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THE WEEKLY SUNDAY BROADCAST

Have you ever wondered how our broadcast officer Reg VK7KK manages to get sufficient information to give a half hour news broadcast each week?

Have you ever thought how much work goes into it? Besides reading every radio magazine and listening to broadcasts from other divisions he relies on YOU the member to let him know of any news that you may come across, what you are doing in the way of building of equipment or the DX you have been working whether HF or VHF. After all a lot of news is nothing more than gossip.

It is so easy to elect someone to do the job for you and then forget all about it until next years annual general meeting, when just a few minutes of your time would save him hours of sleuthing. How about you, are you helping the people you elect and showing you care what happens in your branch? Think about it.

73 John AX7JV

MEETINGS

Nov. 6th North West Branch, Lakins Hall Ulverstone

Nov. 9th Northern Branch, AEB rooms , High st

Both branches are having a slide evening, NW members are requested to bring some slides along, Northern branch has some 20 slides of the Oscar 6 satellite.

Nov. 24th and 25th Hamfest at Evandale, keep this weekend free.

YRCS

Nov. 10th Kings Meadows High School, room 38, block B
this is the only class in November due to the Hamfest

Dec. 8th Kings Meadows High School, room 38, block B

The meeting of the Northern branch held on Oct 12th was chaired by Peter VK7PF and attended by 46 members.

Peter welcomed visitors David VK7MS and Angus Robertson from TNT 9 Kevin VK7ZAH reported that equipment sales for the month amounted to \$477.00 . Kevin said that there was difficulty with 30 day accounts as by the time these bills were approved for payment they were overdue resulting in some cases in nasty letters from our suppliers.

The meeting decided to authorize the treasurer to pay all urgent bills without meeting approval.

Oscar. Peter mentioned that Oscar 6 was now one year old and still functioning very well. On the question of repeaters Peter said that it is our intention to change frequencies at the same time as VK3 and VK5, this ofcourse is subject to the receipt of official approval.

Hamfest. Lindsay VK7ZLD reported on the progress made and appealed to members for donations of hot and cold dishes for the Saturday evening meal, he also told the meeting of the success Gordon VK7GW has had with his request to trade for literature and prizes.

Lectures. The meeting discussed the lack of these , Reg VK7KK was nominated and elected to the post of lecture officer.

The meeting closed with a very interesting and humorous talk by David VK7MS on the pitfalls of horse and camel racing after which a lot of interest was shown in the Acitron transceiver which David had brought along.

Our congratulations to the VK5 division on their magnificent effort and win in the RD contest.

Congratulations to Daniel VK7ZDA and Mike VK7ZWW on their recent pass in the amateur exams, both of them can be heard on CH4.

I have misplaced a note from Mike VK7ZWW telling of the success of the JOTA and the number of contacts made, however I do remember that he said the whole thing was a great success and many contacts where made both with VK, ZL and inter continental stations.

The new call of Malcolm (VK7ZMS) is VK700 and can be heard on HF as well as his usual VHF frequencies, his new 6M transverter sounds real good. Don't forget to use that CW on VHF Malcolm.

Joe VK7ZGJ and myself (VK7JV) went to Hobart for the big sale a couple of weeks ago and returned with quite a few goodies, Joe's answer to the question "did you buy anything" was " oh about half of it"

On the equipment store scene, Kevin is still doing his thing and has amongst the usual items, ARRL handbooks (only a couple left) printed circuit board, there are still a few pieces left, available from both Kevin and John VK7JV, log books are again in stock.

Don't forget your complaints about intruders still go to Harold VK7MZ .

NOTES FROM THE NORTH WEST BRANCH by VK7MX

Thought provoker. Last month I struck oil. Thanks John. Now to this month. Scout Jamboree on the air. At our meeting it was reported that no official approach had been made to our branch for any activity for the coming Jamboree. A lengthy discussion ensued and it was agreed that the deadline had passed and no involvement would take place this year. In reviewing previous year's activities, members made many complaints of shortcomings of scout groups. Some have attended, some haven't and others were late. Many boys sent along were unsuitable to broadcasting, it was a waste of time putting them on the air. There were odd complaints of boys interfering with apparatus also. There appeared to be an attitude by odd leaders that the scouts were offering the hams a privilege by attending. On the constructive side it was suggested that in future, application be made in writing to our branch for participation at least one month ahead. Our branch would then at its next meeting allocate groups if possible and arrange to visit groups and select suitable persons to broadcast. It was pointed out that with sideband apparatus only suitable voices are easy to copy and the uninitiated will have difficulty in understanding what is coming over. It will be interesting to hear views from other branches. Our monthly meeting was better attended and we were pleased to welcome Steve 7ZSF and Robin 7RH from the North. If nothing else they certainly enjoyed a hearty laugh especially when the matter of a couple of portable toilets were discussed, very subtle wit. Some suggestions were made for activities for future meetings and it was decided that for the November meeting those that can bring along a dozen colour slides and we will have a picture show. Someone brightly suggested that a few "BLUE" slides would be welcome, such as a slide gone wrong showing sky only, HI. I have a feeling that some art studies may turn up. There will be prizes given on the night so turn up chaps. There is a great deal of constructional work taking place in our area, there is some HI FI, antennae and various gadgets, a healthy sign. We are pleased to welcome to our group Nick 7NL from Smithton, Nick is on HF and we now have regular skeds. As soon as he gets the G5RV up he will certainly be heard all over.

C.U.L MAX 7MX

Letter to the Editor.

Sir, as a regular listener to the W.I.A. Sunday broadcast and to sundry contests etc, I would like to suggest that the Institute should attempt to persuade all members to use a standard phonetic alphabet. The A.R.R.L. handbook suggests to its members to use the International Civil Aviation Organization list which is used by Australian armed services, Civil Defence Organizations and others. It is quite common to hear an operator calling C.Q. and giving his call sign with completely different phonetics each time he repeats it. It should be the ambition of every operator to keep his operating practice above reproach and standard phonetics should be included in this. This may sound like "stirring" but I would like to hear any reactions to this suggestion.

73, Bob Jackson L70018

(A alpha R romeo Jackson)

Summary of Amsat-Oscar-B spacecraft system (Oscar 7)

Amsat Deutschland Repeater (designed by Karl Meinzer, DJ4XC)

1. Input freq. passband between 432.125 and 432.175 Mhz.
2. Output freq. passband between 145.975 and 145.925 Mhz.
3. Power output (high mode) is 14W PEP.
4. Downlink passband is inverted from the uplink passband.
(This means that USB input on 432 will come out as LSB on 146. By doing this the max. doppler shift will be about 9 khz., instead of 18 khz., on a signal through the repeater.)
5. Repeater is 45% efficient using envelope elimination and restoration technique.
6. Linear operation--SSB and CW are preferred modes.
7. Repeater is commandable to either 3.75 or 14W PEP output.
8. Telemetry beacon at 145.980 Mhz.(200mW)

Amsat TWO-to-TEN metre repeater (designed by Perry Klein, K3JTE)

1. Input freq. passband between 145.85 and 145.95 Mhz.
2. Output freq. passband between 29.40 and 29.50 Mhz.
(Equipment now being used for Oscar 6 will be usable but with passband frequencies 50 khz. lower.)
3. Power output is 2W PEP.(this is lower than had been planned)
4. Downlink passband is not inverted from uplink passband.
5. Linear operation--SSB and CW preferred modes.
6. Telemetry beacon at 29.50 Mhz.(not the same as Oscar 6)

Morse code telemetry encoder (designed by John Goode, W5CAY)

1. 24 analog input channels.
2. Converts each analog value into a two digit morse code number.
3. A third digit precedes the telemetry value and gives the line number in which the word is located.
4. Format is arranged 4 words per line, six lines per telemetry frame.
5. Morse code telemetry is commandable to 10wpm or 20wpm.

Teletype telemetry encoder (Peter Hammer, VK3ZPI and Edwin Schoel VK3BDS)

1. 60 analog input channels.
2. Converts each analog channel to a three-digit number transmitted in Baudot code.
3. Each three-digit value is preceded by its channel number, making a five-digit telemetry word.
4. The data is arranged 10 words per line by six lines per telemetry frame.
5. Two lines of status information follow the analog matrix and give the spacecraft time (ie Time in counts from launch, 1 count for every 96 minutes)
6. Output keys 435.1Mhz. beacon in FSK: 850 hz. shift; 45 Baud;
(reversed from USA standard) Also keys 145.98 and 29.50 Mhz. beacons as AFSK on command.

435.1 Mhz. beacon transmitter (Larry Kayser, VE3QB and B. Pepper, VE2AO)

1. Beacon output freq. is 435.1 Mhz.
2. Power output is 0.4W at an efficiency of 45%.
3. Beacon is FSK modulated 850-hz. shift.

2304 Mhz. Small beacon transmitter (San Bernardino Microwave Society)

1. 0.1W at 2304 Mhz.
2. Turned on by command only for 30 min. periods.
3. CW keyed--HI followed by 30 sec. carrier. Also keyed with Morse code telemetry on command.

Code-store--Message store-and-forward system (John Goode, W5CAY)

1. 896 bit memory capacity using COS/MOS shift register memory.
2. Loaded by command link.
3. Output code speed is 13 w.p.m.

THE CHARGING OF NI-CAD BATTERIES by VK7NR

In my occupation a lot of moans reach my ears concerning NI-CAD batteries, personally I don't have any problems with them, the main problem seems to be a lack of knowledge of these devices by the user. I hope the following notes will help somebody who might be thinking that he has lost hard earned cash in purchasing NI-CADS. These notes have been compiled from manufacturers data sheets and my own experiences, so if a trade name pops up now and again please accept it in good faith.

General features.

The average voltage of a NI-CAD is approx. 1.2 volts.

At normal discharge rates the characteristic is very nearly flat until the cell approaches complete discharge.

The NI-CAD provides most of its energy above 1.1 volt per cell.

If the cell is discharged with currents exceeding the RATED value, however, the voltage characteristic will have more of a slope, a lower end point voltage will be necessary and the ampere-hours per cycle will be reduced.

Conclusion.

Everything is fine until terminal volts drop to 1.1 volt and then hey presto a flat battery in a very short time.

The capacity rating of NI-CADS is based upon output in discharge at the 10 hour rate to an end point of 1.1 volt per cell.

If the current is drawn at faster rates than these standards capacity is decreased. There is no simple way to determine the state of charge of NI-CAD cells due to this flat characteristic.

Polarity reversal.

Where discharge is carried below 1.0 volt per cell a very rapid fall to zero volts occurs. Because of slight differences in cell capacity one cell may reach this point before the others and this can result in cells reversing polarity.

Whilst polarity reversal causes no damage to sealed NI-CAD cells when discharged at the 10 hour rate it should be avoided for maximum life. After normal recharge a reversed cell will regain its polarity and function normally.

Moral, try not to flatten NI-CADS, arrange to trickle charge batteries during periods when not in use.

Cycle life is at an optimum when over discharge is avoided, recharging is performed regularly and depth of discharge is left as shallow as possible. But overcharging at elevated temperatures should especially be avoided.

When charge, discharge cycles are nearly full, life is measured in hundreds of such cycles. When partial discharges are used, cycle life maybe in the thousands. In rating cycle life, end of life of the sealed NI-CAD cell is considered to be when it no longer provides 80% of its rated capacity.

Impedance

Sealed NI-CADS have a high effective capacitance, their impedance is so low that cells which are being continuously trickle charged make excellent ripple filters. Cell impedance is dependent upon frequency and state of charge of the cell.

Cell connection. Nominal voltage of a NI-CAD cell is 1.2 volts, to obtain a higher voltage cells are connected in series.

When larger capacities are required a larger cell size should be selected. Parallel connection of sealed NI-CADS should be avoided.

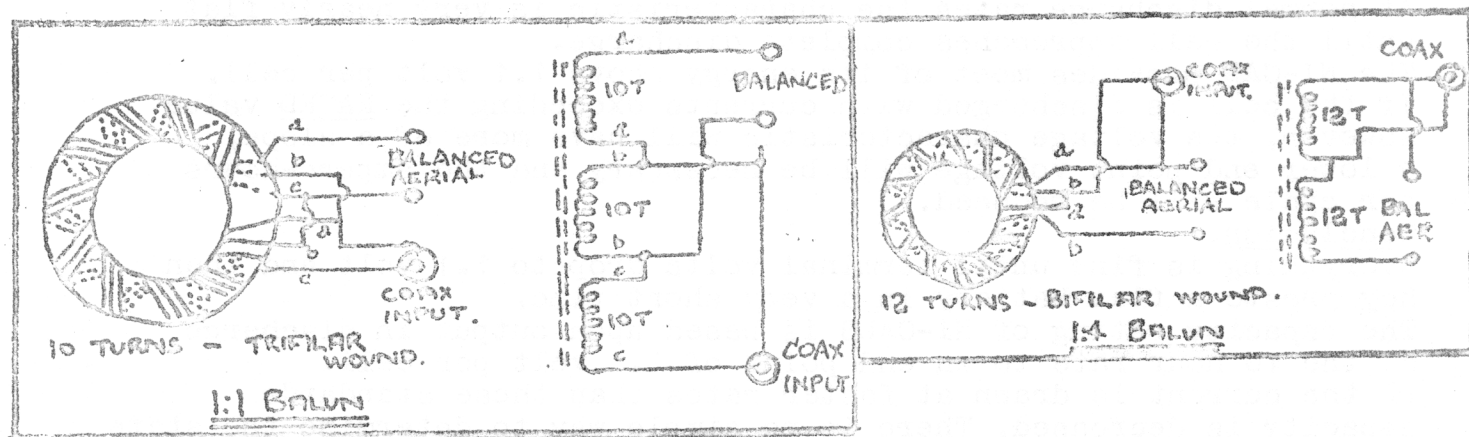
Contact material. Never attempt to solder directly to the cell case as the seals may be damaged by heat.

reprinted from "WESTLAKES RADIO CLUB" Newsletter

AERIAL BALANCE MAKES SENSE

How many times have you seen the advice, "the dipole aerial has a feed impedance of about 75 ohms. This makes it a good match for 75 ohm coax".

Well, if you want to be trapped, just go ahead and try it. It will work of course but it won't work nearly so well as it should. After all, think about it for a moment. The dipole aerial is a balanced device but the coaxial cable, although it has the same impedance, is unbalanced. Currents flow on the large outside conductor quite differently from those flowing on the thin inner conductor.



Original diagrams - "Electronics Australia"

That diagram you have just looked at contains the key to the situation. The drawings illustrate the electrical and physical intricacies of the balance to unbalance transformers, known commonly as baluns.

These simple devices enable coax to be used to feed a dipole, because they match the unbalanced load presented by the coax cable to the balanced load presented by the aerial. This set of conditions applies to the left hand diagram, showing the 1 : 1 transformer. But baluns are not limited to only a 1 : 1 transformation.

The right hand diagram shows a 1 : 4 transformation. This would be used where the 75 ohm coaxial cable is used to feed a 300 ohm feedline - a 1 : 4 step up. Remember your theory here - the 1 : 2 ratio of the transformer as a turns ratio results in a 1 : 4 ratio of impedance transformation. Since we are dealing with impedance matching, then this is the ratio we use.

The details in the diagrams are probably quite sufficient to ensure that you can wind your own balun but here are some tips on how the actual winding is done.

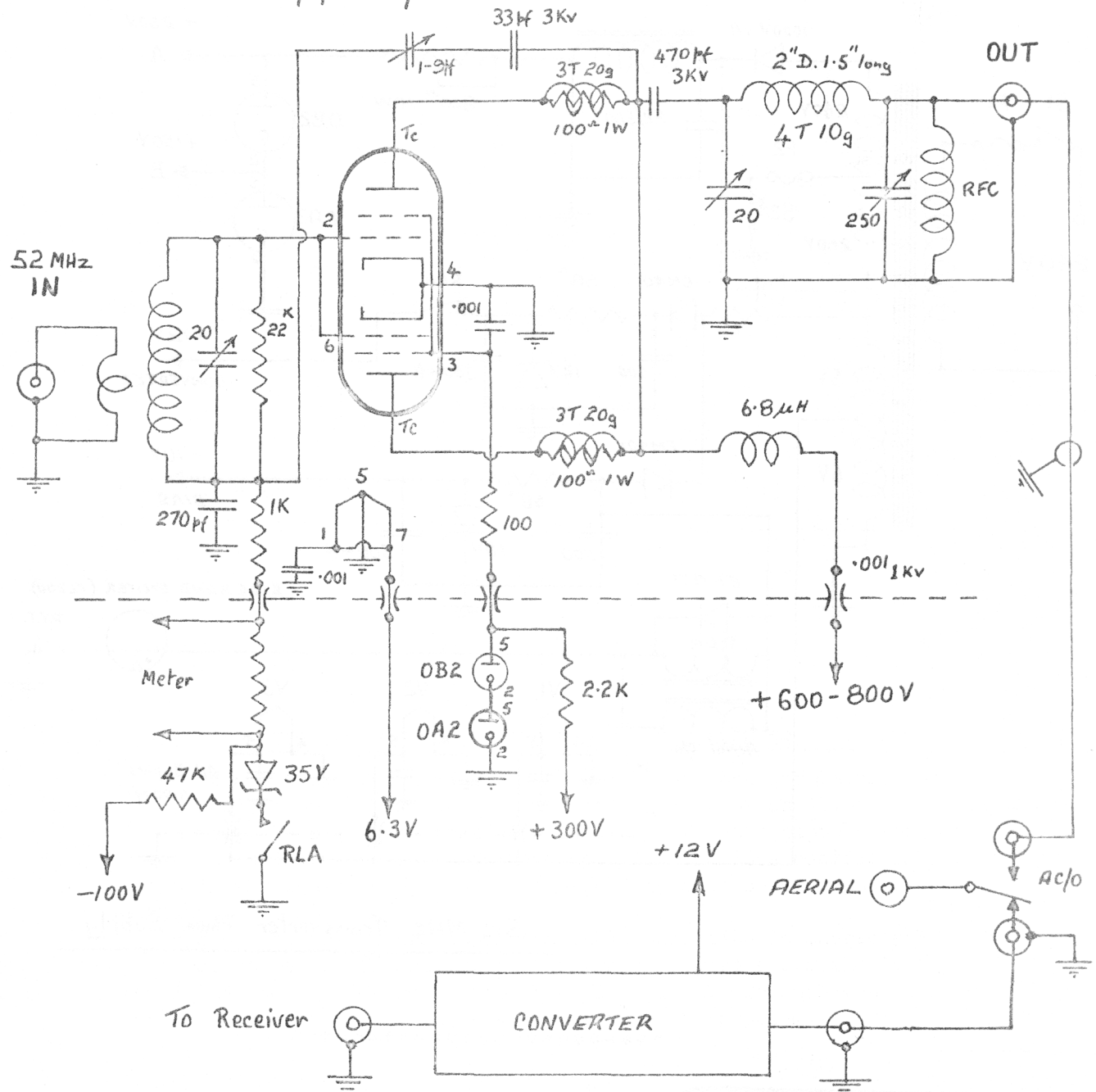
You may use the stranded, PVC covered "hookup" wire if you wish or ordinary single strand PVC covered "jumper" or "bell" wire will do. However, it must be insulated.

The winding is accomplished on the 1 : 1 transformer by winding "Three-in-hand" with, for convenience, three wires with different coloured insulations. This method is called "trifilar winding" to give it its correct title. The lengths of wire for either of the transformers need be no longer than about 50 cm which makes them easy to handle when threading through the "eye" of the toroid on which they are wound. The toroids, by the way, are the common type found in club projects and they are about 34 mm outside diameter and made of Q1 ferrite material. They cost about 80 cents or so. The second diagram shows the method of "two-in-hand" or "bifilar" winding necessary to make the 1 : 4 balun.

Keeping the wires in place is no problem. They may be terminated on a tagstrip to the formula shown in the diagrams or they may be held in place while the whole unit is buried in "Araldite" or "Plasti-Bond" leaving flying leads for connections. Whatever plan you use, your balun, suitable only for the HF bands though, should give you good matching between aerial and feedline.

Final for the 6M SSB transverter by VK7ZGJ

QOE06/40



cont. from page 5

Cells can be purchased with solder tabs fitted, if contact springs are used they should be of nickle plated steel or stainless steel. Copper and copper based alloys can cause local galvanic action and subsequent corrosion and should be avoided.

Care and Storage. Do NOT short circuit cells.

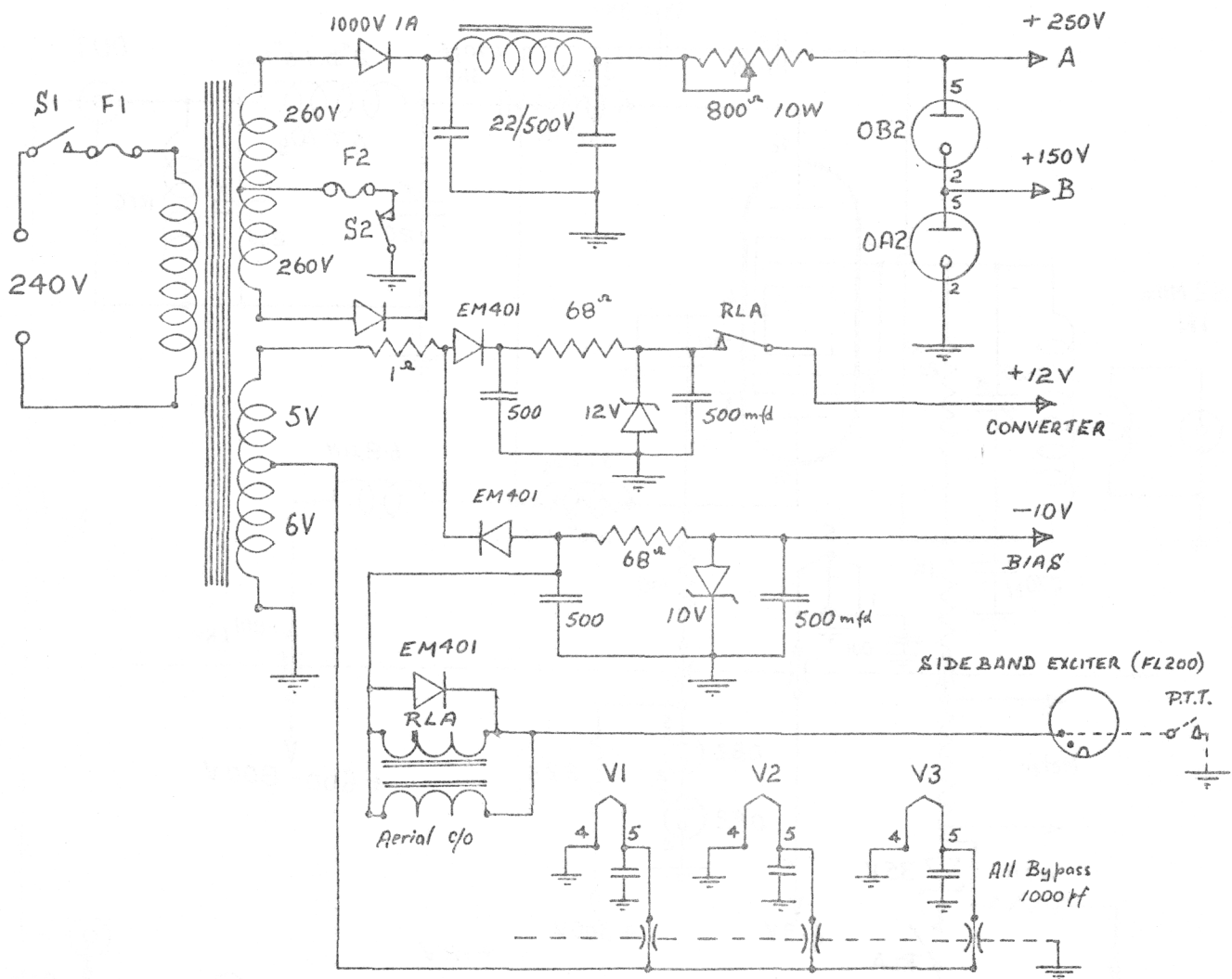
Cells are normally transported uncharged (manufacturer to buyer) so if you buy a cell and it is flat you haven't been sold a dud, CHARGE IT.

After prolonged storage and because of self discharge, the cell will not have its normal capacity, but this will be regained by 2 or 3 cycles of charge and discharge.

NEXT MONTH

THE CHARGING OF NI-CADS.

POWER SUPPLY FOR THE 6M SSB TRANSVERTER by VK7ZGJ



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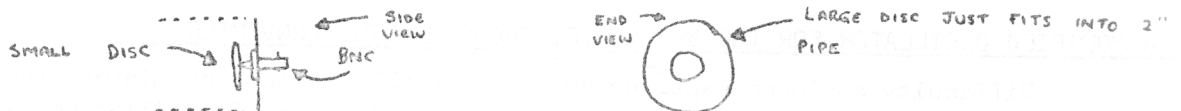
ATTENUATED SIGNAL SOURCE (for 2 mx.)--Basil Barnes, VE6BB

The idea for this one comes from a couple of KICLL's articles in 73 magazine. Being an inveterate "fiddler" and always trying to push just a little more out of both transmitters and receivers, I found that I needed a means of comparison. For receivers this meant that I needed a stable signal source, modulated preferably, and infinitely attenuable. As well, the attenuation had to be smooth, rather than be switched in jumps (i.e. 1 db, 5 db, 10 db, etc.)

The signal source is easy for anybody who has read this far. All you need is your transmitter crystal and a 1-transistor oscillator. To modulate it all one needs is a 1-transistor phase-shift oscillator which modulates the B⁺ to the crystal oscillator.

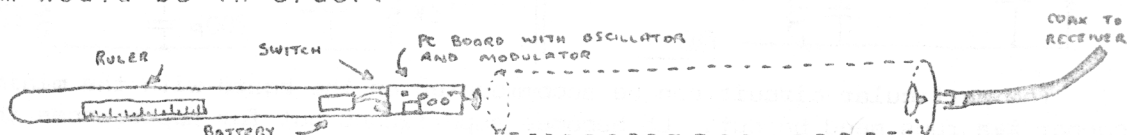
It is the attenuation that appears to be difficult. After all it costs a lot in commercial signal generators, doesn't it? Here, however, we can avoid the cost by not having to calibrate the signal.

All that we need is a piece of thinwall pipe about 20" long, and about 2" diameter. I use copper myself, but any metal will do. For one end I prepared a disc of metal (copper again for me) that just fitted in the end of the pipe, and in the centre of this I fastened a BNC connector. To the inside of the BNC connector I soldered a small disc of metal (copper), which was parallel to the larger disc; and here a diagram would be in order:

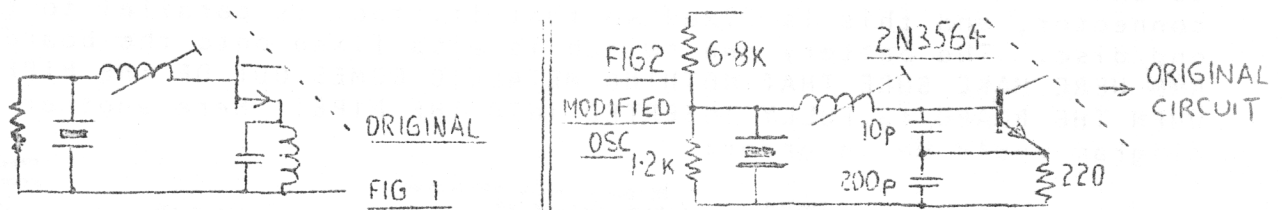
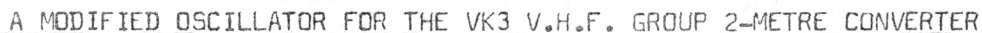


This is soldered to one end of the pipe (see why I used copper?), with the disc inside.

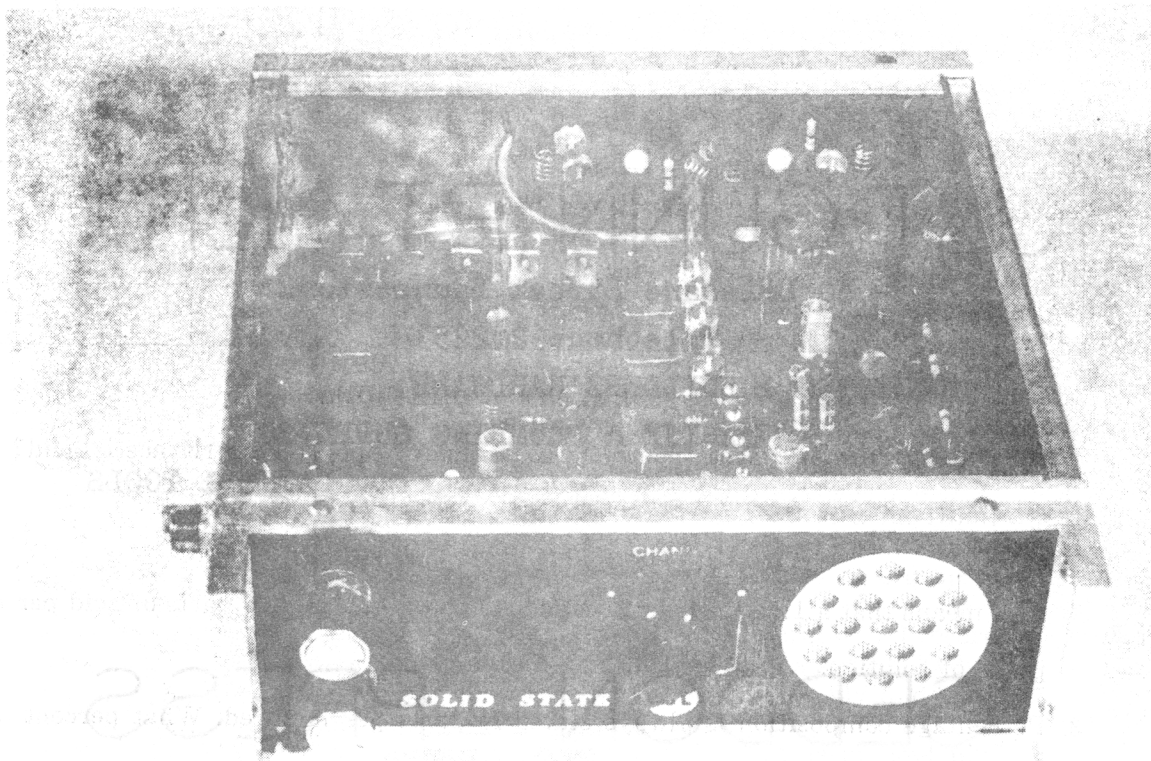
The oscillator and the modulator are built onto a small PC board such that the completed board will fit into the 2" pipe, and the whole lot is attached onto a narrow strip of board that will slide in and out of the 2" pipe. The output of the oscillator is fed to another disc the same size as the one soldered onto the BNC connector, and this is fixed so that it, too, is parallel to the end disc. The battery and switch is also fixed onto the board-- AND HERE MAKE SURE THAT NOTHING METALLIC COMES OUT OF THE PIPE WHEN THE BOARD IS FULLY INSERTED INTO THE PIPE! Here another diagram would be in order:



Now, when the slide is pushed all the way in, the two discs touch and you get maximum signal transfer through to the BNC connector (and the receiver). As the slide is slowly pulled out the signal attenuates smoothly until it completely disappears. By using this you can peak up preamplifiers, see the effects of changes made in RF circuits, and optimally design new preamps. I glued a ruler on to the slide so that when the two discs were touching the ruler indicated 0", and as the slide attenuated out, the distance showed the separation between the two discs. I can never hear anything past 3" on my Attenuated Signal Source (and I will NOT abbreviate that!) For those interested I'll give the schematic over the page.



The original circuit was designed for multiplication by 3. The modified circuit can be used with times 4 multiplication of crystals in the 30 MHz range.



KITS

- RECEIVER: 20 db quieting at .3 Micro volt signal. Mosfet front end, I.C's used in I.F. and audio. Price \$61.20 alone \$55.20 in Transceiver kit
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