

# Chelmsford Amateur Radio Society.

NEWSLETTER No. 258

July 1987

## NEXT MEETING - How to work VHF-DX by Meteor Scatter.

We are pleased to announce that Ken Willis, 68VR, has recovered from the illness which prevented him from giving his lecture in May and will now be able to attend our meeting on Tuesday 7th July.

Ken, who is well known for his columns in RSGB publications, has been able to assemble some interesting information on Meteor Scatter, including the techniques for high speed data exchange which are necessary for this mode of radio communication.

The meeting will commence at 7.30pm at the Marconi College, Arbour Lane, Chelmsford. PLEASE NOTE that due to the extensive road works in the Springfield Road area, access to Arbour Lane may still be restricted to one end which must be approached by either Stump Lane or Springfield Green into Church Lane.

## DATES FOR YOUR DIARY

- 7 July - How to work VHF-DX by Meteor Scatter - Ken Willis 68VR.
- 19 July - Anglian Mobile Rally - Colchester.
- 4 Aug. - Television Telerecording - Max Pemberton 64ZMQ.
- 1 Sept. - Crime Prevention - PC Jeff Butler.

## LAST MONTHS MEETING - CONSTRUCTORS COMPETITION, - Gwyn 64FKH.

This month we had a very successful meeting in the guise of our annual constructors competition. There were five entries of very high calibre, they all deserved a prize but only four could receive one.

In the order in which they were presented they were:-

1) Top Band Monitor Rx. - Andrew 64KQE. This Rx was developed over a number of years, Andrew explained, from an original article taken out of RadCom, which was subsequently modified greatly. The first area of upheaval was the change to a more orderly P.C.B. As with the whole of this project the work was carried out in his garage. Andrew's main problem was instability which he cured after three attempts, it turned out to be coil design. A front end amplifier and S meter were also added. This project utilizes F.E.T., I.C., and even Ge. transistors, so technology has no bounds in 64KQE's shack. Andrew reports good results both as a general coverage Top Band Rx and when used /P for D.F.

2) A version of P.W.'s V.L.F. Converter - Martin, 64T00. The original catered for coverage in the range 0-50KHz, but was subsequently modified for 0-2MHz. Martin made his converter in one day from parts mainly retrieved from his junk box. The circuit consists of a LPF, balun, mixer and oscillator. Martin is open for suggestions as to the use of this converter, however he stated he could get b/cast stations as well as other L.F. transmissions. One of the projects he has in mind for its utilization is to decipher FAX signals in conjunction with a home computer.

3) 144MHz G.P. Antenna - Fred, 62HNF. Fred took this design out of S.W.M. (1962), and is a half wave vertical with 6 radials, plus stub. The S.W.R. with the stub is 1.2:1 or better. Fred made this antenna in about 3 hours in his own workshop at home, He did however point out that a lathe is an absolute necessity. The antenna plus stub was mounted on a pole and electrically isolated so that the antenna ground plane was above actual earth. Whilst built for portable operation, tests to date at home have given QSO's into Kent, Norfolk and Suffolk.

4) D.F. Tx and A.T.U. Kit - Paul, 60BTH. This is a design of various circuits put together by Paul to suit components to hand. The whole thing was made for battery operation and small enough to fit into an Army nap-sack, along with Ant. wire, Key and Mic. His main aims were, (a) compact units, (b) light weight, (c) cover complete 160M band, (d) ruggedness and (e) CW/AM operation. He has successfully used this equipment on D.F. hunts. The Tx is basically a reverse homodyne Rx circuit, which strips and reintroduces the carrier for AM. The A.T.U. was an ARRL design also of compact rugged construction. This set-up enables Paul to get his 6W AM or 3W CW into an aerial. One special allows him to monitor forward as well as reverse power so he can spot an antenna break when someone accidentally walks through it.

5) Morse Key - Chris, 61JRG. Chris explained that it took him about a year to acquire the brass for this project and quarter of an hour daily sessions at work for 3 months to complete. His main problem was the bearing hole, Chris had to get help for this to achieve the precision required. The main tension spring was found in a car park and the mild steel base was acquired! Chris obviously took a lot of time over this neat well engineered project and a total cost of 25p was obviously a source of pleasure for him.

The three judges; Geoff 63EDM, James 66ZC and Simon 66ZKG took serious stock of the situation during the tea break. Geoff gave a brief synopsis of the qualities that they sought. (a) Purpose, (b) Originality, (c) Construction, (d) Safety, (e) Performance, (f) Constructional facilities available, and (g) Finish and cost. Geoff went on to state that all the entries were of such a high calibre that it was difficult to pick out the winner.

Prizes were given as follows :-  
Novice prize - Fred, 62HNF.  
Third prize - Andrew, 64KQE.  
Second prize - Paul, 60BTH.  
First prize - Chris, 61JRG.

I for one concur with the judges decision and thought that Chris's entry was a worthy winner. All appeared to enjoy the evening, and sincere thanks are extended to the entrants and judges.

### NFD- Gwyn G4FKH and Dick G3WHR

Day One, G4FKH - As had been previously arranged the majority (enough hands) turned up on site at 9 a.m. on the 6th to ensure that we were ready for the start of the contest. As the site we used was in a kind farmers field, we all had to drive through a great many puddles, my car for one had about 1/4" of mud on the lower parts.

Because of the good turn-out of willing helpers we were able to erect the telomast in the morning, which proved to be a blessing. Even as the mast was being raised the wind picked up and we had to wait in between stages for the breeze to slacken. Harry, G2HPF at one period wrapped a guy around his body and acted as a human stake in order to prevent a catastrophe. The telomast was erected to the now usual height of 40'. Arthur, G3KPJ used his bow and special arrow again to get the L.W. and dipole stays into suitable trees. He found that loosing his arrow directly with or against the wind gave the best results. The antenna's and rigs were ready by 2 p.m. and with the starting of the generator we were able to establish and log the relevant A.T.U. settings prior to the kick-off time.

When 4 O'clock came around the start of the contest was met by strange band conditions. The scoring rate was very low mainly I believe due to band conditions, Scoring rates picked up later on.

Day Two, G3WHR - It was 10pm before I returned to the site, and I was pleased and relieved to see the site erected as usual and the operator/logger hard at work.

My session with the key began at 3am on 160m. The band was still pretty active, and, for the first time, contained some DL stations. A switch to 80m found the band full of /P signals with absolutely no space between them, however, the IC 751 had a good IF filter and there was no problem in sorting them out.

The tents were still flapping considerably in the wind, and it proved impossible to use the heater brought by Gwyn. Still, there was no chance of frostbite, and I could blame cold fingers when the keyer occasionally got completely out of control in mid QSO.

My 3 hours passed very quickly, we even forgot to fuel the generator, fortunately Arthur had topped it up at the end of his session. At 6am Gwyn arrived to take-over, needless to say the scoring rate improved immediately. I emerged from the tent to find that Andrew had brought Daphne and family with him, and that Daphne was busy cooking breakfast. It was delicious, the only complaint coming from Gwyn who found a soft-boiled egg in a bun rather awkward to contain single handedly.

With the daylight came the switch to the hf bands. We had sessions on 10m/15m/20m and finally finished on 40m. The last serial number sent was 423, not quite so high as last year but long sessions on 160m and 10m meant plenty of double points. Some stations did rather better, on two occasions we were sent a 4 digit serial number.

Approaching 3pm the support crew arrived to help with the dismantling and packing. Time for a last cup of tea/coffee before the Naffi tent was folded away. The site was cleared in record time with our chairman Brian left to enjoy a picnic on the flattened grass.

When the logs were checked for unmarked duplicates - there were none - well done the loggers. We claimed 417 QSOs and 2040 points, now we have to wait for the October Radcom.

### D.F. NEWS - Dick G3WHR.

The third Chelmsford event took place on the 19th June, when Paul Beards G4IX/P was the hidden station.

From the start at Tiptree the bearing went across the river Colne, posing the usual problem - which side? A punctured tyre 400m from the start delayed me for 15 minutes, so I arrived in Colchester for the 8pm transmission. The cross bearing indicated the South bank and approaching the river I kept seeing other competitors driving around. It wasn't until 8.30 that we convinced ourselves that the signal came from the North bank.

As usual, some found it all too easy and couldn't believe it when they arrived on-site without the usual traffic jam of DF cars. Well done Richard for your first triumph, and to Paul for a well chosen site.

RESULTS				
	1 Richard Whitney	8.42	7 Pat Cranmer	9.05
	2 Jeff Herbert	8.43	8 Andrew Mead	9.10
	3 Philip Cunningham	8.47	Ian Holmes	
	4 Paul Clark	9.00	Colin Baisden	
	5 Dick Brocks	9.00	Graham Dufford	
	6 Ian Butson	9.00		

The Chelmsford/Colchester RSGB National Qualifying event will take place on Sunday 16th August. As a warm-up to this event the next Chelmsford event and the following Colchester event will have two hidden stations. Usual start times apply - for more details see me at the next meeting.

We welcome newcomers to DF, just turn up at the start wearing old clothes.

Future Events 17 July, Chelmsford. 2 August, RSGB Salisbury. 7 August, Colchester.

### CLUB NETS

Remember that for up-to-date information on the activities of the society between meetings join in the Tuesday club nets.

The 2 Metre FM Net begins at 7.45pm, on 145.225MHz (or nearby if this channel is already occupied) and the 10 Metre SSB Net on 28.325MHz starting at 8.30pm.

### MORSE TUTORS

If you have a Morse Tutor on loan and would like to return or extend the loan please arrange this with Ela, G6HKM at the meetings, both Tutors are out at the moment, however, your name can be put on the waiting list.

#### LETTER FROM AMERICA - Paul G4PVM.

I am currently building a 23cm E-M-E antenna and looking for suitable design information I came across several references to American publications I didn't have. I wrote to the CARS newsletter appealing for help but after several weeks I had no response. Last week, out of the blue, I received copies of the articles I required by post from Chelmsford ... Massachusetts. The newsletter, which is exchanged with the Chelmsford Club in the US, was seen by Bob W1HH and he and Joe W1JR (author of one of the articles) sent me the information I needed. Thanks a lot!

It shows it always pays to advertise via the CARS newsletter. With luck I should now be QRV in the ARRL E-M-E contest this autumn.

#### REPORT OF VISIT TO BRADWELL POWER STATION - John Bowen G8DET

On 19th May 1987, 20 CARS members, XYLs and friends assembled at Bradwell Nuclear Power Station for an evening visit. Roy, G3PMX, took a photo of the group but instead of returning his camera to the car, was invited to bring it into the plant.

The introductory lecture was given by the Plant Reactor Physicist, Mr. Graham Carr who told us the history of Bradwell and answered questions. He explained that part of his job was to anticipate what could go wrong and then ensure it didn't.

Bradwell is one of 11 nuclear power stations which commercially produce base load power (11%) for the National grid at about 1p per KWatt. Coal and oil power stations are sited close to their fuel source which is usually far from a plentiful supply of cooling water, hence the need for the unsightly cooling towers.

The nuclear power stations need only a few fuel elements each week and therefore they can be sited on large estuaries or near the sea and are then from high population areas. Bradwell used 20 million gallons of cooling water per hour.

The group were split into parties of 4/5, the leader of my party was a retired Instrumentation Engineer who was present when the first reactor was commissioned in 1962.

We were first shown the standby generators to provide power for the motors which circulate the 75 tonnes of carbon dioxide as it takes the heat away from the reactor and is used to make superheated steam.

With a combination of lifts and staircases we then climbed to the top of the 2500 ton plant which houses the reactor. Here we walked over the reactor floor and peered down at the standpipes which give access to the fuel elements, control rod motors and the emergency control tubes which all go to prevent a Chernobyl type accident. The 8 fuel elements are unloaded/loaded from each channel at the rate of 8 per week using the huge Reactor Charge Machine. This is 60ft high and weighs 400 tons, see photo. The spent fuel elements are passed into an Irradiated Fuel Cooling Pound where they stay for some months before being sent to the infamous Sellafield Nuclear Reprocessing Plant.

The 18 channel monitoring plant was next visited where samples of air are taken from all over the plant to check for radiation, a test being made with a known source each week to ensure they did work. The control room was next on the tour. The instrumentation looked a little dated but you had to remember that the meters etc. had been in continuous use for 25 years!

We followed the steam supply and found ourselves looking at the six conventional 42M Watt Parsons turbo alternators running at 2998 rpm.

To ensure that we were not radioactive we all passed through a turn-style testing area where air was blown over our clothing and checked. An old luminous watch dial was quickly detected.

After a hot drink and a discussion we thanked the CEGB and made our way home happy to have a Magnox nuclear power plant on our doorstep.

A chat while mobile ensured no-one got lost round the winding roads.

#### COMMITTEE MEETING

The July Committee Meeting will be held in the Marconi College Residence at 7:30pm on Wednesday, 15th July. You are most welcome to join us.

73 from Roy & Ela, G3PMX & G6HKM

Telephone, Home (0245) 360545  
or Office (0245) 353221 Ex.3815

1, High Houses,  
Mashbury Road,  
Great Waltham,  
CM3 1EL.

### MEMBERS ADVERTISEMENTS

#### FOR SALE

Pye Europa F.M. transceiver converted to 2m. 9W output xtled for S18, also has facility for selective call. C/W circuit diagram setting up procedure, £50.

Phone Dave G8UUO, Chelmsford 252170.

#### WANTED

Has anyone got a copy of a View Sheet Manual that I may borrow for a day or two, any version BBC or Electron will do.

Phone Dave, G8UUO Chelmsford 252170.

#### FOR SALE

As new, in original packing, Spectrum Communications SC29 Synthesizer Conversion Module for CB's using the LC 7137 PLL IC to 29MHz FM. Purchased at NEC this year for £15 but now not required. Complete with detailed fitting instructions, will accept £10. Roy, G3PMX.