# Free Market DA

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### Constellation cancelation is key to tech innovation and spurring the free market.

Zimmerman 11 (Robert, is a well known and respected space historian and author.“Bad news for NASA, good news for private space” <http://behindtheblack.com/behind-the-black/essays-and-commentaries/bad-news-for-nasa-good-news-for-private-space> //Donnie)

Earlier this week NASA submitted a report to Congress reviewing the design and construction status of the heavy-lift rocket and manned capsule that Congress has required them to build and launch by 2016. NASA’s conclusion: the space agency doesn’t think it can do the job in the schedule or budget that Congress has provided. NASA does not believe this goal is achievable based on a combination of the current funding profile estimate, traditional approaches to acquisitions and currently considered vehicle architectures. . . . We will not commit to a date that has a low probability of being achieved. NASA’s conclusions here are not surprising. The agency had been having trouble building Constellation on the much bigger budget and longer schedule given to them by past Congresses. For them to build the-program-formerly-called-Constellation for less money and in less time is probably impossible. Nonetheless, this was the response of the Senate Commerce committee: The production of a heavy-lift rocket and capsule is not optional. It’s the law. This is why I have been saying that the money for this program is nothing more than pork. Congress knows that nothing can be built on this budget, but wants the money spent nonetheless, to keep people employed in their districts. Meanwhile, in sharp contrast, Space Adventures yesterday announced a new deal with Russia, whereby the Russians have agreed to build and launch one extra Soyuz capsule per year, beginning in 2013, to fly 3 tourists to ISS. In addition, there is this report today about how SpaceX is successfully meeting all its milestones in building its cargo ferry for ISS. An earlier report last week also noted how Orbital Sciences is also moving forward with its cargo ferry, with a planned first test launch by the end of 2011. All in all, this news is not good news for NASA. The space agency’s manned spaceflight program appears to have two futures, neither of which will involve it continuing to build rockets or fly humans into space. In one option, the new Congress, when it finally sits down to write a budget, will decide that pork and happy constituents are more important than a balanced budget, and will appropriate the money for the-program-formerly-called-Constellation. NASA will struggle hard to build it, but will not succeed. Thus, no government-built manned space program. In the second option, Congress will agree with me and decide that it just doesn’t have money for pork, especially considering the terrible state of the federal budget. Moreover, seeing the success of the private efforts of SpaceX, Orbital Sciences, and Space Adventures, Congress will wonder why it needs to pour more billions into a vain effort by NASA to build something it can’t, when there are other private companies that can do it, and do it for less. In this circumstance, it will be very easy for them to cut the-program-formerly-called-Constellation. Once again, no NASA manned program. Neither scenario is actually a bad thing. What we are actually seeing play out here is the free competition of different companies attempting to provide a service to a customer, and the customer eventually picking the best company from which to buy the product. NASA, as a government agency, simply can’t compete, and unless Congress decides to provide them welfare, will lose this competition hands down. The U.S. will still have the capability of getting into space, but for far less money. And having multiple private companies competing to provide this service will also encourage innovation, something the rocket industry has sorely needed these past five decades.

Market control of space is key to exploration and colonization.

Hudgins 4 (Edward L. Hudgins, director of The Objectivist Center, is the editor of the Cato Institute book, Space: The Free-Market Frontier. “Move Aside, NASA” <http://www.cato.org/pub_display.php?pub_id=2514> //Donnie)

One reaction to President Bush's plan for a permanent moon base and a trip to Mars is, "Great! It's about time NASA stopped going around in circles in low Earth orbit and returns to real science and exploration." Unfortunately, there's not a snowball's chance in the sun that the same agency that currently is constructing a downsized version of its originally planned space station, decades behind schedule, at 10 times its original budget, a few hundred miles up in orbit, will be able to build a station several hundred thousand miles away on the moon. If Americans are again to walk on the moon and make their way to Mars, NASA will actually need to be downsized and the private sector allowed to lead the way to the next frontier. The lunar landings of over three decades ago were among the greatest human achievements. Ayn Rand wrote that Apollo 11 "was like a dramatist's emphasis on the dimension of reason's power." We were inspired at the sight of humans at our best, traveling to another world. In announcing NASA's new mission, President Bush echoed such sentiments, speaking of the American values of "daring, discipline, ingenuity," and "the spirit of discovery." But after the triumphs of Apollo, NASA failed to make space more accessible to mankind. There were supposed to be shuttle flights every week; instead, there have been about four per year. The space station was projected to cost $8 billion, house a crew of 12 and be in orbit by the mid-1990s. Instead, its price tag will be $100 billion and it will have only a crew of three. Worse, neither the station nor the shuttle does much important science. Governments simply cannot provide commercial goods and services. Only private entrepreneurs can improve quality, bring down the prices, and make accessible to all individuals cars, airline trips, computers, the Internet, you name it. Thus, to avoid the errors of the shuttle and space station, NASA's mission must be very narrowly focused on exploring the moon and planets, and perhaps conducting some basic research, which also might serve a defense function. This will mean leaving low Earth orbit to the private sector. Thus, the shuttle should be given away to private owners. The United Space Alliance, the joint venture between Boeing and Lockheed-Martin that refurbishes the shuttle between flights, would be an obvious candidate. Let a private owner fly it for paying customers--including NASA, if necessary -- if it is still worth flying. NASA also should give up the money-draining space station, and sooner rather than later. The station might be turned over to international partners or, better still, to the mostly private Russian rocket company, Energia -- and the Western investors who were in the process of commercializing and privatizing the Mir space station before the Russian government brought it down for political reasons. If need be, NASA can be a rent-paying station tenant. NASA centers that drive up its overall budget but do not directly contribute to its mission should be shut down. If the government wants to continue satellite studies of the climate and resources or other such functions, they could be turned over to other agencies, such as EPA and Interior Department. NASA and the rest of the government should contract for launch services with private companies, which would handle transportation to and from low Earth orbit. Contracting with private pilots with private planes is what the Post Office did in the 1920s and 1930s, which helped the emerging civil aviation sector. Further, to facilitate a strong private space sector, the government needs to further deregulate launches, export licensing and remove other barriers to entrepreneurs. Creating enterprise zones in orbit would help make up for government errors of the past. Rep. Dana Rohrabacher proposes a "Zero Gravity, Zero Tax" plan that would remove an unnecessary burden from "out-of-this-world risk-takers." NASA will also need to do business in new, innovative ways. For example, if a certain technology is needed for a moon mission, NASA could offer a cash prize for any party that can deliver it. The federal government used such an approach for aircraft before World War II, modeled after private prizes that helped promote civil aviation. Even if the federal government foots the bill for a moon base, it should not own it. Rather, NASA should partner with consortia of universities, private foundations and even businesses that are interested in advancing human knowledge and commercial activities. NASA could simply be a tenant on the base. Or consider a radical approach proposed by former Rep. Bob Walker. The federal government wouldn't need to spend any taxpayer dollars if it gave the first business to construct a permanent lunar base with its own money a 25-year exemption from all federal taxes on all of its operations, not just those on the Moon. Think of all the economic activity that would be generated if a Microsoft or General Electric decided to build a base! And the tax revenue from that activity probably would offset the government's revenue losses from such an exemption. If we're true to our nature, we will explore and settle planets. But only individuals with vision, acting in a free market, will make us a truly space-faring civilization.

It also independently solves extinction

Collins and Autino 9 (Patrick Collins, Expert in the economics of energy supply from space, professor of economics at Azabu University in Japan, and a Collaborating Researcher with the Institute for Space & Astronautical Science, as well as adviser to a number of companies, AND\*\* Adriano Autino, prolific science and space writer/lecturer for leading magazines, journals, and space advocate organizations, as well as Italian entrepreneur, “What the Growth of a Space Tourism Industry Could Contribute to Employment, Economic Growth, Environmental Protection, Education, Culture and World Peace”, 11 June 2009, <http://www.spacefuture.com/archive/what_the_growth_of_a_space_tourism_industry_could_contribute_to_employment_economic_growth_environmental_protection_education_culture_and_world_peace.shtml>, MinR)

The continuation of **human civilisation** requires a growing world economy, with access to increasing resources. This is because competing groups in society can all improve their situation and reasonable fairness can be achieved, enabling social ethics to survive, only if the overall "economic pie" is growing. Unfortunately, societies are much less robust if the "pie" is shrinking, when ethical growth becomes nearly impossible, as competing groups try to improve their own situation at the expense of other groups. Continued growth of civilisation requires continual ethical evolution, but this will probably be possible only if resources are sufficient to assure health, comfort, education and fair employment for all members of society. The world economy **is under great stress** recently for a number of reasons, a fundamental one being the lack of opportunities for profitable investment—as exemplified by Japan's unprecedented decade of zero interest-rates. This lack of productive investment opportunities has led a large amount of funds in the rich countries to "churn" around in the world economy in such forms as risky "hedge funds", causing ever greater financial instability, thereby further weakening economic growth, and widening the gap between rich and poor. Increasing the opportunities for profitable, stable investment requires continual creation of new industries [16]. Governments today typically express expectations for employment growth in such fields as information technology, energy, robotics, medical services, tourism and leisure. However, there are also sceptical voices pointing out that many of these activities too are already being outsourced to low-cost countries which are catching up technologically in many fields [20]. Most of the new jobs created in the USA during the 21st century so far have been low-paid service work, while the number of US manufacturing jobs has shrunk rapidly [21]. It is thus highly relevant that aerospace engineering is a field in which the most technically advanced countries still have a substantial competitive advantage over later developing countries. Hence, if a commercial space travel industry had already been booming in the 1980s, the shrinkage in aerospace employment after the end of the "cold war" would have been far less. Consequently it seems fair to conclude that the decades long delay in developing space travel has contributed to the lack of new industries in the richer countries, **which is constraining economic growth** and causing the highest levels of unemployment for decades. The rapid economic development of China and India offers great promise but creates a serious challenge for the already rich countries, which need to accelerate the growth of new industries if they are to benefit from these countries' lower costs without creating an impoverished under-class in their own societies. The long-term cost of such a socially divisive policy would greatly outweigh the short-term benefits of low-cost imports. The development of India and China also creates dangers because the demands of 6 billion people are now approaching the limits of the resources of planet Earth. As these limits are approached, governments become increasingly repressive, thereby adding major social costs to the direct costs of environmental damage [22]. Consequently, as discussed further below, it seems that the decades-long delay in starting to use the resources of the solar system has already caused heavy, self inﬂicted damage to humans' economic development, and must be urgently overcome, for which a range of policies have been proposed in [23,24]. 3.1. Popular demand is the basis of economic growth The continuing heavy dependence of the space industry on taxpayer funding, despite cumulative investment of some 1 trillion Euro-equivalents, is due to the simple fact that those directing the industry have chosen not to supply services which large numbers of the general public wish to buy. Yet it is elementary that only by doing this can the space industry grow into a normal commercial activity. Doing so will create an industry which raises private investment to develop new, better and larger facilities in order to sell better services to ever-more customers—in the familiar "virtuous circle" of business growth. Eventually this activity may even reach a scale sufficient for the tax revenues it generates to repay the public investment to date. In successful companies, investment is skillfully judged so as to produce goods and services for which there will be large commercial (i.e. non-governmental) demand. If this earns sufficient profits, then the activity will continue to grow spontaneously for decades or more, like manufacturing of cars or airliners. If, instead, **funds intended for investment are spent on developing non-commercial products**, such as expensive surveillance satellites or a space station for which the only significant customer is government, then clearly the space industry is **doomed to remain forever a small, taxpayer-funded activity—a hindrance** rather than a help **to economic growth**. Economic policy-makers responsible for deciding the public budget for space development must no longer rely exclusively on the advice of the space industry itself, which ever since its origin has had different objectives than the economic benefit of the general public. That is, economic policy-makers, who are responsible for tens of trillions of Euros of activity, must take the initiative to ensure that passenger space travel services are developed as soon as possible. There are many ways in which private investments in this field can be facilitated and supported, **without governments themselves either planning or managing the projects**. Among other steps, this will require the important institutional innovation of collaboration between civil aviation and civil space activities. Since, even with today's knowledge, researchers foresee the **possibility of economic development in space growing** to a scale similar to terrestrial industry [11]. This field of industry must be considered as having the potential **to become a major new axis for economic growth**—equivalent in importance to the aviation industry, but with minimal environmental impact, as discussed below—and therefore deserving of the most serious and urgent attention by economic policymakers.

## DA Solves The Case

### **Putting constellation back in the control of NASA dooms the project—the status quo solves all of your advantages better**

RocketForge 10 (“Obama’s Conservative Plan for American Leadership in Space” <http://rocketforge.org/?p=470> //Donnie)

Even after this discussion many wonder if its a good idea to outsource the responsibility of America’s leadership in space to a bunch of untried Internet billionaires that haven’t put anything in orbit yet? The easiest way to answer that is to compare what is being done commercially and what NASA has done lately. First lets take NASA. What many people don’t realize is that NASA hasn’t designed a rocket in over 30 years. The people who did that are long gone. NASA has built the International Space Station, though. That means it has a lot of current knowledge on how to do in space assembly of very complex hardware. The Constellation program which is NASA’s plan for building its own system of rockets is WAY over budget and behind schedule. This partly due to Congress limiting its budget but also due to NASA not designing the system to be operationally efficient. With rockets about 80% of your operational costs are fixed before you ever bend a single piece of metal. NASA simply has no incentive or desire to design something for operational efficiency. Now lets look at the commercial side. There are numerous companies who have been or are about to fly new rockets: Boeing – Delta IV, including the Delta IV Heavy which can lift 28.5 metric tonnes to LEO – 11 flights to date Lockheed – Atlas V, 29.4 metric tonnes to LEO – 18 flights to date SpaceX – Falcon 9, 10.4 to 29.6 metric tonnes to LEO, designed to be human rated – still in development. First flight expected in March. Orbital Sciences – Taurus II, 5.5 metric tonnes to LEO, still in development Bigelow Aerospace – Sundancer, an inflatable space station habitat. Gensis I and II already on orbit There are more out there such as Masten Space Systems (my company), Virgin Galactic, XCOR, Blue Origin, Armadillo Aerospace, Dreamchaser, etc. All building hardware and flying it on budgets that combined are smaller than one years budget for Ares I.

### Here is more comparative evidence: we internal link turn your whole aff—NASA just can’t get the job done.

Homans 11 (Charles Homans is an editor of the Washington Monthly. “The Wealth of Constellations

Can the free market save the space program?” <http://www.washingtonmonthly.com/features/2010/1005.homans.html#Byline> //Donnie)

It was another milestone for one of NASA’s most successful endeavors in recent memory. Over the six years they have spent roaming the Red Planet, Opportunity and its sibling, Spirit, have mined rock samples, charted craters and mountains, and found evidence suggesting the existence of long-evaporated seas on the planet. The rovers have sent back a stream of fascinating photographs: windswept panoramas, microscopic mineral formations, even an eerily moving picture of a sunset, the familiar star appearing from Mars’s greater distance as a wan pinpoint of light dropping toward an alien horizon. And they have done all of it for less than a fifth of the budget that the space shuttle program chews up in a single year. For all the chest-thumping nationalism and science-fiction fantasy that attends human spaceflight, the fact is that most of the truly astonishing things that NASA has accomplished since Apollo have been done not by astronauts in orbit, but by engineers and researchers in labs much closer to home, operating unmanned machines like the Mars rovers and the Hubble telescope. In the years that the shuttle program has burned through upwards of $170 billion—and fourteen crew members’ lives—to perform research on subjects like the effects of weightlessness on spiders, earthbound researchers working with a fraction of those resources have discovered hundreds of planets beyond our own solar system, found cosmic evidence of the Big Bang, and begun to pinpoint the age of the Universe. By the time the first astronaut sets foot on Mars—by even the most optimistic estimates—probes and robots will have scoured the planet’s atmosphere and surface for half a century. In turning away from the Bush-era NASA’s ambitions, the Obama administration has tacitly acknowledged that human spaceflight, as it has been practiced for half a century, has become something anachronistic and difficult to justify. "We’re not trying to rebuild that system," Garver told me. "It was overbuilt." But in betting taxpayer money on the nascent commercial spaceflight industry’s promises of an orbiting free market waiting to be born, the agency has shown that it hasn’t fully cut itself loose from its old gambler’s impulses: the belief that the next paradigm of manned space exploration, the thing that will make all of this worthwhile, is just around the corner. And if not—well, space is a lonely and expensive place.

## Uniqueness

### Ending Constellation has given room for the free market to take over which solves the case—the plan reverses this trend.

AOL News 10 (“Private Firms Look to Cash In on NASA Cuts” <http://www.aolnews.com/2010/02/01/private-firms-look-to-cash-in-on-nasa-cuts/> //Donnie)

With NASA's Constellation program cut from the budget President Obama proposed Monday, private companies have the chance to play a bigger role in the next space race. While the budget request for fiscal year 2011 eliminates the Constellation program – which would have replaced the space shuttle with new rockets to return humans to the moon and ultimately land them on Mars – it provides funds for NASA to work with private industry to provide transportation to the International Space Station (ISS) and take on other exploratory and scientific projects. NASA Administrator Charles Bolden briefed reporters Monday afternoon about the budget, calling it a "bold challenge" from Obama for NASA "to become an engine of innovation." He emphasized that the space agency's budget is rising by $6 billion over the next five years to facilitate, in part, the "growth of new commercial industry." William Pomerantz, the senior director for prizes at the X Prize Foundation, believes that government and private industry will both continue to play important roles in space exploration. "It's certainly not an 'us or them' proposition," said Pomerantz, whose foundation awards multimillion-dollar prizes to private-sector innovators in space exploration and other fields. "We recognize that these agencies – like NASA and the European Space Agency – have unique qualities and capabilities, but there are gaps that private industry can fill." In fact, private industry has always played a role in space exploration. Space tourism isn't the only way private companies can tap into the space industry. When government spacecraft travel to the ISS, trips come at great expense. According to NASA's Web site, each shuttle trip costs about $450 million. Private companies could carry one or two payloads to the ISS or on other missions, said Pomerantz, and could make the trips more frequently for less money. Lendroth said there is also great potential for private robotic missions. The moons of Jupiter, for instance, offer exciting possibilities for robotic exploration, as do other projects far beyond Earth. The Planetary Society plans to launch Lightsail-1 by the end of 2010. The craft is designed to orbit Earth propelled by sunlight. Subsequent missions would reach farther into space. The X Prize Foundation, meanwhile, is sponsoring the largest-ever international incentive prize. The Google Lunar X Prize will award $30 million to the private team that is able to send a robot to the moon, have it travel 500 meters and transmit video, images and data back to Earth. As for the future of space exploration, it's a market with all kinds of possibilities.

### Ending constellation has caused a free market fill in.

Chow 11 (Denise Chow, SPACE.com Staff Writer, “The Case Against the Moon: Why We Shouldn't Go Straight Back” <http://www.space.com/10597-case-moon-return.html> //Donnie)

NASA's now-canceled Constellation program, established during the administration of President George W. Bush, aimed to return American astronauts to the moon by 2020. As part of the roughly $9 billion program, NASA was charged with developing new Ares rockets and a space capsule called Orion that would act as a replacement for the agency's retiring space shuttle fleet. But President Obama's 2011 budget request effectively shut down the moon-oriented Constellation program and shifted the focus of future U.S. space exploration toward asteroids and Mars. On Oct. 11, 2010, Obama signed a major NASA act that turned these lofty goals into law. The signing officially scrapped the Constellation program and set the stage for a manned mission to an asteroid by 2025, followed by a manned mission to Mars, currently envisioned for some time in the 2030s. The new space plan also opens the door for private spaceflight companies to create commercial vehicles to ferry astronauts into low-Earth orbit (LEO) while NASA sets its sights on targets deeper into the solar system. One such commercial firm is Space Exploration Technologies, commonly called SpaceX. The Hawthorne, Calif., company's Dragon capsule is designed to transport cargo, and eventually humans, aboard the company's Falcon 9 rocket to the International Space Station. "I think Mars, given that it holds the potential for making life multi-planetary, is much more important than the moon, and that should be the focus of future manned exploration," said Elon Musk, the chief executive of SpaceX. "However, if there turns out to be a market for traveling to the moon, SpaceX will support that just as we support LEO activity."

## Links

### Several links to the plan:

### Deterrence: Constellation deters private investment through large shuttle contracts.

Pappalardo 9 (Joe Pappalardo, writer for Popular Mechanics Magazine, "Private Space to the Government", 6/4/09, [www.popularmechanics.com/science/space/nasa/4320379](http://www.popularmechanics.com/science/space/nasa/4320379)) AK

The future of space could soon belong to private companies—the soon-to-be retired space shuttle is being replaced by private launchers, space tourists are snapping pictures from the International Space Station, global positioning systems are ubiquitous, and entrepreneurs are building suborbital craft destined for use by paying customers. But the mood at the Space Business Forum, an annual gathering of investors and space geeks held in New York City, was impatience to get the feds out of the way so the private sector can attract investments and grow quicker. "I'd say the role of government [in the space industry] is too high," says Heidi Wood, the senior equity analyst for aerospace for Morgan Stanley. "There are far too many hands on it." Complaints start with a familiar mantra of the stifling nature of bureaucracy and regulation. High on the list of irritants is the Federal Communications Commission, which must license the use of bandwidth and approve the orbital slot of any satellite being launched. This oversight prevents satellite collisions and overlapping signal interruptions, but the auction and approval process can be slow, and firms loathe delaying the construction of satellites until the government hoops are cleared. These add to financial risks, in turn driving away much-needed investor cash; companies with long startup times and no guaranteed return are not appealing to investors. "The markets don't want to hear about negative cash flow right now," says Andrew Africk, senior partner with the private equity firm Apollo Management LP. "I don't see that thriving real estate business model coming," Africk says when asked if there is any chance that the distribution of bandwidth can operate more like real estate—where people buy the commodity, use it and sell it as they wish. "We'd need a new regulatory point of view." Some bandwidth and hardware swaps already occur between companies, but these incidents are exceptions and not part of a wider trend, he says. The commercial space industry is also feeling pinched because the U.S. government has become one of its largest customers, taking up payload space in launch vehicles and hogging the attention of private space companies. Space companies covet these high-dollar contracts for their income streams but hate them because they crowd out new, potentially long-term strategies with the private sector. The government can be a fickle business partner because it renews contracts at the whim of the federal budget cycle. These contracts might not be renewed, or they might be changed when a policy shifts, leaving the private firms out in the cold with dead hardware and defunct business plans.

### Funding: Constellation trades off with private investment and jobs—cuts prove.

Mace 11 (Frank, Frank Mace is an columnist for the Harvard Political Review, "In Defense of the Obama Space Exploration Plan", 4/7/11, hpronline.org/united-states/in-defense-of-the-obama-space-exploration-plan//avi)

Last April, President Obama unveiled a comprehensive overhaul of NASA’s future and cancelled much of the Bush-era Constellation plan to return to the moon. Obama’s plan looked to add $6 billion to the NASA budget over the next five years, renew the focus on scientific discovery, lengthen the lifespan of the International Space Station, and most importantly, dramatically increase the role of private contractors in NASA missions. Obama rightly prioritized jobs, science, and national inspiration with his new direction for NASA. This plan drew immediate criticism from, among others, Apollo 11 Commander Neil Armstrong, Apollo 13 Commander James Lovell, and Apollo 17 Commander Eugene Cernan, who jointly wrote in a letter to President Obama: “It appears that we will have wasted our current $10-plus billion investment in Constellation and, equally importantly, we will have lost the many years required to recreate the equivalent of what we will have discarded. For The United States, the leading space faring nation for nearly half a century, to be without carriage to low Earth orbit and with no human exploration capability to go beyond Earth orbit for an indeterminate time into the future, destines our nation to become one second or even third rate stature.” The three commanders, however, overvalue pure nationalism at the expense of the NASA roles in job creation, science, and national inspiration. In today’s economic climate, our first consideration should be jobs. The Obama Plan would add 2,500 more jobs to the American economy than the Bush-era plan. Additionally, the increased private sector involvement in the space program could generate upwards of 10,000 jobs. Conservative critics of Obama’s plan should take note of this increased reliance on the private sector for innovation—after all, a belief in the efficiency of the private sector is a central Republican tenet. Secondly, Obama’s attention to scientific discoveries with tangible benefits is apt. He endorses exploration of the solar system by robots and a new telescope to succeed Hubble and calls for fresh climate and environmental studies. An extended commitment to the International Space Station further displays Obama’s respect for the scientific discoveries being made onboard. His vision of the role for space exploration is based on science, not nationalism.

### Constellation money went to stimulating private companies—the plan would reverse that.

Achenbach 10 (Joel Achenbach, Washington Post Staff Writer, "NASA budget for 2011 eliminates funds for manned lunar missions”, 2/1/10, [www.washingtonpost.com/wp-dyn/content/article/2010/01/31/AR2010013101058.html](http://www.washingtonpost.com/wp-dyn/content/article/2010/01/31/AR2010013101058.html)) AK

The budget numbers will show that the administration effectively plans to kill the Constellation program that called for a return to the moon by 2020. The budget, expected to increase slightly over the current $18.7 billion, is also a death knell for the Ares 1 rocket, NASA's planned successor to the space shuttle. The agency has spent billions developing the rocket, which is still years from its first scheduled crew flight. It remains to be seen whether Congress will accede to Obama's change in direction. Industry insiders expect a brutal fight in Congress. The early reaction to media reports about the budget request has been filled with howls of protest from lawmakers in districts that would be most affected by a sharp change in strategy. Obama's budget, according to a background briefing by an administration official on Sunday, will call for spending $6 billion over five years to develop a commercial spacecraft that could taxi astronauts into low Earth orbit. Going commercial with a human crew would represent a dramatic change in the way NASA does business. Instead of NASA owning the spacecraft and overseeing every nut and bolt of its design and construction, a private company would design and build the spacecraft with NASA looking over its shoulder. Former NASA administrator Michael Griffin, who championed the Constellation program, views the Obama budget as disastrous for human space flight. "It means that essentially the U.S. has decided that they're not going to be a significant player in human space flight for the foreseeable future. The path that they're on with this budget is a path that can't work," Griffin said, anticipating the Monday announcement. He said that, although he pushed for seed money for commercial cargo flights to space, he doesn't believe that the commercial firms, such as SpaceX and Dulles-based Orbital Sciences, are ready to take over the risky and difficult job of ferrying human beings to orbit. "One day it will be like commercial airline travel, just not yet," Griffin said. "It's like 1920. Lindbergh hasn't flown the Atlantic, and they're trying to sell 747s to Pan Am." John Gedmark, executive director of the Commercial Spaceflight Federation, said the critics underestimate the maturity of the commercial sector. "The Defense Department began using commercial rockets a long time ago to launch priceless national security satellites, that our troops' lives depend on. If the Pentagon can trust private industry with this responsibility, we think NASA can, too," Gedmark said.

### Preclusion: NASA Shuttle programs preclude private development

Plait 11 (Phil Plait is an astronomer and writer of Discover Magazine’s Bad Astronomy, “One Small Step”, 7/3/11, [www.nypost.com/p/news/opinion/opedcolumnists/one\_small\_step\_qDLhhzgjW8sTVwUQCDnrOJ/3](http://www.nypost.com/p/news/opinion/opedcolumnists/one_small_step_qDLhhzgjW8sTVwUQCDnrOJ/3)) AK

These are not, if you pardon the expression, fly-by-night endeavors. NASA has outlaid serious money towards these ventures: a total of nearly a billion dollars as part of its Commercial Orbital Transportation Services. President Obama’s NASA budget favors more dependence on private industry, while Congress overall prefers NASA develop its own booster. If you had asked me a decade years ago if a company that didn’t yet exist would be launching rockets capable of putting humans in orbit by 2015, I’d have laughed at you. I’m not laughing now. Why explore space? NASA’s budget is about $18 billion a year. That sounds like a lot, but in reality is only 0.6% of total US government spending. In America we spend five times as much on tobacco products every year as we do on NASA. But with space exploration we get a lot back; technology and other investments by NASA actually do pay off. Estimates of NASA’s return on investment range from 33% — not great, but not bad — to as high as 10 to 1. There are also spinoffs from NASA technology, like advances in digital cameras, lightweight cordless technology for medical equipment and power tools, and product improvements from golf balls to solar panels to a host of medical advancements such as digital breast-cancer biopsy technology. And, of course, there are weather, communication and Earth-observing satellites . . . all of which support a vast chunk of our economy. It’s difficult to measure all the direct monetary benefits we’ve reaped from space exploration, but it’s clearly substantial. It’s fashionable to say the Shuttle program was a failure — too expensive, too limited. But progress is not a steady curve. Not all steps are leaps. At the time the Shuttles were proposed, small, lean private companies able to build rockets like SpaceX didn’t exist — but these companies owe their existence to the environment NASA helped create. Things are different now, however, and the era of something like the Shuttle should be behind us. The Shuttle missions were billed as routine, but NASA shouldn’t be doing the routine. The role of our space agency is to innovate, invent, design, push the limits, cross the borders. And once that’s done, once it becomes routine, they should hand it over to others. Let private companies take over low Earth operations, and let NASA be free to pursue literally loftier goals. What the President and what Congress want isn’t all that different, and we shouldn’t let inaction leave us with no vision. NASA’s future does depend on the decisions made in the next year or two. If nothing is done, then nothing will get done.

## They Say: “Free Market Won’t Fill In”

### The market will fill in.

Williams 11 (Joe Williams, a real-life rocket scientist with NASA at the Johnson Space Center in Houston, Texas. “Commercial Space and Transitional Change” <http://leadingspace.wordpress.com/page/2/> //Donnie)

When I step back and consider where we are, I think of the possibilities offered by having the commercial sector handle routine access to low earth orbit (and make a profit along the way), allowing Government to focus on the risky edges of pushing the boundaries of human exploration of space. This is by no means an easy endeavor: the commercial sector might fail in building a sustainable business model for access to low earth orbit, or the American people might decide that human space exploration is not a national priority. Yet I don’t see either happening. I believe the future of human space exploration is wrapped up in a partnership of the best of entrepreneurial and Government efforts. The challenge is ours to make the future we desire.

# Earth Science DA

## 1NC—Earth Science DA

### The VSE pushes Earth Science off the agenda.

Abbey and Lane 9 (Neal Lane is the Malcolm Gillis University Professor and Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and served in the Clinton Administration as Science Advisor to the President and Director of the National Science Foundation. George Abbey is Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and former Director of the NASA Johnson Space Center in Houston Texas “Maximizing NASA’s Potential: In Flight and on the Ground Recommendations for the Next Administration.” <http://bakerinstitute.org/publications/SPACE-pub-ObamaTransitionAbbeyLaneMuratore-012009.pdf> //Donnie) \*\*\*the VSE is the constellation program

The U.S. shuttle transportation system is the longest running, most successful fleet of manned space vehicles ever produced. The International Space Station (ISS), which involves close partnerships with Russia and 16 other nations, is an incredible accomplishment. When completed, it will represent the largest international cooperative technological project in history. In 2004, President George W. Bush chose to establish a new course for NASA and the civil space program. He announced his Vision for Space Exploration (VSE), a bold plan to complete the ISS and phase out the space shuttle by 2010. Under the VSE, a replacement for the space shuttle was to be designed and built by 2008 and flown by 2014. Humans would return to the moon by 2020 and prepare for missions to Mars. It was made clear that VSE was to be led by the United States. With President Bush’s new vision in mind, NASA quickly reset its priorities. Going to the moon and Mars became the agency’s mission. The new priorities pushed science, environmental, and aeronautical research further down the list, and international cooperation was no longer encouraged. Space domination emerged as the administration’s space policy, and that agenda did not have a place for cooperative activities in space. President Bush presented a bold vision, but as several critics pointed out at the time, the vision was incomplete—there was no detailed plan, no provision for the transport of astronauts to space after the shuttle phase-out, no consultation with foreign space partners, and science was no longer a priority.

### Earth science is key to stopping warming—that outweighs all other impacts and only NASA solves.

Abbey and Lane 9 (Neal Lane is the Malcolm Gillis University Professor and Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and served in the Clinton Administration as Science Advisor to the President and Director of the National Science Foundation. George Abbey is Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and former Director of the NASA Johnson Space Center in Houston Texas “Maximizing NASA’s Potential: In Flight and on the Ground Recommendations for the Next Administration.” <http://bakerinstitute.org/publications/SPACE-pub-ObamaTransitionAbbeyLaneMuratore-012009.pdf> //Donnie)

In the short term, NASA’s deep space human spaceflight efforts can be rapidly redirected from the moon and Mars to focus on technical issues related to energy and the environment by placing greater emphasis on research on Earth and in low Earth orbit, including enhanced satellite Earth observation systems. At the same time, NASA can plan, with international partners, for a truly visionary cooperative space exploration program beyond Earth orbit. Energy security and threats to the environment—particularly climate change and its impact on the Earth’s ecology, land surfaces, oceans, and people across the globe—will be the most significant challenges faced by humankind in the next 50 years and beyond. National and domestic security, foreign policy, the economy, and social equality will be increasingly dependent on our response to these two challenges. NASA has three great resources to make significant contributions in these areas. First, NASA has a unique capability to operate in air and space, giving it an extraordinary vantage point for observing the Earth’s environment. NASA has played this critical role for the nation since the launch of the first Landsat satellite in the 1970s. Unfortunately, NASA has been reluctant to significantly publicize its efforts, in part because of the political controversy surrounding global warming and climate change. This impediment should be removed both by the growing scientific evidence of global climate change, as well as the openness of the new administration to necessary policy actions. Second, NASA has unique tools for understanding modeling and managing large-scale processes and projects. Tools such as computer modeling, large-scale computing, aircraft, satellites, and communications are required for this work. A strong partnership between NASA, the National Oceanic and Atmospheric Association (NOAA), which has major responsibilities for weather and climate predictions, the U.S. Geological Survey (USGS) and the National Center for Atmospheric Research (NCAR), supported by the National Science Foundation, will be critical to future U.S. capability in weather forecasting and climate projections. But only NASA has the scientific, engineering, and technical capability to design and launch satellites that are needed for Earth observations. Third, because of its unique mission, NASA has developed extensive engineering experience relevant to alternative energy systems such as wind turbines, solar cell arrays, batteries, and fuel cells. It is also the primary federal agency with the experience to improve the fuel efficiency of all types of aircraft. These capabilities have not been in the public eye but, nevertheless, have been essential to the success of NASA missions since its creation immediately after the launch of Sputnik.

## DA Turns Case

### Warming outweighs—it’s the most pressing issue of our time, that’s Abbey and Lane.

### Here is more evidence it causes extinction.

Tickell 08 [Oliver, “On a planet 4C hotter, all we can prepare for is extinction]

We need to get prepared for four degrees of global warming, *Bob Watson told the Gurdian last week. At first sight this looks like wise counsel from the climate science adviser to Defra*. But the idea that we could adapt to a 4C rise is absurd and dangerous. Global warming on this scale would be a catastrophe that would mean*, in the immortal words that Chief Seattle probably never spoke, "the end of living and the beginning of survival" for humankind. Or perhaps the beginning of our* extinction. The collapse of the polar ice caps would become inevitable, bringing long-term sea level rises of 70-80 metres. All the world's coastal plains would be lost, complete with ports, cities, transport and industrial infrastructure, and much of the world's most productive farmland. *The world's geography would be transformed much as it was at the end of the last ice age, when sea levels rose by about 120 metres to create the Channel, the North Sea and Cardigan Bay out of dry land.* Weather would become extreme and unpredictable, with more frequent and severe droughts, floods and hurricanes. The Earth's carrying capacity would be hugely reduced. Billions would undoubtedly die.

### The plan triggers backlash against human space flight—collapses it in the long term.

Space Politics 11 (“Human spaceflight versus Earth sciences?” <http://www.spacepolitics.com/2011/02/09/human-spaceflight-versus-earth-sciences/> //Donnie)

A bigger issue, though, is that this letter may be indicative of a bigger battle some in Congress want to wage between human spaceflight and Earth science. Some members have openly expressed their skepticism about the validity of climate change research, questioning either the existence of global warming or the role of human activities in causing climate change. The letter to appropriators makes no judgment on the quality of validity of such research, only NASA’s role in supporting it, but some might see that unspoken argument there. For example, one of the letter’s signers, Rep. Brooks, said last week in regards to NASA funding that there would be “hearings soon on global warming” by the House science committee without going into more details. An attack on Earth sciences funding to support human spaceflight could create or reinvigorate opponents of human spaceflight programs, reminiscent of previous debates between human spaceflight and robotic space exploration advocates—a battle that the agency presumably would want to avoid.

### Earth science is key to exploration—solves the aff.

Abbey and Lane 9 (Neal Lane is the Malcolm Gillis University Professor and Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and served in the Clinton Administration as Science Advisor to the President and Director of the National Science Foundation. George Abbey is Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and former Director of the NASA Johnson Space Center in Houston Texas “Maximizing NASA’s Potential: In Flight and on the Ground Recommendations for the Next Administration.” <http://bakerinstitute.org/publications/SPACE-pub-ObamaTransitionAbbeyLaneMuratore-012009.pdf> //Donnie)

Initiatives would be implemented to fully employ NASA’s ability to monitor, model, and predict long-term climate, utilizing NASA instruments, aircraft, spacecraft, computers, and communications. This effort could include enhanced use of the ISS for monitoring the Earth and expanding the current Earth Observing System (EOS), and would require close coordination with the NOAA, USGS, and the National Center for Atmospheric Research, supported by National Science Foundation. In addition, robotic exploration would be implemented to compare the Earth to sister planets. **This could lead to a better understanding of Earth planetary science**. **Breakthroughs in all of these areas,** as well as the development of better solar and fuel cells and improved knowledge of the environment and planetology, **are essential to future exploration activities**.

## Brink/Link Booster

### NASA’s budgets is tight—Earth Science is on the chopping block.

Atkinson 11 (Nancy, is a staff writer @ universe today, “Fiscal Squeeze Could Freeze NASA Budget for Five Years” <http://www.universetoday.com/83333/fiscal-squeeze-could-freeze-nasa-budget-for-five-years/> //Donnie)

NASA officials put on happy faces on February 14 to discuss their new budget proposal for Fiscal Year 2012, but it wasn’t exactly cheerful news. President Barack Obama proposed freezing NASA’s budget at the 2010 level, and called for a five-year freeze on new spending for the space agency. This would put NASA at $18.7 billion annually through fiscal 2016. Gone is the 1.6-percent increase NASA had sought for fiscal 2011, which ends in September, as well as the promised steady increases of an extra $6 billion over five years. But, truth be told, no one knows for sure what level NASA will be funded during this tight financial time, and the conservatives in Congress have talked about not just freezing the budgets of agencies like NASA, but reducingthem. “This budget requires us to live within our means so we can invest in our future,” NASA Administrator Charles Bolden said. “It maintains our commitment to human spaceflight and provides for strong programs to continue the outstanding science, aeronautics research and education needed to win the future.” “These are familiar numbers for those of you familiar with NASA budget,” said NASA’s Chief Financial Officer Elizabeth Robinson. “It’s the numbers we are currently living with in the Continuing Resolution.” Since Congress failed to agree on spending levels for the Federal government for 2011 preceding last November’s mid-term election, it was decided to maintain 2010 levels with the Continuing Resolution. As with every NASA budget proposal, some people were seemingly happy with the numbers and prospects, while others have already begun thinking of how the proposal should be changed. NASA touted the new budget request for fiscal year 2012 as supporting “a reinvigorated path of innovation, technological development and scientific discovery,” and that it “supports all elements of NASA’s 2010 Authorization Act, which was passed by a strong bipartisan majority of Congress and signed into law by President Obama.” Bolden said at a press conference that the new budget represents a “leaner, more responsible NASA.” “We are going to live within our means,” he said, by slowing hiring, and aligning their work-force numbers and skills with the mission requirements. “This will help us to be better stewards, make better use of our infrastructure and meet the President’s clean energy goals, while encouraging us to perform at an even higher level and do the big things you all expect of us,” Bolden said. The new budget proposal includes $4.3 billion for the Space Shuttle and International Space Station programs, $2.9 billion for the development of a heavy launcher and the Orion capsule, $5 billion for science, $3.9 billion for future exploration systems and $569 million for aeronautics research. There were reductions to Earth science and exploration robotics, and the development of heavy lift will certainly be delayed as that portion of the budget will stay at 2010 levels instead of being made a priority. NASA’s said the science budget supports new missions and continued operations of the many observatories studying Earth and space. The agency will continue work on a wide range of astrophysics, heliophysics and Earth science missions. Robinson noted that if the astrophysics budget look small it is because funds for the James Webb Space Telescope have been shifted out of that area, as JWST will be reporting directly to Ed Weiler, the Associate Administrator of the Science Mission Directorate, because of the huge cost overruns the mission has had.

### The Constellation program proves NASA has internal cuts and reallocations.

SFN 11 (SpaceFlightNow ! “Spending bill will put an end to the Constellation program” <http://www.atlasaerospace.net/eng/newsi-r.htm?id=5424&printversion=1> //Donnie)

A federal budget bill passed Thursday by the U.S. Congress will loosen restrictions on NASA efforts to shut down the Constellation moon program and start work on fresh launch and exploration vehicles. NASA's budget is set at $18.45 billion this year in the long-awaited federal spending bill, approximately $250 million less than last year's funding level. The legislation pays for NASA operations through the end of September, when Congress could face another heated budget battle on federal spending for fiscal year 2012. Congress sent the budget bill to the White House, where President Obama was expected to sign it into law before the government's account runs dry Friday night. The bill was hammered out between President Obama and leaders in the House and Senate after a failure to agree on budget cuts nearly forced a government shutdown last week. Named H.R. 1473, the bill cuts $38 billion from the overall federal budget for fiscal year 2011, which expires Sept. 30. Since Oct. 1, NASA and other federal agencies have been operating under a series of short-term budget bills called continuing resolutions. Thursday's bill is another continuing resolution, but it will run for nearly six months. Perhaps more important than NASA's top-line budget number, the bill permits NASA to formally end the terminated Constellation moon program and redirect efforts toward a new heavy-lift rocket and multipurpose crew vehicle, fresh exploration programs that will likely recycle substantial work from Constellation. Previous law barred NASA from restructuring its budget to shut down the Constellation program, which was recommended to be cancelled by the Obama administration in February 2010. Lawmakers agreed to end the program in a budget blueprint authorization act signed into law in October.

### Recent cuts mean Earth Science funding is on the brink.

Xinhua 11 (Chinese news, “Satellite crash leaves NASA in fiscal dilemma”, 3/9/11, news.xinhuanet.com/english2010/sci/2011-03/09/c\_13768759.htm) AK

BEIJING, March 9 (Xinhuanet) – The loss of NASA's Glory satellite last week has left NASA in a fiscal dilemma to finish its climate satellite missions, according to "ScienceInsider" news Wednesday. The 424 million U.S. dollar satellite Glory blasted off last Friday but failed to reach its orbit. As part of the U.S. remote observation system, it carried advanced equipment to help scientists understand how solar irradiation, clouds and other particles of matter in the atmosphere affect the climate. Glory's loss increased pressure from the Congress to cut the budget for Earth science. The House of Representatives has already approved cutting NASA's budget for the rest of 2011 by 600 million dollars while the Senate Democrats, 200 million. NASA originally expected the Congress to approve the president's request to grow the agency's budget for Earth science in the next four years from 1.8 billion dollars to 2.3 billion. However, given the budget pressure, NASA earth science budget expert Art Charothe speculates that 1.9 billion dollars that President Barack Obama requested for the 2012 fiscal year "is the high point." With the limited budget for Earth science, NASA has to think over the gloomy climate budget picture. NASA has already spent hundreds of millions of dollars on climate satellite missions that are still on the ground and need hundreds more to be able to fly. NASA's decision to build and launch a copy of the Orbiting Carbon Observatory craft, which crashed in 2009, has already taken money away from the budget for Earth science. The manned spaceflight program in recent years has also shrinked the budget specifically for climate satellite missions.

## Every Dollar Is Key

### Cuts mean Earth science is on the brink—every dollar matters.

Scientific American 11 (Magazine, “Budget Cuts Open Earth Observation Gap”, 4/14/11, [www.scientificamerican.com/article.cfm?id=budget-cuts-earth-observation-gap&page=2](http://www.scientificamerican.com/article.cfm?id=budget-cuts-earth-observation-gap&page=2)) AK

Cuts contained in the 2011 budget plan would push back the launch of the first Joint Polar Satellite System (JPSS) orbiter by at least 18 months past the current 2016 target, National Oceanic and Atmospheric Administration chief Jane Lubchenco said yesterday. That would halt the flow of crucial weather and climate data -- handicapping environmental forecasts, severe storm warnings and search-and-rescue operations, Lubchenco warned a Senate Commerce subcommittee. "It's safe to say there will almost certainly be a gap in coverage that, at this point, looks like it may be at least 18 months, based on the fact that the launch date will now slip at least 18 months," she said. That projected gap has grown by at least four months since early February. NOAA officials said then that they expected a 12- to 14-month delay (ClimateWire, Feb. 15). The problem stems from the series of stopgap funding measures that have kept the federal government operating since October. That hand-to-mouth existence has taken its toll on JPSS, Lubchenco said, since those temporary spending bills did not include the full $910 million that President Obama sought for the satellite program in 2011. "There is great uncertainty now with respect to what the fiscal future of this program is," she said. "We're still in the process of doing planning to try to figure out how we can minimize the damage." Funding 'tight into the future' The proposed 2011 budget compromise, which would fund the government through the end of September, would worsen that problem. It chops NOAA's budget to $4.6 billion, $140 million below the level enacted in fiscal 2010. The agency had sought $5.5 billion this year. Although Congress has yet to vote on the new plan, Mark Begich (D-Alaska), chairman of the Subcommittee on Oceans, Atmosphere, Fisheries and Coast Guard, said there was little chance NOAA would receive full funding for the satellite program this year -- or next. "Funding will remain tight into the future," said Begich, one of a group of Senate Democrats who participated in an unsuccessful last-ditch effort last week to secure a budget boost for JPSS. "You can pretty much assume it's not coming in for 2011. We're moving to the next stage." Lubchenco said her agency believes it has few options for averting a gap in the climate and weather data that JPSS satellites are designed to gather. The current polar-orbiting satellite now in space is slated to be replaced in September by a satellite known as the "NPOESS Preparatory Project," or NPP. Cancel contracts now, pay more later Because NPP was designed as an experimental satellite, its planned lifetime is short -- just five years. The current budget difficulties mean that NPP's replacement, known as JPSS-1, won't be ready to fly in late 2016. "There is no other polar-orbiting satellite that will be flying in the orbit that JPSS[-1] was intended to fly in, and so that's why there will be a data gap," Lubchenco told lawmakers yesterday. "There isn't redundancy." Congress's budget cuts will also have long-term financial consequences for the satellite program. "For every dollar we didn't spend this year on JPSS, we will need to spend $3 to $5 down the road," Lubchenco said. "We have to cancel the contracts we have, to let people go. These are very skilled workers, and then you'd have to bring them back." JPSS's current budget woes are the latest in a string of problems that have bedeviled the satellite program and its predecessor, the National Polar-Orbiting Operational Environmental Satellite System (NPOESS). The program was designed in the 1990s by the Defense Department, NOAA and NASA to replace separate military and civilian weather satellite efforts. Its estimated price tag more than doubled -- from $6.5 billion to $13.9 billion -- and its satellites were delayed by years before the Obama administration decided in 2010 to split the effort into separate Air Force and NOAA programs. "A lot of people see those satellites and think, 'Why is that useful to me? Why do I need weather satellites when I have the Weather Channel?'" Lubchenco said yesterday. "But the reality is, that's where we get 98 percent of the information that goes into weather forecasts and disaster warnings -- plus they give us information that enables maritime commerce to happen and helps with search and rescue."

## They Say: “No Tradeoff”

### It’s a zero sum trade-off.

Homans 11 (Charles Homans is an editor of the Washington Monthly. “The Wealth of Constellations

Can the free market save the space program?” <http://www.washingtonmonthly.com/features/2010/1005.homans.html#Byline> //Donnie)

What is different now is that for the first time, the old routine is no longer an option. The shuttle is slated to make its final flight next year—the production lines for its fuel tanks have already been shut down—and the agency has nothing ready to take its place. This means that NASA won’t have a vehicle to reach the International Space Station it has spent eleven years and $48.5 billion building—and will find its knowledge of how to pull off human spaceflight atrophying rapidly. It’s a hell of a bind: NASA must choose between spending a heap of money continuing to meet the obligations of the present—the space station missions and other activities in earth’s orbit—and directing its resources toward the ambitions of the future, new exploratory missions that might be decades away from happening and are hardly guaranteed to even happen at all. In the midst of a recession, it can’t do both.

## They Say: “DA Not Intrinsic”

### The DA is a relevant discussion—yes intrinsic.

Christensen 8 (David L. Christensen has 55 years of experience in missile and space programs and has worked with several major aerospace organizations until his retirement in 2005. He worked with the von Braun team and was the Saturn H-1 rocket engine Project Engineer. He is an Associate Fellow in the AIAA and past Chair of the National Space Club - Huntsville and the Space Propulsion Synergy Team. He currently provides consulting services to government and industry. “Infrastructure needed for future space exploration” <http://www.thespacereview.com/article/1177/1> //Donnie)

With the current and anticipated national and international conditions, it is difficult to keep a flexible and affordable approach within any large-scale planning effort. It is also difficult to evaluate various options and develop fallback plans to meet a host of unexpected situations and conditions. And it is wise to carefully consider the negative impacts that can accrue from making bad decisions. Any government-funded program must be accountable to the customer, in this case the American public, and should incorporate the best available talent and skills in ways that will maximize the probability of success. This case for the development of a viable and comprehensive strategy, and related infrastructure elements needed for our exploration of the cosmos, is also a plea to do it correctly.

## They Say: “Not That Costly”

### You massively underestimate—there will be slips and growth in costs.

Abbey and Lane 9 (Neal Lane is the Malcolm Gillis University Professor and Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and served in the Clinton Administration as Science Advisor to the President and Director of the National Science Foundation. George Abbey is Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and former Director of the NASA Johnson Space Center in Houston Texas “Maximizing NASA’s Potential: In Flight and on the Ground Recommendations for the Next Administration.” <http://bakerinstitute.org/publications/SPACE-pub-ObamaTransitionAbbeyLaneMuratore-012009.pdf> //Donnie)

Given budget and manpower shortfalls, NASA is unable to provide firm cost estimates, while tight White House deadlines continue to put pressure on the Ares I and Orion projects. Both are likely to experience substantial schedule slips and growth in costs. The best “advertised” estimate of when the Constellation might fly is 2015 though realistically it could be much later. We could be looking at a flight gap as great as eith years or more And all the while, science and aeronautical research will continue to be held hostage.

### **Reject their evidence—their cost estimates are lowballing.**

Morgan 10 (Daniel Morgan Specialist in Science and Technology Policy“The Future of NASA: Space Policy Issues Facing Congress” <http://www.tennessee.edu/govrelations/docs/NASA_future.pdf> //Donnie)

Cost is likely to play a central role as congressional policy makers oversee the Vision’s progress and consider proposals to modify it. During the Bush Administration, NASA stressed that its strategy was to “go as we can afford to pay,” with the pace of the program set, in part, by the available funding. 18 The original plan in 2004 proposed adding a total of just $1 billion to NASA’s budget for FY2005 through FY2009 to help pay for the Vision, with increases thereafter limited to the rate of inflation. Subsequent Administration budgets more than eliminated this increase, and actual appropriations by Congress were even less. As a result, most funding for the Vision has been redirected from other NASA activities, such as the planned termination of the space shuttle program. NASA has not provided a cost estimate for the Vision as a whole. In 2004, it projected that developing capabilities for human exploration, not including robotic support missions, would cost a total of $64 billion up through the first human return to the Moon. 19 The Congressional Budget Office (CBO) concluded that, based on historical trends, the actual cost could be much higher. 20 In its 2005 implementation plan, NASA estimated that returning astronauts to the Moon would cost $104 billion, not including the cost of robotic precursor missions or the cost of servicing the ISS after the end of the shuttle program. 21 In 2007, the Government Accountability Office (GAO) estimated the total cost for the Vision as $230 billion over two decades. 22 In April 2009, as directed in the 2008 authorization act, the CBO updated its 2004 budgetary analysis of the Vision. It found that NASA would need an additional $2 billion per year through FY2025 to keep the Vision activities on schedule, not counting probable cost growth in other activities. 23 In October 2009, the Augustine report stated that executing NASA’s current plans would require an additional $3 billion per year, even with some schedule delays. 24 Schedule is closely related to cost. For example, the 2009 CBO analysis found that NASA could maintain its currently planned budget by delaying its return to the Moon by approximately three years. 25 The tradeoffs can be difficult to quantify, however. The Augustine report, unlike the CBO analysis, found that under NASA’s current budget plans, “human exploration beyond low-Earth orbit is not viable” and currently planned budgets would delay a return to the Moon “well into the 2030s, if ever.” 26 Schedule delays are already evident. For example, the initial operating capability for Orion and Ares I was originally planned for 2012; it is now planned for 2015; the Augustine committee concluded that 2017 is more likely.

### Cancellation saved six billion dollars.

Matson 10 (“Phased Out: Obama's NASA Budget Would Cancel Constellation Moon Program, Privatize Manned Launches” <http://www.scientificamerican.com/article.cfm?id=nasa-budget-constellation-cancel> //Donnie)

Since 2005 the U.S. has spent roughly $9 billion developing the Constellation program's Ares rockets and Orion crew capsule, which were originally supposed to return astronauts to the moon by 2020. Constellation took shape in the wake of the 2003 Columbia disaster as a safer, longer-range successor to the space shuttle, which is slated for retirement this year. But Constellation's costs have ballooned and its timeline has slipped; an independent panel convened by the Obama administration and chaired by former aerospace executive Norman Augustine estimated last year that the Ares rocket system would not be ready for manned missions before 2017, with a lunar return sometime in the mid-2020s, even under the most favorable circumstances. By scrapping the troubled program—along with its focus on a moon landing—and leaning on the private sector, the agency thinks it will actually accelerate efforts to loft astronauts beyond low Earth orbit, the farthest reach of the shuttle. NASA Deputy Administrator Lori Garver declined to specify a preliminary target for exploration in a teleconference Monday afternoon but mentioned near-Earth asteroids as a potential stepping-stone on the path to ultimately exploring Mars and its moons. She also pointed out that, although the agency will relax its focus on the moon, lunar exploration remains on the table. "We're certainly not canceling our ambitions to explore space," Garver said. "We're canceling Constellation." Garver tried to put the new approach in context, calling Constellation's stated goal of a moon landing in 2020 "wishful thinking." By stepping back from that unrealistic timeline, she said, the U.S. would be free to undertake more ambitious exploration. "We had lost the moon," Garver said, "and what this program does is give us back the solar system." Sources revealed the contents of the budget request to various newspapers last week, spurring a wave of condemnation from Michael Griffin, a former NASA administrator and tireless Constellation champion, and from members of Congress who represent states with major NASA centers focused on the human spaceflight program—Texas, Florida, Alabama. Those lawmakers will have their say when the houses of Congress hammer out their own budgets in the coming weeks.In Monday's teleconference, NASA Administrator Charles Bolden expressed support for the budget request, saying that he was "excited" to present the president's proposal, which would add $6 billion to NASA's total outlay over the next five years. Bolden said that he and Obama agreed that Constellation was in an untenable position. "The truth is, we were not on a sustainable path to get back to the moon's surface," Bolden said. He applauded the decision to delegate the development of launch capabilities to commercial providers while, he said, "NASA firmly focuses its gaze on the cosmic horizons beyond Earth."

### Ares I costs 4.5 billion a year.

Smith 10 (“How Much Would Ares I Cost?” <http://spacepolicyonline.com/pages/index.php?option=com_content&view=article&id=817:how-much-would-ares-i-cost&catid=67:news&Itemid=27> //Donnie)

What might seem a simple question may not have a simple answer. How much would Ares I cost per year and per flight? That is one of the key questions arising from congressional hearings on President Obama's new plan for NASA. The President wants to cancel the entire Constellation program, of which Ares I is part. He proposes replacing Ares I as a launch vehicle for taking astronauts to low Earth orbit (LEO) with commercial alternatives in part because of anticipated cost savings. Thus, the cost of Ares I on an annual basis and per launch is a critical issue. What little information is available in the public domain seems contradictory, although some of the confusion may be caused by exactly what is being counted in the total. In testimony to the House Appropriations Commerce-Justice-Science subcommittee on Tuesday, NASA Administrator Bolden said that the Ares I would cost $4-4.5 billion a year, and $1.6 billion per flight. The Augustine Committee report states that "When it begins operations, the Ares I and Orion would be a very expensive system for crew transport to low Earth orbit. Program estimates are that it would have a recurring cost of nearly $1 billion per flight, even with the fixed infrastructure costs being carried by Ares V. The issue is that the Orion is a very capable vehicle for exploration, but it has far more capability than needed for a taxi to low Earth orbit." (page 90) So that estimate was not only for Ares I, but for the Orion crew capsule as well and seems more directed at Orion than Ares I. The report also said that Ares I would "cost $5-6 billion to develop assuming that all common costs are carried by the Ares V." (emphasis in original, page 90).

# Multilateralism DA

## 1NC—Multilateralism DA

### Ending Constellation was key to multilateral space co-operation—the plan reverses this trend.

Zak 10 (Anatoly, space historian and journalist “End of Constellation: It is not all doom and gloom” <http://www.russianspaceweb.com/sei_end.html> //Donnie)

Even before the White House made a proposal on Feb. 1, 2010, to eliminate funding for the Constellation program, a political hurricane had started brewing in Washington, D.C. Critics alleged that the end of the project, which aimed to return the American astronauts to the Moon, would undermine US space efforts and would even mark the end of the nation’s leadership in space, giving the upper hand to evil powers like China and Russia. The criticism is probably leveled by the same people, who six years ago were blindly cheerleading the Bush administration’s shortsighted decision to start this project in the first place, without any solid fiscal or technical foundation. With a minimum foresight and the knowledge of space exploration history, it was clear from the get go that the Bush plan was underfunded, poorly designed and would have to be scrapped sooner or later. It is just unfortunate that it took six years, nine billion dollars and the change of occupant in the Oval Office to come to this realization. Obviously, for every space enthusiast around the world, it would be sad to see any major space exploration effort to be axed in a budget crunch. The frustration of legislators representing congressional districts with heavy involvement into a discontinued federal project is also understandable. However there is a silver lining. Every failure presents a new opportunity and even more **so does the inevitable demise of the Constellation program**. NASA still can make it right, make it big, and remain a leader in space, if it chooses to do so. First of all, the Obama administration promised to increase overall NASA funding, which along with recovering economy, puts the US space agency in a very strong position for drawing up an aggressive future strategy in space. The goal of going to the Moon itself has not been abandoned but only postponed, likely for a historically insignificant period of time. In the meantime, NASA and all its international partners will be able to send their astronauts to the International Space Station, ISS, to conduct scientific research and built foundation for human ventures beyond the Earth orbit. The fact that US astronauts will temporarily fly to the ISS onboard Russian spacecraft, should bother no one but isolationists and nationalists. It is much more tragic that under funding restraints of the Constellation program, a brand-new space station -- the largest and most complex man-made structure in orbit -- would have to be dumped into the ocean as soon as 2015. Perhaps, it still would not be the most unprecedented waste of taxpayers’ money in the history of space program – just ask the developers of the Soviet N1 moon rocket and the Energia-Buran system. (Both were abandoned practically on the launch pad, after years of colossal efforts.) Beyond the station Before the end of this decade, NASA would have a new manned spacecraft, capable of reaching the ISS and, most likely, the same vehicle would be easily adaptable for lunar missions. Although the potential of the so-called “private sector” to build better, cheaper spacecraft is greatly over-hyped, there is little doubt that the US aerospace industry would be fully capable of building a state-of-the-art spacecraft for the federal government. Hysterical cries in the American press about the loss of US capability to launch astronauts into space are completely unfounded. In the end, it will be the decision of the American public and the US Congress on the ultimate goal of the manned space program after 2020. If the US economy grows and the federal budget can be balanced, many ambitious projects in space exploration, including a lunar base, missions to asteroids and expeditions to Mars would become possible **by 2030.** Unlike the Constellation, which was intentionally set up to be an “in-house” program, the future efforts to explore deep space should include a broad international **cooperation with Russia**, China, Europe and other countries. **No longer mandated to exclude foreign partners, NASA can return to the negotiation table** with other space agencies and formulate a common approach toward future goals. Based on recommendations of the Augustine Committee last year, NASA can allow foreign partners into the so-called “critical path” in future cooperative projects, meaning that their goals would not be achievable without hardware and support of other countries. While it may or may not cut cost of the whole enterprise, it would certainly give space program an important political clout. Interdependency in space as well as on Earth would help to ensure that governments make a habit of finding common solutions to international **problems at the negotiation table.** As a first possible step to manned exploration of deep space, Roskosmos have proposed to convert the Russian segment of the International Space Station into an assembly platform for planetary ships. European Space Agency expressed interest in the idea and NASA might consider taking them up on that offer. Yet, another space station might be required in the lunar orbit, along with manned and cargo transports, landers and launch vehicles. For future projects, space agencies could contribute and barter various hardware and services for common goals of reaching the Moon and Mars. In other situations, two or more parallel systems, such as transport lines, could be set up, to provide redundancy for the lunar base or a Martian expedition, even in case of a major failure in one of the systems.

### Co-operation with Russia is key to overall relations and co-operation—manned space flight is key.

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It was with respect to the impact of U.S.-Russian cooperation in human space flight on the overall course of U.S.-Russian relations since 1993 that workshop participants had the widest spread of views. This divergence of views appeared related to the participants' judgement of the validity of claims for broad-scale impact of space cooperation. As one participant suggested, "The Clinton Administration believed that pursuing cooperation in the space and military spheres would indeed have a broad, long-term impact on U.S.-Russian relations. But no one should be under any illusions. When the going gets tough, the influence of particular programs will be minimal. To be justifiable, these endeavors should be valuable as ends in themselves; as means to a broader end they are quite insignificant." However, another participant noted, the offer of expanded space cooperation did present "key decision-makers with a strategic choice- essentially . . . were they going to work with the United States or with Iraq? - with the US representing a more developed technological and economic community, and a more responsible one as well." Also, "space cooperation leaves a mark in the minds of Russian as to what real cooperation with the United States might mean." Another participant suggested, however, that "overall, the state of U.S.-Russian relations has deteriorated so much in the last few years that even a high-profile cooperative initiative such as the International Space Station is unlikely to produce significant improvement. . . . Russian participation in the International Space Station is likely to have negligible political effects neither bolstering reformers, undermining nationalists, nor raising the spirits of a dispirited population." Yet another participant suggested "Much of the American debate about the Clinton Administration's foreign policy -- both supporters and critics -- attribute too much influence to American initiatives -- positive or negative. It failed to deal with the underlying crises that have shaken Russian society, The demographic, social, and economic crises in Russia have deep roots in Soviet experience and are not amenable to short-term fixes. . . . Against the backdrop of the radical transformation of the Russian state, economy, and society over the last decade, US Russian cooperation in manned space flights seems to be a matter of high expectations, significant progress, and marginal impact on the overall character of US-Russian relations. Begun in an era when the leaders of the Russian Federation expected a rapid transition from the Soviet system into a democratic polity and a market economy, bilateral cooperation with the United States seemed to be a measure that ensure Russia's status as a full partner in space. Cooperation in space belongs to that time when leaders in both countries viewed the logical development of US-Russian relations after the Cold War as directed toward strategic partnership." Even though, this same participant noted, "Within this context of the evolution of US-Russian relations over the last eight years, what assessment can we make of US-Russian cooperation in manned space flight? First, as a high visibility program of cooperation, the program is only now reaching the point where it will enter the mass consciousness of the public in the United States and Russia and around the world. At a time of strained relations it may well be of greater value by suggesting long-range cooperation in space. That will, however, depend on the underlying nature of U.S.-Russian relations, and that is more likely to be defined and redefined by the dynamics of regional conflicts and crisis, where national interests will have primacy. . . . Cooperation in the area of manned space flight implies a long-term, on-going relationship. That it has continued while the hope for [strategic] partnership has largely disappeared should be seen as one of its strengths. Both governments view such cooperation as serving valuable national purposes with regard to the future of space and their bilateral relations. . . . Both would like to co-opt the manned space programs of other states into a program in which they define the policy goals and long-range design. Russia seems willing to accept the role of a senior partner in a consortium where the United States provides the strategic leadership." Another participant suggested that "Assessing U.S.-Russian cooperation in the ISS, and its impact on Russian behavior, is fraught with difficulty, yet some observations, however tentative and preliminary, may be possible. First, U.S.-Russian cooperation in manned space flight has been and can continue to be emblematic of a new, more cooperative U.S.-Russian relationship. It has signaled U.S. and Russian support for collaboration in a major, highly visible area of scientific, technological and commercial activity. This cooperation and commitment should not be overlooked or undervalued. . . . Overall, U.S.-Russian cooperation on manned space flight has been a cost-efficient, desirable development. It has fostered Russia's willingness to work with the United States, and it has helped the Russian leadership resist a more nationalistic approach to international affairs. U.S.-Russian space cooperation is building links between our military, scientific and commercial links and helping bind Russia to U.S. and Western-style economic principles. Despite numerous pitfalls and uncertainties, the ISS project has become a symbol of U.S.-Russian cooperation and Russia's integration in global space research and exploration."

### US-Russia relations solve extinction

Collins & Rojansky 10 – \* U.S. Ambassador to the Russian Federation from 1997 to 2001, AND \*\*deputy director of the Russia and Eurasia Program at the Carnegie Endowment (8/18/10, James F. Collins, Matthew Rojansky, Foreign Policy, “Why Russia Matters,” <http://www.carnegieendowment.org/publications/index.cfm?fa=view&id=41409>)

A year and a half after Barack Obama hit the "reset" button with Russia, the reconciliation is still fragile, incomplete, and politically divisive. Sure, Russia is no easy ally for the United States. Authoritarian yet insecure, economically mighty yet technologically backward, the country has proven a challenge for U.S. presidents since the end of the Cold War. Recent news hasn't helped: The arrest in July of a former deputy prime minister and leader of the Solidarity opposition movement, Boris Nemtsov, provoked some of the harshest criticism of Russia yet from the Obama administration. Then last Wednesday, Russia announced that it had moved anti-aircraft missiles into Abkhazia, the region that broke off from Georgia during the August 2008 war. The announcement was hardly welcome news for the United States, which has tried to defuse tensions there for the last 24 months. Yet however challenging this partnership may be, Washington can't afford not to work with Moscow. Ronald Reagan popularized the phrase, "Trust, but verify" -- a good guiding principle for Cold War arms negotiators, and still apt for today. Engagement is the only way forward. Here are 10 reasons why: 1. Russia's nukes are still an existential threat. Twenty years after the fall of the Berlin Wall, Russia has thousands of nuclear weapons in stockpile and hundreds still on hair-trigger alert aimed at U.S. cities. This threat will not go away on its own; cutting down the arsenal will require direct, bilateral arms control talks between Russia and the United States. New START, the strategic nuclear weapons treaty now up for debate in the Senate, is the latest in a long line of bilateral arms control agreements between the countries dating back to the height of the Cold War. To this day, it remains the only mechanism granting U.S. inspectors access to secret Russian nuclear sites. The original START agreement was essential for reining in the runaway Cold War nuclear buildup, and New START promises to cut deployed strategic arsenals by a further 30 percent from a current limit of 2,200 to 1,550 on each side. Even more, President Obama and his Russian counterpart, Dmitry Medvedev, have agreed to a long-term goal of eliminating nuclear weapons entirely. But they can only do that by working together. 2. Russia is a swing vote on the international stage. As one of the five permanent members of the U.N. Security Council, Moscow holds veto power over any resolution that the body might seek to pass -- including recent efforts to levy tougher sanctions on Iran or, in 2009, against North Korea following that country's second nuclear test. Russian support for such resolutions can also help persuade China and others not to block them. The post-reset relationship between Moscow and Washington works like a force multiplier for U.S. diplomacy. Russia plays an equally crucial role in the G-8 and G-20 economic groups, helping to formulate a coordinated approach in response to economic threats. In 2008, for example, Russia supported a G-20 resolution promising to refrain from protectionism and avoid new barriers to investment or trade. 3. Russia is big. The country's borders span across Europe, Central and East Asia, and the Arctic -- all regions where the United States has important interests and where it cannot afford destructive competition. With an ongoing counterinsurgency campaign in Afghanistan, the United States has a strong interest in Central Asian stability and relies on Russia not only for direct assistance with logistics and information sharing, but to help manage threats like the recent political upheaval and sectarian violence in Kyrgyzstan. In the former Soviet space, Moscow's historical ties to newly independent states are still fresh and powerful. Moscow is the linchpin to resolving "frozen conflicts" that prevent countries like Moldova, Georgia, and Azerbaijan from prospering economically and moving toward European Union membership. Recently, for example, Moscow signaled renewed interest in resolving frozen conflicts in Nagorno-Karabakh and Transnistria. And despite recent troop movements into Abkhazia, a negotiated settlement is still very possible, one that returns some territory to Georgia but preserves its autonomous status, along with that of its fellow breakaway republic, South Ossetia. 4. Russia's environment matters. As the catastrophic fires across Western Russia have dramatically illustrated, Russia is both a victim of global climate change and a steward of natural resources -- including many of the forests now badly burned -- needed to reverse the global warming trend. With more than one-tenth of the world's total landmass, vast freshwater and ocean resources, plus deposits of nearly every element on the periodic table, Russia is an indispensable partner in the responsible stewardship of the global environment. On climate change, there is work to be done, but progress is evident. Russia today is the world's fourth-largest carbon emitter, but as a signatory to the Copenhagen Accord, it has pledged to reduce emissions to 20 to 25 percent below 1990 levels. Another black spot is Russia's use of "flaring" -- a technique that burns natural gas into the open atmosphere during oil extraction, but Medvedev agreed to capture 95 percent of the gas currently released through flaring. Last year he also signed Russia's first law on energy efficiency, which takes such steps as requiring goods to be marked according to their energy efficiency and banning incandescent light bulbs after 2014. True, most of Russia's other commitments are short on deadlines and concrete deliverables. But like China's cleanup for the Beijing Olympics, Moscow could transform resolve into reality with surprising speed, given the right amount of international engagement. And in the meantime, Russia's natural climate-cleaning properties are vast; the Siberian provinces alone contain more clean oxygen-producing forests and reserves of freshwater than continental Europe. 5. Russia is rich. As the "R" in the famous BRIC grouping of emerging economies, Russia is the 12th-largest market in world, with the third-largest foreign currency reserves. And the country's role in world markets is only growing. Russia is a big player in commodity trading, the country boasts a volatile but increasingly attractive stock exchange, and it is open to foreign investment -- even in state-owned industries. Russian businesses are increasingly looking abroad to form strategic partnerships, acquire assets, and sell their products. And as a country that felt the global financial crisis viscerally -- economic growth fell by almost 8 percent in 2009 -- Russia has a strong interest in making sure there is no repeat. Despite occasional retrenchments, such as the ban on grain exports after the summer fires, Russia is committed to becoming a free-trading World Trade Organization member, and wants more access to U.S. and European technology and management know-how to drive its modernization. Excessive bureaucracy and widespread corruption are the biggest challenges to Russia's further economic growth, but these are already top talking points in Medvedev's modernization drive, and engagement with more transparent Western countries such as the United States can only help. 6. One word: energy. The American way of life depends on stable and predictable commodity prices -- gasoline, natural gas, and coal in particular -- and Russia plays a large role in the global production and pricing of these fossil fuels. Russia alone possesses roughly one-quarter of the world's known gas reserves, and it is currently responsible for over a fifth of global exports. It is the second largest oil-producing state after Saudi Arabia and has the second-largest coal reserves after the United States. The even better news for Washington is that Russia is not a member of OPEC, the cartel of oil-producing countries. This gives the country far more freedom to focus on increasing exports rather than reducing them to keep prices down. When it comes to bringing supply to market, many will no doubt remember the so-called gas wars between Russia and Ukraine and Russia and Belarus that left Eastern Europe in the cold several times in recent years. Much of the trouble is attributable to the legacy of Soviet energy infrastructure in Russia's western neighbors, which put a choke-hold on Russia's gas pipelines. Moscow is currently working with the United States, China, and Western Europe to find a way around this problem, which will entail building new pipelines through the Baltic Sea, Black Sea and Siberia. 7. Russia is a staunch ally in the war on terror (and other scourges). Even during the dark days after the 2008 Russia-Georgia war, Moscow and Washington cooperated effectively on counterterrorism, counternarcotics, infectious disease prevention and response, and other shared security priorities. Recently, the two have worked together under the auspices of the Bilateral Presidential Commission to coordinate relief strategies for catastrophes such as the Haiti earthquake and the violence in Kyrgyzstan. Both Washington and Moscow recognize that swift, well-organized responses to such crises are key to preventing weaknesses from being exploited -- for example by extremist groups who are happy to fill the vacuum of government authority. Russia is also a critical partner in U.S. law enforcement efforts to defeat organized crime and terrorism financing. The two countries are currently working to map smuggling routes in Central Asia. And Russia has shared information with the United States on the informal financial networks used to fund Taliban and Afghan warlords. 8. The roads to Tehran and Pyongyang go through Moscow. Russia maintains unique relationships with Iran and North Korea -- both top concerns on Washington's nuclear nonproliferation radar. In the past, the Kremlin has used its leverage to keep the path open for negotiations, sending senior diplomats to Tehran and offering carrots such as civilian nuclear assistance and weapons sales (though it has deferred the sale of advanced S-300 ground-to-air missiles that could be used to blunt a U.S. or Israeli air strike). Now more than ever, Washington needs allies with that kind of leverage to help punish violators and discourage cascading nuclear proliferation worldwide. Leading by example on nonproliferation is also a must; as the world's biggest nuclear powers, the United States and Russia are looked to as the standard-setters. If they fail to ratify their latest modest step forward on bilateral nuclear arms control, it will be difficult to push other countries to take similar counter-proliferation measures. 9. Russia can be a peacemaker. Moscow has the potential to play a role in the settlement of key regional conflicts -- or if it chooses, to obstruct progress. Russia is a member of the Middle East "Quartet," the six-party talks dealing with North Korean denuclearization, and each of the working groups addressing conflicts in the post-Soviet space, such as the OSCE Minsk group on Nagorno-Karabakh, and the 5+2 group on Transnistria. In such post-Soviet regions in particular, Russia has a unique capacity to contribute to peaceful resolution of territorial disputes by facilitating trade and economic engagement with and between former adversaries, and acting as a peacekeeper once a final settlement is reached. In the Middle East, Russia still controls a network of commercial and intelligence assets and has substantial influence with the Syrians, who should be pushed to play a more productive role in the Arab-Israeli peace process. 10. Russians buy U.S. goods. As the U.S. economy stops and starts its way out of recession, most everyone agrees that boosting exports is a key component in the recovery. And Russia is a big market. U.S. companies such as Boeing, International Paper, and John Deere have invested billions in Russian subsidiaries and joint ventures. In all, there are more than 1,000 U.S. companies doing business there today. They are in Russia not only to take advantage of the country's vast natural resources and highly skilled workers but also to meet the demand for American-branded goods. The Russian middle class wants consumer goods and the country's firms increasingly seek advanced U.S. equipment and machinery. Between 2004 and 2008, before the financial crisis hit, U.S.-Russia trade grew by more than 100 percent to over $36 billion annually, and although that figure dropped by a third in 2009, there is potential for an even better, more balanced trade relationship in the coming decade. In short, Russia is indispensible. As long as the United States participates in the global economy and has interests beyond its own borders, it will have no choice but to maintain relations with Russia. And good relations would be even better.

## DA Turns Case

### Canceling joint programs makes us look weak to key allies—it also solves the exploration advantage.

Faith 10 (G. Ryan Faith is an independent technology consultant and Adjunct Fellow for Space Initiatives at the Center for Strategic and International Studies, (CSIS). CSIS is a private, tax-exempt institution focusing on international public policy issues. CSIS’ research is nonpartisan and nonproprietary. CSIS does not take specific policy positions. Accordingly, all views, positions, and conclusions expressed here publication should be understood to be solely those of the author. “President Obama’s Vision for Space Exploration” <http://www.thespacereview.com/article/1616/1> //Donnie)

It worth examining the broader psychology associated with political support for space exploration. We have seen, at least during the Cold War, that competition can generate stronger support for space programs than the programs would otherwise normally enjoy, primarily because the existence of a competing space program provides an external confirmation of the value and validity of one’s own national space exploration program. Without some sort of external validation of the value of a space program, it becomes easier for skeptics to regard space exploration as something on par with a national quest to have the world’s largest ball of twine: a rather expensive and quite pointless exercise in gaining dominance in a field in which there is neither demand nor interest. If one does not have the ability to generate intense competition to support a national space program, the natural counterpart to competition—cooperation—becomes the next best alternative. International cooperation can validate a national space exploration effort, because cooperation implies some measure of international respect and recognition of the importance of one’s own efforts. Even if this validation is not sufficient in and of itself, the risk of being seen as having abandoned one’s own allies in their space exploration efforts makes cancellation of joint programs less attractive.

## Link

### **Your aff precludes international co-operation—it actively pushes it off of NASA’s agenda.**

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The U.S. shuttle transportation system is the longest running, most successful fleet of manned space vehicles ever produced. The International Space Station (ISS), which involves close partnerships with Russia and 16 other nations, is an incredible accomplishment. When completed, it will represent the largest international cooperative technological project in history. In 2004, President George W. Bush chose to establish a new course for NASA and the civil space program. He announced his Vision for Space Exploration (VSE), a bold plan to complete the ISS and phase out the space shuttle by 2010. Under the VSE, a replacement for the space shuttle was to be designed and built by 2008 and flown by 2014. Humans would return to the moon by 2020 and prepare for missions to Mars. It was made clear that VSE was to be led by the United States. With President Bush’s new vision in mind, NASA quickly reset its priorities. Going to the moon and Mars became the agency’s mission. The new priorities pushed science, environmental, and aeronautical research further down the list, and international cooperation was no longer encouraged. Space domination emerged as the administration’s space policy, and that agenda did not have a place for cooperative activities in space. President Bush presented a bold vision, but as several critics pointed out at the time, the vision was incomplete—there was no detailed plan, no provision for the transport of astronauts to space after the shuttle phase-out, no consultation with foreign space partners, and science was no longer a priority.

### It excludes key allies.

Abbey and Lane 9 (Neal Lane is the Malcolm Gillis University Professor and Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and served in the Clinton Administration as Science Advisor to the President and Director of the National Science Foundation. George Abbey is Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and former Director of the NASA Johnson Space Center in Houston Texas “Maximizing NASA’s Potential: In Flight and on the Ground Recommendations for the Next Administration.” <http://bakerinstitute.org/publications/SPACE-pub-ObamaTransitionAbbeyLaneMuratore-012009.pdf> //Donnie)

Actions initiated as a result of President Bush’s new vision have confirmed the lower priority for scientific research, especially efforts to use space to better understand the Earth’s environment. They have also seriously damaged international programs such as the ISS. Now that the Europeans and Japanese finally have research modules installed on the station, and can gain a return on their substantial investments, their planned research is in jeopardy. The United States has arbitrarily decided to end support of the space shuttle (with its critical up-and-down mass capability needed by the ISS), and the Europeans and Japanese have been told they will not have access to the new VSE program. The decision to stop flying the space shuttle signaled that the United States is no longer interested in the ISS, and that after 2010 other nations largely will be on their own. Potential international partners will think twice before joining the U.S. in future endeavors. NASA plans to buy trips to the ISS on Russian Soyuz and Progress (cargo) spacecraft, but with relations between the United States and Russia at a low point, Congress has already questioned the arrangement.

# Case Materials

## 1NC—Solvency Frontline

### Constellation can’t develop anything—empirics prove.

Homans 11 (Charles Homans is an editor of the Washington Monthly. “The Wealth of Constellations

Can the free market save the space program?” <http://www.washingtonmonthly.com/features/2010/1005.homans.html#Byline> //Donnie)

The short-sightedness of the administration’s accounting became clear when Constellation started running into technical problems, as new NASA programs inevitably do. As the Ares rockets began to take shape, engineers realized that the solid-fuel boosters they had adapted from the space shuttle caused a number of problems in the new design. Most critically, they found that when the first stage burned out, the engine could loose violent vibrations up the shaft to the capsule that housed the astronauts, shaking them so badly they would be unable to read the instrument panels. Mitigating the problem would require years of testing, and billions of dollars—which, of course, Constellation didn’t have. Searching for funding within the zero-sum confines of the NASA budget, Griffin began dipping into other projects’ accounts. Soon Constellation was not only behind schedule, but forcing the cancellation of more useful NASA research and technology development programs. By 2009 Ares’s first flight was optimistically projected for 2015 and realistically years after that, and the estimated cost of building the rockets had grown from $14.4 billion to $35 billion. The moon base, to say nothing of Mars, receded into the distant future. What had begun as an audacious bid for NASA’s past glory was quickly becoming a very expensive means of continuing the dull obligations of the present, the perfunctory trips to and from the International Space Station—something Griffin had long scoffed at as a waste of time and resources. And even that wouldn’t be possible until years after the space shuttle was scheduled to be retired, meaning that American astronauts who wanted to get to the station would be reduced to paying to hitch rides with the Russians, whose Soyuz rocket and capsule would be the only means of getting into orbit. Desperate for something to show for their work, Constellation’s engineers eventually cobbled together a rocket, the Ares I-X, for an October 2009 test flight. But it was really just a mock-up of the still-nonexistent real thing—assembled from a spare shuttle booster and preexisting military rocket electronics, with a fake upper stage and capsule, it resembled Griffin’s original vision in shape alone. Preoccupied with his ambitions, Griffin had made the classic engineer’s error: in drawing up his grand designs, he had simply assumed the money he needed to make them happen would be there. As a result, he left his successors with a far bigger mess than he had inherited. If there was one thing his NASA tenure proved, it was that the human spaceflight program’s problem wasn’t a lack of ambition—it was getting someone to pay for it. In trying to figure their way out of the same box, his successors would steer a course in the opposite direction.

### There is still human space flight now, status quo solves your advantages

Techhub 11 (“The Future of Human Spaceflight” <http://www.techofthehub.com/2011/07/future-of-human-spaceflight.html> //Donnie)

In reality, there are two separate efforts going on. Private companies are competing to create a low-earth orbit vehicle to shuttle people to and from the International Space Station. In addition, despite the cancellation of Constellation, NASA is still actively developing a manned deep space vehicle, Orion, now being called the Multi-Purpose Crew Vehicle (Orion seems a bit catchier). The Hub examined a full-sized test version of the vehicle that had just arrived at the Kennedy Space Center for a brief visit. Last year, this prototype was used to test the Launch Abort System which would allow astronauts to escape during a launch mishap. NASA is also developing a new heavy lift vehicle as part of the Space Launch System. However, from our reading, its future is unclear. While the Orion capsule would benefit from a new heavy lift rocket, it could also be retrofitted to work with one of the existing rockets in NASA's fleet. According to those close to the vehicle, the best case scenario for a manned test of Orion is four years from now.

## No Solvency

### **No chance it gets developed in a timely fashion, this assumes your solvency mechanisms.**

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The Bush administration’s commitment to shut down the shuttle program by 2010 and purchase future trips to ISS has severely limited the nation’s capability to continue to fly Americans into space. The currently planned replacement vehicle cannot be ready much before 2015 and, realistically, probably mach later. Progress on Developing the new “constellation” space vehicle-an Orion crew exploration vehicle riding on a new Ares I rocket—has been delayed due to a number of significant technical design problems. Even if all the problems can be solved with considerably more time and money, the capabilities of the new system fall far short of the shuttle in many ways . For instance, the Orion capsule, a larger version of the 1960’s Apollo capsule, does not allow for extravehicular activity, cannot stay long in orbit, carries no payload up or back, and requires a water landing. Given budget and manpower shortfalls, NASA is unable to provide firm cost estimates, while tight White House deadlines continue to put pressure on the Ares I and Orion projects. Both are likely to experience substantial schedule slips and growth in costs. The best “advertised” estimate of when the Constellation might fly is 2015 though realistically it could be much later. We could be looking at a flight gap as great as eight years or more And all the while, science and aeronautical research will continue to be held hostage.

### Constellation will remain behind schedule—it won’t work.

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Despite having brilliantly succeeded in assembling over a million pounds of hardware in the multinational international space station and having endured heartbreaking tragedy and recovery in the space shuttle program, NASA finds itself in an almost impossible situation. The Bush administration’s focus on the VSE has resulted in a number of consequences: After 2010, the United States will be dependent on Russia for transport to space and will have to pay for each trip; that, as well as the de-emphasis of science, including research on the ISS, undercuts the investments of our international partners. Additionally, the proposed Constellation system will be over budget, behind schedule, and of limited capability. Finally, the rationale for total focus on returning to the moon is weak. It as not resulted in a national consensus, nor is there any pressing national concern except , possibly that China might land on the Moon at the end of the decade.

### Cost overruns spell irreversible DOOM.

Christensen 8 (David L. Christensen has 55 years of experience in missile and space programs and has worked with several major aerospace organizations until his retirement in 2005. He worked with the von Braun team and was the Saturn H-1 rocket engine Project Engineer. He is an Associate Fellow in the AIAA and past Chair of the National Space Club - Huntsville and the Space Propulsion Synergy Team. He currently provides consulting services to government and industry. “Infrastructure needed for future space exploration” <http://www.thespacereview.com/article/1177/1> //Donnie)

Infrastructure and facility expense is a major factor in overall life cycle costs of large operational systems such as Constellation. Unfortunately, a common and effective life cycle control process is sadly lacking on most large government programs, especially on the Space Shuttle, the International Space Station, and most Defense Department weapon systems. Huge cost overruns are the rule rather than the exception and this greatly restricts the development of new technologies and the advanced systems needed for the future.

## Status Quo Solves

### There will still be staffed missions but they will be cheap and won’t trigger the DAs.

Dillow 10 (Clay, staff writer at PopSci. “NASA Budget: Constellation Officially Canned, But The Deep-Space Future Is Bright” <http://www.popsci.com/technology/article/2010-02/nasa-budget-constellation-officially-canned-deep-space-future-bright> //Donnie)

Rumors circulated last week, but now it’s official: NASA won’t be sending manned missions back to the moon any time soon. But in what may seem like a gutting of NASA moon- and Mars-based ambitions there is a silver lining: a $6 billion investment in helping private industry bring their space launch vehicles up to human-rated capacity and a smattering of modest robotic precursor missions to the moon, Mars, Martian moons or the Lagrange points that should set the stage for later manned missions far beyond low-earth orbit. However, the Constellation program – and the $9 billion already spent developing its Orion crew vehicle and Ares rockets – is decidedly dead. In a press conference Sunday, Office of Management and Budget Director Peter Orszag told reporters the White House is recommending Constellation be scrapped, turning the run-of-the-mill duties of shuttling astronauts into low-earth orbit over to private companies and shifting NASA’s focus to “"advance robotics and other steps that will help to inspire Americans and not just return a man or a woman to the Moon but undertake the longer range research that could succeed in human spaceflight to Mars."In a teleconference today, NASA Administrator Charles Bolden outlined the budget’s goals, emphasizing that while Constellation is getting the axe, NASA’s deep space exploration ambitions have not been curtailed, nor are they being fiscally undercut. Rather, NASA is reprioritizing, seeking more or less a five-year period of intense study on possible means toward future manned missions to deep space before embarking on a mission to the moon or beyond. Between now and fiscal 2015, the agency plans to fully utilize the R&D capabilities of the ISS, demonstrate better deep space flight technologies and fly some unmanned missions around the near solar system to scout out the most scientifically interesting targets for future manned exploration. Those precursory missions to the moon, Mars and nearby asteroids might entail more tele-operated robots like the Spirit and Opportunity rovers on Mars, as well as a robotic lunar lander or asteroid mission that demonstrates an ability to utilize resources from remote outposts in space. These will be substantially cheaper than manned missions, generally less than $800 million each. But the thrilling prospect of a manned mission back to the lunar surface within the decade as envisioned in Constellation is more or less out of the question.

## 1NC—Aerospace Frontline

### The Aerospace industry is resilient.

Warton Defense Report 8 (“Despite Economic Turbulence, U.S. Aerospace Industry Shows Resilience” <http://executiveeducation.wharton.upenn.edu/wharton-aerospace-defense-report/Economic-Turbulence-1208.cfm> //Donnie)

The aerospace industry is showing resiliency navigating through turbulent economic times — even ending 2008 with modest growth and showing some strength in important areas such as its foreign trade balance and employment levels, the Aerospace Industries Association (AIA) announced. AIA, based in Arlington, Va., noted that while the industry is not immune to the effects of the ongoing global financial crisis, it is showing relative strength. Aerospace sales are on pace to reach $204 billion for 2008, according to AIA. This is an increase of 2.1% — a lower rate than in recent years, but still a record for the fifth consecutive year. The industry will also continue to post strong export numbers, reaching $99.2 billion for the year. That fuels an important foreign trade surplus of about $61 billion, the largest of any U.S. manufacturing sector (though the surplus remained flat compared to 2007). Employment in the sector also remained strong, with an average workforce that will reach 655,500 for the year — about 10,000 more than the average for 2007. The association is forecasting modest sales growth for 2009, with sales reaching $214 billion. AIA president and CEO Marion Blakey, however, acknowledged that this forecast may be affected by the extremely volatile economic environment in the coming year.

### Aerospace is strong now, the market assures strong business

Homans 11 (Charles Homans is an editor of the Washington Monthly. “The Wealth of Constellations

Can the free market save the space program?” <http://www.washingtonmonthly.com/features/2010/1005.homans.html#Byline> //Donnie)

The Obama administration’s NASA plan is an attempt to escape this fix. While the details have yet to be hammered out, and still await passage by an inevitably hostile Congress, the idea in a nutshell is this: if NASA helps commercial companies get their rockets onto the launch pad, and those companies find a market for their services beyond NASA, the agency’s human spaceflight program will finally be free of its expensive obligations to maintain its rudimentary orbit-oriented activities. Instead of spending billions a year on shuttle launches, the agency can simply book astronauts on commercial flights for $20 million or so a pop. With the money it saves, NASA can redouble its research and development efforts to acquire the technology it needs to push the boundaries of exploration once again. It’s this potential for the expeditions of the future—and aerospace jobs in the present—that Obama emphasized in a speech at Cape Canaveral in April aimed at stemming a growing political backlash against his new policy. But for this to happen, the other part of the plan has to work—low-earth-orbit space travel has to go from being a resource-sucking government program to an efficient business. The best reason to think this idea is not completely crazy is because something like it has happened before. In 1925, when air travel was still in its infancy, Congress passed the Kelly Airmail Act, which allowed commercial airlines to bid on U.S. Postal Service delivery contracts. The government backing allowed the fledgling airlines to expand their routes and service offerings; demand for cargo service increased, and, as flight got cheaper and came to be viewed as a normal and non-death-defying means of getting places, passenger service increased, too. Through a combination of private-sector ingenuity and government seed money, a new industry was willed into existence. But even the earliest, most rickety commercial airlines at least enjoyed the advantage of traveling between places where people lived; it was easy enough to think of things that needed to go from point A to point B, and could stand to get there faster. Commercial spaceflight, by contrast, has to contend with the fact that there aren’t many things that actually need to be done in space. In effect, the rocket builders don’t just have to figure out how to serve a market—they have to create one. The plan is risky in more serious ways, too: NASA is gambling that private corporations, some of them as yet untested in spaceflight, can carry astronauts to the space station more safely than the space shuttle, even as the agency exercises less safety oversight over them—a plan that runs counter to the recommendations of every major accident investigation NASA has conducted. That NASA is willing to put all its chips on a bet as dubious seeming as this one is a testament to the uncomfortable straits in which the agency finds itself as it settles into middle age. One of the government’s last great throwbacks to the Cold War, NASA’s human spaceflight program has finally reached a point where it can no longer ignore the looming question of what it is, exactly, we’re doing in space. And it’s hoping that its new commercial partners can figure out the answer.

## Aerospace Industry Resilient

### Aerospace will continue to grow—launches and AIA projects

KPMG Corporate Finance 10 (“Aerospace & Defense” <http://www.kpmgcorporatefinance.com/engine/rad/files/library/Sector/Aero_spring2010.pdf> //Donnie)

The momentum of the aerospace and defense industry generated by the long period of growth and expansion during the prior decade was critical to the overall strength and resilience of its industry participants throughout 2009. The Aviation Industries Association (AIA) projects that the momentum will push commercial aerospace sales to a record year in 2009 despite the overall economic challenges. AIA estimates that aerospace sales reached US$214.1 billion in 2009, up more than 4 percent from 2008. Looking ahead, the aerospace industry will likely continue to endure economic resistance before finally breaking through to clearer skies. The industry should likely continue to recover along with the overall economy. There are already indications of stabilization evidenced by key aerospace matrices. Boeing recently reported that fewer customers were deferring jet orders.3 Additionally, the International Air Transport Association (IATA) is forecasting international passenger traffic to grow by 4.5 percent in 2010 from a year ago. This forecast was increased from the previous September 2009 forecast of 3.2 percent annual growth, and follows an estimated contraction of 4.1 percent for 2009. In particular, significant growth is anticipated to come from emerging aviation markets such as China, India, and the Middle East.3 On the defense side, the launch of the Joint Strike Fighter is expected to partially offset the potential impact of a few existing aircraft program reductions or cancellations. Additionally, sales of unmanned aircraft systems are likely to boost defense sales. Demand for unmanned systems by the U.S. military has increased more than 600 percent since 2004, and is forecasted to double again between 2010 and 2015.It is well known that aerospace and defense is a cyclical industry. Overall, the recent years have been very prosperous for the industry, evidenced by the first simultaneous civil and military aerospace upturn in 25 years. While a number of factors will impact the industry in the near future, the launch of the 787 and new defense priorities may be the key growth drivers for the industry going forward.4

### Here’s more evidence that they will continue sales no matter what.

Colorado Space Coalition 8 (“Aerospace shows strength in harsh financial atmosphere” <http://www.spacecolorado.org/aerospace-financial-strength.html> //Donnie)

The aerospace industry is showing resiliency in trying economic times, ending 2008 with modest growth and continued strength in important areas like foreign trade balance and employment, Aerospace Industries Association (AIA) announced Dec. 10. While the industry has not been immune to effects from the ongoing global financial crisis, it is showing relative strength, AIA president and CEO Marion Blakey said during the annual AIA Year-End Review and Forecast. "We are in an extremely challenging economic atmosphere, but our industry is proving to be remarkably durable," Blakey said. "We anticipate this to continue, and we expect our industry will continue to be an asset to the U.S. economy as we climb out of our current financial hardships." Aerospace sales are on pace to reach $204 billion for 2008. This is an increase of 2.1 percent – a lower rate than in recent years, but a record sales figure for the industry for the fifth consecutive year. The industry will also continue to post very strong export numbers, reaching $99.2 billion for the year. That fuels a critically important foreign trade surplus of about $61 billion, almost exactly the figure the industry logged in 2007. It is the largest trade surplus of any U.S. manufacturing sector. Employment also remained solid, with an average workforce that will reach 655,500 for the year. The total was 657,700 in figures released in September. The average is about 10,000 more than the average for 2007. AIA is forecasting modest sales growth for 2009. Sales should reach $214 billion, a figure that is about 2.2 percent more than the total the industry would have achieved this year had a work stoppage not impacted the 2008 bottom line. Blakey acknowledged we are in extremely volatile economic times that could affect the forecast in the coming year. AIA has launched an outreach campaign highlighting the industry's strength and potential to help the U.S. economy recover from the recession. The campaign, titled "Aerospace and Defense: The Strength to Lift America," details that the industry supports 2 million middle-class jobs spread out over 30,000 companies in all 50 states. Aerospace helps ensure our national security, and bolsters advanced technology innovation. The new administration and Congress should rely upon our industry in this time of need and continue to support the programs that can get America's economy moving again, Blakey said. Blakey released the statistics during the 44th annual installment of the Year-End Review and Forecast. About 350 members of the media, industry and government attended the event, which showcases statistical analysis by AIA’s Aerospace Research Center.

## 1NC—Leadership Frontline

### Winning the space race with Constellation is a meaningless token—it does nothing to help exercise US leadership

Lester and Robinson 10 (Daniel F. Lester, Michael Robinson, Department of Astronomy C1400, University of Texas, Austin, TX 78712, USA b Hillyer College, University of Hartford, Visiions of Exploration, Space Policy 25“The Death of the Constellation Program” <http://timetoeatthedogs.com/2010/02/02/the-death-of-the-constellation-program/> //Donnie)

3. If we abandon human space flight, we will soon be outpaced by the China, Russia, India, [insert developing industrial nation] in the space race. The United States did gain prestige from landing astronauts on the moon in 1969, showing up our Cold War rival, the Soviet Union. But how much did that prestige, or “soft power” actually benefit the United States? Prestige did not stop the Vietnam War, or the Arab Oil Embargo, or the onset of stagflation. How much, then, is this type of prestige worth in the post-Cold War Age, a time when the United States is, arguably, supposed to reap the benefits of belonging to a multilateral world? What does the United States gain in winning the space race against China when they are losing the economic race to China back on Earth?

## 1NC—Space Colonization Frontline

### They underestimate the difficulty in colonization—even if we got there we would still all die for the same reasons we will die on Earth.

Lester and Robinson 10 (Daniel F. Lester, Michael Robinson, Department of Astronomy C1400, University of Texas, Austin, TX 78712, USA b Hillyer College, University of Hartford, Visiions of Exploration, Space Policy 25“The Death of the Constellation Program” <http://timetoeatthedogs.com/2010/02/02/the-death-of-the-constellation-program/> //Donnie)

4. Human space flight is the first step in the human settlement of space, a process vital to continuation of the species. The idea that astronauts are really 21st century pioneers is a romantic one, but unrealistic. Going to the moon (or Mars) is a lot easier than settling there. Perhaps the real question here is why proponents of space settlement are so willing to give up on planet Earth? Global warming? Nuclear war? Overpopulation? This begs the question: if we cannot take care of a 197 million square mile habitat that’s free, self-regulating, and self-sustaining, what makes us think that we’re going to do any better on multi-billion dollar artificial habitats on other planets? It’s time for NASA to think differently about space exploration. The Obama budget requests $18 billion for the agency over the next five years, an increase from the current budget. Now NASA has the time and the money to think about new ways of moving forward. Bravo to the Obama Administration for forcing the issue.

# Funding Reserve Condition CP

## 1NC—Funding Reserve Condition CP

### The United States federal government should <aff> on the condition that its annual appropriations have included a minimum 30 per cent funding reserve for the years up to the projects critical design review and through the time necessary to complete engineering and operational responses to that review.

Here is a solvency advocate: the counterplan is key to cost reduction and preventing delays which is key to solvency, innovation, beating China in the space race, and clean energy.

Schmitt 11 (Harrison Schmitt. Ph.D. is an American geologist, a former NASA astronaut, University Professor and a U.S. Senator for one term. “SPACE POLICY AND THE CONSTITUTION #4” http://americasuncommonsense.com/ //Donnie)

Enabling legislation for NSEA should include a provision that no new **space exploration project** can be re-authorized unless its **annual appropriations have included a minimum 30% funding reserve** for the years up to the project’s critical design review and through the time necessary to complete engineering and operational responses to that review. Nothing causes delays or raises costs of space projects more than having reserves that are inadequate to meet the demands of the inevitable unknown unknowns inherent in complex technical endeavors.

The simple charter of the National Space Exploration Administration should be as follows:

Provide the People of the United States of America, as national security and economic interests demand, with the necessary infrastructure, entrepreneurial partnerships, and human and robotic operational capability to settle the Moon, utilize lunar resources, scientifically explore and settle Mars and other deep space destinations, and, if necessary, divert significant Earth-impacting objects.

Is this drastic new course for national space policy and its implementation the best course to repair what is so clearly broken? Do we have a choice with Cold War II upon us, with American STEM education a shambles, with domestic engineering development and manufacturing disappearing, and with an ever-growing demand for American controlled, **economically viable, clean energy**?

## Cost Growth Turns the Case

### Cost growth creates liquidly problems and delays—if they win that there is not enough money for the counterplan then vote negative because it means the plan does not solve.

National Academies 10 (“CONTROLLING COST GROWTH OF NASA EARTH AND SPACE SCIENCE MISSIONS” <http://www.nap.edu/openbook.php?record_id=12946&page=R1> //Donnie)

Large cost growth is a concern for Earth and space science missions, and it can be a concern for other missions as well. If the cost growth is large enough, it can create liquidity problems for NASA’s Science Mission Directorate that in turn cause cost profile changes and development delays that amplify the overall cost growth for other concurrent and/or pending missions. Addressing cost growth through the allocation of artificially high reserves is an inefficient use of resources because it unnecessarily diminishes the portfolio of planned flights. The most efficient use of resources is to establish realistic budgets and reserves and effective management processes that maximize the likelihood that mission costs will not exceed reserves. NASA is already taking action to reduce cost growth; additional steps, as recommended herein, will help improve NASA’s mission planning process and achieve the goal of ensuring frequent mission opportunities for NASA Earth and space science.

## Solvency/Net Benefit

### The reason Constellation was canceled in the first place was because it didn’t have enough money—the aff means it will get canceled again.

**Space Politics 11** (“The fierce urgency of now for American space industry” <http://www.spacepolitics.com/2011/03/09/the-fierce-industry-of-now-for-american-space-industry/> /Donnie)

The president of Pratt and Whitney Rocketdyne had a blunt warning this week for policymakers: get a plan in place for NASA’s future now or industry will suffer the consequences. “NASA has a very short period of time to work with Congress and come up with a unified position and get their act together, and let industry know what’s going on,” Jim Maser told reporters in a roundtable Monday in Washington. “We’ve got to pick something, we’ve got to move on.” Maser said he was concerned about the effect of extended uncertainty about NASA’s future plans on an industry already challenged by low flight rates and an unstable supplier base. He described one specific supplier of a component for the RL-10 rocket engine that still does business with him because the owner “wants to be part of the space business”. That owner, he added, is in his 80s, and his heirs don’t share that passion. “With this uncertainty I would think there’s a fair number of second- and third-tier suppliers” who are rethinking their commitment to the industry, he warned. “In the absence of a decision in the next four to eight months, I think companies will be making decisions about space.” Any future architecture needs to be aligned with the prospects for flat—at best—budgets in the future. “Constellation had a plan that was more than the budget that was going to be allocated,” he said, and backers assumed there would be a “future Hail Mary” from Congress that would provide that additional funding. “Ultimately, I believe that’s why it was canceled, because it couldn’t be achieved on what was likely to be the realistic budgets provided.” “We have to recognize that the budget is the budget, and we have to pick an architecture that’s aligned with it, a timeline that’s aligned with it, and a mission that’s aligned with it. We do that in business all the time,” Maser said. “My point over the next four to eight months is that we need to pick that now. We’re running out of time.” “To me, the shuttle ending is a huge scenario that this industry has never faced,” he said. “I don’t think people understand what we in business will have to do to accommodate that without a follow-on… To me it’s all very predictable and, at this point, very avoidable. But we have to change the uncertainty, and right now there’s just arguing.” Maser came to the media roundtable after he and other industry executives met with NASA administrator Charles Bolden and deputy administrator Lori Garver. Maser said he communicated that same message in that meeting. “Pick something, run a competition, pick winners and losers, and let’s move on, that was basically my message, because we’re out of time.”

# Shuttle CP

## 1NC—Shuttle Counterplan

### The United States federal government should appropriate new funds to re-instate the space shuttle program.

Canceling the shuttle sends an international signal of weak space leadership—the CP solves by bringing it back.

Lane and Abbey 8 (Neal Lane is the Malcolm Gillis University Professor and Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and served in the Clinton Administration as Science Advisor to the President and Director of the National Science Foundation. George Abbey is Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and former Director of the NASA Johnson Space Center in Houston Texas.“How to Save the U.S. Space Program Restoring Preeminence in Space Science and Exploration” <http://www.scienceprogress.org/2008/11/how-to-save-the-us-space-program/> //Donnie)

Critics of President Bush’s plan expressed a number of concerns, calling the plan bold but incomplete and unrealistic.[1] First and foremost, the mandate to stop flying the space shuttle in 2010 meant the United States would depend on Russia for human access to space for at least four years, but more realistically a decade. President Bush and NASA also made clear that the president’s VSE would be a U.S.-led effort. Now that the Europeans and the Japanese finally have their research modules installed on the station, and can gain a return on their substantial investment, it must be galling to be told that Washington will simply cut their lifeline by ending shuttle support (with its critical up-and-down mass capability) and yet not welcome access to the new VSE program. The arbitrary decision to stop flying the shuttle signaled that the United States is no longer interested in the ISS, and that after 2010 other nations are pretty much on their own. NASA plans to buy trips to the ISS on Russian Soyuz and Progress (cargo) spacecraft, but with relations between the United States and Russia at a low point Congress has already questioned this arrangement. President Bush’s vision, however, was incomplete in other ways. No cost estimates were presented for returning humans to the moon. The commitment by the president was to add $1 billion to the NASA budget each year for five years—far short of what would actually be required to build a new space vehicle and prepare for a return to the moon. The cost of Apollo was approximately $135 billion in 2004 dollars, but the president did not request even these small increases. Former Sen. John Glenn of Ohio has called the Bush VSE program “one of the biggest unfunded mandates that we have had in all of government history.” [2]

## Solvency

### Lack of a space shuttle has left the U.S. behind—Russia and China are challenging now.

Keating 11 (Joshua E. Keating is an associate editor at Foreign Policy.“Houston, We Have a Problem” <http://www.foreignpolicy.com/articles/2011/07/07/houston_we_have_a_problem?page=0,0> //Donnie)

The U.S. space shuttle program will be no more after Friday, when the shuttle Atlantis makes its final launch from Cape Canaveral. While it's not the death of U.S. space travel, the demise of the expensive shuttle will leave the U.S. reliant, for now, on Russian rockets and hopeful that the private sector will soon be able to pick up the slack. Here's a look at the countries and companies looking to seize this opportunity to lay a claim to the great beyond .Next steps: The country that began the space race with the launch of Sputnik in 1957 appears -- at least in terms of manned flight -- to have prevailed. Russia nearly abandoned space altogether following the collapse of the Soviet Union. It finally shut down its flagship orbital station, Mir, in 2001. But Russia has reinvested in its space program under the Putin/Medvedev tandem and now accounts for 40 percent of all global space launches. With the end of the U.S. shuttle program, Russia will have a monopoly on transporting astronauts to the International Space Station, using its ageing Soyuz rockets, until at least 2016. It's a lucrative business -- the United States is paying Russia about $43.4 million per astronaut -- but Prime Minister Vladimir Putin has said that Russia should not content itself to be a mere "ferryman" to the stars. Russia and China will jointly launch an unmanned Mars probe later this year. The Russian space agency's more ambitious plans include a manned mission to the moon by 2025, potentially followed by an "inhabited station." Next steps: China is a relative latecomer to the space race and its achievements so far are somewhat modest. It launched its first manned mission in 2003 -- becoming the third country to do so -- and hasn't sent a person up since 2008. But, unsurprisingly, its ambitions are enormous. Later this year, China plans to launch the first of three separate temporary space stations which will eventually lead to a permanent orbital station sometime around 2020 or 2022. China also launched an unmanned moon probe, Chang'e-2, last October. Chang'e 1, launched in 2007, crashed by design on the moon's surface in 2009. By 2020, it hopes to have an unmanned lunar lander bring back samples and, if all goes well, is hoping to launch a manned mission to the moon by 2022. Former NASA Chief Administrator Michael Griffin told a Senate panel in 2007 that "China will be able to put people on the moon before we will be able to get back [there]." Barring any unforeseen contingencies, that now seems to be almost a certainty. In addition to its manned spaceflight ambitions, China raised eyebrows in 2007 with its test of an anti-satellite missile.

# Baker Institute CP

## 1NC—Baker Institute Counterplan

### The United States federal government should restructure the Orion program to reduce the size of the crew to three members; shift the Orion program to an X-38 lifting body with land-landing capability; and reinstate the Ares V heavy lift vehicle program.

### The counterplan solves all of the case and the solvency deficits but does not bring back Ares I—that’s critical to shift NASA’s focus to international cooperation and HLVs—turns the case.

Abbey and Lane 9 (Neal Lane is the Malcolm Gillis University Professor and Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and served in the Clinton Administration as Science Advisor to the President and Director of the National Science Foundation. George Abbey is Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and former Director of the NASA Johnson Space Center in Houston Texas “Maximizing NASA’s Potential: In Flight and on the Ground Recommendations for the Next Administration.” <http://bakerinstitute.org/publications/SPACE-pub-ObamaTransitionAbbeyLaneMuratore-012009.pdf> //Donnie)

This is by far the most challenging element of the five-point plan. One approach to restructuring would be to switch the early focus from the moon and Mars to enhanced support of the international space station. A clearly stated rationale for the ISS, such as continued international cooperation on the peaceful uses of space, scientific research in particular, would be important. Extending space shuttle flights through 2015 would reduce reliance on Russia for transportation to the ISS and provide the large up-and-down mass capability needed by all ISS partners. The Constellation program would be restructured by canceling Ares I. Ares I, if successful, doesn’t offer much of an advantage over other Earth-to-orbit launchers and its development will take too long and use valuable funds. In addition, canceling other lunar surface-related work— including the lunar lander, the space suit, the rover, and other habitat and surface systems work—would focus the NASA workforce on **immediate challenges**. These activities can be resumed at an appropriate time in the future. Canceling human-Mars discussions would be a pragmatic statement that recognizes the incredible challenges of a Mars mission. Robotic missions to Mars should be flown exclusively, at least for the next decade, with extensive surface exploration by rovers. The present Orion program would be restructured to reduce the size of the new spacecraft to a three-member crew, Apollo-sized vehicle or an X-38 lifting body vehicle with land-landing capability. The smaller-sized vehicle would be flown on an Ariane 5 or Delta IV launch vehicle, with a planned 2014 or 2015 launch to the ISS. Moving to one of these launch vehicles allows a more rapid deployment by decoupling the new spacecraft from the development of a new launcher such as Ares I. Development of the new spacecraft would be accelerated by reducing the crew size and the need for weight efficiency, and taking advantage of previous Apollo and/or X-38 development. This significantly reduces the technical risk in many key areas, such as thermal protection and parachutes. Weight and technical risk can be further reduced by designing the service module for ISS service missions, making it simpler. Europe and Japan should be invited to participate as Europe participated in the X-38 program. Parts would be provided in return for services (i.e., future launches to ISS). In order to ensure this international participation is meaningful and effective, the recommendations stated in the recent National Research Council report, “Beyond Fortress America,” should be implemented. This report provides an excellent assessment of the impact of building walls that compromise our ability to access global science and technology and that adversely affect our ability to compete globally. The report makes recommendations to reform the export control process, ensure scientific and technological competitiveness, and improve the nonimmigrant visa system that regulates entry into the United States of foreign science and engineering students, scholars, and professionals. It calls for immediate action “to stem a serious decline affecting broad areas of the nation's security and economy.” By not investing in a unique Ares I Earth-to-orbit human launcher, NASA will be positioned to take full advantage of emerging commercial Earth-to-orbit transportation services should they develop in the 2015-2020 timeframe. In our restructuring approach, the shift in near-term focus from lunar to ISS would be followed by building a capability for deep space asteroid or comet intercept as a longer-term focus based on an Ares V heavy lift vehicle. The Ares V heavy lift launch capability is critical to any further deep space exploration. By canceling Ares I, it should be possible to focus all of the agency’s launch vehicle development capability on designing the one launcher needed by the nation for future deep space work, and the one launcher not anticipated to be provided by the private sector. All options for providing an Ares V heavyweight launch capability will be studied, including liquid boosters, liquid fly-back boosters, and international cooperative options. This should include the evaluation of options such as proposed by the Direct Launcher concept that makes use of most of the existing shuttle hardware, including the two solid rocket boosters and the external fuel tank. The only key modifications would be an Apollo-like capsule at the top and an engine at the bottom of the external fuel tank. Although Ares also uses shuttle parts, it is essentially an entirely new rocket. The ability to fly to an asteroid would give the United States a lunar capability should one be needed in the future. A deep space mission, such as a human asteroid or comet intercept, would effectively demonstrate American leadership in space, should that be a concern in the face of a possible Chinese landing on the moon. It might even be argued that an American lunar return would do less to question U.S. space leadership than a more aggressive goal of performing a human asteroid intercept mission. To advance this and other concepts, a joint NASA-DOD propulsion research program should be initiated, as propulsion is a limiting factor in space exploration. An aggressive program focused on innovative advanced propulsion development has been needed for a long time. A restructured human spaceflight initiative should be premised on the idea that any future plans by the United States to return women and men to the moon, and someday to Mars, will need to be top national priority. It should involve many U.S. federal agencies, universities, and industries, and be fully international in scope. By restructuring the human spaceflight initiative, resources will be made available to allow NASA to contribute to other vital short- and long-term national priorities.

## Solvency Framing

### Even if the counterplan isn’t perfect it is better than the status quo—it reduces the risk of the aff enough for the DA to outweigh.

Abbey and Lane 9 (Neal Lane is the Malcolm Gillis University Professor and Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and served in the Clinton Administration as Science Advisor to the President and Director of the National Science Foundation. George Abbey is Senior Fellow of the James A Baker III Institute for Public Policy at Rice University and former Director of the NASA Johnson Space Center in Houston Texas “Maximizing NASA’s Potential: In Flight and on the Ground Recommendations for the Next Administration.” <http://bakerinstitute.org/publications/SPACE-pub-ObamaTransitionAbbeyLaneMuratore-012009.pdf> //Donnie)

A new and unique window of opportunity is available to re-establish NASA as an exciting and innovative organization that is both immediately relevant and can contribute solutions to the nation’s most pressing needs while continuing our scientific quest and our human desire to explore the frontiers. We offer an approach to resetting priorities for the U.S. space program and restructuring NASA that we believe would accomplish these goals. And we believe that thebenefits of this approach to the nation are great. Whether or not our proposal is heeded, **the status quo is not an acceptable option**.

## Avoids Multilateralism and Earth Science DAs

### Your affirmative assures lack of multilateral co-operation and drained earth science funding: the counterplan secures each.

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NASA has set the standard for international cooperation and developed the most successful manned space vehicle ever built, the space shuttle. And yet, as it successfully completes the largest international cooperative technological project in history, the international space station, NASA’s Vision for Space Exploration leaves the nation with no capability to continue to fly humans in space for a significant period of time. The new vision basically focuses the agency on a single mission, moving NASA away from a balanced set of activities—to the detriment of science, engineering, research and technology, and aeronautics—that have contributed so much to the nation’s leadership in space and aeronautics. The proposed five-point plan takes the agency in a direction that will significantly contribute to the future of the United States and the American people, indeed to all humankind, in two vital areas: energy and the environment, especially climate change. Under the plan, NASA will continue to fly humans in space, complete the international space station, meet its commitments to our international partners, and re-establish a balanced set of activities featuring science, engineering, aeronautics, research, and technology. It will build a foundation for a human exploration program that involves other agencies, the nation’s universities, and is based on international cooperation.

## Solves Leadership

### Their internal links are based on having human space flight and access to the ISS uniltaterally—the cp solves that two fold

### -The orion program: we keep it, that allows for fast human space travel

### -Ares V: that allow us to colonize asteroids which will pave the way to going to the moon in the future as well as securing vital resources.

## They Say: “Moon Key”

### The cp solves this: “the ability to fly to an asteroid by keeping the Ares V heavy lift vehicle allows us lunar capability in the future if we need it.

### You solve this worse: we link turn your aff, focus on Ares I prevents focus on Ares V which is a better internal link to solvency because its achievable and multilateral.

### The cp assures asteroid accession, this solves space leadership better.

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The ability to fly to an asteroid would give the United States a lunar capability should one be needed in the future. A deep space mission, such as a human asteroid or comet intercept, would effectively demonstrate American leadership in space, should that be a concern in the face of a possible Chinese landing on the moon. It might even be argued that an American lunar return would do less to question U.S. space leadership than a more aggressive goal of performing a human asteroid intercept mission.

## They Say: “Perm Do The CP”

### The counterplan is plan minus—you fully fund constellation, we fund Ares V and Orion after restructuring it, we keep Ares 1 banned.

### The cp is also textually competitive, does not include the words ‘constellation’ or ‘fund’

### Here is evidence that proves the counterplan is functionally different than the plan.

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The new administration presents NASA with a unique opportunity. Instead of trying to close the gap in human spaceflight, and continuing to exhaust critical resources on the current Vision for Space Exploration, NASA should dedicate itself in the first term of the new administration to proving its relevance in the post-Cold War world while restructuring its human spaceflight objectives. We propose a new direction for NASA, a five-point plan that can be carried out with existing capabilities and realistic budgets: 1. Restructure the human space initiative and keep the space shuttle flying until 2015. 2. Deliver short-term (within four years) payoffs in energy and the environment, especially climate change. 3. Deliver longer-term payoffs (within four to eight years) for energy and the environment. 4. Ensure an ongoing and effective robotic space science program. 5. Implement a reinvigorated and effective aeronautical research program, with particular attention to low-carbon fuels and efficiency, to help ensure the future well-being of the nation’s aviation industry.

### This proves this is a severance perm—that’s a reason to reject it, lack of stable advocacy makes negative ground impossible.

## They Say: “PICs Bad”

Counter-interpretation: the negative can have a plan inclusive cp with a solvency advocate.

This solves their offence, since its grounded in the literature someone wrote a response to it.

Also, its offense, their interpretation is guts education because it prevents real world debates, that outweighs because if debate does not model a real forum it becomes less portable and self referential.

Pics are good:

They reward research: it makes for the most specific and classy debates about the plan which maximizes education. The alternative is the neg going for consult NATO which would be much worse.

Defense, this is not the ‘should’ pic, it goes out of a third of your aff, its not minute and trivial, they should have answers to this, if they don’t they deserve to lose.

Err negative: this topic is huge, and/or and development make every aff topical.

Reject the argument not the team: cp theory is a scope of fiat question.

# Politics Links

## Democrats Hate The Plan

### Critical democrats oppose the plan.

Orlando Sentinel 10 (“Bolden: Constellation Program needs to die” <http://articles.orlandosentinel.com/2010-03-23/news/os-nasa-administrator-testifies-20100323_1_nasa-missions-subcommittee-that-controls-nasa-constellation-program> //Donnie)

Congressional opposition to a new White House plan for NASA appears to have softened slightly, as Democratic lawmakers **on a key** U.S. House panel said they would be willing to work with the administration during a Tuesday hearing with NASA chief Charles Bolden. Previously, lawmakers in both parties have blasted President Barack Obama's plan to cancel the Constellation moon program and instead rely on commercial rockets to shuttle crew and cargo to the International Space Station while NASA refocuses its engineers on developing futuristic technologies. But Democratic members of the House subcommittee that controls NASA spending were not as hostile to the proposal as their counterparts on the House Science and Technology Committee. Support from the appropriations committee — which writes the budget **— is critical.** "I think this will be a collaborative process," said U.S. Rep. Alan Mollohan, the West Virginia Democrat who chairs the appropriations Subcommittee on Commerce, Justice and Science. "My sense is that there is a lot of openness on all sides."

# Affirmative Materials

## 2AC AT: Multilateralism DA

### Obama will not participate in multilateral space co-operation—the da has necessary but not sufficient conditions

Faith 10 (G. Ryan Faith is an independent technology consultant and Adjunct Fellow for Space Initiatives at the Center for Strategic and International Studies, (CSIS). CSIS is a private, tax-exempt institution focusing on international public policy issues. CSIS’ research is nonpartisan and nonproprietary. CSIS does not take specific policy positions. Accordingly, all views, positions, and conclusions expressed here publication should be understood to be solely those of the author. “President Obama’s Vision for Space Exploration” <http://www.thespacereview.com/article/1616/1> //Donnie)

Further, by cooperating with the State Department, NASA could provide the United States government with a valuable and visible soft-power tool, broadening the political support for space exploration within the US. Granted, this could be rather more difficult than would be the case in something more concrete like the ISS or the establishment of a lunar base, owing to the inherent vagueness of the proposed Flexible Path architecture framework. President Obama did (and still does) have the opportunity to engage foreign leadership at the highest levels to pursue international cooperation, as President Reagan did with his Space Station Freedom project. However, having failed to include strong international language in the rollout of his proposal, and having lost the opportunity for engagement during the rollout of his policy, current trends suggest that it is unlikely that the President Obama will pursue cooperation **at this level in the near future**.

## 2AC AT: CP

### The plan is key to prevent Chinese resource access from the moon—that is key to hegemony

Schmitt 10 (Harrison H. Schmitt is a former United States Senator from New Mexico as well as a geologist and former Apollo Astronaut. He currently is an aerospace and private enterprise consultant and a member of the new Committee of Correspondence. <http://lunarnetworks.blogspot.com/2010/04/harrison-schmitt-details-concerns-about.html> //Donnie)

In addition, Congress should ask for specifics as to why this approach would be better than the Constellation program already approved by Congress, and whether it truly "Advances America's commitment to human spaceflight and exploration of the solar system," to again quote the White House. Congress also should question if the proposals support the primary constitutional rationale for funding NASA, that is, as a contribution to "the common Defence." The current United States space policy, twice approved by the Congress in response to President George W. Bush's FY2005 and subsequent budget requests, calls for focused technology development and mission formulations that would 1) enable a return to the Moon not later than 2020; 2) be consistent with future Mars exploration; 3) complete the construction of the International Space Station; and 4) replace the Space Shuttle with a new crewed vehicle not later than 2014. The Constellation program's design would achieve these goals subject to the projected run-out funding for NASA in that original FY2005 budget. Unfortunately, the Bush White House submitted annual budgets for FY2006-10 that funded Constellation $11 billion less than originally deemed necessary to maintain the proposed schedule. This includes the effects of an Office of Management and Budget error of about $3.8 billion in 2004 budgeting for the run-out cost of the Space Shuttle. Congress exacerbated this continued under-funding for Constellation through inflation-related cuts of about $1.5 billion in its 2006 and 2008 Continuing Resolutions. In spite of these budgetary complications amounting to under-funding of some $12.5 billion over six years, and contrary to the Augustine-Crawley Commission's allegations, Constellation remains "executable" albeit with some delay relative to the original schedule. The Augustine-Crawley Commission did not look at the reality of the existing Constellation program and its previously approved funding, but constrained itself to the cumulative cuts of $28 billion for FY2010-20 submitted in the Obama budget for FY2010. Clearly, Constellation would not be "executable" with such drastic cuts to the original funding plan. New funding of about $3 billion per year for the next five years would maintain the current schedule for Constellation and possibly remove dependency on Russia in 2014 for Space Station access (NASA's FY2010 budget of $18.3 billion is about 0.5 percent of total federal spending.). If this budgetary adherence to current space policy were undertaken, the United States could indefinitely maintain its dominant position as the world geopolitical and technical leader in space. With this six-year long period of intense design and development already behind us, President Obama's budget proposals would stop Constellation and substitute the following policy elements: 1. A NASA budget increase of $6 billion over five years. These new dollars would be used largely to increase expenditures for space, Earth, and climate science. (This same $6 billion increase, if dedicated to Constellation, would give the U.S. its own Orion spacecraft and Ares launch vehicle for access to Space Station.) 2. A "commitment to decide in 2015" on a specific approach to a heavy-lift rocket. Such a launch vehicle would be required if future policy added flights to "lunar orbit, Lagrange Points, Asteroids, moons of Mars, and Mars." (With no commitment to any specific objective for new heavy-lift, this policy position is made to order to be abandoned. It contains the technically and philosophically ludicrous suggestions that Lagrange points could be fuel depots, without getting fuel from the Moon, and that a mission to an asteroid has greater historical value than a base on the Moon.) 3. Technology development and test to increase space capabilities and reduce costs. The objective would be to "establish the technological foundation for future crewed spacecraft for missions beyond Earth-orbit." (As with heavy-lift, the policy gives no focus for these technology efforts as valuable as they could be, particularly with the development of a domestically produced, large hydrocarbon fueled rocket engine like we had for Apollo. Claims of providing "more jobs for the country" are disingenuous, however, as many more thousands of jobs would disappear with the cancellation of Constellation and the retirement of the Space Shuttle.) 4. A "steady stream of precursor robotic exploration missions." (A steady stream of such missions has been underway for two decades so this is nothing new.) 5. Restructuring of Constellation with the Orion spacecraft downsized to an emergency escape vehicle for the Space Station. (Orion development has progressed to the point that this proposal amounts to its termination and the start of a new spacecraft program that will cost more that completing Orion. Contrary to White House claims, this logically does nothing to reduce dependence on Russia to carry Americans to the Space Station. Major additional costs would be incurred to fly the new Orion to the Station and replace it periodically.) 6. An increase in "astronaut days in space by 3500 over 10 years." (No obvious means of doing this exist based on available Russian Soyuz flights to the Space Station and current biomedical limits on crew exposure to the space environment.) 7. A "jumpstart" to non-NASA, "commercial space launch" capabilities for human space flight. (With no known business case that would justify referring to such a capability as a "commercial" venture that private investors would support, and no definition of the final level of requirements and specifications NASA ultimately would demand, this fully subsidized initiative amounts to another, probably under-funded program by government. It is not clear how much funding will be requested for this subsidy, but a total of about $3 billion of new money each year over ten years would keep Constellation on track for a 2014 availability of Orion and a 2020 return to the Moon.) 8. Placing the space program on a more ambitious trajectory. (Clearly, the President's proposals are not as ambitious as the Constellation return to the Moon/Mars exploration program. Rather, the President takes American human space flight out of the calculations of other nations.) Although many inherent logical, technical, and implementation flaws in the Obama policy are evident, it is important to examine the consequences for the United States if the President's promises could be kept in their entirety: 1. The United States' human space flight capability will rapidly atrophy and then disappear by about 2020. With this atrophy would come the disappearance of the psychological geopolitical edge from which we have benefited immensely since World War II and particularly since Neil Armstrong stepped on the Moon. 2. China will control lunar resources for terrestrial energy and space flight as well as dominate the Settlement of the Moon and eventually Mars. China repeatedly expresses interest in harvesting helium-3 fusion fuel present in the Moon's surface materials. A lunar settlement, sustained by the by-products of helium-3 production, constitutes the most cost and politically effective means of gaining this critical future energy resource. If the Moon comes under China's control, long-term geopolitical reality would be changed in the same way that the Middle East's control of oil dominates our current national security vulnerabilities.