

**WD2XSH status report: September 1 - November 30, 2011****Prepared by Fritz Raab, W1FR, Experiment Coordinator****December 20, 2011****1. SUMMARY OF OPERATIONS**

This report provides a summary of WD2XSH activity during the Fall 2011. The key statistics of our operations during this period are:

- Number of QSOs: 0 additional, total 451;
- Number of reports via web site: 255 additional, total 13,712;
- Operating hours: 8,014 additional, total 114,172; and
- Number of interference complaints: 0.

All statistics are based upon the end of the reporting period (11/30/11). Only transmitting hours are included.

**2. ADMINISTRATIVE**

We have compiled a list of our stations that have never been on the air or have been off the air for more than a year. Maps of their locations have been made. The objective is to make the unused sites available to other qualified operators.

**3. COMMUNICATIONS**

The locations and status of 500-kHz amateur/experimental stations in the USA are shown in Figure 1.

To mark the anniversary of the Berlin treaty that made 500 kHz the International Distress Frequency, WD2XSH and other experimental stations held a special event on November 3. The activities included calling on 500 kHz and then QSYing to complete the QSO, thus simulating maritime communications. A total of 14 stations participated, including:

- WD2XSH 5, 6, 7, 10, 12, 20, 31, 38, and 44;
- WE2XGR 1, 2, 3, 6, and 8; and
- WA2XRM.

NEED was also active, although this had nothing to do with the anniversary event. The author invited heritage station WNE to participate, but got no answer.

The research note on the three ground-wave tests organized by Ralph Wallio W0RPK was finalized and released.

During the X7 solar flare on August 9, strong signal enhancements were observed by KL1X in Alaska. The signal from /7 appeared abruptly, coincident with the flare.

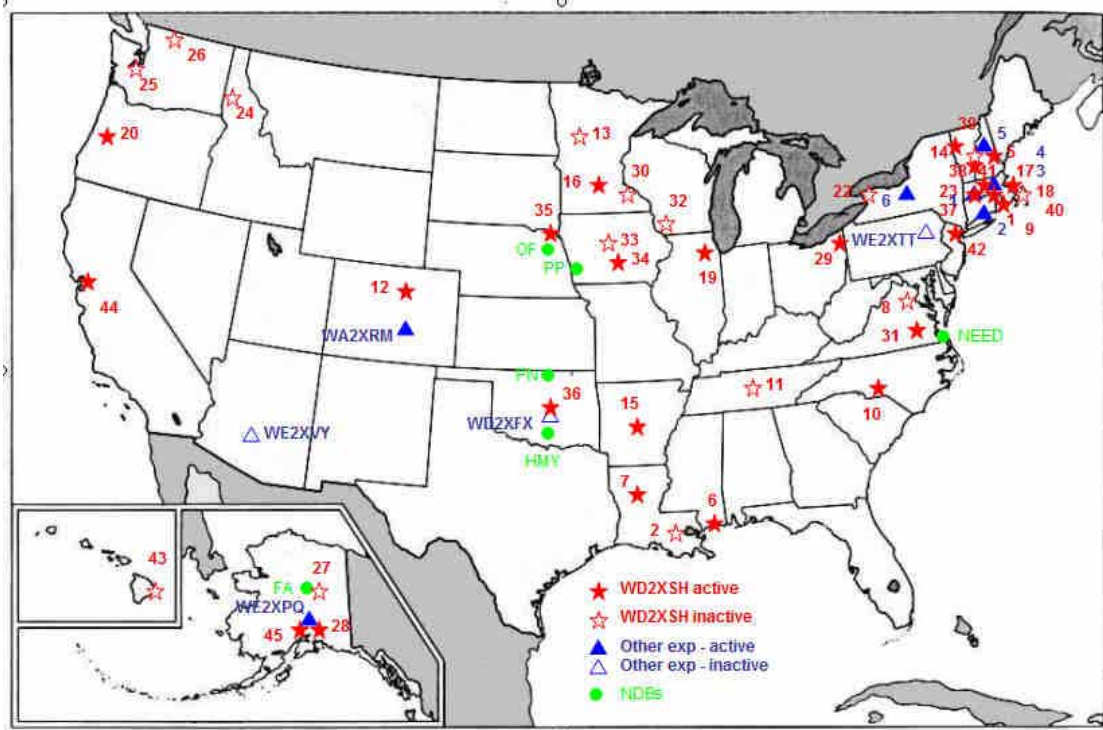


Figure 1. Locations and status of US 500-kHz experimental stations.

#### 4. ACTIVITIES

Fritz Raab W1FR gave a presentation on the 500-kHz experiment at the Burlington (Vermont) Amateur Radio Club on November 18.

#### 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.

WNE will be using 500 kHz as its calling frequency and 472 kHz as its working frequency. We are coordinating with WNE's operator to ensure that there are no interference issues.

One of our operators (AC6QV) has observed 500-kHz signals in the vicinity of BART tracks. Another (W5THT) has detected signals at 510 kHz at a nearby railroad.

### 6. OTHER US EXPERIMENTAL LICENSES

The frequency bands of US and foreign amateur and experimental licenses are shown in Figure 2. The parameters of U.S. experimental licenses are given in Appendix B, and the known unlicensed (part-15) operators are given in Appendix E.

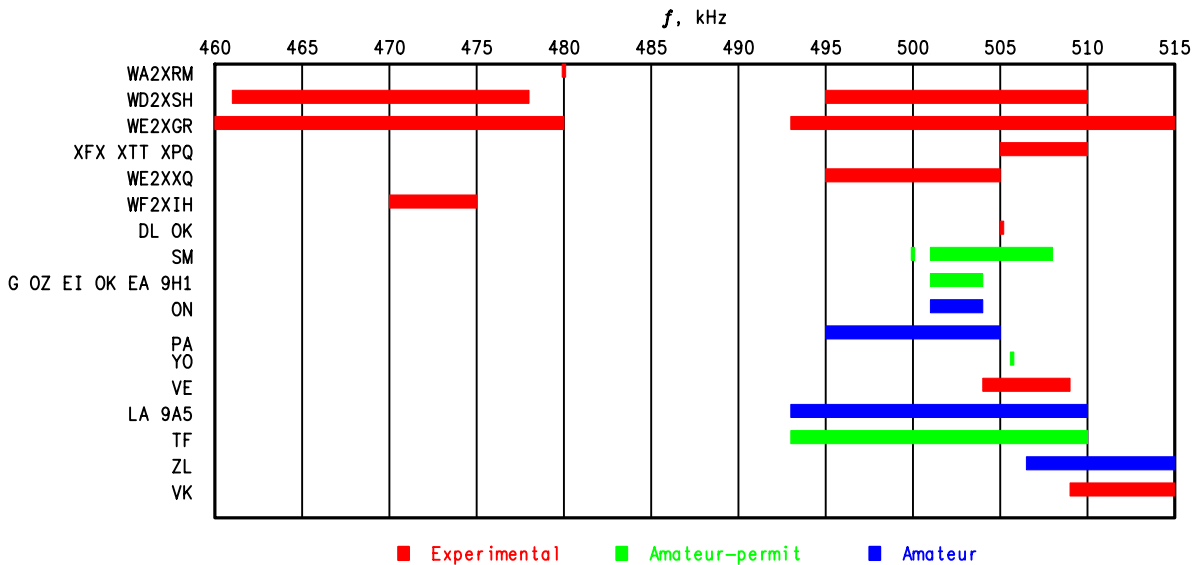


Figure 4. Worldwide amateur activity at 500 kHz.

Juan Granados, K4LCD, has been issued experimental license WF2XXQ. He is located in Miami, Florida. The license allows him to use 495 - 505 kHz as well as 130 - 140 kHz.

Brian Justin, WA1ZMS / WD2XSH/31 has been issued an STA to allow operation of his antique MOPA transmitter with amplitude modulation on 472.5 kHz. WF2XIH will transmit over the holiday season to commemorate the contributions of Fessenden and Heising.

A new WE2XGR station (WE2XGR/8, Frank WA1GFZ ) is on the air and making QSOs.

### 7. INTERNATIONAL AMATEUR ACTIVITIES

There does not seem to be any news to report.

### 8. HERITAGE (MUSEUM) OPERATIONS

Appendix D identifies the known heritage stations in the USA.

In December, WNE began making test transmissions. The plan is for WNE to broadcast weather information on Saturday and Sunday afternoons. We have added operator Steve Russell to our reflector so we can coordinate frequency usage.

## 9. REGULATORY AND WRC-12

### Africa

The African Telecommunications Union is supporting Method A (472 - 478 kHz).

### Europe

At its meeting in September, the CEPT project team approved a draft ECP for a secondary amateur allocation between 472 and 480 kHz. This resolution is subject to approval at the CEPT conference preparatory meeting in November. It represents support for the new band from a number of European countries. They are proposing a limit of 5 W EIRP (about 3 W ERP).

At last report, the Americas (CITEL), Europe (CEPT), and Africa (ATU) are supporting resolution 1.23 for a new amateur band. The former Soviet Union (RCC) and several middle-Eastern countries (ASMG) are opposing the new band, as is the International Maritime Organization (IMO).

The Wireless Institute of Australia reported in its on-line newsletter of December 14 that Asia-Pacific Common proposals were developed at the fifth meeting of the APT Conference Preparatory Group in August to September in Busan, Korea. However, the newsletter provided no details about what is actually being supported.

### Contribution of WD2XSH to WRC-12 Resolution 1.23

Ground work for the ARRL 500-kHz experiment began in early 2004. Seven years later, we are almost at WRC-12 and a decision on resolution 1.23 which calls for a new amateur band in the medium-frequency range (415 - 526.5 kHz). It is therefore appropriate to review the contributions of WD2XSH, WE2XGR, WE2XPQ, and WA2XRM to the cause. Our operations commenced on September 13, 2006, and have demonstrated the following:

(1) Ordinary amateurs with ordinary equipment can operate and make contacts on these frequencies. This point is one reason we retained the 20-W ERP limit throughout the several modifications of the license.

(2) There is interest well beyond our group of experimenters, as shown by the 10,000 reception reports filed on our web site.

(3) We have logged over 100,000 hours of transmission but received not one interference complaint.

(4) Several tests have shown that we can use the ground wave as well as the sky wave to communicate reliably at distances up to 150 miles or so on a 24/7 basis. The 500-kHz ground wave is a new propagation mechanism not available on any other amateur band and will make possible reliable emergency communication at regional distances.

(5) Some of the "ground-wave" tests used a portable antenna that can be deployed rapidly to establish an emergency-communication node.

(6) Modern digital modes (PSK-31 and MSK-31) have been used successfully.

(7) We have demonstrated that an amateur can operate in close physical proximity to stations in other services (NDBs) by maintaining a small frequency separation.

(8) By operating in the band from 510 - 515 kHz, the WE2XGR operators have demonstrated that amateurs can share the same frequency band with other services (NDBs) with reasonable geographic separation.

(9) The higher power (200+ W ERP) used by the WE2XGR operators has not caused harmful interference nor generated any complaints.

## 10. PLANS

We expect that operations will increase during the winter months, as usual.

Brian Justin, WA1ZMS/4 - WD2XSH/31 will be making AM transmissions during the holiday season to commemorate the activities of Fessenden and Heising.

## APPENDIX A. WD2XSH STATISTICS

STATION	CALL	STATUS	08/31/11		11/30/11		LAST LOG
			HOURS	QSOs	HOURS	QSOs	
WD2XSH/1	W1NZR	Inactive	4	3	4	3	11/11
WD2XSH/2	W5TVW	Inactive	13	22	13	22	08/07
WD2XSH/5	KW1I	ON	49	54	50	55	08/11
WD2XSH/6	W5THT	ON	8865	159	9272	159	11/11
WD2XSH/7	W5JGV	ON	12342	1	14245	1	11/11
WD2XSH/8	N4ICK	Inactive	0	0	0	0	-
WD2XSH/9	W2ILA	Inactive	10	27	10	27	05/10
WD2XSH/10	W4DEX	ON	1746	25	1781	25	11/11
WD2XSH/11	WS4S	Inactive	810	12	810	12	11/10
WD2XSH/12	AI8Z	ON	26858	25	28718	25	11/11
WD2XSH/13	KOJO	SK	997	7	997	7	08/08
WD2XSH/14	W1FR	ON	386	8	415	8	11/11
WD2XSH/15	W5OR	OFF	10161	2	10785	2	11/11

WD2XSH/16	WEOH	ON	1186	16	1186	16	08/11
WD2XSH/17	AA1A	ON	11802	23	11802	23	08/11
WD2XSH/18	N1EA	Inactive	3959	0	3959	0	04/08
WD2XSH/19	K9EUI	Inactive	1339	3	1347	3	11/11
WD2XSH/20	N6LF	ON	2296	7	2327	7	11/11
WD2XSH/21	WORW	Dropped	652	0	652	0	02/11
WD2XSH/22	WB2FCN	Inactive	-	-	-	-	-
WD2XSH/23	K2ORS	Inactive	112	1	112	1	08/09
WD2XSH/28	KL7Q	ON	54	6	59	6	11/11
WD2XSH/29	KN8AZN	ON	403	5	452	5	11/11
WD2XSH/31	WA1ZMS	ON	12196	7	15501	7	11/11
WD2XSH/34	WORPK	OFF (Moved)	153	1	153	1	04/11
WD2XSH/35	K0HW	Inactive	11	0	11	1	05/11
WD2XSH/36	W5GHZ	Inactive	1180	0	1180	0	08/10
WD2XSH/37	W1XP	ON	5965	17	6493	7	11/11
WD2XSH/38	KN1H	ON	1657	2	2024	2	11/11
WD2XSH/41	W1HK	ON	15	0	15	10	09/11
WD2XSH/42	K2LRE	ON	16	2	18	0	10/11
WD2XSH/44	AC6QV	ON	33	0	63	0	11/11
WD2XSH/45	KL7UW	ON	173	6	173	6	11/11
TOTAL	08/31/10	22 ON	72,844	434			
TOTAL	11/30/10	22 ON	83,073	441			
TOTAL	02/28/11	22 ON	90,024	441			
TOTAL	05/31/11	19 ON	99,408	450			
TOTAL	08/31/11	19 ON	106,158	451			
TOTAL	11/30/11	16 ON	114,172	451			

**Notes:**

Operating hours and QSOs are derived from logs through November 30, 2011. The statistics in this appendix were compiled by Ralph Wallio WORPK 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 or equipment problems. "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
WA2XRM	1	CO	480	100	01/01/09 - 01/01/14	
WD2XSH	43	USA	495 - 510 461 - 478	20	09/13/06 - 08/01/15	

WE2XGR	8	New Engl and	493 - 515 460 - 480	1000	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.
WF2XXQ	1	FL	495 - 505	500	10/14/11 - 10/01/16	
WF2XIH	1	VA	470 - 475	20	12/10/11 - 03/02/12	STA

\* 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	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

### 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
	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

#### 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
VX90HH	VE30HH	Richmond Hill, Ontario	Inactive

#### APPENDIX G. COMMUNICATION RECORDS

The reception and QSO distances (in miles) 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	8,903	1,951	4,866	--	--	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	731	--	--	--	--	--	357
WD2XSH/44	1,448	--	--	--	--	--	--
WD2XSH/45	96	--	--	2,893	--	--	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	1,094	3,700	1,476	4,650	670	671	670
WE2XGR/5	174	527	--	--	--	--	174
WE2XGR/6	4,253	1,205	--	4,870	--	3,139	3,713
WE2XGR/8	238	--	--	--	--	--	238
WA2XRM	623	2,441	--	--	--	--	--
WE2XPQ	96	1,335	--	--	--	--	--
VX9BDQ	2,695	2,461	--	2,086	--	--	--
VX9MRC	2,532	3,106	--	--	--	--	2,532
VX9ZZZ	2,505	--	--	--	--	--	2,505