

Forthcoming programme

- Nov. 22 Introduction to the new Society Construction Project: SDR receiver Nov. 29 "I like my". Talk about it, or demo, or whatever.
- Dec. 6 Open evening—HF OTA– Committee meeting
- Dec. 13 Annual Christmas Dinner at Allscott Inn: Booking Form enclosed
- Dec. 20 Social and Games Evening at HQ. Last meeting until Jan.10 !
- Dec. 27 Club HQ Closed. 20:00 net on 144.60 (+/- QRM) and GB3TF
- Jan. 3 Club HQ closed. 20:00 net on 144.60 (+/- QRM) and GB3TF
- Jan.10 Open evening—HF OTA– Committee meeting
- Jan. 17 Club Construction Project—SDR (Software Defined Radio receiver)
- Jan.24 Video Evening. Any special requests ?
- Jan. 31 PIC evening led by Richard 'VXG and Dave 'EIX.
- Feb. 7 Open evening—HF OTA– Committee meeting
- Feb. 14 HQ closed. VISIT to Mid-Cheshire ARS, Cotebrook Village Hall, CW6 0JJ
- Feb.21 Under-a-Fiver Construction Competition. (Probably nearer a tenner these days.)
- Feb.28Home Electrical Installations & Safety by G0UFE and G4NKC
- March 7 Open evening—HF OTA– Committee meeting
- March 14 Main Construction Competition. Anything goeseven if not completed!
- March 21 TBA
- March 28 Annual General Meeting

CLUB MEETINGS EVERY WEDNESDAY AT Bank Road Community Centre, Bank Road, Dawley Bank. Rooms available from 7:30 pm. ALL WELCOME. COME AND MEET EVERYONE !

For Foundation & Intermediate training, contact Mike G3JKX tel: 01952 299677, mjstreetg3jkx@blueyonder.co.uk. Advanced course contact Eric M0KZB tel: 01743 240286, e.arkinstall@virgin.net, x or Mike G3JKX, as above.

Editorial

Our First TDARS Hamfest has come and gone—it seems ages ago now. We all know that it has been a great success, and has given us financial security once more. In particular, it will cover the rent for our Club premises at Bank Road for the coming year or so, and we can now make sensible purchases without worrying about immediate re-payment. For example, some souvenirs are available for Members to purchase (see elsewhere in this Newsletter), and we can now take the risk of buying in some stock to sell on to members—mugs for example and pin badges. Likewise we can once again afford to hire the Club room for Amateur Licence training, without having to cover 100% of costs, although the Committee has stated that these training sessions need to be mainly self financing. Luckily, by twisting arms behind backs (!), trainees usually become Members and thereby invest in a modest way to Club costs, and no doubt Mike 'JKX will continue to keep 'em coming.

The support on 'Rally Day' has always been crucial to the success of our Radio Rallies (and now Hamfest) - but none more so than this year. A quick count of the helpers as a proportion of TDARS membership shows that over 70% were there doing their bit for the Club. Nearly everyone else had good reasons for not being there (like living in Scotland - GM3YEW !). So, a very big THANK YOU is in order, and please come again on September 29/30th 2007.

Perhaps the e-mail sent out by Bob 'RJS the Monday after our event says it all quite succinctly... " I have always felt privileged and proud to be a member of our club but never more so than I did yesterday. I like that. Many thanks to all who made it possible."

Right—on with the Newsletter. About 15 E-mails this month related to its content. Thanks Bob'RJS, Robin 'MHU, Richard 'RKH, Richard 'VXG, Dave 'EIX, Mike 'AUZ.

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TDARS Information and pictures Web Site www.tdars.org (note:<u>no</u>.uk)

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Assistant Curator: Kevin Hutchinson G8UPF (01746 764556) QSL Manager : Malcolm 2E1DJM; Trophies/Certs: G3UKV, M1RKH

CLUB NET: SUNDAYS 144.600 FM AFTER 9 PM. GB3TF ALSO MONITORED FOR ANYONE NOT ABLE TO OPERATE ON 2 METRES.

ALSO FIRST WEDNESDAY IN MONTH AFTER 2000 HRS LOCAL TIME ON 3657 KHz +/- QRM.



- 回 A regular Club "49 squares" flutter is ready to go! Full details enclosed, together with a valid (toy-town) £25 note to spend as you wish. Valid for what and where, I'm not sure. You can buy any number of tickets any week to increase your chances of a win, and it will be administered usually by Jim. A new 49 square will be launched each time all the available 49 numbers are taken, so the first game may take a week or 6 weeks to complete-it all depends on you, the punters. Much better odds than the National Lottery ! Study the rules and ask a committee member if it's not clear.
- Early next year (February 14th) we are having a return visit to the Mid Cheshire 回 A.R.S. lads. They were made very welcome at our QTH back in September, and now we've been invited back to their meeting place, which is Cotebrook Village Hall, Stable Lane, Cotebrook, Cheshire CW6 OJJ. It's NE of Tarporley, just off the A49.
- The annual Christmas Dinner at Allscott Inn is booked for Wed. Dec.13th. After a 回 bit of negotiation, the price is the same as last year (£15) per person. About 30 of us were there in 2005, and as always the food and service was good. They always seem to find attractive young waitresses who assist Suzanne and Edward the hosts. There are several changes to the menu, and you can book a sirloin steak this year for a couple of guid extra. Note the menu includes vegetarian alternatives. Family and friends all welcome. Please complete a Booking Form ASAP, and send to me (Martyn) by post, e-mail or in person. Spare forms on the Club Noticeboard.

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There are really two **club construction projects** happening 回 at present. The first is a 'radio' project. About fifteen "Softrock" receiver kits have been purchased from the States. Cost approx. £10 each. These convert 20 metres, or 40/80 metre amateur bands to around 12 KHz, which is then processed by the stereo soundcard of a PC. This is Software Radio (SDR). Processing options are almost Defined unlimited. These units are the same as those sold by W&S for almost £30! Obviously, they will have some shortcomings at this price (eg overload—rather like a Direct Conversion RX), but it is the way things are going. It seems that SDR plus DDS (Direct Digital Synthesis) will see the days of the superhet numbered.... The second project is more individual, since following a talk by Dave G4EIX, a good number of Members have set their sights on being able to construct and program their own PICs (Programmable Integrated Circuits). Again, the possibilities are endless, and only limited by members' ingenuity and skill. A free PIC is available to members taking up the challenge, and Dave, plus Richard G0VXG will give as much support as necessary. This is an offer too good to refuse! More details from Dave next page of this Newsletter.

Menwood scheme "RSGB Affiliated Clubs Bonus Scheme.

You may have heard about this. Basically you have from now until end of March 2007 to take advantage of the scheme. It goes like this.....

i) Buy any Kenwood transceiver new from an appointed dealer.

ii) Photocopy receipt and send to Kenwood UK (Kenwood House, Dwight Road, Watford, Herts. WD18 98EB. Tel: 011923 655284).

iii) With the receipt and the rig's Serial No, nominate an RSGB Affiliated Club (ie TDARS). Give them Jim's address! (G8UGL)

iv) Kenwood then pays the nominated club 5% of cost price (net of VAT)

v) Scheme ends 31st March 2007; claims deadline end of May 2007.

For example, an HF Tcvr costing £1000 (excl VAT) would be worth £50 to TDARS, whilst a VHF/UHF handheld costing £200 (excl VAT) would still be worth £10 to the Club.

■ Here's some info. and references from Dave G4EIX re the PIC programmer, software and guidance.

"Here's a list of the references I sent before. Importantly for other interested members, it's **updated.** Things don't stand still! Following my talk on wed 25th Oct 2006 about PIC processors, here are some URLs to get members started. They point to sites and downloads that I have used or which give alternatives that look good.

There are many ways of getting to grips with the PIC, but it's advisable to build or buy the programming hardware. Collect your free TDARS PIC, set up the **burning software -** <u>icprog</u>, Burn a program into a PIC, then see it working.

If you want to write or modify programs, set up the <u>MPLAB</u> programming suite Learn how to modify a simple program. Learn the basics of how to program from scratch

Hardware programmers that I use. There are layout design, but the circuits are so simple;

RCD Programmer <u>http://feng3.cool.ne.jp/en/rcd.html</u> - easiest if you just want to use the 16F628A, but read the notes about modifying the circuit by deleting three connections.

JDM Programmer http://www.jdm.homepage.dk/newpic.htm (*recommended*)

I do have a design for a **USB programmer** that actually uses a PIC as the interface chip. I have all the details and software, but don't know anything more about it. I have not run the software and don't know which devices it will programme. The design has gone commercial now, but I have the (little) older original free design.

Burning Software to put **hex files** in the PIC. XP users need another driver as well. It's important to save the unzipped driver in the same folder as the **icprog** program. If you have NT/2000/XP there is a tricky setting up procedure and some alternatives.

IC-Prog <u>http://www.ic-prog.com/index1.htm</u> Driver for XP <u>http://www.ic-prog.com/icprog</u> driver.zip

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Software programming and simulation suite from microchip. The MPLAB version I'm using is 7.43, but this is no longer available. On **8 Nov 2006 the version went to 7.50** and I've not tried it yet. It's about 40MB in size for the full suite."

ID The <u>RSGB Club Calls contest</u> on 160metres was entered recently. It lasts just 3 hours, but 4 members managed 124 QSOs in that time, which hopefully will put us in the top ten when the results eventually come out. Thanks to Richard for the use of his premises down by the River Severn at Jackfield. The ops. were Martyn G3UKV, Derek G0EYX, Richard G0VXG and Dave G4EIX.

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TDARS SUBSCRIPTIONS FOR 2006-07—If you haven't paid, please contact Jim G8UGL : £29 normal, £15 Full-time student, £23 Concessionary non-earners.

Locating and Soldering SMD (Surface Mount Devices) on Circuit Boards

(notes culled from Richard G0VXG and Robin G1MHU)

During a recent Club meeting, the use of SMDs was mentioned in connection with assembling the Softrock SDR (club project) kits which will happen shortly.

Whilst most members are quite used to normal soldering of wire-ended components, rather fewer have soldered SMD components, which are really intended for mass-production, using machine assembly and solder-flow techniques.

The most common 'amateur' technique is to use something like a cocktail stick to push the component into position and then holding it in place with the stick and soldering with your other hand. Really you need a third hand. So Richard mentioned how he used a clothes peg assembly to hold SMDs in position whilst soldering with a fine iron. As a refinement, he also added a metallic probe which he could then use to make a temporary connection to a test point—for example, a particular pin on an IC. Surely worth a patent, Richard ?

Here's a photo of his special SMD Gizmo. Presumably the probe shown is *fixed* to the upper jaw of the peg and passes *freely through* the lower jaw, so the peg spring exerts a gentle pressure

on the SMD.



Robin sent along some practical advice gained by long experience of soldering SMDs:-

" I have replaced hundreds of SMD devices, this is how I do them. Move the device into place and solder the corner legs to stop it from moving. Position the board vertically, solder the vertical sides only. Flow solder from the top leg down to the next, the trick is to apply plenty of solder, so the molten ball of solder runs off one leg to the next, feed plenty of solder so the flux prevents solder bridges. The ball of solder will be about 3-4mm The last 2 or 3 legs of the device will usually short, clean these with some de-solder braid. A 100 pin IC can be soldered this way in about a minute. Rotate the board to do the top and bottom rows of legs, clean any excess flux with isopropyl alcohol. Check for bridge shorts using a magnifying glass, and use pin or similar spike to run across all of the legs whilst listening to the board, any legs that are not soldered will make a ping sound instead of a click.

The SMD IC's that I used to solder at NEC were 100 pin 25mm square devices, that could be lifted with a magnet. Your devices might not be ferrous. This is useful when removing the said devices from a board if the device was faulty. Flood the legs with solder, run around the legs with a soldering iron until all the solder was wet, then lift the device off the board with the magnet.

Clean up the board using de-solder braid, clean flux from the board using isopropyl alcohol, This way the device can be reused if it is found that the device was not faulty after all.

Another way to remove these devices is to cut the legs with a scalpel, then heat the legs and wipe them away from the lands. I don't like this method as it is too easy to nick the board and cause damage, but if your solder iron is not good enough for the flow removal method, it does work. Yet another way to remove QFP devices, flow some solder down one side of the IC at a time, use a jeweller's screwdriver to bend the legs clear from the board; use this method for 3 sides of the IC, then flood the remaining side with solder and lift the device off the board using a magnet or pliers. Hope these hints help. "

A Computer for under 50 quid ? By Richard M1RKH

Some of you have been tracking progress on my attempts to make a high gain system working on 2.4GHz for Wireless LAN (802.11 in IEEE spec speak). Well recently I updated the system with a new motherboard. The motherboard is based on a standard Linksys Access Point (WRTG series), these are available for around £40. My previous attempts at antenna connections involved some tricky coax soldering direct to the board with the low loss coax going to the antennas. This time I got some of the correct connectors to allow both ends to be direct connected (from www.solwise.co.uk).

My set-up is a vertical Alford slot and a horn (both available at rallies from G6???). I would expect both of these to give me in excess of 10dB gain at 2.4GHz, with the RF power output being around 18dBm. This is a great level of RF output at this frequency and a good example showing how commoditisation of this technology has led to significant advances in component technology – the types of things tomorrow's amateurs will be using in their systems from surplus or off the shelf supplies.

One of the things I did this time was summon up the courage to burn a new FLASH image on the Access point. The FLASH image is stored in the non volatile memory where the processor stores its programs. Doing this is one of those things where if it goes even slightly wrong, the unit almost literally becomes a "brick". The FLASH consists of something called a boot loader; its job is to have just enough software code to allow the cpu to come to life and then move the image of the operating system into RAM, starting the operating system and unit working – in exactly the same way as your BIOS works. If this process can't happen, you can't do anything with it.

In this task I have been playing around with some third party images based on Linux. The one I went with was called openwrt from <u>www.openwrt.org</u> (there are others from places like sveasoft). This is a tiny, tiny Linux image that can run on this mini processor. It is essentially a stripped down version of a Linux Operating System that could be running on your PC (remember Dave Harris's talks?).

The advantage of this route is that you can start off with a small operating system image and add components as needed to increase functionality or add extra features. The process for putting this on the board is really simple as the Access point has a firmware update tool in its out-of-the-box form (like you will almost certainly have on your AP's or ADSL routers at home). This allows the updated Firmware image to be uploaded to the Flash.

So, as it stands this setup is now probably the most stable I have and the one most suitable for further work on.

If you think you have a possible direct path to my QTH on the top of the golf course (if you can see Heath Hill masts there is a chance) then I would love to hear from you with the possibility to do some site surveys from your location to mine and establish a link.

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<u>REMINDER</u>: Paid up Members are welcome to borrow items of Club Equipment, so long as they're returned the following week and the usual "signing out" process is followed strictly. That's a privilege of TDARS Membership. If you can't return it on time, please find someone else who can, or don't borrow it that week! In case you missed it

TDARS Internet Shop now live...... Just in time for your Christmas list to the XYL WWW.Cafepress.com/tdars If you want to share P&P costs then please give your order to Jim with your payment

We also intend to order selected items shown on this web-page for Members to buy from Club stock. You can also purchase any item shown direct yourself, of course.

TDARS Club Construction Project – SDR (Software Defined Radio) Digest of 3 E-Mails from Richard M1RKH !

On November **22nd** and then again in the New Year (Jan. 17th) the club is going to do a construction project based on Software Defined Radio. For those that didn't hear the talk a few weeks ago this an exciting area of Amateur Radio where there is some very cutting edge developments being done. The premise is simple – use a computer and its sound card to digitise (convert from analogue to digital formats) a portion of a particular band and then demodulate the signals present so you can listen to them through your PC speakers.

We are using a professionally made PCB with a suite of software available off the web. The bands used will be 40/80m and 20m. There are some surface mount, some through hole and some inductor winding, which we will start at the club on the 22^{nd} . The circuit forms a simple frequency selective front end which does some pre-processing of the analogue input streams ready for input into your PC sound card. All parts and software for the kits are provided at a nominal cost of £10 and we will provide a construction service for those not wanting to make the whole kit. I need to know in advance who needs to have the surface mount parts built onto the board for them.....let me know and I will part build them.

Another article will follow explaining some of the processing that happens to allow you to demodulate the HF modes. IF you have any specific questions, then please drop me a line or talk to me in the club – your question may be the one everyone else is thinking but is being too shy to say.

The project boards can be hacked later to different parts of the bands, or even outside of the Amateur bands to allow reception of Digital Radio Mondiale signals (DRM).

For those less steady among us, the intention is to provide a soldering service at the club or even prior to the construction meeting to enable all willing participants to go home with a built kit. Circuit surgery sessions will be available later to get any bugs ironed out.

This should be fun and a FIRST within the club.

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SILENT KEY: John Allwood G4AXZ 2nd October 2006

John was a life member of TDARS until his death at age 63. For many years he paid for Club Newsletters to be posted to all Members via his business, Madeley Dental Practice, of which he was a senior partner.

He had not been active on the airwayes since the 1980s,

but still pursued a wide range of hobbies, and was an extremely nice guy. TDARS was represented at his Memorial Service in Church Stretton on October 10th.

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It makes you think

A letter from a reader of *"Engineering and Technology"* wrote this on the topic of mobile phones and possible health hazards.....

"A simple application of the inverse square law will show the effect of a 1W cellphone held to the ear, 1cm from the brain, is about one million times that of a 25W transmitter on a mast 50m away. If there is a damaging effect from radiation at this frequency—and that is still not established– then the precautionary principle must first lead us to try and reduce the radiated power of the handset.

Fortunately there is a simple way of doing this. Phones have a built-in automatic control to minimise radiated power. The stronger the received signal, the weaker the transmitted one and so anyone really concerned with safety of mobile phones should be campaigning to have a mast as near as possible to all places where children are likely to use them, which means in nearly every school. " (Thanks Mike, G4AUZ, for this gem. It deserves a wider audience!—Ed)

For over 30 pictures from the First Telford Hamfest, click on www.telfordhamfest.co.uk





<u>Annual TDARS Christmas Dinner at Allscott Inn</u> <u>Wed. 13th December 2006</u>



Booking Form: Please return by Wed. Dec. 6th latest:

Please use this page to make your Booking ASAP, or by Wednesday 6th December at the very latest. Pass it, e-mail or post it to Martyn G3UKV. The cost is £15.00 per person, payable on the night.

NAME:	7.30 FOR 8PM.
MENU	NUMBER REQUIRED
Leek & Potato Soup with garlic croutons and warm crusty bread	
Crispy filo basket with creamy garlic mushrooms & side salad	
Prawn & Avocado cocktail on a bed of mixed salad leaves	
Smooth Liver Pate served with Melba toasts & raspberry coulis	
Hot spiced Grapefruit laced with Jamaican rum	
Scottish Smoked Salmon on herby salad, topped Parmesan shavings	
******	*****
Shropshire Turkey with pigs in blankets & a lemon & thyme stuffing	
Roast Shropshire Beef with Yorkshire pudding	
Scottish Salmon Supreme, oven baked with lemon & dill sauce	
Baked Pork Steak with orange, apricot & Grand Marnier sauce	
Caramelised Red Onion Tart with Wensleydale cheese & cranberries	
Spinach pancakes filled mushrooms & leeks, in cheese & chive sauce	
8oz Sirloin Steak, with mushrooms, tomatoes & onion rings (£2 extra)	
*******	*****
Christmas Pudding topped with brandy sauce	
Apple & Blueberry Crumble served with custard	
Mega Chocolate Fudge Cake served warm with ice-cream	
Fresh Fruit Sundae topped with whipped cream & marshmallows	
Lemon Meringue Roulade served with cream	
White chocolate & Raspberry cheesecake served with cream	

