



**SAN BERNARDINO MICROWAVE SOCIETY, Incorporated**

FOUNDED IN 1955

A NON-PROFIT AMATEUR TECHNICAL ORGANIZATION DEDICATED  
TO THE ADVANCEMENT OF COMMUNICATIONS ABOVE 1000 MC.

# **June 2014 Newsletter on the Activities of the San Bernardino Microwave Society**

**Walter Clark, Editor**

## **Tech Talk for the June 5<sup>th</sup> Meeting Software Defined Radio (SDR) and Software Defined Instrumentation**



Dan Slater (AG6HF) here with his wife Sandy, will present an overview of software defined radio (SDR) along with the closely related technology of software defined RF test instruments (SDI). These systems are implemented using a combination of software, computers and special purpose RF hardware. This presentation will start with a brief overview of SDR fundamentals, followed by hardware and software design concepts. Various SDR and SDI hardware will be discussed along with some of the applications and future technology trends.

Dan Slater is vice president and co-founder of Nearfield Systems Inc, an aerospace company that manufactures antenna measurement systems. Previously he worked as a consulting engineer for the TRW Space Communications Division and prior to that in the motion picture industry.

# Activities at the May Meeting of the SBMS

(that would be of interest to the General Ham Radio Community)


**Presiding: Chris Shoaff**      **(19 in attendance... 16 last month)**

## **Guests:**

**Omid Pezeshxfar**

- Omid works for Panasonic and is on Chris Shoaff's team there. He's a digital and power electronics designer. He's Iranian born and graduated from University of Tehran. One project he worked on at home was a Virtual Clock. Check it out on YouTube.

## **Old Business**

- MUD 2015
    - Pat Coker, MUD 2015 chairman announced that the decision has been made 2015 MUD will be in San Diego
    - Pat reported that he and Mel worked on the contract for the hotel
    - He announced that he was still looking for volunteers
    - Responding to that: Mel and Doug are co-chairs for the test lab
  - Pat brought up the July microwave tune-up party.
  - Mel, Marty, and Wayne discussed the rules and placement of people for the May 2 GHz and Up contest.
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**It's Official:**

**MUD 2015 will be in San Diego**

## **New Business**

- Heaps Peak Beacon
  - Dick said the 10 V source is the problem and offered to drive up and get it and give it to Chuck. Mel, Dennis and Marty offered assistance.
- The nomination for the Secretary's position was **Courtney Duncan N5BF**
- The rest of the officer positions are what they were before:
  - President Chris Shoaff, N9RIN
  - Vice President: Doug Millar K6JEY
  - Corresponding Secretary Jeff Fort, KN6VR
  - Treasurer Dick Bremer, WB6DNX

(See last page for email addresses.)

- Beacons

Doug talked about the Pacific beacon project and getting the Japanese stations involved. So far the stations contacted have not shown a strong interest. The beacon will be paid for by Doug and Bill McNally. The Kwajalein reverse beacon is the first station being considered with others planned. This is a big deal because these locations will lead to record breaking contacts on 2 meters.

# Upcoming Events identified by members

No contributions. No volunteers. No activity.

The editor is not interested in contesting. So if you want it posted, you, the reader have to submit them.

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## What Our Members Are Working On

- **Pat Coker N6RMJ (Lake Los Angeles)**
  - is working the HF spectrum these days
- **Chris Shoaff N9RIN San Clemente**
  - Working on his 2 watt 1296 amplifier
- **Frank Kromann AG6QV (Trabuco Canyon)**
  - is reading about airplane scattering
  - he played with his two 2.4 mesh nodes
- **Wayne Overbeck N6NB (Tustin)**
  - is working on the rules and other management issues, for the 2 Gig and Up contest.
  - He will be roving and offered others to visit him.
- **Walter Clark (Fullerton)**
  - Showed some of the demo equipment on a talk he's putting together on magnetic fields
- **Jason Sogolow W6IEE (Burbank)**
  - recently bought a Rigol DS1102E oscilloscope, brand new.  
<http://www.rigolna.com/products/digital-oscilloscopes/ds1000e/ds1102e/>
  - He said that it "feels" like its missing 3/4 of itself because it's so small and portable. But it's not.
- **Robin Critchell WA6CDR**
  - is supplying Jason with surplus cactus equipment
- **Jerry Mulchin N7EME (Corto de Caza)**
  - Announced at the May meeting that this was his last time attending in person. He's nearly done packing and will be moving on the 15<sup>th</sup> of May.
  - Prescott Az has lots of hams but will still miss us.

- **Mel Swanberg WA6JBD (Upland)**
  - has lots of stuff on the bench
  - He played with his 2.3 rig to make sure he's ready for the 2 Gig and Up.
  - At the meeting he brought in some large heat sink stock to give away.
- **Courtney Duncan N5BF**
  - is making progress on 1296 EME project.
  - He has ordered a 23CM2W500 amplifier from W6PQL
  - Current front end has been measured at about 900 Kelvins
  - He has a lower noise mast mounted preamp on order from DB6NT in Germany
  - Doing tests using the DSP-10 EME2 mode at 15 W with the 900 K front end. Seeing nothing, more or less as expected
  - K6JEY was scheduled for the talk at the 5/23/14 JPL ARC meeting. (Doug missed due to illness, will reschedule.)
  - Spent the last two weeks at CubeSat related conferences (Cal Poly San Luis Obispo and Caltech) presenting on JPL's 7.2 to 8.4 GHz X-Band, CubeSat Compatible DSN Compatible Transponder.
- **Doug Millar K6JEY (Long Beach)**
  - got his TS790a back from Mel. Many thanks for a valiant effort to fix it.
  - He was asked to be a field tester for the Elecraft 2m transverter.
  - He obtained one of the Bulgarian transverters and is testing it.
- **Jeff Fort KN6VR (Phelan)**
  - has heard nothing from the state on taxes since February
- **Dennis Kidder W6DQ (Fullerton/Inyokern)**
  - is working hard on his book; almost done.
  - He brought one of the projects he describes in his book
  - He describe his involvement with the TV show **Showdown of the Unbeatables**.
- **Ed Murashie WX6DX**
  - Is working on the laboratory he's building in his house in Santa Ana.
  - He's also working on getting his house in the historical register
  - When his lab is done he intends on getting involved with hamTV on the IST
- **Tom Curlee WB6UZZ (Fullerton)**
  - The only microwave-like activity is a trip to the Chino Hills Swap in a search for the ever elusive unobtainium.
- **Bill McNally N6MN (Seal Beach)**
  - is working in parallel on 2.4GHz and 1.3GHz EME stations
  - Courtney is path finder for him on 1.3GHz
  - He plans a medium size 4 Yagi array on 1.3GHz
  - He's looking for source material to flush out 2.4 GHz plans
  - Marshall, K5QE, supplied 2.4GHz LNA, transverter & high pwr SSA.
  - Just received a 2.4GHz septum feed from RF Design in the Netherlands

- **Marty Woll N6VI (Chatsworth)**
  - has been heavily involved with responding to ARRL members regarding regulatory issues
  - Addressed the Poway (San Diego County) City Council in connection with a proposed antenna ordinance
  - Met with four clubs in the Phoenix, AZ area
  - Getting ready for 2Gig and Up.... planning on going to Frasier.
  - Is going with Dennis Kidder and Wayne Yoshida to Maker Faire
  - Getting interested in virtual radar on 1096
- **Ed Munn W6OYJ (Sand Diego) was not there to report on the Activities of the San Diego Group (They normally meet 3<sup>rd</sup> Monday at Kerry Banke's house.)**

If anyone would like to go this sister club to SBMS, write to Ed Munn at [remunn@earthlink.net](mailto:remunn@earthlink.net)

## Hacking Satellite Dish LNBs

SBMS members Rein Smit and Walter Clark have both been following SARA's group email. SARA is the acronym for Society of Amateur Radio Astronomers (<http://www.radio-astronomy.org/>) Microwave hams can benefit from SARA's insight into low noise microwave by joining the SARA group email. About a week ago there was lots of traffic on evaluating commercial satellite dish LNBs for broadband gain. One fellow bought ten of them to see if there's a difference from unit to unit. Here's an example from one letter in the thread; this one from Steve Olney.

For each LNBF I set the finder DC output to about 200mV on cold sky and then peaked the reading on the Sun with the following results for each model pair...

- Titanium PLL-1KS: 3.15V, 3.29V [ebay, US]
- Jaycar unbranded: 3.67V, dud - s/c on f-connector [local shop]
- Re-furbished: 2.91V, 1.96V [ebay, Aus]
- Anonymous Brand: 1.49V, 1.21V [ebay, Aus]



Titanium PLL-1KS 10750 Phase  
Lock Loop Linear Ku LNB +  
Universal Single Bracket

Top Rated  
Plus

**\$18.95**

Buy It Now

Free shipping

Others later chimed in to talk about access to the circuit, advantages of a long neck, with and without the feed horn, PLL vs DRO, etc.

### **Rein Smit had this to Report on LNB Noise**

“I get with my bare PLL LNB about 4.5 dB cold sky, at 290K. When I cover the LNB with a 1 ft long closed can, (tight fit diameter as the LNB horn), I see a reliable and repeatable 5 db.”

Walter (your Newsletter editor) has similar results and in fact uses that LNB version of a **selfie** as a reference for one of the two polarization inputs. He uses an analog switch to go back and forth about 30 Hz and does a synchronous detection on the difference signal.

## **The 2 Gig and Up Contest**



### **From Marty N6VI**

Here he is atop Frazier Peak for the 2 GHz & Up Contest, looking into his four-band transverter box for the cause of a transmit intermittent on 2.3 GHz.

**From Dave Glenn N6TEB**  
The view from secret site 51 during the 2 Ghz and up contest.





## From Wayne Overbeck (on the 2 Gig and Up Contest)



Here's where Chris Shoaff N9RIN and Ben Wallace KD0EJT operated the 2 Gig-and-Up contest. They were guest ops at Wayne Overbeck N6NB's hilltop house in DM13cs. One station was in the house with a backyard tower. The other one used a tower trailer in the driveway. Both ran about 10 watts output on 2.3, 3.4, 5.7 and 10 GHz. Chris also used a 3-watt station on 24 GHz. The in-house station's 3.4 GHz amplifier turned temperamental and only worked late at night during a break in the hot weather. Its high-temperature shutdown circuitry was triggered by the heat wave.

Wayne was roving with his portable microwave rig.

## More Pictures from the on the 2 Gig and Up Contest

**Michael Lavelle (K6ML) and  
Andreas Junge (N6NU) both from Northern California.**



We roved 500 Miles through the San Joaquin Valley in 20 hours, activating 11 grid squares.

We started in the north at Los Banos and went as far south as Lost Hills. I really want to thank Marty, N6VI, for being there for us on Frazier to provide plenty of 300+ KM QSO's

They stopped at Dos Palos, Firebaugh and east of Harris Ranch





## A First-Timer at Maker Faire (Marty Woll N6VI)

After hearing a presentation by Dennis Kidder W6DQ on last year's Maker Faire, it became clear to me that the Maker Movement is a potentially rich source for attracting youth into Amateur Radio. I was able to join Dennis and another fellow SBMS member, Wayne Yoshida KH6WZ, at last week's big event in San Mateo. With attendance topping one hundred thousand, this Maker Faire is likely the largest of the roughly one hundred held around the world. The three of us carpooled up on Thursday in order to be ready for booth set-up, which started Friday morning. With fabric, banners, posters and wire, we transformed a three-sided chain-link-fenced space into a presentable booth. We laid out the various projects we had built plus some of Walter Clark's cool demonstration pieces.



SBMS members N6VI, W6DQ and KH6WZ with Maker phenom Jeri Ellsworth at our "Not Your Grandpa's Ham Radio" booth at the May, 2014 Maker Faire in San Mateo,

What with microwave rigs, Arduino projects, a Doppler radar and more, we were able to show a side of Amateur Radio that might intimidate an “appliance operator” but would attract and educate builders, hackers and tweekers. We were located adjacent to the student team from University of California Davis and enjoyed watching them show off their hands-on projects to kids and adults alike.



--Stan Slonkosky, KE6ZC

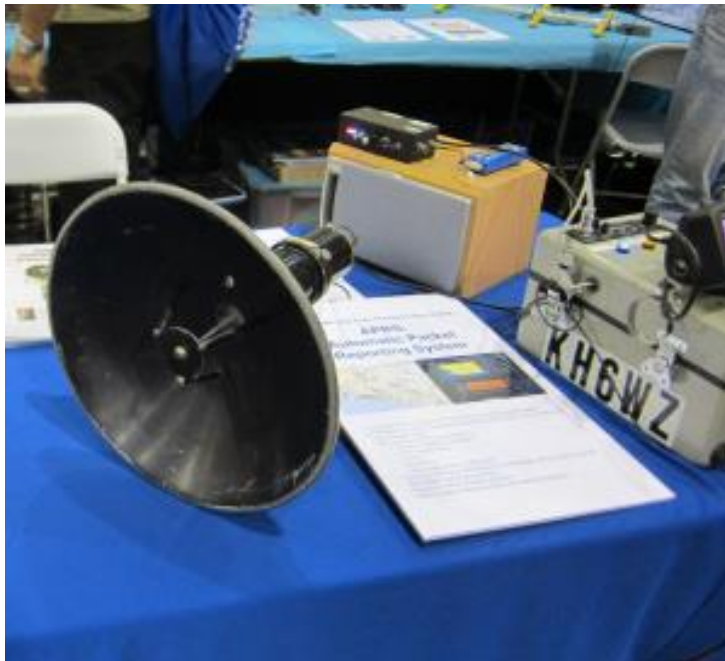
We did most of our walking about during set-up and at brief lunch breaks. The size of the crowds and the ten-hour (Saturday) and eight-hour (Sunday) open times for all exhibitors kept all three of us pretty busy at our booth. What we did see made it clear to me why Dennis has such enthusiasm for this movement and why he characterized it as “Steampunk meets Silicon Valley”. Motorized chairs became roving pirate ships or giant rolling cupcakes. Ambulatory robots strolled the aisles, and unusual costumes turned many a head. Quad-copters battled to the death for air superiority while, in the adjacent “dark” building, fantastic LED displays, Tesla coils and other visual attractions drew throngs of onlookers. Outside were fire-breathing behemoths and a huge, convoluted mousetrap that would have made Rube Goldberg proud.



We fielded many questions from students and adults, most of whom had no idea about Amateur Radio beyond FM handhelds; some were even surprised to learn that it still exists at all! I'm pretty sure we turned some visitors on to the possibilities of enhancing their projects by using the resources Ham Radio has to offer and the knowledge that comes from playing with it and from talking with other Hams. I also had the pleasure of meeting microwave operator Andreas Junge N6NU, whom I have worked many times during contests over the last few



years but had never spoken with in person. He came by the booth, and I was able to show him the four-band microwave rig with which I worked him a dozen times just a few weeks ago during the 2 GHz & Up Contest.



My overall assessment is that the considerable time and effort we put into our unique Amateur Radio presence at the 2014 Maker Faire was well worth it. My thanks go to Dennis and Wayne for inviting me to join them on this adventure.

--Stan Slonkosky, KE6ZC



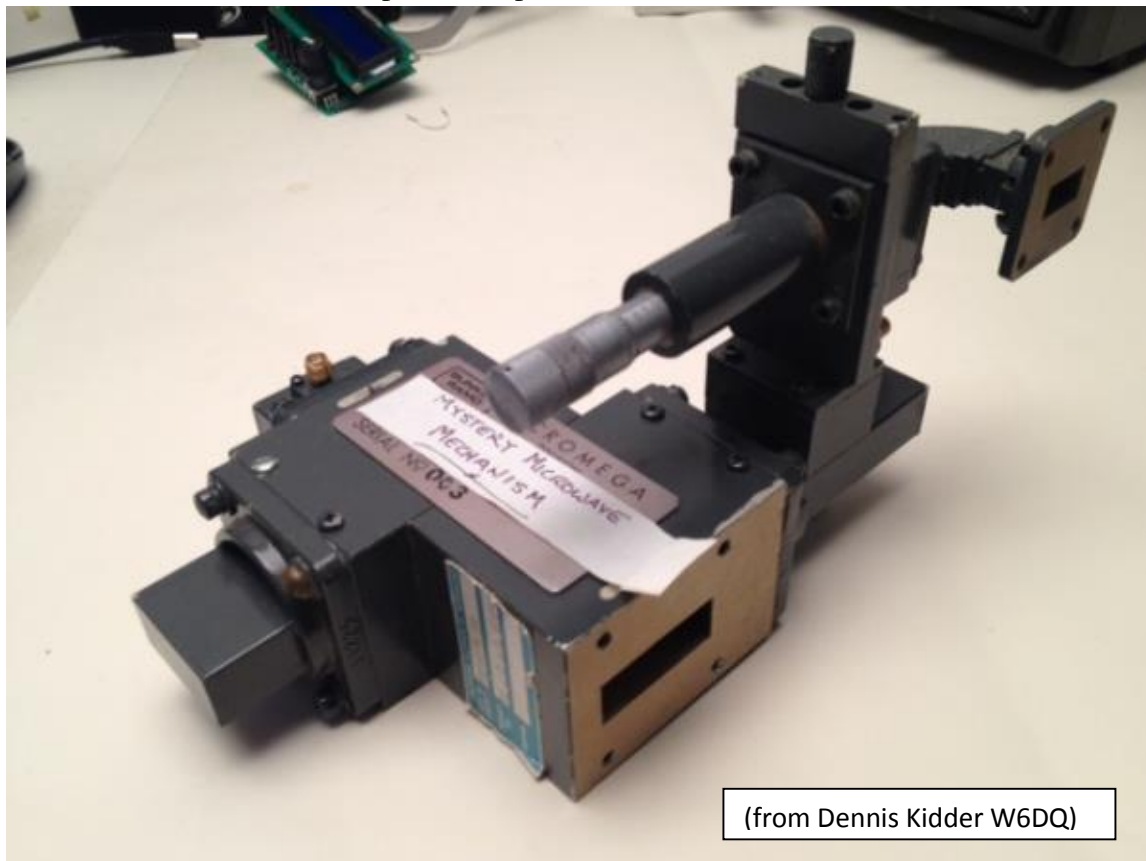
## Tech Talk (Last Month)

Doug Millar gave a talk on mixers and how they perform in the microwave including 79 and 120GHz. Some mixers are not specified at frequencies we usually use them for. He talked about how to trust them anyway; both the expensive ones as well as ones we can afford.

He also covered the construction of the Tektronix mixers and had some suggestions on the care and feeding of harmonic mixers.

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## Microwave Mystery Device of the Month



(from Dennis Kidder W6DQ)

## Gary Heston's ATV Mobile Studio

Not only can you watch our meetings live (well delayed by 240 milliseconds) You chat to other viewers about what you are watching (or anything else.) Enter the chat room by clicking on the white space on the right of the website described below.

**Just as a reminder, this is how you watch SBMS meetings from home:**  
[http://www.batc.tv/ch\\_live.php?ch=2&id=139](http://www.batc.tv/ch_live.php?ch=2&id=139)

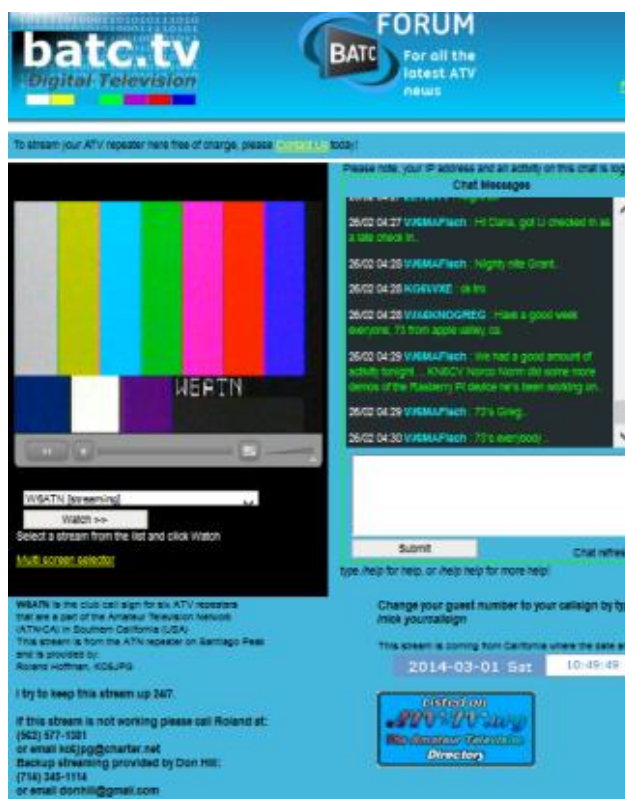
Better yet memorize the following  
Keywords: BATC TV  
and use Google

The TV part is easy to remember. Think of the BATC as batch without the h. It's a British website (that's the B) Once you are there, on the left, you have to pick a stream. The stream to choose is:

### **W6ATN.**

Memorize W6ATN as ATN in California. W6ATN is the club call sign for six ATV repeaters that are a part of the Amateur Television Network in Southern California. (ATN-CA)

Gary Heston's mobile studio beams its signal to the ATN repeater on Santiago Peak which is provided by: Roland Hoffman, KC6JPG



- The newsletter is to keep member informed on current activities of the “active” members; the members that come to the meetings or use ATV to report in.
- The website is for articles and all activities of the past.
- But questions or even bragging is for the SBMS Reflector. Send your email message to: [sbms@ham-radio.com](mailto:sbms@ham-radio.com). More than 80 people will see your question or your bragging. (To sign up go to: <http://lists.altadena.net/mailman/listinfo/sbms>.)



## Needs, Wants and For Sale

- **For Sale from Chris Shoaff:** N9RIN cshoaff@yahoo.com
  - 30w 1296 MHz PA kit \$50 + \$5 for US shipping
- **For Sale from Bill Burns:** Bill will only rarely come to the meetings, so if you want any of this, please contact him by email at . . . bburns@mediacombb.net)  
His address is: 247 Rebel Road Ridgecrest CA 93555 and phone: 760-375-8566
  - 8 watt 5 GHz TWT's with power supplies \$50 each
  - copper wire enamel coated #14 many feet coils \$10 each
  - Bencher BY1 Iambic paddle key \$90
- **For Sale from Doug Millar:**
  - a Rohde and Schwarz 309 10-18GHz Signal Generator in perfect shape. It is digitally synthesized and has a pull out instruction card. It has internal modulation and will also sweep. Will accept \$900.
  - I also have an HP432 power meter, cable and head (478) in working order for \$100



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## Member Ads

### Sixty North Electronics

#### Kits Made by member KL7UW

Let Ed Cole assemble your Down East Microwave kit. For kits in stock, he can deliver an assembled unit to your custom design preferences within 30-days of a paid order. **His prices are the same as you pay DEMI for an assembled transverter, but much quicker delivery time. And comes with 90-day written warrantee on labor (guaranteed to work)!**

Shipping for a transverter is typically that of medium-size flat-rate Priority Mail anywhere in the USA.

For examples of his work click on... <http://www.kl7uw.com/kits.htm>

Contact him at [kl7uw@acsalaska.net](mailto:kl7uw@acsalaska.net)

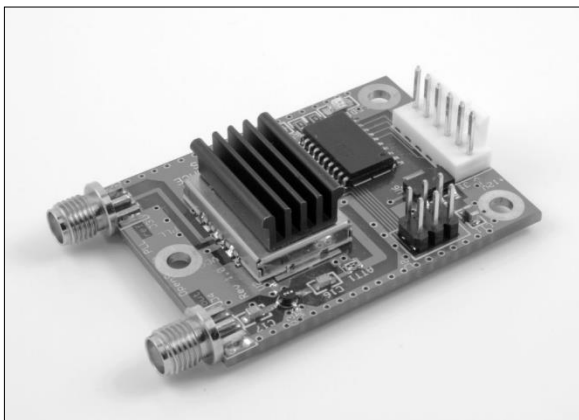
# Member Ads Continued



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For the time being this service is free.  
eMail [WalterClark@roadrunner.com](mailto:WalterClark@roadrunner.com)

## About SBMS

The San Bernardino Microwave Society is a technical amateur radio club affiliated with the ARRL having a membership of over 90 amateurs. The focus of the club is microwave activities in the Southern California. ***Our sister club is San Diego Microwave Group (SDMG). At least one meeting a year are joint meetings.*** SBMS dues are \$15 per year, which includes a badge and that's about it. The dues are more in the way of a donation to pay for outreach things such as video portals, a bank account, and rent for the building. When to pay is not a matter of remembering. The Corresponding Secretary will contact you by email and will then hound you like your own personal PBS telethon. Dues can be handed to the treasurer at the meeting, or mailed to the address of the treasurer listed in the banner below.

Meetings are first Thursday of the month, 7:00 PM at the American Legion Hall, Corona. For carpooling from North Orange County call Walter Clark @ 714 882-9647

### ***The Reflector (SBMS Group Email)***

The most active method of information exchange is our group email called the SBMS Reflector. You don't need to be an SBMS member to participate. To subscribe fill out the form at the website: <http://lists.altadena.net/mailman/listinfo/sbms> (If you are getting email on the SBMS Reflector now, and you want to write your own message, pull up a recently received message, click on "Reply to List." Don't forget to change the subject line and delete all previous text as appropriate.)

### **The SBMS Website and Newsletter**

The SBMS Reflector is ephemeral. There's no record kept. The Newsletter has a slightly longer life. It is sent to members and past issues are recorded in the website. It's URL is: <http://www.ham-radio.com/sbms/> You don't have to memorize that or write it down, just enter SBMS into any internet search engine.

**Newsletter: Walter Clark:** [walterClark@roadrunner.com](mailto:walterClark@roadrunner.com)

**Website: Rein Smit:** [rein0zn@ix.netcom.com](mailto:rein0zn@ix.netcom.com)

The newsletter is created about the middle of the month and broadcast as a link inside an eMail letter to the members. This is mailed to you on the weekend prior to each meeting. SBMS Newsletter and website material can be copied as long as SBMS is identified as source.

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