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Development of NASA's Ultra-Long Duration Balloon Extended

NASA's Ultra-Long Duration Balloon (ULDB) project has extended development for one year because of complexities in vehicle fabrication and an undesirable increase in balloon weight.

"The slip in the schedule will provide additional opportunities to reduce risk, as well as develop more efficient flight systems," said Steve Smith, ULDB Project Manager, Wallops Flight Facility. "This should significantly reduce our risk in supporting the demonstration flight scheduled for December 2001. The more efficient design also will result in increased science payload support capabilities."

Although the first balloon tests conducted in September 1998 were successful, the ULDB team discovered complexities in the design that had not been considered. The material developed for the ULDB's new "pumpkin" shape resulted in an increase in balloon weight causing a limitation in allowable scientific experiment weight as well as maximum altitude.

The goal of the demonstration flight is to support a scientific experiment weighing 1000 kilograms (2200 pounds) and to be able to deliver 800 watts of continuous power to the scientific instrument based on a 12-hour day and night.



Chris Shreves, left, and Tony Goodyear prepare to launch, SPIKE, this year's winning entry. Digital photo by R. Huey.



The new "pumpkin" shaped Ultra-Long Duration Balloon.

Artist's concept.

At the present time, NASA flies conventional and long-duration balloons that are unpressurized and shaped like a child's toy "top". These balloons are used in scientific missions that last from one day to three weeks. The new pressurized "pumpkin" shaped ULDB will be capable of supporting scientific observations above 99% of the Earth's atmosphere for a period of up to 100 days.

The current balloons, as well as the new ULDB when fully inflated, range up to 40 million cubic feet in volume and 200 meters (600 feet) in diameter and are taller than a 60-story building. The system includes the balloon, a parachute and a payload that carries instruments necessary to conduct scientific experiments. The fully inflated balloon can carry a payload weighing as much as 363 kilograms (8,000 pounds), which is about the weight of three small cars.

Project development costs will remain approximately the same due to a projected 50% reduction in materials costs. However, extending this phase of the project will allow the ULDB Team to develop a material that will make the most effective use of the "pumpkin" shape and lower per copy production costs. The plan is to reduce the balloon mass by several thousand pounds providing for an increase in experiment weights and flight altitude.

Wallops manages the scientific balloon program for the Office of Space Science, NASA Headquarters.

More information on the NASA Balloon Program and ULDB Project can be found on the Wallops homepage at: <http://www.wff.nasa.gov/pages/scientificballoons.html>



Arnold Torres, Suborbital Projects and Operations Directorate launches the F-6 entry, Black Brant XII. Digital photo by R. Huey.

Space Week Bottle Water Rocket Contest

The clouds lifted and the winds died down making for perfect weather to complete Wallops first Bottle Water Rocket Contest. The launches were conducted as scheduled with five successful rockets and two that reached minimum success criteria by clearing the launcher.

Members of the Review Team, recruited to judge the launch phase, were Jim Lanzi, Safety Office; Chuck Brodell, Carrier Systems Branch; and Steve Raque, Balloon Program Office.

Launch coordinator, Tony Goodyear, Public Affairs Office, launched some test rockets (bottles) prior to mounting the entries on the launch rail.

Having won in phase one of the contest, Overall Looks and Aesthetics category, the X-Y2K entry failed to perform well in actual flight and finished in a disappointing 6th place.

SPIKE, the winning bottle water rocket entered by team "Cogs in the System" (Chris Shreves, Carrier Systems Branch and Phil Eberspacher, Policy and Business Relations Office) had an impressive flight and was the only entry with a working parachute system. For their winning flight team, "Cogs in the System" is allowed full bragging rights.

The official results are as follows:
2nd place -- GUMP, the only entry deemed to be ISO Compliant - Team "Small Shuttle Payloads Code 870"
3rd place -- Silver Bullet - Team "PAO"
4th place -- OTIOSE - Team "Sub-Orbit"
5th place -- Black Bryant XII - Team "F-6"
6th place -- X-Y2K - "Team Under Pressure"
7th place -- H2R - Team "Wallops Rocket Factory"

Showers to Flowers

by Jim Buchanan, Meteorologist

Temperatures during April were near normal, but April showers gave us conditions that were wetter than normal by over one-half inch. This just might make May flowers a bit bigger and brighter.

Even though conditions during April were slightly wetter than normal, we still had a chance to dry out from the drenching we got during March. Rainfall totals for April were 3.24 inches, just over a half of an inch more than normal. There were ten days with measurable rain. The most recorded during a 24-hour period was .87 of an inch on April 4 and 5.

There were no record high temperatures recorded during April, even though the average daytime high temperatures were 1.5° above normal. On April 4 the temperature tied the previous recorded high of 80°, and on April 23 the temperature tied the previous high of 84°. The average high for the month of 64° was 1.5° above normal. A new record low of 38° was recorded on April 24. The old record low of 39° for the same date was set in 1967. The coldest reading for the month was 32° on April 6. Overnight lows averaged 44°, which is normal for April.

During June, we can expect around three inches of rainfall. Rain normally falls during eight days in June. (That just happens to equal four weekends!) Temperatures should finally begin to warm nicely with daytime highs averaging 80° and nighttime lows averaging around 63°. To look at things differently, June nights are usually as warm as daytime temperatures in April. The recorded high for the month is 97°, which was set on June 10, 1964. The recorded low of 40° was set June 1 and 2, 1967.

As we get near the end of the school year and begin to prepare for some "fun-in-the-sun", also be aware that June 1 marks the beginning of the hurricane season.

The Atlantic hurricane season is forecast to be busier than normal with a prediction for nine hurricanes, 14 named storms and four intense (Category 3, 4, and 5) hurricanes. This year's extended forecast has the Eastern Shore in a broad area covering from Florida to Maine with an 80% probability of having a storm hit land. Prepare now. Know an evacuation route and have on hand a stock of emergency supplies.

Bottle Water Rocket Contest.....



Employees watch one of the launches.



Dave Wilcox prepares GUMP for launch.

Wallops Takes Part in Goddard's 40th Anniversary Celebration



Dave Pierce, University Class Projects Office, (left) talks to a visitor to the Wallops display. Pierce and Keith Koehler, Public Affairs Office, staffed the Wallops exhibit during Community Day events at Greenbelt as part of Goddard's 40th Anniversary on Sunday, May 2.

PAO digital photos.



"Mr. Bill and Ollie" entertain visitors to the GSFC, Greenbelt Visitor Center during Community Day, May 2. Bill Campion, Omne of New Jersey, (right photo, standing) a master ventriloquist, captivated the audience with his little wooden buddies.

Office Product Show Hosted by Office Depot

11 a.m. to 2 p.m.

May 13

Bldg. F-3

Door Prizes, Free Samples and Refreshments

Ergonomics Seminar

Date: Tuesday, May 11, 1999

Time: 1 to 3:30 p.m.

Place: Bldg. F-3

Contact the Wallops Health Unit, x1266, for further information.

Sympathy is extended to the family and friends of **Asa T. Hickman** who died April 30, 1999. Hickman retired in 1971 as a firefighter in the Damage Control Branch.

Wallops On the Road.....

Arnold Torres, Suborbital Projects and Operations Directorate, was guest speaker at the Tidewater Chapter of Sigma Si Scientific Research Society in Norfolk, VA. on April 23.

Karon Eichelberger, Enterprise Advisory Services, Inc., and **Doug Young**, Range and Mission Management Office, participated in a Career Fair at Mary N. Smith Middle School on April 29.

Betty Flowers, Public Affairs Office, conducted an Interview Evaluation class for seniors in the Administrative Assistant Program at Eastern Shore Community College on April 30.

Chuck Brodell, Carrier Systems Branch, was a guest speaker for the American Society of Mechanical Engineers in Ocean City, MD. on April 30.

Dave Wilcox, Shuttle Small Payloads Projects Office, did presentations for Brownie Troop 1264, Onancock, VA. on May 4.

Wallops Fire Department Emergency Medical Technicians responded to a mutual aid request from Accomack County 911 to assist Oak Hall Rescue on a medical emergency on May 5.

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