

AMSAT®



Annual Report
2003



AMSAT

Mission Statement

AMSAT is the principal North American Amateur Radio organization supporting the development of skills and specialized knowledge in the art and practice of Amateur Radio Satellite communications, as well as technology and science, in space.

**We develop, build ,
and operate satellite systems for Amateur Radio communications and experiments using Amateur Radio stations throughout the world.**

**We support and
foster outreach programs to interest the world's youth
in satellite technology and Amateur radio in space .**



AMSAT

Leadership 2003 – 2004

- Governing Officers -

President

Robin Haighton VE3FRH **
Burlington, Ontario, Canada

Executive Vice-President

Richard Hambly W2GPS **
Severna Park, MD USA

Treasurer

Arthur Feller W4ART
Fairfax, VA USA

Corporate Secretary

Martha Saragovitz
Silver Spring, MD USA

Vice-President Operations

Dr. Stacey Mills W4SM
Charlottesville, VA USA

Vice-President Engineering

Stan Wood WA4NFY
Orlando, FL USA

President Emeritus

Dr. Thomas A. Clark W3IWI **
Clarksville, MD USA

Immediate Past President

Keith Baker KB1SF
Rochester, NH USA

- Departmental Vice Presidents -

V-P User Services / Awards

Bruce Paige KK5DO **
Alief, TX USA

Manager, Orlando Laboratory

Lou McFadin W5DID **
Orlando, FL USA

V-P Field Operations

Barry Baines WD4ASW **
Concord, NC USA

V-P Electronic Publications

Paul Williamson KB5MU
San Diego, CA USA

V-P Development

Walter Wittenberg K0CEH
Clayton, MO USA

V-P Strategic Planning

Bill Burden WB1BRE
Stratford, VT USA

V-P Publications

Russ Tillman K5NRK
Vicksburg, MS USA

V-P Government Liaison

Dr. Perry L. Klein W3PK
Washington, DC USA

V-P Human Space Flight

Frank Bauer KA3HDO
Silver Spring, MD USA

*** Members of the Board of Directors*

- Additional Board Members -

Gunther Meisse W8GSM
Mansfield, OH USA

First Alternate:

Lee McLamb KU4OS
Cocoa, FL USA

Radio Amateur Satellite Corporation

**PO Box 27
Washington, DC 20044-0027
301-589-6062**



President's Letter

Robin Haighton



Much progress has been made on our next satellite "ECHO". This satellite, which will replace UO-14, is due to be launched March 31, 2004. Launching ECHO will cost AMSAT-NA around \$110,000 and it is essential that we recoup that launch fee from members and users in order to continue with our satellite program including the development of "EAGLE". To that end we have established a Launch Funding Campaign. This campaign will continue until the goal of \$110,000 is reached.

This year, through your generous contributions and a challenge grant we were able to purchase the EAGLE earth sensors.

A recent membership drive brought 64 new members to our AMSAT family and the income was matched by an anonymous donor.

With escalating costs, and a reduction in the international value of the US dollar, it is increasingly challenging to run this organization and to provide the satellite technology that you want. Thus, it is imperative that we work hard to keep the development funds available.

AMSAT-NA members are taking an active part in the development of parts for P3E such as the Can Bus and IHU boards. The development costs of these are being shared by AMSAT-North America and AMSAT-Deutschland.

I hope that there will be an ongoing launches of amateur satellites by several AMSAT organizations, allowing AMSAT-NA adequate time to raise funds for deployment of new satellites. It is likely that future satellites could cost between \$2.5 and \$3.0 million to build and launch. If we are to do that every 5 years, then this means that we must raise some \$500,000 to \$600,000 for projects each year.

EAGLE's preliminary design leads me to believe that this satellite could be our very best ever; it has the capability to serve AMSAT members around the world in all hemispheres.

There is much to do this year and we look forward to your involvement in AMSAT-NA.

**Robin Haighton VE3FRH
AMSAT-NA President**



Educational Outreach



ARISS

Amateur Radio on the International Space Station

The future of Amateur Radio in space depends on the involvement of our young people world wide. Additionally, there is a significant need to develop new innovative engineers for our future technologies. AMSAT worldwide is doing its part through the renowned ARISS program, conducted in cooperation with NASA and ARRL as well as other AMSAT organizations throughout the world. The program is managed by AMSAT's Frank Bauer, one of NASA's outstanding scientists.

Students in elementary through high school on every continent have the opportunity to talk live with the ham radio astronauts aboard the International Space Station as it orbits the Earth. AMSAT members arrange and guide the students through the process and provide the necessary equipment on the ground to make these thrilling contacts. Last year over 15,000 young people worldwide had one of the great thrills of their young lives as they got to speak firsthand with some of the world's true role models.



In addition to their exposure to the exciting world of space travel, the young people get a taste of the science of orbital tracking, complex communications, electronics and the enjoyment and adventure of ham radio.

“Space Day” At the Smithsonian

In May, 2002 AMSAT participated in a special “Space Day” celebration at the Smithsonian Air and Space Museum in Washington, DC. AMSAT members hosted hundreds of visitors, from celebrities to school children, who participated in a space age cut and paste satellite construction project. Demonstrations outlined how space satellites are constructed and the role satellites play in the world of ham radio and worldwide communications.



Senator John Glenn autographs a prototype satellite designed by Mark Kanawati, N4TPY.

University CubeSats

The future “Bird Builders” are presently engaged in their university schooling. What better time than right now to share the AMSAT experience with them? Using the Senior Advisor members of AMSAT as mentors, we hope to engage these universities, assisting them in their CubeSat design, including system design,

frequency coordination, and the desirability of including amateur radio functions and features. AMSAT members have the experience necessary to save the universities much money and effort, assuring a good space-stable design and learning experience. This mentoring program pays dividends as exemplified by the many AMST designers who have come from such backgrounds including Jan King, Dr. Karl Meinzer and Sir Martin Sweeting.



AMSAT Senior Advisor Richard Daniels, W4PUJ, assists a youngster in assembling a model of AMSAT’s MicroSat during Space Days.



NASA & AMSAT’s Frank Bauer KA3HDO (right) and Russian Cosmonaut Yuri Usachev chatting during Space Day



ECHO

AMSAT's Newest

Soon AMSAT-NA will add the latest MicroSat to the world of Low Earth Orbit spacecraft serving the amateur community around the world. In late March / early April, 2004 this latest AMSAT project will rocket to a sun synchronous circular orbit with an intended inclination of 98 degrees (measured as the northbound angle crossing the equator heading north toward the North Pole) at an altitude of about 800 km. The launch will take place from the Baikonur Cosmodrome in Kazakhstan, Russia aboard a modified Dnepr-1 launch vehicle, which has as its heritage an SS-18 ICBM launched from an underground silo.

The general spaceframe contractor, component developer and AMSAT member, is SpaceQuest located in Fairfax, VA.

The ECHO satellite has cost AMSAT approximately \$500,000 to construct and launch. The launch expense is being covered by a special supplemental Launch Fund Drive now in progress with a goal of raising \$110,000 during 2003 from AMSAT members and supporters.



Russian Dnepr-1 lifts off with MicroSats aboard

Below is Mark Kanawati N4TPY, V.P. of SpaceQuest and AMSAT member, (right) with Ukrainian launch official (left) making final adjustments on a recent MicroSat being readied for launch from the Baikonur Cosmodrome. The wooden stick in Mark's mouth is to apply vibration lock compound to few crucial bolts prior to close out





2003 AMSAT Space Symposium

Toronto, Canada

- Annual Space Symposium -

2003 marked another successful Space Symposium held in Toronto, Canada. Amateur satellite enthusiasts from around the world gathered to hear the latest in new spacecraft developments and to exchange insights.



Attendees exchange views during the Annual Dinner.

Sessions started Friday, October 17th and continued through the Annual General Membership meeting on Saturday evening. Everyone helped celebrate this outstanding event with a great dinner and program that evening.



Attendees and guests enjoy a social moment.

Some Symposium topics presented were: Orbital Determination by Ken Ernandes, N2WWD, a proposal for an Open Experimental Platform for new AMSAT spacecraft by Tim Salo, AB0DO, a new satellite transponder concept based on a possible C-Band transponder by Dr. Thomas A. Clark, W3IWI, and a look at Canada's Smallest Satellite.



Annual Membership Meeting

With over 18 information packed sessions, attendees left with a new respect for the breakthrough work being done by AMSAT volunteers.



Board of Directors deals with the launch of ECHO



Member Services

Update

- AMSAT Journal -

The AMSAT Journal has been a staple in the activities of AMSAT-NA providing a regular opportunity for the scientific community to publish the plans and results of their experiments, the designs for new satellites, and to generally share the activities of AMSAT including extensive participation in the annual ARRL Field Day. Published six times per year, the Journal is provided exclusively to AMSAT members.



- AMSAT e-mail Alias Service -

AMSAT-NA provides a convenient e-mail aliasing service to those who do not wish to publish their personal e-mail address.

- AMSAT.ORG -

Amsat.org is the encyclopedia of the amateur satellite world. This Internet Web site attracts tens of thousands of views per month, providing informational services for the design,

construction and operation of our satellites. From the heavy science to the simple "How-To" tutorials, amsat.org is the center of activity and information exchange.

- ANS (AMSAT News Service) -

This weekly e-mail service keeps members up to date on the latest developments within the hobby. Additionally, it delivers the up to the minute information needed by ham radio operators around the world on the status of each spacecraft presently in orbit, including their operating condition and associated operating frequencies.

- AMSAT Bulletin Board -

amsat-bb@amsat.org is an e-mail service provided for the exchange of questions on design and operation of the AMSAT satellite fleet. Thousands of exchanges occur per month.

- AMSAT Area Coordinators -

The nearly 200 AMSAT Area Coordinators are volunteers who serve as AMSAT's regional ambassadors in the US (48 of 50 states) and Canada (5 of 12 provinces / territories). They serve in a variety of roles, from making presentations at local meetings to manning booths and conducting demonstrations at public schools, hamfests and conventions. Additionally, they serve as local "Elmers", providing technical and operational help to hams in their area.



Radio Amateur Satellite Corporation

Balance Sheet, as of 12/31/2002

ASSETS¹

CURRENT ASSETS

Cash & Cash Equivalents \$136,364.

Total CURRENT ASSETS \$136,364.

FIXED ASSETS

Furniture & Equipment \$67,162.

Less Accumulated Depreciation (\$62,314.)

Book Value of Fixed Assets \$4,848.

LONG-TERM INVESTMENTS

Mutual Funds \$283,855.

Corporate Stocks \$6,898.

Certificates of Deposit \$123,120.

Total LONG-TERM INVESTMENTS \$413,873.

TOTAL ASSETS \$555,085.

LIABILITIES AND NET ASSETS

CURRENT LIABILITIES

Accounts Payable \$19,053.

Payroll & Withholding Taxes Payable \$2,480.

Total CURRENT LIABILITIES \$21,533.

MEMBERS EQUITY

Unrestricted Funds \$494,791.

Temporarily Restricted Fund \$38,761.

TOTAL NET ASSETS \$533,552.

TOTAL LIABILITIES & NET ASSETS \$555,085.

¹ 2002 Audited financials available on the AMSAT web site: <http://www.amsat.org/amsat/amsat-na/financial/amsat-2002-audited.pdf>.



Radio Amateur Satellite Corporation

Sources and Uses of Funds

For the period ending 12/31/2002

Sources of Funds

Dues-New Members	\$12,645.00
Dues-Renewal	\$94,167.00
Advertising	\$8,995.00
Books –AMSAT	\$8,191.00
Books-Resale	\$1,744.00
Donations – Trinkets	\$14,806.00
Donations-General	\$53,415.62
Donations - Life Member	\$7,145.00
President's Club	\$38,495.00
Other	\$45.93
AGM Registration	\$10,448.45
Interest & Dividends	\$678.70
Deposit-KC Tracker	\$9,523.00
KC Tracker Expense	(\$9,069.78)
Royalty SEH	\$548.79
Software Donations	\$23,465.26
ZRO and QSL Bureau	\$97.50

Total INCOME	\$275,341.47

Uses of Funds

Advertising & Promotion	\$2,988.10
Bank Service Charges	\$547.90
Books for Resale	\$586.95
Booth Rental	\$2,737.50
Components	\$7,955.70
e-mail	\$1,981.46
Representation/Promotion	\$731.59
Equip Rental	\$2,877.93
FR Gift	\$613.19
Insurance-Health	\$1,396.44
Ins-Liability and Workman's Comp	\$2,326.24
Postage Prep.	\$4,468.07
Legal & Accounting	\$7,520.00
Licenses	\$649.00
Meeting Supplies	\$246.42
Miscellaneous	\$619.43
Office Supplies & Expenses	\$4,785.57
Pension Plan Expense	\$6,000.00
Photo/Film	\$245.08
Postage & Shipping	\$25,868.44
PO Box Exp(Courier)	\$480.00
Printing & Xerox	\$25,738.35
Record Media(disks/cds)	\$164.77
Reimbursable Expenses	\$4,115.26
Rent	\$16,911.88
Repairs & Maintenance	\$1,499.50
Room Rental	\$509.23
Royalties - Software	\$7,947.50
Salaries	\$64,789.67
Service Charge-MC/Visa	\$4,348.62
Storage	\$319.92
Subcontract-Other	\$85,000.00
Supplies (Other)	\$69.78
Taxes-Property	\$114.05
Taxes-Payroll	\$4,956.56
Telephone	\$4,403.75
Travel	\$29,360.00
BOD Meeting Expenses	\$60.13
Travel BOD Meeting	\$11,489.56
Trophies/Plaques	\$1,280.06
Trinkets	\$9,647.17

Total EXPENSES	\$348,350.77

Gross Profit (Loss)	(\$73,009.30)

Net Income (Loss)	(\$73,009.30)



Radio Amateur Satellite Corporation

A Historical View



AMSAT OSCAR 6
Launched October 15, 1972



AMSAT OSCAR 7
Launched November 15, 1974



AMSAT OSCAR 10
Launched June 16, 1983



AMSAT OSCAR 8
Launched March 5, 1978



AMSAT OSCAR 13
Launched June 15, 1988



AMSAT Lab at NASA
Goddard Space Flight Center



AMSAT Phase 3A
Launched May 23, 1980.
The launch failed.



AMSAT
OSCAR 16
Launched
January 22, 1990



MICROSAT
Mechanical Model
Now at the Smithsonian



AMSAT OSCAR 40
Launched November 16, 2000



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