National Aeronautics and

Space Administration



Rockets in MCC

World champion Houston Rockets' coaches film a sequence in Mission Control. Photo on Page 4.

Space News Roundup

♥STS-78 crew complete for '96 mission

By Kyle Herring

Tom Henricks and Kevin Kregel have been named commander and pilot, respectively, for a 16-day life and microgravity science mission aboard the Columbia scheduled for launch in June 1996.

Henricks and Kregel join five others named in May for the mission designated STS-78. Mission Specialists will be Susan Helms, Richard Linnehan and Charles Brady. Payload Specialists will be



Henricks

Jean-Jacques Favier, of the French Atomic Energy Commission and astronaut of French Space Agency Robert and Brent Thirsk, of the Canadian Space Agency. Pedro Duque

of the European Space Agency and Luca Urbani of the Italian Space Agency are alternates to Favier and Thirsk.

STS-78's experiments will build on previous space shuttle spacelab flights dedicated to life sciences and microgravity investigations. The 16-



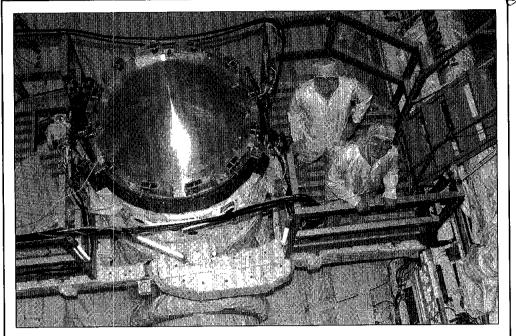
Kregel

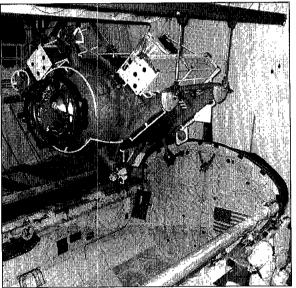
day flight will include aroundthe-clock operations with crew members working in two shifts.

Henricks, 43, flew on the STS-44 mission of Atlantis in November 1991 and STS-

55 on Columbia in April 1993 before he commanded this year's STS-70 flight. He earned a master's degree in public administration from Golden Gate University in 1982 after graduating from the Air Force Academy in 1974 with a bachelor of science

degree in civil engineering. Kregel, 39, will be making his second shuttle flight following the STS-70 mission where he was pilot. He received a bachelor of science degree in astronautical engineering from the Air Force Academy in 1978 and a master's degree in public administration from Trov State University in 1988.





Top: STS-74 Mission Specialists Bill McArthur, left, and Jerry Ross review the configuration of payload elements in Atlantis' payload bay. The astronauts were at Kennedy Space Center recently conducting the Crew Equipment Interface Test to prepare them for the upcoming docking of Atlantis with the Russian Mir Space Station. Left: The Russian-built docking module is lowered for installation into Atlantis' payload bay. The module will be attached to the Kristall module as a permanent part of Mir for future shuttle dockings.

Shuttle, Mir teams ready to dock again

Following in the footsteps of the first shuttle/Mir docking mission in June, Phase 1 managers and officials of the Russian Space Agency conducted a review this week of preparations for the second docking flight, STS-74, targeted for launch next month.

Representatives of all 10 joint working groups involved in the U.S.-Russian cooperative space effort reported they were ready to

support the planned eight-day mission.



ATLANTIS

return to the Russian Mir Space Station," said Frank Culbertson, acting director of the Phase 1 Program. "A lot of people have undertaken a lot of hard work to put us in our current position to launch Atlantis.'

The Phase 1 Flight Readiness Review was conducted in Houston and at the offices of RSC Energia in Moscow by a videoconferencing system. Cul-

bertson and Valery Ryumin, the head of Please see COOPERATIVE, Page 4

Columbia ready to try liftoff again

The countdown clock is ticking toward Columbia's next launch attempt on STS-73 scheduled for 8:46 a.m. CDT Saturday, following a scrubbed attempt last week due to a failed master events controller on the

Last Saturday's scrub came at T-minus 20 minutes after a standard test of the master events controllers on Columbia showed one of the devices failed. The units control such functions as firing explosive bolts that separate the solid rockets and external fuel tank from Columbia during ascent.

The failure was in one core of one MEC. Each MEC has two cores and there are two MECs, providing a quadruple backup for the vehicle. However, launch rules require all four cores to be working properly to proceed with liftoff. Technicians removed the faulty

MEC from Columbia's aft engine compartment, replaced it and successfully tested the new unit on Tuesday. Columbia's countdown began at 3 a.m. Wednesday.

The STS-73 crew, split into two teams to allow around-theclock operations in orbit, traveled back to Houston during the delay, but returned to KSC Wednesday afternoon. With a launch on time, the Red Team-Commander Ken Bowersox,

Pilot Kent Rominger, Payload Commander Kathy Thornton and Payload Specialist Albert Sacco-will keep approximately the same schedule as had been planned last week, working a day shift in Houston time during the mission. The Blue Team—Mission Specialists Cady Coleman and Mike Lopez-Alegria and Payload Specialist Fred Leslie-will work what approximates a night shift in Houston.

COLUMBIA

The weather forecast for a launch on Saturday calls for a 60 percent chance of acceptable weather during the two and a half-hour launch window. On Thursday, technicians were planned to complete servicing of experiments in the United States Microgravity Lab aboard Columbia, and fueling of the external tank with liquid hydrogen and oxygen is planned to begin at 12:26 a.m. CDT Saturday.

Elsewhere, the planned launch of Atlantis on STS-74 may now be set for Nov. 8 due to the delays experienced by Columbia. However, work on the vehicle is progressing smoothly enough to allow a launch as early as Nov. 1 if such an attempt becomes possible. STS-74 will be the second shuttle mission to dock with the Mir Space Station. Atlantis was moved to Launch Pad 39A Wednesday morning, following a one-day delay due to bad weather at KSC.

Other milestones for Atlantis as it is readied for STS-74 include a dress rehearsal of the launch countdown, called the Terminal Countdown Demonstration Test, on

Please see ENDEAVOUR, Page 4

"I am pleased that all elements of this Mir operations for RSC Energia, and other nternational program are prepared for our Space Exploration '95 closer

Sixth NASA Alumni League event moves to Space Center Houston

Space Exploration '95, the sixth annual conference and exhibition sponsored by the NASA Alumni League, moves closer to home this year with a change of venue to Space Center Houston.

Organizers want to make the conference more accessible to JSC employees because the agenda includes a number of topics of interest to the JSC community. The move means that the exhibits area will be open to employees and the general public as well as conference attendees and industry guests.

Space Exploration '95 will open with a reception at 6:30 p.m. Oct. 23. Program sessions will begin at 8 a.m. Oct. 24-26.

The speaker for this year's banquet will be U.S. Rep. Robert Walker, R-Pa., who is chairman of the House of representative Science

Committee. The banquet will be at 8 p.m. Oct. 25 at SCH; tickets may be purchased separately for \$50.

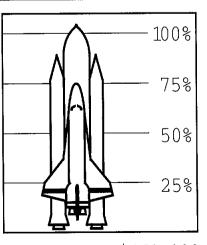
On Oct. 24, conference sessions will focus on reusable launch vehicles, with an 8 a.m. discussion of DC-XA, X-33 and X-34 featuring Gary Payton, director of the Space Transportation Division of NASA's Space Access and Technology. At 3 p.m., Greg Reck will moderate a Space Technology Panel.

Also on that day, tours of the Sonny Carter Training Facility and the new Mission Control Center will be available. The tour of the Sonny Carter Training Facility will be selfguided with a formal presentation set for 5:30 p.m. The MCC presentations will take place in the viewing room at 5:15, 5:30 and 5:45 p.m.

On Oct. 25, sessions will emphasize joint shuttle/Mir missions, driv-

ing technologies and the International Space Station. STS-71 Commander Hoot Gibson will provide an overview of his crew's historic docking at the luncheon. At 10:30 a.m., John O'Neill will moderate a panel "Pathway to Exploration" looking at stepping stones to future exploration. At 1:30 p.m., a panel discussion focusing on "Phase 1: Building Block to Space Station" will be conducted. Panelists will include a representative from the Phase 1 Program Office, Norm Thagard discussing his stay on the Mir space station; and Milt Heflin discussing space walks. At 3 p.m., a panel discussion entitled "Enriching Life on Earth" will look at telemedicine advances, the Left Ventricle Assist Device and the Bioreactor. The day's sessions will end with a discussion of technology

Please see TECHNICAL, Page 4



GOAL: \$460,000



CFC lifts off this month

JSC will kick off its 25th annual Combined Federal Campaign on Monday, establishing a goal of \$460,000 for 1995.

The theme for this year's 1995 CFC of the Texas Gulf Coast, of which JSC's efforts are a part, is "Change Lives: Share the Spirit."

The CFC, which runs through Nov. 17, is a once-a-year voluntary fund-raising effort that gives JSC employees a chance to contribute to local, national and international health and welfare charities.

Last year, JSC employees gave \$459,000 of the \$2.3 million contributed by federal employees throughout the Houston area. This year's CFC goal is \$2.4 million.

JSC CFC Coordinator Teresa Sullivan said there are some additional incentives this year for

Please see CFC, Page 4

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.

Texas Renaissance Festival: Sept. 30-Nov. 12. Tickets cost \$10.50 for adults and \$5.25 for children 5-12.

Texas Renaissance Festival Bus Trip: Oct. 14 and Nov. 11. Tickets cost \$17 for adults and \$12 for children 5-12.

Deep Sea Fishing: Nov. 5. Fishing tickets cost \$40 for adult and \$20 for children. Ride tickets cost \$20 for adults and children under 12 free.

Isle of Capri Casino Trip: Oct. 15. Tickets cost \$5.

Bay Area Chorus Fall Concert: 8 p.m. Oct. 21 at Clear Lake Presbyterian Church. 4 p.m. Oct. 22 at Bethany United Methodist Church. Tickets cost \$8 for adults and \$5 for students and seniors.

Halloween Dance: Oct. 28. Tickets cost \$15 per person.

Wurstfest: Nov. 4. Tickets cost \$17 for adults and \$12 for children. Children 12 and

University of Houston vs. Baylor football: Oct. 14, Astrodome, \$8.

University of Houston vs. University of Texas football: Nov. 11, Astrodome,

Houston Aeros Hockey: Houston Aeros vs. Atlanta Knights at 7 p.m. Nov. 17 in the Summit, Tickets cost \$12.50

Sea World: Tickets cost \$23.50 for adults and \$16.25 for children 3 -11. Splashtown: Tickets cost \$11.05.

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,

Stamps: Book of 20, \$6,40.

JSC history: Suddenly, Tomorrow Came: A History of the Johnson Space Center.

Upcoming events: Wings Over Houston Air Show Oct. 21-22.

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.

Women's self defense: Martial Arts training for women only from 5-6 p.m. Tuesdays and Wednesdays. Cost is \$25 a month.

Weight safety: Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. Oct. 26 and Nov. 14. Pre-registration is required. Cost is \$5.

Exercise: Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Alkido: Martial arts class meets from 5-7 p.m. Wednesday. 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.

Country and Western dancing: Beginner class meets 7-8:30 p.m. Monday. Advance class meets 8:30-10 p.m. Monday. Cost is \$20 per couple.

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

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.

Monday

Cafeteria menu — Special: breaded cutlet. Total Health: crispy baked chicken. Entrees: stir fry pork and rice, baked chicken, smoked sausage with German potato salad, French dip sandwich. Soup: cream of broccoli. Vegetables: okra and tomatoes, peas, navy beans, baby carrots.

Tuesday

NTA meets: The National Technical Association will meet at 6:30 p.m. Oct. 17 at Texas Southern University School of Technology Rm. 316. For more information call Carrington Stewart at x31404.

Cafeteria menu — Special: fried chicken. Total Health: vegetable lasagna Entrees: Salisbury steak, steamed pollock, vegetable lasagna, French dip sandwich. Soup: split pea and ham. Vegetables: mixed vegetables, French cut green beans, pinto beans, vegetable sticks.

Wednesday

Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. Oct. 18 at House of Prayer Lutheran Church on Bay Area Blvd. For additional information, contact Elaine Trainor, x31034.

Astronomy seminar: The JSC Astronomy Seminar will meet at noon Oct. 18 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information, call Al Jackson at 333-7679.

Scuba Club meets: The JSC Lunarfin Scuba Club will meet at 6:30 p.m. Oct. 18 at Redfish Island

on the channel at the end of Bath street under the Kemah-Seabrook bridge, Seabrook side. For more information call Fred Toole x33201.

Cycle club: The Space City Cycle Club will meet for a 25-mile ride beginning at 6 p.m. Oct. 18 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: stuffed bell pepper. Total Health: baked potato. Entrees: stir fry chicken & rice, wieners & beans, fried fish, western special, beef, chicken sausage, Reuben sandwich. Soup: seafood gumbo. Vegetables: buttered rice, Italian green beans, corn O'Brien, peas and carrots.

Thursday

Cafeteria menu — Special: barbecue smoked link. Total Health: roasted turkey breast. Entrees: turkey and dressing, beef stroganoff, steamed pollock, French dip sandwich. Soup: tomato Florentine. Vegetables: Spanish rice, lima beans, buttered squash, oriental vegetables.

Friday

NMA meets: The Texas Gulf Coast Council of the National Management Association, will sponsor a joint chapter meeting at 5:30 p.m. Oct. 20 at the South Shore Harbour Resort and Conference Center, Local NMA chapters including the Bay Area Community chapter, Hernandez Engineering, HTI-Link, Johnson Controls, Krug Life Sciences, Lockheed Martin, Loral Space Information Systems, JSC, Rockwell, Grumman, Unisys and the U. S. Postal Service will gather for the presentation of the prestigious Gold Knight of Management Award. Bryan Townsend will discuss "Life is an Adventure." Tickets cost \$25 per person, and reservations must be made by Oct. 11. For more information, call Kyle Brantley

at 212-1375, or Rhea Ann Saylor at x32412.

Cafeteria menu — Special: meat sauce and spaghetti. Total Health: baked potato. Entrees: rainbow trout, liver and onions, beef cannelloni, ham steak, fried cod fish, Reuben sandwich. Soup: seafood gumbo. Vegetables: steamed broccoli, breaded okra, cut corn, blackeyed peas.

Oct. 24

Space Exploration conference: The NASA Alumni League will host its sixth annual Space Exploration Conference Oct. 24-26 at Space Center Houston. For more information call Al Richmond at 280-7777.

Photo club meets: The Bay Area Photo Club will meet at 7:30 p.m. Oct. 24 at the Faith Covenant Church. For more information call Kelly Prendergast at x37655.

Oct. 26

Radio club meets: The JSC Amateur Radio Club will meet at noon Oct. 26 in Bldg. 16 Rm. 253. For more information call Larry Dietrich at x39198.

NASACOM meets: The NASA Commodore's User's Group will meet at 7:30 p.m. Oct. 26 at the Clear Lake Park Bldg. For more information call Glenda Souliere at x31764

AIAA meets: The American Institute of Aeronautics and Astronautics will meet at 6 p.m. Oct. 26 at the Gilruth Center. Steve Lombardi will discuss "Hot Air Ballooning." Tickets cost \$10 for members and \$11 for nonmembers. For additional information call Tanya Bryant at x31175 or Sarah Follett at 282-3160.

Oct. 27

Chili cookoff: Center Operations will hold its annual chili cookoff at 4 p.m. Oct. 27 at the Gilruth Center. Tickets cost \$3. For more information call Ginger Gibson at x30596.

Property

Sale: Pasadena, 3-2-2 brick, DPISD, landscaped, FPL, sec alarm, jacuzzi, ceiling fans & miniblinds, Ig yard, assumable loan. x36324 or 477-1478. Sale/Trade: League City, Ellis Landing, 4-2-2, w/2

story Dutch barn, 12x16, will take your house or condo in trade, \$89.9k. x41929 or 332-3775. Sale: Clear Lake Forest, 4-2.5-2, glass walled den

family room, FPL, w/hi ceiling, formals, new roof & paint/carpet/paper. 326-2307. Lease/Sale: Clear Lake condo, 2-1 study, carport,

gate, alarm, very nice, \$560/mo. 286-9478.
Sale: Holly Hall townhome, 2-2.5-2, security, immediate occupancy, \$79.9k. Jack Cohen, 488-3171.

Lease: Clear Lake, 3-2 w/detached garage w/extra room, many upgrades, lg trees, 486-0291 Lease/Sale: queens Court II, Nassau Bay townhouse, 3-2.5-2, \$93.3k/\$975/mo. Marilyn, 333-1700. Lease: Webster condo, Ig upstairs, 2-1 w/balcony,

appliances, FPL, ceiling fans, \$520/mo. 486-0315. Sale: Lake Livingston, waterfront mobile home. 3BR, newly redeorated, carpet/linoleum, covered deck

on front, \$34.5k. Barbara, 30981 or 481-1239. Sale: Sagemont, 4-2-2, brick, 2 story, corner lot, Ig yard, sec alarm, both formals, family room. 481-0376. Rent: Beach house, Crystal Beach, Galveston Co. furnished, sleeps 10, wkend/wkly rates. x32805 or

Rent: Galveston condo. furn. sleeps 6, Seawall Blvd & 61st ST, wknd/wkly/dly rates. Magdi Yassa, 333-4760 or 486-0788

Cars & Trucks

409-684-4419

'84 Ford F-150, PU, A/C, 4 speed, 6 cyl, 108k mi, good cond, \$3.5k obo. Les, x30090 or 331-4589. 91 Chevy S10, std, 5 spd, 4 cyl, A/C, AM/FM/cass,

47k mi, \$5.8k obo. x37149 or 409-925-2291 '90 Jeep Cherokee, 4 dr, 5 spd, A/C, AM/FM, 64k mi, 1 owner, \$10k. 488-6798.

'88 BMW 325IS, black w/tan int, sunroof, P/W, P/S, AM/FM/cass, 85k mi, ex cond, \$12k obo. 549-

'94 Mitsubishi Galant ES, auto, A/C, P/W, P/D. cruise. tilt, AM/FM/cass w/6 spkrs, forest green, 18.2k mi, \$14.2k obo. 488-4850.

'91 Eagle Premiere ES, 78k mi, loaded, great cond. \$5.9k Bob. 480-4525 or 333-8707.

'92 Mazda Miata, limited edition, loaded, black, ex cond, detach hardtop, \$17.5k, x41408 or 471-9415. '89 Ford Taurus, many new parts, 100k mi, ex cond, A/C, AM/FM/cass, \$3.5k obo. x30962. '89 Pontiac Grand AM, 2 dr, 5 spd, Quad 4 eng,

blue, runs great, A/C, \$3,395. x39034 or 474-2660. '94 GMC Suburban C-1500 SLE, loaded, bucket seats. cass/equalizer. ex cond. \$24,965, 482-4704,

'87 Mazda RX-7, 76k mi, metallic grey, good cond, runs great, \$4,150. Bob Bragg, x39060 or 337-2777. '90 Honda Accord. 2 dr. charcoal, 87k mi, 1 owner,

good cond, maintance records. 334-7258. '85 Mercury Grand Margai, 112k mi, ex cond, maroon w/white 1/2 top, \$2.5k obo. Clovis, 282-4260

'92 Mazda Miata, red/black, 5 spd, P/W, P/S, A/C,

cruise, AM/FM/cass, W/CD changer, 30k mi, ex cond, \$15.8k. James, x31064 or 334-1766.

'91 Acura Integra LS, 2 dr hatchback, white, 48k mi, 5 spd, 1 owner, loaded, ex cond, \$8.6k. x36477

'85 Pontiac Bonneville, 4 dr, A/C, P/W, P/S, new tires, 100k mi, runs great, new battery, \$1,995. Jim, x38624 or 475-9671. '88 Dodge Aries Wagon, 2.2L/5 spd, TBI, 28k mi

P.S. P/B, rear wiper & defrost, cruise, new clutch, A/C evap/waterpump, \$7.9k mi, \$2.8k obo. Lane 280-

'90 Honda Accord EX, black ext/tan int, 5 spd, sunroof, cass, ex cond, 90k mi, \$8k. 409-938-1927. '89 Mazda MX-6, maroon, AM/FM/cass, 5 spd, A/C, P/W, P/L, cruise, \$40k. Tori or Scott, x47396 or

'86 Jeep Cherokee Laredo, 5 spd, 4WD, 4 cyl, 100k mi, AM/FM/cass, A/C, 1 owner, good cond, \$5.4 obo. x48541 or 538-3444. '82 Olds Delta 88 4 dr. 480-4203

'94 Plymouth Grand Voyager SE, green/gray, 34k mi, loaded, ex cond, \$15.k. 606-3836 or 943-0119.

'89 GMC Jimmy, white/red, lg V6 4.3L, power, 1 owner, very clean, 77k mi, \$6.9k. 486-8805. '91 Geo Metro, 4 dr, 41k mi, new tires, std, ex cond, \$3.8k. Rich, x47257 or 996-7630.

'89 Mazda Cab Plus truck, B2200 series, red w/charcoal int, auto, A/C, AM/FM/cass, sliding back window, bedfiner, new batter/tires, \$5.8k, 482-8820. '72 Monte Carlo, runs good, make offer. x31450 or

332-3375 '84 Toyota Celica, 80k mi, red, ex cond, new tires. \$3.5k. Melissa, x41928 or 338-6798.

'94 Pace Arrow Motorhome, 8.5k mi, 34', Chevy 454, ex cond, & '87 Ford Escort equipped for towing, 49k mi, new tires, \$65.k, 282-0317.

Cycles

92 KX80 Stock bike, extra clean, \$1.3k; '89 YSR 50 mini street bike, ex cond, \$650; '95 KX 125 new top end & bottom end, new FM pipe sprocket, fast bike, \$2.2k; '94 KX 80, modified w/105 kit by Perf eng, R&D pipe, fast, both ex cond, \$1.9k, 326-2361. 87 Honda Magna 700cc, low mi, ex cond, \$2.5k.

Boats & Planes

Wellcraft, 15', 50 hp Johnson, big wheel galv trlr, low usage, ex cond, \$2.4k obo. 488-4487. Lancer, 28', '87 shoal draft-rebuilt yanmar w/1 yr warr, great cond, \$13 k, 532-1666

Sovereign, 24', ready to sail, main, jib, 125% genoa, depth sounder, head, stove, elect start Inhason OB. \$5.7k. Mike, 282-2787 or 286-1691. Sailboat, 18' Hobbie catamaran w/trailer, all

access, \$900 obo. 474-4742. '70 Glastron 16' fishing boat, completely refurbished, '79 70 hp Evinrude, PT & T, DF, TM, other extras, \$1,650. Larry, x49103 oe 922-1696.

'87 Benateau sailing sloop, 23.5', equipped fro racing, 2 jobs, 2 spinnakers, 9.9 hp Johnson OB, VHF radio, electronic depth finder, Loran, safety equip-

ment, sleeps 4, head, sink, alcohol stove, \$14k. Ken, x31496 or 286-7583 '88 Thundercraft, 17', Bow Rider boat, 140 hp

Mercruiser, I/OB, galvanized trailer, AM/FM/cass,

vater skis, jackets, \$4.k, x47385 or 484-6462 Audiovisual & Computers Microsoft Access 2.0 database s/w, \$75; Crosstalk

for Windows, \$25; PC Tools 7.1, \$10. x45338 or 488-486DX2-66, 8 MB RAM, 420 MB HD, SVGA video. \$700; 386DX40, 4 MB RAM, 170 MB HD, SVGA

video, \$400. Charles, x36422 or 280-9650. Citizen printer "CSX-140" w/GSX color option, \$199. Magdi Yassa, 333-4760 or 486-0788. JVC CD player, 5 disc changer, \$100. Leonard.

333-5576

Photography Minolta Maxima 35mm camera, 70-200mm zoom lens, auto focus, auto rewind, auto advance, flash, \$375. Pete, 479-0276.

Pets & Livestock

Cockatiel, "Simi", talking/whistling, 8 mos, w/cage & toys, hand tamed & gentle, \$95. 334-4268. Mexican Red Headed Amazon Parrot, "Taco" needs lots of attention, w/cage & toys, very special

bird, \$425. 334-4268. AKC reg Dalmation puppies, 5 males/4 females, ready after 10-11-95, black & white, brown *& white, \$175/\$225. Margaret, x37512 or 332-5422.

Household

Girls hutch top desk set, French Provincial cream w/blue trim, \$300; petite high boy dresser, 5 drwrs, Queen Anne cream, \$150; white wicker child armchair & oval table, \$25/ea. 474-9747.

King size Ponderosa pine waterbed, headboard w/mirrors, lights & drawers, high profile pedestal, free flow matt & heater, ex cond, \$550 obo. Brian, 333-6059. Living room stuffed chair, recently upholstered.

\$30 obo; 21" Quasar console color TV, needs either adjusting or minor renair \$50 obo 488-4487 Glass top dining table, 4 x6' w/wood base & 6

chairs, \$325; matching buffet, \$50. Jeff, 280-9576. Pflatzgraff "Village" dishes for 8 plus access, \$65: king matt frame, \$15; Chefmate Toaster oven, \$10; all in ex cond. 479-1004.

Sanyo refrig, 11cu ft, white, \$100; Whirlpool 3 cycle electric dryer, white, apart sz, \$75; GE auto washer, almond, apart sz, \$75, avail 11/1, all work great; sofa w/gn size sleeper, white w/pastel colors. pink throw pillows, matching pink swivel chair, \$200, avail 11/1, x41036 or 333-4577 Small mahogany end table, 2 drwrs, \$20; office

desk, chairs, computer systems, micro-wave or TV portable cart w/rollers, \$20; gold leaf framed mirror, \$85: desk. 3 drwrs. \$50: decorator table, glass top, \$45; pair lamps, marble base, \$40; coffee table, glass top, thick over pair oriental bases, hand painted, \$350; love seat, 2 cushion, \$250, 488-5564.

Large blue leather couch, ex cond, \$750; various candle holders, brass, \$10/pr obo; 3 antique chairs, \$75/ea; antique "Tiger Eve" oak table, 5 chairs, buffet \$750; Maganavox stereo console AM/FM record player, \$50. Jim, x38624 or 475-9671

Bedroom suite, 4 pcs, queen size bed, carved pine \$1.7k. Tess, 488-0949. King size waterbed w/motionless matt/heater, pedestal headboard, comforter/sheets, \$150. Tom,

(31252 or 482-2425) Loveseat, brown velour print, good cond, Ig size, \$75, 244-0250

Electric oven, 27" GE coppertone built-in wall mount oven, works great, \$50. Linda, 484-0987.

Want personnel to join VPSI vanpool departing Meverland Park & Ride at 7:05 am for JSC. Van pool consist of on-site personnel working 8 am/4:30 pm shift. Don Pipkins, x35346.

Want roommate, non-smoker, 3-2.5 townhome Clear Lake area, cable, W/D, household privileges, all bills pd, \$300/mo. John, x30543 or 286-7384. Want roommate, to share to home in E

w/single father, prefer professional w/sm child. 333-6821 or 326-2093. Want roommate, 4-2.5-2 comtemp house in

Seabrook, all amenities, sep phone, sep living areas, \$400/mo. 474-4742. Want non-smoking roommate to share 4-2, Friendswood, cable, W/D, microwave, VCR's, FPL, all

amenities included, all bills pd, \$250/mo. Michael, x38169 or 482-8496. Want used soccer balls, will pay \$5 a ball. Calvin,

Want empty glass baby food jars, sz #1 & #2 for crafts, need lots, lids not needed. Linda, x40077. Want used gas kiln or will pay for firing timer trade for elect kiln firing. Tom, x47473 or 332-1530.

Want anyone interested in Hatha Yoga. 480-9663. Want kids race car bed. Liz, x32161 or 436-0116.Want electric typewriter & file cabinets, tax deductible donations, 486-6698.

Want Christmas donations for needy families w/infants, any toys & clothes for new born & up. Bea, x31094 or 948-0282.

Want donations for Son Light Mission on 518 in Friendswood, needed are a washer & electric dryer; a electric stove, and other household items, tax deductible donations. Julia, x30294 or 331-3304.

Miscellaneous

x38921 or 488-7839.

Lalique angel goblets, 8; '87 Waterford xmas ornament oho 480-1024 Sears rowing machine, \$50: Spirit Stair climber

\$300. 328-3840. Weider Home Gym, 4 station setup including stair

stender, ex cond. \$200 firm. Kim or Dan, 489-4414. Stair stepper, \$75. 282-3215 or 480-9448. Morgan Spa, 33 jet, 8 x8', cover, steps pillows, chemicals, blue, ex cond, \$5.5k. 333-6061 or 534-

Remington mod-600, bolt action .243 cal w.4x

scope, leather case & ammo, \$225, x30731 or 538-

Winchester model 94 30-30 lever action never

fired: Ruger Super Blackhawk 44 mag. Jim, x35853

B&D electric flush stapler, \$20. x30446 or 338-Wedding dress, white, size 3/5, short sleeved,

w/veil & petticoat, \$200. 882-0405. Wedding dress, pale pink, sz 10/12, long full skirt, white lace w/sequins & pearls on bodice & sleeves,

\$250. Evelyn, 244-8068 or 480-5380. Full length leather coat, sz 10, \$125; leather blazer, sz 10, women's, \$75. Carole, x48862 or 332-0164. Snugli Travel all multipurpose babybed, \$20; Snugli Legacy front/sling baby carrier, \$20; 12-18 mos boys winter clothes. 488-3314.

Technics stereo, \$20; 2/pr stereo spkrs, \$30/pr water pik, \$10; elect trimmer, \$10; furnace fan, \$5; 4 Ford Ltd wire whl covers, \$25. x35092 or 944-2391.

'82 encyclopedia, 22 vol, \$100. Tess, 488-0949. Health Bananas trees up to 20+ft tall, some w/ bananas, you pick/dig/transport, cash only, \$15 ea. Tropical plants, 5' rubber plant, \$40; 5' vine, \$40;

15 pony Tail Palm, \$500; misc other plants in permanent pots \$5 & up. Bob, x33149.

Swing set, 5 station Headstrom, \$100. Andre, x35296 or 992-3004.

Firewood, mixed, \$75/cord, delivered & stacked: trailer, 3/4 ton Dodge pickup bed w/hitch, chains/ lights & crank lift, good 16.5 tires, \$200 obo. 282-

Bumper fillers, 1 pr inner rear, fits '79-'85 Buick Rivera, \$85, 996-5739

Desk, w/3 drwrs & credenza, white, \$150; child's table w/2 chairs, \$20; car seat, booster type, \$20. 487-1883. Pool table, 7', 3/4" slate, new felt, balls/cue sticks &

rack included, \$250 firm. 488-4850. Hispanic origin cassettes latest releases, \$6 ea

Merri, 484-1658. Country music CD's, latest hits, good cond, \$6 ea or 5 for \$25. Bobby, 244-2444 or 488-4382.

Microwave works great, \$50; cement yard statues; Burgundy rug, \$35; Burgundy pillows, \$5; burgundy throw, \$10; Ig wood glider w/2 sep seats, \$250 obo

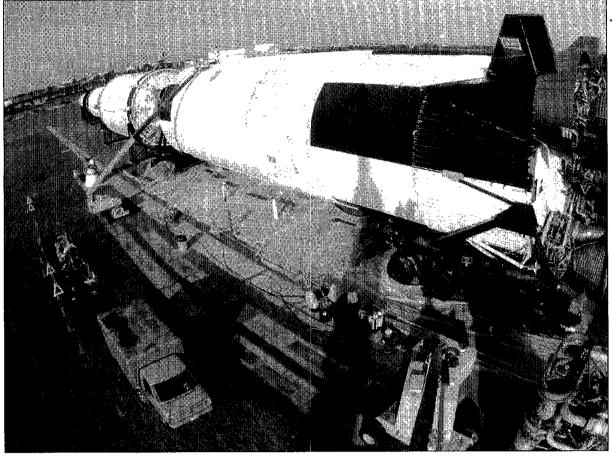
Space World magazine, 94 issues, Aug '82-Dec '90, ex cond, \$250 obo. 333-6453. Riding lawnmower, John Deere RX95, 30" cut,

12.5 Hp Kawasaki eng, pressurized o8il system, \$1.4k. Robert Lewis, x48112 or 480-1800. Sears 10 Hp, 36" lawn tractor, new carb/battery

spare blades & belts, \$275, 479-1004. Kid's Suzuki 750 power whls, 2 spd, 12V rechargeable battery, \$65; Black Beauty spring horse, \$40;

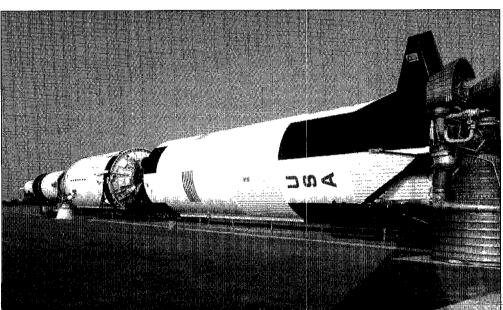
cozy coupe, \$35. x32920 or 992-3014 Sportsman's fiberglass camper for LWB, good cond, \$400. Jim, x36798 or 373-3428.

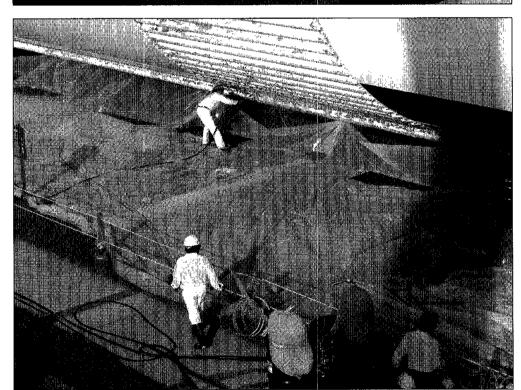
Wolfe Tanning bed, ex cond, \$850, 368-4475. Outdoor lighting kit, 4 flood lights, 8 accent lights w/all cables, \$30. x32920 or 992-3014.

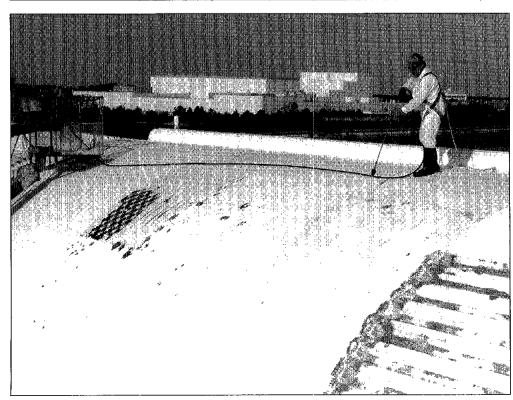


Sprucing Saturn V

Rocket makeover vast after engineers found a few surprises







t's been about 12 years since the Saturn V was totally repainted and a considerable amount of deterioration had taken place since that effort.

The mildewed and flaking paint looked bad, but after the Plant Engineering Division started examining the structure, it became obvious that the vehicle was never designed to rest for 25 years in a horizontal position, especially in the Houston climate.

All routes of interior drainage are from end to end, not from side to side. Subsequently, considerable moisture, as well as hundreds of pounds of souvenirs left by pigeons, owls and a variety of rodents, had accumulated within the confines of the aluminum outer skin of the rocket.

"When we opened an access hatch on the upper end of the second stage, we found mouse and small bird skeletons piled a foot deep," said Mike Scott, branch chief for the special purpose maintenance and services. "There were also several very plump and happy owls."

Once the owls and the moisture-laden debris had been removed, all openings large enough to allow bird passage were covered with screens. Several new penetrations were also made to enhance ventilation. The insides of electrical panels and control boxes on the transporter (the black cradle under the rocket) had to be treated with phosphoric acid to kill the severe oxidation, then the panels were permanently sealed shut.

Aside from the relatively severe oxidation of the aluminum skin, the only other real surprise engineers found was atop the second stage, the only stage that is covered with a layer of spray applied polyurethane foam insulation. At ground level, that insulated stage of the rocket appeared to be in better condition than the rest.

"Once we took a bird's eye view, we realized

that the sun's UV rays had taken their toll," Scott said. "There were large pieces of the insulation completely missing, as well as numerous "pockmarks" all over the top. It looked like the surface of the moon up there."

A putty-like insulation filler material was used to fill the many voids, then a layer of a special butyl-epoxy was used to seal the patched surface.

Once the structural modifications and repairs were completed, the painting began.

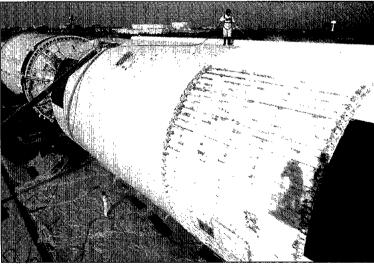
"We did a considerable amount of research on coating materials, as we knew this might be the last paint job this rocket ever gets." Scott said. "We finally found a product that should afford optimum durability, while requiring only minimal surface preparation."

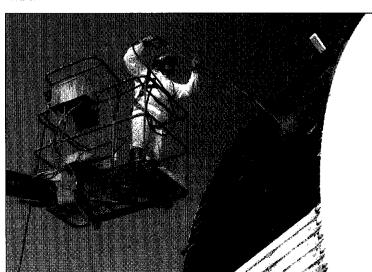
That was an important factor, as environmental considerations could have made the typical surface prep cost prohibitive.

Subsequently, workers from Anchor, Inc. and Johnson Controls were able to perform a high pressure water blast to remove loose paint, capture that water and paint residue on large sheets of plastic, then filter the contaminants from that residue Scott said.

This process drastically reduce waste disposal costs and minimized the overall labor involved. Engineers also were able to procure vinyl flag decals, which significantly reduced the amount of labor required to lay out and hand paint the graphics

"All in all, the weather was as cooperative as one could expect, Scott said. "We really hoped to finish the project before the Ballunar Liftoff, but that goal was a bit too ambitious. Nevertheless, it turned out looking great, and we feel it should stay that way for many years to come. Once again, it should serve as an inspiration to those of us that pass it each day."





From left to right, top to bottom: 1) Anchor Inc. and Johnson Control employees begin the painting stage of the Saturn V rocket atter comple tion now wears a long-term coating material and more ventilation holes to help reduce deterioration, 2) The Saturn V after completion. 3) Workers use high pressure water blast to remove loose paint. 4) Painters Ramon Rosales and Ken Hawley blast the first stage of the rocket, while David **Arcemant and Gary** Landry of Johnson Controls patch the foam insulation atop the second stage. 5) Rosales finds the loose paint on the top of the rocket. 6) Rosales blast paint from the sides of the Saturn V rocket.

JSC photos by Robert Markowitz

Hubble may have discovered recent shattered satellites

NASA's Hubble Space Telescope has discovered several orbiting clumps of icy rubble that could be the remnants of recently shattered moonlets orbiting near the outer edge of Saturn's ring system.

Astronomers say this could represent the discovery of a new class of ephemeral, transitional object in the solar system which provides new clues to the origin and evolution of Saturn's spectacular rings.

This startling conclusion is based upon Hubble's observation of Saturn made as Earth crossed the plane of the ring system on Aug. 10, which provided a rare opportunity to seek out faint satellites in and near the ring plane. "Ring plane crossing" refers to the brief interval when the Earth crosses the plane of Saturn's rings, allowing them to be seen edge on. At such times, the usually bright rings are seen only as a faint, thin line, and Saturn's smaller satellites become visible. These events are rare, occurring in groups of two or four at intervals of about 14.5 years.

The latest Hubble pictures gave astronomers

an opportunity to confirm the presence of two new satellite first discovered by the telescope in images taken and ing the May 22 ring plane

Pather than solving the moon question, however, the August observations presented astronomers with a new mystery.

"We realized these moons are HUBBLE SPACE TELESCOPE too bright to have gone undetected when the Voyager spacecraft flew by Saturn in 1980 and 1981," said Philip Nicholson of Cornell University.

A further complication is that the August pictures seem to show at least three new objects, and in different orbits from the two May objects.

"They also appear to be very elongated or arc-like, unlike a satellite should be," Nicholson said. "One possibility is that they are large clouds of debris from small satellites shattered by impacts with chunks of space debris."

Just as a small handful of chalk dust can make a large dust cloud if tossed in the air, a shattered moonlet would be much brighter

and more visible than when all of its mass is compressed into a single solid body.

The discovery of objects in this transitional phase is not totally unexpected. Nicholson

because one scenario for the origin of Saturn's ring system is that it is made up of countless fragments from several pulverized moons. This idea is reinforced by the fact the new objects orbit Saturn near the narrow F ring, which is a dynamic transition zone between the main rings

and the larger satellites. Moonlets in this region can easily be disrupted by Saturn's tidal pull if they are fractured by an impact, forming a cloud

The dynamics of this zone also are evident in Hubble's observations of the satellite Prometheus. Although a third object seen in the May images was first suspected to be another new satellite because its location did not match the predicted position for any of the known satellites charted by Voyager, it now appears that this body is in fact Prometheus, which has slipped in its orbit by 20 degrees from the predicted position. Nicholson suggests that this may be a consequence of a "collision" with the F ring, which is believed to have occurred in 1993. The moon may have passed close enough to one of the denser, lumpy regions of the F ring to change its orbit. The researchers plan to obtain further observations on Nov. 21.

COD hosts 7th annual chili cook-off

The Center Operations Directorate will host its 7th annual COD chili cook-off on Oct. 27 at the Gilruth

Fourteen award-winning teams are signed up to compete in this years cook-off.

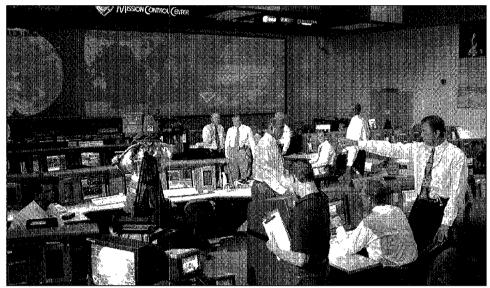
Notable judges for this years cookoff are Acting JSC Director George Abbey and his executive assistant Sue Garman; Safety, Reliability and Quality Assurance Director Charles Harlan; Equal Opportunity Office Director Estella Gillette: Human Resources Director Harvey Hartman; Information Systems Director Jane Stearns; JSC Russian Project Office Special Assistant Don Puddy; Special Assistant for Biomedical Research Planning Carolyn Huntoon; Richard Tuttle of Continental Airlines, Constable Bill Bailey; Amanda Hoefling, Human Resources administrator at Space Center Houston; and Ed Schroeder, of Galveston Party Boat.

Last year more than 2,000 chili-loving employees, family, and friends attended. Showmanship skits begin at 5:30 p.m. and public chili tasting at 7 p.m. Tickets are \$3 through Oct. 20, then ticket prices increase to \$5. Tickets are available from all COD personnel. For information contact Ginger Gibson, x30596.

CFC contributors draw for reserved parking space

(Continued from Page 1)

employees who pledge one hour's pay or more. Those who pledge one hour's pay per month will receive a CFC lapel pin. Those who pledge two hours' pay will earn a lapel pin and coffee mug. Those who pledge \$600 or more per year will receive a lapel pin, coffee mug and a personalized certificate of appreciation signed by George Bush, former President of the United States. In addition, those employees contributing one hour's pay per month or more will be eligible for the drawings for a one-month reserved parking space. The drawing will be held at the conclusion of the campaign.



ROCKET LIFTOFF-The world champion Houston Rockets' Head Coach Rudy Tomjanovich pronounces the Rockets' season "ready for liftoff" in Mission Control on Oct. 4. Tomjanovich and his staff of assistant coaches were filming part of an opening sequence that will air on Rockets games televised on UPN Channel 20 this season. Also at the Flight Director's console are, assistant coaches Carroll Dawson, seated, and Bill Berry, standing. The TV opener will feature the Rockets coaches and players in many JSC and Space Center Houston locations.

Native American forum set for next week

In observance of Native Americans, the Equal Opportunity Programs Office is sponsoring an All Indian Nations Forum from 8-4:30 p.m. Oct. 19 at the Gilruth Center.

The theme for the forum is "The Economic Empowerment Through Telecommunication Technology." This forum will bring Native Americans together as a group to focus on the beneficial applications of telecommunications and other technologies in the lives of Native people

Featured speakers include Ruth Pinney, director of Intertribal Technology Network; Gary Coulter, professor at Colorado University; Jerry Elliott High Eagle of the Technology Transfer and Commercialization Office; Paulette Hansen from the Center for the New West; and Robert Holkan, chief of Simulation Operations and Technology Division

A luncheon program will be held from 11:30-1 p.m. Luncheon tickets are available for \$10. Tickets must be purchased by close of business on Monday

All JSC civil service employees and contractors are invited to attend as their workloads permit

For additional information or to purchase tickets, contact Pat Burke at x30606.

Technical sessions to focus on station

(Continued from Page 1)

transfer and utilization lead by Hank Davis, director of JSC's Technology Transfer and Commercialization Office.

On Oct. 26, sessions will focus on the space station, future exploration and using space. The space station discussion, set for 8 a.m., will feature Program Manager Randy Brinkley; Boeing Program Manager Doug Stone; and Deputy Program Manager Bill Shepherd. Planetary exploration is the focus of "Enabling Steps to the Future" at 10:30 a.m. Panelists include John Young, "Living and Working on the Moon and Beyond"; Paul Spudis, "Clementine Results"; Nigel Packham; "Closed

ECLSS Experiment"; and Franklin Chang-Diaz, "Thermal Propulsion Prototype." "Understanding and Using Space" is scheduled for 1:30 p.m. and will focus on Wake Shield Facility, Earth observations and crystal growth.

Conference registration is \$150 for three days, and \$45 a day for government employees and students. Retired NASA Alumni League members may attend free. JSC employees who want to attend technical sessions should contact their training coordinators for passes. There is no limitation on the number of employees who may attend. For information, contact Gotthard Jansen at 280-2708, or Jennifer Casey at 244-2133.

New seminars offered

Recent "special topic" seminars presented by JSC's Career Transition Assistance Program were well received and will be offered again due to popular

"Starting a Business" and "Becoming a Consultant" will be scheduled for presentation in October. Another new seminar, "Networking", will be offered for the first time. The CTAP has been designing new seminars as necessary to meet the special demands of it's customers.

JSC's CTAP was set up in April to help civil servants interested in learning more about a variety of topics including resume preparation, interviewing skills and salary negotiations. The CTAP has been offering seminars regularly since and offers use of a reference library and job database.

Civil service employees are welcome to drop by and visit the CTAP in Bldg. 45, Rm. 308, or call at x34300.

MCC open for viewing

The Mission Control Center viewing room will be open to JSC and contractor employees during STS-73. Based on an on-time Saturday launch, employees will be allowed to visit the MCC from 1-5 p.m. Oct. 21 and 11:30 a.m.-2:30 p.m. Oct. 25.

Employees must wear their badges and escort family members through the lobby of Bldg. 30 South. Children under five will not be permitted. No flash photography or loud talking will be permitted at any time.

Because of the dynamic nature of shuttle missions, viewing hours may be changed or canceled without notice. For the latest information on the schedule, call the Employee Information Service at x36765.

JSC host business expo

Small, disadvantaged, and women-owned businesses may discuss their companies' capabilities with JSC's technical and procurement organizations, as well as major support contractors at an upcoming Small Business Expo to be held from 9 a.m.-2 p.m. Nov. 3 at the Gilruth Center.

The free expo will offer a number of educational briefings including ISO 9000-The NASA Plan; Mentor-Protégé Pilot Program; Doing Business with NASA; Setting Up a Basic Accounting System for Government Contracting; and Introduction to Internet---The New Path to NASA Procurements.

For information, contact Barbara Kirkland at X34512.

Endeavour in processing

(Continued from Page 1)

Tuesday and Wednesday, and a final Flight Readiness Review by shuttle managers on Thursday.

Endeavour is being readied for an early 1996 launch on STS-72 in KSC's number 3 shuttle processing hangar. This week, the main engines were removed, checks were begun of the auxiliary power units and the orbital maneuvering system and stacking operations began on the STS-72 solid rockets in the Vehicle Assembly Bldg.

Cooperative planning making great strides

(Continued from page 1)

officials participated in the FRR. The Phase 1 conclave preceded NASA's Flight Readiness Review by top agency managers this Thursday, during which an early November launch date was expected to be ratified for Atlantis' second journey to Mir. Atlantis' launch date is dependent on when Columbia begins its delayed 16-day microgravity research mission.

The Phase 1 Flight Readiness Review occurred a little more than two weeks after Culbertson led a team of NASA officials to Moscow for three days of technical discussions with Russian management counterparts in a series of "Team Zero" meetings.

The Sept. 25-28 meetings focused

on a variety of subjects, including preparations for STS-74 and Phase 1 flights to follow. Other topics discussed included the launch date for the newest Russian science module, Priroda, that will be the final modular component for the Mir space station, joint training activities for astronauts and cosmonauts in the years ahead, future joint space walk plans and the upcoming activities of U.S. astronauts who will spend time aboard Mir over the next two years conducting a host of experiments.

Our recent discussions with the Russians were fruitful and productive." Culbertson said of his team's recent meetings in Moscow. "We are making great strides in our cooperative planning for these very complex flights and are looking forward to

many more successful ventures such as we enjoyed on STS-71."

The major objective of STS-74 is the permanent attachment of a Russian-built docking module to the Mir's Kristall science module. The 15-foot long docking module will facilitate future shuttle linkups to Mir and provide shuttles the clearance needed from Mir's large solar arrays.

Atlantis will be commanded by veteran Astronaut Ken Cameron. He'll be joined by Pilot Jim Halsell and Mission Specialists Chris Hadfield, Jerry Ross and Bill McArthur. Hadfield is a Canadian astronaut who will use the Canadian-built robot arm to grapple and mate the docking module to the shuttle's orbiter docking system prior to Atlantis' arrival at Mir.

Space News Roundup

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Electronic mail messages should be sent to the editor, khumphri@gp301. isc.nasa.gov or the associate editor, kschmidt@gp301.jsc.nasa.gov.

EditorKelly Humphries Associate Editor Karen Schmidt

Franklin Planners not available for '96

It is time to order 1996 calendars and Franklin Planners are not available to be ordered this year.

"No Franklin Planners are available through JSC Supply or Center Procurement due to budget restrictions," said Joel Walker, chief of the Support Operations Division.

Calendars will be carried in JSC stock for general use through normal supply system requisition procedures. These are similar to those used at JSC during 1995.

Calendar items available include calendar pads; loose-leaf appointment book refill; wall calendar; weekly appointment book; one-monthly minder, wire-o-wound for flat opening and level writing surface; and day and month schedule at a glance.