



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

Chandra makes most precise measurements ever recorded

NASA's Chandra X-ray Observatory opened a new era in astronomy last weekend by making the most precise measurements ever recorded of the energy output from the 10 million degree corona of a star.

The observations were made using the High Energy Transmission Grating Spectrometer — an instrument that allows a one-thousand-fold improvement in the capability to measure X-ray spectra from space. The new measurements join spectacular images taken previously by Chandra of the aftermath of a gigantic stellar explosion.

The spectrometer spreads the X-rays from Chandra's mirrors into a spectrum, much as a prism spreads light into its

See Chandra on page 6



Photo by Doug Stoffer

Suggestion pays off

Roy Runkle, right, of Marshall's Solid Rocket Booster Project Office, receives a suggestion award from Center Associate Director Sid Saucier, left. Runkle's wife Mary is at center. Runkle received \$10,000 for his suggestion that four solid rocket booster forward skirts be refurbished instead of purchasing new skirts. His suggestion resulted in a savings to the Space Shuttle Program of \$14.6 million. Procurement of four forward skirts would have been approximately \$18.8 million, but the four forward skirts were repaired for approximately \$4.2 million.

Marshall scientist finds severity of hurricane season can be predicted by studying El Niño weather pattern

by Gay Watson

The severity of hurricane seasons can be predicted by studying the influence of the El Niño weather pattern, concludes a study by Robert M. Wilson, a research scientist at Marshall.

The study also determined that a consequence of El Niño is less hurricane development in the Atlantic Ocean than when El Niño is not present.

A statistical analysis by Wilson of hurricanes that developed in the Atlantic Ocean, Gulf of Mexico and Caribbean Sea between 1950 and 1998 found that when El Niño was present, the number of intense hurricanes in a season has never risen above three. When El Niño was not present, the number of intense hurricanes in a season rose as high as seven.

On average, El Niño-related seasons experience about one intense hurricane, the study found, while non-El Niño-related seasons experience about three. In the last 50 years, 14 out of 15

non-El Niño-related seasons had two or more hurricanes.

Wilson's findings will be published in an upcoming issue of the Geophysical Research Letters, a journal of the American Geophysical Union.

"My goal with this research was to show it is quite simple to predict the severity of a hurricane season," Wilson said. "All you need to know is that you are under the influence of an El Niño.

"I anticipate that 1999 will be a busy hurricane season, because we're in a non-El Niño-related year. The ocean temperatures are there. And the right winds are occurring," Wilson said.

"El Niño is a natural part of the climate system, not a beast in

See Hurricane on page 4

"Safety Today = Security Tomorrow"

— Safety slogan submitted by Sharon Bendall, CD30



Photo by Terry Leibold

Ready to help

Information Services Department's Deborah Wills, seated, and Jackie Pates are ready to assist Marshall employees at the Technical Library. The library, in Bldg. 4200, room G11, has a variety of research resources. Hours are Monday-Friday from 7:30 a.m.-4:30 p.m. For more information, call 544-4524, 544-4525 or visit the library's Web site at: <http://library.msfc.nasa.gov/library>

Marshall Values

Innovation important throughout NASA, requires steps to reduce risks

Editor's note: This is the last in a series addressing Marshall's core values.

The Marshall team is committed to five core values: People, Customers, Excellence, Teamwork and Innovation. These values serve as the principles that guide our decisions and behaviors. This week the Star looks at the value of innovation. Dennis E. Smith, manager of program development and planning in the Space Transportation Directorate, explains why innovation is important, not only at Marshall, but also throughout NASA.

INNOVATION:

- We promote innovation and creativity.
- We seek different ideas and perspectives.
- We are committed to making a significant difference.
- We are willing to accept well-assessed, selected risks in the pursuit of our goals — but never at the expense of safety.

"Innovation is important to NASA. It always gets back to the NASA strategic plan and what we want to do in the next millennium," Smith said. "We will continue to explore the universe both robotically and with humans. We want to expand and communicate our knowledge of the universe."

Space Transportation enables exploration and communication by getting humans to space. The goal is to get to space and move around in space safely and cheaply. The only way to do that is through innovation. "But, physics is not going to change," Smith said. "Physics will always make it hard to get to space safely and cheaply.

"We have to tap into the most innovative, creative people to do this," Smith said. "For instance, the Shuttle costs \$8,000-\$10,000 per pound to launch a payload into space. That is too

expensive. We have to get it down to \$1,000 a pound and then \$100 a pound. We can only do that if it is 100 times safer than it is today. And you can only do that through innovation. If we can get the cost down to \$100 per pound, it will open the frontiers of space."

Innovation requires adhering to an established pattern of steps, Smith said. It takes a combination of advanced technologies, new materials, investigations and research into physics and development of design tools.

"It is innovation in the way we manage as well as design things," Smith said. "And you have to take things in steps so that you can grow knowing that you have eliminated the risk. We do that through fundamental research, growing into more basic applied research and technology. We are working to develop new materials that will enable us to do things we cannot do today.

"Then you do major ground demonstrations, understanding the reusable nature of things and the margins you have to stretch," Smith said. "Some things you can only get confidence in through flight — like the X vehicles.

"Marshall is the lead Center on space transportation, but we work this through all the centers. We are the integrators and leaders, but it is not just a Marshall effort. It is so important but also so much fun. The more innovative it is, the more fun it is."

And it ties in with all the other Marshall values. Innovation is like the capstone bringing all the values together. It's people working as teams with and for customers with an eye toward excellence and innovation. "Innovation enables us to go back to our public — our customers — and say here is what we are doing to bring the vision into reality," Smith said.

"The vision is only possible if you have the technical skills to accomplish it. It takes all the customers and partners. Innovation ties all the values together. It is a key contributing factor to all."

Three new managers appointed to Science Directorate

Three new department managers have been appointed to the Science Directorate at Marshall.

Ray J. Arnold has been named manager of the Earth Science Department, **Robin Henderson** has been named deputy for management of the Microgravity Research Program Office and **Robert J. Jackson**

has been named manager of the Microgravity Science and Applications Department.

Arnold previously served as deputy



Ray J. Arnold

manager of the Global Hydrology Research Office at Marshall. In his new position, he will oversee Earth Sciences research at the Marshall Center, working to establish a world-class institution for research into global climate and study of the Earth's water cycle.

Henderson previously served as deputy manager in the Microgravity Research Program Office. Under the reorganization, she continues to direct implementation of NASA's microgravity



Robin Henderson

research activities, including scientific and commercial research conducted in space and ground-based investigations.

Jackson, who previously served as manager of the Microgravity Science and Applications Project Office, will oversee implementation of NASA's Microgravity research program for the Materials Science and Biotechnology Research Programs and the Microgravity Multi-discipline Glovebox Program.



Robert J. Jackson

Four Marshall employees receive Women's Equality Day awards

by Billie Swinford

Four Marshall employees received achievement awards at the Women's Equality Day luncheon held last week.

To celebrate Women's Equality Day, the outstanding women achievers were honored by the Marshall Center, the Office of Personnel Management, U.S. Army Aviation and Missile Command, Defense Intelligence Agency, and the U.S. Army

Space and Missile Defense Command. The special day is an annual event to commemorate the passage of the 19th Amendment to the Constitution that guaranteed women the right to vote.

Jean Warren, director of Huntsville's Broadway Theatre League, spoke to the group on what it takes to be a successful leader.

Marshall employees recognized at the luncheon were:

Susan G. Turner, manager of the X-37 Space Plane Project in the Space Transportation Directorate. She was recognized for outstanding leadership and contributions in the implementation and management of the project.

Susan L. Whitfield, technology utilization specialist in the Customer and Employee Relations Directorate. She was recognized for outstanding performance in the Technology Transfer Department.

Carolyn A. Landry, general supply specialist (lead) in the Center Operations Directorate. She was recognized for outstanding performance in the Logistics Services Department.

Debra L. Grissom, a management support assistant in the Center Operations Directorate. She was recognized for outstanding performance in the Logistics Services Department.

The writer is the Federal Women's Program manager in the Equal Opportunity Office.



Photo by Doug Stoffer

Marshall employees receiving awards at the Women's Equality Day luncheon are, from left, Susan Turner, Carolyn Landry, Debra Grissom and Susan Whitfield.

Interpreter signs briefings for Marshall's hearing-impaired

by Debra Valine

What started as a fascination with languages led Stacie Yarbrough to a career in interpreting for the deaf. She regularly signs briefings and presentations in Morris Auditorium for hearing-impaired Marshall employees.

Yarbrough, the interpreter coordinator for the Huntsville office of the Alabama Institute for Deaf and Blind, became interested in American Sign Language in high school.

"I was curious about sign language, and I've always enjoyed languages," Yarbrough said. "I liked to watch television shows that had the interpreter in the corner. One Christmas I received a sign language dictionary from my parents. I spent a lot of time looking up all the words and then signing to Whitney Houston songs. Once I got good at that, I started going to a church that had a sign interpreter."

Interpreters for the deaf now must be certified, and attend annual classes to maintain their certification. The only program available in Alabama is through Bishop State Community College in Mobile, Ala.

Yarbrough got her start in a one-year program offered in Talladega, Ala., designed for individuals who already knew sign language. The program was offered three consecutive years because of a shortage of interpreters.

Yarbrough has been working full-time



File photo

Stacie Yarbrough, left, interprets for the hearing impaired during a talk by former Marshall employee Homer Hickam, author of the best-selling novel, "Rocket Boys."

for four years with the Alabama Institute for Deaf and Blind, but has been a working interpreter for eight years. She coordinates the activities of three contract interpreters, teaches sign language classes and works as an interpreter.

The institute's regional office provides adult services for the deaf and hearing impaired in 13 Northern Alabama counties.

"The Marshall Center is very proactive in providing services for the deaf and hearing impaired," Yarbrough said. "The Center's management is very supportive of employees with disabilities."

"We have one hearing-impaired employee who regularly requests an

interpreter, but there are others who benefit from having an interpreter present," said Shelvie Miller in Marshall's Equal Opportunity Office.

"After four years of interpreting for the hearing impaired full-time, I still love it," Yarbrough said. "I especially like the variety. Occasionally I go into the area schools to teach sign language classes. I have gone from a day care environment to signing for astronauts in one day."

For more information about services provided by Alabama Institute for Deaf and Blind, call 539-7881.

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

Hurricane

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and of itself," he said. "It is an interaction between the ocean and the atmosphere that has global consequences. One of the consequences of El Niño is less hurricane development.

"By knowing that intense storms are likely to occur, coastal areas can prepare," Wilson said. "We need to be aware that we have been in an era, from the mid-1960s to the early 1990s, when we have had little hurricane activity. During that time, more and more people have moved to coastal areas, so there is a generation that has been lulled into a false sense of security because they are not familiar with the destructive power of hurricanes. Hopefully, this research can act as a warning."

The name El Niño, Spanish for "boy Christ child," originally

was used by local fishermen to describe a warming of the Pacific Ocean off Peru and Ecuador. The warming occurs annually, but the fishermen noticed in some years it intensified around Christmas, creating unusual storms and the destruction of marine life in the region.

El Niño events occur about every three to seven years. Just as a clock pendulum swings between two extremes, ocean conditions vary between El Niño (warm water events), La Niña (cold water events) and interlude conditions. Scientists refer to this weather pattern as the "El Niño-Southern Oscillation."

The hurricane season begins June 1, peaks around Sept. 10 and ends Nov. 30, although the bulk of major hurricanes occurs between mid-August and mid-October of each year.

Upcoming Events

Security Campaign Presentation — Mark Borsi, director, NASA Security Management Office, will visit Marshall Sept. 10 from 9-11 a.m. in Morris Auditorium. He will discuss personnel and physical security, the threats against NASA and plans to ensure effective countermeasures. Lee Holcomb, NASA chief information officer, will discuss information technology security. The presentation is open to Marshall civil service and contractor supervisors and managers, program and project managers, and anyone who deals with or is interested in physical, personnel or information technology security implementations. For more information, call Steve Jones at 544-4373.

Von Braun Celebration of the Arts and Sciences —

Events scheduled for September as part of the yearlong von Braun Celebration of the Arts and Sciences include: Sept. 16-19, Oktoberfest being held at Redstone Arsenal. The festival includes rides, German music, food and beverages. Advance tickets are \$6 for Sept. 16 and \$8 for Sept. 17-19. Call (256) 837-0750 or e-mail:

jfoster@mwr.redstone.army.mil

On Sept. 18, the Huntsville Symphony Orchestra will present a classical concert, Holst's Planets with the Oakwood College Choir and Yura Lee, violinist, and music of Richard Strauss and Prokofiev at the Von Braun Center beginning at 8:15 p.m. Tickets for adults are \$21-\$36 and students, \$10. Call (256) 539-4818 or e-mail:

hso@ro.com

The Big Spring Jam Festival will be held Sept. 24-26 at Big Spring International Park.

Big Spring Jam needs volunteers — The Volunteer Center is seeking volunteers for Big Spring Jam being held Sept. 24-26 at Big Spring International Park. More than 700 volunteers are needed to work entrances, children's areas, information booths or hospitality rooms. Each shift is 2-3 hours, and volunteers receive free admission for the day they volunteer, free designated parking and a reduced price T-shirt if they choose to buy one. Volunteers must attend a one-hour training session. Anyone 18 years or older may volunteer; 16-year-olds may volunteer for the children's area. Call 539-7797.

Christmas Charities — Christmas Charities, a Combined Federal Campaign recipient agency, has an immediate need for back-to-school supplies such as notebooks, notebook paper, pencils, pens, crayons, etc., and children's clothing in sizes 6-12. Donations may be brought to any of six special collection containers around Marshall through Sept. 24. Collection sites include lobby areas of buildings 4200 and 4666, and cafeteria entrances of buildings 4203, 4708, 4471 and 4610. For more information, call Rachel Kamenetzky at 544-1089.

Community Service Day part of annual CFC effort

The fifth annual Marshall Center Community Service Day — part of the Combined Federal Campaign (CFC) — is scheduled Sept. 25.

Employees are encouraged to observe the day by volunteering time and special skills to local non-profit agencies. The slogan for this year's campaign is "Care Enough to Share Enough."

Community Service Day is an opportunity to donate time and special skills to participating CFC community agencies in need of "hands-on" donations, said Rachel Kamenetzky, this year's coordinator.

"Project volunteers should keep safety in mind by wearing appropriate clothing," she said. "Tools should be handled and operated in a safe manner, and heavy objects should be moved or lifted with care and/or assistance."

Employees interested in volunteering should call Kamenetzky at 544-1089 or e-mail: rachel.kamenetzky@msfc.nasa.gov

Participating agencies for Community Service Day include:

- **Technology Assistance for Special Consumers (TASC)**

Mission: To provide technology to children and adults with disabilities so they can be more independent at home, school or work.

Project: Toy Adaptation Day — Adapting toys for children with physical challenges or disabilities.

Number of volunteers needed: 10-20

Equipment needed: Each volunteer should bring small screwdrivers and small wire cutters.

Equipment provided: Soldering equipment and a borrowed workshop at Teledyne Brown Engineering.

- **Care Assurance System for the Aging and Homebound (CASA)**

Mission: Assists elderly and homebound persons with activities of daily living.

Project: Build wheelchair ramps, repair fascia board, interior/exterior painting, plumbing, yard work.

Number of volunteers needed: 15-20

Equipment needed: Basic lawn, woodworking (hammers, saws, etc.), painting, plumbing and/or electrical hand tools.

- **Christmas Charities Year Round**

Mission: Provides clothing, household items, toys, furniture and food baskets to needy families.

Project: Toy refurbishment and fitting and selecting clothing outfits for kids.

Number of volunteers needed: 6

Equipment needed: Basic cleaning solutions, rags and paper towels.

- **Habitat for Humanity**

Mission: Provides simple, decent housing for low-income people of all faiths and races.

See *Volunteers* on page 7

Husband and wife team sees results of efforts with images from NASA's Chandra X-ray telescope

by Sherrie Super

As people worldwide view the first spectacular images from the most powerful X-ray telescope in history, one couple from Marshall can take pride in the fact that they helped make those images possible.

NASA engineers Kurt and Lorna Jackson are members of Marshall's Chandra X-ray Observatory team.

As lead engineer for the Avionics Department, Kurt Jackson played a key role in the design and testing of Chandra's hardware and science instruments to ensure a proper on-orbit operation.

He also assisted in controlling and monitoring the Observatory from the operations control center in Boston during Chandra's launch, deployment and on-orbit activation and checkout.

Lorna Jackson, who tested the power supply system of the telescope and its control center, is continuing to monitor Chandra's electrical power system from Marshall's Operations Support Center — a responsibility she plans to continue through Chandra's five-year mission.

This includes ensuring the solar arrays that receive power from the sun and distribute it to the spacecraft's batteries are operating correctly. Together, the solar arrays and batteries power Chandra's science instruments and hardware.

With its first images, unveiled Aug. 26 in Washington, D.C., the Chandra X-ray Observatory is already providing astronomers — as well as members of the Chandra team such as Kurt and Lorna Jackson — with a new perspective on our universe.

One extraordinary image traces the aftermath of a gigantic stellar explosion in such stunning detail that scientists can see evidence of what may be a neutron star or black hole near the center. Another image shows a powerful X-ray jet blasting 200,000 light years into intergalactic space from a distant quasar.

Both images confirm that NASA's newest Great Observatory

is in excellent health and its instruments and optics are performing up to expectations. Chandra, the world's largest and most sensitive X-ray telescope, is still in its orbital check-out and calibration phase.

With an operational orbit that takes it 200 times higher than the Hubble Space Telescope, Chandra's resolving power is equal to the ability to read the letters of a stop sign 12 miles away. In addition to quasars and stars, it will allow astronomers to study other sources of X-rays like black holes, colliding galaxies and comets.

Chandra, named in honor of the late Indian-American Nobel Laureate Subrahmanyan Chandrasekhar, was launched aboard the Space Shuttle Columbia July 23.

The first images from Chandra are available on the Web at: <http://chandra.nasa.gov>

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



Photo by Dennis Olive

Lorna Jackson, left, and Kurt Jackson, husband and wife, are two of the many Marshall employees who are part of the Chandra X-ray Observatory team.

Chandra

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colors. The spectrum then can be read by Chandra's imaging detectors like a kind of cosmic bar code from which scientists can deduce the chemical composition and temperature of the corona. A corona is a region of hot gas and magnetic loops that extends hundreds of thousands of miles above the star's visible surface and is best studied with X-rays.

"The success of the new spectrometer is definitely a major milestone for modern astronomy," said Professor Claude R. Canizares of Massachusetts Institute of

Technology, principal investigator for the instrument and associate director of the Chandra X-ray Observatory Center in Cambridge, Mass. "Within the first hour we had obtained the best X-ray spectrum ever recorded for a celestial source. We already can see unexpected features that will teach us new things about stars and about matter at high temperatures."

The spectrometer measured X-rays from the star Capella, which is 40 light years away in the constellation Auriga. Capella is actually two stars orbiting one another and possibly interacting in ways

that pump extra heat into the corona, which appears more active than that of the Sun. How a star manages to heat its corona to temperatures a thousand times higher than its own surface is still a puzzle, which astronomers hope can be solved by observations like this one. Other prime targets over the next few months include black holes, quasars and supernova explosions.

To follow Chandra's progress, visit the Chandra News Web site at:

<http://chandra.nasa.gov>

Volunteers

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Project: Provide finishing touches on three just-completed homes. Work to include painting, home site cleanup and yard landscaping.

Number of volunteers needed: 15-20

Equipment needed: Paint brushes, rollers, general hand tools (hammers, pliers, etc.) and lawn tools.

• **Salvation Army**

Mission: Provides welfare assistance, homeless services and character building programs to all on a nondiscriminatory basis.

Project: Serve lunchtime meal and bus tables.

Number of Volunteers needed: 5

Equipment needed: None

Job Opportunities

CPP 99-108-KP, AST, Electrical Instrumentation Systems, GS-855-14, Engineering Directorate, Structures, Mechanics, & Thermal Department, Structural & Dynamics Testing Group. Closes Sept. 8.

CPP 99-111-CV, AST, Mission Support Requirements and Development, GS-801-14, Flight Projects Directorate, Ground Systems Department, Mission Systems Operations Group. Closes Sept. 8.

CPP 99-112-CV, AST, Mission Support Requirements and Development, GS-801-14, Flight Projects Directorate, Ground Systems Department, Mission Systems Development Group. Closes Sept. 8.

CPP 99-109-RE, Safety and Occupational Health Specialist, GS-018-7/9/11 (4 vacancies), Safety & Mission Assurance Office, Safety, Reliability & Quality Assurance Department. Closes Sept. 7.

CPP 99-110-RE, Quality Assurance Information Systems Analyst, GS-301-7/9/11, Safety & Mission Assurance Office, Safety, Reliability & Quality Assurance Department. Closes Sept. 7.

Obituary

Billmayer, Hans, 87, Huntsville, died July 24. He retired from Marshall in 1972 where he worked as a mechanical engineer. He is survived by his wife, Hedwig Billmayer.



Photo by Dennis Olive

Softball champs

Division I softball Renegades won the Division I League for the third straight year. Front row from left: Rob Ray, Steve Knight, John Hutt, Randy Reed, Dan Mullane and

Johnney Mason. Second row from left: Len Bell, Blake Anderson, Joel Anderson, Chris Cianciola, Michael Rorex and Chris McGougan.

Area Scouts view eclipse '99

by Barbara Anthony

Forty area Boy Scouts and leaders, and volunteers from the Von Braun Astronomical Society and the Marshall Center gathered atop Monte Sano last month to view the Perseid meteor shower and the last solar eclipse of this millennium.

The eclipse was directly visible only in Europe and Asia, but these local viewers were able to watch the eclipse via Internet Webcasts and television broadcasts sponsored by NASA.



Photo by Barbara Anthony

From left, volunteers Jason Anthony and Stacey Sims distribute packets of material on the sun and the eclipse to area Boy Scouts Drew Ballance of Troop 96 and James Lindstrom of Troop 4.

Marshall solar scientist David Hathaway narrated the local event at the planetarium, along with Mitzi Adams, also a Marshall solar scientist, who viewed the eclipse in Romania and narrated via telephone.

Alease Sims, a contractor employed by Ai Signal Research Inc. who works in Marshall's Educator Resource Center, organized the event.

The writer is an education specialist in Marshall's Educator Resource Center.

Employee Ads

Miscellaneous

- ★ Saxophone, Conn, alto w/hard carrying case, \$650. 464-0667
- ★ CTX 14" SVGA monitor and Cardinal 700 video card, \$20. 721-0617
- ★ Toshiba laptop, \$1,200; Epson stylus-600 color printer, \$150. 751-0682
- ★ Entertainment center, wood/glass, \$80; bookshelf, wood, 7', \$30; both finished in black. 881-3527 after 3:30 p.m.
- ★ Powerbuilt Citation golf clubs, nine irons, three woods, metal shafts, \$250. 881-8879
- ★ Screw mount lenses, 200mm auto, 135mm manual, 55mm, auto, 3X auto converter, \$45 total. 837-2386
- ★ Sofa, blue w/wood accents, \$124; changing table, \$20; baby swing, \$20, walnut coffee table, \$45. 776-9165
- ★ Rowing machine, \$25; Nordic-track, \$50; VHS camcorder, \$150. 232-8804
- ★ Auburn/Ole Miss football tickets, two tickets, game day Sept. 25, \$25 each. 722-9114
- ★ Electric clothes dryer, white, \$90; 6-leg children's swingset, \$90; fiberglass basketball goal, pole & base, \$85. 881-6040
- ★ Lane small sleeper sofa w/ottoman, \$500. 881-5756
- ★ Burley Lite bicycle trailer, seats two children, \$175. 721-9005
- ★ Girl's Rothchild "Red Riding Hood" coat, size 8, \$30; Girl's rollerblades, size 2, \$7. 772-8041
- ★ Route 66, Cat's Meow, 4-piece wooden architectural set, \$34. 882-1097
- ★ Custom built chair and ottoman, one burgundy set, one hunter green set, \$298 per set. 881-8674
- ★ Numerous baby items and clothes for baby boy, age 2 and under. 881-8674
- ★ Conn student trombone, \$475. 830-4846
- ★ Antique 48" round oak table w/4 chairs, \$995. 851-8085

Vehicles

- ★ 1987 Cimarron, burgundy, new a/c, alternator, tires, leather, power windows, seats, \$1,500 obo. 582-5210
- ★ 1994 Nissan Sentra-XE, 4-door, sedan, 90K miles, white 4-cylinder auto, a/c, AM/FM cassette, \$4,500 obo. 772-9930
- ★ 1990 Nissan Maxima, white, 5-speed, loaded, Bose sound system, 129K miles, \$5,000. 721-8099/430-3488

- ★ 1997 Jeep Wrangler, 4.0L, 6-cylinder, 5-speed, red w/black top, 68K miles, \$16,000 firm or take over payments. 355-1353
- ★ 1982 Honda CM450 custom, 15K miles, windshield, sissy bar, crash bar, \$975. 883-2919
- ★ Ford tractor, Model 3600, 42hp, gas w/6' bush-hog, grader blade, etc., \$7,500. 881-4247
- ★ 1993 Aerostar van, 53K miles, one owner, new Michelin tires, blue, a/c, excellent condition, \$5,800. 852-5900
- ★ 1988 Nissan Sentra, 136K miles, a/c, 4-door, automatic, gray, one owner, \$1,500. 974-5312
- ★ 1994 Mazda MX-6 LS coupe, 59K miles, 6-cyl., 2.5L engine, loaded, leather, new tires, \$10,200. 232-4168
- ★ 1993 Dodge Ram 150, full size, 8-cylinder, 97K miles, camper shell, \$6,000. 931-433-6009
- ★ 1997 Mustang V6, bright red, factory warranty, 29K miles, power package, \$12,500 obo. 498-6568
- ★ 1993 Mazda Protege DX sedan, gray, 53K miles, one owner, all records, \$5,500. 722-9483
- ★ 1997 Acura Integra, red, 2-door hatchback, 5-speed, sunroof, a/c, power windows, am/fm stereo cassette, cruise. \$6,800 obo.

Carpool

- ★ Ride from Morgan City to Bldg. 4648, will pay. 498-2769

Found

- ★ Golf ball holder w/golf balls, found at ballpark. Call 544-4758 to identify
- ★ Keys, found at Bldg. 4705 and Bldg. 4723. Call 544-4758 to identify
- ★ File sorter left at Regions Bank, Bldg. 4200. Call 544-4758 to identify
- ★ Sunglasses w/case, found at D-13 Gate. Call 544-4758 to identify
- ★ Cargo tie-down, found at Bldg. 4466. Call 544-4758 to identify
- ★ Portable Micro Design, found at Bldg. 4663. Call 544-4758

Lost

- ★ Silver and turquoise tear-drop earring, lost 8/26 in vicinity of Bldg. 4201. 544-7817

Center Announcements

- ☛ **Philippine American Association Ball** — The Philippine American Association of Alabama Inc.

is holding its 12th Inaugural Ball Sept. 11 from 6:30 p.m.-1 a.m. at the Von Braun Center's North Hall. The event is semiformal and features a sit-down dinner, live band and door prizes. Tickets, at \$25 each in advance and \$30 at the door, are available by calling Alan Chow at 544-7107.

- ☛ **TFAWS '99 Workshop** — The Tenth Thermal & Fluids Analysis Workshop (TFAWS '99) will be held Sept. 13-17, at the Bevill Center in Huntsville. The workshop will focus on applications of thermal and fluids analysis in the aerospace field. The workshop will bring industry, academia and government together to share information and exchange ideas about applications analysis tools and methods. To register, visit the Web at: <http://tfaws99.msfc.nasa.gov>

- ☛ **NASA Men's Bowling League** — The NASA Men's Bowling League will begin Sept. 7 at 6 p.m. at Monarch Lanes on Bob Wallace Avenue. All NASA employees, dependents and on-site contractor personnel are eligible to participate. For more information, call Chuck Seal at 544-1120 or Rob Lake at 544-1176.

- ☛ **Photo Lab Retirees** — Photo Lab retirees will meet at 9:30 a.m. Sept. 7 at Shoney's at Memorial Parkway and University Drive. For more information, call Charles Allen at 852-0917.

- ☛ **MARS Ballroom Dance Club** — The MARS Ballroom Dance Club will offer tango and waltz lessons on Sept. 13, 20, 27 and Oct. 4 in the Parish Hall of St. Stephen's Episcopal Church at 8020 Whitesburg Drive. Intermediate classes will start at 7 p.m. and beginner classes at 8. The lessons will be taught by Joe Whorley and are available to the public for \$4 per person per night. For more information, call Linda Kinney at 544-0563.

- ☛ **Rocket City Rowing Club** — The Rocket City Rowing Club is offering a rowing clinic for adult beginners on Saturday, Sept. 11, 18, 13 and Oct. 2, from 10 a.m.-noon. The clinic teaches basic rowing technique, along with equipment and basic lingo. Cost is \$60. To sign up, call Halley Little at (256) 539-8841.

- ☛ **NASA Ski Week** — The 9th Annual NASA Ski Week will be hosted at Big Sky, Mont., Jan. 22-29, 2000. For information, call 1-233-0705 or e-mail Thomas.S.Dollman@msfc.nasa.gov

- ☛ **Toastmasters** — Redstone Toastmasters meets weekly at 6 p.m. on Tuesday at Piccadilly Cafeteria in Madison Square Mall. For information, call 461-0476. The NASA Lunar Nooners Toastmasters Club meets Tuesdays at 11:30 a.m. in Bldg. 4610 cafeteria conference room. For information, call 544-5142.

MARSHALL STAR

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