

Inside Wallops



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Blind Engineer Provides Insight Into Soyuz Capsule Re-entry Issues

A blind engineer at NASA's Goddard Space Flight Center had the vision for a solution to a problem that ultimately required him to fly to Europe to obtain potentially important data on the flight of a Soyuz capsule.

Marco Midon is an electronics engineer in the Microwave and Communications Branch at Goddard. Earlier this month, Midon read a memo from the head of space operations at NASA Headquarters asking for ideas on how the agency could respond to a request from the Russian Federal Space Agency to provide telemetry data on the Soyuz capsule during de-orbit and re-entry.

The request from came after it was determined that there were no commercial or Space Station partner facilities that could provide the service needed because the downlink frequency (VHF) is not usually used for space telemetry.

NASA and Russian partners agreed that providing data beyond that which is recorded just prior to separation of the Soyuz modules might be valuable in shedding light on the spacecraft's past entry performance.

"In the spirit of the old NASA, the Goddard team responded to my request with an amazing 'can-do' attitude. The team was focused on the problem to be solved and let no hurdles stand in the way," said Bill Gerstenmaier, NASA associate administrator for Space Operations. "Good Soyuz performance is important for International Space Station operations, and any help NASA could provide helps all of the partnership."

Midon's proposal involved a low-cost mobile system that could be transported and deployed along the track of the separation and re-entry plan of the Soyuz vehicle.

With less than four days before Soyuz landing, the next step involved Midon contacting individuals at NASA's Wallops

Flight Facility to confirm that the center could support a test of the system being proposed. After getting confirmation, he traveled to Wallops and supported activities that simulated what the Russian signal would look like and verified it could indeed be received and recorded. A day later, all the equipment ordered was in place, and the stage was set for the final test to prove that Midon's idea could indeed work.

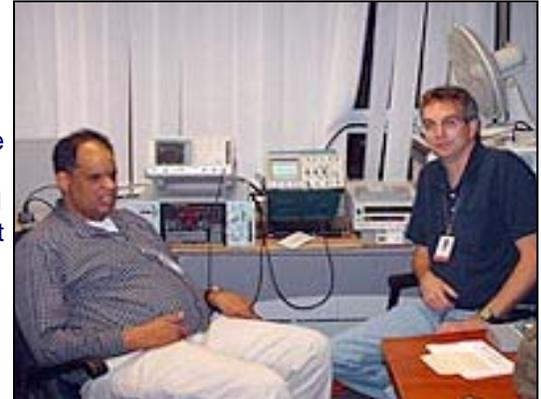
"We took the equipment down to Wallops and set up everything," said Midon. "While we were busy doing that, other folks talked to the Russians who agreed to turn on the Soyuz that was docked to the Space Station for two communication passes. Basically we were 72 hours out from landing and knew we would only have these two short communication passes to prove the whole thing worked."

The first pass wasn't that successful with little or no signal received. Midon came up with some tweaks to the system to make it a little more sensitive and during the second pass, good data was received.

Other NASA engineers were busy determining the best location to place the portable system. Three potential locations were initially identified -- Turkey, North Africa and Greece. After reviewing flight path trajectories, it was decided that Athens would provide the best view to capture telemetry data.

With less than 48 hours before Soyuz landing, the site for the temporary station was set. Midon and Jim Evans, a Honeywell Technical Solutions employee at Wallops, traveled to Baltimore-Washington International airport with all the equipment.

After arriving in Greece, the two went immediately to the American Embassy in Athens to set up their equipment. By around 10 p.m. and less than eight hours before the event, all the equipment was powered up and verified ready to support.



GSFC employee Marco Midon (left) and Jim Evans, a Honeywell employee at Wallops, are seen in an office at the American Embassy in Greece. Credit: NASA

The men checked into their hotel, got a few hours sleep and were back at the Embassy around 4 a.m., local time, for the Soyuz flyover which was planned for just after 6 a.m.

Based on information provided by flight dynamics engineers, the antenna on the roof was positioned and just after 6 a.m., the system began receiving data from the Soyuz capsule as it traveled through the atmosphere.

"The pass was very low, only 8 1/2 degrees and we were in a valley so I wasn't sure we were going to get anything" said Midon. "At first, the signal was very weak. After two-to-three minutes the signal got much stronger, and it was clear we were getting good data. The strong signal lasted about a minute. With processing back in the lab, we're hoping there is at least 90 seconds of good data that can be utilized."

Midon remarked, "I think the real story here is that we only had two or three days to come up with a solution to something and were then able to implement it. I may have been the technical guy who figured out how to do it but there were a lot of other folks whose willingness to pitch in provided us with an opportunity to succeed."

Wallops Historical Marker Unveiled



Photo by Jacob Owen

NASA's Wallops Flight Facility was recognized by the Commonwealth of Virginia for its contributions to aerospace research during a historical marker unveiling ceremony Saturday, at the NASA Visitor Center.

The nomination of Wallops as a historic site was provided by the Virginia Aeronautical Historical Society and supported by the Virginia Department of Historic Resources and the Virginia Department of Aviation.

Thanksgiving by the Numbers

271 million

The preliminary estimate of turkeys raised in the United States in 2008

689 million

The forecast for U.S. cranberry production in 2008.

1.8 billion pounds

The total weight of sweet potatoes — another popular Thanksgiving side dish — produced by major sweet potato producing states in 2007.

769,760 tons

The 2008 contracted production of snap (green) beans in major snap (green) bean-producing states.

116 million

Number of households across the nation — all potential gathering places for people to celebrate the holiday.

(Source of above information: www.census.gov)

Toastmasters Provide Educational Outreach

WFF Debedeavon Toastmasters Freda Johnson and Pat Dworske instructed a group of home school children on the importance of clear communication and speaking skills at the Atlantic United Methodist Church, Atlantic, VA on November 14.

The children shared what they would experience with their five senses based on places and scenes depicted in various photographs.

Freda Johnson is President of Debedeavon Toastmasters and Pat Dworske is Area 13 Governor for Toastmasters International.

Toastmasters International has been the world's foremost communication and leadership development nonprofit since 1924. NASA personnel at the Wallops and Greenbelt campuses have benefited from Toastmasters' training.

Did you know?

The Wallops Aerobics Club encourages participants to stretch gently after a warm up and stretch more at the end of a workout. Stretches should be held for at least 15 seconds to allow muscles time to overcome a stretch reflex and relax.

Inside Wallops is an official publication of Goddard Space Flight Center and is published by the Wallops Office of Public Affairs, Extension 1584, in the interest of Wallops employees. Recent and past issues of *Inside Wallops* also may be found on the NASA Wallops Flight Facility homepage: www.nasa.gov/wallops

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