



THE LOCAL OSCILLATOR



THE PUBLICATION OF THE PANHANDLE AMATEUR RADIO CLUB

PRESIDENTS MESSAGE

The next club meeting will be Tuesday, May 6.

Special thanks to KD5WJ, Joe Price, for donating some very special equipment to the club. Also the NEW club station, located at the Old English Field will soon be a reality. Come to the next meeting and learn more!

DON, KC5EZO

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SATELLITE STATION - \$300 ?? Part 2

Last Issue Introduced You To A \$300 Satellite Station. This Issue Provides An Introduction To The Use Of The System.

Using our sub \$300 Satellite Station; Let's look at the two HF rig method first. Our target is RS-12 in mode K operation. We will need to transmit on 15 meters * and listen on 10 meters. I recommend using the older and simpler of the radios for transmitting if possible for two reasons. First the newer rig probably hears better on 10 meters. Second newer fancier radios seem to generate a lot more
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SOLAR CYCLE 23

It is now becoming quite clear that we have passed old solar cycle 22 and are ramping slowly upward toward the maximum of the present solar cycle 23. We have seen some reports and heard speculation regarding this matter that is somewhat inaccurate. Although the official word still isn't out yet, there is an increasingly abundant amount of evidence suggesting that we are now within solar cycle 23. Some of this evidence follows: Calcium plage emissions are slowly increasing and have been increasing for many months now; the background and daily average x-ray flux values are increasing - they are higher now than they have been since about 1995 when we
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Test Equipment For The Shack

What's all this test equipment stuff anyway! Do I need Test equipment for the shack? What kind of Instruments do I need?

As we get into this hobby, sooner or later we are faced with the prospect of needing some basic test equipment. It's true that due to the complexity of our radios, the "State of the Art" has advanced to such a high degree that most repairs have been taken out of our hands. Do you still need any test and measuring equipment in the shack? You can always take it to the repair shop and pay \$50.00 an hour to get it fixed. If your equipment runs on AC or DC there is still the need for a volt/ohmmeter in the shack. Many of the problems that are encountered with our equipment all have to do with power. We use Batteries, Power supplies and Connectors of all kinds. Being able to do GO/NO GO checks can quickly prove where the problem really is, and can save you lots in repair bills. There is nothing worse than a repair ticket with "No problem found" or "Operator in error" or "Loose nut in front of control".

More often than not, problems with a handi-talkie can be traced to a Mechanical connection between the battery and a radio. Being able to prove that the battery is good with a VOM (Volt-Ohm-Meter) or DVM (Digital volt Meter) prior to looking for a problem like this helps with the troubleshooting process. For many of us who have base radios, when a problem occurs there are usually several test points in the radio that the manufacturer may want checked before they make a suggestion as to a repair action. Some manufactures such as Ten-Tech when calling the technical support hot-line with a problem will ask for several voltage readings. If there is one "Must Have" in the shack, it's a basic VOM/DVM. Many manufactures make them and the prices vary from \$30.00 to several hundred dollars. Depending on your needs and skills the VOM/DVM can be of great asset in troubleshooting.

Analog Vs Digital

Of the Meters on the market what type is best for you? For those of us who have used them awhile the older Meter Movement VOM is the instrument of choice. It can be used to check AC and DC voltages, AC and DC Amperages, Check continuity of conductors and connectors and Resistance's and will check most semiconductors with a "front to back" check. The DVM will do all of the above checks, The display reads directly and in plain numbers, but the semiconductor check is based on a front to back voltage reading rather than a resistance reading. Some of the high end meters by Fluke will even read capacitance and frequency to 10,000 hertz. Another difference with the DVM is the input impedance is very high so it won't load the circuit being tested. For most applications this is good. For others this can fool you in that it will read leakage voltages that don't show up with a VOM.

Power and SWR Meters

Another instrument in the shack that becomes a "Must Have" for most of us is the Power/SWR Meter. This meter is used to check the output power of a radio and also to check the Standing Wave Ratio (SWR) or Forward to Reflected power ratio of our transmitters. The name of the game here is to put Radio Frequency energy into the air. If you have a high standing wave, power is not being put into the air but the power is being reflected back toward your radio and that it has to throw off as heat. The better the SWR of your station radio and antenna system the more efficiently it is working.

Power/SWR meters come in a variety of sizes, shapes and prices from the inexpensive version sold by Radio Shack to the lab quality instruments built by Bird and Booton. Many of these instruments are designed for specific application or range of measurement such as VHF/UHF only or HF only. Depending on your use, care should be observed and follow the manufacturer's recommendation. These instruments are broken up into two broad types, the Single meter and Dual Meter types. The dual meter shows forward and reflected power simultaneously and where the needles cross is the SWR. The single meter type has a switch that changes the polarity of the sensing diode so forward and reflected power are shown as two separate measurements. Before purchasing one of these instruments consider the highest power you will be running. Many of these instruments come in Low watt versions. Test instruments for many of the basic measurements will keep the station running at peak efficiency and can warn you to of degrading or marginal performance.

Permission granted; Copyright 1996 Gerald Crenshaw WD4BIS
(Visit His Web Page : <http://web2.airmail.net/gerryc/newham.html>)

NET SCHEDULE

P.A.I.N

146.94 8:00 PM SUNDAY

CLOUD CHASERS

146.92 8:00 PM MONDAY

PANHANDLE TRAFFIC AND EMERGENCY NET

3933 KHZ LSB 00:00 UTC
DAILY

AMSAT

3840 KHZ 9:00PM TUESDAY

S W LYNX NET

146.56 6:00 PM THURSDAY

PAMPA TOP OF TEXAS NET

146.90 8:00 PM WEDNESDAY

FRITCH SIDEWINDERS NET

147.30 8:00 PM TUESDAY

ARES NET

444.2 or 145.35 (T88.5) 8:00 PM
THURSDAY

WANTED

Your magazines, books, code tapes
and other items that could be of use
in the CLUB LIBRARY.
Contact DON, KC5EZO

WANTED/FOR SALE/TRADE/ INFO NEEDED

Your free message here!
Contact bcollyer@fia.net

HAMS ON THE NET

E-Mail Addresses

Looking for information?, need help? or just want to
e-mail a recent contact...the following is a list of some local
hams!

WA5CBS, KC5PEG: gtwest@arn.net

KA0YOS: ka0yos@arn.net

KA4MKD: bmwbikecrz@aol.com

KC5JIF: dr.biggs@usa.net

KC5OMK: denney@arn.net

N5ZLU: rkerr@fia.net

KM5ER: bcollyer@fia.net

N4BZ: n4bz@fia.net

W5UGQ: msproul@arn.net

W5FBQ: bobhill@arn.net or bohill@fia.net

KC5KCA: dennisg@fia.net

N5TOY: jcyjr@arn.net

N5AE: jbreimund@juno.com

KK5IH: lams@arn.net

W5CKR: w5ckr@juno.com

K5IS: k5is@arn.net

N5IS: bdoerrie@tenet.edu

W5RXC: jwhilHITE@amomega.actx.edu

KC5UUZ: kylevan@arn.net

Hurry!

Time is running out!
Place your Bid on the old .94 controller!
Contact DON, KC5EZO

WANTED! News of fellow Hams - Did someone you know
do something they should be recognized for? Let me know!
bcollyer@fia.net

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phase noise. For example my Kenwood TS-940 S would completely wipe out any signals on 10 meters when the mic button was pressed on 15 meters. It didn't actually need to transmitting measurable power the phase noise was that bad. Anyone wonder why I no longer have the rig? So we're listening to 10 meters with our IcoYae Ken rig and transmitting on 15 with a Heath HW-100. The pass band is 40 KHz on RS-12 with uplink running from 21.210 - 21.250 and the downlink is 29.410 - 29.450. The transponder is non-inverting so 21.215 up should come down around 29.415 and USB up comes down as USB.

Clear as mud?

Let's walk through a pass. Here comes the satellite. Start the pass by listening for the beacon on 29.408 MHz tune up and down a bit to compensate for Doppler shift.

Remember the beacon should be the loudest signal from the satellite

ALWAYS. If your downlink is stronger than the beacon turn your transmit power down! Some ops will NOT be gentle in reminding you of this. Okay we hear the beacon loud and clear. Now tune your receive radio to an open spot in the pass band let's say 29.440 MHz.

Next tune your transmitter to 21.240 MHz. Start by send a series of Vs or a CW character of your choice. If you do not hear your signal on the downlink tune your transmitter frequency up and down until you do. Finding yourself is skill that you acquire rapidly.

Most ops remember the first few

QSOs and are pretty tolerant of some CW swishing around the passband. If they are not tolerant remember THEY are the lid not you. Some experienced ops will follow a swisher until he finds himself just to say welcome to satellite operating! Wouldn't it be easier to change the frequency of the receiver and look for my downlink?

Yes, but this is a poor practice. If you leave your transmit on one frequency and look for it you may clobber an ongoing QSO, but if you change your transmit frequency you will just quickly swish through the QSO. Rules of thumb CW QSOs in the bottom part of the band SSB on the top part. What about Doppler shift? Doppler is easy to compensate for on mode K.

At these frequencies it is quite slow. One of the beauties of duplex operations is being able to hear yourself and adjust for the best sounding signal. The general rule of thumb is to only adjust the higher frequency radio after establishing contact. In mode K this means keep adjusting the 10 meter radio and leave the 15 meter rig alone after the QSO is established.

Simply continue to tune the rig for the best sounding signal. If you work someone adjusting the wrong radio they will appear to run away from you. If you mention they are adjusting their frequency by other than standard convention be VERY polite this is not a big deal. Often ops get in the habit of working one mode. If it is mode B (435 MHz up 145 MHz down) they correctly keep adjusting their transmit frequency. They will carry this habit to mode K which is not correct. Why adjust the Higher frequency?

The higher frequency is affected more by Doppler shift. By adjusting the higher frequency you compensate for the largest frequency change. To the satellite your frequency will seem to change very little (you will use less of the pass band to complete your QSO). The less passband you use the more of us can use the satellite at once!

Anyway you now hear your Vs come back to you on 10 meters with a slight delay (It takes a while to get a signal to the satellite and back). Start calling CQ or switch to USB and fine tune your transmitter for a natural sound and call

CQ. Remember to wear your headphones! feedback over a path that long sounds terrible. On satellite the newer ops generally call CQ

and the more experienced ones tune them in and answer. After 3 or 4 passes all of this will be second nature and you will be swooping up and down the passband pouncing on the new ones! Next month I'll finish the comments on RS-12 and take up the other "EZ-Sats".

If you have Internet access check-out - <http://www.amsat.org> - there is a ton of good stuff there.

73 for Now, Joe
(KAOY0S)

* NOTE Watch you license class! It is against the law for you to uplink on a band or subband you do not have privileges for! On the other hand it is legal for the satellite to downlink your signal onto a band you do not have privileges for.

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were still in the decline of cycle 22; the occurrence of old-cycle sunspot regions is decreasing. This latter item is usually considered the clincher. Unless sunspot formation suddenly dies out for an extended period of time, the sunspot minimum of solar cycle 22 will almost certainly be May of 1996, where the smoothed sunspot number fell to 8.1.

THE FUTURE OF SOLAR CYCLE 23

Solar Cycle 23 is predicted to be a larger than average solar cycle. Current predictions estimate the sunspot number for cycle 23 will probably peak near 160 (+/- 30) with a peak in the 10.7 cm solar radio flux near 205 (+/- 30). There is some excitement that this cycle may be a record breaker. The current champion of sunspot cycles is solar cycle 19 which had a smoothed sunspot number of 201 in November of 1957. This is not likely to occur, but it is a notable possibility. The art of predicting the magnitude of sunspot cycles is still rooted primarily in empirical relationships. We do not yet understand the physical processes involved well enough to derive successful quantitative models of sunspot cycles. For this reason, there is a level of uncertainty that (however small) could result in a record-breaking cycle. If current projections are correct, the sunspot maximum is currently estimated to peak in March of the year 2000. It must be noted, however, that predicting the month of maximum is even less certain than the sunspot number. The actual month of sunspot maximum could be as early as January 1999 or as late as June, 2001.

Geomagnetic activity is expected to gradually become increasingly disturbed as we move toward the solar maximum of cycle 23. The number of days of disturbed conditions is expected to increase from 1997 through to a peak near the year 2002. Thereafter, activity should begin a gradual decline. This is good news for people interested in watching auroral activity, but it is bad news for people reliant on ionospheric radio communications and satellite health. For people reliant on ionospheric radio communications, there is a bitter-sweet story. Although the fre-

DID YOU KNOW?

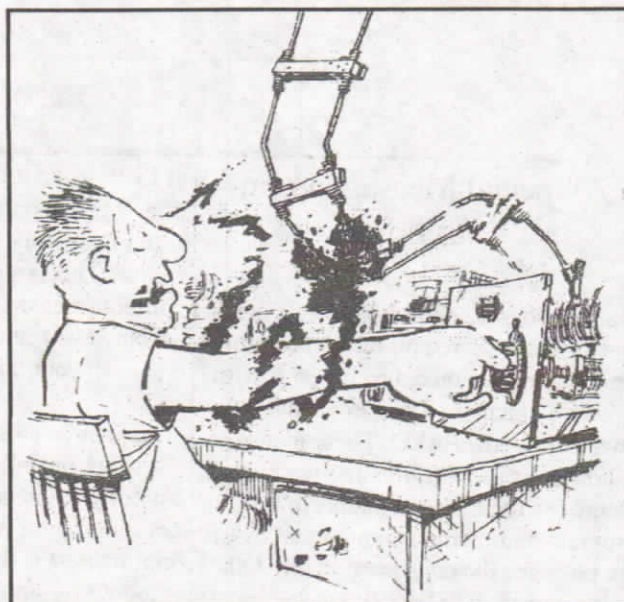
VE testing is held 11:00 the first Saturday of each month at the southwest branch of the Amarillo Public Library; 4423 SW 45th Street. For more information contact: griley@arn.net

quency of degrading interplanetary disturbances will increase, the large increase in ionizing radiation from sunspot regions will provide ever-improving propagation conditions with bands gradually opening into the higher frequencies of the HF bands. The years from 1999 through 2005 will be the worst in terms of geomagnetic and ionospheric disturbances. And of those, the year 2001 is expected to be significantly disturbed, seconded by the year 1999 and the year 2004.

(Submitted by KX4Y also known as HS0ZCN also known as ZS6BBH - yep...this guy gets around!)

DID YOU KNOW?

The end-of-message signal, AR comes from the American Morse letters FN, meaning 'finish'.



KM5ER POWERS UP HIS HOME BUILT RADIO FOR THE FIRST TIME!

PARC
PO BOX 10221
AMARILLO TX
79116



Mailing
Address
Goes
Here

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In This Issue...

Using your \$300 Satellite Station, Solar Cycle 23, HAMS on the NET and more!

RECENT NEWS

A Special Message From Your Editor

Ham radio is a hobby and as such is not one of the basic requirements necessary to sustain life (some may disagree with this statement!). There are about 100 members in the PARC. These members show their support in numerous ways. Some use their special talents to install, program and maintain equipment that is in place for the enjoyment of all. Others, due to their busy life styles and other commitments, offer the much appreciated monetary support by keeping current on their dues. As your Editor my extra contribution is in the publication of this newsletter. I attempt to make the club meetings but do not know

if I will make it till the day of the meeting. I rarely participate in other activities due to my lifestyle and commitments. This is a similar situation to that of most members. However, one such method you can contribute is through **your** club newsletter.

This newsletter is for you; the member. It is not my publication; it is yours. I ask for your contribution to your club by contributing to your newsletter. Of special interest is the contribution of att-a-boys (or att-a -gals, to be fair). I need information regarding special accomplishments, good deeds or even news related to local silent keys. We can not always keep in touch over the air..we can keep in touch via your newsletter. You can hand me an item at

the club meeting, send it to me by e-mail or get it to me via a third party. I can scan almost any document so even photographs and cartoons are appreciated. If you have always wanted to write an article or a short letter this is the perfect place to do so. Do not be concerned about spelling or the proper way to phrase an item; that is my job.

The bottom line is do not let this club be controlled by the few. It is your club and it is up to you to help run it. Participate in the fashion that is appropriate for you as an individual, whether it is by keeping up to date on your membership dues, providing extra support using your skills and talents, attending club meetings or supporting your club newsletter.
73s, KM5ER