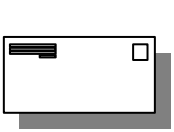
The Newsletter of the

Royal Naval Amateur Radio Society

Winter 2017

The officers and committee wish you, your family and friends a very merry Christmas and happy New Year



www.rnars.org.uk

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Items published in the Newsletter do not necessarily represent the views of the RNARS. The RNARS is affiliated to the RSGB.

The RNARS is grateful to Phil Taylor MØVSE and his brother Wayne G6NGV of **Shine Systems** for hosting our web site free of charge: **www.rnars.org.uk**

Contents:

Chairman's Chat

David Firth
2E0GLL@mail.com

A message of thanks to all those members who attended the AGM and to those who encouraged me after my very first AGM as Chairman. Especially, to Commodore Paul Sutermeister for coming so far. Actually, I have to share a little secret that involves our President, whom I had the chance to observe arriving with a police escort just as I stepped out into the car park to fetch an item from my car. Paul, I know it wasn't planned, but as I said at the time '...it looked so cool' Bravo! And I'm still smiling at the thought of it.

For the immediate future the committee will be seeking to adopt the Royal Navy's social media policy and guidelines on social media behaviour, with a view towards integrating these and other related regulations into our constitution. Also, we shall be reviewing the constitution with regard to strengthening disciplinary proceedings within our society. There is a lot of work to be done.

My latest radio adventure is the acquisition of a budget dual-band box for mobile use. Having bought an aerial system and base connecter I found myself at the Kempton Park rally clutching a nice little 2m/70cm aerial, and half an hour later a little brown box containing the 'rig.' It is so small that I could fit it into my pocket! Sadly, after checking it out in my shack, in my car and finally in the HQ shack it was quite apparent that a random buzzing occurred during transmissions. Talking to the world on VHF or UHF was *orff the menu* -so to speak. A tantalising week later a small box arrived by courier to replace the offending article and voila! All is well again with the software included along with a PC cable, so that I can program my frequencies into its huge memory bank. It fits into the car very snugly and out of the way. This time my mobile experience up on the South Downs promises to be more fruitful.

Most of us have been aware that two members have been airing their views on a matter in which they had sought fast-track gratification from the committee. During their discordant online displays they misled people into thinking that the Society was in a terrible mess. That clearly is not the case. Please refer to the minutes of the committee meeting.

WSPR & T2FD

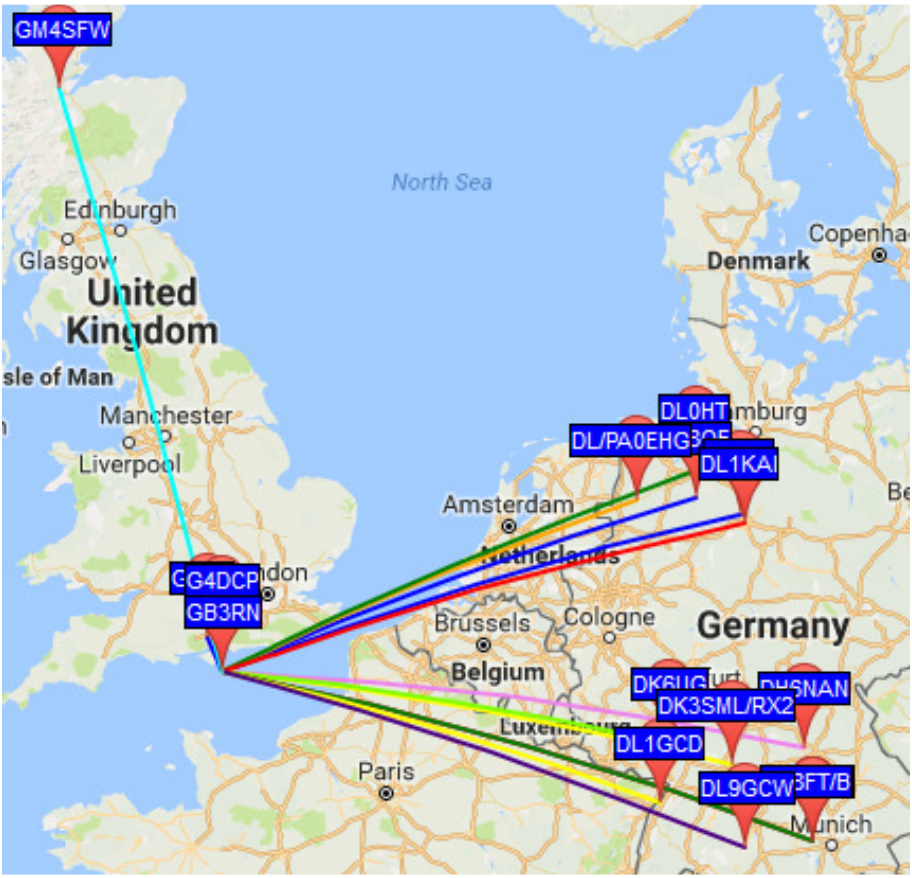
Earlier this year Ian 2EØIHH managed to persuade a US supplier to provide him with a wideband aerial, a tilted terminated folded dipole, T2FD for short. On his return from overseas service he very generously donated this to the HQ Shack. When it was installed we ran a comparison with the existing G5RV and found that the T2FD (http://tinyurl.com/y73s6w8b) was infinitely better. Recognising that this was possibly as much down to the failures of the G5RV as to the merits of the T2FD we decided to run some tests with the newer aerial.

Tony, M5AGB offered the loan of his QRP-Labs (www.qrp-labs.com/ultimate3) Ultimate 3 WSPR transmitter (tinyurl.com/2wgcp2f) to carry out the tests so in July after Tony had configured it with the callsign GB3RN, the first four characters of our Maidenhead locator and bands to transmit on we connected the radio to the T2FD.

On the WSPR home page; (http://tinyurl.com/y77esam7) Professor Joe Taylor K1JT who developed **WSPR** (pronounced "whisper") said that it *implements a protocol designed for probing potential propagation paths with low-power transmissions. Normal transmissions carry a station's callsign, Maidenhead grid locator, and transmitter power in dBm. The program can decode signals with S/N as low as -28 dB in a 2500 Hz bandwidth. Stations with internet access can automatically upload their reception reports to a central database called WSPRnet, which includes a mapping facility.* There is a specific frequency allocated for WSPR activity on every one of our bands and they can be found on G4ILO's excellent introduction to WSPR (www.g4ilo.com/wspr.html).

The Ultimate 3 transmitter was configured to send a signal on 6 HF bands spending 2 minutes on each band. It was connected straight to the T2FD without any form of antenna tuning unit. It was set up with the HQ Shack callsign GB3RN to transmit on all the HF bands from 80m upwards. The output power was in the range of **100 to 250mW** (yes milliwatts) and the equipment was left running for just over 30 minutes from about 16.10 to 16.42 which was just under 3 full cycles of the bands.

To say that the results were staggering would be an understatement. In the thirty-odd minutes it was running GB3RN was logged by fifty stations. How we knew this was that there is a world-wide network of receivers monitoring the WSPR frequencies and what they hear is posted to WSPRNet.org to be displayed on a map or in tabular form. WSPRNet.org also allowed us to monitor performance by band.



Stations receiving GB3RN on 40m

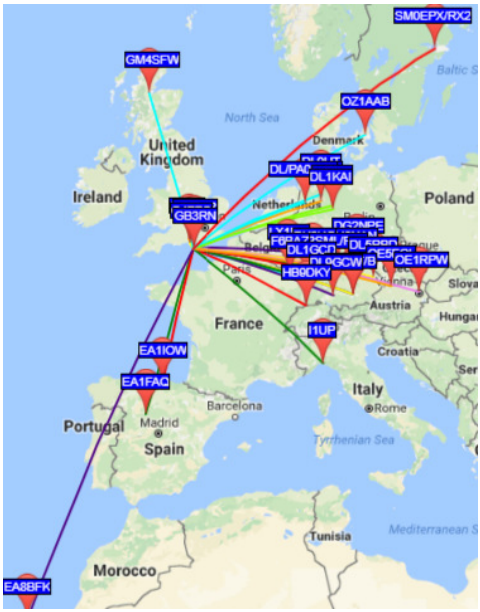
When we took a snapshot at 17.00 on Tuesday of where GB3RN had been heard there were just thirty reports but when we took a similar snapshot at 11.55 the following morning the number of reports had increased to fifty. The increase in reports can be accounted for by the

remote receivers only uploading their report to WSPRNet.org during the evening and overnight.

The tabular display on WSPRNet.org gives additional information. A fragment of the display is shown below.

Call	MHz	Grid	Pwr	Reporter	RGrid	km	azimuth
GB3RN	14.097147	IO90	0.2	G4ZFQ	IO90ir	0 33	328
GB3RN	14.097162	IO90	0.2	EA8BFK	IL38bo	2661	209
GB3RN	7.040150	IO90	0.2	DK8FT/B	JN58oe	922	101
GB3RN	7.040151	IO90	0.2	DK8FT	JN58oe	922	101
GB3RN	7.040175	IO90	0.2	GM4SFW	IO77sn	818	346

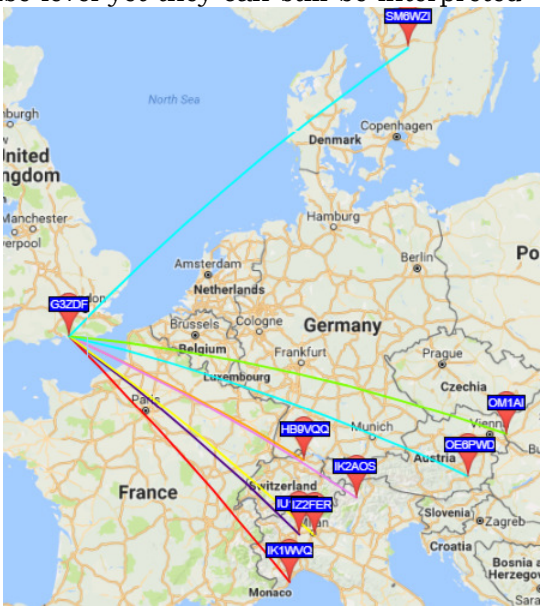
This tabular display also conveniently shows the azimuth or direction from where we were transmitting and in this way, gives an indication of the radiation pattern of the aerial in use. A map showing all the stations who heard us across all the bands is shown below.



We were heard by an awful lot of stations in Germany but whether that is a result of the density of receiving stations in that country or the quality of the signal we transmitted in that direction is a moot point.

The exercise generated quite a lot of interest among those in the shack, in particular questions about what the purpose of WSPR was. In the test we ran, we got a good idea of propagation conditions at the time and found out the directions in which the aerial we were using seemed to operate well.

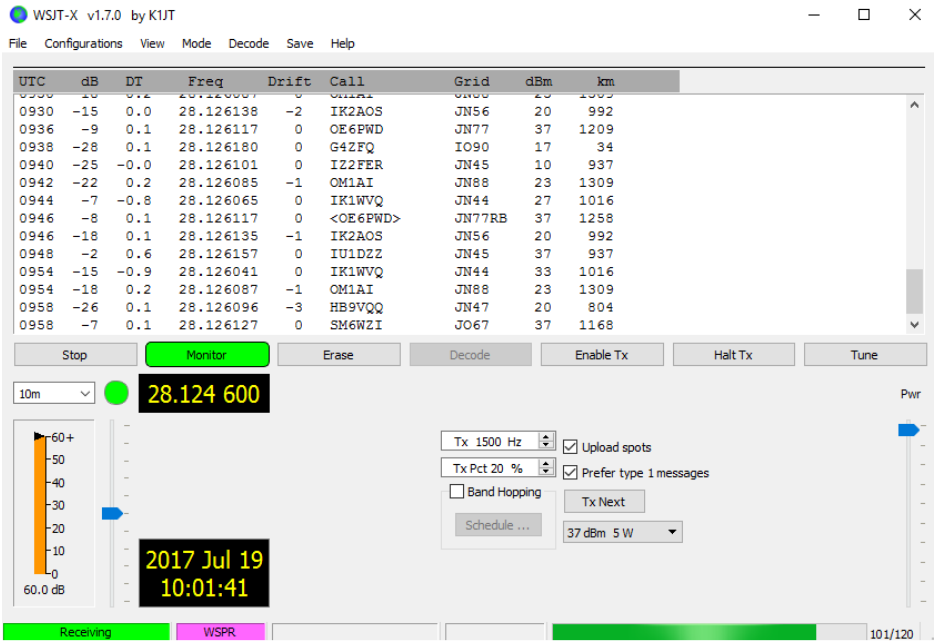
I already use the WSJT-X software for JT9 and JT65 having downloaded it for free from the WSJT-X website (http://tinyurl.com/hg6rnxm). A recent release included WSPR so I decided to use my IC-7300 to receive WSPR signals on 10m. The software runs in the background while I am doing other things and uploads details of any stations heard to WSPRNet.org. Heard is a slight misnomer because most of the signals are barely audible because they are below the noise level yet they can still be interpreted by the software. Below is a screenshot of the signals heard and processed by the WSJT-X software over a period of about half an hour on 10m at 11.00z on 19th July 2017 using my IC-7300 and a doublet aerial.



WSPR activity is not for rag chewing. Each over takes two minutes and consists of 50 binary digits or bits. However, it is a very useful tool for those amateurs wanting to check propagation, compare aerials or just help others to do the same.

Joe G3ZDF

Screenshot from WSPRNet.org of the activity shown on the WSJT-X screenshot below.



Colin;
Just read the Autumn edition of the Newsletter and aside from the very nice picture of the shack on RRS James Clark Ross, I was interested in the article that mentioned WSPR.

It may be of interest that when I am on board James Clark Ross, I run a WSPR receiving station on 30MHz as part of a scientific experiment. It is interesting what I do receive during these work periods.

Mike

At the time of publication, Mike will be aboard RRS James Clark Ross until a few days before Christmas. Mike's web site lists his activity periods, daily up-dates, pictures, Tweets and the daily food menu: www.gm0hcq.com. Mike tweets as @gm0hcq

Pause for thought:
God is supposed to look after his faithful flock; so why do church steeples have lightning conductors?

Much is said about voice activation these days, particularly with regards to modern communications.

I can recall the days when you lifted the telephone hand set and a distant voice said; "Number please?"

You spoke the number you wanted connected to, and the voice replied; "Connecting you now". Job done, no buttons to press or dial to rotate; real automated voice activation.

Pie and Mash - or Pi and S-Match
What started this off was seeing a comment on line that someone in the U.S. had reviewed the Palstar balanced tuner, model BT1500A, a balanced 'L' tuner that I had modelled my homebuilt one on. He said it was the worst balanced tuner he had come across for balanced output. He put one of the reasons for this as the switched variable capacitor which left the unused part of the capacitor still connected on one side. He also criticised the layout and the fact that it was built in a metal enclosure, as all contributing to the poor balanced output.

This prompted me to check the balanced current in my open wire feeder connected to my balanced 'L'. I had recently completed construction of a balanced rf current meter which connected to the feeder in series with the output from the tuner. This upset the tuner slightly but was not a problem.

Sure enough, on only two bands was the current equal and on six other bands there was a difference of four divisions or more on the meters and of course it wouldn't tune 160m unless the feeders were strapped.

It was at this time I came across an on-line discussion on ATUs and mention was made of the S-Match by PA0FRI. I'd heard about this ATU when it was featured in Radcom in March 2003, so I visited PA0FRI website and read all about it.

It seemed a very simple design consisting of just 3 components: a variable capacitor, a transformer and a rollercoaster coil.

It just so happened that I had been given some junk components, amongst which was a damaged rollercoaster coil. It had one ceramic end plate and the other end plate had been replaced by a thin piece of Perspex which had been smashed. The coil itself was undamaged. I took it to bits, cleaned it all and using a couple of end plates from another variable capacitor (long since lost its plates) I rebuilt it. I measured the inductance and found it was 18microhenries, just right for the S-Match.

One snag though: the tuning shaft was 3mm diameter and everything I had was for 6mm or ¼ inch shafts. So a look on fleabay for a flexible shaft coupler to connect 3mm to 6mm shaft revealed only one, made by a firm in Hong Kong. Cost £3.73 with free postage! It arrived in ten days and was perfect for the job.

Whilst on the PA0FRI website, reference was made to PA0LL website as he produced a commercial version, all handmade but very expensive. He also makes a balanced Pi tuner, but more of that later. It gave me the idea for building my own S-Match using Perspex (acrylic) for the cabinet, but I decided to use a piece of polished varnished plywood for the lid as the S-Match did not have a built in SWR meter, one would have to sit on the lid and might scratch it if it was made of Perspex.

Be careful drilling and cutting Perspex. I used a vertical bench drill at slow speed and gentle pressure for the holes. Do not use a hand-held drill as a slight variation from the vertical is likely to crack the Perspex. Some of my pieces of Perspex were obtained cut to size and the cutting was done with a laser leaving a nice polished edge. One or two pieces I had to cut myself using a hacksaw. This of course left saw marks on the edge. These were removed with a fine file and then about five minutes rubbing with fine wet and dry paper and finally finishing off with Solvol Autosol chrome polish which left a nice shiny edge as good as the laser cut pieces.

As I have mentioned, there are only three components to the S-Match: variable capacitor, transformer and rollercoaster coil. The specification for the capacitor is pretty broad. Almost anything from about 300pf to 500pf or more will do and even vintage receiver types have been used. I had a two section transmitting type variable of 220pf each section. I decided to add a switch so that the 2 sections could be in series (for

the higher bands) or in parallel (for the lower bands) thus the 2 sections would always be in circuit.

The transformer consists of three windings wound on a single iron dust core type T200-2 although PA0FRI gives details of a transformer wound on 2 stacked T300-2 cores which he says would be good for 2.5kw! On his website he gives very detailed description of how to wind on the core the three windings and how they are connected.

The rollercoaster coil is simply connected across the output of the transformer and thence to the balanced feeder.

In use I found an immediate advantage over the balanced L tuner in that the S-Match tuned my doublet on 160m without having to strap the feeders. SWR 1:1, in fact the S-Match tuned my doublet on every band with an SWR of 1:1. Next I checked the balanced RF current in the open wire feeder. This showed seven bands equal current and the other two bands were within four divisions difference. The meter scales go from 0 - 100 divisions, so you can tell that four divisions is not very much. I was extremely pleased with this performance which made my balanced 'L' tuner redundant.

Later I came across DJ0IP website and a discussion on Symmetrical and Asymmetrical ATUs. He covers quite a lot and mentions some ATUs I've never heard of but one type he mentions is the Balanced Pi ATU. I'd heard of the pi filter of course, that was what was in the output stage of the Naval type 619 built by Pye and in my ignorance at the time I thought it was a 'PYE' filter invented by the PYE factory! Incidentally, the reason this type of filter is called 'Pi' is because the circuit diagram of such a filter displays the three components in the configuration of the Greek letter 'Pi'.

However, there are only two known manufacturers of balanced Pi tuners: one is German and is a remote controlled type, very expensive and the other is PA0LL who hand crafts all his ATUs and are very expensive. As DJ0IP says, he'd have to win the lottery to afford one of those. However, he does rate the balanced Pi tuner very highly and when I heard a UK amateur saying he is using one of PA0LLs tuners and that it was the Rolls-Royce of tuners and he uses nothing else I decided to have a look at it.

I already had most of the components in the now disused balanced L tuner and I had a suitable variable capacitor for the input in my junk

box. The four capacitor switches came from CPC, which were identical to the ones used by PA0LL, so the front panel was going to be black Perspex with white markings. The rear panel was also black Perspex and the rest of the cabinet in clear Perspex. The central deck was 10mm thick Perspex and all the other pieces were 5mm thick. It was going to be a much larger cabinet than the S-Match.

Also incorporated was the SWR bridge and cross-needle meter from the L tuner, something the PA0LL unit did not have, so avoiding the need for an external SWR unit.

The 1:1 Guanela current balun consists of ten turns bifilar wound on an FT240-43 ferrite core and is mounted underneath the main deck next to the SWR bridge. Also mounted underneath the main deck is the input variable capacitor. The four switches are front panel mounted below the level of the main deck and the two poles are doubled up on each switch and the capacitors mounted directly on them.

The two rollercoasters and connecting pulley belt are mounted on the top of the main deck and the variable capacitor placed between them.

Came the end of construction and time to connect the new tuner to the balanced feeder of my doublet antenna. Again, an instant advantage over the balanced L tuner in that it tuned on 160m with SWR 1:1 without the need to strap the feeders. Tuning on all bands produced SWR of 1:1 and now to check the RF current in each leg of the balanced feeder.

I was absolutely amazed to find that on eight bands the RF current was equal and the one band that wasn't (10m) the difference was only two divisions on the meters.

At this time, I had just completed building feeder current meters to a different design which uses individual pick-ups that clamp around each leg of the feeder, so not disturbing the feeder or tuning at all. This new RF Current meter produced exactly the same results.

I am very pleased indeed with balanced Pi tuner, the only disadvantage is its size, but I think I can live with that.

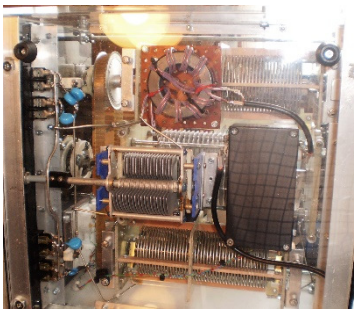
Some might say there is a disadvantage in that you have three variable controls to adjust but when you have got your settings noted on a

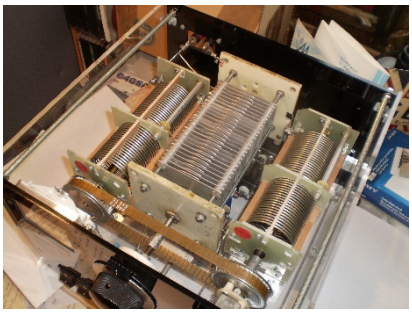
piece of card, it is quite easy when it comes to changing bands, to go straight to those settings again. The fact that the RF current is balanced means that more of it is reaching the antenna where it needs to be.

More information can be found at PA0FRI, PA0LL and DJ0IP websites.

Ken Randall G3RFH

Pi Match front


Pi Match lower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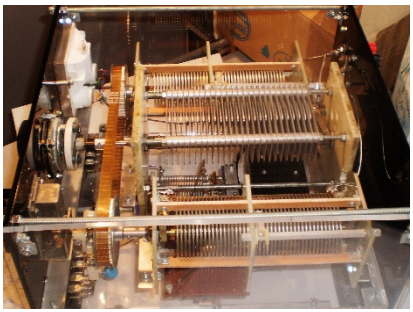
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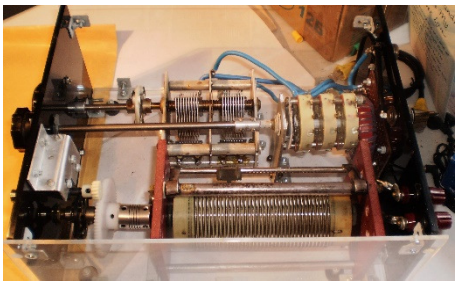
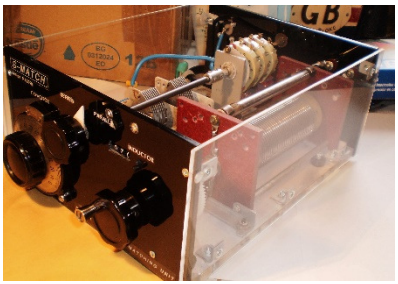
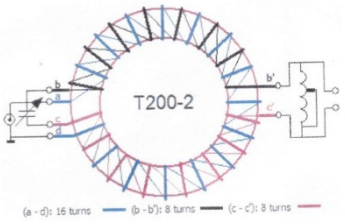
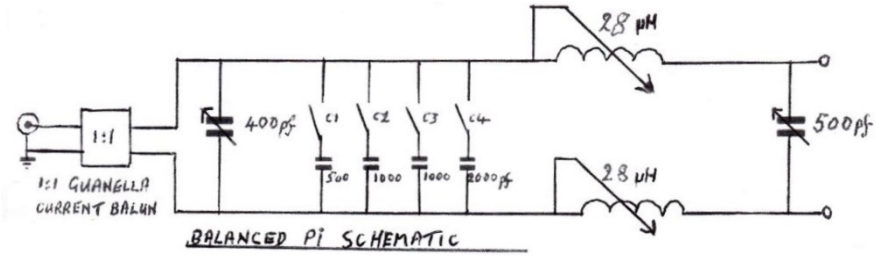

S Match top


S Match side

S Match front



S-MATCH SCHEMATIC



BALANCED Pi SCHEMATIC

RNARS Social Media Policies

Copies of the Social Media and Data Protection policies are now available on the T&Cs / Policies page of our website.
They cover a wide range of related topics.
Please send any comments to Joe G3ZDF.

A very warm welcome to our new members and up-dates

New Members		
Christopher Brown	SWL	5036
Phil Challans	2E0PGC	5037
Ian Miles	2W0IWM	5038
Re-joiners		
Don Inbody	AD0K	4774
Mike Robertson	G3USX	3254
Changes		
Doug Mulloy - Callsign incorrectly listed in last NL as K7AGX	K7ABX	1486
Bert Matthies – callsign change	DM1BM & SO1BM	4968
Keith Missenden – callsign change	M0IHN	5029
Resigned		
Colin Topping	GM6HGW	1870
Dave Lacey	G4JBE	0434
Bill Mahoney	G3TZM & 9H1BX	0328
Jerry Williams	AA1XX	4755
Silent Keys		
Rick Edmonson (former member)	G3YEC	1727
Tony Quy	GØFEO	2935
Bev Moorcroft (former member)	G4UDY	4172
Colin Whale	VK4CU	1561
John Plenderleith	9M2XRO (ex G3OOK)	0437
John Kerr	G4DJN	0767

Affiliated Clubs: As well as hearing from members, perhaps some of our affiliated clubs might share their news? Do you have any rallies or expeds planned; don't keep it a secret, send in your news and pictures.

59 Degrees North Amateur Radio Group – Twatt Airfield

Submitted by 59 Degrees North and RNARS member, Bill, GM3IBU, all timings: GMT.

HMS Tern (Twatt Airfield) weekend operation 2017

The Operation, run by three members of the 59 Degrees North Amateur Radio Group, took place over the weekend of the 16 &17th September 2017, and formed part of HMS Tern/Twatt Airfield Museum Open Day. It was a successful operation despite the prevailing poor ionospheric conditions. The callsign for the event: GB5TAM (**T**ern **A**irfield **M**useum) as applied for by David MM5DWW.

Station Set-Up

There were three stations, three rigs, and three operators: David MM5DWW using SSB, Ed GMØWED on CW and Glenn 2MØDES using RTTY & PSK. The antennas were, a 40m vertical; a linked vertical, used for 30m CW, and dipole for all bands. The new filters ensured that there was no inter-station interference. The stations for SSB and data modes shared the former RTTY room in the control tower, and the CW station was in an adjoining room. The two vertical antennas were set up in the field to the north and east of the tower. The dipole ran alongside the fence to the south.

Contacts & conditions

Four-hundred and sixty-nine contacts were made. Considering the forecast solar conditions, and the use of only three bands, conditions were not as poor as might have been feared, though deep and sudden QSB made for some challenging QSOs. Only three continents were contacted, Africa, Asia, and Europe, which, given the circumstances of bands and conditions, was not unexpected.

Operation started on Saturday at 13:53 with a SSB CQ call from David, which was answered straight away by Bill GM3IBU, the log entry reads:
QSO: 7150 PH 2017-09-16 13:53 GB5TAM 59 GM3IBU 59 Bill.

This was the first known transmission from the control tower since the airfield closed after the war. It was particularly fitting that a member of our own 59 Degrees North ARG, Founder Member and Honorary Life Member, Bill Wright GM3IBU, made the first contact with us; so there was a member of the group at each end of the first contact. Contacts continued on Saturday until 18:07, the last contact of the day being a CW contact with SV9/WB2GA/P, Ron, an American operating from Crete.

"GM3IBU, this is GB5TAM"

Sunday operation began at 06:22 with a CW contact with EM130QM a special station from Moldova, and the operation ended at 15:31, with a PSK contact with IZ5YBN, Alfredo, in Prattovecchio, Italy.
Contact details are:
By Mode:
SSB 189 contacts 15 countries
Data: RTTY 3 contacts, 3 countries; PSK 86 contacts 18 countries
CW 194 contacts 29 countries

40M	15	30M	29
20M	21	2M	1

38 countries in total.

Accommodation

We were lucky with the weather for both setting up and taking down the antennas. It was a little disconcerting to find that the cattle in the field had not been moved, and it was almost by chance that we noticed the cattle heading north towards the antennas. David, after failing to be able to contact the owner, moved the cattle safely to a secure neighbouring field for the weekend.

Saturday was cold in the 'open' tower, with the north wind blowing directly into the two operating rooms through the vents. Thermals and mitts were a wise choice. On Sunday the wind direction had changed, and the tower was warmer. The accommodation was fine. Each station displayed a board with details for visitors to read of the station and the history of the mode which was being used. On

Sunday afternoon there was a considerable number of visitors at each station who engaged in conversation with the operators, discussing all sorts of matters relating to the equipment (for example a range of Morse keys on display), the modes being used and the countries contacted. We were made to feel very welcome, and a good time was had by all. We were particularly pleased to be able to interact with so many members of the public on the day, and HMS Tern's profile was raised throughout Europe and beyond. I got back quite a few humorous remarks about a Royal Navy Airfield.

Useful links: www.hmstern.co.uk
www.facebook.com/HMSTernOrkney

Ed GMØWED

David MM5DWW, Frank Zabriskie, Ed GMØWED & Glenn 2MØDES
(Frank is a SWL using and repairing older valve equipment)

Watch out for more news from the **59 Degree North** group, operating from a former RN airfield control tower, they are applying for affiliate membership of the RNARS, welcome aboard.

CW For Ever

You must have at times, thought into the past,
Where some things go out, while others last,
What comes to mind is the Old Morse Code.

To talk with ones fingers, is surely an art,
Of any info you care to impart,
In most conditions the signals get thru,
While the same about phone is simply not true.

Those dits and dahs cut through the trash,
Of nearby noise or lightening's crash,
To the sensitive ears of the ham receiver,
Who records this data with ardent fever.

He knows he is doing something unique,
In such poor conditions, that is quite a feat,
To roger the message that came off the air,
These brass pounders sure do have that flair.

They say Morse ops are a dying breed,
But do not despair, there is always that need,
That when conditions get rough for the new automation,
Be rest assured, there will be need for your station.

CW is dying? Believe it never,
This mode will be round forever and ever,
But one thing is sure, what we really need,
Is to relay our knowledge to the younger breed.

To carry the torch, long after we are gone,
To send Morse Code through the air like a song,
When at last, Silent Keys pull that final lever,
We can rest in peace, it is CW for ever.

Me In My Shack; Not.

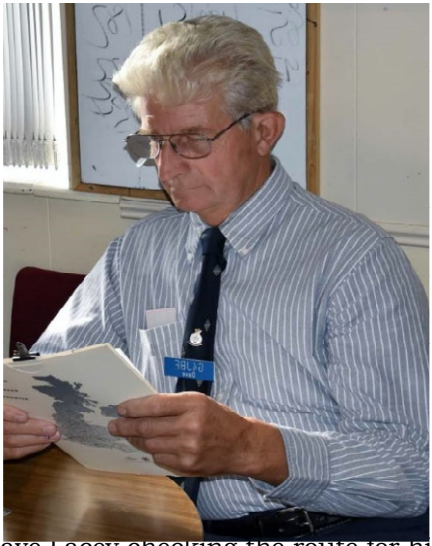
Not in his own shack; Carl, K8BBT has been on his travels, this time to Battle Ship Cove and the ARRL HQ station W1AW.

Hans-Juergen Kempe's AGM pictures

Unaccustomed to delays on German railways, Hans is clearly bored with UK railways.

"Joe, are you sure this is the correct location for the AGM?"

Our President; Commodore Paul Sutermeister DL RN.



Dave Lacey checking the route for his return journey home.

Navy ensure Air Cadets keep to the rules

Recently, two air cadets from 106 Air Cadet Squadron based in Grays celebrate when they passed their amateur radio exam.

This acheivement allows them to operate transmittors and talk to people around the globe over the airwave. The cadets had been studing via the Essex Ham on line training course which gave them a basic understanding of electronics. Once they had completed this course they then attended a training day which is desgned to cover the amateur radio syllabus before taking the exam in the evening.

The training included a practical section which required them to demonstrate that they could set up a station and had the ability to speak over the air. During this part of the exam one cadet had quite a surprise as after she had spoken into the microphone an amateur located in America responded. Morse is a requirement of the exam and the cadets were required to send and receive a morse code message which they completed sucessfully.

The picture shows (L –R) Lt Cmd R James (RNR) who acted at the invigultor during the exam presenting the pass certificate to Cadet Lee and Cadet Mayes is seen receiving his pass certificate from Flt Lt Mark Jones RAFVR officer commanding the 106 Squadron. Both Lt Cmdr. James and Flt Lt Jones commented on how hard the cadets had worked to achieve their pass certificate and they looked forward to seeing them talking on the squadron radio station which is currently being set up at the squadron HQ. Should anyone wish to know more about amateur radio or the Air Training Corp please e-mail: 106.oc@aircadets.org

Submitted by Nich G4HCK via Joe G3ZDF

NEW MEMBERSHIP CATEGORY

A proposal was submitted to the 2017 AGM that:

> *New members under the age of 25 will be offered free membership until they reach their 25th birthday. They will receive the electronic newsletter. If they wish to receive the printed Newsletter they will be required to pay the full subscription. Existing members under the age of 25 will not be entitled to any refunds of subscriptions but will be entitled to free membership until they reach their 25th birthday'*

The aim is to try and recruit some new and younger members. Although many who apply for this category of membership may not continue beyond their 25th birthday it was felt that some would and that in itself justified this approach.

The proposal was accepted and passed unanimously.

Any member under the age of 25 who wishes to take advantage of this offer should contact the Membership Secretary, Marc G0TOC – details on the contacts page.

Resonant impedance R_p of parallel resonant circuits either capacitive or inductive tuned

In connection with my deepening study of the literature about high frequency technique, especially about the theory and the various mathematical derivations of parallel resonant circuits, I found in [3] of the bibliography a very interesting diagram, figure 1. It shows, among other things, the tendency of the resonant impedance R_o, dependent on the frequency, of parallel resonant circuits with capacitive tuning by means of a variable disk capacitor.

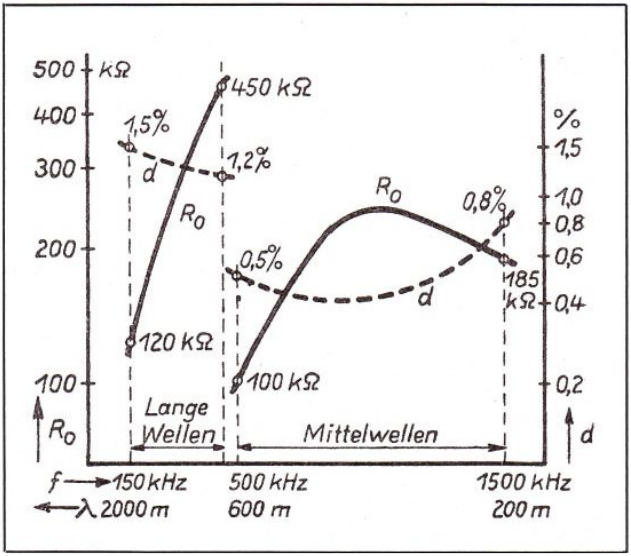


Figure 1
Resonant impedance R_o for the long wave (Lange Wellen) and the medium wave (Mittelwellen) range, dependent on the frequency, tuned by means of a variable disk capacitor
([3], page 211, Abb. 179)

Short-designation of the resonant impedance

Only some of all the books I used for my study are listed in the bibliography.
In brackets the number in the bibliography and behind the fraction line the short-designation:

[1] / R_p [2] / R [3] / R_o [4] / R_k [5] / R_{res}

I decided to use in this treatise „R_p“ only.

Note: For the wording „resonant impedance“ one can find in the literature also „resistive impedance at resonance“.

The definition of the resonant impedance R_p

To call to mind again for the readers following the definition of R_p:

R_p is the impedance Z_r of a parallel resonant circuit at resonance. It is pure ohmic because at resonance the capacitive (X_C) as well as the inductive (X_L) reactance cancel each other out. At parallel resonant circuits R_p is very high-ohmic (see e.g. figure 1).

This wording can be proved by means of mathematics as follows:

The impedance Z of a parallel resonant circuit at frequencies below or above the frequency of resonance one can present mathematical by means of the well-known equation:

$$Z = 1 / \{ (1/R)^2 + (1/X_C - 1/X_L)^2 \}^{0,5}$$

At the frequency of resonance is $X_C = X_L$ and hence it follows $1/X_C = 1/X_L$ and from them $1/X_C - 1/X_L = 0$ and the above mentioned equation „Z = …“ is now reduced to:

$Z_r = 1 / \{ (1/R)^2 \}^{0,5}$ with the index „r“ for „resonance“ and the ohmic resistance has to be replaced by R_p and hence it follows

$$Z_r = 1 / \{ (1/R_p)^2 \}^{0,5} = 1 / (1/R_p) = R_p$$

Tendency of the curves $R_p = f(f)$ in the long wave and the medium wave range

Figure 1 shows that the curve $R_o = f(f)$ in the long wave range (low frequencies) rises very steeply with increase of the frequency.

Compared with that shows the curve $R_o = f(f)$ in the medium wave range (medium frequencies) a totally different behaviour: with increase of the frequency at first a steep rise until the peak value, which is also the turning point, and then it falls continuously.

Comparing these two curves I was curious as well as very interested to find out which tendency the curve R_p = f (f) has in the short wave range (high frequencies).

Because of that I decided to investigate two parallel resonant circuits, one capacitive and the other inductive tuned, which cover a certain part of the short wave range.

Note: Following I use for „parallel resonant circuit“ only the abbreviation „PRC“!

Investigation of two PRCs to calculate R_p

For both PRCs, PRC1 and PRC2-1, I used ring core coils, made with enamelled copper wire.

PRC1 with L = const was tuned by means of a variable disk capacitor.

PRC2-1 with C = const was tuned by variation of L in steps, realized with different numbers of windings, always spread around the ring core with constant maximum angle of contact.

Dependent on the values of the components L and C following f-ranges could be reached:

PRC1: f = 1,866 [MHz] to 4,764 [MHz]
PRC2-1: f = 1,915 [MHz] to 7,333 [MHz]

The equations to calculate R_p

I calculated R_p based on the following equations A to D.

Equation A, B and C are from [1] of the bibliography and D from [3].

Equation A: $R_p\ [\Omega] = Q_{0,7}\ [-] \times 10^3 \times \{ (L\ [\mu H] / C\ [pF])^{0,5} \}$

Equation B: $R_p\ [\Omega] = (10^6 / R\ [\Omega]) \times (L\ [\mu H] / C\ [pF])$

Equation C: $R_p\ [\Omega] = Q_{0,7}{}^2\ [-] \times R\ [\Omega]$

Equation D: $R_p\ [\Omega] = 2\pi \times f\ [MHz] \times L\ [\mu H] \times Q_{0,7}\ [-]$

Calculation of R_p

For both PRCs I measured/calculated the values required for the equations A to D.

With these results I calculated the various R_p-values by means of the equations A to D. The differences between them were negligible.

The next step was to calculate their mean values which are required for the diagram presentation.

Results of the investigation PRC1: $R_p = f(f)$

The decision to present in figure 2 the resonant impedance R_p dependent on the frequency (both in numerical values of the calculations respectively of the measurements) was made to have the same basis for comparison with figure 1.

The curve $R_p = f(f)$ shows for this range of short waves the same tendency like that one for medium waves (Mittelwellen) in figure 1.

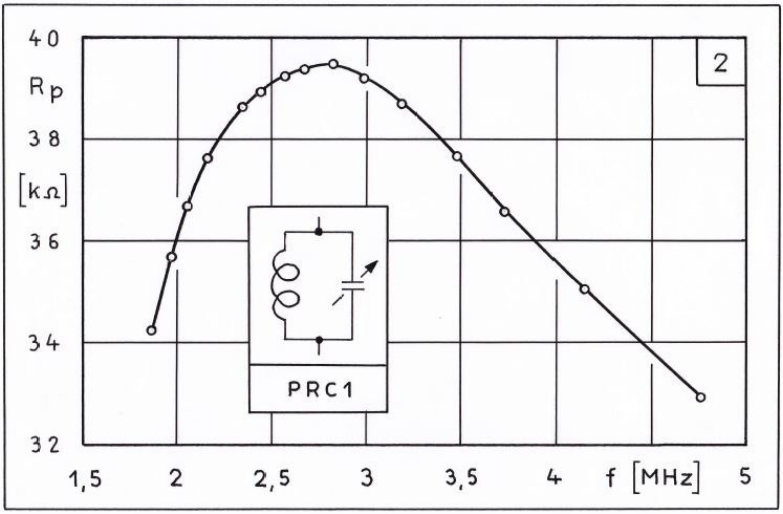


Figure 2
$R_p = f(f)$ of a capacitive tuned PRC for a certain short wave range

PRC2-1: Rp = f (f)

And now the great surprise: figure 3 shows for the curve $R_p = f(f)$, (as in figure 2: both, R_p and f, in numerical values of the calculation respectively of the measurements) a totally different tendency compared with figure 2:

< no rise with increase of f

< no turning point at the highest R_p-value at a certain f-value

< R_p falls from the highest value at the lowest measured frequency in a nearly hyperbolic shape to the lowest value at the highest frequency of this short wave range.

However: Is this correct? Has this curve really a hyperbolic shape respectively tendency?

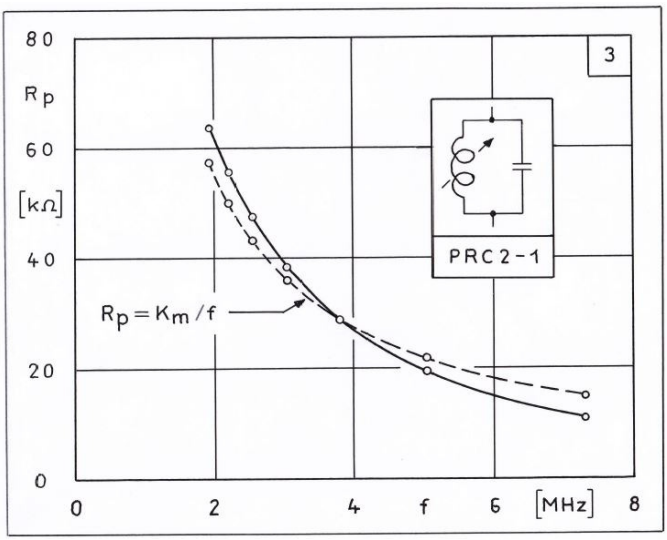


Figure 3
Full line: $R_p = f(f)$ of the inductive tuned PRC2-1 for a certain short wave range
Broken line: proof that the full-line-curve has a hyperbolic tendency

Proof that the curve $R_p = f(f)$ of PRC2-1 has a hyperbolic tendency

The mathematical functional equation of a hyperbola is X x Y = 1 or, general, X x Y = K with K as a constant.

With X = f [MHz] and Y = R_p [kΩ] one can write:

f [MHz] x R_p [kΩ] = K [MHz x kΩ]

and hence it follows R_p [kΩ] = K [MHz x kΩ] / f [MHz]
Procedure to check the curve R_p = f (f), figure 3, whether their tendency is hyperbolic or not:

< Calculation for all seven marked points in figure 3 the product f [MHz] x R_p [kΩ]

< Calculation of the mean value of them, result: K_m = 109,183 [MHz x kΩ]

< Calculation of R_p [kΩ] = K_m [MHz x kΩ] / f [MHz]

< Presentation of these „new" R_p-values with circles, dependent on the frequency, in figure 3 and connected with a broken line

Proof: the curve R_p = f (f) of an inductive tuned PRC has a hyperbolic tendency!

Decisive is the tendency of the full-line-curve in figure 3 in comparison to that one with the broken line and not their numerical values. For that reason it can be stated:

< The tendency of the curve R_p = f (f) of an inductive tuned PRC is hyperbolic!

Well, so far, so good. But: is this generally valid for all inductive tuned PRCs or only for PRC2-1 with its values of L and C and the L/C-ratio dependent on them?

To find out the behaviour of R_p = f (f) of inductive tuned PRCs in general, that means independent on their L and C as well as the L/C-ratio, I investigated two more PRCs with different L- and C-values and designated them PRC2-2 and PRC2-3. Their frequency ranges are:

PRC2-2: f = 3,356 [MHz] to 18,306 [MHz]

PRC2-3: f = 2,470 [MHz] to 9,208 [MHz]

R_p = f (f) of PRC2-2 and PRC2-3

Figure 4 and figure 5 show the result: the curve R_p = f (f) of both PRCs has the same hyperbolic tendency like that one of figure 3!

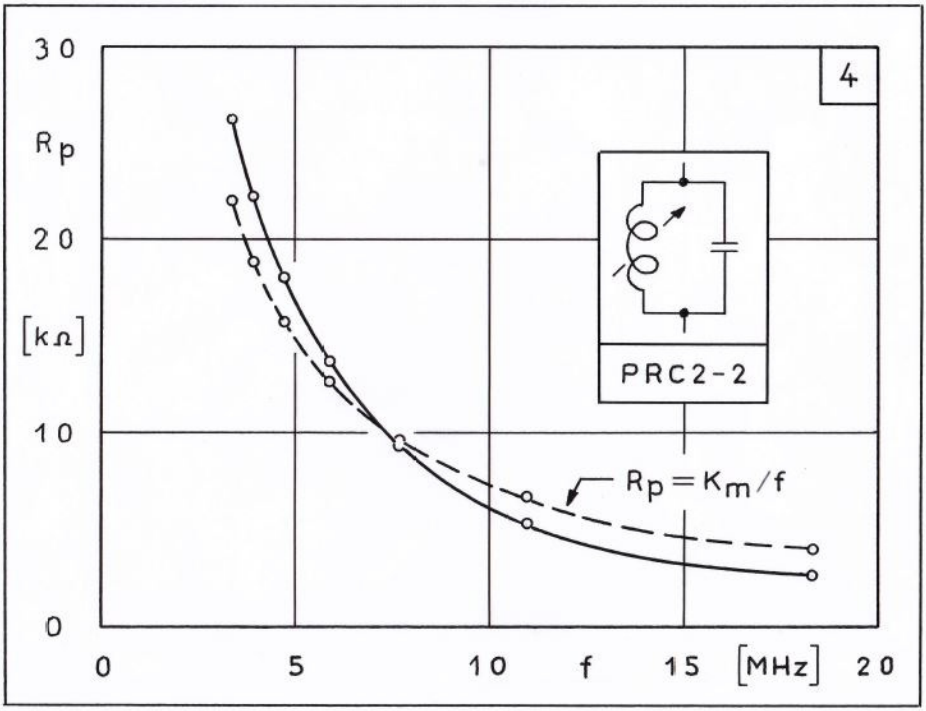


Figure 4
Full line: R_p = f (f) of the inductive tuned PRC2-2 for a certain short wave range
Broken line: proof that the full-line-curve has a hyperbolic tendency

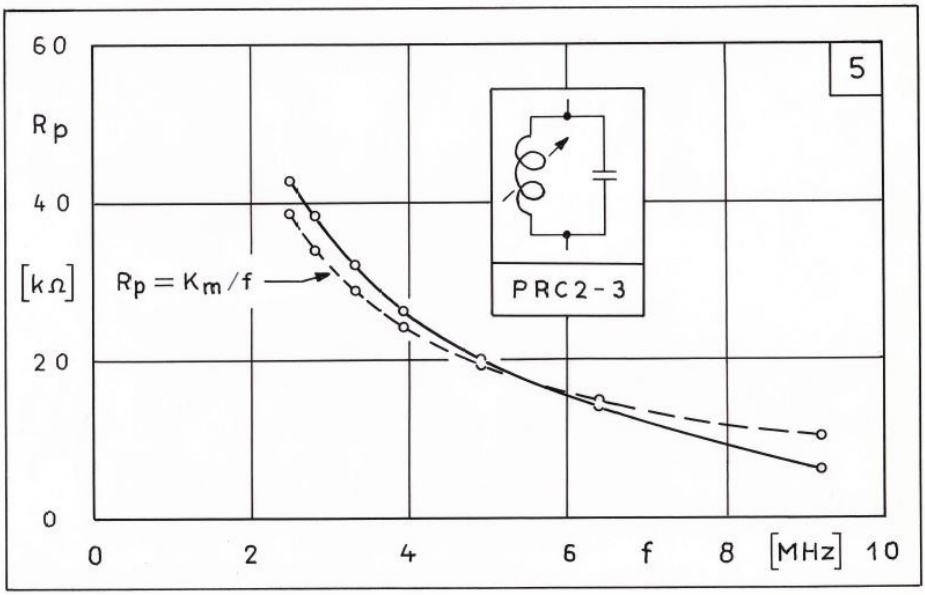


Figure 5
Full line: $R_p = f(f)$ of the inductive tuned PRC2-3 for a certain short wave range
Broken line: proof that the full-line-curve has a hyperbolic tendency

Summarizing shows figure 6 the curves of all three inductive tuned PRCs. As a confirmation can be seen that:

- the curve $R_p = f(f)$ of inductive tuned PRCs (independent on the L- and C-values) has a hyperbolic tendency: highest R_p-value at the lowest frequency and then falling to the lowest R_p-value at the highest frequency of the concerning short wave frequency range.

- the values of L and C as well as the L/C-ratio and the frequency range itself have no influence on that.

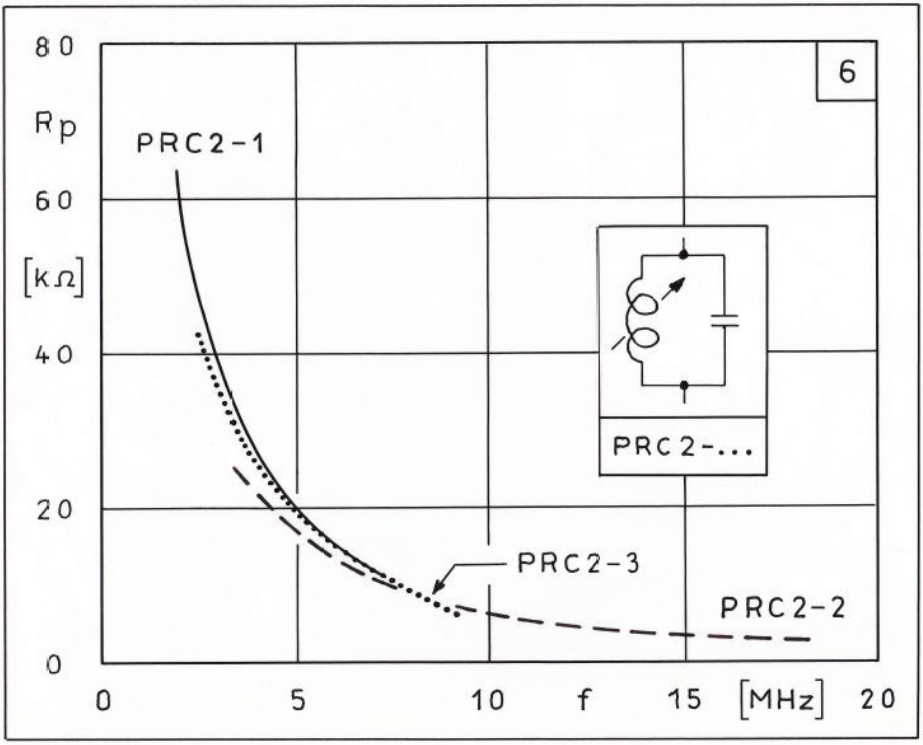


Figure 6
Summarizing presentation of Rp = f (f) of all three inductive tuned PRCs (to gain a better overview the calculated values of R_p are not marked with circles)

Dimensionless presentation of the characteristic curves of different PRCs

Presentation of characteristic values of different PRCs, e.g. $\Delta f_{0,7}$ - $Q_{0,7}$ - C - L - R_p as curves dependent on the frequency and with their numerical values, has the disadvantage, that these kind of curves are dependent on the numerical values of the particular PRCs.

It does not need a special explanation, that such curves can not be used for general comparisons of the tendency of the curves of PRCs with the same design on the one hand (either capacitive or inductive tuned), but different numerical values of the components „coil“ (inductivity L) and „capacitor“ (capacity C) on the other hand.

For that reason it is scientific practice to choose the dimensionless presentation of curves which shows their general valid tendencies, independent on the numerical values of the components.

While normally the frequency can be used as abscissa for diagrams of PRCs, this does not make sense for the dimensionless presentation of the curves of the here investigated PRCs.

Each PRC has a „L“ and a „C“ and with these two basic values one can determine the L/C-ratio.

But the L/C-ratio itself can not be used as abscissa, it must be transformed to get it dimensionless as „$(L/C) / (L/C)_{max}$“. Because of the wide spread value range of these quotients, $(L/C) / (L/C)_{max}$ = 0,1 to 1,5 [-] respectively 0,01 to 1,5 [-], it was necessary to use a logarithmic scale for the abscissa (figure 7 and figure 8).

To present $f - \Delta f_{0,7} - Q_{0,7} - R_p$ in dimensionless curves one has to calculate the quotients as follows:

$$f / f_{max} \quad - \quad \Delta f_{0,7} / \Delta f_{0,7\ max} \quad - \quad Q_{0,7} / Q_{0,7\ max} \quad - \quad R_p / R_{p\ max}$$

Dependent on $(L/C) / (L/C)_{max}$ the values of these quotients can be drawn (marked with circles) into a diagram. Apart from R_p they are connected with full lines.

The goal of this investigation was, as mentioned at the beginning, to find out the R_p-curves dependent on the PRC-design.

Therefore the curves $R_p / R_{p\ max}$ in figure 7 and figure 8 are drawn with broken lines to show „on the first view“ (and to differenciate them better as against the other curves) the important difference between a capacitive tuned PRC (PRC1) and an inductive tuned PRC (PRC2-1).

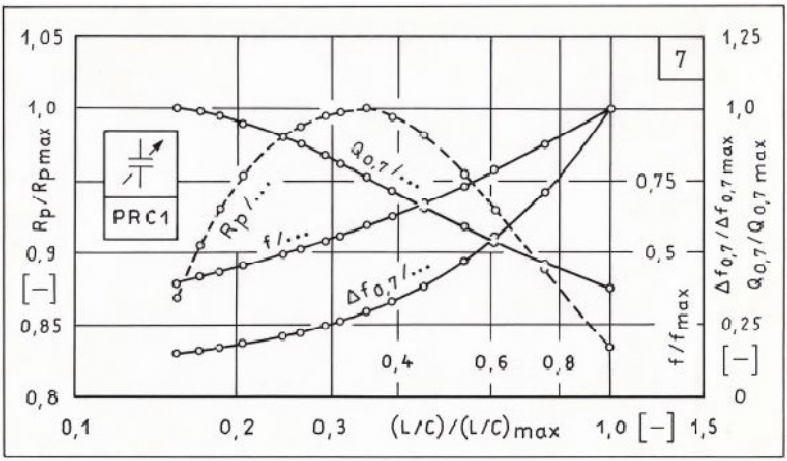


Figure 7
Dimensionless presentation of the characteristic curves of a capacitive tuned PRC (Note: the coil is not presented in the little sketch!)

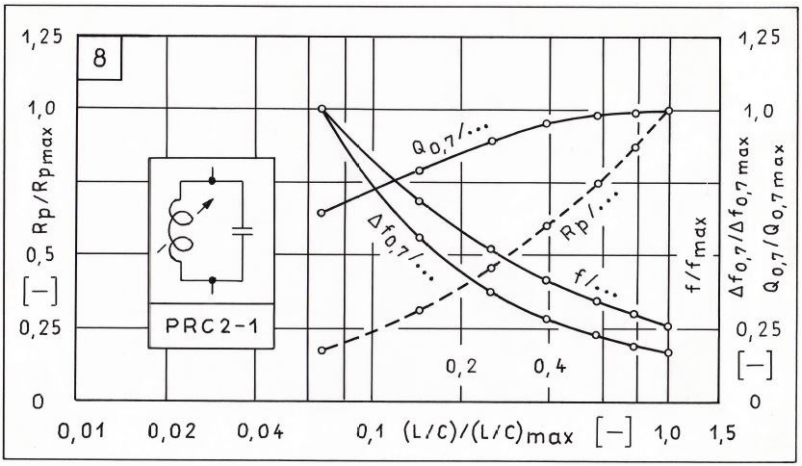


Figure 8
Dimensionless presentation of the characteristic curves of an inductive tuned PRC

Bibliography

[1] Fachkunde für Funkmechaniker, Teil 2
VEB Verlag Technik Berlin, Siebente Auflage
[2] ARRL
The Radio Amateur´s Handbook
[3] Dipl.-Ing. Helmut Pitsch
Lehrbuch der Funkempfangstechnik, Band 1
[4] Dr.-Ing. Heinrich Schröder
Elektrische Nachrichtentechnik, 1. Band
[5] Hans-Joachim Fischer
Amateurfunk
[6] Jürgen H. Timcke (HB9ANE)
A Study on Ring Core Coils
(Collection of measurements data)

Drawings figure 2 to figure 8: Author
Layout: Author / Rolf Rüttimann

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NAVYFIT "HEALTH & MINDS" EXHIBITION

About a week before it was due to happen Martin M0EHL rang me and asked if we would like to have a presence at the NavyFit "Health & Minds" exhibition which was due to be held in Naval Command HQ (NCHQ) in HMS Excellent on Whale Island. Without hesitation I agreed that we would provide a display and set to with our Chairman David, 2E0GLL without really knowing much about NavyFit or NCHQ itself. The opportunity to show the RNARS in a Naval Establishment and especially one with so many gold rings on display was too good to pass up.

David and I discussed a number of possible displays and started to look at the possibility of operating a station from our stand. Martin very quickly put us right pointing out that we would be inside what was probably the RN's most secure building and the Faraday Cage effect of the building itself would probably preclude any possibility of transmitting and perhaps even receiving signals. We therefore decided to confine our display to radio reception and explanations of amateur radio in general and specifically of the RNARS.

David very generously brought along his Icom IC-7300 and used it to showcase what a modern transceiver looks like. I set up a display with an RTL-dongle connected into a laptop with SDR# software running. There was a display of books, leaflets and of course a Morse key although we did not manage to find a buzzer in the time we had available. Prominently displayed were copies of the recent newsletter with a picture of our Patron in all his gold braid on the cover. We also took the opportunity to give our new feather banner its first public outing.

We were asked many times how amateur radio related to fitness. David's answer was to tell people about Fox Hunts; mine was to say that we contributed to wellbeing and that fitness of the mind was as important as fitness of the body.

The day was a modest success. We exposed the RNARS to a number of people who were not familiar or in some cases not even aware of the Society. We handed out a number of leaflets. The most positive responses we got were from parents who thought that their children might be interested in the hobby.

There's a selection of photos we took at the exhibition in the Photo Album page of our website.

Joe G3ZDF

KEMPTON PARK RALLY 5TH NOVEMBER 2017

I attended the Kempton Park Rally on behalf of the RNARS. As is increasingly the case we were the only one of the service radio societies present. It's not clear why RSARS and RAFARS no longer attend. In previous years there was sometimes a clash with Remembrance Sunday ceremonies but not in this case.

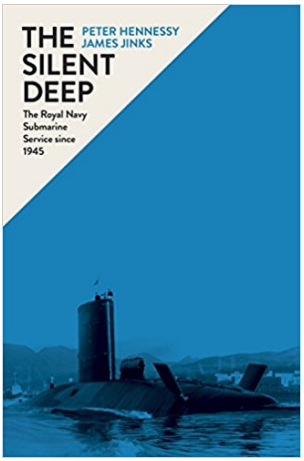
We had nearly a page and a half of sign-ins, current members, former members and Belfast Group members. '*Up Spirits*' was called at 11.30 but there was still plenty of grog left in the half-full bottle I had brought with me. Clearly, the attraction of a tot is not what it used to be.

In previous rallies at Kempton Park our stand has been sited on the route to the very popular Coulsdon Club's Bring and Buy stall. The passing traffic meant we had a good number of visitors even though we were almost at the back of the display area. However, this time the Bring and Buy area was replaced with a small theatre where a number of lectures were given.

I was joined on the stand by Jim G3VRY and we were kept busy most of the morning.

On the day we signed up two new members, encouraged a lapsed member to rejoin and sold nearly £50 worth of commodities.

Joe G3ZDF



The Silent Deep by Peter Hennessy & James Jinks
The Royal Navy Submarine Service since 1945
Originally published in hardback by Allen Lane in 2015 the paperback edition was published in 2016 by Penguin, ISBN 978-0241959480.

Professor Hennessy is a respected academic historian more often associated with politics than with naval matters but he clearly has an enthusiasm for this subject. James Jinks is his research assistant.

If you are interested in an authoritative review of the development and evolution of the Royal Navy Submarine Service since 1945 then this is the book for you. It comes in at just over 800 pages so it is not a quick read. The Silent Deep is full of pictures, diagrams and maps and is a cracking read. G3ZDF

A CLAUS FOR THOUGHT.

There are approximately two billion children in the world. For the purpose of this paper a child will be someone who is less than 18 years old. However, since Santa does not visit children of Muslim, Hindu, Jewish or Buddhist religions, the total is reduced to 15%, or 378 million. That is according to statistics issued by the Population Reference Bureau, November 1999. At an average(census) rate of 3.5 children per household that means 108 million homes. Assuming of course that there is at least one good child in each.

Santa has about 31 hours of Christmas to work with, thanks to the different time zones and the rotation of the earth. Always assuming he travels east to west.
This works out at 967.7 visits per second. In other words for each Christian household with a good child he has around 1/1000th of a second to park his sleigh, hop down the chimney, fill the stocking and distribute the larger presents round the tree, eat whatever snacks have been lefty out for him, get back up the chimney, jump on the sleigh and get to the next house.

To simplify the equation it is assumed that these 108 million homes are an equal distance apart, (This we know to be untrue but it simplifies the calculation and make's Santa's job easier.) This now makes each house o.78 miles apart: a total distance of 75.5 million miles, again to keep the calculations fairly basic comfort stops or breaks are not included. This now means that Santa's sledge must operate at 650 miles per second; 3000 times the speed of sound. As a comparison, the fastest manmade vehicle is the Ulysses space probe moving at a measly 27.4 miles per second, with the conventional reindeer running, at best, 15 miles per hour.

The payload of the sleigh provides another interesting element. Assuming each child is to receive nothing more than a medium size Lego set which weighs two pounds, the sleigh will have to carry some 5000 tons. On land a conventional reindeer can pull no more than 300 pounds: even allowing that a "flying reindeer" can pull 10 times the normal amount, the job cannot be done with eight or nine of them ..... Santa would need 360,000 of them. Ignoring Santa himself, the weight of the sleigh(unloaded) plus the tackle for the reindeers, the weight has now increased by another 54,000 tons. We now have something like 600,000 tons travelling at 650 miles per second creating an enormous air resistance heating up the reindeer in the same way as a space craft is on re-entering the earth's atmosphere. This means the lead pairs of reindeer's is absorbing 14.3 quintillion joules of energy per second. In short they would burst into flames instantaneously, exposing the pair behind them and creating a deafening sonic boom in their wake. The entire reindeer team would be vaporised within 4/1000 of a second, which from previous statements would be about the time Santa should have reached the fifth house. Not that this is of any importance

since dear old Santa, as a result of the acceleration from a dead stop to 650mps in 0.001 seconds would produce a centrifugal force of 17,500 G's, pinning him to the back of the sleigh with a force of 4,315, 015 pounds of force: instantly crushing him to a quivering blob of pink goo.

It must therefore be accepted regardless of all other evidence that if Santa ever existed he certainly doesn't now.

And a very Happy Christmas to all Ho Ho Ho.

Santa 'BEQ

IS THIS THE FUTURE OF AMATEUR RADIO?

Steve our Shack Manager recently showed me a new hand held transceiver he had bought from the States. It looked like a cross between a mobile phone and a hand held transceiver. He said it ran on Android, the Google-provided operating system that powers nearly half of the world's smartphones. He explained all the features of the rig and I was so impressed I asked him to let me have a few notes about it. This is not a plug for a particular radio but an example of the convergence of different communication techniques, technologies and devices.

This is Steve's report.

Joe G3ZDF

One of the problems faced by Amateur Radio operators for many years is the inability to maintain a conversation whilst travelling around the UK. Once out of range of the local VHF/UHF Repeater HF is the only way to talk though this is dependent on propagation /band conditions with no guarantee you can still maintain communications with each other.

This is where the many new modes of operation come into their own, DMR[1]/D-Star[2] /Fusion[3] and other digital modes that can be used via a series of linked repeaters. This

[1] **DMR** -Digital mobile radio (DMR) is an open digital mobile radio standard defined in the European Telecommunications Standards Institute (ETSI) Standard TS 102 361 parts 1–4[1] and used in commercial products around the world. DMR, along with P25 phase II and NXDN are the main competitor technologies in achieving 6.25 kHz equivalent bandwidth using the proprietary AMBE+2 vocoder. DMR and P25 II both use two-slot TDMA in a 12.5 kHz channel, while NXDN uses discrete 6.25 kHz channels using frequency division. (https://en.wikipedia.org/wiki/Digital_mobile_radio)

[2] **D-STAR** (**Digital Smart Technologies for Amateur Radio**) is a digital voice and data protocol specification for amateur radio. The system was developed in the late 1990s by the Japan Amateur Radio League and uses minimum-shift keying in its packet-based standard. There are other digital modes that have been adapted for use by amateurs, but D-STAR was the first that was designed specifically for amateur radio. (https://en.wikipedia.org/wiki/D-STAR)

gives a massive improvement especially being able to set up mobile hot spots via other personal devices to maintain contact on the go.

Now there is a new generation of Hybrid Radio/ Android[4] devices being sold that are becoming very popular.

I have been fortunate to obtain one of the first Handheld Radio Tone RT4 devices in the UK. They have only recently been released superseding previous models. The RT4 is said to be the best device of this type on the market today. So what is it and what can it do? Technically it is an Android device with a PTT button that runs radio Apps. It has Google programs, you can watch TV on it, play music and you can use it as a camera.

With the likes of EchoLink[5], Zello[6] and the amazing program called TeamSpeak[7] supporting the International Radio Network (IRN[8]) it is a hand held radio using VOIP[9] to link to real HAM RF Repeaters, links and nodes worldwide. Yesterday I was listening in on a conversation between South Africa and Hawaii. It was as clear as being in the same room face to face. The RT4 enables you to link to the Allstar[10] network, UKHUB and the Guild and Brand Meister DMR Talk Groups with more being added all the time.

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[3] **System Fusion** is Yaesu's implementation of Digital Amateur Radio, utilizing C4FM 4-level FSK Technology to transmit digital voice and data over the Amateur radio bands. In the early 2000's GMSK emerged in the Amateur radio market as the dominant digital mode, however in 2013 Yaesu introduced "System Fusion" which quickly became the dominating digital format in Amateur radio because of quality, reliability and enhanced performance in a wide range of environments. (https://systemfusion.yaesu.com/what-is-system-fusion/)

[4] **Android** is a mobile operating system developed by Google, based on the Linux kernel and designed primarily for touchscreen mobile devices such as smartphones and tablets. (https://en.wikipedia.org/wiki/Android_(operating_system))

[5] **EchoLink** is a computer-based Amateur Radio system distributed free of charge that allows radio amateurs to communicate with other amateur radio operators using Voice over IP (VoIP) technology on the Internet for at least part of the path between them. (https://en.wikipedia.org/wiki/EchoLink)

[6] **Zello** is an application startup located in Austin, Texas, behind the creation of Zello applications. The applications emulate push-to-talk (PTT) walkie-talkies over cell phone networks. (https://en.wikipedia.org/wiki/Zello)

[7] **TeamSpeak** is proprietary voice-over-Internet Protocol (VoIP) software for audio communication between users on a chat channel, much like a telephone conference call. Users typically use headphones with a microphone. The client software connects to a TeamSpeak server of the user's choice, from which the user may join chat channels. (https://en.wikipedia.org/wiki/TeamSpeak)

[8] The **IRN** (International Radio Network) is a VoIP/RoIP system using Teamspeak 3 (TS3) that allows users to TX/RX using RF around the World using different devices (Mobile Phones, Tablets, Computers etc) for free. (http://www.internationalradionetwork.co.uk)

[9] **Voice over Internet Protocol** (also **voice over IP**, **VoIP** or **IP telephony**) is a methodology and group of technologies for the delivery of voice communications and multimedia sessions over Internet Protocol (IP) networks, such as the Internet. (https://en.wikipedia.org/wiki/Voice_over_IP)

[10] The **AllStar** Link network consists of a number of large (and small) individuals and groups who wish to provide efficient large-area communications to the Amateur Radio public in their respective local areas. (https://allstarlink.org/about.html)

Is it difficult to set up? No, it's as simple as choosing a channel, pressing one button to join and off you go, chat away to your heart's content to Amateurs worldwide. No programming required not like you have to do with DMR radios. (I know as I have 3 sat here as bookends since my local DMR repeater was switched off . . . . .)

Some of these devices are "true radio" having amateur band VHF/UHF/Digital modes built into them. The RT4 does not just work VOIP, the antenna is not just there for show, it is a dedicated GPS antenna which gives a very accurate fix to you location. Many RT4's can be linked and tracked via additional software.

Now for the purists out there who have probably stopped reading this by now note: this new exciting way to communicate could be the catalyst that the future of amateur radio needs to continue to grow. This mode of operation is bringing the interest to many 1000s of amateurs worldwide, youngsters can enter into it using their existing phone technology (Just take a look at all the JOTA nodes available on Echolink!!!), they do not need to purchase any further hardware, they can even sign up to Zello and TeamSpeak and just have access as an SWL and listen to the HAM activity. What a better way of keeping the hobby alive and kindling interest. Unlike the VHF/UHF Bands every time I turn the RT4 on, open the TeamSpeak programme, I am almost guaranteed to hear someone on clearly coming through its speaker. On that the audio is very clear, plenty of volume and easily adjustable from the volume knob on the top of the radio.

I see this new form of amateur use equipment as just another part of the great hobby's evolution. Originally you built all your own equipment. Home brew, then mass produced equipment became the norm, so why not use existing commercial networks to spread the ability to talk but still incorporate RF, Repeaters and the Amateur spirit to talk to like minded hobbyists worldwide?

The atmosphere is not going anywhere just yet so fingers crossed for good conditions and we can still all continue to enjoy chasing and beating propagation conditions to communicate using real HF but for those times when it is not so easy or rules and regulations or other reasons stop you from having antenna farms and amplifiers at your home location this could be just for you. The battery gives me over 15 hrs use, standby is much longer, the screen display is small but very clear and the original background gives a pleasing black carbon fibre appearance. It looks and operates just like any other 2 way mobile radio; it has a standard phone port charging as well as being able to sit in a charging dock (Not supplied). Under the covered port is a Motorola style connector for microphones, headset etc. The radio is well made and solid and giving many hours of enjoyment.

So if you enjoy or thinking about using phone based radio apps think about one of these radios; they do all your Android phone does plus gives you that true Radio experience.

Below is an image of the Radio Tone RT4. Mobile versions are available as are RF and Digital ones. It is shown with TeamSpeak running on it.

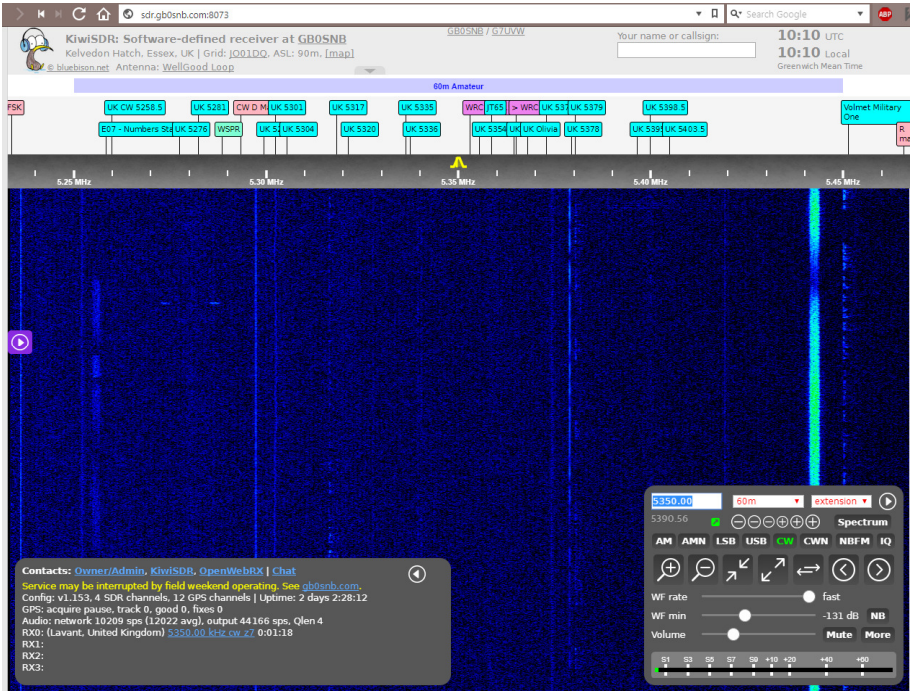
Steve M6WVV RNARS #5019

WEBSDRS OR INTERNET RECEIVERS

WebSDRs (**S**oftware **D**efined **R**eceiver) provide a means of accessing and tuning a receiver using the Internet and listening to signals on your PC, Mac or tablet. They can be accessed using any of the standard web browsers – Chrome, FireFox or Edge for example. Type 'websdrs' into any search engine and a list of some of the available sites will be presented. Hack Green is one of the popular WebSDRs in the UK but its coverage is limited to the upper part of the main amateur bands. Try sdr.hu instead and you will have a choice of receivers from all over the world covering most of the HF spectrum.

The screenshot below shows GB0SNB tuned to the 60m band. The blue tags along the top of the screen give additional details of specific frequencies. This particular receiver is situated in Kelvedon Hatch, Essex and uses a WellGood loop.

Joe G3ZDF



QRT – Closing Down - for the final time

To all who have supported the Newsletter during my tenure as editor over ten years, my sincere and grateful thanks to you all. However, despite my repeated pleas to contact me directly with any issue or disputes, sadly there are a very small number and one in particular who elects to make known his views over my role as editor in a public manner to the point of using nasty and offensive remarks. I would have been perfectly happy to continue for another ten years, but I am not prepared to put up with the few members who make known their inflammatory views and remarks openly and do not contact me in the first instance; enough is enough and I am no longer prepared to continue as editor or as a member.

It would be an abuse of my privileged role as editor to make known what has been said and done and name the individuals concerned within the pages of the Newsletter. Or the very many headaches one member in particular has caused me and never shown any maturity or taken responsibility for his actions or words. Suffice to say, it is now time to stand down and hand over to someone else to take over as editor. I will of course provide help and advice and hand over articles I have to the new editor. Perhaps one of my regular critics may wish to take up the reins?

Again, my profound thanks to all concerned for their support and help. My seasonal best wishes to ain and aw, your families and friends. I wish the new editor, the Newsletter and RNARS success.

For the final time, yours aye, *Colin Topping*

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RAFARS & Royal Signals ARS Nets

RAFARS	Time	Freq	Control
Daily	1100 A	3.71	GØSYF GI4SAM
	1830 A	3.71	G3HWQ MØRGI
Monday	1900 A	3.7	G3PSG GØBIA
Tuesday	0730 A	14.27	G4IYC
	1400 A	7.015	
	1900 A	3.567	
Wednesday	1500 Z	14.29	?
	1530 Z	21.29	
Thursday	1830 Z	14.17	ZC4RAF
Friday	0730 A	14.055	CW Net
Sunday	0900 Z	5.403	?
First Monday of the month	1000 A	3.71	?
RSARS Nets	**Time**	**Freq**	**Control**
Monday - Friday	1000 A	7.17	GW3KJW M3VRB
Monday	1830 A	3.585	GM3KHH (RTTY)
Tuesday	1400 A	7.17	MØOIC
	1600 Z	14.18	G4BXQ
Wednesday	0600 Z	14.143	Various
	1030 Z	3.615	?
	1830 A	3.565	GM3KHH
	2030 A	1.946	2EØBDS
Thursday	1400 A	7.17	GØRGB
	1800 A	3.743	G6NHY
Friday	1830 A	3.583	GM3KHH (PSK31)
	1830 A	3.565	High speed CW
	2000 Z	14.055	CW
Saturday	0600 Z	14.143	SSB
Sunday	1000 A	3.565	G3JRY (Slow speed CW)
	1100 A	7.17	GW4XKE
	1100 A	3.745	GM4FOZ
Joint Service Net	**Time**	**Freq**	**Control**
Sunday	0900 A	5.4035	G3RAF
Tuesday	1900 A	5.4035	G3RAF

RNARS Nets

All frequencies +/- QRM. DX nets are GMT; UK nets are GMT or BST as appropriate. The list is compiled by Mick Puttick G3LIK mick_g3lik@ntlworld.com – 02392255880 **who must be informed of all changes**.

UK	Time Local	Frequ	Net	Control
Daily	2359-0400	145.727	Midnight Nutters	Vacant
Sun	0800	3.667	News 0830	G3LIK
	1030	7.065	Northern Net	GM4VUG
	1100	145.4	Cornish Net	GØGRY
	1100	7.02	CW Net	G4TNI
Mon-Sat	1030	7.065 / 3.743	Bubbly Rats	GØGBI GØOKA GDØSFI MØZAE
Mon	1400	3.575 / 7.02	QRS CW	GØVCV
	1900	7.088 / 3.743	North West-News 2000	GØGBI
Tue	16:00	7.068 / 3743	HQ Shack	GB3RN
	1900	7.028 / 3.528	CW Net	G3RFH
Wed	1400	3.74 / 7.088	White Rose	G4KGT
	1930	3.743	SSB News 2000	GØOAK
	2000	145.4	Stand Easy	Vacant
Thur	1900	3.542	Scottish CW	Vacant
	2000 GMT	1.835	Top Band CW	GØCHV G4KJD
Fri	1600	10.118	CW	SM4AHM
Sat	0800	3.74/7.088	GØDLH Memorial Net	GØVIX
DX	**Time GMT**	**Frequ**	**Net**	**Control**
Sun	0800	7.015/30555	MARAC CW	PA3EBA/PI4MRC
	1430	21.41/28.94	RNARS DX	WA1HMW
	1800	Echolink	Echolink	VE3OZN / K8BBT
	1900	14.33	N American	WA1HMW
Mon	0930	3.615	VK SSB	VK1RAN/VK2RAN
Wed	0118-0618	7.02	VKCW	VK4RAN
	0148-0648	10.118	VK CW	VK4RAN
	0800	3.62	ZL SSB	ZL1BSA
	0930	7.02	VK SSB	VK5RAN
	0945	7.09	VK SSB	VK1RAN/VK2RAN
Thur	1430	21.41	RNARS DX	WA1HMW
Sat	0400	7.09	VK SSB	VK2CCV
	1330	7.02	VK CW	VK2CCV
	1400	7.09	VK SSB	VK2CCV
	1430	21.41	RNARS DX	WA1HMW

RNARS activity frequencies									
FM	145.4								
CW	1.824	3.52	7.02	10.118	14.052	18.087	21.052	24.897	28.052
SSB	1.965	3.66	3.74	7.088	14.294	14.335	18.15	21.36	28.94

RNARS Commodities

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Gold blazer badge with **new RNARS logo**	£10-00 P&P £2-00
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