NASA: Change of heart on new rocket that would reuse shuttle parts?

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Dozens of Kennedy Space Center engineers and more at other NASA centers have been working quietly behind the scenes since August to design a new rocket made from parts of the space shuttle -- a project similar to one that an agency official only two years ago said defied the laws of physics.

The design uses most of the existing shuttle hardware, including its current four-segment solid rocket boosters, the big orange external fuel tank and versions of the shuttle's main engines. The plan puts the engines underneath the tank, with the boosters on the sides and a capsule on top, to create a launcher capable of lifting 70 tons into orbit, more than enough to blast four or more astronauts and their gear into space.

The engineers' aim is a test flight by 2014 and a fully operational rocket able to take cargo -- and possibly crew -- to the International Space Station by 2016.

The rocket is almost identical to one promoted for the past four years by Team Direct, a group of moonlighting NASA engineers and rocket hobbyists. The group touted its project as a more viable and cheaper alternative to the agency's expensive and troubled Constellation moon program and its family of Ares rockets.

Constellation now faces being killed by legislation passed by the Senate last month and half-heartedly endorsed by the Obama administration. (Legislation pending in the House supports a more Constellation-like

approach.)

It's quite a change from two years ago, when the proposal was a threat to the Ares I crew launcher and Ares V cargo lifter. Then, NASA engineers and officials dismissed Direct's "Jupiter" rocket as unworkable.

"We can't justify (the performance claims for the Jupiter rocket) based on laws of physics," Richard J. Gilbrech, then NASA associate administrator, told a congressional panel in April 2008.

Then, in a study that NASA released after the Orlando Sentinel published a story about the Jupiter rocket later that year, NASA said it had "determined that the Direct proposal is unlikely to achieve its claims of improved performance, safety and development costs when compared to the Ares I and Ares V approach."

What's changed, according to engineers and NASA officials interviewed for this story, is that with money running out for Constellation at the end of this month and no clear direction from Congress and the White House, the agency is desperately looking at ways it can launch astronauts into space quickly and affordably after the space shuttle is retired next year.

Direct's supporters always claimed that the Jupiter rocket was the most "direct" and cost-effective way to get humans into space because it made maximum use of existing space shuttle technology and the shuttle work force.

"It turns out Direct was right," said one NASA engineer working on the project but not authorized to speak publicly.

The main spokesman for Direct, Stephen Metschan, a software engineer, said that it's too early to claim victory because NASA has yet to pick the

design officially. He points out that other NASA studies back a much larger version of the rocket using technology from the Constellation program -- like taller, five-segment solid rocket boosters -- that he says will be too costly and take too long to build.

"But it is a victory in the sense that Congress is finally aligning behind a common-sense approach," Metschan said in a telephone interview from his home in Seattle.

The Senate bill, passed last month, calls for NASA to use its existing contracts to get started on building a rocket capable of initially lifting 70 tons to orbit and provides $11 billion for the project over the next three years. Critics, like retired astronaut John Grunsfeld, warned that the funding was insufficient.

But Direct supporters say a Jupiter-like rocket can be built for that amount -- and then, over time, made powerful enough to lift 130 metric tons. However, supporters of the Constellation program -- who say a 70-ton rocket is too small -- are opposed.

"This provision should be removed as it is technically unwise," said former NASA administrator, and Constellation booster, Mike Griffin in a speech last week to the Space Transportation Association. "Setting a lower initial floor will inevitably result in a suboptimal design. ... (Because) we will be using whatever heavy-lifter is developed for the next 50 years. It should be the right one. If we don't have the time and money to do it right the first time, where are we going to find the resources to do it over?"

For its part, NASA spokesmen in Washington says that Administrator Charlie Bolden and his top managers have not yet decided on a way forward. The White House favors building a rocket that uses new technology and abandons solid-rocket boosters, which add increased

costs. But the agency is divided on the issue.

"NASA has not selected a detailed heavy-lift configuration," said agency spokesman Michael Braukus.

He added that he could not rule out that the work going on to plan a Jupiter-like rocket was contingency planning or aimed at creating work for engineers to keep them busy until a final decision is made.

"I would imagine that there are managers out there more or less looking at how they can speed up the process and be ready to go once Congress passes a budget for 2011 and the president signs it," Braukus said. "It's just preparing for when that day comes."

Many of the engineers working on the shuttle-derived rocket favor building a new rocket with new technology and propulsion systems but said that they recognize that Congress is unlikely to give them the money or the time they need to do that.

Under the constraints NASA faces, the Direct-like approach is probably the best way forward, they said.