



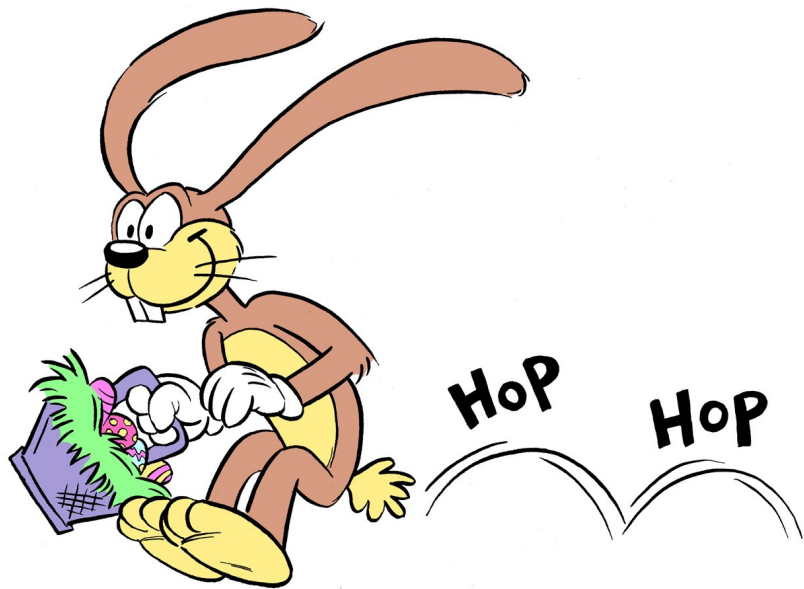
April 2019

ARCOver

A Community Service Organization Dedicated to Amateur Radio Since 1970

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Hop Into
Amateur Radio

E-mail: W6SBA@arrl.net



Website: <http://www.w6sba.org>

Hello fellow SBARC Amateur's

Speaking of socializing ham radio, we have an upcoming picnic at De Portola Park in Torrance. By the time you read this it will likely already have occurred. One thing I can say is we should not have had any seating problems. The picnics are popular as it's an opportunity to socialize and set up some radio gear if so desired. And, there's no technical problems that can't be solved over a couple of club provided hot dogs.

I still have the information available for Boy Scouts merit badge counseling. Some training will be required. This is online training available to you in the comfort of your own home. Let me know if you are interested.

This month's speaker, Tom Essenpreiss-KB9ENS, will deliver an interesting presentation on constructing a portable loop antenna. In my past, I have heard a lot about loop antennas. I remember hearing about the use in direction finding applications. Tom will be able to refresh us on the attributes and construction techniques of loop antennas!

Last month I had acquired some military surplus aluminum mast sections and pipe to pipe type mast clamps from eBay. I find these mast pieces to stack up very well. I drilled and placed some 1/4" trailer hitch pins in each section so that I can lift the mast without the risk of them falling apart with the antenna attached. The idea here is to put it all together on the ground then raise it and slip the base into place on the mounted lower section. Probably similar to what's been done at our TMMC field day location. What I found is the military mast is too big in diameter, 1.75", to allow direct antenna mounting. The antenna I have wants a maximum mast diameter of 1.50" So I have to come up with a short mast section to mount on top of the military mast. When time permits, another visit to M&K metals in Gardena maybe in order.

And looking ahead in April, The club has its club meeting on the 18th followed by the TRW/NGC swap meet on Saturday the 27th. The proceeds benefit the club. The swap meet also offers a social opportunity afterwards. Those interested club members meet up about 11:30 AM at the Denny's on Aviation and Artesia.

Keep hamming it up!
73's...

Scott N6LEM
President

ARES Helps Iowa Water Utility to Resolve RFI Issue

Des Moines (Iowa) Water Works (DMWW) uses secure radiotelemetry to monitor various remote-site parameters to alert staff to problems. Earlier this year, DMWW experienced periodic and sometimes total failure of the radio system. After no solution could be found, staff reached out to various resources, including the FCC. **Polk County ARES** also was brought in, and eight operators assembled to track down the interference, working the late shift.

After a process of elimination, the ARES volunteers pinpointed the interfering signal to defunct equipment atop a downtown Des Moines building. The team contacted the owner of the license associated with the equipment and got permission to disable it, and DMWW confirmed that the signal interference was gone. Collectively, the Polk County ARES volunteer team spent approximately 70 hours to assist DMWW. Following the experience, DMWW installed a more robust radio system with encryption and established stronger relationships with several entities that can assist if similar problems arise. ARRL 03/26/19

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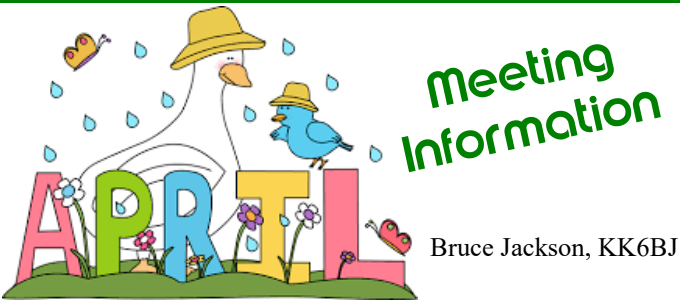
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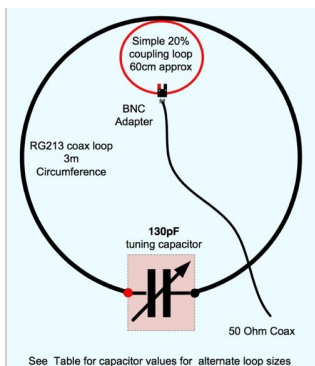




Tom Essenpreiss-KB9ENS-Amateur Extra will be presenting his methods for constructing a portable loop antenna. He previously showed us the results of his project, winning first prize at our annual do-it-yourself presentation. He is an avid hiker and summits on the air (SOTA) activator. He will be showing us how this project can be used both at base stations and in the field, instructed with readily available equipment at low cost and high personal gratification.



Tom grew up on a small green and livestock farmer in Southern Illinois. He earned his novice ticket age 10. He was commission in the United States Air Force after completing his undergraduate degree in mechanical engineering at Southern Illinois University. He spent 10 years on active duty, completing his MS symptoms of systems from the Naval postgraduate school. He has many amateur radio interests.



Please joins us for this presentation at the South Bay Amateur Radio Club meeting Thursday, April 18th in room 1 of the Richard Hoffman Education Building, West Tower of Torrance Memorial Medical Center at 7:30 PM.



We will have our 1st picnic for the year at de Portola Park on April 13, 2019. We will have 2 more this year with dates to be announced.

Armed Forces Parade: We will likely have to take our part in the Staging area for the TAFP on May 18, 2019 as in the past (not 100% sure yet). Several things have to happen: a. We need to provide names of all operators ASAP. Names need to be turned into the TPD. Please, if you wish to work this give us your name ASAP. A minimum of 6 operators plus NC and support. The date is Saturday May 18, 2019. Staging for us is usually around 10:00am and is at Acacia and Torrance Blvd. You can help and all you need is an HT on 220 or be a helper at the Parade staging area in the down town Torrance area. So please let us know. By the way, if you have a club jacket or polo shirt etc wear it that will be very helpful. See next item please.



Memorial Day: The Memorial day event at Green Hills which is a Fly Over. Chuck-KN6H is turning it over to us as a Club activity after having it done for many years, thank you Chuck. We man the Airport Tower at Torrance Airport and have a crew on the ground to relay the official request to have the plane or planes do their flyover to coincide with the announcement being made. By the way, a great luncheon afterwards is provided in appreciation for the help we provide.



Field Day 2019 is June 22-23, 2019. We have a new FD chairman Tom-KB9ENS, Vice President. The



South Bay ARC has participated in every FD since it was established in 1972. We are very lucky to have access to our FD site here at TMMC "West Parking" structure. It allows us to have a sheltered location and have bathroom and such facilities available to us.

Please mark your calendars with these club events.

Vacuum channel transistor combines best of semiconductors and vacuum tubes

by Lisa Zyga , Phys.org

(Phys.org)—Although vacuum tubes were the basic components of early electronic devices, by the 1970s they were almost entirely replaced by semiconductor transistors. But in the past few years, researchers have been developing "nanoscale vacuum channel transistors" (NVCTs) that combine the best of vacuum tubes and modern semiconductors into a single device.

Compared to conventional transistors, NVCTs are faster and more resistant to [high temperatures](#) and radiation. These advantages make NVCTs ideal candidates for applications such as radiation-tolerant deep space communications, high-frequency devices, and THz electronics. They are also candidates for extending Moore's law—which states that the number of transistors on a computer chip doubles approximately every two years—which is expected to soon hit a roadblock due to the physical limitations of shrinking semiconductor transistors.

On the other hand, traditional [vacuum](#) tubes have certain disadvantages compared to semiconductor transistors, which caused them to become obsolete. Notably, vacuum tubes are very large and consume a lot of energy. With the new NVCTs, size is no longer an issue because the new devices are produced using modern semiconductor fabrication techniques, and so can be made as small as a few nanometers across. Whereas traditional vacuum tubes look like light bulbs, NVCTs look more like typical [semiconductor transistors](#) and can only be seen under a scanning electron microscope.

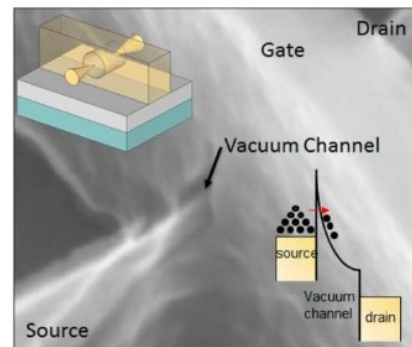
To address the more pressing issue of energy consumption, in a new study researchers Jin-Woo Han, Dong-Il Moon, and M. Meyyappan at the NASA Ames Research Center in Moffett Field, California, have designed a silicon-based NVCT with an improved gate structure that reduces the drive voltage from tens of volts to less than five volts, resulting in a lower energy consumption. Their work is published in a recent issue of *Nano Letters*.

In an NVCT, the gate is the component that receives the drive voltage and, based on this voltage, it controls the flow of electrons between two electrodes. In contrast, in the old [vacuum tubes](#), electrons were released by heating the emitter of the device. Because the electrons traveled through a vacuum (the vacuum gap), they moved at very high speeds, which led to the fast operation.

In NVCTs, there is not actually a vacuum, but instead the electrons travel across a space filled with an inert gas such as helium at atmospheric pressure. Since the distance between electrodes is so small (as little as 50 nm), the probability of an electron colliding with a gas molecule is very low, and so the electrons move just as quickly through this "quasi-vacuum" as they do in an actual vacuum. Even with some collisions occurring, the gas molecules are not ionized due to the lower operating voltage.

Perhaps the greatest advantage of the new vacuum transistors is their ability to tolerate high temperatures and ionizing radiation, which makes them promising candidates for the harsh environments often experienced by military and space applications. In the new study, the researchers experimentally demonstrated that the NVCTs continue to operate at the same level of performance at temperatures of up to 200 °C, whereas conventional [transistors](#) would cease to function at this temperature. Tests also showed that the new NVCTs are robust against gamma and proton radiation.

In the future, the researchers plan to further improve the performance of this "new old" technology. "Future research plans include device modeling work at the nanoscale, including structure and material properties," Han told *Phys.org*. "Also we plan to study aging mechanisms to improve reliability and lifetime."



Illustrations and scanning electron microscope image of the nanoscale vacuum..

<https://phys.org/news/2017-04-vacuum-channel-transistor-combines-semiconductors.html>



Petition for Rule Making Calls for “Amateur Digital Mode Transparency”

The FCC is accepting comments on a *Petition for Rule Making (RM-11831)* seeking to amend FCC Part 97 rules that require all ham radio digital transmissions to use techniques “whose technical characteristics have been documented publicly.”



The *Petition*, filed by Ron Kolarik, K0IDT, of Lincoln, Nebraska, expresses concerns that some currently used digital modes are not readily and freely able to be decoded, and it asks the FCC to require all digital codes to use protocols that “can be monitored in [their] entirety by third parties with freely available, open-source software,” per §97.113(a)(4).

Kolarik said his petition also aims to reduce levels of amateur-to-amateur interference from Automated Controlled Digital Stations (ACDS) on HF operating under §97.221(c)(2). Kolarik wants the FCC to delete §97.221(c), which permits automatic control of digital emissions provided the station “is responding to interrogation by a station under local or remote control, and [n]o transmission from the automatically controlled station occupies a bandwidth of more than 500 Hz.” The petition does not call for eliminating ACDS, however. Under current rules, ACDS are allowed in specific sub-bands.

In his *Petition*, Kolarik maintains that interference from ACDS continues to be “a major problem on the amateur bands.” He suggested that an absence of formal complaints may be due to the fact that such stations are “difficult to identify.”

The *Petition* also proposes to amend §97.309(a)(4) to ease monitoring of certain digital transmissions. “Without open, over-the-air interception capability for all transmissions in the Amateur Radio spectrum, there is no way to determine if there is commercial or other prohibited, inappropriate content in ongoing communications...” Kolarik’s *Petition* asserts. He said problems arise when “protocols and devices used in commercial, government, and marine services are used in the Amateur Service with no adequate means to fully decode transmissions,” thwarting any efforts at self-policing of such transmissions. He said simplifying the language “would remove ambiguity about what constitutes ‘publicly documented technical characteristics’ by requiring any protocol to be freely decodable,” and lead to “amateur digital mode transparency, present and future.”

Kolarik contended in his petition that FCC action stemming from ARRL’s 2013 “symbol rate” *Petition for Rule Making* could increase congestion (i.e., interference) problems. In July 2016, the FCC in WT Docket 16-239 **proposed** to revise the Part 97 rules to eliminate current baud rate limitations for data emissions, consistent with ARRL’s *Petition*, but declined to propose a bandwidth limitation for MF and HF digital to replace current baud rate limitations. ARRL had asked the FCC to delete the symbol rate limits in §97.307(f) and replace them with a maximum bandwidth for data emissions of 2.8 kHz on amateur frequencies below 29.7 MHz. ARRL 04/02/19

Beginner ARDF in Mission Viejo on April 20th

If you've heard about on-foot hidden transmitter hunting but haven't tried it, or if you are a beginner that needs some practice and guidance, this free introductory session in Mission Viejo is for you. A ham radio license and knowledge of radio equipment are not required. Experts will be on hand to teach you the basic techniques of on-foot radio direction-finding (RDF). Bring the kids and grandkids, then go out on the course with them!

This event is sponsored by South Orange Amateur Radio Association (SOARA) and will take place at the Mission Viejo Community Center. Your host is Erik Wresch W6INE. Course-setter is Joe Moell K0OV. The session gets under way at 9 AM with instructions on techniques for on-foot transmitter hunting, followed by an opportunity to find some two-meter band transmitters located in the surrounding park.

There is no charge for this event. A limited amount of radio direction finding gear will be available for loan. If you have receivers, scanners, directional antennas, attenuators, or other equipment suitable for on-foot RDF, be sure to bring it. Make sure all batteries are fresh. All ages are welcome, but young children must be accompanied by an adult at all times.

The Mission Viejo Community Center is also known as the Norman P. Murray Community & Senior Center. For your GPS navigation system, the address is 24932 Veterans Way. From Interstate 5, take the La Paz Road exit, go east 1.6 miles past Marguerite Parkway to Veteran's Way. Turn left (north) and continue one-quarter mile to the Community Center parking lot. Talk-in is on the SOARA Laguna Beach repeater, 147.645(-) PL110.9.

Fun event for all. Very close by. Your kids might like this as well. Bruce, KK6BJ

AMSAT Comments in FCC Orbital Debris Mitigation Proceeding

AMSAT has told the FCC that several proposed rule changes related to the mitigation of orbital debris would have an extremely detrimental effect on both the Amateur Satellite Service and AMSAT's ability to launch and operate new satellites, including AMSAT's upcoming GOLF satellites. AMSAT filed comments on April 5 on an FCC *Notice of Proposed Rule Making (NPRM)* in IB Docket 18-313. AMSAT argues that amateur satellites often have longer mission lifespans than other small satellites and that the FCC should take a mission duration of 5 to 10 years into account when determining whether or not an amateur satellite will meet the orbital debris regulations, either by transferring to a parking orbit or re-entering the atmosphere within 25 years of mission completion. Current practice is to assume a "zero-year" mission and to require that amateur satellites meet the debris regulations.

AMSAT also urged the Commission to consider alternatives to a proposed rule that would restrict to altitudes of 650 kilometers or less satellites in low-Earth orbit that plan to meet the orbital debris mitigation guidelines through atmospheric re-entry. AMSAT noted that, had this rule been in place, it would not have been permissible to deploy AO-85 and AO-91 in their current elliptical orbits with apogees of approximately 800 kilometers, even though both will re-enter within 25 years due to their low perigees.

Additionally, AMSAT noted that current plans for the GOLF-1 satellite are to meet orbital debris mitigation guidelines through atmospheric re-entry by deploying a drag device that will ensure re-entry within 25 years, despite deployment at an altitude higher than 1,000 kilometers. This proposed rule would prohibit GOLF-1's deployment at that altitude.

The Commission's proposed rules would further require that Amateur Satellite licensees indemnify the government against any claims made against the US due to the operation of a



satellite. AMSAT believes this proposal would end the ability of AMSAT, or any other entity in the US, to launch and operate amateur satellites and urged the FCC to consider alternatives, such as establishing a fund to pay any such claims, noting that the likelihood of such a claim is low.

For amateur satellites with propulsion, the FCC has proposed requiring encryption of any command links as well as satellite telemetry. AMSAT called the proposed rule "unnecessary and counter to the spirit of the Amateur Service" and said open access to telemetry is expected of Amateur Radio satellites and critical to their educational component.

Interested parties may file reply comments by May 5 via the FCC Electronic Comment Filing Service (**ECFS**). – *Thanks to AMSAT News Service.* ARRL 04/09/19



Please join us for Trivia night the **first Thursday of every month.**

As you know Alex-KD6LPA has been doing the net now a few times. Alex likes to ask Trivia questions. We're very grateful for having him do this once a month

during the Council meetings nights. What perhaps you do not know is 2 things: 1) He has usually covered ham radio as a subject; questions are ham related and 2) The winner every month is given 5 tickets to our monthly drawing if you will. He who answers most questions (right or wrong for now) is eligible for that. Alex will broaden the scope somewhat by having some other questions mixed in. So please join us in the fun.

The best kind of ham for the season!



1. **Attendance drawing:** We had a winner last month. Yes We had a name drawn, however, they weren't present so. the April drawing now will be up to \$ 35.00. Be present and win. Starting April 1 we will use the members in good standing for 2019 in the pot. So in order for you to win you must be a member in good standing and also be present of course. Please remember that and enjoy.

2. **Thank you:** Jerry-KJ6JJ thank you for the great presentation you did for us at our March meeting including the 10GHz you touched upon. Hopefully this generates more activity on Echo link. Also, do let us know if you could use some assistance with a new transceiver. Thanks again for the enlightening presentation, it was enjoyed by most. Knowing that you are working on a few issues to make things better is very much appreciated. Thanks again.

3. **Membership roster:** I hope to have a new membership roster available for all those attending our April meeting. Also, we will likely pending a few discussions have it on the restricted side of our website. With summer upon us we know the busy time is here. So please stay tuned.

4. **Membership Renewal Survey:** As you know we asked some questions to find out what it is we could do for you as a club and how we can survive. While I can't give you the answers just yet (maybe some at the meeting) it had definitely some surprises and some not. We knew of course that a good number of us are seniors, including myself. What we were always guessing about was whether you would read the Arc Over and even look at our website or is that just a lot of hard work for nothing. Also, why we have such a low turnout at some of the things we do. Well one thing we did find out-most of us are seniors- the information we have in our data base is pretty accurate as far as address and email goes- lot of you do have transceivers and much more. As you know it was I that initiated this questionnaire, my main concern was that I had not been updating your information-done a pretty good job on that. I thought why not ask some other questions to go along with that such as Do you want your name, call and e mail address/phone number listed on the website. Privacy is our main concern and even though as we all know QRZ lists more info with just your call. Lots of pro and con on either side of the fence.

Some thought some of the questions were vague and none specific-no answers were provided by you. Due to the fact yes I felt that being very specific would invade your privacy therefore vague and hoped for the best. Anyway, stay tuned for the report.

5. **Membership renewal:** Yes we had some more of you renew your membership-thank you so much for your continued support. Charles-AJ6HZ 3282103 Joanne-KM6BWB 3282104 Howard-KF6NOR 3282105. Your continued membership is greatly appreciated. We look forward with working with you whenever you can.

6. **SBARC Jackets, polo shirts and more:** As you notice above jackets and polo shirts are so nice during events like this. TPD recognizes this and appreciate us in nice club cloth. So you can have that opportunity if you order something with us as follows: Jackets, polo shirt or hoodie. The prices are the same from last year. Jackets \$ 55.00 up to XL, \$3.00 for each next size. Polo shirts are \$ 24.00 to XL and \$3.00 for each next size. Hoodies are \$ 40.00 with long zipper up to XL and \$3.00 for each next size. WE also have hats for \$ 11.00 or maybe some more if they let me know to change the design. The other problem is that The parade is May 18th. The vendor needs to know ASAP your choices. So please let me know ASAP including name and call to be put on it and size of course so we can place this order in time. Order must be placed before May 1, 2019

7. **Name badges:** The price has gone up a little. They are now \$ 11.25 which includes tax. Let me know ASAP so we can place the order in time. You have the month of April but that is it. Orders must be place before May 1, 2019.

8. **New Member:** We have a new member, Charles, AJ6HZ. He has an Extra class licensee. Thank you so much for joining us Charles. Please let us know if we can help you in anyway. Our website has a list of Elmers ready and willing to help. Thanks for joining us and welcome to the South Bay ARC.

9. **Website Calendar:** Please check out our calendar at the www.w6sba.org website. It has been updated for the month of April and as you can see lots of things to choose from. This reminds me, if you have or know of an activity we can help with or would like us to support talk to us. This is how it is done failure to communicate does not get you anywhere. Let's talk about it. My suggestion is as always talk to the Secretary. He can spread the word for you.

Thank you all and I hope to see as many of you as possible.

Joe, WB6MYD (Secretary)

2019 CLUB OFFICERS

President: Scott –N6LEM, 310-530-9889 scottsimpson126@gmail.com

Vice President: Tom – KB9ENS, 310-896-5434 kb9ens@arrl.net

Secretary: Joe -WB6MYD, 310-328-0817 jmlanphen@gmail.com

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Council: Mark – KM6HQG, 310-612-0835 markvberbue@gmail.com

Council: Steven – KM6EMF, 949-690-3877 kf6jvt@aol.com

Past Pres: Ray – WA6OWM, 310-370-1913 wa6owm@arrl.net

CALENDAR

Council Meeting - 1st Thursday of the month
Call Joe - WB6MYD (310) 328-0817

Club Meeting - 3rd Thursday of the month
April 18, 2019 - 7:30 p.m.
Room 1 in the Richard Hoffman
Educational Center at Torrance
Memorial Medical Center

Club Nets - **W6SBA WEEKLY NET**
Every Thursday @7:30pm
(except the night of club meetings)
PVUSD EMERGENCY NET
1st Tuesday of the month
09:30 Hours on the W6SBA repeater

TRW Swap Meet Saturday,
April 27, 2019, 7-11 a.m.

VE Sessions - Scheduled on Saturday of even months
Contact Joe, WB6MYD with questions
(All VE sessions are scheduled for Room 4 in the Health
Conference Center)

Social Event - Contact: Joe WB6MYD
Phone: (310) 328-0817
jmlanphen@gmail.com

CLUB SERVICES

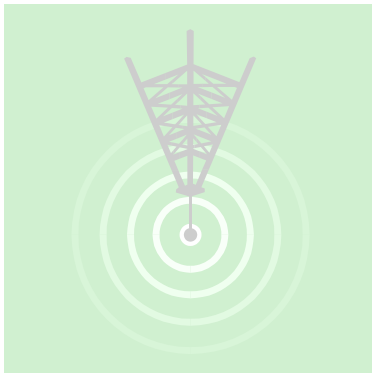
Awards Manager (HF/VHF)	Cliff - K6LH
Health & Welfare	Joe - WB6MYD
Swap Meet Chair	Tom-KI6RC, Chuck-
VE Test Liaison & Sessions	Betty Barch-N6VZF N6VZF@arrl.net (310) 545-6422
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Proofreader	Scott - N6LEM

South Bay Amateur Radio Club Repeater
224.38 MHz · PL - 192.8 Hz Offset -1.6 MHz
(See Calendar for Weekly Net Times)

NEWSLETTER SUBMISSION

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TO:



Address Correction Requested

A COMMUNITY SERVICE ORGANIZATION

W6SBA

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