



NASA's improved external tank begins journey to launch

By Lynnette Madison

The huge, orange External Tank that will help launch Space Shuttle Discovery on its next mission isn't glitzy like the crystal New Year's ball in Times Square. But its journey from NASA's Michoud Assembly Facility in New Orleans marks something special for 2005: the Year of Return to Flight.

The tank, designated ET-120, rolled out on its transporter and was loaded onto a covered barge Dec. 31 at Michoud for shipment to NASA's Kennedy Space Center, Fla. The barge will take four to five days to travel from the Mississippi River-Gulf of Mexico Outlet to Florida's Banana River, which flows into the Atlantic Ocean. Shipping the tank is an important milestone, particularly for the NASA team that spent 23 months working on modifications to make it safer.

"Our team of contractors and civil servants has worked hard developing, testing and implementing improvements that will reduce the risk to the orbiter during liftoff and ascent," said Sandy Coleman, manager of the External Tank Project, an element of the Space Shuttle Propulsion Office at NASA's Marshall Center. "This will be the safest, most reliable tank NASA has ever produced."

During a launch, the tank delivers 535,000 gallons of liquid hydrogen and oxygen propellants to the three main engines, which power the Shuttle to orbit. It is covered by polyurethane-like foam, with an average thickness of about one inch. The foam insulates the propellants, keeps ice from forming on the tank's exterior and protects its aluminum skin from aerodynamic heat during flight.

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Robinson

Robinson named EEO director

Marshall Center director David King has appointed Audrey Robinson director of the

Office of Equal Opportunity.

She will be responsible for the day-to-day activities of the office. Prior to this assignment, Robinson served as assistant chief counsel for litigation and attorney advisor in the Office of Chief Counsel at Marshall.

Robinson joined the Marshall Center in 1981 as a Summer High School Apprenticeship Program member in the Chemicals and Non-Metals Processes of the Materials and Processes Laboratory. After completing her degree, she worked

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From simulation to space, Raffaello prepares for launch



Adeah Singhal, left, project engineer at the Marshall Center, discusses the Multi Purpose Logistics Module simulation with project manager Shawn Reagan during training.

By Lori Johnston

A unique "moving van" is getting ready to haul a big load of supplies to space. But first there is a precision practice.

The Multi Purpose Logistics Module is essentially a "moving van" that transports supplies to the International Space Station. The module, named Raffaello, will make its third trip to space on the next Space Shuttle mission, STS-114. Raffaello is at NASA's Kennedy Space Center, Fla., being prepared for flight in May, when it will deliver to the Space Station such supplies as lamp housing assemblies to replace interior lights, batteries and a photo and

TV re-supply kit with new camera lenses and videotapes.

Raffaello is a cylindrical module, approximately 21 feet long and 15 feet in diameter, weighing almost 4.5 tons. It can carry up to 10 tons of cargo packed into 16 standard racks. Raffaello, Leonardo and Donatello are three multi-purpose modules managed by the Marshall Center and designed by the Italian Space Agency, under an agreement with NASA, in exchange for Italian access to U.S. research time on the Space Station.

A six-member team from Marshall's Multi Purpose Logistics Module group recently participated in a simulation of Space Shuttle

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Tank

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Modifications to the tank address the Columbia Accident Investigation Board's recommendation to reduce the risk to the Shuttle from falling debris during ascent.

During Columbia's launch in January 2003, insulating foam from the bipod area, near the front of the craft where the tank attaches to the orbiter, fell off and damaged the left wing.

ET-120 incorporates several safety improvements, including an improved bipod fitting that connects it to the orbiter; a video camera mounted on the liquid oxygen feed line to document liftoff; reversed bolts on the flange of the tank's mid-section and a new spraying procedure for the thermal protection required there; a redesign of three bellows on the liquid oxygen feed line, the 70-foot pipe feeding liquid oxygen to the main engine; and a more defined spray procedure on the longeron, a structural support for the tank's aft, orbiter attachment struts.

"Clearly, the modifications to the External Tank are at the heart of our Return to Flight work," said Michael Kostelnik, deputy associate administrator for the International Space Station and Space Shuttle Programs. "Seeing this tank begin its journey to the Kennedy Space Center, where it will be prepared for launch, makes it clear how far we've come in making the Shuttle a safer spacecraft for our astronauts," he said.

A seven-member Discovery crew will fly the Return to Flight mission, designated STS-114, to the International Space Station. The major mission objectives are testing and evaluating new procedures for flight safety.

"It has been an amazing experience to watch this team of talented and dedicated individuals pull together to accomplish this mission," said Coleman.

The Space Shuttle Propulsion Office at Marshall manages the tank project. Lockheed Martin Space Systems Co., in New Orleans, is the primary contractor.

The writer, an ASRI employee, supports the Public Affairs Office.

Raffaello

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Discovery's Return to Flight mission at the Johnson Space Center in Houston. During the 36-hour simulation, the team operated from the Mission Control Center, and the astronaut crew members – who also participated in the simulation – were in the nearby Shuttle simulator.

"This exercise provides an excellent opportunity to re-familiarize ourselves with the processes, systems and protocols associated with a mission," said Shawn Reagan, project manager for the Multi Purpose Logistics Module at Marshall. "It has been more than two years since we have flown one of our modules, so it is important to be at the Mission Control Center again in order to work efficiently."

The simulation began one day, 12 hours and 45 minutes into the "mission" – just as the crew prepared to move Raffaello from the Shuttle's cargo bay and attach it to the Space Station. The Marshall team monitored the simulated move – a move that involved a first: the STS-114 mission will be the first time the Space Station's robotic arm will be used to transport the module from the Shuttle to the Station. In previous Shuttle missions, the Shuttle's robotic arm has been used to make the transfer.

During the transfer, the team must make critical decisions that could affect the mission, including monitoring the module's interior temperature readings to avoid moisture build-up. In this simulation, the team faced the challenge of deciding whether condensation would build

Robinson

for NASA as a materials engineer. She left the Agency to attend law school and returned in 1994 as an attorney advisor at Kennedy Space Center. She returned to Marshall in 1996 and served in increasingly responsible positions in the Office of Chief Counsel and served on a detail to NASA Headquarters in the Office of Equal Opportunity Programs, Discrimination Complaints Division.

She holds a bachelor's degree in chemistry from Huntsville's Oakwood College,



Marshall Center project engineers Kathy Jones, left, and Dallas Clark discuss the Multi Purpose Logistics Module's temperature readings.

inside Raffaello if its shell heaters could not be used when the module was moved from the Station back to the Shuttle. The heaters, mounted on the exterior walls of the module, are routinely used to match the temperatures of the Shuttle and the Station. Although the simulation ended before a final decision was made, the Marshall team completed analysis that showed how quickly condensation would begin to form and how quickly freezing would occur without the use of the heaters.

It's just one of the things that could happen to us and we have to be prepared," said Reagan. "These are excellent exercises to ensure we make the best decisions."

The Marshall Center continues working with the Environmental Control and Life Support System, Nodes and the Payload Operations Center – the command post for all science activity aboard the Space Station, all supporting the Space Station Program Office at Johnson Space Center.

The writer, an ASRI employee, supports the Public Affairs Office

a master's degree in science management from the Florida Institute of Technology and a law degree from Emory University. She has completed the Smith Management Program, Critical Issues in Management, and the Executive Development Program, Modules I & II.

She was selected as a 2004 NASA Senior Executive Service Candidate Development Program participant and was awarded the NASA Exceptional Service Medal in July 2004.

Announcements



Mike Fincke, Expedition 9 crewmember, after a successful landing in the Soyuz, a Russian spacecraft.

Astronaut Mike Fincke to speak Jan. 18 at the Marshall Center

International Space Station crewmember Mike Fincke will visit the Marshall Center Jan. 18 at 12:30 p.m. to present mission highlights during an assembly in Morris Auditorium. Fincke spent six months on the Expedition 9 mission where he continued science operations, maintained Station systems and performed four spacewalks.

NASA W-2 forms for Marshall employees in the mail

The NASA W-2s for the Marshall Center have been mailed, but employees must use both the NASA W-2 and the Department of Interior's W-2 to file their 2004 tax returns.

Project Management Institute social is Jan. 18

The Project Management Institute will hold its annual Networking Social from 5:30 – 7:30 p.m., Jan. 18, at the Holiday Inn across from Madison Square Mall. A brief presentation on the project management professional certification process also will be given. For more information or reservations, call Camilla Canty at 544-5223.

Volunteers needed to mentor SHARP students

The Marshall Center is seeking volunteers to work with students participating in the 2005 NASA Summer High School Apprenticeship Program, or SHARP. The eight-week program gives selected students opportunities to work in science and engineering areas. Researchers and other science and engineering professionals serve as mentors to the students. To volunteer, call Jennifer Simmons at 961-7544.

Chamber of Commerce to hold membership meeting

The Chamber of Commerce of Huntsville-Madison County will hold its 69th annual membership meeting at 11:30 a.m. Tuesday at the Von Braun Center North Hall. U.S. Sen. Jeff Sessions will speak. Tickets are \$40 and may be purchased from Rosa Kilpatrick in the Government and Community Relations Office.

New Weight Watchers classes start Thursday

Weight Watchers at Work meetings are held Thursdays at 10:45 a.m., Bldg. 4203, Room 3002. New classes begin Thursday. For more information, call Vanita Brown at 544-2476.

Saturn V tag sales slow, more orders needed

Presales of the Saturn V auto license tags are lagging with the Jan. 31 deadline fast approaching. At least 1,000 speciality tags must be ordered before the state will agree to produce them. The Saturn V tag costs \$50 every year above the usual license plate fees. Of that \$50, \$41.25 will go to the Space Center Foundation's Save the Saturn campaign to help pay the cost of restoring and displaying the Saturn V rocket. Tags may be ordered online at <https://register.spacecamp.com/tag>.

Dr. Martin Luther King Jr. celebration will be Jan. 13

NASA is joining Team Redstone in celebrating the legacy of Dr. Martin Luther King Jr. with a luncheon at 11:30 a.m., Jan. 13 at the Redstone Arsenal Officers' and Civilians' Club. Dr. Johnny Flakes of Columbus, Ga. will speak. Tickets are \$10 and may be purchased from the Marshall Center's Equal Opportunity Office.

Job Announcement

MS05C0024, Executive Support Assistant, GS-08 (potential to GS-09), Deputy Director's Office within the Office of the Director. Closes: Jan. 6. Contact: Jannette Black, 544-8660

Classified Ads

Miscellaneous

Pair of black iron and irons w/brass eagle finials, \$115. 882-1097
 New charger and used batteries, \$600; golf club car free. 881-8882
 Oak dining room table, chairs, china cabinet, buffet, \$1,000; sleeper sofa, \$150. 256-534-0939
 Pub tables, Oak top, 42", curved metal legs, 36" high, new, \$50. 883-1003
 Bachman HO scale "Iron Duke" electric train, lighted steam locomotive, track and many extras, \$95. 882-6947
 Silk flowers with vases, make offer. 464-9408
 Girl's pageant dress, pink w/beautiful bead work, size 7. 256-652-6268
 Ibanez (EDA905) 5-string bass guitar w/gig bag, active/passive pickups, used <1-year, \$475. 256-859-3744
 Schwinn indoor exercise bike, best offer over \$250. 931-363-8217
 Two small wooden end tables, 24" tall, single drawer, \$20; Rocker/recliner, tan, \$25. 256-922-0948
 1993 Shasta 21' pull behind camper w/awning, sleeps five, \$5,000. 256-694-0501
 Whitewater kayak, Dagger Super Ego, paddle, spray skirt, helmet, \$450. 880-2990/Mick
 Mahogany modular "L" desk w/return and matching 2-drawer lateral file, 1 yr. old, \$1,200. 256-426-9557
 King trumpet w/King hard case, Tempo 2, Model 601, silver, \$300. 883-2757
 American Bulldog puppies, shots, wormed, ready to go, \$200. 851-8668
 Girl's 20" Schwinn bike, blue & white, white tires and basket, \$30. 797-8895
 Sears Craftsman 10" Radial Arm Saw, \$200. 353-4922
 Nintendo DS dual screen GameBoy system, in factory sealed box, \$210. 961-3362
 Camper shell for S-10 short bed, \$125; Rare Bach Stradivarius trumpet, mint, \$1,200. 851-8085
 2001 Coleman pop-up electric-lift camper, 10'x25' foldout, a/c, kitchen, toilet, showers, king-size beds, \$9,000. 931-438-2411
 Baby crib, Cherry, converts to toddler bed & full size bed, mattress included, \$175. 256-784-5299
 Celestron CS telescope, \$750. 256-508-4379
 Diamond solitaire ring, .25 carat, \$125; diamond

cluster, heart-shaped ring, \$125. 683-1279
 Singer sewing machine, \$50; Collection of National Geographic magazines, 1985-2000, \$50. 417-2654
 H&R .308 single shot rifle, no scope, \$170. 256-723-3803/Mark
 Office trailer, 8'x20", can be towed with pickup, \$1,800 obo. 256-739-9467
 Office desk, 24x54, walnut laminate top, chrome legs, almond colored steel drawers/frame, \$50. 971-0571
 Dell 17" monitor, 2-yrs. old, \$75. 489-0292
 HJC FG-23 black motorcycle helmet w/shield, size medium, \$50. 883-1667 evenings
 Full-size short bed truck fiberglass shell, needs rear door replaced, \$300. 961-1282
 Fiberglass shell for long bed pickup, Leer, green metallic, \$550; travel trailer, 10"L, "Scotty brand, \$1,500. 227-0339/Dave
 New Belkin Wireless-G router, \$35; cd-rw 52x drive, \$25; dvd-rom drive, \$20. 489-0136
 Lady's 14K wide band ring, center pear cut w/10 small round diamonds, wt. 0.75, \$900. 256-552-0998
 Enfields; .308 Jungle Carbine, \$275; British .303 Mk III, \$225; Steyr Mannlicher w/German Ammo, \$295. 797-1962
 Red Fiberglass Tonneau cover for Chevrolet step-side, '99 new body style-'04 body style, \$400. 256-506-2111
 Assorted Cannon 35mm cameras, Mamiya 4x4 lenses. 772-5996
 Nikon N80 SLR outfit w/case, original box, Nikkor 28-80mm Macro zoom lens, strap. 653-4333
 Wagner 425 airless paint sprayer, power roller, 1/3hp electric motor, 50' hose, \$250. 882-2369
 Dolce & Gabbana "Light Blue" for women. 3.4 oz. spray. 508-1636
 Sony VAIO computer, 75GB memory, 1.69GHz, 256MB RAM, cd-rw, dvd-rom, 19" ViewSonic monitor, \$400. 489-0748
 Celestron C5 telescope, \$900. 883-1667/evenings only
 Oak entertainment center, holds up to 30" TV, stereo equipment, and storage areas, \$225. 256-852-5092
 Dell-8400, 3Ghz, 1Gb-DDR2, 160Gb-HD, 16x-dvd-rw, 19" LCD, 128Mb-X800, dvd-rom, \$1550. 251-650-2385
 All kinds of bird cages \$20-\$60; aquariums/filters, \$10-35; reptile cage/w supplies, \$45. 655-9663
 Whirlpool washer & natural gas dryer \$100; white dinette table, \$75. 922-9387/evenings.

Electric range, \$100; white formal sofa, \$95, light blue loveseat, \$20. 430-6842.
 Gateway computer, 15" screen, printer, speakers, \$300. 256-586-7424.
 Electric air hockey table, \$75. 828-0756
 Canon D60 digital camera & Canon 28-135 lens, many extras, everything included. 256-586-0002.
 2004 Komfort Cruiser "big kid" booster seat, \$95; Engagement ring, 1/2 carat, \$900. 714-0481/Stephanie

Wanted

Free or inexpensive dirt bike or scooter in rough or not running condition. 603-3343
 Laptop, PC, for student. 883-2757
 Sears Savvyers GAF slide projector trays, 100 slots. 256-776-2687
 Sarah Maclachlan tickets - BJCC, May 05. 256-673-0045
 Verizon flip phone with home charger. 508-0509
 To buy 600 steel T-posts for fencing, will buy smaller quantities. 256-753-0005
 Last season's maternity clothes, sizes 12-14. 683-5380.

Free

Large bobtail cat, front paws declawed, gray striped. 256-498-3680

Lost

Set of keys in Building 4487. Call 797-1788 if found
 Red Christmas envelope containing cash, inside or parking lot of Building 4203. Call 468-4406

Found

Glove in Building 4200 parking lot, near loading dock/post office, Monday, 12/13. Call to identify/claim 544-2507
 Men's reading glasses, Bldg. 4203. Call 544-3623 to claim/identify
 USB memory stick at SE gate of Bldg. 4487. Call 544-3305 to identify

Vehicle ads will appear in next week's issue.

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