

January 20, 2008

New Rocket Has Problem With Vibration

By THE ASSOCIATED PRESS

WASHINGTON (AP) — [NASA](#) is working to solve a potentially dangerous vibration problem in its next generation of launching vehicles.

Engineers are concerned that a new rocket, the Ares I, which will replace the space shuttle and send astronauts on their way to the moon, could shake violently during the first minutes of flight.

The problem is common to solid rocket boosters.

If not corrected, the shaking, which arises from the powerful first stage of the rocket, could “shake apart the whole structure,” said Paul Fischbeck, an engineering professor at [Carnegie Mellon University](#).

“They know it’s a real problem,” said Professor Fischbeck, who has consulted on risk issues with NASA.

The concern is not the shaking of the first stage, but how it affects everything that sits on top: the Orion crew capsule, instrument unit and a booster.

NASA officials said they hoped to have a plan for fixing the design as early as March and did not expect the problem to delay the goal of returning astronauts to the moon by 2020.

“I hope no one was so ill-informed as to believe that we would be able to develop a system to replace the shuttle without facing any challenges in doing so,” the NASA administrator, Michael D. Griffin, said in a statement to The Associated Press.

“NASA has an excellent track record of resolving technical challenges,” Dr. Griffin said. “We’re confident we’ll solve this one as well.”

Professor Jorge Arenas of the Institute of Acoustics in Valdivia, Chile, said that the problem was serious but added that “NASA has developed one of the safest and risk-controlled space programs in engineering history.”

Since 2005, the space agency has been working on a plan to return to the moon, at a cost of more than \$100 billion. Two rockets are planned, the Ares I, which would carry the astronauts into space, and the Ares V, an unmanned heavy cargo ship.

That rocket’s first stage is composed of five segments derived from the solid boosters that NASA uses to launch the shuttle.

The shaking problem involves pulses of added acceleration caused by gas vortexes similar to the wake that develops behind a fast-moving boat, said Professor Arenas, who has researched vibration and space launching issues.

The Ares I vortexes match the natural vibrating frequencies of the rocket’s combustion chamber, and the combination causes the shaking.

Senior managers were told of the findings last fall, but NASA did not talk about them publicly until The Associated Press filed a Freedom of Information Act request this month and the watchdog Web site [Nasawatch.com](#) submitted detailed

engineering-oriented questions.

The first launching of astronauts aboard Ares I and Orion is scheduled for March 2015.