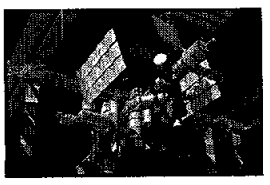
National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, Texas



Enterprising piece

Highlights of NASA's stategic plan focus on strategic enterprises. Part 2 on Page 3.

Cadets in class

A group of Marine Military Academy cadets tours JSC facilities. Photo on Page 4.

Space News Roundup

Vol. 34 | May 12, 1995 | No. 19

JSC Photo by Tom Vicknair

HEART-TO-HEART—JSC Director Dr. Carolyn L. Huntoon and Baylor College of Medicine's Dr. Michael DeBakey explain the Left Ventricular Assist Device to Dr. John Gibbons, director of the White House office of science and technology policy, during a recent visit to JSC. The device is designed to supplement the pumping of the left ventricle in the heart and is a cooperative effort between JSC and Baylor College of Medicine.

STS-70 to mark 100 U.S. space missions

Discovery was hauled to its oceanside launch pad at Kennedy Space Center last week as engineers stepped up preparations for its liftoff June 8 on the first of three shuttle flights planned over six weeks.

Discovery is being readied for the start of the STS-70 mission, the 100th U.S. human space flight, in which a NASA Tracking and Data Relay Satellite will be deployed as the newest member of the TDRS constellation in geosynchronous orbit.

The 3 1/2 mile trek to Launch Pad 39B marked the first time in three years that two shuttles stood on adjacent pads being prepared simultaneously. At the pad, *Discovery*'s cargo bay doors were opened and the 5,000-pound TDRS satellite and its 12-ton solid fuel inertial upper stage booster were installed.

STS-70 Commander Tom Henricks, Pilot Kevin Kregel and Mission Specialists Don Thomas, Nancy Currie and Mary Ellen Weber will climb aboard *Discovery* this week for the final hours of a dress rehearsal which will lead to their launch on a mission which will last between 5 and 8 days.

While *Discovery* was moved to its pad, technicians continued work on *Atlantis* at Launch Pad 39A for its liftoff the third week in June on STS-71, the first flight to link a space shuttle with the Russian Space Station Mir. *Atlantis* could launch sometime between June 19 and 24 on the first mission to dock a U.S. spacecraft with a Russian spacecraft since the Apollo-Soyuz mission 20 years ago.

Work to prepare the Mir for *Atlantis*' arrival began this week as Mir 18 cosmonauts Vladimir Dezhurov and Gennadiy Strekalov prepared for a space walk to ready a worksite near the Kristall science module and check connections and hardware for the removal of one of two solar arrays on Kristall. The two EVA crewmembers will conduct a second space walk next week to transfer that solar array from Kristall to the Kvant-1 science module. The other array will be folded and stowed during the third space walk May 24. A fourth EVA will be conducted May 27 to move docking port equipment the day after the scheduled linkup of the newest science module, Spektr.

The 10-ton module is targeted for launch May 20 from the Baikonur Cosmodrome carrying U.S. equipment and science gear for the remainder of U.S. astronaut Norm Thagard's stay. Thagard is entering his third month aboard Mir and will break the record for the longest single space flight by an American on June 6, surpassing the mark of 84 days set by the final Skylab crew in 1973-1974. The space walks, the arrival of Spektr and the rotation of Kristall from its current position to a new position will place Mir in configuration for *Atlantis'* docking with the 9-year-old outpost.

The STS-71 crew, led by veteran shuttle Commander "Hoot" Gibson, will conduct its countdown dress rehearsal at KSC on May 25, which will include the two Russian cosmonauts who will be launched with Gibson and his four NASA colleagues. Anatoly Solovyev and Nikolai Budarin will replace Thagard, Dezhurov and Strekalov aboard Mir as the Mir 19 crew, enabling the Mir 18 trio to return home on *Atlantis*.

All the while, engineers pressed ahead with the processing of *Endeavour* for its scheduled launch in late July on STS-69 to deploy and retrieve the Wake Shield Facility and SPARTAN. The Wake Shield, which first flew on STS-60, is being readied for a two-day free flight to grow perfect semiconductor films and crystals in the "clean" environment of the saucer-shaped satellite's wake.

Mir 18 crew to perform first of four space walks today

Nearing the end of their eighth week aboard the Mir space station, crew members Commander Vladimir Dezhurov, Flight Engineer Gennadiy Strekalov, and Cosmonaut Researcher Norm Thagard continued life science experiments and prepared for today's space walk.

Monday, Dezhurov and Strekalov checked the seals on their space suits and placed unnecessary equipment in the Progress module which will be jettisoned later this month.

Tuesday was a day of rest for the crew so they could prepare for their space walk. On Wednesday, a simulation was conducted with Dezhurov and Strekalov in their space suits and Mir's transfer node. This training session included familiarization with the tools they will use during today's space walk.

The crew must perform a variety of tasks to prepare Mir for the arrival of the Spektr research module later this month. Dezhurov and Strekalov must prepare a work site outside the space station to accommodate the Spektr. Last week, the cosmonauts laid power cables through the space station, from the bat-

Please see **MIR**, Page 4

Space station completes key life support tests

New water purification system displays ability to remove viruses for first time

The International Space Station's water purification system has passed a series of tests designed to evaluate new components and configurations of the water recovery system and to challenge the system's ability to remove bacteria, fungi and—for the first time—live viruses.

The test series, begun in August 1994 at Marshall Space Flight Center, characterized the physical, chemical and microbiological composition of the space station's expected waste water—shower water, oral hygiene, urine distillate, wet shave and human perspiration. The tests produced recycled water using new performance procedures and hardware dictated by changes in station requirements and lessons learned during earlier water system testing.

The tests featured the first use of a new fully integrated water processor which automatically tested for the presence of chemical substances, such as organic carbons, iodine and overall water purity. Also, special computer software was developed for automated control very similar to that planned for use on the space station.

"This test allowed design engineers to assess the water purification system under the operating conditions that would be expected on the International Space Station," said Don Holder, principal investigator for the test. "Overall, the system was very effective in producing high quality potable water from waste water."

"The purification equipment effectively removed high concentrations of microbes in the waste water and provided water with little detectable bacteria and fungi," said Monsi Roman, life support system microbiologist. "The test series was very challenging, and we are very pleased with the excellent results and overall efficiency of the system."

The final phase of the tests included, for the first time, an assessment of the system's capability to eliminate viral particles. During the five-day viral test, high concentrations of viruses were steadily introduced. While special filters are used to remove larger contaminants such as skin particles and hair fragments, the smaller viral organisms, along with fungi and bacteria, were destroyed by exposure to the purification system's synthetic cleaning resins and high temperature processor.

Throughout the viral test, water samples were collected in order to study the effectiveness of each element of the system and evaluate its role in viral removal. The viruses selected are common and non-pathogenic for humans.

"The viral removal capability of the water recycling system appears excellent based upon our preliminary test results," said Christon Hurst, a virologist of the EPA's Drinking Water Research Division in Cincinnati.

Additional testing of the water purification system is planned to determine the actual lifespan of some system hardware, such as filters. The water processor is scheduled to be launched in the U.S. habitation module in 2002. Marshall is conducting a variety of water purification tests for the Space Station Program Office.

Hubble discovers new dark spot on Neptune

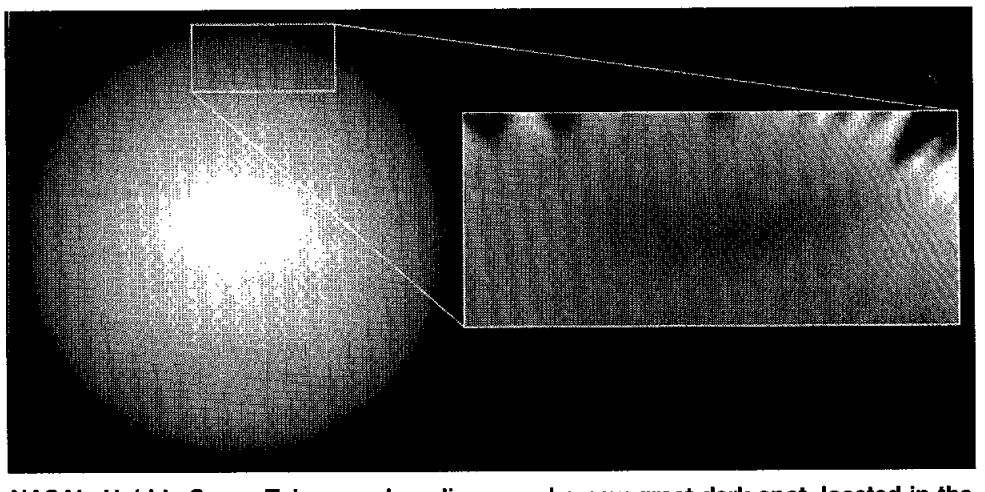
The distant, blue-green planet Neptune again has surprised astronomers with the emergence of a new great dark spot in the cloudy planet's northern hemisphere discovered by the Hubble Space Telescope.

Only last June, HST images revealed that a great dark spot in the southern hemisphere—discovered by the Voyager 2 spacecraft during its 1989 flyby—had mysteriously disappeared.

The new dark spot is a near mirror-image of the previous feature first mapped by Voyager 2. The northern dark spot discovered by HST is accompanied by bright, high-altitude clouds. As atmospheric gases flow up over the spot, they cool to form methane-ice crystal clouds.

"Hubble is showing us that Neptune has changed radically since 1989," said Heidi Hammel of the

Pleases ee **NEPTUNE**, Page 4



NASA's Hubble Space Telescope has discovered a new great dark spot, located in the northern hemisphere of Neptune. The dark spot appears near the limb of the planet and may be a zone of clear gas that is a window to a cloud deck lower in the atmosphere.

Second buyout sees 140 leave

A total of 140 JSC employees, reflecting years of experience, participated in the final buyout opportunity designed to reduce the agency's headcount.

"The buyout authority expired March 31 with employees leaving on or before that date," said Harv Hartman, director of Human Resources. "During the most recent buyout opportunity, 140 JSC and space station program employees either resigned or retired."

A wide range of employees took advantage of this most recent buyout incentive. Combined, the employees had an average age of 54.4 years at

Pleases ee **JSC**, Page 4

JSC

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.

Galveston Home Tour: May 6,7,13 or 14. Tickets cost $13.75.

Texas Challenge National Karate Tournament: May 19-20, Astroarena. Tickets are $10 a day, $10 for finals or $15 for both; ringside tickets are $25 for finals, $30 for both.

World Championship Ice Skating: 8 p.m. June 15 at the Summit. Tickets cost $30.50 for upper prom, $45.50 for lower prom.

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: Early bird tickets must be purchased by May 31. Cost is $14.70; season passes cost $45.50.

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; 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: Mothers Day gifts available.

JSC

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. May 25 and June 14. Pre-registration is required. Cost is $5.

Defensive driving: Course is offered from 8:15 a.m.-3 p.m. Saturdays. Next class is May 13. 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.

Country dancing: Beginners class meets from 7-8:30 p.m. Mondays; intermediate class meets from 8:30-10 p.m. Mondays. Partners are required. For additional information, contact the Gilruth Center at x33345.

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 from May-June. For more information call Richard Hoover at 996-7716.

Golf lessons: Golf lessons will be given at the Clear Lake Golf Course. Cost is $100 for six weeks of lessons.

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.

JSC

Dates & Data

Today

Cafeteria menu: Special: tuna noodle casserole. Total Health: broiled chicken breast. Entrees: deviled crabs, broiled pollock, liver and onions, broiled chicken with peach half, Reuben sandwich. Soup: seafood gumbo. Vegetables: Italian green beans, cauliflower au gratin, steamed rice, vegetable sticks.

Saturday

FOD Chili Cookoff: The 17th annual FOD Chili Cookoff will be from 9 a.m.-5 p.m. May 13 at the Gilruth Center. All JSC and contractor employees are invited. Tickets ate $3 until May 5, then $4; the price includes a tasting kit and beverages. For tickets, contact Mission Operations or Flight Crew Operations division secretaries. For more information, contact Sandy Griffin at x31056.

Vintage aircraft: The American Institute of Aeronautics and Astronautics Young Members Committee will present a tour of the Confederate Air Force's World War II vintage B-17 bomber 'Texas Raiders' at 2 p.m. May 13 at the CAF Bldg. at Ellington Field. Reservations are requested, call Paul Judas at 333-3703, x116.

Monday

Cafeteria menu: Special: Italian cutlet. Total Health: herb flavored steamed pollock. Entrees: barbecue beef spare ribs, steamed pollock, baked chicken. French dip sandwich. Soup: black bean and rice. Vegetables: California mix, okra and tomatoes, vegetable sticks, ranch style beans.

Tuesday

NAT meets: The National Technical Association will meet at 6:30 p.m. May 16 at Texas Southern University School of Technology Rm. 316. For more information call Carrington Stewart at x31404.

Cafeteria menu: Special: spaghetti with meatballs. Total Health: baked potato. Entrees: stir fry beef, liver and onions, beef cannelloni, ham steak French dip sandwich. Soup: split pea. Vegetables: winter blend mix, seasoned cabbage, breaded squash, lima beans.

Wednesday

Mechanisms symposium: The 29th Aerospace Mechanisms Symposium, hosted by NASA and Lockheed Missiles and Space Co., will be held May 17-19 at South Shore Harbour Resort and Conference Center. For more information call Dorothy Daigle at 333-7390.

Lunarfins meet: The JSC Lunarfin Scuba Club will meet at 7:30 p.m. May 17 at the Clear Lake Park Bldg., 5000 NASA Road 1. A first-hand experience with "the bends" will be discussed. For additional information, call Karen Clark, x30514.

Cafeteria menu: Special: smoked barbecue link. Total Health: roast porkloin. Entrees: cheese enchiladas, roast pork and dressing, baked chicken, steamed pollock, Reuben sandwich. Soup: seafood gumbo. Vegetables: Italian green beans, Spanish rice, turnip greens, peas and carrots.

Thursday

Cafeteria menu: Special: chicken fried steak. Total Health: roast beef with gravy. Entrees: steamed pollock, lasagna with meat, steamed pollock, catfish, French dip sandwich. Soup: cream of turkey. Vegetables: whole green beans, butter squash, cut corn, black-eyed peas.

Friday

AIAA symposium: The American Institute of Aeronautics and Astronautics Houston Section will host the 20th annual Technical Symposium from 8:30 a.m.-4:30 p.m. May 19 at the Center for Advanced Space Studies, 3600 Bay Area Blvd. Space Station Program Office Technical Manager Bill Shepherd will discuss "International Space Station: The Next Iteration" at an 11:30 a.m. luncheon. Registration, which includes lunch, is $3 for AIAA members, $5 for non members. Reservations are needed for lunch only; call Tanya Bryant at x31175 or Sara Leggio Follett at 282-3160. For more information, contact Kam Lulla at x35066, or Brenda Ward at x47563.

Cafeteria menu: Special: fried chicken. Total Health: vegetable lasagna. Entrees: pollock hollandaise, beef stroganoff, vegetable lasagna. Vegetables: steamed broccoli, carrots vichy, Italian zucchini, breaded okra.

May 23

BAPCO meets: The Bay Area PC Organization will meet at 7:30 p.m. May 23 at League City Bank. For additional information call Guy Thibodeaux at 333-5340.

May 24

NMA meets: The National Management Association will meet at 5 p.m. May 24 at the Gilruth. For more information call Kathy Kaminiski at x38706.

May 25

Radio club meets: The JSC Amateur Radio Club will meet at noon May 25 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. May 25 at the Clear Lake Park Bldg. For more information call Glenda Souliere at x31764.

May 29

Memorial Day: Most JSC offices will be closed in observance of the Memorial Day holiday.

June 2

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.

JSC

Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads may run only once. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2. No phone or fax ads accepted.

Property

Rent: Galveston condo, furniture, sleeps 6, Seawall Blvd & 61st St, swimming pools, cable TV. weekend/weekly/daily rates. Magdi Yassa, 333-4760 or 486-0788.

Rent: Arkansas Cottage on Blue Mountain Lake, great get-away with huge stone FPL, screened porch overlooking lake, $250/weekly or $50/daily. Corcoran, x33005 or 334-7531.

Sale: League City, 11.5 + acres, 669.72' on FM 270 extension between Webster & Austin St., cleared, clean, fenced, $300k. 554-4316.

Lease: Meadowgreen, 3-2-2, new carpet, new dish washer, well maintained, avail 6/1, $950/mo + dep. 244-0124 or 480-9436.

Lease: Pipers Meadow, 3-2-2, new carpet/roof & paint, sunroom, FPL, avail 6/1, $850/mo + dep. 244-0124 or 480-9436.

Sale: League City, 3 bedroom house, 3 acres, barn, pond, beautiful setting, $130k. 554-6138.

Lease: Barringer Way condo, 2-1, W/D conn, pool, storage area, ex condition, new carpeting, no pets, $495/mo. 486-2048.

Sale: League City, 4-2-2, split plan, new paint/roof, many upgrades, $69.5k. 332-9231.

Sale: Friendswood, Forest Bend, 4-2-2, new paint, FPL, new AC/heat pump with hot water recovery system, upgraded, $67k. 482-0167.

Sale: Webster condo, 2-2-2CP, FPL, ceiling fans, mini blinds, new dishwasher/solar screens, refrig, W/D conn, $39.9k. x47413 or 280-0285.

Sale: Lot in Newport near Lake Houston, restricted & heavily wooded, $2.5k. 997-2280.

Sale: Camino South, 3-2-2, extra large, bright kitchen area, A/C, large lot, $75.9k. 480-3838.

Rent: Condo off El Dorado, W/D, kitchen appliances, upstairs w/private entrance & balcony, immediate occupancy, references required, $390/mo + $300 dep. Richard, x31488 or 286-6915.

Sale: 1.09 acres at Cripple Creek Mountain Estates in Colorado, includes use of Clubhouse with several amenities, electricity, phone, and city water at property line. 486-8208.

Rent: House, 3-2-2, ex condition, 1 mi to all schools, good neighborhood. 331-3877.

Cars & Trucks

'90 Dodge custom van, built-ins, oak accents, loaded, low mileage, extended warranty, $12k/cash. Diane, 244- 7129.

'88 GMC PU extended cab, long wheelbase, SLE package, 5.7 liter w/OD, P/S/P/W, A/C, AM/FM/ cass, toneau cover & toolbox, new tires/brakes, ex condition, 99k mi, $8.5. 333-6277 or 339-2773.

'84 Cutlass Brougham, ex condition, $1.6k obo. J.C., 616-9149.

'54 Buick Special, 4 dr, 43k mi, excellent, a classic. Gene Cernan, 827-9922.

'93 Nissan Sentra XE, 4 dr, standard, all power options, 22k mi, $9.5k nego. Dilhar, 488-2549 or 480-3233.

'77 Buick Park Avenue, loaded, A/C, dependable work/school car, $900 obo. Glenn, x38067 or 480-7019.

'87 Bronco II Eddie Bauer package, new brake system, $5.2k obo. 286-2339.

'92 Toyota Celica ST, teal, P/S, P/B, auto, ex condition, 55k mi, $9,990. 409-925-2372.

'78 Olds Cutlass Supreme, 95k mi, no body damage, runs great. Roland, x39923 or 992-1430.

'85 Camaro, 1 owner, 51k mi, good condition, $2.9k. 333-1789.

'87 Toyota PU, dark blue, 4 speed, A/C, ex condition, new tires/bedliner, sunroof, alarm system, pullout AM/FM/cass, $3.5k. Tony, x38839 or 992-8669.

'91 Dodge Caravan SE, light blue, 51k mi, V6, good condition, $9k obo. J. Sansone, 335-2237.

'89 Ford Taurus LX, 110k mi, ex condition, $3.3k. x36955.

'83 Subraru GL wagon, AM/FM/cass, power windows, cruise control, tilt steering, ex interior, runs good, new battery & tires, $900 obo. 334-4313.

'78 Layton 20' travel trailer, new tires & ref, self contained, A/C, good cond, $1.5k. Roly, x31394 or 481-3451.

Travel trailer, 25' Avion, good cond, $2,850. 554-6138.

'78 Motor, 350 fuel injection, $350 obo. 488-7032.

Cycles

Yamaha dirt bike, '80 DT175G, new carb, extra parts, $300 or trade for small sailboat. 335-2539 or 474-2368.

Boats & Planes

SeaRay Bowrider, 18', 130 hp I/O, power trim/tilt, power steering, all options, ex cond, galvanized trailer, $8.5k. 532-1673.

Laser 2 sailboat w/trailer, spinnaker rigged, trap, vests, $1.2k obo. x41095 or 486-8185.

'88 Invader, 210 cuddy cabin, I/O 200 hp Merc, galvanized trailer, loaded, great cond. 997-6141.

Sovereign, 24', ex condition, extra jib, depth sounder, head, stove, sleeps 4, electric start Johnson OB, recent bottom job, make offer. Mike, 282-2787 or 286-1691.

'94 Lowe 22' deck boat, 120 hp Johnson OB w/warranty, trailer & cover, good cond, seats at least 12, $15.5k obo. x47089 or 488-7982.

SeaRay, 17' 55 hp Chrysler OB, lower unit rebuilt, new impeller and pressure tested, runs great, $1.2k. Lester, x36447.

'91 Yamaha Wave Runner, galvanized trailer, cover, $2.7 obo. 332-2453.

Audiovisual & Computers

Citizen printer, "CSX-140" w/GSX color option, $225. Magdi Yassa, 333-4760 or 486-0788.

486 40 MHz computer, 4 MB RAM, 120 MB HD, 14" SVGA monitor, Sound blaster card & speakers, $650. x39528.

Fax-modem, Mac-compatible, external, 9600 fax/2400 data, manuals/cables included, ex condition, $50 obo. x41071.

Photography

2 Canon zoom lenses, EF 35mm - 80mm & EF 80mm - 200mm, zoom lenses, $240/both fits Canon SLR cameras. Jim, 991-0533.

Musical Instruments

Guitar tuner, Korg GT-3, ex condition, $15. x36309 or 474-9747.

Pets & Livestock

Free purebred Weimereiner, 2 yrs old, excellent w/children. Kathy, x38193 or 409-267-3750.

Free German Shepherd, large, approx 3 yrs old. Susan, 282-3892 or 332-3986.

AKC registered Siberian Husky puppies, black/white w/blue eyes, 2 males, 4 females, ready to go by mid-to-late April, $250. 991-5280.

Household

Black lacquer bedroom set, dresser, mirror, chest w/cabinet, king size headboard, 2 night stands, $500. DJ, x31960 or 488-5525.

Formal sofa, $550; TV stand, $15; antique mirror, $200 obo on all items. x37113 or 286-3019.

King size oak waterbed with semi motionless mattress, 6 drawers, headboard, w/mirror and shelves, $250/obo. 280-0285.

Beige tweed sleeper sofa, queen, clean, good condition, $150. Nell, 332-7817.

Medium oak hutch w/wood door and 3 large drawers, $350; formal dining table w/2 leaves and 6 chairs, $750; light oak dresser, $125; large coffee tables, $40/ea; small 2-level coffee tables, $40/both; dark wood TV trays, 4, $45; round medium oak kitchen table, $85. 282-3570 or 474-3820.

Dining room table and 4 chairs, oak tabletop, country look, ex condition, $100. 286-2339.

RCA color TV, solid wood console, 27", stereo sound, new $950 sell $650 cash. 244-7129.

Antique armoire, late 19th century, light oak finish, 80"Hx48"W, $800. 280-8894.

Solid pine four-poster bed, new, $700 sell $400. Vanessa, 282-4563.

Queen Anne Revival oak dresser, circa 1900, w/cartouche-shaped, beveled edge mirror in frame, dark wood finish, $750. 280-8894.

King size waterbed, mattress, frame, liner, heater, $75. 488-7032.

GE washer and dryer, heavy duty, ex condition, $300/both. 286-2339.

Antique oak dining table, 48" x 48", ex cond, $375; glass top decorator table, ex cond, 17" x 47.5", $40; 4 antique chairs, 3 are arm chairs, refinished, $125/all. 488-5564.

Pool table, 8', accessories included, $500 obo. Debbie, 334-5987.

Queen size bedroom set, plastic, refrigerator, dining room table and chairs; 4 section wall unit. 333-1789.

Wanted

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 Moebes, x45765 or Don Pipkins, x35346.

Want riders for Southwest van to NASA, 7:30 - 4:00 p.m. Susan Gaynor, 282-5447 or Ed Rangel, x36124.

Want pool table with slate top. Nelda, 333-7886 or 332-5641.

Want reasonably priced hunting travel trailer. Nelda, 333-7686 or 332-5641.

Want gas edger, good condition. x32264.

Want to buy Laptop PC. 867-8820.

Want boys 20" or 24" bicycle. Steve, x35145.

Want someone who likes dogs to occasionally board my gentle, clean, 11 year old female black Lab mix when I have to travel on business, small stipend offered. Don, x44003 or 474-9509.

Want engineer/technician to repair Emerson TV, model 250RA, problem is in power supply board, I have schematic. 333-2468.

Want Emerald Tree Boa. Rich, x47257.

Miscellaneous

Two President & First Lady Premier Plus memberships, valid, any club nationwide, $1.6k value, both $800. Debbie, x36276 or 332-4751.

One SW airline trip pass anywhere Southwest flies, round trip, $200. Barry, x36325.

Free miscellaneous pipe lengths; huge shop fan. Kathy, x38193 or 409-267-3750.

Craftsman electric edger, 1.5 hp, cord, $50; sprinkler and hose, $10; 7.25" circular saw, $15; Iron, $2. Richard, 488-3081.

Jennaire range with grills and hot plates, $200; kids playhouse shingle roof, glass windows, $75. x39528.

Craftsman 3.5 hp gas lawn edger, needs some work, $50. John, x47179 or 486-7760.

Sportcards, sets, unopened boxes, singles including many rookies, Jordan, Gretzsky, O.J., excellent prices. Duane, x36145 or 428-7419.

Complete baby's room, 40 pieces, includes crib, $150; car seat, $25; good condition clothes 0-24 mos, 125 pieces, $60; Fisher Price high chair, bottles, bibs, $50; travel high chair, $8; 2 piece bathtub/towels/washcloths, $11; everything but the baby for $250. Linda, 488-8588.

Permanent air filter 20x25x1, $5; plastic garbage cans, $10/$5, 2 car jack stands, $10; wine bottles, $.50 ea; flouresent lights w/bulbs, $15 ea; 2 bolster pillows, $20 ea; 2-8' horizontal blinds, peach, $95; garden tools, $10 ea; metal detector, $85. 282-3570 or 474-3820.

Kitchen table and 4 chairs, $150; Sears lawnmower, needs work, $50; gas grill, $40. Steve, x38867 or 332-7335.

Golf clubs, Ping Zing2, 1, 3, 5 woods, $150; Big Bertha wood clones, graphite shaft, $70 ea; Big Bertha, King Cobra iron clones, 3-PW, $150; Big Bertha, King Cobra irons, graphite shafts, $250; Bullet B-52 oversized irons, 3-SW, $200. Ken, 283-9233 or 473-2602.

Pin Ball machine, coin-operated, ex condition, $500 firm. Glenn, 332-1852.

Nordic Trac "Pro" model, ex condition, non-impact exercise machine, heart/pulse rate monitor. Glenn, x30953 or 486-5063.

Metal office desk with solid wood top, 6 drawer, locking center drawer, $60. 488-4382.

Huffy, 26" men's 10 speed bike, $30; left hand mixed set of golf clubs, woods and irons, $30; 165 cm Kostle skis, Solomon bindings, Kustinger boots, sz 10, poles, $40. Tom, x41076 or 326-3248.

Shotgun, 12 gauge, Winchester model 1400MK II semi auto, vented barrel, $250. Jim, 991-0533.

Contractor model 10" table saw, $300; rear-tine tiller, $400 or will rent. 997-2280.

King size waterbed frame with headboard, $10; infant bouncer, $10; sliding glass door, 6', $50 obo; TV aerial antenna, $10; insulation bats, 8', $2 ea; 2-32" interior doors, $10 ea; electric trolling motor, $15. 332-2453.

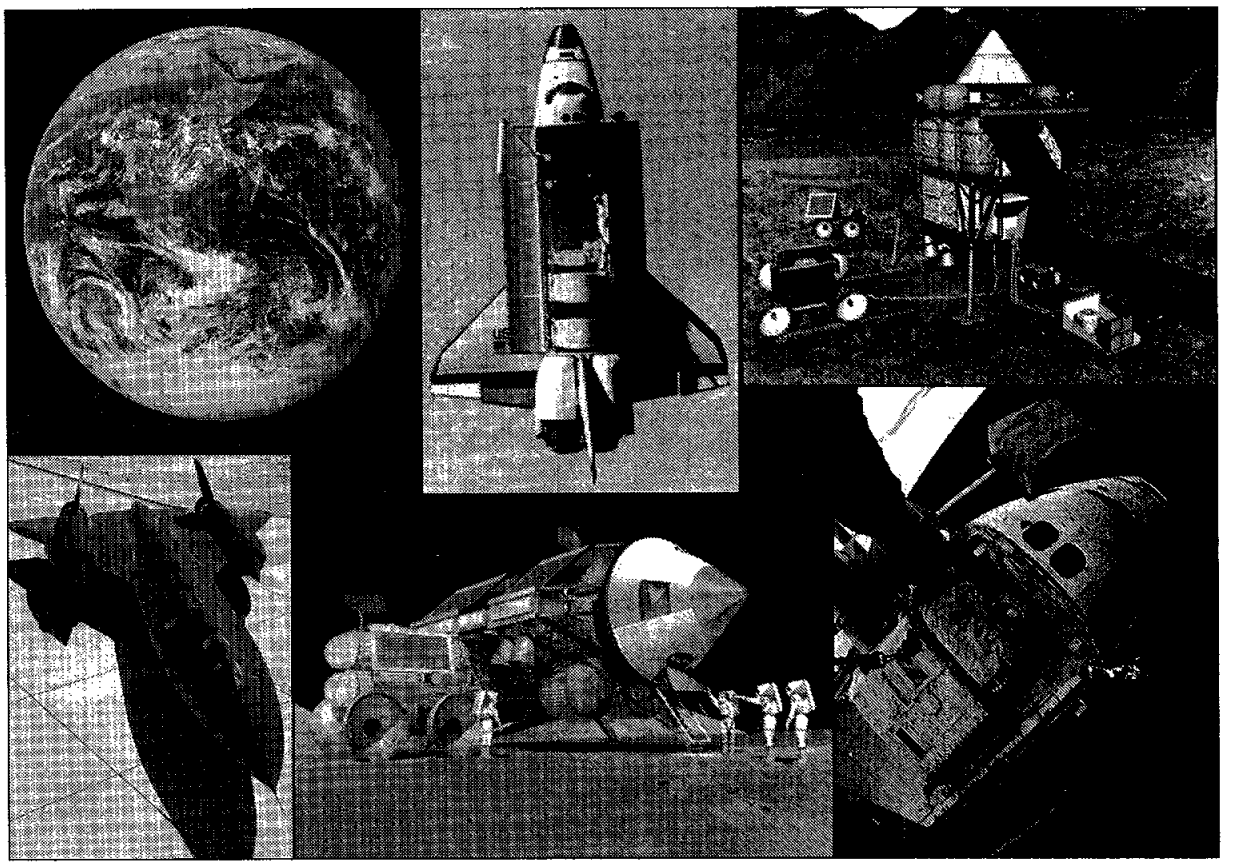
Timing light, $20; 3-gage barometer, $10; vent-a-hood, refinished, $20; baby cradle, $35; baby buggy, $40. 488-5564.

Mazda RX-7 bra for '85 model year and older, $20; shop repair manual included; bike rack, over-the-trunk style, $15. Dave, 488-6838.

Day-timer planner, with zipper notebook, full 8.5 x 11 size, desk paper punch, notebook paper punch, fillers through Sept '95, $60; 14kt dia-cut rope bracelet, 2.5 mm wide, 7" long, $50; 14kt gold dia-cut rope necklace, 1.5 mm wide, 18" long, $60. Eric, x31917.

NASA's 1995 Strategic Plan

Five strategic enterprises establish agency framework for attaining goals relevant to Americans



[Editor's note: This is the second installment in a two-part synopsis of the highlights of 1995 NASA Strategic Plan prepared by the Public Affairs Office's External Affairs Branch.]

The recently released 1995 NASA Strategic Plan moves closer to a top-notch strategic management approach for the agency by including specific goals for each enterprise and more detailed strategies for reaching those goals. Following is a quick overview of the main elements of the Strategic Plan.

Strategic Enterprises

Mission to Planet Earth Enterprise

Dedicated to understanding the total Earth system and the effects of natural and human-induced changes on the global environment, pioneering the study of global change, and laying the foundation for long-term environment and climate monitoring and prediction. Goals include:

- Increase scientific understanding of the Earth as an integrated environmental system and its vulnerability to natural variations and human influences;
- Observe and characterize the entire Earth system and make resultant data widely available;
- Contribute to wise and timely national and international environmental policy; and
- Foster the development of an informed, environmentally aware public.

Aeronautics Enterprise

In partnerships, identifies, develops, verifies, transfers, applies, and commercializes high-payoff aeronautics technologies. Seeks to promote economic growth and security and enhance U.S. competitiveness. Goals include:

- Develop high-payoff technologies for a new generation of environmentally compatible, economic subsonic aircraft, and
- Develop the technology base and options for a high-speed civil transport, for new capabilities in high-performance aircraft, for air-breathing hypersonic flight, and for advanced aerospace systems.

Human Exploration and Development of Space Enterprise

The HEDS mission is to open the space frontier by exploring, using, and enabling the development of space. The enterprise seeks to bring the frontier of space fully within the sphere of human activity for the benefit of America and all humankind in this and future generations. In exploring space, the enterprise sends humans and machines together into the solar system to unravel its mysteries. The enterprise makes use of resources found in space to achieve our goals. In enabling the development of space, the enterprise seeks to serve as a catalyst to commerce. The enterprise will increasingly reach out to customers to both design relevant research and expand participation. Goals include:

- Understand and use nature's processes in space;
- Explore and settle the solar system;
- Achieve routine space travel; and
- Enrich life on Earth through people living and working in space.

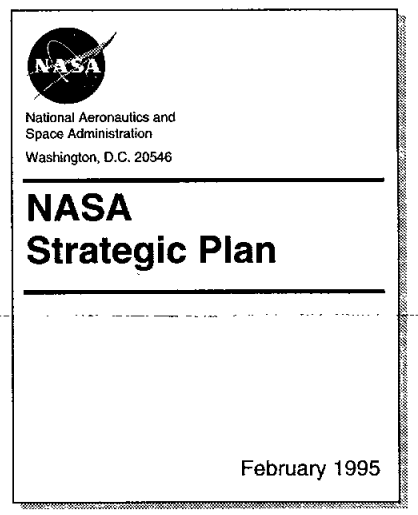
More specifically, the HEDS Strategic Plan identifies enabling human exploration through robotic missions, assembling and operating the International Space Station, and establishing a human presence on the Moon and Mars. Our goal is to move from regular human access to space to routine space travel, and to keep the space shuttle fleet operational until a replacement vehicle is available.

Space Science Enterprise

NASA contributes to the creation of new scientific knowledge by exploring the solar system and the universe. This Enterprise maintains scientific leadership, excites and inspires society, strengthens education and scientific literacy, develops and transfers technologies to promote U.S. competitiveness, fosters international cooperation to enhance programs and share their benefits, and sets the stage for future space ventures. Goals include:

- Discover the origin, evolution, and fate of the universe, galaxies, stars, and planets;
- Understand the solar system's origin and evolution by exploring, surveying, and sampling the planets and moons with robotic spacecraft;
- Determine if planets, including terrestrial-like planets, exist around stars; and
- Determine if life exists, or ever existed, elsewhere in the solar system and the galaxy.

The Space Science Enterprise seeks to answer these fundamental questions by using space-based telescopes to observe the Universe; space probes, orbiters, and landers to explore the planets; and Earth-orbiting satellites and deep space missions.



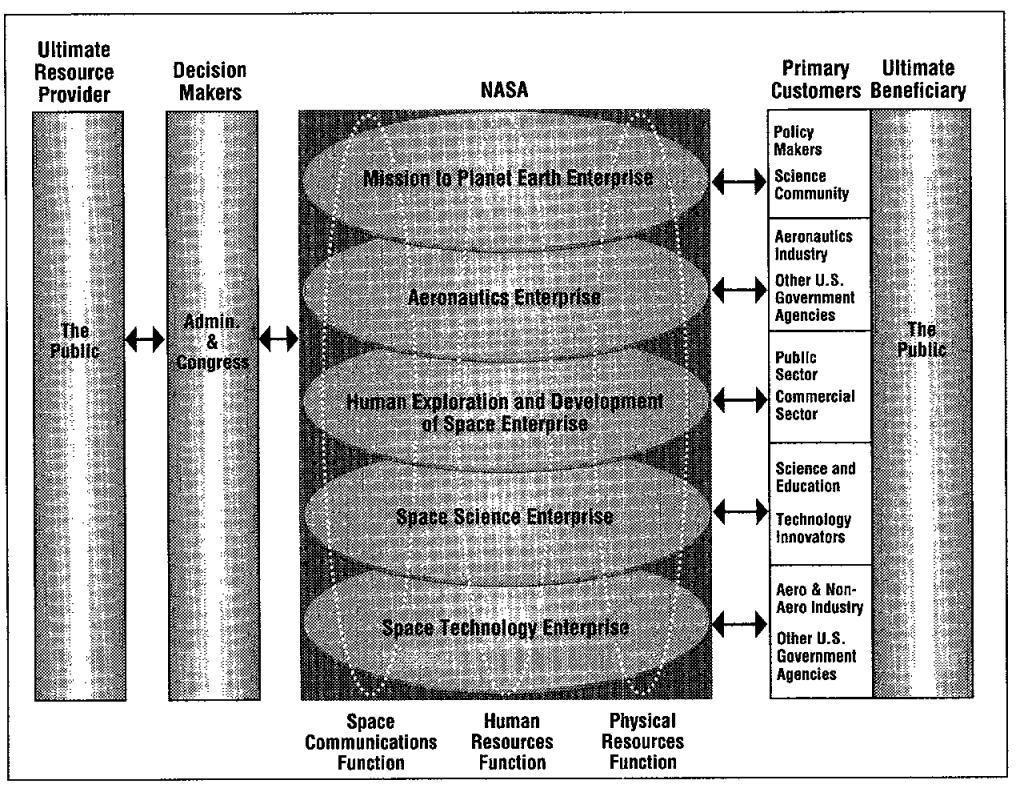
Space Technology Enterprise

Contributes significantly to U. S. international competitiveness through advanced technology development and transfer. Stimulates the economy by developing dual-use products and processes and by creating an opportunity for high-skill, high-wage American jobs. Goals include:

- Reduce the cost of access to space;
- Provide innovative technologies to enable ambitious, future space missions; and
- Build technological capability in the U.S. space industry and share the harvest with the U. S. industrial community.

The enterprise will help to enhance the vitality of established space industries and nurture emerging and potential space industries. It will provide techniques and mechanisms to assist all enterprises and functions in their technology-transfer efforts, and facilitate technology "spin-in" from non-NASA sources. The enterprise will develop mission-related advanced concepts and critical, enabling, cutting-edge technologies for future space missions.

A specific focus of this enterprise will be to develop in cooperation with industry, technology leading to a development decision for a fully reusuable launch system(s).



Strategic Functions

NASA's Strategic Functions provide capabilities required by the strategic enterprises to achieve their missions. These functions are space communications, human resources, and physical resources.

- **Space Communications**
  Uses a cost-effective combination of NASA, commercial, government, and international assets.
- **Human Resources**
  Develops policies, systems, and programs to assure NASA has the resources to achieve its mission.
- **Physical Resources**
  Maximizes resources to support evolving program and mission requirements.

Implementing Strategy

Our ability to respond to future opportunities under tight fiscal constraints requires that we increase our effectiveness and efficiency while achieving significant cost reductions in current and future programs. To this end, we will pursue the following new ways of doing business. Examples include:

- Accept prudent risk while striving for lower costs, shorter development times, and more frequent missions.
- Streamline management; make decisions quickly; minimize reviews and documentation requirements to those that are essential for safety and quality.
- Increase institutional efficiency by consolidating programs and reducing functional overlaps.
- Seek to effect improved space launch capabilities to reduce the fraction of the NASA budget allocated to space launch.
- Emphasize research and development; transfer operational activities, as feasible, to other federal agencies or commercial operators.
- Consider closing facilities that are duplicative, too expensive to maintain, or not tightly linked to mission requirements.
- Conduct reviews prior to program initiation and throughout program life to confirm compliance with cost, schedule, and performance targets.

We will follow decision rules which are consistent with certain values and operating principles (examples):

- Maintain excellence in all that we do.
- Forego activity when we cannot maintain adequate safety, robustness, or standard of excellence.
- Institutionalize equal opportunity, equity, and diversity as an underlying premise in all that we do.
- Ensure that NASA Centers are Centers of Excellence in their fields.
- Evaluate all costs before initiating activities.
- Undertake only new programs which are consistent with our strategic plan and are consistent with realistic budget expectations.
- Provide managers and employees the in-house R&D experience necessary to maintain expertise.
- Pursue and preserve strategic enterprises as an aggressively, as an essential element of NASA's service to the nation.
- Execute our mission with a sense of urgency; do what we say we will do. ❑

STS-78 mission, payload specialists named for '96

Helms Linnehan Brady Favier Thirsk

By Kyle Herring

NASA has named mission and payload specialists for a 16-day flight aboard the Space Shuttle *Columbia* in the summer of 1996 that will conduct life and microgravity science experiments.

Designated STS-78, the mission will have astronauts Susan Helms, Richard Linnehan and Charles Brady as the mission specialists. Also on the flight will be Jean-Jacques Favier of the French Atomic Energy Commission and astronaut of the French Space Agency, and Robert Brent Thirsk of the Canadian Space Agency. Both will serve as payload specialists on the mission.

Helms will serve as the flight engineer and Linnehan, Brady, Favier and Thirsk will serve as the payload crew. The commander and pilot will be named later.

NASA has designated Pedro Duque of the European Space Agency and Luca Urbani of the Italian Space Agency to serve as alternates to Favier and Thirsk. As alternates, Duque and Urbani will undergo the same training as Favier and Thirsk and will be ready to serve on the mission crew if necessary.

The mission's experiments will build on previous shuttle Spacelab flights dedicated to life sciences and microgravity investigations (Spacelab Life Sciences 1 and 2—STS-40 and STS-58, and International Microgravity Laboratory 1 and 2—STS-42 and STS-65).

Helms, 37, has flown two previous shuttle missions, STS-54 in January 1993 and STS-64 in September 1994. She received a master of science degree in aeronautics/ astronautics from Stanford University in 1985.

Linnehan, 37, will be making his first flight. He is a member of the astronaut class of 1992. Linnehan earned his doctor of veterinary medicine degree from the Ohio State University College of Veterinary Medicine in 1985.

Brady, 43, also is a member of the astronaut class of 1992, and STS-78 will be his first flight. He received his doctorate in medicine from Duke University in 1975.

Favier, 46, earned a Ph.D. in engineering at the Mining School of Paris and a Ph.D. in metallurgy and physics from the University of Grenoble. He is adviser to the director of the CEA's Center for Materials Studies and Research. Detailed to CNES, Favier currently is working at Marshall Space Flight Center, in the payload operations laboratory and the space station furnace facility area. Favier was an alternate payload specialist for STS-65, the International Microgravity Laboratory-2 mission.

Thirsk, 41, earned a doctorate in medicine from McGill University Medical School, Montreal, Canada, and a master of science in mechanical engineering from the Massachusetts Institute of Technology. He is an adjunct professor of mechanical engineering at the University of Victoria and continues to practice clinical medicine in Canadian hospitals. Thirsk was an alternate payload specialist for the STS-41G mission.

MS society to visit JSC

By Karen Schmidt

The Multiple Sclerosis Association of America is touring NASA centers to inform employees of the cooperative efforts between NASA and the MSAA.

MSAA will make a stop at JSC next Tuesday and employees are invited to stop by the display that will be set up in the Bldg. 11 cafeteria. The display will feature a video and demonstration about how Multiple Sclerosis patients use the NASA developed "cool suit" to aid MS patients.

"The primary purpose of the NASA visits is to inform and educate the NASA family about MS and the cooperative efforts under way between NASA and MSAA," said John James O'Neill, the national programs director for MSAA. "There also is a desire by both organizations to find other assistive technologies developed in support of the space program which may be helpful to MS patients in the future."

Multiple Sclerosis is a disease that attacks the coating (called myelin) on nerves located in the brain, central nervous system and the spinal cord. The coating is attacked and leaves scars on the nerves in multiple places, hence the name Multiple Sclerosis. Symptoms are often mistaken for other disorders. Doctors use magnetic resonance imaging or a spinal fluid analysis to diagnose the disease. MS patients often experience numbness and the cool suit stimulates nerve signals and improves nerve conduction.

The MSAA and NASA signed an agreement last year to promote industry research in the cool suit and other NASA technology that may benefit MS patients. An MS cooling workshop was recently held at NASA's Ames Research Center to "fine-tune" the cool suit and look at how the technology can address the specific needs of MS patients. The workshop focused on determining the requirements for future MS-specific cool suits.

JSC Photo by Benny Benavides

CADET TOUR—Cadets from the Marine Military Academy in Harlingen, Texas, recently toured JSC facilities including the Weightless Environmental Training Facility. Wayne Wedlake, left, of the Extravehicular Activity Systems Branch in the Mission Integration and Schedule Management Office shows the cadets several tools being used in the WETF to train astronauts for future flights.

Neptune changes spots

(Continued from Page 1)

Massachusetts Institute of Technology. "New features like this indicate that with Neptune's extraordinary dynamics, the planet can look completely different in just a few weeks."

Like its predecessor, the new spot might be a hole in Neptune's methane cloud tops that gives a peek to lower levels of the atmosphere.

"We weren't surprised the other spot disappeared," said Hammel. "It was kind of 'floppy' because it changed shape as atmospheric circulation carried it around the planet." By contrast, Jupiter's Great Red Spot, which is similar to Neptune's original spot in relative size and position, has remained stable in appearance for at least 300 years.

Hammel points out that studying the dynamics of Neptune's immense atmosphere might lead to a better understanding of Earth's atmosphere.

"Neptune's unusual behavior is showing us that though we can make great models of planetary atmospheric circulation, there may be key pieces missing," Hamel said.

Energy from the Sun drives Earth's weather system. However, the mechanism must be very different on Neptune because the planet radiates two times more energy than it receives from the dim, distant Sun.

Neptune's atmosphere might be so dynamic because the cloud tops are warmed from below by this strong internal heat source. A slight change in the temperature differential from cloud bottom to top might trigger rapid, large-scale changes in atmospheric circulation.

Since the 1989 Voyager flyby, astronomers using ground-based telescopes have not been able to resolve the subtle structures in Neptune's variable atmosphere, particularly the low-contrast dark features.

The astronomers don't know how long the new feature will last. For the first time in planetary history though, HST will allow astronomers to follow the details of Neptune's atmospheric changes over at least a decade.

Total Health offering blood pressure check

By Eileen Hawley

The Total Health Program, in cooperation with the American Heart Association, is conducting a series of high blood pressure screenings for employees this month.

The screenings are part of the Total Health Program's continuing commitment to ensuring the health and welfare of JSC's employees.

"A preventive screening is the only way to find out if you have high blood pressure," said Lynn Hogan of the Total Health Program. "Untreated, high blood pressure can lead to stroke, and heart or kidney failure."

total health

There are no symptoms or warning signs that a person might have high blood pressure. And although doctors do not know what causes most high blood pressure, it is a treatable disease. Medication, exercise and diet can greatly reduce the risks associated with high blood pressure.

Daily screenings will be available in the clinic from 10 a.m.-noon and 1-3 p.m. the week of May 22. Screenings also will be available at the following locations: May 22 — 8:30-11:30 a.m., Bldg. 1; 1-2:30 p.m., Bldg. 4S; and 2:45-3:45 p.m., Bldg. 7A. May 23 — 8:30 a.m.-noon, Bldg. 30; 1-2:30 p.m. Bldg. 16; and 2:45-3:45 p.m. Bldg. 32. May 24 — 8:30-11:30 a.m., Bldg. 45; 1-2 p.m., Bldg. 31; and 2:30-3:30, Bldg. 44; May 25 — 8:30-10 a.m., Bldg. 419; 10:30-11:30 a.m., Bldg. 273 at Ellington Field; 1-2 p.m., Bldg. 15; and 2:30-2:45 p.m., Bldg. 325.

Total Health also participates in the "Heart at Work" program designed to help employees make educated decisions about diet and exercise.

"We will routinely distribute flyers to employees that discuss ways they can help maintain their physical conditioning and health," Hogan said. "We want our employees to have the facts about heart disease, proper exercise, and how they can maintain a healthy lifestyle."

For additional information about the blood pressure screenings or the Heart at Work program, contact the Clinic at x 34111.

Mir science research continues

(Continued from Page 1)

teries to the future location of the solar arrays. This activity is very important for the second space walk when one solar array will be moved from the Kristall module and reinstalled on the Kvant-2 module.

Important life science research also continued. Thagard and Dezhurov participated in an experiment designed to determine microgravity-related changes in how the body handles medications during long-duration space missions. Astronauts have access to emergency and preventative medications, however researchers believe that the microgravity environment affects the body's ability to absorb and use drugs effectively.

For the experiment, Thagard and Dezhurov ingested acetaminophen, a generic pain reliever. They then collected saliva, urine, and breath samples over a 24-hour period. The data will be compared to the pre- and post-flight results. They also will keep a log to monitor fluid, nutrient, and medication intakes, and also will exercise throughout the experiment. Experiment findings will be useful in developing drug treatments and delivery techniques that are more effective than the current methods.

Last week, Thagard used the Mir treadmill for the sport-fatigue experiment which evaluates the effects of microgravity on a crew member's cardiovascular system. During the sports portion, Thagard ran on the treadmill at four different speeds. For the fatigue portion, he performed isometric exercises until he reached the point of maximum fatigue.

JSC employees take advantage of buyout opportunity

(Continued from Page 1)

NASA, salaries of $62,971 and an average separation incentive payment of just over $22,000, The total incentive payment was $3.2 million.

Combined with the 201 employees who left during the earlier buyout period, in March and April 1994, JSC's civil service workforce was reduced by about 10 percent. During the year the buyout law was in effect, 2,666 employees agencywide either voluntarily retired or resigned.

Although the legislation authorizing NASA to offer the separation incentives expired the last day of March, the agency can continue to offer early retirements—or "early outs"—through Sept. 30. To be eligible for an early out, employees must have 25 years of service at any age, or be 50 years old or older with 20 years of service.

Employees interested in the early out option should contact Employee Services at x32681 for additional information.

Employees participating in the 1995 buyout period, by directorate, are:

Public Affairs: Iris Garner, Reba Kelley and Elena Salsitz.

Human Resources: Debra Griffin and Clarence Williams. From the Equal Opportunity Programs Office, Shirley Price.

Business Management Directorate: Helen Agnew, Karen Flanagan, Regina Gardner, Patrice Halliburton, Otto Hanneman, Monica Kruest, William Kruest, Alfred Ligrani, Jose Reyes, Karl Schaefer, Wanda Thrower and Doris Wood.

Flight Crew Operations Directorate: Rick Hieb, Carol Shaw and Harley Weyer.

Mission Operations Directorate: Ann Bowersox, Marie Gibson, William Gravett, Janice Gray, Ted Guillory, David Hogg, William Lamey, John McKune, William Middleton, Walter Poates, Melvin Richmond, Raymond Smith, Charles Stough, Margaret Tatum and John Williams.

Engineering Directorate: William Acres, Thomas Barry, William Bean, David Belanger, Jimmy Bradley, James Cioni, James Davis, Charles Deason, Alice Eastman, Frank Elam, Elizabeth Gary, Allan Gist, Marian Gordner, John Henderson, Malcolm Jones, Edgar Lancaster, Sherry Land, Harold Largent, Norman Luksa, Constance Madden, Rudolf Marent, Louis McFadin, Charles Norris, Carl Pinkney, Delores Price, Donald Price, Robert Ried, Robert Robinson, Indulis Saulietis, William Trahan and Leopoldo Villareal.

JSC Projects Office: Mary Burck, Gary Coen, Louis Davidson, Robert Fletcher, Marilyn Forbes, Richard Hoover, John Knochel, Joe Martin and Betty McCaghren.

Technology Transfer and Commercialization Office: Betsy Magin.

Center Operations Directorate: Mattie Dinick, Maggie Hughey, Brenda Kinsey, Reba Moore and Clara Odom.

Space Station Program Office: Dorothy Hailey.

Office of the Comptroller: Donna Ducom, Donald Mitchell, Evelyn Morris, and Shirley Randolph.

Space Shuttle Program Office: Stanley Blackmer, Richard Hautamaki, Martin Keough, Edward Lattier, Marion Lusk, Gary Meester, Charles Pace, John O'Loughlin and John Temple.

Safety, Reliability and Quality Assurance Office: Janet Bradley, Philip Corral, Elizabeth Fox, Donald Glebe, Lamar Haugabrook, William Meek, Richard Serpas and Roy Stokes.

Information Systems Directorate: Lizabeth Alley, Cynthia Barringer, Darrell Boyd, Gary Cook, Cheryl Damewood, H. Richard Heetderks, Donna Keith, Joel Kent, Anne Modisette, Doris Roberts, Mark Rorvig and Phillip Stallings.

White Sands Test Facility: Nancy Lee

Space and Life Sciences Directorate: Jeffrey Bremer, Nancy Budden, Robert Cohen, Judy Endsley, Robert Giesecke, Richard Jennings, James Keith, Peter Kennedy, John Kidd, Curtis LeBlanc, John Mitchell, Robert Newlander, Gary Primeaux, Joy Robertson, Frances Ross, Antoine Smith, Dell Tamblyn and John Westover.

NASA-JSC