



Written by [James Heiser](#) on September 1, 2009

## Space Exploration Cost Overestimated, Study Finds

From deficit estimates to the cost of a socialized health care system, the Obama administration is encountering substantive challenges regarding the accuracy of its cost projections. Now, in the wake of reports that the presidentially-appointed “Augustine Committee” has determined that NASA’s budget is woefully inadequate at current spending levels to continue a manned space program, an independent review has found that the inadequacy rests not in the budget, but in the estimates being fed to the committee.



In an analysis released last Friday, Dr. Robert Zubrin, President of the Mars Society, offered the following assessment:

The Mars Society has examined copies of the cost projections being used by the Augustine Committee in currently considering the future of NASA’s human spaceflight program. These estimates, generated by the Aerospace Corporation, a US Air Force funded policy oracle, have no scientific basis and have clearly been composed to make the case that human space exploration is unaffordable.

As has been noted in [earlier coverage](#) of the Augustine Committee, the committee formally named the U.S. Human Space Flight Plans Committee is called the “Augustine committee” after Norman Augustine, retired chairman and chief executive officer of the Lockheed Martin Corporation, who serves as chairman of the committee advising NASA and President Obama on the future of U.S. manned space flight. Obama announced the committee on May 7 as “an independent review of planned U.S. human space flight activities with the goal of ensuring that the nation is on a vigorous and sustainable path to achieving its boldest aspirations in space.”

However, despite the stated intention that the committee’s goal was “ensuring” such a path for the nation’s space program, according to Zubrin the committee’s findings are in danger of seriously damaging that program:

The Augustine Committee may believe that by accepting such estimates they can push the Obama administration into supplying more funds to NASA. However the program they propose is so unattractive that the more likely result is that they will simply cause cancellation of the human exploration effort. Indeed, presented with a choice of accepting the Committee’s recommended plan of spending a quarter trillion dollars over 15 years in order to do a year 2025 human rendezvous with a near-Earth asteroid, retrenching to a purposeless ISS-visit only astronaut program, or just bagging human spaceflight altogether, the administration could hardly be blamed for choosing one of the latter options.

Why are the cost estimates provided to the Augustine Committee so high? The Mars Society analysis blames the “insane” accounting methodologies of the Aerospace Corporation. One example cited is the proposed Ares 5 heavy lift booster, which would essentially fill the role played by the Saturn 5 in the



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days of the Apollo program:

Examining the Aerospace Corp's cost estimates we see they claim an insane development cost of the Ares 5 heavy lift vehicle of \$35 billion dollars, and assign a development cost of \$28 billion for a somewhat lower capacity Shuttle-C type launcher. Both of these incredible estimates are about a factor of 7 higher than what is generally believed in the industry to be necessary for the development of such systems. In fact, in testimony delivered directly to the committee, SpaceX president Elon Musk offered to develop a heavy lift system for \$2.5 billion, and I myself have seen Lockheed Martin presentations which estimate their cost to develop a heavy lift (150 tons to LEO) launcher at \$4 billion."

As stunning as a potential seven-to-tenfold overestimate of costs might be, the estimate discrepancies are alleged to be even greater in other areas. Another set of cost projection evaluated by Dr. Zubrin is the cost of ground operations (which includes the maintenance, preparation, and support which is done on Earth in connection with ongoing support for human space flight). In the words of the Mars Society analysis:

As the charts correctly note, these today amount to about \$300 million per year to support the flights of the highly complex Space Shuttle. Following retirement of the Shuttle, Aerospace's cost estimates have ground operations cost triple to \$900 million by 2012, and then continue to rise to \$1.8 billion by 2022. This sixfold rise in ground operations cost would be difficult to explain in any case, but in the absurdity of this instance is outstanding since during the entire ten year 2012-2022 period in question, there are NO heavy lift flights at all for the ground operations to support. In other words, the Aerospace Corp's estimates have NASA's ground operations costs rising sixfold over Shuttle flight support requirements, spending \$15 billion over ten years, in order to launch nothing.

Given the popular backlash boiling up against bailouts and unsupportable — even unimaginable — levels of government spending, such an overpriced program would seem to be politically untenable: Although the space program enjoys broad, if shallow, support by a majority of American taxpayers, an increase in NASA's current \$18 billion budget by an order of magnitude would probably be pronounced "dead on arrival" on Capitol Hill, just as it was in 1989 when President George H. W. Bush's "90-Day Report" proposed a roughly \$500 billion Mars mission.

Predictably, for Zubrin and the Mars Society, the answer to their concerns regarding the estimations of the "Augustine Committee" is an aggressive program aimed at a manned mission to Mars:

Americans want and deserve a space program that is actually going somewhere. In order for that to happen, a radically different methodology to that being accepted by Augustine Committee needs to be employed. Rather, a real goal, worthy of spending serious money on, if necessary, needs to be selected. That goal can only be humans to Mars. Then a minimum cost, minimum complexity, and, critically, fastest schedule plan needs to be selected to achieve that goal. In order to minimize schedule and cost, such a plan should avoid advanced propulsion, on-orbit assembly, or other futuristic ideas, and instead get the job done in the manner of the Mars Direct and Semi-Direct missions by employing a strategy of direct transportation to Mars of required payloads using an upper stage mounted on the heavy lift launcher."

The relationship, or competition, between governmental and private space efforts (such as the Google Lunar X Prize) is likely to continued to be debated in the coming months. Certainly new companies such



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as SpaceX and Virgin Galactic are putting pressure on the assumptions of how space exploration ‘must’ be done. In the wake of the boost in the engineering and practical sciences experienced in the United States in connection with the space program of the 1960s and ‘70s, the inspirational value of such exploration seems undeniable. However, the fundamental questions today remain open to debate: “Who can best accomplish such goals of exploration?” — and — “Who is going to pay for it?”

— *Photo of Norman Augustine: AP Images*



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