Chelmsford Amateur Radio Society

Club Station Call Sign GØMWT

Issue Number 336 January 1994

NEXT MEETING - The Annual Film/Video Show

At the start of a new year, we offer for your interest and enjoyment some video films not previously shown to club members. We are fortunate in being able to purchase for the club, a copy of the Howland Island Expedition, a well made video which records the endeavours of a group of enthusiastic amateurs risking life and limb to activate a station on this very small island in the middle of the Pacific Ocean. The duration of the video is rather long to show at the meeting so Charles, G0GJS and Geoff, G7KLV have made an abridged version, however, the full version will be available for hire from the club library for home viewing.

The evening will include a full supporting programme of short videos, including a cartoon!

The meeting opens at 7.30pm on Tuesday 4th January, in the Marconi College, Arbour Lane, Chelmsford.

DATES FOR YOUR DIARY

4 Jan. CLUB MEETING - The Annual Film/Video Show.
1 Feb. CLUB MEETING - Cellular Comms - Colin, G4IIK.
6 Feb. SOUTH ESSEX ARS RALLY - Canvey Island.
13 Feb. CAMBRIDGE & DARC RADIO/COMP: RALLY.
20 Feb. RSGB VHF CONVENTION - Sandown Park.

DF NEWS - Dick, G3WHR

The Snowman Event.

The Snowman will take place on Sunday the 30th January. The event will use the Bury St.Edmunds OS map 155 starting from the green at Long Melford. To make best use of the light, the start time has been advanced to 12.50.

Afterwards, competitors have been invited to a Bring-a-Bite tea at Mike and Pat Hawkins house in Gt.Cornard.

CHRISTMAS DINNER REPORT

The new venue for this event proved to be successful, we were very lucky that the weather was kind to us (no fog as in previous years), it was a crisp cold night for the cross over from the Bar to the Dining Room, and everybody agreed that it was nice to have plenty of 'elbow room'. The raffle was very well supported with plenty of prizes, but there did seem to be a bias for the lucky winners to be at the 'other table'. Thanks to all who supported this event, see you at the 1994 Christmas dinner.

COMMITTEE MEETING

The next Committee meeting will be on Wednesday 12th January, at 7.30pm, in Telford Lodge; you are welcome to join us.

RSGB INTERNATIONAL HF AND IOTA CONVENTION 1993 - REPORTED by Charles, G0GJS

This was the second Convention to be held at the Beaumont Conference Centre and it again proved to be a first class event. A terrific atmosphere in which to meet fellow HF enthusiasts was generated. A full two day lecture programme featuring 2/3 streams of talks, plus a two days ladies programme (Windsor and Hampton Court), was organised with the main social event being the dinner on Saturday evening.

The business of IOTA - the Islands On the Air enthusiasts - was conducted on the first day and the HF Contest presentations, Young Amateur of the Year Award and 'Queries Workshops', took place on the Sunday with the lectures running in parallel throughout. The content and variety of subjects for the presentations viz. '40m Phased Arrays' by Bob Whelan, G3PJT - 'Low Band Antennas' by John Devoldere, ON4UN (phased arrays at 80m!!) - 'Working DX by HF Satellite Paths' by our friend Pat Gowen, G3IOR - 'HF Linear Amplifiers' by Ross Clare, GW3NWS - AH1A, KH5/KH5K and other dxpedition presentations - 'How to Win NFD (restricted section)' by Dave, G4BUO - 'How to Win BERU' (some of the trade secrets!) by Dennis, G3MXJ - 'IOTA Handling of Island Pileups' - 'HF and EMC' by the RSGB EMC Committee.

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'Computer Antenna Modelling' by Ian White, G3SEK - made choice very difficult in terms of selecting which presentations to attend. There were also stands and exhibits of working equipments and software demonstrations. GB1OTA was on the air driving a linear and sporting an 80 foot Versatower with a multi element tribander. Morse tests were in progress and RAFARS and AMSAT-UK stands were in evidence.

My first choice was the 40m phased array presentation by Bob Whelan, G3PJT. He explained that the declining sunspot activity meant that the LF bands were becoming more important and to overcome the associated heavy QRM and also transmit competitive levels of signals, directional antennas could be utilised so gaining big advantages for both transmission and reception. Phased arrays for the LF bands can achieve gains of 6db with 'back to front' ratios of 20dbs. We have placed in the Club Library (two copies) a fully documented account of the talk - why not have a go? Why limit your horizons to 40m? Real estate requirements are not unreasonable and apart from the square configuration there are trilateral and 2-element arrays described in the literature.

Ross Clare's presentation on HF Linears was really a few "nuggets" on home construction and some interesting observations on commercial linear amplifiers. The P.A. valve 3-500Z by EIMAC which was his prime candidate, gives 600/700 watts PEP output when provided with 1200/1300 watts input. The singly configured 3-500Z has 3kv on its anode and an Ia of 450m/a. Ross said that some commercial amplifiers were let down by the cooling arrangements. 'Chimney' sucked cooling was favoured - not diametrically blown. If the valve was diametrically cooled then the input power should be limited to 1kw. The better linears such as the L4b Henry 2K used 'chimney' cooling. He thought that one US manufacturer made exorbitant claims by quoting 1kw output for a single 3-500Z, which if correct meant that the valve must be grossly overloaded.

Inrush current protection was discussed keeping in mind that the cold filament resistance is only .1 ohms and this could be achieved either by the use of a separate filament transformer rated at 90w/100va (RS cat ref. 207289) or an inrush limiting resistor in the primary of the main supply transformer. Ross showed us a very fine example of a linear that he had built and used for twenty years.

Dave, G4BUO, a member of the Gravesend Club which again won the restricted section of NFD, gave some very useful information which I intend to discuss in some detail with the NFD group when we meet early this year. "How to Win BERU" by Dennis, G3MXJ was a fascinating insight into a determined Dxer operating in a competition which has restricted participation (Commonwealth amateurs only) with low QSO rates - possibly only 150 QSOs in 24 hours. A detailed knowledge of propagation in order to maximise such aspects as dawn/dusk openings - the use of the "DX Edge" to help track and forecast the movement of the "grey line" so that the opportunities for short band openings are not missed - whether to call "CQ" or search - the need for comprehensive antennas - these were just a few of the considerations that Dennis put to us. A different contest to the tempo and bustle of NFD but BERU obviously brings out the talents of the true HF Dxer.

The Saturday dinner was excellent and the President of the RSGB Peter Chadwick, G3RZP, a former committee member of CARS, made a highly entertaining speech. More than 300 amateurs, including some 30 overseas visitors, attended the Convention and I am sure were unanimous in voting the weekend a great success.

LAST MONTHS MEETING - John, G8DET

We were pleased to welcome Ron Kitchen to present his illustrated lecture on RF Radiation with a bias to the amateur operator.

Ron is one of the leading authorities on the subject and has written a definitive book which has just been published (much to Ron's annoyance as it was delayed by the publishers in favour of Lady Thatchers memoirs).

As an introduction, Ron stated that his subject was NOT ionization, NOT nuclear radiation or X-Ray radiation (which can occur in commercial oscilloscopes with EHT over 5kV).

Even so RF Radiation can cause havoc commercially by firing off air bags in cars and upsetting aircraft electronics hence the warning to air travellers not to use portable radios, etc.

The units involved with RF Radiation:-

1) Power Flux Density measured in Watts per Square Metre

2) Energy Density which is Power Flux Density x Time.

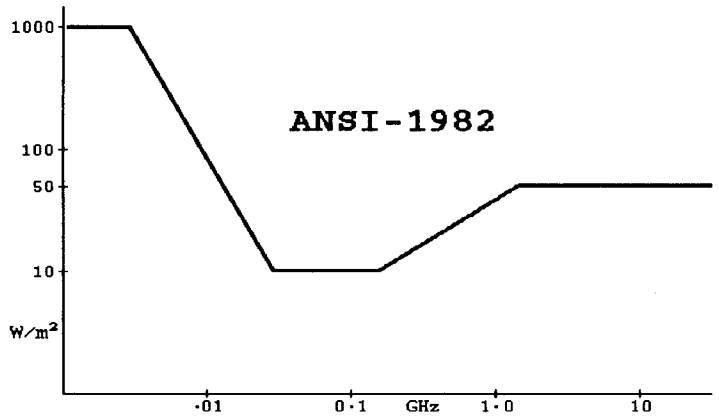
The most disadvantageous RF frequency for the human body is at the frequency of 2.5GHz which is why this frequency was chosen for microwave ovens (meat cooking). At this frequency about half the power is absorbed by the body. Having said this Ron assured the audience that provided the microwave door was kept clean and that the unit had not been dropped, it would be perfectly safe to use. Even so it is always suggested that the door should be closed, the oven switched on and retire away from it until the bell informs one that it has switch off - don't peer into the door for long periods.

The RF effects to be controlled:-

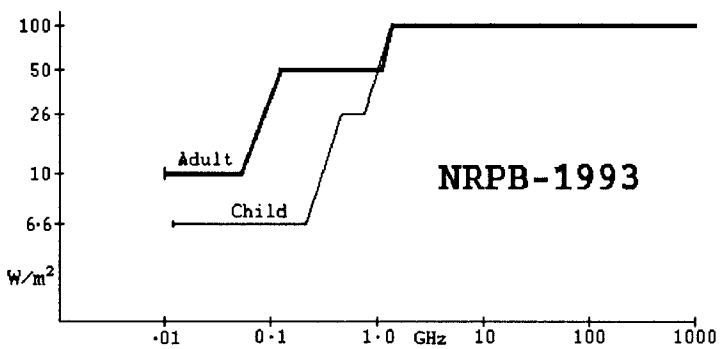
1) Heat deposition. Body currents below 100MHz produce burns and shock which damage critical areas e.g. eyes and testes when subjected to more than 1,000 Watt/m² and for more than 6 minutes. When the body height is equal to 0.4 x wavelength it resonates at 80MHz when isolated from earth but only 40 Mhz when earthy. Again this is why hospitals use 27MHz for electro-medical therapy (warming tissue damaged by sprains etc.).

2) Depth of penetration. At 27MHz it can be as deep as 25cm while at 10GHz or greater it is only mm.

Ron backed up these statements with the A.N.S.I. graph:-



and the N.R.P.B. graph, which soon may be the new standard.



As an example Ron suggested that the existing hand held radios were safe to use but if linears were added or the power was increased then the user would be at risk. Motorola had been sued in America and as a result had conducted much research into the effects of RF Radiation.

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RF can cause an explosion given the appropriate conditions. This would have to include having the appropriate explosive mixture present, e.g. petrol/air mixture and sufficient power to produce a spark. The press had quoted examples of the illegal linear amplifier used in a petrol station. Most petrol stations now have metal canopies over them to reduce the risk and to provide protection from lightning.

Safety for the Radio Amateur.

Ron stated that it was very important that all RF Feeders and Power cables were routed away from people. Design Linears such that they were at the rear of the equipment which should be in metal cabinets.

Keep babies/toddlers away from radiation as their mass was less and therefore more susceptible.

Remember the possibility of RF Shock and Burn below 100MHz.

Ensure that the equipment is provided with good earths, particularly when used in flats etc.

At outside events, consider the risk to flammable vapours.

Junior Amateurs - develop confidence NOT fear.

Be very careful with vehicle mounted aerials - they can produce RF burns if touched.

To demonstrate this Ron held a NARDA Portable Probe next to a 1 Watt Transmitting aerial; it showed that there was a field strength of 5 Watts/m² present. This was within the "safe" area but would not have been if power was increased. Again remember the 6 minute rule.

After a break provided by Jean with hot mince pies from Ela and John. The evening ended with a number of questions from members which were confidently answered by Ron.

CAR PARKING - IMPORTANT NOTICE

There are now occasions when other events are taking place simultaneously with our Tuesday evening club meetings at the Marconi College and car parking spaces may be in short supply.

One option which is NOT available is to park in the short access road at the entrance to the College.

During recent meetings there have been complaints from the residents of the terraced houses in this road - so please DO NOT PARK THERE!

If you have difficulty in parking, please ask for advice from the committee.

ADVERTISEMENT

Bargain of the month! MICROSOFT MS-DOS.5 UPGRADE, packaged as new, "this is the good one" and the last version with a full size printed manual. Upgrades previous versions of DOS (version 2.11 or later). £25. Contact Roy, G3PMX.

A Very Happy New Year to all our readers

73 from Roy & Ela Martyr,
G3PMX & G6HKM

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P.S. we are very short of articles and material for the News Letter . . . . please send more!