FIVE AND NINE PLUS

THE OFFICIAL NEWSLETTER OF THE APPLEDORE AND DISTRICT AMATEUR RADIO CLUB

Club Callsigns: G2FKO and GX2KKO
Website: www.adarc.co.uk

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			Exam Secretary	John Lovell	G3JKL
			Editor	Mike Wogden	G4KXQ
			Mikewogden@gmail.com		

EDITORIAL

July's meeting was the Quiz Night. It was a disappointing turnout with only 10 members so quite a small audience with 2 for each panel and myself as quiz master. I was told that the questions were a little difficult, they consisted of Amateur Radio knowledge along with trivia. I can only apologise for that. Unfortunately, due to a last-minute change of schedule Ben Louder could not make the meeting so no live stream was available. Congratulations to John and Terry who formed the winning team.

Terry has kindly supplied me a follow-on article from his aerial modeling article included last month. This outlines some of the methods and techniques used to improve the performance of his loop aerial.

For the August club meeting Mark G6BNB is kindly presenting his story in the Film and TV special affects business. Unfortunately, due to some of Mark's presentation material being subject to copyright restriction we will be unable to stream the meeting on YouTube. Please come along in person to support the meeting.

The September meeting was planned as an aerial construction evening with Mark G6BNB and myself. Unfortunately for this meeting we will need to postpone the meeting by one week to Monday 22rd September. Due to this date change Mark will no longer be available so we have made the decision to move the aerial construction evening back to the spare slot in February 2026. We therefore proposed that the forthcoming delayed September meeting will be a 'Natter Night' with a show and tell for any interesting projects.

DATES FOR THE DIARY

The weekend of 27th and 28th September will be 'Railways on The Air' where we intend to operate for the Bideford Heritage Railway at the old Bideford Railway Station, East the Water.

John Stacey G8BXO SK

It is with sadness that I have to inform the members that John Stacey G8BXO recently passed away. This sad news was passed on by John's wife via Tom Cromack G0FGI. John had been in hospital for about 7 weeks and had an operation and appeared to be recovering but unfortunately went downhill in the past few weeks.

John was ex RAF and a lover of Vintage military Wireless Sets. As a founder member of the Exmoor Club and a longtime member of Appledore Club we have lost a true amateur and supporter of local amateur radio activities. The Funeral will be at the Crematorium 29 August.

RIP John

73 Mike (G4KXQ)

Club Program

Aug 18th 2025	Talk on the film industry special effects	Mark G6BNB
Sept 22nd 2025	Natter Night with Show and Tell	
Please note change in meeting date		
Oct 20th 2025	On-Line Talk - Guide to using satellites in amateur radio	Tim GW4VXE
Nov 17th 2025	Bring & Buy	
Dec 15th 2025	Christmas Party	
Jan 19th 2026	External Speaker	TBC
Feb 16th 2026	Antenna Build - Practical	Mike G4KXQ, Mark G6BNB
March 16th 2026	Annual General Meeting	

LOCAL NETS

2m Elevenses FM Net: Mon/Wed/Fri :
11 - 12.00 noon via GB3DN Net Control ; Mike (G3PGA)

Friday Night 2m Net: Friday : 145.450 FM, 8 -9pm

Sunday Top Band Net: Sunday 1.860 MHz
9.30 - 10.15am
(LSB - 32W pep max)

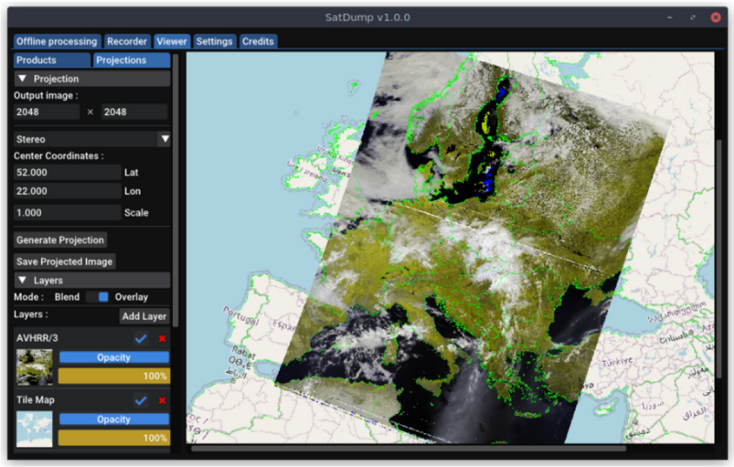
2m SSB Nets: Wed: 8 - 9pm 144.260MHz USB SSB (Vertical polarised)
Sun: approx 10.30am (follows Top Band Net) 144.260MHz USB SSB (Vertical polarised)

Sunday FM Net: Sunday: 11 to noon via GB3DN
Net Control : Chris (G0FJY)

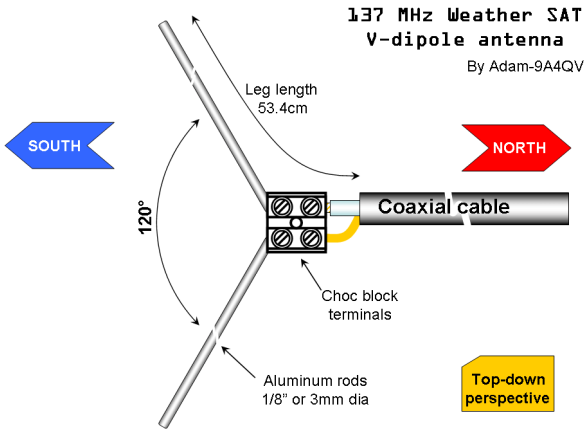
Note :- FM Nets which use GB3DN as shown above will continue despite the recent changes. GB3DN is disconnected from the Wires-X/ Southern Fusion Room just before the listed start and end of each FM Net

From The Workbench – Weathersats and Cubesats

During July, like other members, I spent a few nights trying to receive the set of 12 SSTV pictures being transmitted from the ISS. I was unsuccessful as the transmission times and orbit profile meant the same 6-8 pictures were always transmitted whenever the UK was within the ISS footprint. This did give me the incentive to look at remote space imaging again i.e. Weather Satellite pictures transmitted on 137Mhz. This frequency is close enough to our 144Mhz band that I could use my dual band colinear for receiving. Following some research, I found that things had changed a little since the early 80's and there was now a software package called SatDump available.

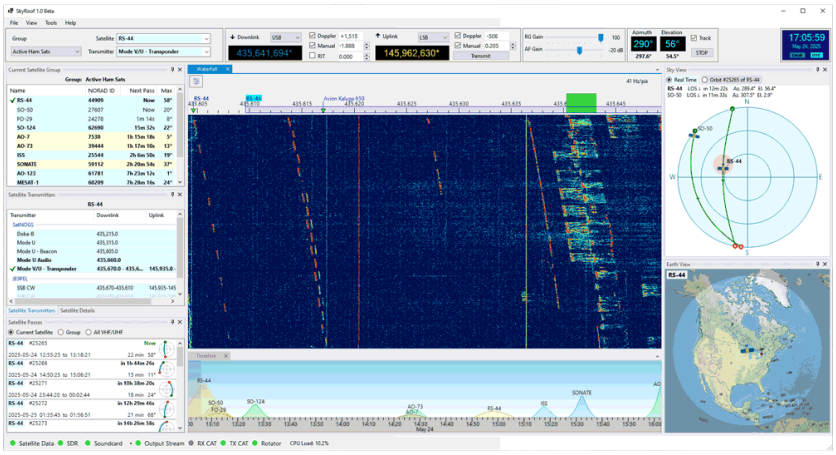


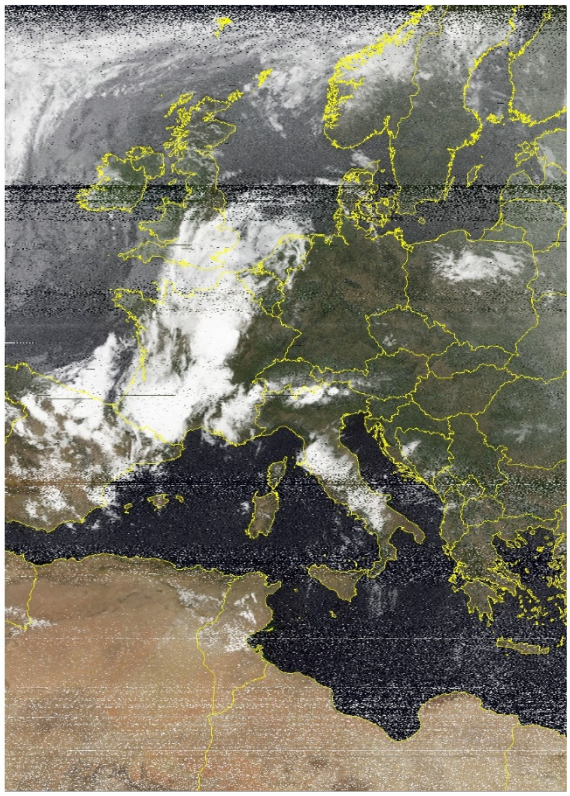
This package is available on Windows or Linux, and has an integrated SDR receiver, orbit predictor and picture decoder. It also can control a rotator in azimuth and elevation. The number of satellite types it could support was quite amazing: 137Mhz & 1.7Ghz Low Orbit or 1.7Ghz Geostationary. I started off with the two NOAA Satellite (NOAA15 and NOAA 19) as they still used the old analogue APT standard. My early results were encouraging but did suffer from picture graining due to losing the signal whenever the satellite passed overhead due to the colinear antenna. Ideally you should use a QFH 'eggbeater' aerial but that wasn't a straightforward construction project.



I tried a simpler aerial, 'V' dipole, which gave better results on overhead passes but overall wasn't as good as I could only mount it at ground level and not in the clear on the roof. The other satellites using 137Mhz are the two Russian Meteosats. They use a digital encoding method so rather than getting snow in areas of low signal you get solid black lines. I've had a few encouraging results on these birds but nothing perfect. The downer on my new hobby branch came two weeks ago when NOAA announced that they were decommissioning their two low orbit satellites during August. (Blame that nice Mr Trump and his DOGE cost saving group) leaving only the Russian Meteosats using 137MHz. NOAA 19 went off-air on Monday evening with NOAA 15 to follow suit early next week. I did get a nice decode from NOAA15 last night showing the cloud cover passing over the south of the UK. I've now got to decide if I want to continue with fascinating weather pictures, if so, I will have to move up to 1.7Ghz but that will mean parabolic dishes and some automated means of steering the dish.

In the meantime, it's back to Amateur satellites and Cubesats. I did find out that some of the Amateur sats also transmit SSTV pictures as well as the ISS. To aid me in working the Amateur satellite with linear or FM transponders I discovered another new package called SkyRoof. Like SATDump this package integrates orbit predictions, doppler correction, rig control for transmit and receive, rotator control and has an integral SDR receiver. It's a very slick piece of software showing pending orbits, automatic frequency tuning both uplink and downlink for selected satellite. I only installed it on my PC last night and within 30 mins I was listening to QSO's from around Europe on AO-91. If anyone has a dual band VHF/UHF rig with CAT control I suggest they give it a try. The software has been out for a few months and is in continuous development with new versions with bug fixes or enhancement coming out every few days. Its Windows only at present I'm afraid.





Contest Calendar

Lots of contests this month. The highlights are HF SSB Field Day and 2m SSB Contest on 6-7 September .

Contest Name	Date & Time (UTC)
SARTG WW RTTY Contest	0000Z–0800Z, Aug 16; 1600Z–2400Z, Aug 16; 0800Z–1600Z, Aug 17
Russian District Award Contest	0800Z, Aug 16 – 0800Z, Aug 17
SARL Youth QSO Party	1200Z–1300Z, Aug 16
Keyman's Club of Japan Contest	1200Z, Aug 16 – 1200Z, Aug 17
Feld Hell Sprint	1600Z–1759Z, Aug 16
CVA DX Contest, CW	1800Z, Aug 16 – 2100Z, Aug 17
North American QSO Party, SSB	1800Z, Aug 16 – 0559Z, Aug 17
FISTS Sunday Sprint	0000Z–2359Z, Aug 17
RSGB FT4 Contest	1900Z–2100Z, Aug 18
Turkey HF SSB Contest	0000Z–2359Z, Aug 23
ARSI VU DX Contest	1200Z, Aug 23 – 1200Z, Aug 24
YO DX HF Contest	1200Z, Aug 23 – 1200Z, Aug 24
CVA DX Contest, SSB	1800Z, Aug 23 – 2100Z, Aug 24
SARL HF CW Contest	1400Z–1700Z, Aug 24
SKCC Sprint	0000Z–0200Z, Aug 27
SCRY/RTTYOps WW RTTY Contest	2200Z, Aug 29 – 1200Z, Aug 30; 1200Z–2359Z, Aug 31
Feld Hell Sprint	0000Z–2359Z, Aug 30
ALARA Contest	0600Z, Aug 30 – 0559Z, Aug 31

Contest Name	Date & Time (UTC)
World Wide Digi DX Contest	1200Z, Aug 30 – 1200Z, Aug 31
RSGB 80m Autumn Series, SSB	1900Z–2030Z, Sep 1
All Asian DX Contest, Phone	0000Z, Sep 6 – 2400Z, Sep 7
CWOps CW Open	0000Z–0359Z, Sep 6; 1200Z–1559Z, Sep 6; 2000Z–2359Z, Sep 6
SARL Field Day Contest	0800Z, Sep 6 – 1000Z, Sep 7
Russian RTTY WW Contest	1200Z, Sep 6 – 1159Z, Sep 7
RSGB SSB Field Day	1300Z, Sep 6 – 1300Z, Sep 7
AGCW Straight Key Party	1300Z–1600Z, Sep 6
IARU Region 1 Field Day, SSB	1300Z, Sep 6 – 1259Z, Sep 7
IARU Region 1 145 MHz Contest	1400Z, Sep 6 – 1400Z, Sep 7
Ohio State Parks on the Air	1400Z–2200Z, Sep 6
PODXS 070 Club Jay Hudak Memorial 80m Sprint	2000Z, Sep 6 – 2000Z, Sep 7
WAB 144 MHz Phone	1000Z–1400Z, Sep 7
VHF-UHF FT8 Activity Contest	1700Z–2100Z, Sep 10
RSGB 80m Autumn Series, CW	1900Z–2030Z, Sep 10

Data Thanks to WA7BNM Contest Calendar

DX NEWS

Start Date	End Date	DXCC Entity	Call Sign(s)	/ Notes
August				
02 Aug	10 Aug	Ogasawara	JD1BRC	By JH7CSU fm Higashi-machi, Chichijima; HF; mainly CW
02 Aug	10 Aug	Mayotte	TO3K	By IV3JVJ IK3ZAQ IZ3NYS fm IOTA AF-027; 80-6m; CW SSB FT8 FT4; 100w; QSL via IV3JVJ
02 Aug	31 Aug	South Sudan	Z81D	By YI1DZ; 40-6m, possibly 60m and 80m; SSB FT8; QSL via OM3JW; exact end date not clear
07 Aug	12 Aug	Bermuda	VP9	By K9GY as VP9/K9GY; @VP9GE; 40-10m; CW; QRV for WAE CW Contest; QSL via K9GY direct
08 Mar	10 Aug	Cayman Is	ZF2GA	By K4AFD; HF; SSB; 85w; POTA activations
03 Aug	18 Aug	South Cook Is	E51KEE	By ZL2KE fm Rarotonga I; 40-10m; CW SSB; QSL via Club Log OQRS or IK2DUW
04 Aug	13 Aug	St Kitts & Nevis	V47JA	By W5JON fm Calypso Bay; 160-6m; SSB FT8; yagi, verticals; QSL also OK via W5JON direct
08 Aug	11 Aug	Br Virgin Is	VP2V	By KK4LWR as VP2V.KK4LWR and KD8RTT as VP2V/KD8RTT fm Tortola I; HF, focus on 6m; 100w; QSL via home_call direct
08 Aug	15 Aug	Corsica	TK	By OK1XOE as TK/OK1XOE; HF; SSB FT4 FT8; dipole
08 Aug	22 Aug	Wake I	KH9	By K9HEI as KH9/K9HEI; HF; FT8 SSB, some slow CW

Start Date	End Date	DXCC Entity	Call Sign(s)	/ Notes
12 Aug	15 Aug	Easter I	3G0YT	By CE7ET; mainly 20 10m
12 Aug	20 Aug	Faroe Is	OY	By DM6MA as OY/DM6MA; HF; SSB FT8; 20w; QSL via DM6MA (B/d)
15 Aug	29 Aug	Greenland	OX	By DL6YYM as OX/DL6YYM fm IOTA NA-134 (Aug 15-18) and NA-018 (NA-018); HF; CW; QRP
Aug 16	Aug 23	Guatemala	TG4	By KT8X as TG4/KT8X; 40-6m; CW + digital; holiday style operation
Aug 17	Aug 24	Aland Is	OG0C	By OH5CZ OH5CY OH5YL OH2JIU OH5CW fm IOTA EU-002; 160m-70cm; CW SSB FT8 FT4 MSK-144 JT65; QSL via OH5CW direct
Aug 17	Aug 25	Dodecanese	SV5	By N3JWJ as SV5/N3JWJ fm IOTA EU-001; HF; FT8; QSL via Club Log OQRS
Aug 18	Aug 22	Palau	T8	By JH6GFY as T88GF and JK6DXD as T88XD; HF; QSL via JH6GFY and JK6DXD respectively
Aug 18	Sept 07	Benin	TY2AA	By IK7WUL; 10m; SSB; spare time operation; QSL via I8KHC
Aug 18	Aug 23	Chile	3G1P	By VE3LYC XQ7IR PA3EXX fm Ilotes Pajaros (SA-100 New); 40-10m; CW SSB; see Web for QSL details
Aug 23	Aug 31	Market Reef	OJ0MN	By OH1MN; HF + 6 4m; SSB CW + digital; 100w
Aug27	Sept13	Lord Howe I	VK2	By SP9FIH as VK2/SP9FIH fm IOTA OC-004 (QF98ml); 30-10m; SSB FT4 FT8
September				
Sept 01	Sept 22	Rwanda	9X2AW	By DF2WO fm Kigali (KI58aa); 160-10m, incl 60m; CW FT4 SSB; QSL via M0OXO OQRS
Sept 02	Sep t07	Palau	T88DZ	By JH2JGR fm Koror I (IOTA OC-009); 160-6m; CW SSB RTTY FT8 FT4 MSK
Sept 02	Sept 11	Palau	T88DF	By JH2DFJ fm Koror I (IOTA OC-009); 160-6m; CW SSB RTTY FT8 FT4 MSK; QSL via Club Log OQRS
Sept 12	Sept 22	Sint Maarten	PJ7K	By OK1FCJ OK2ZA OK2ZC OK6DJ OM5ZW; 160-6m; CW FT8 SSB RTTY; QSL via OK6DJ
Sept 12	Sept 22	Svalbard	JW6VDA	By LA6VDA fm Spitsbergen (IOTA EU-026); HF; FT8 FT4; SSB; holiday style operation; QSL via Club Log OQRS
Sept 13	Sept 25	Dodecanese	SV5	By HB9OAU as SV5/HB9OAU fm Karpathos I (IOTA EU-001, KM35ol); 40-6m; SSB CW; holiday style operation; QSL via HB9OAU direct
Sept 15	Sept 19	Aland Is	OH0	By DL4APJ DL2AQI as OH0/DL4APJ fm IOTA EU-002 (KP00ad); 80-10m; CW SSB + digital; QSL via Club Log OQRS or DL4APJ (B/d)

Data courtesy of Ng3K.com DX Operations : 2025

LOCAL REPEATERS/GATEWAYS

Frequencies are those transmitted and received by the Repeater

GB3ND UHF DMR Repeater - Holsworthy Beacon TX 439.7375 RX 430.7375 Colour code 1 Slot 1 local RF, Slot 2 SW Cluster Keeper G1BHM

GB3DN VHF FM/C4FM Repeater - Stibb Cross
Tone 77Hz (for analogue FM) TX 145.6375 RX 145.0375, Default Digital Connection : Wires-X Southern Fusion http://www.g0rql.co.uk/gb3dn.htm. Keeper Tony G1BHM

GB7FB UHF DMR Repeater - Bideford TX 439.475 RX 430.4750 Colour code 5 Slot 1 Local RF/DoD Slot 2 SW Cluster . Keeper Drew M0MFS

GB3LZ VHF FM/C4FM Repeater - Winkleigh
Tone 77Hz (for analogue FM) TX 145.6625 RX 145.0625, Digital Connection : Wires-X SOUTHERN ENGLAND. Keeper Simon G4MQQ

GB7LZ UHF DMR Repeater - Winkleigh
TX 430.9125 RX 438.5125 Colour code 1, Slot 1 Talkgroup 9 local and direct dial, Slot 2 South West Cluster. Keeper G4MQQ

MB6DT VHF Fusion Gateway - Barnstaple
Frequency 144.8125 MHz. Gateway. Keeper Darren (2E0LVC)

GB7TG - UHF DMR Repeater - Wembworthy
TX 430.9750 RX 438.5750 Colour Code 7, Default Connection : Slot 1 Local/DoD Slot 2 SW Cluster Keeper G7SOJ

GB3NX VHF FM Allstar Holsworthy Beacon TX 145.7375 RX 144.1375. CTCSS tone 77hz Connection SW AllStar network (SWAN). Wires-X default room: Southern-Fusion, Keeper G1BHM

GB3BU - UHF DMR Repeater - Bude
TX 430.9625 RX 438.5625 Colour Code 1
Default Connection: Slot 1 Local/DoD Slot 2 SW Cluster Keeper G1BHM

GB3JH – UHF Analogue Repeater – Tiverton
TX 430.8625 RX 438.4625, Tone 77Hz – Keeper G6ASK

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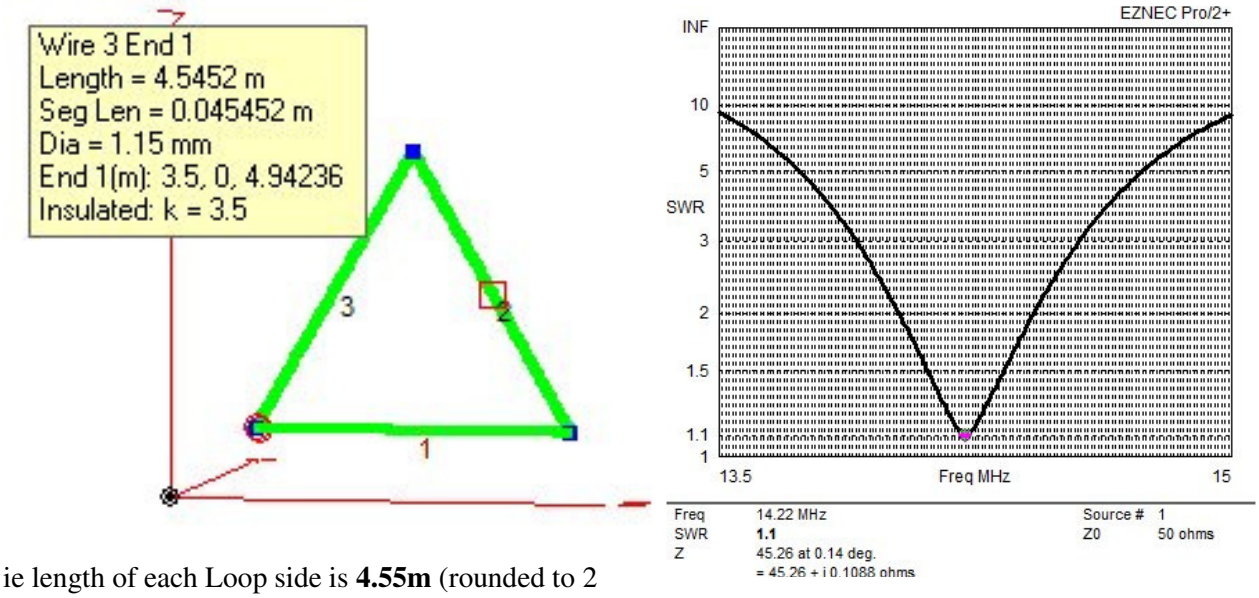
COIL INDUCTANCE MEASUREMENT AND ITS IMPLICATIONS IN EZNEC – Terry G4CHD

Introduction

The Compact Delta Loop antenna described in my Club YouTube video and 5&9 article has performed as predicted in EZNEC with regards having a low SWR and low angle take off with a recent QSO with Asiatic Russia being the best to date. However, it has become obvious that there is a significant difference between the EZNEC predicted Loop size and that needed to bring the Loop to resonance around 14.2MHz. This discrepancy has come to light as several such Delta Loops have been made by both myself and Mike (G3PGA) using heavy duty PVC coated antenna wire from Sotabeam which is specified as having an O/D of 2.55mm and 32 strands of 0.2mm copper conductor equivalent to 17AWG (1.15mm dia). This was confirmed by Mike (G3PGA) who used a micrometer to arrive at an O/D of 2.54mm and conductor dia of 1.17mm which agree very well with specified values.

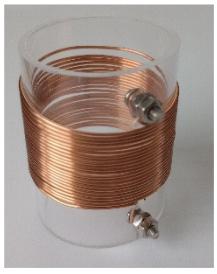
Therefore using the specified values of 2.55mm O/D and 1.15mm dia copper conductor gives an insulation thickness of (2.55 – 1.15)/2 = 0.7mm. These values were used in EZNEC together with a loading coil inductance of 20uH with a dc resistance of 0.1ohm to arrive at the following design :-



ie length of each Loop side is **4.55m** (rounded to 2 decimal places) to give resonance at 14.22MHz with an SWR of 1.1.
However, a Delta Loop constructed with a 20uH coil as shown above supported by a glass fibre pole needed each Loop side to be trimmed to a length of **4.33m** ie **22cm shorter** than predicted by EZNEC which led to the following investigation.

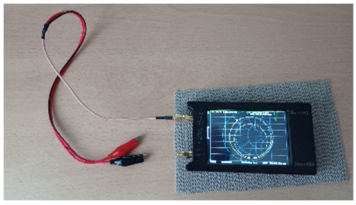
Loading Coil Inductance Measurement

The coil was kindly made by Mike (G3PGA) as shown opposite and consisted of 23 turns of 0.9mm dia enamelled copper wire.
Its inductance was measured using a **Peak Atlas LCR meter** also shown opposite which made inductance measurements at a frequency of 200kHz and gave a measured inductance of 19.7uH.



As part of the investigation I now decided to use a **NanoVNA H4** to measure the coil's inductance but now at a frequency of 14.2MHz to see if the measurement frequency was a problem.

NanoVNA H4 Inductance Measurement



A SMA 52cm Female to Croc Clip RF Coaxial Cable was purchased from Amazon which was attached directly to the CH0 port as shown opposite :-
The NanoVNA H4 was connected to a computer running **NanoVNA Saver** using the supplied USB cable and calibrated within NanoVNA Saver using Open, Short and a 50 ohm load (two metal oxide 100ohm resistors in parallel) **at the croc clips** over a frequency range of 50kHz to 40MHz using 10 segments.

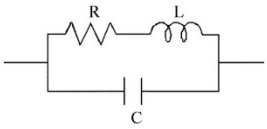
Two displays were then selected namely Smiths Chart and Impedance Z (magnitude) and the sweep set to continuous with the croc clips attached to the terminals of the coil. Care was taken to keep the coil well away from nearby objects.

The red marker was then moved until a frequency of 200kHz was displayed and the Series Inductance of 19.4uH noted and compared with the Peak Atlas Meter reading of 19.9uH.
The red marker was then moved to the 12 o'clock position (ie a position of pure inductance) and the Series Inductance of 19.3uH noted.

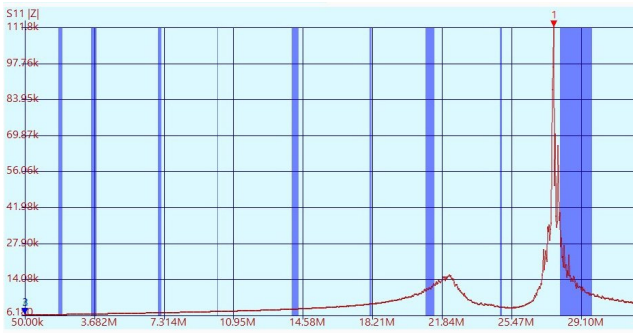
Finally, the red marker was moved until a frequency of 14.2MHz (or as near as possible) was displayed and the Series Inductance of 26.7uH noted. These results are compared in the table opposite :-

200kHz	12 0'clock	14.2MHz
19.4uH	19.3uH	26.7uH

It can be seen that the 200kHz and 12 o'clock readings are very similar whereas the 14.2MHz reading is much increased.
The reason for this difference at 14.2MHz was because previously no consideration had been given to the presence of **stray capacitance** (eg between adjacent windings) which leads to the coil having an equivalent electrical circuit as shown opposite :-



The dc resistance of the coil is only approx. 0.1ohm and hence will be ignored compared to the coil inductive reactance at 14.2MHz. We thus have a simple parallel LC circuit (ie Trap) which has a resonant frequency when the coil's inductive reactance is cancelled by the capacitor's reactance. This occurs at a frequency given by $f = 1/2\pi\sqrt{LC}$.

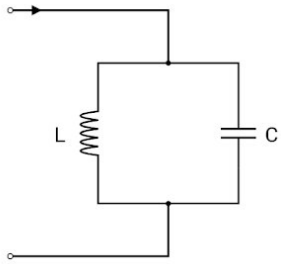


Referring now to the NanoVNA Saver Impedance Z plot shown opposite, we see a distinct peak at approx. 27.8MHz which is where the coil's inductance is in resonance with its stray capacitance.
Putting f = 27.8MHz, L = 20uH into the above equation, gives a stray capacitance of 1.6 pF.

Theory

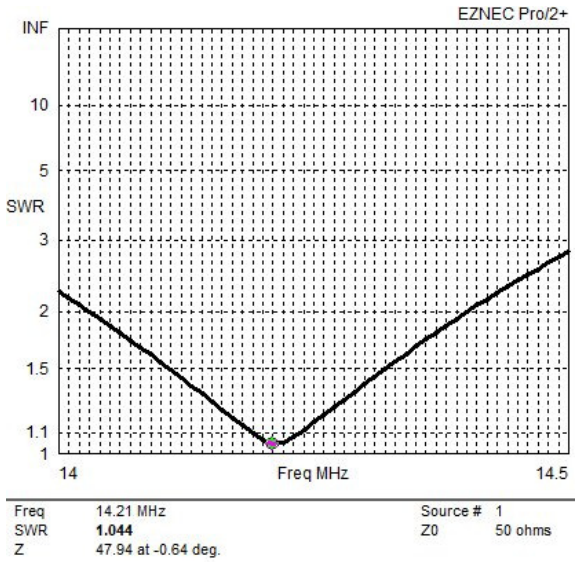
Consider the simplified circuit shown opposite :-
As a parallel circuit then $1/Z = 1/j\omega L + j\omega C/1 = (1 - \omega^2 LC)/j\omega L$

Parallel LC circuit



Hence $Z = j\,\omega L/(1 - \omega^2 LC)$
ie Magnitude of $Z = \omega L/(1 - \omega^2 LC)$ where $\omega = 2\pi f$
Hence $Z = 2\pi f L/(1 - 4\pi^2 f^2 L C)$
ie at any frequency f the effective inductance of a coil is $L/(1 - 4\pi^2 f^2 L C)$
where L is the actual coil inductance (ie measured at a low frequency)

Consider a numerical example :-



Let actual coil inductance L = 20uH and assume C = 1.6pF
Using the above formula **L/ (1 - 4 π^2 f^2 L C)** for the coil's effective inductance at frequency f

effective coil inductance@ **200 kHz** is :- 20uH/(1 - 0.00005) = **20uH**

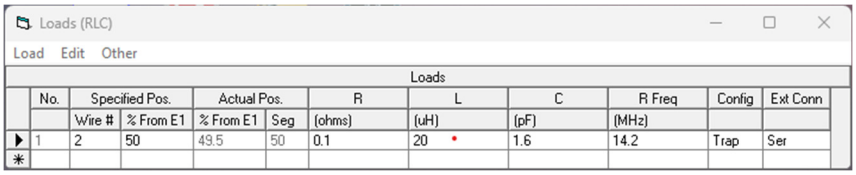
effective coil inductance@ **14.2MHz** is :- 20uH/(1 – 0.25) = **26.6 uH**

This shows that even 1.6pF of coil's stray interwinding capacitance causes the effective inductance to increase with frequency until the self resonant frequency is reached, above which the coil effectively becomes a capacitor! This is why it is essential to use the coil at a frequency well below its self resonant frequency.
Neglecting the coil's resistance of 0.1ohm, the coil's self resonant frequency is given by **1 / 2 $\pi\sqrt{LC}$**
where L = 20 uH and C = 1.6 pF we get self resonance at **28.1 MHz**

Hence using the coil at 14.2MHz is OK and well below the coil's self resonant frequency of 28.1MHz.

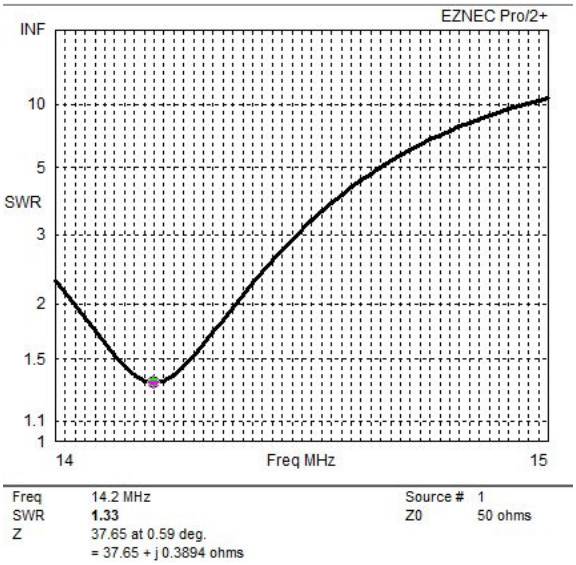
Implications in EZNEC using the Coil as a Load

Open the Load window and click on the Other Tab and click on Select Load Type and finally select RLC and click OK. Assume values for R, L and C are entered as shown below.
Now right click in the Config column entry cell and select Trap as shown opposite.

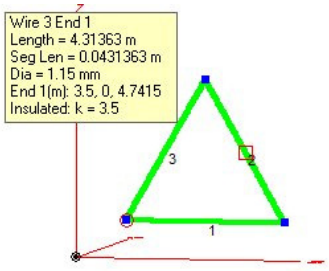


Now complete tuning the antenna dimensions to achieve resonance at 14.2MHz in the normal way.

The final design is summarised opposite showing a final SWR of 1.33 at 14.2MHz and a Loop side length of 4.3m
This final loop size of 4.3m agrees well with the 4.33m side length required in practice to tune the antenna.
Of course, actual final values will vary to some extent depending upon actual surroundings.



Modified Compact Ham Delta Loop Design taking into account stray capacitance



The design process was repeated in EZNEC using different coil inductances with an assumed stray reactance of 1.6pF until a low SWR design at 14.2MHz was achieved.

The optimum coil inductance was found to be 15uH and gave these results :-
a side length of 4.62m to give a SWR of only 1.04 at 14.21MHz with an overall antenna height of 5m.
Hence to construct the antenna, two 7m lengths of antenna wire are required which should give some leeway for final tuning.