WD2XSH status report: March 1 - June 30, 2008

Prepared by Fritz Raab, W1FR, Experiment Coordinator

July 1, 2008

1. SUMMARY OF OPERATIONS

Spring as usual brought increased QRN, increased D-layer attenuation, and decreased night-time hours. Nonetheless, the experimenters have logged 1,465 additional hours of operation, bringing the total to 20,840. Thirteen stations are on the air. There were only a couple of additional QSOs, leaving the total at 276. An additional 750 reports have been filed on our web site, bringing the total to 6540.

Statistics cited here are derived from logs (04/30/08), reception reports on the web site (06/23/08), and the W0RPK activity report on the web site.

2. ADMINISTRATIVE

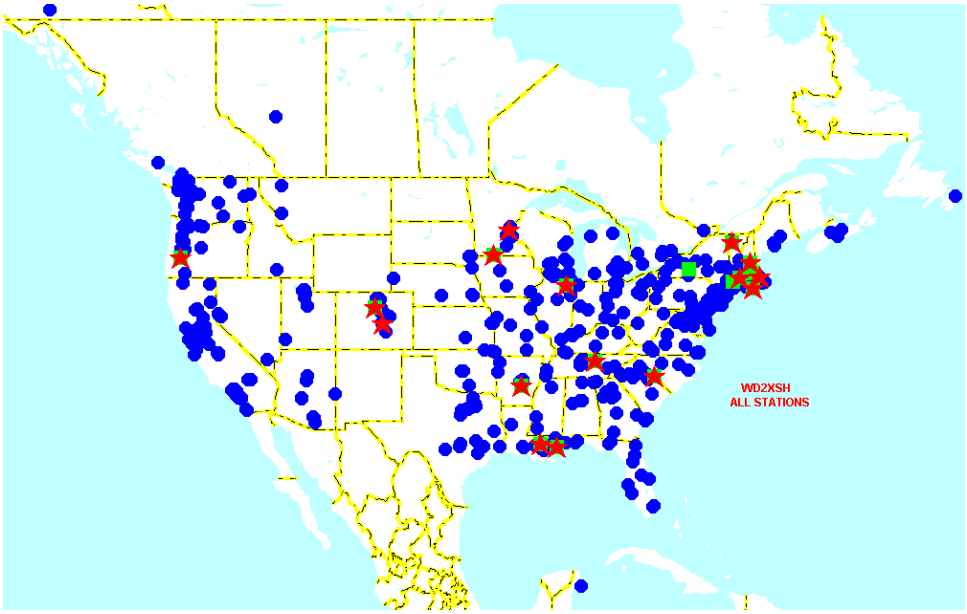
WD2XSH was granted a two-year extension on April 24. This "as-is" extension allows continued operation of the same stations through August 1, 2010.

All information needed for the request to expand the license is in the hands of ARRL attorney Chris Imlay W3KD. The expanded geographic coverage, expanded frequency range, and portable operation are essential to making the case for an amateur band, so we need to get this filed as soon as possible.

3. COMMUNICATIONS

Several stations continued to operate on a regular basis in spite of the poorer conditions during this quarter. No new records have been set. The composite reception map (based upon reports filed on the web site) appears below. Maps for individual stations appear in Appendix B. The markers are defined as follows:

- Red star: WD2XSH station
- Green square: QSO
- Blue circle: Reception report.

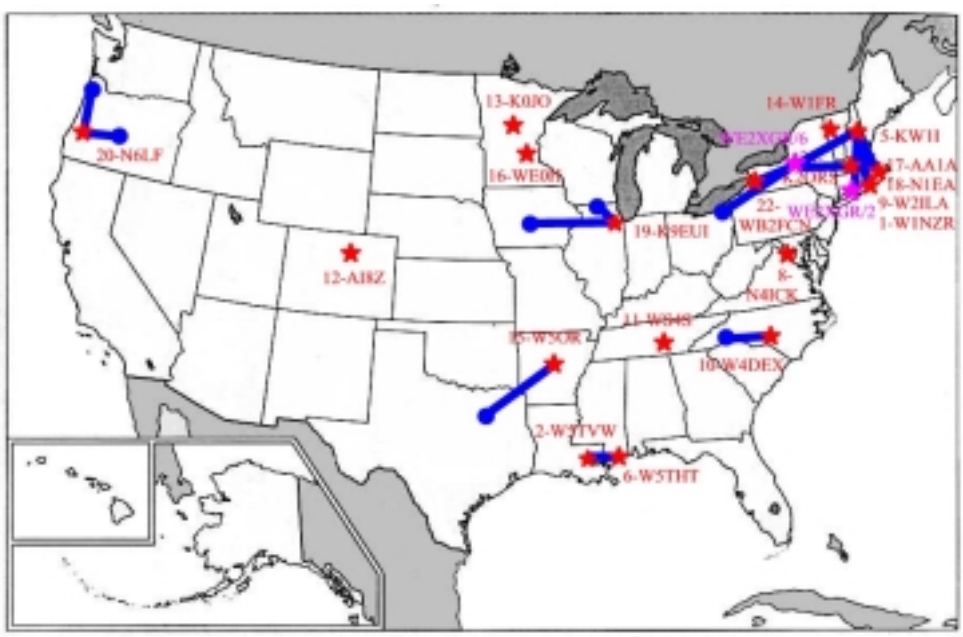


Web-site reception reports for all stations (by W0RPK).

Ground Wave Communication

A 500-kHz amateur band has the potential to allow amateurs to provide reliable regional (100 - 200 mi) emergency communications that does not depend upon the whims of the ionosphere. No present amateur band offers this capability. Demonstrating this capability will be an essential piece of our arguments to the FCC and ITU for a new band.

To date, there have been numerous reports of ground-wave reception and QSOs, some of which are shown in the figure below. However, there has not been a systematic evaluation of the capability and reliability of the ground-wave links. Summer provides a strong daytime D layer (hence ground-wave only communication during the day) as well as the highest noise levels. It is therefore the ideal time to demonstrate this communication capability.



Ground-wave links (2007).

The ground-wave tests are organized in ten clusters of stations located at distances of no more than 200 to 300 mi. Each cluster has a team "captain". The captain is responsible for contacting other members of his cluster, recruiting other monitoring stations, scheduling tests, and reporting results. The members of each cluster include WD2XSH stations, WE2XGR stations, those to be added to the WD2XSH license, and a few others.

Each cluster is to run a minimum of ten (10) tests between May 1 and September 30. The tests can be either the daytime ground-wave test or the partial 24-h tests described subsequently.

The daytime ground-wave test is conducted near mid day (13:00 local time) when the D layer is strongest. A five-minute transmission from each station in each mode (CW, QRSS3, PSK-31) is envisioned.

The objective of the partial 24-h test is to conduct communication tests during daytime (pure ground wave), sunset (mixed ground-wave / sky-wave), and evening (probably sky-wave dominance). While it would be nice to operate continuously over the full 24-h, it will suffice to operate from about 15:00 to 22:00 local time with transmissions once per hour. Again, five-minute transmissions from each station in each mode are envisioned.

The primary data will be Excel files from each team captain. These files will show the percentage “copy” of each link in each mode at each transmission time. These files will be processed by computer to determine link reliability.

In some cases, stations will transmit continuously through the day-night transition and the receivers will generate Argo log files. I hoping to process these files to plot signal strength or SNR as a function of time.

Digital Modulation

PSK-31 has now been used by three WD2XSH stations: /12, /17, and /19.

4. INTERFERENCE

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

NDB OF

I am currently processing the signal-level comparisons collected by K0HW during the winter.

NEED

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

5. OTHER EXPERIMENTAL/AMATEUR OPERATIONS

On April 4, Romanian station YO2IS operating on 505.68 kHz was received in several places in Europe. He was using a 100-W tube-type transmitter and a 100-ft long wire. He apparently had special permission for this test, but details are unclear.

On June 5, experimental license WE2XPQ was granted to Lawrence Howell, KL1X in Palmer, Alaska. He is allowed to operate from 505 to 510 kHz with 50 W ERP, using CW, several digital modes, and SSB. He also may operate portable within a 250-km radius.

Phil Galasso K2PG from Shickshinny, PA has applied for a part-5 license for 470-495 and 505-515 kHz with 1.5 kW ERP and CW and AM modulation. The stated purpose of his application application is to investigate radio wave propagation on the specified frequencies, 470 to 495 and 505 to 515 kHz. The data collected will be used in a future submission of a Petition for Rulemaking for possible inclusion of these frequencies in a new secondary allocation in the Amateur Radio Service (Part 97)."

6. REGULATORY AND WRC-11

IARU

The Administrative Council (AC) of the International Amateur Radio Union (IARU) held its Annual Meeting on June 24-25, 2008 in Konstanz, Germany. The AC reviewed and renewed the three-year strategic plan for the development of support for Amateur Radio frequency allocations for the period 2008-2011. The principal focus is on preparations forWRC-11),

especially the attainment of an amateur allocation in the vicinity of 500 kHz. [per *The ARRL Letter*, June 27].

International Maritime Organization

At the COMSAR 12 meeting on May 15, the IMO adopted several comments about the future use of the 500-kHz band. These can be summarized as follows:

- There are better uses for 500 kHz than reserving it for heritage (museum) operations.
- Heritage stations can now use the band because WRC07 suppressed Appendix 13.
- Amateur operations must be considered carefully with consideration to the impact upon needs for maritime communication.

The possibilities mentioned for future use in support of maritime operations include maritime safety information, (MSI, basically NAVTEX), e-navigation, and port safety.

Museum (Heritage) Stations

In the past, many former 500-kHz radio operators were opposed to any amateur use of the band. Recently, however, several groups have seen cooperation with amateurs as offering the best chance to preserve a frequency for heritage (museum) operations.

Seefunkkameradschaft, the German Association of Maritime Radio Operators, has made an agreement to work with the Deutscher Amateur Radio Club (DARC) toward common use of 500 kHz by amateurs and heritage stations. They note the possibility that heritage stations could eventually become a special class of amateur stations.

The Norwegian Coast Radio Museum (NORKRAM-LGN), whose members are also former radio operators, coast station operators and radio amateurs, has also decided to support joint amateur-heritage efforts to preserve the 500-kHz band for both uses. NORKAM is a member of Norwegian Radio Relay League (NRRL) and is working with them.

Members of the "Radio Officers &C" e-mail list have also come-up with a proposal for joint use of the 500-kHz band.

6. PORTABLE STATION

Fred Temple KN8AZN and Ralph Walio (both on the list of stations to be added to our license) are working on a portable station that will test the viability of an transportable node in an emergency-communication network.

Fred has modified and documented a Small Wonder Labs PSK20/30/40 transceiver and Communications Concepts EB63 linear amplifier to operate on 500 kHz. This design is being used by other stations as well.

W0RPK has assembled a portable ground-radial system consisting of 32 radials with a 40-ft radiu. His current plan fpr an antenna is to use a spare Hustler 4BTV insulated mount with aluminum tubing extending to 40 to 50 ft. The guy wires will also serve as a capacitive top hat. The design of the antenna has not yet been finalized.

The AMRAD Active LF Antenna, modified using a 12V powered J-310 device, is being tested as a the receive antenna. It appears to be excellent.

Narrow-band PSKmail and NBEMS message transmission, switching and receiving software is being evaluated for ARES field use.

7. PLANS

During the summer, most of our efforts will be devoted to the ground-wave / 24-hour tests.

APPENDIX A. STATISTICS

STATION	CALL	STATUS	01/31/08		04/30/08		COMMENT
			HOURS	QSOs	HOURS	QSOs	
WD2XSH/1	W1NZR	ON	9:37	3	8:37	3	Log error
WD2XSH/2	W5TVW	OFF	12:31	22	12:31	22	Inactive
WD2XSH/3	WD5CVG	DROPPED	-	-	-	-	
WD2XSH/4	WD4PLI	DROPPED	-	-	-	-	
WD2XSH/5	KW1I	ON	19:38	41	19:47	42	
WD2XSH/6	W5THT	ON	2599:38	80	2962:11	81	
WD2XSH/7	W5JGV	MOVED	-	-	-	-	Moved
WD2XSH/8	N4ICK	OFF	0	0	0	0	Inactive
WD2XSH/9	W2ILA	ON	9:37	26	9:37	26	
WD2XSH/10	W4DEX	ON	655:13	22	792:33	22	
WD2XSH/11	WS4S	ON	809:42	12	809:42	12	Equipment failure
WD2XSH/12	AI8Z	ON	5466:19	26	6644:39	21	Beacon
WD2XSH/13	K0JO	ON	854:46	7	897:30	7	
WD2XSH/14	W1FR	ON	87:07	4	118:05	5	
WD2XSH/15	W5OR	ON	942:27	2	1853:57	2	
WD2XSH/16	WE0H	OFF	2:38	0	2:38	0	Working on ant
WD2XSH/17	AA1A	ON	680:00	23	712:09	23	
WD2XSH/18	N1EA	ON	3215:04	0	3935:00	0	Equipment problem
WD2XSH/19	K9EUI	ON	1283:96	3	1297:46	3	
WD2XSH/20	N6LF	ON	1963:12	7	1963:12	7	
WD2XSH/21	W0RW	DROPPED	652:42	0	652:42	0	
WD2XSH/22	WB2FCN	MOVED	-	-	-	-	Ready

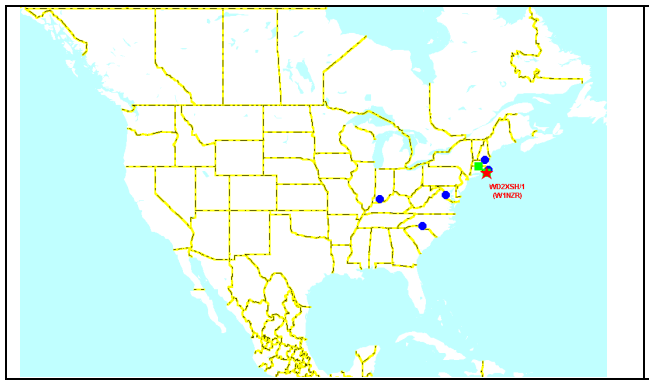
WD2XSH/23	K2ORS	OFF	110:11	0	110:11	0	Inactive

TOTAL 01/31/08	14 ON	19,375	278
TOTAL 04/30/08	13 ON	20,840	276

Note:
Operating hours and QSOs are derived from logs through April 30, 2008.
Total number of QSOs is half the total shown for individual stations.
The statistics in this appendix were compiled by Rudy Severns N6LF using the Excel logs submitted by the stations.

APPENDIX B. RECEPTION MAPS

These maps were compiled by Ralph Wallio W0RPK from reports entered on the web site.



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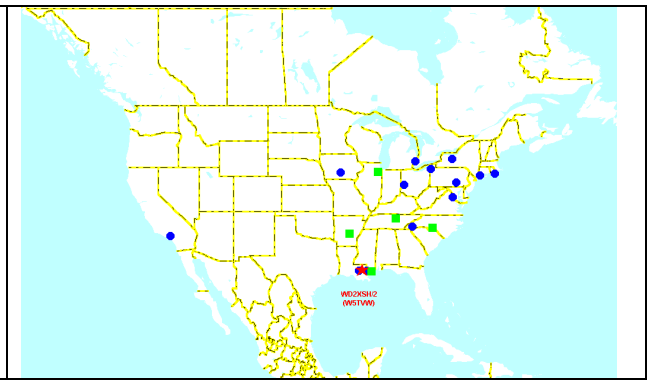

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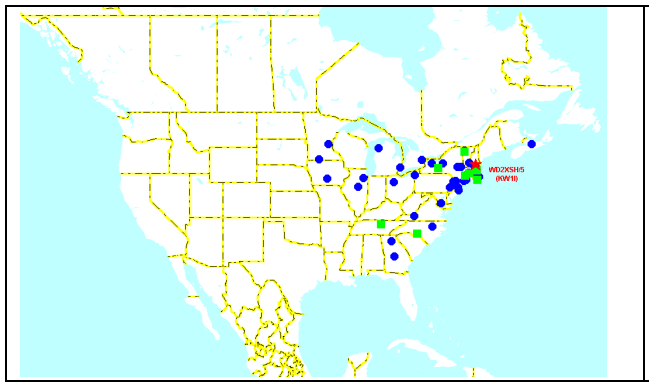

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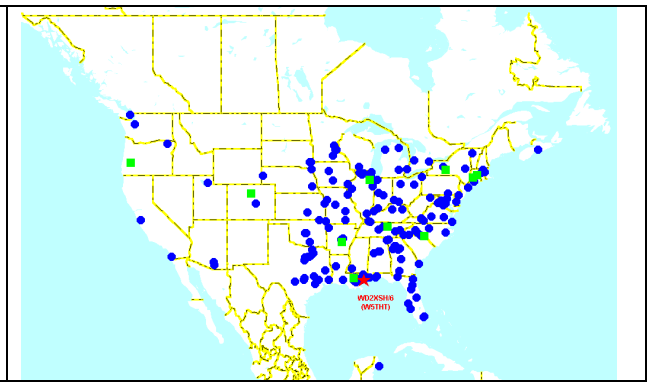

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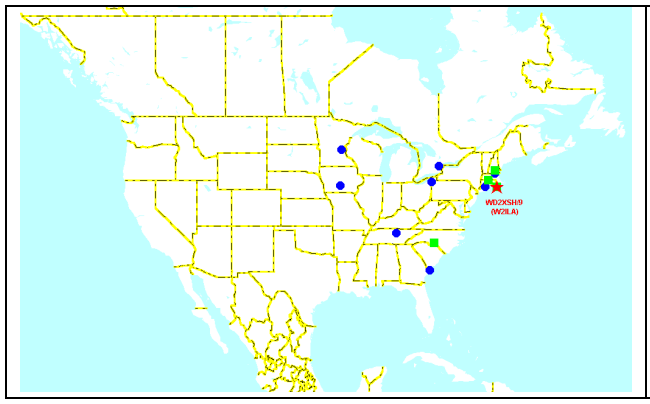

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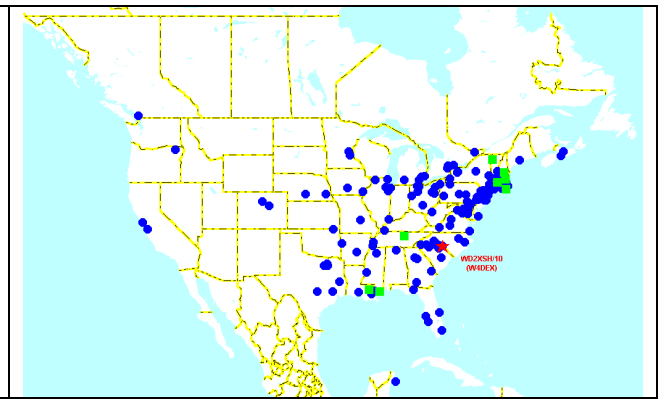

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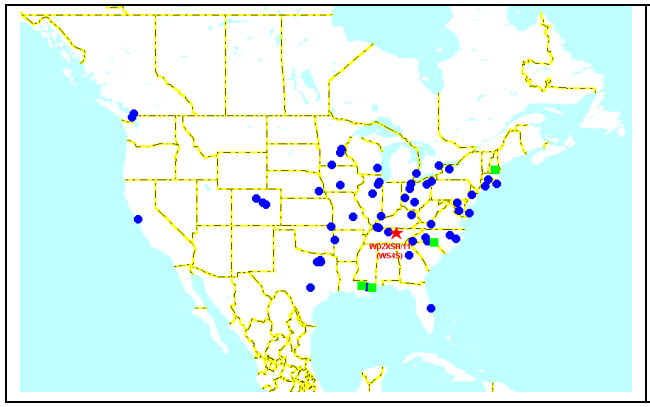

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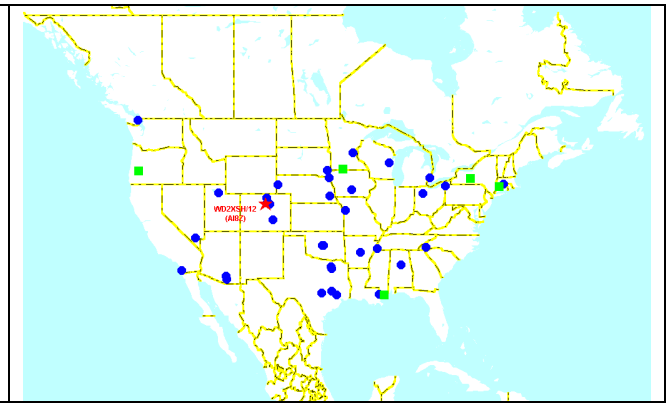

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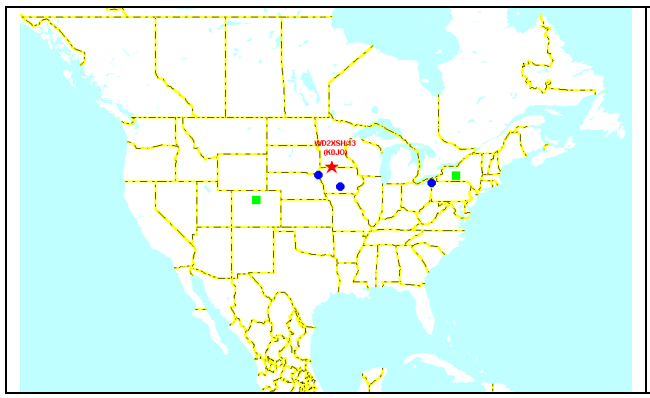

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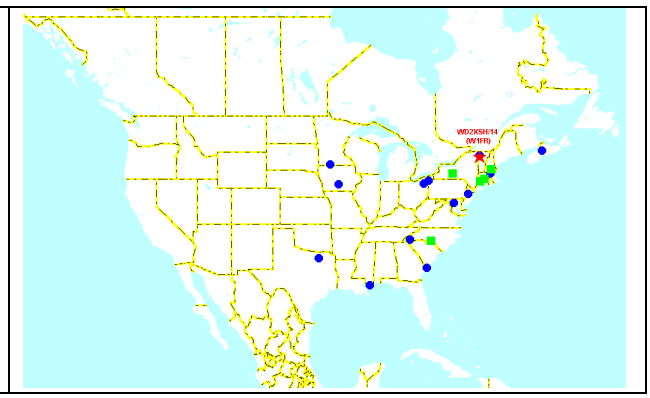

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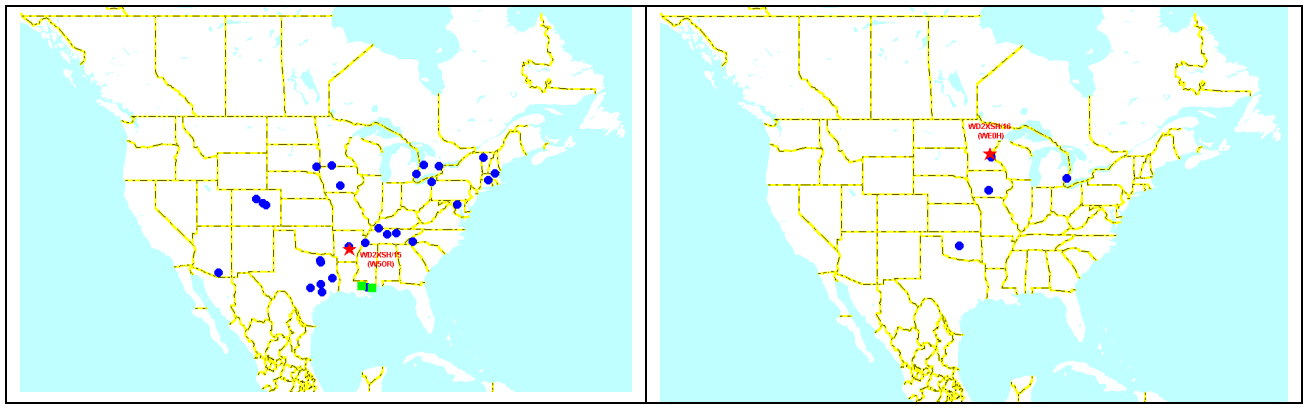

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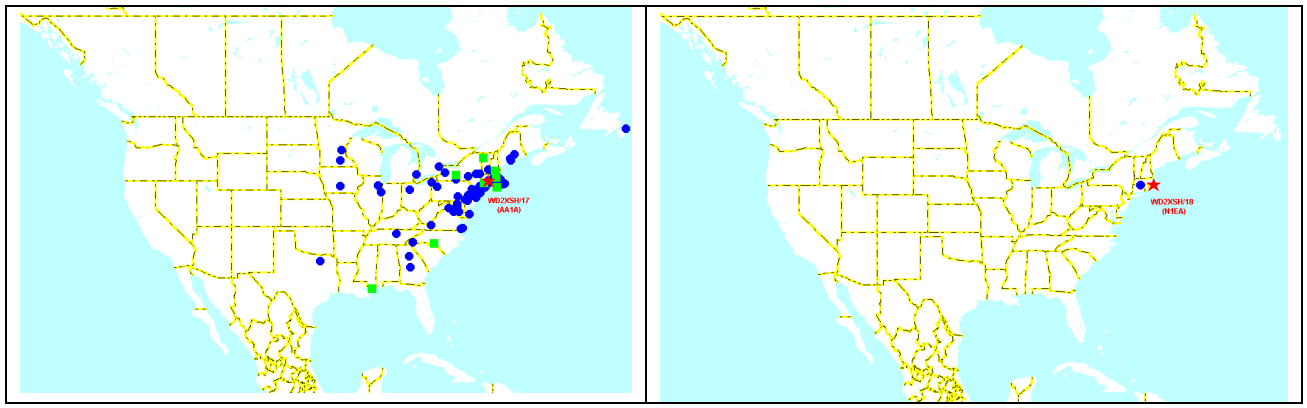

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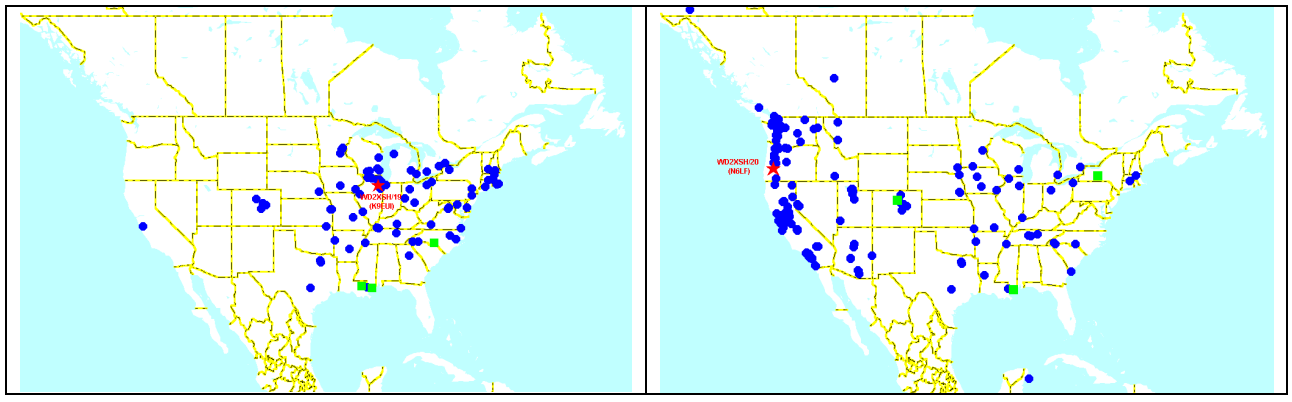

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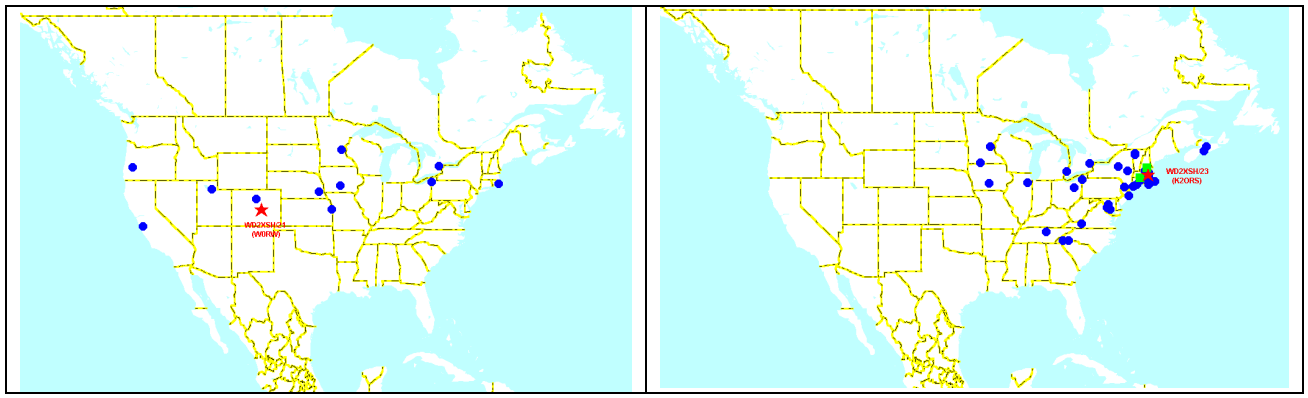

/21 **/23**