



State of the Center...

Little's Looks Back, Ahead After Two Years as Director

Editor's Note: Dr. Wayne Little's served as director of the Marshall Center for the past two years. On Jan. 3 he retired from government service after more than 30 years. Little's talked to the Marshall Star about his experiences as Center Director.

Marshall Star: What were the greatest accomplishments of the Center in the last two years? Are there any areas in which you feel we should have done more or better?

Little's: It has been a major challenge to implement the Zero Base Review. We have met the budget reductions institutionally that we committed to, we have put in place several performance based contracts, and we have continued to reduce our personnel to the levels required by the year 2000. I am proud of the way the Center has responded.

The External Tank was a major challenge but has been successfully completed, thanks to a great effort by our Shuttle Team. That team continues to do an outstanding job to ensure that our Space Shuttle flies safely. No mission is routine and the Team meets all challenges with great professionalism and competence. Major accomplishments include the way the Center has responded to its new assignment in space transportation and technology, putting in place the X-33



Marshall Center Director Dr. Wayne Little's talks about his NASA experience. Photo by Dennis Keim

program, where we are demonstrating technologies for the future for space transportation, the X-34 program - another
See Little's on page 2.

London Assumes Position As New X-34 Manager

By Tony Jacob

John R. London, technical assistant to the manager of the Advanced Space Transportation Program at the Marshall Center, has been appointed NASA X-34 program manager. London replaces Jack Levine, who retired from the agency on Jan. 3.

London joined NASA in November after completing a 21-year career in the U.S. Air Force. A retired lieutenant colonel, London's final active-duty assignment was as program manager for the Space Based Laser program in the Ballistic Missile Defense Organization at the Pentagon.

In 1992 London was selected as the Air Force Systems Command research fellow and subsequently completed a one-year research program aimed at lowering the cost of

space launch.

The X-34 is designed to bridge the gap between the earlier Clipper Graham subsonic demonstrator vehicle and the larger, more advanced X-33 vehicle. The X-34 will demonstrate key technologies applicable to development of a future Reusable Launch Vehicle (RLV). The overall goal of these vehicle programs is to demonstrate the key technologies needed to dramatically lower the cost of putting a pound of payload into space from \$10,000 to \$1,000.



John London

Inside...

Susan Smith Interview

Associate Center Director Susan Smith recently announced her plan to retire. **See page 3** to find out what Smith thinks the position means and what she deems as the Center's most significant accomplishment during her tenure.

1997: The Year in Review

Beginning on **page 4**, take a look back at last year's accomplishments and countless contributions Marshall made to science and the American people.

Upcoming Events...

Retirement receptions, Open House are on the calendar. **See page 6.**

Little's

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technology demonstration vehicle, and the Advanced Space Transportation Program, which is a wide variety of technologies being developed for propulsion and space transportation. Our Microgravity Program Office has done an excellent job of implementing our Lead Center assignment and produced the first implementation plan in the Agency. Our AXAF team has had significant challenges but is well on the way to completing the program successfully. I am also very proud of our Global Hydrology Research Office and the science being conducted there, and our space physics and astronomy scientists continue to produce excellence science. Our support of the Space Station Program has been outstanding. We are doing very well in the development of the POIC and are preparing for our major role in Space Station Payload Operations and Utilization.

Marshall Star: What is the current state of Marshall? What are our strengths? Our weaknesses?

Little's: The Marshall Center is one of the strongest research and development organizations in the country and certainly within the Agency. For many years the Center has maintained a focus on ensuring that we continue to have a strong engineering and science capability at the Center and the management skills and talents that go along with these capabilities. The Center has continued to maintain the posture of having a superior research and development science and engineering organization even with the challenges that we have now with downsizing and reducing our budget.

In terms of other areas of support, we have an excellent set of core facilities at the Center that serve us well in meeting the needs of our programs. We have a strong Center. I expect Marshall to be a core part of the Nation's capability that is utilized to continue to pursue the space program.

The major issue for this Center and NASA is continuing strong support in the Administration and in Congress and maintaining the budget that NASA has to do the missions that we are assigned. The Agency has reduced its budget as far as it can be reduced and still maintain the core programs within the Agency. As long as NASA can maintain a budget to do its assigned missions, Marshall will continue to be at the heart of what's going on.

Marshall Star: How is the "Lead Center" concept working for NASA? What is Marshall doing with its Lead Center roles in microgravity and space transportation?

Little's: The Lead Center concept has been with us for almost two years and it has worked reasonably well in most places. There are still some places where the Lead Center concept has not been implemented as it was envisioned to be. There's still work going on and senior management within the Agency has to make sure the concept works. Marshall has done well with its Lead Center assignments. We have implemented our Lead



Little's chats with employees during the holiday reception. Photo by Jack Ray

Center assignment in Microgravity and in the space transportation area. Those involved have done a good job in implementing our assignments in X-33, X-34, advanced space transportation, and Microgravity research. The Center has responded well to its assigned roles. The Lead Center concept will continue to be an area of work and discussion over the next several months as we make sure everything is implemented equitably across the Agency.

Marshall Star: What about "Centers of Excellence?"

Little's: Implementation of Centers of Excellence has been slower than expected. There is still work to be done to implement the original Centers of Excellence that were chartered during the Zero Base Review. Our Center of Excellence in propulsion is solid although there is still work to be done in our implementation. There has been discussion over the last two years of adding Centers of Excellence, however, the Agency has elected not to do that.

Marshall Star: The STS-87 Shuttle mission, late last year, was called Marshall's last Spacelab. How significant is that for the Center?

Little's: The Spacelab program has been a cornerstone at this Center since we started working with the Europeans in the mid-70's to develop Spacelab hardware. We have been able to accomplish a significant array of science in a wide variety of disciplines. The program has been very successful and has done what it was envisioned to do. It was started to give a platform on orbit in the Shuttle to conduct science. It's being phased out now because next year we will begin launching Space Station hardware and assembling it on orbit. Space Station is the next generation laboratory for conducting science. Spacelab was a very successful program for the Marshall Center, not only in terms of the science we have conducted but also the Payload Operations Control Center which has been here and conducted

See Interview on page 6

Susan Smith Shares Experiences, Bids Farewell

Editor's Note: Associate Director Susan Smith has summed up her NASA career. She talked to the Marshall Star about her experiences and plans.

Marshall Star: What does the position of associate director of the Marshall Center entail?

Smith: Being associate director of the Center is a job that is focused on the Center as an institution. It also focuses on the local community. Also, it means doing whatever the Center director or deputy Center director asks you to do!

Marshall Star: Prior to being named associate director in 1996, you served as chief counsel for the Marshall Center since 1982. What was that transition like?

Smith: It was a surprisingly difficult transition for me. Serving as chief counsel was a long time in one job. One thing that comes to mind with the transition is the fact that I went from managing and leading a staff of several people in the chief counsel's office to working with just one or two people. The "ninth floor" does not have the bustle of clients flowing in and out as was the case in the legal office. Since I like to be around people, I would get out and wander around the Center where I could meet and chat with co-workers.

Because of the nature of the work in the legal area, you are most often involved in things that are not necessarily positive. You deal with issues, problems and concerns. A delight for me as associate director has been seeing the many positive things going on at Marshall. It has allowed me to see the Center in a different perspective. I see the Marshall Center for what it is — a large team of outstanding people doing a huge variety of things with a tremendous number of successes day in and day out.

Marshall Star: What has been the most challenging part of being associate director?

Smith: In order to get things done in this position you need to have the support of the line organization. That means you have to challenge yourself to operate in a way that you win that support. You have to be able to lead people in the right direction. You have to coax them into wanting to change and do things that are right for the Center.

Marshall Star: What do you think has been your greatest accomplishment during your NASA career?

Smith: Two things immediately come to mind, both occurring while I was chief counsel at Marshall. One was dealing with the aftermath of the Challenger accident in terms of the contractual issues. This involved very long protracted negotiations with a small team and coming to a resolution that had to stand the test of review at NASA Headquarters all the way up to the Administrator as well as external to NASA. It was an incredible privilege to have been able to lead those negotiations for the Agency.

The other accomplishment came soon after I started at Marshall. I became involved in what became a landmark decision by the United States Supreme Court. It turned out to be a unanimous decision. I feel good about the role I was able to play with the team of people who made it possible.

Marshall Star: Is there any one memorable moment that stands out during your tenure as associate director?

Smith: The memorable moment that stands out is a symbolic one. I try hard to make the Center a more visible member and

contributor in our community. If Marshall doesn't have the support of the people who live next door to us, then we can't expect to have the support of the American public generally. That one "memorable moment" is the Open House that was held in May. It was the first Open House in something like 17 years and it drew 15,000 people.

Marshall Star: How does NASA today compare to NASA when you first started?

Smith: The complexities, regulations and rules that are imposed on us, have been imposed on us, and that we impose on ourselves in many respects have dramatically increased. When I started with NASA in 1974, it was still the NASA that had been created in 1958, still a new agency. One of the benefits of being a new agency is not worrying so much about what you cannot do. In this agency for a long time, we've talked about micromanagement. I think that is very real, the tendency for all of us to want to be controlling about the group reporting to us is a human tendency that the agency and Congress have to fight. It used to be that when a law was passed, it was straight forward with basic principles in it. Now the tendency seems to be that when a law is passed it has all the detailed rules and regulations needed to implement it.

Also today, the political influence on the agency is much more pronounced than it was in 1974. We are much more closely linked to the political process.

See Smith Reflects on page 7



Susan Smith reflects.

A Look Back

1997 Was a Year Filled With Accomplishments at Marshall

January

- Government and industry managers successfully completed a Preliminary Design Review for the X-33 technology demonstration program. The X-33, a half-scale technology demonstrator intended to pave the way for the agency's Reusable Launch Vehicle (RLV) program, is scheduled to make as many as 15 flights in 1999. The RLV could dramatically reduce the cost of putting payloads into space.



X-33 Technology Demonstrator

- Marshall-managed payloads were among the complement of experiments which constituted a key part of the fifth Shuttle-Mir docking mission, STS-81.
- Marshall astrophysicists discovered evidence that shows gamma-ray bursts come from remote parts of the universe, rather than the Milky Way galaxy or its "neighborhood."
- Marshall's intranet site, "Inside Marshall," made its debut. The website is a "one-stop information shop" that provides quick and easy access to Center information.

February

- The RLV program held a two-day Technology Expo for industry, government agency and military representatives.
- STS-82 crew members, who trained at Marshall's Neutral Buoyancy Simulator, performed major maintenance and upgrading of NASA's Hubble Telescope.

March

- Marshall Center researchers hosted the Solar Thermal Propulsion Workshop where some of the top minds in the field compared notes on how to build a propulsion system that directly uses the rays of the sun to propel space ships and satellites.
- Students involved in the Future Assets, Student Talent (FAST) program, a community initiative designed to motivate and prepare students with disabilities, visited the Marshall Center to get a first-hand look at the world of aerospace engineering.
- Mirrors for NASA's most powerful orbiting X-ray telescope successfully completed initial testing at Marshall's X-ray Calibration Facility.
- Marshall engineers from the Propulsion Lab were named 1996 Inventors of the Year for their work in developing a Selectively Lockable Knee Brace to aid those recovering from strokes or knee injuries.

April

- The first super lightweight external fuel tank for the Space Shuttle, about 7,500 pounds lighter than previous tanks, completed major pressure tests, verifying its design.
- Marshall sponsored the Fourth Annual Great Moon Buggy Race. College and high school students designed, built, and raced their versions of the "moon buggy" on a track simulating the lunar surface.
- Marshall engineers conducted tests for the linear aerospike engine, which will provide propulsion for NASA's X-33 Advanced Technology Demonstrator.



Super Lightweight External Fuel Tank

May

- Marshall hosted its first full-up Open House in more than 30 years, a daylong event that drew about 15,000 visitors.
- High resolution mirrors of NASA's most powerful X-ray telescope, following successful completion of testing at Marshall's Marshall's X-ray Calibration Facility, were moved from Marshall to TRW Space and Electronics Group.
- A revised charter created four new Marshall organizations: the Space Transportation Programs Office; the Microgravity Research Program Office; the Flight Programs Office and the Global Hydrology Research Office.
- Government and industry managers successfully completed a three-day systems design freeze of X-34. The reusable, suborbital, air-launched vehicle will fly at speeds approaching eight times the speed of sound at altitudes up to 50 miles.



X-34 Suborbital Vehicle Concept

June

- The Army-NASA Virtual Innovations Laboratory or ANVIL Lab was dedicated at Marshall, allowing both organizations to pool their resources and capabilities for greater cooperation in the field of virtual reality.
- The Marshall-developed Fastrac engine, which could power the next generation of space launch vehicles, was cleared for the final stage of design.
- The first major U.S.-manufactured International Space Station element, Node 1, was shipped from Marshall to the Kennedy Space Center. Made of aluminum, the node has six hatches which



Space Station Node 1

will serve as docking ports for other Space Station modules.

- The U.S. Space and Rocket Center officially opened a new, 38,000 square-foot exhibit designed to portray Marshall and Army Missile Command achievements.

July

- After an abbreviated mission in April, NASA flew the Marshall-managed MSL-1 Spacelab Mission for its full duration. The crew conducted a variety of experiments to examine how various materials and liquids change and behave in the weightlessness of space.
- The Global Hydrology and Climate Center sponsored a three-day conference at Vanderbilt University to establish a dialogue with those, such as local and state emergency management officials, who are significantly affected by climate change.
- The Marshall Occupational Health Program and the NASA Exchange Physical Exercise Facility merged their resources to establish a comprehensive Wellness Program.

August

- Marshall's Microgravity Research Program Office contributed five microgravity science experiments flown during the STS-85 mission.
- The Fastrac engine, the primary propulsion system for the X-34 technology demonstration vehicle passed a series of critical tests meant to evaluate the engine's thrust chamber assembly.
- Marshall's unique X-ray Calibration Facility — the largest in the world of its type — was selected for induction into Alabama's Engineering Hall of Fame for

1998 in the project category.

September

- The Fourth Huntsville Gamma-Ray Burst Symposium brought together world-renowned scientists to debate the causes of gamma-ray bursts, one of the biggest mysteries of the universe.
- The Advanced X-ray Astrophysics Facility Operations Control Center opened at the Smithsonian Astrophysical Observatory in Cambridge, Mass., in preparation for the mission of NASA's most powerful orbiting x-ray telescope.
- Two microgravity research payloads were successfully launched aboard Black Brant XII sounding rockets, completing one investigation and continuing another sponsored by the Microgravity Research Program at the Marshall Center.
- Four Marshall-managed Microgravity Research experiments in biotechnology and fluid physics were transferred to Mir during the STS-86 Shuttle mission. The experiments included three biotechnology and one fluid physics studies. Also during STS-86, the Marshall-managed Passive Optical Sample Assembly-1 was one of four space environment experiments retrieved during a spacewalk.

October

- Marshall engineer Dr. Mark Whorton conducted space research with down-to-Earth applications of reducing the effects of major vibrations — such as those caused by earthquakes and high winds — on structures.
- Launch of the Cassini spacecraft on a mission to explore Saturn and its moons, especially Titan, included seven Marshall-built mirrors for Cassini's Composite Infrared Spectrometer.
- Making extensive use of computational fluid dynamics, Marshall engineers performed much of the design and testing for the X-33 technology demonstrator in parallel with actual program development. This approach saved time and money.

November

- Government and industry representatives successfully completed a comprehensive

design review of the X-33 technology demonstration program, giving the program a vote of confidence and the go ahead for fabrication of all remaining components, completion of subsystems and assembly of the subscale vehicle.

- A solar thermal propulsion system known as Shooting Star was tested in Marshall's X-ray Calibration Facility.
- The Advanced X-ray Astrophysics Facility passed another major development milestone when the telescope of the Marshall-managed X-ray observatory was mated with its spacecraft.
- The Center's Technology Transfer Office facilitated testing of a new medical treatment to fight cancer, by adapting space-based, plant growth lighting technology to activate light-sensitive, tumor-fighting drugs.
- The Lightning Imaging Sensor (LIS), developed by the Global Hydrology and Climate Center, was launched aboard the U.S.- Japan Tropical Rainfall Measuring Mission.
- The STS-87 mission aboard Columbia included microgravity science of the fourth Marshall-managed United States Microgravity Payload and a technology demonstration of the Marshall-developed Automated Rendezvous and Capture Video Guidance Sensor.

December

- Boeing/Rocketdyne, Distributed Information Systems, Boeing/McDonnell Douglas, Sverdrup and Summa Technology, were recipients of Marshall Contractor Excellence Awards for 1997.
- December marked the 25th anniversary of the last Saturn rocket to boost humans to the lunar surface. The Marshall Center provided the Saturn V launch vehicle for each Saturn/Apollo launch.
- Marshall's Payroll Office received award that recognized the organization's efforts in the consolidation, under which Marshall will handle the payroll for all NASA personnel.
- Engineers in the Structures and Dynamics Laboratory completed modal testing on the P6 power module for the International Space Station.

Interview with Littles

Continued from page 2

the operations for a significant number of Spacelab missions with tremendous success.

Marshall Star: Do you think NASA and Marshall are evolving to become more like private industry? If so, what does this mean to our employees and contractors?

Littles: No, NASA is not evolving to be like private industry. The government is never going to be private industry because private industry has a profit motive. There are, however, many things that we can do in this Agency by using techniques, tools and practices that private industry uses to make ourselves better.

Marshall Star: You initiated Project LIGHT. What results has it produced?

Littles: There have been a significant number of positive results from Project LIGHT. The initiative started by identifying over 300 challenges and opportunities that were distributed among 15 or 16 teams that worked in a variety of areas. There have been changes implemented and activities initiated in a number of areas that improved the Center, ranging from improved communication to personnel practices. Project LIGHT activity should not be discontinued when the current teams are finished, but should be an ongoing activity.

Marshall Star: A lot of work has been done for the Center to become ISO 9000 certified. Why is it important? How will it benefit the Center?

Littles: The ISO 9000 certification process is important to Marshall and the Agency because it is an excellent management system. It requires and assures that organizations have processes and procedures in place to conduct business. It ensures that we do business in a disciplined way. It requires that everyone involved understand what they are doing and requires a continuing assessment to ensure that we use approved processes.

I have seen many improvements at this Center already as a result of going through the process of becoming certified.

Marshall Star: What do you think the future holds for the Marshall Center, near and long term?

Littles: Marshall is going to be very busy. We have our plate loaded this fiscal year and the next. As long as the Agency's budget is sound and the missions of the Agency continue to be conducted, Marshall has a solid future. We have the core of NASA's space program in our hands. We are responsible for space transportation and for getting payloads and people into space. We need to continue to drive the cost of space transportation down. The Agency is still spending more than 25 percent of its budget to get people into space. We need to reduce that to the minimum possible amount so we can spend that money on science and other activities that the Agency is responsible for. Our primary mission in Microgravity research will also continue to grow as we move into the Space Station era. Our team is doing an excellent job in this Lead Center area. We have many talents and capabilities in other areas. I expect that we will continue to be involved in Space Station and Space Station-related activities. One of the primary areas of Space Station work will be in our assigned area of Space Station Payload Operations and Utilization. Because of our strong capability in space sciences and global hydrology, our people will continue to play a major role for the Agency in these areas. Marshall has a strong future and a broad area of work while focusing on its primary responsibilities.

Marshall Star: What are your plans for the future?

Littles: I have not made definite plans yet. There are still options that I have yet to pursue. I expect to firm up plans soon. I have been fortunate in my career for more than 30 years. If I had written the script for my career, I would not have written it this well. The people here are like family. I will miss them. It has been a fantastic journey.

Farewell Receptions Set in January

Marshall employees, on-site contractors and retirees are invited to attend a **farewell reception honoring Center Associate Director for Science Dr. Rick Chappell** Jan. 28 from 3:30 to 5:30 p.m. in Bldg 4200, room P110. The cost is \$7 and tickets may be purchased from administrative officers.

A **farewell reception also is scheduled for Sherman Jobe of the Science and Engineering Directorate.** The reception will be held Jan. 29 from 3:30 to 5:30 p.m. and tickets, available through administrative officers, are \$7. All employees, retirees, and on-site contractors are invited to attend.



Smith Reflects on Career, Looks Forward to Future Plans

Continued from page 3

Marshall Star: There have been many changes occurring around NASA and Marshall in recent years. Which has been most significant?

Smith: The need to be oriented to our customers. It is not something that has come naturally to this agency or at least those who have been with this agency for many years. I can recall sitting in Room P110 several years ago after hearing a speech by an industry executive talking about continuous improvement. A senior manager commented that Marshall doesn't have any customers. No one today would make such a statement. I think that the notion that we do have customers is here to stay and most people at NASA today understand that. The agency grew out of necessity. We had to win the race with the Russians because our national security was at stake. Now, it's going to be difficult to convince the nation to increase funding to NASA. Marshall has customers and we have to deliver on our commitments. If we view change as an opportunity and a challenge, then change is positive and should be embraced.

Marshall Star: What challenges do you see the Marshall Center facing?

Smith: The obvious one is that we need to resolve the roles and missions that the agency has defined and been transitioning toward. Although we're still not fully transitioned, Marshall has done its part under Wayne Little's leadership. We've made the hard choices and we've started focusing. It is important to recognize our roles and missions because our number one challenge is delivering on our commitments.

Another challenge is that we have a reorganization that should be implemented in the next few weeks. Change can always be disruptive. The insecure are afraid of change, but the secure will embrace it. I hope that everyone will understand that

the whole idea behind the reorganization is to help the Center operate more effectively. It's the logical thing to do.

Being a good member of the NASA team is a challenge. Most of the employees understand that we are one NASA, and that NASA doesn't exist because there is a Marshall Center. When we get everyone pulling in the same direction, Marshall will be stronger.

Marshall Star: Sid Saucier has been named to replace you. Any advice for him?

Smith: He has to do the job in a way that he is most comfortable. I feel confident that he will do that. He will be working with an outstanding team and he will do an outstanding job.

Marshall Star: What does retiring mean to you? What are your plans for the future?

Smith: Retirement is such a misnomer for what I'm doing. It's more of a transition for me. I've enjoyed an incredible career with this agency, but will continue to work -- and relax some if I can.

My husband has a small business in Huntsville. I will work for him. We're both excited about the opportunity to work together and grow the company.

Marshall Star: What will you miss most about Marshall?

Smith: The people. I'll miss seeing them everyday. Marshall is really an exceptional place to work and it has been my privilege. I'll be a very interested observer from the sidelines for many years to come.

Marshall Center Work Recognized in 'Top Sci-Tech Story' Lists for 1997

Three national publications have recognized Marshall Center's sci-tech programs as top stories for 1997.

In its special January issue, Discover recognizes gamma-ray bursts as one of their "Top 100 Science Stories." Discover says "these brief flashes of high-energy electro-magnetic radiation have been one of the enduring mysteries of astrophysics."

The editors of Science, in December, named gamma-ray bursts a "1997 Breakthrough of the Year." According to the publication, which is the journal of the American Association for the Advancement of Science, "usually scientists must content themselves with remnants of these strange explosions, but in 1997 they caught a gamma-ray burst in action- and for the first time with optical (visible light frequency) instrumentation. This mixture of good science and good luck promises to open a new window on an intriguing mystery."

Finally, in the year-end issue of Aerospace Engineering, that publication's readers voted the Marshall-managed Reusable Launch Vehicle program as a "Top 15 Technology." The overall goal of the program is to demonstrate the key technologies needed to dramatically lower the cost of putting a pound of payload into space from \$10,000 to \$1,000.



Marshall's 1997 Combined Federal Campaign chairperson Steve Gaddis receives an award from Redstone Arsenal Commander Major General Emmett Gibson for his efforts in managing the Marshall Center campaign. Marshall employees gave more than \$431,000 to charitable organizations during the annual drive.

Photo by Shirley Phillips

Employee Ads

Miscellaneous

- ★ Golf clubs, square two XGR, 1, 3, 5 woods, 3-PW, graphite shafts, \$500 o.b.o. 837-9434
- ★ Treadmill, Sears Spacesaver, one year old, never used, cushioned tread, \$395. 881-8970
- ★ Schwinn Traveller, 10 speed, 26" bike, \$175. 881-8953
- ★ Gas logs, 24", vented, LP gas, \$50. 539-0094
- ★ 27" Sony Trinitron TV, needs minor repair, \$100. 859-0323
- ★ Sega Genesis with 7 games, 2 controllers, RF adapter, \$100. 461-8721
- ★ Girl's French Provincial bedroom set: triple dresser, mirror, twin, four poster bed, (w/o mattress set), \$225. 883-5168
- ★ Beige contemporary dinette with 4-chairs on casters, \$250; battery powered Little Safari Jeep, \$65. 772-3303
- ★ Gold Star computer, monitor, software, \$75. 883-2653
- ★ Queen sleeper sofa and loveseat, 4-years old, \$600 o.b.o. 505-0129
- ★ Bear Bryant museum autograph football & case, quarterback edition #183/323. 883-5114
- ★ Couch, upholstered chair, small three piece dinette set, \$50 ea. 881-7750
- ★ Antique: 1900's oak curio/china cabinet, \$850; 1870's mahogany end table, \$150. 881-4505
- ★ Ladies leather coats: multicolor, medium & Aigner blazer size 10/12; 13" color TV, \$20. 852-6952
- ★ Suzuki Sidekick JX, 5-speed, 4-WD, A/C, AM-FM cassette, new tires, brakes, tune-up, 96K miles, \$4,680. 837-6109
- ★ Sega/Sega CD, 5 CD Games, 2 controllers, \$190; Super Nintendo, 2 controllers, turbo controller, \$60. 837-6109
- ★ Canon BJC-4100 Bubblejet color printer, unregistered, in box, one year warranty, \$99. 880-0881
- ★ Australian Shepherd puppies, \$50-\$100 (males & females). 420-5938
- ★ 486 DX2 66 MHz computer w/o monitor, 4 Meg RAM, 370 Meg hard drive, various software, IBM 4070j printer, \$200. 464-0106
- ★ Emu oil, \$7; Emu Steaks, \$5; Emu patties, \$4; and Emu meat \$3 available. 852-9617

Vehicles

- ★ 1985 Camaro, V-8, T-Top, automatic, 122K miles, \$2,400. 837-0085
- ★ 1964 Triumph, TR-4, rebuilt engine, new wiring harness, new top, needs paint, \$4,800. 883-4177
- ★ 1996 Chevy Corsica, 4-door, \$7,700. 852-7982

- ★ 1997 Grand Prix, GT, 2-door, black, sun roof, CD, options, 29K miles, \$19,000. 796-1271
- ★ 1994 Acura Integra LS, 4-door, 86K miles, \$8,900. 505-0129
- ★ 1976 Toronado, 98K miles, 454 engine, auto, PS, PB, PW, cruise, air, \$1,995. 883-7464
- ★ 1974 Glaspar 17ft. runabout, 115HP Johnson with power trim, walk-thru windshield, depth finder, \$1,450. 883-8257

Wanted

- ★ Female Gouldian Finch. 534-5653
- ★ 5 to 6 person tent windowed with rain tarp, in very good shape. 955-8570 or E-mail: jdstephens@juno.com

Center Announcements

- ☛ **MOO** —The Management Operations Office retirees will meet for breakfast/lunch Dec. 18 at the Cracker Barrel in Madison at 10 a.m. Call 539-0042 if you have questions.
- ☛ **Stop Abuse** — Aware of waste, fraud or abuse? Telephonically contact the MSFC Office of Inspector General at 544-9188 or send complaints to Mail Stop M-DI. Confidentiality will be maintained.
- ☛ **MSFC Internal Calls** — This is a reminder to MSFC employees that the following telephone message system feature can be used: After dialing the 1-888-245-MSFC number to listen to messages, one can then dial -9- and -0- and make another internal (e.g. 4-xxxx) call.
- ☛ **Toastmasters International** —The MSFC Lunar Nooners Toastmasters Club will meet on Dec. 23 at 11:30 a.m. in the 4610 cafeteria conference room. For more information call Lee Johns at 544-5142
- ☛ **MESA** —The Marshall Engineers and Scientists Association, IFPTE Local 27, will meet Dec. 18 at 11:30 a.m. in bldg. 4471, room C-105. Refreshments will be served.
- ☛ **Election** —The deadline for receiving ballots for the NASA Exchange Election is COB Dec. 18. Ballots are available in the Exchange Office, bldg. 4752.
- ☛ **Nut Sale** —The nut sale is being extended to Center employees. The hickory smoked almonds, \$3.15 for 12oz.; honey roasted almonds, \$3.15 for 12oz.; natural almonds, \$3.90 lb.; english walnuts, \$4.40 lb.; and chocolate covered pecans, \$6.75 lb. Nuts may be purchased from 8 a.m. to 4 p.m. in the Exchange Office, bldg. 4752.
- ☛ **Styling & Barber Shop** —The Styling & Barber Shop in bldg. 4203, room 1108 will be closed Dec. 25 - Jan. 2. Operating hours are 8 a.m. to

4:45 p.m. weekdays. Persons wishing to make an appointment may stop by or call 881-7932.

- ☛ **Auto Service** —The Auto Service in bldg. 4678 will be closed Dec. 25 - Jan. 4. Operating hours are 8 a.m. to 5 p.m. weekdays. Call 881-7640 to schedule work.
- ☛ **MARC** —The Marshall Amateur Radio Club will meet Dec. 18 at 11:30 a.m. in bldg. 4622. The MARC is open to all NASA and on-site contractors. For more information call Scott Akridge at 4-1510.
- ☛ **NASA Ski Week (Last Call)** —The 7th Annual NASA Ski Week will be hosted at Whistler-Blackcomb, Jan. 24-31, 1998. All MSFC employees, on-site contractors, retirees, and dependents are eligible to participate. This is the last call for skiers and non-skiers. For information call Tom Dollman at 544-6568 immediately.

Job Opportunities

- CPP 98-10-CV, AST, Electronic Instrumentation Systems, GS-855-11 with promotion potential to GS-13, S&E, Structures & Dynamics Lab., Structural Test Division, Quasi-Static Test Branch. Closes Dec. 19.**
- CPP 98-11-SP, AST, Flight Systems Test, GS-861-9 with promotion potential to GS13, S&E, Systems Analysis & Integration Lab., Systems Test Division, Payloads & Experimental Test Branch. Closes Dec. 23.**
- Reassignment Bulletin: 98-2-CL, AST, Measurement Standards and Calibration, GS-1310-13, Facilities Office. Closes Dec. 22.**
- Reassignment Bulletin: 98-3-CV, Electronics Technician, GS-856-9/11 (2 vacancies), Structures and Dynamics Lab., Fluid Dynamics Division, Experimental Fluid Dynamics Branch. Closes Dec. 18.**
- Reassignment Bulletin: 98-4-CV, AST, Electronic Instrumentation Systems, GS-855-12/13 (2 vacancies), Structures and Dynamics Lab., Fluid Dynamics Division, Experimental Fluid Dynamics Branch. Closes Dec. 18.**
- Reassignment Bulletin: 98-5-RE, Vac. #1, AST, Reliability & Quality Assurance GS-861-12/13 (2 vacancies), RSRM Assurance Office, Resident Mgmt Office, Thiokol Corp., Brigham City, Utah. Vac #2, AST, Reliability & Quality Assurance, GS-861-12/13 (1 vacancy), ET Assurance Office, Resident Mgmt Office, Michoud Assembly Facility, New Orleans, Louisiana. Vac #3, Ast, Reliability & Quality Assurance, GS-861-12/13 (1 vacancy), SSME Assurance Office, Resident Mgmt Office, West Palm Beach, Florida. Closes Dec. 22.**

MARSHALL STAR

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