exact nature of these differences and assist in developing better training of astronauts for spacewalking construction work. They will characterize astronauts' abilities to move large objects in space and evaluate the amount of time required to perform various tasks. Also, they will attempt to identify the physical demands of various spacewalk jobs and evaluate new training techniques.



JSC Photo

**As the Comet Flies — Astronaut candidates recently took a familiarization flight on NASA's KC-135. Mary Ellen Weber tests weightlessness while Michael Lopez-Alegria makes sure she doesn't escape. The Class of '92 began training this summer.**

## STS-53 begins mission

(Continued from Page 1)

Fluid Acquisition and Resupply Equipment and HERCULES.

BLAST uses a laser receiver to detect laser energy from ground-based test locations to help in developing DOD sensor technology, while FARE investigates the dynamics of fluid transfer in the microgravity environment of space. Data collected during STS-53 will help scientists better understand how to replenish on-board fluids and prolong the life of space vehicles such as Space Stations *Freedom*, satellites and extended duration orbiters.

For HERCULES, crew members will use a modified camera to more

precisely determine the latitude and longitude of various features on the ground. Flying for the first time, this experiment was developed to provide an observation system for military, environmental, oceanographic and meteorological applications.

*Discovery* is scheduled to land at the Kennedy Space Center Wednesday at about 1:19 p.m. Central.

Also this week at KSC, the Space Shuttle *Endeavour* was moved into position at Launch Pad 39B as preparations for the first flight of 1993 continue.

*Endeavour* will carry a five-member crew on STS-54, scheduled to launch in January.

## Excellence award given to three contractor teams

JSC Director Aaron Cohen recently announced the selection of three contractor groups as recipients of the JSC 1992 Team Excellence Award.

JSC Team Excellence Awards annually recognizes contractor companies that have demonstrated outstanding dedication and commitment to continuous improvement in quality and productivity in support of U.S. manned space flight programs.

Award winners for 1992 are Honeywell, Inc., Space and Strategic Systems Operation of Clearwater, Florida; IBM, Federal Sector Division of Houston; and Paramax, Space Systems Operation, also of Houston.

"These three companies have demonstrated outstanding technological performance in support of the U.S. space program," Cohen said. "Their commitment to quality and productivity and dedication to continuous improvement enables us to sustain our leadership in manned

space flight."

Honeywell Space and Strategic Systems Operation provides definition, design, development, production, and logistics support of the space shuttle flight control system elements; and provides the attitude control and determination system, hand controllers and the subsystem control interface electronics for Space Station *Freedom*.

IBM, Federal Sector Division, was recognized for designing, developing, integrating and supporting both flight and support software and hardware for space shuttle systems.

Paramax Space Systems Operation provides software engineering products, services, and support to Space Shuttle and Space Station *Freedom* operations.

Cohen also noted that IBM and Honeywell were both recipients of the 1992 George M. Low Trophy — NASA's quality and excellence award.

## MCC viewing room closed for flight

Employees wanting to watch Mission Control in action will have to wait until the next shuttle flight.

Due to the classified portions of the STS-54 payload, the MCC viewing room will not be opened during the seven-day flight. In addition to security concerns, the third floor viewing room has limited access and therefore is not avail-

able for the viewing operations.

Cafeteria operations also will be changed slightly for STS-54 and future flights. Facilities in Bldg. 11 will be open from 6:30 a.m. to 2 p.m. during missions while the Bldg. 3 cafeteria will be open from 7 a.m. to 2 p.m.

Neither cafeteria will be open on the weekends during shuttle flights.

## Leestma selected as FCOD director

(Continued from Page 1)

design, preparation, modifications, safety and certification requirements of payloads to be flown on the Shuttle. He also worked in the Mission Control Center as capsule communicator from January to November 1985.

Leestma was a Navy pilot and operational test director before his selection as an astronaut in 1980. He has logged over 3,500 hours of flight time and is a life member of the Association of Naval Aviation. He graduated first in his class from the U.S. Naval Academy and went

on to earn a master of science degree in aeronautical engineering from the U.S. Naval Postgraduate School.

"Dave's varied experience and record of achievements speak for themselves," Cohen said. "He has the necessary leadership skills, hands-on technical expertise, and practical experience for this key position. I am confident that he will work well with Agency officials, international partners, the science community, and aerospace industry officials to accomplish the ambitious human spaceflight goals."

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