



# The SETI League, Inc.

2011 Annual Report  
Issued 14 April 2012

**Offices:**

433 Liberty Street  
Little Ferry NJ  
07643 USA

**Phone:**

+1 (201) 641-1770

**Facsimile:**

+1 (201) 641-1771

**Email:**

info@setileague.org

**Web:**

www.setileague.org

**President /**

**Enrolled Agent:**

Richard Factor

**Executive Director**

**Emeritus:**

H. Paul Shuch, PhD

**Secretary/Treasurer:**

A. Heather Wood

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## Contents:

Vision and Mission Statements	2
The Case for Amateur SETI	3
A message from our Executive Director	4
Program Service Accomplishments – Science	5
Program Service Accomplishments – Technology	6
Program Service Accomplishments – Public Education	7
Program Service Accomplishments – Media and Outreach	8
Trustees and Officers	9
Financial Highlights	10
Budget Tracking – 2011	11
Annual Budget – 2012	11
2011 Donors	12
Major Donations, Since Inception	13
Additional Information	14

SETI scientists seek to determine, primarily 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](mailto: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.**

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## 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.



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## The Case for Amateur SETI

When the NASA SETI Program was cancelled in 1993, the US government accomplished three things: they reduced their science expenditures by 5 cents per US citizen per year; they reduced the federal deficit by 0.0006%; and they drew a curtain across the sky, shielding us from possible membership in the cosmic community. The initial reaction most SETI supporters was dismay. That gave way to elation a year later, with the founding of The SETI League and the privatization of SETI science.

The giant radio telescopes once employed to scan the heavens for signs of life have a limitation. They are incredibly sensitive, but can only view a tiny portion (perhaps a millionth) of the sky at a given time. That means that if such an instrument is turned on, at precisely the right frequency, at precisely the instant The Call comes in, there's still a 99.9999% chance it will be pointed the wrong way.

One solution is to build a network of a million such instruments. But, at a cost of a hundred million dollars apiece, we'll quickly exceed the Gross Planetary Product.

Fortunately, there is another way. Amateur radio telescopes are less sensitive than NASA's dishes, but each can see two hundred times more sky. Which means that only five thousand of these smaller instruments (which cost only a few hundred to a few thousand dollars apiece to build) can, if properly coordinated, accomplish something which no government project ever contemplated: See in all directions at once.

Around the world, around 150 of such amateur radio telescopes have already been built, using discarded satellite television dish antennas, home computers, and readily available signal analysis software. The SETI League envisions a day when thousands of stations will be online, and our great goal achieved: that no direction on the sky shall evade our gaze.

Privatized science makes good sense. When governments get involved in large-scale projects, they often end up taking twice as long, costing twice as much, and working half as well. The SETI League is now doing its modest search on just half a percent of NASA's old SETI budget. But, we do need your support and participation, to keep that search alive. Whether you choose to operate your own radio telescope, to help develop new technology, or merely to share vicariously in the thrill of discovery, you are invited to join The SETI League. Together, there's no limit to what we might yet accomplish.



## Up the Sky Without a Shuttle

by Prof. H. Paul Shuch  
Executive Director Emeritus

Those of us of a certain generation (and I'm afraid that includes most members of The SETI League) can recall with pride the glory days of the Space Race, when, here in the US, NASA represented humankind's boldest hopes. This was a time of Giant Leaps, when the agency was replete with brave astronauts, gifted scientists, brilliant engineers, powerful rockets, limitless dreams -- and a sizeable budget. It seemed as though we could accomplish the impossible -- and, in a way, we did.

Those days are, if not gone forever, at least rapidly fading into dim memory. Today, NASA is an agency with a space mission, but no ticket to ride. Does the end of the Shuttle era mean the end of the dream?

I hope not. Over the past half-century, we on Planet Earth have made halting strides away from ideological competition, toward global cooperation. The International Space Station, though still a work in progress, has shown us what can be accomplished when we put nationalism aside in favor of human progress. The fact that American astronauts are dependent upon our Russian neighbors to hitch a ride there, though an embarrassment to those who think in terms of a once-great spacefaring nation, speaks to our newfound status as a spacefaring world.

Still, here we are without a re-usable launch vehicle. At the very least, it's one small step backward.

Not that the Shuttle ever achieved its promise of being a re-usable launch vehicle. At best, it was a re-manufacturable one. Parts of it would return from a mission, get wheeled into the chop shop, and (months and millions later) re-emerge with little more in common with its previous iteration than a pile of bricks and a name. But, at least, it gave the illusion of an ongoing human spaceflight program. That illusion was shattered with the final landing in 2011 of the last operational shuttle.

And what has all this to do with SETI, the electromagnetic Search for Extra-Terrestrial Intelligence? More than you might think. Recall that when Congress terminated NASA's modestly funded SETI effort in 1993, many of us thought that was the end of the line. We were wrong, of course. Privatization of SETI kept the dream and the mission alive (though at a more measured pace) for the past two decades, and continues to do so today. So may the privatization of human spaceflight keep a different dream alive in a post-Shuttle era.

Richard Branson's Virgin Galactic venture, its Burt Rutan designed *SpaceShip Two* soon to carry passengers into sub-orbital flights, is admittedly a far cry from a Space Shuttle, and is wholly incapable of attaining orbital velocity. It is, however, a truly reusable space vehicle, one which can be turned around and re-launched in a matter of days, not months. I have little doubt that true orbital vehicles will follow (and, in fact, may be already waiting in the wings), ushering in a new era of access to space -- propelled as much by the profit motive as by hybrid rocket motors.

Much as happened in the early days of NASA SETI, the Space Shuttle era began in fits and starts. Cost overruns and launch delays were the norm. Thirty years ago, I had hanging on my office wall an STS-1 launch calendar. It showed the year (1981), and an artist's conception of a Shuttle orbiter, along with the optimistic words "STS-1 -- we *will* launch in March!" Below, in a bit of whimsy that proved both realistic and prophetic, were block calendars for the twelve months of the year, labeled January, February, March, March, March, March, March, and March. I suspect scheduled commercial spaceflights will run to a similar calendar.

Many of us in The SETI League happen to be licensed radio amateurs. We were motivated and inspired by the Shuttle Amateur Radio Experiments, and some of us had the privilege of talking to astronaut/hams as they orbited the Earth. The SAREX program morphed into ARISS (Amateur Radio on the International Space Station), and continues to this day. We can still talk to astronauts in low Earth orbit. But, few of us ever contemplated being on the high-altitude end of such a radio contact. Now, we can. Sure, the ticket costs \$200,000, but that's today. I can easily envision a tomorrow in which members of our fraternity can venture into space with our hand-held transceivers, handing out contacts for little more than the cost of an ocean cruise. And I'm talking ordinary citizens here, not just astronauts! With the privatization of spaceflight will come its true democratization.

I look forward to the day when commercial space access is the norm, when we look fondly back to the quaint old days of costly Shuttle missions, viewing the Space Shuttle as the technological ancestor to modern spacecraft. After all, with all that's been accomplished in the privatization of SETI over the past two decades, isn't that how we're beginning to view the brief (but fondly remembered) NASA SETI program?

## Program Service Accomplishments – Science

During 2011, The SETI League and its members made the following contributions to radio astronomy and SETI science:

- Supported 147 Project Argus radio telescopes built by members in 27 countries on all seven continents. Coordinated their SETI and astrophysical observations. Argus stations analyzed and cataloged several new candidate signals during 2011.
- Members' stations continued to monitor telemetry signals and science beacons from several NASA and ESA interplanetary space probes.
- Provided Committee leadership (as co-chairman) to the SETI Permanent Study Group of the International Academy of Astronautics.
- SETI League members continue to lend computer support to the SETI@home distributed computing experiment, through the Berkeley Open Infrastructure for Networked Computing (BOINC).



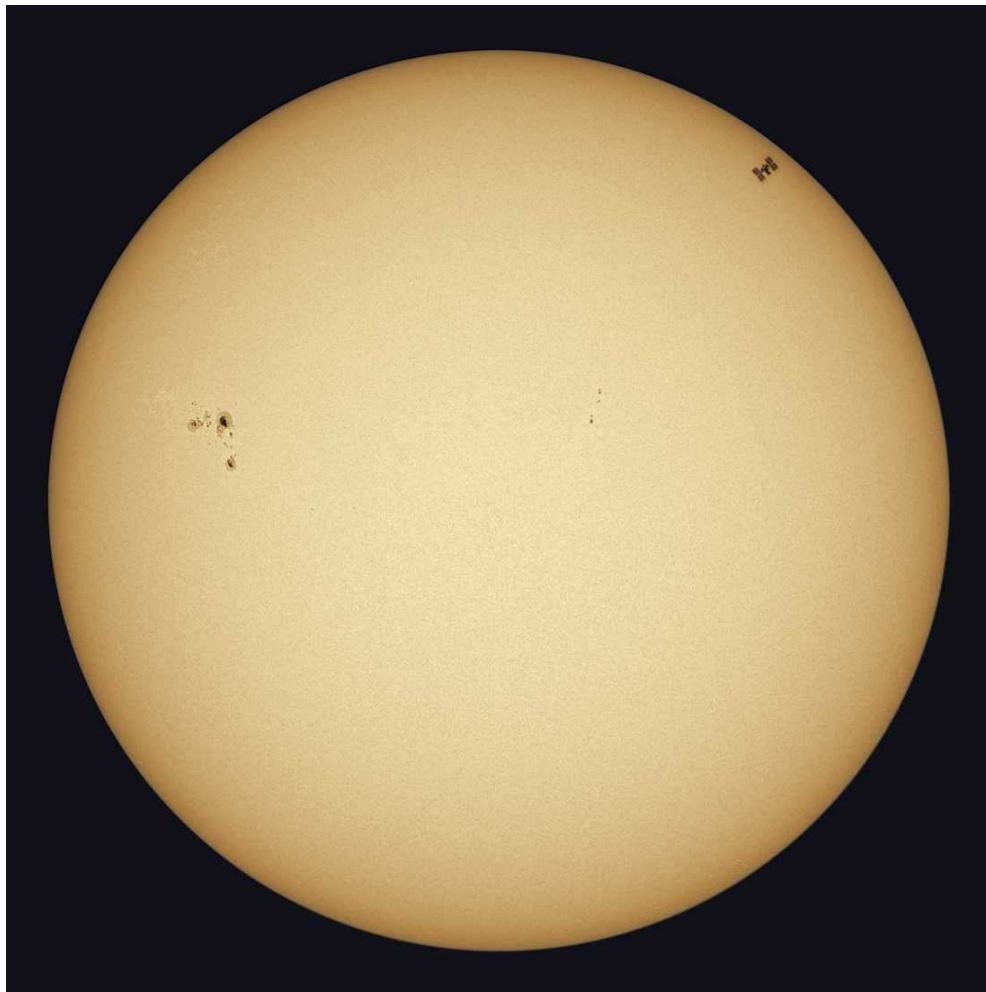
From France, SETI League member Bertrand Pinel sent out this 2011 New Year's greeting card featuring his 3.5 metre parabolic antenna, which he has used over the past five years to monitor signals from 18 different interplanetary space probes. (F5PL photo)

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## Program Service Accomplishments – Technology

During 2011, The SETI League and its members made the following contributions to technology design and development:

- Assisted three members in bringing new Project Argus stations online.
- Coordinated and archived four closed technical email lists.



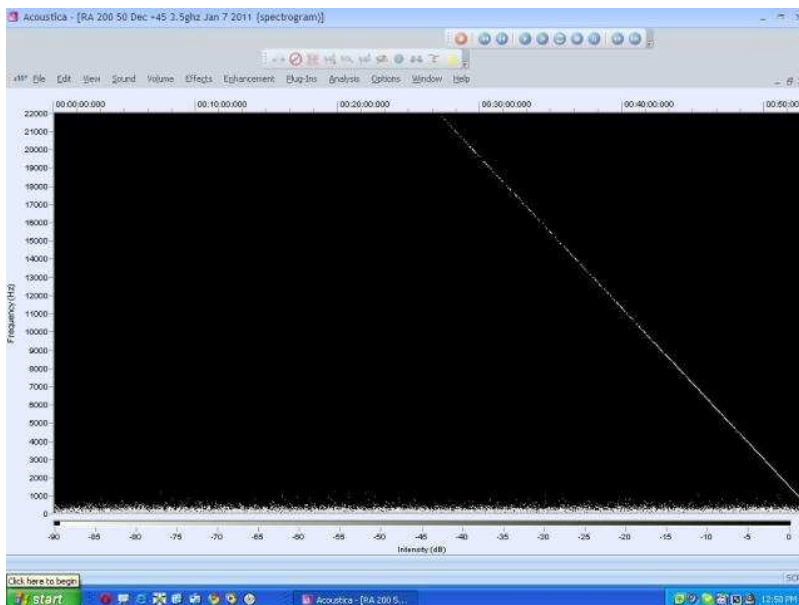
On its last mission, the space shuttle Discovery, docked to the International Space Station, is seen here transiting the Sun on 1 March 2011. This spectacular photo was taken by Alan Friedman of Buffalo NY USA, with a 90mm hydrogen alpha telescope, from the Winter Star Party in Florida.

(Copyright © Alan Friedman / avertedimagination.com, used by permission)

## Program Service Accomplishments – Public Education

During 2011, The SETI League and its members made the following contributions to educating the public on SETI science and technology:

- Executive Director Emeritus delivered six public SETI lectures in the US and South Africa.
- Members participated in the 2011 Green Bank Technical Conference of the Society of Amateur Radio Astronomers (SARA), a SETI League affiliate, as well as SARA's regional conferences in Tennessee and California, presenting papers and conducting workshops.
- Executive Director Emeritus published five technical articles in scholarly journals, Conference proceedings, and the popular press, served as a manuscript reviewer for the International Academy of Astronautics, and as a member of the British Interplanetary Society's editorial board.
- The SETI League provided webmastering and website hosting services to the International Academy of Astronautics SETI Permanent Committee.
- Distributed CD copies of "The SETI League Technical Manual" and "Tune In The Universe!", a radio amateur's guide to the Search for Extra-Terrestrial Intelligence.
- Officers and volunteer Regional Coordinators answered numerous email queries from around the world on technical and societal aspects of SETI.
- Distributed numerous print and CD copies of various SETI League Conference Proceedings.



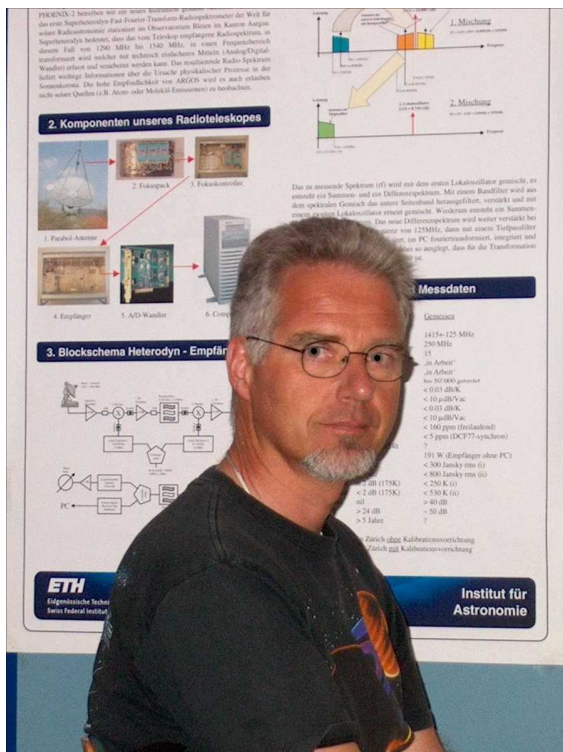
This waterfall display, produced by Canadian member Peter Cheasley, VE3TPR on 7 January 2011 at 3.5 GHz, shows a highly coherent (narrow-band) signal with a Doppler curve typical of a low Earth orbit (LEO) satellite. Such signals frequently plague Project Argus observers, because they are clearly of non-natural origin, but generally produced by human technology.

*VE3TPR image*

## Program Service Accomplishments – Media and Outreach

During 2011, 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 three Press Releases and twelve Editorials to over 700 media outlets worldwide.
- Filed 52 weekly updates to The SETI League's extensive website.
- Mailed out dozens of membership brochures to email requesters.
- Several of our 64 volunteer Regional Coordinators in 46 countries conducted print and broadcast media briefings and interviews.
- Executive Director Emeritus granted interviews to print media and broadcast outlets in California, New Jersey, Pennsylvania, New York, the United Kingdom, Brazil, Germany, and South Africa.
- Awards Committee chairman designated recipients for the sixteenth annual Giordano Bruno Memorial Award, the ninth Orville Greene Service Award, and twelve SETI SuperStar Awards.



The sixteenth Giordano Bruno Memorial Award, announced at the 2011 SETI League annual meeting, went to Christian Monstein, HB9SCT, of ETH Zurich, Switzerland, for his development of the CALLISTO global network of solar spectrometers.

(SETI League photo)



## Trustees and Officers

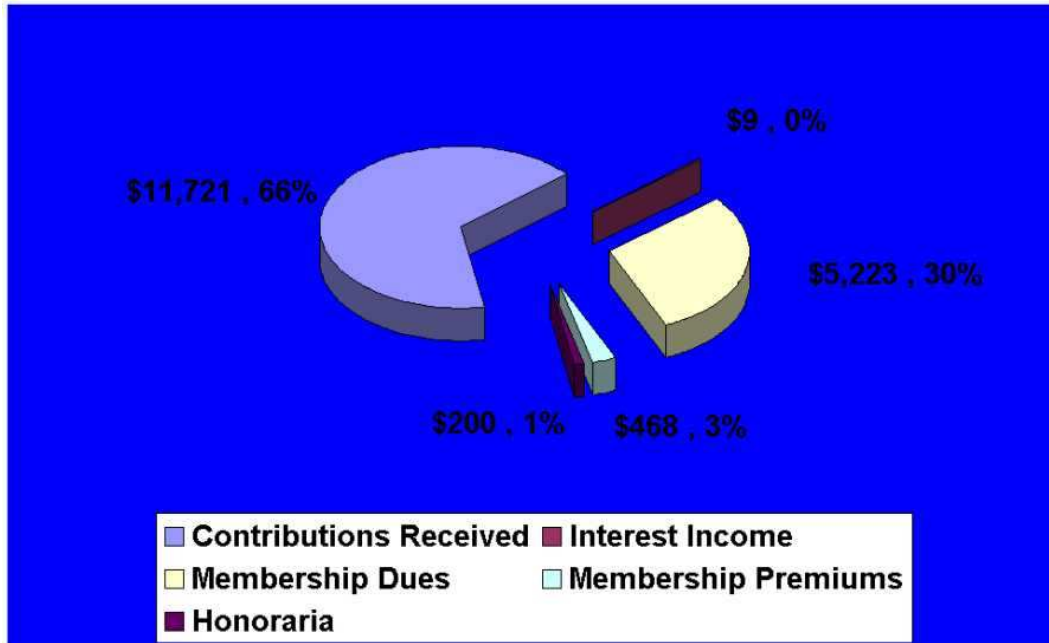
In accordance with Article V, Section 2 of the Bylaws of The SETI League, Inc., as amended, “The Board shall consist of all officers along with such other trustee positions as determined by the Board of Trustees at their annual meeting.” At its annual meeting on 24 April 2011, the Board confirmed the 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	Chairman, Eventide Inc.
A. Heather Wood	Secretary/Treasurer	The SETI League, Inc.
Martin Schreiber, CPA	Trustee	Brand Sonnenschine LLP
H. Paul Shuch, Ph.D.	Executive Director Emeritus	AvSport of Lock Haven

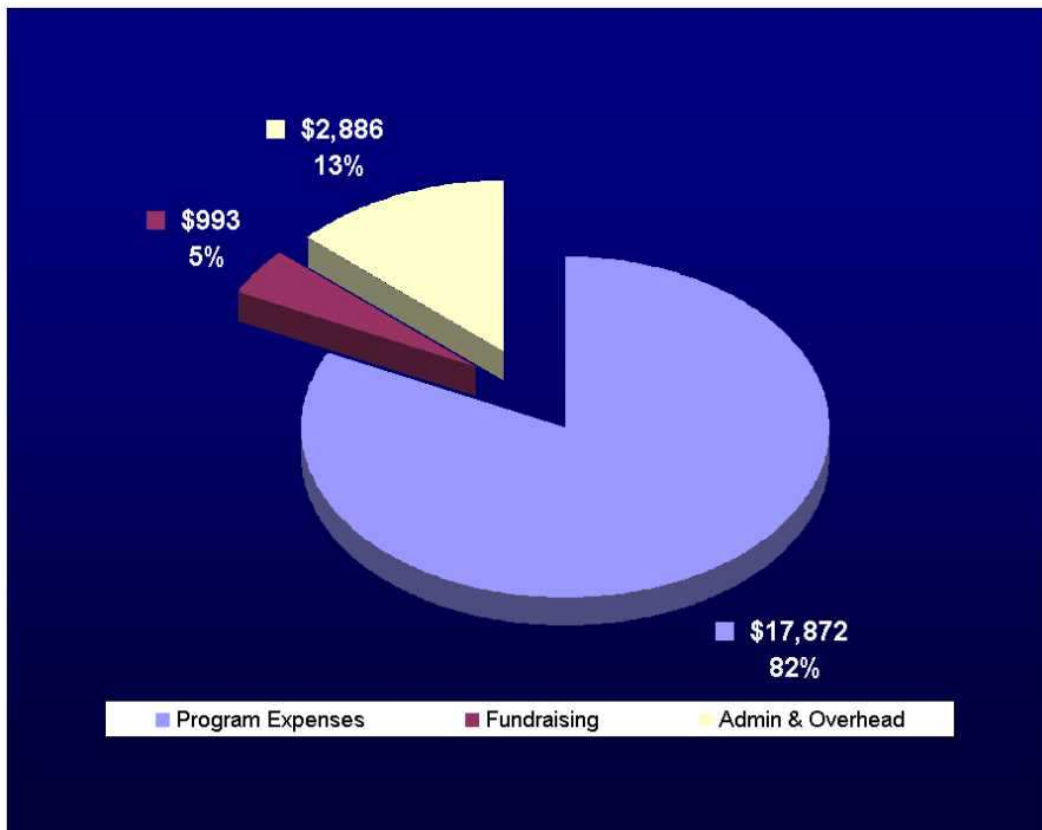


In Michigan, member Jim VanProoyen N8PQK has been duplicating the SETI Horn of Plenty antenna, for distribution to local schools interested in teaching radio astronomy.  
(N8PQK photo)

## Financial Highlights



2011 Revenues



2011 Expenses



### Budget Tracking – 2011

990 Line	REVENUES:	2011 (Projected)	2011 (Actual)
1d	Dues, Grants & Contributions	20,000	17,612
4	Interest & Investments	19	9
12	<b>Total Revenues:</b>	20,019	17,621
	<b>EXPENSES:</b>		
13	Educ. and Scientific Programs	17,000	17,872
14	Management & General	4,600	2,886
15	Fundraising	1,400	993
17	<b>Total Expenses:</b>	22,000	21,751
18	<b>Excess or (Deficit) for the year</b>	-1,981	-4,130
	<b>BALANCE SHEET:</b>		
19	Beginning Net Assets	10,981	10,981
21	Ending Net Assets	9,000	6,851

### Annual Budget – 2012

990 Line	REVENUES:	2012 (proposed)
1d	Dues, Grants & Contributions	18,000
4	Interest & Investments	5
12	<b>Total Revenues:</b>	18,005
	<b>EXPENSES:</b>	
13	Educ. and Scientific Programs	17,000
14	Management & General	3,000
15	Fundraising	1,000
17	<b>Total Expenses:</b>	21,000
18	<b>Excess or (Deficit) for the year</b>	(2,995)
	<b>BALANCE SHEET:</b>	
19	Beginning Net Assets	6,851
21	Ending Net Assets	3,856



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## 2011 Donors

The SETI League recognizes the extraordinary commitment of our Major Donors, each of whom has provided contributions of \$1,000 US or more, in cash or in kind, during 2011:

- Mr. Richard Factor (USA)
- Second Foundation (USA)
- Prof. H. Paul Shuch (USA)

The SETI League welcomes the following individuals, who became new members of The SETI League during 2011:

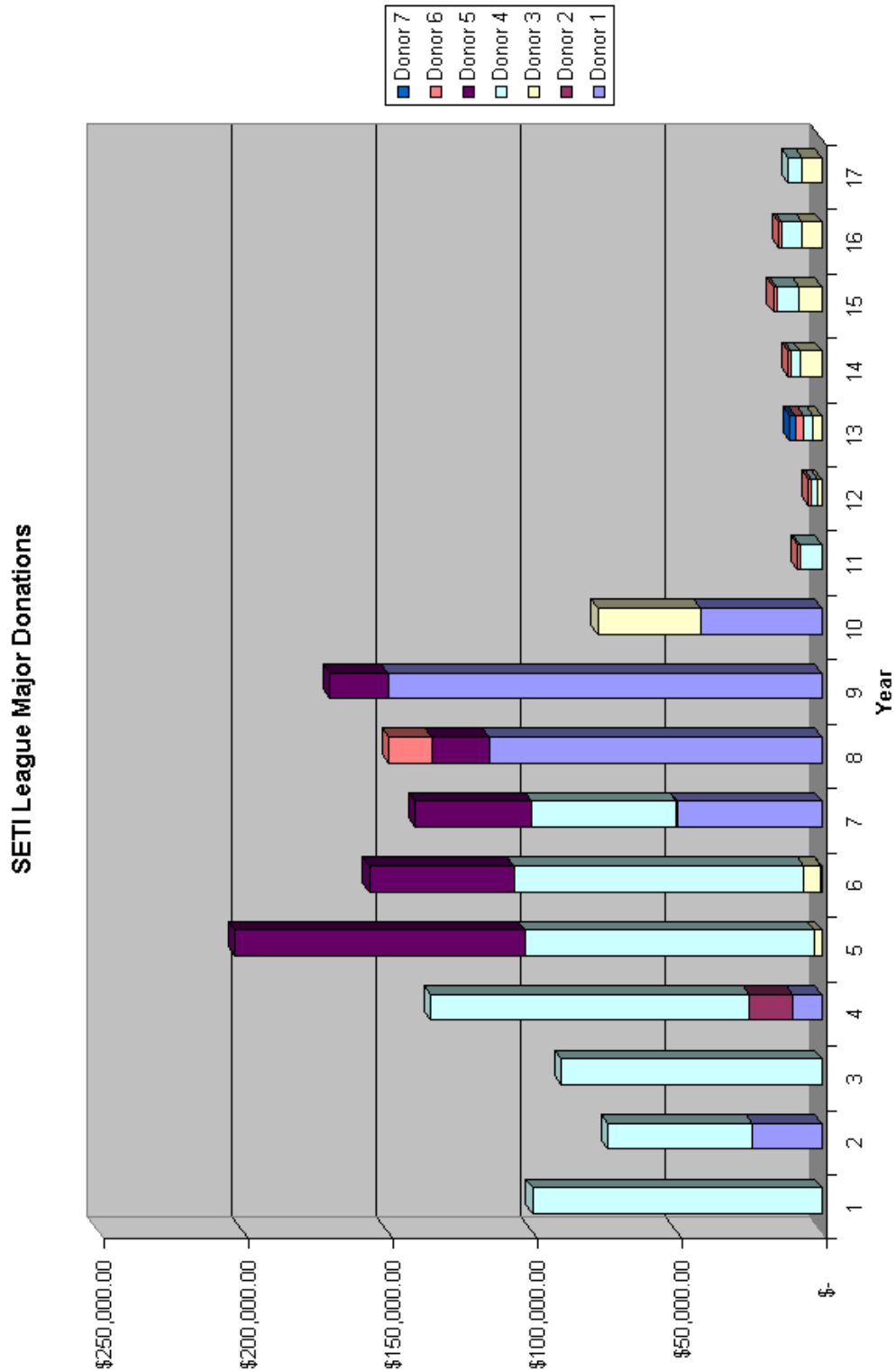
- J. Thaddeus Coin, NC USA
- Fred T. Erskine III, PA USA
- Andy Fain, CA USA
- Joseph E. Hank, NV USA
- Tisha Hayes, AL USA
- Patrick Koehn, MI USA
- Shelley Rogers, CA USA
- Hans van de Groenendaal, South Africa
- Jason B. Williams, England
- David Zielinski, NC USA

We gratefully acknowledge the following supporters, who during the past year have made financial or in-kind contributions to The SETI League above and beyond membership dues:

- Adriano V. Autino
- Keith Cooper
- Nadia Drake
- Adam Frank
- John Kieczewski
- Larry Klaes
- Dennis Murphy
- Christopher Rossie
- Erick Sherman
- Seth Shostak
- Space Renaissance International
- Susan Tonkin
- Alexander Zaitsev



## Major Donations, Since Inception





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



**Four SETI League members, including our Executive Director Emeritus and two volunteer Regional Coordinators, were among the eight attendees at the annual International Academy of Astronautics SETI dinner, held in Cape Town, South Africa in October, 2011. (ZS6AKV photo)**