



Space Frontier Foundation
2006 Annual Report

Letter from the Executive Director

The Space Frontier Foundation has been asking important questions about our national space goals since our inception in 1988, and we remained at the front of the charge through 2006.

Being effective requires understanding the changes around you and adapting to them, and early this year the Board of Directors and I held a strategy and priorities meeting. Recognizing that the emerging commercial NewSpace industry is maturing, we decided that our priority (and new tagline) would be “Advancing NewSpace.” Our activities for the year, which you can read about below, were focused on this goal.

Similarly, after many years of holding two separate conferences (Space Frontier and Return to the Moon), we merged them into one conference called “NewSpace 2006.” This permitted us to more effectively and efficiently use our resources in the service of opening the space frontier to all humanity.

The ground is shifting under the entire space industry, and we continue our work to ensure the promise of NewSpace doesn’t founder. While we have every right to be excited about recent accomplishments, the development of a truly commercial space industry certainly isn’t guaranteed. And that’s why we have much to do... now and in the years ahead.

The future is here because of the work of the Foundation. Many have adopted our language and vision, and it is taking hold and resonating in many nations. The world is witnessing the dawning of the space frontier that we’ve defined. We envisioned this future, we created these opportunities, and we shall succeed.

As we continue our work, we are guided by these observations:

“The future belongs to those who believe in the beauty of their dreams.”
-- Eleanor Roosevelt

“The art of progress is to preserve order amid change and to preserve change amid order.”
-- Alfred North Whitehead

Sincerely,

Jeff Krukin

Who We Are

The Space Frontier Foundation is an organization of space activists, scientists and engineers, media and political professionals, entrepreneurs and citizens from all backgrounds, beliefs and nations. Our central and driving goal is the large-scale permanent human settlement of space as soon as possible, using the resources we find there, and the imaginations we bring to task.

We believe all people have the “right stuff” and that everyone will benefit from opening the space frontier. Given the fragility of our planet we also believe that it is vital that we not only preserve the biosphere of earth using the resources of space, but that we expand that biosphere, taking life to worlds now dead. If successful, we see our future as exciting and full of possibility.

We reject the ideas that the world’s greatest moments are in its past, that technological achievement must mean the decline of our ecosystem, and we are determined to transform the image held by many that the future will be worse than the present.

We believe that free people, free markets, and free enterprise will become unstoppable forces in the irreversible settlement of this new frontier, and that our world is on the verge of a truly historic breakthrough – access to space for all.

To make that happen, we are engaged in the transformation of space from a government-owned bureaucratic program – into a new partnership between the public and private sectors – that will lead to a dynamic and inclusive frontier open to all people.

What We Do

Foundation members present a future that excites and inspires. Our members include citizens from many nations and backgrounds. We make a difference through our activities, briefings, gatherings, and presentations by transforming the perception of why human space activity is vital and how it should be implemented.

We work on policy issues at the national and international level, interacting with those who make the decisions. We speak to the media, challenging their old assumptions about space and the future. We let the world know what is possible on the frontier, and what needs to be done today to get us there. We teach the children of our world to imagine a better future. We use the vastness of our universe to bring them together as we give them permission to dream of a tomorrow that is full of positive choices and hope.

Our members are encouraged to take actions that help to open the frontier. Many of our members have formed companies and organizations that further our goals. From non-profits to rocket companies to space services and travel groups to publishing and Internet firms, they are getting the word out and making space happen!

- Remember the Lunar Prospector that found signs of water on the Moon? Foundationers helped start that project.
- Recall the breakthrough flights of the little rocket called the DC-X? Foundationers helped get it off the ground.
- Who were the people who made the Mir the world's first commercial space station? Foundationers put up their sweat and cash and took a stand.
- Who shot the first TV commercial on the space station? Foundationers worked with the space station partners and put RadioShack in space.
- Who signed up Dennis Tito to fly and fought for his right to go into space? Foundationers did the deal and helped clear the path for his incredible adventure.
- Who are the people building many of the new and innovative vehicles to fly people like you and I into space? Foundationers are building new reusable rocketships right now.
- Who threw the world's first global space party to celebrate humanity's first steps into space? Foundationers put the "rock" into rocket and reached out to a new generation with an annual worldwide celebration known as Yuri's Night.

Events and Projects

Teachers in Space – The Foundation’s newest project, conceived in 2004, TIS seeks funding from each of the fifty states for teachers to experience spaceflight and share their experiences with students, colleagues and the greater community. Funding will be sought from a combination of private and public sources.

Both the teacher selection process and the post flight activities will be developed individually by each state.

Leveraging the excitement of the spaceflight goal, the project will also develop methods/experiences other than spaceflight to engage and enable teachers to bring ‘a NewSpace future’ knowledge and excitement to their students. As an example, TIS will offer a series of curriculum workshops themed on the exciting and historic developments now occurring in NewSpace. TIS will also develop and engage a community of teachers with which to share these developments.

2006 saw marked progress in the development of its implementation and fundraising plans.

Space Settlement Project – Underlying all our activities is the goal of sustained human migration into space, leading to the development of economically sustainable and thus permanent settlements beginning on the Moon and spreading throughout the solar system. In 2006 the project continued developing partnerships with other organizations, such as the Advance Technology Working Group and various committees of the American Institute of Aeronautics and Astronautics, to broaden the space settlement conversation and create space settlement promotion and outreach efforts.

Annual NewSpace Conference – This conference is the centerpiece event on the Foundation’s annual calendar. Entrepreneurs, scientists, engineers, entertainment leaders, aerospace industry executives, government representatives and citizens meet and discuss the latest ideas and activities pertaining to the exploration, settlement and development of space. NewSpace 2006 took place on July 19-23 at The Flamingo Las Vegas. Themes included “Enabling NewSpace” and “Returning to the Moon,” and the conference focused on understanding and supporting the emerging commercial NewSpace industry.

Mars Media Project - This project is part of the NASA Haughton-Mars Project's Education and Public Outreach Project. The goal: increase public awareness of current research that is preparing for the future settlement of Mars. Considering the years that will pass prior to human Mars exploration and settlement, this project emphasizes student outreach. In 2006 the project leadership enhanced relationships with other Mars organizations, such as MarsDrive, to develop grassroots support for Mars missions.

Permission to Dream – In addition to the commercial and resource value of space, there is the powerful image of space exploration and settlement as an impetus for a peaceful future. PTD uses the awe and mystery of space to deliver a vision of hope and unity to the world's youth, creating a desire to further their education and participate in the creation of our future. In 2006, PTD continues to seek funds to provide telescopes to students around the world, in the hope that by exploring the Universe together we can bring humanity closer together.

Solar Power Satellites – Space is a place of abundant resources. One need only stand in the warmth of the sun to appreciate this. With the headlines full of stories about scarce and polluting energy sources, the growing energy needs of India, China and other developing nations, it's clear that the world's standard-of-living is directly related to its per-capita energy use. Space Solar Power Satellites are a potential solution to current and future energy and environment concerns. Massive orbiting arrays would capture solar energy, convert it to radio waves, and transmit to receiving antennas on the Earth's surface. While this is conceptually possible, further research is required to determine the future economic viability of SPS, and how governments and corporations around the world would work together to build, launch and operate SPS. This project supports this research by facilitating the exchange of research and information across the SPS community.

Space Enterprise Symposia – Without economic viability, human space exploration and settlement cannot be sustained at the level needed for permanent settlement. Today's myriad of commercial activities must expand beyond Earth orbit to the Moon, asteroids and beyond, and it all begins with affordable and readily available launch providers (basic transportation) and destinations (habitats and other facilities). In other words, capitalism, the same engine that creates wealth on Earth and provides a comfortable standard of living for hundreds of millions of human beings.

In our SES events we bring together space entrepreneurs and investors. In 2006, a project team began working on symposiums for New York City and Silicon Valley.

The WATCH – Fact, not science fiction: You have a greater chance of dying as the result of an asteroid impact than in a jetliner crash. A quarter-mile-wide asteroid slamming into our planet would cause more destruction than a hundred hydrogen bombs. NASA studies have demonstrated that, sooner or later, a catastrophic terrestrial impact is inevitable. The Watch believes in the importance of finding these Near Earth Objects (NEO's) before they find us, and is working to secure additional funding for tracking NEO's, as well as keeping this issue in the public eye. And it isn't just gloom and doom, as the useful potential of NEO's is just as real... and important. Each of these objects is made up of natural resources that can be used for the betterment of life on Earth and the development of permanent space settlements.

Yuri's Night – You can't read the news today without encountering concerns about our education system. Similarly, numerous corporations bemoan the lack of students interested in science, technology, engineering and math (STEM), all necessary to

compete in an increasingly connected and technical world. Space exploration and settlement is the ideal motivation to study these disciplines, and each April the Yuri's Night global space party celebrates Yuri Gagarin's historic space age-opening flight with events created for the youth who will create our future.

Frontier Awards – The Foundation presents awards to reward those who help create and realize our vision of an open Space Frontier. Our 2006 Awards went to:

- SERVICE TO THE FRONTIER – Robin Snelson
For Outstanding Service To The Cause of Opening the Frontier
- VISION OF THE FUTURE AWARD – Joss Wheden for the “Firefly” television series and “Serenity” movie
- VISION TO REALITY – Space Adventures
- PIONEER OF NEWSPACE – Courtney Stadd
- SPACE JOURNALSIM – Alan Boyle (MSNBC)
- FOUNDERS' AWARD – Walt Anderson

Directors and Officers

Founder and Chairman of the Board

Bob Werb – Bob Werb was an active partner in Rivercrest Realty Investors from 1976 until 2001. Rivercrest Realty Investors is a privately held, real estate firm that owns and manages a portfolio of garden apartments, shopping centers and office buildings with properties in New York, New Jersey, Maryland, North Carolina and Florida. Recently, he has assumed a more passive role in Rivercrest Realty Investors and has been spending more time working with several small space start-ups. Bob is one of the three founders of the Space Frontier Foundation.

Executive Director

Jeff Krukin – Jeff Krukin (www.jeffkrukin.com) is an international speaker, writer, analyst, and award-winning leader concerned with commercial space development, space settlement, and The Human-Space Connection™. During his undergraduate studies in Psychology and Sociology at The George Washington University, Jeff became interested in how resource constraints contribute to global conflict. This led to the Studies of the Future graduate program at the University of Houston/Clear Lake, where he studied space resources and deepened his belief that space settlement and development are necessary for prosperity, liberty and peace.

Jeff's first space article was published in 1981, the year he completed his graduate internship at NASA Headquarters and became an IBM Systems Engineer at NASA's Johnson Space Center. In the early-1990's he began speaking at conferences about the settlement and development of space. Combining his passions for space and writing, in the early 1990's he wrote a monthly column entitled "Think About It," which appeared for several years in the *Journal for Space Development* and other space newsletters. He has also been published in *Space News*, the *Houston Chronicle*, the *Houston Business Journal*, and on websites such as *Spacedaily.com* and *Betterhumans.com*. Chelsea House will publish his first book essays, specifically written for high school students, in a multi-author collection in Spring 2005. Jeff is also a noted conference speaker and has been interviewed on radio and television news programs.

Invited to become a Space Frontier Foundation Advocate in 1990, Jeff became a Board Member in 1995, and the first Director of Advocates the following year. In 1997 he left the Foundation to become a ProSpace Board Member and Director of the 1998 and 1999 March Storm lobbying events. In 1998 he received the ProSpace Activist of the Year Award. In 1999 he became Vice President and continued as Director of March Storm. Jeff became Chairman in 2002 and served until 2004. In addition to the Foundation, Jeff is on the Steering Committee of the International Association of Space Entrepreneurs and is the advisor to the Director of the North Carolina Space Initiative at NC State University.

2006 Board of Directors

Bill Boland – Bill has owned and operated two businesses in New York City (Manhattan) over a twenty-year period. Both companies were sold to public companies. He currently resides in Scottsdale, Arizona, and is now able to commit more time to opening up the space frontier for commerce and eventual human settlement. He has previously served on the Board of Directors and as a conference chairman. He is currently Project Manager for the Foundation's Teachers in Space project.

Kerinia Cusick – Business Consultant, Syn-Dex. Kerinia's first profession was aerospace engineering, but after ten years designing experiment aircraft and satellites she discovered her passion was business. Kerinia started her career at the Grumman Aerospace Corporation working on the X-29 forward-swept-wing technology demonstrator program. Moving on to Hughes Aircraft, she was the system architect for many cutting-edge space vehicles. It was also at Hughes where she transitioned from engineering to business, delivering a profit while building commercial communication satellites. She left to become a co-founder of a systems engineering/product development consulting company, SECAT LLC. Most recently, prior to rejoining the consulting field in 2004, Kerinia worked for ESI International, the world's largest privately held project management training and consulting firm, as the Managing Director of Business Development.

Having no interest in revisiting the past glory days of Apollo, Kerinia generally avoided space activist organizations. However, the Space Frontier Foundation's multi-pronged approach – changing legislation to enable business, focusing on the media to change perception, and prizes to help create financial incentives – was a different matter. Recruited by Rick Tumlinson, the next thing she knew she was managing the annual Space Frontier Foundation Conference in 1998, and was a member of the Foundation's Board of Directors from 1997 to 1999. Kerinia also took an active role supporting ProSpace, running the annual "March Storm" lobbying training two years in a row. In 1999, she won ProSpace's "Activist of the Year" award.

Jeff Feige – Jeff Feige is currently an associate at PoliSpace, a political consulting firm dedicated to helping space entrepreneurs and intrapreneurs succeed at the nexus of space business, technology, and public affairs. Before joining PoliSpace, Feige was the Assistant to the Executive Director of the Aerospace States Association (ASA), an organization representing the U.S. States on matters relating to Aerospace policy. Prior to that, he worked as a policy analyst for the National Coalition for Spaceport States (NCSS), an organization founded to advance the interests of those states that operate or were intent upon one day operating spaceports. Feige has also worked as an Aerospace technologist at the U.S. Space and Rocket Center (USSRC) in Huntsville, AL. He holds a BS from Drexel University in Philadelphia, PA, and is an avid Scuba Diver, Sailor, and Private Pilot.

Kevin Greene – Kevin’s involvement in space engineering and construction began in 1992, at ASCE’s "Space-1992" conference in Denver, CO. He’s attended, and helped to organize, every ASCE space engineering conference since. His involvement in the Space Frontier Foundation began in 1999, and he’s now on their board of directors and involved in organizing their annual ‘Lunar Development Conference’ series – based in Las Vegas. Kevin is also an investor and participant in several New-Space ventures.

Erin Medlicott – Ms. Medlicott has been a space enthusiast since the age of nine, when she wrote a letter to President Kennedy telling him she wanted to fly into space. (The President's office of spaceflight wrote back, telling her they'd keep her in mind for future trips!) In the late '70s, when NASA began recruiting women into the astronaut program, Erin went back to school and earned a geology degree, and applied to be a Mission Specialist candidate. She was then recruited by her hero, Dr. Gerard O'Neill, to work as his personal assistant, working in his office for several years, handling lecture and interview requests, the Space Studies Institute newsletter and doing administrative work for Dr. O'Neill's other business start- up, Geostar.

She met Rick Tumlinson in the mid '80s and became a member of his newly founded local group, the Space Frontier Society of New York, and edited their newsletter. Soon she met Bob Werb and Jim Muncy, who, along with Rick, founded the Space Frontier Foundation; she became one of their first members.

Erin was a contract writer for the "Continuum" section of OMNI magazine, a freelance writer for The Bergen News, and is currently employed in market research for a magazine publishing corporation in midtown Manhattan. She has a Master of Science from NYU.

She assists Foundation Creative Director Peter Thorpe in producing Space Front, the quarterly journal of the Space Frontier Foundation. Erin was recently elected to the Foundation Board of Directors, and is the recipient of the Outstanding Service Award for 2003.

Working with Founder and Board Member Rick Tumlinson, Erin edited “Return to the Moon” which was published in late 2005.

Charles E. Miller – Mr. Miller became Constellation Services' 1st employee in September 1998, and since then has lead the development of the company from small startup to major player in the quest to provide on-orbit services. Under his direction, CSI became a subcontractor under NASA's 2nd Generation Reusable Launch Vehicle and Alternate Access to Station (AAS) "Phase 0" Concept Study programs, and then beat out at least seven other bidders to win one of the four NASA prime contracts under the AAS Phase 1 program. During this time, CSI worked with an established aerospace major hardware

system supplier and AAS subcontractors to take CSI's design from concept through system design and into preliminary design. Mr. Miller has not only assembled and led the CSI executive team that achieved these accomplishments, but also has been responsible for raising over \$1 million in private investment in CSI's business.

Prior to CSI, Mr. Miller managed his own management consulting firm that provided services to small businesses and community organizations. Mr. Miller's services included general strategic planning; employee recruitment and retention, training, and retention; business management and control procedures; team building; conflict management strategies; and government affairs.

Mr. Miller was the founding Chairman and President of ProSpace, where he served from 1996 to 1999. Known also as "The Citizens' Space Lobby," ProSpace is one of the most effective space policy groups working on Capitol Hill. Under Mr. Miller's leadership, ProSpace was instrumental in the passage of vital space-related legislative initiatives, including the Commercial Space Act of 1998, funding for NASA's X-33, Future-X and Space Solar Power programs, and the U.S. Air Force RLV Technology Development program. Mr. Miller has also served as Administrator and a director of the National Space Society, Vice President for Development and a director of the Space Frontier Foundation, and Vice-President for the California Space Development Council.

Because of the depth of his knowledge of space policy issues and his numerous contacts in Congress and NASA, the leading firms in the commercial space industry often seek Mr. Miller's advice. In addition, he has received several awards for his work in the field, including the "Vision in Action" award from the Space Frontier Foundation, the "Space Pioneer" award from the National Space Society, and the "Exceptional Leadership" award from the California Space Development Council.

Mr. Miller studied engineering at the California Institute of Technology and has a BS in Business Administration (Finance) from the California State University of Chico.

Founder and Board Member

Rick Tumlinson – Named one the top one hundred most influential people in the space field by Space News, Rick Tumlinson is the Co-Founder of the Space Frontier Foundation, which has been called “pound for pound the most effective space organization on Earth.” From an old Texas family whose pioneering credits include co-founding the Texas Rangers and fighting in the Alamo, Rick has spent his life fighting to open the space frontier. The son of an Air Force Sergeant and his English wife, he was educated primarily in England and Texas.

Mr. Tumlinson worked for noted scientist Gerard K. O'Neill at the Space Studies Institute, founded the New York L-5 Society, and was a key player in starting the Lunar Prospector project that discovered hints of water on the Moon. He also helped pass the Space Settlement Act of 1988, testified before President Reagan's National Commission

on Space, and was a founding trustee of the X-Prize. Over the years he has been a lead witness in six congressional hearings on the future of NASA, the U.S. space program and space tourism, most recently in early 2004, testifying before the Senate Space and Technology Committee on the Moon, Mars and Beyond program.

Rick is Executive Director and co-Founder of the Foundation for the International Non-Governmental Development of Space (FINDS), a foundation which funds breakthrough projects and activities such as Helium 3 research, laser launch studies, and asteroid processing projects. The organization provided \$100k in seed money for the Mars Society, operated the Cheap Access to Space Prize and supported such projects as The Watch asteroid search program. FINDS also underwrote and co-sponsored a very successful series of Senate Roundtables on space issues in conjunction with the Foundation and the lobby Pro-Space over the last few years.

To support his activism, Tumlinson produced the animated videos used to gain funding for the Air Force's DC-X rocket project, the International Space University, the X-33 rocket program, the Air Force's Space Command and created the first ever paid political announcement for space. A regular contributor to the space industry paper Space News, Tumlinson's writings and quotes have appeared in the New York Times, Wall Street Journal, Los Angeles Times, Miami Herald, Reader's Digest and dozens of other publications around the world. He has appeared on such television programs as ABC's World News Tonight, the CBS Morning Show, and Politically Incorrect. Internationally he has appeared on TV sets from Russia to China's CCTV and the BBC and been quoted in a wide range of journals, from The Economist to China's People's Daily.

Not satisfied to just talk, write about and help get funding for projects, Mr. Tumlinson has put his time and money where his mouth is. He co-founded the firm LunaCorp which produced the first ever TV commercial shot on the International Space Station for Radio Shack. He led the team which turned the Mir Space Station into the world's first commercial space facility, and was a co-founder of the space firm MirCorp. Along the way he personally signed up Dennis Tito, the world's first "citizen explorer," and has assisted in numerous other such projects.

Rick has appeared on the front page of the New York Times, has been featured in two issues of Popular Science, and appeared as an expert guest on the "CBS Evening News with Dan Rather," CNBC's "Open Exchange" and was quoted in papers such as the Washington Post, LA Times, and the Orlando Sentinel, regarding the Space Shuttle Columbia disaster. He also appears often as a space commentator on CNN. He has been a consultant to the Heinlein Prize Organization and is leading an effort to get the United States to Return to the Moon and explore Mars. Working with Board Member Erin Medlicott, Rick edited "Return to the Moon" which was published in late 2005. He is also developing his new space firm, "XTreme Space."

Treasurer

Natalie Vollrath – Natalie Vollrath has been active in the space movement since 1993 and a Foundation Advocate since 1999. She can often be spotted at Foundation conferences running registration and other functions. Natalie is an active partner of JP Aerospace, handling financial and contract management for the company and serving as Recovery Coordinator out in the field. For her day job and career, Natalie has been in quality management for 15 years and holds a number of certifications in quality and regulatory affairs. She is an Amateur Radio operator as well as a California-licensed Pyrotechnic Operator for Rockets 3rd Class.

Secretary

Michael Heney – Recipient of the Space Frontier Foundation's 2005 Service to the Frontier Award. Manager of the Space Frontier Foundation's Information Technology systems.

Advocates Coordinator

Manny Pimenta – Manny developed the virtual reality lunar DVD for PCs for Lunar Explorer (www.lunarexplorer.com). He is also currently an Applications Engineering Manager for a New Jersey company that engineers and manufactures computer systems used by electric distribution, water, and gas utilities, as well as transportation systems like CTA, Washington Metro, and Amtrak. He has an Electrical Engineering background and a Masters in Computer Science. Like many other people, he has had a life long interest in space exploration. He decided to join the Space Frontier Foundation after attending a Return To The Moon conference in Las Vegas and discovering that many of the ongoing private efforts to push the space exploration vision were driven by Foundationers. After so many years of waiting for NASA or the Government to open up space for all of us and becoming disillusioned that it would never happen, he was encouraged that an alternate possibility existed and was gaining viability with each passing year: private enterprise will open space for all of us. Manny is a previous Foundation Board member.

Creative Director

Peter Thorpe – Peter has spent 25 years designing and illustrating book covers for various publishers, including Warner Books, Random House, Doubleday, Putnam, HarperCollins and Penguin USA. His series of covers for over 40 editions of Tony Hillerman's Navajo mysteries has gained him world wide recognition. His paintings have been exhibited at The Society of Illustrators and Art Directors Club, and have appeared in Communication Arts and Print Magazine. His work can be seen at www.peterthorpe.net. Thorpe designed the Space Frontier Foundation's logo in 1988, and since then has been involved in many Foundation projects, including designing the Foundation's journal, Space Front, and designing the Foundation's web site.