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## NASA Reconsiders Its Moon Plans

The Constellation system, which includes the Ares rocket and Orion crew module, could lose favor to a cheaper, more DIY approach to launching orbital craft post-Space Shuttle

By [Stuart Fox](#) Posted 07.01.2009 at 3:45 pm



**Ares Rocket :** *courtesy of NASA*

Next year, 33 years after its maiden flight, the space shuttle will retire. What happens after that has become subject to fierce debate within the space agency. The designated successor program, named Constellation, was the darling of previous NASA administrator Michael Griffin, but a new review now has the space agency looking elsewhere for a ride back into the firmament.

The centerpiece of the Constellation program was the Ares rocket. However, that rocket needs **billions of dollars more in funding** to reach operational status, and has been plagued by numerous engineering problems. Now, some are proposing an alternative rocket system that makes use of already existing shuttle parts.

The plan, which would be **\$28.4 billion cheaper than Constellation**, was recently submitted to an independent panel reviewing NASA shuttle replacement options. According to the [Associated Press](#), NASA engineers worried that the expense of Constellation would get cut, leaving the agency without a ticket back to the moon. So they developed this plan, which, coming in at a lean \$6.6 billion, has a much lower chance of getting the axe.

The plan calls for the continued use of the solid fuel boosters and fuel tank used to launch the shuttle into orbit. Rather than designing a whole new rocket like Ares, NASA would only have to design a cargo vehicle that would attach to the existing rockets. Not only would this allow NASA to reuse the rockets, but it would also allow them to preserve existing launch pads as is.

The drawback to the new plan is that the rockets would not be able to reach any point beyond low Earth orbit. That means NASA would still need to develop additional rockets to reach anything beyond the International Space Station, like, say, the Moon or Mars.

The plan seems to be meeting a warm reception from the panel, all of whom are mindful that the Obama administration shares neither the Bush Administration's funds nor their enthusiasm for manned space flight. The panel will meet again in the end of the July and beginning of August, at which point the plans for replacing the shuttle will no doubt come into sharper focus.

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## 7 COMMENTS

Mike\_R

07/01/09 at 9:02 pm

I've been supportive of most of Obama's policy changes, but I can't believe that with the 40th anniversary of the Apollo 11 moon landing just days away, he would think of scrapping the only currently viable way of getting the US back to the moon. The Constellation program may have problems, and it certainly seems a step backwards from reusable spacecraft, but we do need the capability of getting beyond low Earth orbit if we want to maintain a viable space program. For an administration that has sold itself on change, hope, and vision, President Obama and his advisors might want to have a little more enthusiasm for the manned space program. The only possible long term future for humanity involves spreading beyond this one planet. You never keep all of your eggs in one basket.

[link to this comment](#)

Jbob1014

07/01/09 at 9:21 pm

ummmm, sounds like the shuttle c program being reborn. they've done a lot of the hardware engineering for this sort of thing, and they used to have a full scale mockup of the shuttle c at marshall space center.

[link to this comment](#)

John\_Sullivan

07/02/09 at 1:48 am

I think the bottom line should really be not how much money is spent in getting people from the pad to orbit but rather how much is spent on the comforts, operational capabilities and quality of life provided by the space ship components needed for the space mission itself. The launch is over between 8-10 minutes, and it is insane to overthink the importance of the launch platforms. America's space capabilities in launching with precision of thrust and guidance is without match, and in fact getting to orbit is all about fine-tune control of guidance and thrust and little more. From External Tanks to First Stage Boosters, they are all worth nothing 10 minutes into the flight. If men can get off the planet and into space on a "man-rated" Delta IV or Atlas V, then no power to America's ingenuity for trying it. "Man-Rating" Titans, Deltas, and Atlas rockets means "slowing them down" to make the ride and g-forces survivable. It can be done.

I am strongly against three things Dr. Aldrin recently suggested publically - 1) keeping the Shuttle flying until 2015 and 2) creating a Shuttle-like piggyback craft for the next manned trip to space. So far as the first objection, I have seen all 3 surviving Shuttles up close and would be very pleased if all 3 can survive the remaining missions through 2010. They are really showing their age. The development of both ARES and ORION do in fact use legacy "COTS" approaches to space, by keeping the foam-covered tanks and the approach to lift-stage solid rocket boosters. Anyone with any good understanding of what flight dynamics are for the first 25-30 miles in altitude would understand why solid-rocket boosters make incredible sense. The Shuttle's dangers are well known after both the Challenger and Columbia accidents, and some famous astronauts with names like Sally Ride, Story Musgrave, and even John Young have said that knowing what they know now, they would never ride the Shuttle in its current configuration with the known inherent safety flaws. The biggest two flaws in the Shuttle are 1) falling foam in a line of trajectory into the crew compartment or vehicle, and 2) no escape mechanism. Both of these are solved by the Orion/ARES Constellation but not both of these problems are solved by the piggy-back alternatives that have made themselves famous over the last year.

I wish America all success with the X-37B spaceplane designed by NASA and operated by the Air Force and maker Boeing - this is the Shuttle design that America would design today - knowing what we know now. But spaceplanes are only good for Earth orbit, due to thermal limitations encountered when approaching the atmosphere from higher distances - like from the Moon.

I am always disturbed by the cost it takes to get into space, and one needs not take long to discover that the cost is not necessarily in getting up there, but in the expensive installations, civil servants at NASA, and myriad of layers and layers of contractors. After all, NASA has rarely been a space program so much as it has been a jobs program. Perhaps in

today's economy, that's exactly what we need, but with China and others ready to go on a cheaper budget with an eye on space more than jobs, we really need to take a serious self-assessment as a nation on where we want to go from here.

[link to this comment](#)

John\_Sullivan

07/02/09 at 3:33 am

I mentioned that there were three things that Dr. Aldrin proposed, but only mentioned two. The third is his idea that man should skip the Moon as a manned target based on the grounds of 'been there, done that,' and go straight to Mars, and never send anyone back. He may be right, because sometimes it is not always necessary to go through every intervening planetary body on the way to the Mars. The International Space Station has been instrumental in proving that humans can endure long-duration space-flights, but an artificial gravity "anchor" deployed from a spacecraft by tether would be great in creating the spin needed to create artificial gravity in space, and the accompanying reduction in bone mass loss over time.

While I think that sending people to Mars without a return is as silly as telling people to go to war without an exit strategy, my main complaint with Dr. Aldrin's suggestion that we skip the Moon is that we just don't know yet what the LRO / LCROSS missions will yield during this year. The vehicles have just launched, and people at NASA tell me it is very likely that LRO will have images of the Apollo Lunar Landing site - as it is today - back to us in time for the celebrated 40th Anniversary. Between LRO and LCROSS, we may learn more about the Moon than we did in all of the Apollo missions combined - very few (only the last few, actually) had trained scientists, and not Astronauts who got there because of test pilot and fighter pilot experience. Only the very last mission had a trained geologist. While I give Dr. Aldrin all the credit in the world for his expertise in orbital mechanics - which is how he got that job, he can't predict now what LRO / LCROSS will yield in the form of scientific discovery, and it is not fair for him to predict the outcome before the missions truly begin their work.

If in fact it is proven that a manned exploration to Mars is no more exciting than a manned visit to Saudi Arabia's sand dunes or Antarctica's barren wilderness, then I agree that we should probably skip the Moon and move our priorities to a Mars landing - and a return trip as well. I have no doubt that in centuries to come, people will call domed cities on Mars home, and just when it seems feasible to try the expensive project to "terraform" the place we'll abandon it in lieu of moving out to planets in other star systems. But no matter how far we go, we should never preclude the possibility of a ride home.

[link to this comment](#)

Old.Timer

07/02/09 at 6:27 am

I recall NASA saying that The Constellation system, which includes the Ares rocket and Orion crew module would not have cost overruns or delays because it was not using new state of the art technology but ONLY already proven technology, mostly off-the-shelf.

Now I see a proposal to finally built the cargo only version of the Shuttle and write off the billions already spent on The Constellation system.

Well, why not go further back and use the Saturn family of launchers, Saturn 1B for passengers to the station and Saturn 5 for cargo and the moon. And either the Russian design capsule (Which the Chinese brought the designs for, and used for their men into orbit flights) or build more Apollo capsules. One of the Skylab missions almost needed a rescue flight because their Apollo return capsule had a steering fuel leak, the rescue Apollo on stand-by was reconfigured to carry 5 astronauts, 2 up, 5 down. The Apollo taking crew to Skylab, acting as life boat, then for crew return, had a 80 day at least shelf life in orbit, and was able to easily rendezvous and dock with Skylab. with some updating, it could easily do what the Orion crew module is supposed to do one day. BUT Apollo did have one issue, it had to splash down on the sea, and so it became too costly to have the USA Navy station ships in all the oceans, but with today's navigation computers, it would not be hard to splash down Apollo just off shore from the Kennedy Space Flight Centre, and have the crew retrieved

by the two ships designed to retrieve the Shuttles SRBs

True, the Saturn is very old, but imagine how cheap it would be to mass produce copies, using today's manufacturing technology.

Whoops, but NASA stuffed up there, it destroyed all the jigs and blue prints for Saturn way back just after the end of the Apollo/Skylab program, while it was designing and building the Shuttle, because it was worried that due to Shuttle delays and cost overruns it would be ORDERED to cancel the Shuttle and revert to Apollo hardware.

Today, July 2009, due to delays and cost overruns on the The Constellation system, which includes the Ares rocket and Orion crew module, it may be reverting back to Shuttle hardware

I note above I repeat myself a few times, but NASA seems to keep repeating its false promises and repeats the same mistakes as always.

The Chinese will be first back to the moon, (NASA is holding the Russians back from the moon, because of needing passengers services to the Station) and its a toss up between the Russians (whom will give up on servicing the Station the first chance they get) and the Chinese for first to Mars, the Chinese taking extreme risks (to their crews) to get there, and the Russians having years of experience in long duration Mir.

And NASA has become too much like the USA Defence Department developing a new bomber or fighter, studying the hell out of proposals for 20 years and (not OR) more, to find the cheapest, most-cost-effective safest hardware, then cancelling because development costs were too high.

You can blame the politicians too, for expecting too much, for too little funding. The trans USA railways, were just built, nobody studied costs for years before hand, no accountants in charge in those days.

Maybe the USA should give 75% of its manned space flight tax payer funded budget to the Russians to design and build their ideas, then NASA just buys tickets on the next Russian space liner to the moon, for its own astronauts. No doubt the Russians will take cargo to the moon for NASA as well. NASA wont be first, but at least it will have the second moon base. Certainly it would cost less than if NASA did it all in-house.

Think about it, without the Russians providing passengers services to The Station from day one, which includes life-boat capability from when it was first manned 24/7, no way would the Station have been viable, even while The Shuttle is still flying. And the Russians could have built The Station themselves WITHOUT a shuttle, using expendable launchers in the same way they put Mir up.

It seems the USA is fast becoming a 3rd world partner in space flight.

[link to this comment](#)

ikalo

07/02/09 at 10:16 am

Well, more than ever money is the main concern.

Maybe they should start thinking practicaly. Like Soviets did back during space race. They figured out that they can't make one rocket strong enough to shoot the spacecraft directly to the Moon so they decided to launch crew and craft separately and merge it in orbit. They didn't make the stable enough rocket for that task either and lost the race, but now we have ISS, and regular flights there.

Why not thing like this:

- launch spacecraft that will be used to fly to the moon once into the orbit and dock it to the ISS, old apollo command module and LEM would do just fine, just update it and refine it. You don't even need return capsule, because crew and samples would go back with soyuz like capsules that are already in use.

- launch crew, supplies, fuel and equipment in a way that is already in use with progres/jules verne supply ships and soyuz like capsules.
- once in orbit, you could load everything to "moon shuttle" go there, return back and park it there for next trip.

most of things you need is already in use, and you don't need more powerfull rockets than they are already used.



Everett\_Tsosie

[link to this comment](#)

07/02/09 at 1:17 pm

I like Old.Timer's comment. Unfortunately, I know that even if we tried the Saturn Program, it will be from scratch. None of the engineers are the same. All homegrown engineers moved on or retired. We are left with many engineers that don't think on their feet. It's all iPod, blackberries and meetings. I have, so far, not run into another Mechanical Engineer that knows how to run a lathe. So practical applications are out the window, and we have to rely on the oldest experts in the field. Knowing this and seeing the trend to 3D modeling, I would say that this will take a while.

There are many other solutions, one is similar to the Xplane, where a plane fitted with rockets to reach orbit. That preserves the gas mileage. In this case, what we need is a lesson learned. We know that saving the engine is very beneficial and the new vehicle only has to get to space. Now that simplifies the design from the shuttle. For example, we could design ram jet engine boosters that will return to earth after a launch with the wing portion (no pilot). It can just drop to earth in a parachute with no fancy landing. Cargo portion will stay in space where even the hull can be disassembled in space and reused. For me, cargo is cargo. In airliners, the cargo bays are not pressurized. If need be, then they will have their own little pressurized containers and relief valves.

So there are many options and going back to old school may sound nice, but to me old school refers to the engineers. Well, that is not an option.

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