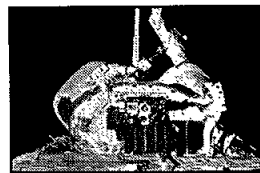




During the past several months, JSC has played host to a number of visiting dignitaries. Photos on Page 3.



Four astronauts get the nod for space walks on the next Hubble Space Telescope servicing flight. Story on Page 4.

Space News Roundup

Vol. 34

June 2, 1995

No. 22

Mir 18 crew ready to work with Spektr

With four space walks successfully preparing Mir for the arrival of a new module, two Russians and one American on board the space station should be working today with equipment sent up on Spektr earlier this week.

Spektr was scheduled to begin its final approach to Mir about 7 p.m. CDT Wednesday, and dock between 7:40 p.m. and 8 p.m. that evening. There were two additional opportunities to attempt the docking in case of a problem.

The 45 foot-long Spektr is the newest science module built for the Mir complex, and is designed to study the Earth's natural resources, atmosphere, and the area surrounding the Mir station. It will also be used for biomedical experimentation while providing additional electrical power to the station via four solar panels.



Mir's two space walking cosmonauts—Vladimir Dezhurov and Gennady Strekalov—completed the fourth space walk on Sunday to realign the docking target for the second repositioning of the Kristall module. The space walk began at 5:22 p.m. and ended at 5:43 p.m. CDT.

Throughout the space walks, U.S. Astronaut and Cosmonaut Researcher Norman Thagard provided assistance during the space walks from inside the station and with cleanup activities.

The Kristall module was successfully repositioned twice—once on Friday and again on Monday—as planned. Its current location clears the docking port for the arrival of Spektr. Friday's move of the Kristall marked the first module movement onboard Mir in 5 years. Kristall arrived at Mir in June 1990 and was repositioned the next day.

The two cosmonauts have spent 18 hours, 13 minutes outside the Mir complex thus far.

Discussions continue among Mir managers about the possibility of completely retracting the remaining Kristall solar array that was partially

Please see **MIR**, Page 4



The STS-70 astronauts check out *Discovery* during a final dress rehearsal of their launch, scheduled for 8:26 a.m. Thursday. From left are Mary Ellen Weber, Kevin Kregel, Tom Henricks, Don Thomas and Nancy Currie.

NASA Photo

Discovery, crew set for Thursday morning launch

Five astronauts are gearing up to fly to the Kennedy Space Center Monday for final prelaunch preparations for their blastoff June 8 on the STS-70 mission, the 100th U.S. human space flight.

Commander Tom Henricks, Pilot Kevin Kregel and Mission Specialists Don Thomas, Nancy Currie and Mary Ellen Weber will arrive at KSC at 5 p.m. CDT Monday, 12 hours after the start of the 43-hour countdown that will lead to their launch on Thursday at 8:26 a.m. CDT at the start of a 2 1/2 hour launch window. It will be the third shuttle mission of the year and the 69th in shuttle program history.

Six hours and 12 minutes after launch, Thomas and Currie will complete the major objective of their mission, deployment of the sixth Tracking and Data Relay Satellite, which will be fired into a geosynchronous orbit one hour later by a two-stage solid fuel inertial upper stage booster.

The remainder of the planned eight-day mission will be devoted to secondary experiments with landing planned at KSC's Shuttle Landing Facility on June 16 just after 6:30 a.m. CDT.

Friday, the five astronauts will be awakened at 3:30 a.m. CDT to begin final launch day preparations. After

having breakfast and suiting up, Henricks and his crewmates will depart their crew quarters at about 5:11 a.m. to head for Launch Pad 39B.

As *Discovery* awaited the start of its countdown, engineers continued preparations for the launch of *Atlantis* on adjacent Launch Pad 39A in late June on the STS-71 mission, the first flight to dock a shuttle with the Russian Space Station Mir. A firm launch date for *Atlantis*' flight was expected to be established at the conclusion of today's Flight Readiness Review by NASA managers at KSC.

Commander "Hoot" Gibson, Pilot Charlie Precourt, Mission Specialists Ellen Baker, Greg Harbaugh and Bonnie Dunbar, Mir 19 Commander Anatoly Solovyev and Mir 19 Flight Engineer Nikolai Budarin completed their countdown demonstration test dress rehearsal at KSC last week, pronouncing themselves "fit and ready" to begin the first flight to link a U.S. spacecraft to a Russian spacecraft since the Apollo-Soyuz mission 20 years ago.

Solovyev and Budarin will be launched aboard *Atlantis* to replace the Mir 18 crew, Commander Vladimir Dezhurov, Flight Engineer Gennadiy Strekalov and U.S. astro-

Please see **THAGARD**, Page 4

Tools change, but 'Houston' still Mission Control call sign

Though their tools will be updated, NASA flight controllers will carry many of the traditions and procedures from 30 years of experience to a new Mission Control Center as portions of STS-70 are controlled from a new building for the first time.

As in the past, the responsibility for shuttle operations will revert to Houston once *Discovery*'s two solid rocket boosters ignite. Mission support in the control centers will begin five hours prior to launch and continue through landing.

The STS-70 ascent, deployment of the NASA's newest Tracking and Data Relay Satellite, and entry

operations will be conducted from the old Flight Control Room. After the completion of the TDRS deploy, however, the flight control team will move to the new MCC in Bldg. 30 for the remaining on-orbit operations.

The new MCC's design offers an unprecedented flexibility in flight control operations, allowing the facility to be changed from controlling a space shuttle to controlling any other spacecraft with almost the speed of simply choosing a different

function from a computer menu. The commercially available equipment and up-to-date technology used in the new MCC will greatly reduce maintenance costs for the facility as well.

Voice communications with the orbiter will be standard, using the call signs "Houston" and "Discovery."

The teams of MCC flight controllers will alternate shifts in the control center and in nearby analysis and support facilities. The handover between each team takes about an hour and

allows each flight controller to brief his or her replacement on developments during the previous two shifts.

The MCC flight control teams for this mission will be referred to as the Ascent/Entry Team, the Orbit 1 Team, Orbit 2 Team and the Planning Team. The Ascent/Entry Team will be led by Flight Director Rich Jackson. The Orbit 1 Team will be led by Flight Director John Shannon. The Orbit 2 shift will be conducted by Lead STS-70 Flight Director Rob Kelso. The Planning Team will be led by Flight Director Bryan Austin.



Early morning downpour floods JSC gates

Holiday weekend gets surprise extension as heavy rain hits Clear Lake

The lights were on, but few could get into JSC early Tuesday morning as a long holiday weekend ended on a stormy note that temporarily flooded all of the center's entrances.

Although center facilities were up and running, even the impassable gates were beyond the reach of many employees who were stuck at home in flooded subdivisions or blocked by engulfed Gulf Freeway feeder roads as torrential rains dumped as much as 10 inches in the Clear Lake area Monday and Tuesday. By midday, most employees were able to make it to work.

JSC remained open and center management gave supervisors the authority to grant up to two hours of excused leave to employees who were prevented from reporting to duty because of the flooding, said Human Resources Director Harvey Hartman.

For those who required more time, supervisors are being asked to adopt a liberal leave policy and use all of the flexibility in the time card system to meet the needs of those who couldn't make it to work.

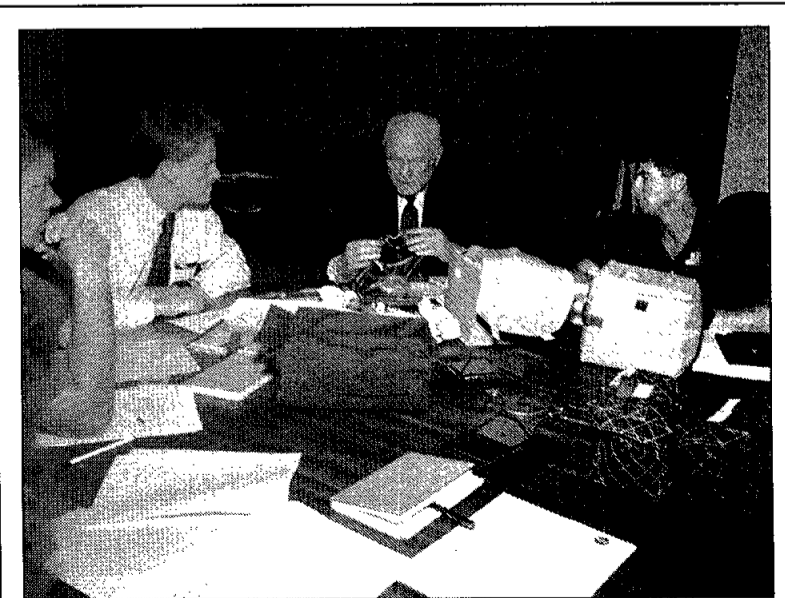
"From a facilities point of view, we did well," said Center Operations Director Jim Hickmon. "The buildings all had air conditioning and their power was working. The problem was getting here—the center itself was in good condition."

Nevertheless, there was minor water damage to JSC facilities. Bldg. 14 had the most with 3 to 4 inches of water in the LASER tunnel and 2 to 3 inches in the anechoic chamber area. Water from the storm drain line backed up to cause the flooding. There also were reports of drains backing up or leaky roofs in Bldgs. 1, 2, 3, 5, 7, 10, 30, 31, 44, 45 and 266.

Steve Sokol of the National Weather Service's Spaceflight Meteorology Group, said the heaviest thunderstorms hit the Bay Area about 4 a.m. Tuesday and remained heavy until about 7:30 a.m. The cause was a stationary front and upper level low pressure system.

Forecasters were challenged by not being able to get to JSC and their sophisticated weather tracking equipment, and by a lightning strike that took the League City radar system off-line Tuesday morning.

Rainfall reports included South Shore Harbour, 9.7 inches Tuesday; Clear Lake City, 8.3 inches Tuesday and 10 inches over two days; Friendswood, 6 inches Tuesday and 8 inches over two days; Pearland, a two-day total of 10 inches; and League City, with 1.5 inches Monday and 6.7 Tuesday for total 8.2 inches.



JSC Photo by Benny Benavides

SENATE SCRUTINY—U.S. Sen. John Glenn talks with STS-70 Commander Tom Henricks, far right, and Pilot Kevin Kregel, far left, during a visit to JSC this week. Also on hand were JSC surgeon Rainer Effenhauser, and John Young, background.

DATE

OPR

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PGM

SIGNATOR

LOC

SUBJECT

Ticket Window

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

- Loving Feelings Concert:** 7 p.m. Sept. 30 at the Summit. Tickets cost \$32.50.
- Schlitterbahn:** Tickets cost \$17.80 for adults and \$15.30 for children 3-11.
- Seaworld:** Tickets cost \$23.50 for adults and \$16.25 for children 3-11.
- Astroworld:** One day pass cost \$18.10.
- Splashtown:** Tickets cost \$11.05.
- Six Flags:** Tickets cost \$23.70 for a one day pass, \$31.75 for two day pass and \$20.30 supersaver not valid on weekends in June July and August.
- Fiesta Texas:** Tickets cost \$20.35 for adults and \$15.80 for children 4-11 and senior citizens over 55.
- Moody Gardens:** Discount tickets for two of three different attractions: \$9.50
- Space Center Houston:** Discount tickets, adult, \$8.75; child (3-11), \$7.10.
- Metro tickets:** Passes, books and single tickets available.
- Movie discounts:** General Cinema, \$4.75; AMC Theater, \$4; Sony Loew's Theater, \$4.75.
- Stamps:** Book of 20, \$6.40.
- JSC history:** *Suddenly, Tomorrow Came: A History of the Johnson Space Center.* Cost is \$11.
- Upcoming events:** Country and Western Dance July 29 at the Gilruth. Tickets cost \$12. Ringling Bros. Circus July 22 at the Summit.

Gilruth Center News

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

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

Weight safety: Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. June 14 and June 29. Pre-registration is required. Cost is \$5.

Defensive driving: Course is offered from 8:15 a.m.-3 p.m. Saturday. Next class is June 10. Cost is \$19.

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

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

Ballroom dancing: Cost is \$60 per couple. For additional information call the Gilruth Center at x33345.

Sailing class: NASA Sailing Club will hold classes from 9 a.m.-noon Saturdays in June. For more information call Richard Hoover at 996-7716.

Golf lessons: Lessons begin June 24 or 27. Cost is \$100 for six weeks.

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

Dates & Data

Today

Hurricane workshop: The Emergency Preparedness Office is sponsoring a hurricane preparedness workshop from 10 a.m.-noon June 2 in the Teague Auditorium. The program will include guest speakers from the broadcast media and the National Weather Service, information on JSC's program to protect employees and facilities and information on personal disaster survival plans. For additional information call Bob Gaffney at x34249.

ABWA meet: The Clear Lake Area Chapter of the American Business Women's Association will meet at 5:30 p.m. June 2 at Space Center Houston's Silver Moon Cafe. For more information call Nancy Hutchins at x34006.

Cafeteria menu: Special: baked meatloaf. Total Health: baked potato. Entrees: chicken fajitas, ham steak, pork and beef eggrolls, steamed fish, Reuben sandwich. Soup: seafood gumbo. Vegetables: stewed tomatoes, seasoned spinach, cut corn, macaroni and cheese.

Monday

Cafeteria menu: Special: Italian cutlet. Total Health: roast beef au jus. Entrees: chicken a la king, enchiladas with chili, vegetable lasagna, steamed pollock, French dip sandwich. Soup: split pea and ham. Vegetables: Brussels sprouts, oriental vegetables, buttered carrots, lima beans.

Tuesday

Cafeteria menu: Special: stuffed cabbage rolls. Total Health: roasted turkey. Entrees: turkey and dressing, country style steak and hash browns, beef ravioli, baked chicken, fried cod fish. Soup: tomato Florentine. Vegetables: Italian blend, okra and tomatoes, corn cobbette, navy beans.

Wednesday

Astronomy seminar: The JSC Astronomy Seminar will meet at noon

June 7 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information, call Al Jackson at 333-7679.

Toastmasters meet: The Space-land Toastmasters will meet at 7 a.m. June 7 at House of Prayer Lutheran Church on Bay Area Blvd. For additional information, contact Elaine Trainor, x31034.

Cycle club: The Space City Cycle Club will meet for a 25-mile ride beginning at 6 p.m. June 7 at the University of Houston Clear Lake soccer field. For more information on this ride and weekend rides call Mike Prendergast at x45164.

Cafeteria menu: Special: pepper steak. Total Health: stir fry pork with rice. Entrees: liver and onions, stir-fry pork with rice, steamed fish, western special, Reuben sandwich. Vegetables: steamed broccoli, yellow squash, macaroni and cheese, vegetable sticks.

Thursday

SSQ meets: The Society for Software Quality Houston Chapter will meet at 5:30 p.m. June 8 at the Ramada Kings Inn, Ballroom at 1301 NASA Road 1. Robert Pelle will discuss "People Management Maturity—Keys to Motivating Productivity." Advanced tickets cost \$10 for members and \$14 for nonmembers. For reservations or information call Dot Cimarron at 335-5888 or Leon Swartz at 282-8136.

Airplane club meets: The MSC Radio Control Airplane Club will meet at 7:30 p.m. June 8 at the Clear Lake Park Community Bldg. For more information call Bill Langdoc at x35970.

Cafeteria menu: Special: chicken fried steak. Total Health: baked potato. Entrees: beef tacos, steamed pollock, baked chicken, catfish special. Soup: navy bean. Vegetables: spinach, cut corn, breaded okra, pinto beans.

Friday

Cafeteria menu: Special: tuna noodle casserole. Total Health baked potato. Entrees: steamed salmon steak, baked chicken, fried cod fish, ham steak. Soup: seafood gumbo. Vegetables: French cut green beans, cauliflower with cheese, green peas, black-eyed peas.

June 14

Astronomy seminar: The JSC Astronomy Seminar will meet at noon June 14 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information, call Al Jackson at 333-7679.

Toastmasters meet: The Space-land Toastmasters will meet at 7 a.m. June 14 at House of Prayer Lutheran Church on Bay Area Blvd. For additional information, contact Elaine Trainor, x31034.

Cycle club: The Space City Cycle Club will meet for a 25-mile ride beginning at 6 p.m. June 14 at the University of Houston Clear Lake soccer field. For more information on this ride and weekend rides call Mike Prendergast at x45164.

SSFF meets: The Space Station Future Fighters will hold a joint meeting with the National Space Society at noon June 14 at the Freeman Memorial Library at 16602 Diana. Individuals interested in either organization are encouraged to attend. For information call David Cochran at 335-0185.

PSI meets: The Clear Lake/NASA Area Chapter of Professional Secretaries International meets at 5:30 p.m. June 14 at the Holiday Inn on NASA Road. For additional information, contact Elaine Kemp x30556.

MAES meets: The Society of Mexican American Engineers and Scientists will meet at 11:30 a.m. June 14 in the executive dining room in the Bldg. 3 cafeteria. For more information call Michael Ruiz at x38169.

Swap Shop

Property

- Safe: Canyon Lake, Village West, elevated, 3-2, .25 acre, satellite, gazebo, waterfall, \$130k. 210-899-3447.
- Rent: Galveston condo, furniture, sleeps 6, Seawall Blvd & 61st St, weekend/weekly/daily rates. Magdi Yassa, 333-4760 or 486-0788.
- Rent: Winter Park, Colorado, 2-2, furnished, sleeps 6. Lil, 488-4453.
- Sale: Webster condo, 2-2-2CP, FPL, ceiling fans, mini blinds, new dishwasher, refrigerator, W/D conn, \$39.9k. x47513 or 280-0285.
- Sale: 11.5+ acres, 669.7' on FM-270 extension, LC, clear/clean, fenced, \$300k. 554-4316.
- Rent: El Dorado Trace, 2-2, balcony FPL, alarm, W/d, pools, sauna, hot tub, \$575 + electricity. 333-8126 or 488-1327.
- Rent: Condo off Space Center, 1 BDR, furnished, appliances, W/D, 6/1 - 1/96 nego, non-smoker, no pets, \$600/mo. Jill, x30839 or 335-4907.
- Rent: Lake Travis cabin, private boat dock, cent A/C/Heat, fully equipped, sleeps 8, spring/summer. \$550/\$650 wky, \$120/dly. 474-4922.
- Rent: Arkansas cottage on Blue Mountain Lake, huge stone FPL, screened porch over looking lake, \$250/wky/\$50/dly. Corcoran, x33005 or 334-7531.
- Sale: Baywind II, 2-2.5, 2 story, W/D, refrigerator w/ice maker, FPL, corner unit, \$43,950. Charli, 488-8102 or Sue, 339-3564.

Cars & Trucks

- '83 Subaru GI wagon, AM/FM/cass, pwr, cruise, ex int, runs good, new battery/tires. \$900/obo. 334-4313.
- '75 F150 Ford PU, 390 V8, A/C, PB/PS, low miles, ex cond, x37371 or 480-3329.
- Honda CPX, HF, red, 5 spd, clean, 5 star rims. Kyle, 996-1264.
- '83 Toyota Supra, pwr, sunroof, low miles, needs engine work, \$1.5k obo. Constantin, x47163 or 992-4555.
- '86 Chevy Spectrum, 4 dr, std, A/C, economical commuter. Mary, x36478 or 554-8039.
- '91 Mazda Miata, red, automatic, 34k mi, new tires, \$11.9k obo. 486-7537.
- '80 Celica, 137k mi, good engine, needs suspension work, \$500. 482-9781.
- '84 Mazda RX7 GSL-SE, 5 spd, sunroof, pwr windows, stereo cassette, leather interior, 99k mi, needs repair, \$1.5k. 482-5531.
- '78 Porsche 924, 1 owner, good cond, A/C, sunroof, \$3k obo. John, x49816 or 486-0097.
- '81 Oldsmobile Cutlass, V8, auto, good body, best offer. 338-4470.
- '93 Pontiac Grand Am GT, fully loaded, ex cond, low miles, \$14.5k. 282-6769 or 331-3609.
- '83 Firebird, V6, auto, \$3k. 282-6769 or 331-3609.
- '93 Nissan Sentra XE, limited edition, 4 dr, std, pwr options, cruise, 22k mi, ex cond, \$8.5k obo. Dilhar, 488-2449 or 480-3233.

- '87 Bronco II Eddie Baur package, V6, auto, pwr options, A/C, AM/FM/cass, ex cond, \$4.8k. 286-2339.
- '88 Mazda 626 LX, loaded, moonroof, 5 spd, white ext/burgundy int, ex cond, \$6.6k. Jeff, 335-2637 or 286-6785.
- '92 Chevy Cavalier, tilt, PS/PB/PL, AM/FM/cass, A/C, 5 spd, 25k mi, clean, \$6.5k. 485-7062.
- '84 Lincoln Towncar, 86k mi, loaded, ex cond, \$3.2k. Paula, x32222.
- '89 Mazda cab plus, PU, red ext, charcoal int, auto, A/C, radio/cass, new tires/bedliner, nice, \$6k; truck tool box, white, w/lock handles, \$100. 482-8820.
- '93 Ford Taurus, pwr, tinted windows, 38k mi, ex cond, \$10.5k obo. x37113 or 286-3019.
- '85 BMW 524 Turbo diesel, ex cond, burgundy, loaded/pwr, sunroof, extras, \$5.2k. 485-4008.
- '90 Mitsubishi Galant, silver, auto, A/C, 4 dr, stereo/ cass, good tires, looks/runs good, \$5.5k. 488-4372.
- '91 Corvette, ex cond, blk, blk leather int, 42k mi, 6 spd, AM/FM/cass, 6 way pwr seats, low tire waring system, \$22.k. Tony, x30699 or 286-2937.
- '54 Buick Special, 4 dr, 43k mi, ex cond, classic, \$12.k. Gene Cernan, 332-9922.
- '75 Chevy 1 ton, 350 CID, Granny 4 spd, w/cab over camper, \$1k. x32264.

Cycles

Bianchi racing bike, 12 spd, Shimano gears, ex cond, new \$375 sell \$130 obo. Joe, 282-6714 or 286-8708.

Boats & Planes

- Laser 2 sailboat w/trailer, spinner rigged, trap, vests, \$1.1k obo. x41095 or 486-8185.
- '88 Invader, 210 cuddy cabin, I/O 200Hp Merc, galvanized trailer, loaded great condition. 997-6141.
- O'Brien Elite windsurfer, beginner/intermediate board, accessories, \$375. Brian, 326-5626.
- Aluminum johnboat, 14', w/trailer, 3.0 hp Gamefisher motor, \$750. x36186.
- Chrysler sailboat, 22', 10 hp electric start Chrysler outboard, roller furling jib, wheel, CB, depth finder, knot meter, bimini, sleeps 5, many extras, galvanized trailer, \$4,750. Jim, 244-8464 or 286-9632.
- Stainless steel boat propellers for Johnson outboard, V6, \$100 ea. 332-9105.

Audiovisual & Computers

- Citizen printer, "CSX-140" w/GSX color option, \$199. Magdi Yassa, 333-4760 or 486-0788.
- Delco 2001 AM/FM/CD car stereo 16 channel, 7 band EQ, 12 preset stations, \$125. 333-7167.
- Compaq 286/12MHz, color mono, 2 FD, HD, mouse, \$200. x35549 or 554-7104.
- Packard Bell 486DX Legend 2276 computer/ PC, 350HD, 9 MB, 66 MHz, 15' color monitor,

- keyboard/mouse, CPU, tower type w/3.5" & 5.75" drives, CD-ROM, 2 speakers, 16 bit sound card, fax/modem & Canon Bubble Jet 200e printer, all manuals, pre-loaded software programs, \$2.5k obo. 337-3614.
- Single spd multimedia kit, \$150; NEC 3x external CD-ROM, \$200; HH Rms 340 MB IDE HDD w/ISA card, \$165; 120 MB internal colorado tape backup, \$80, all items/obo w/free installment. 280-8788.
- 386SX, 33 Mhz computer, w/8 MB RAM, 14' VGA monitor, 512K VGA driver board, 267 MB IDE HD, 1.44 MB 3.5" floppy, 360k 5.25" floppy, 8 bit Sound Blaster Card, 2400 baud internal modem, serial mouse, Star Micronics NX1000 9-pin printer, stereo speakers w/pwr adapter, microphone, cables, software, \$1k. x31647 or 471-2932.
- Graphics card, VEGA, IBM, Diamond Speedstar Pro, \$75. 338-9338.
- JVC turntable, \$75; JVC tapedeck w/Dolby, \$65; TEAC equalizer, \$75, portable AC/DC B/W TV w/AM/FM radio, \$70. 735-0381 or 488-4382.
- AT&T cordless phone model 5500, speakerphone, & dial pad in base, \$75. 735-0381 or 488-4382.
- 486DX3/66, mid-tower case, 8 MB RAM, 540 MB HD, 1.44 MB floppy, 14' SVGA, 101 keyboard, Logitech mouse, \$850 firm. Robert, 332-4466.
- Color Radius Pivot/LE monitor, w/PDS video card for Mac, new \$800 sell \$450. 480-3424.

Musical Instruments

- Bass amplifier, Peavy TNT 115, 150 watts, retails for \$535, make offer. Morrison, x35039.
- Kawai K111 digital synthesizer, 96 patches, reverb, touch response, full MIDI implementation, free cables, aluminum stand, \$375. Sharon, x3019 or 554-6741.
- Bach 42B trigger trombone, light weight slide, ex cond. Don, 333-8155 or 486-6726.
- '89 Fender twin guitar amplifier, \$500 firm. Robert 332-4466.

Pets & Livestock

- AKC Rottweiler pups, 3 males, 3 females, born 4/27, ready 6/19, \$350. 331-9255.
- Burmese Python, 12', female, heterozygous for albinism, tame, beautiful, \$400 obo. Brett, 333-6415 or 483-4565.
- Sable Ferret, 4 mos, cage & supplies, current shots. John, x39624 or Evelyn, 871-2552.

Household

- RCA 25' color console TV, works, \$75. Sam, 332-3168.
- Maple country kitchen table 36"x72" w/4 maple country ladderback chairs, sq cocktail table, cherry black, & brown southwest loveseat w/5 multicolored pillows, all nego. x37788 or 992-4384.

- Sears Kenmore sid-by-side refrigerator, 21 cu ft, ice & water dispensers, almond ex cond, \$450. x32040 or 776-9348.
- Large off white sofa & loveseat, \$250; leather chair ottoman, \$40. x37201 or 337-3418.
- Solid chrome dining set, glass top table, 6 newly upholstered hi-back chairs, gray/blue flame stitch, ex cond. Linda, 481-6554.
- Stained glass lamps, 1 lg, blue, \$180; 1 med, green, \$120; med oak dresser/hutch, \$350; formal dining table w/6 chairs, 2 leaves, \$750; end tables, 2, \$40; lg square coffee tables, \$40/ea; round solid wood kitchen table, \$75; TV trays wood, \$45; 1t dresser, \$115; 55 gal fish tank, & stand, \$195. 474-3820 or 282-3570.
- Sears Kenmore Advantage gas dryer, 5 cycle w/auto dryness sensor white, ex cond, \$260. 532-2147.
- Kenmore refrigerator, 14 cu ft, no-frost, almond, icemaker, \$150. x34144 or 996-8900.
- Rectangular Cargo dining table, 5'x3', ex cond, \$240. 326-1526.
- Henredon Parson type cocktail tables, 16Hx 21sq, \$100/pr; maple dresser, \$100; Pfaltzgraff "village" dinnerware, service for 8 plus, \$65/all; Regina carpet steamer, \$35. 479-1004.
- Kenmore electric stove, good cond, needs new lock for door for self-cleaning process, \$50. x31057.
- Tappan gas built-in oven, upper oven & lower broiler, black glass & chrome front panels, \$250 obo. Dennis, x34405 or 532-3312.
- Hide-A-Bed sofa & 2 end tables. 488-1234.

Wanted

- Want carpooler from I-10 west, 290 north area to Clear Lake area, working hours between 7 a.m. to 4 p.m. Racquel, x34167 or Bob, x35207.
- Want personnel to join vanpool, departing Southwest parking lot at 6:50 a.m. for JSC & off-site locations, 7:30 - 4:30 p.m. shift. Susan Gaynor, 282-5447 or Ed, x36124.
- Want personnel to join VPSI Vanpool departing Meyerland Park & Ride lot at 7:05 a.m. for JSC, on-site personnel working the 8 a.m. - 4:30 p.m. shift, Travis Moebees, x45765 or Don Pipkins, x35346.
- Want 35mm SLR, auto focus, autowind camera. Mario, x48172 or 538-1918.
- Want & need your wooden kitchen cabinets, will remove them if necessary. Marilyn, x32116.
- Want monochrome monitor for IBM compatible computer, nothing fancy but working. 488-2578.
- Want to purchase home, 3-3-3, det garage in Clear Lake, need 9/15/95 to \$75k. 484-5860.
- Want temporary housing for N/S family of 5, from 6/17 - 8/7. Denise, 903-297-6176 or 903-753-0131.
- Want STS-70 payload & experiment patches & decal's, TDRS-G, NIH.R2, Hercules, Windex BRIC, BDS, CPCG-II, RME-III, STL-B, MIS-B,

- VFT-4 & MAST. Andrew, x34312 or 280-0647.
- Want roommate(s), 4-2.5-2, 2 story house, Seabrook, fans, sep phone lines, W/D, \$350/mo. 474-4742.
- Want "liftback" to fit '83 Honda Civic station wagon, good cond w/little or no rust. 283-9500, x509 or 486-9605.
- Want baby jogger. 332-9105.

Miscellaneous

- Sony cordless telephone model SPP-50, \$40 obo; K&E students drafting table, 40"x30" w/parallel guide, \$50 obo. Jill, x30839 or 335-4907.
- Camper shell, EC, fits full sz Chevy truck, \$150; chrome wheels, 14" 6 lug, off Nissan truck, \$100; golf clubs, 1 runs & assorted woods. Mario, x48172 or 538-1918.
- Car top carrier, ex cond. Marilyn, x32116.
- Craftsman 6" jointer planer, \$225; 16" boys bike, new tires, \$30. Howard, x37346.
- Bike Avocet seat, \$20; women's Avocet shoes, sz 7, roof rack, \$50 for vehicles w/rain gutters on roof. 333-8126 or 488-1327.
- Aquarium, 20 gal w/air pump, heater, hood w/light, lots of access, good cond, \$80. 480-3424.
- Water lilies, hardy, tropical day & night bloomer, \$3-\$10; parrots feather, pickerel rush, yellow iris, water hyacinth, \$1-\$2. 337-5392.
- Cross stitch materials, complete kits, bibs, patterns, frames, all sz/all colors. Faye, 470-1455.
- Exercise bicycle, \$45. x37201 or 337-3418.
- Ivory man made leather sofa/loveseat, \$650; Evenflow ultra 3 pos recl carseat, \$70. 996-0152.
- Fisher Price toddler car seat, \$40. 480-3424.
- Natural wicker baby furnished set, crib w/trundle drawers, lg & sm dressers, built in changing table, \$485; Emerson 19" color TV w/remote, \$85; Sharp VCR, \$35; Panasonic Senior Partner computer, 2 x 5.25 FD, monochrome monitor, software, manuals, \$75. Scott, x34614 or 334-2278.
- 480' of 6" PVC well casing w/20' of 4" well screen, \$650. 326-1399.
- Pool table, 8', access, \$500 obo. Debbie, 334-5987.
- Pair of original brass rubbing, "Lace" Lady, approx 40"x20" ea, gold on blk w/ornate gold frames, \$100 ea or \$150/pr. x31057.
- Portable 5 person Morgan spa/hot tub, \$1.k. Tim, x33791 or 482-2308.
- Exercise skier machine, \$45 obo. Ed, 481-4889.
- Large wood executive desk & matching lateral file, \$250-\$150 obo 334-3996.
- Hot tub cover, 8' octagon, \$85. 334-3996.
- Tickets, 5th row to Ringo Starr/All star band, 08/11/95, Arena Theater. Nancy, 554-6864.
- Cross extra fine point pen w/leather case, new \$110 sell \$80/both. x35913.
- President & First Lady Premier Plus membership, \$375. Bonnie, 283-6840 or 338-1825.

VIPS Visit

Distinguished visitors tour JSC facilities

During the past few months, dignitaries from all over the world have toured JSC to learn more about human space flight, robotics and space sciences.

From left to right top to bottom:
1) From left, Doug Peterson of the Office of Public Affairs joins John O'Neill and Linda Perrine of mission operations as O'Neill explains the new Mission Control Center to Congressman Ken Bentsen, D-Texas.

2) From left, Larry Li of the Automation, Robotics and Simulation Division, Norm Chaffee of the Space Station Operations Office and JSC Deputy Director George Abbey explain robotics to Brenda Arnett, director of the Texas Department of Commerce.

3) Astronaut Steve Smith, left, explains the working of the space station to Congressman Cleo Fields, D-La., center right, as Dee Williams, center left, of Allied Signal and Willard Jackson, right, CEO of Metroplex Industries Inc. look on.

4) Randy Brinkley, center, program manager of the space station details space stations activities to Congressman F. James Sensenbrenner, R-Minn., left, chairman of the House Subcommittee on Space and Aeronautics and Congressman Steve Stockman, R-Texas, right.

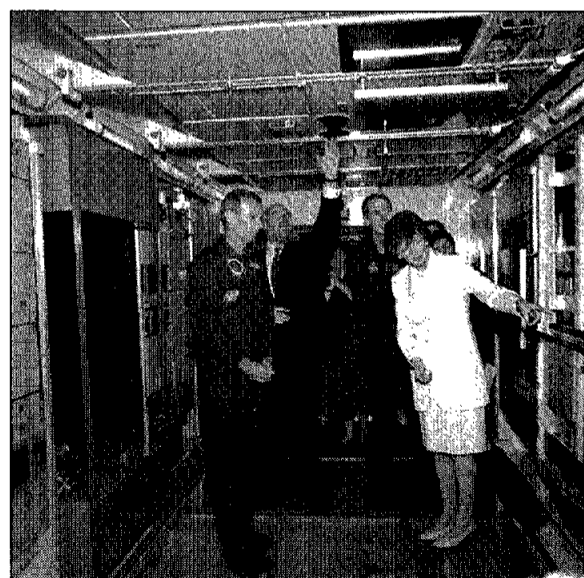
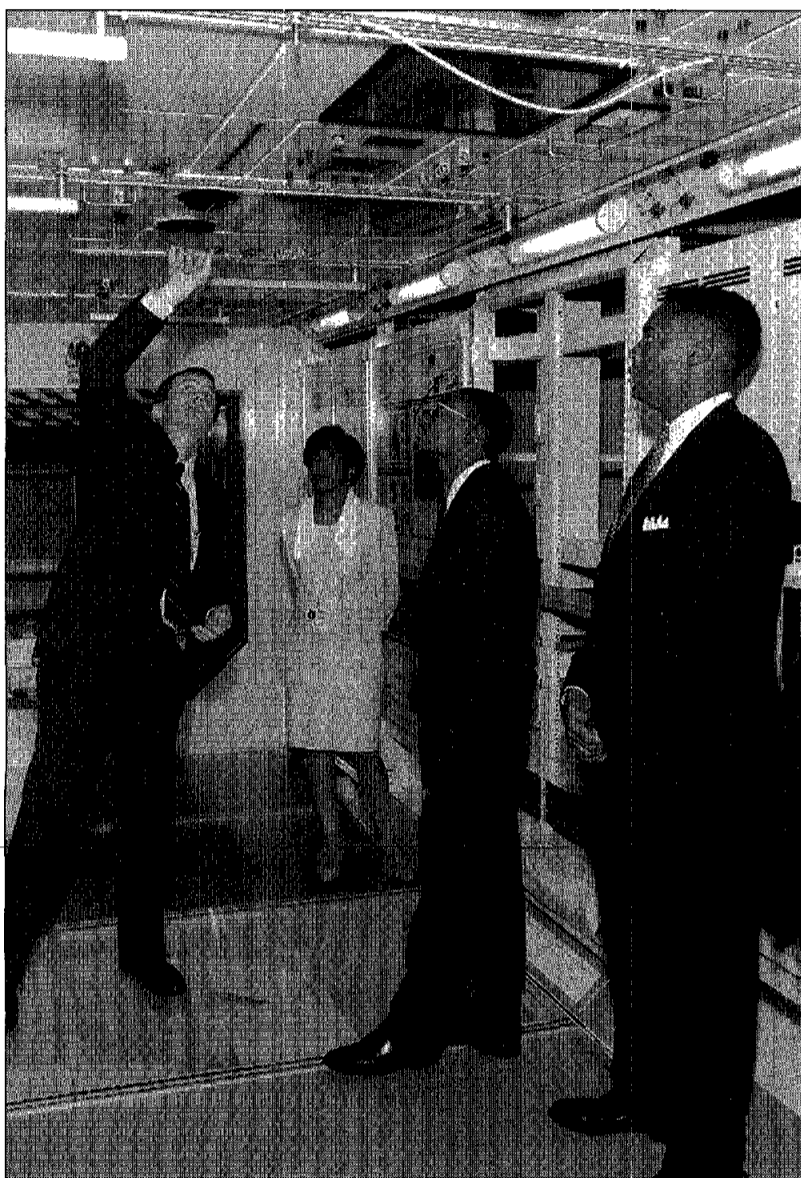
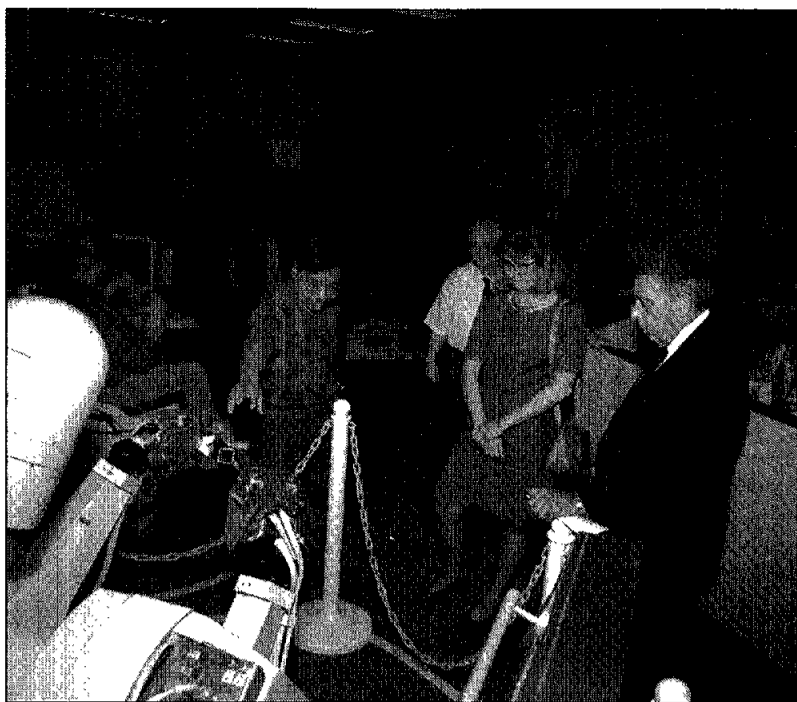
5) A visit to the new mission control from left, John O'Neill, director of mission operations, JSC Director Dr. Carolyn L. Huntoon, Carol Evans of mission operations, Congressman Gene Greene, D-Texas, Linda Uljon of mission operations and JSC Deputy Director George Abbey.

6) The President of Ireland, Mary Robinson, right, visits the space station mock-ups in Bldg. 9 with from left, Astronaut Brian Duffy, the President of Ireland's husband, Mr. Nicholas Robinson and Astronaut Dan Barry.

7) Dr. John Gibbons, director of the White House Office of Science and Technology Policy checks out the shuttle simulator.

8) Congresswoman Sheila Jackson Lee, D-Texas, center left, listens as JSC Director Dr. Carolyn Huntoon, Bill Shepherd, right, deputy director of the space station program and Stephen Hunter, left, of the space station program, explain workings of the space station mock-up.

9) Deputy Director George Abbey shows His Excellency Francois Fillon the Minister of Higher Education and Research of the Republic of France the different mock-ups in Bldg. 9. □



NASA signs first native American education agreement

NASA signed the first Native American tribe education agreement recently with members of the Mississippi Choctaw Tribal Council, Philadelphia, Miss.

NASA's Stennis Space Center will work in partnership with the Mississippi Choctaw Tribal Council to enhance existing mathematics, science and technology education programs and to create new vocational and technical training programs.

"We all have an interest in space," said Stennis Director Roy Estess.

"We (at NASA) try to capitalize on the human interest in space and leverage that for an increased emphasis in education.

"What we hope to do is to work with the Mississippi Choctaw Tribal Council in enhancing their education system—providing new tools for the classrooms, new inspirational tools for their teachers—bring a little piece of the space program into the classrooms," Estess added.

NASA will establish a teacher enhancement center at the Choctaw reservation. The center will include

teacher resource materials such as videotapes, slides, curricula and publications.

Another goal of the initiative is to enhance the school, industry and civic linkage by creating an increased awareness of state-of-the-art technologies in education.

"The technology that has been developed by NASA programs can be transferred into the local communities through education and industry, as well," Choctaw Tribal Chief Phillip Martin said. "Because of this partnership, we can develop

new technologies and give our young people an opportunity to learn about state-of-the-art technology. This agreement will provide motivation for students to continue their pursuit of science, math and other courses essential to the world of technology."

"NASA is honored to become formal education partners with the Mississippi Band of Choctaw Indians. It is hoped that this will provide many new educational opportunities for Choctaw students—from kindergarten to postgraduate—

teachers, parents and the community. This agreement will be the beginning of many avenues of the collaboration between NASA and the Mississippi Choctaw tribe," said Dr. David Powe, manager of Stennis Space Center's educational affairs.

Both NASA and the Mississippi Band of Choctaw Indians will actively conduct education activities within the state of Mississippi and the tri-state region as part of NASA's Tri-State Education Initiative, which includes portions of Mississippi, Alabama and Tennessee.

Four space walkers get nod for second Hubble servicing job

Astronauts Mark Lee, Greg Harbaugh, Steve Smith and Joe Tanner will be the extravehicular activity, or space walking, crew for STS-82—the second flight to service the Hubble Space Telescope scheduled for early 1997.

The mission, scheduled to include at least three space walks, currently includes changeout of two science instruments previously scheduled for the second servicing mission and a data interface unit. The instruments are the Space Telescope Imaging Spectrograph and the Near

Infrared Camera Multi-Object Spectrometer. The second servicing mission of the telescope follows the first flown in December 1993.

Lee, 42, an Air Force colonel, has flown on three shuttle missions—STS-30 in May 1989, STS-47 in September 1992 and STS-64 in September 1994. He conducted the first untethered space walk in 10 years during his last mission.

Lee will act as payload commander for this servicing mission.

Harbaugh, 39, is currently training as a mission specialist for the next shuttle mission in June to dock with the Russian Space Station Mir. He has flown on two previous missions—STS-39 in April 1991 and STS-54 in January 1993. In addition to conducting a space walk on STS-54, Harbaugh was the backup space walking astronaut and the spacecraft communicator in Mission Control on the first HST servicing mission.

Smith, 36, flew on STS-68 in September/October 1994. He served as a payloads officer in Mission Control prior to becoming an astronaut.

Tanner, 45, flew on STS-66 in November 1994. Prior to becoming an astronaut, he was a research and instructor pilot teaching astronaut pilots landing techniques in the Shuttle Training Aircraft and T-38 trainers.



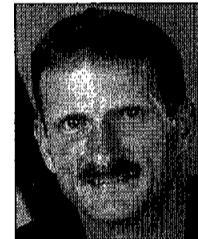
Lee



Harbaugh



Smith



Tanner



NASA Photo

An advanced jet exhaust nozzle designed to reduce noise produced by a 21st century High Speed Civil Transport without adversely affecting its takeoff performance is prepared for tests at speeds up to 345 miles per hour in Ames Research Center's 40-by-80-foot wind tunnel.

NASA tests noise cutting jet exhaust

Nozzle may be key to supersonic 300-passenger transport

NASA's Ames Research Center is testing an advanced jet exhaust nozzle designed to reduce noise produced by a 21st century High Speed Civil Transport without adversely affecting the plane's takeoff performance.

The tests are part of NASA's High Speed Research Program, which is evaluating technologies needed for development of a 300-passenger supersonic transport that is both economically practical and environmentally acceptable.

"The commercial success of the next-generation HSCT depends upon its ability to satisfy mandated community noise regulations governing aircraft operations," said project manager Brian Smith, an Ames aerospace engineer.

As proposed, the HSCT would

be capable of flying at Mach 2.4 (2.4 times the speed of sound) and have a range of 5,000 to 6,000 nautical miles. Envisioned to fly long distances over water, the HSCT could reduce the Los Angeles to Tokyo flight time from about 10 hours to only four. The expected date for beginning service is 2006.

The High-Lift Engine Aeroacoustics Technology tests are being conducted with Boeing Commercial Airplane Group, McDonnell Douglas Aerospace, General Electric Aircraft Engines and Pratt & Whitney. The 19 weeks of tests ended last Friday.

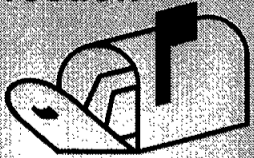
Engineers are trying to make the HSCT quiet on takeoff and landing, ensure that the sonic boom created does not adversely affect people or wildlife reduce pollution produced by turbojet engines operating in the stratosphere, but for now now are concentrating on the first challenge.

Working with NASA's Langley and Lewis Research Centers as well as the aerospace industry, project engineers are testing a mixer-ejector nozzle on a semi-span conceptual model.

The 42-foot-long aircraft model is mounted on a sound-absorbing platform. Six microphones enable engineers to measure jet noise at different speeds, flap configurations and angles of attack.

"This is important from an environmental standpoint, because if the nozzle causes the aircraft to develop less lift, the only way to compensate is to take off at a higher angle," Smith said. "That requires more thrust and more thrust means more noise. What we want is an efficient airplane that can take off at a low angle of attack with high ratios of lift to drag."

Correction



A story about procedures for using the new X.500 electronic mail directory in the May 23 Space News Roundup substituted a slash for a period in an address for users of graphical interface browsers.

Accessing the World Wide Web address of the directory on the JSC Internal Home Page—<http://www.jsc.nasa.gov/jsc/internal/x500.html>—will allow employees to search personnel by typing in a fellow employee's name.

Employees' children earn scholarships

The children of two JSC employees have earned JSC Exchange Scholarships for 1995. Four children of employees at other NASA centers earned NASA College Scholarships.

This year's JSC Exchange Scholarship winners are David Akers, son of Thomas D. Akers, astronaut and deputy director of Mission Operations; and Keith F. Kelly, son of Albert F. Kelly of the Mission Operations Directorate Business Management Office. They bring the total scholarship awards to date to 76.

Akers, a National Merit Scholar commended student, graduates this month from Clear Lake High School. He plans to attend the University of Missouri-Rolla, majoring in nuclear engineering and physics.

Kelly, also a National Merit Scholar commended student, graduates this

month from Friendswood High School. He plans to major in engineering at Rice University.

Each will receive \$4,000—up to \$1,000 a year—for studies at any university. Selection was based on scholastic achievements, financial need and breadth and substance of school and community activities.

This year's winners of the NASA College Scholarship Fund are Andrei C. Gnepp and Lori M. DiRusso of Lewis Research Center, David C. Richards and Robert H. Thornburg of Kennedy Space Center, and Emily C. Paulson of Langley Research Center.

The NASA College Scholarship Fund was established to award scholarships agencywide to qualified dependents of NASA and former NASA employees. This year's recipients bring the total number to 63.

Space News Roundup

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Editor Kelly Humphries
Associate Editor Karen Schmidt

Mir crew finishes four space walks

(Continued from Page 1)

retracted at the end of the third space walk. During one communications session, Strelakov radioed that the array could be folded up without a space walk since he could monitor its progress from a window on the station. The partial retraction was done during the third space walk to allow additional power generation prior to Spektr's arrival.

A small mechanical arm on the module was attached to a grapple fixture on the docking module and repositioned the laboratory to a different docking port. Commands for the module movements were made from the ground. Moving modules is a process that takes about an hour and a half.