

MARSHALL STAR

Serving the Marshall Space Flight Center Community

Feb. 7, 2002

Marshall budget may rise 9 percent overall

NASA administrator says 2003 budget request reflects White House commitment

NASA and Marshall news releases

NASA Administrator Sean O’Keefe announced Monday the Administration’s fiscal year 2003 budget request includes \$15.1 billion for NASA. Of that total, the Marshall Center looks to receive \$2.5 billion to continue key support to the Space Shuttle, International Space Station, Space Launch Initiative and Earth and Space Sciences.

“The President’s budget proposal of \$15.1 billion for fiscal year 2003 reflects the Administration’s commitment to this agency’s core research efforts and its fundamental mandate to



Photo by Emmett Given, NASA/Marshall Space Flight Center

Center Director Art Stephenson outlines the Marshall Center’s portion of the proposed budget.

All-hands meeting with NASA Administrator Sean O’Keefe, Friday, Morris Auditorium. Please be seated by 1:30 p.m.

advance aeronautics and aerospace science,” O’Keefe said.

The budget includes \$6,131 million for human space flight; \$8,845 million for science, aeronautics and technology; \$25

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Propellant-free space propulsion technology marks critical milestone

by Sherrie Super

Propellant-free propulsion technology has taken a critical step toward reality, completing a series of systems tests at the Marshall Center.

The Propulsive Small Expendable Deployer system — called ProSEDS — is a tether-based propulsion experiment that draws power from the space environment around Earth, allowing the transfer of energy from the Earth to the spacecraft.

Marshall’s Space Transportation Directorate manages the ProSEDS experiment.

Inexpensive and reusable, ProSEDS technology has the potential to turn orbiting, in-space tethers into “space tugboats” — replacing heavy, costly, traditional chemical propulsion and enabling a variety of space-based missions, such as the fuel-free raising and lowering of satellite orbits.

The initial flight of ProSEDS, scheduled for early summer, will mark the first time a tether system is used for propulsion. To be launched from Kennedy

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Black History Month

Marshall leaders offer views on excellence at Center

Editor's note: Each week during Black History Month, the "Marshall Star" will feature a Q&A with African-American leaders at the Marshall Center who are "Profiles in Excellence."

Q *Where are the greatest opportunities for advancement at the Center?*

Lewis Wooten, a Marshall employee since 1980, is the group lead of the Mission Design Group in the Payload Operations and Integration Department of the Flight Projects Directorate. His group plans missions for the International Space Station scientific payloads.

A "I believe opportunities exist in most places. It is largely up to the individual. There are no guarantees and I don't know a secret formula for advancement. I recommend finding something you truly enjoy doing, something you are passionate about, and committing yourself to it. If it advances you, that's great, if not, you still would have enjoyed what you did; in the end that's all that really matters.

The one thing that concerns him is the age gap in the Center's work force. "The NASA brand is very important to me. It symbolizes excellence, innovation, high quality and safety. If that legacy is to continue, it has to be passed on to next set of torchbearers."



Wooten



Hullet-Smith

Gloria Hullet-Smith, who started her career at Marshall as a cooperative education student in 1967, is the Customer Interface Applications team leader in the Flight Projects Directive/Ground Systems Department. She is responsible for the development and operation of a system that supports the collection, processing, management, and distribution of data required for the International Space Station payload integration and operation.

A "It is important to find your niche and a mentor, develop a plan that will help you to reach your goals, and work hard. Your chances of encountering various forms of obstacles are great. Therefore, it is important to stay focused, work on projects that you enjoy, and don't give up."

Research is the key to advancement at the Center, she believes. "I think advancement opportunities exist in all organizations at this Center. I advise those who are seeking advancement to do a little research on organizations where they have an interest. Talk to managers and employees about advancement opportunities in their organizations and investigate the organization's history on employee advancement."

Don Frazier, Marshall's chief scientist for physical chemistry, has worked in Marshall's Microgravity Science and Applications Department since 1980.

A "To those who want to nurture individual excellence: Don't be afraid of stretching yourself, playing by the rules, to take risks for positive organizational accomplishment and personal development. In so doing, persevere and study. Do not hesitate to support the work of your colleagues. The effort you make for others without ulterior motive is somehow returned manifold. The latter also makes for a very good working environment."

Some of the greatest opportunities for advancement at the Center might be in Space Launch Initiative (SLI), he suggests. "However, we have great hopes for materials processing, which can be tied into the primary missions of the Center such as SLI and Propulsion.

"The Marshall workforce needs to continue to be proactive with minority institutions, and to involve dedicated and active scientists with good technical skills in identifying futuristic outreach projects that meaningfully engage minority institutions in NASA'S critical science enterprises."



Frazier

'Defining Excellence'

Marshall marks Black History Month with exhibits, events

In February, the Marshall Center will mark Black History Month with a series of programs and events intended to unite NASA employees with Huntsville-area industry leaders and young people.

This year's History Month theme, "Defining Excellence: African-American Leadership in the New Millennium," embraces the roles and responsibilities of African-Americans in the workplace, the community and the nation.

Events

Spider Martin Civil Rights Photo Exhibit: Open daily through Feb. 27, Bldg. 4200 lobby. In the 1960s, Alabama photojournalist Spider Martin captured images of the American civil rights movement. His national touring exhibit of still photos, taken between 1965-1968, will be on view for NASA employees and visitors to the Center.

Leadership forum: 10-11:30 a.m., Feb. 12, Bldg. 4200, Morris Auditorium. Panelists are Wendell Colberg and Biliyar Bhat of the Engineering Directorate; Don Frazier of the Science Directorate; Angelia Walker and Amanda Goodson of the Safety and Mission Assurance Office; and James Wycoff of the Space

Transportation Directorate. This event brings together Marshall Center leaders for a culturally diverse panel discussion on minority programs, initiatives and pathways to leadership excellence. Open to Marshall Center employees.

Science Fair: 7 a.m.-2:30 p.m., Feb. 26, National Space Science and Technology Center (NSSTC), 320 Sparkman Drive. Elementary students from Huntsville area schools will display their science projects at the NSSTC (Rm. 4708), tour the Marshall Center and learn more about NASA's mission. Visitors escorted by bagged NSSTC employees may attend.

Black History Month closing ceremonies: 10-11:30 a.m., Feb. 27, Bldg. 4200, Morris Auditorium. Guest speaker is Dr. Julian Earles, deputy director, Glenn Research Center in Cleveland. Local educators and organizations will be awarded for contributions to science education and leadership. The event is open to the public.

Unification Activity: 9:30-11:30 a.m., Feb. 28, Sparkman Center's Bob Jones Auditorium, Redstone Arsenal. The Marshall Center will participate in the 7th annual "Festival of African-American Music/Art/Portrayals," hosted by Redstone Arsenal. The event is open to NASA and Arsenal employees.

Former astronaut, manager Charles Bolden tapped to be NASA's deputy administrator

President Bush has selected Marine Corps Maj. Gen. Charles F. Bolden Jr., a former Space Shuttle astronaut and NASA Assistant Deputy Administrator, to serve as Deputy Administrator of the space agency.

Bolden, who also served as the astronaut office liaison to the Safety, Reliability and Quality Assurance Directorate at Marshall Space Flight Center in Huntsville, Ala., will become the chief operating officer for the agency, reporting directly to NASA Administrator Sean O'Keefe.

Since August 2000, Bolden has served as the Commanding General, 3rd Marine Aircraft Wing, based in Miramar, Calif.

As NASA's Deputy Administrator, Bolden will be responsible for directing and managing many of the programs and day-to-day operations

and activities at NASA.

In a statement, NASA Administrator O'Keefe said, "I am grateful for the President's overwhelming confidence in Gen. Bolden. I could not ask for a more qualified partner to help lead this great agency. His management and leadership skills in the fields of aeronautics and space technology will play a vital role in charting a new course for America's space program. I am delighted he accepted this nomination and look forward to welcoming him back to the NASA family. We are hopeful for expeditious consideration by the United States Senate."

"I am pleased that Gen. Bolden is joining NASA again. He clearly brings a wealth of knowledge about human space flight," said Art Stephenson, director of the Marshall Center. "I have heard great things about him, and I look forward to working with him. I understand he is very much a 'people' person, and that he

recognizes we get our work done through the talents of our people. This is consistent with Marshall's philosophy."

Bolden is a veteran of four Space Shuttle flights. He was pilot on STS-61C in 1986 and STS-31 in 1990, and was mission commander on STS-45 in 1992. That same year, he was appointed Assistant Deputy Administrator at NASA Headquarters in Washington, a position he held until 1994, when he was named commander of STS-60. He left the space program having logged more than 680 hours in orbit.

Additional personnel announcements are expected in the coming weeks.



Bolden

Budget

Continued from page 1

million for the inspector general; and \$117 million for full funding for federal retirees.

Of those totals, Marshall expects to receive \$1,207 million for Human Exploration and Development of Space; \$794 million for Aerospace Technology; \$244 million for Space Science; \$247 million for Biological and Physical Research; \$26 million for Earth Science; and \$10 million for academic programs.

"Some of the numbers have gone up, and some have gone down," said Marshall Center Director Art Stephenson. "The numbers going down do not mean we have failed in those missions. It means we have accomplished the mission and need less money to maintain it.

"With the exception of Space Launch Initiative — which reflects a 61 percent increase over last year for the agency — many of the funding levels remain about the same," he said.

Marshall's 2003 budget request allows for significant research in nuclear propulsion to begin; continuing support of the Space Shuttle, including upgrades; and continued support of the Space Station, particularly through the Payload Operations Center. Microgravity Science research prioritization is under way, and, Earth and Space Science budgets remain stable.

"From developing safe, more powerful and more efficient space transportation systems to pioneering the frontiers of flight and knowledge, NASA is the world's premiere aerospace agency," O'Keefe said. "We have the freedom and the people to dream big, and then are given the enviable tasks to make those dreams into reality.

"But it's not enough to make promises about the future," O'Keefe said. "We have to live up to the President's Management Agenda, which asks us to responsibly live up to those promises.

"The Administration has chartered a fiscal course for the future that asks NASA to look at the way it does business, identify improvements in management and performance, and continue to build on the agency's core foundation of science and technology research."

Additional information about NASA's FY 2003 budget and the President's Management Agenda is available on the Internet at:

http://www.nasa.gov/budget/budget2003_index.html

<http://ifmp.nasa.gov/codeb/budget2003/>

<http://www.whitehouse.gov/omb/budget/fy2002/mgmt.pdf>

Marshall highlights from the 2003 President's budget request

- **Marshall budget up from \$2.3B (FY02) to \$2.5B (FY03) to \$3.3B (FY07)**

- **Civil service staffing — FY02 current full-time employees 2,721. FY03, 2,761**

- **Four Space Shuttle flights in FY03 — safety upgrades included**

- **Space Launch Initiative — Marshall FY01 to FY07 = \$5.2B (Agency \$6.2B) (Marshall has lead center role with full-scale development targeted to begin in FY06.)**

- **Space science budget — In-space Propulsion budget triples (\$16M FY02 to \$51M FY03). Includes new initiative for nuclear propulsion.**

- **Earth science budget stable**

- **Space Station — Node 3, crew return vehicle and X-38 continue at the critical skills level. Environmental Control and Life Support System (ECLSS) decision pending.**

- **Microgravity Program — Office of Biological and Physical Research science prioritization activities projected to be completed in May.**

Employees wonder who 'they' are

It seems "they" are everywhere. Messages indicating "They are coming to MSFC" have been spotted across the Center.

The first messages appeared Jan. 28 as signs at the major entryways into the Center. While each pair of signs conveys a different message, they all indicate "They are coming."

Similar messages have been spotted on the Center electronic marquees, Marshall television and elsewhere. More than 20 unique messages have been identified, yet none indicate who "they" are.

The messages themselves provide some clues to "they's" identify. Hints provided include: "over 1,700 are coming," "most are short," "they've won gold medals," "they'll chat with you late at night," "they have answers you're looking for," and "they may change the way you think."

While who "they" are remains uncertain, it is clear that continued speculation over their identity is likely grow in the days ahead. Don't miss the Feb. 14 edition of the "Marshall Star," when the identity of "they" is revealed.



NASA photo

STS-108 crew to visit Marshall Wednesday

From right, Space Shuttle Commander Dominic Gorie pilot Mark Kelly and mission specialists Linda Godwin and Daniel Tani, the STS-108 crew, will visit the Marshall Center Wednesday. The crew will present mission highlights in Morris Auditorium from 10:30-11:30 a.m. In the afternoon, the crew will present Silver Snoopy awards.

NASA develops child car-seat safety device

NASA news release

Every year infants and small children die needlessly because they have been left in vehicles, according to KIDS 'N CARS, a national nonprofit safety organization. As a result, NASA has developed a safety device that would alert parents who inadvertently leave their children strapped in car seats.

The NASA device, inspired by aircraft flight-test technology, uses precision materials and electronics to sense when a child is seated in a car infant or booster seat after the driver has left the vehicle.

Called a Child Presence Sensor, the device was developed at Langley Research Center, Hampton, Va. The research center is looking for a commercial partner to further develop and market a product based on the technology.

"I wanted something that would serve as a second set of eyes and ears, something that could easily and inexpensively be retrofitted to existing child car seats," said principal inventor William "Chris" Edwards of Langley's Laser Systems Branch. Edwards has small children of his own and had read about cases around the country where well-meaning parents

had inadvertently left a small child in a vehicle with disastrous results.

Overloaded, exhausted, distracted or confused by a change in routine, working parents can completely forget that they've left their children unattended. Others may leave sleeping children in car seats while they exit their vehicles for what they believe will be a quick errand. Yet, left alone for only a few minutes, a small child can be abducted, set the vehicle in motion, or — even on a seemingly mild day — suffer a deadly heatstroke.

The Child Presence Sensor driver alarm, designed to hang on the driver's key ring, sounds 10 warning beeps if the driver moves too far away from the vehicle. If the driver doesn't return within one minute, the alarm will beep continuously and cannot be turned off until it is reset by returning to the child safety seat.

The sensor switch triggers immediately when a child is placed in the seat and deactivates when the child is removed. The switch has a large activation area with a sensitivity of about eight ounces. The sensor detects weight once the child is placed in the seat, transmitting a unique code to the driver-alarm module

via a radio-frequency link. The system incorporates a long-life battery for reliability. If the battery is low, the system alerts the driver with an audible alarm.

Edwards was aware of a simple, yet precise, sensor technology developed for the NASA Langley 757 research aircraft. The aircraft is a highly modified flying research lab for experiments ranging from aviation safety to increasing capacity at major airports. The aircraft sensor is mounted in the main landing-gear area to sense environmental effects acting on the aircraft. That data is then beamed to the cockpit by way of a radio-frequency transmitter and receiver system.

Co-inventors Terry Mack and Edward Modlin adapted the self-contained radio-frequency technology from the 757 aircraft project and combined it with Modlin's highly sensitive switch technology to create an inexpensive prototype device.

U.S. companies may inquire about licensing the Child Presence Sensor technology by contacting Brian Beaton, Langley's technology commercialization program manager at (757) 864-7210 or by e-mail at b.f.beaton@larc.nasa.gov

More than 400 contractors attend first joint symposium

It was like the hand of God grabbed us and pulled us into space.”

That is how Space Shuttle Commander Dom Gorie described the first eight-and-one-half minutes of his ride in December 2001 on STS-108 to a recent gathering of Space Shuttle propulsion contractors at Kennedy Space Center for the Shuttle Program Supplier Symposium.

Gorie and his three-member crew told meeting attendees that the suppliers' commitment to Shuttle safety and mission success is the basis upon which astronauts commit to flight. “We fly because of the confidence we have in you,” said Gorie. “You are an integral part of the Space Shuttle program.”

The prime contractors for the Shuttle's propulsion system and the Marshall Center's Space Shuttle Projects Office organized the three-day meeting at Kennedy. The joint symposium was the first to bring together contractors and suppliers for ATK Thiokol Propulsion of Brigham City, Utah; Lockheed Martin of Michoud, La.; The Boeing Company-Rocketdyne of Canoga Park, Calif.; Hamilton Sunstrand of Windsor Locks, Conn.; and United Space Alliance, Houston; and Kennedy Space Center. Marshall's Shuttle Projects Office is responsible for the Shuttle's four propulsion elements.

“A strong supplier base is a must for continued success of the Shuttle,” said Jody Singer, assistant manager of Marshall's Shuttle Projects Office and one of the meeting organizers. “This symposium provided an opportunity to emphasize that the



Marshall Shuttle Project managers, from left, Jerry Smelser of External Tank, George Hopson of Main Engine, David Martin of Solid Rocket Booster and Mike Rudolphi of Reusable Solid Rocket Motor, answer questions proposed by the more than 400 suppliers and contractors that attended the symposium.

Shuttle's success begins with the individuals who make its five-million parts.”

Marshall managers, company presidents and other representatives used the meeting to learn about each other and share information. The symposium offered networking opportunities during planned breakout sessions for each of the primary contractors, receptions, dinner and a tour of Kennedy.

Marshall Center Director Art Stephenson, who addressed the symposium, asked the suppliers to preserve critical skills needed to fly the Shuttle safely — and to meet the challenge of supplying parts for the next decade of Shuttle flights.

Stephenson also asked the group to consider competing for Space Launch Initiative contracts.

“You are one of the greatest teams in the United States, because you are a model of process control,” said Stephenson. “You do it right. We thank you for what you do. I encourage you to stay tuned for the future of space transportation.”

The symposium covered the current status and outlook for the Space Shuttle, Shuttle Upgrades, Space Station Programs and the Space Launch Initiative.

“This meeting was an opportunity for us — the managers — to get first-hand



Mike Rudolphi, left, manager of the Shuttle's Reusable Solid Rocket Motor Project, discusses opportunities available to contractors and suppliers with George Alford of ATK Thiokol and David Martin, deputy manager of the Shuttle's Solid Rocket Booster Project.

co-hosted by Marshall's Space Shuttle Projects office

feedback from our vendors," said Mike Rudolphi, manager of Marshall's Reusable Solid Rocket Motor project. "Many of our original suppliers are gone. So, we need to hear the needs and concerns of these suppliers to keep the Shuttle flying. They are the people on the front line. They make the Shuttle the magnificent flying machine it is."

Also addressing the group was Capt. Dennis Fitch, an airline pilot trainer who was a passenger on ill-fated United Airlines Flight 232 on July 19, 1998. Though 112 passengers perished in a terrifying crash landing in Sioux City, Iowa, Fitch and the flight crew saved 184 people. He credits the teamwork and leadership of the crew and control tower for landing a plane that had no hydraulic controls to guide or land it.

Fitch used his experiences to help the audience understand the importance of teamwork and a positive attitude.

Other speakers included Ron Dittmore, manager of the Space Shuttle Program at Kennedy Space Center; Elric McHenry, manager of Space Shuttle Program Development at Johnson; Joyce Rozewski, manager of the Shuttle Process Control Group at Kennedy; Stacey Edgington, program manager of Space Flight Awareness at NASA Headquarters; and Jerry Cook, deputy manager of the Program, Planning and Control Office of the Space Launch Initiative at Marshall.

Participating in a panel discussion were contractor senior management, including: Howard DeCastro, vice president and program manager of the Space Shuttle Program for United Space Alliance; George Alford, vice president and Reusable Solid Rocket Motor program manager for ATK Thiokol Propulsion; Ron Wetmore, vice president of the External Tank project for Lockheed Martin Space Systems – Michoud Operations; and Jim Paulsen, program manager of the Space Shuttle Main Engine program at Rocketdyne Propulsion & Power of The Boeing Company.



Terry Greenwood, left, deputy manager of the Shuttle's External Tank Project, and Earl McConnell of Lockheed Martin await the next speaker at the Shuttle Suppliers' Symposium.

Members of the panel stressed long-term viability of the Space Shuttle program and the importance of safety and supportability upgrades.

Attendees were given a chance to ask questions to another five-member panel. Serving on the panel from Marshall were Mike Rudolphi, manager of the Reusable Solid Rocket Motor; George Hopson, manager of the Main Engine program;

David Martin, deputy manager of the Solid Rocket Booster; and Jerry Smelser, manager of the External Tank project. Ralph Roe, manager of the Shuttle Vehicle Engineering Office at Johnson Space Center, also served on the panel.

Others attending from Marshall were Terry Greenwood, deputy manager of External Tank, and Shelby Weathers, Space Flight Awareness manager.

Job Opportunities

SES Announcement No. MSFC-ES-08-01: Deputy manager, Avionics Department, Engineering Directorate. Closes March 8.

Announcement No. MS02N0024: AST, Aerospace Flight Systems GS-0861-14, Flight Projects Directorate, Flight Systems Department, External Carriers Group. Closes Feb. 19.

Announcement No. MS02N0025: AST, Aerospace Flight Systems GS-0861-14, Flight Projects Directorate, Flight Systems Department, External Carriers Group. Closes Feb. 19.

Announcement No. MS02N0026: AST, Engineering Project Management GS-0801-14, Flight Projects Directorate, Flight Systems Department, Pressurized Carriers Group. Closes Feb. 19.

ProSEDS

Continued from page 1

Space Center, Fla., ProSEDS will fly aboard an Air Force Delta II rocket and demonstrate an electrodynamic tether's ability to generate significant thrust.

"We achieved an important milestone with our tests in November," said ProSEDS project manager Leslie Curtis of the Space Transportation Directorate. "Using a vacuum chamber to represent the space environment, we successfully simulated the first 16 hours of the experiment's initial flight."

In orbit, ProSEDS will deploy from a Delta-II second stage a 3.1-mile-long (5 kilometers), ultra-thin bare-wire tether connected with a 6.2-mile-long (10 kilometers) non-conducting tether. The interaction of the bare-wire tether with the Earth's ionosphere will produce thrust, thus lowering the altitude of the stage.

Although the mission could last as long as three weeks, the first day is the most critical, because the primary objective of demonstrating thrust with the tether should be achieved during the experiment's first 24 hours.

During the mission profile tests last November, engineers from the Marshall Center, along with their partners in academia and industry, tested the experiment's multiple systems as if the flight were actually taking place.

"We took ProSEDS through every step of the mission's first 16 hours," Curtis said. "We operated its hardware, batteries, cables and software, activated and deactivated systems, and collected and transmitted data as we would during an actual flight."

During the tests, all sub-systems functioned as designed, including the hollow cathode plasma contactor, a critical component that enables the tether system to complete its electrical circuit.

During the flight, the process of collecting energy will begin when the electromagnetic portion of the tether collects electrical current along the tether's length as it moves through the Earth's magnetic field. To keep the current flowing, the plasma contactor reconnects the electrons

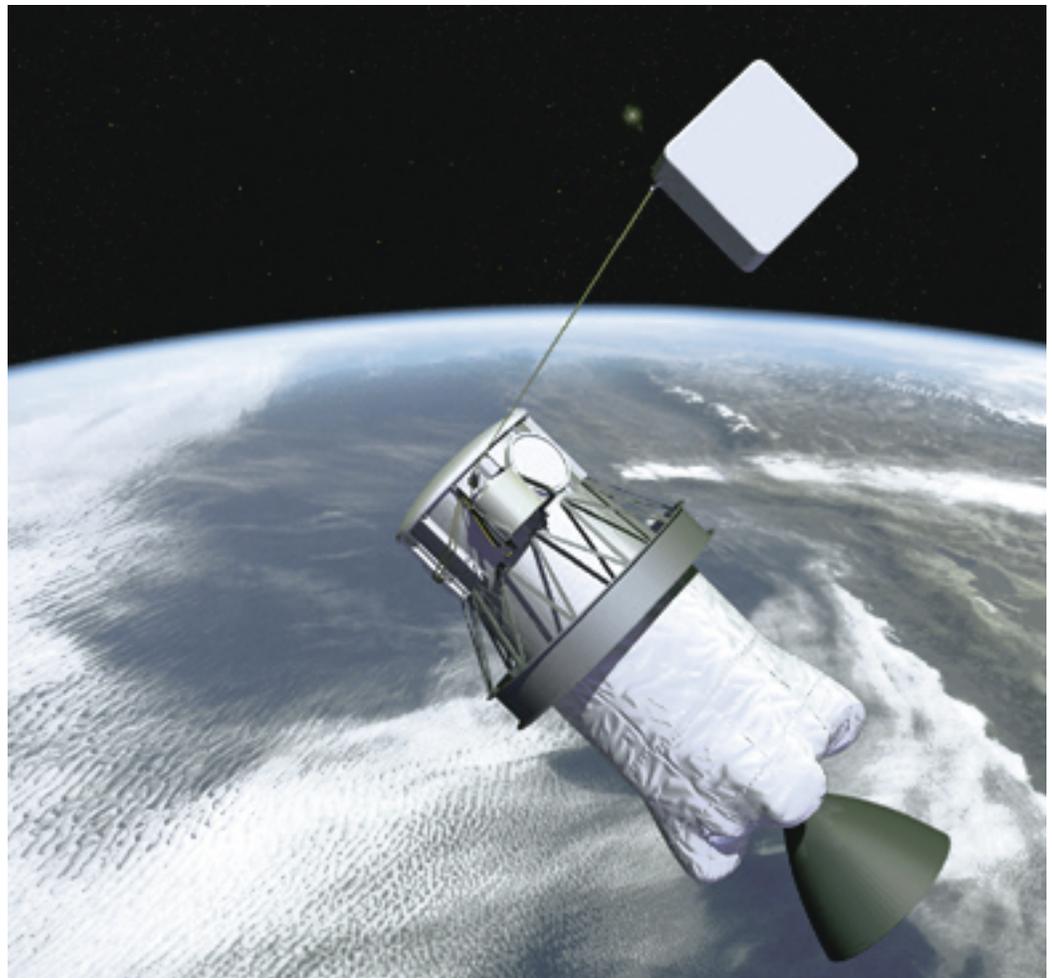
with the invisible, electrically charged plasma that surrounds the Earth, emitting the electrons back into space so it can complete its circuit.

"We were pleased to see the plasma contactor perform well throughout the test, even under conditions outside its expected operating range," said Curtis. "It demonstrated the robustness of its design and the performance range of the ProSEDS operating system." The contactor was designed and built by the Electric Propulsion Laboratory in Monument, Colo.

Additional testing of ProSEDS hardware leading to its launch will include thermal testing, tether deployment and final system verification with flight software.

NASA's industry team for the ProSEDS experiment includes the University of Michigan in Ann Arbor, Alpha Technologies of Huntsville, Ala., Electric Propulsion Laboratory of Monument Colo., the Smithsonian Astrophysical Observatory in Cambridge, Mass., Tether Applications Inc. of Chula Vista, Calif., and Triton Systems Inc. in Chelmsford, Mass.

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



Artist concept of ProSEDS



Photo by Emmett Given, NASA/Marshall Space Flight Center

Zero safety findings

From left, Center Director Art Stephenson and Engineering Directorate Director Bill Kilpatrick, present the Zero Safety Findings award to Bruce Askins, Wyatt Poe, Nancy-Jo Ogozalek, Wayne Ellenberg, Robert Tackett, Larry Popejoy, and Eddie Davis.

First-time Shuttle Launch Viewers Program allows civil servants to sign up on the Web to see launch

by Debra Valine

Civil servants working at the Marshall Center, who have never seen a Space Shuttle launch, now have a Web site where they can sign up to do so.

Marshall's Protocol Office has launched a new program — the First-time Shuttle Launch Viewers Program — that will allow civil servants to make a request to attend a Shuttle launch. The program will set up the opportunity to attend a launch, but attendees and a guest will be responsible for making travel arrangements and paying both travel and lodging expenses.

This program will be in addition to the Space Flight Awareness Program, where Marshall employees and contractors are awarded a trip to the Cape for a launch based on work performance. The Space Flight Awareness Program honorees and a guest receive an expenses-paid trip.

"This started out as a suggestion to build morale," said Sandra Turner, Marshall's protocol officer. "Philisha

Matthews in the Space Transportation Directorate submitted a suggestion. We plan to offer two launches each year that long-time and new employees who have never seen a Shuttle launch may attend." Turner developed a pilot program that would be equitable to employees.

"I believe this program will not only build morale, but will give employees a broader understanding of what we do at Marshall and how we work together as a team with thousands of NASA and contractor employees to accomplish a Space Shuttle launch," said Center Director Art Stephenson.

Tereasa Washington, director of the Customer and Employee Relations Directorate, believes "every employee who attends a Space Shuttle launch will be an even stronger and more assertive ambassador of the space program."

Employees who want to attend the April 4 launch may sign up on the Web at: <http://ntf-2.msfc.nasa.gov/ftlvp.nsf/main>. The Web site will be open until Feb. 28. A computer program will randomly select 54

employees to attend the STS-110 launch.

Each person selected will be allowed to bring a guest. Though the employees must pay for the trip, administrative leave up to three days will be granted — two travel days and one day to view the launch. A liberal leave policy will be in effect for those who want to stay in Florida longer than the three days.

"Since the terrorist attacks on Sept. 11, security has been tighter at the Cape, and tours have been limited," Turner said. "The NASA Exchange plans to purchase tickets for a tour of Kennedy Space Center for the employees selected. Guests, however, will have to purchase their own tickets. Tours will be offered based on the security level at the time of the launch."

For more information, visit the Web site or call Turner at 544-0067.

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

Energy tip

Use hydronic heating as a means to eliminate the chill

While radiators are the most common source of heat transfer, radiant loops — hydronic heating systems — are gaining popularity. Installation and materials costs have made aluminum-finned copper tubing the most effective design for these systems.

A hydronic heating system consists of a closed piping loop through which a hot fluid is passed to transfer heat to a large surface. The medium for heat transfer in a hydronic system is hot water from a boiler or water heater.

Once the heat loss of a room has been determined, a measured length of base-

board module — low output or high output — or the correct size free-standing cast radiator can be installed. A base-board module, whether copper or cast iron, is run in a continuous loop from room to room, but the larger cast-standing radiators work better as a supply and return loop or as a monoflo loop.

Using a fitting called a monoflo T, one pipe can feed the entire loop of standing radiators. Unique but simple, the monoflo T uses an orifice placed to one side of the T arm to restrict the flow of water through it. Down side of the flow it forces water into the arm. Upside of the flow suction is produced. Water is forced in and out of

the radiator without valves or a separate pump.

Using the concept of warm feet as an important comfort factor, radiant heating is becoming more popular, but continues to be more expensive to purchase and install. It can be stapled to the underside of the sub-floor, embedded in a concrete slab or strung between the ceiling joist to radiate down from the ceiling for double the pleasure or when refitting a room with an existing slab floor. When embedded in a concrete slab, response time is slow and gradual, so the water must circulate constantly and the thermostat set at the desired temperature and left alone.

Eligible students should apply for NASA scholarships by March 22

Applications are being accepted for six scholarships to be awarded by the NASA College Scholarship Fund Inc. The fund, set up in 1982 through an endowment by author James Michener, provides college scholarships for qualified dependents of current or retired employees of NASA and dependents of current reimbursable detailees to NASA.

In addition, college scholarships may be awarded to full-time students who are dependents of former NASA employees or reimbursable detailees to NASA who died while employed by NASA.

Six \$2,000 scholarships will be awarded for the 2002-2003 school year. The renewable scholarship is for a maximum of \$8,000 over six calendar years.

Applicants must be pursuing a course of study in the science and engineering fields that will lead to a recognized undergraduate degree at an accredited college or university in the United States. Since 1984, 10 Marshall dependents have received NASA College Scholarship Fund scholarships.

Contributors to the NASA College Fund include the Freedom Forum, the Johnson Space Center Chapter of the Alumni League and NASA employees through the Combined Federal Campaign. Donations to the fund may be made at any time, and mailed to NASA Johnson Space Center, AH14/NASA College Scholarship Fund Inc., Bldg. 12, room 105, 2101 NASA Road 1, Houston, Texas 77058.

For complete information on the scholarship and application process, visit the Web at: <http://hro.jsc.nasa.gov/jsc-hro-2/specialprogs/fellowships&scholarships.htm>.

Sign up now to help at the 2002 Great Moonbuggy Race

Volunteers are needed to help with the 2002 Great Moonbuggy Race being held from 8 a.m.-5 p.m. April 12-13 at the U.S. Space & Rocket Center.

The Moonbuggy Race is a competition where high school and college students design and race a vehicle that addresses a series of engineering challenges similar to the problems faced by the original Lunar Rover Vehicle — moonbuggy — team.

Possible volunteer positions include: obstacle judging, score keeping/reporting, start/finish line activities and pre-race qualifying. A T-shirt will be provided for each volunteer, as well as lunch on the day(s) they volunteer.

Shifts will be from 8 a.m.-12:30 p.m. and noon-5 p.m. both days.

Sign up online at:

<http://ntf-2.msfc.nasa.gov/tgmr2002.nsf/reg>.

Position descriptions are available on the signup site. If you have any questions or have difficulty accessing the online form, contact Joel Farbman at (256) 544-2319 or joel.farbman@msfc.nasa.gov

Obituary

Gullion, William H., 75, of Huntsville, died Dec. 16, 2001. He retired from Marshall in 1981 where he worked as an administrative officer. He is survived by his wife, Mary S. Gullion.

Center Announcements

Washington Update breakfast

The Chamber of Commerce of Huntsville/Madison County will host the Washington Update breakfast at 7:30 a.m. Feb. 18 at the Von Braun Center North Hall. Tickets are \$20. Reservations must be made by Feb. 12. Call Vanessa Lindsey at 544-5663.

Marshall Association

The Marshall Association membership drive is under way. Annual membership dues are \$25. Mail membership dues — checks only — to the new treasurer, Cliff Bailey/AD02.

Earth Day logo contest

The Marshall recycling committee invites all Marshall employees and onsite contractors to participate in the 2002 Earth Day logo contest. The theme is, "It's Hard to Stay Green." Submissions must be original artwork on 8.5- by 11-inch white paper and must have no more than four colors. Each employee may enter up to three designs, with the winner of the contest receiving \$50 at the tree planting ceremony at 10 a.m. April 18 at the Wellness Center, Bldg. 4315. The winner's design will be depicted on the 2002 Earth Day T-shirts. Send entries — identified with name, organization code and phone number on the back — to Shirley Novy Shue/ PS31-G, Bldg. 4202, room 220A, or Jeanette Swearingen/PS52-Q, Bldg. 4203, room 3146, by close of business March 1. Entries will not be accepted after the closing date.

Spot bid sale

A drop-by spot bid sale will be held from 9 a.m.-2 p.m. Feb. 13 at Intergraph Bldg. 21. The sale will consist of 40 personal computers (no Macs), 6 laptop computers (no Macs) and 14 lots of assorted furniture. For details, call Greg Tate at 544-1774.

Auction sale

An auction of approximately 140 lots of miscellaneous computer equip-

ment, test equipment and furniture will be held beginning at 9 a.m. Feb. 26 at Intergraph Bldg. 21 at 470 Dunlop Blvd. in Huntsville. Pre-screening of the items will be from 9 a.m.-3 p.m. Feb. 25 and 7-8:45 a.m. Feb. 26. For details, call Greg Tate at 544-1774, the sales hotline at 544-4667 or visit the General Services Administration Web site at: www.gsaauctions.gov

Become a CFC organization

The Tennessee Valley Combined Federal Campaign (CFC) is accepting applications from non-profit organizations for participation in the 2002 fund-raising campaign. Under federal law, an organization must have 501(c)(3) status, proof of human health and welfare services, an annual audit/IRS 990 Form, and a board of directors. The open period for acceptance of application packages will be March 1-April 6. For more information, call Melinda Seigler at 536-0745, ext. 108, or Gay Money at 876-9143.

Clubs and Meetings

Admin professionals meet

The Redstone Arsenal Chapter of the International Association of Administrative Professionals will hold a seminar and education forum Feb. 12 at the Huntsville Hilton Hotel. Cost is \$135. For more information and a registration form, call Kathy Johnson at (256) 895-4449.

Facilities Office breakfast

Facilities Office retirees will meet for breakfast at 8 a.m. Feb. 12 at the Shoney's on University Drive and Memorial Parkway. For more information, call Carl Gates at 232-2950.

AIAA meets

Dr. Alfred Ritter will speak on aerodynamic research and development in China at the Feb. 21 meeting of the American Institute of Aeronautics and Astronautics (AIAA). The meeting begins

at 6:30 p.m. at the Holiday Inn Research Park. Regular admission is \$15. Student admission is \$8. Make reservations via e-mail to ArloeWJr@cs.com or call 881-7124 by noon Feb. 18.

NARFE meets

The National Association of Retired Federal Employees (NARFE) will hold a special meeting and luncheon for prospective members at 11 a.m. Feb. 9 at the Senior Center on Drake Avenue. All current and retired federal employees are invited to learn how NARFE can help you. A complimentary lunch for prospective members will be served. Reservations are required and can be made by calling Floyd Clark at 859-7747 by Feb. 6.

Professional development

The Huntsville-Madison County Chapter of Blacks in Government (BIG) will sponsor its eighth annual Professional Development Seminar from 8 a.m.-5 p.m. Feb. 21 at the Huntsville Museum of Art, 300 Church Street. Cost is \$125, which includes the seminar and lunch. Credit cards and government payment vouchers are accepted. For more information, call (256) 551-7230 or 851-8437.

IEEE meets

Bradley Morantz will present an overview of neural networks at the Feb. 19 meeting of the Institute of Electrical and Electronics Engineers (IEEE) at 11:15 a.m. at Piccadilly Cafeteria at Madison Square Mall. To attend, call Sonya Hutchinson at 544-3312.

Sports

NASA Ski Week

The 11th Annual NASA Ski Week will be hosted at Banff/Lake Louise March 9-16. All Marshall employees, on-site contractors, retirees, and dependents are eligible to participate. Interested persons may call 544-6568 or e-mail Tom Dollman for additional information.

Employee Ads

Miscellaneous

- ★ Four Jeep Wrangler rims, 7-1/2"x15", all for \$100 or \$25 each. (256) 565-0937
- ★ Light and dark local honey, \$5 quart, \$3 pint. 837-8987
- ★ Genie wet/dry shop vacuum, 4 HP, large capacity, all accessories, \$15; Kenmore charcoal grill, large, \$15. 837-2386
- ★ Yamaha PSR-215 portable keyboard, \$140; Bushnell 565 telescope w/equatorial mount, \$150; Pentax K1000 camera, \$100. 534-3252
- ★ Bench press w/weights and heavy bar, \$50; men's roller-blades, size 11-12, wrist guards, \$25; grill & smoker, charcoal, \$25. 772-9925
- ★ Trailer hitch for 1995-1999 S-10 Blazer or Jimmy, Class III, \$50. 233-3407
- ★ Mobile home, 16x80, 3-bedroom, \$13,500; cedar posts, 6"x9", \$4.50 ea.; cherry lumber, 120 bd. ft., \$2.50 per ft. (256) 772-9768
- ★ Boxer dog, 1.5 year old fawn male, well-behaved, friendly, \$50. 420-8101
- ★ Seasoned firewood, will deliver. 379-2020
- ★ 1986 Goldwing Aspencade, 1200cc, blue, 59K miles, new stator, all Honda line accessories, \$5,000. 828-1640
- ★ Radio-controlled model airplane, Hobico Avistar 40, OS Max 46 engine and Futaba 8UAFS radio, \$350. 527-5247
- ★ Ruger P90 .45 cal., with case and three clips, \$300. 656-0461/971-9710
- ★ Wells Cargo auto wagon enclosed 24' trailer, interior: 19'8"Lx7'6"Wx6'6"H, \$3,200. 883-2948
- ★ Chinese Chippendale dining room table and 4 chairs, Cherry, \$600. 774-3147
- ★ Two twin daybeds, mattresses, bedspreads w/matching cushions, corner table, \$250. 533-4824
- ★ Trek 820 Men's 21" mountain bike, \$150. (256) 232-6881
- ★ Panasonic KP2123 Dot Matrix printer, \$25; Ensoniq keyboard, \$250. 509-0196
- ★ Student desk w/bookshelf on top chair, \$30 obo. 882-1382
- ★ Whirlpool washer & dryer, large capacity, matching set, \$250; two antique peddle sewing machines in oak cabinets, \$150 ea. 830-4477
- ★ Gift certificate, value \$80, for dog training at OTC of Huntsville, \$20. 859-9856
- ★ Several stackable chairs, chrome & vinyl, \$6 each; swivel computer chairs, w/o arms, \$12 each. 722-9989
- ★ Queen size polished brass and white enamel headboard and bed frame, \$125. 534-7981
- ★ Dog kennel, 10x10, no rust, \$135. 353-3229
- ★ New items: Men's all-weather coat w/zip-out lining, London Fog, size 40R, taupe, \$70; Men's Dan Post boots, size 9-1/2D, \$45. 828-4817
- ★ Antique piano, \$300. 881-6076
- ★ Wedding gown, size 10, ivory, never worn, Michelangelo design by David's. 883-1869
- ★ Daybed with trundle, \$300; wooden computer desk, \$90; washer and dryer, \$100. 534-0939
- ★ Pitbulls, 6 weeks old, 3 males, 2 females, \$200. 720-8606
- ★ Coach, SAK, and Nine West handbags and accessories. (256) 757-0469
- ★ NARUMI china, Spring Bamboo pattern, 12 7-piece place settings with platters, vegetable dishes and gravy bowl, \$150. 881-3485
- ★ Antique (early 1900's) 54" round Queen Anne table and four chairs, \$650 obo. 881-4418
- ★ Total Station universal weight machine, \$1,250. 679-3353
- ★ Sofa, Clayton Marcus, 7', burgundy/green/gold stripe, \$250. (256) 464-8374
- ★ Laptop computer, Micron, 400MHz CPU, 192MB RAM, 10Gig HD, 14.1" TFT screen, 56K modem, two new batteries, \$675. 837-0625

Vehicles

- ★ 1988 Lincoln Towncar, gray, leather, garaged, one-owner, 69K miles, \$3,499. 883-8522
- ★ 1993 Dodge Grand Caravan SE, one-owner, service records available, \$3,800. 895-9520
- ★ 1994 Dodge Grand Caravan, champagne, V-6, air power windows/locks, AM/FM/

- cassette, child seats, \$3,100 obo. 851-9982
- ★ 1998 Pontiac Grand Prix GT, 2-door, leather, heads-up-display, 52K miles, \$14,000 obo. 851-9672
- ★ 1965 Ford Mustang coupe, 302, 4-speed, \$5,200. 828-6070
- ★ 1998 Dodge Grand Caravan SE, \$9,900. 233-6197/564-6225 beeper
- ★ 1998 Mustang, 6-cylinder, 5-speed, 60K miles, many options, black, new tires, \$7,950 firm. (256) 753-2278
- ★ 1992 Chevy Chupp & Sons van, high-top conversion, V-8, all-power, \$6,500. (256) 880-6337
- ★ 1965 Ford Thunderbird convertible, \$6,500. 882-6556
- ★ 1995 Oldsmobile Aurora, metallic green, 4.0L, V-8, CD player, heated leather, 121K miles, Bose sound, \$5,700. (256) 446-6310
- ★ 1997 Mercury Topaz, black/gray leather trim, \$6,500 obo. 774-3147
- ★ 1991 Lincoln Town car, \$1,500. 852-0996/852-4656
- ★ 2000 Nissan Maxima GLE, leather, 52K miles, one-owner, \$17,500. 653-2895
- ★ 1993 Plymouth Grand Voyager, original owner, power windows and driver seat, 3.3L, V-6, rear a/c, new transmission, \$3,750. 464-9729
- ★ 1969 Camaro, new SB 400, Muncie 4-speed, 3.73 rear-end w/accessories, needs paint & upholstery, \$8,500 obo. 509-3392
- ★ 1997 Honda Accord EX, dark green/tan interior, auto, moonroof, 59K miles, new timing belt & tires, \$12,200. (256) 536-4326

Wanted

- ★ 95-99 Camry, Accord or Civic, less than 70K miles, no wrecks. 883-2757
- ★ Chest of drawers, dinette w/4 chairs, occasional chairs, bookcase, lamps, household items. 533-0074
- ★ Set of Nerf bars for 1995 Jeep Wrangler, black w/setup; used light bar for top of jeep. 355-7063/603-5560

Free

- ★ 7 yr. old, female, spayed cat, does not get along with other cats. 882-1566

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