



## Minutes of the Propagation Studies Committee

24<sup>th</sup> September 2016

### Attendees:

Steve Nichols	G0KYA	Chairman	
Dr John Worsnop	G4BAO	Vice Chairman	
Chris Deacon	G4IFX	Secretary	(part time)
Alan Melia	G3NYK		
Gwyn Williams	G4FKH		
Prof Barry Chambers	G8AGN		

### 1. Apologies for absence

Apologies for absence had been received from Alan Messenger G0TLK, Sam Jewell G4DDK, Dr Marcus Walden G0IJZ, Ron Smith G3SVW, Jim Bacon G3YLA and Tony Dixon G4CJC.

### 2. Minutes of meeting held on 30th April 2016

These minutes had previously been approved via email and posted on the RSGB website.

### 3. Matters arising from the minutes of the previous meeting

#### 3.1. 5MHz beacons

In the last minutes we reported that the 5MHz beacons have served their purpose in demonstrating the value of 60m, encouraging activity and developing our knowledge of the possibilities of the band, but that there is not a strong argument for continuing the experiment. Marcus, G0IJZ has since queried this and asked if at least one of the 5MHz beacons could be kept running. He also queried whether Professor Cathryn Mitchell at Bath University (who is now a corresponding member of PSC) had been asked if they would like to host one of the 5MHz beacons.

In an email exchange, Martin G3USF Region 1 HF beacon coordinator, has said that IARU policy allows for beacons at 5MHz for serious propagation studies. At the time of the last meeting, the indications were that the original NVIS-based phase was complete and that no follow-up proposal had been brought forward. Also not all the current beacon keepers were prepared to continue.

Martin also says that if there was a well-founded research proposal AND evidence of willingness to maintain beacons over a substantial period of, say, 3-5 years, he might take a different view. He would be happy to forward any such scheme to the 2017 Region 1 conference for approval, but did not think we have one at the moment. He said he would not encourage the continued operation of beacons simply for casual listening. That would also be at variance with Region 1 policy.

Steve G0KYA has responded to Marcus, saying he is free to come up with a proposal for a long-term 5MHz beacon project. There is also money in the RSGB Legacy Fund pot that



is looking for suitable projects. Also, he first tried to contact Professor Mitchell back in the spring but she had only just been able to respond. As such, we've never discussed whether Bath could or would host a 5MHz beacon and Steve said he wouldn't want to suggest it unless there was a long-term project proposal in place that Martin had agreed. Steve will be meeting with Professor Mitchell at the RSGB Convention in Milton Keynes in two weeks.

### **3.2. RAL “Cheap as Chips” Digisonde**

Despite numerous emails from Steve G0KYA, no replies have been received from Dr Ruth Bamford at RAL. As such there is no progress to report.

In the last minutes Alan, G3NYK reported that he believed the ex-Falkland Islands digisonde was now owned by Terry Jeacock, G0EZY. Subsequent enquiries by Steve G0KYA confirmed that, indeed, Terry owns a Lowell Digisonde, although its history is unknown. It is currently in its packing crate at Terry's QTH in Doncaster having had its power supply repaired.

Terry's email, which outlines the details, has been passed to Dr Ruth Bamford at RAL and also to Professor Cathryn Mitchell at Bath University. PSC has no plans to set up or run an ionosonde but it was thought that the two parties mentioned might be interested in acquiring it.

Update: After making further enquiries and talking to John Wright G3VPW (who used to look after the RAL Digisondes) it turned out that Terry in fact has a BR Communications (now TCI) RCS-5 “chirp sounding” receiver. Photographs can be seen on the Brooke Clarke website: <http://www.prc68.com/l/RCS-5A.shtml>

The marking on the packing case is “ex MoD DHFCS Crimond” (Scotland). DHFCS = Defence High Frequency Communications Service, now operated by Babcock Communications plc, so we presume it was installed at the end of an MoD HF circuit somewhere. Terry says will continue to use it when I he gets time to set it up at his new QTH.

## **4. PSC membership**

### **4.1. Full members**

No changes, although PSC has a long-standing advertisement for a member with VHF experience on the RSGB website. There was some discussion over the difficulty in recruiting new members with the requisite experience and knowledge.

### **4.2. Corresponding/Associate members**

As indicated earlier, PSC welcomes Cathryn Mitchell, Professor in Electronic and Electrical Engineering at the University of Bath, as a corresponding member. Steve, G0KYA plans to meet with her at the RSGB Convention to see where and how we can collaborate.

John Rogers M0JAV is currently not on the PSC Group Yahoo reflector after Yahoo blocked his email address due to an inadvertent spamming issue caused by his out of office autoresponder.

Emails to Geoff Grayer, G3NAQ and Howard Oakley, M1BWR are currently bouncing.



## 5. Topics for discussion

### 5.1. Newark Hamfest

PSC will not have a stand at Newark this year. While Steve G0KYA could attend on the Friday he couldn't cover the Saturday. As no one could be found to cover Saturday and take down the exhibition material it was decided not to attend. A number of members are attending the event as visitors.

### 5.2. RSGB Convention

A number of PSC members will be delivering talks at this year's RSGB Convention in Milton Keynes:

Steve, G0KYA	How the weekly GB2RS propagation report is prepared
Marcus, G0IJZ	HF NVIS propagation
John, G4BAO	Moving up to 1.3GHz
John, M0JAV	Diagnosing & reporting RFI problems
Sam, G4DDK	'The secret life of the transverter'
Chris, G4IFX	Polarisation of 50MHz signals
Cathryn, M0IBG	Space weather

## 6. Topics for discussion

### 6.1. ITURHFProp and pretest (G4FKH)

Gwyn, G4FKH reported that the area maps are now working but that unfortunately James Watson, the previous development partner for the point to point facility, has now withdrawn from the project. Fortunately, an advert in RadCom has produced a number of offers of help, including one from Essex University, to work on tidying up the pretest area maps and to develop the point-to-point facility. These are now being followed up.

There are some copyright concerns which will prevent the new service being run on the RSGB website and from having RSGB branding, so it has now been decided that development will continue as Gwyn's private project with encouragement but not direct support from PSC. Gwyn will not be seeking RSGB funding at the present time for either development or running costs, although there is the possibility of a separate request to the Radio Communications Foundation or the RSGB Legacy Fund to cover operational costs once the site has been developed.

### 6.2. HF/VHF Propagation Presentations (G0KYA/G4BAO)

Steve, G0KYA reported that a 19-minute movie on VHF propagation is just about ready. John, G4BAO prepared the script and the presentation while Steve prepared the voiceover and converted the PowerPoint into a format suitable for video. The complete presentation was then turned into a M4V video file.

This will be made available to clubs in due course via a story in RadCom. The clubs will contact Steve, G0KYA who will give them a download link and provide show notes (still to



be prepared). A list of volunteers who could deliver a Skype-based Q&A after the presentation has been shown will also be prepared.

Steve, G0KYA reported that the HF Propagation presentation has now been used 84 times with about 25 Skype Q&A sessions delivered.

### **6.3. RSGB book on propagation (G0KYA)**

A new RSGB book on radio propagation entitled "Radio Propagation Explained" is about to be released after being written by Steve G0KYA. This is due to hit the streets in October/November. The book is based on Ian Poole's book "Radio Propagation Principles and Practice" but has been updated extensively with three new chapters added. RSGB decided that it wants to release the book under a new title with Steve noted as the author, although Ian Poole's contribution is credited and acknowledged.

### **6.4. Noise measurement projects (G4FKH)**

Gwyn G4FKH reported that the HF project is still going strong and still has a year to run with current funding. Gwyn reported that he is seeing a rise in noise on 80m and 40m, although the 40m noise change needs to be looked at.

Also, everyone is reporting different results, possibly due to their local noise levels. The fact that PLT is notched in the amateur bands helps, but outside of the amateur bands (but still on shortwave) PLT really does raise its ugly head.

John, G4BAO said that he wished to apologise for his recent email outburst during a discussion about VHF noise measurement techniques. John, G4BAO and Chris, G4IFX will look again at how an informal VHF noise measurement investigation could be organised and look at how people could measure noise at their QTH.

**Action: G4BAO/G4IFX**

### **6.5. IARU 50MHz synchronised beacons (G4IFX)**

The upgraded 50MHz GB3MCB beacon in IO70, was activated in July 2016 using hardware developed by the OZ2M Next Generation Beacon group. The new transmission sequence has a 1 minute cycle comprising carrier, call-sign in FSK and data in PI4 format. A particular advantage of working with the OZ2M team is that dedicated monitoring software for PI4 is available and this is now under evaluation, using both GB3MCB and OZ7IGY as signal sources. GB3MCB is currently still on its original frequency of 50.043MHz but it is hoped that in due course it will move to become the first beacon in the UK to become part of the 50MHz synchronised beacon chain. The upgrade was funded by UKSMG.

Further information on the Next Generation Beacon project can be found here:  
<http://www.rudius.net/oz2m/ngnb/index.htm>

### **6.6. Goonhilly SDR (G0KYA)**

Steve, G0KYA met with the committee of Poldhu amateur radio club during the summer. The conclusion of the discussion was that there is no realistic possibility of installing a web SDR at Poldhu because the Internet access is very slow. It is also clear that there is no desire on behalf of the club for a permanent transmitter on site because of interference issues.

But Goonhilly is now a possibility. The site is now under private ownership but the managing director is keen to get involved in radio-related projects because part of their funding is conditional on outreach/community activities. The problem would be to find someone local who would be sufficiently interested to install and maintain the equipment – the site is a long way away from where all the PSC members are based.

**Action:** **G0KYA** follow up with Goonhilly.

## 6.7. Other projects for the next 12 months

No new projects were put forward.

## 7. Reports

### 7.1. Chairman's report (G0KYA)

G0KYA reported that his project looking at potential connections between solar flares and sporadic-E continues. He has collected the solar flare data and he is planning to use the EA6VQ DX maps as a source of data on 50MHz openings over the summer 2016. He expects that any solar flare effects will be masked by other factors during the Es season.

Steve also recently spent some time with the TX Factor team alongside Jim Bacon G3YLA, being interviewed on propagation topics. Three hours of the interview were recorded and there is the possibility of a dedicated programme on their channel.

Steve will be giving a talk at the RSGB Convention about the GB2RS propagation forecasts to explain what they mean, where they comes from and how to use them.

**7.2. Chris, G4IFX** will be giving a talk on his 50MHz polarisation project at the RSGB Convention. Initial results from data gathered over the 2016 Es season suggest that the effective polarisation of sporadic-E signals is normally constantly changing over timescales of seconds to minutes, but it's definitely not 'random' – cyclic changes can be observed. This applies to both single-hop and multi-hop Es.

**7.3. Alan, G3NYK** is considering the influence of weather effects on LF propagation is the same way that Jim, G3YLA has been looking at sporadic-E.

**7.4. John, G4BAO** wrote the script for the VHF video and developed the presentation. He is also presenting at the RSGB Convention on microwave topics.

**7.5. Barry, G8AGN** has recently given a couple of talks on millimetre wave propagation. He is also getting quite interested in observing what happens at different light wavelengths and also correlating that with millimetre wavelengths. A 2W-output LED can be seen over a much greater distance than a typical millimetre wave signal.

**7.6. Gwyn, G4FKH** reported that in addition to the ITURHFProp project reported earlier, he has continued to produce the Propagation Report for RadCom.

**7.7. Jim, G3YLA** reported (by email) that a main activity has been to furnish the GB2RS weekly news script with the VHF propagation weather forecast for the coming 10 days (from the time of issue).



Jim also reported sporadic-E has been a full time task again this year and includes a daily upload of jet stream forecast charts for 0600, 1200, 1800 and 0000z to cover the movement of these strong upper winds during the day. The main Es season (May to Aug), this has also been accompanied by a detailed commentary indicating the reasons why certain areas are worth investigating. The total number of hits to this section of the RSGB Propagation Q&A Forum now exceeds 25,000.

Three points are worth making:

- 1) Jet streams do indeed appear to provide the necessary gravity wave turbulence on many of the Es events investigated this year.
- 2) There is not sufficient data to yet say exactly which part of the many long jet stream segments is the most likely area, but some subjective feeling that the rapid acceleration and deceleration at the entrance and exit regions are significant, plus any interaction with mountain ranges, especially the Pyrenees, Alps and Balkans.
- 3) Forecast upper wind charts do not always capture the detail of what actually happens. The real observations pick out some smaller scale features, which are not on the coarse resolution model forecast frames and yet appear to play a role in the location of some Es.

Work will continue to try to ascertain what the key weather players are in the location of Es.

**7.8. Martin, G3USF** reported (by email) that in his role as Region 1 HF Beacon Manager he has noted with pleasure the arrival of HL1ZLL/B on 28300 with 95 Watts to a quarter wave antenna, improving Region 3 coverage.

Martin also noted that at 50MHz we now have more than sixty beacons that have moved up the band to their new frequencies and he wonders when the UK beacons will join them, given that the UK was active in initially advocating migration.

As a GB2RS newsreader he reported that he is much happier with the current format for the propagation report than when he was contributing to it himself.

**7.9. Marcus, G0IJZ** reported (by email) that he will be giving a presentation at the RSGB Convention entitled 'HF NVIS Propagation: Findings Associated with 'the 5MHz experiment'. The IEEE Antennas and Propagation Magazine will publish an article with the same title in the December 2016 issue, which is a special issue on 'HF Radio Systems and Techniques'. This article collates old and new findings related to NVIS propagation.

## **8. Any other business**

None

## **9. Date of next meeting**

The date of the next meeting was provisionally agreed to be Saturday 6<sup>th</sup> May 2017.

## **10. Close**

The meeting closed at 16.15

**Chris Deacon G4IFX**  
**PSC Secretary**