



FIVE AND NINE PLUS

THE OFFICIAL NEWSLETTER
OF THE
APPLEDORE AND DISTRICT
AMATEUR RADIO CLUB

Club Callsigns: G2FKO and GX2FKO
Web Site : www.adarc.co.uk

CLUB'S OFFICERS

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Editor	Terry Adams	G4CHD	

June, 2013

EDITORIAL

Welcome to another Newsletter.

This month's talk by Graham should be highly topical with the changes in local TV frequency allocations having just taken place. So please come along and give Graham all your support and enjoy the evening.



In our last Newsletter editorial I referred to the need for the Club to take out **equipment insurance** and thanks to a lot of hard work by Alan our Secretary we now have some quotes which are being considered before a final decision is taken. Unfortunately such insurance does not come cheap and will necessitate an increase in next year's annual Club membership fee (suggestion is that it may be an increase of approx £3). However, equipment Club insurance cover is necessary as equipment storage is inevitably at a member's qth where it should not impact on the member's own house insurance. Of course without insurance, if we were to lose all the equipment, the cost per member to replace it would be well in excess of any membership premium !

Our Summer seems to have arrived at last which means that the **Rally season** is upon us. Details of a couple of relatively local ones are given opposite which I have certainly put in my diary.

There are some more **old photos of members** included this month and next month we will try to name as many as possible

So, enjoy this Newsletter

Terry (G4CHD)

CLUB MEETINGS

Unless otherwise stated, Meetings are held at the Appledore Football Social Club starting at 7.30pm for 8.00pm. Visitors are always welcome.

For further information, contact Alan (M6CCH)

June 17th	Implications of the 4G TV Band takeover by Graham (G1ZTJ)
July 15th	Club Bring & Buy
August 19th	Natter Night
September 16th	Antenna Analysers - Comparison and Demo
October 21st	Mountains & Canyons of SW USA by John (M0JKL) This is our annual Open Meeting
November 18th	Back to Basics : The Superhet by Terry (G4CHD)
December 16th	Club Christmas Party
January 20th	Audio Recording - Practical Demo by Laurence (G4XHK) & John (M0JKL)
February 17th	Radio Quiz by John (M0JKL)
March 17th	Club AGM
April 21st	TBA

RALLY DETAILS

Cornish RAC 50th Mobile Rally

Penair School, St Clements, Truro, Cornwall £2 entry
Contact : Steve 01209 844939/g7voh@btinternet.com

AMATEUR RADIO IN THE COUNTRY

Upton Bridge Farm, Long Sutton, TA10 9NJ
Amateur radio, QRP and homebrew in a country setting
Contact : Tim Walford (G3PCJ) walfor@globalnet.co.uk

REPORT ON THE MAY MEETING

Analysis of G100RSGB by Mike (G3PGA) and How to set up Logger32 by Terry (G4CHD)

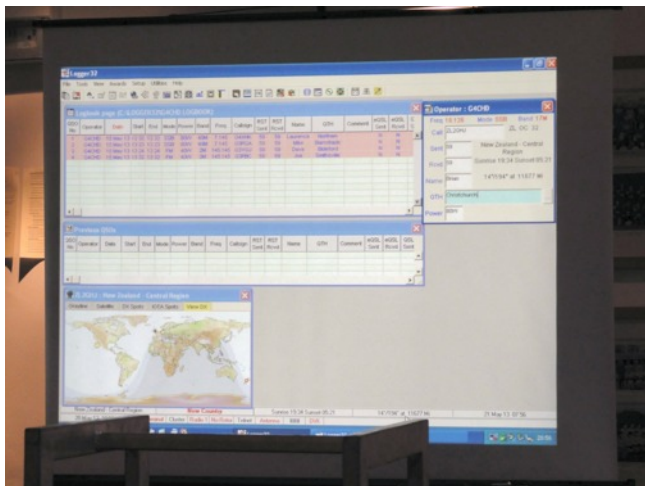
Mike first thanked everyone who had helped and in particular, thanked Laurence and Viv for all their hospitality and hard work behind the scenes. The activity was a great success with in excess of 1000 contacts being made over the 2 days as summarised below :-



Day 1:
SSB 314, CW 97, 2m FM 14, PSK31 63, SSB mobile 69

Day 2: SSB 272, CW 36, 2m FM 10, PSK31 105, SSB mobile 93.

Terry then took over and explained how Logger32 had been used quite successfully over the 2 days and perhaps as there may be members who would also like to dabble with electronic logging, then hopefully this talk would help. A step by step guide to setting up Logger32 from scratch was



then given using a slide presentation and in parallel, a demonstration of each step.



If anyone would like to try Logger32, a pdf file giving a detailed step by step description from download to contacts logging can be downloaded from the Club Website www.adarc.co.uk.

If members find this useful, then perhaps other associated pdf files could be published eg describing how to link Logger32 to QRZ.com etc.

Terry (G4CHD)

LOCAL REPEATERS

70cm Handy Cross Repeater/Echolink (#221334) Gateway (GB3ND)

User: Listen 433.35MHz– Transmit 434.95MHz
Access 1750Hz Tone (Timeout 4.25 mins)/ 77Hz CTCSS
Repeater keeper is Jeff (G4SOF)

2m Stibb Cross Repeater (GB3DN)

<http://www.g0rql.co.uk/gb3dn.htm>

User: Listen 145.6375MHz - Transmit 145.0375 MHz.
Access 1750 Hz Tone or 77 Hz CTCSS Repeater keeper is Tony (G1BHM).

Yahoo users group for general chat and banter at :-
<http://groups.yahoo.com/group/GB3DN/>

LOCAL SKEDS

Zepp Net: Mon, Tues, Thurs : 145.450 MHz
Wed : via GB3DN 1600 local time

6m Net: Wednesday, 8pm, 51.5MHz FM

HF Net: Friday at 1500 local time
7.145 MHz ± qrm

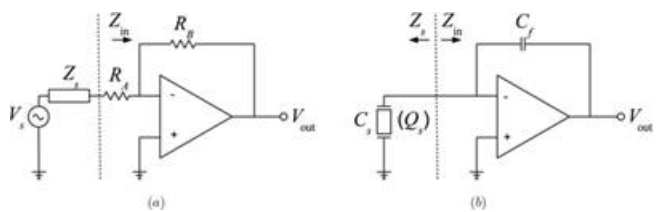
Slow Morse: This net run by Dave (G3YGJ) **has been suspended. Please contact Dave if you require Morse practice.**

70cm Net: Sunday, via GB3ND, 1100 - noon local time

ANOTHER TECHNICAL TEASER

Many thanks to Dave (M)JAP for the following teaser, this time concerning Op Amps.

What's going on here ? Fig a) shows the sort of op-amp we are familiar with and frequently use.



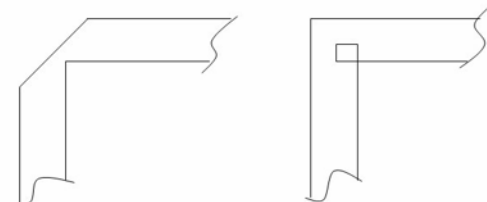
But what about Fig b) on the right ?
How can that be useful ?
Look carefully for the clue.....

Dave (M0JAP)

ANSWER TO THE APRIL TECHNICAL TEASER FROM DAVE (M0JAP) CONCERNING TRANSMISSION LINE DISCONTINUITIES

According to our records, many ADARC folk failed to answer the following teaser, and the answer was also missing from last month's newsletter:

As a reminder, the problem was :-
How might the bend in the 50 SHF microstrip on the right work just as well as the one on the left ? No maths. is necessary, The two pictures show the metal top track, with the small square on the right one 'missing'.



The clue: the word 'quasistatic' - even though the operating frequency can be well into the microwave region. (If you are still struggling, consider a discontinued inner (open end) within a longer coax line: where is the true open circuit ? At the same plane as the end of the inner ?)

ANSWER

Here's the explanation.

First, we are talking of transmission line discontinuities – geometrical discontinuities and how they are modelled. Let's consider a coaxial line with a discontinued inner i.e. an open circuit. If we moved back from the open circuit we would see an impedance of zero (short circuit) at distance $\lambda/4$ (quarter-wavelength), yes ? Well, yes but not exactly. At the discontinued end there is some fringing of the E-field and this corresponds to a small discontinuity ('stray') capacitance which in turn - for dimensions short compared with λ – equates to a small equivalent line length. That is, the transmission line open circuit is effectively just beyond the physical inner end, termed the transmission line 'end effect'.

Similarly, for planar transmission lines like triplate, coplanar or the ubiquitous microstrip line, an open circuit will effectively be formed just beyond the physical open circuit. Depending on Z_0 and substrate dielectric, this end effect (extension) is around 0.2 – 0.6 H, where H = substrate thickness.

So, back to the microstrip corner. If we just use a simple un-mitred bend the "outside corner" geometry induces a similar excess capacitance, corresponding to fringing of the E-field. Commonly we mitre the corner to reduce this, and it's possible to get an excellent match for the transmission line by the use of a symmetric mitre of appropriate 'strength'.

For the case of the 'missing' square of 'hot' conductor shown in the figure on the right, we may think of this as adding a little extra inductance, ΔL_s at this juncture, more or less coincident with the fringing capacitance ΔC such that we maintain the $Z_0 = \sqrt{L/C} = \sqrt{(\Delta L/\Delta C)}$. We can think of the extra inductance ΔL as being caused by the increased

current crowding and path length for the current flow. Tricky but neat matching, huh ?

Calculation of discontinuities in transmission lines is quite difficult mathematically, and some useful data has to come from empirical studies. But coping with discontinuity effects (steps in width, open ends, bends etc) is important in accurate layout design for higher frequency circuits, especially microwave. Professional CAD s/w normally includes tools to characterize such discontinuities these days.

Hope the above ends some members' sleepless nights worrying over the answer!

Dave (M0JAP)

TRANSATLANTIC 2m BEACON NOW LIVE

The GB3WGI Transatlantic 144MHz beacon went live at 1600 GMT on the 4th of June in time for the peak of the 2013 Sporadic E season. The beacon runs 100 Watts EIRP in CW and JT65b modes on 144.487MHz and is located in the West of Northern Ireland (IO64bl). The plan is to apply for an increase in EIRP in due course.

The beacon's function is to provide an early warning of 144MHz Transatlantic propagation on the Europe to USA path as a complement to the existing 144MHz Transatlantic beacon network in the USA which provides alerts on the USA to Europe path. It also aims to encourage participation in the IRTS Brendan Trophy and to further study the propagation path using weak signal digital modes (WSJT) developed by Nobel Laureate Professor Joe Taylor K1JT. It is hoped that the project will benefit amateurs interested in 144MHz long distance weak signal working as well as those generally interested in digital modes, and could provide the first real evidence of transatlantic propagation from the US to North West Europe. Current 144MHz European transatlantic beacons are much further to the South and/or East in Cornwall, France and the Azores. GB3WGI has a clear sea takeoff to the eastern seaboard of the USA.

The beacon was supported by a number of amateur donations including The City of Belfast Radio Amateur Society, but the major donation of £500 was made by the RSGB Propagation Studies Committee from the legacy left by the late Charlie Newton G2FKZ. The bulk of this went on the beacon, the remainder to fund beacon driver development for future beacons. Charlie Newton, wrote the definitive book on radio auroras, and was acknowledged as one of the leading experts on the topic of VHF propagation. He was for many years a leading light in the Radio Society of Great Britain (RSGB) Propagation Studies Committee. Acknowledgements also go to Brian WA1ZMS who inspired the concept of GB3WGI, Andy G4JNT who designed and built the driver, Powabeam Antennas and The DX Shop who supplied parts for the antenna system, to James G3RUH who provided a GPSDO reference, to Murray G6JYB for Ofcom liaison, to John G14BWM and Dave G14SNA and of course to beacon keeper and site manager Gordon Curry G16ATZ who really drove the project through to completion.

John Worsnop (G4BAO)

CROSSWORD

This month's Crossword by Stuart (M1FWD).
The answers will be published in the next month's Newsletter. Good luck !

Clues Across

- 1) Port in Seven Oscar land (4)
- 3) Zulu Kilo Two land (4)
- 7) User (of machinery, for example) (8)
- 9) Add this to 'Berm' and get Victoria Papa Nine islands (3)
- 10) A resistance wire that heats up in, for example, a toaster (7)
- 13) Abbreviation for a line cutting a curve at one or more points (3)
- 14) Nickname of Coventry City FC (3,5)
- 15) To have a quick listen around several radio frequencies (4)
- 16) Metric unit of mass equal to one-thousandth of a kilogram (4)

Clues Down

- 2) A thermionic valve having two electrodes (5)
- 4) (Of a quality, feeling, etc.) - existing in a high degree, e.g. heat, cold (7)
- 5) Organs of hearing and balance (4)
- 6) Plant genus which includes cowslips (7)
- 8) Kilo Hotel Five island (7)
- 11) Nikola ? (1857-1943), a Yugoslav-American electrical inventor (5)
- 12) Small vipers native to southern Europe (4)

Last month's answers :-

Across 1) dhal 5) vegan 7) Mikhail 8) antique
11) abalone 13) sysop 14) papa

Down 1) dime 2) Arkansas 3) lei 4) unun 5) varicap
6) glaucoma 9) base 10) zeta 12) box
Stuart (M1FWD)

1	2			3	4		5
			6				
	7	8					
9							
	10					11	
12					13		
14							
15				16			

SUDOKU PUZZLE

The aim is to enter a number into each cell so that **any column, or any row, or any block of cells contains all numbers from 1 to 9**. This month's puzzle is categorised as **Advanced** difficulty.

		2		4	5		6	1
							8	7
9			8			4		
1			5	2				
	3						5	
				3	7			2
		3			6			8
6	7							
5	1		4	8		6		

Terry (G4CHD)

NORTH DEVON HOSPICE WALK THANKYOU

I know many of our members helped and the letter below shows how much their efforts were appreciated.

Just a note to say a big thank you to you all for the magnificent work done during the North Devon Hospice Walk on Saturday night. The organisers are delighted with the work we did, the way that the groups made the event work and the problems we solved on their behalf.

During the event and after I have been fed back a few problems from you that I was not previously aware of. Some problems such as access to the Trail will be taken up with the Hospice. Some others which as I say have occurred before, but that I have not been made aware of in previous years are to be looked at. As there has been a change of leadership looking after the group please look at it as part of a steep learning curve on their behalves. On the whole I think we must consider the event on all parties a success, and again thank you to you all from both Steve and myself

Cheers Chris (G8LNT)

WORD PUZZLE FROM DAVE (M0JAP)

Rather in the style of BBC R4's Round Britain Quiz: What's the connection between a radio receiver and a doctor's prescription ?

Answer next month. Dave (M0JAP)

CAN YOU HELP IDENTIFY THESE MEMBERS

So that's it for this month.

If any member has an article that they feel would be of interest to Club members, please send it in to me and it will make your Club Newsletter all the more interesting.

Enjoy the read

Terry (G4CHD)

