



The SETI League, Inc.

2004 Annual Report
Issued 7 March 2005

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H. Paul Shuch, Ph.D.
A. Heather Wood

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SETI scientists seek to determine through microwave and optical measurements whether humankind is alone in the universe. Since Congress terminated NASA's SETI funding in 1993, The SETI League and other scientific groups have been attempting to privatize the research. Experimenters interested in participating in the search for intelligent alien life, or citizens wishing to help support it, should visit us on the Web at <<http://www.setileague.org/>>, email to join@setileague.org, send a fax to +1 (201) 641-1771, or contact The SETI League, Inc. membership hotline at +1 (800) TAU-SETI. Be sure to provide us with a postal address to which we will mail further information. The SETI League, Inc. is a membership-supported, non-profit [501(c)(3)], educational and scientific corporation dedicated to the electromagnetic Search for Extra-Terrestrial Intelligence.



SETI League Vision

Recognizing that confirmed evidence of extraterrestrial intelligence will change forever our view of humanity's place in the cosmos, The SETI League, Inc. envisions a worldwide network of amateur and professional scientists working together to hasten our entry into the galactic community.

SETI League Mission

To encourage and support the Search for Extra-Terrestrial Intelligence by:

1. attracting a wide range of amateur and professional scientists into the SETI community;
2. developing technologies to assist the SETI experimenter in assembling a workable radio or optical SETI observatory;
3. disseminating hardware and software designs in support of SETI;
4. coordinating SETI experimenters worldwide in conducting a thorough sky survey;
5. providing a variety of forums and media for wide-ranging communication among SETI experimenters, enthusiasts, and organizations;
6. designing, assembling, and operating advanced optical and radio telescopes;
7. identifying and publicizing potential spin-off applications of SETI technologies; and
8. raising public consciousness as to the importance and significance of a broad-based Search for Extra-Terrestrial Intelligence that encompasses a variety of strategies.



Executive Director's Annual Message

Dear SETI Supporters,

When the nonprofit SETI League was founded, I was happily employed as a tenured college professor, enjoying both my teaching duties and the security of a lifetime job contract, backed by the taxing authority of the state. So when your Board of Trustees offered me the opportunity of a lifetime, to do fringe science on soft money, of course I jumped at the opportunity! For their part, the wise and generous founders of The SETI League offered me a five-year contract, guaranteed to match my teaching salary and benefits, thus allowing my family to continue to eat. It has been a good deal for me, and I hope for all of you, in that we've managed to stretch that five-year contract farther than anyone dared hope. I have just completed my tenth year with The SETI League, and wouldn't want to be doing anything else.

Unfortunately, however, the economy has other plans for me. As you may know from reading our Annual Reports and quarterly newsletters, we have been struggling to keep our organization's collective head above water in the face of global recession, international conflict, and a general downturn in private support for nonprofit endeavors in general, and SETI science in particular. You will see in this Annual Report that our major donations are at an all-time low, with many who have helped us in the past now forced to withdraw their support. So, I was not particularly surprised to learn that the Board of Trustees would be unable to extend my employment contract when it expired last August.

I remain as committed as ever to The SETI League and its educational and scientific mission. Unfortunately, since my family has not yet learned how to survive without food, clothing, shelter, and health care, I found it necessary to seek gainful employment elsewhere. Last year I resurrected Microcomm, the consulting firm I founded in California thirty years ago, and once more hung out my engineering shingle. Immediately, I landed some interested jobs (and was able to contribute much of the proceeds to The SETI League). Now, one of my consulting clients has put me on payroll, as Vice President and Chief Technology Officer of a high-tech startup, making mine the shortest retirement on record.

Although our League can no longer afford the luxury of a full-time Executive Director, we are a dynamic and vital organization of dedicated and committed volunteers. Like SETI science itself in the wake of Congress pulling the plug on NASA funding a decade ago, The SETI League refuses to die. And I refuse to turn my back on the most exciting venture of my lifetime (and possibly of yours).

Where does this leave me? As a SETI League volunteer, just like the rest of you. If it pleases our Board, I will continue to serve as your Executive Director, on a volunteer basis. Like the rest of you, I will pursue my profession, support my family, and serve The SETI League on weekends, evenings, and whatever spare time I can muster. As long as I'm able, I will continue as editor of *SearchLites*, and webmaster to our extensive website. I will write articles, and grant interviews, and attend conferences, as my work schedule permits. And I too will continue to strive toward the day of Contact.

So, we're all volunteers now. Your ongoing support becomes more important than ever, as we make the transition to life without the luxury of fulltime leadership. And yes, I will continue to be an active SETIzen. I just won't be able to answer your emails instantly anymore. But then, if nothing else, the search for extraterrestrial intelligence has taught us patience.

Yours for SETI Success,

H. Paul Shuch, Ph.D.



Case for Support

Ever since mankind first used intellect to distinguish itself from the rest of the animal world, a fundamental and profound distinction became evident --- we do not seek simply for survival, we seek to understand.

Intellectual curiosity is part of what separates man from beast. And scientific endeavor has always been driven less by need than by desire. We desire knowledge not for what we can do with that knowledge, but for the sake of the knowledge itself.

Modern scientific research has until recently followed the same principle --- ask the questions, find then answers, then figure out how to apply that knowledge. But today, more and more scientific research is being dictated by a pre-determined end, an application in search of a question.

Scientific research isn't about application, but discovery. The Search for ExtraTerrestrial Intelligence (SETI) is mankind's search to know what, or who, is out there. Because it is contrary to our nature to not try and discover if there is intelligent life beyond our own world.

The SETI League was established in 1994 to continue the scientific research formerly conducted by NASA. When funding for NASA's SETI research was cut, it was left up to a handful of visionary pioneering scientists to privatize the search for intelligent life in the universe.

The SETI League is a 501 (c)(3) not-for-profit scientific research and education organization. Universal in its scope, it is international in its composition, with more than a thousand volunteers in five dozen countries participating in the organization's activities.

Project Argus is a prime example of the type of work **The SETI League** is involved in. *Project Argus* is an effort to deploy and coordinate roughly 5,000 small radio telescopes around the world, in an all-sky survey searching for microwave signals which might possibly be of intelligent extra-terrestrial origin. When fully operational, *Project Argus* will provide the first ever continuous monitoring of the entire sky, in all directions in real time.

SETI League members have developed the necessary hardware, software, protocols and procedures for distribution worldwide. Traditional research grade telescopes, of the type used by NASA, can view only a small fraction of the sky at a given time, typically on the order of one part in a million. To achieve the goal of continuous all-sky coverage would require one million telescopes, properly located and aimed. The cost for such an enterprise would exceed the Gross Planetary Product.

Project Argus has taken an innovative approach to the problem. By employing much smaller, relatively inexpensive amateur radio telescopes, built and operated by **SETI League** members at their own expense, we will be able to achieve an all-sky view for an infinitesimally smaller expenditure.

Only 5,000 of these smaller instruments, properly coordinated, are necessary to see in all directions at once. The equipment, though modest, is capable of detecting microwave radiation from sources out to a distance of several hundred light years.

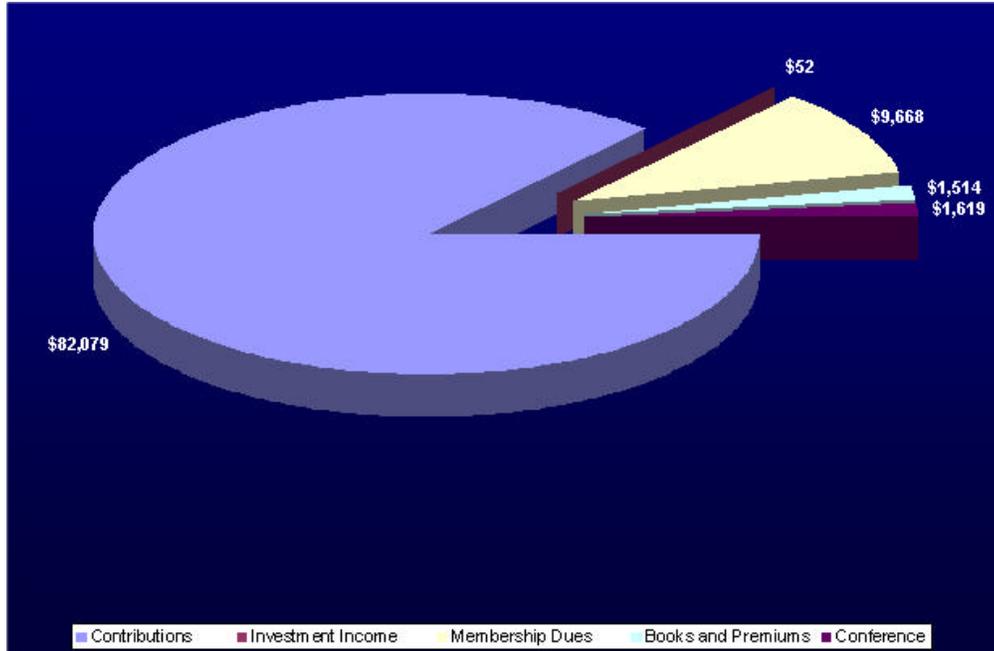
This is an example of the innovative volunteer projects that members of **The SETI League** are engaged in. And while the relative cost of these types of projects are low, there are hard costs nonetheless.

To continue this research and expand **SETI League** activities, the organization needs to raise \$600,000 over the next three years. Membership dues, gifts and contributions will certainly help, but it is necessary to expand funding sources beyond current levels and current sources.

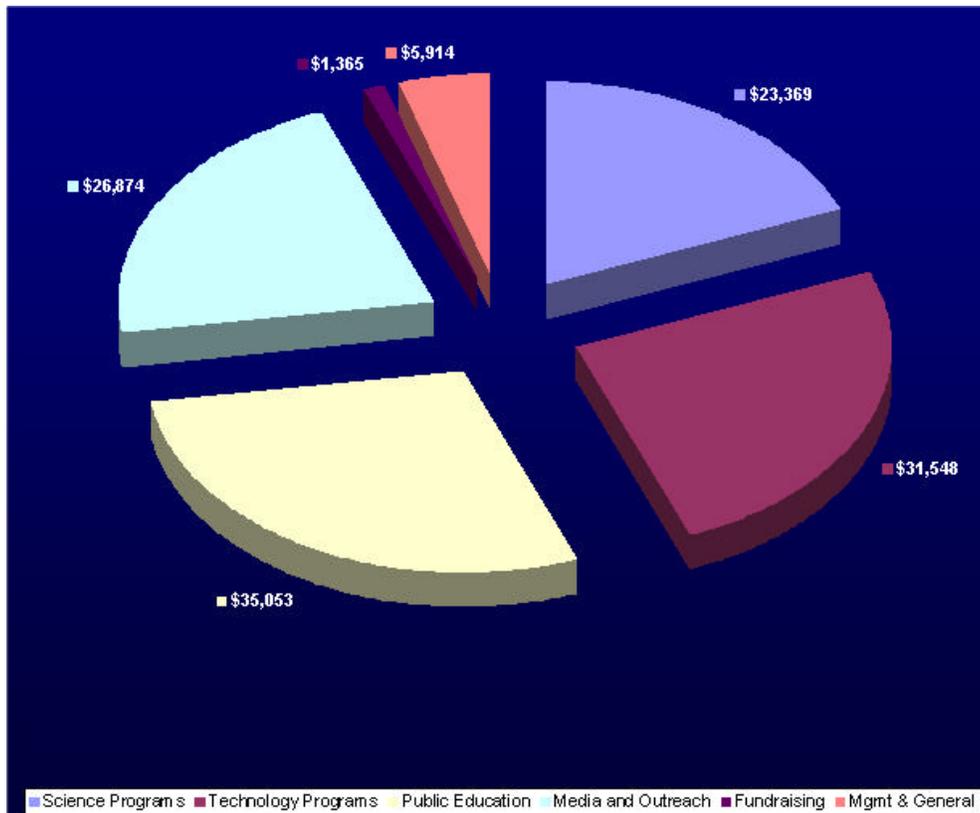
The SETI League is seeking investments of \$50,000 from foundations, corporations and individuals, those who are committed to scientific research and radio astronomy.

We welcome the opportunity to present our annual report and a full proposal for funding. And while spin-off technologies and applications are an inevitable result of scientific exploration and discovery, it is the search that inspires us, that causes us to lift our eyes to the heavens and wonder.

Financial Highlights



2004 Revenues



2004 Expenses

Program Service Accomplishments – Science

During 2004, The SETI League and its members made the following contributions to direct scientific research and observation:

- Coordinated 127 Project Argus radio telescopes in 23 countries, built and operated by volunteers, logging an estimated 100,000 hours of astrophysical observations. Argus stations analyzed and cataloged several candidate signals during 2004.
- Operated W2ETI Moonbounce Beacon for 4 1/2 months, providing 1600 hours of free microwave calibration signals to the world's amateur and professional radio telescopes.
- Provided Committee leadership (as co-chairman) to the SETI Permanent Study Group of the International Academy of Astronautics.
- 246 members contributed an additional 1,000 additional years of processing time to the SETI@home distributed computing experiment.
- Performed laboratory measurements to help refute a claim of extraterrestrial technology on Earth.



These six SETI League members, who all serve on the SETI Permanent Study Group of the International Academy of Astronautics, attended Study Group meetings held at the International Astronautical Congress in Vancouver, Canada, in October of 2004.

Program Service Accomplishments – Technology

During 2004, The SETI League and its members made the following contributions to technology design and development:

- Designed and tested an analog power combiner circuit for the Very Small Array radio telescope prototype.
- Provided design consultation and proposal assistance to the Montecorvino SETI Telescope Array (MStar).
- Coordinated and archived four closed technical email lists.
- Inducted five more amateur radio astronomers into the Extra-Terrestrial Century Club.

	<h3>MStar Preliminary Research Proposal</h3>	
<p>Principal Investigator: Prof. H. Paul Shuch, Ph.D. (drseti@cal.berkeley.edu)</p>		
<p>Key Design Features of Instrument:</p> <ul style="list-style-type: none"> ▪ 25 4.5 meter reflectors in six spiral arms ▪ Full tracking azimuth and elevation rotation ▪ Dual Orthogonal Circular Polarizations ▪ Full 'water-hole' coverage, 1.2 - 1.7 GHz ▪ Simultaneous radiometry, spectroscopy, and interferometry in real time 		<p>The SETI League's Very Small Array (VSA) prototype in Pennsylvania, USA will serve as a test-bed for developing required MStar technologies.</p>
<p>Experimental Design</p> <ul style="list-style-type: none"> ▪ Site survey for mitigation of electromagnetic interference ▪ Installation of central dish for validation of basic receiver circuitry ▪ Meridian transit sun sweep for calibration ▪ Begin all-sky SETI survey upon completion of first spiral arm 	<p>Schedule Milestones</p> <ul style="list-style-type: none"> Year 1: Demonstrate Total Power Radiometry - completion of one Spiral Arm Year 2: Mega-channel spectroscopy - completion of three Spiral Arms Year 3: Aperture synthesis interferometry with all spiral arms in place 	<p>Applications</p> <ul style="list-style-type: none"> ▪ Meridian transit all-sky SETI survey ▪ Parasitic Astrophysical Survey ▪ Targeted SETI in direction of known exoplanets ▪ Quick-response verification of candidate SETI signals
<p>Collaborators</p> <p>The SETI League, Inc. Little Ferry, NJ USA</p>	<p>Osservatorio Astronomico Scientifico "Gian Camillo Gloriosi," Montecorvino Rovella, Salerno IT revised 14 August 2004</p>	

Program Service Accomplishments – Public Education

During 2004, The SETI League and its members made the following contributions to educating the public on SETI science and technology:

- Conducted EuroSETI04, The SETI League's first European Technical Symposium, and published Proceedings on CD-ROM.
- Conducted SETICon04, The SETI League's fourth annual Technical Symposium, and published Proceedings on CD-ROM.
- Distributed 15 copies of "Tune In The Universe!", a radio amateur's guide to the Search for Extra-Terrestrial Intelligence.
- Distributed 7 print copies of "The SETI League Technical Manual."
- Executive Director delivered ten public lectures in four countries, on radio astronomy techniques and related SETI science.
- Published more than a dozen technical articles in the popular and scientific press.
- Published third issue of "Contact In Context," a Web-based peer-reviewed SETI scholarly journal.
- Provided webmastering services to the Society of Amateur Radio Astronomers, the International Academy of Astronautics SETI Permanent Study Group, and Invitation to ETI.



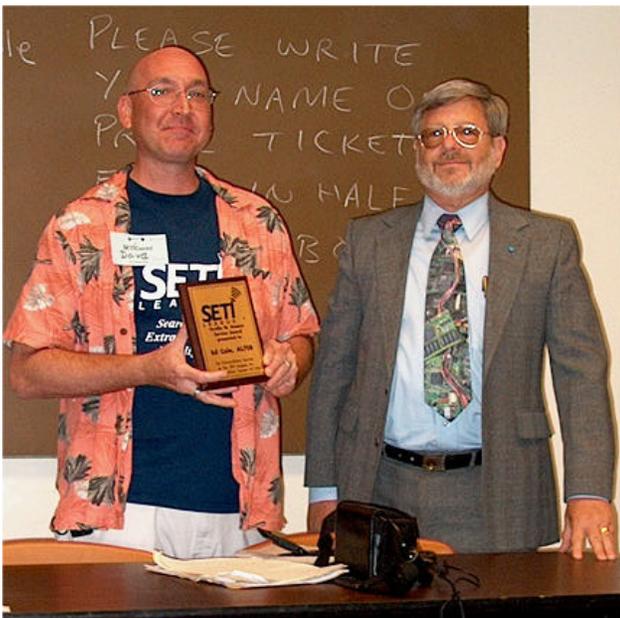
Fifteen SETI League members from the US, Scotland, Germany, France, Italy, Switzerland, Luxembourg, and Russia gathered at the Starkenburg Observatory in Heppenheim, Germany, for the EuroSETI04 conference in late March of 2004. Here they display the Flag of Earth, flown at SETI observatories all around the world. We are saddened to report that SETI supporter James Cadle, the Flag of Earth's creator, passed away during 2004.



Program Service Accomplishments – Media and Outreach

During 2004, The SETI League and its members engaged in the following media and outreach activities:

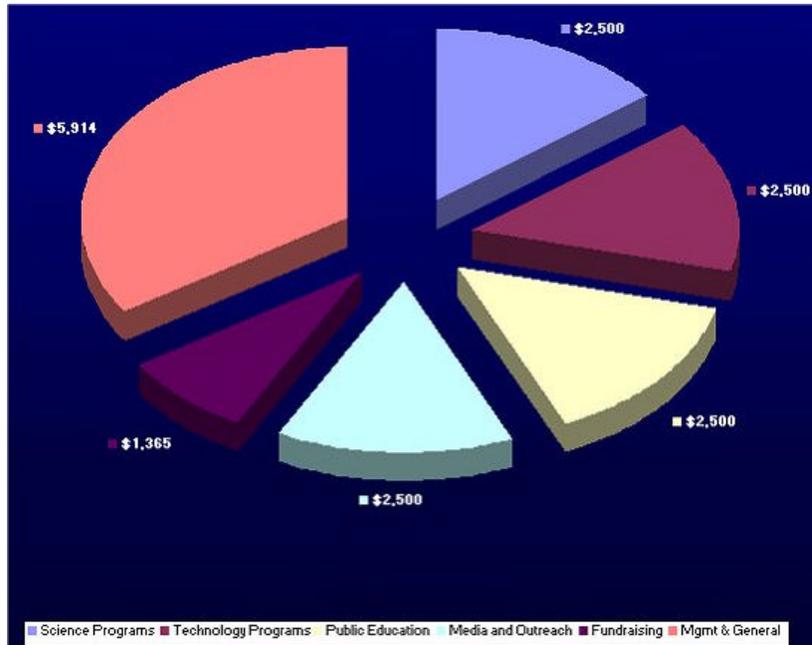
- Published four issues of SearchLites, the quarterly newsletter of The SETI League, Inc.
- Coordinated and archived two open public email lists.
- Distributed six Press Releases and twelve Editorials to over 700 media outlets worldwide.
- Filed 52 weekly updates to The SETI League's extensive website, bringing its total document count to over 2800 pages.
- 65 volunteer Regional Coordinators in 49 countries conducted a dozen print and broadcast media briefings and interviews.
- Executive Director granted print media and broadcast interviews in the US, Canada, Italy, and Germany.
- Presented the tenth annual Giordano Bruno Memorial Award, the third annual Orville N. Greene Service Award, four Best Ideas Awards, and twelve SETI SuperStar Awards.



At the Awards Reception held in conjunction with SETICon04, Awards Committee chairman David Ocame (left) and Executive Director H. Paul Shuch present the Orville N. Greene Service award, via speakerphone, to volunteer Regional Coordinator Ed Cole in Alaska.



Annual Budget Highlights – 2005



2005 Expense Budget

REVENUES:	2005 (revised budget)
Dues, Grants & Contributions	13,102
Interest & Investments	20
Total Revenues:	13,122
EXPENSES:	
Educ. and Scientific Programs	10,000
Management & General	5,914
Fundraising	1,365
Total Expenses:	17,279
Excess or (Deficit) for the year	(4,157)
BALANCE SHEET:	
Beginning Net Assets	7,166
Ending Net Assets	3,009

Note: Projected revenues include pledged grants and membership dues only. They do not include any future grant amounts or new revenue sources, which we can in no way anticipate.



Trustees and Officers

In accordance with Article V, Section 2 of the Bylaws of The SETI League, Inc., as amended, “The Board shall consist of all officers along with such other trustee positions as determined by the Board of Trustees at their annual meeting.” At its annual meeting on 8 August 2004, the Board confirmed the following Officers and Trustees to serve for a term of one year:

<u>Appointee</u>	<u>Position</u>	<u>Professional Affiliation</u>
Richard Factor	President	President, Eventide Inc.
A. Heather Wood	Secretary/Treasurer	Executive Secretary, The SETI League, Inc.
Martin Schreiber, CPA	Trustee	Accountant, Brand Sonnenschine LLP
Marc Arnold, Esq.	Trustee	Attorney, Arnold and Lofaro
H. Paul Shuch, Ph.D.	Executive Director	Chief Technology Officer, QorTek, Inc.



The 2004 SETI League Annual Meeting was held in conjunction with SETICon04 at The College of New Jersey, Ewing NJ.



Accountant's Letter: Audit Not Required

William R.
Hoffmann, LTD.

Certified Public
Accountants



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Professional Building
416 Pine Street
Williamsport, PA 17701
(570) 326-1938 - Phone
(570) 323-6667 - Fax

March 7, 2005

Dr. H. Paul Shuch, Executive Director
The SETI League, Inc.
433 Liberty Street
Little Ferry, NJ 07643

Dear Dr. Shuch:

In accordance with New Jersey charitable registration guidelines, you are not required to have an audit of your 2004 financial statements since total gross receipts are less than \$100,000. You are required to send a copy of your 2004 federal Form 990 and a copy of your internal financial statements along with your New Jersey registration forms.

We have given to Heather a copy of our adjustments so that your financial statements will match the numbers reported on the 990.

If you have any questions or need additional information, please feel free to contact our office.

Very truly yours,

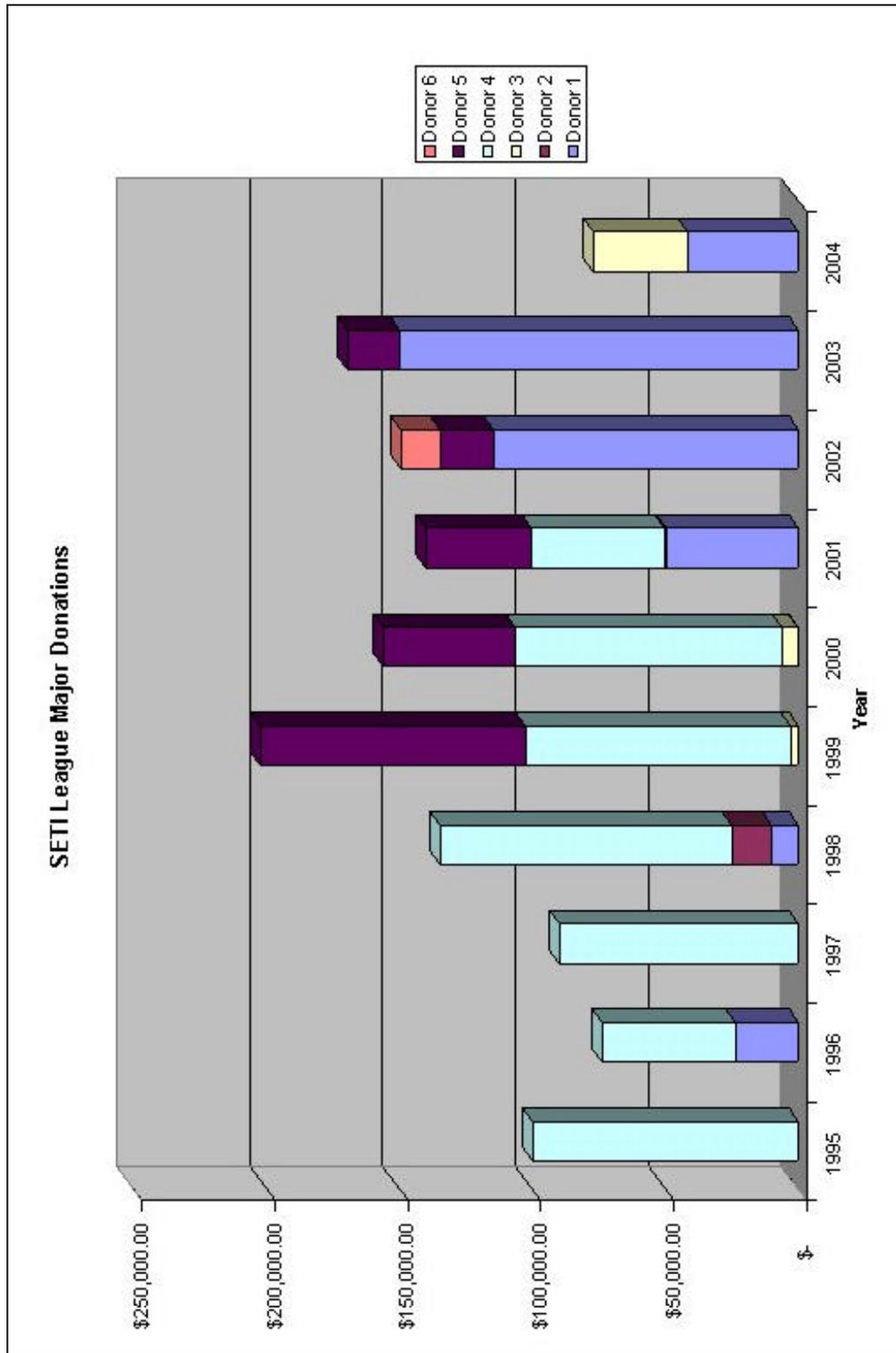
WILLIAM R. HOFFMANN, LTD.

Romey D. Faghano
Certified Public Accountant

Member:
American Institute of
Certified Public Accountants
Pennsylvania Institute of
Certified Public Accountants
National Conference of
CPA Practitioners



Major Donations, Since Inception





2004 Donors

The SETI League recognizes the extraordinary commitment and contribution of our Major Donors, each of whom has provided support in excess of \$10,000 US during 2004:

- Richard Factor
- Dr. H. Paul Shuch

We gratefully acknowledge the following members, who this year have made financial contributions to The SETI League above and beyond their membership dues:

- Michael Abrams
- C. Jack Hale
- Harry E. Kimball
- Martin Malecha
- Thomas E. Oates
- David M. Ocame
- Malcolm Raff
- Pat Santoro
- Susan Tonkin
- Pace Wilbur
- A. Heather Wood
- Owen Wormser

The SETI League welcomes the following individuals, who became new members of The SETI League during 2004:

- Michael Abrams
- David Ames
- Luca Bettinelli
- Richard Braastad
- John Broste
- Gary D. Cochrell
- Cindy Corriveau
- Don C. Dhabolt
- Stephane Dumas
- Gerald Fitzgerald
- Christian Fortin
- Peter Grun
- C. Jack Hale
- Eckhard Kantz
- Judith Keist
- Nancy Krissoff
- Roger P. Ley
- Martin Malecha
- Hamdi Mani
- Michael McKenney
- D. Read Moffett
- Stelio Montebugnoli
- Mark C. Nolte
- Paul Norrigan
- Roy H. Norris
- Ray North
- Thomas E. Oates
- Tomás Palmer
- Lieven Philips
- Bertrand Pinel
- Herman Pulgar
- Bruce Randell
- George Raynault
- Paul Raynault
- Alan Sliski
- Joachim Slupek
- George E. Sutton
- Sam Whipple
- Jay N. Whipple
- Danny Woodard
- Jesse Young



Additional Information

For additional information about The SETI League, Inc. and its various educational and scientific programs, please see the following pages on The SETI League website.

Main Page	http://www.setileague.org
Financial Information	http://www.setileague.org/finances
Membership Services Department	http://www.setileague.org/admin
Publications Department	http://www.setileague.org/articles
Press Relations Department	http://www.setileague.org/press
Photo Gallery	http://www.setileague.org/photos
Technical Programs:	
Project Argus	http://www.setileague.org/argus
Very Small Array	http://www.setileague.org/vsa
Array2k	http://www.setileague.org/array2k
Moonbounce Beacon	http://www.setileague.org/eme
Awards Program	http://www.setileague.org/awards
Hardware Support	http://www.setileague.org/hardware
Software Support	http://www.setileague.org/software
Technical Symposium	http://www.setileague.org/seticon
Dr. SETI ® On Tour	http://www.setileague.org/drseti