

SRMC HF Communications Test Report, January 10, 2015: Executive Summary for SRMC Emergency Preparation Committee

On Saturday, 10 Jan 2015, at 10:00 am (1800 UTC) Placer County ARES conducted an HF communications test net on the 40 meter band (frequency 7214 kHz LSB) from Sutter Roseville Medical Center (SRMC) in Roseville, CA. The total time of the test was a little over one hour. The equipment used included an Alinco DX-SR8 transceiver and an MFJ-1788 “Magnetic Loop” antenna that was being tested. Many stations checked in and exchanged signal reports from northern and southern California and Nevada. A preliminary test had been done on Tuesday, 6 Jan 2015, at 10:00 am. Notice of the larger regional test on Saturday was given via VHS radio, packet radio, email and telephone.

Of special concern was to test the signal quality of 40-meter simplex communications between regional hospitals and other locations over the substantial intervening terrain. There were 22 radio operator participants from the following locations and distances from SRMC:

Placer County, CA: SRMC in Roseville, Lincoln (13 mi), Penryn (9 mi), Auburn (16 mi), Citrus Heights (6.5 mi)
(also provide support for Sutter Auburn Faith Hospital and Kaiser Permanente Hospital-Roseville)
Nevada County, CA: Grass Valley (34 mi), Nevada City (23 mi)
(not far from Sierra Nevada Memorial Hospital)
Sacramento County, CA: Antelope (7 mi), Charmichael (12 mi)
(also provide support for Sutter Health Emergency Medical System, SHEMS), Elk Grove
Yolo County, CA: Sutter Davis Medical Center in Davis (34 mi)
Amador County, CA: Pioneer (41 mi), Volcano (37 mi) (also provide support for Sutter Amador Hospital)
San Joaquin County, CA: Stockton (several hospitals nearby)
Modoc County, CA: Canby (187 mi, near NE CA border with Oregon)
Humboldt County, NV: Winnemucca (241 mi, along I-80 well beyond Reno, NV)
Douglas County, NV: Gardnerville (82 mi, east of So Lake Tahoe)
San Bernardino County, CA: Apple Valley (368 mi, Southern California)

When the SRMC radio was at 100 Watts all of the stations were able to hear and understand clearly (received signal strength report of S8-S10). Background noise was low in most cases (about S1-S3). At 10 Watts, fewer stations could hear well (reported S3-S5). At 1 Watt only a handful of the closest stations could hear (report S1-S3). Rotating the loop 90 degrees (West-East) from the starting orientation (North-South) improved the reported signal strength for several stations. Some stations noted that the voice audio changed somewhat, perhaps due to imperfect tuning and tuning drift. Retuning had to be done several times through out the one hour test period – a feature which will be examined in the future.

The remote radio operator participants indicated that the test was successful and that a “40 meter Magnetic Loop” antenna should be considered further for 40m HF communications between SRMC and regional locations. Rapid deployment is an important characteristic of these types of HF antennas. Another important feature is that the loop only needs to be a few feet off the ground or floor. Its base was about 6 feet above the concrete floor of the top level of the three-level parking structure and it was placed away from the concrete walls to avoid degradation. This height was well below the Helipad lights that are an upper limit to antenna height.

The test team at SRMC wish to thank all of the radio operator participants for giving their time and skills for this test. The results indicate that magnetic loops can be valuable communication tools in regions with significant intervening terrain.



Duane WA0MJD with MFJ Magnetic loop parallel to I-80 ("N-S").



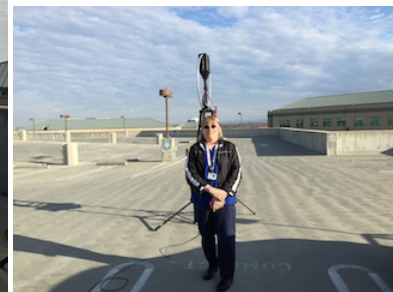
MJF Magnetic loop rotated 90 degrees from I-80 ("W-E"). Heliport, seen in background, limits antenna height.



Chuck KG6FFK, our scribe, With station in background.



Chuck, Duane set up in sun tent.



Carol KP4MD visits after seeing patients. She recorded the 1-hr session for us.



John NT6ET was HF Net Control running the 40-meter test. Duane WA0MJD, owner of the loop, maintained tuning.



Marty W6TOC was VHF Net Control using SRMC's new Kenwood TM-710G kit.