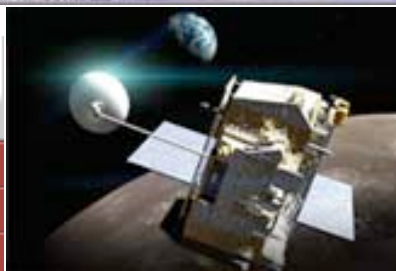




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NASA Considers Stowaway Finalists for LRO Launch

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With extra room available on the rocket that will launch the Lunar Reconnaissance Orbiter in late 2008, NASA is evaluating four proposals for low-cost spacecraft small enough to be stowaways on the mission.

NASA plans to launch the Lunar Reconnaissance Orbiter on either an Atlas 5 or Delta 4 rocket in October 2008. Mark Borkowski, director of NASA's Robotic Lunar Exploration Program, said either rocket should have room for another 1,000 kilograms worth of secondary payloads.

Not wanting to waste what essentially amounts to a free ride to the Moon for one lucky spacecraft, NASA asked its 10 regional field centers in late January to submit proposals for low-cost hitchhiker missions beneficial to the U.S. space agency's lunar exploration goals.

"There are a lot of pieces of information we'd like to have about the Moon and if we can get any of that information sooner and at a lower cost, that would be an advantage," Borkowski said.

NASA received 19 "pretty freakin' exciting" proposals within a matter of weeks, according to Borkowski, and by late February had selected four finalists for a closer look. The

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finalists were due to present additional information to NASA the week of March 20. Borkowski said NASA intends to make its selection by early April and give the chosen team authority to proceed.

If that seems like a rather fast turnaround for soliciting and selecting a space mission, Borkowski said that is the point.

"We want to see if the quick-response, low-cost way of doing business will work for the exploration initiative," he said.

While the Lunar Reconnaissance Orbiter's launch vehicle will have room for multiple secondary payloads, Borkowski said only one of the four finalists - if that - can expect to make the cut.

"It's ambitious to free up budget for one," he said. "Freeing up budget for two might be a bridge to far."

Borkowski said the field center-led teams were given a budget target of \$50 million and an "absolute upper limit" of \$80 million for doing their proposed mission. NASA would fund the mission out of the Robotic Lunar Exploration Program budget, which would grow to \$272 million in 2007 under the agency's spending request now before Congress.

Neither Borkowski nor the field centers would say much about the mission concepts since they were still in competition.

A Feb. 23 e-mail that NASA's associate administrator for exploration, Scott "Doc" Horowitz, sent to NASA field center directors identified the four finalists as: the Lunar Crater Observation and Sensing Satellite; the Lunar Explorer for Elements and Hazards; Lunar Explorer; and Lunar Impactor.

NASA's Moffett Field, Calif.-based Ames Research Center proposed the first two missions on the list. The last two missions were proposed by Goddard Space Flight Center and the Jet Propulsion Laboratory respectively.

Borkowski said three of the four candidate missions would be focused in whole or in part on "the water question." If water ice is present in the permanently shadowed craters at the lunar poles as NASA suspects, it would be a valuable resource for extended stays, making it possible to produce potable water, breathable air and rocket propellant on the Moon.

Hunting for water ice is one of the main objectives of the Moon-mapping Lunar Reconnaissance Orbiter.

While details about the proposed missions are being closely held, Borkowski did say that all four of the finalists would make use of a secondary payload adapter ring that the U.S. Air Force developed for the Atlas 5 and Delta 4.

The EELV Secondary Payload Adapter, or ESPA, has accommodations for up to six small satellites. The structure was developed by the U.S. Air Force Laboratory but has yet to fly.

But that is expected to change later this year. The Atlas 5 rocket slated to launch the U.S. Defense Advanced Research



Project Agency's Orbital Express spacecraft from Cape Canaveral, Fla., also will be carrying an ESPA ring laden with five small experimental satellites.

Borkowski said one of the four finalists is proposing to turn the ESPA ring into a satellite by outfitting the structure with the necessary subsystems. That idea, while untested, is not new. The U.S. Air Force Research Laboratory has a project called the Deployable Structures Experiment in development that would use the ESPA ring as the hub of an Earth-orbit satellite equipped with multiple instruments.

At least some of the proposed missions NASA is considering would leave room for the ESPA ring to carry additional secondary payloads.

"There are several options, some of which might leave room and mass available for others, and some which do not" Borkowski said. "After we make our decisions, we would then consider other opportunities on a case-by-case basis. Until then, we don't know enough to offer potentially open 'slots' to other users."

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