

AMATEUR RADIO FLEA MARKET

and Auction

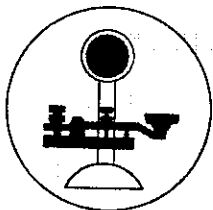
Saturday, Sept 20 8 AM - 2 PM
Sebastopol Community Center
390 Morris St., Sebastopol

Indoor Flea Market tables: \$7 at door, \$5 in advance
Vendor set-up 7 AM. **TALK-IN on 146.73**

Radio Clinic, Refreshments, Door Prizes ...
F.C.C. EXAMS

FREE ADMISSION & DOOR PRIZES!

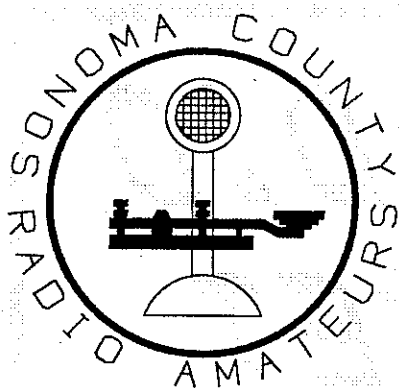
From SANTA ROSA take Hwy 12 west 10 miles. Look for sign on right at city limits.
For table registration tickets and information write:



Sonoma County Radio Amateurs, Inc.

P.O. Box 116
Santa Rosa, CA 95402





-----OFFICERS FOR 1986:-----

PRESIDENT:	George Shedore	KS6W	838-6102
VICE PRES.:	Bob Olsten	WD6DPE	546-5593
SECRETARY:	Kathi Boyett	WB6UAZ	544-7943
TREASURER:	Ed Goei	KA5LGC	579-1681
REPEATER CHAIR:	Paul Hansen	AE6H	527-7955
ACTIVITIES CHAIR:	Steve Schaffer	KD6GC	546-8860
MEMBER-AT-LARGE:	Warren Klinger	WB6RHP	632-5459

-----SHORT SKIP STAFF:-----

EDITOR:	Alan Bloom	N1AL (e) 538-7115
	1578 Los Alamos Rd, Santa Rosa, CA 95405	(d) 577-3981
ADVERTISING MGR:	Jim Rutherford	WB6PER 833-6020
CIRCULATION MGR:	Tracy Reese	WB6TMY
SWAP SHOP:	Hank Davis	W6DTV 823-7885

RACES LIAS: WB6RHP/WD6DPE (see above)
 ARRL LIAS: Alan Bloom N1AL 538-7115
 ASST. DIR: Chuck Sabin N6DDK 795-2371
 PUB. RLATNS: Kathi Boyett WB6UAZ 544-7943

-----ACTIVITIES COMMITTEE-----

PUBLIC SRVC: Jim Boyette WN6D 544-7943
 REFRESHMENTS AT MEETINGS: Bob WD6DPE
 GREETER AT MTGS: May Kobold N6GZV
 RAFFLE: Lyman WB6SMY, N6GZV, Terry WA6RNF
 QSL MANAGER: Doug Bender WA0JRB
 VOL EXAMINERS: W6DTV WA6ACX N1AL

K6ANP N6BLN AG6C WD6CKP WN6D
 WB6FRZ KF6FX WA0JRB WA8LLY
 EDUCATION: George Shedore KS6W 838-6102
 PROGRAM CHAIRMAN: Bob WD6DPE 546-5593
 HIDDEN XMTR HUNTS: Don Osborne WA6ACX
 FIELD DAY: Gene Johnson W2EBG 578-3104

-----REPEATER COMMITTEE-----

Alan Bloom N1AL-Jim Rutherford WB6PER
 Jim Boyett WN6D-Phil Copenhaver N6KZS
 Brian Kotzian KE6WL-Terry Laduke WA6RNF
 Hoppy Bravin WD6CKP (Westlink b'cast)

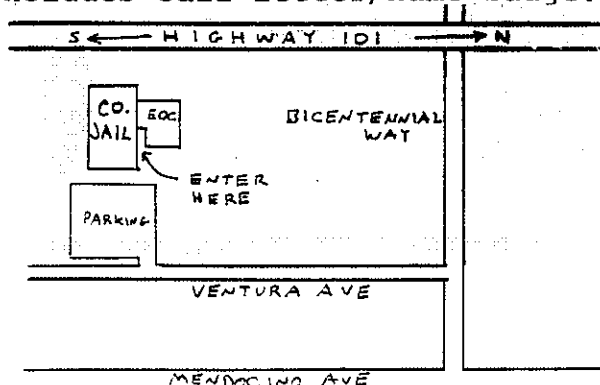
-----CLUB MEETINGS-----

7:30 PM 1st Wed of each month at the
 Emergency Operations Center (EOC).

NEXT CLUB MEETING: Sept 3, 1986

PROGRAM: Packet Radio

Meetings open to all, member or not. Need not be licensed to join. Full voting membership for licensed Amateurs only. Dues: \$12.00 per year plus a one-time \$4.00 initiation fee. (Includes call-letter/name badge.)



ARE YOU NOT AN SCRA MEMBER?

IF SO, then this is a complimentary copy. Our club is into almost every aspect of amateur radio: repeaters (13/73), Field Day, license classes (novice/upgrade), volunteer exams, RACES, DX programs, packet radio, hidden xmtr hunts -- you name it.

We invite you to attend our next monthly meeting (see below) or check into the SCARS net on the 146.13/73 repeater every Tues. night at 7 PM. You will hear the latest Westlink Amateur Radio news broadcast, SCRA announcements, and a Swap Shop. If you would like to join SCRA, please refer to the dues listed below. 73!

SHORT SKIP ADVERTISING RATES:

\$14 First 1/4 Column
 \$2 Additional 1/4 Columns
 (\$28 Full Page, 1 side)

Pre-printed inserts:
 \$28 (8.5 x 11" sheet)

Guaranteed circulation: 200/month

AD DEADLINE: 15th of previous month

RADIO SHACK

Store Nr. 3855

Zane Bates, Manager

510 Farmers Lane Telephone
 Santa Rosa, CA 95405 546-8423

**MINUTES OF THE GENERAL MEETING OF SCRA, July 2, 1986**

Visitors: Jane Vanderslice N6NTB, Frank Masten WB6HZZ, John Hazard WA6VSF, Art Hall NR6G. Upgrade: N6LYR Dwayne Kennedy became an Advanced = KI6IA. Introduction of members followed.

The program tonight was presented by Darrel Mead who is in charge of the Volunteers in Fire Prevention program with the Department of Forestry. The VIP's use the volunteers to help with child education, public information, fire safety inspections, red flag patrols, and supplemental communications to the CDF radio system. This last area is where the amateur radio operators are used the most. The program in Sonoma County started in 1983 as a satellite of the Lake-Napa Ranger Unit. There have been about eight call-ups since the program started. There are approximately 50 people currently in the program. Personnel are provided with an identification card, baseball cap, vest, and Nomex short which are all recognized identification by the CDF and other emergency agencies. If you are interested in joining the program or want more information, the next meeting will be Thursday, August 21, at 7:30 PM at Santa Rosa Headquarters on West College Avenue. Regular monthly meetings are held on the third Thursday of each month with the exception of December. Darrel then showed a VCR tape entitled "California, a State on Fire" which dealt with the tremendous number of fires in the state of California in 1985. If you would like to go down and see the headquarters, call Darrel at 576-2285 and make arrangements.

The minutes were approved (moved by Don WA6ACX, and seconded by Jane KB6MZE). The Treasurer's report was as follows: General Fund has \$1171, and the Repeater Fund has \$1461. The report was approved (moved by Bob WD6DPE, and seconded by Bill WD6DXW).

Autoslot codes can be obtained by calling Jim WB6PER at his home.

Novice classes will be starting on Tuesday, September 9 at 7-9:30 PM at the EOC. Depending on interest, upgrade classes could start a week later being taught by Steve WA8LLY (Adv. and Extra) and Joel WB6PDP (General).

RACES: There will be a training session in Santa Rosa at the EOC on Thursday, August 7, at 7 PM. All interested should attend.

BADGES: All that have been made have been distributed. There needs to be better communication between Treasurer and Hank so the badges can be made and distributed quicker.

OLD BUSINESS:

Seating at club meetings is still a problem and needs further consideration. Parking at club meetings will be disrupted for the next 2 years. Okay to park next to the Sheriffs Department after 4 PM. Before that time you will be ticketed.

NEW BUSINESS:

The election of a new club Secretary was held. Kathi Boyett WB6UAZ was voted in as Secretary.

MAILING LISTS: The Board decided as a general rule that it won't be given out but a request can be brought before the Board for consideration. A fee of \$250 would be charged, which would be negotiable depending on what they would do for the club. Anyone not wanting their name given out should contact Al N1AL. [Ed note: see note at end of minutes.]

The club was asked to make the club picnic on August 23 into an area-wide picnic for all amateur radio operators. The only problem would be if a non-club member were to win a prize. It was voted to waive Bylaw #14 of the Constitution for the club picnic so as not to create a problem. (Moved by Sarah N6FAX, seconded by Susan N6IRJ.)

Net control for August is Carolyn N6KLR. We still need an alternate for the month of August, who would then take over net control in September. Susan N6IRJ will be alternate for September and control for

October. Suggested that the net control preamble be published in Short Skip so that all members can have the information to follow along during a regular net and learn how it is done. Then maybe more would be willing to be net control.

The Board members are going through the list of club-owned property for evaluation for possible sale at the Flea Market in September. If you get a call inquiring about any club equipment you might have at your place, this is the reason.

Slips of paper were distributed for the membership to write down any questions they might have regarding the legality of the use of the autopatch. A letter will be sent to ARRL.

By August 20, the club has to send a check to the Sebastopol Center for a \$125 fee and a \$100 clean-up retainer.

September 20 there will be VE testing, held at the Sebastopol firehouse starting at 1 PM. Testing for 20 wpm will be 1-1:30, 13 wpm 1:30-2, and all written tests will be given from 2-3. More information can be obtained from Hank W6DTV 823-7885.

Hank was inquiring about the Repco repeater being fixed in case there is a need for use. Paul Hansen will be taking care of it.

Santa Cruz is listed as sponsoring the 73 repeater in the new Repeater Directory. Also, we are not listed as a Special Service Club. This will be looked into.

Jane N6NTB requests that people give their callsigns slower and more distinctly. Those that are hard of hearing are having a difficult time.

A ride for an interested ham is needed from the Healdsburg area for a disabled individual. Anyone interested contact Kathi WB6UAZ 544-7943.

The club is in need of a historian. We need a volunteer to put together all the pictures, records, etc. of the club. If interested, contact George KS6W 792-2277.

Diabetes Walk-A-Thon volunteers are needed for Sunday September 28. If interested contact Steve KD6GC.

Al N1AL has a sheet for volunteers to sign up and help with the Flea Market. Publicity on the Flea Market has been sent to the magazines. Flyers were sent to all hams, clubs, and previous attendees last week. We will be distributing them to all the electronic stores in the area. Also, PR will be sent to the newspapers, radio and TV stations. A mass mailing will be going out to all the hams in the area in a week or two.

Volunteers are needed to help Steve KD6GC and Pat KF6AG with the Christmas Party. The party will be held Saturday, December 6, at the Windsor Mobile Home Club House.

A membership lottery of \$6.50 was won by Sarah N6FAX. The raffle brought in \$31.00, and was conducted by Garry KB6MXZ.

The meeting was adjourned at 9:50 (moved by Bill K6TCD and seconded by Garry KB6MXZ.)

-- Submitted by Kathi Boyett WB6UAZ, Secretary

MAILING LISTS

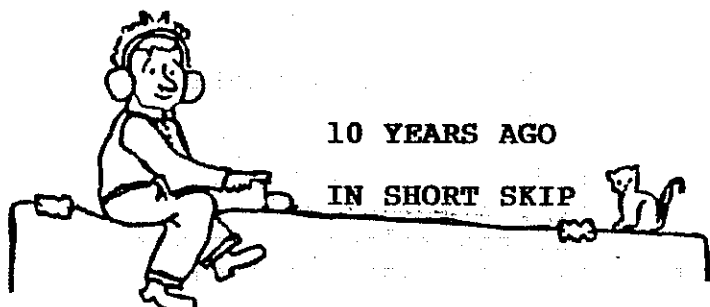
We have 4 different mailing lists available: SCRA members (past and present), all Sonoma County hams, Bay area ham & computer clubs, and past Flea Market attendees.

My recollection of the Board's decision was that the membership roster would not be given out except

in special cases (e.g. RACES mailings), but that the Sonoma Co. list might be sold for \$250.00.

The mailing list program has no provision for flagging those who don't want their address used. The obvious solution is to use the membership list only for club business.

-- N1AL



Volume I, issue III announced a live demonstration of the new Oscar satellite at the September meeting. Hugo W6CH was named "Old Timer of the Year." WB6AGP had started a Novice class in Petaluma.

On the Ham Radio newsfront, the first edition of the ARRL Repeater Directory sold out the first printing. Cost: 35 cents each. Issuing of licenses by FCC is so snarled that some Amateurs are receiving "WT" (temporary) calls until the computer catches up.

A local CW net on 21.150 MHz every evening sharpened CW skills. 8 participants were checking in regularly.

THE PARKING SITUATION

As you know if you came to the last club meeting, we've lost our usual parking lot due to the construction of the new jail. See the map on page 2 for info on where to park and how to get in.

Since we are beginning to outgrow the EOC meeting room anyway, perhaps this would be a good time to look for another hall. What do you think?

UPGRADE CLASSES!

We shortly will be having two upgrade classes: One for General and one for Advanced/Extra. Come to the organizational meeting Tuesday September 9 at 7:30-9 PM at the EOC (see p 2). If you can't make the meeting, call 792-2277 and ask for George.



TREASURER'S REPORT FOR MONTH ENDING JULY 31, 1986

ACCOUNT	REVENUE	EXPENSE
Club activities		62.22
Coffee & Donuts	.23	
Dues & Initiations	62.00	
Fund raising event	5.00	
Raffle	28.00	
Badges		15.90
Miscellaneous		35.06
Treasurer's Expense		2.20
Short Skip Expense		76.65
Westlink		17.18
	179.23	222.51
NET LOSS		43.28

ASSETS:

General Acct (Exchange Bank)	1171.52
Rptr Fund (Northbay Savings)	1461.70
TOTAL ASSETS:	2633.22

-- de KA5LGC

NEW MEMBERS SINCE AUGUST

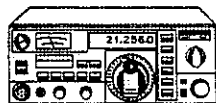
Arthur J. Hall NR6G
5555 Montgomery Dr. #68
Santa Rosa, CA 95405
579-6923

Floyd Whitfield K6KQJ
19900 Arnold Dr.
Sonoma, CA 95476
996-9413

John Hazard KA6VSF
7669 Beverly Dr.
Rohnert Park, CA 94928
795-8241

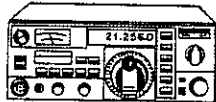
Robert E. Davis WA6YTW
305 East Spain St.
Sonoma, CA 95476
938-2033

We now have 147 members.

**CLUB EQUIPMENT**

The Board has decided to sell the following items at the Flea Market. If there's anything you think we should keep, contact a Board member before the next Board meeting.

A.B. Dick Duplicating(mimeo) Machine
 HW-101 Transceiver + mic + P.S.
 Comm. Spec. TT decoder in cabinet
 (2) Hamtronics 450 lW Xmit strips
 GE Pre-Prog 450 Xcvr w/control unit
 Heathkit GR-54 general-coverage Rcvr
 Duomatic AKS tube-type Keyer
 Tech manual for SCR 533A
 Radio Shack Model I computer
 Okidata Microline 80 printer

**MISSING EQUIPMENT**

If you know the whereabouts of any of these items, please contact a board member. We want to gather all the stuff up, examine it, and determine disposition. If you are using it and still need it, we can get it back to you.

Hi Gain TH4 Beam Antenna *
 Hi Gain 2-band Beam Antenna *
 File drawer for Secretary
 Homebrew (W6CYM) antenna tuner
 Homebrew (N1AL) 12V, 10A pwr supply
 Old surplus TT control decoder
 High Gain Vertical 40-10 Meters
 SBE 450 MHz HT w/TT pad
 Wilson 450 MHz HT

* (Were these sold at the Flea Market last year?)

CHEAP GENERATORS

Northern Hydraulics, Inc. of Burnsville, MN has 4 KW generators made by Agtronic for \$425 (recoil start) or \$487 (electric start). These 120/240 VAC generators feature an 8 HP Briggs & Stratton engine, and are rated for continuous duty 33 Amps @ 120V or 16.6 Amps at 240V. Shipping to N. Calif. should be about \$60-\$70. They also carry Honda generators and a lot of other neat stuff. 1-800-533-5545.

WE NEED OPERATORS!

The Santa Rosa Police Department has asked us for our help. This is the first time that this has happened, and we'd like to make a professional first impression.

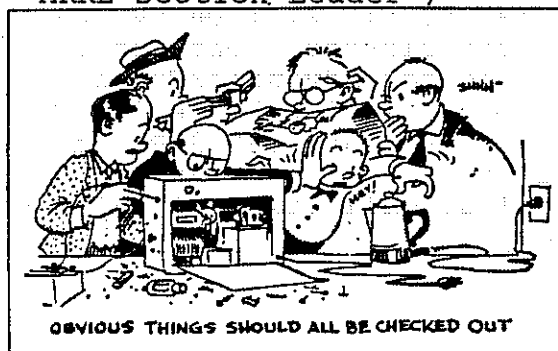
The event is the first Santa Rosa Classic Bicycle Race Sat. Sept 13. This is not your typical "fun race" as it is open only to Professional and Olympic-class bicyclists. We need 20 people with two meter FM to help out from 2 to 5:30 PM. Call Kathi Boyett, 544-7943, and leave a message on the machine if she is not home. Thanks!

**TIME**

A student of mine once defined Time as "that stuff that keeps everything from happening at once." Now there's plenty of room for thought in that statement. When a disaster strikes, time has gone to zero, if you are thinking of getting ready for it. If you are thinking of recovery, time is infinite...

Your interests may not lie with ARES or NTS, but someone will ask you what you can do to help. Assess your equipment for emergency capability. Try originating a formal message or two into a traffic net. Above all, develop the discipline that teaches you to listen. In all disasters, amateur radio operators will surface. That's almost a law of nature. The difference is whether they are useful or add to the problem.

(Excerpted from Byron Looney K6FI in the "ARRL Section Leader")





NEWS of Amateur Radio

T - E - C - H N - E - W - S

JAS-1 LAUNCHED. The Japanese Amateur satellite, now called "Fuji" has reached its planned circular orbit on August 12. Operating frequencies for mode "JA" are: 145.900-146.000 uplink, 435.900-435.800 downlink. Beacon on 435.795 sending 20 wpm CW telemetry. The digital mode "JD" will be activated in several weeks. (ARRL)

OSCAR 10 LIVES. As Mark Twain once commented that reports of his death were "greatly exaggerated", so has Oscar 10 risen from the ashes. DJ4ZC was able to upload a memory diagnostic program that generated a "roadmap" of the failed and marginal memory cells. Based on this info, Karl rewrote the operating system to avoid the bad areas and get the bird back on the air. (ARRL)

CAPTAIN MIDNIGHT, the person who captured a satellite TV channel for almost 5 minutes with a message disparaging the access fees charged TVRO dish owners, has been caught. John R. MacDougall KA4WJA was a part-time operator of a Central Florida commercial uplink station. Although the maximum sentence is \$10,000 and a year in jail, MacDougall plea-bargained that down to \$5000, a year's probation, and suspension of his Technician ham license for a year. (Westlink)

AN ARRL MUSEUM & VISITORS' CENTER to be located at the current HQ site in Newington was approved in principle at the ARRL Board meeting. Initial funding is an \$85,000 bequest from the estate of W7WU. (ARRL)

CALLSIGNS ISSUED as of Aug 1 (ARRL)
EXTRA ADVANCED TECH/GEN NOVICE
WW6C KI6IT N6OBJ KB6NST

Thanks to the ARRL Letter and Westlink Report for permission to reprint.

PACKET MOONBOUNCE was successfully tried by W3IWI/KL7RA using the 26 m (85 ft) dish at Gilmore Creek near Fairbanks AK. They got good copy of their echoes using the new AEA PM-1 HF packet modem set to 600 Hz shift.

HF PACKET ACTIVITY is increasing. K5VZN logged 16 DX calls his first time ever on packet during his vacation at VP2MR's QTH in Montserrat. All contacts were on 14,103.5 kHz.

Gateway magazine is compiling an HF packet directory. Send your call, freqs used, & times most active to: HF Packet, Gateway Editor, c/o ARRL, 225 Main St., Newington, CT 06111.

Thanks to ARRL's Gateway magazine for permission to reprint.

WESTLINK RADIO NEWS

The Westlink broadcast that you hear on several local repeaters may soon go out of biz if they can't soon pay their phone bill. SCRA will make a contribution, but more is needed. To make things easy for you, just tear out the handy form below and fill it in:

WESTLINK SUPPORT FUND
c/o Dr. Norm Chafin K6PGX
PO Box 463
Pasadena, CA 91102

I listen to Westlink on:

(Rptr): _____

Name/Call: _____

Address: _____

City/State: _____

Contribution : \$ _____

(Sonoma County Radio Amateurs, Inc. "Short Skip" Sept. 1986.)



----- **HANK'S SWAP SHOP** -----

Hank Davis W6DTV 7822 Washington Ave
Sebastopol, CA 95472 823-7885
(Noncommercial ham ads printed free)

KENWOOD 520SE, Low-pass filter, CW
keys, coax/connectors, long wire ant
\$450. KB6MXZ 584-3425.

KENWOOD 520, VFO, CW filters \$425.
HEATHKIT TWINS 303R-401T, extender
boards \$250. N6OJ 763-2528.

CENTURY 21, 80-10 Meter CW
transceiver, full break-in.
\$150. Doug WA0JRB 526-5131.

RTTY PAPER & TAPE. 80/40 Mtr FSK
rig plus power supply. "Price is
right". Bob 823-9122.

HYGAIN 18AVT Vertical. 5-band. Joe
526-7731.

WANTED: 6 METER gear. I have several
people interested. Also, still have
COAX RG8-U solid & foam @ \$.12/foot.
Speakers, mikes. Hank 823-7885.

WANTED: Low-priced ham and test gear
to be repaired and given to foreign
missionaries. Donations would be
appreciated and receipts given.
"Amateur Radio Outreach" Joel WB6PDP
545-0285.

WANT: OLD SHORT SKIPS

The Copies we need are: all of
Volume II (1977); Vol. III (1978)
issues # 1, 2, 3, 4, 7, 9, 11, 12;
and Vol IV (1979) issue # 4. If you
have any of these, please contact Al
NLAL 577-3981 (day) or 538-7115 (n).

Thanks to Bob WD6DPE, Betty AG6C,
Terry WA6RNF and Warren WB6RHP for
their kind donations.

EVENTS CALENDAR:

(Dont forget SCARS net every
Tuesday at 7:00 PM on 146.13/73)

Aug 30 - RACES Drill.

Sept 1 - RACES Nets, 7:00 PM
Sept 3 - SCRA meeting 7:30 PM
Sept 5-7 - ARRL Nat. Convention, San
Diego W6UZL 619-292-7918
Sept 13 - Santa Rosa Bike Race
Sept13/14- ARRL VHF QSO Party
Sept14/21- Jack London Festival
Sept 15 - RACES Nets, 7:00 PM
Sept 18 - CDF VIP Meeting 7:30 PM
Sept 20 - SCRA Flea Market

Oct 3-5 - Pacific Div. Convention
San Jose, contact AE6Z
Oct 18 - RACES Simul'd Emer. Test
Oct 20 - Sonoma Co. Emer. drill

Dec 6 - SCRA Christmas Party

VE EXAMS HOTLINE NR: 408-984-8353

CALIFORNIA PACKET UPDATE

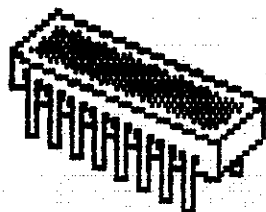
A new digipeater on 145.01 MHz should be up and
running by the end of this month. It will be
located on Jackrabbit Ridge, West slope of Mt
Shasta, CA at the 6700-foot level. Ten watts to
an AEA Isopole antenna will be very effective as
test have proven. The call of the new digipeater,
which can be solar powered, will be N7EVB-1. The
co-op of N7EVB, Bob Stone, W6OMR, Irv Astmann,
WA6IUM, Ed Westbrook and W6SDP, Doug Caley are
doing all the work.

WB7AWO-1 is still being used to crack the Siskiyou
Mountains between California and Oregon to WB7SZM-
1. The WB7AWO-1 station is in the process of
directing new north and south KLM 16-element log
periodics that divide 160 watts if needed. A PK-
80 is up full time with battery backup. This digi
can be reached direct from W6AMT-7 and goes direct
to WB7SZM-1 in Medford, Oregon. The new digi
going up on Mt Shasta will be a great help in
making this link should propagation create
problems.

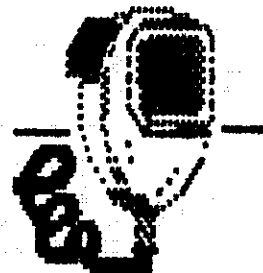
At this moment, W6SDP fills the gap on occasions,
but might move to 145.01 MHz soon. Keep in mind
that if you access WB7ZSM-1 (such as C WB7SZM-1 V
WB7AWO-1) you will get an "error message." You
must use it only as a digipeater.

The Roxy Ann site is up and in operation and
continually being improved. It is also on 145.01
MHz. At this time it is able to reach Grants Pass
stations and WB7AWO-1 has made connects into
British Columbia using the northern links.

From WB7RQG



H.S.C.



ELECTRONIC SUPPLY

6819 SOUTH SANTA ROSA AVENUE - COTATI

792-2277

ONE BLOCK SOUTH OF NEW K-MART IN ROHNERT PARK

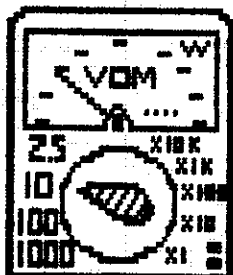
MANAGERS SPECIAL

"LAMDA" REGULATED 12VDC/10A POWER SUPPLIES

\$29.95

MOUNTING RACK (HOLDS UP TO THREE)

\$2.50

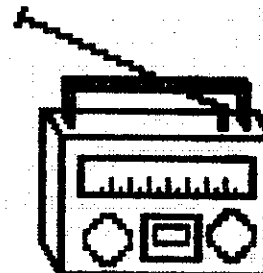


CONSIGNMENT NOW TAKEN

ON AMATEUR RADIO GEAR!

PHONE IN YOUR ORDERS,

DELIVERY BY NEXT-DAY UPS!

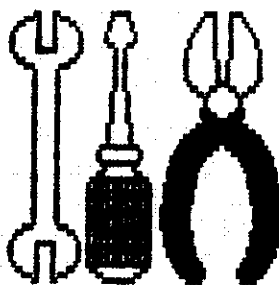


WE STOCK THE MAJOR PRODUCTS & BRANDS

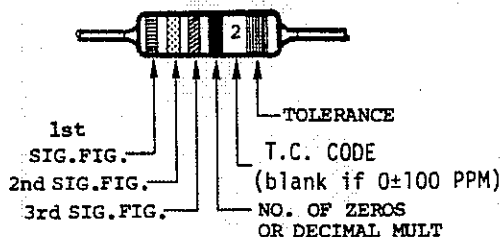
MIRAGE LINEARS, KLM ANTENNAS, ARRL PUBLICATIONS, VAN GORDEN ANTENNAS, DICK SMITH PRODUCTS, LARSEN ANTENNAS, TAB BOOKS, AND MANY MORE!

COME VISIT OUR COMPUTER & HAM ROOMS

HAVE A FREE CUP OF COFFEE, BROWSE AROUND THE STORE AND SEE ALL THE SURPLUS BARGAINS THAT ARE AVAILABLE. CHECK OUT OUR NEW AND USED COMPUTER EQUIPMENT IN THE "COMPUTER ROOM". STOP INTO OUR (SOON TO BE COMPLETED) "HAM ROOM" AND "QSO" WITH YOUR LONG LOST FRIENDS. COME CHECK US OUT, YOU'LL BE HAPPY YOU DID!

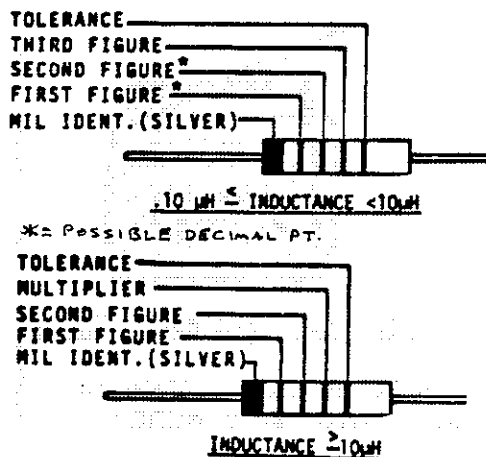


METAL FILM RESISTORS



COLOR BAND	DECIMAL MULTIPLIER	TOLERANCE %
BLACK	1	
BROWN	10	1
RED	100	2
ORANGE	1,000	
YELLOW	10,000	
GREEN	100,000	0.5
BLUE	1,000,000	0.25
VIOLET	10,000,000	0.10
GRAY	100,000,000	0.05
WHITE	1,000,000,000	
GOLD	0.1	5
SILVER	0.01	

INDUCTORS



Color	Figure	Multiplier**	Tolerance
Black	0	1	
Brown	1	10	
Red	2	100	
Orange	3	1,000	± 3%
Yellow	4		
Green	5		
Blue	6		
Purple (Violet)	7		
Gray	8		
White	9		
None			± 20%
Silver			± 10%
Gold			± 5%
	Decimal Point		

**The multiplier is the factor by which the first two figures are multiplied to yield the nominal inductance value in μH .

Example: 2.2 μH , 10% would be silver, red, gold, red, silver.

APPLICABLE COLOR CODES

DIRECTIONS - Identify similar component type in the proper column on the lower section of the page. Read across the rows at the top to determine the significance or value of the various colors.

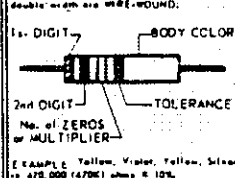
COLOR	DIGITS OR NO. OF ZEROS	RESISTORS RMA & JAN		CAPACITORS MOLDED MICA RMA & JAN		CAPACITORS MOLDED PAPER		CAPACITORS CERAMIC RMA & JAN		DIGITS OR NO. OF ZEROS	COLOR
		VAL. (P.P.M.)	TOLERANCE	VAL. (P.P.M.)	TOLERANCE	VAL. (P.P.M.)	TOLERANCE	VAL. (P.P.M.)	TOLERANCE		
BLACK	0	1		1	20%	A	1	20%	1	0	BLACK
BROWN	1	10		10	2%	B	10	1%	10	1	BROWN
RED	2	100		100	1%	C	100	0.5%	100	2	RED
ORANGE	3	1,000		1,000	0.5% (max)	D	1,000	0.25% (max)	1,000	3	ORANGE
YELLOW	4	10,000		10,000		E	10,000	0.1% (max)	10,000	4	YELLOW
GREEN	5	10 ⁵			5% (max)	F (JAN)		5%	0.5	5	GREEN
BLUE	6	10 ⁶				G (JAN)			0.25	6	BLUE
VIOLET	7	10 ⁷							0.1	7	VIOLET
GRAY	8	10 ⁸							0.05	8	GRAY
WHITE	9	10 ⁹							0.01	9	WHITE
GOLD		0.1	5%		5% (JAN)		0.1	5%	1.0		GOLD
SILVER		0.01	10%		10%			10%			SILVER
NO COLOR			20%								NO COLOR

RESISTORS

This color code gives the resistance in ohms.
RMA & JAN color coding for fixed composition resistors are identical.

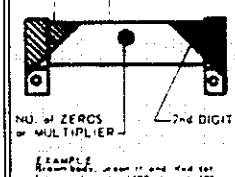
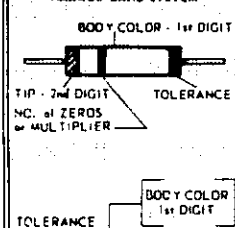
COLOR BAND SYSTEM

Resistors with BLACK body are COMPOSITION, NON-INSULATED.
Resistors with COLORED body are COMPOSITION, INSULATED.
Resistors having the first color band double width are WIRE-WOUND.



EXAMPLE: Yellow, Violet, Yellow, Silver = 470,000 (470K) ohms ± 10%.

BODY, TIP, DOT or NARROW BAND SYSTEM

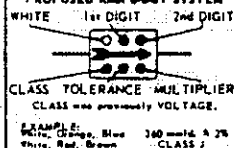


EXAMPLE: Brown body, green tip and red for Silver 470 ohms ± 10%.

HOLDED MICA

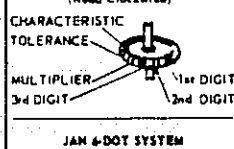
This color code gives the capacity in mmfd.
All aerial lead mica capacitors have a voltage rating of 300 to 500 volts.
The maximum capacity obtainable is 10,000 mmfd.

PROPOSED RMA 4-DOT SYSTEM

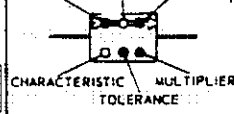


EXAMPLE: Yellow, Orange, Blue, Silver = 300 mmfd. ± 2% CLASS 2.

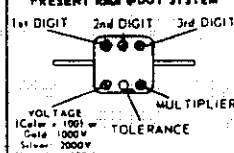
BUTTON, SILVER MICA (Read Clockwise)



JAN 4-DOT SYSTEM



PRESENT RMA 4-DOT SYSTEM



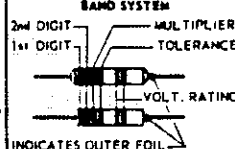
EXAMPLE: Brown body, green tip and red for Silver 470 ohms ± 10%.

CAPACITORS

HOLDED PAPER

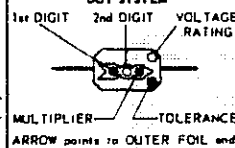
This color code gives the capacity in mmfd.
Voltage ratings in hundreds of volts.
One color band employed for ratings under 1000 volts.

BAND SYSTEM

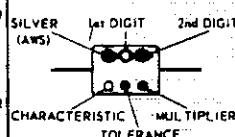


INDICATES OUTER FOIL (May be on other end)

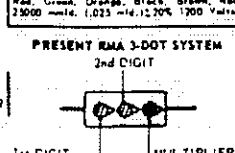
DOT SYSTEM



SILVER (AWS)



PRESENT RMA 3-DOT SYSTEM

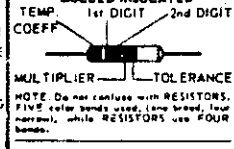


EXAMPLE: Brown, Orange, Black, Brown, Red = 2000 mmfd. (0.025 mfd) ± 20% 100 Volts.

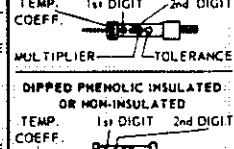
CERAMIC

This color code gives the capacity in mmfd.
All tubular ceramic capacitors are rated at 500 volts.
NOTE: Do not confuse with RESISTORS. FIVE color bands used (same brown, blue, orange, while RESISTORS use FOUR bands).

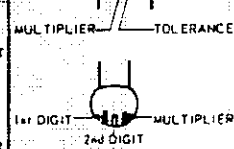
MOLDED INSULATED



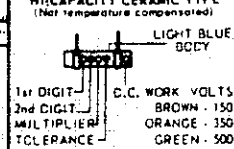
STANDOFF CERAMIC



DIPPED PHENOLIC INSULATED OR NON-INSULATED



HI-CAPACITY CERAMIC TYPE (Not temperature compensated)



EXAMPLE: Brown, Orange, 10000 mmfd.

CAPACITORS EIA TEMPERATURE CHARACTERISTIC CODE

Code	Temperature Range
V5	-55°C to +150°C
X7	-55°C to +125°C
X5	-55°C to +85°C
Y5	-30°C to +85°C
Z5	+10°C to +85°C

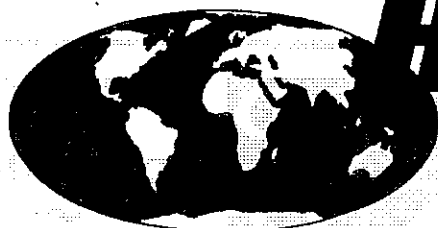
CAPACITORS NUMERIC CODE:

Values in pF. First figure, 2nd figure, multiplier. Example: "471" = 470 pF
"103" = 10,000pF = .01uF.

Code	% Capacity Change
D	± 3.3%
E	± 4.7%
F	± 7.5%
P	± 10%
R	± 15%
S	± 22%
T	+22% -33%
U	+22% -56%
V	+22% -82%
W	+22% -90%

For example, Z5U = +22%, -56% capacitance from 10 to 85 deg. C

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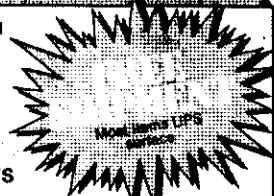
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