

The background of the slide is a light gray gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance.

TRANSITIONING WWARA REPEATERS TO NARROWBAND

SCOTT HONAKER, N7SS - WWARA CHAIR

WHAT DO COORDINATION BODIES DO?

- Repeater coordination
 - Promote efficient use of spectrum
 - Ensure fair access to spectrum and minimize interference
 - 95% paperwork Processing, 5% Arbitration
- Publish Repeater Listings
 - Much more accurate than online and crowd sourced offerings
 - WWARA site updated nightly
- Publish Local VHF/UHF Band Plans
 - Avoid interference by following the plan
 - Simplex, crossband and shared repeater pairs identified

Western Washington Amateur Relay Association
Certificate of Coordination

Where as Scott Honaker, N7SS has agreed to abide by the Bylaws and Coordination procedures of the WWARA and has requested Coordinated usage of: 443.725 MHz transmit, and 448.725 MHz receive, the WWARA grants coordination status to the following described station:

Station	Station Location	Latitude	Longitude	Primary Geographic Area
W4TDEA	Mountlake Terrace	47.7974°	-122.3124°	Inshoreland

The following Tracking Number has been assigned to this coordination S152

Station Coordination Holder:	Station Technical Data:	Station Access:
Scott Honaker 14014 89th Ave Se Shoahamish, WA 98296	Height above Sea Level: 510 Ft Antenna Height above Ground: 160 Ft Antenna Azimuth: OMNI Antenna Gain: 8 db Transmit ERP: 240 Watts	

It is the Station Coordination holder's responsibility to keep the WWARA informed of the status of this station at least once every five years, including any address changes of the coordinated holder. This coordination is for the above-described system only and expires on the date shown. Any changes in any of the parameters listed must be presented to the WWARA for approval before being implemented. Failure to abide by the coordination policies of the WWARA will result in immediate cancellation.

Date of Original Coordination	Granted By:	Coordination Expiration
Oct 18th 2007	<i>Frank A. Wolfe</i> Frank A. Wolfe, N4M9, Chairman	May 18th 2021



BAND PLANS

- VHF/UHF band plans managed by coordination bodies
 - Oregon Radio Relay Council
 - www.orrc.org
 - Local Band Plans available
 - Western Washington Amateur Relay Association
 - www.wwara.org
 - Repeater list published nightly
 - Local Band plans available
 - Inland Empire Coordination Council
 - British Columbia Amateur Radio Coordination Council
 - www.bcarcc.org

TYPICAL WWARA COORDINATION PROCESS

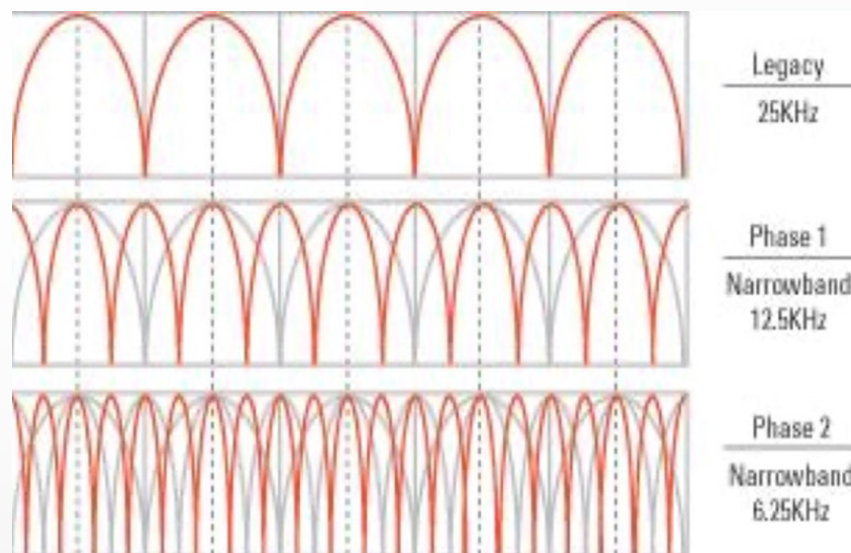
- Repeater owner chooses repeater pair and applies for coordination
- Repeater owner puts equipment on air
- Coordination requires a test period (3-6 months)
- If no complaints, coordination request is processed and published publicly
- Absent any concerns, coordination is issued
- Renewal period is 5 years

REPEATER TIMELINE

- 1970s – Shift from AM to analog FM repeaters
- 1980s – WWARA moved 2m from 25kHz to 20kHz spacing
- 1989 – Project 25 started (P25 digital solution)
- 1997 – FCC requires narrowband in land mobile radios
- 2005 – Icom introduced first DSTAR system (first open ham radio digital solution)
- 2007 – First DMR solutions released (commercial radio solution, adapted to ham radio)
- 2011 – WWARA designates 10 narrowband 2m channels
- 2013 – FCC requires all commercial stations to go narrowband (12.5kHz)
- 2013 – Yaesu announces System Fusion

DEFINITIONS

- Wide Band Analog FM
 - 20/25 kHz channel spacing
 - 5 kHz deviation, 16K0F3E
- Narrowband Analog FM
 - 12.5 kHz channel spacing
 - 2.5 kHz deviation, 11K2F3E
- Narrowband Digital
 - 9K80D7W (P25), 9K36F7W (Fusion), 7K60FXW (DMR), etc.
- Ultra-Narrowband
 - 6.25 kHz channel spacing
 - 4K00F1W (NXDN), 6K00F7W (DSTAR), 5K00J3E (ACSSB)



VHF VS. UHF NARROWBANDING

- 70cm currently has 25kHz channels
 - Narrowbanding to 12.5kHz is straight forward
- 2m has 20kHz channels
 - 12.5kHz doesn't divide into 20kHz evenly
 - Users will have to move a little

Existing	New
145.1100	145.1000
145.1300	145.1125
145.1500	145.1250
145.1700	145.1375
145.1900	145.1500
145.2100	145.1625
	145.1750
	145.1875
	145.2000
	145.2125

Existing	New
146.6200	146.6250
146.6400	146.6375
146.6600	146.6500
146.6800	146.6625
146.7000	146.6750
146.7200	146.6875
	146.7000
	146.7125
	146.7250

Existing	New
147.0000	147.0000
147.0200	147.0125
147.0400	147.0250
147.0600	147.0375
147.0800	147.0500
147.1000	147.0625
	147.0750
	147.0875
	147.1000
	147.1125

LIMITED 2M SIMPLEX CHANNELS

- WWARA recommends some simplex narrowband
- 2m has two designated simplex ranges
 - 146.520-146.580 (4 channels)
 - 147.520-147.600 (5 channels)
- The 146MHz range contains simplex call channel
 - 146.520 and adjacent channels remain wide
- The 147MHz frequencies can be narrowbanded
 - The five channels become eight
 - Tone encode is recommended

NARROWBANDING SAVES LIVES

- Hasn't been a 'open' 2m pair in over a decade* and for the first time in 2018, all WWARA 70cm pairs were full
- Commercial world shifted to narrowband in 2013
- Multiple digital solutions in use already for repeaters
 - All digital solutions are narrowband
- WWARA Coordinations of new repeaters has increased 23% since 2013
 - Digital repeaters has increased 77% in the same time period
 - Hams want more repeaters, mostly narrowband digital

WWARA NARROWBAND PROPOSAL

- May 2019 - Public proposal to narrowband VHF/UHF at WWARA
 - Presentations at more than a dozen clubs and SeaPac
 - Provides band plan for 12.5 kHz channels for 2m and 440 bands
 - 2m pairs increase ~50%, 440 pairs increases ~100%
 - Currently 13% of 2m and 22% of 70cm systems already narrowband
 - 70% of new systems in 2024 are narrowband digital

FACTS ABOUT NARROWBANDING

- Provides more repeater pairs for new modes
 - There will be more new modes
- All (current) digital voice modes are narrowband
- Most WWARA new requests are for digital voice systems
 - 70% in 2024
 - Currently wasting wide space with narrow modes
- Supported in all commercial gear since 1997
 - Most amateur gear supports narrowband after 2000
 - New wideband gear is hard to find
- Only the repeater may need to change, nothing else
 - No antennas, feedlines, entrance panels, duplexers, etc.

ANTICIPATED ISSUES

- Narrowband systems must be narrow on the output regardless of input signal
- Training users how to program narrow FM
- Potential loss of range on high altitude systems
- Coordinating moves of adjacent systems
- Tracking wide and narrow systems simultaneously
- Coordinating changes with adjacent regions

WWARA NARROWBAND PLAN

- In 2023 the new band plan is accepted
 - Allows allocating narrowband pairs
- By 2025 all new coordinations must be narrowband
 - The WWARA stops accepting applications for new wide band analog systems
 - Wideband FM systems can still be renewed
- By 2030 no wideband systems can be renewed
 - No wide band systems will be renewed, need to convert to narrowband or lose coordination
- By 2035 all systems on 2m/70cm will be narrowband

JOIN OR CONTACT US

- Join us and help shape the future
 - Decisions are made by those who show up
 - All licensed amateurs are welcome
 - Cost is minimal and meetings are only quarterly
- WWARA - <https://www.wwara.org/>
 - Next WWARA meeting May 10, 2025 @ 10:00 AM

WWARA RESOURCES

- WWARA Repeater Listings -
<https://www.wwara.org/coordinations/coordination-data-files/>
- WWARA Band Plans -
<https://www.wwara.org/documents/band-plan/>
- WWARA Narrowband Plan -
<https://www.wwara.org/documents/narrowband-plan/>
- Getting Coordinated with WWARA -
<https://www.wwara.org/coordination-process/howto-get-coordinated/>