

Space News Roundup

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No. 49

Group reveals suggestions

By Kari Fluegel

NASA, though imperfect, remains the gathering place for the United States' greatest body of space expertise and is the appropriate organization to take the nation's space program into the future, said a special group charged with making recommendations about that future.

The Advisory Committee on the Future of the U.S. Space Program, headed by Martin Marietta Chief Executive Officer Norm Augustine, presented its report Monday.

The 12-member task force was appointed in August after a series of troubles, including discovery of the Hubble Space Telescope's spherical aberration and *Columbia's* and *Atlantis's* hydrogen leaks.

The committee cites nine specific concerns, but in spite of those concerns, said sweeping management changes are inappropriate.

"Briefly stated, the Committee believes that NASA, and only NASA, realistically possesses the essential critical mass of knowledge and expertise upon which the nation's civil space program can be sustained — and that the task at hand is therefore for NASA to focus on making the self-improvements that gird this responsibility," the report says.

The committee's concerns include the lack of national consensus regarding the goals of the country's space program; continuing changes in project budgets; institutional aging; the natural tendency for projects to grow in scope, complexity and cost; the fact that space projects tend to be very unforgiving in any form of neglect or human failing; and the material foundation of any major space project as NASA's technological base.

Regarding the space shuttle, the committee said the system offers significant capabilities to carry out missions where humans are uniquely required, however, it also "is a complex system that has yet to demonstrate an ability to adhere to a fixed schedule," according to the report.

The committee recognized the shuttle's flexibility and capability to provide human presence in space. The shuttle also permits the recovery of costly launch vehicle hardware which would otherwise be expended, the report says.

However committee members said, the shuttle "tends to be complex with relatively limited margins; it has not realized the promised cost savings; and should it fail catastrophically, it takes with it a substantial portion of the nation's future manned launch capability and, potentially, several human lives."

Please see **AUGUSTINE**, Page 4

Diplomats visit JSC

As *Columbia* and the Soviet space station *Mir* orbited the Earth, the U.S. Secretary of State and Foreign Minister of the Soviet Union came to JSC Monday to look at the present and future of America's space program, and say hello to seven of the 12 men in orbit.

Secretary James Baker and Foreign Minister Eduard Shevardnadze, who were in Houston for a week of diplomatic talks, toured the Space Station *Freedom* mockup, the space shuttle mock-up and the Mission Control Center with JSC Director Aaron Cohen.

While in MCC, both diplomats had the opportunity to greet the STS-35 crew.

"I had the privilege of welcoming the crew back from *Columbia's* first mission in 1981 and I want to take this opportunity to thank you and the crew of *Columbia's* 10th mission for your outstanding service to the nation," Baker told the crew. "We are extraordinarily proud of the work you are doing and wish you continued success."

Mission Specialist Mike Lounge told the secretary he was especially

excited to be one of 12 humans in space in three separate vehicles for the first time.

"That's a milestone we hope will be repeated many times in the future," Lounge said.

Shevardnadze, speaking through an interpreter, extended greetings from the Soviet people, the Soviet cosmonauts and Soviet President Mikhail Gorbachev.

"I think that what you are doing in space is very important," Shevardnadze said. "You are paving new roads in space and I very much believe you are paving those roads for the benefit and happiness of all of us on Earth."

Mission Specialist Jeff Hoffman greeted the foreign minister in Russian and agree that space travel is important for the future of all mankind.

"It is our privilege to be able to have taken part in this mission," Hoffman said. "We congratulate you on the good work done by the *Mir* and Soyuz cosmonauts and we look forward to continued work by nations of all the Earth in development of space which is so important for the future of all mankind."



NASA Photo
STS-35 Commander Vance Brand, left, inspects *Columbia* with Director of Flight Crew Operations Don Puddy, center, Mission Specialist Jeff Hoffman and the rest of the Astro mission crew after landing at Dryden Flight Research Facility late Monday night.

Weather ends STS-35 early, *Columbia* on its way home

By Kyle Herring

Columbia swooped out of the darkness to a perfect touchdown just before midnight Monday at Edwards Air Force Base ending its tenth flight and one in which its crew observed ultraviolet and X-ray spectrums.

Shuttle managers elected not to extend the mission an additional day because of poor weather forecasted for Tuesday.

Flight controllers earlier provided a workaround that would have allowed the mission to continue an extra day if the weather had cooperated.

The work at JSC and at the Marshall Space Flight Center to overcome small, but nagging failures proved successful in providing the additional day of observing time with the astronomy telescopes before the forecasted poor weather for Tuesday led to the decision to come home Monday.

At Edwards, *Columbia* on Wednesday was secured in the mate-demaite device at NASA's Dryden Flight Research Facility. There have been no significant problems since the tow from the

Please see **COLUMBIA**, Page 4

Truly: Report merits study

By James Hartsfield

NASA Administrator Richard Truly said Monday the Augustine Committee's report strengthens NASA's plans for the future, supports NASA's current programs, and offers several fresh suggestions.

"It (the report) is very supportive of many of the directions we have been going, and it takes note of the strength of this organization," Truly said. "I, frankly, am extremely pleased with the tone of the words in the report."

Truly also said it was too early to describe specific program or budget changes that may be made within NASA as a result of the report. A Headquarters team headed by JSC Director of Flight Crew Operations Don Puddy will study those possibilities, he announced.

"When the report came to me, it didn't come with a blank check in the envelope," Truly cautioned. "It came with some funding assumptions, and, from them, an idea of what we should be capable of in the future."

The report recommends not building another Space Shuttle orbiter after *Endeavour* is completed next year, but it supports the current NASA strategies for the shuttle.

Truly said that if NASA does defer building a new orbiter, it should retain the capability for the future. "They say it in their report — that it (the shuttle) is going to be a centerpiece and a requirement in our program for at least another decade."

JSC Director Aaron Cohen agreed and added that the report reaffirms the shuttle's vital and continuing role in the U.S. space program.

"I've seen a lot of media articles claiming that the report recommends that the Space Shuttle be 'phased out,' and it simply doesn't say that," Cohen said. "What it does say is that the shuttle should be devoted to missions that require a human presence and be a key science instrument. In saying that, it supports the major philosophies on which the Shuttle Program has been operated since the return-to-flight."

"After the *Challenger* accident, within NASA we instituted a mixed-fleet balancing of expendable launch vehicles and shuttle flights," explained Truly. "Our assignment policy says we will not put satellites on the Space Shuttle unless they do require human presence, are shuttle-unique or there are compelling reasons to do otherwise."

Administrator Truly also voiced appreciation for the report's recommendation that NASA develop a new heavy-lift launch vehicle.

Please see **TRULY**, Page 4

Columbia to fly over JSC Monday

The orbiter *Columbia*, atop the Boeing 747 Shuttle Carrier Aircraft, will fly over the Johnson Space Center at about 8 a.m. Monday weather permitting.

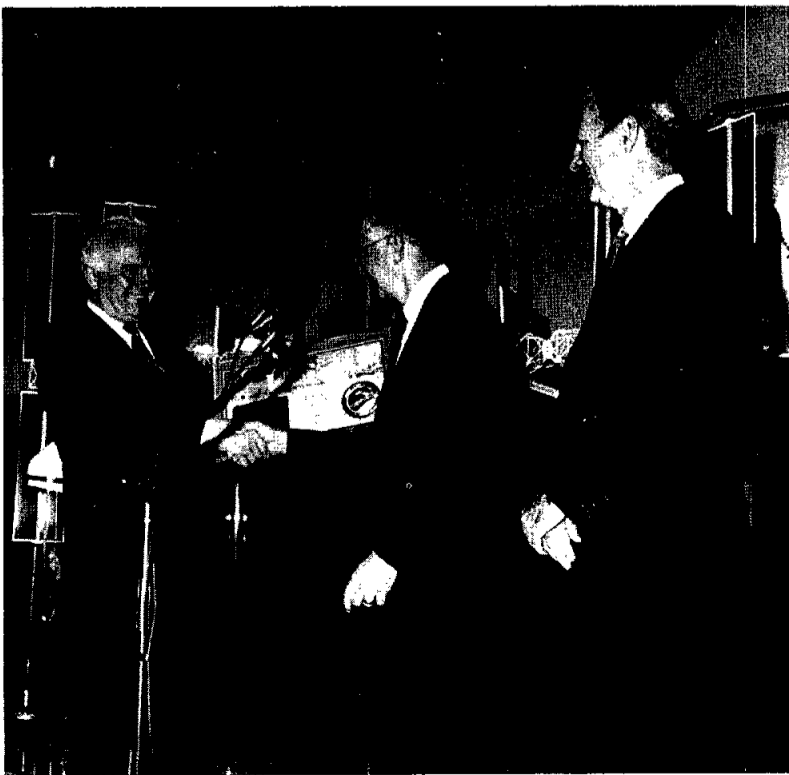
The flyover will be at 2,000 feet approaching west to east from Webster, paralleling NASA Road 1 to Galveston Bay, and then departing.

Columbia and the SCA will depart Edwards Air Force Base at 9 a.m. CST Sunday, refuel at Davis-Monthan AFB, Ariz., and fly to Kelly AFB in San Antonio for an overnight stop.

Departure from Kelly is scheduled for 7:30 a.m. Monday with the flyover at JSC about 30 minutes later. The aircraft will land for refueling at Barksdale AFB in Louisiana before continuing to the SLF at Kennedy Space Center (KSC). Arrival at KSC is scheduled for 3 p.m. CST Monday.

Pilots on the first leg of the return flight will be ex-astronaut Gordon Fullerton with Tom McMurry, both from Dryden Flight Research Facility.

JSC pilots A. J. Roy and Arthur "Ace" Beall will be the flight team from San Antonio to the SLF in Florida. Flight engineers on both legs of the flight will be Dan Hill and Larry LaRose.



JSC Photo by Mark Sowa
JSC Director Aaron Cohen welcomes Soviet Foreign Minister Eduard Shevardnadze to JSC as U.S. Secretary of State James Baker watches. Following the presentation, the secretary and foreign minister toured the Space Station *Freedom* mock-up.

JSC

Ticket Window

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

General Cinema (valid for one year): \$3.75 each.
AMC Theater (valid until May 1991: prices increase Jan. to \$3.75 each): \$3.50 each.
Holiday in the Park (through Dec. 31, Astroworld): \$5.50.
New Years Eve Dance (7 p.m. Dec. 31, Gilruth Center, music by Fourth Wave Rhythm and Houston Society Jazz Orchestra): \$15, tickets available Dec. 17.
Rediscovering Pompeii (6:30 p.m. Dec. 16 or 5:30 p.m. Jan. 4, Museum of Fine Arts): free with ticket.

JSC

Gilruth Center News

EAA badges—Dependents and spouses may apply for a photo I.D. 6:30-9 p.m. Monday-Friday.

Defensive driving—Course is offered from 8 a.m.-5 p.m., Jan. 12 and Jan. 26. Cost is \$15.

Weight safety—Required for the use of the Gilruth weight room, this class will be available from 8-9:30 p.m. Dec. 20; cost is \$4.

Aerobics and exercise—Both classes are on-going.

Country and western—Next dance class begins Jan. 7 for beginners and intermediate. The six-week class meets Mondays. Cost is \$20 per couple.

Ballroom dancing—Eight week courses for beginners, beginner-intermediate, intermediate and advanced students will begin Jan. 3. Cost is \$60 per couple.

Health Related Fitness Program—Includes screening by medical examination and a 12 week education component. For more information call the Physical Fitness Office at x30301.

JSC

Technical Library News

These new publications are available in the JSC Technical Library, Bldg. 45, Rm. 100.

NASA Symposium on Quality and Productivity, Report from the Second NASA Symposium on Quality and Productivity, 1986. HD56.N363.1986.

Electronic Data Interchange: A Total Management Guide, Margaret A. Emmelhainz, 1990. HF5548.33.E46.1990.

Astronauts and Cosmonauts Biographical and Statistical Data, 1989. KF32.S39.6/30.1989.

JSC

Swap Shop

Property

Sale: Brittany Bay LC, 3-2-2 all brick, FPL, lg. master bath, many extras, \$74,950. David, 554-5514.

Sale or Lease: Lakeside condo at The Landing, 4445 NASA Rd. 1, #218, 2-1, 25 ft. boat slip, \$600/mo. incl. util., or \$44K, financing avail. w/20% down. Carol, 244-9647 or 667-7023.

Rent: Galveston condo, Sea Wall and 61st St., furn., sleeps 6, dly/wkly/wknd rates, cable TV. Magdi, x33479 or 486-0788.

Rent: Friendswood, 804 Lochmoor 4-2-2, fenced, trees, porch, \$650/mo. w/\$450 dep., 1 yr. lease preferred, option to lease/purchase. x38294 or 482-6816.

Sale: Pearland lot, Dixie Hollow Subdiv., Cyprus Hollow St., all util. x39530 or 482-5003.

Rent/Lease: Clear Lake marina condo, 2-2.5-2, 3 level, all appl., FPL, wet bar, \$950/mo. 326-5652.

Rent: Lake Travis cabin, private boat dock, CA/H, fully equip., accom. 8, wkly/dly, \$325/\$80. 326-5652.

Lease: Webster/Ellington, 2-1 apt., many extras. Dave, x38156 or Herb, x38161.

Rent: Heritage Park, room w/phone in newly furnished 3 BR house, \$200/mo. plus 1/3 util., avail. Jan. Jay, x35814 or 992-3149.

Sale: Seabrook, bayfront lot, #125K; two water view lots near NASA, \$38.5K ea. Don, x38039 or 333-1751.

Dickinson, 2 acres, Humble Camp Rd., improved property, all util. avail., nice trees, \$12.5K/acre; Texas City, 2-1-1, den, formal, enclosed back porch, curbs, \$32.5K. OBO. Shelly, 333-7153.

Rent: Lakeview condo, 2-1, 5 min. from JSC, all util. incl., \$550/mo. x32883 or 532-4363.

Sale: Orlando, FL retirement home, 2-2, Florida rm, fully furn., \$49.9K. 280-2523 or 333-1762.

Lease: Sagemont, 1.5 story, 4-2-2, 2200 sq. ft. gas heat, FPL, new paint/carpet, ceiling fans, fenced yard w/trees, \$675 plus dep., no pets, 484-4944.

Lease: Heritage Park, lg. 3-2-2, two yrs. old, eat-in kitchen, FPL, formal dining rm., no pets, \$80/mo. 282-2787 or 532-1240.

Sale: University Green, 2-1-2, patio home, fenced, new paint, vaulted ceiling, mini blinds, custom drapes, ceiling fans, FPL, deck, nice yard, \$76K. 480-7338.

Sale: 12 50' by 130' lots off Hwy 3 between Dickinson and League City, TX, #12K. 738-2755.

Lease: Egret Bay condo, 2-2-2cp, new carpet and paint, FPL, avail. immediately, no pets, no smoking, \$500/mo. plus dep. Irene, x39043 or 480-9812.

Sale: University Green townhouse, 3-2-2, fans, FPL, whirlpool tub, loft, alarm sys., decked orlyrd, 2 min. to JSC, \$90K; Pipers Meadow, 3-2.5-2, formal LR/DR, FPL, loft, wet bar, fans, gar. door opener, deck, landscaped, new paint, 15 min. to JSC, 10% assum., \$92K. Dennis, x34405 or 480-5076.

Cars & Trucks

'77 Grand Prix, good cond., new trans., tires and radiator, \$1495. OBO. David, 554-5514 or 282-3827.

'78 Chevrolet Beauville van, 80K mi., capt. chairs, \$1800. 481-6470.

'87 Hyundai Excel, 1.5 liter, 4 cyl., 5 spd., manual trans., AC, new tires/batt., 3 dr., AM/FM stereo, undercoating, cloth seats, white ext., blue int., 40K mi., \$4000. Patrick, x32635 or 488-1079.

'85 Toyota Camry, auto., AC, AM/FM/cass., cruise, good cond., over 100K mi. \$3000. OBO. x34264 or 332-2314.

'88 Hyundai 4 dr., 18K mi., ex. cond., assume loan. Eve, 532-1562.

'84 Pontiac Fiero SE, auto., ex. cond., 56K mi., AC, cruise, block, \$4200. Cathy, x36237 or 481-9227.

'88 Ford Mustang LX, 2.3L, 5 spd., blue, pwr wind, mirrors, locks, cruise, AC, AM/FM/cass., 27K mi., \$5500. OBO. x32567 or 488-3314.

'84 Camaro, white, 65K mi., new tires, brakes, alternator, starter, AM/FM/cass., AC, PS/PB, cruise, tilt, needs body work, \$3000. 479-1860.

'87 Grand Am, AC, auto, PS, tilt, cruise, AM/FM, 4 dr., low mi., \$5975. x36252 or 358-9598.

'77 Cadillac El Dorado, ex. cond., \$3500. 486-4916 or 280-2060.

'89 Dodge Custom van, ex. cond., white/maroon ext., gray/maroon int., 2 stereo cassettes, softback, 4 capt. chairs, 22K mi., \$1000 down and assume payments. Jerry or Beth, 947-0416.

'78 Datsun 280Z, 107K mi., new tires, clutch, stickers, \$2800. John, x31114 or 480-5439.

'85 Cadillac Sedan DeVille, 60K mi. ex. cond., lt. metallic brn., tan leather, vogue tires w/wire covers, \$8000. Mike, 333-6821 or 474-3637.

'76 VW Bug, new batt, brakes, clutch, ex. cond., \$1650. OBO. 282-4623 or 996-8022.

'88 Volvo 240, 4 dr., ex. cond., 29K mi., bumper to bumper warranty, \$15K. 280-8546.

'86 Toyota Camry, white 4 dr., ex. cond., AC, auto., AM/FM/cass., tilt, cruise, orig. owner, non smoker, 64K mi., \$5997. 474-3507.

'86 Buick Regal Ltd., 2 dr. sprt cp, V8, 71K mi., loaded, \$5800. OBO. 282-4041 or 337-2318.

'34 Plymouth Sedan, runs good, new brakes, all orig., \$8000. OBO. (409) 938-4573.

'89 Honda CRX-SI, red, loaded, tinted wind., new tires, stereo, ex. cond., \$8679. 622-1455 or 585-2580.

'83 Toyota Supra, blue 6 cyl., 5 spd., AM/FM, PS, PB, good cond. \$3200 nego.; '76 Jaguar XJ12L Series III, white w/tan interior, AC, PS, PB, good cond., extra engine, trans. and misc. parts, \$6500 nego., Nandin, x39408 or 480-7136.

'87 Saab 9000S, perfectly maintained, silver, 38K, all pwr options, sunroof, complete repair records, \$11,500. 286-5431.

'79 Chevy PU LWB, 350 auto., loaded, new tires, AC, duals, \$2500. Ron, x38785 or (409) 945-8787.

'88 Jaguar XJ6, green w/tan leather int., 26K mi., ex. cond., \$22K. 484-1240.

'82 Peugeot 505S turbo diesel sports sedan, sunroof, loaded, good cond., \$5000. David Holland, x33478 or 333-9899.

'85 Chevy S-10 Blazer, V6, auto., good AC, tires, pwr locks/wind., cass., very clean, 63K mi., \$5700. OBO. x31913 or 486-9488.

'85 Ford F-150 ext. cab, 6 cyl., auto., AC, well maintained, 70K mi. Martinez, 286-0432 or 335-2552.

'83 Plymouth Turismo, 2 dr. hthbk, ex. cond., 62K mi., 5 spd., \$2300. OBO. Dennis, x34405 or 480-5076.

'72 Mustang Mach 1, tstrk, 351 Cleveland, Holley 4 barrel, alum. rims, radial fags, custom blower, poly-trak susp., rear air shocks, \$2000. 471-3025.

Cycles

'80 Honda CB750 custom, x32949.

'81 Honda 750 custom, low mi., good cond., fairing w/radio, \$900. OBO. Bruce, 485-0386.

'81 Suzuki RM125, ex. cond., many new parts, track/trail ready, \$600. OBO. Andy, 333-6671 or 332-9105.

'87 Kawasaki KLR-650, multi-purpose, 6K mi., liquid cooled, elec. start, ex. cond., extras, \$1900. 282-3307 or 486-4016.

3 Schwinn bicycles, boy's 20", \$25; girl's 24", \$20; men's 26" super strong w/alternator pwr light, \$50. Ted, x30621 or 474-2214.

Schwinn Le Tour 10 spd., silver and red, Shimano derailleurs, Zefal pump, good cond., \$95. Ruben, x33829 or 486-0817.

'81 Suzuki GS450 Cafe motorcycle w/spare tire, \$500. Jim, 585-0679.

Yamaha RZ350 Sportbike, professionally ported by Spec II, expansion chambers, K&N jet kit, RD Mikunis, Dunlop radials, many spares, \$2195. OBO. Hugo, 286-0432 or 335-2552.

'81 Suzuki GN400, 9200 mi., new rear tire, tags, w/helmets, \$500. Dave, 480-1225 or 538-1626.

Boats & Planes

14 ft. fiberglass fishing boat, 15HP Evinrude OB, trlr., \$500; 13 ft. fiberglass sailing dinghy, main and jib, galv. trlr., \$600. Bob, 482-9576.

18 ft. Jensen canoe w/Kevlar cross-rib construction, front and rear seats, alum. trim, bent shaft paddles, \$900. Randy, 326-1775.

'85 Wellcraft 23 Nova w/trlr., 260HP platform, SS prop, full canvas, stereo cass., VHF, compass, trim tabs, thruhull exhaust, 300 hrs. clean, make offer. x31136 or 485-0900.

'87 16 ft. Fish 'n Ski barge, 55HP Suzuki motor w/stainless steel prop, new trolling motor, never used, McClain trlr., \$4400. Mike 331-2022.

21 ft. Searay w/351 Ford Cleveland eng., Mercruiser I/O, depth finder, life jackets, 2 swivel capt. chairs, great fishing boat fast, deep-V hull, decking and woodwork need TLC. \$1400. Diane, x30401 or 332-5417.

Audiovisual & Computers

Amiga 1000, color monitor, external 5-1/4 and 3-1/2 drives, 1.5 meg memory, lots of SW, \$875. Bob, 482-9576.

IBM/PC-AT 286, 640K RAM, 1.2 meg and 1.44 meg floppy, 30 meg hard disk, EAG color monitor, 287 math co-processor, Panasonic printer and Logitech mouse, \$1600. Apple IIe computer w/monitor, numeric keypad and joystick, excellent for educational SW, \$180. x35814 or 992-3149.

JSC

Dates & Data

Today

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

Monday

Cafeteria menu—Special: chili and macaroni. Entrees: barbecue sliced beef, parmesan steak, spare rib with kraut. Soup: French onion. Vegetables: ranch beans, English peas, mustard greens.

Tuesday

Book signing—Apollo 11 Astronaut Michael Collins will sign copies of his new book, "Mission to Mars" from 4-6 p.m. Dec. 18 at Jeremy's Bookshelf.

Cafeteria menu—Special: corned beef hash. Entrees: meatballs and spaghetti, liver and onions, baked ham with sauce. Soup: split pea. Vegetables: buttered cabbage, cream style corn, whipped potatoes.

Wednesday

Christmas concert—The Lockheed Music Makers Choir will present a Christmas concert at 11:30 a.m. Dec. 19 in Teague Auditorium. For more information, call Ray Suffron, x31773.

Cafeteria menu—Special: barbecue link. Entrees: cheese enchiladas, roast pork and dressing. Soup: seafood gumbo. Vegetables: pinto beans, Spanish rice, turnip greens.

Thursday

NCMA meets—The National Con-

tract Management Association's Space City-Houston Chapter will meet at 11:30 a.m. Dec. 20 in the Gilruth Center. Reservations are due Dec. 14; cost is \$5 for members, \$7.50 for non-members. Call Lucy Yates, x31864, or Theresa Borrego, 282-6679, for more information.

Cafeteria menu—Special: chicken fried steak. Entrees: roast beef with dressing, fried perch, chopped sirloin. Soup: beef and barley. Vegetables: whipped potatoes, peas and carrots, buttered squash.

Dec. 21

Cafeteria menu—Special: fried chicken. Entrees: fried shrimp, baked fish, beef stroganoff. Soup: seafood gumbo. Vegetables: okra and tomatoes, buttered broccoli, carrots in cream sauce.

Jan. 22

BAPCO meets—The Bay Area PC Organization will meet at 7:30 p.m. Jan. 22 at the League City Bank and Trust. Call Earl Rubenstein, x34807, or Tom Kelly, 996-5019, for more information.

Feb. 2

AAS conference—The American Astronautical Society will host the Rocky Mountain annual Guidance and Control Conference Feb. 2-6 at the Keystone Lodge in Keystone Village, Colo. For information, call Alice Little at (303) 939-5147.

March 5

Space conference—The Space

Foundation will co-sponsor the third annual Space: Technology, Commerce & Communications Southwest conference March 5-7 at the Nassau Bay Hilton. For more information contact Roseann Tully at 617-862-7174.

Apr. 23-26

Space Congress—The 28th annual Space Congress will be April 23-26 in Cocoa Beach, Fla. The Canaveral Council of Technical Societies will host the conference with a theme of "Space Achievement—A Global Destiny." For more information contact Stuart Shad-bolt at (407) 383-2200, x2202, or John Glass Jr. at (407) 383-2200, x2207.

May 3

AACE workshop—The American Association of Cost Engineers Houston Gulf Coast Section will present its annual spring workshop May 3-4 at the Hobby Airport Hilton. Dennis Lawler of JSC's Intelligent Systems Branch, will be one of several speakers. For more information, call Ralph O'Neal at 492-3922.

May 22

Space development—The National Space Society will host the 10th annual International Space Development Conference May 22-27 at the Hyatt Regency on the Riverwalk in San Antonio. The theme is "Space: A Call for Action." Abstracts, due by Nov. 1, may be sent to Bob Blackledge, 6015 Eagles Nest Ct., Colorado Springs, 80918-1510. For more information, call Carol Redfield at 512-522-3823.

Recliner, like new, hideous green color, very comfortable, \$80. Edward, x36250.

New Sears 19 in. color TV, w/remote, cable compat., screen display, memory and sleep controls, \$250. 482-8827.

Restonic semi-motionless kg. sz. waterbed, w/frame, heater, accessories, \$200. Hal, x30503 or 488-2273.

Loveseat, wooden rocking chairs, end tables, computer hutch, more. Floyd, x37459.

Wanted

Will buy U.S. coins, proof sets, mint sets, collections of single coins. 488-4859.

Want '75-'80 Ford Pinto, auto., no pwr steering, no AC, no pwr brakes, body not important, does not need to run, must be towable. Trey, 280-4275 or 484-7834.

Want 28-70mm zoom lens w/self-adjusting focus to fit Minolta ST or X series 35mm camera, 35-70mm lens second choice. 649-8332.

Want housemate, m/f, non-smoker, to share 3-2-2 w/rehearsal space, FPL, great back yard, \$300+. John, x39147.

Vanpool riders needed from Sugar Land, Westwood Mall, Fondren and Loop 610 Park & Ride to JSC area. Alice, x35234.

Want your unwanted "Holiday in the Park" coupon enclosed in your Exxon statement this month. Send to Lyon, R1C2, 282-3830.

Want toys trains and StarWars toys. Ron, 482-1385.

Want TI-99/4A educational and games SW cartridges for children age 5 and up. Ed, x36969 or 332-0442.

Want by 1/15/91, lg. 1 or 2 BR townhouse, house, duplex w/yard or patio, reasonable rent, perhaps w/ future purchase option, pet owner. 480-6539.

Want riders for vanpool starting from Greenspoint Mall to NASA. 820-1062.

Want riders for a vanpool starting for SW side and Braeswood-610 locations to CL/JSC. Cham, x31451.

Want roommate to share lg. 3 BR house, 10 min. to JSC, \$300/mo. plus 1/2 util. Laura, x39434 or 480-6494.

Need to buy '79 thru '82 Honda Accord for parts; want unused or unneeded calculators. 940-5005.

Want '82 Datsun 200SX hardtop coupe, auto. Fred, 944-0493.

Want old wrist watches, any cond. 480-7338.

Want Apple, Apple II or Apple III and SW. x31945 or 482-5948.

Want scuba gear for man, suit, BC, regulator, etc., must be very reasonably priced. 280-8796.

Want Gemeinhardt solid silver flute w/low B key or Yamaha 481H. Barbara, 564-6200.

Want used Nintendo games. 337-3122.

Miscellaneous

1/72 scale plastic model airplanes, World War II, single, twin & 4 engines, U.S., German, British, Japanese, all at cost. 534-3021.

Mazda GSL-SE parts, motor, alum. flywheel, brake calipers, fenders, fuel pumps, air pumps, exhaust sys., etc. x32949.

U.S. coins for sale, Indian cents to silver eagles, will buy or sell mint sets, proof sets Morgans, Walkers, etc. 488-4859.

Omega speedmaster chronograph, stainless steel, \$450; box of mechanic tools, \$150. 481-6470.

Lifecycle exercise bike, Lifecycle LC600 commercial spa type aerobic trainer w/computerized display/control of control motive force electronic motor resistance, state-of-the-art, highest quality, \$1500. Patrick, x32635 or 488-1079.

One-way, nonstop Continental Airlines ticket, leave Ft. Myers, FL 5:50 p.m., Friday, Dec. 28, 1990, arrive Houston Intercontinental 7:35 p.m., \$85. OBO. Bob 480-1225 or 474-4747.

Baby carrier/car seat, good cond., \$10; BSR turntable, \$15; full sz. mattress, \$20. x30280 or 480-3424.

Matching love seats, blue w/wood trim, like new, \$300 ea. or both for \$550; DP rowing machine, like new, \$50; drafting table, \$50. Phil, x34416 or 532-1003.

Baby Porta-crib, \$35; playpen, \$35; Italian blankets, \$35 ea.; room monitor, \$10. 286-0022.

Double baby stroller, \$75. 280-0102.

Model magazines, Model Builder from 1973, Model Aviation from 1975, all at 1/2 book price on magazines. 534-3021.

Girl's coat, sz. 4, 100% wool w/ rayon lining, Jennifer Moore brand, red w/black velvet trim, \$60. 326-1775.

SNR's Trivia Challenge

Everyone knows a few facts that basically only can be used to amaze and astound friends and neighbors. But collecting and relaying those little facts have become a national hobby.

This week, the Space News Roundup would like to introduce its first JSC trivia test. This test is designed to have something for everyone, and one or two questions just to make life a little more interesting.

This test investigates our past and studies our present. It will, we hope, educate, entertain, enlighten and fascinate all who take the challenge. Answers are on Page 4.

Let the games begin.



2. Which flight directors have been on the cover of TIME Magazine?

3. In 1960, NASA decided that its future manned spacecraft center would have to be near a military airfield, near a large city with good universities, and on canal transportation. Houston filled the bill, but what cities were the other two final candidates?

4. Which American astronaut flew the first backpack maneuvering unit on a spaceflight?

5. Which shuttle missions had white external tanks?

6. What is the FTS exchange for the White Sands Test Facility?

7. During the early flights of various animals into space, what was the humorous name for the mythological proposal to place several cows in orbit?

8. What manmade artifact did Apollo 12 find on the moon?

9. There's a plaque in the Mission Control Center with a mirror on it. Which spacecraft is it from?

10. During Gemini, what did the MCC mean when the astronauts were advised "UHF-six next pass?"

11. What spacecraft was struck by lightning during ascent?

12. Atop which local motel were the television studio penthouses of NBC and CBS?

13. The Lunar and Planetary Science Institute adjacent to JSC was once the hunting lodge of which Texas millionaire?

14. How many pounds of lunar rocks were returned to Earth?

15. What building housed the quaran-

tine facilities for returning Apollo astronauts?

16. What was the first mission controlled from Houston?

17. Who was CapCom when Apollo 11 landed?

18. What American spacecraft designer holds patents on the Mercury spacecraft and the space shuttle system?

19. Who were the flight directors for the Apollo 11 landing, the Apollo 13 explosion, and the STS-1 launch?

20. How many astronaut candidates are currently in training?

21. What year did personnel begin occupying permanent buildings at what was then called the Manned Spacecraft Center?

22. What is the height of the solid rocket boosters?

23. Which astronaut was dropped from a mission because of a childhood disease he didn't have?

24. Who got the first haircut in space?

25. When did Skylab crash and what crime did local Australian officials charge NASA?

26. Who said "I was thinking that everything here was supplied by the lowest bidder"?

27. What did JSC Director Aaron Cohen do before becoming center director?

28. Translate "We are AOS DGS, LOS TDRS-E, AOS IOS then LOS DGS, LOS IOS and AOS TDRS-W."

29. What Apollo mission would the Saturn V near JSC's entrance have been used for if the program had not

been cancelled?

30. What were the first buildings constructed at JSC? What building was completed most recently?

31. Including the latest class of astronaut candidates, three states have contributed 15 individuals to the astronaut corps. What are the three states?

32. What non-military institute has the greatest number of astronauts as graduates?

33. What unusual parking place did NASA 916 occupy during the Apollo 11 20th Anniversary celebration?

34. What did Vice President Dan Quayle eat for lunch in the Bldg. 11 cafeteria on his first visit to JSC?

35. How long in the orbiter cargo bay?

36. Who was the tallest Mercury astronaut?

37. What was the last spacecraft delivered to the JSC barge dock?

38. How many vehicles are in JSC's taxi fleet?

39. In round numbers, what was the grand total for 1990 Combined Federal Campaign contributions at JSC?

40. What is the phonetic alphabet designation for the letter "Q"?

41. What vast area of the moon is grossly misnamed?

42. Only four shuttle mission patches do not include, in any way, a depiction of the orbiter. What are those missions?

43. What is the wingspan of an orbiter?

44. Which shuttle astronaut has made the most trips to the launch pad?

45. The Hubble Space Telescope was the first of the four Great Observatories.

1. What shuttle flight was able to view three cyclonic storms? Name the storms.

What is the next and on what mission will it be launched?

46. Who was the first American mother selected for spaceflight?

47. What African lake's water levels have been extensively documented by space photography?

48. What was the originally intended names of OV-101 before the "Trek-kies" got their campaign organized?

49. Name five of the toys that flew on board STS 51-D.

50. How large is the fleet at Ellington?

51. How many gallons of chili will fit in the WETF?

52. How many center directors has JSC had? Name them.

53. How many astronauts fell down on the moon?

54. For which missions did the postal service issue stamps?

55. What was the first name of the "Bubble Boy" with severe combined immune deficiency who received a Mobile Biological Isolation System using moon suit technology?

56. How many people can be seated in the Teague auditorium.

57. On STS-7 orbital debris damage necessitated the replacement of a spacecraft part after landing. What was the debris and what was the part?

58. Which came first, Velcro or manned space flight?

59. What historical figure is prominent in both the naming of the Space Shuttles *Discovery* and *Endeavour*?

60. How do the Solid Rocket Boosters compare in size to the Statue of

Liberty?

61. What is Buzz Aldrin's legal first name?

62. What three actual space vehicles are now permanently on display in the JSC Visitors Center?

63. Name all of the Department of Defense payload specialists and their missions.

64. What comic strip characters set up shop in a 1988 educational television special featuring Space Station *Freedom*?

65. Who was world renowned as the "Voice of Mercury Control?"

66. What female astronaut has acquired the most time in space?

67. While permanent facilities were being built, how many different locations in the Houston area housed Manned Spacecraft Center employees?

68. Under the old mission naming system what would a fictitious 26th flight in 1989 launched from Vandenberg Air Force Base have been called?

69. If a person weighs 180 pounds on Earth, how much will he or she weigh on the moon?

70. What person became the first millionaire astronaut?

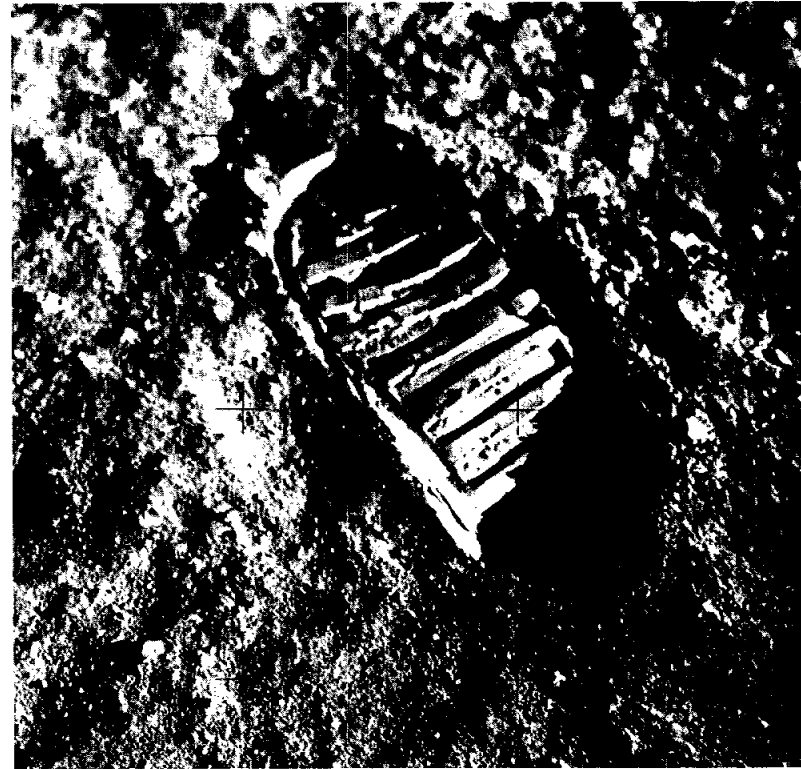
71. Which manned space mission holds the absolute altitude record?

72. What movie about a journalist investigating an entertainment facility which was replacing world leaders with robots was filmed largely in JSC's steam tunnels?

73. What do Mars and Earth have in common as far as weather?



74. What omnipresent cow-posing photographer claims 51 years government service, the longest of any current JSC employee?



75. What size footprint did Neil Armstrong leave on the moon?

Columbia comes home

(Continued from Page 1)

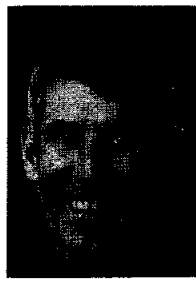
runway was completed Tuesday morning.

The forward ferry flight fittings and tail cone fittings were scheduled for installation Wednesday. The tile survey was completed with nine tiles expected to be removed and replaced.

If work continues on schedule, Columbia will depart from Dryden will be at sunrise Sunday. The flight will take two days with an overnight stopover scheduled for Kelly AFB in San Antonio. When Columbia and the 747 Shuttle Carrier leave Kelly early Monday they

will perform a 2000-foot flyby down NASA Road 1 scheduled at about 8 a.m. The orbiter is scheduled to return to KSC before sunset.

Once at KSC, Columbia will be demated and towed to the Vehicle Assembly Building where it will await room in the Orbiter Processing Facility. There it will take Discovery's place in the OPF when Discovery is moved to the VAB late next month. Work on Discovery is proceeding on schedule to support the STS-39 unclassified Department of Defense flight scheduled for late February or early March.



retired from NASA and the U.S. Marine Corps.

Springer announced he will work for Boeing Aerospace and Electronics Division in Huntsville, Ala. as the manager of the Space Station Freedom's element integration.

Springer retires from NASA, USMC

Col. Robert C. Springer, selected as an astronaut in 1980 and a mission specialist on two shuttle flights, has re-

During his first space flight, STS-29 in March 1989, Springer and his crewmates deployed a Tracking and Data Relay Satellite, and performed numerous secondary experiments, including a Space Station "heat pipe" radiator experiment, two student experiments, a protein crystal growth experiment, and a chromosome and plant cell division experiment. Additionally, the crew took more than 4,000 photographs of the earth using several types of cameras, including the IMAX 70 mm movie camera.

Springer also flew on STS-38, a

Department of Defense flight, which launched Nov. 15, 1990.

Springer's technical assignments have included serving as a member of the support crew for STS-3, concept development studies for the Space Operations Center, and the coordination of various aspects of the final development of the Remote Manipulator System for operational use. He also worked in the Mission Control Center as orbit capsule communicator (CAPCOM) for seven flights in 1984 and 1985.

Augustine committee reports concerns, recommendations

(Continued from Page 1)

Still, "The committee recognizes the important role of the space shuttle for missions where there is the need for human involvement and notes the space shuttle is absolutely essential to America's civil space program for the next decade to come. Necessary steps to assure the viability of space shuttle operations this decade should therefore proceed."

The group also expressed concern about the existing civil service system which is "hopelessly incompatible with the long-term maintenance of a leading-edge, aggressive, confident and able work force."

To address that, the committee recommended major reforms in the civil service regulations as they apply to specialty skills or, if that is not possible, exemptions for at least 10 percent of NASA employees to operate under a tailored personnel system.

In the absence of either of the two recommendations, the committee suggested that NASA consider selectively converting some of its centers to

university-affiliated Federally Funded Research and Development Centers.

According to the report, the committee also believes NASA is "currently over-committed in terms of program obligations relative to resources available — in short, it is trying to do too much and allowing too little margin for the unexpected."

"The result," the report says, "is the frequent need to revamp major programs which sometimes results in forcing smaller (scientific) pursuits to pay the bill for problems encountered in larger (frequently manned) missions."

Though the committee concluded that America does want an energetic, affordable and successful program, the question remains as to what that program should be.

The report suggests that the nation's space program should use science as the fulcrum to balance two keystones — Mission to Planet Earth and Mission from Planet Earth.

The Mission to Planet Earth, as defined by the committee, brings space

down to Earth by addressing critical everyday problems which affect all its inhabitants.

"Mission to Planet Earth as we would define it comprises a series of earth observing satellites, probes and related instruments and a complementary data handling system aimed at producing a much clearer understanding of global climate change and the impact of human activities on earth's biosphere," the report says. "This effort provides us with a much better understanding of our environment, how we may be affecting it and what might be done to restore it."

Mission from Planet Earth focuses on space exploration and would include most of the manned space undertakings which tend to be the most costly aspect of the overall space program.

The committee added that it "wholeheartedly endorses a far-reaching, but we believe realistic, undertaking in manned space activity, carefully paced to the availability of funds."

According to the report, the commit-

tee supports President George Bush's goal to explore Mars but believes the goal should be tailored to available funds rather than adhering to a rigid schedule. Using this approach, committee members believe a sound long-term human exploration program can be pursued.

Regarding Space Station Freedom, the committee said the station cannot be justified solely on the basis of the non-biological science it can perform nor as a transportation node.

"However, the space station is deemed essential as a life sciences laboratory, for there is simply no Earth-bound substitute," the report says.

Freedom should have two justifying objectives: the primary life sciences and microgravity experimentation, the committee said. It added that it believes Freedom can be simplified, reduced in cost, and constructed on a more evolutionary, modular basis.

"Given all of this, we would encourage NASA and the Congress not to be bound by the 90-day restructuring period for Space Station Freedom

recently directed by Congress," the report says. "Redesign is simply too important to take less than whatever time may be needed for a thorough reassessment and the establishment of a configuration that can earn stable long term funding and support."

The committee also stated that NASA's technology base must be replenished and recommended that NASA begin plans to develop a heavy lift launch vehicle, capable of evolving into a man-rated vehicle.

The committee also proposes to divert funds from the planned additional space shuttle orbiter (OV-106) to enable the construction of the heavy-lift launcher. The committee added that funds should not be taken from the construction of support hardware needed to assure the shuttle's continued operational viability.

The committee also said NASA should continue to help nurture a commercial space industry and that it applauds the agency's on-going efforts to enhance the nation's mathematics and science programs.

Truly: Report offers suggestions that deserve study

(Continued from Page 1)

"Their recommendations there are something that is close to our heart, and we're going to take a look at them," he said, but he cautioned that such a vehicle won't be cheap.

"You can't get a heavy-lift vehicle or a Shuttle-C vehicle, for that matter, for the cost of a new shuttle orbiter. And the Shuttle-C is the least expensive way we know of to get a heavy-lift capability. It is designed to be a minimum development cost with maximum use of existing hardware and maximum use of existing launch facilities at KSC."

The report states that NASA's civil service system is incompatible with the specialty skills required by the agency, due to the low ceiling on salaries and the large gap between the federal pay scales and commercial pay scales for

those skills. It suggests that options be explored for revamping the civil service system in general, or via a special exemption, for NASA. If an answer can't be found in that area, it suggests a look at affiliating certain NASA centers with universities as research and development centers, along the lines of JPL's current arrangement.

Cohen said JSC does not have a personnel problem at present.

"At JSC, we don't have a big problem attracting the brightest and hardest-working people in the areas we require, and we've never had a large problem of that type. That situation varies among NASA centers. But there is a large difference between pay scales for civil service professionals and commercially employed professionals, and it's a difference NASA

has hoped to alleviate for quite some time, with little success," Cohen said.

"With that history in mind, it's obvious the prime motivation behind the desire to work here is not the salaries but rather the challenge, excitement and opportunity to serve the country. Still, it simply is not fair to expect an employee to take a salary that isn't comparable to his peers," Cohen added. "And there is always a threat that if the difference in pay scales continues to grow, the civil service may become a training ground as employees move to commercial positions after spending only their entry-level years in the civil service. The report gives us a platform from which we can continue to fight for a more equal salary range to avoid this threat."

Truly said the committee didn't see all NASA centers as candidates for

university affiliation. NASA Deputy Administrator J.R. Thompson added that options for changing civil service rules for NASA would be thoroughly explored before any university affiliation options would be considered.

"Just exploring the possibilities of alternatives in the civil service system would certainly take far longer than a year," Thompson added.

The Augustine Committee report strongly supports NASA's current science programs, and future science programs now in the works.

"They give a vote of confidence to the strategic plan for our science program," Truly said. "I think they've endorsed our current program and the current balance of science in the agency. I think the present pace of the science program is just about right, and I wouldn't see a major change in

that balance."

The report's views on Space Station Freedom and the Space Exploration Initiative (SEI) are supportive, but it recommends that deadlines be loosened for Freedom and eliminated for SEI.

"The report recommends a heavy-lift launch vehicle be developed, a need which NASA identified in the agency's 90-day report on President Bush's exploration initiative," JSC's Cohen added. "In tandem, the report recommends that Space Station Freedom be built, and it calls for a trip back to the Moon, and subsequently, a trip to Mars, and it suggests that deadlines not be placed on long-term initiatives. In short, the report wholeheartedly supports manned spaceflight as a vital part of the nation's space program."

Trivia Challenge answers: How did you do?

- 51-I. Typhoons Pat and Odessa and Hurricane Elena.
- One, Christopher Kraft.
- Oakland, Calif., and Tampa, Fla.
- Jack R. Lousma inside Skylab.
- STS 1 and STS-2.
- 572.
- "The first herd shot round the world."
- Surveyor-3.
- Apollo 13's Lunar Module, Aquarius.
- "Watch your language, this is going out live."
- Apollo 12
- Nassau Bay Motor Inn.
- "Silver Dollar" West
- 841.6 lbs.
- Bldg. 37.
- Gemini 4, June 1965.
- Charlie Duke.
- Max Faget.
- Eugene Kranz; Kranz; Neil Hutchinson.
- 23
- 1964
- 149.16 feet
- Ken Mattingly was exposed to Charlie Duke who had German Measles. Mattingly, who never had and never developed German Measles, was replaced by Jack Swigert on Apollo 13.

- Al Bean on Skylab 3.
- July 11, 1979. Littering.
- Alan Shepard when asked what went through his mind during his 1961 flight.
- He was Director of Research and Engineering.
- We have acquired a signal through the Diego Garcia Tracking Station but have lost the signal through the eastern Tracking and Data Relay Satellite and are acquiring signal through the Indian Ocean tracking station then losing the signal through Diego Garcia, losing the signal through the Indian Ocean station and acquiring the communication back through the western Tracking and Data Relay Satellite. (One bonus point: Repeat the question without looking three times fast.)
- Apollo 18.
- Building 226 was completed Oct. 22, 1962 and Building 25 was completed Sept. 19, 1963. The most recent was Building 28, the Auxiliary Chiller Facility.
- New York, Ohio and Texas.
- Massachusetts Institute of Technology.
- The T-38 was parked in front of Bldg. 1 after being towed from Ellington Field down Highway 3.
- A barbecue beef sandwich and french fries.
- 60 feet
- Alan Shepard at 5 ft. 11 in.
- The Saturn V rocket now located in Rocket Park.
- Twelve taxis and four shuttle buses.
- \$372,400

- Quebec.
- The Dark Side.
- 41-G, 51-I STS-30 and STS-33.
- 78.06 feet
- Steve Hawley.
- The Gamma Ray Observatory will be launched on STS-37.
- Rhea Seddon was the first chosen for a specific spaceflight, but Shannon Lucid was already a parent when chosen as an astronaut. We'll give you either one. (See, we are reasonable folks.) Seddon was assigned to STS 51-E, but that flight was cancelled and the mission specialists reassigned. As a result, Anna Fisher became the first mother to actually fly in space on STS 51-A.
- Lake Chad.
- "Constitution" became "Enterprise."
- Magnetic marbles, jacks and a ball, a yo-yo, a Slinky, a Wheelo, a top, gyroscopes, a flipping mouse, a toy car and a paddleball.
- Thirty-nine aircraft are assigned to Ellington, but several are maintained elsewhere. The fleet includes one G-159, two 747 Shuttle Carrier Aircrafts, two WB 57Fs, one KC-135, one Super Guppy, four G-1159 Shuttle Training Aircraft, and 28 T-38s.
- Roughly 500,000 gallons.
- Five. Robert Gilruth, Chris Kraft, Gerald Griffin, Jess Moore and Aaron Cohen.
- Charles Duke on Apollo 16 and Harrison Schmitt on Apollo 17.
- The answer to this question is a matter of

- interpretation. According to the NASA Headquarters History Office, there have been stamps issued specifically for Apollo 8, Apollo 11 and two for the Apollo-Soyuz Test Project. There was one for Project Mercury which had six manned flights and one for Project Gemini which had 10. There also have been eight stamps issued for the Space Shuttle Program. If you want to include stamps for Pioneer, Mariner and Viking, the number goes even higher. As a result, we will count any number from three to 42 as correct. (We told you we were reasonable.)
- David.
- 797, to be exact, but we'll give you 800.
- A small paint flake strike created an impact crater on one of Challenger's windows.
- Velcro. The stuff upon which many a flight data file has been stuck was created in 1948 by Swiss inventor Georges de Mestral.
- Capt. James Cook sailed ships christened Discovery and Endeavour throughout the Pacific Ocean in the 1770s.
- At 149.16 feet, the SRBs are two feet shorter, however, they weigh twice as much.
- Buzz. He had it legally changed from Edwin. (We had to have one bonafid trick question.)
- Mercury 9, also known as Faith 7; Gemini 5; and the Apollo 17 command module.
- Gary E. Payton on 51-C and William A. Pailles on 51-J.
- The Peanuts gang.
- Shorty Powers.
- Astronaut Bonnie Dunbar.

Editors note: Roundup editors hope to make the Trivia Challenge an annual event.

This year the questions and answers were derived from a variety of sources including welcome inputs from the JSC History Office, Chili Cookoff Trivia Judge Jim Oberg, the imaginative minds of our Public Affairs co-workers and a few books laying around the office.

Next year we would like your input. Write your favorite space or JSC related trivia question and the answer on a white 8-1/2 x 11 piece of paper and send it to Space News Roundup Trivia, Mail Code AP3. All questions must be typed, verifiable and must come with the answer. Deadline for Trivia Challenge II is Oct. 15, 1991. We will publish a reminder as the deadline nears.

This way you can insure you get at least one right.