Vol. 27



Back on track JSC employees talk about what the safe return to flight means to them. Story, photos



## Return to flight

STS-26 was a success, and thousands turned out at Ellington Field to share their elation with the crew. Stories, photos on Page 4.

# ROUNCUT

October 7, 1988

Weise





PRIME OBJECTIVE—The Tracking and Data Relay Satellite is deployed from Discovery during the first day of the STS-26 mission. The Inertial Upper Stage that boosted the mission's primary payload into geosynchronous orbit is at the bottom of this photograph, taken with a hand-held Hasselblad 70mm camera aimed though the aft flight deck windows.

## **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):

Sea Arama (valid until Dec. 21): children, \$4.40; adult, \$7.75

Sea World-San Antonio (year): children, \$13.56; adults, \$15.96.

Renaissance Festival (weekends in October through Nov. 15): children, \$4; adults, \$8.

Bus trips to Renaissance Festival (includes bus fare and ticket): children (1-4), \$6; children (5-12), \$7; adults, \$10.

Dates & Data

Today

EAA badges-Dependents/ spouses may apply for a photo I.D. badge from 6:30-10 p.m., Monday through Friday at the Gilruth Recreation Center.

Aerobics and exercise—Both classes are on-going. Sign up at the Rec Center. For more information, call

Cafeteria menu-Entrees: seafood gumbo; liver and onions, deviled crabs, roast beef with dressing, tuna and noodle casserole (special). Vegetables: whipped potatoes, peas, cauliflower.

Monday

Columbus Day—Most JSC operations will be suspended for observance of the Columbus Day holiday.

**Tuesday** 

Cafeteria menu-Split pea soup; Salisbury steak, shrimp creole, fried chicken (special); Vegetables: mixed vegetables, beets, whipped potatoes.

Wednesday

Secretaries meet-The Clear Lake-NASA area chapter of Professional Secretaries International will meet with a dinner at 5:30 p.m. followed by a business meeting at 7 p.m. at the Holiday Inn on NASA Road Featured speaker will be Dr. Gerry Dice from San Jacinto College, lecturing on "Communications Update." Cost of dinner is \$9. For more information, call Lillian Hudson, x31032, or Rose Wilson, x30312.

IEEE videoconference—Registration deadline for the IEEE-sponsored "Applications of High Temperature Superconductivity" videoconference is Oct. 12. The videoconference will be from 10:30 a.m.-2 p.m. Oct. 20 in the Rec Center. Cost is \$60 for IEEE, ISA, AIAA and ACM members, and \$60 for others. Call Nancy Marshall, x30174 to register. For more information, call Eddie Robinson, 333-7029.

Introduction to Bridge-A basic introduction to the game for those who have never played. Meets 5:15-7 p.m. every Wednesday at the Rec Center. Cost is \$10. For more information, call

Beginning Bridge-The fundamentals of bidding, declarer play and defense will be taught from 5:15-7:30

p.m. every Wednesday at the Rec Center beginning Oct. 19 for eight weeks. Cost is \$35. For more information, call x30303.

Cafeteria menu-Entrees: seafood gumbo; fried catfish with hush puppies; braised beef rib; barbeque plate, weiners and beans, shrimp salad, stuffed bell pepper (special); Vegetables: corn O'Brian, rice, Italian green beens.

Thursday

Return to flight celebration—The eighth annual North Galveston County Chamber of Commerce's Bayou Festival will adopt "A Return to Space Flight Celebration" as its theme Oct. 15-16 at Walter Hall Park in League City. A return-to-flight banquet is slated for Oct. 13 at the South Shore Harbour Resort and Conference Center and tickets are available through the North Galveston County Chamber of Commerce Office in Dickinson and the Clear Lake Area Chamber of Commerce Office, 1201 Nasa Road 1.

Cafeteria menu—Entrees: chicken noodle soup; beef stroganoff, turkey and dressing, barbeque smoked link (special). Vegetables: lima beans, buttered squash, Spanish rice.

### Oct. 14

Cafeteria menu-Entrees: seafood gumbo; baked scrod, liver and onions, fried shrimp, meat sauce and spaghetti (special). Vegetables: green beans, buttered broccoli, whipped potatoes.

Vendor seminar—The IEEE will host a vendor seminar on local area. networks from 9 a.m.-4 p.m. Oct. 14 at the Lockheed Plaza 1 Bldg., 2450 NASA Road 1. The seminar will be presented by Hewlett-Packard. For more information, call Eddie Robinson, 333-7029.

### Oct. 16

Deep sea fishing—The JSC-EAA has rescheduled a deep-sea fishing trip aboard the New Buccaneer sailing from Galveston from 7:30 a.m.-7:30 p.m. Oct. 16. Anyone holding tickets for the previous trip that was cancelled may use them this time. Tickets are also on sale at the Bidg. 11 Exchange Oct. 22

Symphony at Clear Lake—The Bay Area Houston Symphony League will present Gisele Ben-Dor conducting the Houston Symphony Orchestra at 8 p.m. Oct. 22 in the Clear Lake High School auditorium. Reserved seat tickets are \$15 and general admission tickets are \$8. For more information, call 474-4874.

Renaissance Festival trip—The JSC-EAA will sponsor a trip to the 14th Annual Texas Renaissance Festival near Plantersville with a chartered bus leaving JSC at 8 a.m. and returning at 5 p.m. Adult tickets are \$10; children ages 5-11 tickets are \$7; and children under 5 who will require a seat can purchase tickets for \$6. Sales are limited to six tickets per purchase. A second trip to the festival will be sponsored Nov. 5.

### Oct. 25

BAPCO meets—The next meeting fo the Bay Area PC Organization (BAPCO) will be at 7:30 p.m. Oct. 25 at the League City Bank and Trust. For more information, call Earl Rubenstein, x34807, or Ron Waldbillig, 337-

### Oct. 26

End user conference—The Data Processing Systems Division will host a DPSD-Supported End User Conference products from 9:30-4 p.m. Oct. 26-27 in the Product Demonstration Facility (PDF), Bldg. 12, Rm. 112. End users will have an opportunity to explore software and hardware products already in use, and see selected DPSD-supported products they may want to consider purchasing. Manufacturer representatives and product specialists will be available to answer questions, provide tips and distribute add-in products. For more information, call the PDF at x37572.

## Oct. 31

Children's Halloween party-The annual JSC-EAA's Children's Halloween Party will be from 6-9 p.m. at the Rec Center. Carnival games, prizes, refreshments and pictures with Dracula will be featured. Tickets are \$3.50 for children on sale at the Bldg. 11 Exchange Store. Adult refreshment tickets will be \$1. For more information, call Susan Starkweather, x36608.

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2.

## **Property**

Sale: League City, 3-2-2, cul-de-sac, landscaped, low equity, FHA 10% fixed assumable. David, x35464.

Sale: University Green patio home, 2 plus 2/2D, Islander series, Cozumel plan, sharp, \$98,700. Bob Allgeier, 488-0397.

Sale: Middlebrook, 3-2-2 , study covered patio, large lot, ex. cond., FHA 10% assumable, 480-9363.

Rent: 2 BR apartment, NASA/Ellington, \$350/ mo. Eric, x38920 or 484-9179 or Herb, x38161 or 481-1253.

Lease: CLC/Meadowgreen, large, very very clean, 4-2-2, FPL, mini-blinds, formals, den fenced, bay window area, pool & tennis, \$725/ mo. 280-8796.

Rent: Mobile home lot, \$85/mo., \$50 dep. Baker and Kinne, Bacliff. 488-1758.

Sale: Friendswood/Sun Meadow Estates, wooded lot in established neighborhood, culde-sac, bordered by stream & golf course on 2 sides, approx. 245' deep & up to 86' wide, approx. 1/3 acre, utilities on site, \$31,500. Doug, x32860 or 486-7412.

Sale: 1985 mobile home and lot in League City. 14x80, 3 BD, 2 bath. Lot is 50x150, some trees on lot, close to schools, \$27,000, 334-3037

Lease: 3-2-2 in Pasadena Park View Manor. 1,500 sq. ft., fenced yd., shade trees, built-ins, A/C, \$500/mo. plus dep. J. Yeo, 944-8186.

## Cars & Trucks

'82 Plymouth Horizon, TL-3 hatchback, A/ C, auto., 45K mi., new tires, \$1,995. x36710 or

'59 Mercedes Benz 220S, \$3,000. David, x35464.

'85 Ford XLT Club Wagon van, 302 V-8, all power, AOD, dual air, cruise, tilt, AM/FM cass., 4 capt. chairs, seat bed, \$11,500, OBO. 282-

'79 Oldsmobile Cutlass S/W, AM/FM cass.,

low mi., new tires, good cond., \$2,000, OBO. 280-9822. '78 Chevy Scotsdale, 350, 3 spd., A/C, P/

P/B, great cond., \$1,700. Diana, x38680 or 427-9263. '85 Mustang GT, 5 spd., good cond., \$5,900;

racing Go-Kart, invader chassis w/LMR, 100cc engine, spare parts, \$300. x33858 or 996-9860. '84 VW Rabbit, Wolfsburg Edition, 5 spd., A/ AM/FM stereo cass., 80K mi., good cond.,

\$3,895. Plauché, 483-9034. '84 Ford van, short version, 51K mi., captain's chairs, bench seat, A/C, tinted windows. 482-

'87 Z24 Cavalier, sunroof, P/W, AM/FM cass., equalizer, 12,800 mi., ex. cond., \$10,500. 338-2061.

OBO. Rick, x36156.

'83 Porsche 944, silver, 5 spd., sun roof, alarm system, two new tires, ex. cond., 46,000 mi. Frank, 333-5251.

'73 Volvo station wagon, needs battery, runs great, \$350 cash. Jim, x38321 or 334-4631.

'86 Toyota Corolla, AM/FM stereo, JVC speakers, A/C, white w/greyblue int., 41K mi., ex. cond., \$900 cash, OBO and take up car payments, 1 owner. Tracy, x39373 or 731-7792.

77 customized Ford van w/refrig., sink, and closet, 351, P/B, P/S, new tires, runs real good, \$2,400. Scott, x37663 or 482-7775. '81 Olds Cutlass. 4 dr., V-6, A/C, stereo cass/

radio, clean, no rust, runs good, \$1,995. J. Yeo, 944-8186 '85 Camaro Berlinetta V-8 w/T tops, 4bbl Quadra-jet, digital, AM/FM/cass., tinted glass,

A/C, P/S, P/W, 2 new tires, black w/tan int., low mi., \$9,500, OBO. Leslie, 482-6491. '86 Chevy van, customized by Starcraft, fully loaded, 25,000 mi., mint cond., \$16,200, OBO. Andy, x35963 or 474-2421.

## Cycles

'83 Suzuki GS550E motorcycle, 5,600 mi., ex. cond. 673-7667.

'82 Honda Sabre V-4, customized sports tourer bags, fairing, lowers, etc., must see, black w/metallic grey & silver, \$1,200. Richard, 480-

## **Boats & Planes**

Boaters, if you have a Furuno 701 (5kw) radar upgrade to a 10kw for \$200, includes new maggie. x33858 or 332-1262.

'47 Luscombe 8A airplane, 75hp, 100 mph, T2800, STOH 50, \$6,995, econ. flying for fun. 333-6710 or 482-9162

Laser sailboat, \$300, BO. Eric, x38420 or '83 Hobie 16' Catamaran, signature model,

orange rainbow sails, sail box, ex. cond., \$1,850, OBO. x35067 or 333-3544.

'67 Correct Craft speed boat, 18 ft., inboard gal. trailer, needs some work, \$2,000, 338-2061. '77 16' Ebbtide fiberglass outboard boat, 115hp Mercury motor, stainless steel prop, remov. ski bar, gal. trailer, good cond., Todd, 534-6328.

## **Audiovisual & Computers**

Ham special, 2-1000 Watt, bird Watt meters, -30 MHz, 100-157 MHz, Sineadder, 2 Hi Z MIC's. x33858 or 332-1262.

IBM PC programs, microsoft Multiplan, \$35; PFS professional write, version 1.0, \$50. 681-

Commodore 64 power supply (orig.), \$10. Samouce, x35094 or 482-0702. Jensen AM/FM stereo/cass. car stereo, \$50.

Vincent, x30874 or 333-1316., Altec custom voice of the theater sound reinforcement speaker system, \$1,000. 480-

Stereo power amp 200 w/ch Phaselinear \$400; Nikko Beta II preamp, \$200. Mike, x30115 or 996-1496

IBM PC-AT (western digital) hard disk controller, new never used, \$100. Frank, 333-

10 MHZ PC/XT Motherboard, 8 slots, OK memory, ERSO BIOS, never used, \$100, OBO. Ed. 481-0928.

## Household

Beige over stuffed living room chair w/ ottoman in ex. shape, \$95. Mary, x36369 or 326-Oak dining room table w/four chairs, ex.

cond., \$500. 483-0935. Kenmore 21 cu. ft. frost free, side-by-side

freezer/refrig. w/ice maker, needs compressor work. 337-1160 King size waterbed, mirrored headboard,

frame & heater, no mattress, \$85, 996-7637. Upright freezer, 16 cu. ft., \$150. 1-585-8162. China cabinet w/sliding glass doors, very

velvet arm chair, \$75; credenza, \$100; Litton microwave, \$75; coffee table, \$75; wicker chair, \$15; double oven, \$50; stove top burner, \$20; range vent hood. \$10; glass shower doors, \$10.

Ron, x31609 or 488-1968. Love seat, ex. cond., \$70; 2 high back wicker chairs w/glass top table, \$30; metal rim chair w/foot stool, \$10; set of ovenproof dishes, \$15;

telephone stand, \$10. Ray, x38030 or 532-1045. Montgomery Ward stove, used 6 mos., ex. cond., must sell, moving, \$250. Becky, x36530

Semi-motionless king size waterbed, 4 post mahogany wood, heater incl., ex. cond., \$250. Jennifer, x34194 or 280-0993.

Rock band "Powered Flight" needs keyboard player and/or vocalist. Tom, x33651, Rene, x35121, Joe, x33559.

Want to buy elec. trains. Don, x37832 or 996-

Want to trade Ninetendo set w/6 games or Atari set w/over 30 games for Sega set w/ games, Joseph, 326-2187.

Want 0.15 model A/craft engine and 3 or 4 channel R/C equip., also want tools for Briggs & stratton engines. Bill, 326-2187.

Want to buy 2 tickets to JSC football weekend in Dallas on Oct. 8 & 9. Mary, 483-7147 or 484-Want an RV to rent for 1 week around

Thanksgiving, must be reliable and should sleep 4-6. Karen, x38850, Marie, x38875. Want to join or form carpool from Medical

Center/Astrodome area to JSC. J. Beek, x38932. Want ride from Bidg. 227 to Kirby & NASA Rd., Seabrook, 2nd shift at 3 p.m. to 11:30 p.m., will pay \$5.00/week for gas. Russell Hunter,

### x36161 or 326-2794. Pets & Livestock

Free kittens. 337-1160. AKC Rottweiler pups, 3 males, shots, wormed, \$400. Christy, x34231.

## **Musical Instruments**

Yamaha trombone w/case, ex. cond., \$185. Mary, x36369 or 326-2731.

H-Couf alto sax, Royalist I (professional model), also Selmer C Star mouthpiece, \$750,

## Lost & Found

Found, young female dog, blk./beige, Clear Lake, free to a good home. Gloria, 480-8357 or 486-0454.

## Personal

Wish to talk with anyone who owns a 'Replicar' by Fiberfab, Inc., specifically interested in the Mercedes replica. Bob, 488-

## Miscellaneous

Slam dunk basketball goal w/portable pole, \$50, 483-0935.

Stationary exercise bike, like new, paid \$150, sell \$75. 681-4126. Nagel's, Patrick, commemorative prints, \$7,

x32439 or 326-3947.

1983 Subaru factory service manual, like new, \$25. x30577. Tennis racquet, never used. Pro Kennex

Copper Ace 90, midsize graphite style, bought for \$70, sell for \$50. Cathy, x38607 or 488-8944. 4 BBS alloy rims, 4 bolt w/4.25 inch bolt circle. -6x13 w/20x6.0 Goodyear Racing Eagle tires

and 2-9x13 w/21.5x8.5 tires. Merrill, x34925. White Kenmore washer, \$100; D-8 battery, \$100; 3 Toyota Celica alum. rims, \$100; bench and bar bell weight set, \$50, 480-5426.

Triple dresser, drk. wood, w/large mirror, carved out designs on drawers/doors, \$150, OBO; Ladies' 10 emerald/3 diamond ring, sz. 5. \$200; Ladies' 2 pc. suit, taupe, sz. 8, \$35; Kawasaki motorcycle racing leathers, green/blk will fit male 6' tall, \$150. Jana, x31653 or 532-

'79-'81 new Honda car A/C compressor, \$200, OBO. Vincent, x30874 or 333-1316.

Boat generator installation instruction booklet for low-cost light-weight air-cooled generator, data provided will save considerable time & money, \$24.50, 280-8796

Centrifugal pump, 1.5ph, teel, 2 inch inlet, higher pressure range, water/mud/etc., \$125, 280-8796. Rims and hubcaps for Volkswagon Beetle, free. x35067 or 333-3544.

Trolling motor, Shakespear, 3 spd., \$75. 280-8796. Audrouox transportable cellular telephone,

\$600, OBO, 480-9724.

Midland 3' pump, 8hp, Briggs & Stratton engine,

### good cond., \$100, Rob or Rita, 486-0804. Wood/glass top dinnette w/4 chairs, \$450; OBO. 487-8359.

ex. cond., \$300, OBO, Russ, 488-5546.



program is getting back on track.



Root, says he's glad the space Program Integration Office at Computer Sciences Corp.



Mission Control is proud and looks tears filled the eyes of colleagues specialist, asks where do we go forward to future progress.



William McCormick, Brown & Preston James is manager of the Paul Hobush, a microfilm analyst in Laura Chiu, lead librarian admits that Dave Haucker, a security education after the successful beginning of from here?



# Workers revel in success

## Pride, confidence, excitement abound across center

The Return to Flight

—Ron Berry

'To me, it meant seeing the res-

toration of our confidence and

pride in what we do, as well as

make the tough risk trades that

are always going to be a neces-

**Mission Support Director** 

a revalidation of the NASA/

contractor team's ability to

sary part of manned space

Discovery's mission signalled a new beginning for NASA employees and all Americans, invigorating JSC with a pride, confidence and pure excitement destined to defy the limits of Earth again and again.

And employees here are, to understate the situation, more than ready to get to work on that goal. For them, one success breeds desire for another, and it makes the painstaking work required to make long-range dreams into realities a bit more urgent, a lot more tangible.

Simply put, JSC has been ready for this moment for a long, long time.

"We're back on the road again. To me it means the space program is back on track and I'm real happy about it," said Chip Knudsen, a photo technician at JSC. "We've been getting the photo processing and printing equipment ready for the development of flight film."

Most employees were breathless during Discovery's launch, and although tension eased as Discovery achieved orbit, workers were all too aware that the job was not finished until she and her crew came home. Still, enthusiasm grew

Veteran workers possessed a calmness and assurance, a showcase of expertise and experience. Newer workers were wrapped in intense emotion generated by their hands-on contributions, and, for some, the witnessing of their first launch as a team member.

"This was my first mission," said Gary Zupanic, a production technician. "I was involved and it made me feel so proud. Before I started to work here, I always watched the Shuttle on television and was excited about it. But this time it was so totally different and unforgettable."

"It means a great deal and I'm excited and happy that everything has resumed," said Bob

Jones, a personnel management specialist. "Although we (in personnel management) are removed from the nuts and bolts of flight operations, we're certainly proud of the return to flight. I've been here since Gemini III, and though our regrouping period was not the longest

non-flight status ever, its end is encouraging to other professionals interested in joining the

Dick Kohrs, deputy director of the National Space Transportation System (NSTS), said the successful completion of the mission was a great

'The emotion and anxiety were high, but overall it was good to be back on the ground again," he said. "I think it demonstrated a tremendous team effort here at Johnson and the other centers. I think now it's a new day and we have to concentrate on the success of STS-27.

I think this team is ready to do that. We're on a roll and people will continue to work hard to support the program."

flight.

We're back!'

Don Puddy, director of flight crew operations, said he's all smiles now.

"I think the outstanding performance of the NASA/contractor team and Discovery's crewalong with obvious support of the American people-made STS-26 a very proud and

exhilirating event," he said. "We must now exert some degree of diligence and perfection as we continue our safe return to manned space flight."

Throughout JSC's 1,620 acres, many emplovees enthusiastically continued their daily routines, some with thoughts too private to bare

and confidence too bold to admit.

"It's something we've been waiting a long time for," said Paul Hobush, a microfilm analyst in mission operations. "Now it's very satisfying and we can look to the future to see where we

go from here." "Without a Shuttle up in space, it felt like we were simply here doing other things. Now it feels like we're really back in business," explained Reese Squires, a data management supervisor for Stellacom. "We're really pleased and the successful launch is another indication we'll go on stronger than ever."

The return of Americans to space is far from an end in itself to those at JSC, and workers' eves are now more sharply focused on a limitless future than ever before.

"Just like we did back in the 1800s with land. the progress of space exploration provides a new frontier to conquer. The successful launch reinforces my confidence," said Douglas Case, a worker in the Payload Operations

Center (POC).

"I've been involved in the space program for 22 years and feel that I'm an integral part of it, so success means a lot to me," said Preston James, program integration office manager for Computer Sciences Corporation.

"When the Shuttle went up, several people in the library had tears in their eyes," added Laura Chiu, lead librarian. "This is really exciting and encouraging and we look forward to getting

'The next step is to get the commitment behind us to move us into the future. We need the people to say, 'STS-26 is flying, now, where do we go from here? Are we going to put a space station up? Are we going to go to Mars? Are we going to go back to the Moon?' " said Security Education Specialist Dave Hocker. "We need that commitment."

Henry Pohl, director of engineering, agreed that JSC needs to look to the future.

"We have so much to learn, so much to do," he said. "We have the tools now to make space a fun place to work and play in. I told everybody last night they could celebrate because today we have to go back to work because we have another mission to fly. We have to make this a standard way of business and not operate from crisis to crisis. I think it's good to have a focus and we now have that."

Pohl said his strongest feelings occurred when Discovery's wheels stopped rolling, and reminded JSC employees that they need to keep their feet on the ground as well.

"There are a lot of people making this thing work. It only takes one person out of literally thousands not doing his job on some little dinky thing that nobody thought was important that will cause it to fail."



supervisor for Stellacom, supports for Stellacom. film production for training.



Reese Squires, a data management Gary Zupancic, is a production tech,



customer assistance.



specialist hopes to witness further says he's ready to process flight film. mission developments.



Douglas Case, works in payload Bob Jones, a management personnel Chip Knudsen, a photo technician,

## 'A great end for new beginning'

Rick Hauck and Pilot Dick Covey, swooped to a perfect landing at Edwards Air Force Base Monday, a landing described by CAPCOM Blaine Hammond as "a great end for the new beginning.

An estimated 420,000 people were on hand to watch, the second largest crowd ever for an Orbiter landing. Discovery's main landing gear touched down eight seconds past 11:37 a.m. CDT and Hauck acknowledged the wheels had come to a complete stop 49 seconds afterward. The crew exited about an hour later, after the vehicle had been safed by ground teams and other post-landing work finished

The crew members, all in excellent condition, were greeted by Vice President George Bush and by their

You've proven that the space program is stronger than ever," Bush told the

Discovery also is in great shape after her trip to space, Tip Talone, launch processing flow director at KSC, said in a briefing Tuesday. Talone and processing team members had spent the day inspecting the

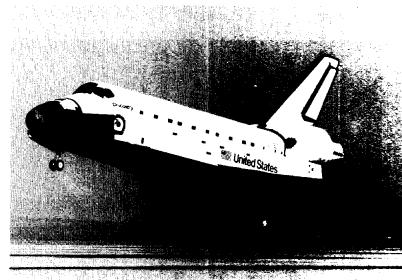
"It's as good or better than any we've seen," Talone said. "When you see it close up, there's very little heating evidence anywhere. It really looks good."

The Orbiter will be mated to the Shuttle Carrier Aircraft (SCA) and become airborne again by Saturday on its way back to Kennedy Space Center. The SCA is scheduled to make a refueling stopover at Kelly Air Force

Discovery, guided by Commander wives. "You've made us all proud. Base in San Antonio during the allday trip.

Talone said Discovery's thermal protection system tiles appeared to be in very good shape overall. No tiles were reported missing, but a small, oblong-about 1.25-inch deepgouge was found across the surfaces of about six tiles on the lower right wing, near where it connects to the fuselage. The gouge must have been caused by some type of debris during ascent, he said, but it didn't come close to cutting through the 4-inch thick tiles. The six tiles will have to be replaced.

Also, Discovery's modified brakes performed well and appeared to have come through the landing in good shape. "We could see no damage at all, but they'll have to be shipped back to B.F. Goodrich to be taken apart for detailed inspection," Talone said.



Discovery prepares to touch down Monday on the dry lake bed at Edwards Air Force Base. The flawless landing occurred at 11:37 a.m. CDT, 4 days, 1 hour and 8 seconds after the mission began.

## Return to flight is smooth sailing for veteran crew

After listening for hours to talk of satellite continued on to its planned unfavorable upper level winds last Thursday, Discovery's crew members were a bit surprised to lift off only an hour and a half late. Once the launch was a success and the vehicle in orbit. however, the mission went almost like clockwork.

they said we're resuming the count, we all looked at each other and said, The Return to Flight 'Woo, we're really

Hauck said after returning to Houston.

The launch occurred at precisely 10:36:59.973 a.m. CDT Thursday. Fifteen seconds into the flight, Hauck's attention was grabbed by a Class 3 alarm indicating that the pH factor was high in Fuel Čell 2. But the alarm turned out to be a temporary sensor reading and didn't require correction.

The crew and Mission Control joined the world in taking a breath at the 73-second mark, but the redesigned solid rocket motors (SRMs) continued to barrel upward toward

The SRMs separated at 2 minutes 11 seconds, and the world breathed a sigh of relief. Hauck said at that point he was "95 percent" sure the mission would be a complete success. The press to MECO (main engine cutoff) call was given at 5 minutes 43 seconds into the flight. Thirty-nine minutes 55 seconds after launch, the number 2 Orbital Maneuvering System (OMS) engine was fired and Discovery achieved a nearly circular 160-nautical mile orbit.

after completing the OMS burn.

The mission's primary payload, the Tracking and Data Relay Satellite-C (TDRS-C) and its Inertial Upper Stage (IUS), were released from the payload bay at 6 hours, 13 minutes, and the

On day two, Hauck and Mission Specialist Pinky Nelson practiced donning and doffing the bulky new partial pressure suit for the first time in microgravity.

All of the middeck experiments 'At 9 minutes prior to launch, when activated throughout the mission by

Nelson appeared to be successful, especially the Protein Crystal Growth experiment, which pro-

going to do this!" Commander Rick duced "lots and lots of crystals," he said.

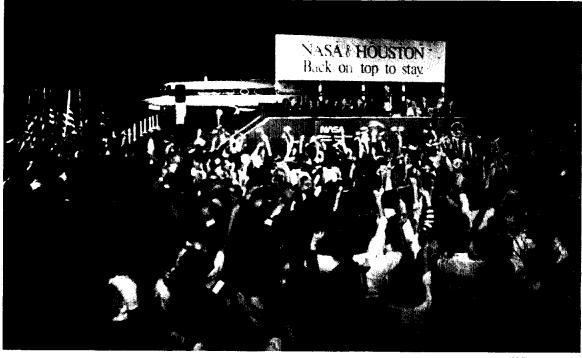
> On day four, the crew members paid tribute to the Challenger crew and sailed through an in-orbit press conference, with questions originating from JSC's Bldg. 2 Teague Auditorium.

> Each day began with an uproarious musical wake-up call. Three were produced by Rick Cahill, a Houston radio producer and part-time JSC tour guide, and the fourth by a group of students from Nelson's alma matter, Harvey Mudd College. Comedian and actor Robin Williams provided special taped introductions—"Good morning, Discovery!"-for two of the wake-ups.

> Only two problems of significance turned up.

The flash evaporator subsystem (FES) that cools the Orbiter when its payload bay doors are not open showed signs of ice early in the mission. Trying to ensure that the FES would keep working and be available for descent, flight controllers circulated warmer than usual freon through the loop. This kept temperatures on the flight deck a little warmer than usual, "It's nice to be in orbit," Hauck said but the crew reported no discomfort. As the mission progressed, the ice continued to thaw and when the FES was needed, it performed perfectly.

Also, the crew was forced to restow a balky KU band antenna when it failed to follow aiming instructions.



A crowd of cheering JSC and contractor employees, bolstered by other supportive Houstonians, welcome home the STS-26 crew at Ellington Field on Monday night.

## Rousing welcome greets crew

With flags waving, cheers whooping and tears welling, JSC and Houston welcomed home their Discovery crew Monday night at Ellington Field, marking the end of STS-26 and a safe beginning of the return to flight.

JSC Director Aaron Cohen, Rear Adm. Richard Truly, NASA associate administrator for space flight, and Houston Mayor Kathy Whitmire joined thousands in voicing their good wishes.

"NASA's number one goal has been to return the Space Shuttle to safe flight status. We did it!" Cohen said. "This is truly an important milestone and one of the most significant milestones in space history-we're back!" he added, thanking the men and women of JSC, contractors, Marshall, Kennedy, Stennis and management team and the STS-26 crew and families.

"This is one of the proudest days of my life," Commander Rick Hauck, flanked by the rest of the STS-26 crew, said from the top of a red, white and blue platform. "And it's wonderful to be able to share it with so many people that we've worked so closely with.'

After being interrupted by a cheer of "Good job!" from the crowd, Tuly said: "I think the efforts of this team coast to coast to get the flight off last Thursday, the performance of the vehicle and the performance of this great crew on orbit and that beautiful landing today says it all.

Pilot Dick Covey said the view from space on the Discovery's last orbit was inspiring, as clear skies let them pick out NASA's manned spaceflight facilities on

"From the shores of California to the Gulf Coast of Texas and Mississippi, the hills of Alabama and the east coast of Florida, those centers of NASA that are so important to the manned spaceflight program and have contributed so much-so many people deserve to share the light that we're standing in tonight," Covey

"The five of us here just got back from the greatest adventure of our lives," said Mission Specialist Dave Hilmers. "Each one of you out there-friends, family, supporters, co-workers-you shared in this adventure just as much as we did. And you're just as much the heroes of this flight," Hilmers said.

Mission Specialist Mike Lounge said the welcome at Edwards Air Force Base was from the whole country, but that the welcome from friends, families and coworkers meant more.

"The most challenging part of this flight, the hardest part of this flight, was trying to live up to what you deserve and I hope we've done that," Lounge said.

And Pinky Nelson asked families to share the glory of STS-26 with the unsung JSC employees.

"For all the families of those people, I tell you what tomorrow when they come home from work, why don't you keep your flags and when they walk in the door, wave your flag and clap your hands because you're all the folks that make it happen.'

## Discovery five gives tribute to Challenger seven

From almost 200 miles above Earth in space, Discovery's crew-Commander Rick Hauck, Pilot Dick Covey and Mission Specialists Dave Hilmers, Mike Lounge and Pinky Nelson—took a few heartfelt moments on the third day of their mission to pay tribute to the seven members of the Challenger

As they beamed the sights they saw to the world, sights whose awesome beauty, according to Covey, cannot truly be done justice by mere pictures, the crew in turn recited the following, beginning with Hilmers:

We'd like to take just a few moments today to share with you some of the sights that we have been so privileged to view over the past several days. As we watch along with you, many emotions well up in our posterity." hearts— joy, for America's return to space; gratitude, for our nation's support through difficult times; thanksgiving, for the safety of our crew; reverence, for those whose sacrifice made our journey possible.

As Hilmer's finished, Lounge began: 'Gazing outside we can understand why mankind has looked toward the heavens with awe and wonder since the dawn of human existence. We can comprehend why our countrymen have been driven to explore the vast expanse of space. And we are convinced that this is the road to the future, the road that Americans must travel if we are to maintain the dream of our Constitution-to ... secure the blessings of liberty to ourselves and to our Then Covey:

'As we, the crew of Discovery, witness this Earthly splendor from America's spacecraft, less than 200 miles separates us from the remainder of mankind; in a fraction of a second our words reach your ears. But lest we ever forget that these few miles represent a great gulf, that to ascend through this seemingly tranquil sea will always be fraught with danger, let us remember the Challenger crew whose voyage was so tragically short. With them we shared a common purpose. With them we shared a common goal.'

And Nelson:

"At this moment our place in the heavens makes us feel closer to them

than ever before. Those on Challenger who had flown before and had seen these sights, they would know the meaning of our thoughts. Those who had gone to view them for the first time, they would know why we have set forth. They were our fellow sojourners. They were our friends." Finally, Hauck:

"Today, up here where the blue sky turns to black, we can say at long last, to Dick, Mike, Judy, to Ron and El, and to Christa and Greg, 'Dear friends, we have resumed the journey that we promised to continue for you. Dear friends, your loss has meant that we could confidently begin anew. Dear friends, your spirit and your dream are still alive in our hearts.

## **Space News Roundup**

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