ERG NEWS

GB3DA GB3ER GB3CMS GB7EP

ISSUE No 3 FEB. 96

Welcome

Welcome to this the third News letter from the Essex Repeater Group keeping the members informed of what is happening with all the groups boxes. If anybody has any input they wish to share with the membership please send it to the editor G6ZVV (QTHR) for inclusion. The next planned edition will be in July for the Colchester Rally. All input should be received by the editor by early June to allow time for production.

Nigel G6ZVV

The New ERG Constitution

Following a unique 'extended' AGM a wide ranging set of amendments have been made to the ERG constitution. All those who attended the Dec. 7 meeting are to be congratulated for their patience, for braving the icy weather, and also surviving a power cut at one point !
The aim of the exercise was to incorporate the lessons of the past, and make responsibilities and procedures clearer. As explained by G6JYB who steered the meeting through them, the background work had been done at length over the summer of 95 by the previous committee, who were all minded to provide an improved framework for the future. Only two areas were not approved - the creation of a formal Vice Chairman position, and a relaxation in the subscription periods. The areas that have been changed include:-

a) Extraordinary General Meetings - much clearer procedures.

b) AGM agenda to explicitly deal with setting subscriptions

c) Declaration of members interests when raising issues at meetings.

d) Collective responsibility for the Committee members.

e) Explicit definition of the Officers roles and responsibilities.

f) ERG assets, records and licenses.

The effect of all of these is essentially a modernization of the 1989 version. This can be viewed as going in hand with the modernization of the repeaters themselves. It will all contribute to a sounder future and a better image for ERG. Copies of the new constitution are available from the Secretary.

M.J.Niman G6JYB

Introductions

As one of the two members totally new to the Committee, I thought a brief resume of Steve G7 RGG and my backgrounds, alleged skills and aspirations may be of interest to the repeater users.
Firstly, we both believe that the Committee is there to further the interests of the users and is therefore accountable to them. We also feel that the status of the repeaters, beacons, etc. should be readily available to anyone who wishes to know. Not that the aforesaid is the case at present. We just need to ensure that standards don't slip and are where feasible enhanced. Now on to Steve and myself. I'll start with Steve who has provided me with the following text....

Steve G7 RGG

A 5 valve Barker 88 radio receiver at the age 10 kindled an interest in hearing the world. I was amazed at how with only some wire strung out of the back of the set could bring in stations from all over Europe. An electronics kit for Christmas a few years later was to start me on the path to a career in Telecommunications which is still unfolding. The kit enabled me to build some #crystal sets and I soon found out how to change the frequencies by altering the coil winding details. New horizons were opening up and when a friend who was an amateur donated his old receiver and R1155 then my listening took off. Several QSL cards were gained from commercial stations including my best from Australia. This set also enabled SSB reception which was starting to become widespread in Amateur use and I started to listen regularly to the 20m band.
Communications was now in my blood and upon leaving school I started an apprenticeship with the General Post Office and three years later, numerous telephone poles climbed and holes dug I went into the exchange as a qualified Auto Exch. maintenance engineer. These were exciting days when the changeover from the old electromechanical switching to Electronic exchanges were taking place. Digital technology was rearing its head. These changes led me to re-evaluate my future and after 9 years with what is now BT exchanged T- shirts for uniform and joined the Royal Air Force. The RAF trained me again but their standards and also added H.F. radio to my list of skills. It was therefore useful that my first posting was to Systems Control involved in the daily maintenance of HF radio links to various parts of the world. HF frequency management was a dark art not like the modern science it is now. A move to the Sun in Cyprus added digital comms and satellite working to my repertoire so it was with interest that four years later I returned to UK with promotion to Sgt. and a new post as a Spacecraft Operations Assistant. This involved day to day commanding of 3 communications Satellites and proved to be one of my more enjoyable postings. I couldn't stay on this forever so a further move saw me within the Ground Radio Servicing Centre supervising a bay of technicians repairing HF radio both TX and RX Mufax and later VDUs. Most servicing was carried out to component level and it was here that interest in Amateur radio was rekindled with the acquisition of an Icom IC 720A.
One year later after a course at the local college I was a brand new G7 and I started operations on 2 metres and 70cms. I have still not cracked the code but I am trying. Most of my operation is mobile as 2 years ago I left the RAF after 15½ years and obtained employment with my old companies rival Mercury. I am happily involved as a satellite earth station engineer which is improving my knowledge of microwave techniques on a daily basis. Now that I have settled in the house in Chelmsford I am starting to expand my activities on the radio. I plan to extend to both 50 and 70 MHz during the year as well as having a try at the ubiquitous packet.
I am lucky that my work and hobby complement each other and that daily what I learn can be used to not only benefit myself but now that I am on the committee other people as well.

Clive G1EUC

For my part I became interested in radio subliminally via my father who was in the Royal Signals during World War II. During this time he established and maintained the communication system for the control of aircraft at the time of the Rhine crossing. This included both landline and radio links. He was subsequently mentioned in a 'despatch' for distinguished service. Although I wasn't around at the time, the legend of his activities has lived on. Later, I entered the complexities of building crystal sets but ended up in only receiving Radio 3 or to be more correct, the Third Programme as it was at the time. My next encounter with radio which refired my enthusiasm was when my parents realized their ambition to sail to Malta which involved us having many ship to shore contacts during the period of the journey. My enthusiasm abated until the onslaught of 'legal' CB which I enjoyed for several years. My activities on CB were rudely halted when I moved to Leeds next door to a G3 station. He encouraged me to take the RAE which, I did. Two years later in 1985 I moved to Danbury where I have remained ever since. My main radio interests are of course DA and ER; 2 metres SSB 6 metres and 2 and 70 mobile. To a lesser extent I am now an operator of the latest obsession, packet radio.

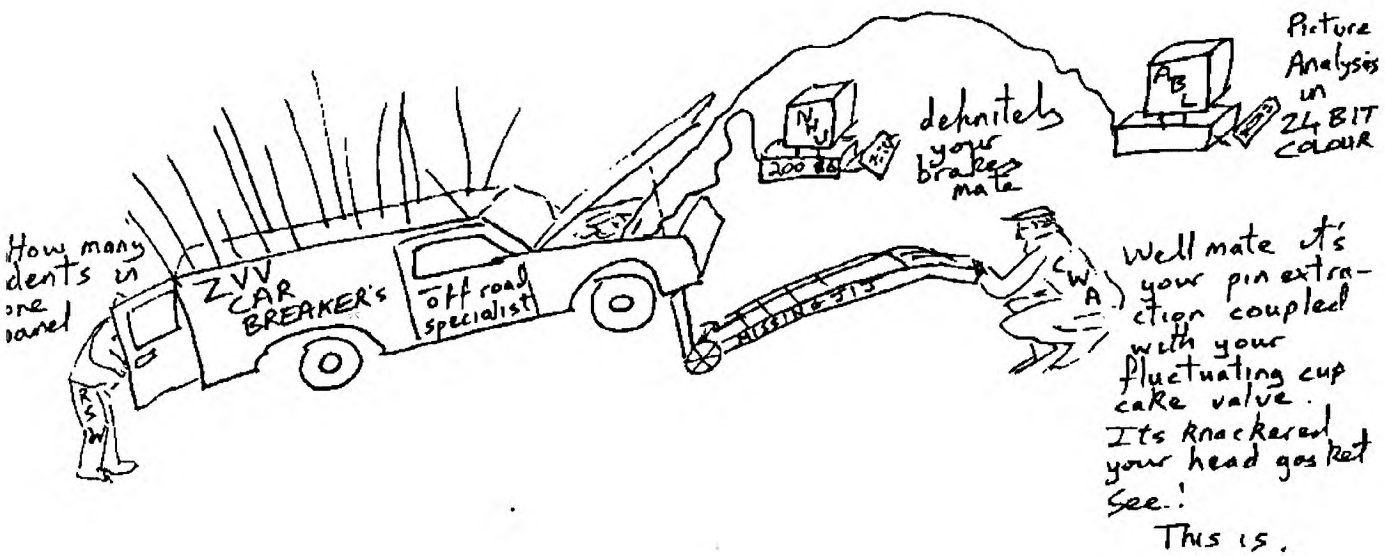
You may ask 'what can this non-technical person who finds crystals sets the pinnacle of his technical abilities bring to the repeater group?'

Well I have been in BT management for twenty years and during that time I have been involved in chairing meetings, PR work, marketing, selling and the management of large numbers of people. The ERG needs money. I believe I can help raise the profile of the group via rallies and other activities and therefore it's funding. With regards to the technical side I'll leave that to the experts, of which we have many.

Just to remind you who the rest of the committee are:

Geoff Blake	G8GNZ
Chris Hewitt	G0PAE
Nigel Hull	G6ZVV
Keith Maton	G6NHU
Chrissy Merrell	G8OIV
Dick Merrell	G4GUJ
Murray Niman	G6JYB
Malcolm Salmon	G3XVV
Mike Wheaton	G4ZPE
Simon Wilton	G7HCD

Clive G1EUC



By Simon G7HCD

The ER Saga

I am now going to try to explain to all those members that are not aware what has been happening with GB3ER over the last few years and explain why if I can.

The problems all started when a call was received from the R.A. requesting that ER be switched off as it was causing interference to the bands primary user. This was duly carried out as requested then questions were asked as to what could be done to resolve this problem as we wanted ER back on air as soon as possible. The answer was that we had got to apply for a new frequency, as there was no actual problem with ER but it was ER's frequency in relation to the primary users frequency causing the problems. The appropriate forms were filled in and returned to the powers that be also requesting a quick turn round if possible as the group were already being asked how long the repeater would be off the air. Several letters and phone calls later, 15 months after the forms were returned a new frequency was allocated to the group. The equipment was all checked over and found operational new crystals were ordered and a further 2 weeks waited. The crystals arrived and were fitted to the repeater, now the fun really started.

When the repeater was returned to the site to be fitted it was found that the original cavities would not tune down from their original frequency to the new frequency without great insertion loss or remain stable. The phone calls started again trying to find new cavities, which were duly found and ordered. When the cavities arrived they were fitted on site and everybody thought we would have cracked it, (no chance). Malcolm spent many hours testing realigning the cavities but was still not happy , he therefore arranged with the suppliers to take them back to be checked on there equipment. When the suppliers checked the cavities they agreed that they were not up to specification and sent them back to the manufacturers in Scandinavia to be looked at by them. this took 3 months with the cavities going back and forth to Scandinavia. This solved that problem we were no heading towards winter when our next problem occurred, the RX frequency varied dependent on the temperature in the shack on site. The frequency was reset on numerous occasions and different methods of trying to keep the ambient temperature were tried until it was decided to replace the crystals with ones that were suitable of taking a crystal heater, this cured another problem. Circulating RF currents were present causing intermittent problems like desense, to alleviate this problem the RF boxes were bonded to each other, the rack was strapped to the cabinet and the cabinet was bonded to the mains earth.. During the early part of last year we were slowly aware of a drop in range of the repeater further investigation showed a high VSWR this was traced to water in the coax, the offending coax was removed and swapped with another run, the range retuned. The final straw before the repeater was removed from air again was the report that the talkthrough audio was very poor. This fault turned out to be the GB3US logic board failing, a good talkthrough audio could be obtained but with no logic tones or good logic tones and poor talkthrough audio. It was then decided that the repeater was to be removed from service as the new logic was in its test state on GB3DA and would soon be ready to go onto ER. The final testing of the new logic carried out on DA and was now ready to be fitted to ER. ER was rebuilt into the same style case as DA had been changed into and rewired for the new logic which was then fitted and set up. The newly rebuilt repeater was then taken to the site all set up and ready to go, upon connecting it all up to the power supply and the cavities it was found that the desense figures were far to high. The repeater was removed from the site and again completely rebuilt the next morning. When it was returned to the site this time the desense figures were better but it was still not possible to get the repeater to operate on a single antenna therefore it was left running on 2 antennas a dipole on the first platform of the mast for TX and a 4 stack at the top of the mast for RX. The coax to the 4 stack was replaced with its heliax and further tests were carried out minor improvements but still not enough. The next test that was tried was to fit a dipole at the top of the mast to try to increase the TX range whilst further test were carried out, this was unsuccessful as the desense was again far to high. As the cavities had been sitting on site connected to an antenna the whole time ER was off air it was decided that they should by checked over by the suppliers just In case they had been damaged by static. The checks proved OK and they were reset up to there full specification. Further tests have been carried out both on and off site, resulting in new RX crystals being ordered to change the local oscillator from the low side of the IF to the high side. The other item that is under discussion is purchasing a new antenna which is to the same standard as that of DA's (i.e. a commercial heavy duty rugged collinear).

NIGEL G6ZVV

C.T.C.S.S

The dreaded initials. What do they stand for?..... Continuous Tone Controlled Signalling System. Ok..but what is it?....As the title suggests, it is a signalling system that utilises a continuous tone for control purposes. This is used, in PMR, for many purposes but in most cases it is used for the same purpose as that used by amateur repeaters, that is to identify an uplinking mobile as a station wishing to have it's signals repeated by the base station. Each base station has a specified CTCSS tone frequency programmed into it's decoder and mobiles wishing to use the repeater, send that specified tone whilst they are transmitting. The same may apply in reverse. Each base station transmits it's specified tone and mobiles can be

fitted with tone decoders that control their squelch gates thereby enabling "selective listening" on a channel that, at a particular location, is within range of more than one base station. The transmitted CTCSS tone is low frequency and operated at a low deviation. Below 260 Hz and less than 800 Hz respectively. With this low frequency and deviation, unless the receiving station has too good a audio frequency response, the continuous tone is not too obtrusive. If the receiver is fitted with a CTCSS decoder, this is normally equipped with a on board, high pass filter with a cut-off at about 300 Hz. The received audio is fed via this filter thereby removing the tone from the received signal. In the case of GB3DA and GB3ER the decoder has sufficient sensitivity to allow CTCSS tones to be used with a deviation of less than 400 Hz. This level is that normally used for systems operating with a channel spacing of 12.5 Khz but has a number of advantages over the higher deviation even though both of our repeaters are 25 Khz spaced systems. Firstly, the tone is more easily removed from the received signal. Secondly, it is easier to modulate a transmitter, in a linear fashion, when the deviation required is so low. Finally, should the powers that be ever decide that repeaters should be relocated on 12.5 Khz spaced channels, users of our repeaters will not have to make changes to their CTCSS dencoders, nor shall we have to change any level settings within the logic units. I hope to produce an article in the next issue of the newsletter that deals with the problems that may be faced when building or installing CTCSS dencoders in mobile units and how they may be solved. I will go into more detail as to how the CTCSS is used but for now a simple explanation is.....

When a mobile equipped with CTCSS is transmitting to the repeater, it's carrier is continuously modulated with the CTCSS tone. The decoder in the base station logic module detects the tone and from that point on, refers to the tone decoder rather than the receiver squelch gate, to detect when the mobile drops carrier. This has the advantage of being able to detect the end of an over, send a "K" and reset the timer even if a "rogue" carrier is present beneath the wanted mobiles signal. Obviously, if the mobile is not transmitting a CTCSS tone, then the base station logic module can only refer to the squelch gate and therefor have no indication that the over is terminated. As far as the transmitted CTCSS tone from GB3DA and GB3ER is concerned, it is only transmitted during a QSO. When the repeater is sending it's CW ident during idle periods, the tone is not transmitted. This enables mobiles, with CTCSS decoders fitted, to mute the idle time CW idents.

If anyone would like any further info about CTCSS on our repeaters and cannot wait for the next newsletter, please feel free to telephone me. I am at home most Monday, Thursday and Friday evenings between 20:00 and 22:00. My telephone number is 01376 514377. If you use packet radio then I can be contacted by that mode.

73 de Malcolm. (g3xvv@gb7eip)

If you wish to join the Essex Repeater Group please fill in this coupon and return it to D Merrell, G4GUJ, 40 Fanton Walk, Shotgate, Wickford, Essex. or come along and see us at any of the Essex Rallies at the groups table.

NAME .....

CALLSIGN.....

ADDRESS .....

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