

W.W.A.R.A. – General Meeting Minutes
March 2, 2019

Howard Wilhelm – K7UID	Doyle Wenzel, N7UJK	Steve Van Wambeck, N9VW
Kenny Richards – KU7M	Frank Wolf – NM7R	Rob Chatham – AF7PR
Peter Dahl – WA7FUS	Spencer Banner – K7SLB	Scott Honaker – N7SS

Absences:

Stan Nelson, K7DKK

In accordance with Article IX, Section 3a of the bylaws, a quorum was present. The meeting was called to order at 10:00am at the Tukwila Fire Station #51. Introductions were made and by a motion the minutes of the December 1, 2018 general meeting was approved, as posted on the website.

Officer's Reports

Treasurer Report:

- WA7FUS read a summary of the accounts
 - Expenses included payment for the TLS certificate for the WWARA website and renewal of the state business account.
 - Dues were collected on four memberships
- Full details are available upon request.
- Current assets total \$16,105.16

Secretary Report:

- All TDS received prior to Feb 25 have been processed. (Small set received in last 48 hrs which will be processed over the weekend)
- All Certificates of Coordination's approved in the last three months were e-mailed on March 2nd.
- A special second run of Certificates of Coordination's will be done in one week due to the four new coordination's ending public comment period and the five renewals received in the last 48 hrs.
- The expired and about to expire coordination lists on the website are now updated daily.

Committee Reports

IACC/BCARCC/ORRC

- ORCC – There has been a recent discussion about a repeater put on the air at Larch Mountain, which while in Washington, is actually a part of the ORCC territory. The machine happens to be operating on a frequency outside of the FCC repeater sub-band. AF7PR reported that it has been disabled and when access to the site is possible, changed to a different frequency.
- ORCC – Darron Wilson, N7HQR requested a copy of the original 2m digital narrowband proposal that the WWARA adapted in 2012. There is discussion about the ORCC considering a similar plan.

6/10 Meters – Frank Wolfe, NM7R

- The one open application is currently out for public comment period.

2 Meters – Peter Dahl, WA7FUS

- Four applications out for public comment, four in testing and three outstanding
- See band chair report for details

220 – Peter Dahl, WA7FUS

- One application out for public comment, one pending installation
- See band chair report for details

440/430 Repeaters & Links – Howard Wilhelm, K7UID

- Seven repeaters in testing/pending status
- 11 repeaters in proposed state (not on air)
- See band chair report for details

900 / 1.2Ghz – Scott Honaker, N7SS

- One 927Mhz repeater that just entered testing period

Database Enhancement Committee – Kenny Richards, KU7M

- The TLS certificate for the WWARA website will expire in eight weeks. A new one has been purchased and will be installed in the next month. Down time should be only a couple minutes.

Old Business

Transition to Narrowband Channels 2m/70cm Proposal

- KU7M presented a draft document describing the current situation and a proposal for moving the existing 2m/70cm bands from 20kHz channels to 12.5kHz/6.25kHz channels. See attached draft for context.
- The general feeling of those present was that application was a moving in the right direction, with the following requests/comments.
 - Need specific channel layout that considers the typical 5kHz tuning step of most modern radios which support analog/digital narrowband modes.,
 - The next phase needs to open up the proposal for more public comment. Two suggestions were given.
 - Do a mass mailing to all 2m/70cm trustee's, whether members or not.
 - Schedule presentations at major clubs in area, to present the plan and solicit comments.
- The Narrowband Committee was formed
 - N7SS, KU7M, N9VW, K7SLB are initial members
 - Request to come back in June with updated proposal, which addresses the specific channel layout question.

New Business

Discussion on pending 146.4250 / K7TGU application

- This application has been pending for many months
- WA7FUS presented the facts of the situation
- KU7M made a motion to cancel the application, because it doesn't conform to the band plan/coordination policies and it was seconded.
 - The application is for an analog only repeater on a channel restricted to digital repeaters.
- After a discussion, a vote was taken and the motion to cancel the application was approved (6 to 3). N7SS took the action items to notify K7TGU.

Adjourn Meeting: 12:14 PM

Next Meeting: June 15, 2019 / Tukwila Fire Station #51 / Time: 10am – 12pm

Taking the Next Step – A proposal for the WWARA to move to narrowband

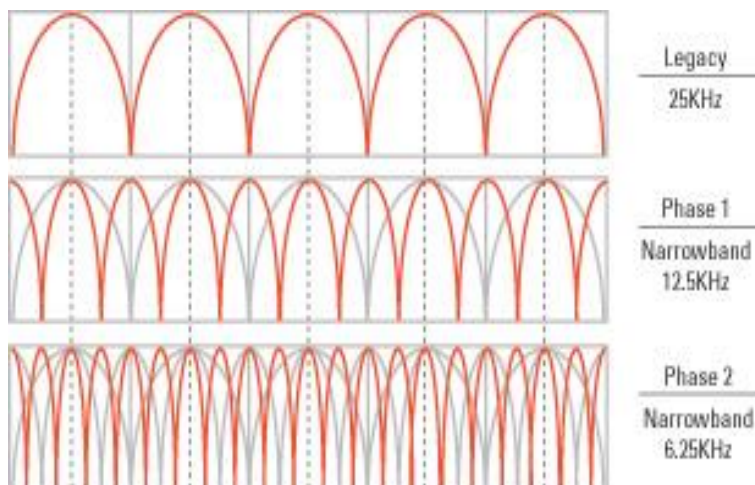
The repeater landscape has undergone a significant change, which really began in 2005 when Icom released the first digital mode radios designed specifically for Amateur radio. While other digital modes that originated from the commercial land mobile market had been experimented with, DSTAR was the first to gain wide spread Amateur acceptance. While other modes have existed, only DMR has approached the initial success as DSTAR here in western Washington.

While I have been unable to find data to support the claim, I believe that overall repeater usage has declined over the last 10 years. Using just the random sample of scanning all the available 2m and 70cm repeaters while driving to work, I believe there has been a 50% or more drop off since I became an active ham again in the mid-2000's. There are exceptions of course, some repeaters in the area are very active, with multiple daily nets and regular QSO's happening all day long.

Another interesting fact is that while the usage of repeaters is declining, the number of repeaters, at least in western Washington is increasing. The WWARA list of coordinated systems has increased 28% since 2013. The number of digital repeaters (defined as DSTAR, DMR, Fusion, NXDN and P25) has increased over the same period by 77%. Based purely on newly coordinated systems, the desire to install a digital repeater is far out pacing analog.

It is a simple fact that most of the coordinated repeaters in western Washington are still wide analog FM systems (defined by 5 kHz signal), the same basic technology that was deployed in the 1970's. There are many advantages to it, including the widely available equipment and fairly simple operation/setup. But this paper is about considering what comes next for Amateur repeaters in western Washington.

The FCC forced the land mobile market (of which most of the equipment Amateurs uses comes from) to go to some form of narrow band mode in January 2013, which was announced in 2007. All commercial uses (with certain exceptions) were required to move from 25 kHz channels to 12.5 kHz channels. While not requiring it, there seemed to be a strong suggestion to also make the switch to some form of digital at the same time.



The FCC expects land mobile licensees to ultimately transition to equipment that supports a 6.25 kHz channel bandwidth (or less). The FCC mandated that all equipment for the 700 Mhz public safety band use 6.25 kHz channels or less on January 1, 2015.

One of the drawbacks, which were outlined in an FCC document published around the time of the announcement for shifting to narrowband, was the impact when narrowing analog signals from 5 kHz to 2.5 kHz. With the reduction in deviation when going to narrowband, it is estimated to also decrease the signal to noise by 6 dB, this was estimated to mean a loss of 30% repeater coverage, without an increase in ERP to compensate for it.

From the FAQ in the FCC document:

It has been estimated that Narrowband compliance can result in a 3 dB loss in signal strength. However, this rule of thumb is based upon a "plain vanilla" Narrowbanding scenario where 25 kHz analog system converts to a 12.5 kHz analog system. Consult with a manufacturer and/or consulting engineer for a better estimate of how Narrowbanding will affect your particular system.

What are the options? The obvious one is simply increasing the power of radios. That might be doable at the repeater side, but what about the other end of the system? It would mean all the HT's in use will also need to double their power, which means a reduction of usage time due to battery capacity or even larger antennas. The other option, which isn't called out directly in the FCC documents, is moving to a digital signal. All of the current digital solutions leverage high quality codec's and benefit from forward error correction (FEC). This technology allows similar coverage of wide band analog systems, but using narrowband channels and similar ERP.

Given the state of things today, what should the WWARA do, to help move the repeater systems of western Washington forward? We know that our users want to construct more repeaters. We know there is already a strong interest and adaption for digital solutions. My recommendation is the WWARA begin down the path of restructuring the band plan to align with this vision. I know it won't happen quickly and there will be many who will get very upset about the prospect. But I believe this aligns with the overall mission of the WWARA and is the right thing todo.

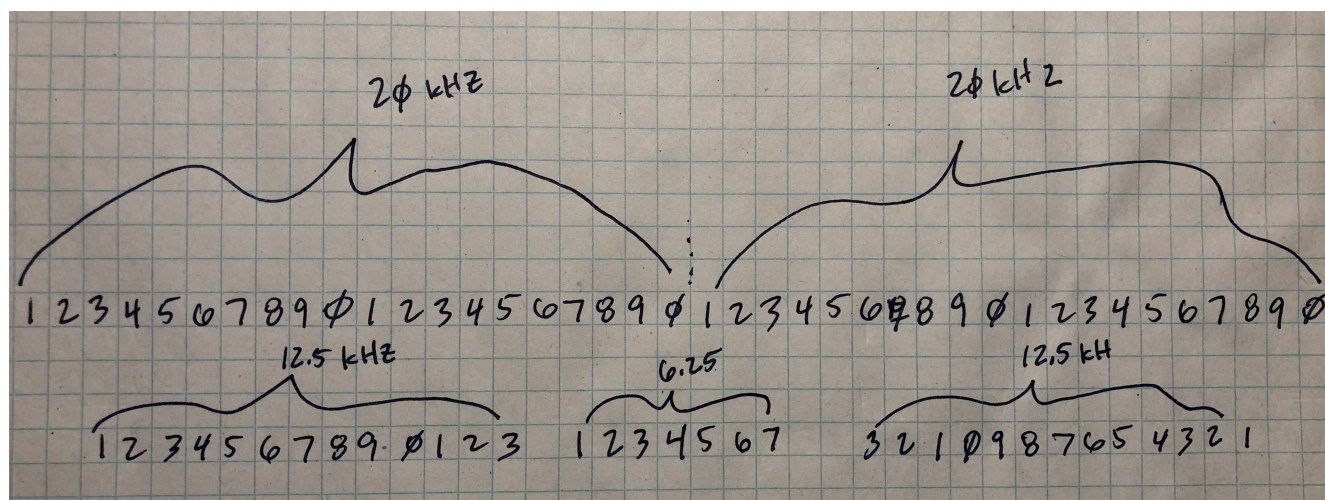
How will the shift happen?

This is just a thought experiment based on various discussions that have been taking place among the WWARA board and other groups. It isn't meant to be a detailed plan and certainly needs more research and input from others. When developing a plan, it is best to start from the outcome desired and work backwards. To that end, I have been using ten years as the point where the WWARA has completely transitioned to a narrow band plan for 2m and 70cm. My logic being that one of the biggest factors in the transition is the wide spread adaption of client radios that supports narrowband. It appears that most Amateur radios released in the last ten years supports at least a narrowband analog mode, while more than half support at least one type of digital mode. So, projecting out ten years, it seems safe to assume that most client radios in use will support some form of narrowband.

If most of the client radios support some form of narrowband already, the major 'cost' of the switch will be for the repeater owners. Other than a need to retune the filtering to adjust to the new band plan, the biggest cost is the TX/RX systems. The old reliable GE Mastr II systems will probably need to be replaced by something made in the last decade. I don't have an answer for this, other than that is what will need to happen. Based on historical patterns, the commercial

land mobile market will also be turning over and replacing many of the first-generation narrowband system at this point (which is actually already happening). This was the source for the GE Mastr II systems, so it is logical to assume a ready supply of 'cheap' repeater systems available on the market over the next ten years.

The next hurdle is how do we move from the current 20 kHz channel spacing to 12.5 kHz? I imagine this as a giant game of Tetris. As wide analog systems are replaced, it allows the creation of pockets of narrowband channels. The common proposal is that when two adjacent 20 kHz channels have moved to using narrow band repeaters, the 40 kHz of spectrum be converted to two 12.5 kHz channels with one 6.25 kHz channel between them. This approach has yet to be tested, we are still waiting for enough wide analog system to convert to a narrowband signal.



Possible options to speed up the transition

This section will probably be the most controversial, but I hope over time some of these approaches can be implemented, even if not immediately. Before offering some suggestions, I'd like to quote a section of Part 97 (Subpart B-Station Operation Standards).

*(b) Each station licensee and each control operator must cooperate in selecting transmitting channels **and in making the most effective use of the amateur service frequencies.** No frequency will be assigned for the exclusive use of any station.*

One could argue that moving to narrowband channels for repeater operations is even a requirement or at least strongly suggested by the FCC for Amateurs.

Option 1: Direct New Systems to Narrowband

Using the ten-year date from the above thought experiment, starting five years in the future, the WWARA could stop accepting new applications for any system which isn't 12.5 kHz or smaller. So existing systems would be able to continue to renew the in-place system, but any new application would need to be narrowband. Additionally, if a system must re-coordinate (due to a site move or any other existing reason which today requires re-coordination), the new system would also have to be narrowband.