

Squelch Tales

A Publication of The San Diego Repeater Association, Inc.
July/August 2014

Ahead in Squelch Tales

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SANDRA meeting minutes. SANDRA BOD meeting minutes resume this month.

Errata, mistake and updates to previous issues of *Squelch Tales*.

Membership Meeting

Gene Swiech – WB9COY

Experiments with Data Transmission using the D-Star Physical Layout Protocol

The June 5, 2014 SANDRA membership meeting featured Gene Swiech (WB9COY) presenting experimental work that he and others have been doing adapting D-Star to pure data transmission. The goal of the work is to utilize the 4800 baud data stream that normally encodes voice to encode an ethernet data stream. Data transmission would be valuable for emergency communications, for example, a completed ICS-213 form (or any communication form) could be programmed and sent from station to station much faster than the information could be communicated by voice.

The D-Star protocol was developed by the Japanese Amateur Radio League with support from the Japanese government. The protocol consists of three parts, a header which encodes call signs, repeaters and digital flags with necessary information about the transmission, a low speed data section (800 bits per second) that transmits GPS and text messages, and the high speed data section that is currently used for voice encoding in the current Icom implementation. It is the high speed data stream that Gene would like to co-opt for ethernet digital communication.

In a more detailed look at the D-Star protocol, the first element is 64-500 bits of alternating 0's and 1's used for bit sync.



Gene Swiech (WB9COY) presenting his work modifying D-Star for ethernet communications.

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ARRL Southwestern Division Convention

San Diego – September 12 -14, 2014

Next week starts the ARRL Southwestern Division Convention to take place at the Four Points Sheraton 8110 Aero Drive, San Diego. Having the convention in our own backyard only comes around every four to five years. This is a prestigious event in which all local hams have the opportunity take part. We don't have to travel to see and hear the luminaries of the amateur radio world, they will be here at this convention. The convention has the privileged of having the keynote address delivered by ARRL's Ward Silver (N0AX) at the Saturday night banquet. Again, it is not often that the opportunity to listen in person and meet someone of the stature of Ward Silver comes around – here is your opportunity.



Ward Silver (N0AX)

The ARRL Southwestern Regional Convention is a full featured convention with a myriad of events, simultaneous speaker, great prizes and hands on activities. The complete convention program can be seen at <http://www.sandarc.net/~convention2014~/index.php>. Snuelch Tales offers the following preview:

Flea Market – what convention would be complete without a Flea Market. The Flea Market is a no cost event to either buyers or sellers and will take place in the west parking lot on Saturday between the hours of 4:00 am and noon. Sellers will start setting up at 4:00 am. There are no reserved spaces, it is first come first serve.

Special Event Station – a special event station will be set up in the exhibit area and all licensed hams may come and operate the equipment. An Icom 7600 will be available for operation which is the same model radio being given away as the grand prize. This is a good chance to come try out new equipment.

VE Testing will be available in the Columbia Room from 9 am to 5 pm on Saturday. If you would like to upgrade your license, bring your FRN number, a valid photo ID and a copy of your current license. If you are taking a test for the first time (new to be ham) just bring your valid photo ID.

Technical Forms – there are 54 one hour technical presentations that run the gammit from bleeding edge technology to various kinds of special interest operations to assembling an engineering laboratory from cheap surplus equipment. There is something for everyone in these session, be sure to look over the program carefully. The sessions run all three days. One of the technical forms will also be presented by Ward Silver (N0AX), in addition to his keynote address at the banquet.

Exhibits – this year's exhibitors include all of the national and international brands as well as local ham suppliers. This is your chance to talk to the manufacturers of your equipment and ask questions one-on-one with the representatives. The exhibits are open every day, all day during the convention.

Prizes – The grand prize is an Icom IC 7600. There are three early registration prizes, one for each pre-registration group, plus hourly prizes during the entire convention. Prize winners will be posted at the prize booth located in the exhibit area. Stop by the Prize Booth any time during the convention to claim your prize. Early registration prizes will be drawn on Friday. The Grand prize will be drawn at noon on Saturday and the hourly prizes will be drawn each hour. You must be present to claim all prizes except the Grand Prize. The Grand Prize winner will be notified. A tax form must be completed for all prizes worth \$600 or more.

T-Hunts – there are two T-Hunts, a walk around T-Hunt on Saturday afternoon between 4:30 pm and

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6:00 pm, and an off-site T-Hunt on Sunday between 1:30 pm and 5:00 pm. These events are sponsored by San Diego's very active local T-Hunt group.

Hospitality Room – SANDRA is sponsoring a hospitality room. If you need a break, rest for your feet or just want to meet other SANDRA members please come and join SANDRA.

Convention Banquet – one of the highlights of any convention is the Banquet. This is the place to meet and greet fellow hams while not hurrying between events. This years banquet features Ward Silver (N0AX) as the keynote speaker. Ward is the Lead Editor of the ARRL Handbook and the ARRL Antenna Book. He is the author of all three ARRL License Manuals and the Q&A Study Guides along with writing the monthly QST columns "Hands-On Radio" and "Contest Corral". The ham radio detective mystery, "Ray Tracy: Zone of Iniquity" is his most recent book. He also serves as a Contributing Editor to the ARRL and consults on a variety of projects and programs in the ARRL Contest Branch. You will also find his byline in the popular Wiley "for Dummies" series; Ham Radio, Two-Way Radios and Scanners, and Circuit building Do-It-Yourself. An electrical engineer, he designed microprocessor-based products and medical devices for twenty years before beginning a second career as a teacher and writer. Ward was first licensed in 1972 as a Novice (WNØGQP) and enjoys DXing, contesting, and participating on his local ARES emergency communications team. He is a founder of the World Radiosport Team Championships and is President of the YASME Foundation Board of Directors. Outside of ham radio, Ward plays the mandolin, dabbles in digital photography, and enjoys camping and canoeing. This will be a memorable banquet and everyone should make an attempt to attend.

Important Tips:

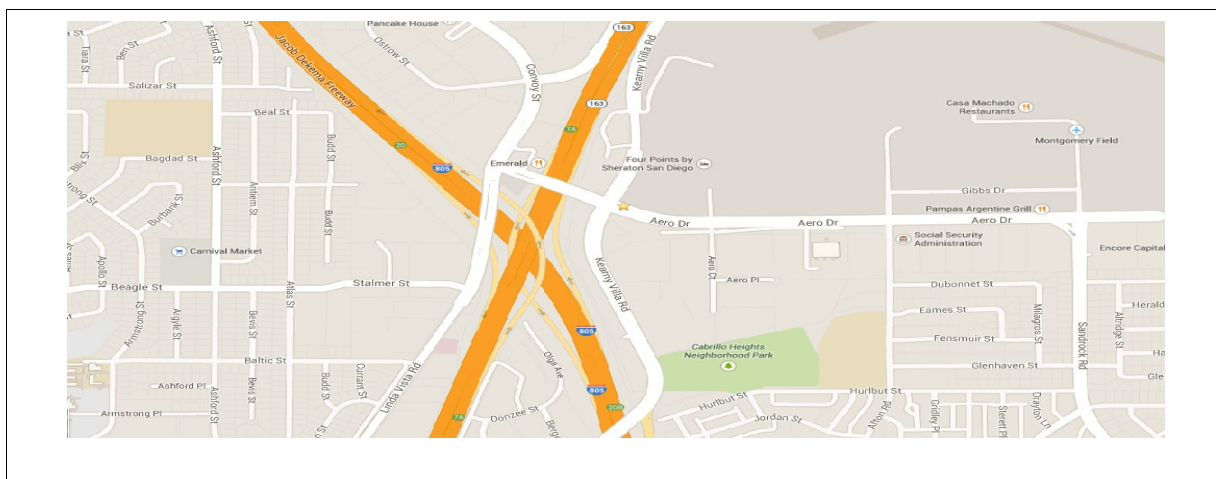
Parking – parking is located on site with additional off site parking. The on site lot fills up around noon, at which time, attendants will direct traffic to off site parking. A hotel van will shuttle attendees back and forth between the hotel and off site parking areas between 10:00 am and 4:00 pm and as required for attending the Saturday night banquet.

Advanced Registration packets can be picked up at the Will Call table in the main lobby. Packets are organized by last name. Additional events (i.e. additional banquet seats) can be purchased at the main registration table.

Walk in registration will be at the main registration table I the lobby.

Exhibits are open between 5:00 pm and 6:00 pm on Friday, 9:00 am to 5:00 pm Saturday and 9:00 am to 12:00 noon on Sunday.

Check the prize booth frequently to collect your winnings. -{SQ}-



New Poway Antenna Ordinance

On August 5, 2014 the Poway City Council approved a new antenna ordinance that allows for the installation of a single support structure up to 65 feet in height with an approved building permit. The council has been wrestling with the antenna ordinance for several years before coming to a final decision. Prior to this, no structure over 35 feet in height was allowed within the city limits except for church steeples and hospitals. To erect an antenna of 35 feet in height required approval of the City Council and was examined on an individual basis.

Going into the meeting there were two ordinance proposals, the first which was ultimately chosen for the final ordinance, required a building permit for a single support structure up to 65 feet in height. Structures greater than 65 feet in height require an antenna permit which is a new permit process requiring the applicant to demonstrate need for the structure and approval by the city council. The second proposal incorporated a building permit up to 35 feet in height, a minor antenna permit for heights from 35 to 65 feet and an antenna permit for heights over 65 feet. The minor antenna permit would require notification of neighbors up to 500 feet who would be able to participate in the decision. A courtesy notice to properties 250 feet from the structure is part of the final ordinance but the notified properties have no ability to prevent the installation.

Four of the council members favored the first and ultimately chosen proposal. The lone holdout was Jim Chunningham who felt that allowing any structure (other than church steeples and hospitals) higher than 35 feet was a paradigm shift for Poway. He also thought that neighboring properties up to some limit 250 or 500 feet should be allowed in on the antenna approval decision. A great deal of discussion centered around

notification of surrounding properties, who should be required to notify them, the city or the applicant and how to verify that notification was complete.

At the end of the night the first proposal was unanimously accepted. Antennas would be allowed up to 65 feet with a building permit, neighboring properties up to 250 feet away would receive a courtesy notice with no recourse to prevent the installation. Roof mounted antennas and wire antennas up to ten feet above the roof line and not more than 35 feet above the ground would be exempt and any number could be installed. The council noted that the ordinance does not preempt home owners associations and their rules. The council also requested a report be prepared after one year to review the performance of the ordinance. -{SQ}-

D-Star continued.

The second element is a 15 bit frame sync which is a specific bit pattern and is followed by the 660 bit header. Following the header is a series consisting of 72 bits of voice, 24 bits of sync, 72 bits of voice and 24 bits of data all of which is repeated 21 times. This is followed by another sync and repeated until an End-of-Transmission (EOT) is encountered. Voice is encoded with a proprietary CODEC implemented as an AMBE vocoder chip. The voice encoding is the only proprietary portion of the protocol and using the data stream for ethernet does not practice that technology. There is also a grey area question about the legal use of a proprietary CODEC because amateur radio is not supposed to use any encryption and the AMBE vocoder is a type of encryption. The FCC considers published and widely understood CODEC's to be encoding instead of encryption, however, the AMBE vocoder is proprietary and not published. France has specifically ruled that the AMBE vocoder is illegal for use with amateur radio because of the proprietary nature. **(continued next page)**

However, the transmission of ethernet data would not have this problem and amateurs may also be able to transmit VOIP over the ethernet data stream without it being considered to be encrypted.

Gene's project is using the KI6ZUM modem which is a \$27 modem kit implemented on an Arduino microprocessor kit. The Arduino is used in preference to the Raspberry Pi because of the higher interrupt speeds. The modem connects an analog radio (not digital radio) to a computer. The KI6ZUM provides the digital GSMK modulation from the computer generated D-Star protocol data. To generate the D-Star protocol, Gene wrote a program which he calls DV Observer. DV Observer runs under both Windows 7 and Windows 8. DV Observer displays the header data at the top, followed by a section displaying the low speed text and GPS information and displays the bit stream of the high speed data below. As a demonstration Gene transmitted a signal from an Icom D-Star radio, received the signal on an analog Kenwood radio connected to the KI6ZUM modem which in turn was connected to a computer running DV Observer. DV Observer displayed the header and text information and displayed the voice as a continuous bit stream. Going the other way, Gene had recorded a captured D-Star signal using the KI6ZUM modem, which was played back through the KI6ZUM modem to the analog radio and transmitted to the D-Star radio which was decoded and played back the original audio message.

The final step of this project will be to write the software to support the sending of ethernet packets in place of the voice stream. It is interesting to note that the JARL specification include the transmission of ethernet packets but it has not been implemented by the hardware manufacturer, Icom.

See <https://www.youtube.com/watch?v=DP6KSNoW10Q> for a YouTube demonstration of Gene's work with the system. Gene will also be presenting at the ARRL Southwestern Division Convention on Sunday morning Sept 14. -{SQ}-

Call For members Interested in Serving on SANDRA's Board of Directors

SANDRA is seeking volunteers that are willing to give up their time and become a SANDRA officer.

It is time once again time for anyone interested in running for a SANDRA office to volunteer their name to the election committee. All positions are open for nominations. The slate of nominees needs to be chosen by SANDRA's October 2nd Board of Directors meeting.

Requirements for officers are:

- 1) membership in SANDRA for at least one year,
- 2) be over 18 years of age and,
- 3) hold a valid amateur license.

To volunteer you may contact:

John Austin, K6RLV via k6rlv@cox.net

Chuck Wood, WD6APP via

woodchuck1@cox.net

David Andreoli, KI6VIA via

david.andreoli4100@gmail.com

An alternative contact is via the SANDRA web site: <http://www.wb6wlv.com> and click on "Contact Us" and again on "Send the Entire board of directors an email message."

SANDRA encourages anyone that is willing to volunteer their time to submit their nominations. -{SQ}-

San Diego Repeater Association, Inc.

**Board of Directors Meeting Minutes
February 6, 2014 (Thursday) 7:00 PM
San Diego County Office of Education
6401 Linda Vista Road, Room 307
San Diego, CA 92111**

Director	Present	Excused
President Barbie Flinn, WA6URS	X	
Vice President Stogie Panger, AJ6AX		X
Treasurer Ken Decker, WA6OSB	X	
Secretary Alex Groza, WB6DTR	X	
Membership Chair Bob Boehme, W2IRI		X
Meeting Chair Ben Concepcion, N6VVY	X	
MAL-1 Year Bayard Rehkopf, K6GAO	X	
MAL-2 Year Chuck Wood, WD6APP	X	
MAL-3 Year David Andreoli, KI6VIA	X	

Call to Order: The meeting convened at 7:00 PM, President Barbie Flinn presiding.

Members in attendance: Attendance Roster attached. (Eleven attendees)

Approval of Minutes: Approval of Minutes from January 2014 meeting, by unanimous consent.

Board Reports / Presentations / Comments:

President: Discussed upcoming Yuma Ham Convention, upcoming Poway antenna ordinance meeting and last month's SANDARC meeting.

Treasurer: Submitted January 2014 Treasurer's Report.

Membership: 224 Members. Report submitted via email.

MAL-1: Hi-Pass repeater site needs to be painted in the near future.

Committee Reports:

Technical: Written report submitted to Board via email.

SANDARC: WD6APP and Joe Acevedo N6SIX discussed upcoming September 2014 ARRL / SANDARC Southwestern Division Convention. Early Bird registration is currently ongoing. SANDARC General Membership meetings are now quarterly; Jan / Apr / Jul / Oct

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Unfinished Business: Policy Manual:

WA6URS-Discussion regarding Policy and Procedure manual update status.

WA6OSB-Asked about Bylaws update and 2014 SANDRA appointments. Secretary advised both had already been taken care of.

New Business:

Poway Amateur Radio Club request: President WA6URS reiterated the importance of supporting our fellow amateur radio operators in Poway regarding an upcoming City antenna ordinance hearing.

Membership Meetings: Southwestern REACT will be making a presentation at the March Membership Meeting.

Next Meeting Date: March 6, 2014, General Membership Meeting. Room: Annex C

Adjournment: The meeting was adjourned at 7:55 PM by Unanimous Consent.

Errata, Corrections, Amplifications and Shorts: This sections acknowledges errors and omissions or allows additions to previous *SQ* issues. We rely on feedback from the readers – please write.

There is a swap net at 9:00 pm on Sunday nights, directly following the SANDRA Sunday Night Net. The swap net is hosted on the Otay KN6KM repeater at 146.91 (minus) with a pl of 100. This is not a SANDRA repeater. This net is hosted by the San Diego Six Shooters.

Repeater Status:

Otay UHF 449.200 repeater – The digital repeater has been removed for repair. The analog repeater was placed back into service and connected to the controller so that it is available for use with SANDRA nets.

Otay 1270.300 packet repeater has been replaced and is in service.

Lyons: No change.

Sharp: WA6AIL reports that the transmit audio is intermittently distorted. A replacement RLC 1 controller was located and installed. It is in programing and will be installed when complete.

Laguna: No change.

HiPass: Baird, K6GAO reports that the building will be needing a paint job soon.

San Diego: The repeater was repaired and placed back into service. The repair required extensive replacement of capacitors throughout the rf sections. Reports from the field indicate that it is working normally.

Callsign	Location	Input	Output	Callsign	Location	Input	Output
WB6WLV	Mt. Otay	146.040	146.640	WB6WLV	Mt.Laguna	444.500	449.500
WB6WLV	Mt. Otay	222.460	224.060	K6GAO	Hi-Pass	144.680	145.280
WB6WLV	Mt. Otay	444.200	449.200	W6SS	Lyon's Peak	146.865	146.265
WB6WLV	Mt. Otay	1270.300	1282.300	WA6AIL	Sharp Hospital	147.285	147.885
WB6WLV	Mt. Laguna	147.750	147.150	WB6WLV	San Diego	442.320	447.320
WB6WLV	Mt. Laguna	222.600	224.200				

All SANDRA repeaters use PL 107.2

SANDRA NETS

Sunday 8:00 P.M. Mt. Otay Repeater
 Wednesday 7:30 P.M. Mt. Laguna Repeater

GUIDELINES SUMMARY

SANDRA, Inc. operates their repeaters for service in the San Diego area. The policy of the organization is that the repeaters are available for all licensed amateur radio operators to use so long as applicable rules and regulation are observed, whether members of SANDRA or not.

SQUELCH TALES

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The SANDRA membership meets the first Thursday in the Months of March, June, September and December. Meetings start at 7:00 P.M. and are located at the San Diego County Education Center, 6401 Linda Vista Road, San Diego. Board meetings take place on the first Thursday of January, February, April, May, July, October and November. All SANDRA members are encouraged to attend.

SANDRA, Inc.
 San Diego Repeater Association
 P.O. Box 81103
 San Diego, CA 92138

