

WD2XSH status report: June 1 - August 31 , 2010**Prepared by Fritz Raab, W1FR, Experiment Coordinator****September 26, 2010****1. SUMMARY OF OPERATIONS**

This report provides a summary of WD2XSH activity during the summer of 2010. The key statistics of our operations to during this period are:

- Number of QSOs: 29 additional, total 434;
- Number of reports via web site: 347 additional, total 11,581;
- Operating hours: 11,362 additional, total 72,844; and
- Number of interference complaints: 0.

All statistics are based upon the end of the reporting period (08/31/10).

2. ADMINISTRATIVE

The "as-is" extension was granted on September 23 and is in effect until August 1, 2015. This should be sufficient to carry us through WRC-12 and a subsequent petition to the FCC.

3. COMMUNICATIONS

The increase in QRN and decrease in night-time hours during the summer predictably resulted in lower activity. However, a number of stations continued operating in beacon and WSPR modes, accumulating significant operating hours.

Ground-wave tests were conducted by several operators. These included New Hampshire to Vermont, Ohio to Michigan, Colorado, Massachusetts, and Alaska. The objective of these tests was to test communication over a given path in a given mode at least ten times during the daytime in the summer. Ralph Wallio W0RPK organized an extensive set of tests for the midwest stations. However, he moved at the beginning of the summer and that ended the tests.

At last, we have a working program for generating and decoding MSK-31. It is called CMSK (for Chat MSK) and was developed by ZL2AFP and ZL1PBU/ZL1EE, one of New Zealand's 500-kHz operators. The current software is a "beta" version but appears to work OK. It incorporates a varicoding scheme much the same as PSK-31. This is good news as MSK offers not only the best bit-error rate for a given SNR but also has constant amplitude so that a linear power amplifier is not required.

On July 24, KL7UW /45 and KL7Q /28 made the first Alaskan QSO on 500 kHz.

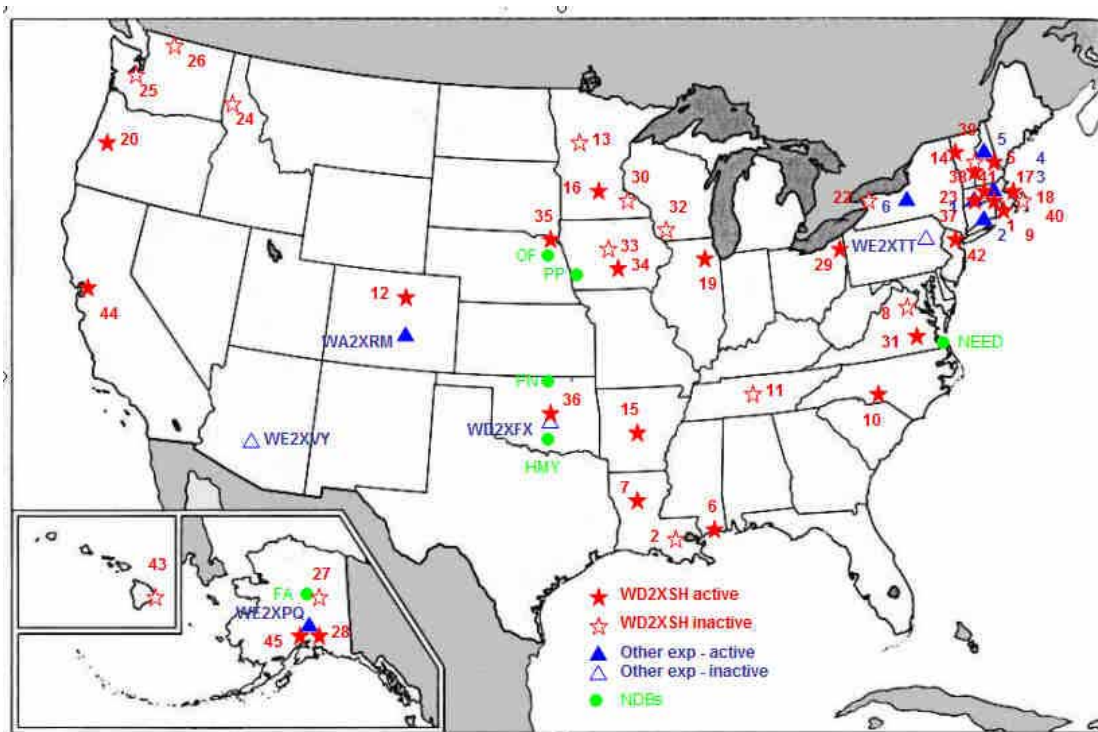


Figure 1. Locations and status of US 500-kHz experimental stations.

4. ACTIVITIES

Mike Reid WE0H - WD2XSH/16 handed-out information sheets at his tables at FDIM 2010 and the Dayton Hamvention. He also did a presentation on September 18th in Ann Arbor, Michigan at the Michigan QRP Club's monthly breakfast/

Don Reaves W5OR - WD2XSH/15 took handouts to at two state hamfests and solicited volunteers for the ground-wave tests.

On September 14th, Lee Mushel K9WRU - WD2XSH/32 gave a presentation on the 600 meter project to Hidden Valleys Radio Club in Platteville, WI. He also provided hand-outs.

5. INTERFERENCE

There have been no reports of interference, however, we are continuing to monitor three potential interference problems:

NDB OF continues to operate on 510 kHz.

We continue to hear NEED on 505 kHz from time to time.

NDB FA continues to operate on 510 kHz.

Sharing Spectrum with NDBs

Nondirectional beacons (NDBs) of interest to WD2XSH and WE2XGH operations include [RN07-30]:

- NEED at 505 kHz in Virginia Beach, VA;
- OF at 510 kHz in Norfolk, NE;
- FA at 510 kHz in Fairbanks, AK;
- HMY at 512 kHz in Lexington, OK;
- PP at 513 kHz in Omaha, NE; and
- Six others at 515 kHz.

An amateur allocation in the range of 495 to 515 kHz must therefore ensure that there is no harmful interference to these NDBs until they are decommissioned. This can be accomplished by restricting frequencies of operation in the geographic vicinities of these NDBs.

The WD2XSH frequency authorization from the FCC permits operation from 495 to 510 kHz. The frequency authorization [M09-1] from the experiment coordinator, however, restricts the frequencies of operation to prevent interference to these NDBs. The restrictions in frequency authorization [M09-1] are as follows:

- Midwest stations 12, 13, 16, 19, 30, 32, 33, and 34 are not permitted to operate above 508 kHz to prevent interference to OF;
- Alaskan stations 28 and 45 are similarly excluded from frequencies above 508 kHz to prevent interference to FA;
- South Dakota station /35 (70 mi from FA) is restricted to frequencies below 505 kHz to prevent interference to OF;
- Alaskan station 27 (about 20 mi from Fairbanks) is similarly restricted to frequencies below 505 kHz.
- Virginia station /31 may not use 503 to 507 kHz to avoid interference to NEED; and
- Stations /8 and /31 (VA and NC) must not use 503 to 507 kHz when NEED is on the air.
- Station /36 (OK) is restricted to frequencies below 507 kHz to avoid interference with nearby NDB HMY.

Measurement of the signal strength of /15 during 2008 [RN09-2] proved that its signal at the edge of the service area of NDB OF was well below the 15-dB margin required by the FAA. Station 15 is therefore permitted to operate up to 510 kHz. NDB PP in Omaha is separated by 3 kHz from the top of the WD2XSH band. The restrictions that protect NDB OF also protect PP.

Basically, the "rule of thumb" for the restrictions is:

- 2-kHz separation at a distance of 300 - 400 mi, and
- 5-kHz separation for close proximity of the WD2XSH station and NDB.

The Band plan [M09-6] (Figure 3) adopted in September 2009 places most of the beacon operations in the band from 508.5 to 510 kHz. Those stations subject to restrictions are assigned beacon frequencies near 496 kHz. The WE2XGR beacon operations are assigned to just above 510 kHz.

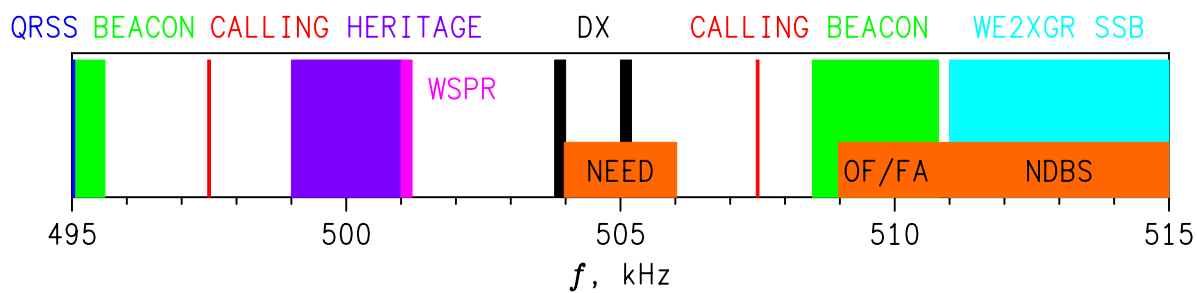


Figure 3. Band plan.

During the past season, WD2XSH stations have operated beacons for thousands of hours. There have been no complaints of interference. This demonstrates clearly that amateurs and NDBs can share the spectrum with appropriate restrictions in the vicinities of the NDBs.

Beacon operations in the 2010-2011 season will continue to follow the same plan for further verification.

6. OTHER US EXPERIMENTAL LICENSES

The frequency bands of US and foreign amateur and experimental licenses are shown in Figure 4. The parameters of U.S. experimental licenses are given in Appendix B, and the known unlicensed (part-15) operators are given in Appendix E.

Telecordia in Piscataway, NJ was granted experimental license WF2XLQ on July. Their application asks for 100 W ERP from 495 to 505 and 525 - 535 kHz. This will support their work under a DoD contract to determine the vulnerabilities of broadband infrastructure to jamming and interference.

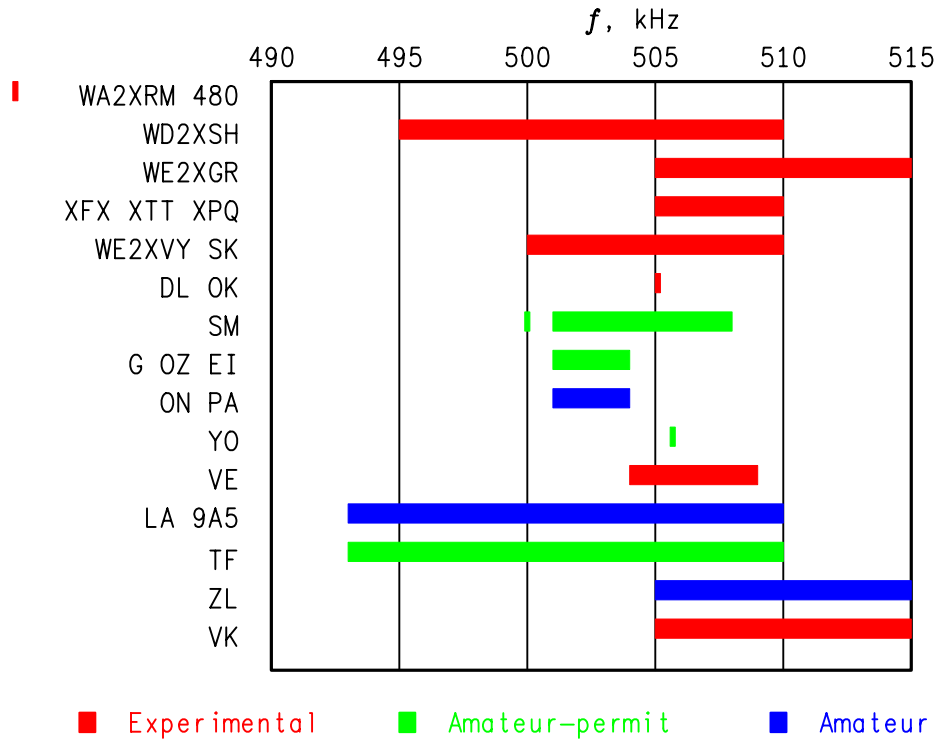


Figure 4. Worldwide amateur activity at 500 kHz.

7. INTERNATIONAL AMATEUR ACTIVITIES

9A5K in Croatia now has an experimental license for operation from 493 to 510 kHz. The license is valid through May 30, 2011.

As of July, Australian amateurs may apply for experimental licenses for operation from 505 to 515 kHz. One amateur, VK3XU is now operating a CW beacon on 507 kHz under the call sign AX2VKW. His station appears in the photograph.



Experimental station AX2VKW (from WIA news).

8. HERITAGE (MUSEUM) OPERATIONS

Appendix D identifies the known heritage stations in the USA.

The Maritime Radio Historical Society held their annual "Night of Nights" on July 13 to commemorate the last commercial Morse transmission in the USA. Heritage stations KSM, KPH, KLB, WLO, NMC, and NMN as well as KKUI (*SS American Victory*) operated on MF and HF as part of this event.

9. REGULATORY AND WRC-12

The United States has decided to support a new amateur band from 461 - 469 and 471 - 478 kHz at WRC-12. FCC and NTIA officials presented proposal at a meeting of the Second Permanent Consultative Committee (PCC.II) of the Inter-American Telecommunications Commission (CITEL) held August 30 - September 3 in Fortaleza, Brazil. This was reported by the ARRL (on-line) News on September 20.

This frequency range is method C for resolving the WRC-7 resolution 1.23 for a new amateur band between 415 and 526.5 kHz. Method C was proposed by the amateur community after the IMO voiced strong opposition to an amateur band at 495 to 505 kHz.

This decision represents compromise between the FCC (which supported 495 - 510 kHz) and the NTIA (which supported the USCG/IMO position of no amateurs anywhere in 415 - 526.5 kHz). This is not our first choice for a frequency assignment and is different from the 500-kHz operations that are now underway. However, it is a very positive step to have the United States supporting a new MF amateur band.

10. PLANS

Activity should increase during the fall as the QRN decreases and the night becomes longer. We expect to see further testing with WSPR and MSK, as well as other modes. We may hold a "special event" to mark the anniversary of the Berlin Treaty on November 3.

I plan to process the results from the ground-wave tests and to prepare a report.

APPENDIX A. WD2XSH STATISTICS

STATION	CALL	STATUS	11/30/09		02/28/10		LAST LOG
			HOURS	QSOs	HOURS	QSOs	
WD2XSH/1	W1NZR	Inactive	13:36	7	13:36	7	08/09
WD2XSH/2	W5TVW	Inactive	12:31	22	12:31	22	07/07
WD2XSH/5	KW1I	Inactive	24:07	48	24:07	48	02/09
WD2XSH/6	W5THT	ON	6854:11	154	7204:57	154	08/10
WD2XSH/7	W5JGV	ON	3850:50	1	5343:49	1	08/10
WD2XSH/8	N4ICK	Inactive	0	0	0	0	-
WD2XSH/9	W2ILA	Inactive	9:37	26	9:37	26	05/10
WD2XSH/10	W4DEX	ON	1731:26	26	1731:26	26	08/10
WD2XSH/11	WS4S	Inactive	809:42	12	809:42	12	08/08
WD2XSH/12	AI8Z	ON	19338:31	24	20707:22	24	08/10
WD2XSH/13	KOJ0	SK	997:00	7	997:00	7	08/08
WD2XSH/14	W1FR	ON	324:01	8	324:01	8	08/10
WD2XSH/15	W50R	ON	4137:37	2	5548:32	2	08/10
WD2XSH/16	WE0H	ON	1077:20	14	1122:59	14	08/10
WD2XSH/17	AA1A	ON	4092:30	23	6205:02	23	08/10
WD2XSH/18	N1EA	Inactive	3935:00	0	3935:00	0	04/08
WD2XSH/19	K9EUI	ON	1382:31	3	1382:31	3	08/10
WD2XSH/20	N6LF	ON	2152:53	7	2208:50	7	08/10
WD2XSH/21	WORW	Dropped	652:42	0	652:42	0	11/06
WD2XSH/22	WB2FCN	Inactive	-	-	-	-	-
WD2XSH/23	K2ORS	Inactive	110:11	0	112:11	0	08/09
WD2XSH/28	KL7Q	ON	-	-	22:42	3	08/10
WD2XSH/29	KN8AZN	ON	1800:26	5	1979:36	5	08/10
WD2XSH/31	WA1ZMS	ON	3890:25	6	4480:30	6	08/10
WD2XSH/34	WORPK	OFF (Moved)	150:39	1	152:54	1	08/10
WD2XSH/35	K0HW	ON	11:10	0	11:10	0	08/10
WD2XSH/36	W5GHZ	ON	855:20	0	1179:55	0	08/10
WD2XSH/37	W1XP	ON	1743:41	5	4085:38	16	08/10
WD2XSH/38	KN1H	ON	517:40	0	1120:08	0	08/10

WD2XSH/41	W1XP	ON	5: 29	0	11: 31	11	08/10
WD2XSH/42	K2LRE	ON	9: 44	4	9: 44	4	08/10
WD2XSH/44	AC6QV	ON	39: 29	0	41: 52	0	08/10
WD2XSH/45	KL7UW	ON	115: 01	0	799: 10	4	08/10
TOTAL	02/28/10	19 ON	49, 286	404			
TOTAL	05/31/10	20 ON	60, 648	405			
TOTAL	08/31/10	22 ON	72, 844	434			

Note:

Operating hours and QSOs are derived from logs through August 31, 2010. The statistics in this appendix were compiled by Rudy Severns N6LF using the Excel logs submitted by the stations. Several stations are subject to a QRT order for not being current in submitting their logs. These stations are required to remain QRT until they have rectified the situation. Generally, these stations have an equipment problem or some other problem that keeps them from operating.

APPENDIX B. US EXPERIMENTAL LICENSES

CALL	NUMBER	QTH	f, kHz	ERP, W	DATES	NOTES
WA2XRM	1	CO	480	100	01/01/09 - 01/01/14	
WD2XSH	43	CONUS	495 - 510	20	09/13/06 - 08/01/15	
WE2XGR	5	New England	505 - 515	200	09/05/07 - 09/01/12	
WE2XFX	1	OK	505 - 510	20	07/27/07 - 07/26/12	
WE2XTT	1	PA	505 - 510	1500*	09/08/08 - 09/01/13	
WE2XPQ	1	AK	505 - 510	50	06/05/08 - 06/01/13	
WE2XVY	1	AZ	500 - 510	200	12/09/08 - 12/01/10	SK
WF2XAU	1	FL	505 - 510	10	06/23/09 - 01/01/10	Exp.

* RF output to antenna

APPENDIX C. FOREIGN AMATEUR/EXPERIMENTAL BANDS

COUNTRY	TYPE	BAND, kHz	ERP, W
Sweden	NoV	500, 501 - 508	20 CW, SSB, data
Germany	Exp	505.0 - 505.2	9
Czech Republic	Exp	505.60	1
UK	NoV	501 - 504	10
Belgium	Amateur	501 - 504	5
Canada	Exp	504 - 509	20
Norway	Am/Herit	493 - 510	100 (RF) CW only
Romania	NoV	505.68	100 (RF)
Denmark	NoV	501 - 504	20

Ireland	NoV	501 - 504	10 CW, PSK-31
Netherlands	Amateur	501 - 504	5
Iceland	NoV	493 - 510	100 CW
New Zealand	Amateur	505 - 515	20 200 Hz
Croatia	Exp	493 - 510	
Australia	Exp	505 - 515	

APPENDIX D. HERITAGE STATIONS

CATEGORY	CALLSIGN	FREQUENCIES	OPERATOR / QTH
Coastal	KSM	500, 426	MRHS, Bolinas, CA
	KFS		
	KPH	500, 426	MRHS, Bolinas, CA
	KLB	500, 488	Seattle, WA
	WLO	500, 438	Mobile, AL
New	WNE	500, 472	NEHS, Stoneham, MA
	KDR	500, 482	Bellevue, WA
	WFT	500, 486	KZ4RV, Palmeto, FL
USCG	NMC	500, 448, 472	Bolinas, CA
	NMN	500, 448, 468	Chesapeake, VA
	NOJ	500, 416, 470	Kodiak, AK
Ships	KKUI		SS American Victory
	KYVM		SS Red Oak Victory
	KECW		SS Lane Victory
	KXCH		SS Jeremiah O'Brien
	KHRC		SS Matsonia
	NWVC	500, 512	LST325, Evansville, IN
	NTTH	500, 512	USS Cassin Young, Charleston, MA
Foreign	LGQ	493 - 510	Rogaland, Norway
	LM500LGN	493 - 510	Bergen, Norway

APPENDIX E. US PART-15 OPERATORS

f_i , kHz	ID	QTH	OPERATOR
510.1	HI	Monroe, CT	
510.903	EH	East Haven, CT	K1RGO

APPENDIX F. CANADIAN 500-kHz STATIONS

CALL	OP	QTH	STATUS
VX9BDQ	VE7BDQ	Delta, BC (near Vancouver)	Active
VX9MRC	V01NA	Torbay, NFLD	Active
VX9ZZZ	VE1ZZ	Nova Scotia	Active
VX90HH	VE30HH	Richmond Hill, Ontario	Inactive

APPENDIX G. COMMUNICATION RECORDS

The reception and QSO distances below have been compiled by Ralph Walio WØRPK.

STATION	CW	QRSS	DIGIT	WSPR	WOLF	SSB	QSO
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WD2XSH/1	56	--	--	--	--	--	56
WD2XSH/2	778	--	--	--	--	--	775
WD2XSH/5	1,508	1,508	--	--	--	--	1,315
WD2XSH/6	3,434	6,679	--	--	--	--	2,079
WD2XSH/7	3,212	3,212	1,425	--	--	--	266
WD2XSH/9	1,155	--	--	--	--	--	649
WD2XSH/10	3,767	4,369	701	5,305	--	--	747
WD2XSH/11	1,039	4,515	--	--	--	--	884
WD2XSH/12	1,811	1,811	1,306	2,357	--	--	1,696
WD2XSH/14	1,467	1,467	--	--	--	--	747
WD2XSH/15	930	1,432	--	1,278	--	--	377
WD2XSH/16	1,535	854	1,074	718	--	--	1,089
WD2XSH/17	3,668	4,032	--	4,611	--	--	1,308
WD2XSH/18	3	--	--	--	--	--	--
WD2XSH/19	1,814	465	392	--	--	--	782
WD2XSH/20	4,737	--	--	--	--	--	2,301
WD2XSH/23	1,185	--	--	--	--	--	690
WD2XSH/28	91	--	--	--	--	--	91
WD2XSH/29	687	1,048	669	1,090	--	--	669
WD2XSH/31	2,057	3,348	--	--	--	--	751
WD2XSH/34	1,060	--	669	273	--	--	669
WD2XSH/35	1,321	--	--	--	--	--	1,209
WD2XSH/36	--	--	--	--	--	--	--
WD2XSH/37	1,098	--	--	3,489	--	--	467
WD2XSH/38	1,468	1,468	--	153	--	--	238
WD2XSH/41	14	--	--	--	--	--	14
WD2XSH/42	636	--	--	--	--	--	357
WD2XSH/44	2	--	--	--	--	--	--
WD2XSH/45	96	--	--	1,366	--	--	91
WE2XGR/1	2,293	473	473	--	--	1,286	975
WE2XGR/2	3,771	4,137	1,407	4,735	3,747	1,209	3,379
WE2XGR/3	686	3,700	1,476	4,650	670	448	670

WE2XGR/5	174	527	--	--	--	--	174
WE2XGR/6	4,253	1,205	--	4,870	--	994	3,713
WA2XRM	623	1,798	--	--	--	--	--
WE2XPQ	96	1,335	--	--	--	--	--
VX9BDQ	1,745	2,410	--	2,086	--	--	--
VX9MRC	2,325	--	--	--	--	--	1,986
VX9ZZZ	2,505	--	--	--	--	--	2,505