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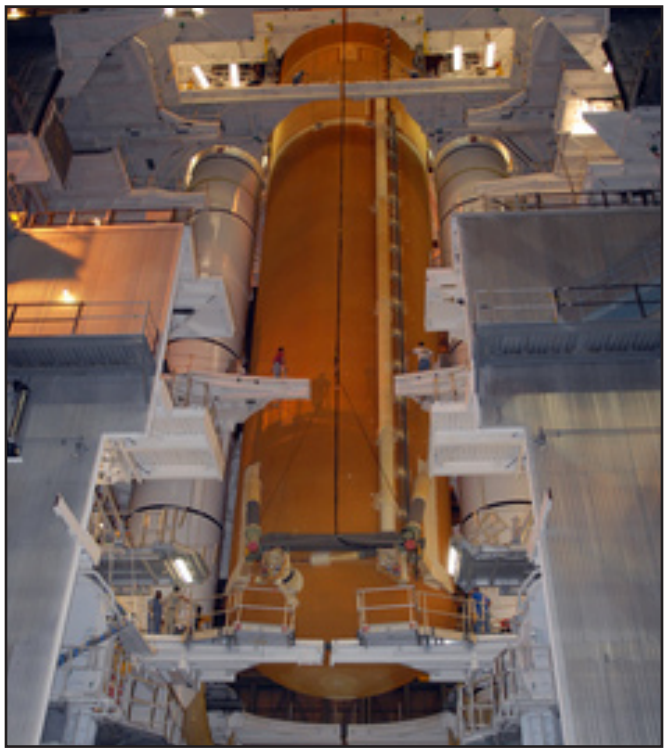
MARSHALL STAR

Serving the Marshall Space Flight Center Community

Aug. 7, 2008



NASA/KSC

External tank, solid rocket boosters readied for next shuttle mission

External tank ET-127 and the twin solid rocket boosters that will fly with space shuttle Atlantis on the next shuttle mission were joined Aug. 3 at NASA's Kennedy Space Center, Fla. The next processing milestone will be the attachment of the external tank and boosters to Atlantis. STS-125, the fifth and final servicing mission to the Hubble Space Telescope, is scheduled to launch from the Kennedy Center Oct. 8 at 12:34 a.m. CDT.

NanoSail-D mission ends with mixed feelings

By Jennifer Morcone

NASA's NanoSail-D and PRESat missions ended late in the evening Aug. 2, about two minutes after launch, when the Falcon 1 launch vehicle, developed by Space Exploration Technologies (SpaceX) of Hawthorne, Calif., failed during stage separation.

NanoSail-D was one of two technology development payloads from NASA onboard the rocket.

"It may sound strange to those not involved in the mission, but I still consider the NanoSail-D experience a success," said Edward "Sandy" Montgomery, NanoSail-D payload manager at the Marshall Space Flight Center. "Our main goal for this mission was to collaborate with NASA's Ames Research Center to design, build, test and deliver to the launch pad a flight-ready payload within budget and on a super-tight, six-month schedule. We did this and exceeded expectations — building not only one, but two full, ready-to-fly satellites in six months."

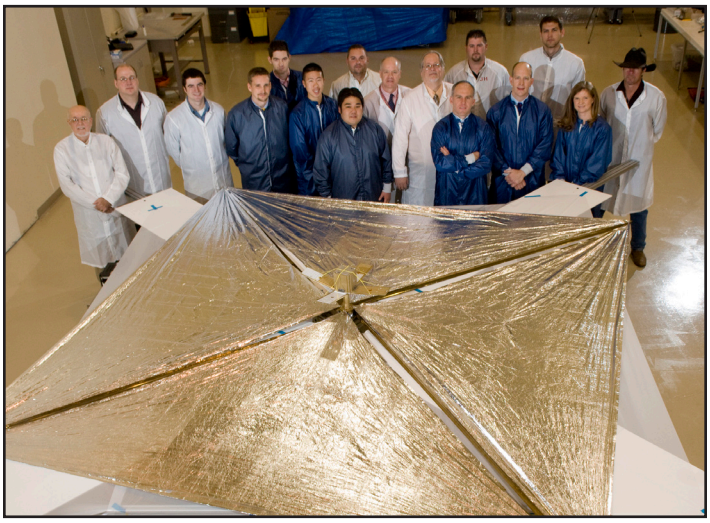
The NanoSail-D satellite, weighing less than 9 pounds, housed a 100-square-foot sail, made of ultra-thin, light gossamer fabric, coated with a layer of aluminum to enhance its thrust-producing properties. The reflective sails were designed to intercept constantly streaming solar energy and change the orbit of the spacecraft.

To develop NanoSail-D, spaceflight engineers and project managers at the Marshall Center teamed up with the Ames Center and several academic and industry partners that provided economical, commercial, off-the-shelf components that were quickly configured and integrated to create the satellite.

See NANOSAIL-D on page 2

NanoSail-D

Continued from page 1



David Higginbotham/MSFC

The Huntsville-based NanoSail-D team stands with the fully deployed sail at ManTech SRS Technologies after a successful deployment test.

Through this project, engineers and technicians at the Marshall Center, the University of Alabama in Huntsville and the Huntsville-based team of ManTech SRS Technologies, the corporation that produced the sail material, acquired a state-of-the-art knowledge of the emerging field of micro and nanosatellite technology.

"Other than the actual operations, we completed everything we set out to accomplish," said Dean Alhorn, NanoSail-D lead engineer at Marshall. "The success that we had is not diminished by what happened to the Falcon vehicle. We would have never been this close if we had not believed in the concept."

Marshall provided materials for the NanoSail-D spacecraft and the solar sail payload, including harvesting the sail material from an earlier Marshall solar sail propulsion mission tested at NASA's Glenn Plum Brook Station near Sandusky, Ohio, in 2005. The spacecraft bus was adapted by Ames from their standard bus architecture used on previous missions, GeneSat, and another mission planned for later this year, PharmaSat.

"Small satellites have great potential for future science missions as the cost to design, build and deploy spacecraft systems is directly related to size," Montgomery said. "Ames has already expressed an interest in working with us to find a launch opportunity for the backup NanoSail-D satellite. While we don't currently have active plans or resources to mount another mission, we are very hopeful."

For more information about NanoSail-D and to see a video of its ground deployment test, see http://www.nasa.gov/mission_pages/smallsats/nanosaild.html.

Morcone is a member of the Public & Employee Communications Office in the Office of Strategic Analysis & Communications.

Celebrating NASA's 50 years of accomplishments

First pictorial organizational chart available on Marshall History Web site

Marshall Space Flight Center team members interested in viewing what is believed to be the first pictorial organization chart ever created for the Marshall Center now can go to the Marshall History Web site at http://history.msfc.nasa.gov/management/org_charts/1960.pdf.

The chart, discovered in the Marshall archives in Building 4200, has been enhanced by the center's graphic artists. It includes team members who were born in the United States, and the German rocket team members who came to the United States in 1945 and moved to Huntsville in 1950 to continue work for the U.S. Army. The employees included on the chart were among more than 4,000 employees who transferred to NASA from the Development Operations Division of the Army Ballistic Missile Agency in Huntsville on July 1, 1960.

Dr. Wernher von Braun, who served as Marshall Center director, is pictured at the top of the directory. Also shown are Dr. Eberhard F.M. Rees, who served as deputy for research and development. Delmar M. Morris, formerly of the Atomic Energy Commission, who became von Braun's deputy for administration, is also shown.

Among other photos on the directory charts are those of the first Marshall Center laboratory directors, including E.D. Geissler, Aeroballistics; Helmut Hoelzer, Computations; Hans H. Maus, Fabrication and Assembly Engineering; Dr. Walter Haeussermann, Guidance and Control; Dr. Kurt Debus, Missile Firing; Dr. Ernst Stuhlinger, Research Projects; W.A. Mrazek, Structures and Mechanics; Dieter Graun, Systems Analysis and Reliability; and Karl Heimburg, Test.

The plan for the first Marshall organization relied heavily on the laboratory directors and their employees, who performed a major portion of the work on space hardware in-house. After President John F. Kennedy established human lunar landing on the moon as a national goal in 1961, Marshall greatly expanded its partnership with American industry in order to build the Saturn V moon rocket. By the mid-1960s, the Marshall Center employed more than 7,500 civil servants in Huntsville. The Saturn project brought together a government-industry team that included more than 25,000 contracting organizations. The crowning achievement for all those involved came in July 1969, when a Saturn V rocket launched three humans on a journey to the lunar surface.

Two Marshall engineers win top AIAA awards

By Dauna Coulter and Lori Meggs

Two Marshall Space Flight Center engineers have garnered top awards from the American Institute of Aeronautics and Astronautics Region II. Mark Shelton of Marshall's Science and Mission Systems Office received the Software Engineer of the Year Award, and the Engineering Directorate's Jeremy Kenny was named Young Aerospace Engineer of the Year.

Shelton, a Teledyne Brown Engineering employee, was honored for developing and updating software for the Microgravity Science Glovebox laptop computer aboard the International Space Station. The computer provides server software to control multiple scientific investigations. The software monitors and stores all Microgravity Science Glovebox health and status parameters, hosts experiment operations, and simplifies required interfaces and connections. The glovebox, developed by the European Space Agency, provides a safe environment for research with liquids, combustibles and hazardous materials on the space station.

Shelton credited the glovebox team, saying, "This wouldn't be possible without their support."

Ginger Flores, Microgravity Science Glovebox project manager, praised Shelton and his abilities. "Mark is an invaluable member of the glovebox team," she said. "His troubleshooting skills, subject matter expertise and ability to predict all manner of scenarios on-orbit provide the team with a high level of confidence in any deliverable or product Mark is involved with. His ease of communicating with others and willingness to offer his assistance make him a go-to person on our team."

Kenny supports Ares I rocket design and development for NASA in the Engineering Directorate's Fluid Dynamics Branch. He was recognized for two achievements demonstrating extraordinary dedication and technical skill.

He led a team that successfully collected data from two horizontal static firings of space shuttle reusable solid rocket motors by placing a full array of microphones in the field around the motor and recording the motor exhaust acoustics — data that has never been obtained for large thrust boosters. He also derived a way to scale motor firings from a four-segment motor to use the data in the design of the Ares I, which will have a five-segment motor.

"Both of Jeremy's accomplishments are vital to the development of the Ares I rocket," said Tom Nesman, Kenny's team lead, who nominated him for the award. "His talents are an asset to Ares Projects to enable the mission of further exploring the moon."

Like Shelton, Kenny also credited team effort for his recognition. "For me, this award represents the excellent team camaraderie and mentorship that my peers and leaders have given me during my career here at Marshall," he said. "It is a place where young engineers are given the opportunity to shine."

"Both engineers represent the high quality of talented, capable leaders at Marshall who we are depending on to help build the next generation of transportation and propulsion systems for space exploration," said Dr. Michael Tinker, a Marshall Center engineer and AIAA section chair.

AIAA advances the arts, sciences and technology of aeronautics and astronautics. With more than 31,000 members, the organization is the largest professional society devoted to the progress of engineering and science in aviation, space and defense. The 1,000-member Region II, serving Alabama and Mississippi, is one of the largest sections in AIAA.

Coulter, a Schafer Corp. employee, and Meggs, an AI Signal Research Inc. employee, support the Office of Strategic Analysis and Communications.

David Higginbotham/MSFC

Mark Shelton, right, accepts the American Institute of Aeronautics and Astronautics Region II Software Engineer of the Year from Dr. Michael Tinker, AIAA section chair.

Doug Stoffer/MSFC

Jeremy Kenny, left, receives the 2007-2008 AIAA Region II Young Aerospace Engineer of the Year Award from Dr. Michael Tinker, AIAA section chair.

Rodney Grubbs leading agency's transition to digital television

Paving the way for live television coverage of next footsteps on the moon

Rodney Grubbs serves as NASA's digital television program manager at the Marshall Space Flight Center, responsible for spearheading the agency's transition from analog to digital television. He began his full-time NASA career in January 1989, after two years as a co-op student from the University of Alabama in Tuscaloosa. His first job at the Marshall Center was in the Photo Lab. He is now assigned to the Engineering Directorate, Mission Operations Lab.

What is your background and what generally is your area of research?

My background is in film and television production. I started my career as a documentary filmmaker, learned how to transfer film to video, and then used that experience to accept the challenge of leading the agency's transition to digital television. Our research is primarily in the application of digital television technologies to help engineers and scientists, and share NASA's work with the public in ways never imagined before the advent of high definition television.

What is digital television?

Digital television, or DTV, includes standard definition television (SDTV) and high definition television (HDTV). SDTV has the same resolution as analog television but has the advantage of better color replication and a much lower bandwidth requirement than analog TV. The application of SDTV most people are familiar with is DVD. High Definition provides up to six times the resolution of analog or SDTV.

Beginning in February 2009, all full-power broadcast television stations in the United States will stop broadcasting on analog airwaves and begin broadcasting only in digital. Digital broadcasting will allow stations to offer improved picture and sound quality and additional channels.

Describe your area of responsibility.

My area of responsibility is to make sure the agency efficiently takes advantage of these new technologies and doesn't duplicate itself or implement systems that can't work together. Prior to the advent of DTV, each center produced video as it saw fit, with no coordination with other centers. NASA TV used an entire satellite transponder for just one channel. DTV gave the agency an opportunity to get more continuity and efficiency in the area of television and video.

Have you developed any technology, and if so, what influenced you to develop this technology?

We don't develop technology per se, but we either influence industry to develop technologies, or applications of technologies, that do not currently exist. Or we find ways to use commercially available equipment to solve problems for missions and programs. For example, early in this decade we provided several camera manufacturers the requirements necessary for putting HDTV cameras inside the existing enclosures used on the launch pads at NASA's launch facilities to protect video cameras. By the time we were able to replace some of the analog cameras with HDTV cameras beginning with the planning for the space shuttle's Return to Flight, we had several cameras commercially available that exactly matched the size and interface requirements that we had provided years earlier.

Doug Stoffer/MSFC

Rodney Grubbs holds a small, solid state high definition television, or HDTV, camera at the Marshall Center's Digital Television Lab, where cameras and equipment can be tested on a variety of HDTV displays. Monitor screens show HDTV images of a space shuttle on the launch pad and an image of the Earth as seen from the International Space Station.

How does your expertise help Marshall accomplish its mission? How does it help the space program?

Marshall was named lead center for digital television and tasked to use the advantages of the technologies to support the agency's missions and spaceflight programs. In 2005, NASA converted to a digital system that allows broadcasting on four or five channels at one time on a single satellite transponder. That saved the agency money and provided more capability. Beginning in 2003, we tested cameras and encoders and provided technical support to develop the new HDTV system used now to document each space shuttle launch and landing with much improved imagery for analysts and engineers.

I have been privileged to be a principal investigator on several HDTV experiments on the space shuttle and International Space

See GRUBBS on page 6

Classified Ads

To submit a classified ad to the Marshall Star, go to Inside Marshall, to "Employee Resources," and click on "Employee Ads — Submit Ad." Ads are limited to 15 words, including contact numbers. No sales pitches. Deadline for the next issue, Aug. 14, is 4:30 p.m. Thursday, Aug. 7.

Miscellaneous

Stanley Summerhaven Collection bedroom furniture, dresser, chest, nightstand, bookshelf, white, photos available, $750. 895-8294

42-inch Samsung projection TV, matching stand, $400. 508-0509

Burgundy love seat, velour, $300; Yamaha full key board, $450 obo. 289-9674

Chihuahua puppies, one male, three females. 460-2390

Chain-link kennel, 7'w x 12'l x 6'h, $40. 881-0221

Husqvarna 42-inch mulching riding mower, zero turn, $1,500 obo. 508-4161

GE cook top, stainless, $40; Nutone stainless hood, $25. 882-3847

Mirage speakers, two OM-7 towers, two Omnisat satellite speakers, stands, $1,500. 679-2165

Finished oak hardwood flooring, about 38 square feet, premium grade, golden harvest, make offer. 351-1754

Giant breed metal dog crate, $100. 425-3822

TI 89 graphing calculator, $50. 783-4703

CKC Boston Terrier puppies, 6 weeks old, one male, four females, $250 each. 205-299-9638

Double jogging stroller, zippered rain cover, $100 firm. 895-6722

Metal gazebo, corner shelves, tan nylon cover, $40. 797-2115

Lapidary equipment, gem-cutting faceting unit, 8-inch laps, one-third HP motor. 883-8257

Bermuda horse hay. 508-6840

AKC German Shepherd puppies, first shots, wormed, parents on premises, $200 each. 423-2090

Brother IntelliFAX600 fax and phone machine, anti-curl system, $30. 797-7829

Pentax SF1N 35mm camera, 28-80 and 20-200 zoom lenses, 10 rolls film, $145 obo. 797-7829

Pull-behind motorcycle trailer, cargo pack, cooler, $300 obo; small pet carrier, $10. 755-6019

Tool box for small truck, 61 inches by 13 inches, metal, $80. 541-3668

Two Sugar Gliders, females, cage, accessories. 508-5031

Oak dining set, rectangular table, pad, six chairs, china cabinet, $350. 468-1066

Wooden play system, slide, two swings, teeter-totter, rope ladder, $300. 772-2332

Camper shell for Dodge Dakota, $50. 461-9894

California King Select Comfort 7000 series bed, $1,000 obo; oak table, six chairs, $200. 683-1264

Vermont Tubbs bunk bed, natural ash, two drawers underneath, $500. 464-0994

Bissell Pet Hair Eraser Bagless Vacuum, $75. 698-5537

Six antique oak kitchen chairs, upholstered seats, $300. 479-5982

Vehicles

2008 Mitsubishi Eclipse, 3k miles, assume loan. 990-3162

2007 Saturn AURA, 100k power train/3k bumper-to-bumper warranties, 32k miles, $16,900. 694-0674

2006 Harley Davidson Electra Glide Classic, silver, extras, 9,400 miles, $16,000. 325-6050

2003 Club Car golf cart, 48 volts, $1,750. 682-6326

2003 Acura RSX, gray, five-speed manual, alloy wheels, moon roof, leather, $9,900. 652-5274

2001 Kawasaki Bayou 300 4x4 four wheeler, $2,700. 828-9798

2001 Honda CRV LX, black/gray, new timing belt/battery, 104k miles, $8,000. 883-6894 or 468-6894

2001 Accord EX, four door, four cylinder, black, 167k miles, $6,000 obo. 698-5537

2000 Toyota Solara, white, 150k miles, $7,000. 990-4615

1999 Toyota 4-Runner Limited Edition, white, brown interior, sunroof, CD, A/C, $7,000. 694-1260

1999 Suzuki Intruder 800 motorcycle, leather, helmets, 10k miles, $4,000. 837-6776

1999 Ford Ranger, take over payments of $160 per month. 658-6353

1997 Lexus LS400, gray, all records available, 186k miles, $8,000 obo. 289-9674

1995 Toyota 4-Runner, red, tan interior, $4,500. 303-7123

1992 Honda Accord, new battery/disks, recently tuned, 134k miles. 881-6572

15-foot aluminum hunting boat, 35 HP motor, tilt trailer, console steering, $1,300. 508-4161

1988 Ford Ranger XLT, six cylinder, five speed, new tires, tuned, $2,000 obo. 679-8499

1984 IH-284 tractor, seven attachments, low hours, $10,000. 837-4627

1967 Ford Mustang, needs to be restored, $1,500. 303-7123

Wanted

Two-four tickets, Nov. 2 Green Bay-Tennessee game; stand-alone projector, built-in DVD player, speakers. 351-1754

410-gauge shotgun shells, any shot size or slugs, 2 1/2 or 3 inches. 828-1234

Tile projects, floors, bathrooms, backsplashes; tree work, tree removal, trimming limbs, stump grinding. 679-5799

Home/office cleaning; children/elder sitting. 651-4723

Used vacuum cleaner, good quality. 227-1327

Electrical work, wiring, adding/removing lights, circuits, plugs, switches. 468-8906

Free

Two-year-old Maltipoo, has papers, to good home. 348-1809

1927 upright grand piano, working condition, pick up in Harvest. 479-9762

Lost

HP PDA in Building 4203, on July 24. 544-8781

Found

To claim any of these items, call the Protective Services Office at 544-4680.

Hyundai car key in Building 4487.

Tan canvas "mail bag," Building 4200, first floor.

Car key attached to green clip, "Rich" scratched on the side of the hook.

Necklace, stairs leading to north parking lot of Building 4200.

Ford car key, Building 4487, near B246.

Carpool

Boaz/Albertville area, 7 a.m.-3:30 p.m. 593-9395 or 506-3248

'Focus on Marshall' highlights new mission to study the sun, looks at Marshall's role in space shuttle launches

By Lori Meggs

On space shuttle launch day, the Marshall Space Flight Center's Huntsville Operations Control Center is staffed with more than 80 people who act as the eyes and ears for shuttle managers at NASA's Kennedy Space Center, Fla. The August episode of Marshall's monthly video program, "Focus on Marshall," takes you inside the HOSC's Shuttle Engineering Support Center.

This facility is equipped to monitor data sensors on the shuttle propulsion elements to ensure there are no problems — from tanking through main engine cut-off. The support center team looks for any issue that may arise, for example, with the ecosensors that measure fuel levels in the external tank, ice build-up or any change in temperatures on the shuttle propulsion elements. The HOSC team is responsible for relaying that data to launch managers at the Kennedy Center.

Also in this episode, Marshall scientists at the National Space Science and Technology Center in Huntsville are building a sounding rocket to study a specific area of the sun's atmosphere that's never before been observed. Viewers will learn about the Solar Ultraviolet Magnetograph Investigation, or SUMI.

SUMI is an advanced instrument that will measure magnetic fields in the transition region which lies between the sun's surface, or photosphere, and the corona. SUMI's specialized optical components have been developed to make exploratory measurements in this region. SUMI is targeted to launch on a sounding rocket from White Sands, N.M., in September.

"Focus on Marshall" is broadcast on Marshall TV and will air on Aug. 7, 19 and 21 at 11 a.m., noon and 1 p.m. It also is available on NASA TV, Inside Marshall and on the NASA Portal.

Meggs, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis and Communications.

Grubbs

Continued from page 4

Station. The HDTV recorded on these flights has been seen by millions of people in documentaries and gives the public a more realistic view of what it's like to orbit the Earth. More recently, we are supporting the Constellation Program by paving the way for live HDTV coverage of the next footsteps on the moon.

How critical is technology development and cultivation of technologists to the future of Marshall as a successful NASA center?

Since the NASA budget doesn't provide research and development funding for the development of television and motion imagery technologies from scratch, working with commercial companies that develop the technology for us is key to the success of the Marshall Center's role as a leader for digital television. With the Ares test flights starting next year, finding the technologies to monitor performance — whether the rocket itself or tracking cameras on the ground — could be critical to the center's primary mission in the Constellation Program.

Each time there's an anomaly, one of the first questions asked is, "Do we have any imagery?" Giving scientists and engineers better tools and data to work with helps ensure mission success, while at the same time giving the public a more realistic view of what their nation's space agency is doing.

Sanda Martel, an AI Signal Research Inc. employee who supports the Office of Strategic Analysis and Communications, conducted this interview for the Marshall Star.

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