The REPEATER

The OFFICIAL newsletter of the Rogue Valley Amateur Radio Club

W7DTA

Volume 2011, Issue 11 **November 2011**

Allan Taylor	**K7GT**	**(541) 855-2054**	**k7gt@charter.net**	**President**
Scott Cummings	**KD7EHB**	**(541) 282-9776**		**Vice President**
Lud Sibley	**KB2EVN**	**(541) 855-5207**		**Treasurer**
Jack Schock	**WA7IHU**	**(541) 535-8471**		**Secretary**
Tom McDermott	**N5EG**	**(541) 734-4675**	**n5eg@tapr.org**	**Newsletter and Membership**
Dave Basden	**W7OQ**		**dave@basden.us**	**Webmaster**
Club Web Page:		**http://www.qsl.net/w7dta**		

Next Club Meeting

Thursday, November 3, 2011, 7:00 PM
Red Cross Building, 60 Hawthorne St., Medford, OR
Across from Hawthorne Park
Program: Jack, WA7IHU and Bud, W7LNG: Homebrew Gear

President's Letter

Your club president just returned from Pacificon 2011. The convention was held at a different venue: Santa Clara Marriott rather than the San Ramon Marriott. The venue reflected the difference in locale: rather than East Bay laid-back (!!) it was Silicon Valley high-tension (and prices--breakfast was $20)). Immediately to the north were two huge buildings with 'Yahoo!' on them and Dell was just up the road.

Having the convention in Santa Clara is a warm-up for the 2012 ARRL National Convention to be held there. The change in location brought out some kinks and faux pas but the convention, all in all, was a great event. At the previous location, the swapmeet had been only on Sunday, but for this one was both Saturday and Sunday. I was able to find a ready-to-go microphone for my Tentec Ar-

(Continued on page 2)

Secretary's Report

MINUTES OF THE 6 Oct 11 ROGUE VALLEY AMATEUR RADIO CLUB MEETING

The meeting was called to order by President Allan Taylor, K7GT at 1905L in the Red Cross building in Medford, OR.

Three guests were present: Gene Backes, KW7JIM, Jerry Fulstone, K6KSI & Ed Payne, KA7PVR.

Since the minutes are in the news-letter they will not be read.

Treasurer Lud Sibley, KB2EVN's treasurer's report is $4448.60 in the bank.

OLD BUSINESS:
Allan reported that they supported a very successful "100 mile ultra endurance run" via

(Continued on page 2)

President's Letter, Continued

(Continued from page 1)

gosy for $5. (Yup, I do sometimes use a mike!).

The antenna forum on Friday was typical (and excellent). There were talks that used the real math and those that were more seat of the pants. Dean Straw, N6BV, gave his characteristic talk replete with many, many VOACAP charts on propagation for contesting. Steve Stearns, K6OIK, discussed the Conjugate Match Theorem (lots of math here). Chip, K7JA, gave a discussion and demo on quick deploy antennas, say, for Field Day. Jim Brown, K9YC, discussed the use and fabrication of stubs. And Tom Schiller, N6BT, gave another brilliantly funny discussion on 'Unknown Antenna Disorder'.

The antenna forum this year had the option of purchasing a flash drive with the proceedings of both this year's and last year's presentations. I will make these available for future club meetings. You have got to see N6BT's presentation!

The presentations on Saturday were a little off my interest chart, especially those in the afternoon. The best ones were by K6WX and WG0AT. Kristen, K6WX, discussed her experience in writing an app for PSK31 to run on the iPad. This gal is amazingly brilliant, a complete master of E.E. and the most up-to-date programming. She was able to get an app for PSK31 running on the iPad but, unfortunately, cannot be made available as she did some of the work using proprietary material (she works for Apple). After a rather mathematically intense presentation by Kristen, I next went to the goats. Steve, WG0AT, discussed the Summits on the Air program and in particular his experiences using two goats (Peanut and Rooster) to carry his gear to his favorite summit (Mt. Herman near Monument CO). The two Ele-

(Continued on page 6)

Secretary's Report, Continued

(Continued from page 1)

2 meters.

Don Bennett reiterated that after several years of doing the coffee he would like someone else to take over. Jeff Statchwick, W7KNX volunteered to do it.

NEW BUSINESS:
Allan is to setting up a nominating committee for next year's club officers. He will not be running for president, maybe vice president though. Jack offered to be secretary one more year and Lud said "he would be treasurer again."

At 1930L Allan put the meeting on hold for coffee and "eye ball" QSOing.

At 2000L Allan called the meeting back into session.

Lud Sibley, KB2EVN and Bob Duel, K2GLO put on a very interesting display and dissertation on tube transmitting triodes before WW2.

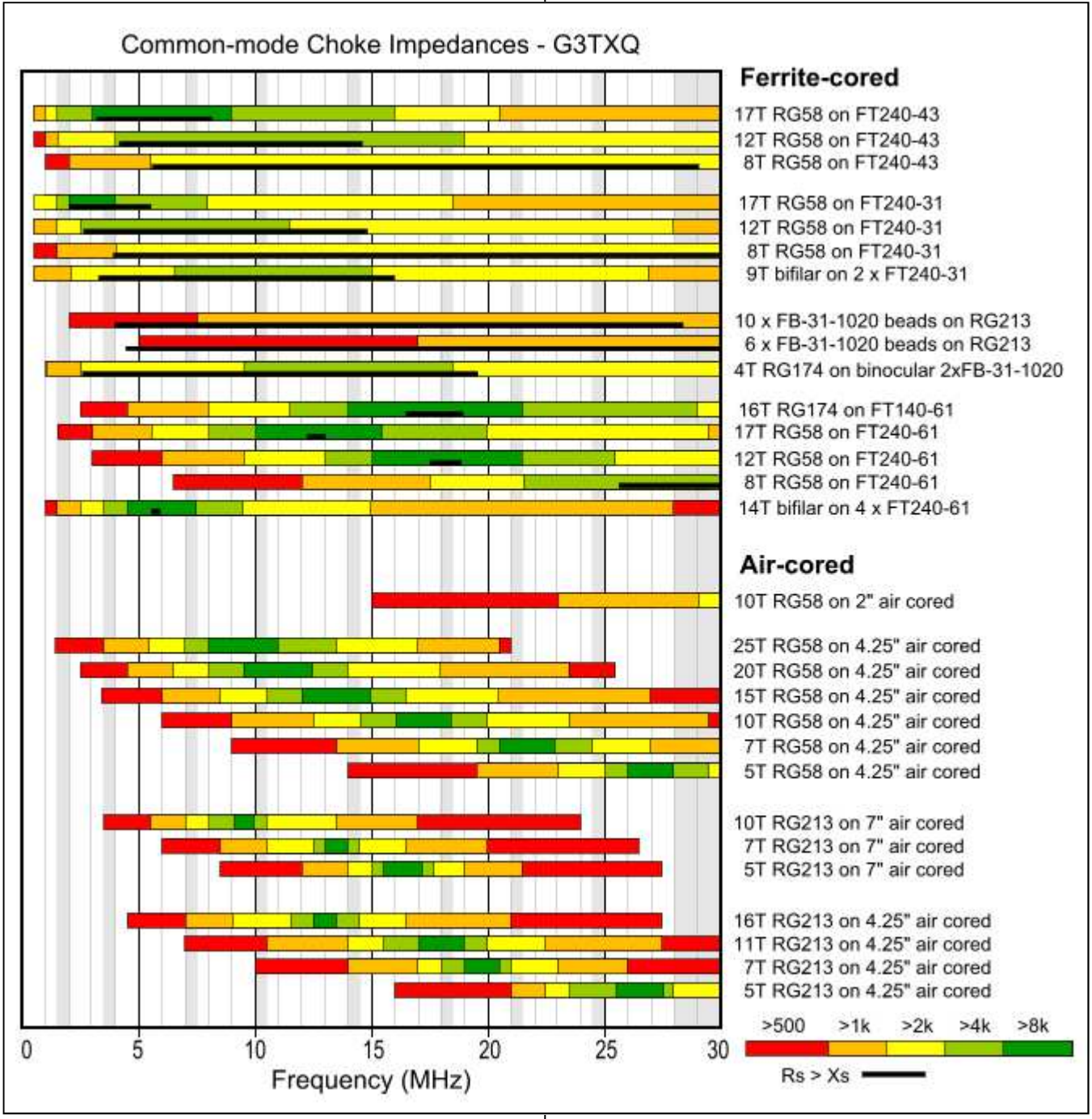
Thanks to Morris Prosser, KB6QR for donation equipment to the club which netted us $70

Allan adjourned the meeting at 2030L.

Submitted by Jacob O. (Jack) Schock, WA7IHU secretary
.

Common Mode Chokes

Many times it is desirable to suppress radiation (or reception) from an antenna feedline. It can improve the pattern of a directional antenna, or suppress local noise pickup (usually used with a dipole). A common approach is to simply coil the coaxial cable around a non-conductive object such as a piece of PVC tubing. One of the drawbacks to this simple approach is that an air-core choke is not very lossy—that is, it forms a pretty high Q parallel resonant circuit. This means that the choking impedance is only high usually across one ham band of interest, it's difficult to make the choke effective over several bands at once.



(Continued on page 4)

Common Mode Chokes, Continued.

(Continued from page 3)

In contrast, common mode chokes made from ferrite, especially quite lossy ferrite, are capable of providing choking impedance across a much wider range of frequencies. I've used the Mix 31 ferrite material quite effectively in making baluns.

Another advantage of ferrite is that chokes for the lower bands (160m and 80m) require far fewer turns than an air-core balun. The figure on page 3 is from G3TXQ's webpage—he constructed numerous air-core and ferrite-core common mode chokes, and measured the choking impedance across the HF bands. The part of each bar that is colored green is where the choke exhibits the highest choking impedance. The part where there is a black line shows where the resistive portion of the choking impedance was greater than the inductive portion (a good thing for a balun).

We can see that most of the air-core chokes cover approximately one ham band, and that none of them were able to choke effectively on 80m or 160m, only the largest one was able to choke well on 40m.

In contrast, some of the ferrite chokes were able to cover 160m and 80m. I've used a stack of 5 x 240-31 cores which increases the impedance by a factor of about 5 compared to the figure. This allows fewer coaxial cable turns while still achieving choking on 160m and 80m. Stacking cores however does not increase the bandwidth much.

One of the reasons that we should be concerned with the resistive component in the choke—in addition to greater choking bandwidth—is that it forms a loss resistance which dissipates the common mode currents as power. This is important especially on the lower bands.

On 160m and perhaps 80m, our feedline is likely to be shorter than a quarter wavelength. Thus, if we put a mostly inductive common mode choke in that feedline, we may in fact electrically lengthen that feedline towards a quarter wave. This would increase the common mode noise pickup rather than decrease it due to improved efficiency of the feedline as a radiating element. Having a large resistive loss component tends to minimize the efficiency of the feedline as a quarter wave radiator.

The choke that I built is used in a ladderline feed system. The ladderline connects directly to the coaxial cable (one ladderline leg to the center conductor, the other leg to the shield). The choke forces the two currents to be equal but opposite thus balancing the ladderline. It also provides a coaxial cable feed through a wall which sometimes does not work well with just plain ladderline. The 5-core stack of 240-31 and 4 turns of RG213 provides a compact balun that makes it easier to use the ladderline.

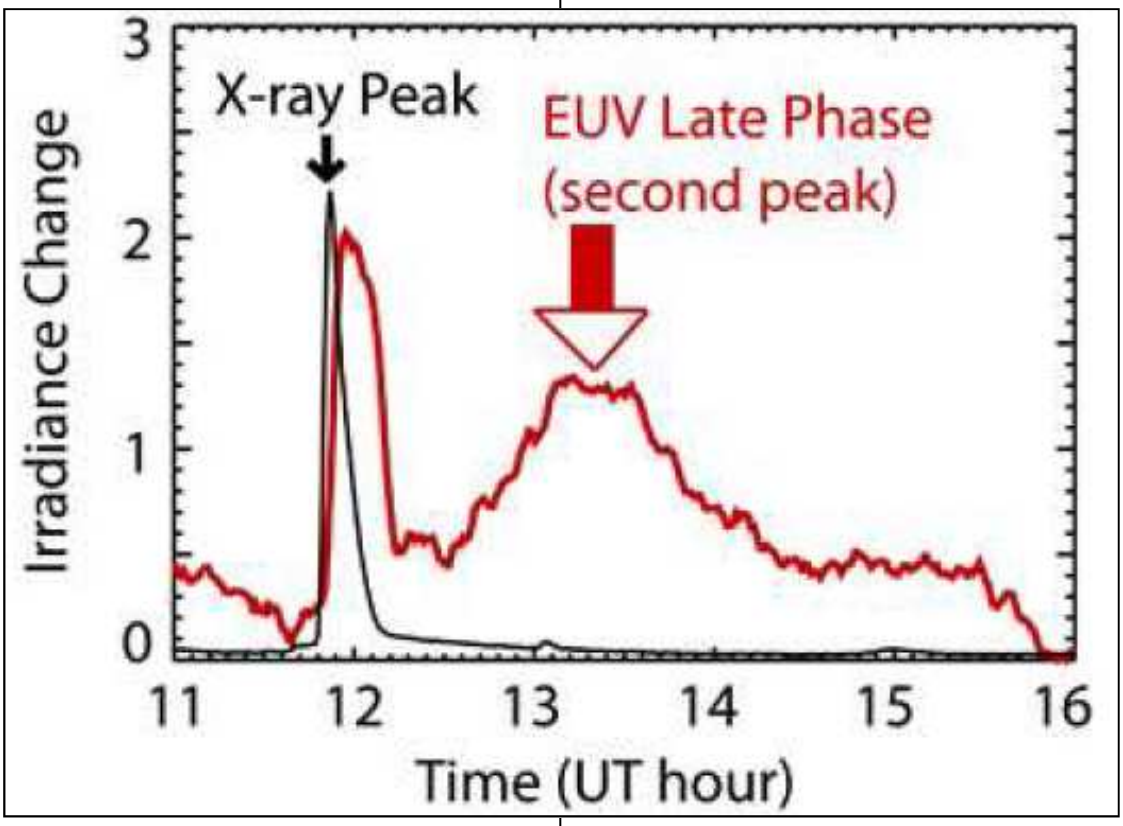
In on-the-air operation, the choke does not impact the transmit or receive signal strength of a 40m dipole on 80m, but it does dramatically reduce the received noise level. In direct comparisons between a 42 foot vertical and the 40m dipole on 80m, the choked dipole is approximately 7 S-units quieter on receive than the vertical. The vertical is usually the same strength or sometimes 1 S-unit stronger than the dipole on 80m.

To effectively use this setup, I have the transceiver setup to use the vertical on transmit and the dipole on receive (the radio has antenna connectors and switching for this function built into the rig). The net result is much improved operation on 80m.

Solar Flare Measurements from SDO

In a previous article in the RVARC Repeater, we discussed the new NASA Solar Dynamics Observatory (SDO). Which is capable of much more detailed solar irradiance measurement than previous NASA satellites.

The SDO is capable of measuring extreme ultraviolet (EUV) radiation, whereas previously just the X-ray peak of a solar flare was measured. The categorization of solar flares into A, B, C, M, and X classes was based on the X-ray intensity of the flare. As the SDO has shown, however, the majority of the energy from the flare is actually in the EUV part of the spectrum rather than in the X-ray part of the spectrum. The chart above is from NASA and The University of Colorado.



A heavy dose of X-rays can cause a Sudden Ionospheric Disturbance (SID) which results in a sudden HF radio blackout lasting perhaps an hour. In fact we had one earlier this fall during one the major contests. This is due to almost complete ionization of the E-region of the ionosphere, resulting in severe attenuation of most HF radio signals. After the sudden X-ray flux, the E-region will decay after an hour or so back to it's normal state.

However it is the EUV radiation from the sun that is usually responsible for most of the ionization of earth's ionosphere. From the SDO measurement that was reported during NASA's February 11, 2011 press conference, in fact many of the flares produce more energy in the EUV than it does in X-ray. That peak shows up about 90 minutes after the X-ray peak. This very high flux of EUV should result in high levels of F-region ionization that last for a considerable amount of time after then X-ray event, suggesting that there may be a possibility of enhanced HF propagation on the higher bands several hours after a major flare.

President's Letter, Continued.

(Continued from page 2)

craft guys (Wayne N6KR and Eric WA6HHQ) discussed kits, advanced receivers, and rigs for HFPack. Of course, their talks were Elecraft-promoting, but that is fine and expected. They make great gear.

A personal highlight was being able to see two of my grandsons and play around in the hotel's pool.

I am looking forward to the big convention next year.

73 Allan K7GT

Amateur Examinations

Amateur Exams are available near both Medford and Grants Pass. The exam fee is $15.00— bring proof of license or exam elements passed, for prior credit.

Medford—RVARC

Oct 29th, 8:30 AM (Walk-ins allowed).

Contact: DON BENNETT
(541) 772-1396

kg7bp@arrl.net

Location: VA Domiciliary-Building,
223 Crater Lake Hwy -Route 62,
2nd floor North (VA HAM RADIO RM),
White City, OR 97504

Grants Pass—SOARC

Nov 18th 6:00 PM.

Contact: WILLIAM A TYNER
(541)476-2703

GOODGRENDL@GMAIL.COM

Location: Fruitdale Grange,
960 Rogue River Highway,
Grants Pass, OR. 97526

Next Club Meeting

Thursday, November 3, 2011, 7:00 PM
Red Cross Building, 60 Hawthorne St., Medford, OR
Across from Hawthorne Park
Program: Jack, WA7IHU and Bud, W7LNG: Homebrew Gear