



"We bring people to space — We bring space to people"

Marshall reaches agreement with Air Force, DoE in Tenn.

The Marshall Center has reached an agreement with U.S. Air Force and U.S. Department of Energy facilities in Tennessee to work jointly on research, development and test activities.

The Memorandum of Understanding, to be signed this week during the Tennessee Valley 2000 Regional Economic Summit in Huntsville, focuses on collaboration and leveraging of the complementary capabilities of the organizations.

The agreement between the Marshall Center and the U.S. Air Force Arnold Engineering Development Center at Arnold Air Force Base, Tenn., and U.S. Department of Energy Oak Ridge Operations, in Oak Ridge, Tenn., will be signed by officials of those agencies June 1 at 12:30 p.m. at the Von Braun Center.

"By working together, we can enhance the effectiveness of our operations," said Art Stephenson, Marshall Center director. "We will benefit from each other's accomplishments and capabilities as we pursue new joint opportunities."

The agreement calls for collaboration in research, development, test and evaluation to make the best use of scientific and engineering capabilities and facilities supporting the missions of the three government agencies.

The Marshall Center has previously reached cooperative agreements with both Tennessee facilities. The Memorandum of Understanding is more comprehensive, however, in that the agencies will seek new opportunities to work on projects together — rather than merely share

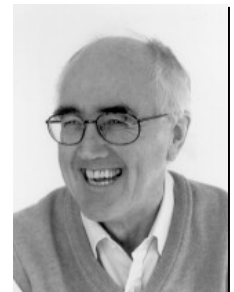
information about current or planned projects.

The Marshall Center is NASA's premier organization for development of space transportation and propulsion systems, as well as NASA's leader in microgravity research. The Air Force's Arnold Engineering Development Center provides aerospace ground test and evaluation products and services, and is the world's largest complex of aerospace ground test facilities. The Department of Energy Oak Ridge Operations has extensive expertise in many areas of science and technology, including advanced materials, manufacturing and prototyping, sensors and instrumentation, and advanced computing.

12th Von Braun Forum Author James Burke to speak today at VBC

by Jonathan Baggs

Best-selling author, television producer, and noted science historian Dr. James Burke will be the featured speaker today at NASA's Von



Dr. James Burke

Braun Forum. The event is free to the public and will begin in the South Hall of the Von Braun Center at 2:15 p.m.

A frequent keynote speaker on the subject of technology and social change, Burke will kick-off the event Thursday with "Exploration: Discovering New Frontiers," — a discussion of how new

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"Safety is an everyday effort"

— safety slogan submitted by
Ann Towery, SA34



Photo by Terry Leibold, NASA Marshall Space Flight Center

Taking Economic Summit tour

Beverly Absher, left, Kenneth Haerer and other members of the Tennessee Valley Economic Summit, visiting Marshall on Tuesday, inspect a sample in the vacuum plasma spray department in the Productivity Enhancement area of Bldg. 4707.

von Braun envisioned station as 'Wheels in the Sky'

On May 29 the space shuttle Atlantis landed after docking to the infant International Space Station (ISS), zipping around the planet at 17,000 mph in the airless space 200 miles over our heads.

Long before such an extraordinary project was actually underway, a permanent space station where people live and work existed in the minds of science fiction writers and the imaginations of those who read their books.

Among those fascinated by tales of women and men living in space was a teenage boy growing up in Germany in the 1920s.

In a groundbreaking 1952 article in Collier's magazine — five years before Sputnik — von Braun wedded fantasy to physics in his vision of how then-existing

technology could be used to put a permanent space station into orbit around the Earth.

Soon after, von Braun appeared in a three part Disney television show, which he helped to produce, on the future of space travel.

The public enthusiasm sparked by the shows and the Collier's article, which ran 4 million copies, is considered a turning point in the American pursuit of space travel by some historians.

"Von Braun (caused) a great shift in public opinion in terms of space flight," said Mike Wright, historian for NASA's Marshall Center where von Braun conducted much of his work.

"While the ISS resembles something constructed from an Erector Set, the

paintings in the Collier's article look more like a wheel in the sky.

But while space travel and space stations had appeared frequently in writings of science fiction and scientific speculation, von Braun brought charisma and political savvy to the cause.

"He was revolutionary in his science and his engineering, but he was also revolutionary in this approach of going directly to the public," Wright said. "Von Braun said we (scientists) can publish scientific papers and treatises until hell freezes over, but if we don't get the attention of the tax payer, we're not going anywhere."

Patrick Barry wrote this article for nasa.science.gov



Photos by Terry Leibold, NASA/Marshall Space Flight Center



Asian/Pacific American Heritage Festival

The Marshall Center and Team Redstone sponsored an Asian/Pacific American Heritage Month program and festival May 24 at Redstone's Post Theater. Above, Dr. Alan Chow, left, chairman of Marshall's Asian/Pacific American Advisory Committee chats with Willie Love, center, Equal Opportunity Office assistant director, and Jim Kennedy, director of Marshall's engineering directorate. At left, Dang Kennedy, sister-in-law of Jim Kennedy, performs during the festival.

NASA, VA partner for patient safety

A NASA-operated voluntary patient safety protection system came to life Tuesday when NASA and Department of Veterans Affairs officials signed an agreement in Washington, D.C.

By forging an alliance with NASA, the veterans' agency will be tapping into NASA's expertise on safety issues to implement and operate a system for recording and analyzing medical errors and "close calls." VA operates 172 medical centers that last year treated more than 3.3 million patients, and has been a leader in reporting medical errors.

Dr. Henry McDonald, director of Ames Research Center in Mountain View, Calif., and Dr. Thomas Garthwaite, acting undersecretary for health for the VA, signed the formal agreement that paves the way for development of the voluntary external patient safety reporting system.

NASA will operate the VA Patient Safety Reporting System that is modeled after the NASA-administered Aviation Safety Reporting System (ASRS) that is funded by the Federal Aviation Administration.

Key Personnel Announcement

Dennis E. Smith has been appointed deputy director in Marshall's Space Transportation Directorate.

Prior to joining the Marshall Center in 1995, Smith worked with the Office of Management and Budget, Executive Office of the President, where he played a key role in developing and managing major policy and budgetary issue related to an annual \$10 billion federal budget.

Smith was involved in numerous Space Transportation related activities. He helped implement the President's National Space Transportation Policy; achieved White House consensus to establish NASA's Reusable Launch Vehicle Program; led NASA's Future-X Pathfinder definition efforts; assisted in developing the Advanced Space Transportation Program; and led an effort to develop NASA's Space Transportation Council.



Photo by Doug Stoffer, NASA/Marshall Space Flight Center

Russian defense delegation visits Marshall

Mike Cole, right, of the Systems Test Group in Marshall's Microgravity and Applications Dept., shows member of the Russian Leadership Program Defense Delegation microgravity hardware during a recent tour of the Center. The group also visited the Payloads Operations Integration Center and Space Station manufacturing and assembly facility.

Chandra clocks 1 million mph wind from vicinity of black hole

The Marshall-managed Chandra X-ray Observatory has examined the stormy environs of a giant black hole in the active galaxy NGC 3783 and measured the dramatic effects of intense radiation produced by matter before it plunges into the black hole. This radiation heats surrounding gas and drives a million mile per hour wind away from the crushing grip of the black hole's gravity.

A team of researchers used the High Energy Transmission Grating in combination with the CCD X-ray camera aboard Chandra to study the properties of the wind. "X-ray observations allow astronomers to probe these extremely powerful gas flows that have been suspected to exist, but have been impossible to study precisely before," said Professor Niel Brandt, of Pennsylvania State University, University Park, one of the leaders of the team.

The grating spreads the incident X-ray beam into a rainbow-like display of

hundreds of different X-ray "colors" or energies. Computers translated this display into a jagged-line plot that resembles an electrocardiogram. Specific elements reveal their presence by sharp absorption dips in the plot. By examining the widths and locations of these dips, the researchers can use the same principle used by a radar gun to measure velocities in the extreme environment of the galaxy's core.

This is the most detailed X-ray spectrum ever taken of a galaxy with an active black hole," said Dr. Shai Kaspi, also of Penn State. "It reveals that the wind contains oxygen, neon, magnesium, silicon, sulfur, argon and iron." An analysis of the wind by team member Professor Hagai Netzer of Tel-Aviv University in Israel, showed that the wind almost completely surrounds the black hole.

The event horizon of the central black hole in NGC 3783 has a diameter about a

hundred times that of the sun, but it produces more radiation than a billion suns as gas is sucked into the black hole at nearly the speed of light. A portion of this powerful radiation is absorbed by gas that surrounds the black hole. Electrons in the gas are boosted from low to high-energy states, and some are ripped from their atoms. The gas is heated to a hundred thousand degrees Celsius or more and driven away from the black hole into the galaxy.

The research team for this investigation also includes Dr. Rita Sambruna, Dr. George Chartas, Professor Gordon Garmire, and Professor John Nousek of Penn State. The High Energy Transmission Grating Spectrometer was built by the Massachusetts Institute of Technology (MIT), Cambridge, Mass. The Advanced CCD X-ray Spectrometer (ACIS) X-ray camera was developed for NASA by Penn State and MIT.

Marshall Center selects companies to help identify new space transportation technologies

by Marianne Higgins

The Marshall Center has selected nine companies to help define how NASA can get into space more safely and for less money than we can today using the Space Shuttle.

The Marshall Center is NASA's Lead Center for Space Transportation Systems Development.

The companies will share in a \$15 million NASA Research Announcement effort titled the "Second Generation Reusable Launch Vehicle (RLV) Risk Reduction Definition Program."

This research — a first step in defining detailed requirements and identifying and implementing improvements in vehicle safety — will be used to support a second-generation Reusable Launch Vehicle (RLV) competition in 2005. The Space Shuttle is a first-generation vehicle.

The companies selected will provide the next step in the work required to increase safety by a factor of 100 while decreasing cost by a factor of 10," said Dan Dumbacher, manager of the Second Generation Reusable Launch Vehicle Program Office. "We're early in the program, and we look forward to further industry involvement to accelerate the effort in fiscal 2001."

Companies chosen to participate in this effort are Orbital Sciences Corp. of Dulles, Va.; The Boeing Company of Seal Beach, Calif.; Andrews Space & Technology of El Segundo, Calif.; Lockheed Martin Space Systems Company of Denver, Colo.; The Boeing Company's Rocketdyne Propulsion and Power of Canoga Park, Calif.; Pratt & Whitney of West Palm

Beach, Fla.; Futron Corporation of Bethesda, Md.; Kelly Space & Technology of San Bernardino, Calif.; and Space Access of Palmdale, Calif.

This effort will further systems requirements definition work necessary for the Second Generation RLV program, leading to initiating the business and technical risk-reduction activities in fiscal 2001.

These companies will be able to take advantage of work already under way on X-33, X-34 and X-37 experimental technology demonstration vehicles. The study will not only explore possible Earth-to-orbit launch vehicles, but also in-space orbit transfer vehicles, ground and flight operations and the technology and organization required to support both.

NASA anticipates awarding more contracts this year in various technical areas, resulting from the NASA Research Announcement.

Making access to space less expensive and safer is part of NASA's Space Launch Initiative, designed to increase commercial development and civil exploration of space. The Second Generation Reusable Launch Vehicle Risk Reduction Definition Program, part of the Space Launch Initiative, is a result of NASA's industry-led Space Transportation Architecture Studies in 1998 and 1999, and NASA's integrated Space Transportation Plan developed in the fall of 1999.

The writer, employed by ASRI, supports the Media Relations Dept.

Project management classes schedule set

Two project management classes are scheduled at Marshall.

Project Implementation will be from 8:30 a.m.-4 p.m. July 10-14 at Marshall. This course emphasizes the Implementation Sub-Process of NASA's Provided Aerospace Products and Capabilities (PAPAC) Cross-Cutting process. It focuses on executing a well planned, baselined project using the Program and Management Systems Requirements described in NPG 7120.5A.

NPG 7120.5A Implementation will be from 8:30 a.m.-4 p.m. June 22 and Aug. 22, in Bldg. 4200, room G-21. This course familiarizes program and project personnel with the NASA Program/Project Management Process and how they fit into that process.

For more information, call Renee Higgins at 544-8864.



Photo by Dennis Olive, NASA/Marshall Space Flight Center

International Space Station flag raising at Bldg. 4663

Barry Dawson, left, of New Technology Inc., Flight Projects Directorate Deputy Jan Davis, center, and Jim Ellis, deputy director of the Safety and Mission Assurance Office, are joined by others in raising the new Space Flight Awareness flag of the International Space Station at Bldg. 4663.

Team develops software used with Chandra, Space Station

by Debra Valine

When the Chandra X-ray Observatory launched last July, a ground-based software system developed at Marshall was instrumental in enabling the observatory to perform its mission. A different version of this software system will be used for the International Space Station.

The team of developers from Marshall, Lockheed Martin, New Technology Inc. and bd Systems — all Huntsville facilities — worked together to build the system that supports Chandra from the Operations Control Center in Cambridge, Mass. Since July, Marshall has implemented system changes requested by the control center; another system will be shipped next month.

There have been no significant problems with the software,” said Patrick Molloy, the Systems Development Team lead in Marshall’s Flight Projects Directorate. “As with any software system, we expect the users to ask for additional software capabilities from time-to-time. This next revision will upgrade the operating system.”

Because of the magnitude of this project, five years were required to design, develop, test and validate it before it was installed to monitor and control Chandra data functions. Another software program handles the science data.

Along the way, the software development project split into two directions: one for Chandra, the other for the Space Station. “The software also was used for pre-mission simulations and user

training prior to launch,” Molloy said.

The software monitors and sends commands to the Chandra spacecraft. It deciphers data, interprets the data and calibrates it for display to the users, Molloy said. It does some amount of converting to real numbers, and ensures that the numbers — temperatures, for example, are within certain limits.

It has a predesigned set of limits,” said Cora White, the contract lead with Lockheed Martin at Marshall. “For example, if a particular part on the observatory gets too cold or too hot, it could cause a problem. The engineers set up limits within which they know the equipment is operating properly. One of the software functions is to signal them when equipment is out of the limits they have set.”

The data are stored for retrieval over a five-year period. Science data are separated from the engineering data and sent to the Chandra Science Center, also in Cambridge.

The other thing we do is command,” Molloy said. “We build the command loads to send up to Chandra that tell it what to do. It has performed extremely well.”

The recent software update improved system performance. “The next system update provides further performance improvements and some minor enhancements that the people working in Cambridge wanted,” White said. “The newest version is due to ship next month.

See Chandra software on page 7

Marshall Center forms volunteer safety team

The newly-formed Marshall Safety and Health Action Team (MSAT) is a volunteer, “grassroots” organization that enables all employees to become involved in promoting safety and health in the Marshall community.

The team of civil servants, contractors and union representatives joined together to promote a safe and healthy work environment. Because it’s an independent “bottoms up” approach to safety and health, the team will be the conduit through which employee ideas are brought into the Marshall culture.

This team’s function is to provide a confidential forum for employees to bring forward issues that contribute to overall employee well being. This will be achieved by doing the following:

- (1) Promote safety and health training and information.
- (2) Promote a safe work environment by providing inputs —
 - a. to safety and health requirements, and
 - b. to support evaluation of corrective actions resulting from accidents and close calls.
- (3) Evaluate and recommend appropriate emphasis to be placed on safety and health issues.
- (4) Interface with the Center’s Central Safety, Health &

Environmental Committee (SHE) and existing safety and health programs, as necessary.

Membership is voluntary. Each organization will have one voting member — elected every year — but non-voting membership is unlimited and open to all.

Jan Davis, deputy manager of Marshall’s Flight Projects Directorate, is the team’s first management adviser. Each employee union also may designate an adviser.

A Safety Bowl will be the first activity to promote safety and health. The Safety Bowl — similar to a college bowl — will have 16 teams from all Marshall organizations competing against each other, trying to make it to the final match. The competition will be based on each team’s ability to quickly answer easy safety questions, which will be published in advance. The Safety Bowl competition will culminate in the Safety Bowl championship match on September’s Safety Day. The organization that wins the final match will take home a trophy, which they can display and brag on until next year’s competition.

Marshall’s Safety and Health Action Team will meet every other Wednesday from 10-11 a.m. in Bldg. 4203, room 3002, beginning June 7.

Forum

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knowledge triggers innovation, changes in how such innovation occurs and the subsequent impact on society. He will address the history of exploration that led to humans reaching into space and how technology drives economic development, as well as improving our quality of life.

This is the 12th year for the Forum, sponsored by the Marshall Center to communicate the Center's goals, accomplishments and impact on the region and the nation. The event involves the academic, industrial, arts and professional communities. It was named in honor of Dr. Wernher von Braun, Marshall's first director and leader of the Saturn V rocket team that took man to the Moon. His persuasive efforts to rally Americans around the space program helped Huntsville become a technology – centered city that continues to reap the benefits of economic expansion from spin-off industries.

Previous forum speakers have included Walter Cronkite, John Denver and Jim Hartz.

Burke has been writing, hosting and producing award-winning documentary television series for 35 years. His most recent television work is a 10-hour technology history series called "Connections3" for The Learning Channel. He has authored eight books and contributes a monthly column to Scientific American.

In 1965, Burke began work with the British Broadcasting Corp. and became its chief reporter on the Apollo moon missions. He went on to produce, write and direct television series for the BBC, PBS, The Learning Channel and The Discovery Channel. His books include "Tomorrow's World," "Tomorrow's World II," "Connections," "The Day the Universe Changed," "Chances," "The Axemaker's Gift," "The Pinball Effect" and "The Knowledge Web."



Photo by Emmett Given, NASA/Marshall Space Flight Center

Sally Little, right, manager of Marshall's Technology Transfer Department, chats with from left, summer scholars Melissa Rodriguez, Letitia Holden, Star Colton and Dr. Joe Ritter of the Optics Laboratory during the Technical and Business Exhibition and Symposium (TABES).

Burke was educated at Oxford and holds honorary doctorates for his work in communicating science and technology.

An art symposium, part of the Von Braun Celebration of the Arts and Sciences, will begin at 3:45 p.m. The multimedia presentation will include narration and live music focusing on NASA's and the Marshall Center's accomplishments and visions for the future. It also is free and open to the public.

Both the Von Braun Forum and the arts and sciences celebration this year are part of the three-day Technical and Business Exhibition and Symposium (TABES) and Tennessee Valley Economic Summit that began Tuesday.

The writer, employed by ASRI, supports the Media Relations Dept.

Marshall Exhibits Program participates in AARP Convention in Orlando



Tom Engler and Linda Dinges of Marshall's Shuttle Program Office speak to American Association of Retired Persons (AARP) participants.



Courtesy Photos

AARP attendees look over a NASA Headquarters Education display on how to make model rockets. Over 60 NASA staffers were on hand to speak to more than 44,000 convention attendees.

Small Business Office explains HUBZone Program

It is the declared policy of the United States that the Government should promote increased participation in the free enterprise system by aiding and assisting small business concerns in the establishment, preservation and strengthening of the small business community. The Historically Underutilized Business Zone (HUBZone) Act of 1997, Public Law 105-135, Title VI, enacted on December 2, 1997, created the HUBZone Empowerment Contracting Program, which is sometimes referred to as the "HUBZone Program." This program is administered through the Small Business Administration (SBA) and is available for federal agency participation. Marshall's Small Business/ Industry Assistance Office is currently seeking to develop new opportunities for this target category.

The purpose of the HUBZone Program is to provide federal contracting assistance for qualified small business concerns located in historically underutilized business zones in an effort to increase employment opportunities, investment and economic development in such areas. A HUBZone is one or more of the following geographic areas: (1) qualified census tracts; (2) qualified non-metropolitan counties; or (3) lands within an Indian reservation. The SBA certifies the HUBZone status of a small business concern after reviewing the qualifications the firm submits via application to the SBA. The firm may qualify as a HUBZone small business concern provided it meets the following criteria:

1. It is a small business concern that is both owned and controlled only by United

States citizens;

2. Its principal office is located in a HUBZone; and

3. At least 35 percent of its employees reside in a HUBZone.

The SBA has developed regulations implementing the HUBZone program. Within certain limitations, certified small business concerns have the opportunity to negotiate sole source contracts and participate in restricted competitions limited to HUBZone concerns. In addition, HUBZone small business concerns may receive a (10%) price evaluation preference in full and open competitions. The authority to examine and verify firm eligibility and to investigate and rule on all challenges falls under the jurisdiction of the SBA.

Complete information concerning the HUBZone Program (including the application procedures) may be found at <http://www.sba.gov/hubzone>. Prior to consideration for award of a federal HUBZone contract, a small business concern must be certified and appear on the SBA list of qualified HUBZone small business concerns located at <http://pro-net.sba.gov>.

The Marshall Center has a very active socioeconomic program providing focus and emphases on several business categories. In order to stimulate a comprehensive approach of contracting diversity, HUBZone businesses have been added to the Center's target business types. Identification of methods and opportunities for

HUDZones participation are of vital interest to the Marshall Small Business/ Industry Assistance Office. Our neighbor, the U.S. Army Space and Missile Defense Command (SMDC), Huntsville, Alabama, requested capability statements from small business concerns throughout the United States. A total of 48 Basic Ordering Agreements (BOAs) were awarded by SMDC to certified HUBZone small business concerns in 18 states as a result of this effort.

The BOAs provide a verity of contracting opportunities for HUBZone small business concerns including supplies, services, research and development and manufacturing. Contracting Officers throughout federal government organizations are authorized to issue Task Orders against the BOA's. Orders may be negotiated as firm-fixed-price or cost reimbursement and may be either sole source or competitive. The BOAs may be electronically downloaded from the SMDC website under "Business" and "HUBZone Information" at <http://www/smdc.army.mil>.

Utilization of the SMDC initiative is certainly encouraged and the support of HUDZones companies at Marshall are essentials in continuing a tradition of aggressive socioeconomic program leadership.

For more information about the HUBZone Program, contact Stan McCall, the Small Business Industry Assistance Officer in Marshall's Procurement Office.

Chandra software

Continued from page 5

Another reason for the revision is to incorporate a revised Silicon Graphics Inc. Unix operating system along with the latest version of Oracle.

"This system we designed and implemented for Chandra has performed in accord with our expectations," White said.

The same basic capabilities are being used for the Space Station. About two years ago, the software development concept for Chandra and the Space Station diverged. Separate software systems were configured for each spacecraft.

Although the types of services required by both the Interna-

tional Space Station and Chandra are similar, Space Station users are located around the world instead of at a single control center and far outnumber the Chandra users.

"It was good that we could start with Chandra for this system development project because it was a smaller project and we received our requirements from a single office, the Chandra Project Office at Marshall," White said. "The Space Station is more complex because its requirements are received from a much larger and more diverse group of payload scientists and data users."

The writer, employed by ASRI, is the Marshall Star editor.

Employee Ads

Miscellaneous

- ★ Lowe easy loader trailer, 16', 40HP Suzuki Evinrude TM, HB fish finder, carpet, live well, \$3,000. 881-6143
- ★ Mexican standard Fender Stratocaster sunburst w/Fender gig bag, \$275 obo. 776-2612
- ★ Dog kennel, 8'x8'x4', 9 months old, assembled, \$150. 881-5093
- ★ Dunlop tires, set of 4, new, 215/60/16", \$300. 233-1157
- ★ Wood clarinet, \$225 obo. 882-7084
- ★ Purebred Australian Shepherd puppies, vet checked, wormed, first shots, 6-weeks old, \$75. 561-2287
- ★ 1992 500 and 1994 Pro VXR Yamaha wave runners and double trailer, \$3,000. 881-0557
- ★ Vitamaster exercise bike, Model 88C w/ electronic display, all manuals, \$75. 882-1780
- ★ Murray riding lawn mower, rebuilt engine, still needs work, \$125 obo. 828-6213
- ★ 1997 John Deere 345 lawn tractor w/19 bushel grass collector cart, 483 hrs., hydraulic lift, \$5,200. 574-5025
- ★ Colonel bed liner for 1998 and later Ford F-150, \$50. 461-3803
- ★ SunnyBrook travel trailer s/slide-out, one owner, under warranty, sleeps six, blue interior decor, \$21,500. 772-0046
- ★ AC D15 gas tractor w/Kelley trip-type loader & three bottom plow, \$2,500. 931-469-7324 after 6:30 p.m.
- ★ 1987 Stratos bass boat, 19'3" 200 Merc., 12/24 TM, hotfoot. 233-5032

Vehicles

- ★ 1993 Oldsmobile Bravada, all-wheel drive, ABS, loaded, 111K miles, \$7,500. 837-6109
- ★ 1994 Toyota pickup, red w/gray interior, 80K miles, bed box and liner, \$4,200. 837-6062
- ★ 1999 Explorer Sport, white, 2-door, 2WB, automatic, extended warranty, CD, chrome wheels, \$16,500 firm. 828-9861
- ★ 1996 Mazda 626 LX, V6, 63K miles, 25mpg, white, 5-speed, loaded, \$9,700. 574-5098
- ★ 1991 Mazda Miata convertible, white, new top w/glass window, \$5,150. 895-2959
- ★ 1995 Dodge Ram, 42K miles, pewter & green, loaded, new tires, \$13,300. 539-4117
- ★ 1987 GMC Jimmy, removable top, loaded, cold air, 350EFL, \$6,500 obo. 539-7379
- ★ 1997 Buick Park Avenue, 58K miles, CD player, new tires, leather seats, \$14,900. 828-0863

- ★ 1989 BMW 325i, 104K miles, sun roof, 5-speed, new belts, hoses, & timing belt, 104K miles, one owner, \$5,400. 721-0709
- ★ 1999 BMW 328i, silver, 5-speed, sport package, leather, sunroof, CD, power equip., factory warranty, \$33,500. 859-3686
- ★ 1997 Honda Civic EX, sunroof, silver w/gray interior, 44.8K miles, \$14,100. 351-9213
- ★ 1999 Explorer, 2 door, 2 WD, automatic, power, CD, warranty to 75K, \$16,500. 828-9861
- ★ 1993 Chevrolet Lumina, 4-door, v-6, air, \$5,000 obo 920-7255

Found

- ★ Diamond in the 4200 north side parking lot. Call 544-5614 to identify

Wanted

- ★ Computer w/monitor, modem, and speakers, 75-300 Mhz, Pentium, in good working condition. 883-2757
- ★ Working instruments (brass, woodwind, etc.) for needy high school band. 881-0883

Center Announcements

- ☛ **Payroll Office** — Effective June 5, the NASA Payroll Office will be open for business from 7:30 a.m. to 11:30 a.m. and from 12:30 p.m. to 4:30 p.m. Employees should make arrangements to conduct payroll business during these hours. Call 544-7341 for payroll assistance.
- ☛ **Retirees Meet** — Retirees and friends of the Instrumentation Division Astrionics Lab will meet at the Redstone Golf Course Coffee Shop on Tuesday, June 6 at 11 a.m. The group will continue to meet on the first Tuesday of each month.
- ☛ **MARS Ballroom Dance Club** — Waltz and tango lessons will be from 7-8 p.m. June 5, 12, 19 and 26 in the Parish Hall of St. Stephen's Episcopal Church at 8020 Whitesburg Drive. Beginner and intermediate classes will be taught at the same time. Cost is \$6 per person per night. For more information, call Woody Bombara at 650-0200.
- ☛ **Shuttle Buddies** — The Shuttle Buddies will meet for breakfast at 9 a.m. June 26 at Mullins Restaurant on Andrew Jackson Way. For more information, call Deemer Self at 881-7757 or Gail Wynn at 852-8189.
- ☛ **Toastmasters** — The NASA Lunar Nooners Toastmasters Club meets Tuesday at 11:30 a.m. in Bldg. 4610 cafeteria conference room. All Marshall employees, contractors and friends are invited to attend.

☛ **Housing for Students** — Undergraduate and graduate students require housing for up to 10 weeks. If you have lodging options, contact Frank Brannon, Education Programs Dept. at 544-5920.

Job Opportunities

- Reassignment Bulletin 00-25-KP, Aerospace Engineering Technician, GS-206-039/11** (2 vacancies), Engineering Directorate, Structures, Mechanics and Thermal Department. Closes June 6.
- Reassignment Bulletin 00-26-KP, AST, Aerospace Flight Systems, GS-861-14/15**, Systems Management Office, Systems Engineering Office. Closes June 7.
- MSFC ES-07-00**, Manager, Information Services Department, Center Operations Directorate closing date has been extended until June 8.
- CPP 00-74-RE, AST, Technical Management, GS-801-15**, Space Shuttle Projects Office. Closes June 6.
- CPP 00-71-KP, Aerospace Engineering Technician, GS-802-12**, Engineering Directorate, Structures, Mechanics and Thermal Department, Thermal and Fluid Systems Group. Closes June 6.
- CPP 00-72-RE, AST, Aerospace Flight Systems, GS-861-15**, Space Shuttle Projects Office, Eternal Tank Project Office. Closes June 7.
- Recruiting Bulletin MSFC-SD-00-94**, AST, Aerospace Flight Systems, GS-861-14. Closes June 7.
- Recruiting Bulletin MSFC-TD-00-95**, AST, Nuclear Propulsion Systems, GS-840-11/12. Closes June 5.
- Recruiting Bulletin MSFC-TD-00-96**, AST, Electric Propulsion Systems, GS-850-11/12. Closes June 5.
- Recruiting Bulletin MSFC-ED-00-98**, AST, Heat Transfer, GS-861-13. Closes June 6
- Recruiting Bulletin MSFC-ED-00-101**, AST, Electronics of Materials, GS-1310-13. Closes June 7.
- Recruiting Bulletin MSFC-ED-00-105**, AST, Aerospace Flight Systems, GS-861-13. Closes June 7
- Recruiting Bulletin MSFC-ED-00-108**, AST, Flight Systems Design, GS-861-13. Closes June 13.
- Recruiting Bulletin MSFC-QS-00-111**, AST, Reliability and Quality Assurance, GS-861-13. Closes June 13.
- Recruiting Bulletin MSFC-QS-00-112**, AST, Reliability and Quality Assurance GS-861-13. Closes June 13.
- Recruiting Bulletin MSFC-AD-00-114**, AST, Experimental Facilities Development, GS-801-14. Closes June 5

MARSHALL STAR

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