

WD2XSH status report: March 1 to May 31, 2015

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1. SUMMARY OF OPERATIONS

This report provides a summary of WD2XSH activity during the Spring of 2015. The key statistics of our operations during this period are:

- Number of QSOs: One additional, total 538;
- Number of reports via web site: No additional, total 16,260;
- Operating hours: 6737 additional, total 186,410; and
- Number of interference complaints: 0.

All statistics are based upon the end of the reporting period (05/31/15). Only transmitting hours are included. Only WD2XSH stations are included as only they submit logs. Automatic reporting of WSPR receptions in the WSPR data base has resulted in lowered use of our web site for reporting.

2. ADMINISTRATIVE

The WD2XSH license is currently set to expire in August. Since we do not know when the FCC will act upon NPRM 15-50, we are in general agreement that the license should be renewed. The author recommends

- Same sites with the exception of one address change,
- Same frequencies, and
- Increasing the bandwidths of the digital modes to 150 Hz to match that of CW.

It would be nice to be able to do cross-band QSOs with US radio amateurs as this would significantly increase our ability to obtain signal reports. However, getting this approved is unlikely.

3. COMMUNICATIONS

Operations have continued through spring quarter, much as in winter quarter.

4. ACTIVITIES

John Langridge KB5NJD / WG2XIQ organized a 630-meter discussion panel at the HAM-CON in Irving (Dallas), Texas on June 13. Participating with him were Eric Tichansky, WG2XJM / NO3M, and John Molnar, WG2XKA / WA3ETD. The discussions included transmitters, receivers, antennas, and operating. A copy of "LF Today" was given away as a door prize. An audio recording has been posted at <http://njdtechnologies.net/the-630-meter-discussion-panel-at-hamcom-2015-is-now-in-the-books/>

5. INTERFERENCE

There have been no reports of interference on either the high or low bands.

6. OTHER US EXPERIMENTAL LICENSES

The locations of most of the US experimental licenses are shown in Figure 2. Their parameters are given in Appendix B, and the known unlicensed (part-15) operators are given in Appendix E.

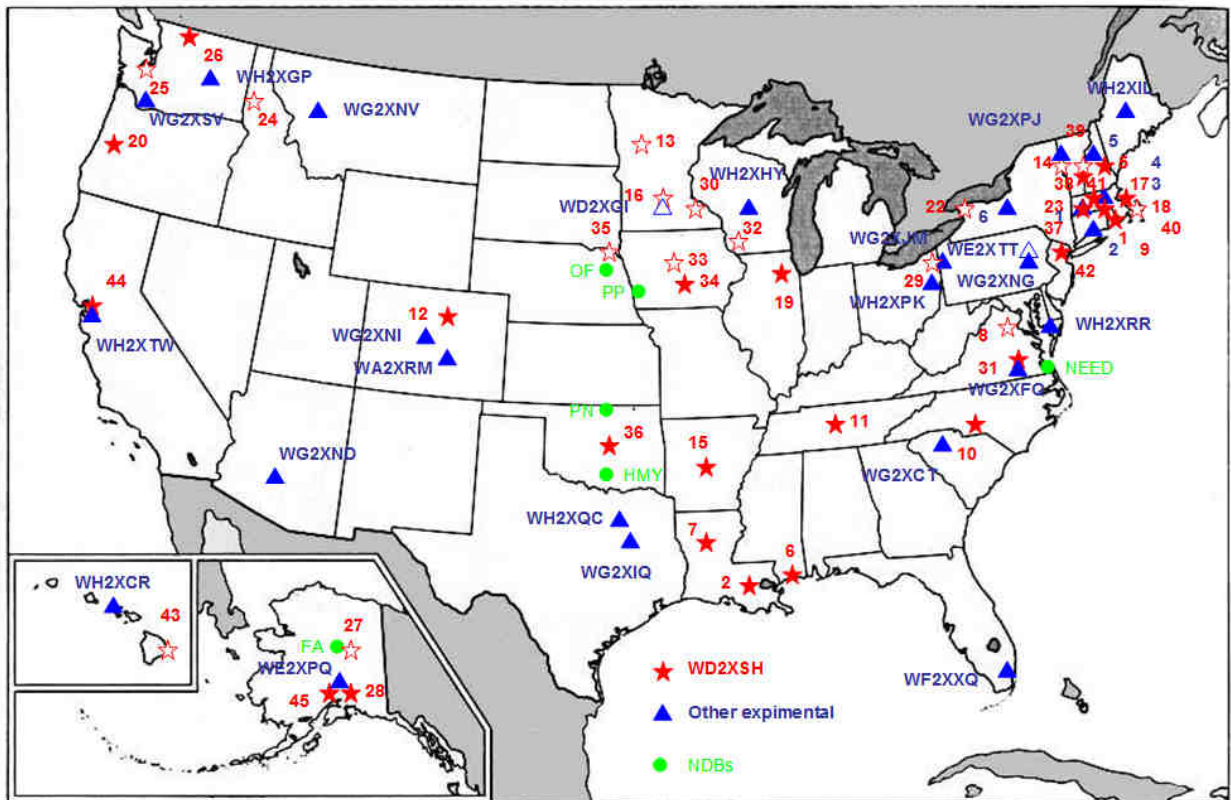


Figure 2. Locations and status of US 630-meter experimental stations.

Two new experimental licenses (WH2XRR in MD, WH2XTW in CA) have been issued. Two more are pending (WH2XUR in OH, David Curry in CA).

7. INTERNATIONAL AMATEUR ACTIVITIES

We have no news of more countries authorizing 630-meter operations.

Amateurs in the following countries now have permission to use the 630-meter band:

Germany, Greece, Malta, Monaco, Norway, Phillipines, Czech Republic, Ireland, Switzerland, New Zealand, Finland, Spain, France, Poland, Burgaria, Canada, Vietnam, Japan.

8. HERITAGE (MUSEUM) OPERATIONS

Appendix D identifies the known heritage stations in the USA.

We anticipate that the Maritime Radio Historical Society will hold its annual "Night of Nights" in July.

9. REGULATORY

On April 28, the FCC released NPRM 15-50. This is an 200+ page omnibus document that among other things seeks to align FCC rules with the decisions of WRC'07 and WRC'12. Consequently, it proposes allocating new amateur bands at 2200 m and 630 m.

The major obstacle to low-frequency amateur bands in the past has been opposition from the power industry, which fears interference with their power-line carrier communications. The FCC now contends that amateurs and PLC can share the spectrum. The two main points to their approach are

- Amateur operation would be secondary to existing utility PLC, hence amateurs would not be able to complain of harmful interference from PLCs and amateurs would have to avoid interfering with PLCs.
- Amateur operation would not be permitted close to power-transmission lines. A distance of 1 km is most commonly cited.

This approach is probably a necessary compromise for us to get the new LF and MF bands. However, many details remain to be decided. In the opinion of the author, an absolute exclusion distance unnecessarily restricts amateur operation, as most power-transmission lines do not use PLCs whose frequencies are in or near the amateur bands. The author therefore recommends the following:

- (1) We need to conduct a detailed analysis to determine the *restriction distance* (RD).

The RD is the minimum separation required to ensure that an amateur station running 5 W EIRP does not cause harmful interference to reception of a PLC signal on a power-transmission line. and a power line with a PLC that is required. A distance of 1 km has been suggested, but this may be overkill.

(2) If the amateur is located more than the RD from power-transmission lines, then the amateur may operate with the full permitted power (5 W EIRP in most places, 1 W EIRP in parts of Alaska) without further concern or coordination.

(3) If the amateur is inside the RD, he can operate with reduced power without further coordination. The power reduction is based upon free-space propagation. For example, at a distance of 0.5 km, the 5-W EIRP is reduced by a factor of four to 1.25 W EIRP.

An amateur located within the restriction distance must go through further checks and coordination as follow:

(4) There needs to be a mechanism to determine which power--transmission lines actually have PLC signals in or near the amateur band. Ideally, the Utilities Telecommunication Council (UTC) should provide a list of such transmission lines and the frequencies of their PLCs. Alternatively, the amateur may be able to obtain this information directly from the utility that operates the line.

(5) If there are no PLCs in or near the amateur band in question, the amateur may operate with the full permitted power.

If PLCs in or near the amateur band are present, the following two mechanisms can be used to determine the maximum allowable EIRP for the amateur:

(6) The restriction distance will be based upon the minimum power used by a PLC system (e.g., 10 W). In most cases, the PLC transmit power will be more than the minimum (e.g., 100 W). If this is the case, then the amateur EIRP can be scaled-up accordingly. If, for example, the PLC power is 40 W and the distance is 0.5 km, the EIRP can be increased from 1.25 W to 5 W.

(7) Depending upon the frequency of the PLC, lower power may be necessary in part of the band while full power is permissible in the rest of the band. For example, if the PLC is at 472 kHz, there is no need to restrict operations from 475 to 479 kHz.

(8) Another option is to measure the level of the amateur signal that is picked-up by the transmission line and delivered to the PLC receiver. The allowable power is set to produce a 10-dB signal-to-interference ratio, or such other S/I ratio as is needed by the PLC.

(9) Previous operation of an experimental station at the same site with no interference complaints should also be evidence of compatibility.

Ultimately, both amateurs and PLC operators will benefit from frequency separation, as this will eliminate both hassles and mistakes. The author therefore further recommends:

(10) If the PLC operators want the same rights and priveledges (e.g., protection from interference) as licensed radio services, then they must share the same responsibilities. One of

these is keeping technology up to date. For example, land-mobile operators recently had to change from 25-kHz channel spacing to 12.5 kHz to make more channels available. The same logic applied to PLC systems would mandate reception bandwidths commensurate with the data rates; e.g., 100 Hz for 10 b/s data, 1 kHz for 100 Hz. This would both allow more PLC operations in the same amount of spectrum and also greatly reduce the susceptibility to interference. The excessive bandwidth of older PLC systems (relative to the data rate) is a key factor in the high signal-to-interference ratio that they require.

(11) No new PLC systems will be permitted in amateur bands.

(12) Those systems currently operating in the amateur bands should gradually transition to other frequencies or to fiber-optic cables. This can be done over a 3 to 5-year period with negligible extra expense by incorporating the changes into normal maintenance and upgrade cycles.

Other Notes

We need to provide definitive calculations on the distance at which special restriction apply. There is also some evidence that 1 km is unnecessarily restrictive and that as little as 250 m will suffice for the restriction distance. This matter needs to be investigated thoroughly.

10. MISCELLANEOUS

Nothing to report.

11. PLANS

A number of stations will again transmit greetings during Field Day in June.

APPENDIX A. WD2XSH STATISTICS

STATION	CALL	STATUS	05/31/14		08/31/14		LAST LOG
			HOURS	QSOs	HOURS	QSOs	
WD2XSH/1	W1NZR	Inactive	4	3	4	3	02/13
WD2XSH/2	W5TVW	Inactive	13	22	13	22	08/07
WD2XSH/5	KW1I	ON	111	57	111	57	01/15
WD2XSH/6	W5THT	OFF	12268	202	12268	202	01/14
WD2XSH/7	W5JGV	ON	28651	1	28651	1	11/14
WD2XSH/8	N4ICK	SK	0	0	0	0	-
WD2XSH/9	W2ILA	Inactive	10	27	10	24	05/10
WD2XSH/10	W4DEX	Inactive	2390	30	2390	30	08/14
WD2XSH/11	WS4S	Inactive	810	12	810	12	07/11
WD2XSH/12	AI8Z	ON	38379	32	38380	33	05/15

WD2XSH/13	K0J0	SK	997	7	997	7	08/08
WD2XSH/14	W1FR	OFF, moved	755	11	755	11	04/14
WD2XSH/15	W5OR	OFF	14142	2	14903	2	11/14
WD2XSH/16	WE0H	Now WD2XGI	1357	16	1357	16	02/14
WD2XSH/17	AA1A	Inactive	11802	23	11802	31	03/12
WD2XSH/18	N1EA	Inactive	3959	0	3959	0	04/08
WD2XSH/19	K9EUI	ON	1431	3	1431	3	05/15
WD2XSH/20	N6LF	QRT	4038	15	4228	15	01/15
WD2XSH/21	W0RW	Dropped	652	0	652	0	02/11
WD2XSH/22	WB2FCN	Inactive	-	-	-	-	-
WD2XSH/23	K2ORS	Inactive	112	1	112	1	08/09
WD2XSH/26	W7WKR	ON	1162	0	1306	0	05/15
WD2XSH/28	KL7Q	Inactive	72	6	72	6	11/14
WD2XSH/29	KN8AZN	SK	499	5	499	5	01/13
WD2XSH/31	WA1ZMS	ON	41608	9	43814	9	05/15
WD2XSH/34	W0RPK	Moved	153	1	153	1	04/11
WD2XSH/35	K0HW	Inactive	11	0	11	1	11/12
WD2XSH/36	W5GHZ	Inactive	1180	0	1180	0	08/10
WD2XSH/37	W1XP	ON	7162	17	7162	17	02/15
WD2XSH/38	KN1H	ON	2791	2	2932	2	02/15
WD2XSH/41	W1HK	Inactive	19	13	19	24	02/15
WD2XSH/42	K2LRE	ON	184	0	184	0	05/15
WD2XSH/44	AC6QV	QRT (Moved)	72	0	72	0	08/12
WD2XSH/45	KL7UW	Inactive	180	6	180	6	11/14
WD2XSH/46	NO3M	Now WG2XJM	1612	5	1612	5	10/12
TOTAL 05/31/14		12 ON	168,472	522			
TOTAL 08/31/14		12 ON	171,671	522			
TOTAL 11/30/14		13 ON	174,833	537			
TOTAL 02/28/15		13 ON	179,673	537			
TOTAL 05/31/15		13 ON	186,410	538			

Notes:

Operating hours and QSOs are derived from logs through February 28, 2015. The statistics in this appendix were compiled by Rudy Severns using the Excel logs submitted by the stations. Decreases in the number of operating hours or QSOs from the previous total indicate correction of errors. Several stations are off the air because of health problems, equipment problems, or relocation. "ON" means operation within the past year. Stations who do not submit logs each month are subject to an automatic QRT order and must remain off the air until their log has been brought up to date.

APPENDIX B. US EXPERIMENTAL LICENSES

CALL	NUMBER	QTH	f, kHz	ERP, W	DATES	NOTES
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WA2XRM	1	CO	480	100	01/01/09 - 01/01/14	
WD2XGI	1	MN	460 - 490	1	04/17/14 - 05/01/19	
WD2XSH	43	USA	495 - 510 461 - 478	20	09/13/06 - 08/01/15	
WE2XGR	8	New England	493 - 515 460 - 480	1000	09/05/07 - 04/15/15	
WE2XFX	1	OK	505 - 510	20	07/27/07 - 07/26/12	Exp.
WE2XTT	1	PA	505 - 510	1500*	09/08/08 - 09/01/13	
WE2XPQ	1	AK	505 - 510 460 - 480	200	06/05/08 - 06/01/18	
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.
WF2XXQ	1	FL	495 - 505	500	10/14/11 - 10/01/16	
WG2XCT	1	SC	465 - 510	500	03/14/12 - 03/01/14	
WG2XFQ	1	VA	483 - 510	20	06/08/12 - 06/01/14	
WG2XIQ	1	TX	465 - 478	1	09/12/12 - 09/01/16	
WG2XJM	1	PA	460 - 480 495 - 515	100 100	10/24/12 - 11/01/16	
WG2XKA	1	VT	460 - 490	1	10/24/12 - 11/01/14	
WG2XPJ	1	VT	472 - 479	10	05/14/13 - 05/01/20	
WG2XSV	1	WA	472 - 479	1	11/13/13 - 11/01/15	
WG2XUX	1	KS	472 - 429	1	08/29/13 - 09/01/15	
WG2XXM	1	OK	472 - 479	1	12/03/13 - 12/01/15	
WH2XAR	1	AZ	472 - 479	1	04/01/14 - 04/01/16	
WH2XCR	1	HI	465 - 490	1	04/09/14 - 04/01/16	
WH2XES	1	TX	465 - 478	1	05/16/14 - 06/01/16	
WH2XGP	1	WA	470 - 480	20	06/24/14 - 07/01/16	
WH2XGZ	1	TX	472 - 479	1	07/03/14 - 07/01/16	
WH2XHY	1	WI	472 - 479	20	08/01/14 - 08/01/16	
WH2XIL	1	MA	460 - 488 491 - 517	1000 1000	08/14/14 - 08/01/19	
WH2XND	1	AZ	470 - 495	10	12/03/14 - 12/01/16	
WH2XNG	1	PA	465 - 478	20	12/02/14 - 12/04/19	
WH2XNV	1	MT	472 - 479	5	12/16/14 - 01/01/17	
WG2XNI	1	CO	465 - 480	5	12/31/14 - 04/01/16	
WH2XPK	1	PA	460 - 480	20	02/26/15 - 03/01/17	
WH2XQC	1	TX	465 - 480	5	03/04/15 - 03/01/17	
WH2XRR	1	MD	472 - 479	1	04/14/15 - 04/01/17	
WH2XTW	1	CA	465 - 478	20	05/28/15 - 06/01/17	
WH2XUR	1	OH	460 - 480	100	Pending	
Curry	1	CA	472 - 479	3	Pending	

* RF output to antenna

APPENDIX C. FOREIGN AMATEUR/EXPERIMENTAL BANDS

The following table gives the amateur/experimental authorizations that were in force at some time prior to approval for amateur operation in the 630-meter band. Some of these allocations have been or will be phased-out concurrent with approval of amateur operation.

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	501-504, 505.60	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	495 - 505	5
Iceland	NoV	493 - 510	100 CW
New Zealand	Amateur	505 - 515	20 200 Hz
Croatia	Exp	493 - 510	
Australia	Exp	505 - 515	
Spain	NoV	501 - 504	5 100 Hz
Malta 9H1	Amateur	501 - 504	10
Italy	NoV	501	One station
Finland	Amateur	472 - 479	1
France	Amateur	472 - 479	
Vietnam	Amateur	472 - 479	
Canada	Amateur	472 - 479	
Japan	Amateur	472 - 479	1

The following countries have approved amateur operation in the international 630-meter band (472 - 479 kHz):

Germany, Greece, Malta, Monaco, Norway, the Phillipines, Czech Republic, New Zealand, Australia, Switzerland, Finland, Spain, France, Poland, Burgaria, Canada, Vietnam, Japan.

This list has been changing frequently and is no doubt incomplete.

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	NEHRS, 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
	NEPL		USS Massachusetts, Fall River, MA
	NWKJ		USS Yorktown, Charleston, SC
Foreign	LGQ	493 - 510	Rogaland, Norway
	LM500LGN	493 - 510	Bergen, Norway

APPENDIX E. US PART-15 OPERATORS

<i>f</i> , kHz	ID	QTH	OPERATOR
510.1	HI	Monroe, CT	
510.903	EH	East Haven, CT	K1RGO
515.15	U	Magdalena, NM	Mike Mideke - Inactive

APPENDIX F. CANADIAN 500-kHz STATIONS

CALL	OP	QTH	STATUS
VX9BDQ	VE7BDQ	Delta, BC (near Vancouver)	Active
VX9MRC	VO1NA	Toronto, ON	Active
VX9ZZZ	VE1ZZ	Nova Scotia	Active
VX90HH	VE30HH	Richmond Hill, Ontario	Inactive

APPENDIX G. PROXIMITY TO POWER LINES

STATION	BAND	ERP, W	D, km	COMMENTS
WD2XDW	2200	3	1.6	138 kV
WD2XSH/6	630	15	1.6	Lines to Navy base
WD2XSH/12	630	1	0.4	Xcel Energy
WD2XSH/14	630	2	0.93	
WD2XSH/15	630	2	3.2	Major N-S line, Entergy
WD2XSH/16	630	1	0.30	
WD2XSH/19	630	0.25	0.61	
WD2XSH/23	630	5	0.27	PLC 196 kHz
WD2XGJ	2200	4		
WE2XEB/2				
WE2XGR/1				
WD2XSH/26	630	0.01	0.015	Comm. distrib., local grid
WD2XSH/31	630	20	0.77	128 kV CW
WG2XFQ	630	20	0.77	Full-carrier AM
WD2XSH/33	630	0	1.25	161 kV
WD2XSH/44 WA	630	0	0.61	
WD2XSH/45	630	1.7	1.44	100-ft poles
WE2XPQ Wasalia/Palmer	630	30	5.26	Multiple LF/MF PLCs
	2200	1		Interconnector
WE2XPQ Anchorage	2200	3	0.06	Buried
		2.1		Main generator Chugach
WG2XKA	630	5	2.0	Substation, hydro, solar
WG2XPJ	630	1	0.8	
WG2XSV UT	630	1	0.13	
WG2XSV WA	630	1	0.33	
WH2XGP	630	10	1.6	DoI Columbia Grand Coulee
			2.0	Pair, Grant County PUD
VE7BDQ	630	5	0.56	
	2200	0.2		