



# MARSHALL STAR

Serving the Marshall Space Flight Center Community

Nov. 14, 2002

## Marshall Director Art Stephenson emphasizes 'team' concept during Center All-Hands meeting

Deputy Director David King introduced

by Jonathan Baggs

A central theme during an All-Hands meeting Nov. 6 by Center Director Art Stephenson was the emphasis on being No. 1. "One NASA."

For the Marshall Center, and NASA, to succeed, said Stephenson, it takes a commitment by employees to live the Marshall Values, to become a team – to become "One NASA."

Stephenson touched on several topics during the meeting in Morris Auditorium in Bldg. 4200. He updated employees on the NASA and Marshall Center vision and mission statements, introduced new Marshall Deputy Director David King, gave program updates and presented Length of Service Awards.

Funding for the fiscal year 2003 NASA budget, Stephenson noted, is still awaiting action by Congress, and discussion of the fiscal 2004 budget is embargoed.

Stephenson echoed the words of the NASA-Marshall Vision: "To improve life here, to extend life to there, to find life beyond." He said more research aboard the International Space



Photo by Doug Stoffer, NASA/Marshall Center

Marshall Director Art Stephenson emphasizes "One NASA" during the All-Hands meeting.

Station is necessary because "we are now talking about humans working beyond low-Earth orbit."

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The Combined Federal Campaign at the Marshall Center has been extended until Friday.

So far, 70 percent of Marshall employees have participated -- donating \$535,000 with an average gift of \$285 each.

For more information on the Combined Federal Campaign, go to "Inside Marshall."

## New NASA Integrated Space Transportation Plan announced

from NASA Headquarters

The Administration is preparing a change to its fiscal year 2003 budget to implement a new Integrated Space Transportation Plan (ISTP) and ensure the International Space Station is properly financed and better positioned to achieve its scientific research priorities.

NASA believes it is important to move forward in a highly integrated way to assure access to and from the International Space Station and low-Earth orbit. This change is part of a continuing effort to ensure programs and budgets, developed to carry out NASA's vision and mission, are responsible,

credible, and compelling.

The new direction reflects important changes to NASA's five-year budget plan, within the totals contained in the President's fiscal year 2003 budget. It is based on multiple studies, undertaken over the past few years, including the extensive work conducted under the Space Launch Initiative (SLI). The new plan will be sent to Congress soon.

SLI was designed to identify feasible options for future NASA space transportation. Having accomplished this objective,

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# Team

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The Marshall Center's Vision, Stephenson said, is "To enable, through our values-based culture, the unbounded access to, and use of, space to benefit humanity. I think you are going to see an Agency now that is very creative in communicating our message," he said.

What does One NASA mean?

"I think it's about the teamwork values that we set up a few years ago," Stephenson said. "We do a program like the Space Launch Initiative and we say, 'We can't do this alone, we've got to involve other Centers.' And that is working. It's not about turf. It's not about winning or losing. It's about drawing on the best talent available, regardless of location."

To enhance the value of teamwork among Agency centers, NASA Administrator Sean O'Keefe has encouraged personnel changes so NASA leadership will become more rounded and familiar with what other Centers are doing and how each contributes to overall success. As a result of this concept, Jim Kennedy, Marshall's former deputy director, is now the deputy director at Kennedy Space Center, Fla., while Kennedy Space Center's former director of Shuttle Processing, David King, is now Marshall's deputy director.

"I must say, I am really impressed with David King," Stephenson said. Introducing King, Stephenson said that the new deputy director already had told him that the Marshall Values – people, customers, excellence, teamwork and innovation – had made an impression. "So, you know that made my day," Stephenson said.

King, born in Illinois, raised in South Carolina and having worked in Florida, said he was glad to get "red clay" on his shoes once again – referring to the soil that is dominant in Alabama and parts of South Carolina.

"I will tell you, I have tremendous respect for what the Marshall team does here," King told the audience. "I am looking forward to helping Art and you, as a team, in trying to fulfill where (NASA) is going. My press release for my coming here said, 'One NASA,' and I believe that is the way we ought to go. Those of you who know me know that I am a team player."

Stephenson emphasized the Freedom2Manage initiative that encourages employees to make recommendations on how to do things more efficiently, to be effective and accountable — to try different things instead of doing a task the same way "because that's the way it's always been done."

Promoting education is a NASA and Marshall priority, Stephenson said. "To inspire the next generation of explorers is a big deal." Investing in the future means getting students interested in mathematics and science so that they will become the next generation of explorers. To help further this goal, NASA has created an Educator Mission Specialist position — teachers flying in, and teaching in space will become a reality, Stephenson said. And he reiterated this is something that "only NASA can do."

These future generations of explorers also may be flying the Shuttle along with other, more advanced technologies, into orbit.

"We are going to be flying the Shuttle for a number of years," Stephenson said. "We have a lot of work to do at this Center for the foreseeable future."

And the Shuttle will support Marshall's role on the International Space Station, particularly in managing the science experiments onboard the orbiting outpost – experiments that Stephenson described as "exciting."

Stephenson gave a rundown on the Space Launch Initiative and new propulsion concepts. "I believe we create our future by what we do today. If you do good work today, we'll have work to do in the future. We're pressing forward. There is a significant role for us in SLI. It is going forward, and there will be a Space Launch Initiative."

Work on air-breathing rockets has completed the systems requirements review and is headed toward the design phase. Stephenson said it was a "great technology that may revolutionize space launch."

The Nuclear Systems Initiative is a nuclear propulsion system that Marshall will be responsible to integrate, Stephenson said. "We are working with Glenn Research Center and the Department of Energy on this. This is a new systems

initiative, and we're looking at a demonstration flight — perhaps as early as 2010."

Stephenson said he was proud of the Chandra X-ray Observatory, managed by Marshall, which is "helping rewrite the textbooks." He added that the Gravity Probe B, also managed by Marshall, may be launched in April or May 2003. Gravity Probe B is designed to test Einstein's theory of relativity.

These programs, along with Earth science studies of lightning and hurricanes, are valuable tools in furthering knowledge about our planet's ecosystem, he said.

Stephenson said the Center's role in the Integrated Financial Management Program is to implement the system that will tie all of NASA together to streamline financial management. Marshall is also responsible for the NASA Information Systems Service Utility, which will improve Information Technology operations and security. The Utility is scheduled to go online Nov. 15.

In addition to the Propulsion Research Lab, scheduled for completion in 2004, Marshall is building a new engineering building on Martin Road at Rideout Road. Construction is to begin in 2003. Marshall also has revamped an Intergraph building to create the Marshall Institute – a training facility with two auditoriums and classrooms to be used for workforce training.

"So, we are creating our future by doing the best job we can," Stephenson said. "We want to be One NASA and we want to be One Marshall."

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

**See page 4 for Length of Service Award recipients**

# Parker named manager of Engineering Systems Department at Marshall

from the Human Resources Department

Nelson C. Parker has been named manager of the Marshall Center's Engineering Systems Department of the Engineering Directorate.

Parker began his career with Marshall in 1975 as a mass properties engineer in the Design Integration Branch of the Systems Engineering Division, Systems Analysis and Integration Laboratory. In this position he supported payload analytical integration activities for dedicated Space Shuttle payloads such as Spacelab 1 and Spacelab 3. He also served as an active member of the integrated Mission Analysis and Planning Team where he gained invaluable experience in the systems engineering approach to mission planning.

During his career he has held numer-



Photo by Doug Stoffer, NASA/Marshall Center

Parker

ous leadership positions including, lead systems engineer for the Space Station United States Laboratory; team leader in

the Design Integration Branch; branch chief, Design Integration Branch; deputy chief, Systems Integration Division; chief, Technical Staff Office, Systems Analysis and Integration Laboratory; and assistant to the director, Engineering Directorate.

Most recently, Parker served as deputy manager in the Engineering Systems Department, where he planned, directed and coordinated research, technology, and developments efforts of a large group of civil service and contractor personnel in support of more than 50 Marshall Center and NASA programs and projects.

In 1999, Parker received a NASA Exceptional Service Medal for his exemplary performance in championing a new program lead approach that successfully enhances management's view of project support and provides timely identification of program trends, issues and concerns.

## Don't 'Look the Other Way' when it comes to safety

from the Industrial Safety Department

The Marshall Team performs many work operations that are potentially life threatening, where the safety of team members depends on using appropriate hazard controls and following required work procedures.

The results can be tragic if an employee chooses to deviate from the established processes and controls. An even greater tragedy would be if someone observed an incorrect and unsafe work activity, yet said nothing to an endangered team member.

There have been instances over the last years, at the Marshall Center and at other centers, where employees failed to intervene on behalf of a coworker. Each Marshall team member has an obligation to say something to a coworker when they are not effectively controlling the hazards involved in their activity.

The following poem is an opportunity to imagine how you might feel, if you spotted a hazard and said nothing, resulting in the accidental death of a coworker.

### *I chose to look the other way*

*I could have saved a life that day,  
But I chose to look the other way.  
It wasn't that I didn't care,  
I had the time, and I was there.*

*But I didn't want to seem a fool,  
Or argue over a safety rule.  
I knew he'd done the job before,  
If I called it wrong, he might get sore.*

*The chances didn't seem that bad,  
I've done the same, he knew I had.  
So I shook my head and walked on by,  
He knew the risks as well as I.*

*He took a chance, I closed an eye,  
And with that act I let him die.  
I could have saved a life that day,  
But I chose to look the other way.*

*Now every time I see his wife,  
I'll know I should have saved his life.  
That guilt is something I must bear,  
But it isn't something you need to share.*

*If you see a risk that others take,  
That puts their health or life at stake,  
The question asked, or the thing you say,  
Could help them live another day.*

*If you see a risk and walk away,  
Then hope you never have to say,  
I could have saved a life that day,  
But I chose to look the other way.*

Author: Don Merrell

J.R. Simplot Company,  
Training Center



## ISTP

*Continued from page 1*

and using study results conducted in preparation for a 2003 System Requirements Review (SRR), NASA has selected a robust and flexible approach to meeting space transportation needs through the new ISTP.

ISTP consists of three major programs: Space Shuttle, Orbital Space Plane, and Next Generation Launch Technology. The new plan makes investments to extend Shuttle's operational life for continued safe operations. The Orbital Space Plane is designed to provide a crew-transfer capability, as early as possible, to ensure access to and from the International Space Station. The Next Generation Launch Technology Program funds developments in areas such as propulsion, structures, and operations for the next generation Reusable Launch Vehicle (RLV). The SLI will focus on the Orbital Space Plane and Next Generation Launch Technology, including third generation RLV efforts.

The budget changes reflect a strategic decision to more tightly couple the Space Station, Space Shuttle, and SLI programs. Recently completed independent cost estimates and program reviews have determined that the Space Shuttle flight rate should be increased and steps should be taken to assure NASA's ability to achieve U.S. Core Complete, while meeting international commitments and providing a robust orbital research program. The proposed new plan reflects these changes.

## Job announcements

**MS03C0012**, Education Program Specialist. GS-1720-13, Customer and Employee Relations Directorate, Education Programs Department. Closes Nov. 18. Competitive placement plan.

**MS03N0013**, Notice/Reassignment. AST, Aerospace Flight Systems. GS-861-13, Flight Projects Directorate, Flight Systems Department, Pressurized Carriers Group. Closes Nov. 26.

**MS03N0014**, Notice/Reassignment. GS-861-14, Flight Projects Directorate, Flight Systems Department, Environmental Control and Life Support Group. Closes Nov. 26.

## Marshall team members honored with Length of Service Awards at All-Hands

Several Marshall team members were honored during Center Director Art Stephenson's All-Hands meeting Nov. 6 with Length of Service Awards.

As he walked across the stage of Morris Auditorium to receive his award for 55 years of service, Werner K. Dahm, TD50, a charter member of the Marshall Center, acknowledged the standing ovation given on his behalf with a smile and a wave of his hand.

The following Marshall team members also received awards:

### 40 years of service

- Larry D. Mullins, TD54
- Charles D. Ray, FD21
- Mary D. Spaulding, DE01

### 35 years of service

- Douglas Blackwell, TD30
- Wesley A. Darbro, SD22

- John C. Davis, ED10
- Gloria A. Hullett-Smith, FD42
- Bennie A. Jacks, TD03
- Robert E. Kapustka, ED11
- Patricia A. Layky, ED12
- William N. Myers, TD62
- Palmer N. Peters, SD46
- Jack W. Stokes, FD22

### 30 years of service

- John D. Bedford, ED37
- James H. Carter, AD01
- Frederick W. Davey, Jr. RS60
- John E. Hengel, MP41
- Roberta E. Lindsey, AD32
- Edwin Norman, ED42
- Larry R. Popejoy, Jr., ED37
- Robert B. Shepard III, FD22
- Charles E. Thomas, AD42
- James E. Wyckoff, TD03



Photo by Emmett Given, NASA/Marshall Center

### First-time viewers briefing

Marshall's Chief Protocol Officer Sandra Turner briefs employees participating in the First-time Shuttle Launch Viewers Program. The program, open to civil servants who have never seen a Shuttle launch, will offer launch-viewing opportunities twice a year.

# Thirty-five years ago, a Saturn V first flew

by Bob Jaques

**T**hirty-five years ago, Nov. 9, 1967, a 36-story, three-stage Saturn V unmanned rocket, developed by Marshall and designated Apollo 4, was successfully launched into space for the first time.

The primary objectives of the Apollo 4 flight were to test the launch vehicle itself, as well as the Command Module's heat shield upon re-entry into Earth's atmosphere – an important step in the human reach toward the Moon.

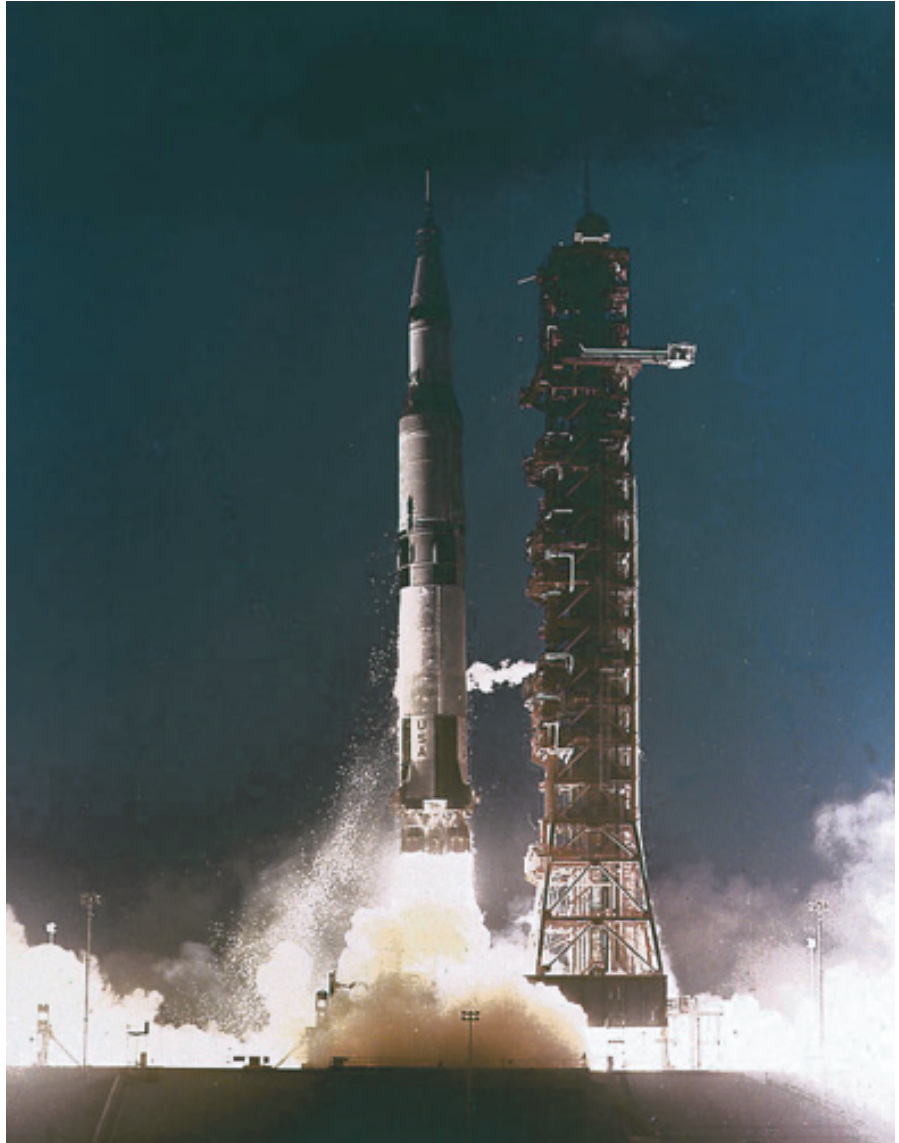
The third stage boosted the Apollo spacecraft to an apogee of 11,400 miles, where it was turned toward Earth for a water landing. When re-entering the Earth's atmosphere, the heat shield took the brunt of the 4,000-degree Fahrenheit re-entry heat. The heat shield worked flawlessly and the spacecraft made a successful landing in the Pacific Ocean about 600 miles from Hawaii.

The first Saturn V flight was officially designated Apollo 4 because of a tragic beginning in the Apollo program. The Apollo 1 designation, although not an actual flown mission, was given in honor of the three astronauts – Virgil “Gus” Grissom, Roger Chaffee and Ed White — who were killed in a fire on the launch pad during a training exercise Jan. 27, 1967. And due to the delay caused by the fire and subsequent investigation, test flights of Saturn vehicles that would have carried the Apollo 2 and Apollo 3 designations, were cancelled.

The Saturn V was the rocket designed for lunar landings. Project Apollo was the fulfillment of President John F. Kennedy's national commitment made on May 25, 1961, when he said, “I believe this nation should commit itself ... before this decade is out, of landing a man on the Moon and returning him safely to Earth.”

Five F-1 engines drove the first-stage of the Saturn V. These engines were capable of generating 7.5 millions pounds of thrust, or 1.5 million pounds of thrust per engine. The total horsepower at liftoff was equivalent to the total horsepower generated by 85 Hoover Dams.

In comparison, today's Space Shuttle Main Engines and Solid Rocket Boosters generate a combined 7.8 million pounds of thrust.



Marshall Imaging Services

**The Saturn V designated as Apollo 4 lifts off on an unmanned test flight. The Saturn V rockets designed at the Marshall Center eventually would carry humans to the Moon.**

The second-stage of the Saturn V was powered by five J-2 engines with each one producing 1 million of pounds of thrust. The third-stage of the Saturn V, with the Apollo Command Module attached, was powered by a single J-2 engine.

Speaking of the successful Apollo 4 launch, Dr. Wernher von Braun, the Marshall Center's first director, said, “No single event since the formation of the Marshall Center in 1960 equals today's launch in significance. For MSFC employees, more than 7,000 strong, this is their finest hour.”

The flight of Apollo 4 paved the way for 12 other successful Saturn V launches. The last Saturn V flight was the launch of Skylab in 1973.

*The writer, employed by ASRI, supports the Marshall Center's history functions.*

# 'Catch a shooting star!'

## NASA engineers to scan skies, share data on Leonids meteor shower Monday

by Lynnette Madison

From five key points on the globe and from the International Space Station, NASA researchers will use special cameras to scan the skies and report activity around the clock during the annual Leonids meteor shower Monday and Tuesday.

Sky-gazers in North America and Europe should be able to "catch" as many as one meteor every 6 to 10 seconds – even with a full moon shining — during the peak of the Leonids meteor shower, which occurs when Earth passes close to the orbit of the Comet Tempel-Tuttle and debris left in the comet's path.

Led by the Engineering Directorate at the Marshall Center, the research is part of a long-term goal to protect spacecraft such as NASA's Chandra X-ray Observatory from potentially damaging meteoroids.

"Stargazers should see a great show, even though the full moon will cut visibility about 75 percent," said Dr. Rob Suggs, the Space Environments Team Lead. "For the past three years, we've had some astounding Leonid showers. However, this may be the last opportunity in our lifetimes to see a 'storm' of Leonids. Predictions lead us to believe this could be the 'grand finale' until 2133."

Using "night-vision" image intensifier video systems and sky-watchers outfitted with Palm computer software developed to record visual counts, NASA engineers and astronomers will record their observations for later analysis.

Despite what their name suggests, "shooting stars" are not stars at all; they are meteors. Meteors are produced when bits of cometary or asteroidal debris in space, usually between the size of a sand grain and a pebble, enter the Earth's atmosphere and burn up, creating a brief — usually white — streak of light.

The Leonids were named such because they appear to radiate out of the constellation Leo. The material crossing Earth's path this year was ejected from the Comet Tempel-Tuttle at least 100 years ago. Meteor viewers in the United States, for example, will see material ejected from the comet in 1866.

NASA engineers have provided meteor shower rates for many cities around the world through the NASA Web site: SpaceWeather.com, sponsored by Science@NASA (<http://science.nasa.gov>).

Astronomer Mitzi Adams of the Marshall Center also will provide updates Nov. 18 on the progress of the Leonids to SpaceWeather.com.

NASA's concern, however, isn't the view. Even though today's satellites are engineered to withstand a smattering of meteoroid strikes, by determining where, when and how the

meteors will strike, NASA can take protective measures to prevent or minimize damage to spacecraft.

Because the stream from Tempel-Tuttle hits the Earth almost head-on, the Leonids are among the fastest meteors known — entering the Earth's atmosphere at 45 miles per second.

Since the Chandra Observatory must travel through the Leonids debris field, controllers at its Operations Control Center in Cambridge, Mass., will make sure the satellite is pointed in the exact opposite direction as the incoming meteors. They will angle the solar arrays to protect the sensitive back of the arrays and minimize the surface area presented to the meteor direction.

Protective measures can range from turning a satellite so it faces the direction of minimal exposed surface area, to shutting down a spacecraft's electronic operations until the storm has passed.

"When a meteoroid hits a satellite, it can heat the impact site

to thousands of degrees Kelvin — rivaling the surface temperature of the Sun," Suggs said. "Usually the entire meteoroid is vaporized along with a tiny bit of the spacecraft."

Considering that meteors

are so small, their potential for damage can be surprising when their speed is considered.

"They're small, but they move very fast — about 45 miles per second," said Dr. Bill Cooke, an astronomer at the Marshall Center.

Cooke says the research data from the Leonids shower will be analyzed to help NASA engineers refine their engineering forecasts for spacecraft.

According to Cooke, sky-gazers could see up to 600 meteors per hour if they are away from city lights and the sky is clear. In the Eastern United States, the shower is predicted to peak near dawn, while in the Western United States, it is expected to peak around 2:30 a.m. PST. However, the "show" will start Nov. 18 about 10:53 EST with the Leonid "grazers" — meteors not dropping into the Earth's atmosphere, but instead grazing the atmosphere. Grazers appear as reddish meteors that advance east to west across a large part of the sky.

The NASA researchers will monitor the storm from five locations, each selected based on meteor forecasts and the area's climate. Sites include Huntsville; Calar Alto Observatory in southern Spain; Teide Observatory in the Canary Islands; Apache Point Observatory in southern New Mexico; and Kitt Peak National Observatory in southern Arizona.

Another tool at Marshall's disposal is "forward-scatter radar" — an early warning system built by Suggs, Cooke and Dr. Jeff

*"This may be the last opportunity in our lifetimes to see a 'storm' of Leonids. Predictions lead us to believe this could be the 'grand finale' until 2133."*

— Dr. Rob Suggs  
Marshall Space Environments Team Lead

See *Leonids* on page 7

# New Heritage Gallery heightens awareness of Marshall history

by Mike Wright

**Y**ou might say that employees and visitors now can literally sense the history behind the Marshall Center when they walk through the front door of Bldg. 4200.

The Center's Heritage Gallery has been relocated from Bldg. 4203 to Bldg. 4200 where a branch of Region's Bank used to be located. The site has been totally remodeled.

"It opened last month in the new location and the concept for the new museum reflects a totally new design," said Marshall Historian Mike Wright. "This is a project that the Customer and Employee Relations Directorate and the Center Operations Directorate worked very closely on in order to achieve just the right look and feel."

The colors, lighting and sound system were selected to heighten interest in the exhibits, models, memorabilia and displays in the gallery.

"The contents in the new gallery are much the same as they were in the former location," Wright said. "There are still models of the many launch vehicles and spacecraft that have made the Center famous. It also features a full-scale mock-up of the Lunar Roving Vehicle. What we



Photo by Emmett Given, NASA/Marshall Center

**The new Heritage Gallery features the accomplishments of several past and present members of the Marshall Center team. Helping dedicate the site are, from left, Gerhard Reisig; Cort Durocher, executive director of the American Institute of Aeronautics and Astronautics; Ernst Stuhlinger; Konrad Dannenberg; Werner Dahm; Walter Jacobi; and Marshall Center Director Art Stephenson.**

have done is drastically improve the design approach to the gallery."

The new gallery also features three built-in multi-media displays. One large screen in the back of the gallery is incorporated into a small theater area with room for about 10 to 12 persons. There also are two glass cases that hold historic memorabilia such as that belonging to Dr. Wernher von Braun, Marshall's first center director.

"We're also looking at our approach to operating the gallery as well," Wright said. "As the Center continues to mark various milestones in its history we will feature displays that correspond to the particular anniversaries."

Marshall Center Director Art Stephenson hosted a ribbon cutting for the new gallery on October 30.

*The writer is the Marshall Center Historian.*

## Leonids

*Continued from page 6*

Anderson, also of Marshall's Engineering Directorate.

"Our system is pretty simple," said Suggs. "We use an antenna and computer-controlled short-wave receiver to listen for 67 MHz signals from distant TV stations."

The transmitters are over the horizon and normally out of range. When a meteor streaks overhead, the system records a brief ping — the echo of a TV signal bouncing off the meteor's trail. Like the image-intensified cameras, this system is capable of detecting meteors too dim to see with the unaided eye.

The Marshall Center has also provided Leonid forecast information to operators of spacecraft such as Chandra to help prepare for a meteor shower. "By comparing the meteor shower predictions to the actual meteor counts, we are laying the groundwork to improve forecasts in the future," said Suggs.

The golden rule to watching the Leonids — or any meteor shower — is to be comfortable, according to Cooke and Suggs. Be

sure to wrap up warmly — a sleeping bag placed atop a lawn chair facing east is a good way to enjoy the show. Put your chair in a clear, dark place with a view of as much of the sky as possible. Don't stare at any one place — keep your eyes moving across the sky. Watch for fireballs and streaks — some will remain visible for several minutes or more. The meteors will be radiating from the Sickle of Leo that will be rising out of the east-northeast sky. Don't look directly at the constellation, but at the area above and around it. And, though you don't need them to see the Leonids, a pair of binoculars could come in handy.

For more information, go to:

- ☛ <http://www.SpaceWeather.com/>
- ☛ <http://science.nasa.gov/>
- ☛ <http://chandra.harvard.edu/>
- ☛ <http://www.nsstc.org/>

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

# STS-113 mission begins third year of Space Station science

## P1 truss being delivered

by Tracy McMahan

**N**ext week, Space Shuttle Endeavour is delivering to the International Space Station the third piece of the Station's exterior truss backbone, and kicking off the third year of science inside the orbiting laboratory by bringing up a new load of scientific experiments.

The 14-ton, girder-like, Port One, or P1 truss will enhance the Station's future cooling and power systems. It will be attached to the left side of the Segment Zero, or S0 truss, during the fourth day of the STS-113 mission.

The Station's other two truss structures - the S0 and Starboard One, or S1 — were installed earlier this year.

"This is the first port integrated truss segment to be delivered to the Station," said Alex Pest, the Boeing Company manager who oversaw the completion of the P1 truss when it was assembled and tested at the Marshall Center. "We tested the truss' strength, as well as its electrical connections and fluid lines that will be important for future Station power and cooling."

The STS-113 mission also kicks off the beginning of the third year of science aboard the orbiting research laboratory and marks the start of a new four-month crew rotation on the ISS. Expedition Six Commander Ken Bowersox and NASA ISS Science Officer Don Pettit and Flight Engineer Nikolai Budarin will conduct new scientific experiments and continue research started on the five prior expeditions.

The Station's five Expedition crews have devoted more than 1,000 hours to research on the ISS. More than 65 NASA-funded investigations have compiled more than 90,000 hours of science operations time on-orbit.

To carry out Expedition Six's 19 experiments, the crew will work closely with ground controllers in the science command post for ISS science operations - the Payload Operations Center at Marshall.

"We manage all the science operations on the Station and work with planners and scientists around the world to schedule research activities," said Lamar Stacy, the payload operations director who leads the Expedition Six payload ops team at the Marshall Center. "To ensure successful operations, we work before each expedition, training the crew and preparing procedures for conducting research in orbit."

Many of the Station experiments are managed by the Marshall Center.

Marshall's Microgravity Sciences and Applications Division



Photo by Terry Leibold, NASA/Marshall Center

### **Marshall team supports Veterans Day**

**Marshall team members participating in the Huntsville Veterans Day Parade on Monday include, from left, Sandra Hyder-Holden, Debbie Scrivner, Cory Scrivner, Ralph Young and Brandon Boone. Waving from the Starship 2040 truck cab is Shelve Miller.**

manage fundamental experiments that explore how physical processes are affected by microgravity, or low-gravity inside the Station. The Space Product Development Program at the Marshall Center manages industry-funded research conducted through NASA's 15 Commercial Space Centers.

The new investigations include two series of fluid physics experiments to be conducted inside the Microgravity Science Glovebox. The glovebox features a sealed work area that allow crewmembers to work safely with experiments involving chemicals, fluids and burning or molten samples.

A new life sciences experiment — Foot/Ground Reaction Forces During Space Flight — characterizes the load on the lower body and muscle activity in crewmembers while working on the Station.

The Protein Crystal Growth Single-locker Thermal Enclosure System (PCG-STES), will return to orbit with a new set of proteins and other biological substances. Scientists want to grow high-quality crystals of selected proteins in microgravity for later analyses on the ground to determine the proteins' molecular structure. Research may contribute to advances in medicine, agriculture and other fields.

New samples will be delivered for the Zeolite Crystal Growth Furnace (ZCG) — an experiment sponsored by a commercial firm attempting to grow larger crystals in microgravity, with possible applications in chemical processes, electronic device manufacturing and other applications on Earth.

Endeavour will bring back plants, biological crystals, and microscopic capsules that are small enough to transport drugs to specific parts of the human body. Experiment equipment and samples will be returned to scientists around the world for in-depth analysis.

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



# George W.S. Abbey to retire from NASA

from NASA Headquarters

In a distinguished federal service career that spanned a half-century, George W.S. Abbey will retire from NASA, effective January 3.

Abbey leaves the agency after a highly decorated aerospace career, which included the Medal of Freedom, the nation's highest civilian award, for his role on the Apollo 13 Mission Operations Team.

In February 2001, Abbey became the senior assistant for International Issues reporting to the NASA administrator. He also was appointed as a Senior Visiting Fellow at the James Baker Institute for Public Policy at Rice University. He is also working with the University of Texas El Paso to enhance the University's engineering and science programs and encourage young students to pursue careers in science and engineering.

"George helped to shape some of NASA's most difficult programs and missions as a true innovator and pioneer," said Administrator Sean O'Keefe. "Throughout his eminent career, George distinguished both himself and the agency. He leaves behind a legacy of excellence and dedication that the hardworking people of NASA will follow for years to come."

Abbey joined NASA in 1964, as an Air Force captain assigned to the Apollo Program. In December 1967 he left the Air Force and was named technical

assistant to the Johnson Space Center director. In January 1976, he was named director of flight operations, where he was responsible for operational planning and for the overall direction and management of flight crew and flight control activities for all human space flight missions.

In 1983, he became director of Flight Crew Operations Directorate, where he continued to be responsible for all Space Shuttle flight crews and center aircraft operations.

Abbey was appointed deputy associate administrator for space flight at NASA Headquarters in Washington in March 1988. In July 1990, he was selected as deputy for operations and senior NASA representative to the Synthesis Group, chaired by former Apollo astronaut Lt. Gen. Thomas P. Stafford, USAF (ret.), and charged with defining strategies for returning to the Moon and landing on Mars.

In July 1991, Abbey was appointed senior director for civil space policy for the National Space Council in the Executive Office of the President, and in

1992 he was named as Special Assistant to the NASA Administrator. Abbey was named deputy director of Johnson Space Center in 1994 and was selected as the center director in 1996.

A pilot in the U.S. Air Force, Abbey had more than 4,000 hours in various types of aircraft before being detailed to NASA. In 2002, he was selected as a Distinguished Alumnus of the U.S. Air Force Institute of Technology.

"George is a demanding leader who rarely accepts compromise," O'Keefe said. "His ability to motivate and inspire his staff to work harder and smarter helped NASA write much of its human space flight history. His devotion to the success of America's space program is unquestionable and I wish him the best."

## Obituaries

**Crowe, Delmar N., 87**, of Owens Cross Roads, died Sept. 18.

He retired from the Marshall Center in 1980 as an aerospace engineering technician.

He is survived by one son, Delmar N. Crowe, Jr.; and one daughter, Lindsey M. Crowe.

**James, Mary T., 58**, of Arab, died Oct. 16.

She retired from the Marshall Center in 1999 as a budget analyst.

She is survived by two sons, Michael James and Mark James.

**Penny, Robert G., 75**, of Decatur, died Sept. 26.

He retired from the Marshall Center in 1981 as AST, flight systems safety.

He is survived by his wife, Violet Carr Penny.



Photo by Terry Leibold, NASA/Marshall Center

### 'Pill Hill' competitor

Heather Day, an exercise specialist at the Marshall Center, works out at the Marshall Wellness Center. She recently won first place in the women's division of the Pill Hill 10K run in Huntsville. She's been running for about 14 years and says competition races keep her motivated.

# Just 'The BARE Facts,' folks ...

## Safety campaign to raise awareness of slips, trips and falls

*from the Industrial Safety Department*

**T**he Safety Bear and the Hazard Hunter will be visiting the Bldg. 4200 Complex next week as part of a week-long campaign planned by the Safety, Health and Environment Communications Team to maintain awareness of slip, trip and fall hazards.

Slip, trip and fall incidents are the cause of more Marshall Center lost-time injuries than any other type of mishap. While specific injuries resulting from these mishaps may vary, it is clear that slips, trips and falls cause painful, serious injuries that temporarily prevent people from working.

A review of our accident history shows that often it is a human decision or action that leads to a mishap, rather than some hazardous flaw in the work environment. Deeper analysis of accidents suggests that these occur when people fail to pay attention to important clues in their work environment.

"The BARE Facts" campaign is designed to draw employee attention to conditions and actions that can increase risks of suffering a slip, trip or fall, and to encourage the Marshall Center community to take positive action to help coworkers avoid such mishaps.

Throughout the week of Nov. 18, the SHE Communications Team will provide announcements and publications on Inside Marshall, Inside Marshall Today, the SHE Web site, the Daily Planet, and Employee TV. Posters will also be distributed throughout Center buildings, and printer-friendly posters will be available online.

The Wellness Center team also will be participating in the campaign. Research shows that balance, flexibility and muscle strength exercises can help reduce the risk of fall injuries. On Tuesday, there will be special presentations and handouts on how fitness and exercise decrease chances of slipping, tripping and falling. The 30-minute presentations will be at 8 a.m., 9 a.m. and

10 a.m. as well as 1 p.m., 2 p.m. and 3 p.m. at Bldg. 4315.

"We welcome the entire Marshall community to participate in these activities, and our handouts will be available for anyone who wants to drop by for a tour of our new facility," said Bill Mayo, Exchange manager.

The Safety Bear and Hazard Hunter will visit the Bldg. 4200 Complex on Wednesday, passing out flyers and chatting with pedestrians about slip, trip and fall hazards. They will be on the east sidewalk of Bldg. 4200 from 7:30-8:30 a.m., and in the lobby of Bldg. 4203 from 10:45 a.m.-12:30 p.m. Please take time to stop and visit with them briefly – they may have a special gift for you, in addition to useful printed information.

Supervisors also will conduct a short, special meeting with employees on that day to discuss ways to prevent slips, trips and falls in work areas.

Our accident experience shows that slip, trip and fall mishaps are most likely to occur in work environments that we consider to be least hazardous — in and around Center office buildings. As with most accidents, they occur in a split second, to people who never suspected that they were on the verge of a serious injury. Please join in actively supporting and participating in "The BARE Facts" Campaign, as we work together to avoid injury through slips, trips and falls.



## SOLAR training workshop for managers, administrators set Dec. 4-5

*from the Employee and Organizational Development Department*

**T**he second annual SOLAR (Site for Online Learning and Resources) Training Workshop has been scheduled for Dec. 4 and 5 in Huntsville, home of the SOLAR System and its development team.

The workshop will provide training and a forum for managers and administrators to discuss the use of SOLAR and its effectiveness as a tool for conducting training.

Last year's workshop had high

attendance, and the constructive feedback and input received from attendees helped the SOLAR team make substantial improvements to the system.

For more information, e-mail Mercedes Sironi at [msironi@htshq.com](mailto:msironi@htshq.com) or call 858-495-0508.



# Center Announcements

## Dial 4-4PAY for payroll assistance

Marshall employees can now receive payroll assistance by dialing 4-4PAY. Questions on WebTADS, pay and leave will be answered. Employees also can e-mail questions to payroll\_office@msfc.nasa.gov or type "Payroll" in the "To" field of their e-mail application.

## Export control classes available

Classes for the six export control processes at Marshall will be opened to both civil servants and contractor personnel. For a complete schedule, go to "Inside Marshall."

## Technology program issues call for proposals

The Technology Investment Projects (TIPs) Program, managed by Marshall's Technology Transfer Department, is soliciting proposals for fiscal year 2003 funding. The program provides support for in-house new, and emerging, technologies. Participation is only open to civil servants. Proposals are due to the Technology Transfer Department TIPs program coordinator, Susan Whitfield, by Friday. For more information, go to <http://techtran.msfc.nasa.gov/CDDF/techtips.html>.

## Maxiflex tour training session open

Employees considering using the Maxiflex tour option will have another opportunity for a special training session provided by the Payroll Office. The session is from 1-2 p.m. Wednesday. For more information, go to [http://hrd.msfc.nasa.gov/maxiflex\\_info.html](http://hrd.msfc.nasa.gov/maxiflex_info.html) or call Pam Vaughn at 544-9372.

## Source evaluation class rescheduled

The Source Evaluation Board Training Class has been rescheduled for Jan. 6-9. Participants who have previously enrolled are already on the roster. Anyone interested in taking this course should sign up immediately via AdminSTAR.

## Propulsion symposium set for Dec. 10-11

Propulsion Engineering Research Center symposium on propulsion will be Dec. 10-11 at Penn State University in State College, Pa. Registration must be completed by Dec. 4. For more information, call Dr. Roger D. Woodward at 814-863-6289.

## Holiday shopping event is Sunday

NASA civil servants and contractors, retirees and their families are invited to Sam's Club in Huntsville from 7-9 p.m. Sunday for an evening of holiday shopping, food, games and door prizes. Santa Claus will be there and admission is free with an employee badge.

## UAH vs. Air Force hockey game Friday

Hockey game between the University of Alabama in Huntsville and the Air Force will be held Friday at 7 p.m. at the Von Braun Center. Free tickets will be available Friday in the Government and Community Relations Office in Bldg. 4200, Room 828T. For more information, call Rosa Kilpatrick at 544-0042.

## NASA Day at Alabama A&M

All Marshall employees are invited to the Alabama A&M University vs. Alcorn State University football game at 1:30 p.m. Saturday for High School Senior/NASA Day. Free admittance with a NASA badge can be gained through the pass gate only. General admission tickets for family members also are free and available in Bldg. 4200, Room 828T. For more information call Rosa Kilpatrick at 544-0042.

## Management Operations Office retirees meeting Nov. 21

Due to the Thanksgiving holiday, the Management Operations Office retirees will meet for breakfast/lunch at 10 a.m. Nov. 21 at the Cracker Barrel Restaurant in Madison. For more information, call 539-0042.

## Venture Crew volunteers needed

Marshall's Education Programs Department is requesting volunteers to work with students who are members of the NASA Marshall Venture Crew. Venture Crew, open to high school students interested in learning about NASA and careers in science and engineering, is sponsored jointly with the Greater Alabama Council of the Boy Scouts of America. Students do hands-on projects with NASA scientists and engineers, tour the Marshall Center and participate in other activities throughout the year. Anyone interested in working with Venture Crew should call Tammy Rowan at 544-8706.

## Blood drive is Friday

The American Red Cross blood drive will be from 8 a.m.-1:30 p.m. Friday at Bldg. 4315. Donors will receive a coupon for a free pizza.

## Faculty/undergraduate programs information requests available

The request for task descriptions for the fiscal year 2003 NASA Faculty Fellowship Program and Undergraduate Student Research Program has been sent to Marshall directorates. For more information and a list of contacts, go to "Inside Marshall."

## Shuttle Buddies to meet Nov. 25

The Shuttle Buddies will meet at 9 a.m. Nov. 25 at Mullins Restaurant on Andrew Jackson Way in Huntsville. For more information, call Deemer Self at 881-7757.

## Lunar Nooners meet Tuesdays

NASA Lunar Nooners meet every Tuesday at 11:30 a.m., Bldg. 4610, Room 1023. For more information, call 544-3887.

## Health benefits open season

The Federal Employees Health Benefits program open season is until Dec. 9. For more information, go to "Inside Marshall."

# Employee Ads

## Miscellaneous

- ★ Lionel train, diesel engine and calf unit, new in box. Paid \$210, sell \$110. 306-0700
- ★ Gas heater, natural gas, 30K BTU, Vanguard, five-brick, \$275. 256-498-3023/1-800-209-1907 Lee
- ★ Spring-action rocking horse w/deluxe frame, \$25; Troy-bilt rototiller, \$400; Sears Proform 725 treadmill, \$300. 325-0085
- ★ Apollo 11 medallion with coin, "The Eagle has Landed, July 20, 1969. 883-5114
- ★ King bedroom suite w/mattresses, night stands, lamps, 3-yrs. old, \$800. 256-652-4675 after 3:30 p.m.
- ★ Sterling flatware, Trianon pattern, 96 pieces, 12-place settings w/chest, \$1,500. 881-7953
- ★ Moving boxes, used, 15 large, medium and small, some bubble wrap, \$8. 772-0004
- ★ Kingsize waterbed set, dresser w/mirror, 2 nightstands, solid wood, \$560 obo. 464-0231
- ★ Mid 1700s Lakeland settee, \$300. 256-859-2722/Cindy
- ★ Wooden foot pump organ from Pulaski's Milky Way Farm, \$1,800 obo. 864-0155/Brock
- ★ Power Macintosh Power PC 6100/66, \$100. 256-586-7375
- ★ Garage doors, one-piece, two 8'x7' combined as one 16'x7', \$125 obo. 880-6146
- ★ Sectional sofa, \$875; off-white loveseat, \$275; antique pie-crust tray coffee table, \$225. 881-0593
- ★ 1999 Yamaha TTR225 dirt bike, electric start, \$1,750. 216-8868
- ★ Software: Norton Personal Firewall 2002, \$7.50; Norton Antivirus 2002, \$750; Peachtree Accounting 2003, \$85. 683-

- 7683
- ★ Go-cart, Yerf-Dog, 2-seater, 6HP, \$700. 837-9022
- ★ Para-ordnance P-14 pistol, 45ACP, \$675; Bach Stradivarius trumpet, \$1,300; several Playstation games. 851-8085
- ★ Hide-a-bed couch, \$100 obo. 883-6496
- ★ Stereo speakers. 468-1999
- ★ Estate items: including living, dining, and bedroom furniture; 10" Craftsman table saw; 14' canoe. 355-7896
- ★ TV/stereo wood cabinet, cherry finish, 36" opening, recessed doors, 3-drawers, CD/VHS storage, \$250. 722-0810
- ★ Blue 3-piece sectional, double recliners, \$350; several car seats, \$5-\$20. 721-9964
- ★ Three piece cushion set for L-shaped breakfast nook, blue plaid, \$50. 883-9353
- ★ Girl's Little Tykes twin playhouse bed, \$200. 650-0485

## Vehicles

- ★ 1982 Jeep CJ5, new tires, \$2,500. 828-4502/lv. msg.
- ★ 1999 Lexus LX470 luxury SUV, 56K miles, all options, pearl, tan leather, \$35,400. 350-2901
- ★ 1969 Toyota Landcruiser w/all shop manuals, runs, rusted body, needs work, \$500 obo. 830-2688
- ★ 1997 Honda Civic CX hatchback, 78K miles, 5-speed, red. 777-0119
- ★ 1996 Dodge Dakota Sport, short-bed, 5-speed, alloy wheels, am/fm/cd, bedliner, 51K miles, \$4,450. 256-753-2278
- ★ 1997 Jeep Grand Cherokee, V6, fully-loaded, new tires, 86K miles, \$9,500. 256-895-0634
- ★ 1989 Cadillac Limited Edition, fire damaged, good engine and transmission, \$500 obo. 852-2145/lv. msg.
- ★ 1986 BMW 325 ES, 5-speed, 180K miles, \$1,800 obo. 883-1834
- ★ 1995 Saturn SL1, auto, beige, sunroof, 150K miles, \$3,000. 777-6595/777-6596

- ★ Motorhome, 1972 Boise, 32K mile, \$5,000; 1980 Datsun 200SX, 5-speed hatchback, \$1,500 obo. 256-881-9150
- ★ 1999 Honda CRV EX, garage kept, 4WD, automatic, CD player, all-options, 46K miles, \$15,500. 353-0370/565-3022
- ★ 1998 Dodge Intrepid, 2.7/V6, auto, silver w/cloth interior, cassette, 120K miles, power doors/windows, \$5,000. 256-603-1535
- ★ 1997 Jeep Wrangler Sport, 6 cyl., 5-speed, 4x4, 79K miles, a/c, green w/tan soft-top, \$9,900. 882-7350
- ★ 1998 Ford Explorer Sport, leather, loaded, sunroof, CD changer, good tires, \$8,495 obo. 852-8320
- ★ 1999 Toyota Avalon XL, fully loaded, \$15,000; trade for Sport Track or crew-cab truck. 880-9025
- ★ 1992 Ford Explorer, 4-door, power windows/locks/doors, CD, 2WD, 160K miles, \$3,850. 572-3567; 723-3803

## Wanted

- ★ Compact dorm-type refrigerator, approx. 4.0 cu. ft. in good condition. 772-0004
- ★ One large dogloo. 256-828-0470
- ★ TV stand, small microwave, loveseat, and couple of barstools. 457-9940
- ★ Bunk beds w/mattresses, queen on bottom, twin on top. 722-9989
- ★ Boat trailer for 15' tri-hull bass boat. 468-1999
- ★ Small motorcycle, any condition. 325-6000

## Found

- ★ Stuffed toy in parking lot near Bldg. 4487. 544-3414 to claim/identify
- ★ Ladies bracelet and cell phone case. 544-3623 to claim/identify

# MARSHALL STAR

Vol. 43/No. 9

Marshall Space Flight Center, Alabama 35812  
(256) 544-0030  
<http://www1.msfc.nasa.gov>

The Marshall Star is published every Thursday by the Internal Relations and Communications Department at the George C. Marshall Space Flight Center, National Aeronautics and Space Administration. Contributions should be submitted no later than Monday noon to the Marshall Internal Relations and Communications Department (CD40), Bldg. 4200, room 101. Submissions should be written legibly and include the originator's name. Send electronic mail submissions to: [intercom@msfc.nasa.gov](mailto:intercom@msfc.nasa.gov) The Marshall Star does not publish commercial advertising of any kind.

Manager of Internal Relations  
and Communications — Steven Durham  
Editor — Jonathan Baggs

U.S. Government Printing Office 2002-533-083-60029

Permit No. G-27  
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Postage & Fees PAID  
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