



RAY~Link is published for the benefit of all members of the Network. It is posted to all controllers who are requested to assist in ensuring a wide membership circulation.

In This Issue:

This is the silly season when all the duties happen, yet everyone is on holiday, so you can't find anyone to do the duties! It is also the time when the Network is very busy doing real RAYNET yet everyone's news, ideas and views are *'in the post'* - definitely the silly season!

- **Tour de France** - this issue's main feature. Bob Bloodworth reports on how RAYNET handled the first aid communications for the Tour's first visit to Britain.
- **Mid Thames** - Sara Perry, reports on the Wycombe half marathon
- **RAYNET Power Connectors** - Mike McCreery explains how and why the RAYNET standard plug and socket was arrived at
- **RAYNET Database** - David, G1ADW keeps us posted on progress of the database

Event:

RAYNET involvement with "Le Tour de France 94"

Hampshire 113 mile Loop: Thurs 7th July

Bob Bloodworth: RAYNET Hampshire CC

RAYNET were invited to help with communications on this year's Tour de France. It was for one day only, blanket coverage was necessary, some points were suitable for hand-portables only, it had never been done before, and it had to work! Bob Bloodworth, County Controller, Hampshire, tells us how it was done.

THE ROUTE

The 113 miles picturesque route started on the seafront at Southsea proceeded through Portsmouth docks and then headed up over the hills passing through the villages of Wickham, Swanmore and Bishops Waltham before dropping down into the valley and travelling through Winchester city centre. The course continued by climbing out of Winchester travelling north towards Andover passing through the village of Wherwell. From Andover the route took an easterly direction following the river valley to Basingstoke via Whitechurch, Overton and Oakley. Having passed through Basingstoke town centre the route turned south to Alton and Chawton and part of the Meon Valley before climbing over the hill and then dropping into the town square at Petersfield. The riders continued eastward into West Sussex passing through the small village of South Harting and then turning south up over yet more hills to return to Portsmouth

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via Rowlands Castle and Havant and finally finishing back on the seafront at Southsea. The riders were preceded by an advertising cavalcade consisting of a range of vehicles which included motorcycles, cars, vans and large articulated lorries. The roads were totally closed for 3 hour periods progressively moving around the course with vast numbers of police officers manning junctions.

THE USER SERVICES

The whole course was estimated to have been lined with one million people and the British Red Cross and St. John Ambulance Brigade provided Ambulances and first aid points around the course at key points. Both services were working in conjunction with the county Ambulance Service which had their control vehicle co-located with the Police control on Southsea common.

RAYNET were requested to provide a support blanket coverage of the course in order to supplement the PMR systems being used by both the Red Cross and the SJAB. Schedules of Ambulance and first aid locations, along with confirmation that RAYNET support was being requested was received about 10 days prior to the event.

THE PROBLEMS TO OVERCOME

- 1) A requirement for blanket coverage of the course.
- 2) Very difficult terrain with many hills and valleys.
- 3) Both Red Cross and SJAB controls needed direct contact with points anywhere on the course.
- 4) SJAB control located almost at sea level on Southsea common at the southern end of the course.
- 5) Red Cross control located remotely on Portsdown Hill.
- 6) Some points around the course were expected to be suitable for hand portable only.
- 7) A need for a clear identity system to determine between Red Cross and SJAB Locations.
- 8) A General need for operators to be able to hear all other operators on the net.
- 9) Approximate locations of operators needed to be easily understood without the need to cross check schedules of call-sign against locations.
- 10) Ambulances could possibly have to travel significant distances away from the course to find hospitals.
- 11) In Hampshire detailed blanket coverage to this degree had never been tried.
- 12) Offers of assistance were coming from all directions. It was essential to make notes of every of every conversation along with check lists of what had to be done.

THE ENGINEERING

The course roamed around the county and spread over 3 Landranger OS sheets. Having spent 2 evenings with Jeff G8HUL crawling over maps and plotting grid references into the computer path profiling programme, we concluded that we were not going to find a good central location which would give us reasonable coverage of the course. We next looked at subdividing the course into 2 parts

which also left us significant holes. With time not on our side, we came up with a proposal to use 4 hilltop talk-through sites roughly located at each point of the compass (i.e. S, W, N, E) each to use a separate 144 MHz frequency and linked by central site on a common 433 MHz frequency.

We next consulted G8RWH to establish if we could obtain a one day special Talk-Through permit covering multi-site linked operation. A permit was issued on the strict understanding that all sites would be double manned and idents would be issued in accordance with normal requirements

The risk of interference was significant and careful monitoring would be maintained during the operation. Having gained some confidence that such proposals may be feasible, coupled with offers of support operators and hardware from outside the county we decided that hill top path proving tests were necessary

This was done on the next evening using operators from several groups who kindly gave us their time having been asked the question "could you be available now, please ?". The tests proved hopeful and on that basis we made the decision to go ahead.

SOUTH SITE:

Fort Widley, Portsdown Hill, Portsmouth

This is the ex-county stand-by site and is permanently equipped with mast, aerials, feeders plus some equipment. We also had access to accommodation which was used by RAYNET Control.

Signals sent out on 144.800 MHz covered outstations in the southern areas. We also operated a duplex talk-through system on 433/439 MHz which gave operators at User Service Controls Access to the net

CENTRAL TALK-THROUGH:

Beacon Hill (S. of West Meon)

The site was already known as good contest by a local radio club and permission plus a key for access was quickly obtained. South East Hampshire group arranged delivery and erection of a 60 foot mast complete with WX1 aerial and feeder. Doug, G8BBI (County Controller-Sussex) brought their mobile control vehicle to the site which was equipped with a 30 foot telescopic mast and was used to carry 70 MHz aerials. Ian G8RWH (ZC5-London) brought a 2m / 70 cm talk-through radio plus 70 MHz radios.

Transmissions were received from control on 144.800 MHz and re-transmitted at 433.775 MHz to each of the 3 satellite talk-through sites which were then simultaneously re-transmitting on 3 separate 2m channels. (144.775 / 144.825 / 144.850 MHz).

Each site was also equipped with 4m equipment which was used for system management and talk-through identification control. The plan to cross-link all the hilltop sites basically worked and this resulted in all 4 of the 2m frequencies being effectively parallel, which meant that operators around the course could hear a majority of the radio traffic. Talk-through identification for each site initially proved to be difficult but was successfully managed and developed as the day progressed.

WEST SITE:

Cheesefoot Head (Nr Winchester)

This location is a leisure car park and picnic area which is also on the course. Many thanks to Chris G1UTC (Surrey West, Group Controller) who obtained permission from Hampshire County Council to use the site for the day. We had been warned that we needed to be on site early in the morning in order to get in, as it was likely to attract spectators. Mike G4FVG arrived on site at 06.00 and reserved a slot for Clive G4ODM (both North West Hampshire group) who brought a complete talk-through system complete with mast and aerials.

NORTH SITE:

Watership Down (South of Newbury)

This was located on high ground well north of the course and gave coverage for northern section of the course. Trevor G4KUJ assisted by G6EDD (both Hertfordshire RAYNET), provided a landrover complete with 25 foot mast, aerials and talk-through equipment.

EAST SITE:

Warren Corner, Froxfield (near Petersfield)

This location was also on the course and subject to spectator invasions. Dave G0DNF and Kevin G6ATK (South East Hampshire group), made an early start in order to collect the RAYNET caravan from Petersfield and locate it on the wide grass verge on top of the hill. A portable 30 foot mast was erected which completed the hill top network of sites.

GENERAL OBSERVATIONS

The linking of four 2m frequencies together was a risky business. Any noise or other unwanted signals on any one of the channels would effectively appear across the whole net. The need for a separate engineering 4m net was essential in order identify and isolate quickly any problems of that nature. Talk-Through sites were dual manned in case it became necessary to drop back to voice relay.

We very nearly achieved complete coverage of the course for mobile operation although some spots in the centre of Basingstoke had to be voice relayed where operators were restricted to hand-held radios only. Some local traffic was passed in this area on 145.200 MHz which caused some additional problems for control as they were then not party to these local communications.

We were able to try this method of frequency linking as the event took place on a Thursday and we not in competition with any other RAYNET groups in Southern England who may have needed part of the radio spectrum that we swallowed up for the day.

The system of tactical idents was used for all locations which proved to be essential for an operation on this scale. Operators were advised that, once they had booked on to the controlled net, then they were required to give their own call-sign, once only, during each sequence of transmissions. Operators were requested to call by ident only and when acknowledged by control give their ident plus normal call-sign.

OPERATORS

Hampshire RAYNET is very grateful for all the help that we received from outside the county. We ended up 52 operators representing 15 different RAYNET groups.

The operation was run as a single net under the control of Steve G4SAC, Jeff G8HUL (South East Hampshire) and Bernard G4LGK (West Sussex). They were assisted by Jan G4VWO who had been closely involved with planning and scheduling of operators into their respective locations.

It was essential for operators to get into position early, as the police were closing roads round the whole of the course for periods of 3 hours on a rolling time slot basis. This had the beneficial effect that the majority of the net work was established well in advance of the cavalcade arriving at any point on the course. We posted a package to each operator (hopefully which should have arrived before the big day) which incorporated:

- a. Instruction letter
- b. Location / ident schedule
- c. Talk-through engineering schematic
- d. List of operators
- e. General route map for the race

CONCLUSION

The very short time scale did not permit us to address all the problems that we may have been facing. We attempted to build in flexibility so that if necessary we could adapt operations on the day.

From a practical point of view we learnt a tremendous amount relating to practical problems in the use of multiple talk-through sites and wide area operations. The discipline was in the main, was good and that is to the credit of everybody who came and assisted. We were lucky that the operation was completed without major problems and that hopefully all operators enjoyed the day.

Event:	Mid Thames RAYNET Right on Course Sara Perry, G7PCN
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On 17th. July, Mid Thames RAYNET provided communications on behalf of the Red Cross and the organisers at the Wycombe Half Marathon. This year 1600 runners took part in the race in sweltering heat around the demanding and hilly course in the town of High Wycombe.

Mid Thames RAYNET provided 20 operators to man eight first aid posts, four ambulances, the lead vehicle, the organiser's bus, the information tent plus their own control and mobile support vehicle. A talk-through unit was essential to provide effective coverage of the entire course due to the terrain.

Everything ran smoothly and RAYNET was thankfully under used (despite the weather) with only one casualty requiring an ambulance pick up.