
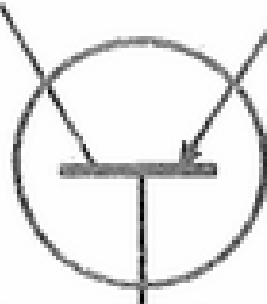


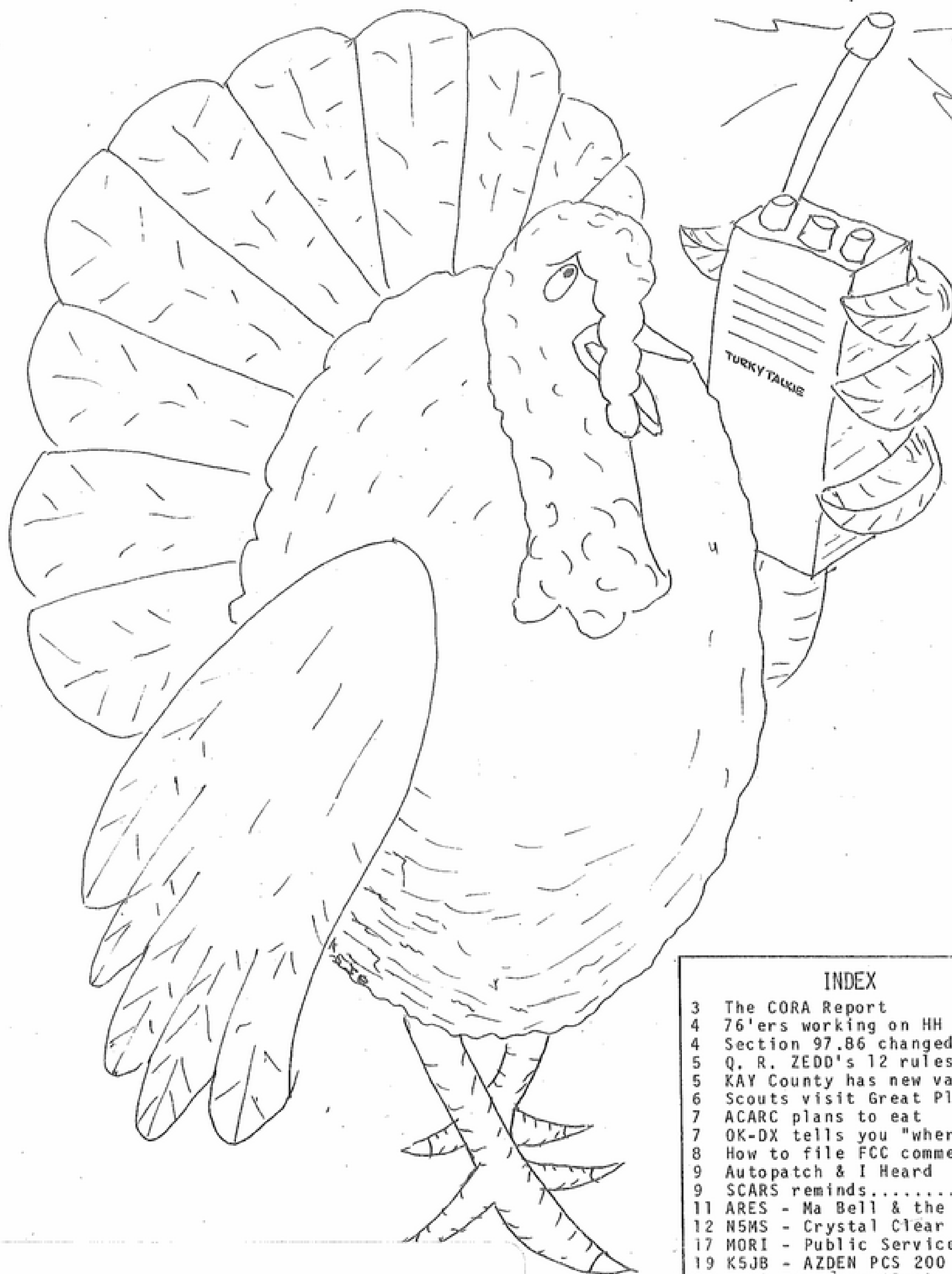
CENTRAL OKLAHOMA RADIO AMATEURS  
**COLLECTOR** AND **EMITTER**

50¢

Volume 7      DECEMBER 1981      Number 83

MAYDAY - MAYDAY!  
THE PILGRIMS  
ARE COMING!



#### INDEX

- 3 The CORA Report
- 4 76'ers working on HH
- 4 Section 97.86 changed
- 5 Q. R. ZEDD's 12 rules
- 5 KAY County has new van
- 6 Scouts visit Great Plains ARC
- 7 ACARC plans to eat
- 7 OK-DX tells you "where"
- 8 How to file FCC comments
- 9 Autopatch & I Heard
- 9 SCARS reminds.....
- 11 ARES - Ma Bell & the Hams
- 12 NSMS - Crystal Clear
- 17 MORI - Public Service
- 19 K5JB - AZDEN PCS 200 Mods
- 20 Dual Timezone Clock
- "Troubleshootong" - continued
- 22 ARRL SCM's Report
- 22 Wheatstraw to party

YOUR COMPLETE AMATEUR RADIO STORE

# KRYDER ELECTRONICS

## Hello World!

 **ICOM IC-720A**



### If you want it all in HF...

- All 9 HF Bands with 100KHz (min) each side.
- All solid state, broadband tuned & low pass filters.
- Digitally synthesized, tuning resolution to 10 Hz.
- Passband tuning in CW, SSB, RTTY modes.
- Two VFO'S, simplex or duplex operation and RIT.
- RF speech processor, easily set to your needs.
- CW filter plus narrow CW, fast semi-break in.
- RTTY function & special filter, DC level TTL compatible.
- Noise blanker, fast & slow AGC, 20dB RF Attn.
- Matched microphone, metered ALC for great TX audio.
- PTT or VOX for voice, CW VOX with full first character.
- WWV Reception — 2.5, 5, 10, 15, 20 MHz.
- ★ General coverage receiver 0.1 to 30 MHz includes AM, CW, SSB, RTTY Filters for your BCL, SWL and other listening pleasure. Transmitting is not possible in the General Coverage mode.

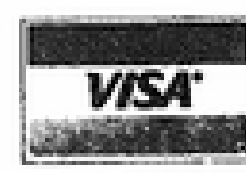
Power Requirements: 13.5 VDC  $\pm 15\%$  @ 20A  
(IC-PS-15 is available for normal duty cycle. PS-20 for 100% Duty or use your own supply).

**KRYDER ELECTRONICS CARRIES ALL MAJOR BRANDS OF HAM RADIO EQUIPMENT**

#### NEW STORE HOURS

TUESDAY .....10-5  
WEDNESDAY .....10-5  
THURSDAY .....10-5  
FRIDAY .....10-7  
SATURDAY .....10-4  
SUNDAY .....CLOSED  
MONDAY .....CLOSED

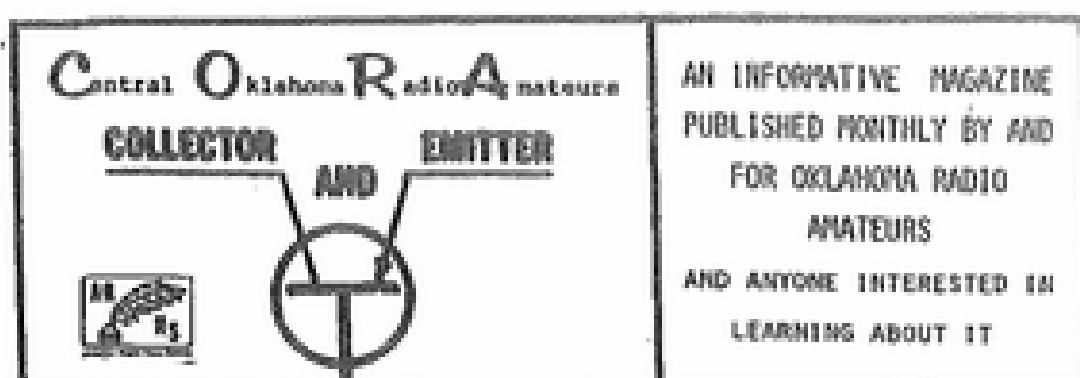
(405) 789-1951  
Chuck Guschke, N5 SW



MacArthur Square Shopping Center

5826 N.W. 50th Street

Oklahoma City, OK 73122



Central Oklahoma Radio Amateurs, Inc. (CORA) is a non-profit association of radio amateurs founded for the promotion of amateur radio communication and experimentation for the advancement of the radio art and of the public welfare and operates to enhance the cooperation of member clubs in sponsoring activities of mutual interest to the clubs and all radio amateurs.

CORA Collector & Emitter (USPS 116-150) is published monthly by CORA, Inc., 1070 Arthur Dr., Midwest City OK 73110. SECOND CLASS POSTAGE paid at Oklahoma City OK. Subscription: CORA members \$3.00 per year. Non-members, \$6.00 per year.

POSTMASTER: Send address changes to: CORA C&E, P.O. Box 15011, Del City OK 73110.

Contents may be reprinted without prior permission by "club" type, non-profit publications. Credit CORA Collector & Emitter.

Managing Editor: Joe Harding, WA5ZNF 737-1044  
Circulation Mgr. Bob Graham, WB5NSV 677-8685

#### PARTICIPATING CORA CLUBS

<b>1 AERONAUTICAL CENTER ARC</b> MEETS: 8:00 pm First Friday, Flight Standards Bldg., FAA Aero Center PR WA5CJG Bob Pace 376-3569 VP K5CQR Bill Oliver 329-6333 Se WA5NSV Bob Graham 677-8685 Tr WA5AAV Larry Bugg 789-4180 EDITOR: Bob Graham, WB5NSV 677-8685	<b>11 EDMOND AMATEUR RADIO SOCIETY</b> MEETS: 2:00 pm Third Sunday, Room 104 Science Bldg., Central State Univ. PR K5SRP Clarence Dollmeyer 341-2143 VP W5DQC Don Brown 717-6121 S/T K5SDC Roger Harmon 340-1230 FC W5SRK Ken Stepp 341-4879 EDITOR: Bob Janda, K5AFD 341-7046
<b>2 OKLAHOMA CENTRAL VHF CLUB</b> MEETS: 8:00 pm Third Friday, Red Cross Bldg., 10th & Hudson, Okla City PR W5IRB Ralph Bartow 521-8330 VP W5FWD Bill Roland 354-5018 Se K5JB Joe Buswell 732-0876 Tr W5KE Ellard Foster 789-6702 EDITOR: Joe Buswell, K5JB 732-0876	<b>12 SHAWNEE AMATEUR RADIO CLUB</b> MEETS: 8:00 pm Second & Fourth Tuesday Shawnee City Hall (FOC) PR K5LF2 Bob Almond 598-5148 VP K5FIT Walter Fultz 598-3984 S/T K5FRC Jim Sullivan 771-3847 EDITOR: Jay Tingler, W5NUP 771-1841
<b>3 MID-OKLAHOMA REPEATER, Inc.</b> MEETS: 8:00 pm First Tuesday, Oklahoma City EOC, 4800 N Eastern PR K5CWX Fred Taylor 528-1537 VP W5PRH Frank Arnold 737-1582 Se K5FED Susie Atkinson 842-0077 Tr W5KOT Sid Gerber 737-1050 EDITOR: Susie Atkinson, K5FED 842-0077	<b>13 KAY COUNTY AMATEUR RADIO CLUB</b> MEETS: 7:30 pm Third Thursday Security Bank Bldg., Ponca City. PR W5URQ Marsh Pronneke 341-2576 VP W5RQT Pat Burnham 765-7279 S/T Gelbert Folles EDITOR: Marsh Pronneke, W5URQ 341-2576
<b>4 OKLAHOMA CITY AUTOPATCH ASSOCIATION</b> MEETS: 7:30 pm Third Tuesday, Okla City Fire Dept. Training Center, N. Portland PR W5IM Henry Israel 722-3848 VP AD1S George Adkins 722-6195 Se K5HJS Judy MacDonald 672-4947 Tr K5EL Guy Liebmann 787-9545 EDITOR: Henry Israel, W5IM 722-3848	<b>15 SOUTH CANADIAN AMATEUR RADIO SOCIETY</b> MEETS: 9:30 am Second Saturday Red Cross Bldg., North Campus, Norman PR K5BCK Wade Anderson 794-5144 VP K5CSC Charles Warner 364-9561 Se W5RPP Sam Barrett 328-2601 Tr W5PLT W. O. Townsend 379-4474 EDITOR: Sam Barrett, K5RPP 371-2601
<b>5 OKLAHOMA UNIV AMATEUR RADIO CLUB</b> MEETS: 8:00 pm (Sep-May) Second Tuesday Carlson Engineering Center PR W5RQB Len Hardy 325-4545 VP K5COT Peter Richeson 329-3217 Se Tr EDITOR:	<b>16 EDMOND AMATEUR RADIO CLUB</b> MEETS: 7:45 pm First Monday, See club section for location. PR W5UUT Stan Van Hart 941-4308 VP W5FSD Wendall Cochran 341-4874 S/T W5RQE Bob Shaw EDITOR: Stan Van Hart, W5UUT
<b>6 ALTUS AREA AMATEUR RADIO ASSOCIATION</b> MEETS: 7:30 pm Second Thursday North Main Fire Station (CO) PR W5HJS Charles Smith 477-1898 VP S/T K5SFH Dennis Sonewitz 477-0194 EDITOR: Dennis Sonewitz, K5SFH 477-0194	<b>17 TRI-CITY AMATEUR RADIO CLUB</b> MEETS: 7:00 pm First Tuesday, Location varies, see club section. PR W5URN John Harringer 374-1040 VP W5VLT J. B. Ritts 374-0190 S/T K5TDA Nancy Hayden 379-6448 EDITOR: Yvonne Harringer, W5URN 374-1040
<b>7 BICENTENNIAL ARC (The 76'ers)</b> MEETS: 7:00 pm Second Tuesday, Air National Guard, Will Rogers Airport PR K5JTE John Calway 670-5472 VP W5CE? Jim Buswell 236-0368 Se W5LUN Jerry Sproul 354-2081 Tr W5RAQ Bill Rogers 632-4375 EDITOR: Bruce Goff, K5CSC 761-6276	<b>18 GREAT PLAINS AMATEUR RADIO CLUB</b> MEETS: 7:30 pm First Tuesday, Basement Woodward Court House PR W5CPW Bill Hyatt 256-3740 VP W5DFW Bill Reid 944-2134 Se W5CCV Gerald Rowan 944-5781 Tr W5DGS Donna Reid 944-2134 EDITOR: Carla Rice, W5CPW 944-2134
<b>9 WHEATSTRAW AMATEUR RADIO CLUB</b> MEETS: 2:30 pm First Sunday, Location varies, see club section for location PR AB5Z Ray Barnes 294-3334 VP W5OLD Dick Ruhl 715-4843 S/T W5PFX Ralph Wilder 423-5471 EDITOR: Ted Van Lanenham, W5JNT 364-1675	<b>19 SOUTHEAST OKLA AMATEUR RADIO ASSO.</b> MEETS: 7 7 7 PR W5TIV Ron Benson 376-5418 VP W5SLL George Weldon 374-5677 S/T W5FUE Orville Kaley 326-7650 EDITOR: 7 7 7
<b>10 CHOCTAW AMATEUR RADIO CLUB</b> MEETS: 7:00 pm Second Monday, Choctaw City Hall PR W5EVP Bob Allen 391-2187 VP AR5H Frank Carter 279-3975 Se W5BEP Syrena Standlee 279-3975 Tr K5ALO Richard Edwards 390-8797 EDITOR: Syrena Standlee, W5BEP 279-3975	<b>CENTRAL OKLAHOMA RADIO AMATEURS, Inc.</b> MEETS: 7:30 pm Fourth Tuesday, Red Cross Bldg (back door) 10 & Hudson Okla City. All clubs to send their three representatives.

#### CORA OFFICERS

President	George Adkins	AD1S	722-6195
V-P	Ted Van Laningham	W5JNT	262-1675
Secretary	Frank Yohe	N5CIJ	324-0772
Treasurer	George Maschino	K5 GGL	263-7614

#### POLICY

The New York Times says "All the News that is Fit To Print".  
The Collector & Emitter says "We print All the news That fits".

## Central Oklahoma Radio Amateurs

#### FROM THE CORA PRESIDENT

I have been able to contact an officer in almost all member organizations in regard to your participation in Ham Holiday '82. Please review the CORA Secretary's report to confirm that your club is represented. If I have not contacted the proper person within your club, please call me any day at (405) 947-0511 ext. 271. My home number is (405) 722-6195 for evening calls. We hope that all metropolitan area clubs will be represented at the 24 November meeting so plans can be finalized before Christmas. Clubs in Altus, Choctaw, Ponca City, etc. also form a vital part of our organization and I will keep you up-to-date by phone if your representatives cannot attend the board meeting this month.

Because of the holidays and pressing business commitments, I may have to postpone my visit to some member clubs until January. I will be there however and will be in touch with the president of the club to discuss details.

I would like to extend my sincere wishes for a healthy and happy Thanksgiving to all our members and their families.

#### NO C.O.R.A. MEETING IN DECEMBER...DE AD1S.

#### SUGGESTIONS FOR FUTURE HAM HOLIDAYS

The following is a collection of suggestions and ideas that I have picked up at HAM HOLIDAY and since.  
+ Regardless of what is "budgeted", the \$25.00 limit called out in the constitution to apply without at least telephone approval of two CORA officers OR one officer and two Directors.

+ A STANDARD OPERATING PROCEDURE outlining each committees duties and limitations with Action/Completion target dates be prepared, published in C&E and a copy given to each committee member.

+ Set the date for next HH at the September meeting.

+ Have signed contract for location, with all provisions and costs to be specified, by the December meeting.

+ Buy, or contract for, the Pre-Registration and Grand prizes by 1 January and have them on hand not later than 1 March so all publicity can say exactly what we are going to award.

+ Buffet, Banquet, Dance, entertainment, etc. to be held on Saturday night again.

+ The curtains around exhibitors spacws:  
a. NOT be paid for out of registration money. --use that for prizes.  
b. Add the cost of curtains to dealers cost. No exceptions.  
c. CORA buy pipe, material, etc and make our own. Rent a locker to store, along with badges and other equipment.

+ Continue one (1) free flea market to each PRE-REGISTRANT until supply is exhausted. If not pre-registered and not a dealer (by any definition) charge same amount as door registration IN ADDITION to door registration for each table.

+ Contact Ogden Foods about having adequate help at refreshment stand and expanding the menu since there is no place to eat around the Myriad. Maybe a buffet line with them furnishing the space.

(Continued on page 4)



# MINUTES - BICENTENNIAL ARC November, 1981 Meeting

Meeting opened at 7:00 by President John Calway, introductions followed with 30 members and guests present. Secretary's report was given by NSAUH and was approved as printed in the C & E. Treasurer's report was read by Sec. Bill Rogers, motion was made and seconded to accept. Vote carried.

The C.O.R.A. report was given by KB5BS. Some of the subjects covered were: 1) Advertisements for C & E; 2) Bill told us that we would be responsible for pre-registration only for HH82--we plan to go into immediate planning for our methods, so we can report back to C.O.R.A. next month; 3) Effective January 1, 1982, C.O.R.A. dues will be the same for all clubs whether in local area or not. Motion was made and seconded to accept the report--motion carried.

Christmas party chairman Bill Skipper reported that he had secured Cattlemen's Cafeteria on our regular meeting in December, which is Tuesday, December 8th, and it will be held at 7:00 P.M. Price is \$7.00 per person. A motion was made and carried to allocate \$100 for door prizes.

New Business: Discussion was held on the following items: 1) Committee to start planning on HH82 pre-registration. 2) Discussion on the tickets for HH82 was brought up as to whether there should be a different price ticket for spectators only and not eligible for prize drawing. A motion was made by KB5BS that we recommend that there be only a one-price ticket for everybody. Motion carried by a slim majority.

Some discussion was given to recommendations for the rules for prize winners at HH82. It is our recommendation that only the pre-registration prize be mailed if winner is not present, and that all other prizes can be won only if the winning ticket is held by owner or representative of owner. Also, if winner of pre-registration prize is not present, he will be required to pay shipping costs. Motions carried.

After a 20 minute break for refreshments, a very interesting film on the AWACS Airborne Radar System was presented by KH6JTE.

Meeting was adjourned at 9:20.

NSAUH, Secretary

76'ERS CHRISTMAS DINNER  
CATTLEMEN CAFEYERIA  
1309 S. AGNEW AVE.

I want to invite everyone to the 76'ers Christmas dinner on tuesday, December 8, at seven p.m. Hope to see all of you there. I hear there is going to be several supprises, as well as door prizes and maybe even a Santa Claus for the kiddies (present company excepted). This one sounds like a dandy.

There have been a lot of inquiries about the phone patch on 76. It is not broken, nor is it in need of repair. It was taken down so a legal logging system of third party message traffic could be installed. This is now ready to be put up. The reason it is not up is because of problems with intentional interference already on the repeater. It seems illogical to give our friend another toy to play with. The whole repeater committee is aware of the problem and inconvenience. I personally would like to apologize for the problem and also would like to thank the club for its patience.

Bruce Goff KC5CR

DECEMBER

## MORE HAM HOLIDAY SUGGESTIONS

- + DO NOT return to two floor layout. Rent 3 exhibit halls on first floor in addition to the flea market space.
  - a. Registration, eating, eyeballing.
  - b. Ham programs. (Never two at same time).
  - c. Ladies hospitality and programs in same room

+ Go back to round badges. Since most everyone has a name/call badge, leave name and call off and otherwise identify by year. Assign a serial number to badge and check against register when a number is called. Use the badges for admittance, prizes -- year after year.

+One printed rule to read "Equipment capable of transmitting on the Amateur Frequencies will not be awarded to an individual who does not hold an amateur license." An exception to be made for a family member of a licensed amateur. In the event an unlicensed persons name is drawn for such a prize they will have their registration fee returned, if requested.

+ Rent only the area used fro registration on Friday night. Any "programs" can be presented on Saturday and/or Sunday. Have the registration area for eyeballing, coffee (10¢ kitty) on Friday night or just do away with Friday night except for dealers and flea market tables to be set up (no cost for seting up.)

+ Contact the Sheraton about getting the tunnel opened up Saturday and Sunday.

+ Obtain mailing list of all clubs in and around Oklahoma with the number of their member for mailing a special HH edition of C&E. Follow up with a "personal" letter to club presidents.

+ Publicity sent to all club newsletters (combined with the presidents letter?) in time for at least two editions. Include pre-registration format and ask that they publish.

= Come up with complete set of rules. Reduce to writing with the statement "No Exceptions":

- a. Publish in C&E not later than April of each year and in each issue through July.
- b. Prepare at least one large poster (photo enlargement?) for display at registration desk.
- c. Print all the rules on ALL programs, back of registration forms, flyers, etc. so that everyone will be on the same frequency.

+ Publish a detailed map showing how to get to the Myriad, how to park and how to enter the flea market and exhibit area.

+ Firm up parking - Cost or No Cost.

+ All expenditures of money to be detailed as to exactly what and how much was spent.

Joe, WA5ZNF

When we were busy working we discovered that business was 85% confusion and 15% commission. Our thoughts were to retire and just ham it up. (Now it is 100% confusion) W0CCT

In hamming we learned one thing for sure: The first screw to get loose in a person's head is the one that controls his toungue.

We thought the world was getting smaller - then we discovered that the antenna had fallen down. W0CCT

REGULATION CHANGE Section 97.84 of the Amateur Regulations has been amended to read as follows:

(a) Each Anateur radio station shall give its call sign at the end of each communication, and every ten minutes or less during a communication.

(h) At the end of an exchange of third party communications with a station located in a foreign country, each amateur radio station shall also give the call sign of the station with which third party communications was exchanged.

COLLECTOR AND EMITTER



(EDITOR'S NOTE: The famed Q.R. Zedd, Oklahoma's greatest DXer, is scheduled to give the speech at the annual SCARS Christmas dinner next week. For those unable to attend, we present here the prepared text of Zedd's sensational remarks.)

BY Q.R. ZEDD

Thank you, thank you, thank you. This ovation is wonderful but only I guess what I deserve. Now if you will just be quiet a few minutes I will share with you some of my secrets of chasing DX. Please remember that all this is copyrighted 1981 by Q.R. Zedd Enterprises, Inc., Box 73, Norman, Oklahoma.

Well, a funny thing happened to me on the way here tonight, ha ha. I worked seven exotic countries on my tuna tin special, running fifty milliwatts to a pipe cleaner in the glovebox. But that was because I called CQ DX and those rare ones naturally recognized my call right away and were clamoring to have the honor of getting a card from me, which is something you peons can't count on, being famous like I am, I mean. So you need more technique and that is what I am here to tell you about, a few simple rules that ought to get you on the Honor Roll by Christmas if you try.

**RULE #1 -- NEVER RUN MORE POWER THAN YOU NEED.** I believe that 2 KW PEP should be sufficient for casual ragchews if you have a decent antenna farm, and if you follow this rule, you will only run big power when trying to snag a new one in a pileup.

**RULE #2 -- NEVER TUNE UP ON THE AIR.** If you tune up on the air, in a place where you can't hear nobody talking, you are likely to QRM somebody you can't hear. Therefore, don't tune up on the air; tune up zero-beat on top of the DX station; sometimes you will make some of the competition so mad they will quit. And you can often get some good tips of where the propagation is going by listening to who complains and where they are.

**RULE #3 -- ANY TIME YOU HEAR A PILEUP, JUMP IN.** If you wait to learn who the DX station is, he may go QRT on you. The best thing to do is jump in and start yelling with all your power on, and then when you get through, you ask him for his call. This will make an impression on him and increase your chances of getting a card.

**RULE #4 -- WITH DXPEDITIONS, ALWAYS GET AT LEAST SIX INSURANCE CONTACTS.** This is only good common sense, to make sure you're in the log. Also, look at it this way: every contact you make is one contact somebody else doesn't make; that makes the DX rarer and you a bigger stud for having his card, right?

**RULE #5 -- IN A PILEUP, NEVER CALL LESS THAN 26 TIMES.** Scientific studies have shown that most DXers have to stop and breathe some time between their first and 25th call. It stands to reason that if you give your call 26 times, you will probably shout out most of the others. Also, if the DX station can hear you at all, he may work you just to get you off the frequency.

**RULE #6 -- IF YOU HEAR ANYBODY CALLING OUT OF THE BAND, BE SURE AND GET DOWN THERE AND TELL THEM THEY ARE OUT OF THE BAND.** It has a whole lot more impact if you call the offending station by his call and tell him he is a lid and an idiot and stuff like that there. Never give your call. Make them guess!

**RULE #7 -- NEVER IGNORE MALICIOUS INTERFERENCE.** If them guys running keyers and telephone busy signals and all don't get screamed and cursed at by true-blue →

DXers, how are they ever going to learn that what they are doing is BAD?

**RULE #8 -- IF YOU HAVE WORKED A REAL RARE ONE IN THE MORNING, AND HEAR HIM AGAIN THAT AFTERNOON WITH A HUGE PILEUP, BE SURE TO BUST THROUGH AGAIN AND GIVE HIM A COMPARATIVE SIGNAL REPORT.** Everybody really appreciates this.

**RULE #9 -- NEVER SEND YOUR CW LESS THAN 40 WPM.** It also helps if you splatter in a few extra dits, which is fairly easy at this speed. It provides a true test of the DX op at the other end; if he is any good, he will figure out what you are saying and appreciate the confidence you are showing in his CW ability. In case he is a lid, send your call a whole lot of times to make sure you are in the log.

**RULE #10 -- NEVER ADMIT A CONTACT WAS HARD.** Your image will suffer if you do. Let me give you an example. The other night I heard a UL7 and I hadn't worked one for almost a day, so I got in there and called, but I was horse mobile at the time with a handle talkie, so I was at somewhat of a disadvantage. I called that sucker for five hours before I got through. But at the Norman Tuesday coffee-drinking the next day, do you think I was going to tell anybody that contact was hard? Bad for my image. I just said something like, "Oh, yeah, last night I worked a UL7, ho hum," and changed the subject. I could tell some of the fellers really thought I was a stud because of that.

**RULE #11 -- ALWAYS MAKE SURE TO MENTION YOUR DX TOTAL.** Like I think most of you noticed this flashing diode callsign badge I've got glued to my forehead which also gives my DX total, flashing red for SSB and green for CW, alternately. For something like this here party where I can't talk to everyone personally, a visual like that is the best. Usually you can be more subtle like you walk up to a man and say, "Howdy, H.O., how's everything going with you? I heard your antenna fell down. By the way, my DX total today stands at four hundred and fifty six." Or: "Hello, Archibald, I was sure sorry to hear your Mom died last night. Incidentally, if I should die before I wake, my DX total would stand at four hundred and fifty six."

**RULE #12 -- IF YOU WORK A RARE ONE, ALWAYS GET RIGHT ON THE LOCAL REPEATER AND LET EVERYBODY ELSE KNOW ABOUT IT AS SOON AS THE DX HAS GONE QRT.** This will assure your reputation locally as not only a DX stud, but a really nice guy always trying to help others. (A variation of this trick is to tell folks about the rare DX the next day, and pretend you didn't know they even needed a BY.)

Well, folks, there are a lot of other things I could talk about, like how to tail-end, how to give signal reports and pretend you heard your call called by the DX station when you really didn't, how to get on lists by making long-distance telephone calls to the MC, and other good stuff like that. But I am sure you will learn all that for your own self.

Let me just leave you with these parting ideas:

ONE -- ALL DXERS ARE NICE GUYS, AND HUMBLE.

TWO -- IT'S NOT WHO YOU WORKED, OR HOW MANY, BUT HOW MANY KNOW WHO YOU WORKED, AND HOW MANY.

THREE -- I FORGOT TO TELL YOU THERE WAS A VIETNAM STATION ON EARLIER TONIGHT, BUT OH, GOSH, BY MY WATCH I SEE HE JUST WENT QRT.

Merry Christmas! I hope it has brightened your holidays to get to rub elbows with me!

--KUSB

**kay**

COUNTY AMATEUR RADIO CLUB  
COUNTY AMATEUR RADIO CLUB  
COUNTY AMATEUR RADIO CLUB

Some how last month I didn't get the artical typed up and set in. I wrote it up during last months club meeting, untill I was interrupted when one member showed up for the meeting. W6JXO & I had a quick eye ball & he left, I waited 20 more min., closed up the room & headed for the farm. Was intercepted by 3 more late comers so we held our meeting at the local coffee shop.

This months meeting hope a lot more show up, for have a good program lined up on Lighting Protection by Fred, W5VAY & also the showing of the clubs newly accured surplus van donated by Conoco Oil Inc. This van will be transformed into Kay Countys A.R.C. emergency communications truck.

The local repeater got a wave from Jay's (W5TXF) magic wand a couple weeks ago. The receiver's sensitivity got back to normal & the I.D.er is back to its dit-da-dit-dit again, Thanks Jay.

The December meeting will be a dinner meeting held the 17th at 6:30 instead of 7:30 & will be at the Rusty Nail on North 14th street in Ponca City so bring your XYL or YL (or both if you don't think you will get caught) & enjoy dinner & a short meeting. Who knows santa may even bring us good news! It looks like this is it for now I need to finish breakfast, get some warm cloths on & ride to Vian here in a bit, just hope the rain will wait till tonight. I'd hate to melt! Hi-Hi wishfull thinking

73 Marsh  
WA5UBO

# GREAT PLAINS A.R.C.

Since this is the last issue of the year and its time once again to elect the 1982 club officers I want to take a moment to thank everyone for their help. I sure appreciated those that called and said, "Hey Carla, did you know," also, the help I received when I would call someone and ask, "Do you have anything for C.O.R.A.?" A special thanks goes to N5CMW Bill and N5CCV Gerald. When I called these guys and hollered "HELP!" they wrote entire articles!

We have two new additions to the "Grandparent Club". KASKAG Gary and his XYL Sharon have a new grandson. The happy parents are Barry and wife Terri. Also K6C10 Larry and his XYL Eleanor have a brand new grandson. The happy parents are Al and wife Angie. These are first time grandparents so be nice to them! Congratulauons go to all.

Boy scouts in Woodward contacted N5CMW Bill to see if he would help them with communications for the "Scouts On The Air Jamboree" day. N5CMW with the help of N5CCV Gerald set up in the EOC in Woodward with 40 meters. The object was to give the scouts an opportunity to get on the air. The emphasis was on distance. The first contact was a former scout in Dallas, Tx. He visited with the boys. Then a contact with fifty boy scouts camped in the jungle near the Panama Canal was made. Excitement mounted in the six Woodward scouts as they visited with their fellow scouts in Panama. One scout in Panama said they had killed boa constrictors and were hot and wet and then laughed. (We were cold and wet at the time.) It sounds as if the amateur radio fever might have hit again. One scout was figuring out how many yards he will have to mow in order to buy his first rig!

We had 18 members and guests present at the November club meeting. The meeting was started with each introducing themselves.

Our club Christmas party is December 12 at K-Bobs in Woodward. Arrival time is 7:00 P.M. and they will start taking orders at 7:30 from the menu. A 15% gratuity will be added to each ticket for the tip. We want to extend an invitation to everyone to come and join us for an evening of fun!

A semi truck loaded with acid was filling a tank and caused an over flow. WB5EGZ Doug and N5CMW Bill were called in their official capacities to the accident. Amateur radio use

was volunteered and was quickly accepted. WB5EGZ said everyone needs to be aware of this type of accident and what to do about it. If you are called on to help, contain the liquid but don't get in it and call the proper authorities. Keep everyone away. The liquid is dangerous as well as the fumes from it. Above all be careful!

An exercise is being planned to make everyone concerned aware of this type of accident and what to do. A film "Blevy" will be shown. It is about hazardous materials.

The upgrading class has settled in with 9 attending. C.W. is coming along fine with N5CCV N5CMW is conducting a hands on program where things are built and discussed. WB5EGZ and WA5PLW Windle acquired a "Student Experience System" training kit for the club. Both teachers are doing a great job.

Attention was called to the October and November C.O.R.A. articles concerning C.O.R.A. directors. Due to the nature of the December meeting everyone is to reread these two articles and prepare for discussion at the January meeting.

WB5EGZ had high complements for WB5PLW's improvements at the 72/12 repeater site. The warning system has already been used successfully several times. WB5PLW has also been working on the 73 machine. The club gives Windle our whole hearted thanks.

A suggestion was made to put our club in the telephone yellow pages. The possibility will be further researched.

73 WB5CGW

FOR SALE: TRS 80 computer with 16 K memory, manuals and over \$100.00 of programs. Price \$350. Randy, WB5CNM, (H) 789-7810 (O) 848-8551 ALSO: Heathkit SB634 station console, mint condition, \$180.

## HOLISTIC CHIROPRACTIC CLINIC



- NUTRITION/WEIGHT LOSS • DIGESTIVE DISTURBANCES
- BLOOD-SUGAR DISORDERS • HEADACHES/BACKACHE
- WORK/SCHOOL/GENERAL PHYSICALS
- WORKMAN'S COMP. • AUTO OR JOB INJURIES
- FULL LAB AND X-RAY SERVICES
- PHYSIOTHERAPY • IRIDODOLOGY
- FULL SPINE ADJUSTING • GENERAL FAMILY PRACTICE

DR. DON BOWERS, M.P.H., D.C.

DOC--N7ATO

4028 N.W. 10TH  
Oklahoma City

**942-7738**

**Now! AZDEN®**

**PCS 3000**

**SUPERIOR  
COMMERCIAL GRADE  
2-METER FM TRANSCEIVER**

**NEW LOW PRICE**

NOW AVAILABLE NEW PCS 300 2-M HANDHELD FM XCVR

FULL 8 MHZ COVERAGE + RUGGED + COMMERCIAL GRADE  
9 CHANNEL MEMORY WITH SCAN + BUILT IN 16 KEY  
AUTOPATCH + COVERS ALL MARS FREQUENCIES WITHOUT  
MODIFICATION + COMES STANDARD WITH AUXILIARY  
OFFSETS + FLEXIBLE RUBBER ANTENNA + EARPHONE  
DESK STAND = HANGING UNIT AND BELT CLIP.  
Will have in stock about November 25.

HARRY WATTS, KC5OU

**WATTS**

ELECTRONIC SALES

205 S MAIN VICI OK 73859 (405) 995-4761



## NOTE FROM WR5AVM

WR5AVM remains alive, well, and still completely "open" for use by one-and-all licensed amateur radio operators. The station identifier remains valid for WR5AVM until early 1983. The FCC declined to renew the license in accordance with current rules. When we change the identifier, it will become W5PAA/R.

There have been no major operating problems on the repeater and patch. A few clear violations have occurred in connection with the patch which need to be watch a little. Most problems seem to be either procedural or with conversation topic.

When accessing the patch, identification with the repeater should be made before punching up the dial tone. Likewise, when knocking down the patch final identification should be made with the repeater making sure both the repeater call and yours are used.

In the case of conversation content...care should be exercised when calling a number to make sure you don't even give the appearance of conducting improper business via the repeater. Control operators have in the past had to terminate some conversations because of potential violations of the non-commercial rules.

A sound rule to follow when using the patch is:  
WHEN IN DOUBT - DON'T...

Operators accessing the patch should be careful when calling someone else not to let the conversation get into areas of doubtful content.

We have not had anywhere near a serious problem in this regard, but we are getting some new users on the repeater, and it's easy to let one get by once in a while. It's particularly hard when a called party introduces a business item into the conversation.

Enjoy!

Rob.AA00

## MINUTES OF THE NOVEMBER MEETING OF THE ACARC

The meeting was called to order at 8:00 P.M. by President Bob Pace, WA5CJG. There were 41 members and guests present. After a round a self introductions, those who had upgraded were recognized. The CORA and Repeater reports were given.

The December 4, 1981, meeting will be at 7:30 P.M. at the Heritage House on N.W. 63rd and N.W. Expressway. Cost will be \$7.15 for everything.

The January meeting will be January 8th, this is the annual election of officers. The club voted to have the CORA officers take office on October 1, each year. The club also voted for one class of entry as well as one entrance ticket to Ham Holiday 1982. The club further voted to have our CORA representatives see about a possible exception to allow the spouse into the dance without her being registered. A vote was taken concerning the prizes at Ham Holiday, and it was decided to recommend that the pre-registration prize be handled as always, and that as far as the Grand Prize was concerned, the person and/or ticket must be present to win. A motion was made by Charlie, WASJeu, that we have our CORA representatives present these decisions to CORA. The vote was approved 24 to 2. A vote was taken and approved to try (if the prize is right) to get a small room on Friday night of Ham Holiday.

The program was given by Ben Goodwin of OG&E. This is probably the best program that we have had all year.

The meeting was adjourned for refreshments at 9:37 P.M.

By Bill Oliver, KSKDR  
For Bob Graham, SEC, WBSNSV

COLLECTOR AND EMITTER

## RANDOM WORDS FROM THE PRESIDENT:

WELL HERE IT IS ALMOST TURKEY DAY AGAIN, THEN COMES CHRISTMAS, AND SPEAKING OF CHRISTMAS THE AERONAUTICAL CENTER AMATEUR RADIO CLUB WILL HAVE IT'S ANNUAL CHRISTMAS DINNER ON THE 4 TH OF DECEMBER AT 7:30 PM. WE WILL EAT AT THE "HERITAGE HOUSE SMORGASBOARD", LOCATED AT 3900 NORTHWEST 63 ND. RIGHT WHERE 63 ND AND NORTHWEST FREEWAY MAKES A "V". THE COST OF THE MEAL WILL BE

\$7.15 (ALL YOU CAN EAT). THE ONLY THING WE ASK IS IF YOU ARE GOING TO ATTEND PLEASE CALL ONE OF THE OFFICERS OF ACARC AND LET THEM KNOW AS WE MUST GUARANTEE 90 3 DAYS BEFORE THE DINNER. THIS IS GOING TO BE A FUN TIME AND A GOOD MEAL SO COME ON OUT AND JOIN US.

REMEMBER THAT THE JANUARY MEETING WILL BE THE 8 TH OF THE MONTH, THIS WILL BE WHEN WE ELECT NEW OFFICERS SO BE SURE YOU ARE THERE.

THANKS TO ED, KSLIL LAST MONTHS PROGRAM WAS ONE OF THE BEST WE HAVE HAD IN A LONG TIME. THANKS A LOT ED...KEEP UP THE GOOD WORK.

73, BOB, WA5CJG

## OK DX ASSOCIATION

No meeting in December! We will cancel our December brawl to permit more time to spend with family, holiday plans, etc. The next meeting - mark your calendar - will be January 11th at the usual place. More details in next month C & E!

3Y0A - 3Y0B - It is rumored that DK9KD and the Cologne DX Club will make an effort to operate from Bouvet Island in January 1982. Apparently licenses have been obtained and five or six stations will operate in an all-out effort. Financial assistance is solicited. If you help, get in touch with Dieter Loffler, 5000 Koln 60, Postfach 620260, West Germany. This trip will cost over \$45,000. and may be the last 3Y effort for many years.

1A0KM - SMOM is a new DXCC "country" now and the 1A0 is expected up for an all-out effort beginning 24 November. Usual bands and frequencies.

701AB - Rumored for 25 November. Usual DX frequencies.

FB8WG - Crozet Island has been showing up on the PHO family hour 14.225 Mhz 1200-1500 UTC. Listen for W7PHO (Seattle) or W7RQ (Phoenix) to take lists from our area. You have to stay alert on this one....and be patient, because the list-takers change their mind on lists as the propagation moves across the long path. AD1S got this by "luck" on Friday the 13th at 1300 UTC when W7RQ took a list of fives and there were no takers!

Stuart, H44SH, visited Oklahoma November 12-15 as guest of AD1S and N5DLM. Stuart, Aru and the two boys were a real pleasure. We visited a county & western night club where several local hams got to meet Stu and watch him chow down on a rack of bar-b-que ribs! Other stops were at the Hall of Fame, Omniplex, Kryders, and Quail Springs Mall (all places unique to Oklahoma City and USA - hi.) Stu is now enroute to Honiara, Guadalcanal, where he is an engineer for the Solomon Islands Plantation, Ltd., which grows, harvests and processes palms for palm oil products. We wish them a safe trip and an early return to OKC in the future. Stuart will return to his role as H4's most active DX'er around 29 November. Listen for him and if you hear him - extend a hearty OKC "howdy"!

May God bless you and your family with a healthy happy Thanksgiving. De AD1S.

## APPLICATION FOR LICENSE TO COMPLAIN

Since there are many things concerning Central Oklahoma Radio Amateurs, Inc. (CORA) that do not meet with my wholehearted approval, I wish to apply for a license to complain about anything and everything that does not suite me. (Applicant should supply a "YES" or "NO" answer to each of the following.)

YES NO

- ( ) ( ) I volunteered to be my club's representative to CORA.
- ( ) ( ) I attend each and every meeting of my club. Listen to the CORA report and participate in discussing the matters which my representative will vote on at the next CORA meeting.
- ( ) ( ) I urge my club representatives to attend the CORA meetings.
- ( ) ( ) I find time to occasionally attend a CORA meeting to see just what is going on.
- ( ) ( ) I am also always on the lookout for items of interest that might be presented at CORA meetings.
- ( ) ( ) I always attend HAM HOLIDAY.
- ( ) ( ) I always offer to help my club in carrying out their HAM HOLIDAY job.
- ( ) ( ) I always help on Field Day, not only in setting up, but also in keeping on the air continuously throughout the exercise. Am always present and willing to help out on ALL PROJECTS.
- ( ) ( ) I cheerfully go along with the wishes of the majority, despite the fact they do not always coincide with my own personal preferences.
- ( ) ( ) I always try to aid the officers. If I have any complaints, I always take them to the officer or representative concerned, rather than grumbling to anyone who will listen, like on the local repeaters.
- ( ) ( ) I try, at least occasionally, to make some contribution to the CORA Collector & Emitter, if only to pass on a joke or personal tidbit.
- ( ) ( ) I love all (hams) (Amateurs), even those who disagree with me.



The easiest way to figure the cost of living is to take your income and add 10%.

Practive does not make perfect: perfect practice makes perfect. Vince Lombardi

Anything scarce is valuable: Like, praise.

Alot of people love their jobs. It's the work that they hate.

I must do something will always solve more than "Something must be done."

A foot is 12 inches or a device for finding furniture in the dark.

## HOW TO FILE COMMENTS IN AN FCC RULEMAKING YOUR EXPERIENCE

The FCC is interested in any experiences, judgements or insights you might have that would shed light on issues and questions raised in an inquiry.

### FACTS

Your comments sholud explain who you are and what your interest is. State the facts briefly but fully. Clearly explain your experience and any additional evidence which supports your position.

### BE SPECIFIC

Your comments should be explicit. If the details of the proposed rules or if only one of several provisions of the rule are objectionable to you, make this clear. If the rule would be acceptable with certain safeguards, explain them and why they are needed.

### OTHER OPINIONS

Your comments should include facts which might support a different position, discuss them and explain why the public interest requires that the matter be resolved as you propose.

### FILING DATE

Arrange your comments to reach the Commission on or before the comment or reply comment date included in the Notice of Inquiry or Notice of Proposed Rulemaking.

### FILING COMMENTS

Submit your written comments to: Secretary, Federal Communications Commission, 1919 M St, N.W., Washington DC 20554. If you want your comments to be received as a formal filing, you must submit an original and five (5) copies; however, you may simply submit one copy to be filed in the Docket as an informal comment.

### DOCKET NUMBER

Be sure to note the Docket Number or Rulemaking Number on your comments

### PUBLIC DOCUMENTS

You can obtain copies of a Notice of Inquiry or a Notice of Proposed Rulemaking by contacting the Public Information Officer, FCC, 1919 M St, N.W., Washington DC 20554. Phone is (202) 632-7260.

All Notices of Inquiry and Proposed Rulemaking are printed in the Federal Register soon after they are released by the Commission. The Federal Register is available in most public libraries across the country.

+ + + + +

## SILENT KEY

The Club was saddened to learn of the death this last week of on of the club's most valuable members, *Someone Else*.

*Someone's* passing creates a vacancy that will be difficult to fill. *Else* has been with the club since its beginning. *Someone* did far more than a normal person's share of the work.

Whenever there was a job to do, a class to teach, a committee to be chaired, or a meeting to attend, one name was on everyone's lips. - 'Let someone else do it.'

It was common knowledge that *Someone Else* was among the largest contributors of his time to the club. Whenever there was a need for volu valunteers, everyone just assumed *Someone Else* would volunteer.

*Someone Else* was a wonderful person - sometimes appearing superhuman. But a person can only do so much. Were the truth known, everybody expected too much of *Someone Else*.

Now *Someone Else* is gone! We wonder what we are going to do. *Someone Else* left a wonderful example to follow, but who is going to do the things *Someone Else* did? When you are asked to help, remember -- we can't depend on *Someone Else*. From TRO Signal



THE ANNUAL CHRISTMAS "PARTY" will be held on Tuesday, December 15th. It be a B.Y.O.F. (Bring Your Own Food & Beverages), beginning 6:30 to 9:00. Plan to arrive when you can, stay as long as you can and the entire family is invited! The Christmas festivities will be held at our usual meeting place - the Fire Department Training Center, N. Portland near 10th Street. This will be a relaxed supper party offering an opportunity to meet all our members and their families. Please bring a white elephant gift to the supper-these gifts will be traded - or may be auctioned off to enrich the club coffers. See how original you can be! (Regretfully, Mac K2GKK has sold his beloved Ham Holiday turntable...) Please try to attend!

The November meeting was called to order at 7:35, November 17th, by club president, Henry Israel, N5IH. The October minutes were read by secretary, Judy McDonald, KASBJS and the treasurer's report submitted by Guy Liebmann, K5GL.

We welcomed three new members into the club. Membership looks excellent at this time and we extend an open invitation to others in the ham community to join us. Contact K5GL.

Mike, N5ANG, was appointed to head the 450 Mhz repeater technical committee.

All repeaters were reported to be operating well by the respective technical committee chairmen. We have excellent machines on 146.22/82, 147.81/21, 52.680/52.525, and 449.3/444.3, offering a tremendous service to our membership and the general amateur community. Please remember that our autopatches are open only to members. Non-members will be asked to refrain from attempting to utilize the patch - except in bonafide emergency situations where a member or a control operator will be glad to assist.

Our repeater trustee, Jay, K5JL, joined us at the November meeting to get a straw vote on proposed links with other repeaters in outlying areas of Oklahoma. It was voted unanimously to experiment with links which will give 22/82 much broader coverage during times of ominous weather conditions. Our primary purpose as a club is public service, ie. the Oklahoma Severe Weather Warning Net, and would be a tremendous asset to establish reliable communications with Lawton, Woodward, Duncan, etc. if a severe weather system was approaching the metropolitan area from these directions! More news on this later!

A reminder that the annual meeting at Channel 9 studios will be on our regular meeting date in February.

CORA reports were made by CORA president George Adkins, AD1S and club representative, Reggie, WN5NWX. The club will handle prizes for Ham Holiday '82. We voted to empower our three CORA reps to vote for requiring prize winners at Ham Holiday '82 to be present (or to have endorsed their ticket) to win any prize except the Grand Prize and preregistration prize.

The club agreed that the new C & E policy requiring sale of a \$30. ad by each member organization was in best interest of the association.

In closing, I would like to extend a personal invitation to members, prospective members and your whole family to enjoy our Christmas supper. I plan to bring all five of Vicki and my children - and I hope you will bring your crew - or your friends - or whoever. Fix up chow for your own - or stop at the Colonel and come on over for a nice evening of fun and fellowship. De AD1S.

Please note the promised "I HEARD" column returns this month! Can you stand it? 73. *George - AD1S*

I HEARD: GKK complaining about Chuck Holes...  
....NWX is getting good throwing pipewrenches  
.....IH had a visit from a favorite uncle...  
...DDB gaulking at a streaker.....DUQ complaining about the bad quality of PL259's....  
..DBH's xyl is now driving a beat up old red truck.....GKK complaining about a lady drive r.....SW could care less about the DX meetings but does enjoy the refreshments.....S would make a good tail twister at a Lion Club meeting.....GL won't compete with DBH on 20 meters.....GKK complaining about Chuck Holes.  
M was sent off to the prison at McAlister....  
JYT doesn't care for religious programs at night.....SW is taking up a new hobby-girly shows off the satellites.....GKK is affectionately known as LOLA.....TH wanting to know AC's 20.....DBH sometimes has trouble getting his head screwed on right....FKE had to buy a complete new wardrobe of socks.....GL trying to sell the Canal Zone to GKK.....GKK complaining about Chuck Holes....WZ accusing M of being on the lazy side.....CTT has become an avid dx'er.....OLO became a flaming inferno.....CWW did a strip tease act.... NYX believes he is in the wrong business since all GKK can do is complain about the roads and the repeater.....DBH inviting all his friends to a beer bust.....GKK complaining about another crazy driver....CZN's Donna sings off key in the shower.....UGM nevers gets to hit any new Chuck Holes, has the same ones every day.....HKM had a boil on his lower cheek.....AQY considers himself to be somebody.....CJA doesn't have anything between his ears but a cold.....DBH is looking for a blond dance teacher.....BJS uses all three hands to merge....and a whole lot more. K5NK

## The South Canadian Amateur Radio Society

### SCARS BUSINESS.....

The SCARS business this month consists solely of the announcement that there was no business, due to the fact that the scheduled meeting of Nov. 14 did not take place. The election of officers will have to be re-scheduled.

### LAST REMINDER.....

By the time that this issue of C & E reaches your mailbox, it will be just short (only by the grace of the US Postal Service) of the deadline for reservations for the annual SCARS Christmas Dinner and Get Together which will again be held in the Presidents Dining Room of the Commons Restaurant at the OCCE complex on the OU campus. Chicken Kiev and everything that goes with it sounds good to me and I am going to be there. I may even bring my XYL. There will be a door prize for the ladies. If you dont want to be left out of the Gala Festivities and All Around Socializin' then ~~(you'd better fix up)~~ (Aw Shucks, I just emptied my 2nd 1-quart bottle of Liquid Paper just since I took this job) please send \$9.00 per person to:

Billy J Oliver  
414 Westchester Circle  
Norman, Ok 73069

Make checks payable to SCARS.

Let's have a good crowd or next year we will have to hold this thing in my shack and I won't even have to clean out any of the junk to make room.

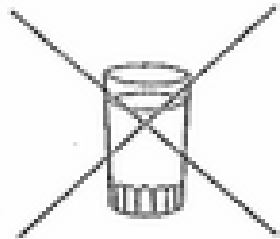
wa5rpp

Keep the injured person lying down.



Do not give liquids

to an unconscious person.

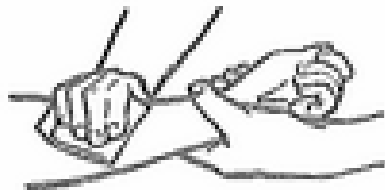


Restart breathing with mouth-to-mouth

artificial respiration.



Control bleeding by pressing on the wound.



Dilute swallowed poisons



and call the Poison

Control Center. Keep broken bones from moving.



Cover burns

with thick layers of cloth.



Keep heart-attack cases quiet and give

cardiopulmonary resuscitation (CPR) if it is necessary



and if you

have been trained. Keep a fainting victim lying flat.



For eye injuries, pad and bandage both eyes.



Always call a doctor.

YES, I would like to make reading all small print easier and more enjoyable.

☐ Please send me ONE Page Size Magnifier for only \$1.99 plus 60c postage and handling.

☐ I'd like to SAVE and share this discovery with someone I care about. Please send TWO for only \$4.00, which includes postage and handling.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_ Zip \_\_\_\_\_  
PM-242

Mail No-Risk Coupon Today  
Money-Back Guarantee

STERLING HOUSE, Sterling Building  
Dept. PM-242 Garnerville, NY 10923

Perfect for reading small print on:

- Maps
- Directories
- Annual Reports
- Newspapers
- Stock Market Reports

**SAVE**  
Order more than one PAGE SIZE  
MAGNIFIER now. Makes the  
most considerate gift.

## REDUCE EYE STRAIN WITH THIS NEW PAGE SIZE MAGNIFIER

ONLY \$1<sup>99</sup>

- Big 7" x 10"
- Magnifies entire page at one glance!
- Unbreakable, lightweight polyvinyl fresnel lens.



Makes reading all  
small print easier  
and more enjoyable.  
...**GUARANTEED!**



# AMATEUR RADIO EMERGENCY SERVICE

NET-34/94, OKC, 9pm. Mon.

In-Person-Meeting - 3rd Mondays, 7:30pm.

MA BELL & THE HAMS.....a continuing saga

Thursday, November 12<sup>th</sup> was a repeat of the telephone outage problem of October 15<sup>th</sup> (See C & E, Oct.) that left the City of Norman without telephone service to the outside world.

Amateurs stepped in to handle possible emergency communication during the outage. The 34/94 repeater in Oklahoma City and 28/88 machine in Norman were used for inbound traffic, which included doctor/patient and medical messages, plus personal traffic.

Following is a list of amateur radio operators who offered their time and talents during the phone outage:

on 34/94 OKC	on 28/88 Norman
K5SJV, Don (E.C.)	KA5COI, Peter (NCS)
N5CTT, Sue	K5KDR, Bill
KA5COI, Norman	AF5X, Jess
KA5CXW, Fred	N5DWN, Linda
WD5DYI, Mark	KC5CU
N5DNE, Gerald	W5NBH, "Tiny"
WB5SVN, Jack	KA5DCM, Jerry
K5VRL, Jim	
KD5AH, Dave	
WB5TMW, Dick	
WB5PWZ, Bob	
WB5IMT, Dave	
KA5ERZ, Connie	
KA5ESA, Bill	
KC5HD, John	
W5NBH, "Tiny"	
N5BEQ, Jim	

## HERE'S ANOTHER CHANCE TO HELP

Amateurs in the Oklahoma City area have been asked to participate in Civil Defense warning siren tests. Bill Atkins, N5AH, of the Oklahoma City Emergency Operations Center made the request.

All sirens are within the Oklahoma City city limits and are tested on the first and third Saturdays of each month at noon. Sirens should be checked for sound and rotation of the siren.

Some amateurs have already volunteered their service for specific siren locations. Their calls and the sirens they will monitor are listed below.

WASTAR	- Canadian River, 2200 S. Portland
K5SJV	- 4529 N. W. 36
N5BWW	- Sequoyah School, 2400 N. W. 36
WB5VBE	- Wilson School, 2215 N. Walker
N5BEV	- Hicks Addition, NE 23/Liberty (10500 E)
KA5HRH	- Surry Hills Elem. School
N5AH	- Longfellow School, 1201 NE 28
N5CTT	- Burbank School, NW 65/Independence (3200 W)
WB5RUP	- Cornado Heights, 5911 N. Sapulpa (3900 W)

If your home or work location is near any of these sirens, contact the ham who is responsible for it and volunteer yourself as a backup - or - check the availability list below and volunteer for one nearest you. Sirens which do not appear on the list are monitored by the Oklahoma City Fire Department.

Water Tank, SW 89/Linn (2600 W)  
John Adams School, SW 37/Goff (3500 W)  
Southern Hills School, 7700 S. Ky. (1900 W)  
Rancho Village School, 1401 S. Johnson (1500 W)  
McKinley School, SW 53/Shartel (800 W)  
3416 S. Robinson  
Hathaway Park, SE 38/Lindsay (700 E)  
Bodine School, 5301 S. Bryant  
Lythe Park, NW 7/Greenvale (7600 W, 500 N)  
Jackson School, SW 26/Villa (2400 W)  
Westwood School, 1701 Exchange  
Woodson School, 600 N. High  
Crooked Oak, SE 15/Eastern (2000 E)  
Harlow Park, NW 19/Harlow (4700 W)  
3820 NW 10  
Madison School, NW 30/Independence (3200 W)  
Hawthorne School, 2300 NW 15

Contact Don Rooker, K5SJV, Oklahoma County Emergency Coordinator or check in during the test on the 34/94 repeater. This monitoring provides a much-needed service to the City and is deeply appreciated. Do what you can to help.

## NEW METHOD FOR DESIGNATING EMISSIONS

Beginning with 01 Jan 82, the ITU standard for identifying radio signals will go into effect. From that date forward, all of our old designations will be obsolete.

Basically, a seven-unit alphanumeric symbol will be used for each type. The first four units will describe the nominal bandwidth required for the signal. The next three will identify the type of emission. The whole system is rather complex; so it will not be discussed here. Instead, the types of signals most often put out by Radio Amateurs, and only those, will be given as examples.

Type of Signal	Old Symbol	New
Make-and break telegraphy	0.1A1	100HA1A
Double sideband telephony	6A3	6K00A3E
Single sideband telephony	3A3j	3K00J3E
Freq shift telegraphy	F1	1K00F1A
Freq Mod telephony	16P3	16K0P3E

The examples cited are only indicative of the system and do not include all types that may be used by Radio Amateurs.

Courtesy of "Amateur Radio"

**NOTICE TO CONTRIBUTORS** - The C&E will be edited (cut & paste) on the 3rd Wednesday of each month at the Red Cross office. I will be there by 6:30pm. You or your copy get there as soon as possible after that. At 8:00pm the forms will be closed and anything not there and CAMERA READY will not be used. I must have the copy to the printer by 9:00am on Thursday or it will be delayed a week. Any questions? Joe Harding, WA5ZNF, managing editor 737-1044.

N. V. Walls  
AUTO & HOME INSURANCE

AAA

OKLAHOMA DIVISION  
AMERICAN AUTOMOBILE ASSOCIATION  
3525 N. W. 23rd ST., OKLAHOMA CITY, OK 73107  
Ext. 215 405 948-5411  
405 948-5418 AFTER 5:00 P.M.

Robert E. Perry KAGAGC  
Manager

**Heathkit®**  
Electronic Centers  
2727 N.W. Expressway  
Oklahoma City, OK 73112  
(405) 848-7593

6-2 a unit of Verotechnology

EXTRA CLASS  
AMATEUR RADIO  
WSKE

FIRST CLASS  
RADIOTELEPHONE  
LICENSE

**ELLARD'S EX EL**  
ELLARD W. FOSTER, OWNER  
5905 N.W. 42nd Street, Phone: 405/789-6702  
OKLAHOMA CITY, OKLA. 73122

TELETYPEWRITER  
ASSEMBLIES

USED TEST  
EQUIPMENT

EXCESS  
ELECTRONICS

12-1



This past month I got a late night call from WA5TBB now stationed in Lubbock, Texas. Cranston was exiled there during an employment stint with mother Motorola. He eventually bought one of the two way service stations there and joined the ranks of the self-employed. Cranston's call was more than just catching up on old times. It seems that his brand new International Crystal Satellite receiver for the stars had bellied up earlier in the week and had faded to black. While musing and moping around the house Cranston decided to borrow one of the local Bellanca Vikings and hot foot it up to OKC for a quick repair job at International. I volunteered to act as the local taxi service if he would fly into Norman and bring his wife. Cranston said that they would pack a sandwich and make a day of it. The weather looked great, what with a front just having come through and it looked like he might have a tail wind to boot. No problem, I was driving to the office when Karen gave me a call on 88. They were over Hobart and I told them to call again when they were five minutes out or so. I made a couple of quick phone calls, then dashed out to the airport.

Bless his heart, Cranston didn't come in empty handed. He brought a used Measurements antique signal genny that had been gathering dust in the backroom for some time. He told me to look it over to see if I could use it. I later plugged it in and although it did not calibrate on the high bands (UHF and 800-900 Mhz) it did have some output on the VHF bands. I will add it to the project list and eventually work it over. I just hope that I don't need any parts for it. The last two coils I ordered for my Model 80 cost over \$60. This was a convenient 300% increase over the parts cost from Measurements before they sold to Automatic Electric who now had the spare parts inventory. Definitely the price you pay for progress.

We tooled up to International's new plant and I am sure that forewarned is forearmed, they were ready for us. I imagine that Cranston's frantic phone calls had put them on notice to his intended arrival. International technician Rick Smart got right to work and isolated the problem as a bad first local oscillator within a couple of minutes. The original design had called for the first oscillator to operate on +20VDC. After a couple of them had popped in service, they lowered the voltage to +15VDC and solved that problem. Rick had the radio modified to put the LO on 15, then completely realigned the radio and touched up the tuning all the way around. The new version of the International Sat receiver puts two conversions out on the dish right after the LNA, then makes the run into the house at 70 Mhz. Losses are considerably less this way and RG59 is much easier to route through the window than LDF 7/8". This receiver is very compact and simple compared to the International version that came from Tay Howard and Paul Shuch. It utilizes many monolithic components such as oscillators and mixers as building blocks. Most of the additional circuitry other than the blocks is control, filters and power supply. After taking a peak inside, it is amazing to see how simple the receiver becomes once you get above the "block" configuration.

While walking around the International work area, I met Russ Sewell W5NLZ and Paul "Denny" Denwalt K5CAZ, both longtime employess of International. Russ is semiretired although he still spends some time at the shop helping out. "Shop" actually, may be a misnomer. Since its start in 1951, International now sprawls over four different buildings, three of which are in the downtown area and one out south of town. Finding two amateurs at International is not unusual as they have always been strong supporters of the amateur market, although

this has not been the bulk of their income. Since 1951, they have manufactured a large variety of products besides crystals for amateur use. This would include 2 and 6 meter converters, oscillators, weather satellite preamps, and, of course, crystals. While visiting, I saw one of the first CB radios made by anybody, a single channel version in a brushed aluminium box which offered five watts and a loaded whip antenna. International later came out with their Executive Model CB radio which was hot stuff in the 1960's. Later, they branched out into microwave ovens (again, way ahead of their time, long before Amana and the other big boys). The quality of their crystals is legendary and I can honestly say that in the hundreds or thousands (maybe) of dollars I have spent with them, I do not recall having ever gotten a blooper.

One of the more interesting aspects of International is that at one time founder Royden Freeland had as many as 22 amateurs working for him. Many of International's products were the obvious product of the experimenter's bench and reflected the interest of Royden or his employees. They got to play around with something that they were interested in and then if they were successful, they would test the commercial possibilities. I am sure that this was the case with the first CB radio, the microwave oven, 6 and 2 meter converters and the recent divergence into satellite receivers. The International line of oscillators probably arose from the need to test crystals and standardize oscillator circuits. You need an oscillator to test a variety of crystals during aging processes and after building up a couple hundred of them, it was nothing to order some extra boards and put them in the catalog. This is also convenient because the cost of development becomes a business expense. And who doesn't want to deduct the costs associated with some of their hobby activities? I think that the Sat receiver market is just a little soft right at the present time. Denny told us that the number of manufacturer's has increased substantially over the last year and the market may not be there. The basic cost of a downlink station is rapidly approaching \$3,000.00, just what you might spend on a quality projection TV (another popular consumer item right now). The Direct Broadcast Service will move the satellite interest to a higher band, but it is possible that the L Band systems will become a popular consumer item and mass production (according to a quote I saw the other day) could drop the cost to \$300.00 to \$400.00 and that will make the market very competitive.

Denny was nice enough to show us through the facilities from the initial categorizing and grinding of the crystals down to the nickel plating to frequency. Many persons might assume that each crystal is custom made for each order. This is not exactly true. International, like most companies, maintains a large store of blanks in a variety of frequency ranges, styles, and holders and ultimately selects from this stock when producing the on frequency quartz crystal. Large orders on the same frequency might require a special run or two to generate enough blanks, but most orders are filled from stock. The quartz is sawed into square blanks, then ground to a particular band. Numerous of the cut blanks are placed into a large grinding machine which uses abrasives and circular motion to bring the groups of blanks to a certain band. How can they tell if they are getting close to the needed frequency? Well, a crystal is a device that converts electrical energy to mechanical energy and vice versa. During the grinding process, the group of crystals in the machine are mechanically stimulated by the grinding process, this in turn generates a radio frequency and this is picked up using a plain garden variety general coverage radio receiver. The most common example for the receiver is a HQ-129-X. This gallant old device made by Hammurlund was the first receiver I owned for amateur use. Denny said that some of them in the grinding shop had been with the company since

the beginning and still performing like champs.

Once a group of square blanks were brought to a particular band, they are glued together in a block, then the edges are rounded off to produce a circular blank. The blanks are broken apart and glued into a holder after the electrodes are deposited on the crystal in the form of gold or silver. The crystals are now categorized according to frequency, holder and type and cataloged into large storage areas.

International maintains a large number of blanks at each stage of the process so that shortages of one frequency can be made up by going back one step in the process and picking up the appropriate blanks and moving up one step. Once the order is received, the processor goes to the blank collection to select an appropriate blank. Blanks are selected that are slightly higher in frequency (physically ground smaller than necessary), then are plated in a nickel solution down to the desired frequency. Some of this is automated by mounting the blank in a holder, dipping the blank in a nickel solution, cleaning in two different deionizing solutions, blowing the crystal dry with nitrogen, then testing the crystal in an oscillator. This process continues until the crystal comes down to frequency. I have always wondered why most crystals that I get always seem to tend toward the high frequency end and must be padded down if you should need to go lower than the desired frequency. I guess this occurs because the oscillator frequency is approached from the high end and the machine stops when the crystal comes into tolerance, possibly skewing the natural frequency toward the high end. In any case, whether or not this is true, it is an advantage since it is easier to lower a crystal infrequency by padding with a capacitor than raising it in frequency.

If the process is one of just a few minutes in a nickel bath, why does International frequently give delivery times in weeks? Actually, this is not always the case. I have gotten orders from them frequently in just a couple of days. Although it doesn't take much time to actually process a single crystal, production is generally quite busy and failure to have the right blank in stock might mean additional delays. As Denny indicated, they might not have a total of 1 hour of labor in each crystal blank, but that labor might be spread out over several weeks or even months in time. That hour must be invested long before any sale is made. Expedited service is available at extra cost and that means that one person will follow and handle your order on a first person basis from start to finish. And depending upon your request for high accuracy or commercial standard specifications, there is a series of tests that must be run. For HA (High Accuracy), these include temperature and environmental tests. It was interesting to find out that HA and CS crystals are both made from the same blanks. HA crystals are held to a tighter tolerance in manufacture and the environmental and electrical testing after plating is considerably more extensive.

My preference in my walkie talkies and HT's has always been to get CS crystals for receive and HA crystals for transmit. After talking to both Russ and Denny, I found out that Motorola HT-220 UHF crystals are among the more difficult to make since the receive oscillator frequency is so high and the crystal is quite physically small. Frequency tolerance, quality control and breakage all account for the higher costs.

So far, nothing has been said that takes into account the variety of different crystals used in different manufacture equipment, holders, oscillator specifications, and tolerances that occur from equipment to equipment or even between models of the same item. Denny told of the variety of different specifications and the frequent failure of manufacturers

to design to their own specifications. I remember K5JB's efforts with a UHF walkie talkie of unmentioned manufacture that had to be custom tuned for each frequency. It was so bad that it appeared that crystals could not be swapped from position to position and remain on frequency. International makes a large effort to get the actual item into their labs to check out the specifications to see if they are up to snuff. They frequently are not and International must apply "fudge factors" to their manufacturing specifications. While there, I also saw a large number of test jigs used in previous years for testing and evaluation. Discoveries regarding specifications or other deficiencies in design become the subject of modification notices periodically issued by International.

There are a variety of factors that affect crystal performance. Generally speaking, the frequency of a quartz crystal is related to its physical dimensions. For crystals less than 1 Mhz in frequency, the more important factor is the length/width ratio. For crystals greater than 1 Mhz in frequency, the thickness becomes the controlling parameter in general. For higher frequencies, a crystal may be operated at one of its overtones rather than at its fundamental frequencies. Since higher frequencies are usually a result of smaller mass and dimensions, the operation of a crystal at its overtone extends the effective range of the crystal considerably. The overtone frequency is a fixed multiple of its fundamental. Overtone operation is determined mainly by economic and physical constraints.

#### AGING

Quartz crystals are usually classified as commercial, precision, or military grade according to their aging characteristics. Aging is primarily attributed to crystal strain relief, matter transfer, and dissimilar-material interface. That last factor explains why gold is frequently used as an electrode (this is the specification required in MIL-C-3098). Other electrodes such as silver, aluminum or silver iodide can be used by at a sacrifice of frequency stability. For some time, International has sealed their crystals with a glob of solder in a vacuum, but Denny indicated that recent trends are to evacuate the crystal case and backfill with nitrogen. There is, of course, a relationship to oscillator frequency and media surrounding the crystal. The gas can cause a decrease in activity also. One thing is for certain and that is, don't attempt to solder to the solder glob on the side of the can, otherwise you might move the crystal frequency to DC as the solder gets sucked into the can and onto the quartz. Cranston recounted this experiment in first person after it occurred to one of his technicians.

Aging is also a function of the manufacturing process. Inadequate outgassing or nitrogen replacement or sloppy clean-up processes will leave residues on the crystal which also figure into "aging." If foreign material migrates to the surface of the crystal, frequency decreases. Most crystals are made in a solder sealed case, but International can also seal crystals in a cold-weld seal. This offers no inherent advantages except cost and cold-weld seals are virtually impossible to repair. There is also some thought that cold-weld seals affect long term frequency stability because the cold-weld process induces mechanical stresses in the package which causes frequency shift as the metal stresses are relieved over a period of time. The cold-weld seal occurs when the crystal case is sealed by mechanical pressure between the case and the holder.

Typical commercial oscillator crystal aging rates vary from  $25 \times 10^{-6}$  ppm/yr at 10 khz to  $5 \times 10^{-6}$  ppm/yr above 1 Mhz. Precision grade crystals will generally age less than  $1 \times 10^{-6}$  ppm/yr or less than  $5 \times 10^{-6}$  ppm/day at 85° C after the first 30 days. Again, the difference between commercial

standard and high accuracy is aging characteristics. Denny suggested that one could simulate the aging by running the crystal under elevated temperatures and increased drive (but not too much, they can fracture). Perhaps the lesson here is that HA crystals are worth it if you need the accuracy. Otherwise, carefully examine the specifications and applications to select the least expensive crystal for the specifications needed. There is also a considerable variability between manufacturers and some techniques are proprietary. Cheap Japanese color burst crystals are OK for a color tv, but they obviously are not manufactured the same as International.

## TEMPERATURE STABILITY

Quartz crystals will change frequency predictably with changes in temperature. Temperature stability (drift stability or tolerance) is referenced to the nominal frequency at the reference temperature, and represents the expected change or deviation from the nominal frequency due to temperature change. Remember that here we are not talking about long term stability or aging, which is generally irreversible, but reproducible drift that can occur in cyclic environmental circumstances. Figure 1 reflects the various curves used by International to specify drift. This curve is only for the crystal and does not reflect components in the oscillator circuit which might also change with temperature. This, of course, is the basis for the temperature compensated oscillator in which components are selected or design parameters are incorporated to compensate for crystal drift or component change with temperature.

International uses thermistor in some of their HA crystals to spread the temperature down to  $-10^{\circ}\text{C}$ . The thermistor has a certain capacitance (approximately 3 pf) and changes in value more drastically at the lower temperatures to compensate for change in stability. I used to think that the thermistors were a custom item selected for each particular crystal depending upon its temperature characteristics, but Denny informed me that International's specifications for the thermistor do not require selection of thermistors for identical crystal frequencies.

## CALIBRATION TOLERANCE

This is simply the allowable deviation from a nominal frequency at a referenced temperature. Some manufacturers reference this to  $27^{\circ}\text{C}$ . International uses  $25^{\circ}\text{C}$ . Commercial standard crystals are specified to  $\pm .0025\%$  and hold  $\pm .003$  from  $-30^{\circ}\text{C}$  to  $60^{\circ}\text{C}$ . HA crystals are also calibrated to  $\pm .0025\%$  and hold tolerance of  $\pm .0005\%$  from  $-10^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ . If a crystal is to be used in an oven, it must be specified at the oven frequency.

## LOAD CAPACITANCE

This is the equivalent circuit capacitance that the crystal "sees" when inserted into the circuit. Crystals change in frequency with changes in the circuit capacitance. The minimum capacitance for proper crystal operation is 10 pf. Typical or "standard" values would be 20 pf and 32 pf. Load capacitance generally does not affect the cost of the crystal. However, when an oscillator is to be operated in the parallel-resonant mode (typically for applications for operation below 20 Mhz), load capacitance is an important parameter and should be specified.

## DRIVE LEVEL

This is quite simply the power dissipation in the crystal during operation as measured by the voltage drop across it ( $P = E^2/R$ , Remember?). Typical drive levels are 0.1 and 0.5 mW. Excessive drive levels can have an adverse effect on the crystal by heating or fracture. Remember, you are converting electrical energy into mechanical energy. Too much

power and "pow" there goes the old ball game.

I asked Denny what effect the increased use in synthesizers had had on the crystal market and was surprised to find out that it actually was very little. Synthesized radios must still have crystals for the reference oscillator and heterodyne mixers. The general effect of synthesizers is not fewer crystals, but rather an increase in the number of frequencies that a radio can hold. There is also a considerable amount of gear in the field that uses crystals. Back before synthesizers, costs kept the number of channels in a radio down. Technology has just made it easier to multichannel radios. In addition, there is a considerable amount of expansion into other markets. For example, the growth of microprocessors has also increased the need for quartz crystals for clocks. Crystals are also used in the generation of quartz crystal watches. International has not seen any downturn in business yet.

We finished out our tour just as Rick was dabbing the RTV on the outside of the downconverter. Cranston spun the channel selector to check Rick's handiwork and pronounced it satisfactory. We stuffed the receiver back into the box for the trip back to Norman. As we walked out of the building, we passed a 16 foot dish in a disassembled state and I could just tell that Cranston was mentally constructing a sling for the underside of the airplane to carry back a super substitute for his 8 foot dish. A sharp, but understanding look from wife Karen temporarily cooled the ambition. Playing with satellites can, like heroin, be addicting. Cranston and I were discussing my new IC-720 transceiver when he commented that it would be very useful in directly listening to the Satellite receiver output for various subcarriers on each transponder. Cranston said that some of the signals were regular SSB channels used for voice communications. Other contain data packs. And there are 24 channels or transponders on each of the RCA birds. Now this could be a reason to get the receiver and dish up. Imagine 24 new HF bands 30 Mhz wide on just one satellite. It could be confusing stuff or not make any sense, but there is a bunch of stuff on the HF band that I hear that doesn't make sense either.

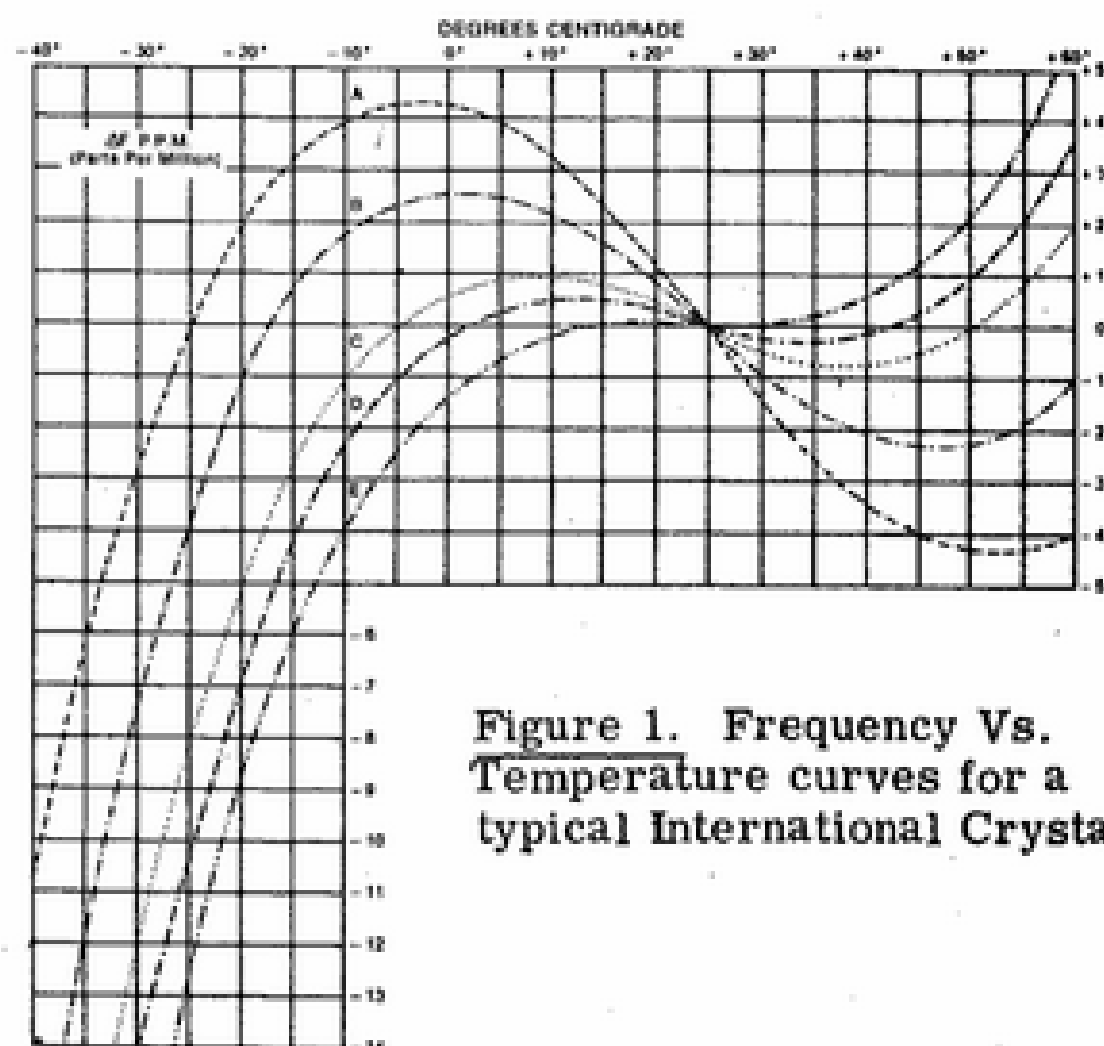


Figure 1. Frequency Vs. Temperature curves for a typical International Crystal.

I loaded Cranston up with some swap items from my house after stopping off for a quick lunch. We then hustled back out to Westheimer International to gas up the Viking. Cranston took me on a turn around the patch before heading back to Lubbock. Maybe he will catch my regular Sunday morning schedule and let me know how the receiver works. I might take another look at scrounging up a dish. For those of you interested in such an item, take a look at the next item.

The trip through International was interesting and unexpected. The study of crystals is something about which a lot of misinformation abounds. Strangely enough, the only book that I have seen that contains both theory and practical technical information about crystals is published by International's competition down in Chickasha. I was lucky enough to be sauntering by the Sentry booth a couple of Dayton's ago and was offered one of the manuals after a short discussion with the salesman. The Sentry Quartz Technology Manual has a copyright of 1977. I don't know whether or not it has been updated, but it contains definitions, equivalent circuits, explanations about cuts, military specifications, and Sentry equivalent numbers for a variety of crystal circuits. International has published similar lists on occasion, but has not compiled all the information in the same book form.

#### TROUBLESHOOTING CRYSTAL OSCILLATORS

On occasion, I have had the dubious distinction of trying to isolate a problem at the oscillator level of a radio. What causes the problem? Well, it can be a variety of things. Once while digging through a HT-220, I couldn't figure out why the radio was 100 KHz off frequency and tuned very sharply. The solution was finding a bad lead which isolated the crystal from a 1K resistor that Motorola puts across the crystal to lower the Q. Tacking the resistor back in place solved the problem.

So what else can you do when confronted with a similar problem? First, be sure that it is the oscillator circuit that is the source of the failure. Check all power supply voltages to the oscillator. The HT-220 uses a voltage regulator inside a 10 pin chip to drive the oscillator in transmit. No B+ to the oscillator could mean a bad chip. Or could it? I found one failure to be the result of a shorted capacitor across one of the chips leads. It's a good thing I found it before taking out that chip.

Once the problem has been isolated to the crystal oscillator and you are relatively sure that there are no power supply problems, the first check to make should be the crystal. Substitute in another crystal or test the crystal in a crystal checker. There have been numerous circuits for cheap and easy crystal checkers.

When looking at the crystal as the source of the problem, you are concerned with reduced crystal activity as a result of aging, fracture, or dirt on the crystal inside the holder. A jump in frequency can be caused by a defective or dirty crystal and sometimes the frequency can be corrected by netting capacitor added across the crystal, (if there is no trimmer capacitor already) or retuning the tank circuit in the oscillator. A slow change in frequency over a long period of time may be caused by crystal aging, and again a small trimmer capacitor can correct the problem. If you have a crystal that has a trimmer and appears to have gone out of tolerance, a quick check with a counter can tell you what you need to do. Tune the netting capacitor through maximum capacitance. If this is not enough to bring the crystal down to frequency, it may be necessary to add a small capacitor (usually in the 3 to 50 picofarad range depending upon the oscillator frequency) across the crystal to bring it down on frequency. If tuning the capacitor to the minimum capacitance is not enough to raise the crystal up to the correct frequency, then more drastic surgery may be indicated. I generally favor replacing the crystal especially if it is of unknown manufacture. It is possible to study the oscillator circuit and "custom" design some capacitor values to raise the frequency. In the HT-220, coils are used for trimmer in the VHF

receive and transmit and UHF receive. I have found that these can be tuned on frequency when out of tolerance by substituting different type of cores for the normal cores found in the radio. Motorola makes a series of different cores with varying inductance that are all interchangeable with the netting coils. Motorola also uses aluminium slugs in some of the front ends of the UHF radio. It is possible to use the aluminium slugs to decrease the effective inductance of a coil. K5JB has done the same by rolling a piece of tinfoil into a tiny ball and sticking it in the coil. The metal acts like a shorted turn lowering the inductance.

Assuming that the oscillator trouble is not from any of the above sources, then other problems might be indicated. Checking with a high frequency scope or RF probe and finding crystal activity may not always rule out the oscillator since it could be on the wrong frequency. The moral is use a frequency counter and couple it to the oscillator through a capacitor or down the oscillator chain. If the frequency is substantially different, again suspect the crystal since the tuned circuit can not usually be tuned to another overtone unless a component becomes defective.

Incorrect tuning can also cause little or no output from the circuit. When tuning a crystal oscillator, the coil slug should not be peaked for maximum output, but should be backed off 1/4 turn on the "gentle slope" from the peak.

In a solid-state oscillator, a high bias voltage (which could be caused by a bias resistor decreasing in value) may prevent oscillator starting, and an open bias resistor would cause a loss of bias or excessive internal bias (from feedback within the transistor) which would also prevent oscillation.

Check for open RF chokes and coils or collector resistors. Use the ohmmeter. Suspect shorted turns in damaged coils, but visual inspection in the best bet here since an ohmmeter will not help.

Still stuck? Try the oscillator transistor. Aging might show a beta change. Remember to use the highest input impedance meter that you can since you can load the circuit down with a VOM. A FET or VTVM is a minimum.

Excessive bias can be caused by a change in the value of the emitter swamping resistor or bypass capacitance thereby causing motorboating from intermittent blocking of oscillation. Also watch out for distributed wiring capacitance. Changing lead dress or parts wiring may detune the circuit and reduce or eliminate the output. Reduced oscillator output can be caused by a partially shorted bypass capacitor or increased resistance in the emitter circuit, or by a short or partial short in the emitter circuit. Check the oscillator transistor with an ohmmeter in circuit but be careful not to use the lowest scale. You should see low forward resistance and high reverse resistance from the base to either the collector or emitter. You may need to remove the transistor and check it out of circuit. If you do this, you might substitute anyway at this point, making sure that the new transistor is also good.

Finally, you might consider opening up the feedback loop and troubleshoot the oscillator as an amplifier. The oscillator is really nothing but an amplifier with feedback. Use the ohmmeter to check components in circuit.

Frequency change could be caused by a defective crystal even if one is used. Best solution is to always use good quality crystals.

Micheal Salem N5MS

To the Editor (ITIS):

Two things: 1. What is it gonna take to get one ARES listing published correctly and accurately? We have labored three long years to get a formal ARES group off the ground and running: it IS!, happily. We've sought CORA's assistance as our body of impetus and organization pattern (and an august one it is, too!) primarily by requesting publicity (recognition for the doers and ignoring the moutherers who are do-nothings or non-doers) which has come readily and easily; however, I, personally, am affronted to see someone's diligent effort go awry; I don't wanna know who's to blame, I don't wanna lay blame (if it was a conscious effort to err, the perpetrator knows and it's their conscience; if not, so what? we are, after all, human, and therefore, fallible) I wanna know how it can be avoided in the future: all 3 ARES rosters submitted in the last year or so have had entire columns and/or segments out of order and that's an insult to the excellent volunteer labor of the typist. What's wrong with doing it right?

2. I take exception with your avowed policy re: the C&E/CORA as stated on page 21 of the November '81 issue: it is unclear if policy 2 is either/or or and/and (having quietly listened in the corner to all the ramblings of the evening during which these proposals were presented and consulted my voluminous notes (2) since, it's still not clear). What IS clear is that the Board of Directors of CORA continues its confidence in the Managing Editor and the Circulation Manager and all contributors and I include myself in that number, but... amateur radio is still a hobby, a service and fun, CORA is a duty and a responsibility, and the C&E is a large, quasi-professional (slick) monthly newsletter: not a one of these has the force of a regulation or law upon an individual's behavior unless that individual submits to it: attempting to force-feed the like engenders animosity....there's gotta be a better way.

The non-doers and bad-moutherers among us need to be shown that they only hurt themselves and the rest of us will succeed better without (in spite of?) them, rather than continuing to legislate their ethics (or lack of same).

My Fraternity's basic-most tenet was and is that in any endeavor, any individual only receives from that activity in direct proportion to what is invested: "you only get out what you put in," the computer buff knows it as GIGO - good in, good out .!

n5beq, jim

Dear Complainer: YTIS (Yes There Is Such).

In last years ARNS newsletter contest C&E was rated Outstanding but they thought we needed some more humor, so I decided to publish the above "opinions".

If there is any validity to your "complaints" I accept full responsibility, my scissors must have slipped. As to #2; someone must have slept through the VOTE to adopt the referenced policy and the stated reason for it.

Joe Harding, WA5ZNP, Managing Editor (YTIS)

#### FOR SALE

Tempo 2001 Linear Amplifier, 2-8874 ceramic tubes. Works super at full 2 KW PEP input. \$525. Call Henry, N5IH 722-3848.

Ten-Tec Omni-C Transceiver, External VFO and Deluxe Power Supply. The Omni-C is latest of Ten-Tec's Omni series. Full QSK. 200 watts input. All optional crystal filters installed. 10-160 meters including WARC bands. Less than 9 months old. Like new condition and I'll be glad to demonstrate! \$1200. firm. Call George, AD1S - 722-6195.

A Real Linear Amp - not a toy! Some folks say this one is capable of 4 KW input! Henry 3KA with Hypersil plate transformer and extra set of brand new 3-500 tubes! \$1650. Call Henry, N5IH 722-3848.

Icom 22-S two meter transceiver. Full "VIP" switch controls and TT mike. \$185. Call Henry, N5IH - 722-3848.

FOR SALE- Drake TR-7 and R-7. Both with DR-7, all optional filters, cables and manuals. Late serial numbers on these mint units. Full 100% duty cycle power supply included with TR-7 transceiver. What a Christmas present for a deserving ham! \$1100 each-firm. Call George, AD1S 722-6195 for a demonstration.

WANTED- Kenwood SM-220 Station Monitor in exc. condition, with or without BS-8 Pan Adaptor. Advise price and condition. Call George, AD1S 722-6195.

Kenwood TS-180 w/matching power supply and antenna tuner operated only 5 hours in the last year. Two crystal filters installed. Call Ken K5UAB at 632-1822.

#### BEAM ANTENNAS

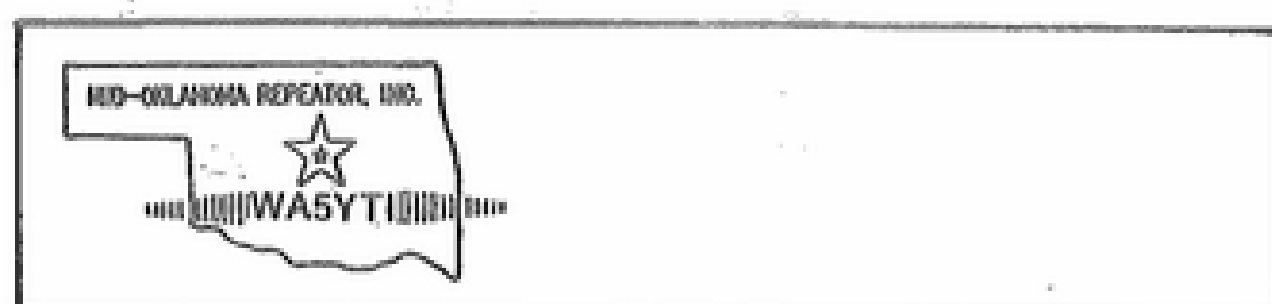
"Amateur Radio" for June 1981 had an informative article on beam antennas in general and the TET multi-band antenna in specific. With the article was a table of measured responses of "S" meters for a number of receivers. A glance at it will tell you why you should never pay too much attention to signal reports based on "S" meter indications!



Carl, W5JJ

Receiver Type	S meter readings													Test MHz
	S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8	S 9	S-9 +10 dB	S-9 +20 dB	S-9 +40 dB		
FT-901	0.8	0.9	1	1.2	1.4	2	3.3	6	11	50	200	1700	3.5	
TS-820	0.5	0.7	1.1	1.7	3.4	6	12.5	25	50	200	1000	2200	14	
IC-701	1.9	2.3	2.7	3.3	5	8	12	20	30	—	120	930	14	
SB-104	10	18	28	40	52	68	95	125	170	265	460	1000	7.05	
TS-520-S	0.55	0.7	0.92	1.25	1.9	3	5.6	11	25	110	500	1500	3.5	
FT-301	1.4	2.4	4	7	10	13	18	24	30	95	450	2700	3.5	
FR-101	—	0.4	0.48	0.63	0.9	1.4	2.4	5	15	150	1500	65000	—	
IC-245-E	0.26	0.37	0.5	0.68	1	1.6	3.2	7	13	—	130	1000	144	
IC-211-E	0.33	0.56	0.73	0.87	1	1.2	1.45	1.9	2.5	—	8.5	50	144	
Sony CRF-320	0.6	0.95	1.4	2.3	3.9	10	42	1000	>20000	—	—	—	3.5	
FT-220	0.8	0.9	1	1.1	1.2	1.35	1.6	9.3	5	—	—	—	—	
FT-221	0.75	1.2	1.65	2.15	2.7	3.5	4.4	5.9	8.2	17	43	160	—	
IC-201	0.36	0.53	0.66	0.85	1.1	1.4	1.7	2.4	3.5	—	19	140	—	
Multi-2700	0.29	0.37	0.41	0.44	0.47	0.51	0.55	0.64	0.8	—	—	250	—	
TS-700-G	0.62	0.7	0.76	0.86	1	1.3	1.8	2.8	6	—	600	2000	—	
FT-7	1.5	3	4	6.5	11	15	21	28	40	—	180	1800	7	
IC-280-E	0.9	1.7	2.1	2.4	2.8	3.2	3.6	4	4.5	—	7.2	24	144	
IARU Recommendation	0.21	0.4	0.8	1.6	3.2	6.3	12.6	25	50	160	500	5000	up to 30 MHz	
IARU Recommendation	0.02	0.04	0.08	0.16	0.32	0.63	1.26	2.5	5	16	50	500	above 30 MHz	





What a great slate of new Mid Okla. Repeater officers were elected last meeting!! Your Pres. will be John Clement KC5HD a strong but down to earth gentleman. I have a lot of respect for John and hope everyone will pitch in with him both in the technical side and the public side to always boost our club.

I've always admired the new Vice President.. Don McDown W5HPR What a good choice!

Your new Secretary is Connie Boland KA5ERZ XYL of Bill KA5ESA. She's super... and very well qualified too...

Roses to the efficient Treasurer of last year who agreed to serve again.. Sid Gerber W5KOZ was elected for his second term. He said he would continue to act as membership secretary, as well. He does such a great job.....

Let's all pitch in and help these fine folk to keep MORI the top club, they need your help & ideas.

Reminded of the many opportunities for Public Service that MORI members have participated in, and the very easy task it was to get a good turnout of helpers. Those funny little men and ladies with the radios made quite an impact on this community, I thank those who "pitched in" during my two terms for your selfless service day or night.

I was relieved to hear from WA5FSN's relay of (Leonard Holler) bulletin that FCC finally buried the "Plain Language" Part 97 on November 13 this year. Thanks for those of you who wrote opposing this insidious change of rules and I thank ARRL for backing us up from the SCM on up the line.

I'm stuck at home a while with a cast on a broken foot and catching up on projects, kinda hard to do with the foot elevated, but things are getting done.

Everyone should be receiving a letter from the club this month. Please return the card with your vote on lowering the legal percent on conducting business to 5 percent. I personally think this is a dangerous move if voted in. 10% would be a preferable percent where 30 folk would be needed at the meeting to conduct financial business. 30 would be the count based on 10% of our current membership. Please take the time to vote, and give us your comments.

Congratulations to W5HFU Ivan and his bride. We all wish you the most sincere good wishes.

Fred KA5CXW  
MORI President

Well, it seems that we have all ended another year, and it has been a pretty good one under most circumstances. I have really enjoyed serving my term of office as Secretary and Editor for MORI, plus all kinds of activity that has been going on. I appreciate each and everyone of you that have been so cooperative, patient, understanding, etc., and I just hope you will extend the same to the new officers for 1982. In case, some of you are still wondering who the new officers are, well, I will just tell you now....

President	John	KC5HD
Vice President	Don	W5HPR
Secretary	Connie	KA5ESA
Treasurer &	Sid	W5KOZ
Membership Secretary		

I know each one of these people personally, and I think you will agree that it is a very good slate -- I extend my congratulations & very best of luck to you all.

Last month, and the first part of this one (November) we went to the Texoma Hamfest, I sure wish it could have stopped raining, it might have been better conditions, but all in all, I had a real good time meeting some

new people and seeing a lot of the familiar ones. Saturday night, Mrytie Broudy (wife of K5MCJ, and I went back to her room and had a real nice chit-chat, and she sure gave me some good head-ache medicine, thanks very much, I really needed that, especially with all of the excitement, etc. I played my usual games of bingo, didn't win anything however, so I just used the some of the "mad money" and bought a few souvineers -- HI!

I am not real "newsy" this go-around, I do not know what is the matter, but maybe I will think of something before it comes time for this to be printed -- if so, I will just stick it in my typewriter, BUT if not, I do want to wish everyone a "Happy and Properous" New Year (1982) -- wishing everyone a good year that is healthy, wealthy, etc. See you real soon.

Susie KA5FED  
1981 MORI Secretary  
and Editor

Please don't forget our (MORI) Christmas party on Wednesday, December 2, at Dotson's cafeteria, 4101 So. Western (same as last year) so be sure to get in on all of the fun, cheer, friendship, etc. It starts at 6:00 P. M.

Personal note: You can probably beat Fred to the food now -- that he is on crutches -- Hi'.

Susie KA5FED

#### FREQUENCY STANDARD FOR SALE

Cranston brought me a couple of items to play with during his trip into OKC for repair of his satellite receiver. One of them was a Motorola netting device that takes an input from a tapped line and nets it against a stable oscillator that generates 30 Khz signal harmonics. The device is kind of old, but was a real godsend back in the days when compact counters and service monitors were not available. Cranston doesn't need it and I already have a frequency counter, sooooo someone make Cranston an offer on this doogie. Let me know and I'll pass it on to him. The new cost of this device was over \$600.00. The device is portable and probably has a broadband mixer, highly stable oscillator, harmonic generator and null detector. Whatdoidbid? 321-5453 or 360-1302.

Micheal Salem N5MS



#### Ann's Chicken Fry House

*(Specializing in Chicken  
Fried Steaks)*

*(Home of the Chicken Fry)*

Food you will enjoy...  
Service you will appreciate!

4106 N.W. 39th Street  
Oklahoma City, Okla.

#1 Ph. 943-8915

#2 Ph. 373-1677

422 Piedmont Rd. North  
Piedmont, Oklahoma



GEORGE NIGH  
Governor

OKLAHOMA CIVIL DEFENSE  
SEQUOYAH-WILL ROGERS BUILDINGS  
POST OFFICE BOX 53365  
OKLAHOMA CITY, OKLAHOMA 73152  
405/521-2481



NORRIS PRICE  
State Director

TO: THE AMATEUR RADIO OPERATORS OF OKLAHOMA

DATE: NOVEMBER 17, 1981

ONE WEEK DOESN'T MAKE A SEASON, AND THAT IS PARTICULARLY TRUE IN THE EMERGENCY MANAGEMENT BUSINESS AS YOU A.R.E.S. PEOPLE KNOW. HOWEVER, THE WEEK OF OCTOBER 13, 1981 STANDS OUT TO ALL OF US AT STATE CIVIL DEFENSE AS A SHINING EXAMPLE OF THE VALUE OF SUCH AN ORGANIZATION AS YOURS AND WHAT DEDICATION BY ITS MEMBERS MEANS IN THE POSITIVE SENSE TO ALL OKLAHOMANS.

YOUR GROUP AND ITS MANY UNITS ARE A WELCOME AND VALUED ADDITION TO OUR SCHEME OF OPERATIONS IN EMERGENCY MANAGEMENT.

THE PROFESSIONALISM AND EXPERTISE DISPLAYED DURING THIS CRITICAL INTERVAL WAS A NOTICEABLE CONTRIBUTION TO PROBLEM SOLVING IN OBVIOUS COMMUNICATION PROBLEMS HERETOFORE INSURMOUNTABLE.

WE SAY....."WELCOME ABOARD A.R.E.S."

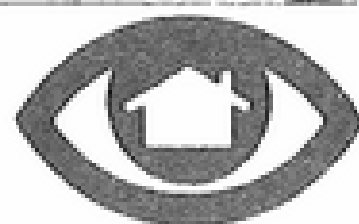
WE LOOK FORWARD TO A CLOSER WORKING RELATIONSHIP WITH YOU IN THE FUTURE.

*Norris Price*

NORRIS PRICE  
STATE DIRECTOR



STEVE HUTCHERSON  
Owner - Lic.  
2919 N.W. 22nd St.  
(405) 755-0660  
Residence 721-8064  
WB5CTS



TRUMAN MILLER'S  
**abide,**  
**REALTORS**  
CORPORATE HEADQUARTERS:  
7008 North May Avenue Oklahoma City, OK 73129

SONY SUPERSCOPE  
SPARCUE  
Amperex  
marantz  
SUPERSCOPE  
ATLAS SOUND  
SONY  
KEELITE  
DAKTRON  
BOC  
SHURE  
TUBES 50% OFF  
Free Testing  
Most Electronic  
Engineers and  
Technicians buy  
from us  
**Kelly's**  
DISCOUNT  
ELECTRONICS  
4221 N. MacArthur  
PH: 787-0822  
Oklahoma City



AVIATION CO.  
HANGAR 3B, WILL ROGERS WORLD AIRPORT  
P. O. BOX 59906, OKLAHOMA CITY, OKLA. 73159

GENE NAILON - K5DLE  
Avionics Manager

OFFICE 405-681-2331  
HOME 405-341-8289

WANTS: AVIONICS TECHNICIANS FOR  
REPAIR AND INSTALLATION OF AVI-  
ONICS EQUIPMENT (NAV/COM, PULSE  
FLIGHT CONTROL) IN IN GENERAL  
AVIATION AIRCRAFT.

EXPERIENCE IN GENERAL AVIATION  
AVIONICS PREFERRED - - BUT NOT  
REQUIRED





## Club NEWS

VISOR  
The Elmer Gooder Memorial  
Station

### Minutes of November Meeting

...will appear in next month's C&E. The meeting will happen two days after paste-up.  
Joe, K5JB, Sec'y

### Azden PCS 2000 Modifications

Major Bailey, K15P, 910 N. 4th, Sayre, OK 73662, sent the following modifications to Azden 2000. In his words:

Scanner speed modification: See Figure 1. This modification increases scanner speed from 20 seconds per megacycle to approximately 7 1/2 seconds per megacycle. Simply replace C407 on the control head with a 120 pf mylar capacitor. Simple!

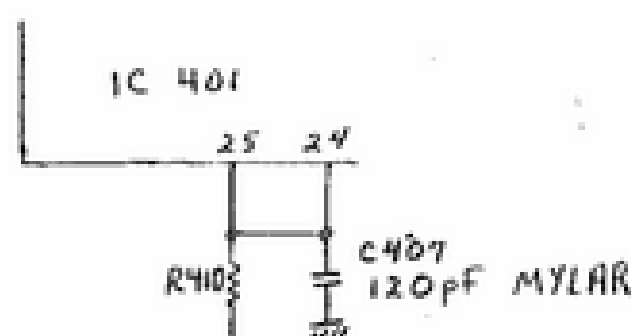


Figure 1 Scanner speed mod.

Input frequency modification: See Figure 2. This modification permits instant QSY to the input frequency without reprogramming. Connect one end of a 27K, 1/4 watt resistor to the anode of diode D409, connect the other end of the resistor to a spst switch. Connect the other pole of the switch to ground. Note; switch is easily mounted on either side of the lower control head cover. Easy!

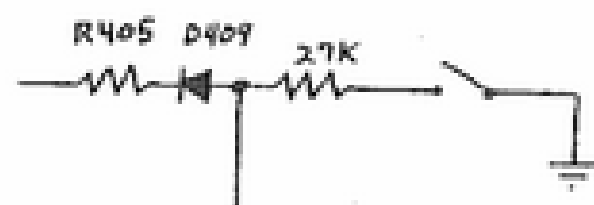


Figure 2 Input frequency mod.

Sampling scan modification: See figure 3. This modification stops scan on any busy frequency in either memory or auto scan modes with the offset switch set to free scan. Scanning stops for approximately 3 seconds then automatically resumes.

Assemble the unit on .1 inch perfboard. Final measurement of the completed board is approximately one inch square. Unit mounts easily between the upper and lower control head circuit boards.

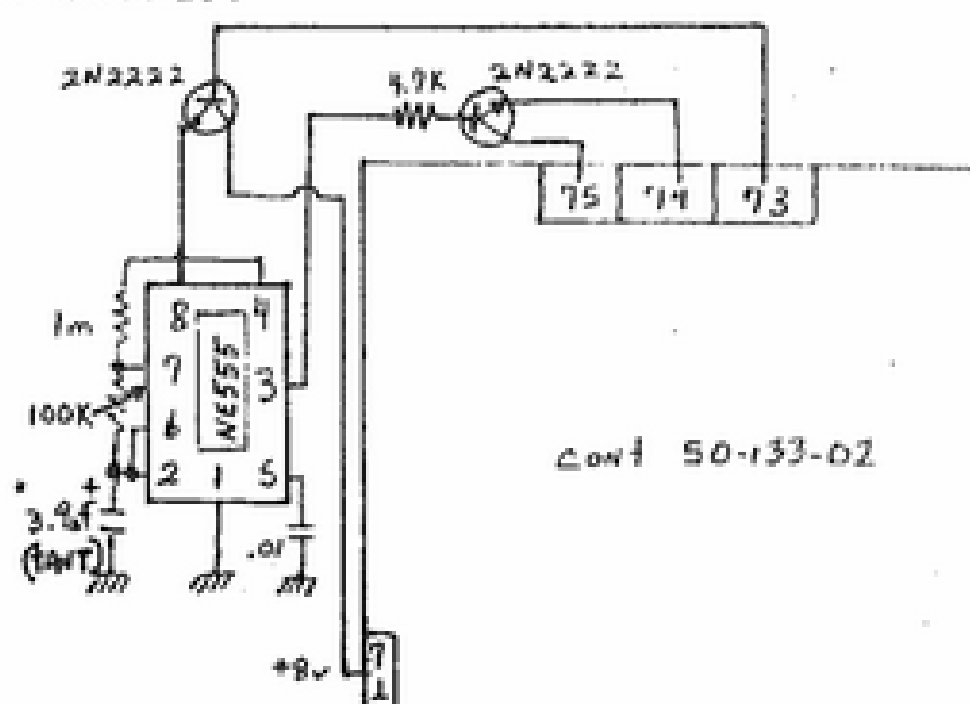


Figure 3 Sampling scan mod.

To align the unit after all connections are made, turn the radio on and open the squelch. Adjust the variable resistor so that the scanner stops on each successive memory position. That's all there is to it!

Positive keypad entry modification: See Fig-

ure 4. Please don't attempt this modification if you're unsure of your ability to do extremely delicate P C board work. This modification provides an audible tone in response to any keypad or microphone entry, positively confirming the action.

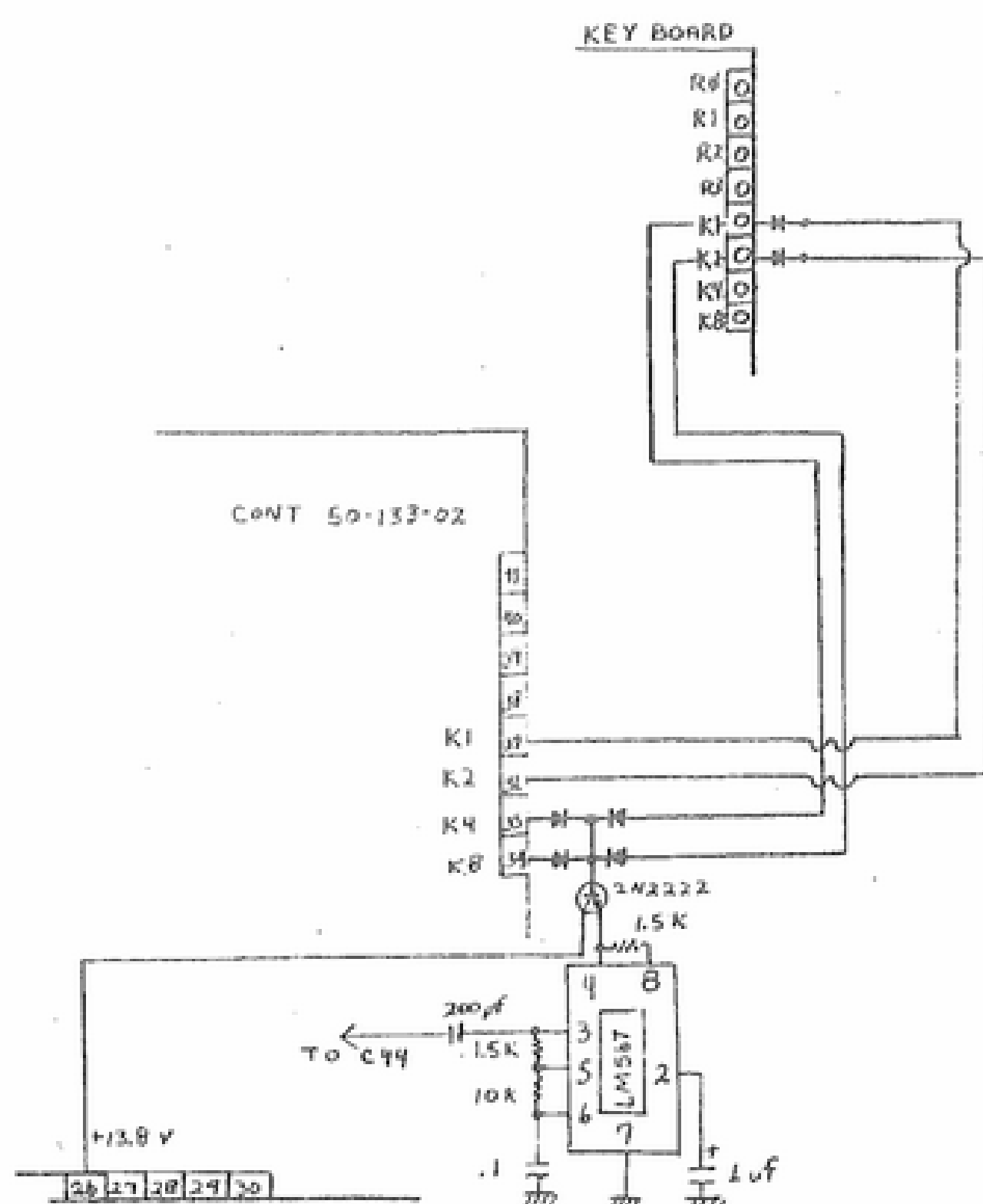


Figure 4 Positive key entry mod.

First remove the upper and lower control head covers. Next remove the front panel and 4 screws securing the keypad. Carefully disconnect the 5th and 6th ribbon wires from the top of the keypad. Note; don't disconnect the wires from the back side of the board. Install a 1N914 diode, anode end, into each of the holes from where the wires were removed. Connect the cathodes of these diodes to their corresponding wires which were removed earlier. Now connect a wire about 6 inches long to each of these diodes, anode side. On the free ends of these wires, connect the anodes of another pair of 1N914 diodes. Now with two more 1N914 diodes in hand, connect the anode of one to point 34 on the control head and the anode of the other to point 35. (Designated as input lines K4 and K8 on the schematic.) Now tie the cathodes of these diodes to the cathodes of the diodes run earlier from the keypad. The four diodes, along with the two diodes installed on the keypad, serve to isolate the inputs and provide a trigger voltage for the audio oscillator.

After constructing the audio oscillator, cut the foil on the 6th pin of the printed circuit board plug from the left of the top side. This is the plug which connects the control head to the main body. Connect the oscillator output to this pin. Connect another wire to the corresponding socket on the main body of the radio. Connect a 200pf disc ceramic capacitor to the junction of C44 and R32 on the receiver circuit board. Connect the free end of this capacitor to the wire from the socket on the main body. The complete oscillator dimensions can be made the same as the sampling scan board or one inch square, and also fit easily into the space behind the offset switch or between the upper and lower control head circuit boards.

Major concludes by saying "good luck and 73." I'll say thanks and keep 'em coming. Good technical articles are always needed for the old C&E.  
Joe, K5JB

## Homebrew Dual Timezone Clock

Here is a goodie prepared by Al Rauscher, K5CXP. It was done so beautifully I thought it best to strip it right in without retyping.

Poor Man's Universal Coordinated Time Clock

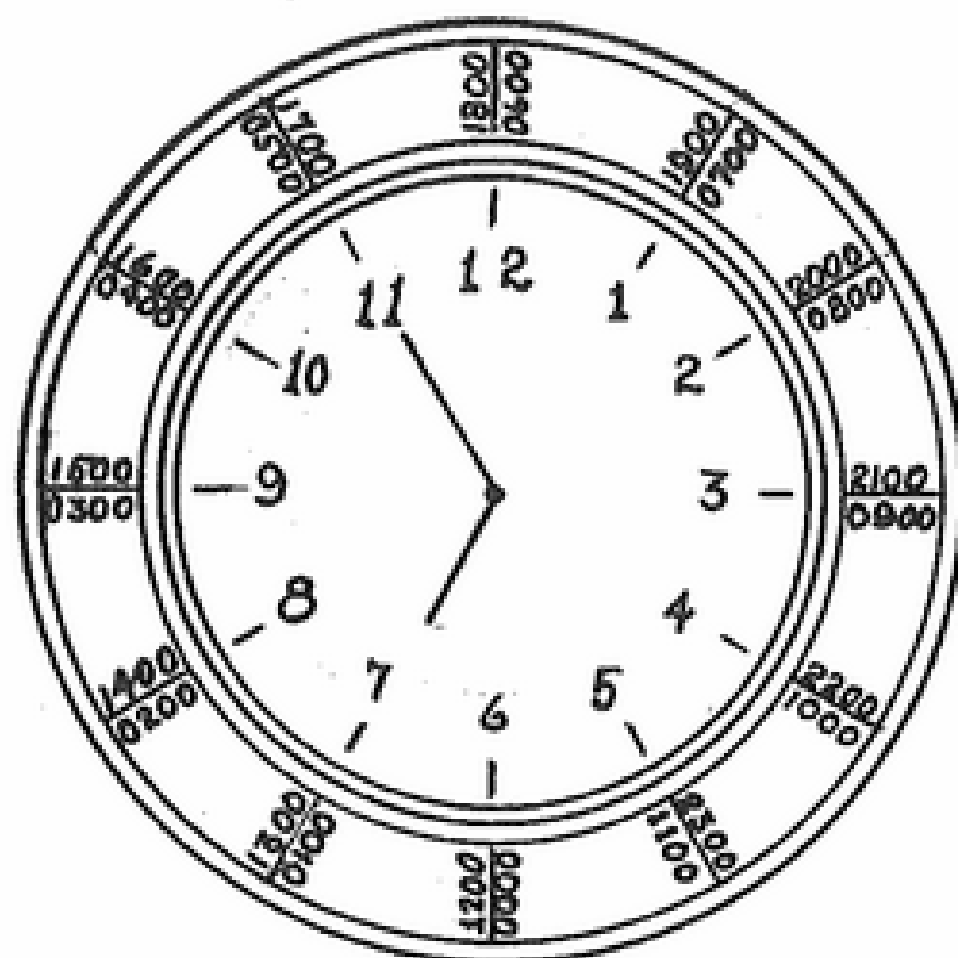
- Or Add A Bezel To A 12-Hour Face

A simple rotatable clock face added to a standard clock will provide simultaneous indication of UCT and local time. By making the supplemental face rotatable we thus have the ability to maintain the correct difference between local and UCT as local time shifts between standard and daylight saving time.

I will describe my approach to establish the idea. Various materials and techniques could be employed.

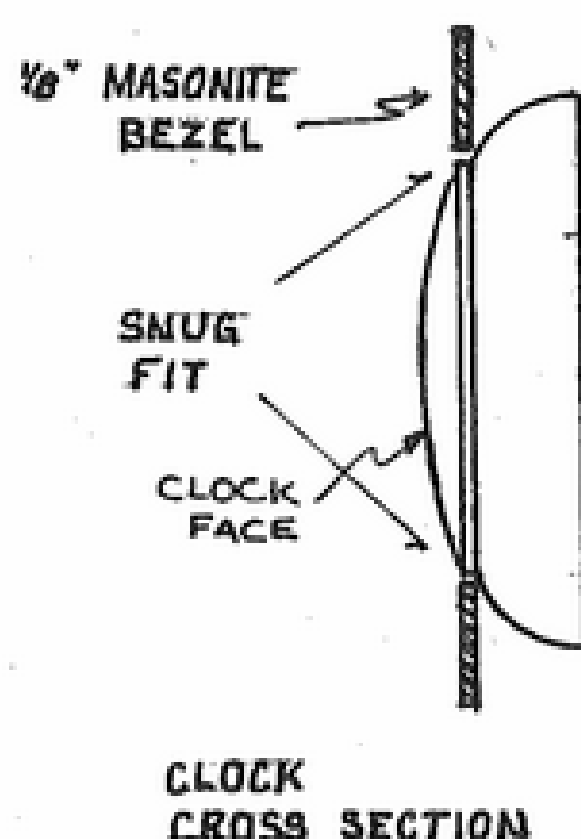
My choice was an eight-inch kitchen clock with a round retainer ring for the glass protruding approximately one quarter of an inch. The ring's outer edge should not slope away from the face but should be at right angles to the face as it is the only support and bearing surface for the bezel to be added.

Using 1/8" masonite I cut a flat 2" wide ring with an inside diameter such that it snugly slipped over the face glass retaining ring. It should press on fairly easily and stay firmly in place.



With a compass I duplicated, on construction paper, the flat supplemental ring adding radius indications every 30 degrees. At each 30 degree mark I lettered two sets of the 24-hour clock numbers, i.e. 1200 and 0000, 0600 and 1800, etc. This resulted in a 24-hour clock face which was glued on the masonite ring.

To establish the correct position of the bezel it is only necessary to know your time zone. The "0", GMT, GCT, or UCT time zone extends from 7½ degrees east longitude to 7½ degrees west. The "+1" zone is from 7½ degrees west to 22½ degrees west. The "-1" zone is from 7½ degrees east to 22½ degrees east. Every 15 degrees of longitude represents one hour. Algebraically add your time zone number to local time to ob-



tain UCT. Central Standard Time is in the plus 6 time zone. Central Daylight Time is equivalent to Eastern Standard Time or the plus 5 zone.

Every 12-hour clock makes one demand on the reader. It is a prerequisite for accurate reading that the reader know whether the sun is ante or post meridian. We do this automatically when we look at our watch (if it is not digital) and it is no problem. The same requirement exists when reading in terms of 24 hours from a 12-hour clock face. Al, K5CXP

Many thanks, Al. You and Major saved my neck this month. I was running out of ideas and time with paste-up right around the corner.

My original twenty four hour clock only had one time zone but it could be left on zulu for radio logging purposes. I removed the clear plastic cover and hands from a cheap electric alarm clock. With dry transfer rub-on letters I added the hours 1300, 1400, etc. and even got carried away and added my call to the face.

I have to admit Al's is a lot prettier. Keep those hints and ideas coming guys. Joe, K5JB

## Troubleshooting Continued

After preparing last month's article on using simple equipment and elementary logic to find the trouble in a broken radio, I came up with some more random tidbits to add this month:

Fred, W5NL, inspired me to mention the use of the sense of touch as a troubleshooting tool. He had experienced an intermittent problem with a vacuum tube rig. It quit transmitting after a short period of operation from a cold start. First a word of caution, Don't poke around in a rig having high voltage (anything over 24 volts) with the fingers unless 1. you are absolutely sure the thing you are about to touch is not live, and 2. one hand is in your pocket.

Fred had determined that a carrier oscillator was not functioning. He tested all the voltages, which appeared OK. He ran all the diagnostics he could with simple equipment but still no luck. With only a small number of components involved in this oscillator he began systematically checking each one. When he touched a small 200pf capacitor, it was hot to the touch. Now there is no reason why a small capacitor in this type of circuit should be hot, so he changed it. I won't keep you in suspense. That fixed it. It also gave Fred something to brag about the next Saturday on 40 Meters, and rightly so.

Some parts will run normally hot, but not too many. The most obvious symptom of a problem is smoke and an odor that somehow affects the stomach - it upsets it! Upon examination of equipment which has turned belly up with a puff of smoke, one can usually find a little black thing, or things, where resistors used to be. These are symptoms of a problem and the best thing to do is study the schematic to determine where all the current that did the damage might have come from, or where it might have gone. Causes may be a short circuit from a bare wire or part that got against a ground, a failed transistor or a capacitor that went shorted. It is unlikely that a resistor would have shorted. These shorts can usually be traced out with an ohmmeter.

Another word of caution. In some circuits the innocent looking little transistor you are about to put your finger on might be as hot as blazes and will raise a blister in about a microsecond. The little bitty ones used as class A amplifiers in rf stages can't dissipate heat too well and might be as hot as 300 degrees and be working just fine. Be careful not to take too long deciding a component is hot!

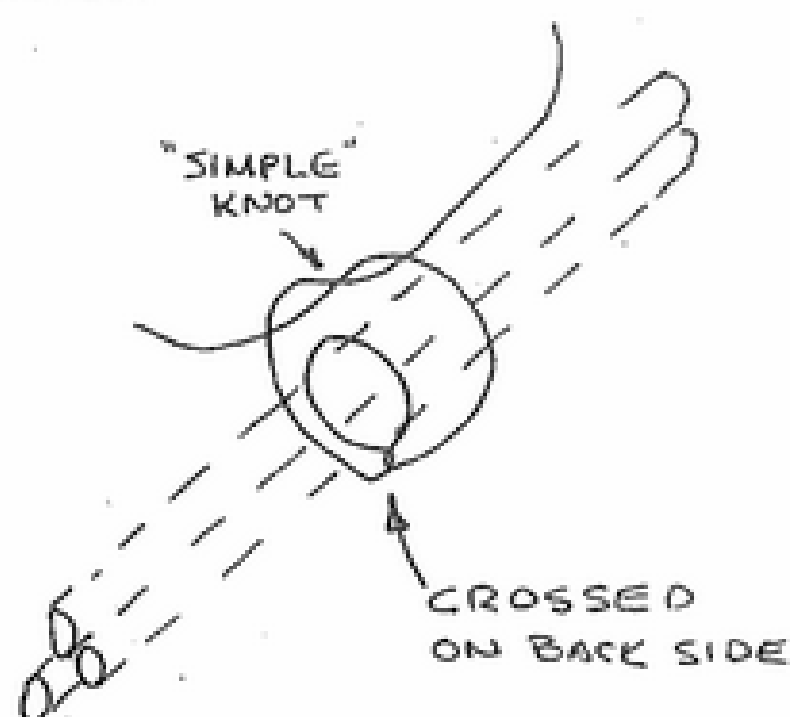
It can't be overemphasized how important a good visual inspection of the equipment might be. I have probably fixed more things by tak-

ing time to give a good look at the thing. A bad solder joint is easy to spot in a good light if a magnifying glass is used to carefully scan every inch of the circuit board. Gently flexing a faulty board will sometimes stir up the problem and help localize it if it is caused by a bad solder joint. A couple of times I have found cracked resistors by this method. Those little things are not too flexible and a strain on the board can cause a crack that is almost impossible to find unless the part is disturbed. A plastic tuning tool is useful for probing parts and looking for this kind of problem.

It is really amazing how many times I dreaded to get into a piece of equipment, only to find when I did that a loose wire was staring me in the face! Where it belongs can usually be determined by more careful examination. If it broke, there will be a little stub somewhere. If it came loose from a solder joint somewhere, there will be a blob of solder close by that looks like something is missing. It never hurts to find the circuit on the schematic and check it out to be sure before connecting the plus twelve volts to ground!

Microphones seem to be involved in a lot of problems. The normal flexing they get in use and the occasional overstress from being wrapped around the steering wheel, etc., if tough on the little wires in the mike plug. Sometimes it is more than the little wires on the other end of the cable can take also. Trouble with keying or loss of transmit audio, if it is being caused by a faulty mike cord, can be traced out with an ohmmeter. Most microphone cartridges nowadays are dynamic and exhibit 500 ohms or so. An ohmmeter can easily tell if there is an open circuit or a short between audio and ground. The only problem is keeping the test leads connected to the terminals long enough to run the tests, with all the wiggling that may be necessary. If a broken wire is found, it may be a good idea to remove all the wires, make a sketch so it will all go back together correctly and trim back to get some fresh wires involved. If one only resolders the broken wire, it may be shorter than the rest and bear the brunt of subsequent abuse.

Which reminds me, a stranded wire soldered to make a connection, is stiffened by the solder and all movement will be concentrated where the solder stops. The wire will break at that point if it is allowed to flex. One method that I use to anchor wires is to tie them down with waxed lacing cord. Heavy thread like coat button thread will work as well but the secret is in the knot used to tie the thing. I don't know if I can adequately explain, without demonstrating, the knot that I use but I'll give it a try. A piece of cord is cut long enough so both ends can be grasped with the hands. If you are handy with hemostats, shorter pieces of cord can be tied, and in tighter spaces, but the hemostat is not necessary. Refer to the figure for a sketch of the knot being formed so I can save a thousand words.



Cable tying knot

Both ends of the cord are passed over the wires being tied, crossed and reversed on the back side, and brought back together on the front side. If the knot is being formed in the desired place on the wires, the two ends are formed into a simple knot and the thing pulled snug. Because of the mechanical advantage of the string being crossed and doubled back, it is easy to cut the insulation on the wires so be careful at this point that excessive tug is not put on the wires. If everything is where you want it to be, form a second knot over the simple knot, resulting in a square knot, (or granny knot if you did it backwards, makes no difference). At this point, if you aren't lacing a bundle, cut off the loose ends of the cord and you're finished. Waxed cord is easier to use because it resists slippage while the knot is being finished, but, any old string will work quite well. Sewing thread, if it is small would have more of a tendency to cut the insulation so be extra careful and it should be satisfactory.

If you want waxed lacing cord and you don't want to spend \$11.00, or so for a thousand year supply, try waxed dental floss. Looks like the same stuff.

If you want to really get into cable lacing, I think there is a section in the ARRL Handbook on the subject. For a test on how good you can form the knot described here, try tying a bundle of pencils with this knot. Keep trying until you are unable to pull one of the pencils from the bundle. You are then ready to cut plumb through the insulation of a bunch of wires. (I knew there had to be a good reason why nylon ty-wraps were invented!)

A word about soldering. Too often we are given instructions to use a "low wattage" iron. Do not get carried away. By "low wattage" they mean, less than a 350 watt soldering gun. Too much damage is done if insufficient heat is available to melt a solder joint quickly. The heat is conducted to the connected parts, damaging insulation and parts, and on circuit boards, damaging the adhesive holding the copper to the board. On circuit boards, a thirty or forty watt iron is ideal. Circuit board repair would take a book to cover. In most cases, quickly heating a joint and walking a part out by alternating leads, allowing the joint to cool between applications of heat will cause the least damage. The holes can be opened by a sewing needle after the part is removed and heat is applied one last time before insertion of the new part. It is really better to remove old solder because it deteriorates at elevated temperatures, but don't tear up the board if you don't have the proper tools. Just get on and off quickly with a hot iron and very little harm will be done.

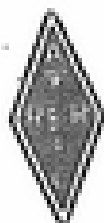
Maybe next month we can continue with this ramble about fixing things, if I either get some more ideas or something else breaks. The most important thing is to not be timid about opening equipment and looking inside. Pick a time when you are relaxed and can put the thing back together, or make notes on how it came apart. It is not really necessary to have the factory repair manual but it is nice. Perhaps, now while everything is working would be a good time to order one, before you need it!

Joe, K5JB

FOR SALE: R.L. DRAKE DL-300 DUMMY LOAD (AIR COOLED, 300 WATT), BRAND NEW IN BOX. MARIE, WA5JGU'S BETTER HALF, WON IT AND SAYS CHARLIE IS TOO CHEAP TO BUY IT FROM HER SO SHE WILL SELL IT TO SOMEONE ELSE FOR \$20.00. 943-5631

FOR SALE: YAESU FRG-7 GENERAL COVERAGE RECEIVER SYNTHESIZED, COVERING .5 to 30 MHz, \$200.00, CHARLIE, WA5JGU, 943-5631

FOR SALE: YAESU FT-570, 10 THROUGH 80 METER TRANSCEIVER, 500+ WATTS PEP, IN MINT CONDITION, \$375.00, WITH MATCHING DESK MIKE \$390.00. DALE, W5KYL, 478-4900.



LEONARD HOLLAR, W5FSN  
SECTION COMMUNICATIONS MANAGER

Part 97.1 (a) Recognition and enhancement of the value of the Amateur Service as a voluntary non-commercial communications service, particularly with respect to providing Emergency communications.

The very basis of our existence, and the privileges that we enjoy. This will be too late to exhort you to help with Thanksgiving Traffic. But, not too late to encourage your help in the Christmas Traffic. Your help will be appreciated.

Now for the Emergency side of our hobby. Our State Civil Defense Office has recognized our capabilities. It seems, we really got the job done during some of the Autumn flooding, and that effort has been recognized.

Bennett Basore, W5ZTN and Don Rooker, K5SJV, met with State C.D. Officials recently and laid the groundwork for furthering the plans for Joint A.R.E.S.- C.D. operations during and in the event of an Emergency.

Now is the time for all interested Amateurs to contact your nearest A.R.E.S. E.C. and get on board to do your part. (E.C. list in separate column). Our emergencies are not confined to Storm Warning and Watching.

There are enough of us, in numbers, to provide help to our Weather Watch, the Red Cross and the Civil Defense.

An Emergency is no respecter of the calendar, nor the clock, and very definitely not locations. Simply showing up during an emergency is not enough. Do you know what to do? Where to report? and with what equipment? This can be learned by meeting the various ARES nets and meetings. Training in message handling is available every day on the Traffic Nets. There is a place for YOU.

One thing that is as sure as Death and Taxes is that during an emergency, there is no room for time for petty jealousies. This must be looked at and smoothed out during training sessions.

ARRL sets out Guidelines for operating during an emergency. Not hard and fast rules. Each situation will be different. It behooves our leadership people to look for and make the best use of the equipment and personnel available. From then on it becomes a team effort to get the job done, as quickly and accurately as possible.

*Leonard Hollar W5FSN*

Oklahoma A.R.E.S. Leaders, Nov. 1 1981

S.E.C. Bennett Basore, W5ZTN, Stillwater  
E.C.'s by Counties:  
Atoka, Gary Cooper, WB5WWU Atoka  
Beaver, John Shaw, WB5UOE Beaver  
Caddo, Winston Northcutt, WD5ETB Cement  
Carter, Charles Dibrell, W5BLW Ardmore  
Cherokee, Carl Mahaney, K5JLS Tahlequah  
Choctaw, Geo. Weldon, WB5ULI Hugo  
Cleveland, Jessa McKinzie, AF5X, Norman  
Comanche, Charles Crawford, K5BYF, Lawton  
Craig, Robert Lawhon, AI50 Vinita  
Ellis, Rod Ford, WB5OVT Gage  
Garfield, Chuck Patton, WA5UJF, Enid  
Grady, Don Newman, WB5RXX, Chickasha  
Harper, Lee Rogers, W5HGH Buffalo  
Jackson, Dwight Dennis, WB5KRH Altus  
Kay, C.L. Hallmark, W5ZWM Ponca City  
McClain, Fred Beck, WB5RAP Purcell  
McCurtin, O.A. Cook, W5JFT Broken Bow  
Muskogee, Joe Borovetz, WA5VMS, Muskogee  
Oklahoma, Donald Rooker, K5SJV, Bethany  
Okmulgee, David Horn, N5CG, Okmulgee  
Pawnee, Leonard Freise, WD5ICO Pawnee  
Pottawatomie, Earl Couch, WB5ZBA Tecumseh  
Stephens, Ron Twelves, W5QOZ Duncan  
Texas, Tom Kimber, WD5GLA Guymon  
Tulsa, Tom Shaw, K5OVT, Tulsa  
Washita, Herschel Gordon, N5ABM Cordell  
Woodward, Bill Reid, WD5DFH, Mooreland



WHEATSTRAW ARC ®  
01-67

MERRY CHRISTMAS!!! The first and most important business brought before the Wheatstraw Amateur Radio Club that met in Calumet Sunday was our annual Christmas dinner. Everyone is invited to meet at Wyatt's Cafeteria at 2:00 Sunday December 13. We plan to gather in the parking lot so we can go in as one group so we can be seated in one place and keep some from getting a head start.

After the dinner it will be time to once again elect the leaders of our group for the coming year. The candidates nominated were:

for pres. WA5GHK and WD5GLD  
for v.p. WA5FLT and KA5FUU  
for sec/tr. WA5PFK and K5GGL

railroaded or nominated for reporter WD5JNT. If your favorite person or persons does not appear or if any one feels left out, don't despair because there will be time after the dinner for more nominations.

After the monthly Cora report we had Leonard W5FSN volunteer for net control for next month.

After several other discussions, we then adjourned to the goodies. The hot chocolate sure hit the spot. While we were all busy cleaning up the cake pans Joe WA5FLT put an education tape in his video recorder on digital characteristics and their operations that fascinated most of us, and I noticed a few brains that looked like they understood it.

Thank you Calumet for having us. Do not forget WYATTS CAFETERIA Northwest Highway and Rockwell at 2:00 Sunday the 13th. All guests welcomed. Tune in our weekly net 8:30 Wednesday night so you can learn the answer to the question "Marvin, did you get all your wheat planted yet?"

I doubt if anyone ever reads this section but if they do, they might remember that last spring there was mentioned several times that the Wheatstraw Club was offering a trophy to any group in Okla. for the highest score on Field Day. If so, they might wonder who won it. Well just in case any one does wonder, it went to a good home. The high score could have been as low as 3 without making any difference in where it went. That is right!!! It went to the only group that submitted a copy of their Field day log. It stayed in the Wheatstraw Club since there was no other group that wanted it bad enough to enter a log. Is there any point in making another offer next year????? TED WD5JNT

Oklahoma Net Report for October 1981

Net	Session	QNI	QTC	WX
O.P.E.N.	4	214	27	
O.P.O.N.	22	314	76	
S.T.N.	27	310	76	
O.T.W.N.	26	473	335	309
O.L.Z.	31	193	69	
O.N.O.N	31	459	82	
Q.C.W.A.	4	146	11	
N.W.O.S.	12	79	5	

FOR SALE: Complete station. All as new condition. Ten-Tec Argonaut & linear, Vibroplex key, Keyer, Power supply, 10-81 meter vertical, all misc. Package deal \$330. Call (405) 482-2625.



Maxey's Cycle, Inc.

4112 N.W. 39th • OKC  
SALES, SERVICE & ETC.

HONDA DEPT.  
(405) 946-0558

YAMAHA  
(405) 946-9931

6-2

**DO YOU REMEMBER  
PEARL HARBOR?  
IF YOU DO AND WERE THERE  
WE WANT YOU AS A MEMBER**

**REMEMBER PEARL HARBOR  
DECEMBER 7, 1941**



**The Pearl Harbor Survivors Association** is seeking out all living survivors. If you were in any Branch of the Military Service on Dec. 7, 1941, and were on the Island of Oahu or within a three-mile radius of the Island, you are eligible as a survivor.

**WE NEED YOU! YOU MAY NEED US!**

**REMEMBER PEARL HARBOR - - - KEEP AMERICA ALERT!**

**CONTACT OR PHONE**



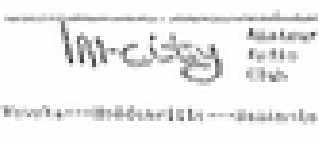













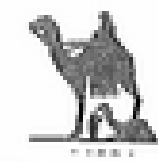

**PEARL HARBOR SURVIVORS ASSOCIATION**

677-6822  
943-5102



PRINTED IN U.S.A.

T.W.N. 7/69

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<b>DECEMBER</b>		 1	<b>MORI</b> DOTSON'S 4101 S. Western 2 6pm	3	 <b>HERITAGE HOUSE</b> 4 7:30pm	5
6	 USAF MARS 7	 8	9	 10	11	12  K-Boob's 7pm
 13	 14	 CHRISTMAS PARTY 15 O.C.F.D.	 16	"RUSTY NAIL" DINNER kay 17 6:30	 18	19
 20	 21	 22	23	24	 25	26
27	28	29	30	31		

Can you wear

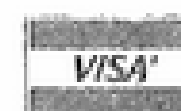
## SOFT CONTACT LENSES ?

Find out if you can wear soft contact lenses. Just drop by for a free computer analysis using our System 6600 Autorefractor.

If the signs are right, we'll place soft contact lenses on your eyes and make a further evaluation. Bring your written prescription if you wish. Patient normally gets lenses IMMEDIATELY!

Dr. Robert Goodhead  
Optometrist, Inc.  
2821 N.W. 57th St.

**840-1234**



*Ask Doc, WA5CZN, about his fantastic contacts!*