

SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

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

W6IFE Newsletter February 2010 Edition

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At the **4 February 2010** SBMS meeting the "Tech Talk" will be the "SBMS Polarplexers Development" by George, K6MBL. The SBMS meets at the American Legion Hall 1024 Main Street (south of the 91 freeway) in Corona, CA at 1900 hours local time on the first Thursday of each month.

REMINDER- NO PARKING IN THE CHURCH LOT

Last meeting-.Doug, K6JEY had a talk on the USB type power measuring instrument which included a handout from Agilent Technologies. Welcome to new member Richard Leiterman KE6RIM. SBMS made another installment payment to MUD2010 Hotel. 26 people present.

I am sorry to pass along this information from Jim Von Striver's daughter. **Jim, W6ASL** after a short illness battling emphysema and pneumonia passed away on Friday January 15, 2010. Services are pending. Jim was a true friend, a nice guy and always a gentleman. He will be missed by many friends and family. Ron, K6GZA

Scheduling...

4 March- Ed Marashi- NASA--Nominations of officers
13 March Spouses Dinner at Denny's Irwin dale 6 pm. <u>http://atn-tv.org/wintermeeting.htm</u> 6550 N. Irwin dale Ave., Irwin dale, CA N 34° 07.891' W 117° 55.898'
1 April-- Frank WB6CWN 24 GHz ... Election of officers
6 May TBD
12 May IEEE Conference in Anaheim-SBMS Demonstration by Pat, Dennis, Brian, Walt.
MUD 2010 Wednesday October 20 ----- Sunday October 24 Los Angeles area. SBMS is sponsoring it.

ARRL 2010 Contest Calendar

June 12-14 VHF QSO Party June 26 Field Day August 7-8 UHF Contest August 21-22 10 GHz and UP contest 1st weekend September 11-13 September VHF QSO Party September 18-19 10 GHZ and UP second half

European EME Contest Calendar 2010

March 21/22 3.4 GHz March 27/28 144 MHz and 10 GHz + Up April 17/18 2.3 GHz April 24/25 432 MHz, 5760 MHz May 22/23 1.2 GHz

Wants and Gots for sale.

Wanted wr90 flanges Chris N9RIN cshoff@yahoo.com

For Sale- Gonset 20mtr 5 elm beam \$10; 220MHz heavy duty 7 el beam \$15 ; 6 ft spin aluminum dish (no back mounting support) \$50; Hallicrafter HT32A transmitter with manual \$50, Trio (Kenwood) TS520D 80-10 meters SSB 90w rig with manual \$75 Bill WA6QYR 760-375-8566 bburns@ridgenet.net. **For Free-** Early Heathkit items- G-2 sine/square wave generator; V-5 VTVM; Later Heathkit- 5 inch scope O-10 Bill WA6QYR 760-375-8566 bburns@ridgenet.net.

Activity reported at the January 2010 SBMS meeting-- Dick, WB6DNX did some repeater work; Frank, WB6CWN has a 100w 10 GHz TWT and a 9 ft dish; Chuck,WA6EXV has his 10 ft dish tracking system back on line and is working on a new LNA; Walt did a demo on AM modulation of 10 GHz source as a Physics of Microwave project; Bill, WA6QYR has been working on 144 MHz tower; Dennis, N6DQ has 1296 MHz rig; Tom, KF6Q was our visitor-Welcome; Tom, WB6HYH did some 2.4 GHz ATV; Ed, WX6DX did some C-band weather work; Chris, N9RIN purchased a 9 GHz YIG and some power FETs; Mel, WA6JBD worked on his 24 GHz rig; Dick, K6HIJ is ³/₄ done with Qualcomm 10 GHZ rig conversion; Pat N6RMJ made contact with N6EQ on 10 and 24 GHz; Larry, K6HLH found his tower mounted 10 GHZ rig didn't like cold weather; Doug, K6JEY had a science day at OVRO on 19 December with 10 students and has 17 stations on 144 MHz EME; Pat, N6RMJ has 100w on 6 meters with 2 yagis in JT mode; ATV check-ins were K6BNN, W6ATV and AF6HP.



Walter Clark's demonstration on AM on 10 GHz shown at the January SBMS meeting.

Call for Papers 14th Annual Southeastern VHF Society Conference April 23rd and 24th, 2010 Morehead State University in Morehead, Kentucky

The Southeastern VHF Society is calling for the submission of papers and presentations for the upcoming 14th Annual Southeastern VHF Society Conference to be held at Morehead State University in Morehead, KY on April 23rd and 24th, 2010. Papers and presentations are solicited on both the technical and operational aspects of VHF, UHF and Microwave weak signal amateur radio. Some suggested areas of interest are: Transmitters Receivers Transverters **RF** Power Amplifiers **RF** Low Noise Pre Amplifiers Antennas **Construction Projects** Test Equipment and Station Accessories Station Design and Construction Contesting Roving **D**Xpeditions EME Propagation (Sporadic E, Meteor Scatter, Troposphere Ducting, etc.) Digital Modes (WSJT, etc.) Digital Signal Processing (DSP) Software Defined Radio (SDR) Amateur Satellites Amateur Television

In general papers and presentations on non weak signal related topics such as FM repeaters and packet will not be accepted but exceptions may be made if the topic is related to weak signal. For example, a paper or presentation on the use of APRS to track rovers during contests would be considered.

The deadline for the submission of papers and presentations is February 5, 2010. All submissions for the proceedings should be in Microsoft Word (.doc). Submissions for presentation at the conference should be in PowerPoint (.ppt) format, and delivered on either a USB memory stick or CDROM or posted for download on a web site of your choice.

Pages are 8 and 1/2 by 11 inches with a 1 inch margin on the bottom and $\frac{3}{4}$ inch margin on the other three sides. All text, drawings, photos, etc. should be black and white only (no color).

Please indicate when you submit your paper or presentation if you plan to attend the conference and present there or if you are submitting just for publication. Papers and presentations will be published in bound proceedings by the ARRL. Send all questions, comments and submissions to the program chair, Robin Midgett K4IDC via K4IDC at comcast dot net.

For further information about the conference please go to <<u>http://www.svhfs.org</u> >www.svhfs.org

Thank you, Robin Midgett K4IDC

Threads- well traveled amateurs-

January 10th, 1946-

Today is one of those magic days in amateur radio history. On this day, in 1946, the first signal was bounced off the moon. Using a SCR-271 early warning radar operating on a wavelength of 2.6 meters, a signal was bounced off the rising moon at 1148 EST. Its reflected signal, arriving 2.4 seconds after the pulse had been transmitted, was unmistakable evidence the experiment was successful.

The principle engineer-director of the Army project was John H. DeWitt Jr., a licensed amateur operator, who had been trying to accomplish the EME experiment as early as 1940 with his home brew 80w transmitter. However, upon the end of the war, he secured the SCR-271 and the assistance of another amateur operator by the name of Edwin H. Armstrong. Together, they modified the radar's rep rate to take into consideration the increased transition time, and BINGO the rest is history.

Well almost, the Army didn't get around to declassifying the accomplishment until 1949. Bunderi, Robert, 1996, The Invention That Changed the World, Simon & Schuster, pgs, 274-275 Greg K60PV

Would that perchance be THE Edwin H. Armstrong who was the inventor of FM and the superheterodyne receiver, among other things?

73, Wayne, N6NB

Armstrong invented MANY different fundamental radio circuits that young engineers take for granted. He also invented a form of RF oscillator that I have used in several of my designs. There was an article in an IEEE Microwave Letters Journal a couple of years ago about a solid state oscillator that claimed to be new and unique. It was written by a Korean engineering student. I immediately saw that it was an Armstrong oscillator and wrote to the author and told him about Armstrong. He wrote back that I was incorrect and his was completely unique. He obviously did not understand that the only difference was that his had a solid state device rather than a vacuum tube.

I then wrote to the Journal's editor who was a professor of engineering in Switzerland. He did not know about Armstrong!

My letter to the Editor explaining that the circuit was an Armstrong oscillator was never printed in subsequent issues.

An interesting anecdote: when I was 12-14 I had a Mentor who was an elderly retired engineer. We lived in Los Angeles. He knew Armstrong and used to tell me about him and also about Lee DeForest. I learned ohms law thoroughly and also other engineering math from this Mentor. I remember his telling me that he

had invented the homodyne receiver. For those younger folks out there, that is the proper terminology for what we today call "direct conversion". This was done as the patent workaround to Armstrong's superhet patents. Unfortunately I cannot remember this fellow's name. If anyone out there knows, please write to me.

By the way, he also taught me about the armstrong antenna rotator. He had a small 2m beam mounted on a piece of tubing supported by bearings and he had a pulley around the tubing. He put a clothes line around the pulley and ran the ropes to a small pulley by his window just outside of his station. By reaching outside of his window, he could turn the pulley and thus turn the beam which was around 20ft away. I had built my first dish feed for 1250MHz and had a surplus 30" dish. He encouraged me to make and use this armstrong rotor since I could not afford a motorized rotator. Note that this was not invented by Edwin; it was an Arm Strong rotator. 73, Jeffrey Pawlan WA6KBL

I see a number of us have survived in spite of ourselves! This year marks my 61st. In high school I used a modified Mk19 on 2 meters to talk a few miles away with W7EE in Coos Bay, Oregon. Later at Oregon State, Will and I experimented on 5.7 GHz. 73 de Jack - N7OO

I'm approaching my 63rd anniversary! I was at that time the youngest ham in Arizona. Chuck, W7CS

Hah, a young squirt :>) I was licensed 53 years ago, also on January 10th, as KN6VVH and I hold it as a club call today. W6NF

56 years here, they have all been great.

Saw a Boy Scout with a crystal set in '53, made my own and it was all up hill from there.

I took a "five tube wonder" radio and unwound the RF antenna on the back panel thinking that it would make the radio tune to the ham frequencies, what I did was change the RF stage to receive on the upper side of the VFO and started hearing hams on 75 meters.

Almost killed my self when I connected a ground to the chassis, the AC plug was backward and the chassis was hot with AC, big time spark, found out about AC-DC radios real quick.

I met another great Ham on my newspaper route, K6BKZ, he had a Goony Bird and got me into VHF, been there ever since.

I would not give up my experience with Ham Radio for anything.

I did do some drag racing along the way that was also a lot of fun. Jerry K6DYD

You're a bunch of young 'Whiper Snappers'! I was running a TGTP #45 with loop modulation on 160m, 71 years ago! And was on 2 1/2 M with a debased 76, 69 years ago. 73, Chuck WA6EXV

You are absolutely correct. I do not remember the #76. But I started with using a #80. And I made a spark gap transmitter from a Model-T ignition supply.73, Jeffrey

Congratulations, Chuck! Next year will be my 60th year as a ham. I did get my first WW 2 surplus radio from my college Physics prof. in 1947. He had all the closets in the building full of stuff and they were just waiting for him to retire so they could haul all the surplus to the dump. After WW 2 ended, the schools got the stuff by the boxcar load. Will

Congratulations, Chuck! Next year will be my 60th year as a ham. I did get my first WW 2 surplus radio from my college Physics prof. in 1947.

He had all the closets in the building full of stuff and they were just waiting for him to retire so they could haul all the surplus to the dump.

After WW 2 ended, the schools got the stuff by the boxcar load. Will W0EOM

Chuck, you surely must have been a member of the Armed forces during WWII as a radio operator. Hams were much sought after for such assignments. I was enlisted (post war) as a 3rd Class Petty Officer in the local Naval Reserve, at the age of 17, mainly to teach Morse code and radio theory to other electronic specialty Reservists. I finally retired from active duty and active Reserve 43 years later.

Prior to my earning my Class C Amateur license, my high school Physics teacher (also our radio club mentor) assigned me the project of converting (retuning) a couple of Abbot 2 1/2 M super regenerative transceivers to the newly FCC released 2M band. He loaned me a home brew wavemeter to "calibrate" the frequency. Chuck, W7CS

So how many (old timers) are there on this site? Did anybody make a count? Larry n6ppo aka. "Old timer"

Depends what you mean by "old timer".

I was first licensed in 1971 (G4ABB) at 17yrs of age, so I'm closing in on 40 years as a ham. That still makes me a young pup compared to many here. GL & 73, Alf NU8I Scottsdale AZ DM43an

So what constitutes "old"? I stopped counting a long time ago - had to think it through before writing, into my 52nd year, first licensed at 12 still in the same rut, 160, UHF & microwaves. Keeps me occupied Robin, wa6cdr

At 52 years of radio, I guess I qualify. Like Robin always the same- VHF to microwaves and building/converting stuff. Somewhere early I wanted a dish antenna like I guess I saw in the movies. The best I got as a kid was 5gal lard can on 1296. But it worked! Converted a pile of surplus stuff as a kid. SCR 522's and ARC 5's. I don't know how I lived- between the small fires and getting buzzed a few times.

I had an S 20R because it was all I could afford. Boy, I hated that radio; I suppose doing radio on a string budget like that made me have better radios later on.

There is a novice site that is fun and filled with people's stories, mostly about when they were in their early teens. http://novice.bappy.com/whats_new_25.html

And this one about old gear is great. It will keep you busy:

http://www.virhistory.com/ham/hobbies.html Doug K6JEY

Well, I guess I qualify. I was first licensed in 1948. 73, de Dave, W6EMD, Redwood City, CA

Still "Pre-Geezer" here at 41 years... Dave - WA6CGR

I'm a little more of a geezer than Dave at 45 years, but no where near the best of them. Jerry Mulchin - N7EME

Doug, how dare you say disparaging things about the wonderful Hallicrafter S-20R receiver? I had a Heath- kit AR-3, but my friend across town was the envy of the entire Mira Costa High School Amateur Radio Club with his S-20R! That was in 1957, 53 years ago now.

I rushed to get my license before they ran out of K6 calls--and got K6YNB (well, KN6YNB at first). My S-20R owner friend didn't get his license as quickly and the FCC started reissuing W6 calls. I was jealous when he got W6UGU (WN6UGU at first).

Soon thereafter, the FCC reissued K6 calls, and then started assigning WA6 calls (like WA6CDR, issued to a kid down in Palos Verde's).

That's my old-timer story. Congrats to WA6EXV on his

71 years in amateur radio. Chuck, what was your original call?

Wayne, N6NB

Hi Wayne,

First, my S 20R wasn't all there. It didn't work on 80m. It did pretty well on 40 with a QF 1 Q multiplier. I can see how you would envy the guy, the Heath was pretty numb. I sense that we both may have done a little compensating for those days.

I'll bet we talked on the radio back then. Do you still have your logs? I do and I'll check. I lived in Hollywood Rivera along with about 40 other hams.

It would be cool to exchange QSL's all this time later.

I had a similar experience. I got KN6JEY call and my friend Mike got WA6AWS in the late fall of 1957. Doug K6JEY

I was first licensed as KN6OQK at the age of 14. I've held K6OQK for a little over 54 years. I can prove it. Just watch the way I try to walk! Burt K6OQK

Wow I'm no longer the kid. But showing signs of geezing at 45 8/12. N3IZN

I'm not ready to concede to anything but still being a kid, but I think I passed some sort of milestone in December... age 50, and 35 years licensed. AARP is now sending me membership applications. And they go straight to the trash. Original callsign, BTW. Never changed it, never will. Mel - WA6JBD

It's my 49th year as a ham. Mr. Brubaker, The Murray Jr. High science teacher taught dozens of us kids the code and theory. I was a novice at 11.

Before I could drive, I rode my bike out to Chuck WA6EXV's place to learn how to build and operate. Almost 50 years later I'm still going over to Chuck's for the same reason. Frank WB6CWN

I got to thinking about some of the signs of being a radio geezer. Please add to the list. You know you are a radio Geezer when you have more tools than you'll ever need, but can't find them. You know you are a radio Geezer when you need to keep your radio's user manual on the desk. You know you are a radio Geezer when your antennas are getting smaller and closer to the ground. You know you are a radio Geezer when it's been 40 years since you've had the snot shocked out of you. You know you are a radio Geezer when you forget the band plans.

You know you are a radio Geezer when you check into the weather net, the noontime net, the Bell Telephone net, and some other net just because they are there.

You know you are a radio Geezer when you still have a phone patch and Q multiplier in the cabinet.

You know you are a radio Geezer when your radio warms up faster than you do

You know you are a radio Geezer when RF gets into your hearing aid

You know you are a radio Geezer when you have to find you teeth to have a QSO

You know you are a radio Geezer when you can no longer see the parts used to make radios

You know you are a radio Geezer when you had a real ham shack

40 years since first licensed. I received my first call, WN6DHN at 15 thanks to a ham mentor and an enthusiastic High School electronics teacher.

I toss those AARP letters in the trash too.

Here are some more geezer thoughts.

You know you are a radio Geezer when you know how to properly tie a wire bundle using waxed string.

You know you are a radio Geezer when some of your test gear you built is older than your adult children.

You know you are a radio Geezer when you add light in front of your radio so you can read the dials.

You know you are a radio Geezer when the neighbor kid annoys you with his rap music so you get on six meters and call CQ when the is no chance of a band opening.

You know you are a radio Geezer when you buy a piece of gear only to find out you already had one in the garage you forgot about.

You know you are a radio Geezer when you can no longer log, make QSO's and drive at the same time. You know you are a radio Geezer when you realize a Life Membership in the ARRL is no longer a good value. Dave N6TEB

Great ones Dave!

I tied off a multi-conductor bundle with string last month. Much better than a couple dozen plastic wire ties. FK

Good list, Frank. The one above has bothered me for years. I think becoming optically challenged is one of the most predictable indicators of aging. I find it unfortunate and ironic that, as our ability to see small things decreases, all the parts we want to use are shrinking. Back in the 90's I found a binocular microscope at a flea market. It seemed a rather pricey investment at the time. Glad I bought it. I don't know how I would survive without it now. I use it all the time for unexpected things like removing a splinter. -Rex, KK6MK

Ha. Over the summer we got some work from Ericsson, they wanted certain items bundled with wax string instead of ty wraps. Like a LID I said "Oh yea I remember how to do that" Guess who has callas on his pinkies? I guess one step closer to geezer status...... N3izn

Chuck - you beat me by quite a bit. Just found one of my QSL cards on Ebay for sale as a collectible. Do I get points for that? Will

I'm sure not as much of an old timer as many of the distinguished group here but I was licensed in 1967 as WN6WKQ then WA6MEM in 1968.

I think your qualify as an old timer if you purchased a Heathkit Twoer when it was a "new" rig and you operated the K6MYK and WA6TDD AM repeaters.

Was crystal control on 7176 Kcs because that was the only "rock" you had and the crystal was made by Jet Crystals in Torrance, CA? Bought surplus ARC 5 and APX 6 units and they were still packaged in the original WWII protective shipping material. WA6MEM

I wanna hear about the youngsters! Who's newest! Jim N9JIM

Born: 1978 Licensed: 1991 First Microwave contest: 1995

So I had an uncle who was an engineer and a ham. He was my idol as a kid and I adopted his interest in ham radio. I ended up working where he did when he got out of college (TRW) as well. Anyway, I studied for my ham license along with my dad at the Convair Amateur Radio Club in San Diego, under Nick Callas K6DBJ. I got my license and within a reasonably short time was interested in microwaves. I started going to the San Diego Microwave Group meetings I think in 94 or 95 and started building my 10 GHz rig in 95/96 with the help of Kerry N6IZW. So in keeping in line with the previous comments...

You know you are a ham youngster when:

You are looking for the gate, drain, source contacts on any three terminal device.

You think BWOs, tube amplifiers, diode amplifiers, spark gaps, etc. are mystical black magic.

You have only PLL synthesized radios.

You don't know what a grid/dip meter is.

You wonder how people designed circuits without computers.

I'm probably not the most NOOB ham here, but I'm getting the impression I'm on the lower end of things... -Tony KC6QHP

I think your qualify as an old timer if you purchased a Heathkit Twoer when it was a "new" rig and you operated the K6MYK and WA6TDD AM repeaters.

I built my own transmitters and receivers for 2 meters. First I made a tube transmitter that put out 10w AM. The receiver was a super-regen using a 955 acorn tube. Then when the first Philco "barrier drift" transistors became affordable; I made my own sold state transmitter and receiver. I was on both of the above

mentioned repeaters.

Was crystal control on 7176 Kcs because that was the only "rock" you had and the crystal was made by Jet Crystals in Torrance, CA.

The frequency I chose was 7173kcs and there was a crystal grinding place in Los Angeles. I vaguely remember La Cienega Blvd but I may be wrong as it was so long ago and I have not lived in la since 1982.

Bought surplus ARC 5 and APX 6 units and they were still packaged in the original WWII protective shipping material. And I modified them and operated on 1250mcs in 1961. I was also on 10Gc in 1961 with a 2K25/723AB 73, Jeffrey Pawlan WA6KBL

Mel, Please don't move to Arizona and keep the "6" call sign, I didn't. They are disrespected as much as CA license plates in Oregon!

CS

OK I will put my Geezer info on line also.

First Licensed 1954 at the age of 16, KN6GHI Lasted for One year.

Then I got a drivers license and discovered GIRLS.

So much for Ham Radio until 1966 when I got a technician call WB6DNX.

Original owner and will not change it!

First radio was a Super Regen 6SN7 built from plans in the Boys Life Magazine. Anybody got a copy of the article; I want to build one last version.

My first commercial radio was a Hallicrafter S 40 B, \$80.00 used at Henry Radio.

Along the way I had 11W7113 Class D and 2nd class phone P2 11-30945 which got me a job in the 2 way radio industry.

Lastly a NABOR and APCO certificate. That is all. 73 Dick WB6DNX

I was first licensed in 1963 at age 15 as WN6ESX as a Novice. My first rig was a Heathkit Twoer that I assembled and used from home QTH and mobile from my Dad's Rambler since I was not old enough to drive. I can still remember the wine of the surplus Dynamo under seat that supplied the B+ the Heathkit needed. I also remember the long wait to find out if I passed the FCC test I took in San Francisco. I struggled with the Code in those days and still do today. It just does not come easy to copy for some people, me included. Never upgraded to General do too discovering girls and my problems with the Code.

Revisited Ham radio due to my twin boy's science teacher's station at County Club Elementary in San Ramon, California. My oldest boy Craig went on to get his Ham ticket and I was licensed as KE6RXJ in 1993. Went back to trying to copy code and after several tries passed the 13wpm and received an Advanced Call of KQ6EF. Later on passed and upgraded to Xtra Class. I still remember drooling over those shiny Heathkit HF Radios in the Catalogs. I just knew I would never have the money for a factory radio, but maybe I could buy a kit!

I think you qualify as an Old Timer if:

You know a Heathkit Lunch box is not where you keep your sandwich! Your kids jump back when you first power up that Heathkit SB-102 you just bought at the swap meet and want to know if those glass things glowing inside the radio are Nuclear devices! Your kids can not believe that Packet Radio could be only 1200baud and be that slow! Tnx Rich Gill KQ6EF

At least it did not flip on its back when you keyed it! a 140D radio had a dynamotor with so much torque you HAD to hold the radio if you had it up on its side on the bench and keyed it. You best have a STOUT power supply, too! - those radios could make better than 60W out on VHF from 6 volts DC!

I made mine make 120 watts after replacing the 5894 with a used Motrac final 8643... but at least that was on 12V In that era, we didn't have to teach the folks to push the button and WAIT before talking- they could HEAR the Dynamotor spool up, and at night, all the lights in the vehicle blinked at PTT!..... that dynamotor is still a better "indicator" than the channel acquisition chirps you get on a trunked radio these days Robin

Radio History-

It is interesting to me about the discoveries made in the 1940's on the east coast. The Fall 2009 CQ VHF magazine has a second in a series on "Amateur Radio and the Cosmos- Crawford Hill" by Mark Morrison, WA2VVA. It talks to George Southworth and his waveguide technique and Bell Labs, John Pierce with AT&T --NASA Project Echo-JPL Goldstone (Hi K6HIJ and KL7UW) --Crawford Hill New Jersey--EIMAC-- and lots of other folks who were both scientists and amateurs who go involved with the evolution of microwaves, EME, and a number of related topics. I believe one of the SBMS founders Tommy, W6IFE was involved in some of that effort on the east coast in the 40's and came back to the west coast in the 50's at the Naval Ordnance Lab in Corona to do more exploration with the upper frequencies. The polarplexers came out of the SBMS group as a mode of feeding a dish with klystrons in the 3.3 KMc. It looks similar to the feeds in the Crawford Hill Technical Notes of Dick Turrin, W2IMU which are for making circular polarization on a 1296 MHz feed.

Another article by Morrison is in the Spring CQ VHF "A Pioneer in the Family -Jim Kmosko, W2NLY" is also interesting from an early amateur radio and EME perspective.



Frank, WB6CWN on Frazier in August 2009 with his 10 GHz rig.

The San Bernardino Microwave Society is a technical amateur radio club affiliated with the ARRL having a membership of over 90 amateurs from Hawaii and Alaska to the east coast and beyond. Dues are \$15 per year, which includes a badge and monthly newsletter. Your mail label indicates your call followed by when your dues are due. Dues can be sent to the treasurer as listed under the banner on the front page. If you have material you would like in the newsletter please send it to Bill WA6QYR at 247 Rebel Road Ridgecrest, CA 93555, bburns@ridgecrest.ca.us, or phone 760-375-8566. The

bburns@ridgecrest.ca.us, or phone 760-375-8566. The newsletter is generated about the 15th of the month and put into the mail at least the week prior to the meeting. This is your newsletter. SBMS Newsletter material can be copied as long as SBMS is identified as source.

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