WD2XSH status report: September 1 - November 30 , 2010

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January 2, 2011

1. SUMMARY OF OPERATIONS

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

- Number of QSOs: 7 additional, total 441;
- Number of reports via web site: 589 additional, total 12,170;
- Operating hours: 10,229 additional, total 83,073; and
- Number of interference complaints: 0.

All statistics are based upon the end of the reporting period (11/30/10).

2. ADMINISTRATIVE

The recent proposals by the FCC and CITEL favor the use of 495 - 505 kHz for maritime-safety broadcast and 461 - 479 kHz by amateurs. It is therefore essential that we file a request for modification to add 461 - 479 kHz to our license so that we can demonstrate use of these frequencies for both WRC-12 and a subsequent petition to the FCC.

This need for this modification was discussed in October and it was agreed that the mod would be filed promptly. However, to date the filing has not yet been made. We are therefore requesting that the ARRL give some degree of priority to this project and make the filing within the next week or two.

3. COMMUNICATIONS

On November 3, WD2XSH stations marked the anniversary of the Berlin treaty that made 500 kHz the international distress frequency. For this 24-hour period, WD2XSH stations used 500 kHz for calling and establishing a QSO, which was then completed on another frequency. The traditional silent periods were observed. Participants included W5THT /6, AI8Z /12, AA1A /17, WA1ZMS /31, and W1XP /37. We encouraged the heritage stations to participate, but as far as we know none did.

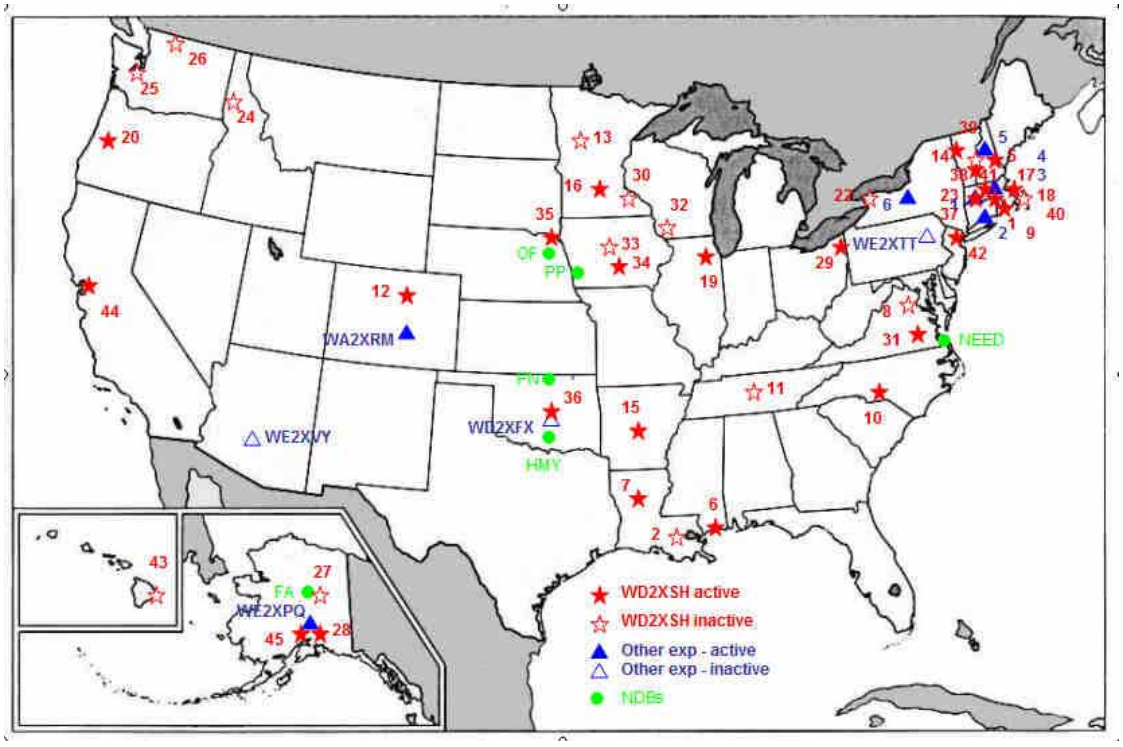

Figure 1. Locations and status of US 500-kHz experimental stations.

4. ACTIVITIES

Rudy Severns N6LF - WD2XSH/20 gave a talk on our activities to TERAC (Technology Amateur Radio Club) in Beaverton, OR.

Pat W5THT /6 put up a sign at his table at the Poplarville, MS hamfest and got questions from several attendees. He is also trying to arrange for students at the EE department at Louisiana Tech University about getting to analyze our data.

Eric Nichols KL7AJ /27 has included the 500-kHz project in his amateur radio class at Hutchison Institute of Technology. Some of his students have built frame loop antennas.

Paul Staupe W0AD /30 gave a short presentation at the Minnesota DX Club's Christmas meeting.

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.

There were no complaints of interference from 500-kHz transmissions during the special event.

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.

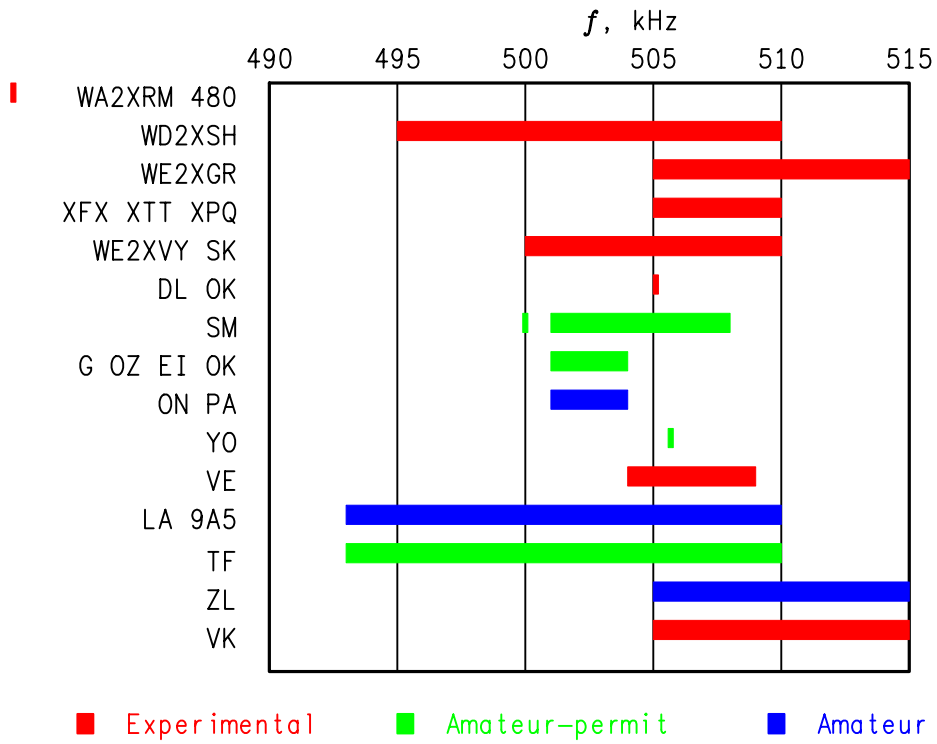

Figure 4. Worldwide amateur activity at 500 kHz.

LBA Technology in Pactolus, NC has been granted an experimental license WE2XVO. This license authorized transmissions from 435 - 495 kHz (note inclusion of NAVTEX frequency) to support expermintation with mine communication under a government contract. The license runs from January 2011 to December 2013.

7. INTERNATIONAL AMATEUR ACTIVITIES

A second Australian station, AX2VKX, is now operational. It is operated by VK2DX and transmits a beacon signal on 510 kHz.

The Czech Telecommunications office has given Lubomir OK2BVG permission to operate between 501 and 504 kHz with a maximum power of 20W ERP. His license is valid through September 1, 2011.

Iceland has extended permission for 500-kHz operation through December 2012.

8. HERITAGE (MUSEUM) OPERATIONS

Appendix D identifies the known heritage stations in the USA.

9. REGULATORY AND WRC-12

WRC Proposals

The FCC and subsequently CITEL (Americas) have put forth the following proposals for WRC-12:

- 495 - 505 kHz should be used for maritime-safety broadcasts (e.g., SYNOPTIC).
- 461 - 469 and 471 - 478 should be made available to amateurs on a secondary basis.

While the band from 461 to 478 is not our first choice, having support from the FCC and CITEL for a new MF amateur band is nonetheless a very positive step.

Experimental SYNOPTIC System

Beginning about November 1, amateurs in Europe began reporting broadband interference in the range of 498 to 502 kHz. This has been confirmed as an experimental version of the "SYNOPTIC" maritime-data system proposed by the IMO. The present prototype is located near Brest, France. The signal is OFDM (multiple QPSK-modulated carriers). The signals were received on a ferry at various locations between France and England.

The proposed SYNPOTIC system would have a bandwidth of about 10 kHz (vs. the more practical 4 kHz of the experimental system). and two or three stations would be located between 495 and 510 kHz. Transmissions would rotate from station to stations somewhat like NAVTEX. We are not aware of any mandate for use of such a system, nor any funding for deployment. Nonetheless, the experimental system certainly demonstrates to amateurs that the IMO can use the frequency at its discretion.

A new high-accuracy DGPS station is transmitting on 458 kHz. It is located at the Federal Railway Administration (FRA) test center near Pueblo, Colorado. The station at Haggerstown, PA is also back on the air. The FRA is sponsoring these tests in an effort to obtain decimeter positioning accuracy and thus to be able to determine which track a train is running on. There has been interest in this project for several , especially from the FRA and Federal Highway Administration. However, there has never been more than minimal funding for experimentation, and it is unclear whether there will be funds for full-scale deployment. Nonetheless, this is a reason for the government to want to hold onto these frequencies. In fact, this system was the reason why the 600 Meter Research Group was kicked off 480 kHz a decade ago.

10. PLANS

Activity should increase during the winter as the QRN decreases and the night becomes longer. We expect to see further testing with WSPR and MSK, as well as other modes. A second operating event using 500 kHz as the calling frequency is planned for December 11.

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

APPENDIX A. WD2XSH STATISTICS

STATION	CALL	STATUS	08/31/09		11/30/10		
			HOURS	QSOs	HOURS	QSOs	LAST LOG
WD2XSH/1	W1NZR	Inactive	13:36	7	14	7	10/10
WD2XSH/2	W5TVW	Inactive	12:31	22	13	22	07/07
WD2XSH/5	KW1I	Inactive	24:07	48	24	48	02/09
WD2XSH/6	W5THT	ON	7204:57	154	7700	156	11/10
WD2XSH/7	W5JGV	ON	5343:49	1	7769	1	11/10
WD2XSH/8	N4ICK	Inactive	0	0	0	0	-
WD2XSH/9	W2ILA	Inactive	9:37	26	10	26	05/10
WD2XSH/10	W4DEX	ON	1731:26	26	1722	26	11/10
WD2XSH/11	WS4S	Inactive	809:42	12	810	12	11/10
WD2XSH/12	AI8Z	ON	20707:22	24	21622	24	11/10
WD2XSH/13	K0JO	SK	997:00	7	997	7	08/08
WD2XSH/14	W1FR	ON	324:01	8	357	8	11/10
WD2XSH/15	W5OR	ON	5548:32	2	7731	2	11/10
WD2XSH/16	WE0H	ON	1122:59	14	1146	14	11/10
WD2XSH/17	AA1A	ON	6205:02	23	7668	23	11/10
WD2XSH/18	N1EA	Inactive	3935:00	0	3935	0	04/08
WD2XSH/19	K9EUI	ON	1382:31	3	1383	3	11/10
WD2XSH/20	N6LF	ON	2208:50	7	2241	7	11/10
WD2XSH/21	W0RW	Dropped	652:42	0	652	0	11/06
WD2XSH/22	WB2FCN	Inactive	-	-	-	-	-

WD2XSH/23	K2ORS	Inactive	110:11	0	112	0	08/09
WD2XSH/28	KL7Q	ON	22:42	3	43	3	11/10
WD2XSH/29	KN8AZN	ON	1979:36	5	2575	5	11/10
WD2XSH/31	WA1ZMS	ON	4480:30	6	6370	8	11/10
WD2XSH/34	W0RPK	OFF (Moved)	152:54	1	153	1	11/10
WD2XSH/35	K0HW	ON	11:10	0	11	0	11/10
WD2XSH/36	W5GHZ	ON	1179:55	0	1180	0	11/10
WD2XSH/37	W1XP	ON	4085:38	16	5188	17	11/10
WD2XSH/38	KN1H	ON	1120:08	0	1259	0	11/10
WD2XSH/41	W1HK	ON	11:31	11	13	11	10/10
WD2XSH/42	K2LRE	ON	9:44	4	10	4	11/10
WD2XSH/44	AC6QV	ON	41:52	0	43	0	11/10
WD2XSH/45	KL7UW	ON	799:10	4	687	6	10/10
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			
TOTAL 11/30/10		22 ON	83,073	441			

Notes:
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 off the air because of health or equipment problems. 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. Decreases in the number of operating hours from the previous total indicate correction of errors.

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	501-504, 505.60	10	
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	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

Foreign	LGQ	493 - 510	Rogaland, Norway
	LM500LGN	493 - 510	Bergen, Norway

APPENDIX E. US PART-15 OPERATORS

f, 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	VO1NA	Torbay, NFLD	Active
VX9ZZZ	VE1ZZ	Nova Scotia	Active
VX9OHH	VE3OHH	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
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	1,951	--	--	--	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	--	1,420	--	--	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	--	524	--	--	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	2,441	--	--	--	--	--
WE2XPQ	96	1,335	--	--	--	--	--
VX9BDQ	2,695	2,461	--	2,086	--	--	--
VX9MRC	2,325	--	--	--	--	--	1,986
VX9ZZZ	2,505	--	--	--	--	--	2,505