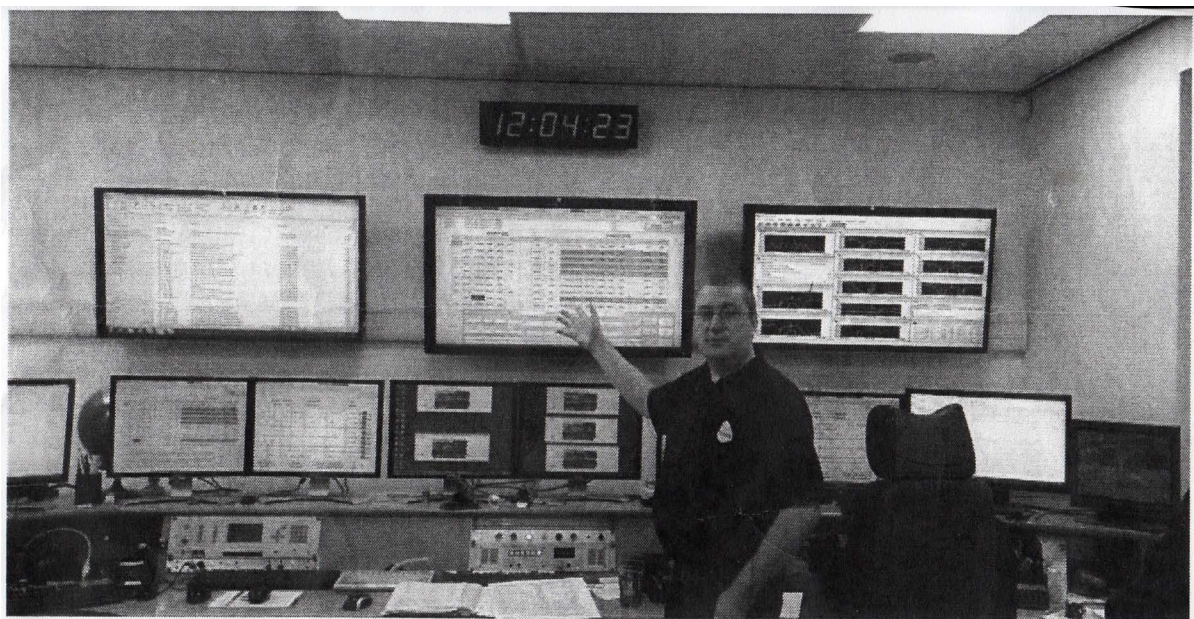


Club Call G4HRS

Est. 1938

HARCNEWS



**The Journal of
Horsham Amateur Radio Club
December 2017**



Affiliated to:



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Old skool and same procedure as last year

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Cover picture: Martin Goulding, 2E1EKX explains the various screens in the Wooferton control room

Editorial

This month's club meeting is the AGM and all members are invited to attend. Looking back to the early days of HARC such as 1972 the year when I joined, at each AGM when the voting part arrived Ron G3PYC would have a blackboard in place. The names of each candidate would be chalked on and votes noted and counted up for each position. In fact there was much competition amongst those present!



Today it's not like that anymore but should you wish to be considered for a post on the committee please make yourself known either beforehand or on the night. You never know what might happen! Once the official business has ended the floor will be open for any matters that those present would like to discuss. Now that it is the end of the year I would like to thank all those who have submitted material for this newsletter.

Special thanks goes to David 2E0NKC, Julian G1ODN and Mick G4EFO for their contributions to Broadcast Listener which has become a regular slot to keep one tuning in. Many amateur radio rigs as you will be aware cover the entire Short-wave spectrum these days making listening to this type of material relatively easy! The last time I did a good tune around I kept finding the Voice of Russia everywhere in English, very strong and loud!

To end I would like to wish all readers a very Merry Christmas and a Happy New Year.

David G4JHI

Copy deadline for emailed items for January edition 20th December - For written items the deadline is 17th December.

For items sent by email please send to this address:

harc.news@g4jhi.co.uk

November Meeting

HARC - CARC Challenge

At the November HARC Club night it was our turn to host the now traditional annual challenge held between the Horsham and Crawley Radio clubs. This year's challenge was arranged by Paul G4TMC, and took the form of a previous format but with a twist.

There were two teams of six members from each club, and this year's participants were required to identify common electronic components hidden inside small plastic project boxes (with only terminal strips on view connected to the component inside) with only a digital multimeter. This involved taking measurements between each connector on the outside of the box and recording the results.

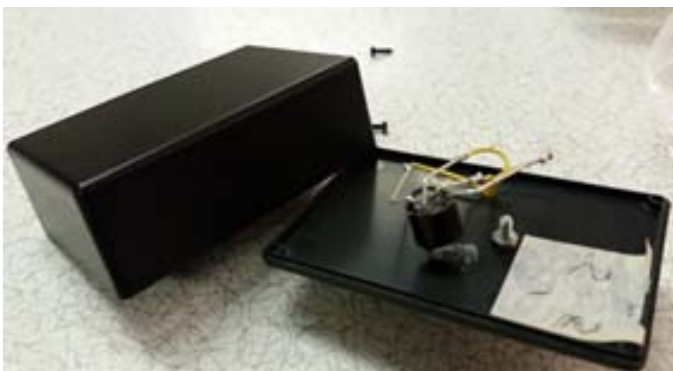


HARC table



CARC table

Once all the measurements had been taken from approximately twenty boxes each team had to identify what type component was hidden in the box and then write the answer on a grid sheet of paper somewhat like a crossword puzzle. Components ranged from resistors, NPN and PNP transistors, a miniature speaker, LEDs, a mini transformer, bridge rectifier etc.



Project box containing a bridge rectifier



HARC Team members in deep thought!

Once all the components had been identified key letters from the component description were required to spell out six well know phrases including club call signs, pieces of radio equipment etc.

At the end of the evening all 4 teams had successfully identified all components and correctly answered the question sheets, so a tie breaker question was set asking teams to count the total number of PN junctions they had identified. Again all teams answered the tie breaker correctly, so the challenge was officially declared a draw and as such Crawley retained the challenge trophy!



An honourable draw between both teams with quizmaster Paul G4TMC (centre left)

All that took part found it to be an entertaining evening, many thanks Paul.

G4LRP

HARC Chairman's Report 2017

It is December again and as another year draws to a close it is time to write the usual 'Chairman's Report'.

We have been fortunate to have yet another good year at HARC; our membership continues to remain high, with meetings reasonably well attended. This year we have seen a wide selection of subjects at club evenings, with talks from external speakers about the following subjects. The Magnetron - From Radar to the Kitchen by Mike G3LHZ, Communications Systems on-board the new Queen Elizabeth class Aircraft Carriers by Duncan Brooker of Thales, Nick Henwood G3RWF the RSGB President gave a talk about DX-ing from Africa and in finally a talk and demonstration of DMR radio by Dennis G0OLX.

From our own club members talks about: Offshore Pirate Radio by Mick G4EFO, Vive La Difference - Life and Amateur Radio in France by Mike G8CKT/F8VON and SDR Radio by Alister G3ZBU. The November meeting was the now annual Challenge between the Crawley Club (CARC) and HARC with the challenge being organised by Paul G4TMC.

Club Junk Sales in March and October continue to boost clubs funds and provide an interesting source of surplus equipment. All of this year's club meetings have been well received and enjoyed by those that attended.

We have had a full diary of other non club night activities, ranging from social evenings, foxhunts, contests, and long weekend trips away including the Dutch National Rally in Rosmalen in March and a trip to North Wales in September. The usual contingent also went to the Ham Radio Show in Friedrichshafen in July.

The only portable contest entered by HARC this year was the QRP Portable section of HF NFD, a few of us assembled the station (and took it down afterwards) whilst Peter G3LET operated the whole 24 hours singled handed and again won the Reading Trophy for a third time, a superb effort. Congratulations to all those that took part in the various home based contests, but special thanks again to Bryn G3SWC for providing the necessary encouragement to all and for providing monthly reminders and contest progress report for HARC News.

Talking of HARC News, thanks again to David G4JHI for his continued work in producing HARC news, that continues to be an enjoyable and informative read. Thanks also to Jonathan MOTWM who took on the role of revamping the HARC website.

Overall I think it has been another good year for HARC, maintaining our membership numbers, with interesting club meetings that were well attended and a selection of enjoyable social events. Looking forward to next year I hope that HARC can continue to build on its past successes and I encourage all to enjoy the hobby of Amateur Radio. Hopefully 2018 should see HARC providing you with a club to be proud of, with meetings, events, and contests that all can take part in, if not all of the time, but some of the time.

I must remind you that it is "your club" and that the committee and officers are put there by 'your vote', we try to please, but at times, as the old saying goes "you can't please all of the people all of the time". If you want to change things, come along to the AGM and get involved. If you want more info in the newsletter, tell us what you want or better still provide some articles for inclusion in the newsletter.

In closing I would like to thank all of the committee and HARC members who have helped with club activities throughout the year, by getting involved and organising club events. As always, a big thank you to everyone who helped out at the Junk Sales, from auctioneering, accounts and especially to Mick G4EFO for German Sausages and refreshments.

Finally I would like to wish you all a Merry Christmas and a Very Happy and Prosperous 2018.

73's de G4LRP

HARC ACCOUNTS 2017

EQUIPMENT	COST	Depn to 31.10.16	Depn for. 16/17	Net Val net	sold for	Profit/ loss
H.F. LINEAR	350.00	350.00	0.00	0.00	0.00	0.00
FT5000DX	3000.00	1200.00	600.00	1200.00	0.00	0.00
POWER METER	25.00	25.00	0.00	0.00	0.00	0.00
GENERATOR	367.80	367.80	0.00	0.00	0.00	0.00
PC PROJECTOR	349.99	349.99	0.00	0.00	0.00	0.00
LDG AT-200Pro	204.00	122.40	40.80	40.80	0.00	0.00
	-----	-----	-----	-----	-----	-----
	4296.79	2415.19	640.80	1240.80	0.00	0.00
	=====	=====	=====	=====	=====	=====
SOLD	0.00	0.00	0.00	0.00		
	-----	-----	-----	-----		
Carried fwd	4296.79	2415.19	640.80	1240.80		
	=====	=====	=====	=====		

INCOME AND EXPENDITURE ACCOUNT

BALANCE SHEET 31-Oct-2017

INCOME

BANK INT.	0.00
SUBS	667.50
REFRESH	0.00
JUNK/DONA	249.61
ADVERT	40.00
P/L SOFA	0.00

	957.11
	=====

ASSETS:

EQUIPMENT COST	4296.79
DEP'N TO DATE	3055.99

BUILD SOC A/C	0.00
BANK A/C	4492.93
PETTY CASH	119.20

	5852.93
	=====

EXPENDITURE

DONATION	-500.00
REFRESH	-41.00
PETROL	-23.58
SPEAKERS	-30.00
RSGB	-51.00
EQUIP REP	0.00
SUNDRIES	-14.00
HALL RENT	-432.00
RAFFLE PRIZES	0.00

	-1091.58
	=====

LIABILITIES

2016 CLOSING BALANCE	6528.2
EXCESS INC/EXP	-134.47
DEP'N CHARGE	-640.80
SCARF Funds	100.00

	5852.93
	=====

**BALANCE OF
INC.OVER EXP.** -134.47
=====

CHECKED BY:- Ian Wassell G4KDR
.....

Date: 29/11/2017

HARC Christmas Crossword

Here's something to keep you busy after the Christmas pudding and before the Queen's speech. Good luck!

G8CKT

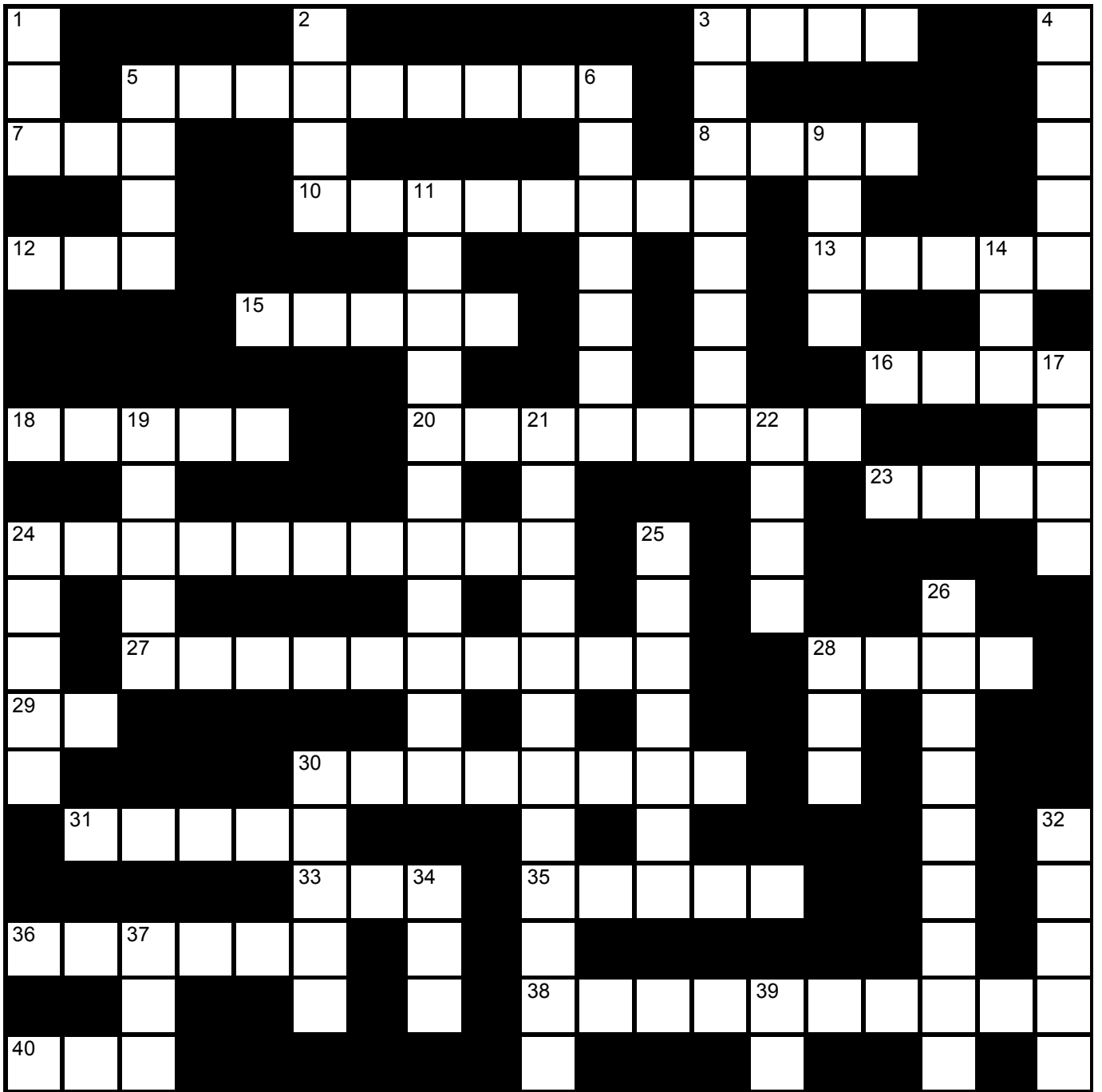
Clues

Across

- 3** To successively check a number of channels (4)
- 5** Could be ceramic or quartz (9)
- 7** Available in both N- and P-channel versions (3)
- 8** Adjust after using the ATU's tune control (4)
- 10** Leading DMR standard (8)
- 12** Switch used in telegraphy (3)
- 13** Electromechanical or solid-state switching device (5)
- 15** Unit of capacitance (5)
- 16** ARRL award for 100 different countries (4)
- 18** Used to extract voltage (5)
- 20** Wide range of frequencies (8)
- 23** Popular beam antenna (4)
- 24** Useful for speech input (10)
- 27** Measures ohms, volts and amps (10)
- 28** Determines operating point and linearity (4)
- 29** General call (2)
- 30** Signal at a multiple of the fundamental frequency (8)
- 31** Middle of SNR? (5)
- 33** Relatively new datamode (not legal in the USA) (3)
- 35** Japanese manufacturer (5)
- 36** Microphone element (6)
- 38** Electrically charged region of the Earth's atmosphere (10)
- 40** Used below 14MHz (3)

Down

- 1** Simple form of receiver (3)
- 2** Supporting one or more elements of a beam (4)
- 3** Causes interference with adjacent frequencies (8)
- 4** Unit of inductance (5)
- 5** Radio teletype (4)
- 6** High-gain directional HF antenna (7)
- 9** Represents the interests of US radio amateurs (4)
- 11** Matches one impedance to another (11)
- 14** Used to protect the output stage (3)
- 17** Inductive component (4)
- 19** Spectrum authority and regulator in the UK (5)
- 21** Polarised capacitor (12)
- 22** Useful for matching an unbalanced antenna (4)
- 24** From one impedance to another (5)
- 25** High-permeability material with good RF properties (7)
- 26** Provides a rough check of radiated frequency (9)
- 28** Guaranteed to annoy the neighbours! (3)
- 30** Cycles per second (5)
- 32** Frequency changer (5)
- 34** Popular miniature RF connector (3)
- 37** Popular communication mode (3)
- 39** End of message prosign (2)



TV Addict

by David G4JHI



Amateur Radio on Show

Episode 19 of TX Factor is now available, I haven't watched as yet myself at the time of writing but it looks like another good varied show. Items included are Hamfest 2017, a preview of the Icom IC-7610 and IC-R8600 rigs. Also there is a spot on the new owners of PW Magazine and a trip to the BBC.

Scan your equipment

Following information in the September 2017 edition of this newsletter new details have emerged regarding the Freeview retune in 2018. In our readership area the TV transmitters affected are Crystal Palace, Rowridge the latter on the Isle of Wight and perhaps Hannington that some of you may be receiving. These transmitters not only transmit the main 6 multiplexes but also Com 7 and 8 which include channels such as 5USA +1 and 5Star +1.

It should be noted that Crystal Palace also transmits a multiplex called LW which transmits the local channel 'London Live'. Rowridge also has a local multiplex called LSO which provides the local channel 'That's Local'. Following the retune next year Com 7 and 8 will move to UHF channels 55 and 56 in all cases. This could potentially have issues with interference between these transmitters by some viewers.

Also because of the move to the higher frequencies at these transmitters these multiplexes will no longer fall within the same aerial group. Therefore in order to continue to receive those new aerials may be required unless one already has a wideband type. However during 2022 Com 7 and 8 multiplexes look to be going to be removed and their future is currently not known.

At that point it is not clear as to what will happen to these existing services. According to UK Free TV the retune dates for all the above transmitters and Midhurst except Hannington have now been brought forward to March 31st 2018. The latter is still at the original date of 30th June 2018.

Reception issues

If you have still been experiencing poor signals from the Midhurst TV transmitter; according to Digital UK engineering work has been going on still in preparation for the retune next year. Therefore recommended action is to do nothing to your viewing equipment.

Vintage movies

Talking Pictures TV which has been available via satellite and to a limited number of viewers via Freeview is moving from Com 7 to Com 6 multiplex which will be available to 90% of the Country from the afternoon of Thursday 30th November 2017 and will be available on this platform for 24 hours a day. It will be found from this date on channel 81. Talking Pictures TV screens a variety of films from years gone by and includes films from the BFI.



Broadcast Listener



FLASHBACK Sound of Pirate Radio re-floating and sailing once again?

by Julian Thompson, G1ODN 19th November 2017

Just image the inter-generational conflict, fifty years ago (1967) when the unique sound of *Wonderful Radio London* erupted around the house, the day after the government-of-the-day had banned Pirate Radio indirectly, by starving stations of their advertising revenue. [see 'Fifty years Since *Pirate Radio* Was Banned' in *HARC News* April'17; p.11]

At that time, as regular readers are probably aware, *Pirate Radio* was socially situated at the heart of young people's lives. It gave us a unified voice against various authorities. *Pirate Radio* had reached top-of-list of the government's anti-social agenda. Surely, they hadn't been forced into an embarrassing political U-turn?

What Radio London Meant to Me

At that time, I'd been tasked as an eleven-year-old (as a budding young Brunel) during my summer vacation spent with grandparents: to construct a kit-garage large enough to house four vehicles. I had nothing more than a screwdriver, a right-angled triangle and my wooden *go-kart*. It was a tough life! For me, the sound of *Radio London* blasting across the expansive Petworth countryside was reassuring. It made me feel cheerful and never fearful. It kept the rural foxes away after sunset. Shame, when *Pirate Radio* was taken off the air.

The Who – Never Knowingly Sold Out

Record executives must have known they'd struck gold, as soon as each *The Who Sell Out* pirate radio concept album hit the turntable. Not only did the sound of *Radio London* jingles precipitate in our parents a *shock-horror* reaction; but also, the sight of a (young) Roger Daltrey sat in a bath full of baked beans on the album cover was similarly *sickening*.

'So what' test: was the pirate radio concept album a success?

The Who Sell Out was the first thematic concept album. '*Rael I&II*' launched the idea of the Rock Opera, as the precursor to '*Tommy*.' It was distinctively different from the group's renowned old standards like '*I Can't Explain*' and '*Substitute*.'



Summary/Conclusion

Fifty years ago, it was a sad day when Pirate Radio advertising was banned. Transistor radios had made miniaturized radios making them portable: at the heart of many young people's lives. Fifty years later, *The Who Sell Out* is no substitute for pirate radio. But it is downloadable to appreciate fifty years later in a number of languages other than English, including Russian and Japanese.

Reference

Rolling Stone Magazine, Issue date 14/12/1967

Photo of Roger Daltrey's Baked Bean bath – copyright of Montgomery/Getty Images

See: <http://www.rollingstone.com/music/news/b-o-baked-beans-buns-and-the-who-19671214>



Anticyclone

by David Miller G4JHI

Did you tune around on the VHF and UHF frequencies on or around the 31st October? If not you missed a lift in conditions! In the morning of that day Classic FM from North Hessary Tor in South Devon had taken over Kiss on 100.0 MHz FM on my Sony portable with telescopic aerial. On my roof aerial which points towards London and using an FM tuner Kiss could be heard with severe QRM unless the unit was set to mono.

Back to my portable and Radio Crymu which is a programme all in Welsh was booming in like a local station on 96.8 MHz FM from the Wenvoe transmitter. In the evening it was noted that the PSB3 multiplex from the Midhurst TV transmitter on channel 58 which carries several HD services was fading in and out! Maybe you had a chance to look around the amateur bands for a bit of DX during this period? If so let us know.



Monthly Roundup

by David Ansell 2E0NKC

All times UTC

Numbers Stations

A strong station Id-ing as "Fastdraw" was heard at 15:30 on November 7th on 4724 kHz USB. The station said "there now follows a message of 97 characters". I have never heard a numbers station say this before!

Volmets

Gander Volmet Newfoundland broadcasts WX information at 20 and 50 minutes past each hour on 13720 kHz, 10051 kHz, 6604 kHz and 3485 kHz all in USB. A Volmet Id-ing as 'Military information one time broadcast' heard at 11:45 on 5450 kHz USB. This thought to come from a disused airfield in Cornwall?

Medium-wave

China National radio is being heard again this year with Chinese melodies after 21:03 on 1377 kHz when Trans World Radio, Armenia closes. This in parallel with Short-wave 4800 kHz at 22:00 ID with time signal and Beijing time given. This is from Xingyang in Henan province in east China. Also China Radio International Id in Russian at 17:00 on 1521kHz via Urumchi heard again this autumn.

Radio Payam (which means 'message') Tehran, Iran heard in Farsi at 21:30 on 1188 with fair peaks. BBC Radio Devon heard on 801 kHz via "grey line" reception. Transmitter site is near Barnstaple and antenna is a 'T' antenna (I have seen it). Trans World Radio Bishkek Kyrgyzstan heard 16:45 on 1467 kHz with TWR jingles several times and unidentified language. Severe heterodyne from co-channel Iran off frequency.

New medium wave stations in Denmark

In September we reported in that three new medium wave stations are planning to launch in Copenhagen in the next couple of months. This news came as a pleasant surprise to many AM enthusiasts as the medium wave band has been unused in Denmark since June 2011 when the Kalundborg medium wave transmitter on 1062 kHz was taken out of service and replaced by a new long wave transmitter on 243 kHz.


The new stations are:

- NB24 on 846 kHz**
- World Music Radio on 927 kHz**
- Radio 208 on 1440 kHz**

Two of the new stations will be music based and the third station will be all talk according to Stig Hartvig Nielsen.

Pictured right is the new 300 W AM transmitter for World Music Radio which will be used on 927 kHz.

(Photo: World Music Radio Facebook page 29 Oct)





Short-wave

Radio New Zealand heard on 7355 kHz at 14:00 with its "overnight programme". This frequency may have changed by now. Myanmar Radio heard in English with domestic broadcast from Yangon at 15:30 on 5985 kHz. Trans World, Swaziland signs on at 15:57 with jingles and very good signal on 15105 kHz. Voice of America, Botswana is a very good signal afternoons on 15580 kHz. Radio Free Asia from Tinian, Northern Mariana Islands heard with English Id and Korean service on 5885 kHz at 15:00.

Radio Slovakia has expanded Short-wave via Kall in Germany. Heard 15:30 on 6005 kHz and at other times. Radio Tirana English via Kall has been re-timed to 13:30 also on 6005 kHz (not Suns). Voice of Mongolia via Kall now at 13:00 on 6005 kHz. Radio Algerienne signs on at 22:00 on 5905 kHz in French and then Quaran programme. This is via Issoudun in France. Algeria is presently building its own Short-wave site in Algeria.

Vatican Radio has English to Africa at 16:30 on new 13765 kHz. Unofficial Radio Underground International heard at 16:30 on 6305 kHz "broadcasting from jolly olde England". The Voice of America special transmission for South Sudan is now heard Monday to Friday 16:30 on 11850 kHz, 13865 kHz and 15180 kHz with a programme entitled "Focus on South Sudan". Radio France International heard at 12:00 on 21690 kHz via Madagascar in French. Voice of Turkey now on 6050 kHz for winter period in English at 19:30 to 20:20.

QSL-'s received

Adventist World Radio – QSL for 11975 kHz via Trincomalee, Sri Lanka. Received from AWR Asia pacific office in Bangkok with Thai stamp as postage.

WBCQ, Monticello, Maine, USA – 7490 kHz. QSL with world globe on the front. I sent US \$2 for return postage.

Radio Japan – 9710 kHz via Vatican relay. QSL received plus printed schedule and reception report forms.

Radio WHRI Cypress Creek, South Carolina, USA – 15530 kHz and 11750 kHz 30th anniversary QSL.



Visit to Wofferton

I left Horsham at 05:15 BST on October 13th for the 360 mile day return trip to Southern Shropshire to visit the only remaining HF Short-wave transmitter site in the UK. I arrived with 7 minutes to spare after two stops on the way and joined about 20 other radio amateurs, SWL's and Dx-ers from around the UK. The visit was organised by the British DX Club. After a safety briefing we were taken first to see the huge antenna farm.

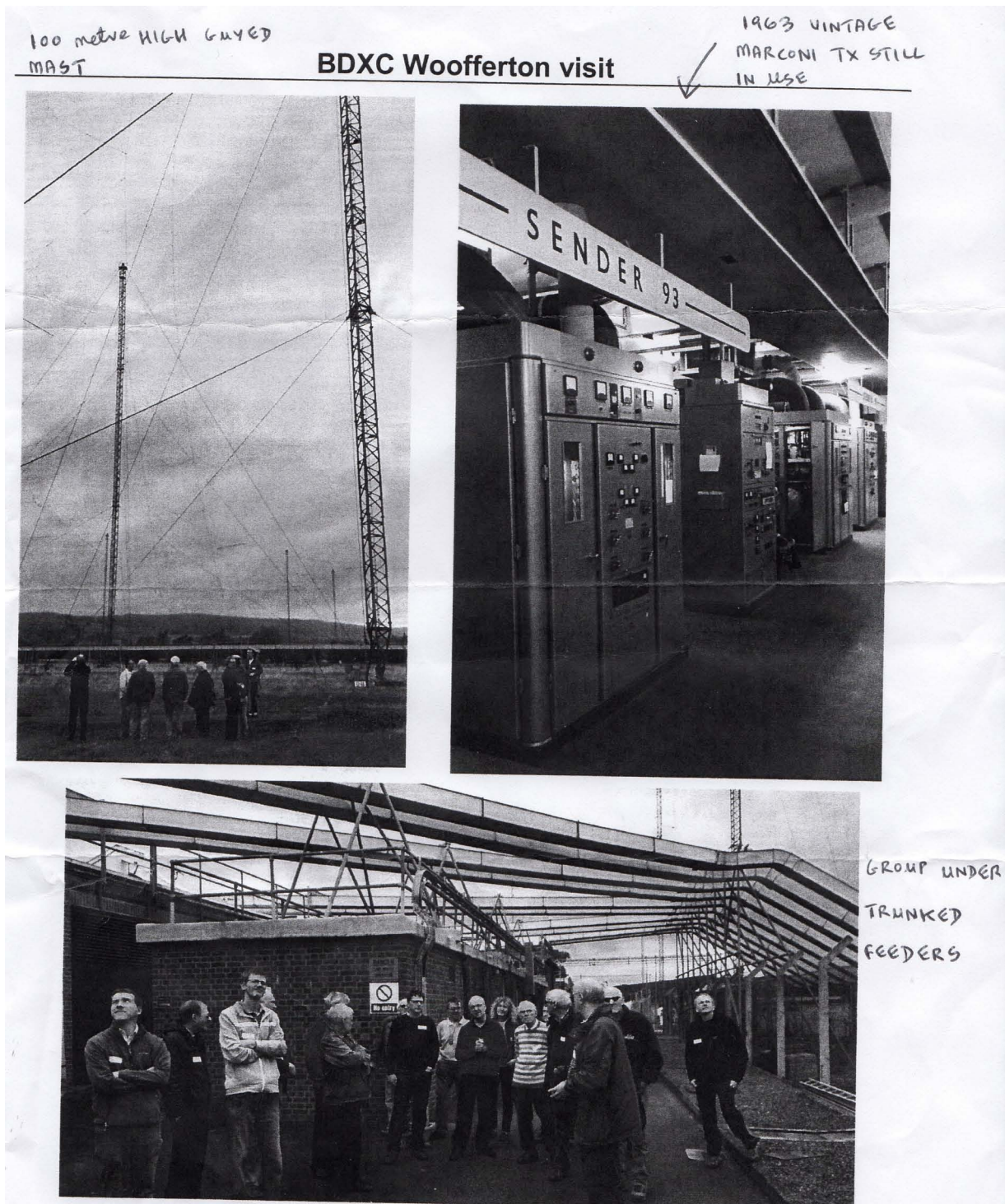
There were several towers which are 340 feet tall from which curtain antennae hang. Also there is a lower antenna for 4 MHz (75 metres). Listen to this one 20:00 or 21:00 UTC on 3955 kHz with Radio Taiwan International or KBS Korean Radio Seoul in French and German. There are many antennae aimed mainly at Africa, the Middle East and Russia. Wofferton not only broadcasts BBC World Service but other international broadcasters.

Feed from these stations is received by huge satellite dishes on site. The site is in the Malvern Hills but is a flat area surrounded by farm land. Sheep are "employed" to "mow" the grass! The site was built in 1943 as a second station to Daventry (now long gone). We then went inside the transmitter hall to see the 6 or more 250 Kw senders + 4 at 300 Kw. We saw "inside" the transmitters. Details too much to mention here.



Also we saw some DRM transmitters one of which was transmitting at the time. Radio Japan in DRM on 9620 kHz. Also we saw the 300 watt transmitter for BBC Hereford and Worcester on 1584 kHz which transmits from there and the FM transmitter for Sunshine Radio, Ludlow on 105.9 MHz FM. We then went to the control room where on the screen we saw which transmitters were broadcasting on which frequency and at what bearing and which antenna was in use and the future "plan" for the day.

This can vary as in the last few days Wofferton was helping out the Dubai transmitter site in the Middle East that had problems. It was a thrill to sit in the controller's seat for a few minutes as long as I didn't touch anything! Power for the station is from the National Grid. There is no back up from generators so if there is a power cut locally it all goes QRT! A few transmitters from the closed Skelton site are there. We were told that Rampisham transmitters in Dorset which closed were scrapped. I asked how much their electricity bill a quarter was but our guide had no idea. The site is owned by Babcock Media Services based in London.



Diary

Dec 2nd, HARC Christmas Bash - The Chequers Inn, Rowhook
19:30 for 20:00 (Pre-bookings only)

Dec 3rd, 144MHz AFS (Club Super League) 10:00 - 16:00
Contest exchange is RS(T) + Serial Number + locator

Dec 7th, Club Night: AGM

Dec 14th, Committee meeting - QTH G3ZBU

Dec 21st, Social Evening: The Cricketers Arms - Wisborough Green
<http://www.cricketersarms.info/>

Dec 25th, BADNET Christmas Day Net 3.722 MHz 10:00

Jan 1st 2017, HAPPY NEW YEAR!

For details on the above contest use this link and follow to the appropriate section
<http://rsgb.org/main/radio-sport/>

All above times are UTC

Committee/Club Meetings and Socials start at 20:00

HORSHAM AMATEUR RADIO CLUB

Committee Members

Chairman - Adrian Boyd, G4LRP 5 Walmer Close, Southwater (01403 733087)

Secretary - Alister Watt, G3ZBU 5 Brambling Road, Horsham (01403 253432)

Treasurer - Paul Barnett, G4TMC 8 Parsonage Road, Horsham (01403 261218)

Mick Senior, G4EFO (07855 268666)

Mike Tooley, G8CKT (01403 783127)

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Club net: Tue 21.30 on 144.725 MHz

BADNET: Sun 10.00 on 3.722 MHz

H A R C W E B S I T E : www.harc.org.uk

FACEBOOK GROUP - Horsham Amateur Radio Club

HARC meets the first Thursday of the month at - The Guide Hall, Denne Road, Horsham, West Sussex

Comments, ideas, and questions very welcome. Please send to HARCNEWS or contact a committee member about it.

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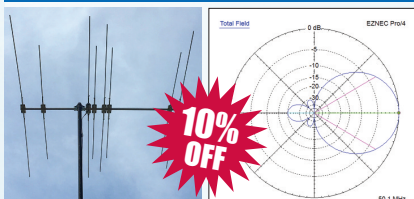
KPA-500
500W solid state
amplifier

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Assembled **£2649.95**

Hy-Gain - New Antennas

New series from USA designed by G0KSC



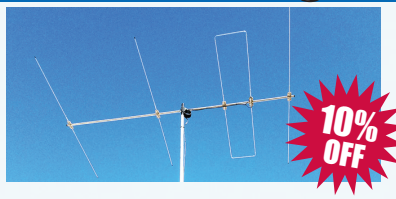
DB46M8EL - 4/6m Yagi
New Compact Dual Band 4 & 6m Yagi

- 8 elements: 4 per band
- Low SWR on each band
- Strong T-6061 aluminium
- Built to last!

~~£299.95~~ **£269.95**

SPECIFICATIONS

50MHz	70.2MHz
Gain: 8.52dBi	Gain: 7.86dBi
F/B: 20.02dBi	F/B: 19.55dBi
Boom Dia: 32mm	Boom Dia: 32mm
Length: 2.1m	Length: 2.1m



LFA 6M4EL - 6m 4 Element LFA
New 3rd generation Loop Fed Array (LFA) yagis with highly suppressed side lobes. Gives low noise, enabling reception of weak signals that others can't hear! Strong antennas built to last!

~~£379.95~~ **£341.95**

SPECIFICATIONS

50MHz
Gain: 10.7dBi
F/B: <32 dBi
Boom Dia: 50mm
Length: 3.9m



LFA 6M5EL - 6m 5 Element LFA

- Low Noise LFA design
- Low SWR, High Gain
- Low Loss 50 Ohm direct feed
- Strong T-6061 Aluminium
- 2 inch Dia. Boom

~~£499.95~~ **£449.95**

SPECIFICATIONS

50MHz
Gain: 11.8dBi
F/B: <42 dBi
Boom Dia: 50mm
Length: 6.2m

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