

COULSDON AMATEUR TRANSMITTING SOCIETY  
**G4FUR**  **M1FUR**  
**CATS WHISPERS**



**April 2014**



Affiliated to the RSGB

### **CATS Committee**

Chairman: Stuart Barber, G6CJR  
Secretary: Steve Beal, G3WZK  
Treasurer: Steve Conway, G7SYO  
Members: Glenn Rankin, G4FVL  
Andy Briers G0KZT  
Dennis Noe, M0NDJ  
Vacancy

**CATS Whispers Editor:** Steve Beal, G3WZK  
email address for contributions: [newsletter@catsradio.org](mailto:newsletter@catsradio.org)

### **Regular Society Meetings**

These are held on the second Monday of each month at:  
St. Swithun's Church Hall, Grovelands Road, Purley, Surrey, CR8 4LA at 20:15 to 22:15

### **Society Nets**

1st Saturday of month - 17:15 - Crescenta Valley / CATS Net on Echolink/ GB3NS  
Sunday mornings - 11:00 - Call on 145.400 MHz  $\pm$  QRM  
Sunday evenings - 17:00 - Call on 3.700 MHz  $\pm$  QRM  
Wednesday evenings - 21:00 - Call on 70.425 MHz

### **CATS Website**

[www.catsradio.org](http://www.catsradio.org)

### **Email**

[enquiries@catsradio.org](mailto:enquiries@catsradio.org)

### **Forthcoming Meetings**

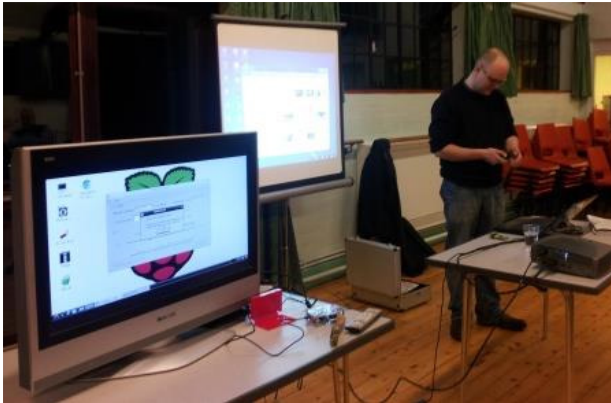
Monday Apr 14 Talk "Bill Basie and the Sky Waves" by Colin G3YCR  
Monday May 12 Talk on Propagation by Mike of Alton Antennas  
Monday June 9 Direction Finding Hunt by M0NDJ



CATS is twinned with the Crescenta Valley Radio Club  
Glendale California USA [www.gsl.net/cvrc](http://www.gsl.net/cvrc)

# CATS March Meeting

The subject of the CATS March meeting was a talk about the Raspberry Pi. It was kindly given by Chris Howard M0TCH (previously 2E0CTH.)



Chris M0TCH prepares to give his talk

Chris began by explaining some of the history of personal computing, beginning with devices like the Sinclair ZX81 and the Commodore 64, through to the present era where most people have a PC or a laptop. Modern machines have vastly more computing power than the ZX81 for example, but no longer enable users to undertake programming at home or in the classroom.

It was therefore in 2006 that a group of academics at Cambridge University formed the “Raspberry Pi Foundation”, to develop a credit card sized computer on which schoolchildren would be able to experiment with programming. The model B Raspberry Pi was launched in 2012 with a simpler version – model A – coming out in February 2013. The device is so successful that by November 2013 a total of 2 million units had been shipped. A brief comparison of the two models is given below:

Pi Model A	Pi Model B
Typical cost £24	Typical cost £30
256 MB RAM	512 MB RAM
1 USB socket	2 USB sockets
Power consumption 2.5 W	Power consumption 3.5 W
No Ethernet socket	1 Ethernet socket

Principal features of the Raspberry Pi include:

- Micro USB socket for power connection
- SD card for storage of operating system, software and data
- RCA socket for output to a TV (some models have an HDMI socket)
- 10/100 Mbit/s LAN capability
- 2 USB ports – these can be expanded by

using a USB hub which should be mains-powered

- 3.5 mm audio out socket – there is no audio-in facility unless a USB sound card is added
- CPU is a 700 MHz ARM processor
- Graphic processor with HD TV capability

The operating system is slower than Windows but various operating systems are available including Raspian (the most popular), Arch Linux and RISC OS.



A Raspberry Pi

To turn a basic Raspberry Pi into a useable device the following needs to be added:

- USB keyboard
- USB mouse
- USB PSU with micro USB connector
- cables
- USB powered hub
- USB WiFi adaptor
- USB sound card

In practice, it is easy to use the Pi to teach/learn programming using the “Scratch” programming tool – which is ideal for children. Chris demonstrated a simple program he had written that caused an LED to flash all the letters of the alphabet (A, B, C ... etc) sequentially in Morse code. For this, Chris made a connection to the Pi’s general purpose input/output bus for plug-in devices.

Chris then demonstrated how the Pi can be used for decoding PSK transmissions. For this he had pre-recorded the audio of a PSK signal. The screen showed a classic “waterfall” and the message decoded by the Pi was clearly visible in the on-screen text window.



An audience of CATS members and visitors

The low power consumption of the Pi means that it is ideally suited to continuous-use-applications such as 24-hour recording of temperature. The Pi has the ability to be remotely controlled over a network from a PC and in such cases the Pi would not need to have its own screen. Other applications include media server, programming (using Scratch or Python) and control of high altitude balloons.

Amateur radio applications include: Digimodes, APRS gateway, rig control, rotator control, WSPR, D-Star DVAP, SDR (eg using a TV DVB dongle), or use as a remote receiver.



A TV dongle of the type that could form the basis of an SDR (software defined radio) when use with a Raspberry Pi

The Pi is readily available from suppliers such as RS, CPC and Maplin. Various accessories are available including:

- Break-out boards
- Cases
- Cameras

After a break for refreshments, Chris showed us a number of videos that demonstrated the Pi's use in practical situations:

- Rig control.
- Control system for a high altitude balloon including temperature and altitude sensors, TV camera, APRS, GPS.
- Microwave oven control. Using a bar code scanner, the Pi looks up cooking instructions for a packet of food/ingredients and sets the microwave to the correct time and power level. This video featured the creation of an appetising Raspberry Pie

from basic ingredients!

- Mini games console.
- Using SiriProxy to open and close a garage door. See: <http://www.raspberrypi.org/archives/tag/siriproxy>
- Southampton University's project to demonstrate the principles of supercomputer operation by connecting sixty-four Raspberry Pi's together. They use Message Passing Interface (MPI) to share the processing load between the Pi's and, intriguingly, all the modules are mechanically supported on a framework using Lego! See: <http://hackaday.com/2012/09/12/64-raspberry-pis-turned-into-a-supercomputer/>

Other websites of use include:

- <http://www.themaqpi.com/>
- <http://www.raspberrypi.org/>
- <http://pi beginners.com/>



Chris M0TCH answering questions after his talk

Overall this was a fascinating evening with a good mix of technical content and fun. Thank you, Chris!

*Editor's Note: Chris' talk certainly inspired me to buy one of these – and I know I'm not the only CATS member to do so!*

## CATS April Meeting

This will be a talk entitled "Bill Basie and the Sky Waves" by CATS member Colin G3YCR. Colin says, "No, this isn't about the latest boy band, but is the story of how one of America's greatest big bands and its leader were discovered because of ionospheric propagation."

This talk will include a number of recordings that uniquely combine two of Colin's great interests: Jazz and Radio. The date for your diaries is 14th April 2014.

## CATS May Meeting

In May, Mike Parkin returns to CATS to present another of his fascinating talks. This time the subject will be Propagation. It'll cover both Tropospheric Propagation ("Tropo") as well as Skywave Propagation with everything you need to know about 'A' factors, 'K' values and sunspot counts. Mike also plans to include a piccie or two of a few sunspots as observed from his back garden.

The date for your diaries is May 12<sup>th</sup> 2014.

## CATS June Meeting

This will be a DF Hunt. Further details will be sent to members nearer the event.

The date for your diaries is June 9th 2014.

## My Introduction to WSPR by G0KZT

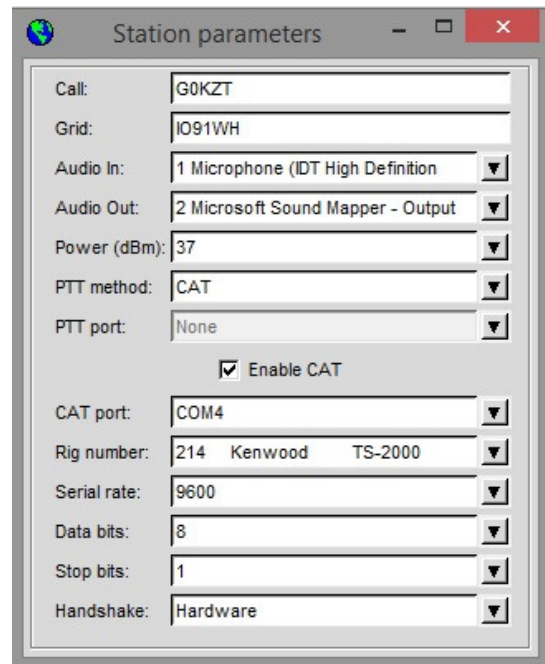
Recently, while driving past the QTH of G4FKK, I popped in and found Martin using WSPR. I'd never really heard about it before. Following a brief demonstration, I set about downloading the software when I got home to have a try. WSPR (pronounced "whisper") stands for "Weak Signal Propagation Reporter." The program was written by Joe Taylor K1JT and was released in 2008. It is designed for sending and receiving low-power transmissions to test propagation paths on the MF and HF bands. Users with internet access can watch results in real time at [WSPRnet](http://WSPRnet).

The software is easy to install. It is possible to also control your transceiver, both by frequency and PTT. If you already have your gear wired to the sound card of your shack PC, you should be up and running in no time.

The set-up is easy too. Your call sign, IARU locator and power (in dBm) make up the data that will be transmitted. The other parameters control the audio I/O and the rig control.

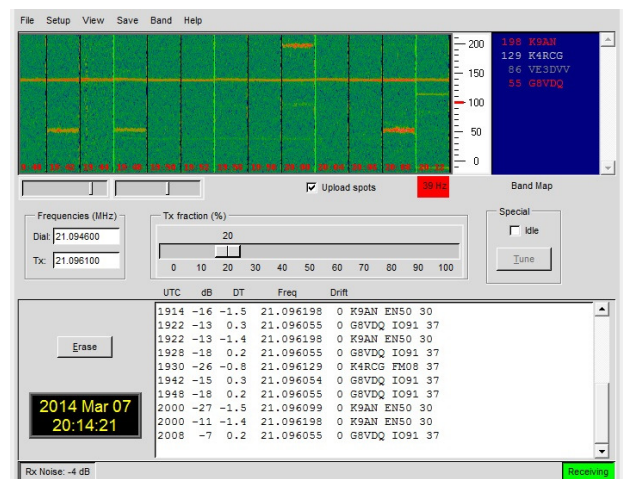
Setting the audio level is both important and simple. You are looking to set the level so the box in the lower left-hand corner reads RX Noise 0 dB. At levels above 10 dB the box turns red to remind you to back the gain off. The transmissions are 2 minutes long (and an accuracy of 1 second is required from the PC

clock). The software decodes the data so that the signals heard are displayed as a horizontal waterfall with call signs in the box at the bottom. The blue box shows which "channel" the station was transmitting on.



Don't get confused like I did with the dial and TX frequency. The software controls the offset and if you have it CAT controlled, the rig is already tuned to the correct frequency for the band selected.

The "Special" box if selected, allows you to tune your audio level without sending your data.



The TX Fraction controls the periodicity of your transmissions. 20% equates to about 1 transmission every 8 minutes.

It is also possible to automatically upload your heard stations to the WSPRNet website if you are connected to the internet. This is where

you would check to see where you have been heard. The beauty of the software is that there is no human input involved. Basically sit back and relax!

I was very surprised where my signals were being heard, bearing in mind that I am only transmitting 5 watts (which appears to be the norm). Please see page 8 of this issue of CATS Whispers for a list of my top spots. It shows both spots that I made and those made by stations hearing me. While this list is only an edited sample of what you would find on the website, the information received makes great reading. The column that attracts my eye the most is the distance column. I have shown my furthest one at the bottom; CX2ABP who reported my signals on 10 metres at a distance of 11030 km. Leaving the rig running over a longer period will show more clearly openings on the chosen band. And of course, this data can be viewed by anyone using the website.

Why leave your gear sitting idle when it can be put to use reporting the propagation on the HF bands? The website lists all the spot frequencies including 6m, 2m, 70cms and 23cms. More information is available from either:

<http://physics.princeton.edu/pulsar/K1JT/wspr.html>

or:

<http://wsprnet.org/drupal/>

(which is also where you visit to view your spotted information.)

I plan to have it running during the Play weekend in August if anyone would like a practical demonstration. By the way, preparations continue for this event and the location has now been booked. The date for your diaries is August 1/2/3 2014.

73 de Andy G0KZT

## QST Available

Paul G8KDQ has seven bound volumes of QST magazine that are available free to anyone willing to provide them with a good home.

*The issues in question are:*

July 1939 to December 1939  
 January 1940 to June 1940  
 July 1940 to December 1940  
 January 1941 to June 1941

July 1941 to December 1941  
 January 1942 to June 1942  
 July 1942 to December 1942

If interested, please contact Paul on 01883 620360 to arrange collection.

## Contests Coming Soon

<u>Tuesday Activity Activity</u> <u>Contests 2014 – all begin at</u> <u>8pm local time</u>	
Apr 15	23 cm
Apr 22	6 metres
Apr 29	4 metres
May 6	2 metres
May 13	70 cm
May 20	23 cm
May 27	6 metres
Jun 3	2 metres
Jun 10	70 cm
Jun 17	23 cm
Jun 24	6 metres
Jul 1	2 metres
Jul 8	70 cm
Jul 15	23 cm
Jul 22	6 metres
Jul 29	4 metres

## Other Contests

Apr 13: First 50MHz Contest  
 Apr 16: 80m CC SSB  
 Apr 24: 80m CC DATA  
 May 3/4: May 432MHz-248GHz Contest  
 May 3: 432MHz Trophy Contest  
 May 3: 10GHz Trophy Contest  
 May 5: 80m CC SSB  
 May 11: 70MHz Contest CW  
 May 14: 80m CC DATA  
 May 18: 1st 144MHz Backpackers  
 May 22: 80m CC CW  
 May 25: 70MHz Cumulatives #3  
 Jun 2: 80m CC DATA  
 Jun 7/8: NFD  
 Jun 8: 2nd 144MHz Backpackers  
 Jun 11: 80m CC CW  
 Jun 19: 80m CC SSB  
 Jun 21/22: 50MHz Trophy Contest  
 Jun 29: 50MHz Contest CW  
 Jun 29: 70MHz Cumulatives #4  
 Jul 5/6: VHF NFD  
 Jul 6: 3rd 144MHz Backpackers  
 Jul 7: 80m CC CW  
 Jul 16: 80m CC SSB  
 Jul 20: 70MHz Trophy Contest  
 Jul 20: Low Power Contest  
 Jul 24: 80m CC DATA

Jul 26/27: IOTA Contest  
Aug 2: 144MHz Low Power Contest  
Aug 2: 4th 144MHz Backpackers  
Aug 3: 432MHz Low Power Contest  
Aug 3: RoPoCo CW  
Aug 10: 70MHz Cumulatives #5  
Aug 13: 80m Club Sprint CW  
Aug 28: 80m Club Sprint SSB

## **Local Rallies & Events**

**13 April 2014**

### **West London Radio & Electronics Show**

Kempton Park Racecourse.  
Open 10:00. Parking, trade stands, catering, disabled facilities.  
Contact [info@radiofairs.co.uk](mailto:info@radiofairs.co.uk)  
*NOTE: CATS involvement in this event. The CATS bring and buy sale is a permanent feature of this rally.*  
[www.radiofairs.co.uk](http://www.radiofairs.co.uk)

**18 May 2014**

### **29<sup>th</sup> Dunstable Downs RC National Amateur Radio Car Boot Sale**

Stockwood Park, Luton, M1 J10  
Open 09:00. Talk in on S22  
[www.ddrcbootsale.org](http://www.ddrcbootsale.org)

**15 June 2014**

### **27<sup>th</sup> Newbury Radio Rally & Boot Sale**

Newbury Showground, M4 J13.  
The Rally takes place at one of the biggest showgrounds in the south of England.  
Newbury Showground is located right next to junction 13 of the M4 Motorway.  
Nearest Post Code: RG18 9BB  
Open 09:00. Free parking, trade stands, catering, disabled facilities.  
Contact [rally@nadars.org.uk](mailto:rally@nadars.org.uk)  
[www.nadars.org.uk/](http://www.nadars.org.uk/)

### **22 June 2014 East Suffolk Wireless Revival**

The Ipswich Radio Rally  
Orwell Crossing Lorry Park  
A14 Eastbound, Nacton  
Ipswich, Suffolk IP10 0DD  
Open 09:30  
Car Boot Sale, Bring & Buy Sale, Special Interest Radio Groups, Local Radio Clubs, RSGB Bookstall, UK Microwave Group, Vintage & Military ARS  
Live Radio Demonstrations, Excellent Food and Facilities, Easy Parking, GB4SWR - HF Radio Station GB4SWR - Talk-in on 145.550MHz  
Contact Steve, M1ACB 07711-329624  
[www.eswr.org.uk](http://www.eswr.org.uk)

**27-29 June 2014**

### **39<sup>th</sup> Hamtronic Show, Friedrichshafen**

Messe Friedrichshafen, Germany  
Open 09:00 each day

- 63rd DARC Lake Constance Meeting
- with lectures and meetings
- HAM RALLYE - Friday and Saturday
- HAM tent camp
- HAM NIGHT - Saturday

[www.hamradio-friedrichshafen.de/ham-en/index.php](http://www.hamradio-friedrichshafen.de/ham-en/index.php)

**6 July 2014**

### **Norfolk ARC Barford Radio Rally**

Barford Village Hall  
Barford 9 miles SW of Norwich close to A11 and A47  
Open 09:00 (traders from 8am), CP, TI, CBS, B&B, C, TS, RSGB Bookstall, Demos.  
Contact: David G7URP 01953 457322 or  
[radio@dcpmicro.com](mailto:radio@dcpmicro.com)  
[www.norfolkamateurradio.org](http://www.norfolkamateurradio.org)

**13 July 2014**

### **McMichael Rally & Boot Sale**

Reading Rugby Club Holme Park Farm Lane, Sonning Lane (B4446), Sonning on Thames, Reading. RG4 6ST off A4 east of Reading  
Open 09:30.  
Large Boot Sale on Level Site  
Special Interest Groups - Special Interests McMichael Radio Owners  
Demonstrations & Lecture  
Catering Services  
Plenty of Parking Areas with Disabled special parking on level ground.  
Easy access from Reading & A4, A329(M) and M4  
First Aid Post  
Talk in Station on VHF  
Parking, trade stands, catering.  
Contact: Pete G8FRC 01189 695 697  
[www.mcmichaelrally.org.uk](http://www.mcmichaelrally.org.uk)

**25-27 July 2014**

### **Amsat Colloquium**

Holiday Inn Guildford GU2 7XZ  
Networking  
Speakers  
Gala dinner  
[www.amsat-uk.org/colloquium/colloquium-2014/](http://www.amsat-uk.org/colloquium/colloquium-2014/)

**10 August 2014**

### **Flight Refuelling Hamfest**

Cobham Sports and Social Club Ground, Merley, Nr. Wimborne, Dorset BH21 3AA  
Open 10:00  
Large marquees  
Radio, computing, and electronics traders  
Also art and craft stalls.  
Car boot sale.  
Ample free parking  
Food and Drink, Licensed bar  
Overnight On-site Camping  
Talk-In on 145.550MHz FM  
Entrance Fees Adults £3.50 Under 14's free  
Contact: 07773 157356 (eves only)  
[hamfest@frars.org.uk](mailto:hamfest@frars.org.uk)  
Further information: [www.frars.org.uk](http://www.frars.org.uk)

**24 August 2014**

### **Milton Keynes 53<sup>rd</sup> Amateur Radio Society Rally**

Longueville Hall, Hammond Park, Whaddon Road  
Newton Longville, Milton Keynes MK17 0AT  
Free on-site parking  
Large indoor space  
Dogs allowed  
Inside catering  
A bar  
Car boot area  
Large outdoor space  
Toilets/shower area  
Open 09:30  
Entry £2.  
Contact: Steve 07866 673192 or  
[www.mkars.org.uk](http://www.mkars.org.uk)

**23 November 2014**  
**CATS 37th Annual Radio and**  
**Electronics Bazaar**

**Provisional arrangements as follows:**

1st Coulsdon Scout Group headquarters, Lion Green  
Road in Coulsdon, Surrey. [Map](#)  
Open 10:00 to 13:00  
Parking, trade stands, bring and buy, refreshments  
Contact: [enquiries@catsradio.org](mailto:enquiries@catsradio.org) or  
[www.catsradio.org](http://www.catsradio.org)

## **Other Club News &** **Contact Information**

### **BROMLEY & DISTRICT ARS**

**Website:** [www.bdars.org.uk/](http://www.bdars.org.uk/)

**Email:** [info@bdars.co.uk](mailto:info@bdars.co.uk)

**Meetings:** 3rd Tuesday of every month at Victory Social  
Club, Kechill Gardens, Hayes, Kent, 19:30 for 20:00.

**15 Apr** - Club project 1 - BDARS portable event for the  
summer

**20 May** - How to put a mast up, from simple to large

**17 Jun** - DF Hunt

**15 Jul** - Intermediate level mentoring - Q&A session

**19 Aug** - Summer BBQ and social

### **CPREC (CRYSTAL PALACE)**

**Website:** [www.qsl.net/g3oou/](http://www.qsl.net/g3oou/) or <http://www.g3oou.co.uk/>

**Club Net:** Wednesdays 20:00 on 145.525 MHz

**Meetings:** 1<sup>st</sup> Friday at All Saints Church Parish Rooms,  
Beulah Hill at 19:30

**4 Apr** – TBA

**2 May** – Op Amps by Garth G3NPC

**6 Jun** – SDR by Professor Norman Billington

How valves work by David Smith

**4 Jul** - TBA

### **CRAWLEY ARC**

**Website:** [www.carc.org.uk](http://www.carc.org.uk)

**Club Nets:** Tuesdays 20:00 on 145.550 MHz and  
Fridays 19:00 on 1.970 MHz

**Meetings:** Every Wednesday at Hut 18, Tilgate Forest  
Recreational Centre, Tilgate Forest, Crawley from 19:30,  
and Sundays, 10:30 to 13.00.

**23 Apr** - Used Equipment Sale

### **CRAY VALLEY RS**

**Website:** [www.cvr.org](http://www.cvr.org)

**Contact:** Lawrie Atkinson G4FAA. (see website)

**Club Nets:** Wednesdays 21:00 on 145.500/QSY and  
22:00 on 3.720 ± QRM, and Sundays 11:00 on 3.720 ±  
QRM

**Meetings:** 1<sup>st</sup> and 3<sup>rd</sup> Thursdays at 1st Royal Eltham  
Scouts HQ, Rear of 61 - 71 Southend Crescent, Eltham,  
London, SE9 2SD.

**3 Apr** - Maritime Satellite Communications

**17 Apr** - AGM

### **DORKING & DISTRICT**

**Website:** <http://www.ddrs.org.uk>

**Email:** [ddrs.secretary@yahoo.co.uk](mailto:ddrs.secretary@yahoo.co.uk)

**Contact:** George Brind, G4CMU

**Club Nets:** Sunday 08:15 on 3.770 MHz & Thursday  
20:00 on 144.775 MHz

**Meetings:** Friends Meeting House, Butterhill, South  
Street Dorking at 19:30.

**22 Apr** - Club evening at Martin Lynch (7 - 9pm)

**27 May** - A practical evening (3 activities)

**24 Jun** - ATV Noel Matthews G8GTZ

**22 Jul** - South Downs evening

**tba Aug** - Social evening

### **HORSHAM ARC**

**Website:** [www.harc.org.uk](http://www.harc.org.uk)

**Club Nets:** Saturdays 21:30 on 144.725MHz and  
Sundays 10:00 on 3.722 MHz

**Meetings:** 1<sup>st</sup> Thursday at The Guide Hall, Denne Road,  
Horsham, Sussex

**3 Apr** - Titan Missiles, A DVD presentation by Phil,  
G4UDU

**1 May** - Concorde - Jock Reid

**2-6 May** - HARC - French/Belgian Weekend -TBA

**29 May** - Thursday Evening Fox Hunt - G4LRP

**5 Jun** - An Update on Antennas Small and Large - Prof.  
Mike Underhill, G3LHZ

**3 Jul** - How Not to Do It! - John Narborough

**17 Jul** - Thursday Evening Fox Hunt

**7 Aug** - Tony Crake - BBC Outside Broadcasts Part 3

### **SRCC**

**Website:** [www.g3src.org.uk](http://www.g3src.org.uk)

**Contact:** John Kennedy G3MCX, 020 8688 3322

**Club Nets:** Sunday 09:30 on 1905 kHz

Daily natter channel – 144.215 MHz at 19.30.

**Meetings:** 1<sup>st</sup> & 3<sup>rd</sup> Mondays at Trinity School, Shirley  
Park, Croydon CR9 7AT 19:45 for 20:00

**7 Apr** – AGM

**12 May** – DIY Solar Hot Water by Les G7VML

**16 Jun** – Understanding the G5RV by Alton

Antenna Arrays

**7 Jul** – BBQ

**4 Aug** – The Crystal Palace Story 1851 - 1936

### **SUTTON & CHEAM RS**

**Website:** [www.scrs.org.uk](http://www.scrs.org.uk)

**Contact:** John Puttock G0 BWV 020 8644 9945

**Club Nets:** Monday 20.00 on 145.500 MHz

Saturday 11.00 on 145.500 MHz

**Meetings:** 3<sup>rd</sup> Thursday at Sutton United Football Club,  
The Borough Sports Ground, Gander Green Lane,  
Sutton. 19:30 for 20:00

**17 Apr** – Easter Island DXpedition' by John Warburton  
G4IRN

**15 May** – AGM and constructional contest

### **WIMBLEDON & DISTRICT ARS**

**Contact:** Andrew Maish G4ADM

020 8335 3434

andrew.maish ATntlworld.com

**Club Net:** Mondays 20:45 on 145.500 MHz

**Meetings:** 2<sup>nd</sup> & last Friday of each month at  
Martin Way Methodist Church, Buckleigh Avenue, Merton

**11 Apr** - Shack Layout Discussion - Mary 2E0FMM

**25 Apr** - Surplus Sale

**9 May**

**30 May** – G3DWW talk

**13 Jun** - Talk and demonstration of the R210 and RBZ  
receivers by Len Stuart and Dick Shanahan

**27 Jun** - WDARS talk to Merton U3A about Amateur  
Radio 2014

**11 Jul** - Summer camp preparation evening

**25 Jul** – Summer camp starts 3<sup>rd</sup> August

**8 Aug** – No meeting

**29 Aug** – No meeting

CATS Whispers is published monthly by  
S J Beal G3WZK on behalf of the  
Coulsdon Amateur Transmitting Society. © CATS 2014

# LIST OF WSPR SPOTS REPORTED TO/BY G0KZT

Please see pages 4/5 of this issue of CATS Whispers for more information. The column headed "az" is the bearing (in degrees) of the receiving station from the transmitting station.

Timestamp	Call	MHz	SNR	Drift	Grid	Pwr	Reporter	RGrid	km	az
2014-03-01 12:48	RA9CUA	28.126134	-10	0	MO07qc	5	G0KZT	IO91wh	3911	288
2014-02-28 11:00	PD1JFW	28.126198	-24	0	JO33kd	5	G0KZT	IO91wh	518	250
2014-03-01 13:26	OZ7IT	28.126180	-27	-4	JO65df	5	G0KZT	IO91wh	932	247
2014-03-01 13:14	OH8GKP	28.126152	-16	-1	KP24rt	5	G0KZT	IO91wh	2098	237
2014-03-07 19:02	K9AN	21.096198	-15	0	EN50wc	1	G0KZT	IO91wh	6527	47
2014-03-01 13:52	K5XL	28.126188	-6	0	EM12kp	2	G0KZT	IO91wh	7682	42
2014-02-28 14:04	G8VDQ	28.126058	-10	0	IO91um	5	G0KZT	IO91wh	26	153
2014-02-28 10:20	G4FKK	28.126034	-9	-1	IO91wi	2	G0KZT	IO91wh	5	180
2014-03-07 18:18	G0KZT	21.096004	-32	0	IO91wh	5	OH7AZL	KP33on	2100	39
2014-03-07 18:10	G0KZT	21.096074	-3	0	IO91wh	5	N2NOM	FN22bg	5592	291
2014-03-01 11:22	G0KZT	28.126127	-13	0	IO91wh	5	FR5ZX	LG78pu	9693	130
2014-03-01 13:08	G0KZT	28.126131	-20	0	IO91wh	5	KB9AMG	EN52tx	6327	299
2014-03-01 13:58	G0KZT	28.126110	-12	0	IO91wh	5	KD4YDD	EM84ab	6724	289
2014-03-01 13:58	G0KZT	28.126153	-18	0	IO91wh	5	ND6M	EM55se	6929	293
2014-03-01 13:58	G0KZT	28.126110	-26	0	IO91wh	5	WV0P	EM04qs	7598	299
2014-03-01 13:58	G0KZT	28.126134	-11	0	IO91wh	5	KB9AMG	EN52tx	6327	299
2014-03-01 13:58	G0KZT	28.126125	-20	0	IO91wh	5	WA3ROM	EN58jk	5982	305
2014-03-01 13:58	G0KZT	28.126111	-9	0	IO91wh	5	K4COD	EM73sc	6832	288
2014-03-01 13:58	G0KZT	28.126117	-20	0	IO91wh	5	K3SIW	EN52ta	6398	298
2014-03-01 13:58	G0KZT	28.126179	-22	0	IO91wh	5	K4EH	EM73	6841	289
2014-03-01 13:58	G0KZT	28.126111	-6	0	IO91wh	5	K5XL	EM12kp	7682	297
2014-03-01 13:08	G0KZT	28.126121	-22	0	IO91wh	5	K3ZV	FM29nt	5698	288
2014-03-01 12:56	G0KZT	28.126127	-11	-1	IO91wh	5	FR5ZX	LG78pu	9693	130
2014-03-01 13:20	G0KZT	28.126131	-11	0	IO91wh	5	KB9AMG	EN52tx	6327	299
2014-03-01 11:22	G0KZT	28.126159	-24	1	IO91wh	5	KP4IA	FK68vj	6768	263
2014-03-01 13:58	G0KZT	28.126079	-18	0	IO91wh	5	WA5NGP	EM10cn	7898	296
2014-03-01 13:46	G0KZT	28.126127	-6	0	IO91wh	5	FR5ZX	LG78pu	9693	130
2014-03-01 11:22	G0KZT	28.126134	-26	-1	IO91wh	5	CX2ABP	GF15wc	11030	224