

# National Space Society Blog

Blogging for the creation of a spacefaring civilization

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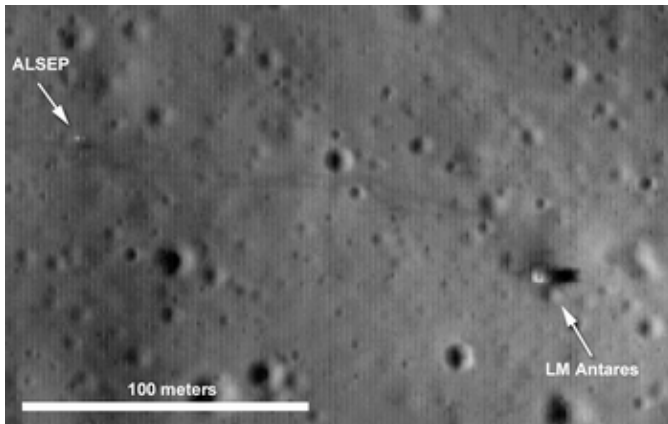
## The Glories of Our Journey

July 20th, 2009

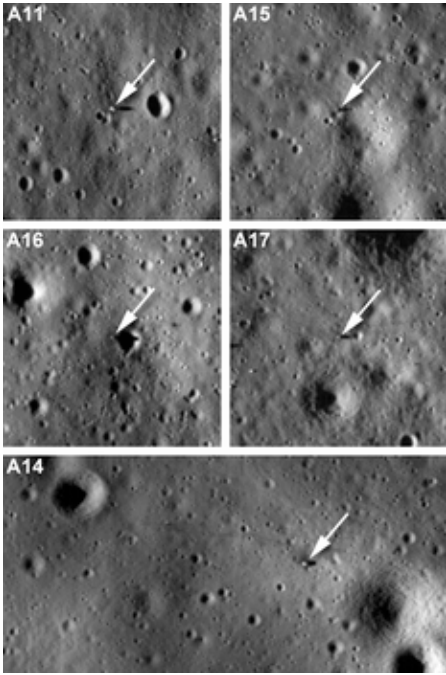
By Veronica Ann Zabala-Aliberto

It is only fitting that just before humanity celebrates the 40th anniversary of the Apollo 11 landing on the surface of the Moon, that a current NASA lunar mission acquires imagery dissolving many misconceptions and proving once and for all that the Apollo 11 astronauts, Neil Armstrong and Buzz Aldrin, arrived on the Moon July 20, 1969.

A mission dubbed as the “precursor mission” to sending humans to the Moon by 2020, NASA’s Lunar Reconnaissance Orbiter Cameras (LROC) not only show the Apollo Descent Vehicle left behind by the astronauts, Neil Armstrong and Buzz Aldrin, but also depict their tracks while traversing to the ALSEP (Apollo Lunar Science Experiment Package). ALSEP is a suite of scientific instruments placed by the astronauts at the landing site of each of the five Apollo missions to land on the Moon following Apollo 11 (Apollo 12, 14, 15, 16, and 17). Apollo 11, however, left a smaller, temporary package called the Early Apollo Scientific Experiments Package, or EASEP.



Four times enlargement of an uncalibrated LROC NAC image showing the Apollo 14 lunar module (LM Antares) and the Apollo Lunar Surface Experiment Package (ALSEP). Note the astronaut tracks between the two artifacts [NASA/GSFC/Arizona State University]



Apollo 11 (UL; 282 meters wide),  
 Apollo 15 (UR; 384 meters wide),  
 Apollo 16 (ML; 256 meters wide),  
 Apollo 17 (MR; 359 meters wide),  
 Apollo 14 (Bottom; 538 meters wide) [NASA/GSFC/Arizona State University]

What is so unique about LRO's cameras is that they take pictures at a much higher resolution than previous lunar missions. This is crucial in order to determine if new craters within the time the Apollo astronauts walked the surface of the Moon were formed as well as how the lunar equipment left behind has held up all these years within the harsh environment on the lunar surface.

Mapping the Apollo landing sites has come at a most appropriate time when the world has experienced such economic uncertainty and NASA's human exploration program is in jeopardy. Such imagery is crucial to educate and inspire the next generation of scientists, engineers and explorers. So much time has passed that two generations of the world's population would begin to consider humans walking the surface of the Moon just a folktale. It is imperative to keep human exploration to the Moon, Mars and beyond in the legislative language and to ensure that educators, students and members of the general public are kept on the same page as NASA in order to ensure that there are no interruptions in human missions again. Forty years is too long of a time span to not go back to the Moon. Especially when it is Earth's nearest celestial body – only 3.5 days to be exact!

I learned a very important lesson in my planetary geology class at Arizona State University which I have translated back to visitors at the Lunar Reconnaissance Orbiter Camera Science Operation Center. As my mentor informed us, there are three phases of exploration.

The first phase is *Observation* and we can thank Galileo for that with the invention of the telescope. Many have observed the Earth's moon via the telescope for centuries. The next phase of human exploration is *Reconnaissance*. This is where we get our lunar orbiters and landers. When we want to explore further and closer to the object we are interested in sending humans to we send an armada of spacecraft and surface landers to that planet or moon in order to determine if it is safe for humans to live and work on, what resources are available, and if we can harvest those resources for the betterment of those living on Earth.

The final phase of exploration is *Human Exploration* to that planet or moon of interest.

Therefore, when it comes to Earth's moon, we have already completed these three phases of exploration! Theoretically, you would think that it would only be natural for us to go back and continue our goals of exploring the Moon with increased frequency. Right? Hopefully, with the spectacular imagery being obtained by LROC, we will again start to explore and educate the way we did when Neil and Buzz walked the surface of the Moon. And remember...LROC is still in its *Commissioning Phase*. Which means that in just a couple of months we will be in our *Nominal Phase* of the mission where we will take even more exciting images of the lunar surface at even higher resolution! So stay tuned!

*Veronica Ann Zabala-Aliberto is a senior undergraduate student at Arizona State University within the School of Earth and Space Exploration who currently works on the Lunar Reconnaissance Orbiter mission within the LROC Science Operations Center. She is also the Chapter President for the National Space Society of Phoenix.*

Posted in [Education](#), [NASA](#), [Science](#) | [No Comments](#) »

## [Can We Afford to Settle Space?](#)

July 20th, 2009

[For [Space Settlement Blog Day](#), July 20, 2009]

Can we afford to settle space? A concomitant question is “Can we afford NOT to settle space?” but let's leave that aside for now. In the long run, space settlement will not be a consumer of wealth but will be a creator of wealth. This is basically a truism because if space settlement does not become a creator of wealth it simply won't happen. Assuming civilization survives, it is likely to move into space because that is where the vast bulk of available material and energy resources are located. Utilizing these resources creates wealth.

The real question is: How do we get there from here? All space settlement scenarios have one thing in common — a very high startup cost before wealth starts being created. Dealing with this chicken-and-egg problem has been plaguing the space movement for the past 40 years. We don't have the startup money.

Or do we? “What do you mean we don't have enough money?” aerospace writer Eric Burgess once said. “We *invented* money.”

This response is not just flippant. A monetary invention, the private stock company, was at least in part responsible for financing the settlement of the New World at a time when reaching it was difficult, expensive, and dangerous. As a result, the New World became the largest creator of wealth in history. Space can do the same.

Besides inventive technologies, we need inventive ways of financing to settle space. There is always a lively debate within the space movement whether such financing should be governmental (with its inherent inefficiencies) or private (with its too-short time horizons), or some creative combination of the two.

A recommended classic paper addressing these subjects was written in 1978 by J. Peter Vajk (rhymes with “Like”) as part of the big [DOE/NASA study of space solar power](#). The paper, “[Satellite Power System \(SPS\) Financial/Management Scenarios](#)” [3.7 MB PDF file], described 10 organizational models for managing and financing projects of this magnitude (the paper is also a model of expository writing). The ten models are as follows:

- Existing government agencies, e.g. NASA, DOE, etc.
- A new government agency, patterned after the Tennessee Valley Authority (TVA)

- A taxpayer stock corporation, a new concept
- A trust fund supported by energy taxes, patterned after the financing of the interstate highway system
- A federal agency financed by bonds, patterned after the Federal National Mortgage Association
- A staging company, an as-yet unrealized new concept for a fully private venture
- A government-chartered monopoly, patterned after the Communications Satellite Corporation (Comsat)
- A consortium model, already used for large-scale projects
- A corporate socialism model, patterned after such developments as the transcontinental railroad
- A universal capitalism model, a concept similar to Employee Stock Ownership Plans

It is not intended here to argue which (or which combination) of these might be the best. The point is that creative solutions can be and to some extent have already been identified. It remains to be seen what role our generation will play in the process of realizing them.

Posted in [David Brandt-Erichsen](#), [Space Settlement](#) | [No Comments](#) »

## [Happy Space Settlement Blog Day!](#)

July 20th, 2009

We have 34 blogs participating. This is a great success. What a great way to honor the Apollo 11 landing.

Please let us know which of their blog posts you liked and found interesting.

Thanks to all the blogs which are participating. Thanks to David Brandt-Erichsen and Brice Russ for all their technical work which has made Space Settlement Blog Day so successful. Thanks to all the sponsors the [National Space Society](#), the [Space Frontier Foundation](#), the [Space Movement](#), the [Moon Society](#), and [Space Renaissance Initiative](#).

Please [Digg Space Settlement Blog day](#).

### **Participating Blogs:**

- [National Space Society Blog](#)
- [NSS Mission Blog](#)
- [The Moon Society Blog](#)
- [Space Frontier Foundation Blog](#)
- [The Space Movement Blog](#)
- [Aerospace Pirate](#)
- [Aerospace, Technology, Paranormal, and UFOs News](#)
- [Artsnova Digital Art and Space](#)
- [Childe Jake's Pilgrimage](#)
- [Day of X](#)
- [Discovery Enterprise](#)
- [Gaiatribe](#)
- [Global Spin](#)
- [Habitation Intention](#)
- [I wanna be an African Aviator](#)
- [The Liber\(al\)tarian Network](#)
- [Life, Liberty and the Pursuit of Catgirls](#)
- [Luna C/I: Moon Colonization and Integration](#)
- [Moonbounce by KB9ROZ](#)
- [Moon-Mine](#)

- [Moon Business](#) (Twitter)
- [My Year of Science](#)
- [Neil Armstrong](#)
- [pdw.weinstein.org](#)
- [Plasma Wind](#)
- [Potentia Tenebras Repellendi](#)
- [Samizdata](#)
- [San Diego Space Society](#)
- [The Space Advocate](#)
- [Spacebeing](#)
- [SpaceCrazed](#)
- [Space Transport News](#)
- [Spacevidcast](#)
- [The Way Out](#)

Posted in [Blog](#), [Karen Shea](#), [Space Settlement](#), [The Space Movement](#) | [2 Comments](#) »

## [Apollo 11 Fortieth Anniversary Events](#)

July 17th, 2009

This week there is a lot going on to celebrate the 40th anniversary of Apollo 11.

### [The Apollo Legacy: The Moon and Beyond:](#)

**Monday, July 20, 2009**

**Walter and Leonore Annenberg Theater, Level 1**

**12:30 p.m.**

**Newseum**

**Washington DC**

### **Annual John H. Glenn Lecture - 40th Anniversary of Apollo 11**

**Sunday, July 19**

**8:00 pm**

[Lockheed Martin Imax Theater](#)

National Mall Building

Washington DC

On the eve of the fortieth anniversary of Apollo 11's first human landing on the Moon, the Smithsonian Institution's National Air and Space Museum welcomes the Apollo 11 crew, as well as Mission Control creator and former Johnson Space Center director Chris Kraft as the speakers for the Museum's 2009 John H. Glenn lecture in space history.

This event is sold out.

[Watch the live webcast on NASA TV](#)

### [We Choose The Moon](#) The Kennedy Presidential Library Web Site

### **Book Signing for We Came in Peace for all Mankind**

Tahir Rahman

Saturday, July 18, 2009 at 10:00am- Sunday, July 19, 2009 at 5:00pm  
Smithsonian Stephen F. Udvar-Hazy Museum  
Air and Space Pkwy  
Chantilly, VA  
info@silicondisc.com  
[Facebook event listing](#)

**40th Anniversary of Landing on the Moon**  
**[Moonfest 2009: From Apollo to LCROSS, and Beyond!](#)**

Sunday, July 19, 2009  
12:00pm - 6:00pm  
NASA Ames Research Center  
Mountain View, CA

**Moon Day at Frontiers of [Flight Museum](#)- Celebrate 40th anniversary of Apollo 11**

Sunday, July 19, 2009  
1:00pm - 5:00pm  
Dallas Love Field Airport  
6911 Lemmon Ave  
Dallas, TX  
Phone 214-350-1651

The Frontiers of Flight Museum and the National Space Society of North Texas host presentations and book signings by Marianne Dyson (flight controller/author), Craig Nelson (author), Ron DiIulio (astronomer), Richard Jeffries (Star Trek), Dallas Area Rocket Society, Chaz Hafey (lunar scientist), exhibits (Apollo 7 command module), DOOR PRIZES—all in celebration of the 40th anniversary of Apollo 11.

**Free concert celebrating the anniversary of 69 ! - Skyebat**

Wednesday, July 22, 2009  
8:00pm - 9:00pm  
Parkside Lounge  
317 East Houston between Ave, B & C  
New York, NY  
Phone 212-673-6270  
[info@skyebat.com](mailto:info@skyebat.com)

**[Inauguration of the Moon-Mine Project](#)**

Storgruvan, Pershyttan, Sweden, 20th July, 2009.

In addition to speakers and journal films from Nora and from the Moon landing, an exhibition will illustrate the plans for the moon-mine, put in context by historical facts about the mine and the Apollo program, as well as contributions from some of our sponsors.

In breaks between speakers, films from 1969 about the Moon, Nora and Pershyttan will be shown.

## Program (preliminary)

**Tema miljö, rymd, Månen jämförd med Jorden. (Moon-Earth environments)***Konferencier: Carl Fridh*EventTalare

1500	Välkomsttal	Jan Norlund, Nora kommunchef
1530	Varför Månbas i Storgruvan?	Niklas Järvstråt, Moon-Mine
1600	Start av pumparna	Anders Olsson, NJOV
1630	I rymden måste allt vara ekologiskt	Ulf E Andersson, Ekofisk Rolagen

**Tema Nora och Månen i forntid - nutid - framtid (Historic view on Nora and the Moon)***Konferencier: Carl Fridh*EventTalare

1900	Välkommen	Lars Östring, Länsråd Örebro län Åke Wiklund, Hembygdsf. Noraskog
1930(ca)	Pershyttan på 60-talet	Åke Mossberg, Pershyttans Hembygdsgrupp
2000	Gruvdykningar	Daniel Karlsson/Mark Dougherty Baggbodykarna
2030	Current moon initiatives	Romanian Space Agency (videolänk?)
2100	Nedräkning	Mikael Genberg
2117	Markering: månlandningen 40 år	-
2130(ca)	Fotspår i FJS-1 (Japanskt mångrus)	Maria Aldrin, släkting till Buzz Aldrin Lars Östring, Länsråd Örebro län Niklas Järvstråt, Moon-Mine
2200	Vision, månbas pershyttan	Niklas Järvstråt, Moon-Mine
	Diskussion	
2400(ca)	Avslutning	

Coffee and snacks will be available throughout. Hopefully also light meals.

Horseback riding for children is being arranged.

[Space Settlement Blog Day](#) is on July 20th. Blog for and about space settlement on July 20th. 33 blogs have signed up already.

Tags: [Apollo Anniversery](#)

Posted in [Event](#), [Karen Shea](#), [NSS Chapters](#), [National Space Society](#), [Space Music](#), [Space Settlement](#) | [No Comments](#) »

## [Financial and Organizational Analysis for a Space Solar Power System](#)

July 16th, 2009

A ground-breaking new paper on space solar power has just been added to the online [NSS Space Solar Power Library](#). The paper is: [“Financial and Organizational Analysis for a Space Solar Power System,” May 18, 2009, 225 pages, 3.7 MB PDF.](#)

Lt. Col. Peter Garretson, NSS Director and one of the principal authors of the Department of Defense report [Space-Based Solar Power As an Opportunity for Strategic Security](#) writes:

“This is the first modern paper to include a stakeholder analysis, an in-depth discussion of international organizational aspects (including intellectual property and separation of manufacture and operator companies), and Net Present Value calculations of niche systems (such as front-line military power).”

Authors of the paper are Sun Xin, IT Director of the China Academy of Space and Technology; Evelyn Panier, Finance Application Consultant; Cornelius Zund, Control Systems Engineer at Pratt & Whitney Canada; and Raul Gutierrez Gomez, Lieutenant Colonel in the Colombian Air Force and Planning Director of Military Aeronautical Institute.

The paper was a multicultural team project submitted in partial fulfillment for the degree of Master of Business Administration in Aerospace Management at Toulouse Business School, Toulouse, France.

Posted in [David Brandt-Erichsen](#), [NSS Website Updates](#), [Space Solar Power](#) | [8 Comments »](#)

## [\*\*National Space Society Applauds the U.S. Senate Confirmation of Charles Bolden and Lori Garver to lead NASA\*\*](#)

July 16th, 2009

*Garver served 9 years as Executive Director of the National Space Society.*

The National Space Society (NSS) is pleased to congratulate retired Marine Major General and four-time Space Shuttle Astronaut Charles Bolden on his appointment to the office of NASA Administrator and Lori Garver on her appointment to the office of Deputy Administrator.

“This is an exciting time for NASA and the space industry as a whole,” said Mark Hopkins, Senior Vice President of NSS. “NASA is rebuilding its human exploration capabilities and the private sector is making real progress toward commercial access to space. Garver understands the importance of both. Bolden has the hands-on experience necessary to guide NASA into the next phase of its mission. We look forward to interacting with Garver and Bolden as they make decisions about the next steps toward a spacefaring future.”

“We are extremely excited to learn of the confirmation of Lori Garver as Deputy Administrator of NASA,” said Brett Silcox, Associate Director of NSS. “She will bring a wide range of experience and knowledge to NASA and has the vision and the commitment to return NASA to the cutting edge.”

Designated a naval aviator in May 1970, Charles Bolden flew more than 100 combat missions in South Asia in the early 1970’s. Bolden was selected by NASA as an astronaut in 1980, flying four missions aboard the space shuttles Columbia, Discovery and Atlantis. Over the course of these four space flights, Bolden logged more than 680 hours in orbit, assisted in deploying the Hubble Space Telescope, and commanded the first mission that included a Russian cosmonaut as a mission specialist crewmember. He was selected for induction into the Astronaut Hall of Fame in 2006.

Bolden left NASA and returned to the operating forces of the U.S. Marine Corps as the Deputy Commandant of Midshipmen at the Naval Academy, in Annapolis, Maryland in June of 1994. Before retiring in 2003, Bolden had attained the rank of Major General and served as the Commanding General,

Third Marine Aircraft Wing at Marine Corps Air Station Miramar in San Diego, California. Mr. Bolden retired from the United States Marine Corps on January 1, 2003 after serving 34 and a half years. From April 2003 to December 2004 he was Senior Vice President of TechTrans International, Inc., of Houston, TX. He is currently the CEO of JACKandPANTHER LLC, a small business enterprise providing leadership, military, and aerospace consulting as well as motivational speaking.

Bolden received a Bachelor of Science degree from the U.S. Naval Academy, a Master of Science degree in systems management from the University of Southern California, and is a graduate of the U.S. Naval Test Pilot School at Patuxent River, Maryland.

Most recently, Garver was the President of Capital Space, LLC, and served as Senior Advisor for Space at the Avascent Group, a consulting firm based in Washington, D.C. She was the lead civil space policy advisor for the 2008 Obama presidential campaign and she helped lead the Agency Review Team for NASA during the transition. From 1998 to 2001, Garver served as NASA Associate Administrator for the Office of Policy and Plans. During this period, Garver also served as a primary spokesperson for NASA. Prior to this appointment, she served as a Senior Policy Analyst for the Office of Policy and Plans, and Special Assistant to the Administrator. Garver was the second Executive Director of the newly formed National Space Society that resulted from the merger between the L-5 Society and the National Space Institute. She served in this role for 9 years until her departure for NASA in 1998.

Garver earned B.A. in Political Science and Economics from Colorado College and an M.S. in Science, Technology, and Public Policy from George Washington University. Garver lives in McLean, Virginia with her husband, David Brandt, and their two children, Wesley and Mitchell.

### **About the National Space Society**

The National Space Society (NSS) is an independent, grassroots organization dedicated to the creation of a spacefaring civilization. Founded in 1974, NSS is widely acknowledged as the preeminent citizen's voice on space. NSS counts thousands of members and over 50 chapters in the United States and around the world. The society also produces the annual International Space Development Conference. For more information on the society or the conference, please visit: <http://www.nss.org>.

Posted in [NASA](#) | [No Comments »](#)

## **[Lee Jones Reporting From The New Mexico Space Port Ground Breaking](#)**

July 16th, 2009

July 19<sup>th</sup>, 2009. A date that will forever change the way we view space flight. In the arid desert just west of the mountain range that defines the western border of the White Sands Missile Range in New Mexico, a group of about 420 space enthusiasts, press and dignitaries gather to witness an historic event. The ground breaking of the first commercial Spaceport on planet earth, Spaceport America was about to take place. With all eyes focused across the desert sands and brush, bright metallic figures approach from the not too distant east as spine chilling music played. Conquistadors! The first explorers to discover this great land called New Mexico approached. Commemorating the true spirit of exploration, New Mexico Governor Bill Richardson among other distinguished dignitaries remember the legacy of spaceflight in its early beginnings just a short distance away. The first picture of planet earth from space was taken from a V2 rocket launched just a few miles away. A historic letter found in the New Mexico government archives was presented by Governor Richardson on behalf of this great state to Will Whitehorn, President of Virgin Galactic. This letter written by Governor Jack Campbell in the early 1960's and addressed to President John F. Kennedy stated; Dear President Kennedy. In light of this historic event, this great nation has now found its way to space. This is a true beginning that someday will evolve into commercial space transportation of people and cargo to space. Please consider the great state of New Mexico as that place where commercial space transportation should begin. This great visionary and the people of planet earth have now witnessed this dream come to pass. As each rocketeer scooped the desert sand and placed it in a small capsule, preparations were made to load the sand on to a rocket which ultimately closed the ceremony as it was launched toward space. Planet earth has now entered a new era in space travel and the sky is no longer the limit and commercial space is no longer a dream. It's reality!

Lee Jones

Space Ambassador Program Director

Tags: [New Mexico](#), [Space Port](#)

Posted in [Space Transportation](#) | [No Comments](#) »

## [Buzz Aldrin's The Long Journey Home from the Moon and Rocket Experience](#)

July 16th, 2009

The National Space Society is proud to announce the "launch", on June 23, 2009, of Apollo 11 astronaut Buzz Aldrin's dramatic memoir, ***Magnificent Desolation – The Long Journey Home from the Moon***. In his new book, Dr. Aldrin, an honored member of the NSS Board of Governors, provides a gripping account of the lunar landing (and as to how close it actually came to failure), as well as a frank and open discussion of the personal challenges that awaited him upon his return to Earth, including his difficult, but ultimately successful, battle to overcome depression and alcoholism. It also details his tireless work as an advocate for space exploration, development, and settlement.

In conjunction with the release of his memoir, Dr. Aldrin also recorded a new "rap" song, "**Rocket Experience**", which he recorded with the assistance of two other famous "rappers", Snoop Dogg and Talib Kweli. His friend, Quincy Jones, and admirer, Souljaboy, also appear in the Funny or Die video made of the song in support of Buzz's track. This dual launch of his new memoir, and his new career as a rapper, were the subject of television appearances on The Today Show, CNN, and Access Hollywood.

We invite you to check out two online videos involving the recording of Dr. Aldrin's rap song, the first one called, "The Making of Rocket Experience", and the second one called, the "Rocket Experience Music Video":

<http://www.funnyordie.com/videos/f7a26d7505/making-of-buzz-aldrin-s-rocket-experience-w-snoop-dogg-and-talib-kweli>

<http://www.funnyordie.com/videos/0be5c681fc/buzz-aldrin-s-rocket-experience>

Dr. Aldrin has announced that a portion of the proceeds from the "**Rocket Experience**" song will go to his non-profit corporation, ShareSpace Foundation, and also to other non-profit space advocacy groups such as the National Space Society, in order to further space exploration, development, and settlement. \_

For additional information about Dr. Aldrin and ShareSpace Foundation, check out his website at <http://www.buzzaldrin.com>.

Tags: [Book](#), [Dr. Buzz Aldrin](#), [Music](#)

Posted in [Books](#), [Music](#) | [No Comments](#) »

## [Buzz Aldrin's Unified Space Vision](#)

July 16th, 2009

Time to Boldly Go Once More By Buzz Aldrin, Thursday, July 16, 2009, [washingtonpost.com](http://www.washingtonpost.com)

Instead, I propose a new Unified Space Vision, a plan to ensure American space leadership for the 21st century. It wouldn't require building new rockets from scratch, as current plans do, and it would make maximum use of the capabilities we have without breaking the bank. It is a reasonable and affordable plan — if we again think in visionary terms.

Tags: [Dr. Buzz Aldrin](#)

Posted in [Space Policy](#) | [2 Comments](#) »

## [Make Your Voice Heard!](#)

July 9th, 2009

### [PROVIDE YOUR INPUT TO THE AUGUSTINE COMMISSION](#)

This spring, the White House's Office of Science and Technology Policy asked NASA to launch a commission tasked with conducting an overall review of current and future human space flight efforts. This committee, formally known as the "Review of United States Human Space Flight Plans Committee," is headed by Norman Augustine and is informally known as the "Augustine Commission."

**[The Augustine Commission's webpage](#) has information about upcoming public meetings, as well as tools for you to ask questions and share your opinions about U.S. space policy. This is an opportunity for all National Space Society members to make their voices heard, and to affect the U.S. future in space!**

The Augustine Panel is planning to release a report with its recommendations in August. Whatever conclusions the Panel reaches, the National Space Society (NSS) believes that the Obama Administration should use this opportunity to reaffirm its commitment to extending human presence through the solar system. NASA remains the world's premier space agency, and as such, is in an excellent position to continue leading this important effort. To that end, NSS believes the Panel should focus on the following principles when making its recommendations:

- Vehicle and infrastructure investments should continue to advance the nation's ability to send human beings beyond Earth orbit for exploration, commercial, and eventually settlement purposes.
- Technology investments should make wise use of taxpayer dollars and should target activities most likely to advance the goals above.
- The government's proper and most effective roles in space are in funding exploration, new technologies, and basic research while protecting human safety and national interests.
- The private sector's most effective roles in space are in developing and refining new technologies; reducing the costs of basic services; providing services in support of exploration and research activities; and extracting, processing, and transporting natural resources to facilitate exploration, basic research, and settlement. Government should continue to maximize private-sector participation to the greatest extent practical, as stated in existing NASA policies.
- The government should encourage research and educational programs that improve humanity's ability to live in space and to apply space resources to challenges there and on Earth.

## Additional Background Information

The Human Space Flight commission, popularly known as the Augustine Panel, has been assigned to work closely with NASA and seek input from “Congress, the White House, the public, industry, and international partners.” In particular:

“The review should aim, specifically, to identify and characterize a range of options that spans the reasonable possibilities for continuation of U.S. human space flight activities beyond retirement of the Space Shuttle. Results and supporting analysis should be provided to involved Administration agencies and offices in sufficient time to support an August 2009 decision on the way forward. The identification and characterization of options should be cognizant of — and should address the implications for — the following objectives: (1) expediting a new U.S. capability to support utilization of the International Space Station; (2) supporting missions to the Moon and other destinations beyond low Earth orbit; (3) stimulating commercial space flight capabilities; and (4) fitting within the current budget profile for NASA exploration activities.”

More background, including the letters and press releases associated with the establishment of this effort, can be found at <http://www.nasa.gov/offices/hsf/about/background.html>.

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