

ACF/CCF INTER DISTRICT RADIO NETWORK

NEWS SHEET NO 24

SEPTEMBER 1980

EDITOR'S COMMENT

1. With the start of another school year, it's all too easy to fall into the "here we go again" trap; another motley crowd of recruits to train in the mystical art of V P, and the black art of tuning aerials (those who have offered inadvertent burnt offerings over MT leads will sympathise). The coming of the C-13's has raised many stations' signal strength above the QRM, but a depressingly high number of contingents seem to limit their work to telephone and light VHF use. This is a pity; the effort spent in "getting on net" for the first time is well repaid.
2. This term's News Sheet is mainly devoted to ways and means of getting an established station working better. Those with a rack-full of dusty C-12s (or, worse, a crate-full of clean C-13s), who want to get started but don't know how, are advised to see last term's News Sheet, or drop a line to the Editor for help. Those who would like to change "nominal output power" into "effective radiated power" at a better rate, read on .....
3. Call-sign 29 have sent in details of an interesting dipole arrangement that they used on their recent trip to Scotland. As they raised their unit DX record to 505 miles, reaching Bournemouth, it must be fairly effective! (This is believed to be the all time Field Station record; would anyone who has any challenges or comments please let me know). I believe that 83B hold the outright DX record of 515 miles, to 47 in the Channel Isles. Or should that be the other way round?
4. The aerial is set up between two posts or buildings at least 120 feet apart. It is fed with coax straight from the set (29 recommend direct from the RF connection to the set, if you can arrange proper plugs) which can be either 50 ohm or 75 ohm. Television "low loss" cable is ideal, but expensive; microphone cable is quite useless, avoid it like the plague. Standard TV "downlead" is good enough.
5. The aerial itself is symmetrical, cut from R-4 aerial wire if you can get it, and hard-drawn copper if you can't. Medium gauge "Physics Dept" wire will do, if all else fails; it doesn't have to be insulated (covered), but should have at least 14 strands. If you use this wire you must make allowance for its low breaking strength (ie avoid "Armstrong" methods when setting up, and allow for a fair degree of sag); it also helps to have a Physics Dept. which is either friendly, or easily distracted!
6. The layout of the aerial is best shown in the diagrams of Annex B; the wire runs from the junction (shown on the other diagram) to a pair of plastic chain-link insulators at A, and is secured there. A second wire runs from the other side of the insulators, to another insulator pair at B; a third wire runs from B to C. A flexible wire, terminated in a croc clip (or a proper shorting link if available) is soldered to the outer side of insulators A and B; this is used to connect the outer elements, as described below.

7. Table of lengths (each side).

OA 43.9 feet  
 AB 3.75 feet  
 BC 10.3 feet

8. "Only connect....."

<u>Band</u>	<u>Short</u>	<u>Open</u>	<u>Total Length of Arm</u>
D	None	A, B	43.9 feet
C	A	B	47.6 feet
B	A, B	None	58 feet

9. Final hints. The knots securing the dipole wire to the junction box and the insulators should be at least a "figure 8" knot; a half blood knot, or an archer's knot, would be better. It is essential that no stress comes on the coax parts at the junction, or on the link wires at the insulators. When the junction has been secured, it should be encapsulated in plasticraft or glass-fibre resin, to make it waterproof.

10. Modifications. As the weight of the coax cable will load the aerial noticeably, you may want to support the middle as well. This has disadvantages (another mast is needed, and another rope has to be used when lowering the aerial to make or break connections when changing frequency) but it is possible to get the middle of the dipole (whence cometh most of the radiated power) higher, and so lose less power to earth. Guidelines for making an A - frame mast are included, later in this News Sheet. Some stations may want to add a further element on each side, to radiate signals on channel "A"; or, more liketly (since "A" is essentially a ground wave, vertically polarised frequency best worked with a whip aerial and a good earth) to shorten the portion of wire O-A by adding another set of insulators to tune a shorter length to channel "E". This channel is still remarkably under used; it is often most effective around lunchtime, and often well into the afternoon. Anyway, many thanks to c/s 29 for a clearly explained sketch and notes; I have slightly amplified them, so any problems were most likely caused by editorial fiddlings.

LUCKY JIM AWARD.

11. I was glad to hear from c/s 20A that they will be attempting this award from the beginning of term. Other stations interested in trying for the Net's only certificate (so far ...) should refer to the last News Sheet, and Annex R of the Regimental Signalling Handbook, part 5. All stations are reminded that "Lucky Jim" messages must be accepted AND LOGGED, and that the active station MUST have a QSL card from each station confirming the exact message sent. Please help active stations by QSL-ing immediately, with the received message on the card; QSL cards are quite cheap (and can be an interesting exercise for the Art people) but a sheet of paper with your callsign, station address and relevant details is quite good enough.

12. Any other stations wishing to attempt this award must notify the Senior Net Monitor BEFORE the start of the six month period. Details of attempts will usually be included in the next News Sheet, but this may be well after the actual start of the attempt. 20A have chosen about the best time of year to start; if I can enthuse the new Signals Sergeant, 26A are going to try as well.

QSL BUREAU

13. With all these QSL cards flying around to confirm "lucky Jim" and other

contacts (and to brighten up the walls of the Signals Room and impress wandering Generals) the Bureau is a very good way of keeping postage costs down. You send a few (5-6) stamped self-addressed envelopes (minimum size 9 x 4 inches, but 9 x 6 is better) to the Bureau address; each envelope is numbered, with the last clearly marked "LAST ENVELOPE" at the bottom left. Your QSL cards to other stations are collected in your Radio Room until you have 6 or 8, when you put them in an envelope (make sure the stamp covers the weight of the cards) and send this, too, to the Bureau. The Bureau will then sort the cards (it helps if there is SOME indication of the station to receive the card !) and, when a given station has 4 or 6 cards ready, send them on in an envelope provided by the "receiving station". All very simple really!

14. A recent letter from the Bureau Manager reads:

"I must first apologise to you all for a marked reduction in Bureau activities during the past few months. This was entirely due to personal problems encountered by myself. These problems have now been resolved and the Bureau is now operating once again at 100% efficiency (cough, cough). About 50% of the correspondence I receive for the Bureau has no Call-sign appended (on letters, envelopes, etc.). If no cards accompany this correspondence it is very time consuming searching through the Net Directory to discover the appropriate call-sign to affix thereon. So please .....

15. "Herewith follows a list of all call-signs with envelopes in Bureau files:

3, 7, 7B, 8, 9A, 20A, 20B, 21A, 21B, 22B, 24, 26, 26A, 28, 29, 29A, 29B, 31A, 31B, 32, 32A, 36B, 41A, 47, 51, 51A, 51B, 52C, 53C, 58A, 74, 79, 80, 88B.

I say again, if your call-sign does not appear in this list, your cards will not be sent on to you. Call-signs outside British Isles postal area, need only send unstamped self-addressed envelopes".

16. The QSL Bureau Manager's address is:

Capt R F G Cogzell

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#### STATION BEHIND THE CALL-SIGN 77

17. "Reading in the National Net news of Capt Hargreaves' retirement, I felt that now was the time for 77 to add its number to those who have been written about in the 'Station behind the call-sign' series. So here goes...

18. "There has been a Signals section at Ellesmere for as long as anybody that I have asked can remember, and that goes back about 35 years. However activity on the Net has been very limited, in fact almost non-existent until the summer of '78 when I and two others became classified. I was the first "on net" and therefore became the No 1 operator, my first contact was at 1301 hrs on a Sunday early in the summer term; the exact date and the call sign have become unreadable in the log because of a coffee stain. However enough of personal memories, from that day on we have never looked back.

19. "For the first year we were operating from above the Armoury, this meant that we had to be very careful with the alarm; it was then decided that there was a need for a new RETE hut so a new Signals Room was built at the same time. This obviously meant that we had to erect all new aerials. At the end of the first term in the newroom we entered the Christmas competition this proved just how cold and damp the new room was going to be (this year we moved to a near by club-room for the competition). The result of this competition and of the previous 24 hrs Field competition spurred us on for the next year. This proved to be worth-while .... now we have impetus for another year ....

20. "The equipment we have is the usual array of 38's and 31's. On the HF side we have a C13, C12, 32 and a 19 that has Russian instructions but doesn't work. We also have and use regularly an 'Eddy Box' - at least, that's the friendly name for it..... For an aerial, I find that the best is the half wave dipole, cut from channel 'D'; when using that frequency, I feed it directly from the RF socket of the set (C 12 or C 13).

21. "Finally I would like to thank all those who have organised competitions in the past, and especially Capt Hargreaves; and I would like to suggest to the Net that we should all get together to buy a memento of the Net for him".

Mark Beach, NCO i/c Signals 77.

(I think this is a very good idea. Prontos and others who have known Capt Hargreaves over the years are invited to send any donations, and ideas of a suitable gift, to the Senior Monitor by the December deadline AK).

#### 24 HOUR FIELD COMPETITION

22. The results of this competition are not yet available, but it is hoped to include them as Annex A to this News Sheet.

#### FORTHCOMING ATTRACTIONS

23. The Christmas Competition will be run again this year by Major Buckley of c/s 21B. Stations wanting to try this unusual and interesting competition should send a sae to him, preferably by the end of October; immediately on receipt of this News Sheet is even better. They will then be sent exact instructions later in the term. Write to:

Capt. H J Buckley

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24. The CW Competition is usually held in October, and stations interested in this should write to Mr Kirby NOW! It is not necessary to be able to copy fast morse; even stations working 4 wpm are welcome to join in.

C F Kirby Esq

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25. Stations wanting to start CW, or to improve their speed (and this includes those working for the Home Office Class 'A' Amateur Licence) should contact Mr Kirby (he is to be heard on channel X - a CW only channel on many Sunday mornings); Lt Harding of 53C is also active on CW, and is willing to help anyone who would like to master this most efficient mode. Stations wanting to practice CW are advised to use a "voice" frequency so that they can sort themselves out if they get into difficulties. CW is always allowed on voice frequencies (with the permission of the control station, and NOT if the frequency is busy) but you may NEVER use voice on a CW - only

frequency. Channels 'X' and 'Y' are CW-only.

### GETTING STARTED ON THE NET

26. Lt Burgess of c/s 20A has very kindly offered assistance to any Pronto or senior NCO who is trying to get started. Anyone interested should write to him to arrange a visit to the station (if you are near enough) or a simple local contact. Stations distant from him are again urged to write to the Senior Net Monitor for assistance in the first few contacts.

### COMPUTATIONS

27. Thanks to c/s 29 for sending 2 programmes to help self-training in CW. Both of these run on a "Pet" computer; stations with access to one of these beasts are welcome to write to the Senior monitor for a photocopy of the programmes, which were produced at 29. Unfortunately this typewriter won't copy the "Pet" graphics used in the programme, so the programmes cannot be inserted in the News Sheet as such.

28. For anyone who still hasn't got one, a table of distances from your station to all the active stations on net is available from 26A; send your c/s, latitude and longitude. This helps when working contests - if you want to do it yourself, a copy of the programme (which runs in BASIC in a SUTPC 6800 machine) is available from the same source.

### ROYAL SIGNALS AMATEUR RADIO SOCIETY

29. This society is organised mainly for those currently serving in the ROYAL SIGNALS, who have a full Amateur licence. Cadets currently in the CCF or ACF, Prontos, and in fact ROYAL SIGNALS Sections are entitled to become members while they are attached to a CCF or ACF. The magazine "MERCURY" is published several times a year, with much information on old equipment, about present use of the MF bands, competitions and awards, and stories about past and present customs of the ROYAL SIGNALS. An extract from one of the humorous articles 'More School-person howlers' :

"The process of turning steam into water again is called conversation"  
"The earth makes a resolution every 24 hours"  
"The cuckoo does not lay its own eggs"  
"The pistol of a flower is its only defence against insects"  
"Sea water has the formula C H<sub>2</sub>O"  
"For a dog bite -- put the animal away for a few days. If it has not recovered, kill it"  
"For asphyxiation -- apply artificial respiration until the patient is dead".

Much more information about the Society than there is space for here is available from Major Buckley at the address given in para 23.

### AN A - FRAME MAST

30. A diagram of an 'A' frame mast, currently in use at 26A, is given at Annex 'C'. This has allowed the centre of the dipoles in use to be raised to 30 feet agl, and seems to have made the aerials noticeably more efficient. Aerial theory suggests the lowest acceptable height for a dipole is 1/4 wavelength about ground (and of course clear of buildings, overhead wires and similar obstructions). It is rather difficult to manage this on the lower frequencies, but the closer we can get to this optimum, the better; dipoles supported only at the ends can sag so badly that the central portion (which radiates the most power) can be only 10 feet agl or so. This will receive fine, but put out a remarkably weak signal.

31. The mast is made from sections of 2½ inch square rough (ie not planed smooth) timber, chosen to be as free from knots as possible ( 2 inch square might do for a small mast, not above 25 feet overall). The sections are held together by 6 inch coach bolts, with washers at both ends of each bolt. Bracing struts, as shown in the diagram, are needed to give stiffness in the plane of the "A"; their exact placing is not critical, but you will need about one every 6-8 feet. A tall mast (over 25 feet) will need a third strut, halfway down the lower leg; however this should not be less than 10 feet above ground, or someone will succumb to the temptation to swing from it. This tends to cause problems.

32. The minimum overlap at the middle is 1 foot for every 10 feet of the final height of the mast; 3 or 4 feet is best if possible. 3 coachbolts are used on each overlap. Coachbolts should be coated with preservative (eg Plusgas 'Red Can') after assembly -- you may want to get them off again sometime ... Before putting up the mast, soak it in several (3 to 5) coats of creosote, allowing each to dry before the next is applied. This procedure should be repeated every summer to keep the wood from rotting.

33. Guys (and pulleys for hauling aerials, flags and errant cadets to the top of the mast) should be fixed (before setting up the mast) to the top (chamfered) section. No guys seem to be necessary in the plane of the mast, but one (better 2) guy(s) should be led at right angles to the plane of the mast, to a secure point at least 30 feet away. Guys at right angles to an aerial can be made of D-10 cable, and will have no effect on signal strength; if the guys must be parallel to the aerial they must be broken down into sections insulated from each other, using insulating rings; the maximum length of a section of guy should then be 5 feet. Alternatively nylon rope could be used, but it is considerably more prone to damage, both accidental and intentional. Natural cordage should never be used for guys -- it is too likely to rot, or shrink and stretch in rain and sun.

34. This mast has been in use at 26A for the last 3 years, with a minimum of care -- just a coat or two of creosote every summer, and it shows no sign of ageing. Care should be taken in the actual business of putting it up -- secure the feet firmly (those on the mast, as well) and hoist slowly, with as many people as is convenient holding check guys. The aim should be to keep the mast from twisting -- temporary guys can be attached to the ends of the middle cross-brace with a loop of D-10, which can be 'twitched' off when the mast is vertical. Do not try to make your mast more than 35 feet high overall, if you can provide a draining concrete base for the feet of the mast, this will help prevent rot starting at the base.

#### RECOMMENDED OPERATING TIMES

35. The best chance of finding another station is provided by calling (and listening) between 1230 and 1300 local time on weekdays, on channel D. Other channels may sometimes be more effective, but 'D' is the best place to start. I hope to hear stations working the 'morning shift' in the 0800-0900 hrs local period before school starts, as well; some stations were also heard last term on Saturday afternoons, but they had often arranged to meet there in contacts during the week.

36. Prontos and No 1 Op's are urged to try to spend at least half an hour each week at one of the times listed above, calling and listening on 'D' or if that's unuseable 'C'. I shall try to have my own callsign (33B) on air as often as possible this term; there has been a little difficulty with a speech processor in my Tx, so I'd appreciate frank reports on the quality of audio, if requested. Apart from that, the idea is to USE the allocated frequencies, not just to listen to them.

FINISHED SENDING.....

37. Which concludes this term's News Sheet. I've used all my "Station behind the call-sign" material, mentioned all the points raised in letters and passed on all the hints I can scrounge from the various sources available. Now it's up to you to write to me; requests for assistance, technical, moral and legal (as our SSI says, "If you don't ask, you don't get"); ideas you think might be worth trying (like the 29 dipole) or carefully prepared building instructions (like 53C 's PSU for the C-12); articles about your station, equipment or particular problems (waterproof ink please); and reactions to the content of these News Sheets, and suggestions for improving the competitions and general use of the net.

38. A few suggestions for comment: would any stations be interested in a series of articles expanding basic radio theory? Do any cadets manage to go on to take the Radio Amateurs' Examination? Should this be a possible aim for senior cadets (I know one school where it's available as a Vith form option)? Would any prontos be interested in a set of VP exercises? How many stations would be sufficiently interested in CW to join a slow morse net (which I understand 53C is willing to help with)? Have any stations the time and energy to try some experiments with channel 'A' (this will probably need (very) slow morse)? Is any station interested in developing equipment for the VHF spot frequency ('RS')? In fact, is there intelligent life on net?

OVER

39. Articles, comments, suggestions and general correspondence should be sent to the Senior Net Monitor:

F/) A Keir (RAFVR(T))  
Barnard Castle School

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The closing date for the January News Sheet is 8th December 1980.

DIRECTORY AMENDMENT NUMBER 6

Call sign 50c

Delete spare

Insert St Edmunds School

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NOTES ON THE 24 HOUR FIELD COMPETITION

1. A disappointing turnout this year, especially for the first of the two weekends, and with very little CW operating. Several stations commented that nothing seemed to happen during the night, and certainly I heard nothing at all during the hours of darkness. I think the time has come to look at the competition and see what changes might be made to make it more viable.
  2. The idea of a 24-hour competition is an old one. It has been taking place every year since at least 1957, and probably even earlier; that year is the earliest record I have. The idea has always been to give an incentive to operate under difficult conditions, with sets of limited power run from batteries and not located in permanent buildings. These three fundamental rules must remain, although with the increased number of C11s and C13s around we must look carefully at the question of power output. When I first became associated with National Net, the sets we had were 19s and 22s, and much depended on your location and aerial arrangements.
  3. I can remember several very windy nights spent under canvas (mostly - when it didn't blow away) in North Herefordshire about 1000 feet up. The rule about batteries was brought in after one gentleman ran about 400 yds of D10 cable across a field to take mains power to his WS 12, which needed 250 watts to run. No-one got killed, but by the time he had run lights and a small heater off it the voltage drop was about 70 volts, which did not exactly help. So - NO MAINS. And, of course, if you sit just outside your shack in the sun with the mike lead trailing through the window to your set, it is not a field operating competition. So CAMP somewhere - it need not be very far away, as long as SUNRAY or PRONTO can certify that you genuinely did camp.
  4. Since the idea of the competition has been to get you to USE your sets to the best effect, we have encouraged the use of all frequencies except the METNET ones - O P and Q, - which may NOT be used for the Competition. However, in order to encourage the use of Morse, we go back to the frequency allocation which existed until a year or two ago and state that (for the Field Competition)  
FREQS A B C D E may be used ONLY for VOICE  
FREQS V W X Y Z may be used ONLY for MORSE  
when making competition contacts.
- In addition, we give extra points for Morse contacts, which is, I think, fair enough.
5. Because the frequencies in the 2-3 Mhz band are very hard to get through on - in daytime - most people seem to avoid them. At night, however, the change in the skip distance often makes these 3 freqs a bonus point.



6. In order to prevent someone fiddling a lot of points by setting up three stations and operating to each other all night we have the rule that EACH UNIT MAY OPERATE ONLY ONE STATION in each weekend. So if P99K is taking part, only ONE contact per other station per frequency in each 24 hour period counts for points.
7. The rules I have discussed so far form the essential basis of the competition, and I do not think they should be changed. However, I should welcome your suggestions about improving the other rules of the weekend competitions.
8. THE DISTANCE BONUS. These bonus points were introduced because it seemed that a group of schools in the Midlands, many of whom were within ground wave distance of each other, were having the best of it, while those of the net who were at the edges, in Scotland or in the far SW or SE seemed to be at a disadvantage. I think possibly some simplification of the distance factor might be a good idea. In any case, all that is needed is a map of the British Isles with a couple of circles drawn on it centred on your base, to give the distance bands to other stations. Don't be too elaborate.
9. THE CONTACTS. In the days when we had about 50 - and I mean fifty - stations on one net, there was only time for an exchange of signal strength reports. Now, however, there is perhaps a case for introducing some sort of message element - perhaps a 3-figure or five-letter code. Any ideas? In any case, we need to save time by allowing a station to send several messages in one transmission, and then wait for the replies - something like: "Hullo 12, this is 34, OK message 295, out to you; hullo 56, this is 34, difficult, message 367, out to you; hullo 78, this is 34, OK, message 985, out to you ...." and do on for, say five messages. Then 34 listens to the replies, and when his turn comes round again he can send to five more stations.
10. THE DATES. This is a big problem. The original idea was to get the whole thing over well before O levels. Then various boards and CSE syndicates started having exams in May and even April, so we brought in the second weekend at the end of June, after most exams had finished. However, this still did not suit everyone, and there are problems in having two weekends anyway. So suggestions, please, and I will referee. The earliest possible date is April 25-26, although this is very difficult for some Schools, and the last date is July 3-4, or else one starts getting mixed up with Summer Camp. The times, 1600 - 1600, seem about right; they allow boarding schools, many of which work on Saturday Morning, a reasonable time to get to their camp site and set up, while giving reasonable time to get home again on Sunday. Times are always quoted in BST for convenience.
11. So will you please let me have any suggestions by Christmas time, and I will then produce a revised set of rules to be published in the January News-sheet, which you can then keep for future reference. Over.

62B/G3PBN

Lt Col Moorse

24 HOUR COMPETITION RESULTS

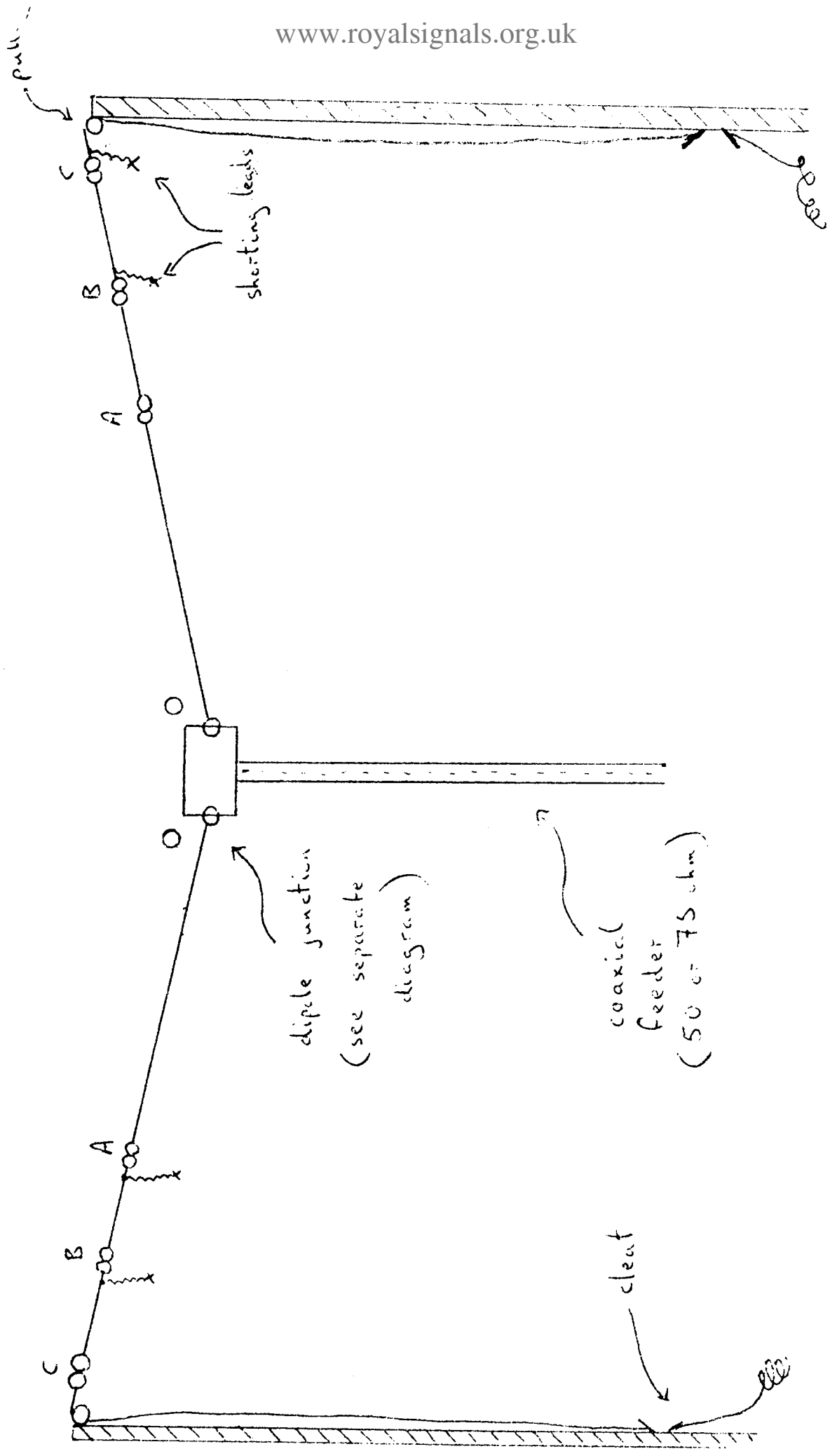
WEEKEND 1

<u>Call</u>	<u>Pts</u>
F49	55
F77	55
F8B	25
F80A	13

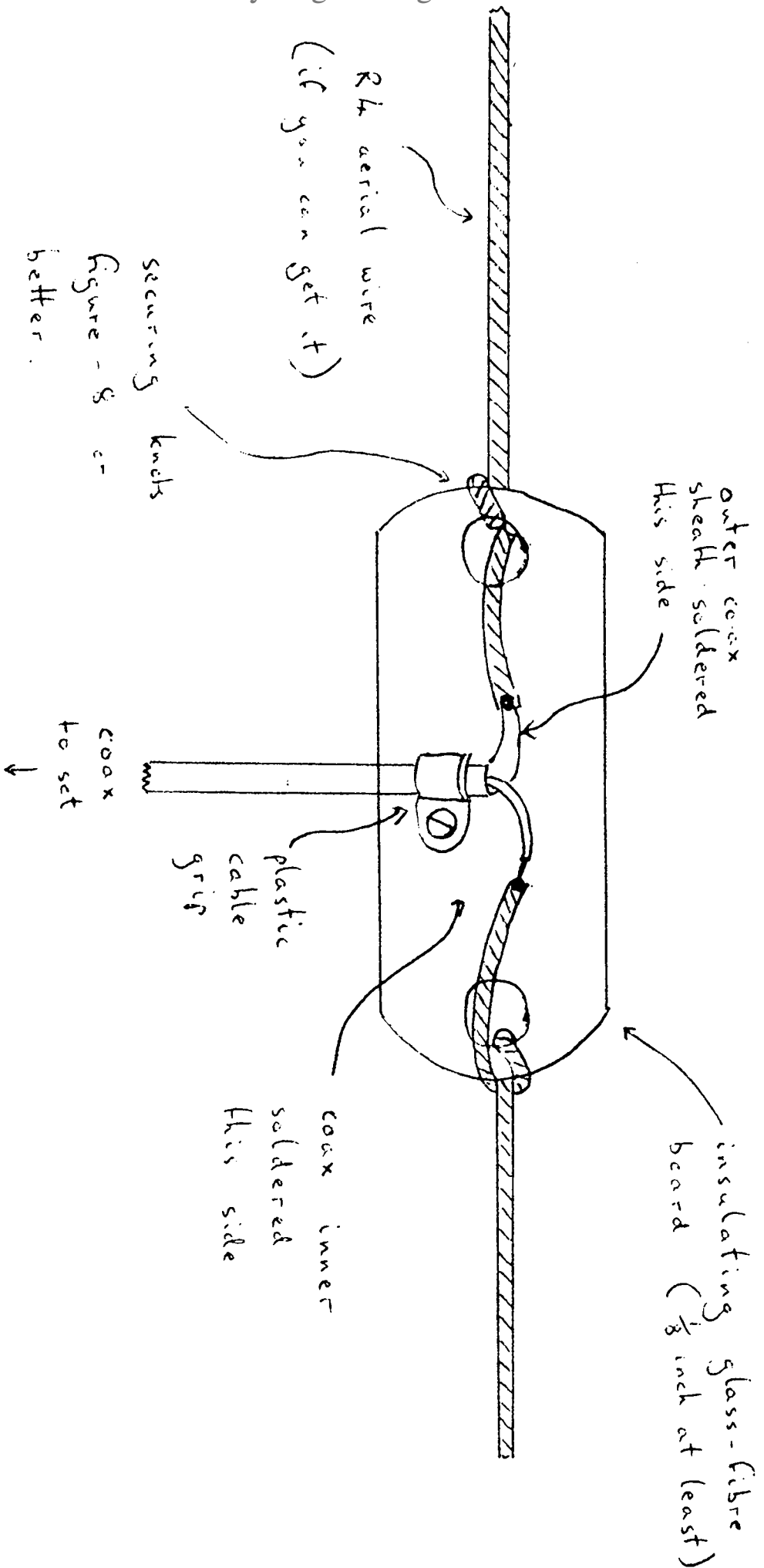
WEEKEND 2

<u>Call</u>	<u>Pts</u>
F77	71
F20A	71
F51A	43
F66A	43
F44A	42
F49	39
F8B	38
F26	37
F26A	20
F67B	20

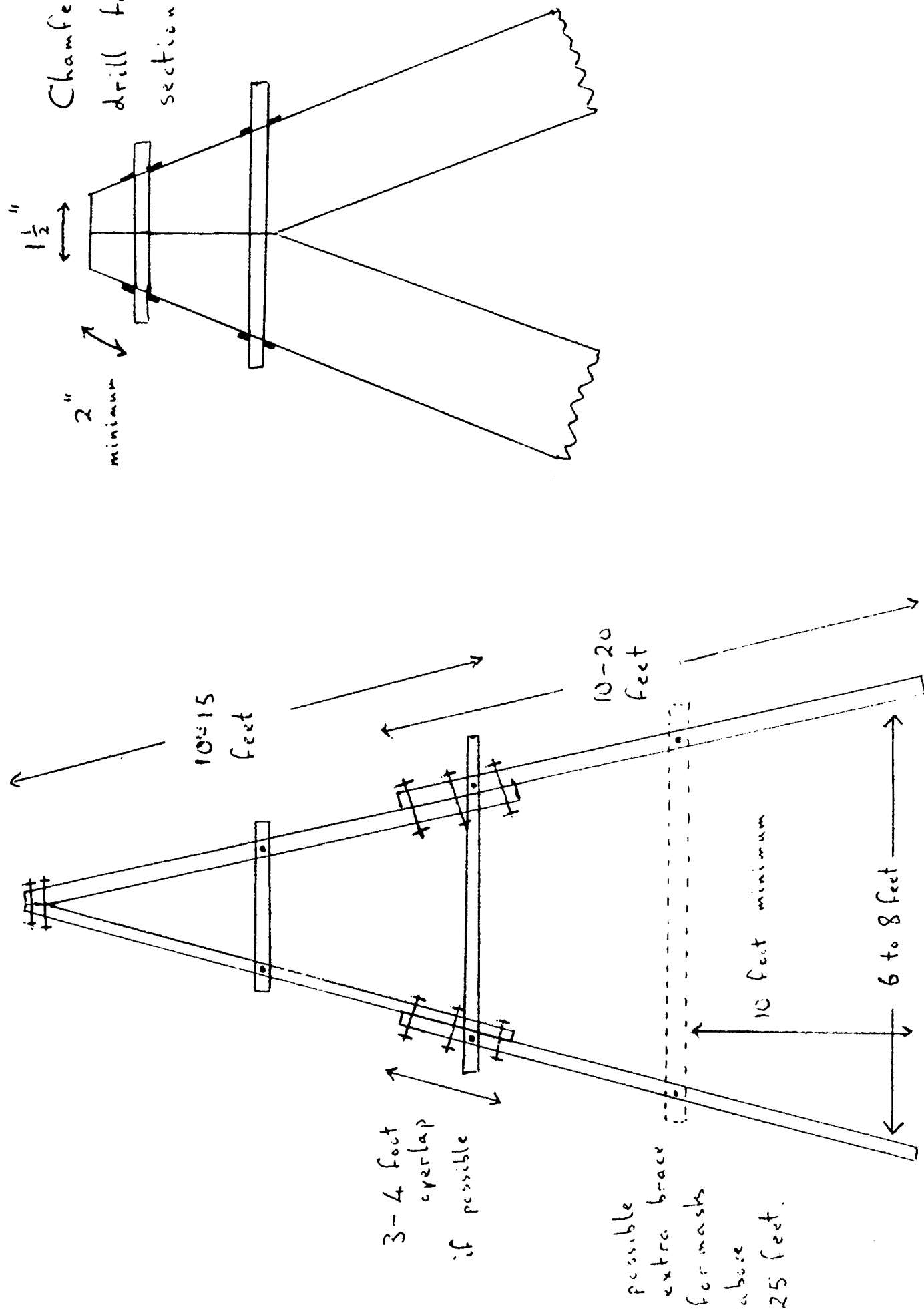
Multiband Dipole From 29



Close-up of dipole junction (full size)



A-frame mast for dipoles.



Chamfer and  
drill top  
sections thus:

1 1/2"

2" minimum

10-15 feet

10-20 feet

3-4 foot overlap if possible

10 feet minimum

6 to 8 feet

possible extra brace for masks above 25 feet.