Orbital's private launch may show whether NASA made right call

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On the face of it, the planned mid-April launch of a new commercial rocket from Wallops Flight Facility in Virginia won't be one for the record books.

A number of barriers for commercial space companies already have been broken - for instance, SpaceX has flown to the International Space Station - and the maiden flight of Antares, a two-stage rocket built by Orbital Sciences of Virginia, is expected to do little more than prove it can put a dummy payload into orbit.

But the outcome of the test flight, and the rocket's performance going forward, could act as an important indicator of the strength of the emerging space economy - and whether NASA made the right call in relying on commercial companies to do supply runs to the space station.

The Wallops launch also will be closely watched by Florida officials, as success there would bring more proof that the number of rivals to Cape Canaveral in the launch business is growing.

As planned, Antares is expected to launch from Wallops from April 17-19 and carry an 8,400-pound weight that mimics the Cygnus spacecraft that Orbital is building to ferry cargo to the station, possibly as soon as this summer. The spacecraft will be ready by summer, the company says.

NASA also is flying three small satellites - each the size of a coffee mug

and costing less than $7,000 apiece - to test whether engineers can convert components commonly found in "smartphones" into a working satellite.

Each will orbit for about two weeks - sending back pictures of Earth and status updates about its battery life and temperature - in what NASA officials hope will teach them how to build cheap satellites that could monitor space weather or radiation.

"The hope is to demonstrate that small, inexpensive satellites are becoming a reality," said NASA spokesman David Steitz.

In a way, the satellites are a fitting metaphor for the Antares mission itself, as NASA's use of new "space taxis" to carry supplies - and possibly astronauts - to the station was driven by a desire to lower the costs.

In 2008, Orbital Sciences made a $170 million deal with NASA to build a rocket and capsule for station resupply. Though the contract later jumped to $288 million, it's still far below the billions NASA has spent developing and operating its own space vehicles, even with the $1.9 billion that Orbital is slated to get for eight supply missions during the next several years.

But using the private sector to cut costs hasn't stopped a problem endemic to spaceflight: delays.

As late as May 2011, top Orbital officials were predicting a first test flight that year. SpaceX, another space-taxi company with a NASA contract, also was at least two years late in launching its historic 2012 mission to the station - the first time a commercial-rocket company had berthed with the orbiting observatory.

Still, Orbital's delays underscored the feeling it was playing second fiddle to the California-based company, though SpaceX signed its NASA deal in 2006 and had a two-year head start.

David Thompson, head of Orbital, acknowledged the setbacks in a Feb. 14 call with investors.

"On the negative side, the company experienced frustrating delays in completing the Antares launch (pad) and in conducting main-rocket-engine testing, which combined to push back the first flights of our new launcher into 2013," he said.

The problems with the Wallops pad, which cost an estimated $150 million in federal and state funds, dealt largely with its "plumbing" - ensuring its valves and gauges worked properly to get the rocket fueled and ready to go.

The engine problems were more dramatic - a side effect of using decades-old equipment left over from the Soviet Union's efforts to build a moon rocket in the 1960s.

Though the engines since have been upgraded in the U.S., one caught fire because of a ruptured manifold during a 2011 test. Subsequent testing revealed cracks and corrosion on other manifolds, forcing repairs and retesting.

NASA needs the Orbital flights, along with 12 planned from SpaceX, to keep the station supplied in the aftermath of the space shuttle's 2011 retirement.

And though NASA likely could find another way to meet its supply needs - SpaceX is one possibility, which could mean more launches from Florida - the success of Antares is critical for Orbital, said one space

analyst.

In the past four years, a different Orbital rocket failed on two separate NASA missions. Jeff Foust, editor of The Space Review, said Orbital needs a success to stake a bigger claim on the space-launch market.

"If they have problems with (these Antares test flights) ... it starts to raise the question on whether they can make this whole thing work," Foust said, adding that it's a test of whether a midsized company such as Orbital can survive in an evolving space economy that features both upstart tourism ventures and heavyweight defense companies such as Lockheed Martin.

"The challenge for them (Orbital) is that now there is a new generation of companies that are getting a lot of attention . . . and they are caught between them and the aerospace giants," Foust said. "They have to find their place in this evolving market."