



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

Pulse detonation rocket engine testing begins

by Deana Nunley

Technology for a rocket engine that uses an automotive ignition system to initiate supersonic combustion waves is being tested at the Marshall Center.

Component testing of a small-scale pulse detonation rocket engine began in April.

A spark plug is discharged to ignite hydrogen fuel in a small initiator tube, about 4 inches long and one-half inch in diameter. The hot firings, which last 5 to 10 seconds, demonstrate pulse detonation principles and help researchers evaluate engine performance.

Following last month's successful testing of the initiator tube, engineers

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Photo by Doug Stoffer, NASA/Marshall Space Flight Center

Giving children a head start

A recent visit to Marshall and the U.S. Space & Rocket Center proved a field trip out of this world for students and staff of the Meridian Street Head Start Program. The trip, coordinated by Marshall Equal Opportunity Office coordinator Chanel Vaughan of Ai Signal Research Inc., was sponsored through the Equal Opportunity Office's Educational Outreach Program.

NASA presents George M. Low Awards for quality

Commitment to innovative management, quality and customer service has earned four U.S. companies the George M. Low Award, NASA's highest honor for quality and technical performance.

NASA Administrator Dan Goldin presented the 2000 Low Award, the nation's oldest award for organizational quality, at the 15th Annual NASA Continual Improvement and Reinvention Conference on Quality Management in Alexandria, Va.

"Each of these companies personifies the importance of continuous, quality, customer service and innovative management. Their commitment to quality and performance has been a great asset to NASA and the nation's industries," Goldin said.

The award is named for George M. Low, who served as NASA's deputy administrator from December 1969 through June 1976.

Marshall's nominee, Sverdrup Technology Inc., finished as a semifinalist. Carl N. Lester of Marshall's Engineering Directorate gave a Continuous Improvement Team Presentation on "Marshall Convergent Coating: An Aerospace Success Story" at the conference April 27.

Advanced Technologies Inc. of Newport News, Va., received

the award for small-business product, and Jackson & Tull, Aerospace Engineering Division of Seabrook, Md., received the Low Award for small-business service.

Computer Sciences Corporation, NASA Programs Division, of Lanham-Seabrook, Md., was this year's winner in the large-business service category, and The Boeing Company's Delta II Launch Division in Huntington Beach, Calif., took the award for large-business product.

Goldin also presented the prestigious 1999 QASAR (Quality and Safety Achievement Recognition) Award to four individuals for their significant improvements to products or services for NASA.

The award recognizes — in addition to NASA employees — personnel from other government agencies, prime contractors and subcontractors for significant, quality improvement to products,

See Low Awards on page 4

"Believe in Safety"

*— Safety slogan submitted by
Betty Canestrari, SD81*

Yea Team!

Teams from two Centers coordinate Space Station training

Editor's note: The following article on teamwork, one of the Marshall Center's five core values, is part of an effort to show how Marshall organizations and people are coming together to work as a team. Jan Davis, deputy director of the Flight Projects Directorate, discusses how teams from two Centers worked together on Space Station crew training.

by Jan Davis

Teamwork is essential to success. The old adage "the whole is greater than the sum of its parts" says it all. But how does a team come together?

As an example, training teams from the Marshall Center and Johnson Space Center in Houston worked together toward the success of the International Space Station program's payload crew training administration.

Johnson Center manages the overall Space Station crew training function, and all training facilities are located there. Marshall is responsible for payload crew training.

To get started, members from both Centers' training organizations met face-to-face to identify roles and responsibilities. Discussing processes and identifying potential roadblocks for working together, the team implemented measures geared toward better cooperation and communication.

Three areas for improvement readily presented themselves early in the analysis: direction, structure and cohesion.

First, the team needed a definite authority for policy decisions or configuration management of products. The Payload Training Panel was created to act as the governing body. Leaders from both Centers co-chair the panel. It is used to approve training administration policies and plans, formalize cross-Center product

hand-over, resolve team conflicts and receive reports of milestone accomplishments. This panel gave the team direction.

Second, the team needed a forum for working team issues, concerns or processes in an organized manner. To put the TEAM within the WORK, payload training teams were formed. Each team includes members from both Center's training organizations and members from other important outside organizations. The team develops training plans for the crew on each payload, facilitates training product and facility readiness, conducts crew training, monitors the progress of the training program and works issues toward successful completion of training. This forum gave the team structure.

Finally, the team needed better communications. To minimize cultural differences between the two organizations which sometimes made communications difficult, team members from one Center visited the other Center, worked with that Center's people and learned the details of daily work activities. This strengthened the team's appreciation for each other and created a more effective communications process. By establishing regular meetings to communicate working details and progress, the team stimulated awareness of each other's activities and helped to better understand each other's needs. Communication gave the team cohesion.

Implementation of these three measures provided direction, structure and cohesion to the International Space Station Payload Training Team and helped to put the TEAM in teamwork.

The writer is a Teamwork Values team member. Other Teamwork members include Tereasa Washington, director of the Customer and Employee Relations Directorate, and Bill Kilpatrick, deputy director of the Engineering Directorate.



Photo by Emmett Given, NASA/Marshall Space Flight Center

Just stopping by

State Sen. Dale Shugars of Michigan, second from left, and his family tour the International Space Station mockup during a recent visit to Marshall and the U.S. Space & Rocket Center. From left are his mother, Barbara; wife, Debbie; and daughter, Meaghan.

May celebrates Asian/Pacific American Heritage Month

by William J. Clinton
President of the United States of America

Over the last two centuries, Asian Americans and Pacific Islanders have contributed immeasurably to the richness of our dynamic, multicultural society. Whether recent immigrants or descendants of families who have been here for generations, Asian Americans and Pacific Islanders embody many of our Nation's core values, including devotion to family, commitment to hard work and pride in their heritage.

The people of this diverse and rapidly growing community have contributed to every aspect of our national life — from engineering and computer science to government, the arts and sports. For example, Vinod Dahm helped to revolutionize computer technology through the invention of the pentium chip. Governors Benjamin Cayetano of Hawaii and Gary Locke of Washington have devoted their lives to public service. The talents of novelist Amy Tan have delighted readers across our Nation, while architect and sculptor Maya Lin's stirring memorials to the Vietnam War and the Civil Rights Movement have uplifted and inspired all who have experienced them. And diver Greg Louganis and football star Junior Seau have thrilled sports fans everywhere with their skill and athleticism.

While many Asian Americans and Pacific Islanders today are thriving, others are still struggling to overcome obstacles. Because of oppression in their countries of origin, some new immigrants have arrived without having completed their education; once here, some have encountered language and cultural barriers and discrimination.

Pacific Islanders, too, must overcome barriers to opportunity caused by their geographic isolation and the consequences of

Western influences on their unique culture. For these and other reasons, too many Asian Americans and Pacific Islanders face low-paying jobs, inadequate health care and lack of educational opportunity.

To assist this community in meeting these challenges, last June I signed an Executive order establishing the White House Initiative on Asian Americans and Pacific Islanders. The Initiative's goal is to improve the quality of life for Asian Americans and Pacific Islanders by increasing their participation in Federal programs — including health, human services, education, housing, labor, transportation, economic and community development programs — which may not have served them in the past.

My Administration remains dedicated to building an America that celebrates and draws strength from its diversity. Let us use this month to reflect on the many gifts Asian Americans and Pacific Islanders have brought to our nation and embrace the contributions that Americans of all backgrounds make to our increasingly multicultural society.

To honor the accomplishments of Asian Americans and Pacific Islanders and to recognize their many contributions to our Nation, the Congress, by Public Law 102-450, has designated the month of May as "Asian/Pacific American Heritage Month."

NOW, THEREFORE, I, WILLIAM J. CLINTON, President of the United States of America, do hereby proclaim May 2000 as Asian/Pacific American Heritage Month. I call upon the people of the United States to observe this occasion with appropriate programs, ceremonies, and activities.

IN WITNESS WHEREOF, I have hereunto set my hand this twenty-ninth day of April, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fourth.



Photo by Emmett Given, NASA/Marshall Space Flight Center

Celebrating at Marshall

Alan Chow, second from left, and members of the Asian/Pacific American Committee present Marshall Associate Director Sid Saucier with a proclamation signed by Huntsville Mayor Loretta Spencer declaring May as National Asian/Pacific American Heritage Month.

Properly use hand, power tools for safe job

The proper use and selection of hand and power tools can make the task one is performing safe and easy. Simply follow this checklist to avoid your next task being your last.

HAND TOOLS	YES	NO
Proper tool being used for each task.		
Neat storage, safe carrying.		
Inspection and maintenance.		
Damaged tools repaired or replaced.		
Employee personal tools inspected. Damaged tools repaired or replaced.		
Proper PPE being used.		
POWER TOOLS		
Good housekeeping practices where tools are being used.		
Tools and cords in good condition.		
Proper grounding.		
Proper training and instructions implemented.		
All mechanical safeguards in place.		
Tools neatly stored when not in use.		
Right tool being used for the task at hand.		
Proper PPE being used.		
POWER-ACTUATED TOOLS		
All operators trained/qualified.		
Tools and charges protected against from unauthorized use.		
Competent instruction and supervision.		
Tools inspected and in good working order.		
Tools used on recommended materials/surfaces.		
Tools neatly stored when not in use.		
Area barricaded off around where tool is being used.		
Proper PPE being used.		
NOTE: All power tools must be plugged directly into a GFCI circuit or when used in conjunction with an extension cord, a portable GFCI must be used.		
COMMENTS:		
Supervisor Signature:	Employee Signature:	Date:

Engine Test

Continued from page 1

finalized their design and started building a primary tube — about 3 feet long and 2 inches in diameter — which will be connected to the initiator tube. Using only a small amount of spark energy, a detonation wave can be created in the initiator tube and propagated into the larger primary tube where the main propellants are burned at an extremely high rate.

Like automobile engines, pulse detonation rocket engines operate by injecting fuel and oxidizer into long cylinders and igniting the mixture with a spark plug. The explosive pressure of the detonation pushes the exhaust out the open end of the cylinder, providing thrust to the vehicle.

A major advantage is that pulse detonation rocket engines boost the fuel and oxidizer to extremely high pressure without a turbopump — an expensive part of conventional rocket engines.

In a typical rocket engine, complex turbopumps must push fuel and oxidizer into the engine chamber at an extremely high pressure of about 2,000 pounds per square inch or the fuel is blown back out. The pulse mode of the pulse detonation rocket engines allows the fuel to be injected at a low pressure of about 200 pounds per square inch.

Marshall engineers and industry partners United Technology Research Corp. of Tullahoma, Tenn., and Adroit Systems Inc. of Seattle have built small-scale pulse detonation rocket engines for ground testing. During about two years of laboratory testing, researchers have demonstrated that hydrogen and oxygen can be injected into a chamber and detonated more than 100 times per second. NASA and its industry partners also have proven that a pulse detonation rocket engine can provide thrust in the vacuum of space.



Technology development now focuses on determining how to ignite the engine in space, proving that sufficient amounts of fuel can flow through the cylinder to provide superior engine performance, and developing computer code and standards to reliably design and predict performance of the new breed of engines.

A developmental, flight-like engine could be ready for demonstration by 2005 and a full-scale operational engine could be finished about four years later. Manufacturing pulse detonation rocket engines is simple and inexpensive. Engine valves, for instance, would likely be a sophisticated version of automobile fuel injectors.

Pulse detonation rocket engine technology development could lead to lightweight, low-cost space transportation systems.

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

Low Awards

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programs, processes and management activities.

David B. King, chief of the Safety, Health and Medical Service Office at Ames Research Center in Moffett Field, Calif., received the QASAR award for most significant safety or mission assurance contribution within the organization.

Greg S. Breznik of the Electrical Systems Division at Kennedy Space Center in Fla., received the award for most significant safety or quality improvement, service improvement or initiative from a NASA employee external to the organization.

Steven Cronk, chief of the Air Force Flight Test Center Range Safety Office at Dryden Flight Research Center in Edwards, Calif., took the award in the government but non-NASA category, and Christopher S. Strong of AverStar Inc. in Burlington, Mass., received the honor for a NASA prime or subcontractor employee.

Blood pressure screenings available to all Marshall onsite employees in May

May is "High Blood Pressure Month" and the Marshall Center is participating in the National Institutes of Health-sponsored observance by offering blood pressure screenings for all employees.

While the Medical Center, Bldg. 4249, will check blood pressure any workday from noon-3 p.m., this special emphasis in May is to raise awareness of the importance of monitoring blood pressure.

Studies have shown treatment can make a difference in reducing early death and illness for people with high blood pressure. Treatment also can prevent pressures from going to even higher levels where a patient's chances of developing serious complications are greater. This makes the Marshall Medical Center's program of special screening sessions important to each of you.

HEMSI paramedics will stop at Bldgs. 4203, 4755, 4207, 4200 and 4705 during May to perform blood pressure checks. More information will be available later.

Nicogossian to lead NASA's new health office; Goldin names Heffernan NASA chief of staff

New office to foster health, safety

NASA Administrator Dan Goldin recently announced the creation of a new office to increase the Agency's emphasis on health and safety on the ground and in space.

Dr. Arnauld Nicogossian will lead the effort as chief health and medical officer. He will develop the Agency's infrastructure in areas such as best medical practices, professional development and training, and improvement.

"Dr. Nicogossian's wealth of experience as the flight surgeon for the Apollo-Soyuz program; a researcher at NASA's Johnson Space Center in Houston, and as the associate administrator for life and microgravity sciences and applications



Arnauld Nicogossian

makes him the perfect choice," Goldin said. "He will be responsible for developing policy and oversight of the Agency's health program."

The administrator has made health and safety NASA's number one priority, expanding the Agency's efforts to create a healthy and diverse work force focusing on cutting-edge research, a permanent human presence in space and developing new technologies to extend human reach into the far corners of the solar system.

Nicogossian will continue to serve as associate administrator for life and microgravity sciences and applications pending the selection of his replacement.

Heffernan named chief of staff

NASA Administrator Dan Goldin has named Edward J. Heffernan to be chief of staff at NASA Headquarters in Washington, D.C.

"Ed Heffernan brings a wealth of policy and legislative experience to this important role," Goldin said. "He has

Upcoming Events

Advanced Space Propulsion Workshop — The Marshall Center and the Jet Propulsion Laboratory in Pasadena, Calif., are co-sponsoring the 11th Advanced Space Propulsion Research Workshop May 31-June 2. This year's workshop will be at the Laboratory. Speakers from NASA, Department of Defense, Department of Energy, industry and academia will discuss the latest advanced propulsion research and technology development activity. Topics include space sails, tethers, beamed energy, antimatter, ion drives and solar thermal propulsion. For more information, visit the Web site at:

<http://apc2000.jpl.nasa.gov/>

Savings Bond Campaign Kickoff — Marshall's annual Savings Bond Campaign begins Tuesday with a kickoff ceremony at 1:30 p.m. in Morris Auditorium.

Marshall Open House — Marshall's Open House will be from 9 a.m.-6 p.m. May 20. Visitors may enter Redstone Arsenal through Gate 9 at the Rideout Road exit of Interstate 565; Gate 8, at Drake Avenue; and Jordan Lane or Gate 7 at Zierdt Road near the Huntsville International Airport. For more information, call (888) 901-NASA.

been a key adviser and is uniquely suited to this new challenge."

As chief of staff, Heffernan will



Edward Heffernan

continue in his role as head of the Agency's legislative affairs and also will coordinate all staff activities in the immediate office of the administrator.

Heffernan joined NASA in April 1994 as a legislative policy specialist for the Space Station Information Center. He also served as senior adviser for Intergovernmental Affairs in the Office of Policy and Plans, before becoming White House Liaison and later, associate administrator for Legislative Affairs.

Heffernan earned a bachelor's degree in English in 1986 from Tulane University in New Orleans, La. He resides in Rockville, Md.

Determination leads Marshall employee to build harp

by Debra Valine

His daughter needed a harp. Because a harp is so expensive, Dave Ricks decided to build it.

Ricks, the propellant subsystem manager in Marshall's Reusable Solid Rocket Motor project office, had no experience in either playing the harp or building one. But he was determined.

"Emily was 5 years old when she first said she wanted to play a harp," Ricks said of his eldest daughter, now 12. "My wife Polly told her she had to take piano lessons for a year before she could study the harp."

A year later, Emily was taking lessons on a borrowed harp from Carol McClure in Nashville. It only took the instructor three months to determine that Emily had talent, but that meant Emily needed another harp.

"We checked into buying one, but a concert harp costs as much as a good used minivan," Ricks said. "Then, you need a minivan to haul it around in."

Ricks and his father, Earl, a retired Department of the Army civilian who worked for the Missile Command at Redstone Arsenal, joined forces in 1996 to build the mini concert harp that Emily played in her first recital. It took four months.

To build a harp from scratch is no

quick, easy task. Each piece is carefully cut, layered upon each other and molded to perform a specific function. The main parts of the harp — the sound box, soundboard, neck, column and base — are all made of different woods.

"You start by making a mold that will be used to shape the sound box," said Ricks. "I started with a layer of maple, then added a layer of sitka spruce, then another layer of maple veneer." He made the neck of plywood and hard rock maple and the base of maple. He also fabricated a brass crown to put atop the column.

To date, Ricks has made three harps: a lap harp, a studio harp and a mini concert harp, each progressively larger. He wants to build two more harps as he has time.

Ricks, an Auburn University graduate with a bachelor's degree in chemical engineering, is a Huntsville native. He and his wife have two other children, Ivy and William. All the children study piano and swim. Ivy also plays violin and ice skates.

"We feel playing the harp is Emily's



Courtesy photo

David Ricks, right, and his father, Earl, worked nearly four months to complete the mini concert harp.

calling from God," said Ricks, who has worked at Marshall since 1989. "Without God's help, we never would have been able to meet the various challenges we faced in getting Emily set up to play the harp."

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

★ ★ ★ Marshall Stars ★ ★ ★

Multimedia Award — Lead developer **Patrick Meyer** of Marshall's Center Operations Directorate and Orbital Engineering consultants **Tim Horvath** and **Mark Phillips** have won the Silver Award in the 2000 I.D. Interactive Media Design Review for their project, J-Track 3D. The design review is America's leading interactive media design competition showcasing the best interface and multimedia designs of the year. Winning projects will be featured in the June issue of I.D. Magazine, and on a CD-ROM enclosed with the issue.

Health Expo 2000 — At the annual walk held during Health Expo 2000 April 19, the **Space Shuttle Projects Office** won the trophy for the most participants. The **Chief Counsel's**

office had the highest percentage of participants with 100 percent.

Safety Mascot Winners — **Patrick Rasco** of Marshall's Procurement Office submitted a trio of "super" team members. The Health Mascot — Nightingale; Safety Mascot — Safetyman; and Environmental Mascot — Captain Green will share a mission to maintain safety, health and the environment at Marshall. **Terri C. Dailey** of Infinity Technology submitted Safety Mascot — Protective Pam. Dressed in protective clothing and shoes, Protective Pam will provide employees with information needed to protect themselves in the office area work environment. **Kamilla Batts** of Ai Signal Research Inc. submitted Reuse it Rita as an Environmental Mascot. Reuse it Rita will carry bags prepared to collect recyclable litter while she talks about the benefits of reusing natural resources and products.

New fitness center will have room for contractors

by Carrie David

The Marshall Exchange will be getting a new health and fitness facility in the fall that will accommodate both civil servants and contractors.

The new facility is being built at the corner of Digney and Morris roads. When it is complete, the fitness center in Bldg. 4752 will move.

The new health and fitness center initially will be two stressed membrane buildings that Marshall's Facilities Utilization Review Board is purchasing. The buildings will provide nearly 29,000 square feet of space.

Each structure is approximately 95 feet wide and 150 feet long. They are ideally suited for health fitness activities, and are designed to withstand 35 pounds of snow per square foot and 90 mph winds.

The fitness complex initially will house basketball and racquetball courts, an aerobic room, cardiovascular theater, circuit training and weight lifting stations, offices, two neuromuscular therapists, and shower and locker facilities.

Possible future additions to the health facility may be softball and football fields, walking/jogging trails and a picnic area.

The decision to purchase the stressed membrane structures came as planners prepared for the "Turning Goals Into Reality" conference being held at Marshall May 18-19.

Conference planners determined it would be more cost effective to purchase rather than lease structures to

house exhibits for the conference. The structures could then be used as the foundation of the new health facility, freeing the current facility in Bldg. 4752 for needed storage space.

For the conference, the structures will be located on Tiros Road near Bldg. 4752. Once the conference concludes, the structures will be moved to their permanent location.

Since the health facility is still in the planning stages, Marshall Exchange Manager Michele Miller asks that anyone with ideas on what is needed at the new facility contact her. Miller can be reached at Bldg. 4752, at 544-7564 or by e-mail at michele.miller@msfc.nasa.gov

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

AZ Technology to provide NASA's 'voice over the Internet' solution for ISS

AZ Technology, a leading provider of technology to support NASA experimenters, has been awarded a contract to provide a "voice over the Internet" solution for the International Space Station (ISS) program.

The project is tied to Marshall's Payload Operations Integration Center.

The system will consist of a network of personal computers using science intranets and the public Internet to support voice conferencing. Users will be located at NASA Centers, universities and companies throughout the world.

The system will link researchers, NASA operations personnel and potential crew together to support collaboration during Space Station experiment planning and operations. Experiment telemetry data and video also will be provided to remote users to support telescience.

AZ Technology will develop the voice conferencing system and integrate it into Marshall's communications infrastructure. White Pine software of Nashua, N.H., and Telecom Computers of Princeton, N.J., will partner with AZ Technology.

White Pine Software will provide voice software "toolkits" used to develop the conferencing clients and servers. Telecom Computers will provide gateways to the existing NASA telephony conferencing system. When fully deployed, the system will support several hundred users.

Durham Research of Crofton, Md., Live on the Net of Huntsville and the University of Alabama at Birmingham are partners with AZ Technology on this effort.

Sports

MARS Softball Club — The MARS Softball Club is looking for players. There are three divisions of skill:

- Division 1 is for competitive teams. Players are young and fast. Call Jim Lomas at 544-8305.
- Division 2 is for recreational level Teams. Teams have the competitive spirit, just not as strong and fast as Division 1. Call Bill Telesco at 961-1461.
- Division 3 is for Coed teams. Call Leigh Young at 544-1744.

The teams average playing once per week and games are scheduled at 5 or 6 p.m. No games are scheduled on Fridays. If interested, call the division commissioner for the league you want to join.

MARS Golf — A two-person best score tournament will be 8 a.m. June 3 at Chesley Oaks. Deadline to register is May 26. The Mars Golf Club is open to all NASA employees, onsite contractor personnel and NASA retirees. Events will be conducted in a variety of tournament formats. Some tournaments may have limited entries.

Upcoming tournaments include:

- A two-person best score, 8:04 a.m., June 24 at Goose Pond. Deadline to register is June 16.
- A championship tournament, 9 a.m., July 22-23 at Colonial. Deadline to register is July 14.

For more information or to enter a tournament, call Lee Foster at 544-1589, Joey Butler at 544-3808 or Robert Rutherford at 544-8117. Entry fees are \$5.

Employee Ads

Miscellaneous

- ★ Schwinn 10-speed men's bicycle, red, \$50. 881-6040
- ★ Kitchen Aid dishwasher; food grinder; Whirlpool washer, dryer, used one year; Kenmore food processor. 881-2027
- ★ Olympus SYS.230 portable optical drive, 4.1GB on 18 disks, software & cables for any Mac/PC, \$250. 828-6213
- ★ Raleigh ladies 10-speed bike, \$25. 533-5942
- ★ CB radio-40 channel, 50-watt linear antenna, both for \$200. 864-0465
- ★ Conn trombone and carrying case, \$150. 233-3407
- ★ New white spoke 7x15 steel wheel w/new 75-15 Dunlop tire, never used, \$80. 882-1780
- ★ Riding lawn mower, 36" cut, 11HP, \$150. 859-9856
- ★ Solid wood baby dresser and crib w/mattress set, \$100. 464-0231
- ★ Big Bertha X-12 irons, 3-pw; Warbird woods, 1, 3 & 5, graphite shafts, \$1,000. 751-0680
- ★ 1990 Mastercraft Tristar 190, 351, V-8, 165 hours, \$12,100. 721-7904
- ★ Dinette suite, rattan, round w/glass top, four chairs, \$125; Prince tennis racket, \$25. 536-8951
- ★ Air conditioner, Frigidaire, 12,600 btu, window unit, \$100. 534-4968
- ★ Oak finished jewelry chest, \$175; oak finished serving cart, \$75; oak Brentwood rocker, \$20. 858-3850
- ★ Pier One Medici glass top table and four chairs, \$50. 864-3133
- ★ Desk, bookcase, file cabinet, matching set, \$350. 882-6449
- ★ Violins, full size and 3/4 size w/bows and cases, student models. 534-8186
- ★ Indy 500 tickets, one pair, outside of Main Straight, \$80 each. 881-0533
- ★ Bicycles, ladies 27" Schwinn, 10-speed Suburban, \$60; mens 26" Schwinn, 5-speed, Collegiate, \$50. 539-0094
- ★ Student desk and matching bookcase, \$140. 859-5475
- ★ Canon Rebel G camera with three rolls of film, \$150. 859-5475
- ★ Washburn D-10 acoustic guitar, black w/ chipboard case, \$200; Fender Stratocaster sunburst guitar w/gig bag, \$275. 776-2612
- ★ New men's black full-length Bachrach wool coat. Size 38. \$350. 464-5394

Vehicles

- ★ 1995 Lincoln Mark VIII, white w/tan leather interior, \$13,500 obo. 858-9682
- ★ 1997 Chevy Tahoe LS, 2-door, 4x4, step bars, towing package, beige, 67K miles, \$18,500. 974-7532
- ★ 1978 Datsun 810 stationwagon, needs work, \$600 obo. 851-0737
- ★ 1990 Accura Legend, white, 118K miles, automatic, \$6,500. 895-8385
- ★ 1991 Nissan Pathfinder SE, V-6, sunroof, red, 4WD, \$9,100. 922-5891
- ★ 1997 Ford F-150, 4x4, 4.6 V-8, auto, wench, 52K miles, \$17,500 negotiable. 582-3664
- ★ 1997 Ford Mustang Cobra SVT, black w/black leather, one owner, \$18,500. 852-8320
- ★ 1999 BMW 328i, silver, 5-speed, sport pkg., leather, sunroof, CD, all power, factory warranty, \$35,000. 859-3686
- ★ 1999 Explorer Sport, white, CD, 2WD, automatic, 47K miles, warranty to 75K miles, \$18,500. 828-9861
- ★ 1989 Chevy conversion van, silver, four captains chairs, rear heater/ac, folding rear seat, \$3,200. 882-6446
- ★ 1991 Mazda Miata, convertible, new paint, new top w/glass window, \$5,400 obo. 895-2959
- ★ 1992 Acura Integra, 2-dr. hatchback, 5-speed, sunroof, a/c, power windows, am/fm stereo cassette, cruise, \$5,800. 764-2492
- ★ 1977 Porsche 924, silver, 4-speed, sunroof, 136K miles, spare parts, good body, \$1,800 obo. 828-6213
- ★ 1996 Ford Mustang Cobra convertible, red w/ black top/interior, 23K miles, \$19,995. 859-5092
- ★ 1987 Olds Ciera, approx. 169K miles, 4-door, auto, air, \$950 obo. 882-3777

Lost

- ★ Purse with a strap, vicinity of Bldg. 4203. If found, call 881-5993

Free

- ★ Puppies, small beagle mix, short hair, 3-males, 2-females, tan, black, tri-color. 971-1414

Wanted

- ★ Good used horse trailer, prefer 3-horse slant load under 10 yrs. old., bumper or gooseneck pull. 931-732-4742

Center Announcements

- ☛ **Espresso Coffee Bar Grand Opening** — The Espresso Coffee Bar in the lobby of Bldg. 4203 will hold a grand opening celebration on Tuesday. Special prices on selected beverages will be offered as well as Smoothie Freeze samples and cake. A wide variety of sugar-free flavors is available, as well as beverages without caffeine, carbohydrates or fat. In addition to coffee beverages, Italian cream sodas, tea, hot chocolate and Smoothie Freezes come in many flavors. The staff will answer any questions and help the "first-timer" decide what to drink. The Espresso Coffee Bar is open from 6 a.m.-3 p.m., Monday through Thursday and 7 a.m.-2 p.m. on Fridays. Take-out trays are available for large orders.
- ☛ **Facilities Office Breakfast** — The Facilities Office employees, retirees and friends will meet for breakfast at 8 a.m. May 9 at Shoney's on University Drive. For more information, call Carl Gates at 232-2695.
- ☛ **Housing for Students** — Students for various educational programs for summer 2000 soon will be coming to Huntsville. These undergraduates and graduates require temporary housing, usually one month to 10 weeks. If you have lodging options available for these students, please contact Frank Brannon, Education Programs Department, at 544.5920 or by e-mail at frank.brannon@msfc.nasa.gov
- ☛ **Toastmasters** — Redstone Toastmasters meets weekly at 6 p.m. on Tuesday at Piccadilly Cafeteria in Madison Square Mall. For more information, call Sylvia Battle at 890-0547. 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.

Thank you

The family and co-workers of Gwen Gayle Haney wish to thank each of you who donated leave so that Gwen could be on extended sick leave in her battle with cancer. Before her peaceful death in March, she expressed her gratitude for your generous gift. Thank you also for the flowers and all the cards of encouragement and expressions of sympathy. She is now in the pain-free presence of Jesus and her sweet spirit lives on in our hearts.

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