



MARSHALL STAR

Serving the Marshall Space Flight Center Community

Nov. 15, 2007

EXPRESS Racks developed at Marshall live up to the name

By Dauna Coulter

The EXPRESS Racks developed at the Marshall Center live up to the long phrase their acronym stands for: EXpedite the PROcessing of Experiments to the International Space Station. With their standardized hardware interfaces, these payload rack systems enable easy, efficient integration of multi-disciplinary science experiments on the space station. By enabling space station experiments, the EXPRESS Racks advance science in areas such as the development of better medicines, more powerful computer chips and lighter metals.

Annette Sledd, manager for the International Space Station Payloads Office at Marshall, has worked with the EXPRESS Rack system since its inception and notes the racks' reliability: "One of our racks has already accumulated over 50,000 hours of operation."

The EXPRESS Racks remain on orbit on board the space station, and experiments are exchanged in and out of the racks as dictated by science priorities, resource constraints, and experiment run-time requirements. They provide power, water and data communications for the experiments residing in them. Each rack allows its payloads to operate independently of one another, even if these experiments require different temperatures, power levels and schedules. The EXPRESS Racks have accommodated 61 payloads on orbit to date. Each EXPRESS Rack is designed to support up to 10 payloads at a



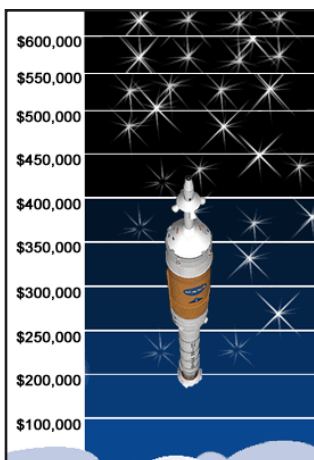
Bill Telesco, payload rack officer, checks cables connecting to the Payload Rack Checkout Unit from the EXPRESS Rack.

time, including experiments in physics, chemistry, biology, ecology and medicine.

Both the space station crew and the payload rack officer at the

See EXPRESS on page 4

Marshall team closes in on Combined Federal Campaign goal



At the end of the fifth week of the 2007 Combined Federal Campaign, the Marshall Center team had raised \$422,455.78. That puts the center solidly on track, committee members say, to reach its goal of \$600,000 by Dec. 7.

"We're incredibly proud of the Marshall team for its hard work so far toward reaching this year's fundraising goal, and for the hundreds of employees and contractors who have volunteered time to support our 'Community Service Days' activities, in partnership with charitable organizations across the area," said Irene Taylor, executive chairperson for the Marshall CFC effort.

"We still have a long way to go, however," Taylor added. "There's a lot of need out there, particularly as the holidays draw near. I want to encourage folks to remember those agencies that still need our support and our contributions."

Visit <http://cfc.msfc.nasa.gov> to find out more about donating to CFC, or call Taylor at 544-2051.



Moving toward NASA's 50th anniversary

First Saturn V launched 40 years ago this month

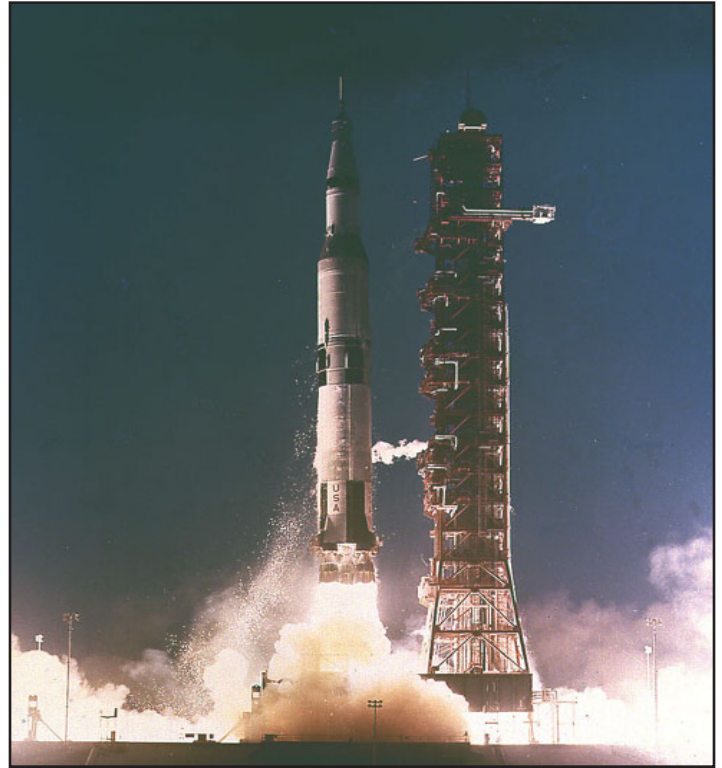
November marks the 40th anniversary of the first launch of the Saturn V moon rocket managed by the Marshall Center.

The Nov. 9, 1967, launch was the precursor to launching the first humans to the moon using a Saturn V in July 1969. It was the first time that a J-2 engine was restarted in orbit. It also was the first time that NASA demonstrated how the Apollo spacecraft might perform when it entered the Earth's atmosphere at speeds reached on return from an actual mission to the moon.

The AS-501 flight tested the launch vehicle in "all-up" configuration, which meant firing all three Saturn stages together in combination for the first flight. That approach was first advocated by George E. Mueller, director of the Office of Manned Space Flight in Houston.

At first, the Marshall team rejected the idea, insisting on a step-by-step conservative philosophy of flight testing. After considerable debate, however, the team in Huntsville accepted Mueller's proposal.

Marshall Center Director Dr. Wernher von Braun called the launch a "textbook" flight that saved enormous amounts of time and resources needed to accomplish President John Kennedy's 1961 challenge to land a human on the moon before the end of the decade.



First Saturn V launch

Von Braun: First Saturn V ran like a 'thoroughbred'

After the first Saturn V launch, Marshall Center Director Dr. Wernher von Braun wrote the following:

"To all civil service and contractor employees:

My heartiest congratulations to everyone who contributed to the stunning performance of the Apollo/Saturn V on Nov. 9. This was

a crucial test, and the Saturn V looked like a thoroughbred. With effortless ease, it demonstrated its ability to send the Apollo spacecraft to the moon. This flight was significant for many reasons, but primarily because it demonstrated a seven-league advance in payload capability, provided by a high level of technology. Fourteen Saturns

have now flown successfully.

The longer our string of unbroken successes becomes, the greater becomes our responsibility to match that performance on the next launch.

I hope that each one of you will redouble your efforts to maintain the Saturn tradition the next time we go down to the launch pad."

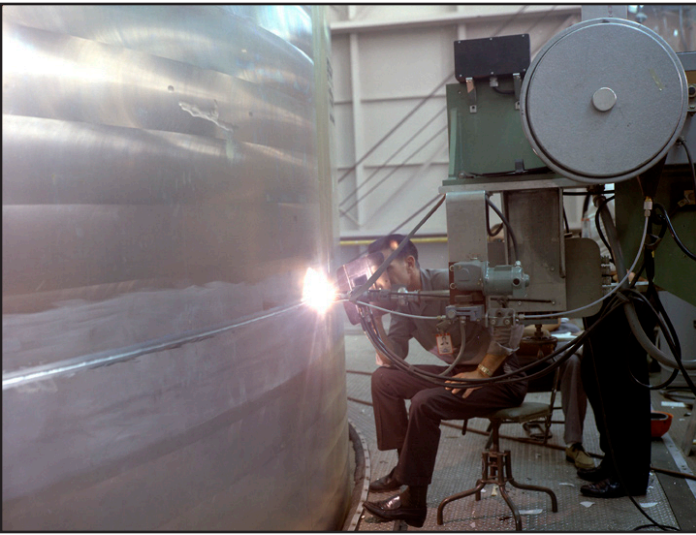
Saturn V vehicle represented a gargantuan complexity

Standing more than 360 feet tall and weighing over 3,000 tons, the complexities of the Saturn V were sometimes difficult to convey to the public, wrote Roger Bilstein, who authored a history of the Saturn program.

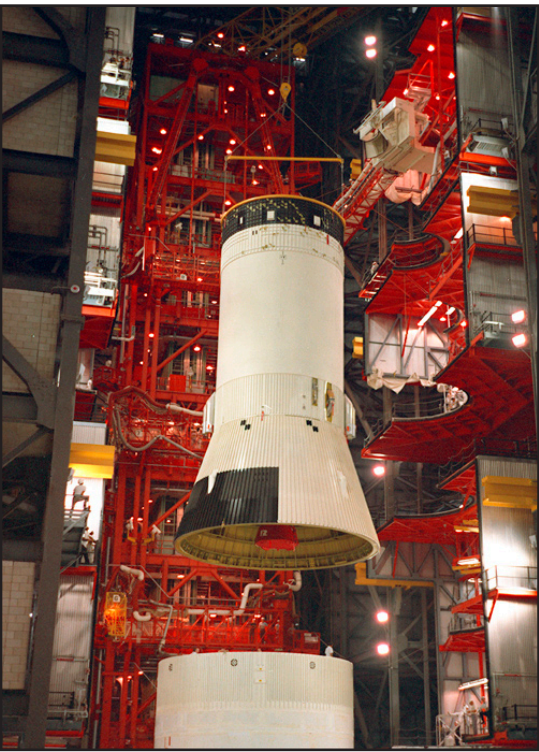
The first stage F-1 engine, including five F-1 engines in all, burned 40,000 gallons of propellant per minute. The girth of the first stage was ample enough to allow three big moving vans to drive into it side-by-side.

The liquid oxygen tank of the first stage held enough liquid oxygen to fill more than 30 railroad tank cars. To get enough force from the tanks to the engines, the pumps on the first stage worked with the force of 30 diesel locomotives, and some of the fuel lines and associated valves were big enough for a human to crawl through.

The cost for the first Saturn V mission was estimated at \$135 million for the rocket and \$45 million for the spacecraft.



Welding Saturn V

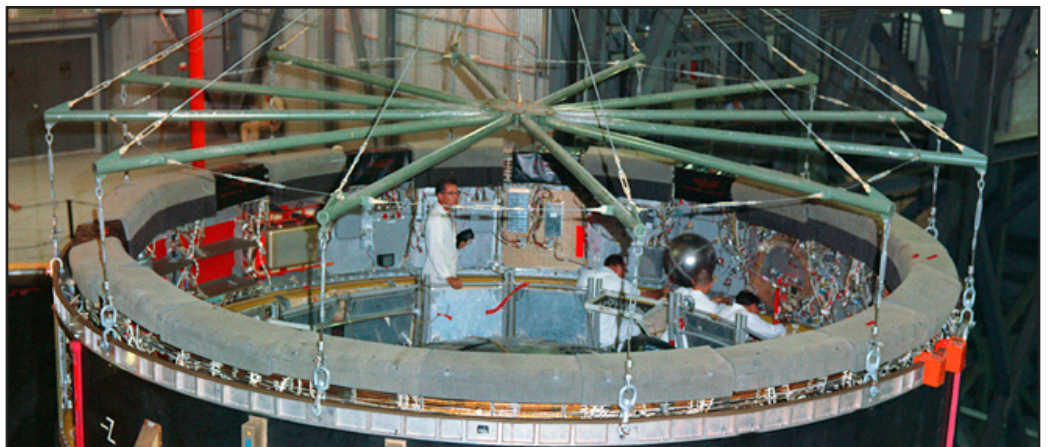


Saturn V processing

First Saturn V launched November 1967



Saturn V at Cape Canaveral



Assembling Saturn V

Don't forget to take the Marshall Star Readership Survey

The Office of Strategic Analysis & Communications is conducting a Marshall Star Readership Survey to better understand the information needs of its readers.

The survey, printed in the Nov. 8 issue of the Marshall Star, also is available online through Dec. 7.

To participate, take the survey online at <http://extweb.bah.com/>

NASA/Marshall_Star_Survey.html or print a copy from the survey site, fill it in and return it to: MSFC, Star Survey, Public & Employee Communications Office, Building 4200, Room 102-12, Huntsville, Alabama 35812. Please fill out only one survey per reader.

The survey should take no more than 15 minutes to complete and all feedback is strictly confidential.

EXPRESS

Continued from page 1

Marshall Center Payload Operations Center can control experiments placed in the EXPRESS Racks. The Payload Operations Center, staffed 24/7, plans and coordinates the operations of the U.S. payload facilities and experiments on the space station. This includes command, data management and resource management among the payloads.

The first two EXPRESS Racks were installed in the space station in April 2001. Subsequent shuttle flights have brought experiments, payload hardware and three more EXPRESS Racks to the station. There are five EXPRESS Racks there now. Two racks are standing by at the Kennedy Space Center in Fla., and one at Marshall for future flights. With a Payload Rack Checkout Unit on site to simulate space station interfaces to the EXPRESS Rack, the Marshall Center's Space Systems Integration and Test Facility provides testing for rack-intended payloads.

"We have set our rack up to provide the capability to do developmental testing for EXPRESS payloads," says Robert Lake, EXPRESS systems engineer at Marshall. "Our rack is a valuable tool for the operations team. They can do a trial run on a new procedure here on the ground first, so they can iron out any 'kinks' before actually performing the procedure on the station."

GLACIER testing

For example, in late September, functional testing was performed on a cryogenic freezer called GLACIER, short for General Laboratory Active Cryogenic ISS Experiment Refrigerator. These freezers are critical for providing very cold return of temperature-sensitive biological samples. A University of Alabama at Birmingham team built the high-tech freezer, which, once installed on the space station, will store science samples that require thermal control between -185 and +4 degrees Celsius. These samples may include bacteria systems, protein crystals, astronaut blood and urine samples and cell culture experiments. The low temperatures preserve the samples until the crew can perform the experiment or until the samples can be returned to the ground for analysis by a science team in a lab.

GLACIER uses a Stirling engine to lower temperatures by drawing the heat out of a volume of air. A Stirling engine is an external

combustion engine invented by Robert Stirling in the early 19th century that works by compressing and then expanding a gas with a piston. This engine uses much less electricity than other possible solutions — an important plus on the station, where watts are carefully conserved.

The Johnson Space Center International Space Station Payloads Program Office funds both the EXPRESS Project work and GLACIER, but Marshall is a much more convenient testing location for the payload built by the University of Alabama at Birmingham.

The GLACIER qualification unit was checked out during the September testing at the Marshall Center, and the actual flight unit will be tested this winter. Once all testing is completed at Marshall, the first of four GLACIER flight units will head for the Kennedy Center to prepare for a late October 2008 trip to the space station. GLACIER will make the journey in the shuttle middeck, carrying scientific samples to the space station and retrieving samples awaiting return to Earth. An operational flight on board the space station is under evaluation. GLACIER is just one example of the kind of payload the EXPRESS Racks can support.

EXPRESS Rack success

"The Express Rack is a good, flexible piece of hardware that can accommodate a variety of applications," says Sledd. "It's being used for even more than payloads now. For example, we will be using an EXPRESS Rack to support the crew galley needs with potable water and a refrigerator. This is critical for supporting a six-person crew on ISS. This flexibility has contributed greatly to the racks' success. And the fact that these racks provide a simple power interface instead of a more complicated power/data interface has also contributed."

The EXPRESS Rack system is managed by Marshall and built by the Boeing Company in Huntsville. The Marshall Center's current role includes EXPRESS Rack integration, flight readiness certification, sustaining engineering, and logistics and maintenance. Space Station Program management is at the Johnson Space Center in Houston.

The writer, a Schafer Corporation employee, supports the Office of Strategic Analysis and Communications.

Astronaut Eileen Collins talks safety with Marshall employees



Former NASA astronaut Eileen Collins visited the Marshall Center on Nov. 6 to talk with team members about safety during the "Safety & Mission Success Awareness" all-hands meeting. Collins shared images from her "Return to Flight" mission in 2005 and answered questions from the audience. The event was an outgrowth of NASA's traditional day-long "Safety Day" event, designed to update the Marshall workforce's safety knowledge in all areas of daily operation.

Doug Stoffer/MSFC

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, Nov. 22, is 4:30 p.m. Thursday, Nov. 15.

Miscellaneous

- Sawyer 35mm slide projector, \$35; hands-free cell phone kit, \$5; fire safe, \$25. 852-6952
- Ashley by Martin wood-burning stove; upright freezer. 837-1940 or 337-2401
- AKC Golden Retriever puppies, 8 weeks old, four females, first shots, \$200. 882-6322
- T-shaped bunk beds, built-in desk, drawers, shelves, chest of drawers, mattresses, \$700. 830-5285
- Drafting/craft table, 37x36x48, wood, back-lit glass inset in tilting top, \$150. 882-0133
- CONAR model 255 oscilloscope, 4 inches; CONAR model 682 TV pattern generator, \$25. (256) 353-8229
- Ceramic tile wet saw, 7-inch diamond blade, 3/4 HP motor, water tray, manual, \$75. 534-2368
- Maestro Bb trumpet, hard-shell case, \$75. 971-2066
- Clayton-Marcus couch, \$350; sofa chair, hassock, \$350. 655-4687
- 1996 American Standard heat pump, 2 1/2 tons, \$500. 232-9143

- Chromcraft circular dinette table, four swivel chairs, \$100. 881-1249
- Kenmore dryer, \$40; Little Tikes infant rocket ship swing, \$10; electric winch, \$8. 325-2919
- Flexi retractable leash, \$10. 325-0085
- Three Boston Terrier puppies, CKC registered, first vet check, shots, dewormed, \$350 each. 859-0889
- Infant Thanksgiving, Christmas outfits, \$4 each. 880-2285
- Two-year-old, side-by-side fridge, white, ice maker, filtered water in door, \$900. 783-1466
- Two child chairs, \$10; special edition Space Camp Barbie, new in box, \$30. 539-5439
- Baby iguana, aquarium, food dish, lighting, care instructions, good home, \$75. 640-6427

Vehicles

- 2007 Honda TRX450R Sport ATV/quad, electric start, plastics black/flames, red frame, \$5,400. 345-9555
- 2006 Honda Accord Coupe EX, silver, 5-speed, 16k miles, \$18,499. 651-2200
- 2006 Mercedes C350, white, sport package, gray, leather interior, 22k miles, \$28,995 obo. (334) 782-2988
- 2004 Nissan Pathfinder LE, leather, Bose, all power, other options, 40k miles, \$17,500. 429-8534
- 2004 Harley Davidson Road King Classic, pearl white, 14k miles, \$13,900. 776-0811
- 2004 Toyota Sequoia, third-row seats, TRD racing package, Borla mufflers, 61k miles, \$18,900. 351-0112
- 2003 Harley-Davidson Ultra Classic Electraglide motorcycle, 100th anniversary edition, fuel injection, loaded, \$16,000. 683-1846
- 2003 Tahoe, leather, third-row seats, rear air, XM, CD, \$18,000. 468-0854
- 2003 Lincoln LS, cream, leather, 34k miles, \$14,900. 536-7372

- 2002 Acura TL, white, tan leather, loaded, 60k miles, \$13,500. 683-2209
- 2001 Mitsubishi Mirage, white, automatic, \$3,800. 679-4929
- 2001 Honda XR100R 100 cc dirt bike, helmet, \$1,050. 325-3696
- 1999 Mazda 626, needs engine, make offer. 777-8595
- 1998 Jeep Wrangler SE, 5-speed, new soft top, 84k miles, \$6,800. 656-7591
- 1997 Honda Accord SE, all power, remote entry, moonroof, alloy wheels, 162k miles, \$4,200. 881-5642
- 1992 4.3L S-10 truck, auto, air, CD, 134k miles, \$3,500. 468-3206

Wanted

- Old, no longer used surfboard. 351-1754
- Fold-up treadmill, good condition. 479-3644
- Solid-color couch. (334) 750-1116

Free

- Lab mix puppies, good home, five females, 10 weeks old, second shots. 509-3392
- Quicktake 100, Apple Desktop Bus connection required. 882-0133
- Umax Astra 1220s SCSI scanner, no software. 882-0133
- 30 2- to 2 1/2-foot evergreen scrubs, for landscaping, you dig and clean up. 532-3195

Found

- Watch, Building 4600, Room 4013; 1GB memory card, Building 4487 south parking lot; male eyeglasses, pouch, Building 4200 area. 544-4680
- Hand-held calculator, Building 4202 lobby coffee table. 544-1170 or 544-3454
- Set of car keys, parking lot behind Building 4610 cafeteria. 544-5427

New Marshall Child Development Center

Facility offers library, playground and more to children of Marshall team

By Jessica Wallace

Next time you're driving along Morris Road on Redstone Arsenal, take a look at the Marshall Medical Center's new neighbor — the Marshall Child Development Center.

The Marshall Child Development Center, established in 1990, opened a newly constructed 15,281-square-foot facility in May. It provides a learning environment for children of Marshall employees ranging from 6 weeks old to kindergarten.

With a capacity of 128 children, the center has 11 classrooms, a cafeteria, library and playgrounds that adjoin the classrooms. Today it employs 29 full-time and several part-time employees who care for 123 children.

"The new facility floor plan is designed to provide an optimal environment for a child's development and growth, while also implementing first-class security and safety measures under the umbrella of Marshall and the Redstone Arsenal," said Rusty Cowan, branch chief of the Mechanical Fabrication Branch in the Engineering Directorate, who serves as president of the development center's board of directors. "The total experience of the new development center is a true testament to the hard work and dedication of the staff and parents, past and present, having the vision to get to where we are today."

The old development center building on Mercury Road was originally built for offices and had a gym before the daycare facility occupied the building.

"The Marshall Child Development Center is unique in the fact that we are an onsite facility for Marshall employees as well as a non-profit organization run by a board of directors made up of parents of enrolled children," said Kelli Wright, director of the development center. "The involvement of the parents makes this center phenomenal."

For more information on the development center or for tuition and fees, visit <http://mcdc.msfc.nasa.gov>.

The writer, an ASRI employee and Marshall Star editor, supports the Office of Strategic Analysis and Communications.



David Higginbotham/MSFC

From left, Dr. Mary Jane Caylor state board member from the Alabama Department of Education and Huntsville Mayor Loretta Spencer help Lori Chapman, daughter of Jack Chapman of the Spacecraft & Auxiliary Propulsion Systems Branch in the Engineering Directorate, and Jase Cowan, son of the development center's board of directors president Rusty Cowan, participate in the ribbon-cutting ceremony for the new Marshall Child Development Center. Also participating are Madison Mayor Sandy Kirkindall, Marshall Center Director David King and U.S. Rep. Bud Cramer of Alabama's 5th District. The ceremony took place Oct. 22 at the development center.

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