Lyndon B. Johnson Space Center

# pace News Roundup,



# Reagan gives Space Station go ahead

everything seems right with the world. The space program is alive and well, and we have a new initiative," Administrator James M. Beggs said on the morning after.

The reason for his elation, and the elation of thousands of NASA employees around the country, came the night before, when President Ronald Reagan stood before both houses of Congress and said, "Tonight I am directing NASA to develop a permanently manned Space Station and to do it within a decade."

With those words in his State of

"It's one of those mornings when the Union address, President said, "are the right ones for the Reagan set in motion an inititative which now goes back to Congress in the budget cycle that could result in an \$8 billion program getting underway and bending metal well before the end of the

> The Space Station, Beggs said. "will give us a permanent presence in low Earth orbit by the early 1990s and will be the cornerstone of our activities in space through the end of the century and beyond. Needless to say, we are proud and pleased".

"Reagan's initiatives", Beggs

right time in our history. They

"... Tonight I am directing NASA to develop a permanently manned Space Station and to do it within a decade. The Space Station would permit quantum leaps in our research in science, communications, in metals and in life-saving medicines which can be manufactured only in space."

RONALD REAGAN

come at the dawn of a new era in space, a time when not only can we dream great dreams, but also

have the tools to bring them to reality. They represent a specific response to state-of-the-art technology and to what we have already proven that we can do in space. They will open new avenues of opportunity to benefit our life on Earth and they will enable both government and industry to forge a new partnership to realize the commercial potential of space."

As now envisioned, the first two vears of the new program will be spent in extended definition, seeking the best design to satisfy commercial and scientific requirements. Hardware definition will

follow, but Americans will be living and working in space within a decade.

At present, NASA and its industrial partners see a number of potential commercial, scientific and medical benefits coming out of the project. Those forecasts include:

 The refining of biological materials to develop improved treatments for such diseases as certain cancers, diabetes and certain kidney diseases;

 The development of ultra-pure semiconductor crystals for use in super-fast computers and elec-

(Continued on page 2)

# NASA's FY'85 request is \$7.5 billion

NASA's \$7.5 billion Fiscal Year 1985 budget request represents a \$274 million increase over FY '84 and provides for three major new

The Space Station project, the Mars Geoscience/Climatology Orbiter and the Upper Atmospheric Research Satellite are all funded under President Reagan's budget

JSC's budget for research and program management would be \$214,105,000, an increase of about \$8.5 million over FY '84, and the number of permanent civil service slots here would remain at the FY '84 level of 3,209.

The budget format represents something of a departure from previous budgets, according to Administrator James M. Beggs.

tions: Research and Development, \$2.4 billion; Space Flight, Control and Data Communications (a new category), \$3.6 billion; Construction of Facilities, \$160 million; and Research and Program Management, \$1.3 billion.

"This partial reordering of categories reflects the appropriations structure Congress created in FY '84 to mirror NASA's operational role in the Shuttle program," Beggs said. "In previous years, production and operations had been included in the R&D account."

For the Shuttle program itself, the buget plan falls into two major categories. Under Shuttle Production & Operational Capability, the plan calls for \$606.8 million for Orbiter costs, \$234.8 million for

There are four major appropria- launch and mission support, \$599 million for propulsion systems and \$25 million for changes and systems upgrading. Under Space Transportation Operations, the plan calls for \$316 million for flight operations, \$758 million for flight hardware and \$265 million for launch and landing operations, or a total of \$1.33 billion for Shuttle operations. A third category, Space Tracking & Data Acquisition, calls for \$795.7 million.

In Planetary Exploration, NASA is asking for a total of \$286.9 million. The breakdown is \$16 million for the Mars Geoscience/ Climatology Orbiter, \$56.1 million for Galileo development, \$9 million for the international Solar Polar Mission, \$92.5 million for the Venus Radar Mapper and \$113 million for

mission operations, research and data analysis.

The Hubble Space Telescope development budget for the fiscal year is \$195,000, while the Upper Atmospheric Research Satellite start up funding is \$60.7 million.

Under Aeronautical Research and Technology, NASA is requesting \$233 million for its research and technology base, \$26.5 million for rotorcraft systems technology, \$21 million for high performance aircraft systems and technology, \$19 million for subsonic aircraft systems technology, \$16 million for advanced propulsion systems technology and \$26.5 million for the Numerical Aerodynamic Simulation program.

The Upper Atmospheric Research Satellite will, for the first time,

make a comprehensive, global measurement of the stratosphere, one of the most important yet least understood elements in the Earth's massive weather and climatology mechanism. The Mars Geoscience/ Climatology Orbiter will measure the planet's geologic and climatic evolution and would be launched in 1990. It is the first of a new series of relatively low-cost planetary exploration vehicles.

Beggs said the budget request for FY '84 and the one for FY '85 will allow NASA to keep its civil service complement at a steady 22,000 people. "As a consequence, we have been able to hire almost 600 recent science and engineering graduates in 1983, reversing the upward rise in the average age of our technical work force."

# Space News Briefs

#### SCA inflight refueling tests begin

Initial flight tests began last week at the Dryden Flight Research Facility to see if inflight refueling during Shuttle ferry flights is feasible. Nine flight tests are scheduled with the Shuttle Carrier Aircraft (SCA), NASA 905, six of them with the prototype Orbiter Enterprise aboard. The first three flights will use just the SCA and test refueling procedures with KC-135 and KC-10 tankers. The other six flights, with the Enterprise aboard, will also test both types of tanker aircraft. Each flight will be about two and a half hours at speeds and altitudes simulating actual ferry missions. Both the Enterprise and the SCA are being instrumented to evaluate structural and other effects of the refueling procedure. Enterprise has 31 pressure sensors and nine accelerometers aboard, as well as two jet exhaust sensors in the payload bay to monitor any possible contamination from the tanker engine wash. Ballast has been added to the Orbiter to simulate a representative ferry weight of 182,000 pounds. A major motivation for inflight refueling is to improve SCA capabilities should an overseas Shuttle landing occur. Fitzhugh Fulton and Thomas McMurtry of the Ames Research Center and Gordon Fullerton and A. J. Roy of JSC are flying aboard the SCA during the

## Asteroid discovered trailing Mars.

JPL's Eleanor Helin has discovered what appears to be the first Trojanclass minor planet, or asteroid, of Mars. The discovery came during the night of Jan. 3/4, while Helin and JPL colleague Scott Dunbar were conducting their regular observations for NASA's Planet-Crossing Asteroid Program, a systematic search begun in 1973. They were using the 48-inch (1.2-meter) Schmidt telescope at the Palomar Observatory. The asteroid, designated 1984AB, is in an orbit about the Sun basically the same as that of Mars although tipped upward 12 degrees. It has the same eccentricity of orbit and is 1.533 astronomical units from the Sun, compared with 1.524 AU for Mars. The asteroid always trails Mars in its orbit by about 65 degrees and never catches up. Helin estimates 1984AB to be about two to three kilometers across. Jupiter is known to have associated asteroids at its two libration points. The first such Jupiter Troja, Achilles, was discovered in 1906. Today, some 35 have been cataloged and a number of others are known but as yet uncatalogued. Follow-up observations are proceeding at the Infrared Telescope Facility on Mauna Kea, Hawaii.

# **Bulletin Board**

### Solar eclipse tour planned

Another in a series of worldwide expeditions is being mounted by the JSC Astronomical Society to Papua, New Guinea, and Australia Nov. 9 to 25 to observe and photograph the total eclipse of the Sun. This will be the ninth such expedition led by Paul Maley. Tax deductible benefits may be available to qualified individuals who participate in a research project to measure the solar radius variation. For additional information,

# Golf Association season begins Feb. 20

The 1984 JSC Golf Association season will tee off at Texas City Feb. 20 with a Florida Scramble. Courses lined up for this season include Willow Creek, Columbia Lakes, Texas National, the Woodlands and what some consider the best course in Houston, Walden. For an application form, call Jerry Shinkle at x2201. The deadline to play at Texas City is Feb. 14.

# Roundups sent directly to retirees

Recent NASA retirees from JSC and those scheduled to retire in the future need take no special action to ensure that copies of the Space News Roundup are mailed to their homes. The Personel Office automatically adds retirees to the Roundup mailing list, and you should start receiving the paper about two to four weeks after your retirement date. If you need to change your address for the mailing list, call Wanda Price at

### Space Camp opens in March

The U.S. Space Camp is being extended to 34 weeks in 1984 to accommodate increased interest in the youth science program at the Alabama Space and Rocket Center in Huntsville. Space Camp this year will run from March 11 to November 16 and will accommodate almost 3,400 boys and girls aged 12-14. Time to register for 1984 is short, however. Some 11,000 youngsters applied for the 1,400 openings last year, and applications are not automatically carried over to the next year. The camps run for one week and host 100 youngsters at a cost of \$350, which includes meals and housing. For more information or a registration form, call (205) 837-3400. There are also a few application forms available at the Roundup Office, Bldg. 2, Rm. 147, x5111.

# 'Best Little Gem Show' opens Feb. 18

Demonstrations of stone cutting and polishing, silversmithing and the faceting of gemstones will be taking place during the weekend of Feb. 18 and 19 during the ninth annual "Best Little Gem Show in Texas" at the Pasadena Convention Center, 79002 Fairmont Parkway. Educational lectures, slide and film programs and other features will be continuously presented during the show hours. Competitive and non-competitive exhibits of lapidary work, jewelry, minerals and fossils will be on display for the visitors to view. A 13-carat faceted topaz gemstone set in a 14k gold pendant is the grand prize to be given away during a drawing. For more information, call D. Mack Robinson, x2868 or 534-4696.

# NVSV Space News Roundup



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..... Brian Weich Asst\_Editor..... Betty Johnson

# New crews announced for 51-A and 61-D in '85 and '86

The crew of a 1985 Space Shuttle mission and a partial crew for a 1986 mission have been announced by the National Aeronautics and Space Administration.

The flights are mission 51-D, scheduled for launch in February 1985, and 61-D, forecasted for January 1986.

Commander of 51-D will be Brewster H. Shaw, Jr. (Lt. Colonel, USAF), 38, of Cass City, Mich. Shaw was pilot of the Orbiter Columbia on STS-9, the first Spacelab mission flown in November and December

Shaw's crew will consist of Bryan D. O'Connor (Major, USMC), 37, of Twentynine Palms, Calif., Pilot; and Mission Specialists Mary Cleave, Ph.D, 36, Southhampton, N.Y.; Sherwood C. Spring (Major, USA), 39, Hartford, Conn.; and Jerry L. Ross (Major, USAF), 35, Crown

Mission 51-D is to be the 21st Space Shuttle operation and the ninth flight of the Orbiter Challenger. Principal objectives of the six-day flight will be deployment of a SYNCOM communications satellite, and retrieval of the freeflying Long Duration Exposure Facility. The LDEF is scheduled to be deployed in April on mission 41-C, and contains experiments which require long-term exposure to space.

Mission specialists for mission 61-D will be James P. Bagian, M.D., 31, of Philadelphia; and Rhea Seddon, M.D., 36, of Murfreesboro. Tenn. John M. Fabian (Colonel, USAF), 44, of Pullman, Wash., will fly as one of the three pilots on

NASA intends to have threemember crews share flight deck

responsibilities on future Spacelabtype missions. The commander and another pilot for 61-D will be announced at a later date. Mission specialists are frequently selected earlier than flight crews since their training is more specialized and requires more time.

Fabian is an Air Force pilot with more than 3,500 hours of flying time. He flew as a mission specialist on STS-7 in July 1983, and is also scheduled to be aboard mission 51-A in October as a mission specialist. Dr. Seddon is also scheduled to fly on mission 41-F in August. Mission 61-D will be Dr. Bagian's first space flight.

Mission 61-D will be the fourth Spacelab flight and will focus on experiments in the field of life sciences for its seven days in space. It will be the ninth flight of the Orbiter Columbia.

# Canadian to fly on 51-A in October

NASA will fly a Canadian as a payload speicalist on Space Shuttle mission 51-A, set for launch in October, in addition to two Canadians already scheduled earlierfor Shuttle flights.

The announcement was made by Donald J. Johnston, the Canadian Minister of State for Science and Technology. NASA offered Canada the opportunity to fly a payload specialist this year in keeping with President Reagan's initiative to increase international cooperation

The Canadian crew member and backup for the October flight will be announced in March. Selection will be made by the National Research Council of Canada from a team of six chosen Dec. 5, 1983. Canadians will also fly on Shuttle flights in 1985 and 1986.

Shuttle Flight 51-A in October will be a six-day flight, carrying Telesat Canada's ANIK C-1 satellite and a Getaway Special experiment designed by two Canadian high school students.

NASA Administrator James M. Beggs stated, "We are happy to make this offer to Canada, one which will enhance the already long-standing strong cooperation between our two countries in space activities '

'NASA's offer at this time is an additional recognition of Canada's contribution to the Space Shuttlein particular, the delivery of CANADARM, the robot arm now part of the Space Shuttle.'

In response, Minister Johnston said, "I am pleased to accept the offer of an extra mission. This exciting opportunity to have a Canadian astronaut in space so quickly is of great importance to the eventual success of both experiments and a major step towards expanding Canada's space capa-

# **Black history activities planned**

In observance of National Black History Month, JSC will present two activities commemorating the 58th annual recognition of contributions Black Americans have made to American life and culture. Initiated in 1926 by Dr. Carter G. Woodson, Black History Month is now observed nationwide during February. This year's theme is "Black Americans and the Struggle for Excellence in Education."

The first JSC event, a luncheon at the Gilruth Recreation Center on Friday, February 24, will feature Mr. Fred Hampton, Administrator of the Houston Preparatory School, as keynote speaker.

Mr. Tony Brown, host and executive producer of Tony Brown's Journal, a national public television program which appears on Houston's Channel 8, will be keynote speaker for the second event, a program on Feb. 28, at 1:30 p.m. in the JSC's Olin E. Teague Auditorium, Bldg. 2.

Brown, a popular and muchquoted television host, is seen weekly nationwide on more than 240 public television stations. The nation's longest running national Black-Affairs television series, his program boasts five mission viewers.

JSC and contractor employees, as well as the general public, are invited to both events.

Tickets to the luncheon on February 24 are \$7 each and may be obtained from: Billy Hervey, Bldg. 1, x2908; Yvonne Simon, Bldg. 30, x2504; Diane Pegues, Bldg. 37, x4264; John Robert Jones, Bldg. 45, x6251; or Vergis Bourgeois, CSC, 486-8153, x172. The deadline for purchasing tickets is February 16.

# Pilot NET program underway

Employee involvement in problem solving is the focus of a pilot program underway at JSC. NASA Employee Teams, or NETS, made up of small groups of employees doing related work, will meet one hour weekly to define problems and recommend solutions to manlishment of the program January 13, R. Wayne Young, Director,

Administration, and Chairman of JSC's Productivity Committee, acknowledged that JSC has always used a team approach. However, he pointed out, the NETS concept is designed to use the knowledge and ideas of employees more fully and increase their involvement in management decisions.

and branch chiefs were held the March.

week of Feb. 6, with employee briefings scheduled for the week of Feb. 13 in branches where there is potential for successful implementation of the NETS concept. The next step will be selection of prospective employee teams from the volunteering organizations. Training for team leaders, facili-Briefings to interested division tators and members will be held in

People Helping People The United Way

# Cookin' in the Cafeteria

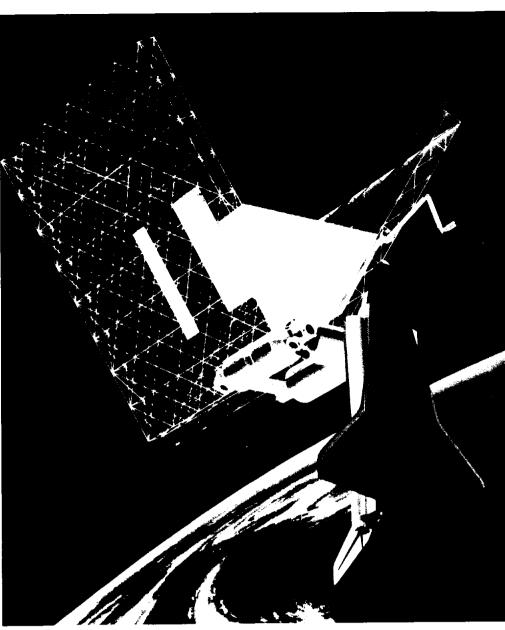
We regret that the cafeteria menu for the next two weeks was unavailable from the NASA Exchange at press time. For information on JSC cafeteria offerings, call the Exchange Store at x2363.

# Correction

In the last issue of Roundup we reported the new road along JSC's north perimeter would not have an effect on the deer population inside the gates. While road construction itself is having no impact on the JSC deer herd, the traffic which will use that road and the people who drive those cars are expected to cause severe problems for the

Human beings already have an adverse effect on the animals, according to Ray Meyer, technical manager of the groundskeeping contract, who says poaching on JSC land is an ongoing situation. Finding the remains of deer who have been killed during the night is

no unusual occurrence. For these reasons and several others, JSC officials have requested that the Texas Parks and Wildlife Commission move part of the herd, which numbers more than 100, to East Texas, where the whitetail deer herd is being reestablished. In our next issue we will have the details on that move.



Three classes of Space Station designs are under consideration. The one atop page one is the Building Block approach. Shown above are, left, the Delta

configuration and right, the Big T configuration. Design studies for the Station will continue for at least another year.

# Station design process now underway

(Continued from page 1) tronic devices of interest to defense electronic industries;

• The productivity of super-light, high-strength materials which could lead over the next several years to high performance substances for everyday uses.

· New business in communications for electronic mail and computer-to-computer communications that will change our current concept of sending the written word, dramatically reduce the cost of doing so, increase tax revenues and improve the overall productivity of the nation.

While it is too early for anyone to say exactty what a Space Station will look like when it is finally built, JSC's input into possible Space Station configurations will be significant.

Possible configurations for a permanently manned, Earthorbiting facility have existed within nators of each design class are

Space Station concept work intensified when Headquarters established the Concept Development Group (CDG) within its Space Station Task Force. Made up of people from NASA centers detailed to the task force, the CDG work is supplemented by tasks performed in-house at JSC and other centers.

Under the umbrella of JSC's Space Station Project Office, a tiger team called the Space Station Special Emphasis Study was led by Bass Redd of Systems Engineering in a brief (six-week), intense effort to generate JSC input into the initial configuration design process. Also incorporating the results of prior studies, three classed of configurations came out of that effort: the Building Block, the Delta and the Big-T approaches.

According to Clarke Covington, Manager of the Space Station Project Office, common denomi-NASA for some time. Recently, modularity and evolutionary capa-

bility. Each is made up of modules in which people work and live and where supplies are storedmodules which can be carried into orbit in the Shuttle's payload bay and assembled by a manipulator system.

The three illustrations are drawings of initial configurations produced by the JSC tiger team in December 1983. Because the initial station established in the early '90s will not be what is needed 10 years later and replacement is not feasible, the station will be designed and built in such a way to facilitate additions to enhance capability and cost-effective performance.

The Building Block approach (see photo, page 1) is the one most often seen and is the easiest and cheapest way to build a space station, minimizing structure and subsystem hardware. The pressurized modules form the structural foundation of the station, which is booms for proper clearance and to minimize the effects of plume impingement from Orbiter engines when docking.

However, missions requiring very large electrical power levels would mean the solar arrays would become very large, presenting problems involving the dynamic characteristics of large masses mounted on limber booms.

One way to solve that problem would be with the Delta type of configuration (see photo, page 3), which uses a triangular truss structure for independent attachment of station elements. This structure maximizes rigidity and enhances controllability and mission versatility. The Delta is approximately solar-oriented with the array mounted on one face of the triangle at a constant angle to the orbit plane. A potential problem with the

solar arrays are mounted out on lines and wires over a larger area.

The Big-T approach (see photo, page 3) to tracking the Sun is somewhere in between the Building Block and Delta, involving rotation of the arrays to track the Sun as the Space Station orbits the Earth. The solar array is on a stiff structure, but as the Sun's Beta angle changes during the year, the large T-structure with the solar array is tilted more toward the Sun. Thus the array can be made a bit smaller than the one on the large Delta, even though it does not totally track the Sun the way the Building Block configuration does. The "T" is Earth-oriented and is arranged for gravity gradient stability. The solar array is approximately twice as large as a fully-oriented array.

The Big-T also uses a truss structure for enhanced rigidity, element independence and mission versatility. Area is available on the Delta approach is in deployment truss substructure for affixing hard-Earth-oriented. The Sun-oriented of the big structure and installing ware and mission equipment.

# Global survey underway for remote data acquisition needs sensing

A group called the Geostat Committee is conducting a survey of Earth's most promising exploration areas as data acquisition and archiving demands increase now that six distinct remote sensing platforms are being readied for launch.

Those platforms include Landsat D' (pronounced D-Prime), which will become Landsat 5 in March after it replaces the troubled Land-

The Geosat Committee, a group of geological exploration and engineering companies, is conducting the global survey in conjunction with the National Oceanic and Atmospheric Administration (NOAA), which has operational control of U.S. Landsat and other remote sensing satellites.

The need for the survey, according to both NOAA and Geosat Committee President Dr. Frederick

Henderson, is especially pressing now that six different remote sensing platforms are being readied for launch over the next few years. The first to go up will be Landsat D' in early March atop a Delta rocket launched from the Western Space and Missile Center near Los Angeles.

Others to follow over the next several months are France's SPOT, the European Space Agency's radar ERS-1, Canada's RADARSAT, West Germany's SPAS/MOMS (SPARX, a commercial version of this configuration, will fly aboard Columbia during Mission 41-G in August) and Japan's JERS-1.

"We are urgently requesting that anyone who is likely to need geological data from satellite systems, whether to remain commercially competitive during the next decade or for academic research. participate in our survey," Henderson said. "All information received from individuals or corporations will be kept strictly confidential. Participants will be noted in the final report provided to government agencies, but they will not be linked to any particular area of interest, he said.

The committee will compile the responses, which consist of a short questionnaire and a grid map of the world on which significant areas of interest can be marked, and will provide them to appropriate decisionmaking agencies around the world.

"If this survey represents a credible response by the geological community," Henderson said, "governments should take it into account in satellite scene selection. Without a widespread response to this survey, however, there is no assurance that data needed during the next decade will be available when researchers and exploration companies decide they want them."

While that effort proceeds, NASA

and NOAA are preparing Landsat D' for launch on or about March 1. The earlier than anticipated launch of this satellite is necessary due to unexpected problems with Landsat 4. Those problems include a failure of the solar array cables, which has caused a serious power supply problem and the possibility that Landsat 4 could cease operations at virtually any time. At the first signs of further failure. NOAA plans to bring Landsat 4 down to a parking orbit where it could potentially be retrieved during a Shuttle flight. Shuttle Flight 62-B, scheduled for launch on April 1, 1986, has been mentioned as a possibility.

Other problems with Landsat 4 include a failure of the central unit, a failure of the wideband communication module which shut down Xband transmissions (and the Thematic Mapper), and persistent noise patterns in multispectral scanner video data.

The power cables, solar array diode module, sun sensor cable connectors, the Central Unit and the prime frequency source amplifiers in both X-band and Ku-band systems were all redesigned for Landsat D'. The new Landsat's orbit will be phased in with respect to Landsat 4 in much the same way that Landsats 2 and 3 were phased. Landsat 5 will pass over the same ground track traversed by Landsat 4 exactly eight days later. In all other respects, the two satellite orbits will be identical (sunsynchronous, 16-hour repeat coverage at an altitude of about 450

Those wishing to take part in the Geosat Committee survey should immediately contact the organization at 153 Kearny . Suite 209, San Francisco, 94108, or call (415) 981-6265. A photocopy of the survey form is available in the Roundup office, Bldg. 2, Rm. 147, x5111.

# Gilruth Center News

**Spanish lessons** — This course will introduce the beginner to basic pronounciation and grammar, but the main emphasis will be on practicing vocabulary and phrases through conversation with a group. The first class meets from 7 to 8:30 p.m. Feb. 13 and the course runs for six weeks. The cost is \$20 per person.

Tennis classes — Beginning tennis classes start Feb. 13 for eight weeks and run from 5:15 to 6:45 p.m. Intermediate classes start Feb. 15 for eight weeks and run from 5:15 ro 6:45 p.m. The cost is \$28 per person.

Defensive driving — Learn to drive safely and qualify for a 10% reduction in your insurance rates for the next three years. The class is held from 8 a.m. to 5 p.m. March 10 at the Rec Center and the cost is \$28 per person.

Children's movie — The next children's movie will be the Disney classic, "Snow White," from 10 a.m. to noon Feb. 18. The cost of \$1 per person includes popcorn and cokes. Tickets are on sale in the Bldg. 11 Exchange Store.

Ladies weight training — This popular course begins Feb. 6 and runs for four weeks. Class meets Mondays and Wednesdays from 7 to 8 p.m. and the cost is \$20 per person. Space is limited.

Speedreading - This course covers the techniques needed to gain greater reading speed and comprehension. The class meets for seven weeks beginning Feb. 27 from 6 to 8 p.m. and the cost is \$70 per person. The deadline for registration is Feb. 23.

Country western dance — Beginners meet from 8:45 to 10:15 p.m. beginning Feb. 27, while intermediates meet from 7:15 to 8:45 beginning on the 27th. Both classes run for six weeks and the cost is \$24 per couple, limit 15 couples per class.

Dancercise — This class will gradually get you into shape. The six week course meets on Tuesdays and Thursdays from 5:15 to 6:15 p.m. and begins Feb. 14. The cost is \$25 per person.

Weight loss class — This course is designed to help change the eating and thinking habits of people who have trouble losing and maintaining a steady weight. The course runs for six weeks and meets from 6 to 8 p.m. Tuesdays beginning Feb. 14. The cost is \$25 per person.



Astronaut Bruce McCandless flies untethered in space during the first checkout flight of the Manned Maneuvering Unit earlier this week during Shuttle Mission 41-B. For more complete coverage of this spectacular spacewalk, see the next edition of the Space News Roundup.

# Roundup Swap Shop

Ads must be under 20 words total per person, double spaced, and typed or printed. Deadline for submitting or cancelling ads is 5 p.m. the first Wednesday after publication. Send ads to AP 3 Roundup, or deliver them to the Newsroom, Building 2 annex. No phone-in ads will be taken. Swap Shop is open to JSC federal and on-site contractor employees for non-commercial personal ads.

#### **Property & Rentals**

For lease: League City Newport 3-2-2, fireplace, large lot, contemporary. Call 338-2130, leave message.

For rent or lease: Bayou Vista beach house, 45S & Hwy. 6, 2BR, pier, storage, cov. parking, w/ or w/o appliances, central air/heat, fenced yard. Call Janice Evans, x5040, Mark Evans, 640-4600, or 409-935-2867 after 5 p.m.

For lease: El Dorado Trace condo. 2-1, all appliances, security system, cov. parking, pool, club house, \$420/mo. + deposit. Call 937-7606 after 6 p.m.

For lease: Kings Park townhome, 0.6 mi. from NASA main gate, 2/2.5/2CP, view of pool & bayou from both floors, end unit, quiet, 1219 sq. ft., fireplace, large kitchen, outside storage closet, W/D connections, \$575/mo., short term lease & lease/purchase available. Call Quin Shepperd, 486-7770, nights.

For lease: Large 2-21/2-1 duplex townhouse, fireplace, 1500 sq. ft., fenced patio, atrium, near pool, garage opener, stained glass door windows. Call 452-

For lease: 10 acres, Alvin area, fenced, on paved road-horses, cattle. Call Damewood, 482-5572.

For rent: Galveston-by-the-Sea condo, 2 BR, furnished, for rent by day (2 minimum), week or month. Call Clements, 474-2622.

For rent: Galveston Gulf front condo, treat yourself to 2-day to 1-mo. vacation, completely furnished, low rate. Call Nussman, 488-7762.

For lease: University Green courtyard home, 2-2-2, 1-yr. old, fireplace, microwave, fenced, \$750 + deposit. Call 488-0500 or 480-6516 after 5 p.m. or week-

For lease: Sterling Knoll, 3-2-2, very clean, fenced, available immediately, \$525/mo. + deposit. Call 488-0500 or 480-6516 after 5 p.m. or weekends.

For lease: Baywind II townhouse, 1-1-1, very nice, \$375/mo. + deposit. Call Elaine, x3803 or 334-2402.

For rent: Lake Tahoe condo, 2 BR, 2 bath, sleeps 6, Apr. 21-28. Call Chuck

at 333-2030, x278. For lease: Waterfront condo, 1 BR, fully furnished, behind Hilton Hotel, \$800/mo. Call Paul Maley, x5378 or

488-6871 For lease: Secluded Dickinson townhouse, 2-11/2-2, carport, end unit in wooded area, never flooded, excellent

condition, \$450/mo. Call 554-7160. For sale: Dickinson 3-2-2, large fenced lot w/trees, brick ext., brand new roof, carpeted, must sell, moving. Call Harold,

x2855 or 337-2679. For sale: Forest Bend, clean 3-2-1, large den, fenced yard, large dog run,

VA assumption 8.75%, \$52,500. Call 482-1106 after 5 p.m.

For sale: Friendswood, 3-2-2, almost new, close to schools & JSC, fully fenced, landscaped, fireplace, ceiling fans, low equity, FHA loan, \$68,000. Call 996-9628

For sale: Brookforest, 3-2-2, large lot, 2-story, \$117,000. Call Paul Maley, x5378 or 488-6871.

### Cars & Trucks

1980 Chevy Citation 4-dr., V6, PS/PB, air, excellent condition, new transmission, \$3,400. Call 334-5392 after 5 p.m.

1975 Chevrolet Monza, 4-speed, V-8 (4.3 liters), runs but needs work, 69K mi., original owner, \$800. Call Quin Shepperd, 486-7770, nights.

1980 Dodge D50 (Mitsubishi) pickup, 31K mi., good condition, new tires, Leer camper cover, \$3,900. Call Nancy Hutchins, x2858 or 482-5607

1980 Toyota Tercel liftback, automatic, A/C, rust-proofed, never in accident, new Michelins, immaculate condition, 31 mpg, 65K mi., \$4,100. Call Gary, x2337 or 482-1290.

1975 Ford LTD, 2-door, automatic, A/C, big 6-passenger, safe, good for car-pooling or family, 67K mi., \$1,400. Call Gary, x2337 or 482-1290.

1979 Mustang, 2.3 liter, A/C, stereo cassette, PS, PB, high mpg, std. trans., fastback, center console, sports package, excellent condition, \$2,895. Call 643-8944 after 6 p.m.

1974 Ford Gran Torino, 4-door, vinyl Boats & Planes top, 351, V-8, PS, PB, A/C, AM/FM/8track, \$1,650. Call 485-3028.

1975 Datsun 610 wagon, rebuilt engine, new tires, radio, air, runs well, body rough, \$1,100. Call x3849.

1970 Maverick, V-6, auto, A/C, stereo, new tires & ignition, run good, \$750. Call Nat, x6316 or 474-4228, evenings. 1958 Packard sedan, auto, PS/PB,

run & looks great, \$900. Call 488-3354 after 6 p.m.

1966 Mustang, rebuilt 289 engine, 3speed, damage on right front repairable, \$900. Call 488-3354 after 6 p.m.

1972 Cadillac Sedan DeVille, goldflake paint, power steer/brakes/windows/locks/seat, many extras, exc. cond., good mileage, \$1,995 or best offer. Call Charlie, x5543 or 488-1010 eveninas

1975 Chevy P/U, V-8, A/T, P/S, dual tanks, AM/FM stereo cassette player, 8" Cabover camper shell, good condition, \$1,900 for truck, \$800 for camper, both \$2,500. Call Randy, x4521 or 482-4083.

1977 Ford LTD, 4 dr., AC, cruise control, good running condition, clean, \$1,250. Call Ron, x3691 or 488-7387

1980 Chevette, low mileage. Call Don Brown, x3781 or 488-0754.

1978 Datsun 510, AM/FM cassette, A/C, very good condition, \$2,500; 1980 Chevy van, SWB, auto, A/C, \$4,000. Call 484-2143 after 5 p.m.

1972 Pontiac, big family car, good cond., all luxury features, \$900. Call Elaine, x3803, 334-2402.



Sailboat, Solcat 18 with trailer, needs jib, mainsheet tackle, boom & one centerboard, \$800. Call Jack, x2118 or 538-1577 after 6 p.m.

PROGRAM, EXT. 3545

Selling 1/4, 1/2 or all of 1975 IFR Skyhawk based at LaPorte, Narco avionics including DME, HSI and 3axis autopilot, none finer anywhere for less. Call Bill Pruett, x4491 or 487-3857

16' Roughneck bass boat, 85 HP Mercury, power trim, thruster troll motor, lowrance, custom trailer, real clean, \$3,500. Call 488-4117.

For rent: Piper Lance, 6-place, 160 knots, full IFR, club seating, \$85/hr. wet, Call L. Damewood or H&R Aviation. 471-1675.

### Cycles

1981 Kawasaki KZ440, excellent condition, 2,900 mi., \$1,025. Call 333-6206, or 334-6113 after 5:30 p.m.

### **Audiovisual & Computers**

For sale or trade: Kenwood TS700A 2-meter, all-mode transceiver, excellent condition. Call Ken, x2176 or 473-2602.

New 5-1/4" diskettes for Apples, Atari, TRS-80, IBM, Commodore, etc., \$2.25 ea or \$21.55 for 10. Call Huntley, x6441 or 472-3244.

#### **Photography**

Pentax K-1000 35 mm camera with flash, 2 filters & carrying case, \$95. Call Julie, x5107.

### Musical Instruments

Kimball console piano, designer series, 5 yr. old, \$1,200. Call Dianne, x2558.

Cornet, King Cleveland 602, student, used one semester, excellent, w/case, \$175. Call 643-5962.

# Household

White vinyl hide-a-bed couch, good condition, \$100. Call Leah, x5316.

Berkline lounger, rust plush velvet, 7 mo. old, \$250. Call Janice, x2059 or 534-2196.

Sofa bed, \$175; secretary, \$125; cedar chest, \$175; hanging lamp, \$50; storage trunks, \$25 ea. Call 333-9234

Lamps, excellent condition, custom silk shades, goldleaf barefoot girl, 37" & antique black Spanish, \$25 ea. Call 474-5610 after 5 p.m. or x2228.

21 cu. ft. Whirlpool SXS w/icemaker, avocado green, clean, works good, \$200 or best offer. Call x2138 or 334-1303 after 5 p.m.

Chairs, good condition, \$150. Call Dianne, x2968 or 488-1359.

AKC English Springer Spaniels, liver & white, 4 males & 4 females. Call Mary, x2782.

## Miscellaneous

Muskrat fur cape, \$75; Panasonic 5' B&W TV, \$50; Richard Timm wildlife prints, set of 40 with albums, signed, retail \$2,575, sell for \$2,400. Call 333-9234.

Bike, 10-speed, 24", hydraulic brakes, Sears, \$50. Call Janice, x2059 or 534-

Four 15x7x8 Cragar super sport mags, back tires B. F. Goodrich wide 60's mounted & balanced, front tires no good, mags & back tires in excellent condition, \$300. Call James, x4414 or

Tennis rackets: Dunlop Maxplay, new, \$25; Dunlop Maxplay, strung, new, \$40; Wilson Advantage, strung, used, \$30; Head Competition III, strung, used, \$45. Call x4107 to 482-8457.

Two men's winter coats, med. & small, \$10 ea.; multifunction men's digital wristwatch, new, \$5. Call Jeff, x3967 or 996-0755 after 5 p.m.

Prints, signed & numbered, "Smokey Mountain Mills & Cabins" by John K. Thierback, exhibited at World's Fair, set of 6, cost \$96, sell \$48/offer. Call 280-0454

Ready to install reworked cylinder heads for 318 Chrysler product, \$150; w/DC valve springs instead, \$225. Call

VW engine, dual port, 1836 cc, bug spray carb, new clutch & pressure plate, extractor, 1,000 mi., \$600 or best offer; new 14 x 7.5 American Vector mag wheels, Chevy bolt pattern, lugs/ caps incl., \$150 firm. Call x2138 or 334-1303 after 5 p.m

AM-FM stereo 40 ch. CB radio, Lake, complete except speakers, \$125. Call x2138 or 334-1303 after 5 p.m.

Sear's brand boy's navy suit, size 12, worn twice, \$15. Call Becky, x6158 or

Four 15 x 8 chrome spoke wheels, 6 lug, fits Chevy/GMC 4WD trucks, cost \$30 ea., sell for \$10 ea. Call Bernard, x5547 or 481-2784.

Mini-trampoline, \$25. Call Dianne, x2968 or 488-1359.

Gerrard LAB-80 stereo turntable, 2 cartridges, all acessories; 2 - 20" girl's bikes; 1 set D.P. Jr. water skis; 2 infant car seats; infant back-pack carrier; all items in good to excellent condition. Call Frank, x5816 or 486-8504 after 5

### Wanted

NASA publication "Spinoff" for 1976 thru 1979 & 1981. Call Tom Winston, x3836 or 488-7513 after 5 p.m.

Bell full-face motorcycle helmet, bright orange, excellent condition, \$75. Call Marie, x3606 or 488-2870 after 5

Roommate to share 3 BR, 11/2 bath C/AC/H house in League City, \$150/mo. % utilities. Call Keith, x3643 or 332-8251.

### Carpools

Would like to form or join carpool from Loop 610 S. & Stella Link, or Meyerland Plaza (Loop 610 S.) to Agena Bldg. on Bay Area Blvd., 7:30 a.m. to 4:30 p.m. Call Chau, 488-9005, x64, or 668-2572.

Carpool partners between JSC west gate & Deer Park via Red Bluff, 8 a.m. to 4:30 p.m. shift. Call Carol, x5996.

Want to join carpool, pay expenses, from Meadowbend, League City area to NASA, 7:30 a.m. to 4 p.m. shift. Call David, x4726 or 538-3273.