

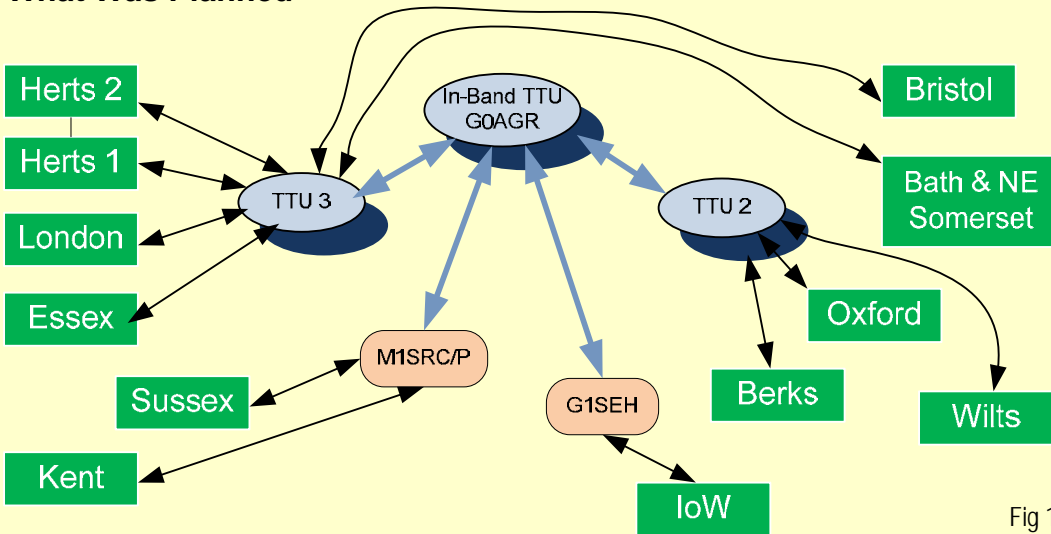
Zone 6 (SE England)

Exercise Chainlink II

**Inter-Zone Linking
January, 2008**



What Was Planned



and 70cm RAYNET communications back to HQ for the Tunnock's Tour of Mull Rally. Fort Widley in Hampshire was selected to provide communications with the Isle of Wight and the Hogs Back in Surrey for linking to stations in East and West Sussex and in Kent.

It is interesting to compare what was anticipated at the planning stage [Fig 1] and reality [Fig 2].

Fig 1

Exercise Chainlink II was a Zone 6 Exercise. Zone 6 covers Berkshire, Buckinghamshire, East and West Sussex, Hampshire (incl Isle of Wight), Oxfordshire and Surrey including the Unitary Authorities within those areas.

Last year Exercise Chainlink I tested communications within the Zone. Chainlink II was designed to test our communications with adjacent Zones via key strategic locations within the Zone. On both occasions the last weekend of January was chosen on the grounds that it would be a good time for flat RF conditions; the test would be in like-for-like conditions (or not!) and it is also a quiet time for community activities. Well, we got two out of three, but Murphy's Law determines that there will always be a lift when you don't want it!

Technical Planning

The technical planning for the exercise was to link strategically placed talk-through units throughout the Zone in order to facilitate easier communications from those stations located in the Isle of Wight, Kent and Sussex and to be able to directly communicate with all other stations both within our Zone and with adjacent Zones.

The idea of linking talk-through units is not new—the technology is used very successfully every year throughout the Isle of Mull to provide 2mtr

Talk-through Arrangements at Christmas Common

TTU2 [70cms in-band talk-through] and TTU3 [see Fig 1] were co-located at opposite ends of the Forestry Commission car park at the highest point of Christmas Common (on the Buckinghamshire/Oxfordshire border) whilst TTU1 was located a few miles away at the National Trust car park on top of Watlington Hill a few miles away.

There were de-sense problems with the in-band TTU. Kenwood TM741Es were used. Although the deviation is turned down the original 25KHz filtering remains. At the outstations there was a mix of old and new equipment, some with deviation set to 12.5KHz and some at 25KHz. One of the linked TTUs was found to be incorrectly set up.

Frequencies and Propagation

Similar to last year's Chainlink I exercise, propagation was variable on the day and particularly lifty during the

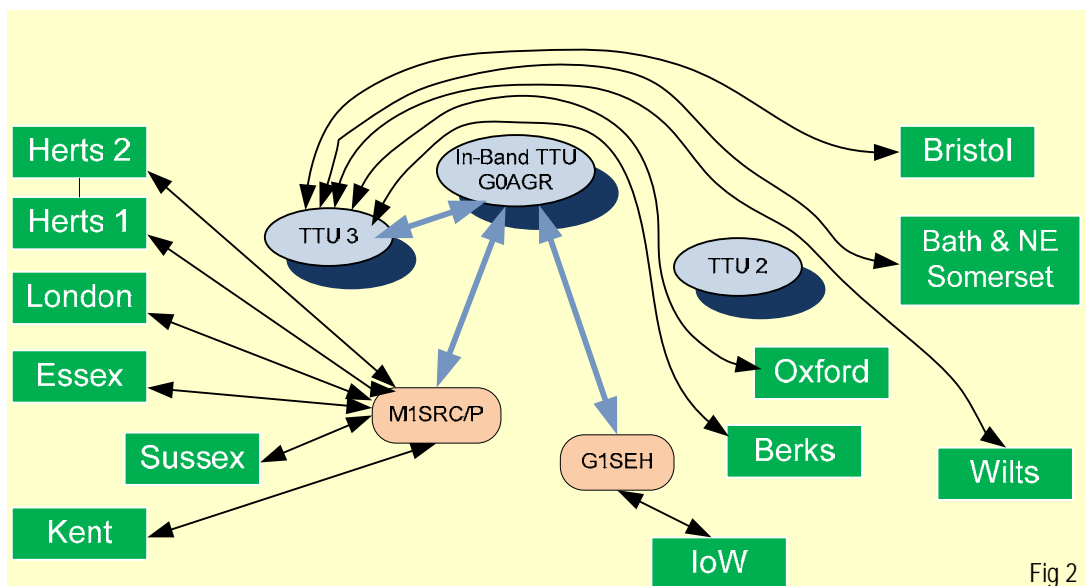


Fig 2

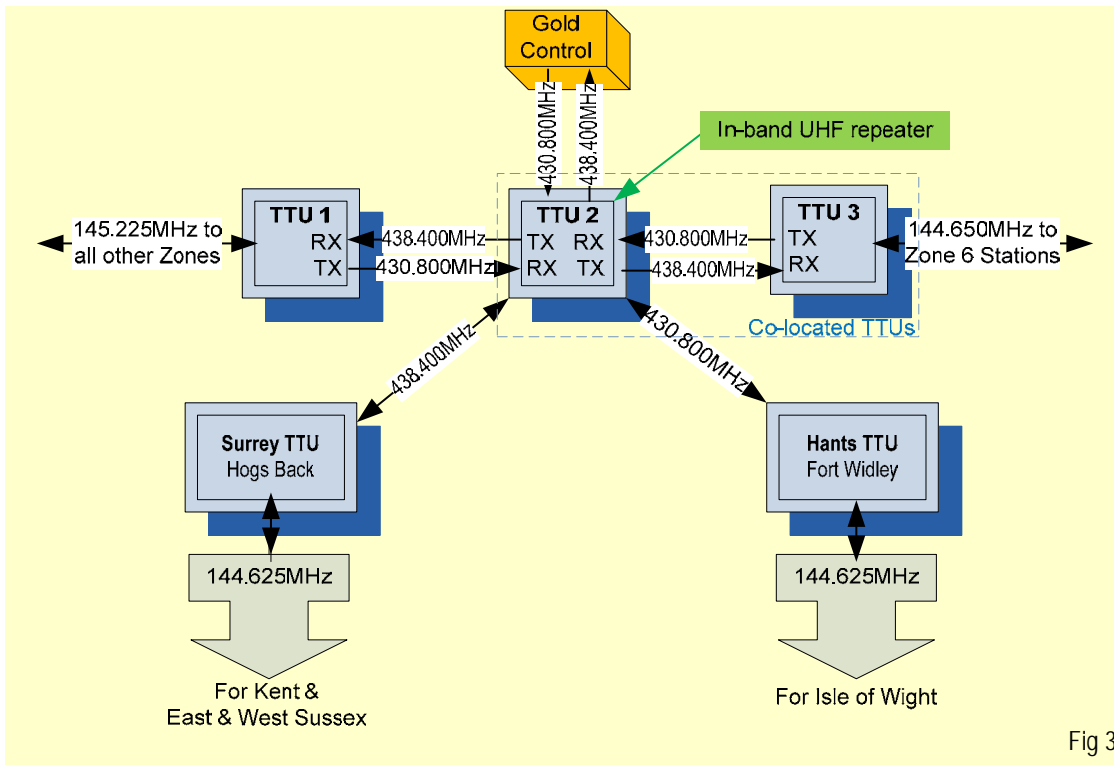


Fig 3

the assistance of intermediary stations such as the one at Christmas Common, which houses the 'concrete tower' visible from the M40 near junction 5, and a further two masts (obscured by trees) near Watlington Hill. Despite some anomalies the Readability Chart below, shows the exercise to have been a success. It established the fact that more than 85% of stations had good

earlier part of the exercise.

Due to an oversight G1SSR (South Sussex Raynet who cover what is now West Sussex) operated on 144.650MHz, later when they realised this they changed to 144.625MHz where signals were stronger! This is obviously absurd—well it would be but for the fact that Hertfordshire came to the same conclusion but the other way round (see 'Overall Readability' later in this article)! South Sussex observed the odd phenomenon of intermittent signals; one moment they would be fully readable and the next, entirely absent. They were unable to determine if this was due to a propagation anomaly or malfunction of a talk-through unit.

The most likely explanation for the difference between frequencies is that on one of the channels the stations were getting into the TTU and not on the other.

South Sussex also reported interference from French stations which was strong enough to hold the TTU squelch open but it could be talked over. They also had interference from a M3 station in Winchester which appeared to be from inside the talk-through path. French interference was much more of a problem for the Isle of Wight. A GO station announced that we were on his chat channel. There is absolutely no reason not to use it as a chat channel—one would hope a GO would know about the Band Plan and understand it.

Testing of the London to SW England Path

There was a specific decision to involve Zone 7 (SW England) stations following a request from Government of South West (GOSW) to engineer communications links between Zone 7 and Zone 5 (London). It was apparent that this would not be achieved without

readable signals with all other stations and there is probably no reason that this can not be raised to 100% based on the lessons learned.

Overall Readability

The Readability Chart (see Fig 4 overleaf) clearly shows that adjacent Zone communications can be very successful with proper site selection. The only 'failed' site was Hertfordshire's 'Herts 1' location. What is extremely odd with regard to this location was the difference in copy between two frequencies on 25KHz apart. Fig 4 shows stations unreadable on 144.625MHz were fully readable on 144.650KHz and vice versa! Herts 2 was demonstrably the superior location to Herts 1 but once again it is interesting to note the differences they had between the two frequencies although as suggested earlier it may be that access through a TTU was being achieved on one frequency and not on the other—as the TTUs were in



Eastbourne & Wealden Group Erect Their Aerial on Butts Brow in a 35 mph Wind!

different locations.

Bits and Pieces

South Sussex Group did not have a great start to the day. Upon arrival at their chosen site they managed to drop the mast into the sloppiest imaginable pile of 'doggy does'! They used 50 watts to a 5-element Yagi on a bearing of 330°. Well, if you live on the edge of the world you don't need an omni-directional aerial but it is a reminder that in an actual emergency or exercise where a User Service needed a link to a specific place then back to back beam antennas could be used to enhance the reliability of the RF path.

On the positive side G7VBR and MOBUX (Eastbourne & Wealden Group) found they could erect a 20ft mast with a co-linear antenna attached in the 35 mph winds they were being subjected to on Butts Brow near Eastbourne.

Some stations were concerned that they did not see the communications plan prior to the event but the KISS principle (*keep it simple, stupid*) was applied. After all out stations do not need to know the technicalities of the exercise. Even talk-through stations did not need to know how TTUs 1 to 3 (*Fig 3*) in order to participate and in an emergency there would not be the opportunity to prepare and distribute a configuration plan in advance! An exercise of this technical complexity is a challenge to everyone and a learning experience; particularly as the technical ca-



One of the Masts at Christmas Common

capabilities of Groups are both varied and unknown. However, it was agreed that it would have been useful for all the main players to understand the full plan in advance. This greater understanding of what was going on would have helped stations to plan alternative strategies and thus to be prepared for them on the day. To this end a Technical team has been set up to plan Chain-link III and the plan will be published in advance and in adequate time.

Zone 9 (West Midlands) does have a tiny boarder with our Zone (at the North West tip of Oxfordshire) as they had their Zone AGM on the same day. However, their AGM talk-in station located in Stratford-upon-Avon could be clearly heard at Christmas Common.

Conclusions and Lesson Learned

In hindsight it may have been advantageous to inform participants outside the Zone of the 2 metre frequencies in use so that they could make their own decisions as to which frequency presented the best opportunity for communications. This will be done in the fu-

Readability Chart	Berks G8CIX	E Sussex G0BUX	W Sussex G1SSR	IoW G0VPO	Kent M0KCR	Oxon G4YUA	Hants TTU G1SEH	Surrey M1SRC/P	London G3NAT	Bath & NES M0BPJ	Wilts G4NWR	Essex 2E0LOM	Herts 1 G4KUJ	Herts 2 G4PMG
Berks G8CIX	GR	GR	GR	GR	GR	GR	GR	GR	GR	RD	GR	GR	GR	WR
E Sussex G0BUX	GR		GR	GR	GR	GR	No Report	GR	GR	GR	GR	UR	UR	GR
W Sussex G1SSR	GR	GR		GR	GR	GR	GR	GR	GR	GR	GR	UR	GR	GR
IoW G0VPO	GR	GR	GR		UR	GR	No Report	GR	GR	GR	UR	GR	GR	RD
Kent M0KCR	GR	GR	GR	WR		GR	GR	GR	GR	GR	GR	UR	RD	GR
Oxon G4YUA	GR	GR	GR	GR	GR		GR	GR	GR	GR	GR	GR	GR	GR
Hants TTU G1SEH	GR	GR	GR	GR	RD	GR		GR	GR	GR	GR	RD	RD	WR
Surrey M1SRC/P	GR	GR	GR	GR	GR	GR	GR		GR	GR	RD	GR	GR	GR
London G3NAT	GR	GR	GR	WR	GR	GR	WR	GR		GR	GR	GR	GR	GR
Bath & NE Somerset M0BPJ	GR	GR	GR	RD	GR	GR	RD	RD	GR		GR	GR	RD	No Rpt
Wilts G4NWR	GR	GR	GR	GR	GR	GR	GR	RD	GR	GR		GR	GR	GR
Essex 2E0LOM	GR	UR	GR	UR	UR	GR	WR	GR	GR	GR	GR		GR	GR
Herts 1 G4KUJ (145.625)	UR	UR	UR	GR	UR	GR	GR	UR	GR	GR	GR	WR		GR
Herts 1 G4KUJ (145.650)	GR	GR	GR	UR	GR	UR	UR	GR	GR	UR	UR	WR		GR
Herts 2 G4PMG (144.625)	GR	GR	GR	UR	GR	GR	GR	GR	GR	GR	GR	GR	GR	
Herts 2 G4PMG (144.650)	GR	GR	GR	WR	UR	GR	GR	GR	GR	UR	GR	GR	GR	
Gold Control G0AGR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR
Also G8KLC	RD	GR	GR	No Rpt	GR	No Rpt	No Rpt	GR	GR	No Rpt	GR	GR	GR	GR

Key: ■ Good Readable ■ Readable with difficulty ■ Weak Readable ■ Un-Readable Dual coloured blocks indicate the extent to which copy varied

ture. Hopefully this will help to avoid confusion about who is meant to be operating on which frequencies.

The information gained last year in exercise Chainlink I on the siting of the strategic talk-through stations was key to the success of the exercise. Some stations who were unable to fully participate in the 2007 exercise were given more opportunity, using the enhanced facilities available in Chainlink II.

It has been suggested that TTUs use CTCSS although this would not have avoided serious interference and is also dependent upon the equipment beings used. The problem of interference from French stations has been brought to the attention of the RSGB and will be pursued, but Groups have been asked to provide comprehensive information to provide the necessary providence.

It is important that, in order for linked talk-through units to operate efficiently, they are set up correctly. As this aspect is not practiced on a regular basis the technical knowledge should be documented for future reference and the setting up of a technical team should enable this to be addressed.

Specifically, the results of the link between Lansdown Fire and Rescue HQ and Central London will be reported back to GOSW as having been a success.

Propagation will always be a major factor in any testing and as was demonstrated in both this and last year's exercises, is unpredictable. For this reason it is proposed that these exercises continue on an annual basis. One day we may get flat conditions!

A survey of equipment available for talk-through without depriving the membership of rigs which they would need as end stations (tributaries) has been circulated to all Groups. This together with the formation of a technical team and the dissemination of information several weeks in advance should improve our resilience in Chainlink III which is planned for Saturday, 24th January, 2009. Meanwhile a UHF link will be tested between Gold Control at Christmas Common and Hoggs Back in Surrey.

Zone 6 Co-ordinator would like to express his thanks to the planners and participate. This exercise helps us to demonstrate our credibility with our User Services as well as being a very interesting Zone activity. Perhaps in the future we can try linking further north and testing the latency. Of course we can provide communications to 'anywhere' using HF, but should Central Government hold a wide geographical exercise with the potential for their staff to speak directly over our network they are likely to be more impressed with 'broadcast' quality. <

