

## KRG Directory

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# KRG 108

## Kent Repeater Group Christmas Newsletter December 2002

*A*

*Very Merry Christmas  
and a*

*Happy New Year  
to*

*all our Members  
from*

*The KRG Committee!*

## Technical reports

**GB3CK** - John MOZAA reported that the logic had locked-up twice, and both times the repeater had to be turned off to reset it.

**GB3EK** - Don G4TKR reported that the repeater was working very well. One site visit had been made and no problems were encountered.

**GB3KN** - Ted G3YCN reported that from April 2001 until 18<sup>th</sup> September this year we had no problems with 'KN, however on that day, it was evident from reports & meter readings that the transmitter output had fallen off badly. Alan G1OMH joined me & we found that the Marconi PA was in trouble. Then, upon fitting the spare PA, we found the T30 driver had also lost output so this had to be changed for a spare as well. We then discovered considerable "howl round" presumably due to the increase in power output, indicating that the Duplexer was "off tune". As we had run out of time we were obliged to turn the repeater off for nearly 48 hours until we had time to retune the Duplexer. Subsequent bench examination showed burning around the 10,000 $\mu$ F smoothing capacitor of the PA, which was a result of the capacitor developing poor connection to its tags. This was hardly surprising as the unit is about 29 years old.. Fitted temporary capacitor & unit was fit for service. The driver was dealt with by re-trimming its multiplier strip. A week later the replacement PA failed in service & the temporarily repaired unit was substituted. Bob G8HLE & I investigated it later & found several 2N3055 transistors in the PSU regulator had failed. I dismantled this unit & found 3 out of 4 pass transistors had actually failed so I decided to change all four. As this one is also about the same age I have decided to fit both units with brand new screw terminal electrolytics which cost nearly £10 each but should give us many years life. We will have got out of this mess for £26.11 but had labour been chargeable we would have been looking at nearly 24 man hours! I leave you to guess how much that would have been. The repeater is now working well & the capacitors have been received and should be changed within a few days.

## How do I access GB3KN ? - cont'd.

So, how do I access GB3KN?

1. Make sure your transmitter is set up for 2.5kHz deviation on transmitted audio.
2. If you have CTCSS, set it for 103.5Hz- this is the most reliable method.
3. If you only have 1750Hz tone, check it is on frequency, no longer than 1.0 second or shorter than 0.2 of a second, the level isn't too high, and follow it with 2 seconds of carrier (ideally with speech) *preferably without releasing the PTT*. Please use the 1750Hz tone only to 'access' or 'bring up' the repeater, not on every "over".
4. If your Toneburst is manually operated IE by a push button, just *jab* the button. If you *hold* it down the toneburst will probably be too long.
5. There will be times when GB3KN will only "access" when the toneburst is followed by a period of speech. Giving your callsign twice would be sufficient as well as satisfying licence conditions & is a very good habit to develop. This "audio detect" routine is brought in to use when required at the keepers discretion.
6. Remember to wait for the "over" signal (to reset the timer) & not to talk for longer than 4 minutes after it, or you will "time out"
7. The "over" signal will be a "G" in Morse if using CTCSS or "KN" if not using CTCSS. Be aware that you will only get a "G" after a reasonable period of transmission not after a very short "over".

Many thanks to G8OSN for this comprehensive article. Readers can be assured of its authenticity, as it was passed on to me for publication via Ted G3YCN who is the keeper of GB3KN.

Dave G7MFW—Newsletter Editor.

## How do I access GB3KN ? - cont'd.

### Access Problems

It is important that users understand that the term 'accessing' or 'opening' a repeater means 'waking it up', not simply talking through it once it is 'open'. Different repeaters around the country require a different approach to accessing them.

The most basic require a short (about 0.5sec) tone at 1750Hz. Once the repeater detects this tone it starts to relay the received audio to the transmitter and the repeater is said to be in 'talk through'. Provided there are enough users to keep the repeater 'awake' then further tones are not normally required, until the repeater returns to 'listen only' and the cycle must be started over. (Some repeaters, including GB3KN, 'time out' if users talk too long and the repeater returns to 'listen only' and must be accessed afresh.)

The 1750Hz tone must be nearly 'spot on' in frequency, not too long, nor cause the user's transmitter to exceed the 2.5Khz deviation, or the repeater may not accept it as valid and therefore fail to 'open'.

Some repeaters, including GB3KN, require that the 1750Hz access tone is followed by transmitted audio- typically 2 seconds of speech. This offers some protection against 'phantom beepers', who sometimes 'bleep up' the repeater to annoy others.

These days, most repeaters will also accept CTCSS to access them. With CTCSS a low level, low frequency (between 60 and 250Hz), and continuous tone, is super-imposed on the users transmitted audio. If this tone matches that set for the repeater, then the repeater will open and enter 'talk through mode'. In Kent the repeaters require a CTCSS tone of 103.5 Hz to access them.

CTCSS tones must be very accurate in frequency and tend to be sent at a low level of deviation. Both of these requirements are normally met by the components used to generate them and are rarely a problem.

## Technical Reports - cont'd.

**GB3KS** - Jim M1BKI reported that it was working well. The Morse class run by G3ROO had been well received. This included positive comments from the RA which had been made when there was a problem with G3ROO accessing GB3WL which had been resolved by him beaming his signal at KS. Various repairs had been made at the site. Martin G4RVV added that he recently called at the site and had been very pleased at the way it was being looked after by the local members.

**GB3NK** -Martin G4RVV reported on behalf of Bob G8JNZ that the repeater was working well in its new location.

**GB3RE** - Spike G4AKQ reported that the repeater continues to work well, but could do with some more users. The site owners were planning changes which might have an impact on the Group's aerals.

**GB3SK** - Dick G6DIK reported that the repeater is working well despite a logic failure requiring a crystal change.

**Web site** - John G4RVV advised that there had been a problem with the web site due to him inadvertently copying the contents of another site into its folder. This had now been resolved.

**E-QSO** - John M0ZAA reported that E-QSO allowed linking to repeaters via the internet.

**New Logic** - Last December we reported that Don G4TKR had designed and built a prototype repeater logic board incorporating PIC chips and using LET PIC logic. This device provides all the usual logic features plus the capacity to adjust the squelch setting remotely. At the September committee meeting Don announced that the 'production' board and its logic are now complete and passed round the finished article for comment. The unit will link repeaters using two CTCSS tones and is fully programmable. The cost of the components is now around £12.00. Don added that the block diagram and associated documentation had also been completed. Members again suggested that the project should be written up for RadCom.

## HOW DO I ACCESS GB3KN ?

by B Reay (G8OSN) October 2002

For some time now there have been frequent, often heated, "discussions" on GB3KN regarding problems with accessing and using the repeater. It is clear that there is some confusion over the issues involved and this article is intended to clear up this confusion.

The primary issues involved are:

- The audio deviation of users' transmitters
- The access method

### Deviation Problems

It is clear that many users do not understand the difference between Channel Spacing and Deviation. Channel Spacing is simply how far the channels are apart. On 2m this used to be 25kHz but is now 12.5kHz. While deviation (some times known as 'peak' deviation) is how much the transmitter frequency varies (or deviates) when you speak into the microphone. Thus, while the deviation should be chosen to suit the channel spacing, few radios (especially older models) automatically adjust the deviation to suit the channel spacing.

Note: Deviation and 'microphone gain' are not the same- the latter only sets how much audio (i.e. how loud you need to speak) to get the maximum (or peak) deviation.

If the deviation is set too high several things can happen. You may get 'break through' onto an adjacent channel ('bleed over' in CB parlance). If the receiver (in the repeater) has a narrow filter (suitable for a lower deviation) the signal may be 'chopped up' with only parts of words being heard. You may also not be able to 'access' or 'bring up' the repeater (see below).

## How do I access GB3KN ? - cont'd.

In ideal circumstances, all of our transmitters would be set for the correct deviation, 2.5kHz, which suits 12.5kHz channel spacing. However, many of us are still using equipment originally used under the 25kHz system and, unless they have been adjusted, these are still set up for 5kHz deviation- *even if they can select channels in 12.5kHz steps.*

Just to add to the joy, many new radios are delivered with their deviation set to the 25kHz channel spacing standard of 5kHz- *even if they have the correct receive filters and are otherwise designed for 12.5kHz spacing!*

Also, older equipment often has receiver filters designed for the wider deviation *but this only affects us on receive.* So, unless someone is using wide (5kHz) deviation on a channel 12.5kHz away, this is unlikely to be a problem in real terms.

Different repeater groups and managers have handled the migration from 25kHz to 12.5kHz channel spacing in slightly different ways. *It should be remembered that they didn't ask for these changes but they are expected to enact guidelines defined by the RA and RSGB.*

To meet the new standard they *had* to decrease their transmitted deviation to 2.5kHz. This has made little difference to users- at worst some will have noticed a slight decrease in volume and compensated with their receiver's volume control.

Some repeater operators have also replaced the filters in the repeater's receiver with ones designed for 12.5kHz. It is *this* change that has caused some users grief as, if their deviation exceeds 2.5kHz, at best their signal will be 'chopped up' by the repeater. In some cases, users may not be able to 'access' or 'bring up' the repeater at all.

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