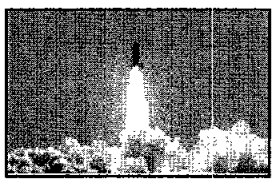
NASA
National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, Texas



Flight Plan

This full-page chart should help you keep track of the new space shuttle manifest. Chart on Page 3.

Hefty Reward

One engineer's quest for computer graphics has kept NASA from spending some $4 million. Story on Page 4.

Space News Roundup

Vol. 30 | August 30, 1991 | No. 34

NASA updates crew rosters for eight flights

By Barbara Schwartz

NASA announced crew assignments and adjustments Friday for eight future space shuttle missions, including the reassignment of two pilots who have earned commands of their own.

Jim Wetherbee will command STS-52, the Laser Geodynamics Satellite II mission, and John Casper will command STS-54, the next Tracking and Data Relay Satellite mission. Also named as commanders were Hoot Gibson, who will lead the STS-47 Spacelab-J team, and David Walker, who will head the STS-53 Department of Defense mission.

The revised crew rosters are:

• STS-50 — Navy Capt. Richard N. Richards will command the U.S. Microgravity Laboratory mission, scheduled for June 1992. The 13-day flight, the longest shuttle mission to date, will be a battery of microgravity materials processing technology experiments to be flown on the first extended duration orbiter mission aboard *Columbia*.

The pilot will be Navy Lt. Cdr. Kenneth D. Bowersox, who replaces Casper and had been assigned to the flight as a mission specialist. Mission specialists will be Payload Commander Bonnie J. Dunbar, Air Force Lt. Col. Carl J. Meade, and Ellen S. Baker, M.D., who fills Bowersox's vacancy. Eugene H. Trinh, Ph.D., of NASA's Jet Propulsion Laboratory, and the University of Alabama's Lawrence J. DeLucas, Ph.D., will be the payload specialists.

• STS-46 — Air Force Col. Loren J. Shriver will command the Tethered Satellite Systems mission, scheduled for September 1992. The crew of *Atlantis* will deploy a satellite from the payload bay on a 12-mile tether to collect electrodynamic data in the upper reaches of the Earth's atmosphere. The European Retrievable Carrier, a free-flying reusable platform dedicated to materials science and life science experiments, also will be deployed.

The pilot will be Marine Corps. Maj. Andrew M. Allen, who replaces Wetherbee and had been assigned to the flight as a mission specialist. Mission specialists are Payload Commander Jeffrey A. Hoffman, Ph.D.; Franklin Chang-Diaz, Ph.D.; European Space Agency Astronaut Claude Nicollier, and Marsha S. Ivins, who will fill Allen's vacancy. An Italian payload specialist will be assigned later.

•STS-47 — Navy Capt. Robert L. Gibson will command the Spacelab J mission scheduled for September 1992. Spacelab J is a joint mission with the Japanese Space Agency dedicated to materials processing and life science experiments.

The pilot will be Air Force Maj. Curtis L. Brown Jr. Mission specialists

Please see **CREWS,** Page 4

Employees generous with leave

JSC gives most to military reservists in Persian Gulf

By Kelly Humphries

JSC employees are being recognized for being the most giving in NASA during the summer Leave Bank Program for federal reservists activated during the Persian Gulf crisis.

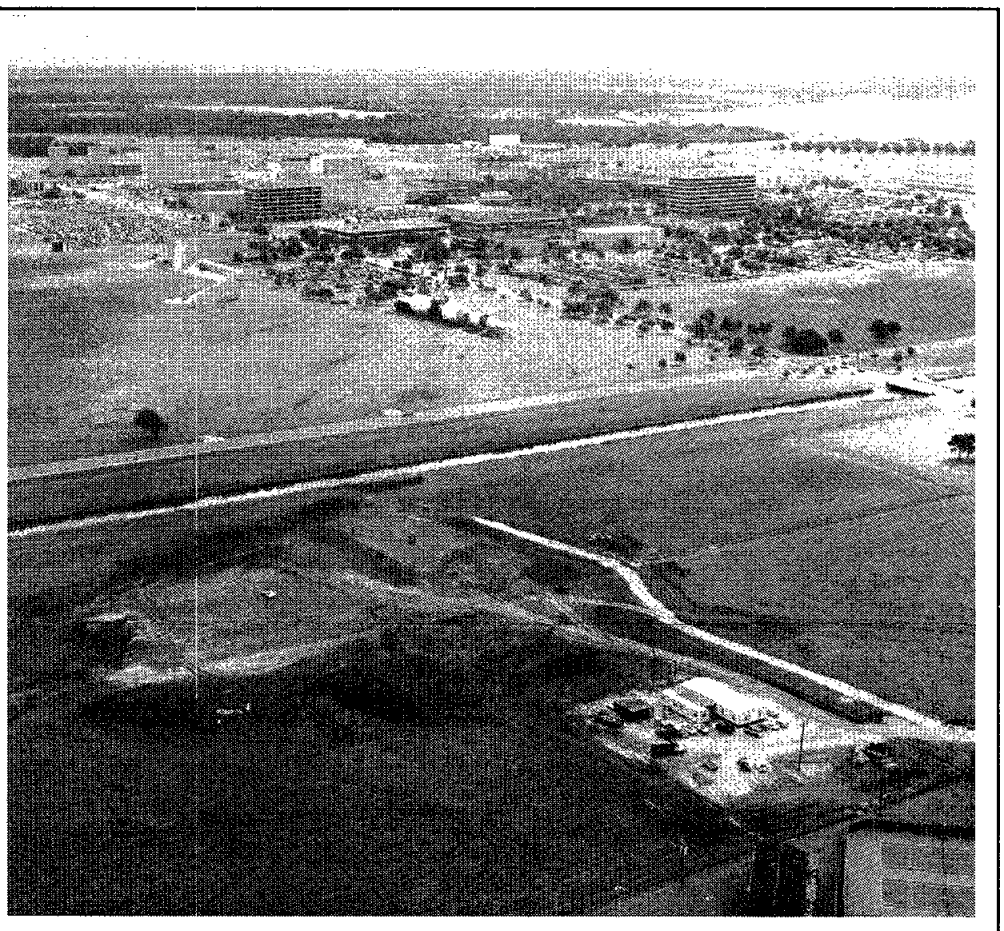
JSC, with only the third highest civil service work force, gave 1,035 hours, almost twice that of any other center and nearly 28 percent of the total NASA hours.

Other center donations included: Ames Research Center, 458; Goddard Space Flight Center, 298; Headquarters, 532; Office of the Inspector General, 72; Kennedy Space Center, 232; Langley Research Center, 198; Lewis Research Center, 288; Stennis Space Center, 2; and Marshall Space Flight Center, 572.

"The fact that JSC responded so favorably is indicative of the caring attitude of the JSC employees," said Human Resources' Natalie Saiz, who coordinated the program at this center. "Thanks to all who donated!"

The original season for the Leave Bank Program was from June 2 to July 13, but it was extended through Aug. 10 to ensure all federal employees had a chance to donate. A major drawback of the program was that one could not designate a particular recipient.

The donated hours will be equally apportioned among all eligible reservists. Out of about 10,500 federal reservists, JSC has 15. Recipients will be notified sometime in October or November.



JSC Photo by Mark Sowa

Construction trailers take up residence near JSC's main gate as excavation work begins on Space Center Houston, the new $70 million visitor center.

Building a foundation for education

Dirt flies as work begins on Space Center Houston

By Kari Fluegel

The dirt is flying on the southwest corner of JSC as bull dozers, front loaders and caterpillars begin the foundation for Space Center Houston.

Site preparation activities began in May for the new $70 million visitors center, operated by the Manned Space Flight Education Foundation Inc.

Work since that time has focused on getting the 123-acre site location ready for the construction. Workers with Weber-Balke Foundation of Houston will begin drilling holes for the that piers will support the 183,000-square-foot facility.

Activities remain on track, but recent wet weather has not allowed the construction activities to get ahead of schedule.

Construction is expected to be complete and the center will welcome its first guests in the fall of 1992.

Space Center Houston is expected to draw two to three million visitors a year and contribute about $100 million to the local economy and will attract 2.3 million visitors

Please see **SPACE**, Page 4

Discovery gets thumbs-up for Sept. 12 launch

By James Hartsfield

Shuttle managers cleared the way Wednesday for a Sept. 12 launch of *Discovery* on STS-48 to deploy the Upper Atmospheric Research Satellite.

During a final review of all major preparations for the flight this week, managers found no outstanding problems that could interfere with a planned 5:57 p.m. CDT launch. The Flight Readiness Review, as the standard pre-flight meeting is called, concluded late Wednesday at Kennedy Space Center.

The crew — Commander J.O. Creighton, Pilot Ken Reightler and Mission Specialists Sam Gemar, Jim Buchli and Mark Brown — is scheduled to depart JSC en route to the launch site the evening of Sept. 9.

At Launch Pad 39A this week, *Discovery*'s main engines went through a flight readiness test with flying colors. Other work included a thorough end-to-end checkout of all of the UARS' equipment. Engineers closed out *Discovery*'s engine compartment for the final time at the end of the week. Also, space suits were installed in the orbiter to be used in case an unplanned space walk is required, and the batteries for the UARS are now taking a final charge prior to launch.

Atlantis is in Bay 2 of Kennedy's processing hangar undergoing post-flight work following its Aug. 11 landing. One of the spacecraft's three main engines was removed this week, and checks are being performed on the three auxiliary power units, generators that supply power to operate the orbiter's hydraulics. *Atlantis*' next launch is currently targeted for November to deploy the Defense Support Program satellite for the Department of Defense.

The solid rockets for that mission, STS-44, also are now being assembled in Kennedy's Vehicle Assembly Bldg.

Endeavour, being readied for a first launch next year to rescue the stranded INTELSAT V, is in Bay 1 of the processing hangar. Tests on the new orbiter this week included checks of the two Orbital Maneuvering System pods it will use once it first reaches space. The two OMS pods are currently in KSC's Hypergolic Maintenance Facility being prepared for installation on *Endeavour*.

'You want to go to space? The people here can do it'

[Editor's note: News is more often defined by what goes wrong than by what goes right, so it's understandable that NASA employees sometimes get the feeling that no matter what they do, their efforts and their agency will be criticized. There are exceptions, however, such as this commentary by ABC Radio and Television correspondent Jim Slade.]

By Jim Slade

Kennedy Space Center, August 12th: This is a special place. It is so special that people will come here someday to see where an evolutionary change in human history began.

Our ABC broadcast facilities sit on a mound about a half mile to the right of the big hangars and control rooms where the shuttles are groomed and then fired into orbit. It is easy to forget now that this is the same place where Neil Armstrong and the others stepped off for the Moon.

The launch pads themselves are about three and a half miles out there toward the ocean. You can see them clearly across acres of tropical scrub and swamp. Birds tumble, squawking, out of those bushes whenever a rocket bellows. But the rockets only sing once in a while compared to the birds and so far, the birds have always come back.

It's a busy place. This is Monday. Yesterday, space shuttle *Atlantis* dropped out of the sky here and was led back to the barn, still warm and sweating. This morning, a big tractor carried *Discovery* out to the same launch pad *Atlantis* used 10 days ago. They hope to launch *Discovery* in mid-September with a huge satellite in its hold that will study how the ozone layer is being depleted and what we humans have to do with it. That is important public business, the kind the shuttles ought to be doing.

As soon as it's ready, *Atlantis* will be reserviced and used to launch a missile-warning satellite sometime in November. That's important, too.

Nobody has to tell the people here that their work is important, though. If you didn't have the spirit to work in this place, you would hate it. It takes a lot of pride to stand up to the pressure, some of it not very fair.

There is a cynical tendency to jeer whenever a big, visible program doesn't work right. Impatience, leavened with the idea that lots of money ought to mean perfection, leads us down that road. The fact of the matter is that nondestructive delays here are a sign of perfection. When a high speed computer stops the clock because it sees trouble in a tiny little gizmo buried among thousands of other tiny little gizmos, I find that nothing short of a miracle. The bottom line here is that no shuttle flies unless everything works at the time of liftoff. Something might break on the way "up the hill," but at that most crucial moment the spacecraft is a hundred percent or it doesn't go. Given the millions of parts and miles of wire in a shuttle, that's saying more than any other engineering or science program has ever been able to say.

If you want to know what's wrong with NASA, you will have to dig back in your history book 10 to 15 years ago when neither the White House nor the Congress could decide if the space program was fish, fowl, or tinker toy. Funding was inadequate to do the job and shortcuts were taken that are

Please see **SOMEBODY**, Page 4

JSC

Ticket Window

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

General Cinema (valid for one year): $4.

AMC Theater (valid until May 1992): $3.75.

Loews Theater (valid for one year): $4.

Astroworld (valid 1991 season): season, $44.94; child less than 4-feet, $10.12; one day, $15.85; Waterworld, $8.15.

Seaworld of Texas (valid 1991 season): child (3-11), $12.25; adult, $17.25; (2-day) child $15.95; adult, $21.95.

Six Flags (valid until Nov. 17): adult (1 day) $15.95, (2-day) $20.95; child under 4 feet, $14.95.

Country and western dance (7 p.m. Sept. 14, Gilruth) $15 per person.

Puerto Vallarta trip (Nov. 7-11, includes air fare, four nights lodging, fiesta): $475 per person, double occupancy; $100 deposit due Sept. 1.

Astros vs. Cincinnati Reds (7 p.m. Sept. 21, Astrodome): $9.

Deep sea fishing (7 a.m.-7 p.m., Sept. 21, includes bait, tackle): $45 to fish, $20 to ride.

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 badge or EAA membership card. Classes tend to fill up four weeks in advance. For more information, call x30304.

Defensive driving — Course is offered from 8 a.m.-5 p.m., Oct. 12 or Nov. 16. Cost is $15.

Aerobic dance — High/low-impact classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is $24.

Exercise — Low-impact class meets from 5:15-6:15 p.m. Monday and Wednesday nights. Cost is $24.

Weight safety — Required course for employees wishing to use the Gilruth weight room. The next classes will be from 8-9:30 p.m. Sept. 5 and Sept. 18. Cost is $5; pre-registration required.

Country and western dancing — Intermediate class meets from 8:30-10 p.m. Mondays beginning Sept. 9. Cost of six-week course is $20 per couple.

Ballroom dancing — Professional instruction in beginning, intermediate and advanced dance. Eight-week session meets Thursdays beginning Oct. 3. Cost is $60 per couple.

Aikido — Martial arts class meets Tuesdays and Fridays from 6:30-7:30 p.m. for four weeks starting Sept. 3. Cost is $35 per month.

Volleyball clinic — Eight-week clinic teaches basic volleyball skills from 2-4 p.m. Saturdays starting Sept. 7. Cost is $25 per person.

Fiction workshop — Six-week course meets from 6:30-8 p.m. Wednesdays beginning Oct. 2. Cost is $80.

Fitness program — Health Related Fitness Program includes medical examination screening, 12-week individually prescribed education program. Call Larry Wier, x30301.

Golf league — The JSC Golf Association is accepting members for the second half of its 1991 season. League is open to anyone with a 36 or lower handicap. Call Larry Hall, x33694.

JSC

Dates & Data

Today

Cafeteria menu — Special: tuna and salmon croquette. Entrees: pork chop with yam rosette, Creole baked cod. Soup: seafood gumbo. Vegetables: Brussels sprouts, green beans, buttered corn, whipped potatoes.

Monday

Labor Day — Most JSC offices will be closed in observance of the Labor Day holiday.

Tuesday

Cafeteria menu — Special: stuffed cabbage. Entrees: turkey and dressing, round steak with hash browns. Soup: beef and barley. Vegetables: corn cobbette, okra and tomatoes, French beans.

Wednesday

Cafeteria menu — Special: pepper steak. Entrees: catfish with hush puppies, roast pork with dressing. Soup: seafood gumbo. Vegetables: broccoli, macaroni and cheese, stewed tomatoes.

Thursday

Blood drive — The third on-site JSC Blood Drive of the year will be from 8-11:30 a.m. and 1-3:30 p.m. Sept. 5 at the Gilruth Center. Appointments are required; call Mary O'Rear, x36531, Helon Crawford, x34159, or Dan Mangieri, x33003. For more information, call Crawford.

Cafeteria menu — Special: chicken fried steak. Entrees: beef tacos, barbecue ham steak, Hungarian goulash. Soup: turkey and vegetable. Vegetables: spinach, pinto beans, beets.

Sept. 6

Cafeteria menu — Special: tuna and noodle casserole. Entrees: liver and onions, deviled crabs, roast beef with dressing. Soup: seafood gumbo. Vegetables: whipped potatoes, peas, cauliflower.

Sept. 10

Hispanic Heritage Program — The JSC Hispanic Advisory Committee and the Houston/Galveston Hispanic Employment Program Manager's Council will host the second annual Hispanic Heritage Program from 8 a.m.-4 p.m. Sept. 10 at the Gilruth Center. Astronaut Franklin Chang-Díaz will show slides, Mexican consul general Ricardo Ampudia will discuss the free trade agreement with Mexico, and Edward Valenzuela will present a leadership workshop. Luncheon tickets are available for $8. For more information, call Mike Ruiz, x38169, or Denise Navarro, 488-8806.

Sept. 24

BAPCO meets — The Bay Area PC Organization will meet at 7:30 p.m., Sept. 24, at the League City Bank and Trust, 303 E. Main, League City. Contact Earl Rubenstein, x34807, or Tom Kelly, 996-5019, for information.

Sept. 26

BANN meets — The Bay Area NAFE Network will meet at 6 p.m. Sept. 26 at the South Shore Harbour Country Club in League City. Melanie Rhodeback will discuss pay equity and the undervaluing of women's jobs. For more information, call Sharon Westerman, 486-8927.

Oct. 11

Space Flight Banquet — The North Galveston County Chamber of Commerce will present its fourth annual Space Flight Banquet at 7:15 p.m. Oct. 11 at the South Shore Harbour Resort and Conference Center in League City. Astronaut Charlie Bolden will be the after-dinner speaker.

Oct. 17

NACA Reunion — The NASA Alumni League's JSC chapter will meet October 17-19, for the NACA Reunion in Galveston's San Luis Hotel. For more information contact Guy Thibodaux 333-5340.

Oct. 27

JSC Bike Club — The Lions Eye Bank of Texas and the JSC Bicycle Club are hosting the 13th Annual Texas Coastal Century at 8 a.m. Oct. 27 at the University of Houston-Clear Lake. Registration fees are $15 before Oct. 1 and $20 late/on-site registration fee. The distance will be 25 miles, 34 miles, 62 miles, and 100 miles. All proceeds will benefit the Lions Eye Bank of Texas and its Sight Restoration Programs. For more information contact Tom Moore, 798-5509, or Mike Prendergast, 480-3330.

Nov. 6

Quality, productivity conference — The eighth annual NASA/Contractors Conference and National Symposium on Quality and Productivity will convene Nov. 6-7 at the George R. Brown Convention Center. The event will address the current strategies in Total Quality Management. Code QB (FTS 453-8415) will act as a point of contact and handle the invitations.

Dec. 3

Technology 2001 — NASA will host Technology 2001, the second national technology transfer conference and exposition, Dec 3-5 in the San Jose (Calif.) Convention Center. For more information contact Joseph Pramberger at 212-490-3999.

Swap Shop

Property

Sale: Wooded lot in highly restricted golf course and lake front community, 30 mi from NASA, $2K. 996-1999.

Sale: El Dorado Trace condo, 1-1.5-CP, all appl, patio, balcony, FPL, fans, designer wallpaper and carpets, assum w/appr. Joyce, 488-1212 or 286-1177.

Lease: CLC 3-2.5, 2 story townhouse, 2 car covered parking, FPL, W/D hookup, avail 10/1, $650/mo. 283-5718 or 283-1950.

Lease: Oakbrook, 3-2-2, both formals, new appl, designer wallpaper, professional landscaped back yard. 282-2558 or 280-0649.

Sale: Baywind II condo, 1-1, FPL, W/D hookup, $29.9K. John, 333-4114 or 333-4144.

Rent: Dickinson, 3-2-2, brick, den, FPL, LR, fenced yard, $650/mo plus dep. 337-5120.

Port Au Prince, 3.2 acres, 50 yds off Bastrop Bayou. 941-1512.

Lease: CLC 2-1 condo, FPL, all appl, mini blinds, pools, storage, vaulted ceilings, A/C, W/D hookup, $450/mo. x31275 or 486-0315.

Sale: Pearland lot, Dixie Hollow subdivision, concrete street, all util. x39530 or 482-5003.

Sale/Lease: Bay Glen, 3-2.5-2, 2 story, formal LR/DR, family rm, exc cond, $115K or $1050/mo plus dep. 488-8632.

Rent: Friendswood, enclosed RV storage stall, 40 ft deep, lights/power, reasonable. 482-9396.

Sale: LC, Bayridge, 3-2-2, no MUD taxes, assum, no approval, never flooded, $60.9K. 992-3876.

Rent: Lake Livingston, waterfront house, 3-2, C A/H, fully furnished, covered decks, pier, fishing, swimming, skiing, ex cond, wknd or week rates. 482-1582.

Rent: Galveston condo, furnished, sleeps 6, cable TV, pools, wkly/wknd/daily rates. Magdi Yassa, 333-4736 or 486-0788.

Cars & Trucks

'82 AMC Concord, 4 dr, low mi, A/C, tape deck, $1K. x38609 or 334-1728.

'86 Honda Accord DX, silver, 4 dr, 5 spd, new clutch/brakes, AM/FM/cass, $4995 OBO. 326-2546.

'89 Alpha Romeo Milano V6 3.0l, loaded, 9K mi, 60km mi warr bumper to bumper, red, $13K. Marc x39421.

'80 Chrysler Cordoba, good cond, blk w/wht vinyl top, auto, A/C, rebuilt 318 V-8, good cond, $1.6K. 338-0002.

Fleet Wing 17.5 ft travel trlr, self contained, A/C, electric lift, ex cond, stove/oven, gas/elec refrig, $3.6K. 339-1152.

'89 Firebird, V6 fuel inj, auto, A/C, 18K mi, cruise, stereo tape, ex cond, $7.9K. Carrie, x38506 or 286-6758.

'77 Chevy Impala station wagon, red, AM/FM/cass, $800 OBO. 337-5976.

'89 Honda civic LX, 4 dr, auto, all power, AM/FM/cass, new tires, ex cond, $7.7K. x35814 or 992-3149.

'90 Lumina Eurosport, 3.1 l V-6, multiport fuel inj, 4 dr, auto, ex cond, $9.4K. Steve, 929-7157 or 488-6288.

'76 Toyota Corolla, new struts, shocks, alternator, radiator, brakes, etc, good cond, $700 OBO. Dave, 333-6062 or 847-3146.

'57 Chevy, 2 dr, 210 sedan, 350, 4 spd, rally wheels, good cond, $3.5K. 482-2320.

'73 Chevy Chevelle Malibu, auto, P/S, P/B, A/C, 350 V8. new tires, starter, $600 OBO. Bruce, x38095 or 286-7859.

'88 Mazda 929, loaded, sun roof, new Michelin tires, 5 spd, ex cond, $9999. 244-9843 or 532-2215.

'80 Corvette, red, T-Tops, A/C, power pkg, leather int, classic, $9K OBO. 992-3155.

'79 VW Pop top camper, rebuilt engine and brakes, $3.5K. David, 929-7120 or 332-9044.

'88 Mazda MX 6 GT, loaded, low mi, silver w/blu int, $800 and take over payment. x39166 or 326-5865.

'86 Honda Prelude SI, low mi, loaded, new tires, muffler, battery, brakes, $8K OBO. Wayne, x36617 or 488-8884.

'78 VW Sirocco, whole or parts, x30221 or 992-4043.

'78 Honda CB750K, new battery/brakes, reconditioned carburators, new Michelin tires, good cond, $700. 488-2960.

'89 GMC Surburban, loaded, ex cond, Dual A/C. 852-8622.

Cycles

'91 Suzuki Bandit, red, ex cond, 2 yr ext warr, $3.4K. 480-6713.

Full face motorcycle helmet w/flip up visor, DOT approved, ex cond, $45. Wayne, x34437 or 326-4832.

'78 Honda 550K, 4 carb, ex cond, 5.6K mi, $650. Dave, 333-6062 or 847-3146.

Schwinn 23 in sprint 10 speed, lt maroon, ex cond, $120. Bauch, x31309 or 333-3382.

'86 BMW K75, blk, 17K mi, new tires, battery, cover helmet, $2.5K OBO. Ken, x39175 or 332-5450.

Boats & Planes

Avon 10 ft inflatable dinghy, good cond, $600. Trina, 333-3318 or Robin, 333-7345.

Sailboat b100-14 w/sails and trlr, $995. Hoover, x31360 or 996-7716.

34 ft Hunter 1983 sloop, Furling jib, Bimini, A/C, VHF, depth/knot meter, stereo, ex cond, $42.9K. Dale, 334-3393.

'84 X17 Glastron Conroy, open bow, 130hp, omc I/O, full inst, ex cond, $4K. x39421 or 484-4397.

36 ft Carver aft cabin motor yacht '84, galley down, dinette up, twin 350 Crusaders, gen, Marine A/C, Bimini w/full enclosure, $79.9K. 474-7171.

'86 20 ft Bass Buggy pontoon boat w/trlr, 35hp Mercury, under 70 hrs running time, elec start, Hummingbird LCR 2000 depth recorder, two 6 gal tanks, new battery. deluxe pkg, $5.5K OBO. 282-3167 or 992-3351.

Aircraft propeller, Seneish 74DM6-0-58, overhauled, yellow tag, fits some Beech, Piper, PA-18, 22, 28 series aircraft, $900. 992-3876.

Audiovisual & Computers

Apple IIc, mono mon, ext 5.25 in drive, mouse, SW, 40 blank disks, $300; Imagewriter printer, $125; both, $400; Pioneer turntable, $50; Technics turntable, ex cond, $90. Anne, x34493 or 286-2932.

286 XT Clone w/VGA mon, 1 MEG RAM, HD 5.25 FD, HD 3.5 FD, 42 MEG HD, $950. Marc, x39421.

Commodore 64: computer, DD, modem, printer interface, SW, games, books, $300.

Stereo components, Sharp dual cass tape deck, ex cond, $49; Pioneer stereo receiver, $60. x38385.

Panasonic letter quality Daisy Wheel printer, Panasonic cut sheet feeder, Teak printer stand w/roller drwr, ex cond, $600. 474-4922.

XT Clone, loaded, color, 2 floppies, 20 MEG HD, $595. X34409 or 393-1670.

MAC PLUS, 20MB HD, 4M RAM, Imagewriter II printer, plus ext drive, SW, ex cond, complete sys, $1100. 280-8796.

Musical Instruments

Kimball piano, ex cond, $950; desk, 5 drwr, $75. Diane, 283-6632 or 486-2692.

5 piece set of Black Pearl drums w/cymbols, high hat, ex cond, $700 OBO. 941-1226.

Pets & Livestock

A.K.C. registered Labradors, assorted colors, $200-$250. 941-0908.

Free puppies, blk Lab/Chow Chow mix, female, shots. 929-7208.

Free blk Labrador. Kirk, 282-2911 or 332-5876.

A.K.C. Shelty puppies, sable and wht, $275. x34409 or 393-1670.

Household

Wurlitzer Organ, ex cond, 3 keyboards, backup rhythm sec, $500; mahogany bar, marble tops, wine rack, two stools, brass rail mirrors, $500. 532-2158.

Recliner, golden tan, $50 OBO. Robin, 333-7345.

Round solid wood breakfast table, one chair, good cond, $50. 332-1614.

Wedgewood Patrician pattern, service for 8 dinnerware, all wht embossed, $195. 486-0898.

Kenmore elec dryer; wht girls bedrm furniture, 5 pieces. 280-8449.

Wood desk, 30x60, good cond, $150. 488-4576.

42' square DR set w/6 chairs, $450; 6 ft stereo cabinet w/radio, turntable, $25. Jodee, 282-4244.

Sears Kenmore washer and gas dryer, blk computerized; Sears Kenmore refrig, w/ice maker, dbl drs. x37796 or 326-1899.

O'Keefe and Merritt under counter dishwasher, good cond, $50. Robert, 283-4135.

Bunkie mattress, ex cond, $20; cushion chair/bed, $5; ATT answer machine, $30; 50 computer bks, some free; trade king mattress for queen, 337-3406.

Antique console, $75; Roger's silver tea set w/tray, $250; Kenmore sewing machine, $100. x35896 or 488-7982.

Peach and beige camelback sofa and loveseat, designed w/heirloom damask overlay, good cond, Scotchguard protected, $150/ea. Lisa, 282-5255.

Antique English oak 4 drwr dresser w/beveled glass mirror, frame hand carved, circa 1900, ex cond, $1K. 532-1673.

Antique oil paintings, oriental rug, $395; vases, lamps, etc; Sears sm load washer, was $450, now $250. 339-1152.

Two, Bald Furniture, unfinished solid oak end tables, 22'x22'x22.5, $70/ea. Karen, x31059 or 538-1313.

Early American brown pattern couch and loveseat, $125; brown recliner/rocker, $30. x34172.

Dbl bed w/brass hdbd; glass etagere; lamps; cap chairs; bar stools; vacuum cleaner; antique table w/chairs; old furniture. Rob, x31477.

Traditional 3 piece sofa, loveseat, chair, royal blue velvet; dinette table w/6 chairs, all for $450. 332-1305.

Formal 8 pc DR set, heavy carved pecan, table w/2 arm and 4 side chairs, buffet, red velveteen trim, $795. 480-5673 or 554-2911.

Queen sleeper sofa, blk w/threads of mauve and seafom green, ex cond, $300. Shawn, x38340 or 472-7526.

Big Sur king waterbed, ex cond, ext firm mattress, 12 storage drwrs, hutch and mirror, packing boxes avail, $250 OBO. 992-3155.

Contemporary sofa w/matching chair, beige, brn, wht, $175. Terry, 283-6646 or 554-6631.

King sz waterbed frame, $50. 488-2258.

Lg French Provincial dresser w/mirror and two nightstands, antique wht and gold, finish slightly discolored, good cond, $150. 333-3640.

Photographic

Olympus auto zoom lens, 35-105 mm, F stop 3.5 to 4.5, ex cond, $250; Vivitar Zoom Thyristor flash 3500, ex cond, $800. 282-2894 or 486-2048.

Wanted

Local dog club seeks members, owners of all breeds and mixes welcome. 332-1847.

Want to buy foam mattress at least 4" thick; nonsmoking roommate for 3-2-2 in Heritage Park, $325 plus half util, avail 9/1/91. Paul, x30272 or 482-7736.

Want window A/C, no more than $75. 339-1337.

Want van pool riders from Sugar Land, Westwood Mall, Fondren, and Loop 610 park & ride to JSC. Alice, x35234.

Want roommate for 3-2-2 house, fully furnished, close to JSC, $250/mo plus 1/3 util. Jay, x35814 or 992-3149.

Want monkey grass from your garden, no work required by you, I will thin or remove it altogether. Karen, 283-5658.

Want mountain or fitness bicycle in good cond; east or central Texas deer lease, day or season, reasonably priced. Mitch, 282-5290 or 488-4879.

Want deer hunters for season lease, Dripping Springs area, $225 per gun. Dean, x35318 or 488-7032.

Want nonsmoking roommate for CL home, $300 plus 1/3 util. James or Lisa, 488-2258.

Want Cox plastic flying model airplanes, control line type, prefer w/engine and unbroken. Walt, x35939.

Want Yamaha Wave Runner dead or alive. Don, x38039 or 333-1751.

Want scuba gear for small lady, suit, BC, regulator, flippers, etc; also want underwater camera, 100ft or greater, must be reasonably priced. 280-8796.

Miscellaneous

Smith Corona elec typewriter, ex cond, $50; interior 6 panel drs, painted wht, no hardware, ex cond, 32" wide RH, $40, 24" wide LH, RH, $35/ea. Anne, x34493 or 286-2932.

Snapper self propelled lawnmower, rear bag, eng needs work, $50. 488-4069.

Wht bridal gown, sz 12, w/all accessories, ex cond, $900 OBO. Therese, 482-8621.

Lakewood ladder bars, $50; M&H drag master 14" slicks on Crayer S/S rims, $175, chrome traction bars. 464-8694.

Futaba 4 channel R/C transmitter and receiver, $100; Vetter motorcyclist rainsuit, $45; 10 gal fish tank w/hood light, htr, pump, and gravel, $30 OBO. x35896 or 488-7982.

GE sm portable refrig, ex cond, $70; Sears 24" red, 10 speed bicycle, $30; S/S Mercury O/B propeller, $150. Gene, 488-8678.

Lawnmower/lawntractor, riding 10hp needs repair, $400 OBO. R. Hoover, x31360 or 996-7716.

Used washer and dryer, good cond, $150 OBO. 337-3122.

80 new alum windows, asstd szs; wood mouldings; 5030 garden windows, $95; Xerox 3701 copier, $200 OBO. Don, x38039 or 333-1751.

Astronomy bks and magazines, 10 to 20% off cover price. Paul, x31883.

Antenna electronics for Toyota Celica, fits '86 to '90 models, good cond. 929-7208.

Novatal cellular car phone, 3W R.F. power w/speaker and microphone, $100. Bauch, x31309 or 333-3382.

Matching golden oak office desk 62x29x28 w/computer side table 42x18x25, and credenza 70x18x28, track on 1 drwr slightly damaged, heavy, $150. John, x30996 or 528-2303.

Three boat trlr wheels, for tire size 4.80-12 inch, ex cond, $30. 481-8885.

Wine racks, metal, each holds 12 cases, $20/ea. 996-1999.

Raleigh 10 spd bike, $125; compound bow 40/80 lbs, $125; martial arts sparring gear, $75; O'Brian windsurfing sail, 7.0 m^2, BO. John, x35514 or 474-9464.

75 gal salt water aquarium, complete set up, Eiheim filter, htr, coral, stand, $550. x39552 or 480-4990.

Four 155x70R13 tires, used, good tread, $20. Walt, x35939.

Text books for UH central ELEE 6370/5440 Adv digital design, ex cond; SW, educational, Word Scramble, Play and Learn, age 7 to 11, word customizing, w/manual, $25. Youm, 283-4813.

SPACE SHUTTLE MANIFEST

'91 Mission:	48	44
Date:	September	December
Orbiter:	*Discovery*	*Atlantis*
Payload:	UARS APM-03	DSP, IOCM
Inclination:	57°	28.5°
Altitude:	292	195
Duration:	5	10
Crew CDR:	John O. Creighton	Frederick D. Gregory
PLT:	Kenneth S. Reightler Jr.	Terence T. Henricks
MS:	Mark N. Brown	F. Story Musgrave
	James F. Buchli	Mario Runco Jr.
	Charles D. "Sam" Gemar	James S. Voss
PS:		Thomas J. Hennen

'92 Mission:	42	45	49	50	46	47	52	53
Date:	February	May	May	June	September	September	November	December
Orbiter:	*Discovery*	*Atlantis*	*Endeavour*	*Columbia*	*Atlantis*	*Endeavour*	*Columbia*	*Discovery*
Payload:	IML-01 IMAX-05 GAS BRIDGE	ATLAS-01 SSBUV-A-01	INTELSAT-VI-R ASEM	USML-01	TSS-01, EURECA-1L IMAX-06 EOIM-III/TEMP2A-03 CONCAP2-01 CONCAP3-01 LDCE-01	SL-J GAS BRIDGE	LAGEOS II USMP-01, CANEX-02 ASP	DOD
Inclination:	57°	57°	28.5°	28.5°	28.5°	57°	28.5°	57°
Altitude:	163	160	183	160	230	160	160	200
Duration:	7	8	7	13*	7	7	9	4
Crew CDR:	Ronald J. Grabe	Charles F. Bolden	Daniel C. Brandenstein	Richard N. Richards	Loren J. Shriver	Robert L. Gibson	James D. Whetherbee	David M. Walker
PLT:	Stephen S. Oswald	Brian Duffy	Kevin P. Chilton	Kenneth D. Bowersox	Andrew M. Allen	Curtis L. Brown Jr.	Michael A. Baker	Robert D. Cabana
MS:	PLC Norman E. Thagard	PLC Kathryn D. Sullivan	Thomas D. Akers	PLC Bonnie J. Dunbar	PLC Jeffrey A. Hoffman	PLC Mark C. Lee	William M. Shepherd	Guion S. Bluford
	David C. Hilmers	C. Michael Foale	Richard J. Hieb	Carl J. Meade	Franklin R. Chang-Diaz	N. Jan Davis	Tamara E. Jernigan	James S. Voss
	William F. Readdy	David C. Leestma	Bruce E. Melnick Kathryn C. Thornton	Ellen S. Baker	Claude Nicollier Marsha S. Ivins	Jerome Apt Mae C. Jemison	Charles Lacy Veach	Michael R.U. Clifford
PS:	Roberta L. Bondar Ulf D. Merbold	Michael L. Lampton Byron K. Lichtenburg	Pierre J. Thuot	Lawrence J. Delucas Eugene H. Trinh	TBD (Italy)	Mamoru Mohri		

'93 Mission:	54	55	51	56	57	58	59	60	61
Date:	January	March	April	May	July	July	August	October	December
Orbiter:	*Endeavour*	*Columbia*	*Discovery*	*Endeavour*	*Atlantis*	*Columbia*	*Discovery*	*Endeavour*	*Atlantis*
Payload:	TDRS-06 DXS	SL-D2	ACTS ORFEUS-SPAS	ATLAS-02 SPTN-201-01 SSBUV-A-02	EURECA-1R SPACEHAB-01 GAS BRIDGE SHOOT	SLS-02	FLT OPPTY	SRL-01	WSF-01 SPACEHAB-02 GAS BRIDGE CAPL-01, OAET-01
Inclination:	28.5°	28.5°	28.5°	57°	28.5°	28.5°	TBD	57°	28.5°
Altitude:	160	160	160	160	160	160	TBD	130	160
Duration:	6	9	8	9	8	13*	TBD	9	7
Crew CDR:	John H. Casper	TBD	5	5	6	7	TBD	6	6
PLT:	Donald R. McMonagle	TBD						TBD	
MS:	Gregory J. Harbaugh	PLC Jerry L. Ross						PLC Linda M. Godwin	
	Mario Runco Jr.	Bernard A. Harris Jr.						TBD	
	Susan J. Helms	TBD						TBD	
PS:		TBD TBD						TBD	

'94 Mission:	62	63	64	65	66	67	68	69
Date:	January	February	April	May	May	June	August	September
Orbiter:	*Columbia*	*Discovery*	*Endeavour*	*Atlantis*	*Columbia*	*Discovery*	*Atlantis*	*Columbia*
Payload:	USMP-02, SPTN-204 FTS-DTF-01 CMSE-01	HST REV-01	CRISTA-SPAS ATLAS-03 SSBUV-A-03	LITE I SPAS-III DEE	IML-02	SPACEHAB-03 SPTN-201-02 DSCT, IEH-01 ROMPS-01	FLT OPPTY	ASTRO-02 OAET-FLYER
Inclination:	28.5°	28.5°	57°	28.5°	28.5°	28.5°	TBD	28.5°
Altitude:	160	330	160	160	160	160	TBD	190
Duration:	9	8	9	7	13*	7	TBD	9
Crew:	5	7	7	5	7	6	TBD	7

Fiscal Year '95

1st QTR	2nd QTR	3rd QTR	4th QTR
SFU-RETR TPITS CAPL-02 SRL-02	SPACEHAB-04 WSF-02 ISEM-01 CMSE-02 PL OPPTY	USMP-03. EP, PL OPPTY SPACEHAB-05, EURECA-2L, SPTN-201-03, FLOATZONE-01, IEH-02 USML-02	SL-D3 LITE II-01, SSBUV-A-04 ISEM-02, CMSE-03 SPACEHAB-06, WSF-03 EURECA-2R, CXM-04

Fiscal Year '96

1st QTR	2nd QTR	3rd QTR	4th QTR
ATLAS-04, WISP SSBUV-A-05	SSF/MB-01 (FEL) SLS-03 SSF/MB-02	XTE, EUVE RETR FROZEPIPE, MICROWAVE-01 SSF/MB-03 SPACEHAB-07, WSF-04 CXM-03, IEH-03	SRL-03 SSF/MB-04 USMP-04, OAET-02 PL OPPTY

Glossary

AAFE	Aeroassist Flight Experiment
ACTS	Advanced Communications Technology Satellite
APM	Ascent Particle Monitor
ASEM	Assembly of Station by EVA Methods
ASP	Attitude Sensor Package
ATLAS	Atmospheric Laboratory for Applications and Science
CANEX	Canadian Experiment
CAPL	Capillari Pump Loop Experiment
CMSE	Candidate Materials Space Exposure
CONCAP	Consortium for Materials Development in Space
CONE	Cryogenic Orbital Nitrogen Experiment
CRISTA	Cryogenic Infrared Spectrometer Telescope for Atmosphere
CXM	Commercial Cross-Bay for Materials Science Laboratory
DCWS	Debris Collision Warning System
DEE	Dexterous End Effector
DOD	Department of Defense
DSCT	Directional Solidification of Cadmium Telluride
DSP	Defense Support Program
DXS	Diffuse X-Ray Spectrometer
EOIM	Evaluation of Oxygen Interaction with Materials
EP	Electric Propulsion
EURECA	European Retrievable Carrier
EUVE	Extreme Ultraviolet Explorer
FLOATZONE	Office of Commercial Programs Experiment
FROZEPIPE	Office of Commercial Programs Experiment
FTS-DT	Flight Telerobotic Servicer Demonstration Test Flight
GAS	Getaway Special
HST	Hubble Space Telescope
IEH	International Extreme-UV Far-UV Hitchhiker
IMAX	Large format motion picture camera
IML	International Microgravity Laboratory
INTELSTAT	International Telecommunications Satellite Organization
IOCM	Interim Operational Contamination Monitor
ISEM	ITA Standardized Experiment
LAGEOS	Laser Geodynamics Satellite
LDCE	Limited Duration Candidate Exposure
LITE	Lidar In-Space Technology Experiment
MICROWAVE	Office of Commercial Programs Experiment
OAET	Office of Aeronautics, Exploration and Technology
ORFEUS	Orbiting and Retrievable Far and Extreme Ultraviolet Spectrometer
ROMPS	Robotic Materials Processing System
SFU	Space Flyer Unit
SL	Spacelab
SHOOT	Super Fluid Helium On Orbit
SLS	Spacelab Life Sciences
SPACEHAB	Commercial middeck augmentation module
SPTN	Shuttle Pointed Autonomous Research Tool for Astronomy
SRL	Space Radar Laboratory
SSBUV	Shuttle Solar Backscatter Ultraviolet Instrument
SSF/MB	Space Station *Freedom* Manned Base
TDRS	Tracking Data Relay Satellite
TPITS	Two Phase Integrated Thermal System
TSS	Tethered Satellite System
UARS	Upper Atmosphere Research Satellite
USML	U.S. Microgravity Laboratory
USMP	United States Microgravity Payload
WISP	Waves in Space Plasma
WSF	Wake Shield Facility
XTE	X-Ray Timing Explorer

*Dependent on prior long duration flight experience.

Computer graphics library earns hefty award

What started out as one JSC engineer's need for graphic support to a structural analysis computer program has helped avoid costs of $4 million at six NASA centers, and earned Joseph Rogers a hefty NASA Suggestion Award.

The award, presented by JSC Director Aaron Cohen on Aug. 19, put $6,750 into Rogers' pocket and earned $2,250 for Robert T. Anderson, who helped Rogers make the final adjustments.

Rogers, who performed spacecraft structural analysis for 20 years before moving to the Information Systems Directorate, was honored for developing what he calls NASA's Device Independent Graphics library. NASADIG is a library of FORTRAN graphics subroutines that programmers can call upon as they write their applications software. It works on virtually any computer system and provides a simple interface with new output devices ranging from computer screens to laser printers.

Developed as a sideline to Rogers' engineering work, NASADIG now is in use on both the Cray and Amdahl computers in JSC's high-speed Engineering Computation Facility. It replaces costly commercial software that would have cost the center $500,000 more to purchase, and its use is spreading throughout NASA and the world through COSMIC, NASA's software licensing agent.

"What I didn't know was that there were quite a few other people who needed that code," Rogers said.

Fifteen other JSC employees also were honored at last week's Tech Brief, Patent Application and Suggestion Awards ceremony.

Tech Brief Awards went to:

George A. Salazar, Reconfigurable Fuzzy Cell; Christopher J. Culbert, Gary D. Riley and Robert T. Savely, C Language Integrated Production System — ADA Version; Michelle A. Rucker, Multi-Use Sheet Material Restraint; Thomas A. Sullivan, Use of Cast Basalt Blocks for Thermal Energy Storage to Enable the Use of Heat Engines for Night Time Power on the Moon; Herbert D. Yeates and S. Douglas Holland, High Resolution Handheld Digital Electronic Still Camera; and Herbert D. Yeates and Myron L. Curtner II, Electronic Circuit for Detecting Cloud to Ground and Inter Cloud Lightning from Space with Background Signal Eliminator.

Patent Application Awards went to:

David A. Wolf, Horizontally Rotated Cell Culture System; Erik E. Evenson and Clarence J. Wesselski, Collet/ Flex Drive Robotic Joint; Jay M. Wright, Nut Quick On and Off from Either Side with Positive Engagement and Full Engagement Indication; Kent D. Castle, Blood Sensing and Radiation Ports; Richard L. Sauer, Regenerable Biocide Delivery Unit; S. Douglas Holland and Herbert D. Yeates, High Resolution Handheld Digitial Electronic Camera.

Joe Rogers

JSC Photo by Bob Walck

EXCITING EVA — STS-37 crew members Jerry Ross, kneeling left, and Jay Apt, accept the patches they wore on their extravehicular mobility units during the historic space walk to free the high-gain antenna on the Gamma Ray Observatory. Employees from the NASA-industry team that prepared the space suits presented the patches in a Monday ceremony at Boeing. Joe McMann, manager of JSC's Government-Furnished Equipment Office, and Glenn Lutz, EMU subsystem manager were joined at the ceremony by workers from Boeing Aerospace Operstions, ILC Space Systems, Hamilton Standard Management Services and Lockheed Engineering Sciences Co.

Temporary access cards phased out

New badges may spell the end of classified operations at JSC, but the protection of NASA's one-of-a-kind facilities and resources still remains a concern.

As a result, access to areas such as the Mission Control Center and the shuttle simulators will continue to require clearance.

JSC has eight buildings that are designated as NASA Resource Protection facilities — Bldgs. 5, 9, 16, 24, 30, 35, 39 and 48. Within several of those buildings there are Controlled Access Areas — formerly Personnel Control Zones.

All JSC and contractor employees who require unescorted access to NRP facilities and/or CAAs must have a favorable national agency check on file in the JSC Security Division.

Currently, employees who do not have completed national agency checks have temporary cards to CAAs. Temporary cards will remain in effect until Sept. 15 after which they will require an escort pending completion of a favorable security check.

The NAC requirement is satisfied if an employee's most recent background check was completed within the past five years. Civil service employees who do not meet this requirement and need access should contact Bob Nooney at x34019; contractors should contact their security officer or project manager.

Processing of the check usually takes two to three weeks after the paperwork is received.

JSC Clinic offers free flu vaccinations

The JSC Clinic will be offering free flu shots again this year in an effort to protect employees.

The influenza vaccine will be available daily beginning Sept. 16 between 10 a.m.-noon and 2-3:30 p.m. at the JSC Clinic in Bldg. 8.

Everyone requesting the vaccine will be asked to sign an informed consent form, and given the chance to ask questions. Adults will require only one dose.

The Center for Disease Control Immunization Practices Advisory Committee advocates vaccinations to high-risk groups such as those with heart disease, chronic broncho-pulmonary diseases such as asthma, chronic bronchitis and emphysema, diabetes mellitus and other chronic disorders.

Shots also are recommended for healthy people who want to reduce their chances of catching the flu.

Trio gets faculty fellowships

JSC Director Aaron Cohen recently presented grants to three Summer Faculty Fellowship Program participants. Each $15,000 grant continues work begun this summer.

"Of the 27 SFF participants, we received 21 proposals," said Stan Goldstein, director of university programs. "All were of very high quality and all described research of interest to the center. The panel, Drs. Kumar Krishen, Robert Ried and John Rummel, did not have an easy job."

Grant recipients include Dr. Leslie O. Schulze of the University of Wisconsin-Milwaukee, who worked with Dr. Helen Lane of the Biomedical Operations and Research Branch. Schulze's grant was for "The Influence of Isotope Enrichments in Shuttle Water on Measurements of Astronaut Energy Expenditure by the Doubly-Labeled Water Method: A Mathematical Model."

Dr. Elvis E. Deal of the University of Houston received a grant for "The Taguchi Optimization of Design Parameters for a Shuttle-to-Space Station Automated Approach Control System." Deal began his research in the Navigation and Guidance Systems Branch with William Jackson.

Dr. Christopher T. Skowlund of New Mexico State University is the first SFF participant from White Sands Test Facility to win a grant. Skowlund is studying "Modeling of the Frictional Heating of Metals in Gaseous Oxygen." Skowlund worked with Dr. Harold Beeson of the WSTF Laboratories Branch.

Crew assignments extend through 1993

(Continued from Page 1)

will be Air Force Lt. Col. Mark C. Lee, payload commander; N. Jan Davis, Ph.D.; Jerome Apt, Ph.D.; and Mae C. Jemison, M.D. NASDA's Mamoru Mohri, Ph.D., will be the payload specialist.

- STS-52 — Navy Cdr. James D. Wetherbee will command the LAGEOS mission, scheduled for launch in November 1992. LAGEOS II is a spherical satellite covered with retroflectors that will be illuminated by ground-based lasers to determine precise measurements of the Earth's crustal movements.

The pilot will be Navy Cdr. Michael A. Baker. Mission specialists will be Navy Capt. William M. Shepherd, Tamara E. Jernigan, Ph.D., and Charles Lacy Veach.

- STS-53 — Navy Cdr. David M. Walker will be in charge of the Department of Defense-1 mission scheduled for December 1992. The pilot will be Marine Lt. Col. Robert D. Cabana. Mission specialists will be Air Force Col. Guion S. Bluford, Army Lt. Col. James S. Voss and Army Maj. Michael R.U. Clifford.
- STS-54 — Air Force Col. John H. Casper will command the mission to deploy Tracking and Data Relay Satellite-F, scheduled for January 1993. The pilot will be Air Force Lt. Col. Donald R. McMonagle. Mission specialists will be Gregory J. Harbaugh, Navy Lt. Cdr. Mario Runco Jr. and Air Force Capt. Susan J. Helms.
- STS-55 — Air Force Lt. Col. Jerry L. Ross has been appointed payload commander of the Spacelab-D2 mission in March 1993. The second German Spacelab mission will focus on microgravity research, technology preparation for space station, robotics, galactic photography and Earth observations. Bernard A. Harris Jr., M.D., will be one of the mission specialists. The remainder of the crew, including two German Space Agency payload specialists, will be named later.
- STS-60 — Linda M. Godwin, Ph.D., has been appointed payload commander of the Space Radar Laboratory mission, scheduled for October 1993. The payload will acquire radar images of the Earth's surface to be used for making maps, interpreting geological features and studying resources. The remainder of the crew will be appointed later.

Manned Flight Awareness honors 15

The Manned Flight Awareness Program recently honored 15 JSC employees with an all-expense-paid trip to Kennedy Space Center, where they joined 200 honorees from across the country.

The launch of STS-43, which was to have been the highlight of the trip, was postponed. But MFA honorees were treated to a tour of KSC that included the Vehicle Assembly Bldg. and a look at *Endeavour*, the parachute assembly facility and a close-up look at launch pad with Atlantis poised for flight.

Associate Administrator for Space Flight William Lenoir, Space Shuttle Director Robert Crippen and KSC Director Forrest McCartner addressed the group at a reception.

Astronaut David Wolf presented certificates to Thomas F. Gallagher and Kenneth W. Lassman, Administration; Martin A. Lewis, Flight Crew Operations; Louis A. DeLuca and James W. Medford, Mission Operations; Marian N. Gordner and Larry M. Walter, Engineering; Lindy S. Fortenberry, Space Shuttle Engineering Integration; Keith E. Henderson, New Initiatives; Earlene G. Little, Center Operations; Clarence L. Ross Jr., Safety, Reliability and Quality Assurance; Lee Snapp, Information Systems; Irwin D. Smith, White Sands Test Facility; and Ronald Woods, Orbiter and GFE Projects.

MFA recognizes outstanding achievement in support of NASA's manned space flight efforts. The next MFA honoree event is scheduled to coincide with the STS-44 launch in December.

Slade commentary

Somebody has to say go, but who'll be the one?

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showing up only today in projects like the Hubble Space Telescope.

More importantly, though, the space agency was getting no direction. No political leader had the interest or the courage to say "this is what we ought to do with the things we have learned," and, as a result, NASA drifted into one enterprise after another, trying to do all there was to do at once. Some great things happened, like Voyager's journey to Neptune by way of the other planets. Some terrible things happened, too, like *Challenger*.

And I don't think things are much better now, although there has been one commission after another making a study of what the U.S. should be doing in space in the next 50 years.

Usually, they say the same thing: go back to the Moon and on to Mars. And so far, there has been a lot of political talk about it. But if you look closely, what you still see is drift.

You want to go to space? The people here can do it. Somebody has to say go, but nobody wants to be the one.

When those people visit this place in the future, I wonder if that's what they'll remember.

Space News Roundup

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during its first year of operation.

The construction phase will employ about 500 individuals and the new facility will employ about 200 full-time workers.

The center will offer tourists hands-on attractions, such as computer-simulated shuttle flights, simulations of weightlessness and moon rock displays. It also will feature two theaters, one with a screen more than five stories tall to tell the story of astronaut training.