



Itchen Valley Amateur Radio Club Annual Report 2015 / 2016



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GB2HWC JOTA 2015

at Hampshire Winter Camp

With grateful thanks to:

2E0BZY – Tom, 2E0CGH – Wendy, 2E0DHG – Ray, 2E0HAI – Will, G0BHK – Ted, G0SEM – Rob, G0UKB – Brian, G3YPW – Pete & M0ACL – Liz and all the Scouting fraternity.



Colin G4GBP explaining procedure

The aerials were erected in no time at all, the feeders laid out and all the radio kit installed into the main room of Lyons Lodge. We were all ready for a Saturday morning start.

The equipment consisted of:

A pair of 40 foot push-up masts to support the antennae, a full-sized G5RV for general HF usage, a 20m vertical dipole for Data-Modes and a 2m collinear for local 2m FM working.

The 2m FM transceiver was a Yaesu FT-897, the HF was a Yaesu FT-840 and the data modes kit arrived in a 19" rack-mount courtesy of Will 2E0HAI. We also had several sets of Morse buzzers so the Scouts could send Morse code messages to each other.



Before the Scouts could send 'greetings messages' over the air they had to fill in a little crib card (so they would not become tongue tied in front of the microphone). This also required them to have knowledge of the Phonetic Alphabet so that they could spell their names.

The organisation of the JOTA camp is such that there is plenty of entertainment for all the young attendees. We were competing with 'bouncy castles', 'Lazer Quest', 'Surf-boarding' and lots of other things. We did manage to lasso a few into our room during the day during times when the queues were too long or they 'had done it all'.

There was one very full hour between events and evening meal when we were suddenly inundated with about 50 or 60 eager bodies all wanting to do everything and we found it difficult to keep up with the demand.

Will, 2E0HAI's data-modes setup had its screen projected on to a white wall so all in the room could see what was going on. He was able to communicate using PSK, RTTY and SSTV. We were all fascinated to see SSTV pictures arriving from various parts of Europe.



The HF rig was mainly used for making contact with Scout Groups around the UK & near continent. The contact with Gilwell Park was a highlight as a number of the Scouts knew about them. The FM rig was used to make contact with local groups, such as Locks Heath and to local amateurs when conditions on HF were not so good.

The Morse code buzzers were amazingly popular considering that most had not heard of Morse Code before the event. They soon got the hang of it and were happily buzzing away. Some were even able to decode some letters without looking at the crib cards by the end of their session. The smiles on their faces were priceless.

We were well looked after, fed and watered by our hosts and a good time was had by all. As is usual, the taking down of aerials and the packing up took considerably less time than setting up. We have been invited back next year and have agreed a number of improvements to enhance the Scouts experience of JOTA!

Colin G4GBP

Minutes of the Itchen Valley Amateur Radio Club AGM held at the Village Hall, Otterbourne on Friday 27th March 2015

The Annual General Meeting opened at 20.00 after the distribution of the Annual Report.

1. Apologies

20 Members were present, as noted in the Attendance Register.

Apologies for absence had been received from Brian Jones G0UKB, Liz Jones M0ACL, Rod Bickley G0EBK and Larry Dale G2DSY.

Our Chairman Paul Garland G6MCX took the Chair.

2. Minutes of the AGM held on 28th March 2014

These Minutes were agreed by the members as a true record of that meeting.

Proposed by David Henley M0XIX
Seconded by Geoff Morgan G3ROG

Signed by the Chairman.

3. Matters arising from those Minutes

Ray G3HRH and Geoff G3ROG subsequently withdrew from the elected Committee having taken on the roles of financial inspectors.

4. Chairman's Report

The Chairman's Report was submitted as part of the Annual Report. Paul G6MCX thanked

- The Committee for all their support during a difficult year
- David Henley M0XIX for running the raffles.
- Ted G0BHK for putting together the Annual Report and Allan G7VQV for its production.
- Brian G0UKB and Paul Wilton M1CNK for creating our new website.

He reported that your Club had been active on contesting as follows:

- BERU CW contest
- 3 Portable Field Day contests: CW, HF SSB and VHF

- As well as the 6m UK Activity contest.

In answer to a question, the Chairman reported that the Club net operates those Fridays when no club meeting is planned, at 20h00 on 145.500 MHz, moving to 145.525MHz.

Proposed by Vic Bryant G3NVB
Seconded by Richard Harris G3OTK

5. Treasurer's Report

The Treasurer's Report was submitted as part of the Annual Report. After explaining each of the entries for both income and expenditure, Ted G0BHK highlighted that your Club showed a loss of £467 for the year.

The subscription income was up, while raffle income was down, as were donations. The Auction and other sales brought in £357. Surprisingly, the membership has supported the tea/coffee provision well. Unusual expenditures this year concerned our ability to field working antennas for field days: a new tow hitch, purchase of a rotor, repairs on the generator and the purchase of a replacement, repair of the SteppIR, a roofing filter, and a new number plate for the trailer. We do not expect such repairs to be required in the coming year.

Insurance cover surprisingly stayed the same.

Ted thanked

- Duncan G3RQF and other Club members for managing the successful Auction.
- Allan G7VQV for the production of the magnificent Annual Report.
- The independent financial examiners for an efficient job.

Proposed by Graham King G3XSD
Seconded by David Henley M0XIX

5.1 Membership subscriptions for 2015/2016

The Treasurer observed that last year's raising of the individual subscription to £20

resulted in a reduction in donations, generally because members had “rounded up” their subscriptions .
He proposed no change in Membership subscription this year.

Proposed by Ray Hills G3HRH
Seconded by Duncan Keith G3RQF

Approved unanimously.

Subscriptions are now due and Ted would be happy to accept cash, cheque, or bank transfer.

5.2 Sponsorships in 2014

The Treasurer proposed that we continue our £18 subscription to the Chiltern DX Club, CDXC. Also that we continue to support registration of the Girl Guides’ web page (£23.99 every other year). This could perhaps be cheaper, and Dave M0XIX and Paul M1CNK will investigate. Paul also observed that he hosts the IVARC and Guides’ websites free. The Treasurer explained that this accounting value appears every year, since we pay for the IVARC website alternate years as well.

Proposed by David Henley M0XIX
Seconded by Peter Horne G3JRH

Approved unanimously.

6. Membership Report

Ted G0BHK stated that in the past year we had lost six members, but had acquired six new members, so the total stood at 34. In response to a question, he said that the lost members had not been followed up to probe the reason for them leaving. A further two new members had recently joined.

7. Field Events Report

No separate report was submitted for this, but a section of the Secretary’s Report covered the items, as well as the Chairman’s Report above.

8. Secretary’s Report

The Secretary’s Report was submitted as part of the Annual Report, listing all the events that had been undertaken

We were successful at the Horndean Quiz, for the sixth year running, and the trophy was on display at the meeting.

Quintin M1ENU advised the AGM that he would not be standing for the Committee beyond this membership year.

Proposed by Paul Wilton M1CNK
Seconded by David Henley M0XIX

9. Election of President

Vic Bryant G3NVB was nominated by Paul Garland G6MCX and Seconded by Richard Harris G3OTK.

Approved unanimously.

10. Election of the Committee for 2015/2016

The President chaired the meeting.

The following made themselves available for the committee

Paul Garland	G6MCX
Quintin Gee	M1ENU
David Henley	M0XIX
Brian Jones	G0UKB
Duncan Keith	G3RQF
Ted Stiles	G0BHK
Ray Holmes	2E0DHG

Proposed by Vic Bryant G3NVB
Seconded by Peter Thurlow G4YUP

Approved unanimously. It was suggested that thumbnails of the Committee be shown on our web site.

With the meetings approval, Paul G6MCX assumed the chair.

11. Any other business as notified to the Secretary.

11.1 Presentation of Awards

1. Clubman of the Year was awarded to Brian Jones G0UKB, together with a £15 Amazon Voucher. Brian was on his travels at the time of the AGM so Paul M1CNK accepted the trophy on Brian's behalf.

2. Newcomer of the Year was not awarded this year.

3. The DX Achievement Award was won by Ted Stiles G0BHK, pictured below, together with a £15 Amazon Voucher.



11.2 Constitutional Amendment

Replace “11[b] Audit of the Club Funds shall be completed before the AGM. The selection of 2 auditors from the ordinary membership shall be appointed at the AGM.”

by “11 [b] Examination of the Club funds shall be completed before the AGM. The selection of 2 examiners from the ordinary membership shall be appointed at the AGM.”

Proposed by Quintin Gee M1ENU

Seconded by Ray Hills G3HRH

Agreed unanimously. The Constitution Version 12 will be made available on the web site.

11.3 Appointment of Financial Examiners for 2015/2016

Independent financial examiners were agreed as Geoff Morgan G3ROG (second year) and Graham King G3XSD.

The Chairman closed the meeting at 21:32.

IVARC Membership 2015 / 2016

Callsign	Name	Surname
2E0DHG	Raymond	Holmes
G0BHK	Ted	Stiles
G0UKB	Brian	Jones
G0VNI	Sheila	Williams
G0WIL	Mike	Williams
G2DSY	Lawrence	Dale
G3HRH	Ray	Hills
G3JRH	Peter	Horne
G3LGA	Mike	Hayward
G3NVB	Vic	Bryant
G3OTK	Richard	Harris
G3ROG	Geoff	Morgan
G3RQF	Duncan	Keith
G3XSD	Graham	King
G4EOW	Peter	Baxter
G4GBP	Colin	North
G4JNT	Andy	Talbot
G4YUP	Peter	ThurLOW
G6MCX	Paul	Garland
G7VQV	Allan	Cook
G8IPQ	Alan	Badcock
G8XIX	Cheryl	Turner
M0ACL	Liz	Jones
M0IKT	Dave	Capstick
M0MMR	Sean	Quinn
M0XGT	Glyn	Thomas
M0XIX	David	Henley
M1CNK	Paul	Wilton
M1ENU	Quintin	Gee

29 Members

Chairman' Report 2015 / 16

Well another year has gone by which, for IVARC, was all in all a good year.

As mentioned in last years report, we took part in the three RSGB Field days (NFD, VHF/UHF & SSB) in June, July and September respectively. The people who organised the events will cover these three contests and a report will appear in our annual publication. We have also continued to be involved in the weekly UKAC contests, as well as 80m CC by some of our members.

About 6 to 7 people from the club take part throughout the year in the UKAC contests which take place every Tuesday Night 8pm until 10.30pm. Some members enter and operate nearly every week, whilst others enter 'part time.' The stalwart is Peter G4YUP who operates all year round, usually from his car and in all conditions. Thank you again Peter from the Club for all your efforts, and thank you also for the reminders you send out.

Peter runs the 2mtr net on non-club Fridays as well, which have been a success following on from the change last year when we moved from 6mtrs. The frequency of the Friday night net is 145.500 Mhz and we normally QSY up to 145.525Mhz for about 45mins to 1 hour. These Nets are open to all amateurs, not just club members.

This coming year 2016/17 we are losing our Secretary, Quintin M1ENU, who is standing down after approximately 10 years doing the Job.

I'm sure you will all join me in thanking him for all the years of work he has put in to help this club run as smoothly as possible.

Sadly, no one has yet come forward to take his place (after a few email reminders.) We will have to 'visit' the lack of a Secretary in the coming new year.

The Club has tried to fill the meeting nights with a diverse range of topics delivered mainly by our club members. To those that have come forward to give a talk, "thank you very much". The discussions ranged from 'fun cube' set up, fault finding on an Icom 706, Digital Modes, and LF Band Operating, to Mechanical Typesetting.

We had two good sales during the year, a "Junk" Sale in July and our now well supported Auction in November. I'm sure Ted will give us a breakdown of monies raised in his yearly report.

We now approach another new club year with activity planned for the 3 main Field Days, NFD, VHF/UHF Field Day and SSB Field day. We are planning to organise a Family 'get together' picnic/BBQ to coincide with IOTA from Compton Field at the end of July, also another stand at the Otterbourne Jalopies event on 26th June (Sunday) this year.

At our last meeting before the AGM we had a very good forum discussing club direction and what other activities we could get involved with which will interest our members. I will try to get the Club to progress some of the ideas which were particularly popular to make 2016/17 more rounded in what we have as Presentations.

Please monitor the Forum on the Club web site for more details and information.



73 Paul G6MCX

Thinking Day on the Air – a report 23/02/2015

Well, I think all concerned, club members, Brownies, the Foxlease activity coordinators and the folks we spoke with on the air, would all conclude this was a great success.

The antenna team, Ray G3HRH, Ray 2E0DHG, Paul G6MCX, Brian G0UKB and Liz M0ACL arrived at Foxlease early afternoon on Saturday and with cold but dry weather (apart from a hail storm) got the station up in just over 3 hours: the station being the club trailer with the 2 element SteppIR for the higher HF bands, a G5RV for 80m/40m and a 2m collinear. The site was tricky but apart from carnivorous brambles didn't present too difficult a challenge.



The activity itself took part from 10:30 Sunday through to 15:30 and the team of Colin G4GBP, Emily M0MBJ with M0ACL and G0UKB worked non-stop to ensure that 76 Brownies achieved everything necessary to gain their Communicator badges, including ensuring every Brownie made a quality on-air contact and learned about the basics of 2-way radio communication.

A Brownie leader talking to Guides in Horsham, ably assisted by Emily M0MBJ

Where possible communication was with other TDOTA stations in the UK, namely GB0HDG (Horsham and District Guides), GB5AG (Ayrshire Guides) and a first for TDOTA, one if Girlguiding's 4 World Centres GB0PAX (Pax Lodge in London). However, when HF contacts dried up or on Sunday afternoon when 40m was getting too noisy for the girls to hear comfortably we had to rely on 2mtrs. Here GB2FOX was privileged to find 3 fantastic local operators who really engaged the girls in conversation and were very generous with their time. So a huge Thank You to Peter G0RUD, Andy G0JZW and Rodney 2E0CZT – we would really have struggled without your help.

From a Girlguiding perspective, speaking with GB0PAX was definitely a highlight, so also was a contact Liz made early Sunday evening when she stumbled on the Canadian Guides on the Air coordinator Helen VA1YL. Helen in Nova Scotia was having an interesting chat with a retired Girl Guide leader Suzanne VE7IM on Vancouver Island, the opposite coast of Canada. Liz joined them and was able to take part in a 3 way Girl Guide conversation coast to coast across Canada as well as talk to Guides in Helen's Shack.

All work and no play etc., late Saturday and Sunday evening and Sunday breakfast time gave us a little down time to 'play radio' and see what DX a 2-element SteppIR could provide. Contacts to the U.S., Brazil, Azores, Japan, Uruguay, Aruba, Dominican Republic and Argentina were the more notable ones.

*Liz Jones M0ACL
Girlguiding TDOTA Coordinator*

Secretary's Report 2015/16

The Club has held 23 meetings over the last year, including 10 talks, 9 Members Forums, the AGM, the traditional Christmas Social, and a Summer Treasure Hunt, but the DF Hunt and barbeque were cancelled.

A raffle has been run sporadically, mostly by David M0XIX. This is a significant source of income, and more could have been run.

The following is a summary of the year's meetings.

10 Apr: Members' Forum:

24 Apr Navy Submarine Communications by Vic G3NVB



After a series of technical equipment problems Vic gave us an excellent talk on submarines. This was illustrated by a number of pictures. He covered the design factors, build sequences, launch methods, tales of life aboard and the factors which limit the life of a submarine. There were a good smattering of Vic's 'anecdotes' which were all very amusing and further illustrated submarine life. There was some discussion on the subject of 'communications' and methods of communications with submarines.

8 May: Ray G3HRH gave a demonstration of N1MM logging program at the alternate venue in the Otterbourne Church hall, since our usual venue was booked for a wedding reception. The program works superbly and fast under contest conditions. It can be used by anyone.

22 May: Members' Forum

12 Jun: 6dB Better Than CW by Andy G4NJT. An exploration of various digital modes.

26 Jun: Members' Forum:

10 Jul: Google Maps by Brian G0UKB. The sourcing of the data was covered and the various facilities offered by Google. Of note were the add-ons that enable you to measure areas, and construct circles centred on a chosen point.

24 Jul: Our annual Junk Sale produced outstanding income and thanks are due to Brian for all his hard work.

14 Aug: Members' Forum:

28 Aug: Coax and Cable Losses by Mike from Alton Antennas. Even at HF it is necessary to perform accurate calculations of the velocity factors as efficiency drops rather rapidly, whilst at VHF and above it becomes essential.

11 Sep: Members' Forum:

25 Sep: Satellite operation: Funcube setup by Vic G3NVB. In his inimitable way, Vic demonstrated how easy it was to plug in the dongle, install SDR software, and tune across the band waiting for the satellite to make an appearance, if only for 3 minutes!

9 Oct: Members' Forum:

23 Oct: Pre-Auction Members' Forum

13 Nov: AUCTION. This annual event produced £221.75. There was a good turnout by members, but few from other Clubs.

27 Nov: Fault-finding on a 706 by Duncan G3RQF. One man's investigation into a deep-seated fault with a rig. A real detective story, with a happy ending.

11 Dec: Christmas Social organised by Brian G0UKB and Liz M0ACL. This was attended by some 30 members and guests, and Sheila G0VNI and Liz provided wonderful savouries and sweets, while Brian did his usual to flummox us with an ingenious Quiz.

11 Jan: (instead of 6 Jan) Members' Forum:

29 Jan: (instead of 22 Jan) Arrangements for TDOTA at Lyndhurst.

12 Feb: An exploration of two Digital Modes by Graham G3XSD. This showed the advantages and shortcomings of Hellschreiber and Olivia.

26 Feb: Mechanical Typesetting by Quintin M1ENU. A marvel of Victorian engineering that solved the difficult problem of setting type speedily, with quality image and evenly-spaced lines of type.

11 Mar: Getting started on the Low Bands by Andy G4JNT. This introduced us all to 475 KHz and 137 KHz. While receiving is straightforward and many rigs can tune that low, transmission is another challenge altogether and serving up 1 KW to achieve 1 W of output was shown to be possible with some care and much safety! Andy has used QRSS and WOLF.

18 Mar: Members' Forum

8 Apr: Annual General Meeting

Events

Club members have also been involved in events away from our usual meeting venue, including a visit to the Horndean ARC for their Annual Quiz that we always win, but somehow failed on this occasion. Some are listed below.

21/22 Feb: TDOTA at Foxlease, Lyndhurst, run by Brian & Liz, went well with 48 girls. QSOs with the Canadian National Coordinator in Montreal and with Vancouver.



14/15 Mar: BERU had 2 teams from IVARC enter. The veterans came 13th, and Team Digi 16th. Team Digi was mentioned in the Preamble to the Results.

Single operator Unassisted (96 Entries): G3OTK 11th; G4GBP 12th; G3XSD 29th; G0UKB 46th; G3HRH 59th; G4YUP 63rd; G6MCX 75th.

In the single op Assisted: G3ROG 19th.

6/7 Jun: NFD CW field day Contest: Successful with 9 operators, 663 QSOs, Two tents were erected on the Compton field.

28 Jun: Otterbourne Jalopies' Festival had a well-situated stall, with Radio in a Box run by Graham G3XSD, GB0OVF was used as a special event station, Voice Spectrum demonstration, CW for Kids/Flashing LEDs, etc.

4-5 July: VHF Field day was held in a field at Crabtree Farm with 12 operators. 2m QSOs 97, 70cm QSOs 38, 23cm QSOs 11, 29363 points.

26 Jul: Treasure Hunt in Alresford by Peter G4EOW.

5 Sep: SSB Field Day at Compton. Organised by Brian with Paul, Liz, Ray, Raymond, Dave, Richard, Sean operating. Others helped to put up and teardown Mike and Sheila, Mike Rowlands and Graham G3XSD. Special thanks to Vic for providing sustenance.



18 Oct: JOTA at Hampshire Winter Camp organised by Colin G4GBP with help from Brian G0UKB, Liz M0ACL, Ray 2E0DHG and Ted G0BHK.

25 Dec: Christmas day call-in chaired by Mike G0WIL.

Mar 12/13: BERU contest with participants forming 'Team Itchen Valley Veterans' and 'Team Itchen Valley DIGI' as before.

Mar 21: Theatre outing to The Plaza, Romsey for "Breaking the Code", 6 people.

Quintin Gee M1ENU
Secretary

So, where do we go from here ?

a report and some musings from the

G3NVB Laboratory

Looking back over the several decades that I have been licensed, I am amazed at the range and scope of the changes in technologies that have taken place. Most of these advances have been matched by my attempts to keep up, which have included building and experimentation. This latter includes some notable disasters on the way.

My transmitter, when first licensed, was home brew, as were all at that time, using an 807 valve (remember) with about 25 Watts input. I was astonished at the 'system' requirements - it needed a power supply, an aerial (20m only being a quarter wave whip on top of the bungalow), and an aerial tuner. All were homebrew. Not forgetting a Morse key, plus headphones. The receiver was an ex-government AR88, weight about 50lbs, one of the finest ever built. The list seemed endless to get on the air.

However, unbeknown to me, the propagation sunspot cycle was at a maximum. This meant that I could work the W6s at 6.00am before the band closed at 7.00. In the evening it was the East Coast Ws.

This era coincided with the arrival of the transistor and the magic of SSB. And voice communication - without the slog of pounding a Morse key. The electronic magazines were full of circuits using transistors, mainly in the audio range. I built my first SSB modulator, and surprisingly it worked, although I had no idea what its performance was like, not having any test gear. There was no worry about the level of opposite side band attenuation in those days.

Over the following decades there came the integrated circuit - many transistors piled into one package. My contribution was the construction of the 3rd method demodulator: while it worked, I found the need for a companion receiver, so a grand plan of the ultimate HF receiver was undertaken. The idea was to make use of a case donated by a

neighbour, however the components and battery size exceeded that of the case, so there was a hasty re-appraisal leading to an eventual abandonment. A lesson was learnt, (one of many): do the planning and preparation before you start any construction.

Then came the PIC, courtesy of EI9GQ of RADCOM fame and of course our own Andy G4JNT. This led to an introduction to computer programming, which led in turn to the building of various gadgets including a most useful frequency counter. Programming at this level was a pain as it seemed to be very cumbersome, shifting files about without any apparent logic. This experimentation was interspersed with activity "on the air" using a YAESU FT-897 - a bit different to the old arrangements. It was a good set, but results were hampered by the site, which at that time was at the bottom of a hill. Indeed the QTH at Waltham Chase was surrounded by hills. Although not particularly high, they were sufficient to limit the possibility of any serious HF DX.

The past few years have seen me involved with more 'on the air' activity at a better QTH at Oliver's Battery. This has provided more DX, helped by a move to data modes (JT65 and JT9). I have particularly enjoyed the recent period of good propagation, especially to the Far East and to South America.

This was followed last year by a foray into satellites, when the "Fun Cube" was launched. This low orbit satellite is a 10cms cube transmitting on 2mtrs and receiving on 70cms. The object was to encourage schools to get pupils interested in the technology, and the satellite transmitted a range of telemetry information, which could be displayed on a computer screen. Parameters such as transmitter power, temperatures, and power consumption were shown. This assembly was described in last year's annual report.

What I discovered, however, was that as the satellite had a 90 minute period, by the time it came round again the Earth had moved on by 22 ½ degrees and it did not appear overhead until 12 hours later. The short time the satellite was overhead to provide decent signals, was about 10-12 minutes, and it was only available at about 10.30 in the morning and about the same time in the evening. The upshot was that it was only useful to me for about 10 minutes every morning. Reception of speech signals had to take account of the Doppler shift in frequency (back of envelope: 1 part per million per Mach number) of about 3kHz. By the time I had fiddled with Doppler correction of the signal the satellite was disappearing over the horizon. It was not a very encouraging or satisfying activity.

So I cast around for another field to conquer and a chance remark by GOUKB during a club forum sprung to mind: He said, “I took this program and that program and wrote a few lines of code to join them.” I thought I would like to be able to write a ‘few lines of code’, as programming has always fascinated me and has always appeared as a bit of an arcane art.

Enter Arduino.

The current stage of technology development has seen the introduction of a series of computer chips (enter the PIC again), mounted on a PCB and containing all the features of a full size computer, but on a smaller scale. A well-known example is the ‘Raspberry Pi’, which has a firmware program built in, so the initial heavy lifting has been provided. Thus a simplified high level programming language is used which is much more intuitive. So if you want to read an analogue voltage, the program says, ‘Read analogue Voltage.’ Simple ! The PCBs carry the IN and OUT connections for both analogue and digital signals.

‘Arduino’ is one of a range of these boards which carry the processor together with the In/Out connections, ADCs, plus other peripherals, see Photo1. A browse through the Farnell catalogue shows a whole range

of similar PCBs providing access to cameras, temperature and other parameter sensors, accelerometers and so on.



Photo 1

Let's do the programming.

One of the marvellous features of the modern technology is the arrival of non-soldering construction. With a number of wire links and a miniature plug or socket at each end, and a multiple socket connector block, simple assemblies can be put together quickly. Photo 2 shows an Arduino connected to an LCD (Liquid Crystal Display).

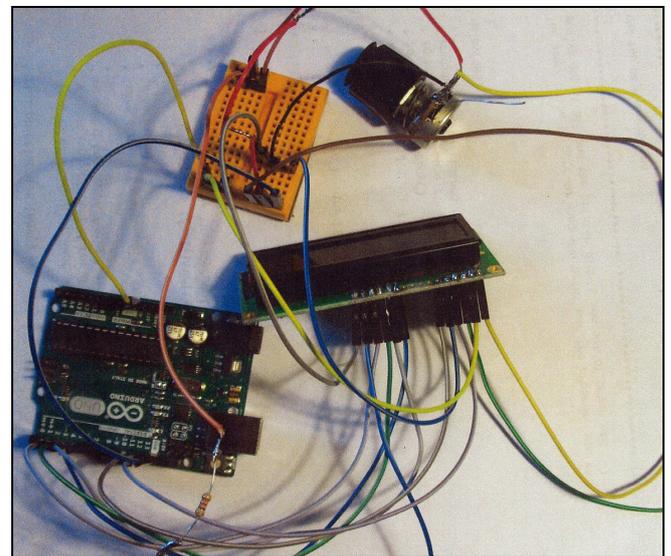


Photo 2

Figure 1 shows the code for a simple program, being “Hallo World” displayed on the LCD. This is all basic stuff and of course leads to the desire for greater things.

For us Amateurs the immediate applications that spring to mind is a VFO, forming the basis of a receiver, a shack signal generator,

```

/*
LiquidCrystal Library - Hello World

The circuit:
* LCD RS pin to digital pin 12
* LCD Enable pin to digital pin 11
* LCD D4 pin to digital pin 5
* LCD D5 pin to digital pin 4
* LCD D6 pin to digital pin 3
* LCD D7 pin to digital pin 2
* LCD R/W pin to ground
* LCD VSS pin to ground
* LCD VCC pin to 5V
* 10K resistor:
* ends to +5V and ground
* wiper to LCD VO pin (pin 3)

// include the library code:
#include<LiquidCrystal.h>

// initialize the library with the numbers of the interface pins
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);

void setup() {
  // set up the LCD's number of columns and rows:
  lcd.begin(16, 2);
  // Print a message to the LCD.
  lcd.print("hello, world!");
}

void loop() {
  // set the cursor to column 0, line 1
  // (note: line 1 is the second row, since counting begins with 0):
  lcd.setCursor(0, 1);
  // print the number of seconds since reset:
  lcd.print(millis() / 1000);
}

```

Figure 1

a sequencer for switching a low noise VHF pre-amp and an SWR meter which will sweep a frequency over a band and display the SWR of a connected aerial. Other Ham oriented applications will no doubt be obvious. The SWR meter was selected as the next challenge and consists of five circuit blocks.

A Little bit of Development.

Central to the SWR meter assembly is of course the Arduino in control of everything. The RF is generated by a DDS (£7.50 from China), an LCD to display what is going on and the heart of everything, and the bridge to connect to the aerial under test. The output from the DDS is only some 200mV p-p and the bridge needs about 5V to drive it adequately. Hence an RF amplifier is needed. Figure 2 shows the circuit of the bridge and Figure 3 the block diagram of the whole assembly.

It will be noted that the impedance presented to the RF amplifier varies from 100 ohms, with the aerial under measurement being a high impedance, through to a matched aerial (50 ohms), to about 33 ohms for a low impedance aerial. This means that a few milliwatts is needed to drive the bridge to a sensible level. This latter is because the

Arduino operates from a 5V supply and this is used as a reference.

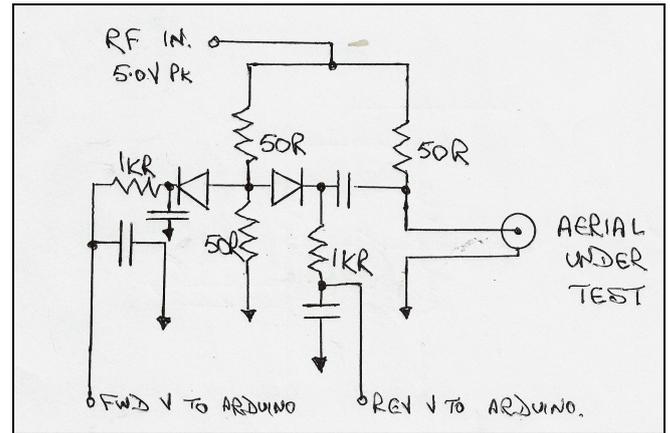


Figure 2

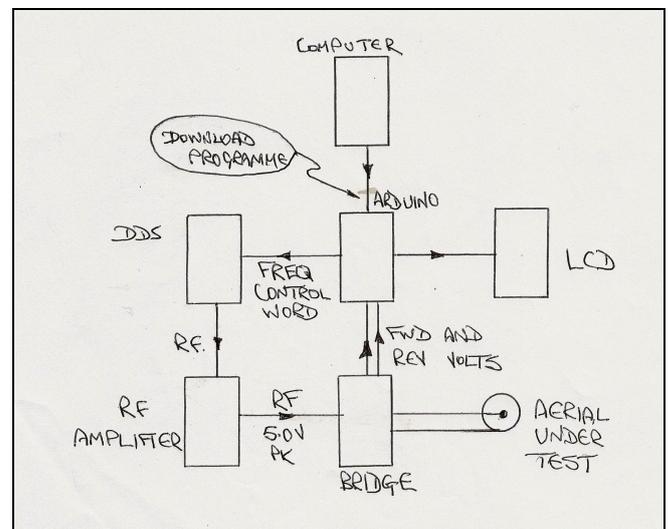


Figure 3

So the final circuit block is an RF amplifier, shown in Fig 4. The buffer amplifier acts to match the DDS high output impedance to the lowish input impedance of the power amplifier. The junk box was raided for most of the components as well as the need to recycle some components from old abandoned projects.

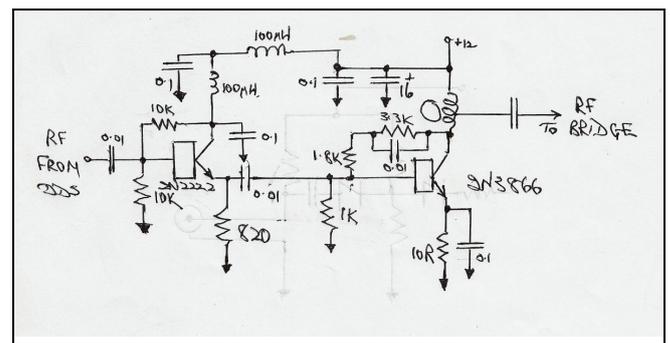


Figure 4

Having got the material circuit assembled, the next step is the programming. For the Arduino this follows a number of logical steps, the first being to download any 'program libraries' that might be needed. There is no point in going through the slog of writing a program for say an LCD when it has already been done and it exists 'out there'. For the SWR meter we need a library for the LCD and for the DDS (AD9850).

The Arduino program consists of four distinct parts :

- The Library assembly that has already been mentioned.
- Setting up of the various connections.
- Setting the initial operating parameters.
- Finally, running the program

Photo 3 shows the breadboard which is a lash up but establishes the circuit and enables the programme to be validated.

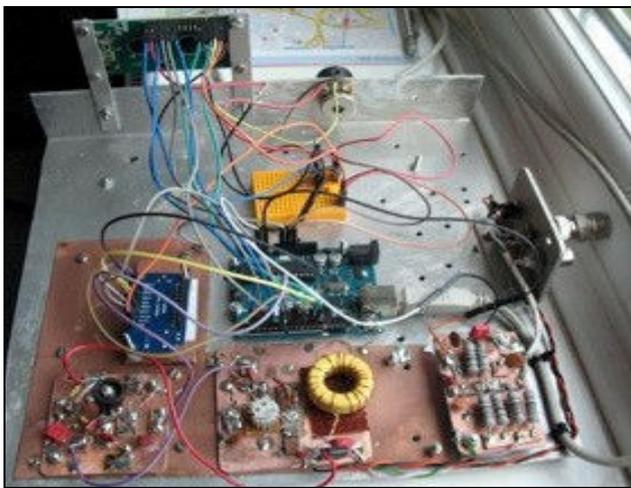


Photo 3

So what comes next .

This project is at the moment very much 'work in progress'. The end object is to have the SWR measurement printed out as a graph, so more detective work is required.

While it may be argued that a highly sophisticated unit may be purchased commercially, the exercise was, and continues to be an attempt to understand the programming processes. In that regard it has

been a success and much is known about the practice although much remains to be learnt. It is all very much a self education exercise, in accordance with the intentions of the Amateur Licence.

Acknowledgement.

The support and guidance of G0UKB is gratefully acknowledged. The tutorial that G0UKB ran for club members in February 2016 has been a great help in gaining confidence in understanding programming practice. The contribution of Ray Holmes with his "Antenalyzer" is also noted. This latter home-brew item of test gear has been of value in checking out the aerials for the Club's Field Day events.



BERU, OR MORE CORRECTLY, 'THE COMMONWEALTH CONTEST' 2016

A couple of years ago Itchen Valley Club tried an experiment: as well as our team of regular CW operators we entered a team of 3 operators who are not skilled in CW at all. The idea was to see if we could contest without needing to aurally copy morse, nor use a key or paddle, just use the computer to both decode and send. In fact, to treat morse just as any other data mode.

BERU, with its low QRM is ideal for this. The operation was an enormous success and last year, once again we fielded two teams – **'Team Itchen Valley Veterans'** consisting four regular CW operators, and **'Team Itchen Valley Digi'**- three members who were all using computers to both send and receive. Our **'Veterans'** managed to bag 13th position in the Team Results and team **'Digi'** came in at 16th position, still with a respectable points total.

Come 2016, even more time and effort has been invested in bettering our earlier results, but this year conditions were not ideal, so we eagerly await the publication of the results later in the year.

As participants usually operate from their home QTHs we don't often get to see photographs, but this year Colin G4GBP decided he would operate from his canal boat – he submitted the following excellent report and pics of his activity.....

'I have entered the BERU contest many times, sometimes from the home QTH and sometimes from my narrow-boat 'Constance' somewhere on the canal system



The operating position

This year I decided to operate from the boat at a quiet location about 3 miles south of Banbury on the South Oxford Canal. The rig used was my Yaesu FT-897 running 100w into a trapped dipole/inverted 'V'. Power to be supplied from my pure-sine 1kVA generator. The trapped dipole is a 100w version of the QRP model which I made for my Australia trip. The laptop was running N1MM+ with a G4ZLP keyer.



The fibre-glass mast was holding the centre feed point of the dipole at about 22 feet above the canal. The ends of the 80m section were about 6 feet above the canal. The cranked TV mast holds the 3G dongle for internet connectivity.



Yes, the mast was leaning at an angle deliberately



A better view of the fibre-glass mast

Problems? Yes I had one or two problems. All the kit was tested from my back garden at home. The system as tested included the generator and the power supply. When I started up on the boat I had two different types of QRM. One was fairly quickly tracked down to the Solar Panel controller, so the solar panel was disconnected. The second source (S9++) hash was a bit more difficult to track down. Eventually found to be the on-board battery charger which automatically starts up whenever it sees 240v mains. Once the QRM was sorted the background noise was not measurable on the S-meter on any band. I had chosen a quiet location, no power lines, no houses, no trains but close enough to the M40 to get excellent 3G Internet. All was set for a good BERU session except that HF radio conditions were not that good in the higher bands. Throughout the whole contest I never heard any resolvable station on 10m and only a few on 15m.



Meals were taken at the operating position. Can't miss that important extra point or two!

The results were a total of 59 QSOs spread: 80m - 8, 40m - 8, 20m - 39, 15m - 4, with none on 10m.

After working on 40m for about an hour in the evening the 40m leg of the antenna suddenly went VHSWR. No explanation, can't see anything wrong with it, but I reckon I lost a lot of points because that would have been the best band for evening working.

Bagged 31 Canadians, 12 VKs and 2 ZLs along with 9H, 9J, 9M, C4, ZS, ZB2, J34, VP9 and really fed up as I heard AT1 calling/being worked several times but did not recognise the prefix as Commonwealth !

Overall, the kit worked well (with the exception of the loss of 40m) and the location was quiet. I found the band conditions to be unexciting and many stations were a struggle to complete. Oh well ! There's always next year..... '

**Colin North
G4GBP**

VHF/UHF National Field Day



Treasurer's Report

It is very satisfying to finish the year with a small 'Excess,' albeit only £82.65, especially considering we finished last year with a deficit of nearly £500 !

We should certainly give ourselves a 'pat on the back' for managing to achieve such a remarkable turnaround, but it is important we look to see what we did right in this past year, and even more important, what we did wrong

It was a big help not to be starting the year owing nearly £200 in back rent (to the Scouts), as was the case in the previous year. This past year we have not waited to receive bills and our rent has been paid regularly and has been kept up to date.

The second important difference is, last year's financial report shows we spent £576 in purchases and paying for repairs, whereas in the past 12 months we have spent only £271 (including servicing of our generator).

Income

Unfortunately, our membership, after staying steady for a couple of years, fell from 34 members in the last report to 29 members currently. This resulted in our income from Subscriptions dropping by £50 to £530.

'Donations' from members shows a dramatic increase from just £8 in the previous report to £110, in the past year. This was mainly due to a particularly generous donation from our President G3NVB, without which we would have finished the year barely breaking even. Thank you very much Vic !

Last year our 'Sales' figure included income donated from casual sales which took place at Club meetings, plus the cash generated from our Auction. This year the Auction has been separated out, and the 'Sales' sum of £18.97 is entirely money donated by members when they have sold books, components and equipment they have brought into Club meetings.

In this year's report we have two new items in the Income column – 'Junk Sale' and 'Auction'.

The 'Junk Sale' is a new venture for us which many members took advantage of to source 'hard to find' components and equipment. We were pleasantly surprised when we determined we had raised £101.60.

Our Auction was expertly conducted as in previous years and, as before, much of the equipment had been donated for Club funds, but we also charged 10% commission for items sold on members' behalf. Our Auction raised £221.75.

A big 'Thank You !' to everyone involved in our fund raising activities, to those who donated equipment, to those who bought equipment, and especially to everyone who was busy with the organizing and the running of the events.

We had fewer raffles last year – in the previous year we ran 8, but last year we ran only 6. Our raffles raised £109.

Thanks to everyone who donated prizes and bought tickets. Also thanks to everyone who helped run the events.

We had an unexpected rise in bank interest paid into our Deposit Account. Previously we had been getting £1.15 each year, but last year we received £4.50 (there had been no change in the amount deposited).

It is very pleasing to see we continue to get a good return from running our Tea Bar - this year £139.72. Many thanks to our Chairman, Paul, who regularly brings in supplies, but who does not seem to be claiming many expenses. Also, thanks to those who volunteer their services manning the counter during our meetings.

You will have noticed in last year's annual report we had entries for 'Contest Donations' and 'Contest Expenses.' It was requested that this year I should provide a more detailed breakdown of Income & Cost relating to each of our events. So now, in the Income column you will find 3 new entries –

'CW FD Donations'
'VHF FD Donations'
and 'SSB FD Donations'

Similarly, in the Expenditure column you will find –

'CW FD Expenses'
'VHF FD Expenses'
and 'SSB FD Expenses'

In terms of Income, the sums shown represent the total amounts donated by the members who were involved with each of the contests.

..... continued on page xx

ITCHEN VALLEY AMATEUR RADIO CLUB
STATEMENT OF INCOME AND EXPENDITURE
FOR THE YEAR ENDED 31st DECEMBER 2015

INCOME			EXPENDITURE		
2014		2015	2014		2015
580.00	Subscriptions	530.00	667.00	Rent	545.00
8.00	Donations	110.00	8.40	Stationery/Postage	1.00
357.52	Sales	18.57	29.99	Tow Hitch Lock	Nil
159.00	Raffle Proceeds	109.00	Nil	Meeting Costs	20.00
1.15	Bank Interest	4.50	Nil	Tent	164.90
112.20	Tea Bar	139.72	247.45	Insurance	250.16
113.00	Contest Donations	Nil	51.00	R.S.G.B.	51.00
	CW FD Donations	80.00	23.99	Web Space Fee	Nil
	VHF FD Donations	110.00	Nil	Treasure Hunt	18.92
	SSB FD Donations	80.00	25.00	Christmas Social	28.00
	Junk Sale	101.60	114.33	Contest Expenses	Nil
	Auction	221.75	18.00	CDXC	18.00
			65.98	Prizes	30.00
			Nil	Generator Service	83.20
			100.00	New Generator	Nil
			110.13	Repairs to carbs	Nil
			25.49	Key Safe	Nil
			88.15	Roofing Filter	Nil
			13.50	New Number Plate	Nil
			209.17	Repair to SteppIR	Nil
			Nil	CW FD Expenses	73.40
			Nil	VHF FD Expenses	79.88
			Nil	SSB FD Expenses	36.03
			Nil	Antenna yard arm	23.00
1330.87	Total Income	1505.14	1797.58	Total Expenditure	1422.49
	Less Total Expenditure	1422.49			
	Excess Income over Expenditure	<u>82.65</u>			

FINANCIAL STATEMENT

Balance B/F 01/01/2015	<u>3193.45</u>	Current Account	1820.28
Add Income for Year	<u>82.65</u>	Petty Cash	16.92
Balance C/F 31/12/2015	<u>3276.10</u>	Deposit Account	1444.90
		less cheque #420 not yet cashed	-6.00
		Total	<u>3276.10</u>

Accounts examined by :-

Geoff Morgan G3ROG

 22/02/2016

Graham King G3XSD

 25/2/16

National Field Day Accounts

CW National Field Day Accounts 2015

<u>Income</u>				<u>Expenditure</u>	
Ray Hills	G3HRH	donation	£10.00	Audio Adapters	£ 5.59
Colin North	G4GBP	"	£10.00	Milk	£ 1.00
Graham King	G3XSD	"	£10.00	Petrol	£20.83
Paul Garland	G6MCX	"	£10.00	Hire of Field	£20.00
Geoff Morgan	G3ROG	"	£10.00	Tent Lighting	£25.98
Richard Harris	G3OTK	"	£10.00		
Ray Holmes	2E0DHG	"	£10.00		
Sean Quinn		"	£10.00		
			-----		-----
		Total Income	£80.00	Total Expenses	£73.40
		<u>Excess</u> = £80.00 - £73.40 =		<u>£6.60</u>	

VHF/UHF National Field Day Accounts 2015

<u>Income</u>				<u>Expenditure</u>	
Ray Hills	G3HRH	donation	£10.00	23cms Antenna Cables	£55.88
Colin North	G4GBP	"	£10.00	Petrol	£ 6.00
Brian Jones	G0UKB	"	£10.00	Petrol + Petrol Container	£18.00
Paul Garland	G6MCX	"	£10.00		
Geoff Morgan	G3ROG	"	£10.00		
Richard Harris	G3OTK	"	£10.00		
Ray Holmes	2E0DHG	"	£10.00		
Liz Jones	M0ACL	"	£10.00		
Paul Wilton	M1CNK	"	£10.00		
Stan Andrews	G3OGY	"	£ 5.00		
Alan		"	£10.00		
Aman		"	£ 5.00		
			-----		-----
		Total Income	£110.00	Total Expenses	£79.88
		<u>Excess</u> = £110.00 - £79.88 =		<u>£30.12</u>	

SSB HF National Field Day Accounts 2015

<u>Income</u>				<u>Expenditure</u>	
Ray Hills	G3HRH	donation	£10.00	Hire of Field	£20.00
Brian Jones	G0UKB	"	£10.00	Petrol	£16.03
Paul Garland	G6MCX	"	£10.00		
Richard Harris	G3OTK	"	£10.00		
Ray Holmes	2E0DHG	"	£10.00		
Liz Jones	M0ACL	"	£10.00		
Sean Quinn	2E0YEP	"	£10.00		
Dave Capstick	M0IKT	"	£10.00		
			-----		-----
		Total Income	£80.00	Total Expenses	£36.03
		<u>Excess</u> = £80.00 - £36.03 =		<u>£43.97</u>	

It's good to see all three of the field day events showed a profit after costs had been deducted.

CW Field Day donations were £80
VHF Field Day donations were £110
SSB Field Day donations were £80

Expenditure

As always, our biggest outlay in the past year was Rent of the venue for our meetings. We had 21 meetings in the Bianchi Suite and 1 meeting in the Church Hall which cost us £545.

We spent just £1 on postage.

Meeting expenses were just £20 – we reimbursed Mike Parkin of Alton Antennas for his traveling when he came to present to us.

Our most expensive item purchased was a tent – at £164.90. It is hoped this will serve us well at future field day events.

There was a small increase in the cost of our Insurance this past year – we paid £250.16.

R.S.G.B. Membership remained unchanged at £51.00,

Treasure Hunt expenses came to £18.92.

Liz produced an excellent spread for our Christmas Social at a very modest cost of just £28.

CDXC membership remained unchanged at £18.00.

We spent £30 on prizes for the 'DX Achievement' and 'Clubman of the Year' winners.

Servicing of our Honda Generator cost £83.20.

CW Field Day expenses amounted to £73.40
VHF Field Day expenses amounted to £79.88
SSB Field Day expenses amounted to £36.03

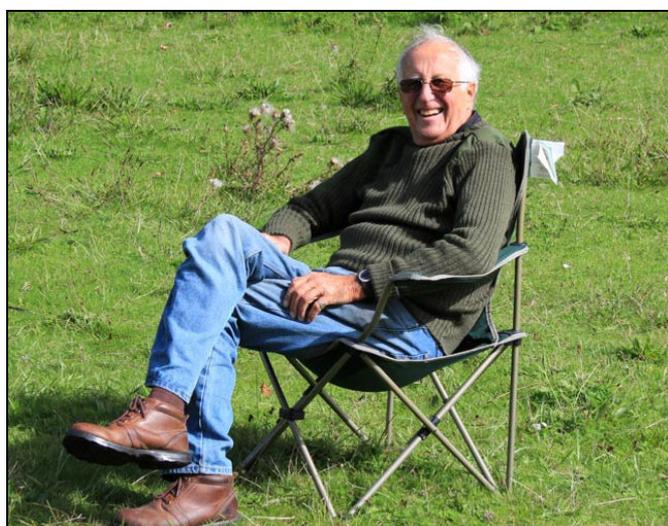
Prior to the SSB field day Ray G3HRH constructed a yard arm to support wire antennas from our mast, the cost of components was £23.00.

Overall, considering our previous year's performance, I think the Club has made considerable progress in managing our finances in the past year.

Finally, I should like to thank Geoff, G3ROG, and Graham G3XSD, who inspected these Accounts.

Ted Stiles G0BHK
Treasurer

SSB National Field Day



IVARC Activity in RSGB Club Contests

by Peter G4YUP

IVARC has participated in several contests in 2015-6, other members will give details of our Field Days and BERU position.

In the AFS Super League, which has six legs covering HF and VHF bands, we only enter three legs. Thanks to our CW experts, we came 63rd out of 102 clubs.

The 80m CC (Club Championship) 2015, had 18 evenings using SSB, Data and CW. We only missed one evening, coming 10th out of 49 clubs. Again our position was elevated by our CW kings. Top scorer was Graham, G3XSD, not just due to his CW skills, but entering both RTTY and PSK in the Data section.

So conditions for 2016 have been extremely poor, with many entries only in single figures.

Full UKAC results are below. This year has seen an increase in the number of members having 23cm equipment, several are using SG-labs 1296MHz transverter, which costs around £130, details in September Radcom.

Conditions were variable. A few evenings you thought you'd done really well working that elusive DX, but when you looked at others entries you realised everyone else had worked them as well. Those operating portable had to endure some dreadful wet cold conditions. Some members, despite poor location and vertical polarisation, still managed to give the Club some points. Many clubs have considerably more members entering than us. Those located in the Midlands have the advantage because they can point their aerials both North and South, but usually for us the only way is up (North), then we can't work that GM as the Midlands are blocking us. Like the HF contests, VHF conditions have been very poor at the start of 2016.

Overall Club's position

2015 18th out of 134 groups. **2014** 19th out of 110 groups.
2013 23rd out of 97 groups. **2012** 43rd out of 113 groups.

Position in each band.

144MHz

2015 19th out of 117 groups. **2014** 25th out of 100 groups.
2013 23rd out of 97 groups. **2012** 34th out of 92 groups.

432 MHz

2015 18th out of 84 groups. **2014** 18th out of 73 groups.
2013 28th out of 73 groups. **2012** 54th out of 64 groups.

1.3 GHz

2015 16th out of 60 groups. **2014** 17th out of 51 groups.
2013 44th out of 45 groups. **2012** No entry

50 MHz

2015 18th out of 86 groups.

2013 23rd out of 75 groups.

2014 17th out of 85 groups.

2013 35th out of 74 groups.

70MHz

2015 18th out of 54 groups.

2013 33rd out of 49 groups.

2014 18th out of 56 groups.

2013 No entry.

SHF No entry.

Members overall position.

	2015 (out of 682 entries)	2014 (out of 572 entries)
G4YUP	21	29
M1CNK	150	214
G3HRH	201	290
M0BTZ	231	----
M0ACL	301	296
G6MCX	314	277
G0UKB	319	314
G0BHK	400	560
G4GBP	414	476
G3ROG	627	593

Not part of the contest, but something that interests me.

Furthest distance worked on a band under good conditions by an IVARC Club member.

144MHz	EA2XR	IN83KI	865k	G4YUP
432MHz	SM7DTE	JO75CN	1140k	G4YUP
1.3GHz	GD8EXI	IO74PC	407k	G6MCX G3HRH
50MHz	LY2IJ	KO25TF	1851k	M0ACL M1CNK
70MHz	G8PNN/P	IO85XF	472k	G4YUP

Don't forget the month's coming contests and UKAC position are on the IVARC web page, under the 'CONTESTING' heading.

The map on the right shows contacts I made during a memorable UKAC 432Mhz session when propagation conditions happened to be particularly good.



Happy Contesting

Peter G4YUP



Update on the 5 MHz, 60 metre HF Band by Geoff G3ROG

Background

The annual report for 2012 / 2013 announcing the allocations at 5 MHz can be found on the IVARC web-site.

Access to frequencies in the band from 5.2585 MHz to 5.4065 MHz was formerly granted by varying individual licences with a Notice of Variation. Following its 2014 consultation, OFCOM has incorporated the NoV into the recently reissued Full Amateur Radio Licence.

The maximum permitted output power on 5MHz is 100 Watts from the transmitter and 200 Watts EIRP from the antenna. Mobile operation is not allowed.

Channel based operation.

The UK allocation continues to be in specific channels, So far, a total of 71 KHz of spectrum has been permitted by OFCOM spaced over 11 channels, one of the highest allocations across Europe, and considerably more than the USA. The danger of working outside a channel was addressed later in 2013 by the RSGB which now gives guidance on setting the carrier frequency. The channelled nature of this allocation has some interesting consequences.

Channel allocation

The allocations at 5 MHz were issued on a secondary basis by the Licensing Administration of most NATO countries, and this continues to be the case. An unfortunate consequence of this is that the channels are not always the same, which can result in illegal operation when calling some of the European countries which have differing allocations.

New spectrum approved by WARC November 2015.

The IARU delegation at the World Radio Conference in November 2015 has negotiated world-wide acceptance of a new allocation of an amateur band at 5MHz. This was a breakthrough and only won after some stiff opposition from various countries including Australia, USA and the Russian Federation.

This will be introduced in the UK by OFCOM, the IARU specifies January 2017 though this is yet to be confirmed.

Although the 15kHz that has been agreed at ITU level is a very small international allocation, this is the first new allocation to the amateur services at HF since the WARC of 1979.

The sector 5351.5 - 5366.5 kHz is to be made a Global allocation. As this overlaps with the existing UK slots between 5354 to 5374.5 kHz it will result in, at least in the UK, a contiguous spectrum of 23 kHz

This increase will make 60 metres much more lively as existing channels in the UK are not necessarily replicated elsewhere and, indeed, the USA and Canada currently have a very narrow allocation which results in 'cross the pond' QSO's requiring cross-band operation.

However, there is a complication in that the 15 kHz is restricted to 15 watts EIRP, and overlaps with the 200 watt EIRP currently allowed in the existing UK channels. Hopefully the MoD will not want these channels normalised to the ITU agreement!

Finally a health warning to Data Enthusiasts....

5 MHz – out of band transmission in JT65 and JT9 modes

It is understood that software commonly used by UK licensees for the production of signals in both modes uses a default preset frequency of 5.357MHz (JT65) or 5.359MHz (JT9) in the 5 MHz band.

After applying the audio offset to the AFSK signal in JT65 mode, using these presets will, in the majority of cases, cause the transmission to fall outside of the upper band edge of the UK allocation of 5.354MHz to 5.358MHz. In the case of JT9, if the default of 5.359MHz is used all transmissions will be outside of the UK allocation. Users of these modes are requested to check that their transmissions fall within the allocated spectrum.

Some URL's about the 5 MHz band

<http://rsgb.org/main/operating/band-plans/hf/5mhz/>

<http://60metersonline.com/resources.html>

<http://rsgb.org/main/operating/band-plans/hf/5mhz/>
W8GEX@aol.com W8GEX 60m Newsletter. - worth signing up for.

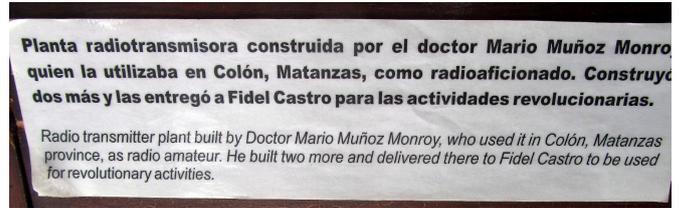
<http://www.iaru-r1.org/index.php/3-news/newsflash/1492-new-band-at-5-mhz>



Who was CO5MM ?



Peter G4EOW and Cathryn have recently returned from a holiday in Cuba and, while visiting Havana, they took a number of interesting photos in the Revolution Museum.



The associated sign advises the equipment was constructed by Doctor Mario Muñoz Monroy and delivered to Fidel Castro. So who was Doctor Mario ?

QRZ.com merely advises CO5MM became a 'silent key' in 1953, but a little research on the web provides a great deal more information.

Mario Muñoz Monroy was a Cuban doctor of medicine who had leftist ideals, and who joined the revolutionary movement against the dictatorship of the Batista regime.



The pictures show what appears to be interesting vintage homebrew amateur radio equipment. One picture clearly shows the callsign CO5MM.



Mario had many hobbies, but he was also a radio amateur and it would appear he constructed a number of items of communications equipment which were supplied to Che Guevara, Fidel Castro and other revolutionaries for use in their fight.

He was involved with the assault on the Moncada Barracks in the town of Santiago de Cuba and spent a lot of time treating the wounded. He was later captured by the soldiers, beaten and shot in the back. He died on 26th July 1953.

The last house where Doctor Mario lived is now known as the 'Museum of the Martyrs' where he is remembered with the many other revolutionaries who died during and after the assault.



A Home-brew QRP Auto-ATU

Richard Harris G3OTK

Commercial auto-ATUs usually require a few watts of RF power to tune and so may not work with QRP transceivers. I needed an ATU to use with my 3W output home-brew 80m and 40m QRP CW transceivers and thought it would be a useful exercise to make a QRP auto-ATU. I like to have control of hardware and software design so that I can fault find and also add new features later.



Commercial auto-ATUs often use an L-network to match a wide range of impedances to the transmitter. Fig.1 shows the principle of the L-match. The variable capacitor can be switched between the input and the output sides so as to cope with load resistances above and below 50 Ohms.

Although there have been auto-ATUs constructed with servo driven variable capacitors and inductors, commercial auto-ATUs for amateur radio applications use relay switched inductors and capacitors in binary steps. I did not need an ATU that covered the whole of the HF band and decided that 32 binary capacitor and inductor steps would be adequate. These are shown in Fig 2. The inductors are wound on T50-6 dust cores. The capacitors are NPO ceramic types, in several instances two in parallel to make up the required value. Each 12V relay coil is driven by a MOSFET buffer.

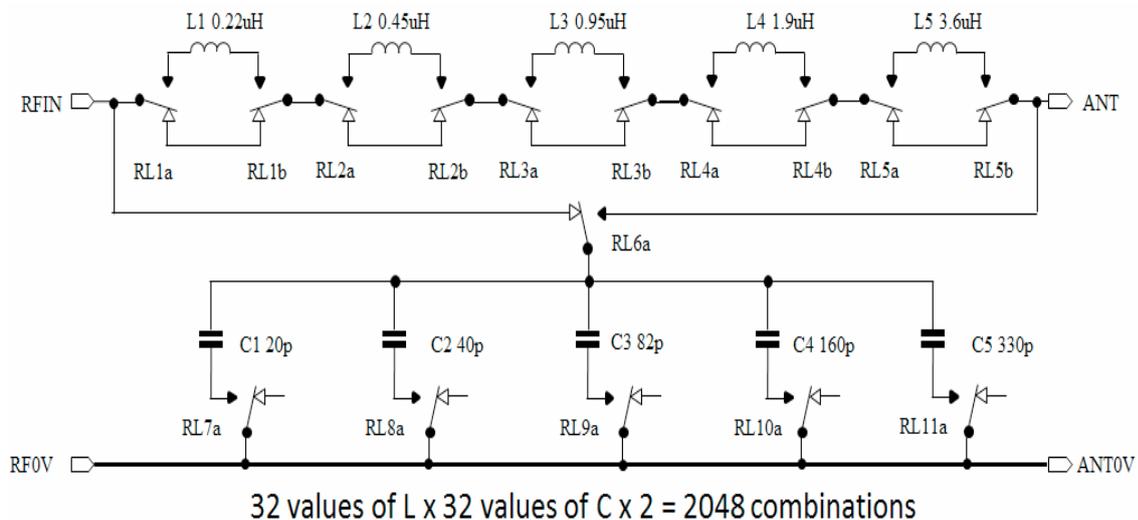


Fig. 2. Relay switched capacitors and inductors



A peek into the G3HRH Shack



144 MHz and 432 MHz amps



Main Racks HV PSU on lower left



Ray says QRZ.com has more detail



Right Hand Main Rack showing 50 MHz amp

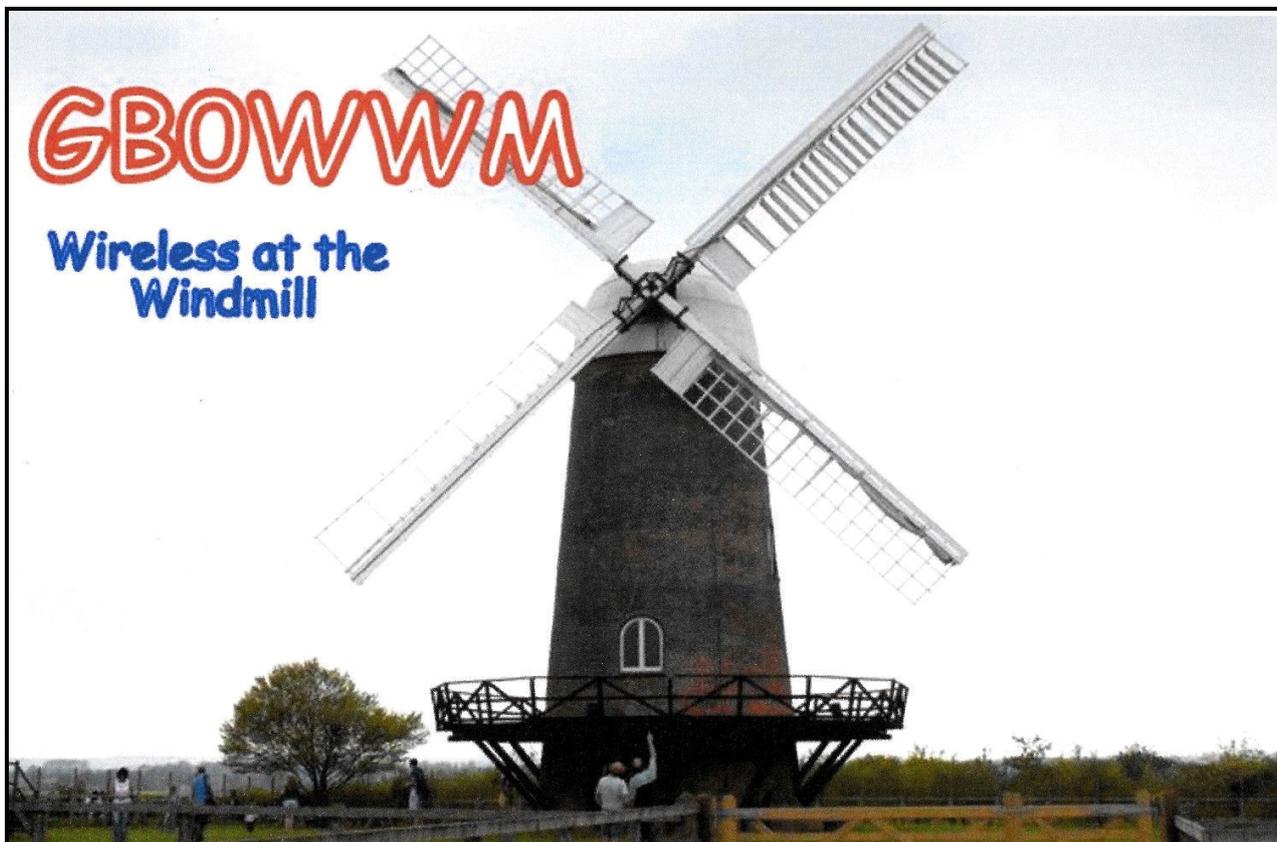


New HF Shack above

23 cms set-up to left



Old HF set-up



Over August Bank holiday weekend Colin G4GBP, Ken G1NCG, Ray G3HRH and friends operated Special Event Station GB0WWM from Wilton Windmill, near Marlborough in Wiltshire.

The Windmill is fully operational, grinding flour from local sources and being sold both on site and to local bakers. The station was operated from a Shepherd's Hut which acts as classroom and cafeteria and of course 'Radio Shack'.

We had activated the Windmill during May as part of 'Mills-on-the-Air' and were invited back by the Trustees to run 'Wireless at the Windmill' as a fun event for us Amateur Radio enthusiasts and for members of the public to join in and see what we do.

Our working conditions: The half-sized G5RV and a 20m vertical dipole were hung between two 40' push up masts, one with a 2m collinear atop. Inside the Shepherd's Hut we used a Yaesu FT-840 with MFJ Tuner for HF and a Yaesu FT-897 for local 2m work. We were joined on the Sunday and Bank Holiday Monday by Ray G3HRH with his Discovery and his /P kit for 2m SSB.

HF conditions on the Saturday were bleak to say the least with only about seven contacts in the log, but with our many amateur friends as visitors we were able to have excellent 59 conversations around the tea pot!

Thankfully Sunday was a better day on the radio with about a further seventy contacts in the logbook. Again we had a number of visitors, both fellow amateurs and many members of the public who took great interest in what we were doing. Ray G3HRH was beavering away on his 2m SSB rig making more contacts. I do not 'go for numbers' in the logbook, preferring a more relaxed approach and taking time to talk to others about our operation.

Most of the HF work was on 40m with a few 20m contacts all UK & European – totalling 91 for the weekend and 31 contacts on 2m SSB.

Thanks to all who came and visited us, licensed or not and to the members of the public who made it such a Special Event!

Colin G4GBP

Churches & Chapels on the Air comes to St. Mary's at Fordingbridge



The rain stopped just in time for my arrival at St. Mary's, Fordingbridge. The first job is to lay out the aerals on the ground to work out where the supports (usually masts) need to be placed. This time things would be different. I was met by the ever enthusiastic Reverend Canon Gary Philbrick, keys in hand for a trip to the top of the Church Tower via the small and winding staircase. The view from the top of the tower was breath-taking as was the climb up the narrow spiral staircase!



Aerial suspended from church tower

Our aerial was to use the tower as a support for one end, I would later erect one of the 40' masts for the other. St.

Mary's has to be one of very few churchyards that has a 63A 2P+E power supply connector between two grave stones, so electric power was not a problem! Just as we were about to start transmitting, Gary and a number of cyclists stopped in front of us, they were taking part in a sponsored 'Ride & Stride' exercise, visiting all of the Churches within the local benefice.

We had the usual arrangement of half-sized G5RV for HF & a 2m collinear for VHF. HF conditions were not brilliant so there were only a handful of 'G' stations throughout the day but plenty of GI, EI, GM & near continental stations worked.

The operators for the day were: Ken G1NCG, Ray G3HRH and myself. We were visited by a number of licensed Amateurs and many members of the public.

When the cyclists returned I was able to make a radio connection with GBOSBC - Scarfskerry Baptist Church at Scarfskerry near Thurso, right at the top of Scotland. Gary took the microphone and passed greetings messages to all the people present at the Skarfskerry site to the delight of all of our onlookers.



G3HRH operating with G3NVB hiding to right

Colin G4GBP