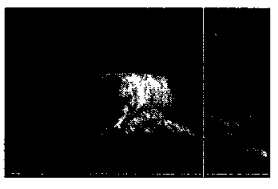
NASA
National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, Texas



Bad publicity

NASA Associate Administrator Lennard Fisk discusses the need for a national concensus on the space program. Story on Page 3.

Eagle Award

JSC Comptroller Wayne Draper earns the National Management Association's esteemed Eagle Award. Story on Page 4.

Space News Roundup

Vol. 30 | November 8, 1991 | No. 44

Grumman, Thiokol win coveted Low Trophy

Grumman Technical Services Division and Thiokol Corp. Space Operations are this year's winners of the George M. Low Trophy, NASA's quality and excellence award.

NASA Administrator Richard H. Truly announced the selection Wednesday night at the Eighth Annual NASA/Contractors Conference and Symposium on Quality and Productivity, hosted by JSC at the George R. Brown Convention Center in downtown Houston.

"The George M. Low Trophy recognizes the best of the best of contractors who work on the space program, " Truly said. "The management and employees of Grumman and Thiokol deserve this recognition. These firms have shown exceptional performance. Their achievements serve as examples which others can pattern themselves after."

Grumman, Titusville, Fla., provides hardware and support services to the integrated launch team at Kennedy Space Center.

Thiokol, Brigham City, Utah, provides the redesigned solid rocket motor propulsion system that produces 80 percent of the thrust necessary for space shuttle liftoff. In addition, Thiokol provides engineering services for sounding rocket design for Goddard Space Flight Center.

The Low Trophy recognizes NASA's prime contractors, subcontractors and suppliers for outstanding achievements in quality and productivity improvement and total quality management. Key goals of the award are to internalize quality and productivity practices and TQM processes throughout NASA and the agency's contractors and to transfer performance improvement methods of the award recipients to others.

The other finalists for the 1991 award were: Unisys Space Systems Division and Computer Sciences Corp.'s Applied Technology Division, both of Houston; EG&G Florida Inc., Kennedy Space Center, Fla.; Honeywell's Space and Strategic Systems Operation, Clearwater, Fla.; Cray Research Inc.'s Manufacturing Division, Chippewa Falls, Wis.; and TRW Space and Technology Group, Redondo Beach, Calif.

Award criteria, developed by NASA in conjunction with the American Society for Quality Control, Milwaukee, were used to judge nominees on performance achievements and improvements in customer satisfaction, quality and productivity levels. Emphasis was placed on management commitment, goals and measures, communications, health and safety, workforce training, award recognition and subcontractor involvement.

Crippen gets McCartney's spot at KSC

Robert L. Crippen will become the new director of Kennedy Space Center, effective Jan. 1, replacing Forrest S. McCartney, the retired Air Force lieutenant general who has been in charge there since 1986.

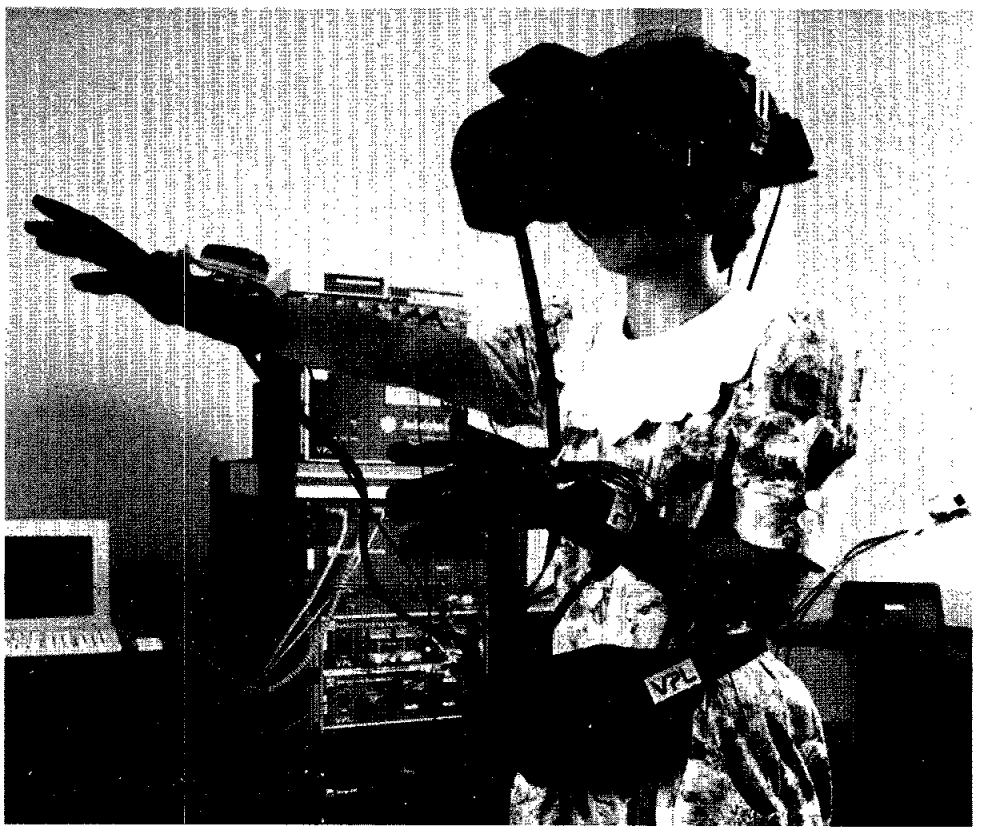
McCartney will continue to lead KSC during the transition period, NASA Administrator Richard H. Truly said late last week.

"With three years of safe shuttle flights behind us, the Kennedy Space Center and the shuttle program are moving into an era of new challenges which will involve not only our continued commitment to safety, but also significant efforts to increase efficiencies and reduce operating costs," Truly said.

"Bob Crippen has been a key leader over the years, and he will take the helm at Kennedy during the exciting years of continued shuttle flights, leading to Space Station *Freedom* launch operations in the mid-1990s. Not only does Bob bring the personal experience of four space flights to the table, but his proven record of leadership in critical management assignments at both the Johnson and Kennedy centers, as well as his current job as shuttle program director at NASA Headquarters, make him uniquely qualified at this critical time."

Truly praised McCartney's performance as KSC director.

"Since that first return flight in September 1988, the Kennedy team has launched 18 safe and successful flights in three years, with another on the pad," Truly said. "This is a remarkable record, achieved during the most challenging time in NASA's history, and the strength of Forrest's leadership in preparing the launch teams for the shuttle's return to flight paved the way."



JSC Photo by Bob Walck

Bebe Ly of the Information Systems Directorate's Software Technology Branch gives virtual reality a try. The stereo video goggles and headphones allow her to see and hear in a computer-generated world and the gloves allow her to move around and grasp objects. Ly is a member of the team that developed CLIPS (C Language Integrated Production System) that has been instrumental in developing several of the systems that will be demonstrated at next week's Software Technology Expo.

Interface with the future

By Kelly Humphries

How would you like see what your kitchen would look like completely rearranged without having to move heavy furniture? How would you like to have all the information pertinent to your job — text, photographs, video and audio — easily available on one computerized database? How would you like to have full-document access to research materials throughout NASA?

All of these may be possible sooner than you think, and you can see them in action at JSC next week.

The Information Systems Directorate's Software Technology Branch will host an exposition from 10 a.m. to 4 p.m. next Friday in Bldg. 12, Rms. 166, 170 and 258 to show off systems that are being tested in its software laboratories.

Included in the expo will be demonstrations of virtual reality, called "the computer interface of the future," in which users strap on video goggles, headphones and gloves and

Please see **EXPO**, Page 4

Managers meet to mark target for next launch

By James Hartsfield

As final pre-flight tests were completed on *Atlantis*, shuttle managers met Thursday to review preparations for STS-44 and set an official launch date.

The processing flow has been in a position to support a Nov. 19 launch for the past several months.

With *Atlantis* on Launch Pad 39A, shuttle managers gathered at KSC Thursday to begin the flight readiness review for STS-44, a final status check of vehicle, control team, payload team and flight crew preparations for the mission. If a Nov. 19 launch is scheduled, *Atlantis* would aim for a 5:51 p.m. CST liftoff at the beginning of a two and a half-hour launch window.

Based on a Nov. 19 launch, the crew — Commander Fred Gregory, Pilot Tom Henricks, Mission Specialists Story Musgrave, Jim Voss and Mario Runco Jr. and Payload Specialist Tom Hennen — would leave JSC for Florida at 4 p.m. Nov. 16.

At the pad this week, technicians completed flight readiness tests of the spacecraft's three main engines. The tests check all electrical systems, valves, sensors and computer control systems on the engines.

Also, a final test was performed on the Defense Support Program satellite, *Atlantis'* primary payload for STS-44, checking all systems and experiments. Installation of the DSP satellite into *Atlantis'* cargo bay was completed early Monday.

Two space suits were loaded into *Atlantis'* airlock as well to be used if a problem occurs during the flight that makes a spacewalk necessary.

Elsewhere at KSC, work continues to ready *Discovery* for a January 1992 launch on STS-42, carrying the International Microgravity Laboratory-1. *Discovery*, now in the No. 3 processing hangar, has had a tunnel installed on the exterior airlock hatch that will connect with the pressurized IML-1 module. The module is scheduled to be moved to the processing hangar for installation in the cargo bay on Nov. 17.

In the Vehicle Assembly Bldg., the external fuel tank for STS-42 is being mated with the twin solid rockets to await *Discovery's* arrival.

Metro resumes service to JSC

Buses make 16 runs a day with six JSC stops

By Pam Alloway

Metro bus service is on the move at JSC.

In an effort to better serve the JSC community, Metro officials have designed a route that will enable JSC workers to catch a Metro bus at six stops on site.

Currently, Metro buses originate in the downtown Houston area and travel to the Park and Ride on Bay Area Blvd. This service now has been extended to JSC.

Metro officials said between 90 and 100 passengers per day, excluding weekends, make the trip from downtown to the Bay Area Park and Ride. It is not known how many passengers actually continue on to JSC.

"We are very excited to be able to extend the service from Park and Ride to JSC," said Janet Redeker, Metro's manager of sales development.

Metro and JSC officials conducted a survey of JSC on Oct. 18 to determine if the proposed plan was feasible. The results were favorable and the new bus runs began Nov. 4.

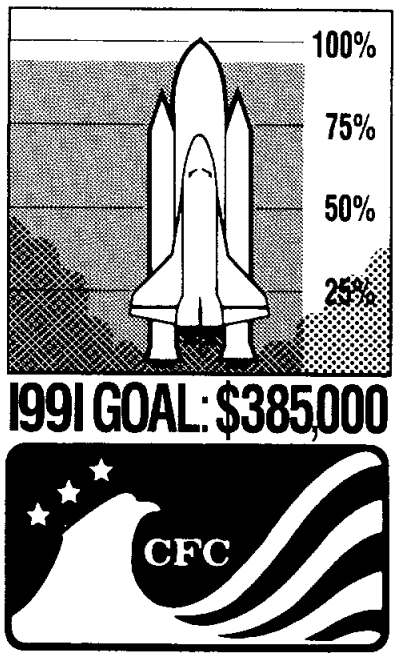
"This is just one of the ways we can help employees," said Joe Olivarez Jr., a JSC security specialist who helped coordinate the bus route on site. "This came about because of Metro's survey that indicated people wanted this service and we just helped make it happen."

The first bus run of the day that travels to JSC begins at 6:55 a.m. It's about 6.5 miles round trip from the Bay Area Park and Ride to JSC's six stops and back. The bus begins at El Camino and Gemini, travels north on Gemini, west on Saturn, north on Bay Area, east on Space Center Blvd. into NASA Avenue B, south on Fifth St., west on Avenue D, north on Second Street, west on Avenue E into Saturn, south on Gemini to El Camino and Gemini.

The buses will make about 16 runs a day through JSC with the last run of the day at 5:19 p.m. Metro signs already have been installed at the stop points on site, officials said.

The JSC stops include: Bldg. 419 in the M-2 parking lot; Bldg. 49 (north); Bldg. 37 on the corner of Avenue B and Fifth St.; Fifth St. and

Please see **BUS**, Page 4



Roundup details holiday deadlines

Because of the Thanksgiving, Christmas and New Years Day holidays, Space News Roundup will not be published Nov. 29 or Dec. 27. Some deadlines will be affected.

Around Thanksgiving, the deadline for Swap Shop ads to be published in the Nov. 22 Roundup will be 5 p.m. Wednesday, Nov. 13. The deadline for Dec. 6 Swap Shop ads will be 5 p.m. Wednesday, Nov. 27.

Around Christmas, the deadline for the Dec. 20 Swap Shop will be 5 p.m. Wednesday, Dec. 11, and the deadline for Jan. 3 Swap Shop ads will be 5 p.m. Tuesday, Dec. 24.

The deadline for receipt of information to be published in the Dec. 6 Dates and Data calendar will be 5 p.m. Friday, Nov. 22.

Please see **HOLIDAY**, 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.

Texas Renaissance Festival (9 a.m.-6 p.m. weekends Oct. 5-Nov. 17, Plantersville): child (5-12), $5.55; adult, $9.25.

NASA Night at Delta Downs (Nov. 16-17). Day trip (3:30 p.m.-2:30 a.m., includes transportation and admission to clubhouse): $15. Overnight trip (12:30 p.m.-12:30 p.m., includes transportation, reception at Beaumont Hilton, accommodations, admission, brunch): $50.

Entertainment '92 (coupon book): $26 for FBA members' first book; $27 for all others.

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. Dec. 14 and Jan. 11. Cost is $19.

Aerobic dance — High/low-impact classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is $32.

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

Weight safety — Required course for employees wishing to use the Gilruth weight room. The next class will be from 8-9:30 p.m. Nov. 21. Cost is $5; preregistration required.

Aikido — Martial arts class meets Tuesdays 6:30-7:30 p.m and Fridays 5:15-6:15 p.m. Cost is $35 per month.

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

JSC

Technical Library News

The following selections are now available in JSC's Technical Library, Bldg. 45, Rm. 100.

Guide to Reference and Standard Atmosphere Models: American National Standard. The Institute, 1990. QC879 .G84 1990.

Present State of Knowledge of the Upper Atmosphere 1990: An Assessment Report to Congress. NASA, 1990. QC879.7 .P73 1990.

The Search for Life's Origins: Progress and Future Directions in Planetary Biology and Chemical Evolution. National Academy Press, 1990. QH325 .S42 1990.

JSC

Dates & Data

Today

JAS meets — The JSC Astronomical Society will meet at 7:30 p.m. Nov. 8 at the Lunar and Planetary Institute to hear trip reports and a video of the July solar eclipse viewing in Mexico. An observing session will follow the meeting. For more information, call Eleta Malewitz, 488-1959.

AIAA meets — The American Institute of Aeronautics and Astronautics International Activities Committee will meet at 11 a.m. Nov. 8 in Lockheed Plaza 4. Zhang ZengMao, deputy director of the Quality Assurance Bureau, Ministry of Aerospace Industry, People's Republic of China, will speak. For more information, call Jim McLane, 488-0312.

RMS anniversary — A party to celebrate the 10th anniversary of remote manipulator system operations will be held at 5 p.m. Nov. 8 at the Gilruth Center. Tickets are $6. For more information, call Don Pallesen, x30634, or Liz Bains, x31551.

Cafeteria menu — Special: meat sauce and spaghetti. Entrees: baked scrod, liver and onions, fried shrimp. Soup: seafood gumbo. Vegetables: green beans, buttered broccoli, whipped potatoes.

Monday

Veterans Day — Most JSC offices will be closed Nov. 11 in observance of the Veteran's Day holiday.

Tuesday

NCMA meets — The National Contract Management Association will meet at 11:30 a.m. Nov. 12 at the Gilruth Center. JSC Procurement Director Gene Easley and Ray Barrett, chief executive of Barrios Technology Inc., will speak on "The Challenge of Transforming a Small Company into a Large One." Tickets are $6 for members and $7.50 for nonmembers. For more information, call John Trahan, x30543, or Theresa Borrego, 282-6679.

Free enterprise lecture — A brown-bag luncheon will discuss "Economic Problems" at 11:30 a.m. Nov. 12 in the Lockheed Plaza eighth floor Training Rm. Call Charles Campbell at 333-6107 for more information.

Cafeteria menu — Special: pepper steak. Entrees: fried shrimp, pork chop with applesauce, turkey a la king. Soup: celery. Vegetables: au gratin potatoes, breaded squash, buttered spinach.

Wednesday

AIAA tutorial — The American Institute of Aeronautics and Astronautics Education Committee will present a tutorial at 10:15 a.m. Nov. 13 at the Gilruth Center. Nadine Barlow, planetary geoscientist, will offer "More About Mars." Reservations are due Nov. 12; call 333-6064. The presentation is free.

AIAA meets — The AIAA will meet at 5:30 p.m. Nov. 13 in the Gilruth Center. NASA Associate Administrator for Exploration Michael Griffin will discuss "The Exploration Initiative." For more information, contact Sarwar Naqvi, 282-2767.

PSI meets — The Clear Lake/NASA-area chapter of Professional Secretaries International will meet at 5:30 p.m. Nov. 13 at the Holiday Inn on NASA Road 1. Ronald Woolcock, coordinator of electronic tax filing for the Internal Revenue Service Houston District, will discuss electronic filing. For reservations or information, call Cynthia Thomasen, x30599, or Pat Woolcock, 754-2570.

Astronomy seminar — The JSC Astronomy Seminar will meet at noon Nov. 13 in Bldg, 31, Rm. 129. Dr. Virgil Sharpton of the Lunar and Planetary Institute will discuss "Impact Craters on Venus." For more information, call Al Jackson, 333-7679.

Cafeteria menu — Special: Mexican dinner. Entrees: fried catfish with hush puppies, braised beef ribs. Soup: seafood gumbo. Vegetables: Spanish rice, ranch beans, buttered peas.

Thursday

Small Business Expo — A Small Business Expo will be conducted from 9 a.m. to 2 p.m. Nov. 14 at Gilruth. The expo will provide a one-stop marketing opportunity for small, small disadvantaged and women-owned businesses to discuss their capabilities with JSC's technical and procurement organizations and their major contractors. Counseling will be continuous throughout the day. Admission is free.

Cafeteria menu — Special: hamburger steak with onion gravy. Entrees: corned beef with cabbage and new potatoes, chicken and dumplings, tamales with chili. Soup: split pea. Vegetables: navy beans, buttered cabbage, green beans.

Nov. 15

Software Technology Expo — JSC's Software Technology Branch will host an exposition of software technologies, including virtual reality, from 10 a.m.-4 p.m. Nov. 15 in Bldg. 12, Rms. 166, 170 and 258. The showcase is open to all badged NASA and contractor employees. For more information, call Carla Armstrong at x39071.

Health Fair — The JSC Human Resources Office is sponsoring a one-day Health Fair from 9 a.m. to 4 p.m. Nov. 15 in the Gilruth Center ballroom. Health care representatives will present their 1992 benefit packages to assist employees in making open season changes. Open season runs from Nov. 12 to Dec. 9. For more information, call x32681.

HSS meets — The Houston Space Society will present a lecture by Valery Aksementov, director of life sciences at the Moscow Aviation Institute, at 7:30 p.m. Nov. 15 at Houston Studios, 707 Walnut, Suite 212. Aksementov will discuss "How to Keep Your Cosmonaut Comfortable." For more information, call Clifford Carley, 923-7221.

SSQ meets — The Houston chapter of the Society for Software Quality will meet at 5:30 p.m. Nov. 14 at the American Host Hotel ballroom on NASA Road 1. Richard Storch, SSQ national president and director of Systems Quality Consultants, will discuss "SQA vs. TQM vs. SEI ... Who Is Right." Dinner is $10 in advance or $15 at the door; the program is free for members and $5 for nonmembers. For reservations or more information, call Nancy Falk, x32381.

Cafeteria menu — Special: barbecue link. Entrees: deviled crabs, broiled cod-fish, liver and onions. Soup: seafood gumbo. Vegetables: buttered corn, green beans, new potatoes.

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 be 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: Lake Travis cabin, private boat dock, C/A&H, fully equip, accom 8, Fall, $325/$80, wkly/dly. 474-4922.

Lease: CL townhome, enclosed patio, covered parking, ext storage, 625 sq ft, no pets, $360/mo. Martin, 244-5338 or 488-0949.

Rent: Arkansas lake cabin, wooded, 4 acres, screened porch, furn, $250/wkly $50/dly. 338-2517.

Lease: Meadowgreen, 4-2.5-2, 2 story, detached garage, lg deck, FPL, master down, avail Dec, $1.2K/mo. 480-9195.

Sale: House, 5-2.5-2, 8.5 percent FHA assum. 488-3191.

Sale: Seabrook, bayfront, 75' x 250', Toddville Rd, $110K. Steve, 282-3097 or 471-2859.

Sale: LC, Countryside, 4-2-2, shade trees, parks and pool nearby, cul de sac. Dennis, x39012 or 554-4233.

Sale: Friendswood, 2, 0.95 acre lots, all util, no flooding, cul de sac, $34K to $42K. Ron, x37192 or 996-9724.

Sale: Magnolia/Woodlands area, residential acreage, all util, $8.5K OBO. Rob, x33484 or 481-6185.

Rent; Vacation condo timeshare, 1 week, 2-2, sleeps 6-8, choose area of country and time you want to go, $600/wk. Tim, 996-9191.

Sale: '84 mobile home, 14 x 60, 2-1, ex cond, new carpet, A/C, stove/dishwasher, new paint inside/out, wallpaper, lg porch, $12K. 534-3887.

Cars & Trucks

'82 AMC Concord, $1K OBO; '79 Honda Accord, $600 OBO. 990-9205.

'74 BMW 2002, 4 spd, green w/tan int, new tires, new $2K paint job, sunroof, AM/FM/cass, ex cond, $8K OBO. David, x32791 or 488-9768.

'89 Ford Mustang 5.0, all options, white special trim, stereo, 26K mi, $9.3K OBO. 481-1492 or 837-1514.

'81 Buick Regal, 6 cyl, auto, all power, tilt, cruise, wire wheels, tape, new vinyl top/headliner, loaded, ex cond, 93K mi, $2050. 335-2465 or 332-4302.

'76 Ford Elite, body/int good cond, $1.5K. x33678 or 489-7494.

'87 Cherokee, 2 dr, 4WD, 4.0L, 5 spd, dk blue, A/C, P/S, P/B, AM/FM/cass, new tires, low mileage, ex cond, $7.9K OBO. Mark, x33165 or 332-6966.

'76 Datsun B210, 2 dr, 4 spd, new eng/trans, $650 OBO; '59 Chevy PU for restoration or parts, good eng, $950. 334-2335.

'84 Chevy custom van, loaded, $4.7K. Raynell, x30229 or 488-8639.

'85 VW Jetta, diesel, 5 spd, sun roof, AM/FM/CD, upgraded speakers. Suzanne, 282-3478 or 338-1976.

'83 Volvo, 2 dr, blue, manual trans, good cond, $3950; '80 Subaru station wagon, beige, manual trans, good cond, $850. Marilyn, x32116 or 480-1934.

'78 Fiat X/19, gray, rem hard top, $400. Michael, 335-1265.

'85 GMC 1 ton Dually, good cond, 70K mi, $6K. Roy, x39162.

'84 VW Scirroco, 5 spd, sunroof, P/W, blk leather int, AM/FM/cass, $3K. 484-9047.

Chevy S-10 Blazer, 4/WD, Tahoe pkg, loaded, good cond, 4.3L, V6, A/C, auto, rear ABS. x38255 or 286-9075.

'80 Cadillac Coupe deVille de Elegance, 110K mi, good cond, service records/manuals, $1.5K. 326-3370.

'91 Toyota Celica ST, wht w/navy cloth int, auto, A/C, tinted, ex cond, assum payments. Cindy, x38801 or 486-5668.

'85 Ford Thunderbird, ex cond, service records, all pwr access, sunroof, AMK/FM/cass, red w/tan int, $4.1K. x32491 or 326-3375.

'82 Honda Accord LX, 5 spd, A/C, P/S, P/B, AM/FM/cass, 104K mi, brown/brown. 333-7478.

'91 Toyota Corolla, 2K mi, 3 mo old, auto, AM/FM/cass, P/S, child locks, rear defogger, int/ext protection pkg, full spare, pearl red. Krish, 286-9344.

'83 Toyota PU, custom paint/int, AM/FM/cass, convertible top, long bed, ex cond, $8.5. x33484 or 332-3476.

'80 Olds Cutlass Calais, 5.7 diesel, all pwr, A/C, records, $750 OBO. Thompson, 332-2229.

'76 GMC 3/4 ton PU; '70 VW bus. Dennis, x39012 or 554-4233.

Cycles

'83 Honda Shadow 750, wineberry red, low mi, rebuilt eng, all paper work, ex cond, $1.8K. Mace, x30277 or 332-7092.

Yamaha RZ350, Kenny Roberts replica, professional eng porting, Mikuni carb pipes, K&N Jet Kit, Dunlop radials, cover and helmet, $1795 OBO. Hugo, 335-2552 or 286-0432.

'90 Suzuki Katana, red w/gold wheels, 600 cc, 3.4K mi, ex cond, bike cover, tank bra, center stand, manuals, locks, $3.5K OBO. 282-3242 or 286-3631.

'83 Yamaha 750 Maxim, windjammer w/radio and lowers, 12K mi, ex cond, $1.5K. 996-0643.

3 wheel scooter w/batt charger, swivel seat, keyed switch, multispeed, ex cond, $1.8K OBO. Rob, x33484 or 481-6185.

Boats & Planes

25' McGregor sailboat, AM/FM/cass, marine VHF, depth, head, 6hp Mariner, custom rigging, trlr, $5750. Kevin. 486-6411 or 480-0828.

'76 27' Catalina sailboat, 3 sails, I/B diesel, bimini, wheel, updated int, 2 batt, depth/knot meter, $13.5K OBO. Ken, x30921 or 333-2699.

15' Chrysler sailboat, all rigging w/Sportsman trlr, $600 OBO. Charles, 559-2331.

'86 20' Bass buggy pontoon boat w/trlr, 35hp Mercury, less than 70 hrs, accessories, electric start, Hummingbird LCR 2000 depth recorder, 2 6/gal tanks, new batt, deluxe pkg, $5.5K OBO. 282-3167 or 992-3351.

Windsurfers, Master class 355, complete $350. Klepper, short board only, $150. 486-6133.

Audiovisual & Computers

Camcorder 8mm Minolta 8:1 Zoom, ex cond, 2 batt, AC adapter/charger, case, manuals, $495. Paul, 283-5075 or 480-7178.

Apple 2e computer, complete, $250 OBO. Steve, 333-7371 or 444-4565.

Two high quality Norelco microphones w/cables, $50. x37626.

Borland Paradox 3.5 database, $275; Quattro Pro 3.0 spreadsheet w/registration card, $175. Martin, 244-5338 or 488-0949.

Amiga 500 1-MEG memory expansion plus clock, new, $50. David, 282-5338.

Amiga 500 complete, modem, 2 DD, 1 MEG RAM, lots of SW, $725. 486-6613.

Amiga 500, 2 DD, stereo speakers, mouse master, mouse, video adapter, SW, $700. x38682 or 332-7205.

AT&T 6300, 30 M HD, 5.25" FD, 640K RAM, mono moni, Keytronic kybd, surge protector, SW, 50 blank disks, graphics card, $325. Jane, 488-9020 or 470-2744.

One pair stereo speakers, home built cabinets, w/8" woofer/midrange and horn tweeter, 14" wide 22" high, $60. 480-3424.

IBM XT compatible computer, math coprocessor, 20 MEG D, DF, graphics card, moni, 2 serial ports, game port, Gemini printer, $500; w/80286 turbo and 2 MEG RAM, $600. Jerry, 246-6085 or 486-4722.

Musical Instruments

Wurlitzer organ, three kybds, backup rhythm section, good cond, $500. 532-2158.

Armstrong flute, ex cond, was $500 now $350. 283-8213 or 486-9537.

Armstrong model 104 flute, ex cond, $200. 332-4780.

Pets and Livestock

AKC Yorkshire terrier puppies, 10 wks, males, wormed, 1st shots, $300 OBO. George, x38959 or 486-6944.

Free 8 mos old blk/wht male feline w/accessories. Lori, 480-6436.

Household

Dark mahogany bar, wine rack, marble tops, mirrors, 2 stools, $500. 532-2158.

12" color TV, $60; Thomasville nightstand, $50. 283-8213 or 486-9537.

Qn sz sleeper sofa, good cond, $125; butcher block computer desk, $100; three hanging light fixtures, $15/$20/$35. Steve, x37626.

Sofa/loveseat, custom made, ex cond, $500; 1 end table, 1 round commode table, pecan, $100/ea; sideboard, extends to 84", wood finish, $125. 333-1387.

Office desk, 5'x3', wood, 4 deep drwrs, 1 swing out typewriter platform, $65. x31373 or 486-5005.

Kitchen Aid, portable dishwasher, 3 cycle, good cond, $75 OBO. 332-7492.

Steelcase tuxedo sofa, fern green velvet, ex cond. 486-9700.

Oak table and chairs, twin bed w/hd/ft boards, kg sz four poster bed, dresser, chairs, RC planes, BO. 554-7012.

GE frostless refrig, almond, 17.2 cu ft, 5 yrs old, ex cond, $200, Lorraine, 480-0014.

Antique oak Morris chair, $200; 1920's wardrobe, $150. Bill, x34062.

Contemporary sofa w/matching chair, beige, brn, and wht, $150. Terry, 283-6646 or 554-6631.

Photographic

Mamiya 645 medium format SLR camera, 80mm lens, 2x, Mamiya converter, metered prism, $750; 35x200 Wietz lens w/filter, fits Canon AE1, $100. Kevin, 486-6411 or 480-0828.

Polaroid SX 70 instant picture camera, auto focus, self timer, flashbar, case, $25. 333-2830.

Wanted

Want house to lease, move in December or January. 990-9205.

Want dbl stroller, child security gates, cloth type car seat w/shield, car booster seat, belt in base type, good cond. Karen, x38297 or 996-8821.

Want shower wheelchair. 559-2000.

Want Speed Spanish cass/tape learning series. Barry, x39280 or 996-5739.

Want nonsmoking female roommate to share 2-1.5 home in Glen Cove, BR unfurn, $325/mo plus util and dep. 538-3320.

Want reasonably priced Honda styled motorized scooter. Gailo, 554-6200.

Want Rollerblades, good cond, men's sz 7 or lady's sz 9, also access. Kelly, 282-4868 or 992-4051.

Want used student desk w/chair, good cond. Ed, x36969 or 332-0442.

Want housemate for 3-2-2 in LC, $300/mo plus 1/3 util. 334-3985.

Want children's easel; spring horse. 486-6133.

Want nonsmoking roommate to share 3-2.5-2 house in Dickinson w/pool and maid, $400/mo plus 1/2 util, ref, and $200 dep. 282-3450.

Want 3 or 4 bus trip tickets to Renaissance Festival for November 9, 1991. 734-5728.

Miscellaneous

Roundtrip plane ticket to Detroit Metro from Ellington for Thanksgiving, $278. Steve, 333-7371 or 333-4565.

Golf clubs, Bristol Lite woods, 1, 3, 5 was $100, now $55; Northwestern driver, graphite shaft, steel head, was $50, now $35; Wilson Tom Kite 3 w, $15. x37137 or 482-8966.

Trailer for motorcycle or as flatbed 4'x8', mechanically solid, needs lights, w/4 sheets 3/4" plywood and some roofing material or without, $90. Carl, x38514 or 486-0265.

Wet suit, ex cond, silver/light blue, all options, $200. David or Traci, 540-2451.

Starcraft camper, sleeps 6, htr, refrig, stove, sink, $700. 337-2452.

Double bed, crib, single mattress, exercise bike, rowing machine, stroller. 488-3191.

Sewing machine, wht, basic portable, ex cond, $200 OBO. 244-9845 or 944-0133.

Spa, hot tub, w/cover, seats 7, $1K. 471-3165.

London blue topaz ring, 6.6 ct, 14k gold, $294. 282-3961 or 992-3861.

Shoei Brite Stripe full face motorcycle helmet, med, wht, $75. x39572 or 480-4780.

EE textbooks, UH central ELEE 6370/5440 adv digital design, ex cond. Youm, 283-4813.

White fox jacket, ex cond, $250; Nordica ski boots, sz 8, $50. 532-2158.

10' commercial stainless satellite dish w/all controls, was $4K, now $1.5K OBO. 481-4882.

Sears trash compactor, $25; 6' patio dr, $10; '80-'82 Corvette louvers, $20; 15 cu ft freezer, $50. 326-2294.

Exercise bike w/electronic ergometer and variable resistance setting, ex cond, $80 OBO. x31497 or 554-4215.

Gold rope bracelet, 8" 14k; men's gold ring w/.20ct diamond, BO. Ron, x30887.

Octa Gym exercise machine, rowing/butterfly in one, good cond, $50; 15" 5 bolt mags w/serviceable Eagle GT tires, fits Ford, 4/$300. Hugo, 335-2552 or 286-0432.

Wedding dress, sz 8-10, long sleeves, beaded bodice, 10' train, was $850, now $450 OBO. 338-2829.

Celestron Super C8 telescope w/access, $500; Schwinn exercise bike, $100. 334-3985.

Bassett spindle solid oak baby bed, $150; Welch baby walker, $15; Radio Shack baby monitor, $15. Steve, x35450 or 480-1658.

Newborn bathtub w/sponge liner, $5; toddler swivel bath chair, $5; Graco red/wht walker, good cond, $10. Michele, x35188.

Electric wheelchair, Rolls Royce model, ex cond, 2 new batt w/recharger, $650 OBO. Pam, 335-6421 or Betty (409)935-1507.

24'x3' round above ground pool/access, $200 OBO; stair stepper exercise machine, $30. 333-7478.

Thornless, evergreen climbing rose, single wht flower w/yellow center, March-April, never needs spraying, 3' tall, 2 gal pots/$5. 996-8020.

Jacuzzi-type oval whirlpool bathtub, 6 jets, wht acrylic, 2 yrs old, 5'x42", 30 day warranty, $295. Jerry, x38922.

Fear of Failing

Developing a consensus on space is essential in an era of national self-doubt, when NASA's need to take risks is in itself a risky proposition

By Dr. Lennard Fisk

One of the frustrations that is currently visited on those of us who work for NASA is the constant onslaught of negative stories in the media.

The other day I was reading the "Weekend" magazine which comes out in the Friday Washington Post, looking among the list of upcoming activities for something to do. And there was an article on that magnificent film, "The Dream is Alive" which is frequently shown in the Air and Space Museum. The article said, and I quote: "If only the space program worked as beautifully as this film. All the budget wrangles and engineering debacles that have weighed down NASA are lost in the gravity-free splendor of three shuttle flights."

My children went to see the movie, "Naked Gun 2 1/2," and it contains a scene in which there is a bar call the "Blue Note Cafe," where you go to drown your troubles. On the walls of this bar are pictures of mankind's greatest disasters: the Hindenberg, the Titanic, Michael Dukakis and the Hubble Space Telescope.

Wherever you go the articles contain a zinger. Even articles about unqualified successes, like the Gamma Ray Observatory, or a new picture from Magellan, or an exciting discovery from Hubble have to contain the requisite statement that goes something like, "In spite of its recent problems, NASA ..." and so on.

Let's take a moment then and analyze the causes and the effects of all this negative publicity. First, we should of course ask whether we are in fact all fouled up. I think the evidence says we are not.

Consider even some of our celebrated problems like Hubble. More than a decade ago, a small group of employees at Perkin Elmer did something dumb. And they were too arrogant to permit the proper checks. And so in 1982 when the primary mirror was installed in the spacecraft — forever beyond any way to check it — contained a small error in its shape.

So what's the story here? Today's NASA is all fouled up? Or is it that in today's NASA, by any review we conduct, the quality control system is such that errors like the ones made in Hubble in the late '70s are unlikely to go unchecked? In today's NASA — at the Goddard Space Flight Center and the Space Telescope Institute — we have taken the Hubble mission, which is challenging to operate at best, and turned it into a scientific triumph — which is producing a major scientific discovery about every two weeks.

Of course the spherical aberration is a problem. I could lie awake nights cursing those people who brought us this error. Because the whole image of the U.S. space science program would be different if Hubble were perfect. But when the spherical aberration was discovered, I said to my staff that the measure of us will not be the problems we inherited, but rather how we handle them. And of that I am very proud.

How about the GOES program — the weather satellites? Dramatically over budget and behind schedule. Its problems threaten the essential weather forecasting system. In the early '80s, when GOES was designed, its technological challenges were underestimated. And the contractor, which was chosen in good faith to build the instruments for this program, to be kind, has struggled to meet those challenges. Today, there are some 30 NASA employees — the best that NASA has to offer — living with the contractor, using their expertise to pull this program through.

And so what is the story here? NASA underestimated the risk and complexity of this program? Absolutely. NASA has problems managing a program when the contractor is not up to the task? Perhaps. Or is it that the only hope for the weather satellites is that NASA's in-house expertise can bail the program out? We'll see.

And what about the unqualified successes? The shuttle has flown 18 times without incident since *Challenger*. Magellan has mapped 90 percent of the surface of Venus, with unprecedented resolution and startling discoveries. Gamma Ray Observatory was launched and has operated without incident and with great results. The Upper Atmospheric Research Satellite was brought in under budget. And then there are the successes of COBE (Cosmic Background Explorer) and CRRES (Combined Radiation Release Experiment Satellite) and Ulysses, and SLS-1 and Astro, and so on.

NASA is a far more active agency today than it has been at any point in the past decade. We have our successes. We have our challenges. And yes we have our disappointments. But today's NASA is as competent, if not more so, than any NASA in the past.

And so why all the negative press? Some of it is, no doubt, a sign of our times. We are into self-flagellation these days as a nation. Some of it, I suspect, is a result of the rise in the importance of trade press in our business. The trade press, in order to protect itself against the charge that it is too much of a cheerleader, can accentuate the negative.

The adventure of space is a vital part of our society. The space program — with its successes, its challenges, and its setbacks — needs to be perceived as the best this country has to offer.

— Dr.. Lennard Fisk
Associate Administrator for Space Science and Applications

But of more importance, we need to be concerned whether all this negative press is simply symptomatic of a more fundamental problem — that currently there does not exist a consensus in this country as to what the space program should be all about.

With a consensus, our successes are the nation's successes. And our setbacks are to be forgiven because we are executing the nation's space program — a program that, by its very nature, involves risk and challenges. The converse is also true. Without a consensus, our successes are only interesting, and our setbacks are entirely our own.

It is perhaps not surprising that a national consensus on space does not exist. A space program is an activity of a wealthy nation. And we are pretending these days that we are poor, with insurmountable budget deficits.

We need to recognize also that the space program has been a creature of the Cold War. We were created to demonstrate that a free society could achieve better technological successes than a communist society. But the Soviet Union these days is sorting out its role as a nation. And it remains to be seen whether they will even continue their space program.

There is no way, then, to define our space program relative to other programs. Our definition and our rationale for existence must be an absolute one, not a relative one, which probably makes developing a consensus as to what the space program should be harder, but more important.

What then is the purpose of the space program? Generally there is agreement on this. The pursuit of science, or understanding. Service to the nation through programs like Mission to the Planet Earth, or through the development of technology to improve our competitive position. And a manned exploration program. Moving the human species into space.

The purposes are reasonably clear. But the means by which we pursue each of these purposes, the balance among them, and our defense of this pursuit, is where there is less agreement.

Consider science. The nation has an almost insatiable appetite for exciting science results. People, in particular young people, instinctively know that we have an opportunity in this generation to provide answers to questions about the universe, about our Solar System, about life, which have intrigued humankind for centuries.

How about Mission to Planet Earth? Policy makers are saying that they want to know if there is going to be global warming and they would like the answer soon so that they can make policies to prevent it. Scientists, however, are saying that's the wrong question. In all likelihood global warming is going to occur. And, although we may slow it down, there is no reasonable economic policy that could be applied worldwide to prevent it. The real question is what will be the regional consequences of the inevitable global warming — how will precipitation patterns change? Will sea levels rise — and what will we have to do to adapt to these changes?

Determining the regional consequences of global warming is probably the hardest, most complex scientific problem ever undertaken. Consider what we are talking about. It's hard to get a decent five-day forecast. When people talk about 60-90 day outlook for the weather, it is in the same category as astrology. But what we want to develop with Mission to Planet Earth is an accurate understanding of decadal trends, by region around the world, so that policies on agriculture, industrial planning, and population control can be made.

There is no way to make this a cheap and simple and quick program. It is going to require an Apollo-like effort to succeed, but somehow it ought to be possible to develop a national consensus that this is what we should be doing. Because rarely has there been a space effort with more direct impact on the future of humankind.

How about human exploration? We had this wonderful debate last spring about the space station. People stood up and said we are doing this for science. And scientists, being the pragmatic people that they are, said "Oh, if you are going to spend $30 billion on science, we would rather that you spend it on Project X, or Project Y."

We seem to have lost the distinction between, and the value of both science and engineering. Science is perceived as forward-looking and exciting. Engineering is perceived as dull. This is, of course, a departure from the historical past. Societies throughout history have undertaken major engineering projects, and been proud of them.

In some cases, the engineering projects were for very practical reasons. to solve a problem. To open new opportunities. The Roman aqueduct system. The Great Wall of China. The railroads of the American West. In some cases the engineering projects were symbolic. The pyramids of Egypt. The Eiffel Tower.

But in all cases these engineering projects served one or more vital roles for their societies. They were a symbol of the society's vitality and greatness.

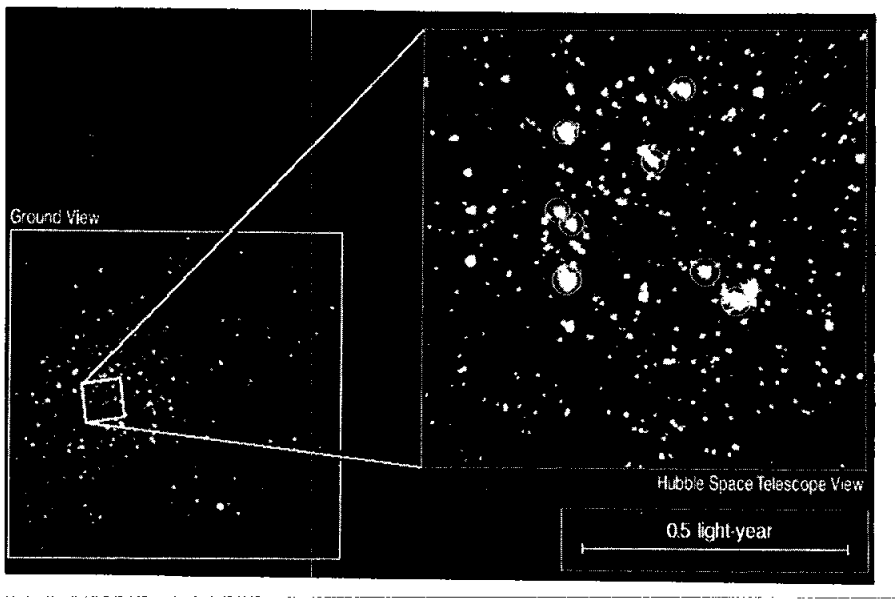
This is the standard against which Apollo was judged one of the outstanding achievements of modern time. And this is the standard against which space station should be judged.

It is not a question of whether the station will yield important scientific results. Certainly it will. But rather, the real question is whether space station is a sufficiently audacious engineering project to rank among previous such efforts. The opportunities it opens up. The economic stimulus it provides. Its symbolic importance in a world with only one remaining superpower. These are the issues around which a strong consensus for its completion should be built.

We should all hope that in time the press coverage on NASA will become more positive. That our goals will be clear and agreed upon. We will get credit for our successes. Be cheered on for our challenges. And worried over and forgiven for our setbacks.

But we need to be aware, too, that failure to change the perception that the space program is awash in unacceptable failures has a serious consequence. If failure is unacceptable, then so is risk. And yet taking risk is what the space program is all about. We press the envelope. Try the tasks that have never been done before. Most of the time we will have outstanding success. Some times we will fail. We need to get to a point where those failures are understood and accepted as a natural part of the risks we are willing to take.

The adventure of space is a vital part of our society. The space program — with its successes, its challenges, and its setbacks — needs to be perceived as the best this country has to offer.



Top: One of the space program's oustanding achievements since *Challenger* has been Magellan's radar mapping of Venus. This three-dimensional perspective shows Maat Mons, a Venusian volcano that may be active, according to Magellan's data. Right: The Hubble Space Telescope's Faint Object Camera took this image of the globular cluster 47 Tucanae despite its oft-criticized spherical aberration. The image reveals so-called blue straggler stars, compared here to a ground telescope view, that are easily separated thanks to Hubble's ultraviolet sensitivity and high resolution.

Pair earns NMA chapter's top awards

JSC Comptroller Wayne L. Draper and Center Operations Deputy Director Grady McCright recently earned the two top honors of the JSC chapter of the National Management Association.

Draper received the Silver Knight of Management Award on the basis of his ability to stimulate and inspire his fellow NMA members, his leadership in business relationships and his adherence to the NMA Code of Ethics.

McCright received the Manager of the Year Award for his exceptional leadership in the management of JSC institutional services and resources, development of Space Center Houston and his promotion of the American enterprise system at JSC.

The NMA chapter also elected its officers for the coming year.

McCright was elected 1991-92 chapter president; Dick Regenburgh III, chief of the Shuttle

JSC
People

Engineering and Equipment Procurement Branch, was named vice president; Janet Rowlands of the Orbiter and GFE Projects Control Office was named treasurer; and Cathey J. Lamb, administrative officer in the Office of the Comptroller, was appointed secretary.

Sias receives honors as top secretary

Valerie D. Sias, secretary for the Space Station Ground Systems Division, has earned the Marilyn J. Bockting Award for Secretarial Excellence.

Sias, who is responsible for providing all secretarial and administrative support to Division Chief Jack Seyl and his staff, was rewarded for "work and interpersonal skills of the highest caliber."

She was cited specifically for training three new branch secretaries over the past year in the policies and processes of the division and in the use of office automation tools, and for contributing significantly in the process definition for use of the computer system and providing its designers with requirements to make the system more productive and user friendly.

Draper McCright Sias Logan

Mock-up builder wins national crew title

Cory Logan of the Space and Life Sciences Man-Systems Division recently won first place in one category of the Masters National Rowing Championship in Austin.

Logan, who builds mock-ups and trainers in the Bldg. 9 complex, finished first in the 27-to-35-year-old division of the men's single scull category A, defeating 35 competitors.

He has won several other rowing medals in the past year in other meets.

Thrift savings open season begins Nov. 15

Open season for the Thrift Savings Plan will be Nov. 15 through Jan. 31.

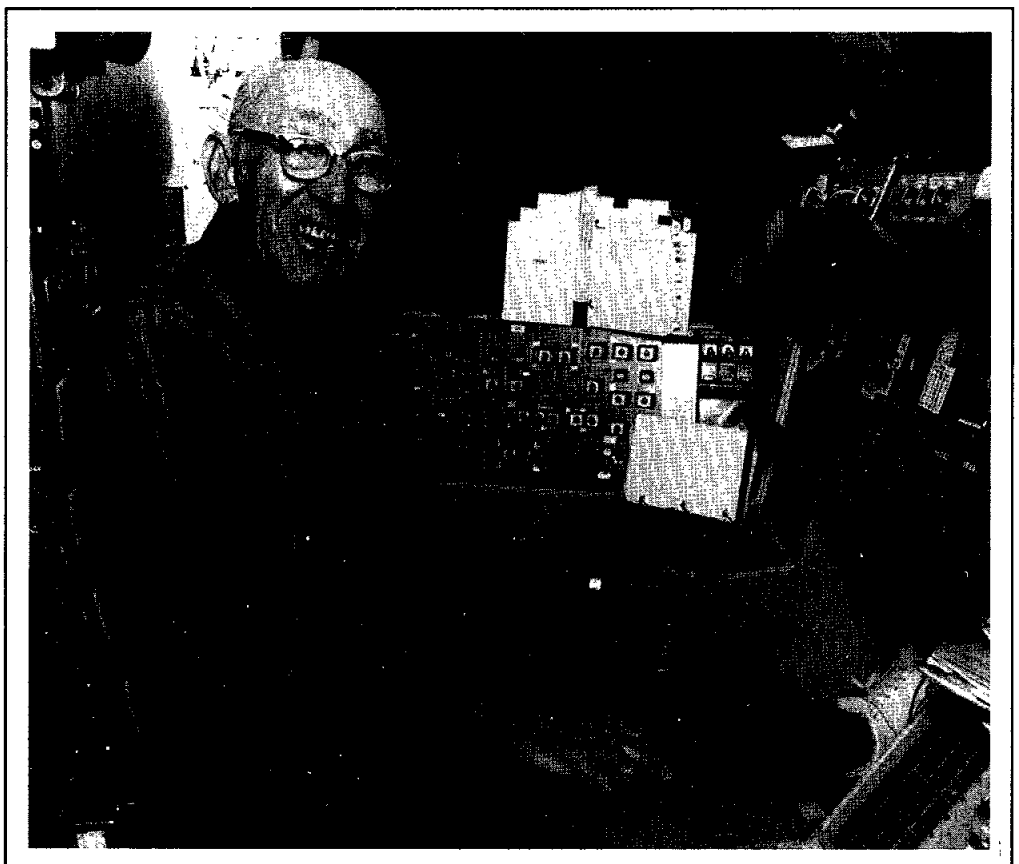
During open season, eligible employees may begin contributing to the plan, change the amount of their contributions, allocate the contributions among the three investment funds, terminate current contributions or waive enrollment.

The effective date for contributions or changes to begin will depend on when the Thrift Savings election form (TSP-1) is received in the Employee Services Section, Code AH76, in Bldg. 45, Rm. 140.

Forms received Nov. 15 through Jan. 11 will go into effect Jan. 12. Forms received Jan. 13 through Jan. 25 will go into effect Jan. 26. Forms received Jan. 27 through Jan. 31 will go into effect Feb. 9.

An employee's investment election applies to employee, agency automatic and agency matching contributions. Employees under the Federal Employee Retirement System who are not making employee contributions may still elect to invest all or part of their agency automatic contributions in any of the three funds.

For more information, call the Employee Services Section at x32681.



JSC Photo by Bill Blunck

THERE ARE OLD PILOTS — Steve Wittman, a pioneer in the design, construction and piloting of racing airplanes, checks out the cockpit of the world's first spaceplane in JSC's Bldg. 9 North. Wittman, 88, who raced against famous pilots like Jimmy Doolittle and Roscoe Tanner in the "golden age of air racing," started flying in 1924 and racing in 1926. He lives in Oshkosh, Wis., where a large airshow is held annually at an airfield that bears his name. Wittman got a chance to meet with STS-42 Commander Ron Grabe during his recent visit.

JSC talking with small businesses

JSC organizations and major contractors will gather at a Small Business Expo next week to learn what small, small disadvantaged and women-owned small businesses can do for them.

The expo, from 9 a.m. to 2 p.m. Thursday at the Gilruth Center, is designed as a one-stop marketing opportunity for those businesses to present their capabilities to technical and procurement representatives from JSC's organizations and their major contractors.

Counseling will be available throughout the expo.

The expo is an outgrowth of JSC's commitment under NASA's plan to award 8 percent of its prime and subcontracts to socially and economically disadvantaged businesses by the end of fiscal year 1994.

NASA's fiscal 1990 obligations to small businesses equaled roughly 5.4 percent.

"The most often used excuse for not taking advantage of these small businesses' capabilities is that the organization wasn't aware they existed," said John Thiel, chief of JSC' Procurement Support Division. "I think the most important reason for the expo is to allow small business firms to learn about what the center needs and to allow the organizations to make contact with small businesses and understand what their capabilities are."

For more information, call Barbara Perkins, x34512.

Child Care Center to host book fair

The JSC Child Care Center will host its annual book fair from 11:30 a.m.-1 p.m. and 4-5:30 p.m. Nov. 20-23. A portion of the book fair sales will go toward increasing the center's library.

Quality children's literature will be available for purchase at the fair in time for holiday gifts, said Child Care Center officials.

Additionally the Child Care Center will sponsor a parents program featuring guest speaker Sally Jordan from Jeremy's Bookstore at 7 p.m. Nov. 20. Jordan's topic will be "Making Reading Aloud to Your Child Fun for You" and will kick off the book fair activities.

The lecture and book fair are open to all JSC employees. The Child Care Center is near the Gilruth Center on Second St.

Astronauts to premiere newest education video

By Barbara Schwartz

"Go for EVA," the second in the "Liftoff to Learning" series of educational videos, will premiere for employees in the Teague Auditorium at 3:30 p.m. Wednesday.

JSC Director Aaron Cohen will introduce the STS-37 astronaut crew featured in the video.

"Go for EVA" is intended for use in middle-school classrooms to explain atmospheric pressure, the necessity of pressure suits and other topics related to "spacewalking."

The production was initiated by the Educational Working Group established to support NASA's educational goals. The EWG is chaired by an astronaut and comprised of representatives from Headquarters Educational Affairs Division, the Space Shuttle Support Office, the Image Sciences Division, the Director's Assistant for Education, and the Public Affairs Office.

"We will use and promote increased application of educational technologies to deliver aerospace education programs. Among such programs are live and recorded lessons from the astronauts on appropriate space shuttle missions; satellite video broadcasts; expanded use of NASA Select for education broadcasts...," NASA Administrator Richard Truly testified before a Congressional committee last year.

The Flight Crew Operations Directorate is supporting this initiative with astronauts providing educational lessons from space using downlink mission video, on-orbit recorded video, video graphics support, and other media.

Other videos in production, "Newton's Laws in Space" and "All Systems Go" on human physiology, will be released in the next few months. The group is planning to release about four new videos each year.

Each video has a teacher's guide to enhance the classroom learning experience. Other written materials are distributed to provide information on upcoming shuttle missions and results after the flights.

Expo to feature latest software technology

(Continued from Page 1)

enter a computer-generated world in which they can see, hear, touch and move objects.

The off-the-shelf system is being considered for use as a training aid in several different areas, said Software Technology Branch Chief Bob Savely.

Another training technology that will be showcased is Intelligent Computer-Aided Training, which uses expert system technology to develop autonomous training systems for use by astronauts, flight controllers and engineers. The demonstration system focuses on the space shuttle's Spacelab module, using digitized functional images of actual control panels to lead students through various failure and recovery scenarios at their own pace.

Researchers will be interested in AutoLib, an automated on-line library management system that allows users to catalog and retrieve objects from very large distributed collections, such as documents at all NASA centers. Using an X-Windows interface for easy access, users can find documents, engineering drawings, computer code and digital photographs through natural language queries.

Other demonstrations will show off multimedia systems, knowlege capture and task analysis tools, machine vision, speech recognition and synthesis, computer-aided software engineering, software reengineering and reuse, software cost modeling, planning and scheduling, fuzzy logic, neural networks, genetic algorithms and parallel processing.

The expo is open to all JSC and contractor employees. For more information, call Carla Armstrong at x39071.

Correction

A story in the Nov. 1 Space News Roundup about the start of Health Benefits Open Season contained an error regarding changes to 1992 benefits.

The new rules include a *maximum* lifetime benefit of $50,000 for mental conditions.

For more information about the Nov. 15 Health Fair, call x32681.

Holiday deadlines for Roundup

(Continued from Page 1)

The deadline for Jan. 3 Dates and Data items will be 5 p.m. Friday, Nov. 20.

Normal Swap Shop deadlines, which are 5 p.m. Friday two weeks before the desired date of publication, will resume following the holidays.

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. No phone, fax or commercial ads are accepted. Each ad may run in only one issue of the Roundup. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2.

Normal Dates and Data deadlines, which are 5 p.m. Wednesday, eight working days before the desired date of publication, also will resume after the holidays.

Space News Roundup

The **Roundup** is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every Friday by the Public Affairs Office for all space center employees.

Editor .....Kelly Humphries
Associate Editors .....Pam Alloway
Kari Fluegel

Bus stops here at JSC now

(Continued from Page 1)

Beta Link; Fifth St. immediately south of Lot D-1; and Avenue D on the north side.

The Metro fare varies from a 70 cent charge for a local fare to $1.20 for reverse commuters (people who live in Houston who ride the bus to JSC), to $2.90 for those people who are traveling downtown. The $1.20 express fare is for people traveling to JSC from the downtown Houston area before 3 p.m. and traveling back toward downtown after 9 a.m. Redeker said that after Dec. 1 Metro will offer new 10-ride ticket books which will be available through ticket outlets at various locations, including Kroger, Fiesta, Apple Tree, Randall's and Gerlands.

For more information, contact Metro's Customer Information office at 635-4000 or Metro's Customer Service office if there are problems at 658-0180.