

## AFTER ACTION REPORT

### CALIFORNIA HOSPITAL DRILL FOR YOLO AND SACRAMENTO COUNTIES

#### AMATEUR RADIO COMMUNICATIONS – SUTTER DAVIS HOSPITAL

This report is a synopsis of the amateur radio communication drills conducted on Thursday, November 15, 2012 from the perspective of the amateur radio operator located at Sutter Davis Hospital, Bryce Birkman, K7DWO.

#### Activity (Times may be approximate)

- 1145: Began monitoring frequencies established for the Yolo and Sacramento County hospital drills. 80 meter band, 3.960 MHz, LSB -- K6JRB repeater located at UC Davis, 145.450 MHz, negative offset, PL 203.5 Hz -- W6AK repeater located in the Sacramento downtown area, 146.910 MHz, negative offset, PL 162.2 Hz.
- 1155: 80 meters – N6JOA, Vet Med Teaching, UCD signed on “monitoring”, signal 4/8.
- 1200: Designated time for Drill #1, communications between Yolo County EOC and Cal EMA on 80 meters and W6AK. Nothing heard on 80 meters. Various “noon net” communications heard on W6AK which were extremely weak, fading, and covered with considerable static. General signal 2/4 with QRN and QSB.
- 1225: W6AK – heard what appeared to be WA6TQJ calling Cal EMA. High QRN/QSB. Although barely readable, traffic seemed to indicate parties were going to attempt contact on 80 meters. Nothing heard on 80 meters.
- 1235: 80 Meters – Heard WA6TQJ briefly, content or contact unknown. I attempted communications with WA6TQJ but did not establish contact. During Drill #4 debriefing N6JOA related he heard me and signal was readable but with considerable static.
- 1235 – Continued monitoring 3.960 MHz, and K6JRB and W6AK repeaters as before.
- 1355: Nothing heard on 3.960 MHz. Received a transmission from WA6TQJ via the K6JRB repeater. Signals strong in both directions. Various traffic on W6AK repeater with varying degrees of readability and QRN.
- 1355: Transmitted five (5) minute alert on K6JRB repeater regarding net for Drill #2.

- 1400: Opened net for Drill #2 via K6JRB. Called for Yolo County hospitals and health care facilities to check in. Began receiving series of repeater keying with no audio. Continued attempt to operate net but without success because of ongoing series of continuing interference with repeater. One or more stations seemed to try to check in but were unable to do so because of repeater keying. There are several possible causes for this interference to include: 1) Malfunction of Sutter Davis equipment, 2) Deliberate keying and interference by parties unknown, 3) Malfunction of the equipment of drill participant/s attempting to check in such as microphone failure, VOX failure, overdriven modulator, or other equipment problem, or 4) participants attempting to check in who were out of range or otherwise masked from the repeater who were able to trigger the repeater but masked to the extent that the audio component of the signal was impaired.
- #1. Malfunction of Sutter Davis equipment is improbable. The malfunction, if Sutter Davis' would have had to be frequency and time specific for only the time of Drill #2. Clear 2-way communications between Sutter Davis and other stations were established via at least three repeaters, including the K6JRB repeater, both before and after this incident.
- #2. Unlikely but not unheard of. The nature of the interference was very specific both in frequency and timing. Deliberate interference with communications is strictly prohibited by FCC regulations.
- #3/4. Most probable cause of interference. However, once noted by the operators that net control was experiencing difficulties with reception they should have discontinued transmissions to clear the net for other traffic.
- 1425: As Davis Sutter hospital to Woodland Memorial hospital communication was the objective of Drill #2 I requested KG6TEN, Woodland Memorial operator, via K6JRB repeater to shift to the KE6YUV "BARK" repeater. Contact was established with KG6TEN with reasonable readability. WA6TQJ and KJ6MOU (Sutter Memorial hospital) also checked in. WA6TQJ was intermittently cutting out with strong signal when readable. KJ6MOU was readable with difficulty and static.
- 1430: Sacramento Sutter hospitals opened a net for Drill #3 on the W6AK repeater. Extreme difficulty receiving, signal weak with high level of static. Contact was established with KJ6MOU (Sutter General hospital) on this repeater but reliability of extended traffic was doubtful.
- 1450: Discontinued monitoring frequencies and secured equipment.
- 1645: Began monitoring K6JRB and W6AK repeaters in anticipation of wrap-up Drill #4.
- 1700: Net opened by WA6TQJ for Drill #4 on the K6JRB repeater. Check in by several stations followed. Generally strong signals and readability from all stations. Gave wrap up report.
- 1718: Secured from drills.

## **Observations**

1. Communications via K6JRB repeater were clear and strong between stations within Yolo County. Stations outside Yolo County had markedly reduced signal.
2. Communications via W6AK repeater with Sacramento County stations were extremely compromised by QRN and QSB and could not be considered reliable.
3. 80 meter communications, although not fully established could prove to be a reliable intra-county link.
4. During Drill #2 I, as net control, upon being unable to establish communications with any stations should have advised all stations to shift to an alternate frequency. Although I did call for a shift it was not timely, and involved only the Woodland Memorial station albeit the objective of the drill was to establish communications with Woodland Memorial.
5. Examination of Sutter Davis' antenna system revealed two issues that could be the cause of the high level of static noted by N6JOA when I tried to contact WA6TQJ on 80 meters and the compromised receive signals via the W6AK repeater. These issues, respectively, are the Sutter Davis Titan HF antenna has a broken counterpoise and both the HF and VHF/UHF antenna runs appear to be RG-58/U. Neither of these problems would be discovered during the course of routine tests because the operator would not attempt communications with stations that were unreadable or compromised by static and would consider the reception normal.

## **Recommendations**

1. Repair the counterpoise for the Sutter Davis Titan HF antenna
2. Determine if the full length of the antenna runs are RG-58/U. If so I recommend replacing the entire runs with a coax that has lower losses such as LMR-400.
3. Woodland Memorial hospital should consider installing, as a minimum, a base VHF/UHF station. Communications relying upon an operators personal equipment operated from outside the facility does not provide the level of reliability necessary in an emergency situation.

## **Conclusions**

Because Sutter Davis was only directly or indirectly involved with drills #2, #3 and #4 I will only address these three.

Drill #2: Communication between Sutter Davis and Woodland Memorial hospitals – successful, reliable communications established even with difficulties on primary frequency.

Drill #3: Communications among Sutter hospital system in Sacramento and Yolo counties – marginally successful. Sutter Davis had extreme difficulty receiving reliable communications on primary frequency.

Drill #4: Wrap up – successful. Reliable and strong transmission to net control and reception from all stations checking in. Successfully received practice message.

Submitted//

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