



The Repeater Rag

Volume 27

Number 4



NEWSLETTER OF THE DENVER RADIO LEAGUE

A CLUB DEVOTED TO
QUALITY AMATEUR RADIO

Published in the Denver South Suburban area, Colorado

EDITOR

Eileen Armagost, WDØDGL

Please submit Articles for publication to:

eileen@armagost.net

Preferred document format: MS Word

or mail hard copy to:

Eileen Armagost, WDØDGL

6337 South Lafayette Place

Centennial, Colorado 80121-2548

DRL BOARD MEMBERS

Tim Armagost, WBØTUB, President

Chris Kregel, KBØYRZ, VP

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Al Cooley, NØAUS, Treasurer

Mike Manes, W5VSI, Member at Large

Nick Hanks, NØLP, Member at Large

George Stoll, WAØKBT, Repeater Trustee

REPEATER LOCATIONS:

146.88Ø Lockheed Martin Company

146.64Ø Centennial Mountain

449.6ØØ Lockheed Martin Company

145.Ø5Ø Digi - Lockheed Martin Company

Repeater Identifier: WAØKBT

The Denver Radio League is open to all licensed amateur radio operators. Repeater usage is limited to properly licensed hams.

Membership dues and renewals

~ Please make checks (\$15) payable to Denver Radio League or DRL ~

Remit to: Al Cooley, NØAUS

6199 South Broadway

Littleton, Colorado 80121-8016

For information, contact Al at:

303-794-6511 or on the 146.88Ø Repeater

Reminders:

DRL Membership Meeting

Thursday,

November 11, 2004

Bemis Public Library



GUEST SPEAKER:

George Stoll, WAØKBT will be the guest speaker at this meeting. His topic will be Broadband over Power Line (BPL) and its effect on radio reception and possible interference issues.

CrockFest

Watch for this event coming up in March, 2005!!

HOLIDAY WISHES ...

From your DRL Board Members and Editor:

Wishing you a very Happy Thanksgiving



A joyous and very Merry Christmas



And an incredibly wonderful New Year 2005!!!



It was decided at the last DRL board meeting that it was time for a **repeater courtesy reminder** and the hot button item was ‘interruption of ongoing conversations’, not to mention drinking and talking! Here are my thoughts on the subject:

As time goes on, we sometimes forget that when a conversation is on-going, the repeater is just like a group standing in the kitchen chatting ... only difference is just one person can talk at a time. So, while we are standing in the kitchen listening to the ongoing conversation concerning our last DX contact and how to get our next contact, would you jump in with “Hey! I just got a new car!”? If you were standing in the kitchen, someone would say “Shut up! We’re talking about DX!”. On the repeater, folks seem to be more courteous (or don’t want conflict) and allow the conversation to be suddenly changed. Early on in our lives we were taught how **rude** it is to interrupt a conversation ... why do we forget this simple courtesy when we are on the air? Does the

pressure of the mic key on our thumb make our brain go flabby?

More than one of us seem to be afflicted with the flabby brain syndrome, so I have included the *Repeater Etiquette Guide* ... Check out paragraph 3, **BREAKS:** and have a look at the part that is italicized. Does it look like what our kindergarten teacher taught us?

With the holiday season upon us, we need to remember that the only person that thinks you are witty and a great conversationalist whilst inebriated is YOU! Note that this is an item that is such a fabric of our understanding that it isn’t included in the Repeater Etiquette Guide but it must be happening or we wouldn’t need to talk about it. Let’s all make it a point not to operate our radios after imbibing.

Following is the Etiquette Guide...thanks for listening!

Tim, WBØTUB
President, DRL

REPEATER ETIQUETTE GUIDE

Mobiles and Portables: Mobile and portable stations should always be given priority over fixed stations. Remember, the repeaters are valuable tools at drive time, in the morning and afternoon for the commuter.

Identification: The FCC requires identification once every ten minutes; it is not necessary to ID after each transmission.

Breaks: Do NOT break into someone’s QSO unless you have an emergency *or something valuable to add to the conversation*. Break in using your call sign (KZØABC) or just ABC is OK. Under no circumstances should you use the word “Break” unless you have an emergency. If you hear the word “Break” give up the frequency immediately to the breaking station. Also, pause between transmissions to give someone else a chance to contribute (wait for the courtesy beep.)

No Contact: It is redundant and not necessary to use the term “no contact.” The fact that the station you called didn’t respond to you speaks for itself. If you have to use slang on the amateur bands don’t use CB jargon, military, police or other terminology not indigenous to the amateur bands. (It will not be tolerated on DRL machines.)

QSOs: Local stations are encouraged to use a simplex frequency whenever possible, so the repeater is free for others to use.

Procedures: While “Q” signals and “calling CQ” are not illegal; they are considered poor operating practice on VHF FM Repeaters.

Membership: If you frequent a certain repeater it is good manners and common sense to become a member of that organization.

Topics: Choose your topics of conversation wisely. Avoid controversial subjects such as religion or politics; not every one has the same views as you and some people offend more easily than others.

Pirates and Bootleggers: Bootleggers occasionally turn up on repeaters. If you hear one, DO NOT attempt communications with him/her for any reason. It is as illegal for you as it is for them.

Malicious Interference: Ignore it, ignore it, IGNORE IT! Don’t make a bad situation worse by responding to a jammer – it only makes them feel special. If you can’t continue your conversation around the jammer, simply go somewhere else.



What is EOSS?

Jack Crabtree, W7JLC, and Mike Manes, W5VSI

Edge of Space Sciences (EOSS) is a Denver, Colorado-based non-profit organization that promotes science and education by exploring frontiers in amateur radio and high altitude balloons. EOSS is also an Amateur Radio Relay League (ARRL) Affiliated Club.

Formed in early 1991, EOSS has grown to a membership of over 40 individuals who actively utilize amateur radio and balloons to further scientific study of the upper atmosphere and to encourage studies of mathematics, science and engineering by students. Membership is available to all interested persons.

While many EOSS members are amateur radio operators or "hams", being such is not a requirement, although a number of members have taken up the hobby after joining EOSS.

Student membership is encouraged and, a reduced membership rate is available.

In addition to the normal slate of directors and officers, EOSS is organized with a number of teams or committees. Some of these groups include technical, public relations, tracking and recovery, and education.

There is ample opportunity for all members to be actively involved in EOSS projects.

EOSS is incorporated in the State of Colorado and is recognized by both Colorado and the U.S. Government as a 501(c)(3), tax exempt, scientific and educational organization.

What We Do

EOSS conducts 10 to 12 unmanned high-altitude balloon events each year, sending scientific payloads to approximately 100,000 feet. Many of these events involve multiple balloon launches.

Ham radio provides the critical command and telemetry links needed for control and real time data down link of balloon position and ambient conditions. In many cases, live video from the payload is available and views of the earth and the edge of space have been made. Educational institutions have discovered EOSS and have enthusiastically adopted its highly skilled services as a "Poor Man's Space Program".

EOSS has also provided balloon operation support for scientific organizations such as NOAA's Forecast

Systems Lab, Pioneer Astronautics, Civilian Space Exploration Team and Navsys.

Members have many opportunities to exchange ideas with their fellow members. A monthly meeting is conducted the second Tuesday of each month in the Admin. Bldg. at Ft. Logan Mental Health Center, affectionately known as the *Balloonacy Group Therapy Center*.

On each remaining Tuesday, the EOSS Balloon Net is conducted at 8 P.M. in the Denver area on the Colorado Repeater Association 147.225 MHz (107.2 tone) repeater. During this net, weekly updates on EOSS projects and news bulletins concerning amateur radio balloon projects around the country are discussed.

Student Involvement

Students of all age groups are involved with EOSS ballooning. They have provided experiments and assisted with launch operations, communications, tracking and recovery.

High school and grammar school students have created plots of telemetry as the balloon flies. These are typically Temperature versus Altitude, Altitude versus Time, and Velocity versus Altitude.

High school and College students have designed experiments to sample upper atmospheric ozone, and radiation. We have also launched an experimental differential GPS payload and a LORAN-C vs. GPS experiment.

Since 2000, EOSS has become an essential contributor to the Colorado NASA Space Grant Consortium. Space Grant monies are provided to qualifying schools that offer hands-on educational opportunities intended to attract new talent into the aerospace engineering fields.

The opportunities for student involvement are essentially unlimited. Please contact us for further information.

Operational Systems

EOSS has successfully launched AND recovered over 85 balloon flight strings. Each string carries a variety of its own ham radio payloads on each flight in addition to the student payloads. A minimum EOSS complement includes two-meter DF beacon, an APRS

beacon and a cutdown command receiver. When the payload weight budget permits, we may also fly either of two Amateur Television (ATV) transmitters operating on 426.250 MHz; the larger of these features an electronic magnetic compass used to keep the down-looking camera aimed in a constant direction while the module body spins. Another popular payload is the EOSS/RMRL 70cm/2m crossband repeater. Despite its 180 mW 2m downlink, this machine has supported QSOs between stations over 580 miles apart. This attests to the wonders of line-of-sight propagation and a radio horizon of over 400 miles. From time to time, we also fly a very lightweight simplex repeater and a simple APRS beacon.

A Kantronics KPC-3 Plus is the heart of the APRS module. It is fed by an on-board GPS receiver and collects data from various onboard sensors: internal and external temperature and barometric pressure. This data is down-linked using 1200-baud packet UI frames. The KPC-3 also provides packet digipeater, K-node and BBS features.

Flight Safety

EOSS balloon flights share civil airspace with some of the heaviest commercial air traffic in the nation. Accordingly, each flight is closely coordinated with FAA authorities, and the position and altitude are reported during the flight to permit controllers to steer traffic around us.

Recently, EOSS's Russ Chadwick, KBØTVJ, and Nick Hanks, NØLP, have pioneered a process where those reports are presented minute-by-minute over the Internet directly to the FAA control floor.

Rick Von Glahn, NØKKZ, refined an earlier trajectory forecasting computer program to allow us to choose a launch site that will avoid landings in populated areas. Rick's forecasts give the FAA a heads-up on which airspace we'll be flying through, and most importantly, a site where the T&R teams can head for in order to effect a speedy recovery. Rick's forecasting program has become a standard tool for most other peer balloon groups around the country.

Upon achieving peak altitude, the latex balloon bursts, and the payload string descends under a parachute. The parachute is sized to minimize the landing impact to minimize damage to both the payloads and to

anything of value at the landing site. EOSS is blessed with the nearly ideal flight area of the eastern plains. Our peers to the east must be prepared to recover from tall trees, while those to the west have deep canyons and terrain that is daunting to even avid off-roaders. But most of the landing sites are on private property, and the T&R teams always seek and gain the landowner's permission to enter for recovery.

EOSS Officers

- ★ Mike Manes, W5VSI, President.
~ Contact Mike for general information ~
- ★ Jim Zimmerman, KØJLZ, Vice-President
- ★ Larry Cerney, KØANI, Secretary
- ★ Merle McCaslin, KØYUK, Treasurer

EOSS Sub-Committees

Edge of Space Sciences subdivides its operations into various committees. If you would like to volunteer for one of these committees, contact the appropriate lead officer.

Technical Committee

The tech committee designs, builds and maintains our payload packages and ground station. Some ongoing projects include:

- Completion of a high-altitude test chamber. We need gastight feedthrus and a mercury manometer or other accurate absolute vacuum gauge.
- A simple, high-efficiency 1200 MHz wideband FM ATV transmitter and low-cost demodulator.
- A simple and lightweight barometrically-armed, load dump sensing balloon release.
 - ❖ Mike Manes, W5VSI, is our chief Tech guy for now, ably assisted by Larry Cerney, KØANI, Nick Hanks, NØLP, and Russ Chadwick KBØTVJ.

Tracking and Recovery Teams

The T&R teams form EOSS's "Lost and Found Department". On each mission we send 4 to 8 teams of foxhunters into the field in advance of the launch. EOSS utilizes both APRS and traditional DFing techniques. EOSS is very proud of the perfect recovery record that these folks have earned.

- Paul Ternlund, WB3JZV, has developed a computerized DF triangulation program.
- Marty Griffin, WAØGEH, is our Tracking and Recovery Lead.

Educational Committee

Currently chaired by Mary-Frances Bartles, KIØDZ.

Membership and Public Relations

- Jim Zimmerman, KØJLZ, chairs this committee and is responsible for our hamfest booths.

Launch and Ground Operations Crews

Launch operations covers two separate but related teams:

- The flight preparation crew gets the payload and balloon ready to fly and conducts launch activities.
- Merle McCaslin, KØYUK, is our Launch operations director, assisted by Dave Galpin, KBØLP, and Larry Noble, NØNDM.

The ground station crew assembles all the equipment necessary to track and communicate with the payload during the flight. It is their job to command and control to the payload and capture any telemetry being transmitted the onboard systems.

- Mike Manes, W5VSI, is the crew lead for the Ground Station.

Internet Communications

The EOSS web site, www.eoss.org, is a gold mine of ballooning information, providing startup information for new balloon groups, plus a detailed history covering all of the flights in our 14 year history. There are links to many other balloon groups as well.

EOSS also offers several email reflectors used to get the word out on upcoming flights and details, photos and audio from recent flights. Links to join those reflectors are on the web site.

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