



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

President	John Jeffers	G0UNB	
Chairman	Terry Adams	G4CHD	
Vice Chairman	Mike Hammond	G3PGA	
Secretary	Alan Fisher	M6CCH	01237 422833 Email: fisheralan@btinternet.com
Treasurer	Mike Wogden	G4KXQ	
Committee	Laurence Soutter	G4XHK	
	John Lovell	G3JKL	
	Graham Bailey	G1ZTJ	
QSL Manager	John Lovell	G3JKL	
Web Master	John Lovell	G3JKL	
Exam Secretary	John Lovell	G3JKL	
Editor	Terry Adams	G4CHD	

March, 2015

EDITORIAL

Welcome to another Club 5&9 Newsletter. I cannot believe just how quickly time flies these days and so here we are again for **this month's Club AGM**.

As has been reported in an earlier 5&9 Newsletter, there will be a **number of changes to your Committee at this year's AGM**.

Laurence (G4XHK) has decided to take a 'year out' for personal reasons and hence will be stepping down from the Committee.

I have also decided that after eleven years as your Chairman (I was elected in 2004!) the time has come for me to step down and make way for someone else to take the helm and steer the Club in the future. I am happy to continue as Editor of the 5&9 Newsletter unless anyone else wishes to take it over.

Much has happened in those 11 years - 2 Presidents, 4 Treasurers, 2 Secretaries and many hard working Committee members. However, I don't get on the bands as often as I would like, and so it's time that someone more active should bring fresh ideas to the running of your Club. However, I am most grateful to **the following Committee members who are willing to stand for re-election** :- Mike Hammond (G3PGA), Alan Fisher (M6CCH), Mike Wogden (G4KXQ), John Lovell (G3JKL) and Graham Bailey (G1ZTJ).

As a result, **there will be at least two vacancies** on the Committee and so I hope that many of you will consider stepping forward to offer your services and make our Club even stronger for the future.



So PLEASE come along and have a say in the future of your Club.

Many thanks to Mike (G4KXQ) for offering to give us another excellent talk on Podcasts & Webcasts for our April Meeting. It's a subject that I know very little about (suspect I might not be alone in that!) and so will be looking forward to the talk with great anticipation.

This month I thought it might be interesting to look at a bit of nostalgia read again a copy of the June 2003 Newsletter. I wonder how many members recall that meeting and the excellent talk on radio aboard the QE2.

If you think this is a good idea, then let me know and I can include other Newsletters from the past. The earliest computer version that I have is from November 2001 so I have been Editor now for over 14 years. Phew!

So, enjoy this Newsletter and I look forward to seeing many of you at our AGM.

Terry (G4CHD)

CLUB MEETINGS

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

March 16th Club AGM

April 20th Podcasts and Webcasts' by Mike (G4KXQ)

Visitors are always welcome.

For further information, contact Alan (M6CCH)

REPORT ON THE FEBRUARY MEETING

WHISPER & WEBSDRs by Mike (G4KXQ)



There was another good Club attendance for yet another excellent talk by Mike who first defined WSPR (Whisper) as :- an automated system designed for sending and receiving low-power transmissions to test propagation paths on the MF and HF bands.

The program can decode signals with S/N ratios as low as -28 dB. WSPR was designed and written by Professor Joe Taylor (K1JT) - a Nobel prize winner and inventor of WSJT, JT65 and others.

Mike then proceeded to explain just how WSPR worked which can be summarised thus :- your system transmits a two minute long (just under) FSK signal with a 6Hz shift. Which contains your callsign, locator and power level in dBm. Your system then listens for WSPR signals in a 200Hz passband, decodes them and sends the results to www.wsprnet.org where they are stored and displayed.



This allows the user to :- look for fleeting/rare propagation paths eg Sporadic E on 10m, test antennas, do long-term propagation research and above all - have fun!

Mike then summarised WSPR as either a useful tool – probably unsurpassed for QRP contacts’ but as a QSO “chat mode” it is no match for SSB/CW/PSK31/RTTY.

However the spot database is useful, but don't believe all you see but it needs more users. Finally, will it take over from “real radio - no!

Mike then discussed the role in amateur radio of WebSDRs - dedicated servers with large antennas that are receiving local radio broadcasts, allowing multiple remote users worldwide the ability to tune to different frequencies. Mike gave several examples including SUWS (Southampton University Wireless Society) Microwave SDR (2m and higher frequency bands), RAF Hack Green SDR and ETDG at the University of Twente in the Netherlands. A fascinating talk and many thanks to Mike for all his hard work in its preparation.



Terry (G4CHD)

LOCAL SKEDS

- Zepp Net:** Mon, Tues, Thurs : 145.450 MHz 4pm
Wed **via GB3DN** - 4pm
- 6m Net:** Wednesday, 8pm, **51.480 MHz FM**
- HF Net:** Friday at 3pm **7.145 MHz ± qrm**
- Slow Morse:** Run by Dave (G3YGJ) every Tuesday and Thursday, 7pm clock time on **145.250 mode FM**.
- 70cm Net:** **Sunday, via GB3ND, 11am - noon local time.**
Available on Echolink node 221334

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/>

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.**

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

Terry (G4CHD)

CROSSWORD

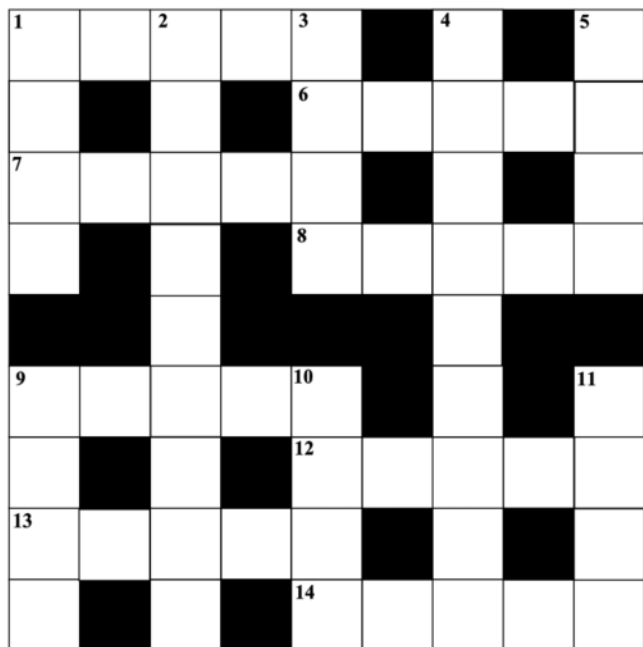
This month's Crossword is by Stuart (M1FWD).
The answers will be published in the next month's Newsletter. Good luck !

Clues Across

- 1) Capital city of Lima Zulu land (5)
- 6) An inert gas used in fluorescent lamps (5)
- 7) ? Gras, Shrove Tuesday in some Catholic countries (5)
- 8) Elland Road is the home of this Yorkshire football club (5)
- 9) One of the twelve periods into which a year is divided (5)
- 12) Mountain range running north-south through western Romeo Alpha land (5)
- 13) 30-mile peninsula in north Golf Whisky land (5)
- 14) It is estimated that there are 3814 million of these in the UK (5)

Clues Down

- 1) A style of heavyweight wrestling from Juliet Alpha land (4)
- 2) Robinson Crusoe Island (IOTA SA-055) is also known as the Juan ? Archipelago (9)
- 3) The upper angle between a leaf and the stem to which it is attached (4)
- 4) In computing, an apparatus for connecting two pieces of equipment so that they can be operated jointly (9)
- 5) Finishes (4)
- 9) Tango Zulu land (4)
- 10) James ?, British racing driver, 1947-1993 (4)
- 11) Poses a question (4)



Last month's answers :-

Across 3) fuse 5) Easter 6) emit 7) Edinburgh
10) Asia 11) nickel 12) Isis

Down 1) Geese 2) Athenians 3) frequency 4) sling
8) disks 9) heals

Stuart (M1FWD)

CLUB BADGES FOR SALE

These are made from strong plastic with a rear clip pin fastener and are available either direct from John (G3JKL) at john@g3jkl.co.uk or via any Committee member. They currently cost £3.95 each.



John (G3JKL)

A MESSAGE FROM OUR ITALIAN FRIEND

Hello Terry (G4CHD)!

The date of next Appledore & DARC (G2FKO) 2015 AGM is approaching very fast and I wish to express my appreciation to the Committee and all the participating members.

Pls accept my sincere apologies for not attending to the meeting as living in a far country.

I always am very proud to be a foreing member of the Appledore & DARC. With my best regards to everybody.

Cordially yours,

Giorgio

SWL IV3 - 57306

So that's it for this month - I hope everyone enjoys the read and I look forward to seeing you at our AGM this month.

Best 73s de Terry (G4CHD)

**REMEMBER
THIS MONTH'S MEETING
MARCH 16TH
IS OUR CLUB AGM
See You All There**



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Chairman	Dave Lawrence	G0PGK
Vice Chairman	Terry Adams	G4CHD
Secretary	Brian Jewell	M0BRB
Treasurer	Syd Arnold	G0LMU
Committee	John Jeffers	G0UNB
	Ade Blandford	M1DBZ
	Graham Bailey	G1ZTJ
	Colin Foley	G0XCF
Editor	Terry Adams	G4CHD

June, 2003

EDITORIAL

May I start by offering to eat humble pie!

Apologies go to Graham on our Committee for getting his callsign wrong which has now been corrected. In addition, Jeff tactfully let me know that I had even got the 70cm Repeater frequencies the wrong way around!! This too has been corrected. Sad thing this getting old!!

By the time Members receive this Newsletter, the Appledore Museum Special Event Station weekend will have been and gone. I am sorry that owing to family commitments I will not have been able to give it my fullest support but I hope the weekend was a success none the less.

My only contribution to this event has been to design a special QSL card which we are hoping to get printed in full colour. The design is given later in this Newsletter. I hope members Are happy with the design and that some of you will receive one having worked the special event station.

Well, enjoy this month's offering 73s Terry, G4CHD

LOCAL SKEDS

Slow Morse: Thursdays, on 144.060 MHz at 1930
Run by Mike, G4NCU.

Zepp Net: Weekdays, on 145.45 MHz at 1600

HF Net: Thursdays, on 3.765 at 1615
Run by G4NCU/M0BRB

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.

June 14/15th	Special Event Station - Appledore Maritime Museum
June 16th	Broadband and PSK31 by Mike Hammond (G3PGA)
July 21st	BBQ
August 18th	Quiz by Dave (G0PGK)
September 15th	Homebrew Morse and Me - by Mike (G4NCU)
October 20th	W3EDP Aerial by Terry (G4CHD)
November 17th	Bring and Buy
December 15th	Xmas Party
January 19th	North Devon Repeater/Worldwide Sat Radio TBC
February 17th	Talk by John Wilson (G3PCY) topic TBA
March 15th	AGM

For further information, contact Brian Jewell M0BRB

LOCAL REPEATERS

2m Stibb Cross Repeater (GB3DN)

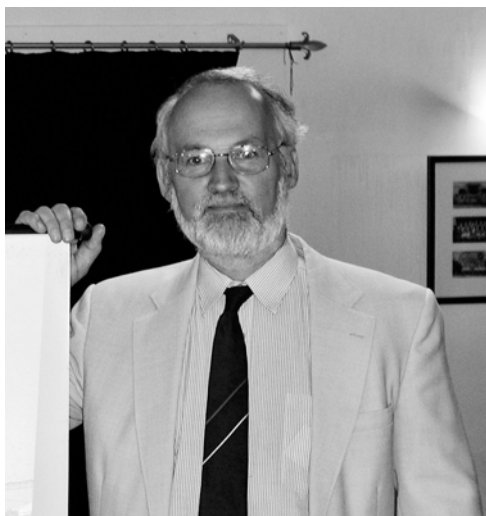
User: Listen 145.6375MHz - Transmit 145.0375 MHz.
Access 1750 Hz Tone or 77 Hz CTCSS.
Repeater keeper is Tony G1BHM.

70cm Handy Cross Repeater (GB3ND)

User: Listen 433.35MHz- Transmit 434.95MHz
Access 1750Hz Tone (Timeout 8 minutes). No CTCSS
Repeater keeper is Jeff G4SOF

REPORT ON MAY MEETING

TALK BY PHILL WILLIAMS EX QE2 RADIO OFFICER (G3YPQ)



Members present at the May meeting were given an extremely entertaining and informative talk on the QE2 with particular reference to radio operation. Phil got his 'ticket' at Plymouth Poly and became Technical Radio Officer on the QE2 between 1978 and 1988.



The QE2 was built to cope with the North Atlantic run and as such had a 2" thick steel hull with aluminium superstructure to reduce weight. This weight reduction allowed the QE2 to navigate the Panama Canal. The QE2 started life as a steam ship with 3 boilers but was later converted to have 9 motors.

She took over the old Queen Mary callsign of GBTT. Originally, the designers were so concerned about the aesthetic looks of the ship that no wire aerials were used. However, within 1 year, wire aerials appeared!! Nowadays, everything relies upon satellites.

The QE2 holds the record for the longest telegram sent which was the passenger and crew list for a visit to China. With 1800 passengers and a crew of about 1000, it took 12 hours to send by key!

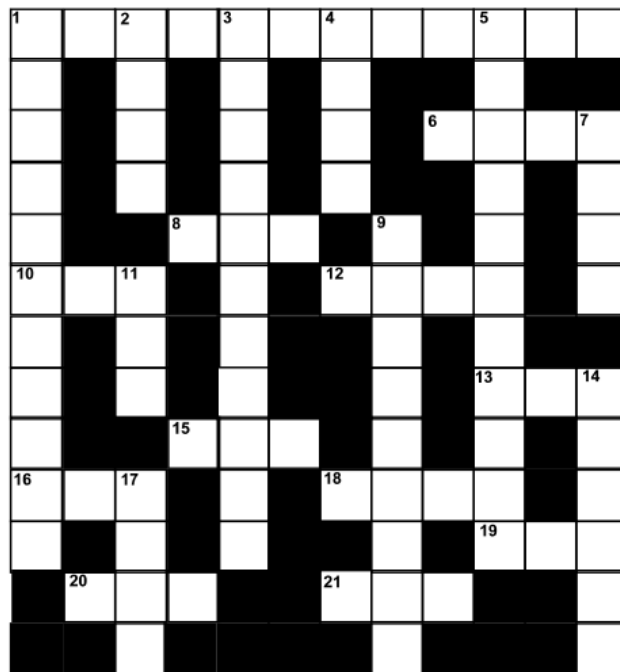
Phil treated us to many tales of life aboard the QE2 which had the audience in stitches.

Many thanks Phil for a wonderful evening.

Terry G4CHD

CROSSWORD

by Terry Adams G4CHD



ACROSS

- 1: Large value capacitor type
- 6: Information
- 8: Electro Motive Force
- 10: Matching Device
- 12: Circular Aerial
- 13: Transistor type
- 15: Amplitude measurement
- 16: Above sea level
- 18: Carries current
- 19: Tuning facility
- 20: Wooden recording?
- 21: eg 144 MHz

DOWN

- 1: Triangle with equal sides
- 2: He makes current circulate!
- 3: Measures temperature
- 4: Famous man's law
- 5: Signal transmitter
- 7: Smallest part of element
- 9: Mathematical table
- 11: Sideband used above 10MHz
- 14: He discovered gravity
- 17: Observe

LAST MONTH'S CROSSWORD

Across: 1: Battery Charger, 8: NPN, 9: Erg, 10: Arc
11: PCB, 12: PTP, 13: Spot, 15: ISP, 18: Wire,
19: Ohm, 20: Tip, 21: Fan, 22: XYL, 24: Laser, 27: Orbit,
28: FET, 29: Lap

Down: 1: Bandwidth, 2: Tone, 3: Electrolytic, 4: Yagi,
5: Headphones, 6: RFC, 7: Electrolyte, 14: Twin, 16: PEP,
17: EMF, 23: VOX 25: ASL, 26: ERP

TERRY'S TECHNICAL TOPIC

by Terry Adams (G4CHD)

Fourier Analysis

This month's topic looks at Fourier Analysis. In essence, this states that any repetitive complex waveform can be synthesised from the sum of a fundamental plus various harmonic frequency signals. The fundamental frequency is the repetition frequency of the complex waveform, and the

harmonic frequencies are multiples of the fundamental frequency. The steeper the complex waveform, the greater the higher harmonic content. Hence, a perfect square wave which has vertical elements, implies an infinite range of harmonic frequencies.

The mathematics behind Fourier Analysis may be quite daunting to some, but the use of either graph paper or the plotting facility of a Spreadsheet such as Excel, can be just as productive.

The following spreadsheet results show how a square wave shape starts to emerge by simply adding 100% of fundamental to 33% of 3rd harmonic and 20% of 5th harmonic. (ie by adding 100%/n of the nth harmonic).

The general mathematical formula for a sine wave is:

$$\text{Amplitude} * \sin(2 * \pi * \text{frequency})$$

Where π is a mathematical constant equal to approx 3.14, and SIN stands for the trig function Sine.

We shall let $2 * \pi * \text{frequency}$ for the fundamental be 1000 in our example (ie the frequency is approx 150Hz).

Hence $2 * \pi * \text{frequency}$ for the 3rd and 5th harmonics will be 3000 and 5000 respectively (equivalent to frequencies of about 450 and 750 Hz).

For a fundamental frequency of approx 150 Hz, the period for one cycle is approx $1/150 = 0.006$ secs (6 ms).

To get a smooth plot, it is useful to have at least 100 plotted points per cycle, ie to plot every 0.00006 sec. As a bit of an overkill, I have used time increments of 0.00001sec (0.01ms).

I set up a spreadsheet (in Excel) as follows:

Time (sec)	A	B	C	A+B+C
0	0	0	0	0
0.00001	0.99998	0.98985	0.99958	2.98942
0.00002	1.99987	1.97881	1.99667	5.97535
0.00003	2.99955	2.96599	2.98876	8.9543
0.00004	3.99893	3.95	3.97339	11.9228
etc..upto	etc..	etc..	etc..	etc..
0.01				

The formulae used in each column were:

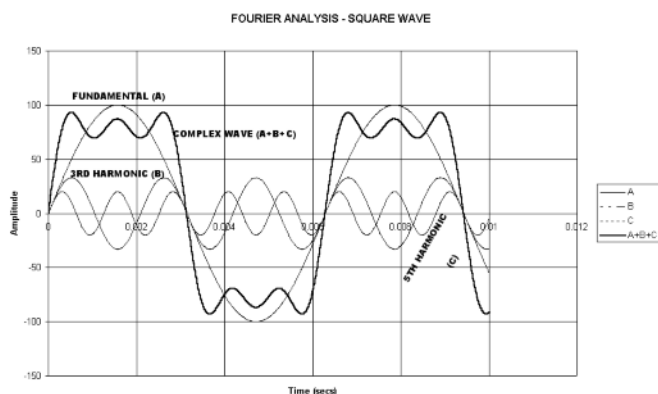
$$A = 100 * \sin(1000 * t)$$

$$B = 33 * \sin(3000 * t)$$

$$C = 20 * \sin(5000 * t)$$

Where t refers to the value in the time column.

The results were then plotted using a scatter graph and the following plots were obtained.



By adding even harmonics the waveform acquires a non unity mark space ratio.

In this way, by adding differing amounts (and phases) of fundamental and harmonics, any complex wave can be synthesised. The reader might like to try experimenting with a spreadsheet to see what waveforms you can create. Fourier Analysis therefore helps us understand the full implications of harmonic distortion or modulating a carrier with a sharp complex waveform eg cw. In the case of the latter, having too sharp a CW signal means too many higher harmonic components and hence sidebands that extend throughout and beyond the band.

Finally, applying a square wave to a system is a useful way of applying a wide range of frequencies from the fundamental upwards simultaneously to test the system's frequency response.

Terry (G4CHD)

MUSEUM SPECIAL EVENT QSL CARD

As mentioned in the Editorial, it is hoped to produce the following QSL card in full colour subject to the Museum confirming the design and content.

North Devon Maritime Museum Appledore

The Museum is housed in a fine, listed building, with items from our local seafaring past, models and photographs of sail and steam vessels, shipbuilding, fishing, wreck and rescue, World War II Experimental Beach Landings Display, Victorian Kitchen, Gift Shop, and North Devon on Disk and Record Office Service Point. The exhibitions relate to the maritime heritage of the area and its people which include Hubba the Dane in 878, and Sir Richard Grenville.

Web Site: www.devonmuseums.net

GB2MMA

To: _____ **CONFIRMING QSO** ☐
RPT ☐

DATE			UTC	MHz	MODE
DAY	MONTH	YEAR			

RST: _____

73s _____

WELCOME TO NEW CLUB MEMBERS

A warm welcome to two new Club members - Ken Sparrow M3CXG of Bideford, and Ron Stone M3VMS of Bickington.



That's all for this month folks

73s Terry (G4CHD)

