

# CENTRAL OKLAHOMA RADIO AMATEURS COLLECTOR AND EMITTER



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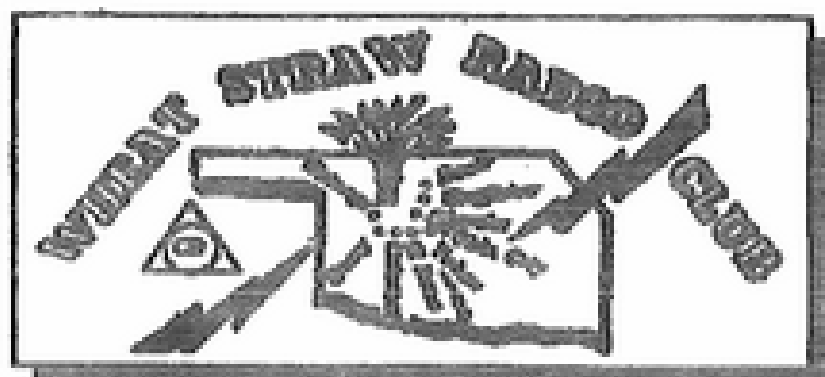
Second Class Mail



July 1993

Volume 19

Number 6



The Clubs annual May covered dish dinner was held May 16 with the weatherman giving us a 40% chance of it raining. I think that discouraged some of the members. Having some sickness in the club and they did not need to get wet. We wish a quick recovery for every one.

Well we missed the rain. All fourteen enjoyed The dinner, meeting and fellowship.

President AB5Z Ray called the meeting to order at 2:30pm. In the absence of the secretary WA5PFK kept he minutes. It was reported that WA7AZ0 Carl had some good days last week. WZ5H Leo And ANN was sick today.

The place of the next meeting and field day being discussed WA5GHK Joe made a motion, the June meeting is held Saturday, June 26 along with the hamburger fry on field day. The motion was seconded by N5VDY Jim. Motion carried. It is to be in the Kingfisher park where we had it last year. WA5VNF Mary Ann is going to try to get the same shelter again this year, We will start about five o'clock pm. The hamburger-meat and buns will be furnished by the club. Those attending bring dishes that goes along with hamburgers. Something for our good cooks.

'Cowless' Cow Patties

Unusual name, but good!

1-cup shortening +1cup Margarine +2cups white sugar+ 2-cups brown sugar+4-eggs +2-teaspoons vanilla +1-teaspoon baking soda+1-teaspoon baking powder +1-teaspoonsalt+4-cups flour+1-cup

shredded coconut +1-cup pecan pieces+ 2-cups cornflakes+ 1-pkg (6oz)chocolate chips. Cream shortening, margarine and sugar. Add beaten eggs and vanilla Add flour, baking powder and soda, mix and drop large spoonfuls on cookie sheet. Spread each one slightly with back of spoon. Bake at 350 F for 15minutes. Makes about ninety cookies. "Could you tell me how to get to McMinnville from here?" "Sure, Go up here three miles and turn left on Jackson Road wait, that won't work. Go on back there four miles and take a right on Old Smith Road. ,No wait, that won't work, either. Hmm. To tell you the truth, mister, if I were going to McMinnville, I wouldn't start from here at all.

"Are there any good girls in this town?" "Mister, all the girls in this town are good girls. "Then how far is it to the next town?

A man was out hunting. A game warden walked up. Sir, may I see your hunting license please? The hunter took out the license handed it to the warden. "Wait a minute ",said the warden. This is last years hunting license. Hunter said,"That's all right, I am just shooting at the ones I missed last year

"How come I can't go turkey-hunting with you?" "Because the game warden told me my limit is one turkey at a time.

A word to all Veterans of all wars. Far too many Veterans of all ages do not belong to any vet's organization. That is a mistake I think. If you do not stand for your rights, who do you expect to. Join a veteran's organization and let your voice be heard. Write to your

members of Congress. The Department of Defense is now trying to get Veteran chapters and post to join n for the years of 1993 through 1995. It is the 50th Anniversary of WWII CommemorativeCommunityProgram.

Check with your commander or adjutant for further information. If he does not have the application, write to. DOD 50th Anniversary of WW11 Commemorative Committee 1213 Jefferson Davis Highway # 702 Crystal City, Va.22202-4303 They will send your group a Commemorative kit. Helpful suggestions for participation of your choice. There will be a Commemorative flag that your organization will have permission to fly.

The April 15 issue of the W5YI report gave the Commission decision for some Amateurs automatically forwarding an anti-war packet message. The message urged amateurs to vote against the Persian Gulf war by telephoning "900-44-noWar to tell president Bush NO! WAR. It automatically wound its way through several packet stations before being killed. The Commission believed that the message was a prohibited communication in that it advanced the business interests of The Coalition to stop U.S.intervention in the Middle East" Furthermore 900 phone calls almost always generate revenue which presented the likelihood that this might also be a fund raising Scheme. Eventually charges against the Amateurs who unintentionally forwarding the "900-44-No-WAR"messages were dropped when they agreed to screen communications flowing from their stations for compliance with the rules. One of those amateurs cited was Richard A.White, licensee of amateur

station KAST. He did not want the violation to show up on his FCC record and retained Washington, D.C. Lawyer: John J. McVeigh (Who is also KD4VS to get all references to it removed. McVeigh demanded that the FCC completely withdraw the violation notice and all related correspondence from Richard White's files. The FCC declined, however, to remove all correspondence concerning the incident from White's record. McVeigh told W5YI they will probably appeal that decision.

The new proposed rule 97.3-03 Frequency sharing requirements. No amateur station transmitting in the 219-220 MHz segments shall cause harmful interference to, nor is protected from interference due to operation: (1) Automated Maritime Communications System. (2) Broadcast television Channels 11 and 13. (3) Interactive Video Distribution Service. (4) Land Mobile Services, or (5) Any other service with a primary allocation in or adjacent to the band. No amateur station may transmit in the 219-220 MHz segment from a location that is within 50 miles of a automated Maritime Telecommunications System Coast station unless the amateur licensee obtains written approval from that Automated Maritime Telecommunications System licensee. No station may transmit with a transmitter power exceeding 50W pep on the 219-220 MHz segment of the 1.25 M band. I noticed another interesting article in the W5YI report. The ARRL has filed a motion to support the FCC in a lawsuit filed by broadcasters who seek to overturn the way the FCC enforces indecent prohibitions through financial penalties. There is a long list of pros and cons. Personally I am in favor of the FCC controlling the act.

K2BSA, the headquarters hamstation of the Boy Scouts of America, will be getting half of the new 20' x 40' building to house the K2BSA ham shack complements of Metrocel, a cellular communications common carrier. The international headquarters is at Las Colinas, in near by Irving Texas. The station will be located in Camp Wisdom at Dallas, Texas on land owned by the

Circle 10 Council of the Boy Scouts of America. In exchange for allowing Metrocel to construct a Cellular telephone site on one of the hills in Camp Wisdom and occupy half of the building, Metrocel has agreed to construct the Boy Scout communications building and maintain it at Metrocel's expense. Included in the deal will be a 125-ft high tower to house the K2BSA antennas as well as the Metrocel cellular service antennas. K2BSA ultimately plans to operate all bands from 160 meters through 450 MHz at the new site be completed this summer. Plans are to use the new station during the Worldwide jamboree on the air (JOTA) which will be held October 16 and 17. K2BSA also plans to operate portable at the National Jamboree to be held at Fort A.P. Hill in Virginia in early August.

The FCC has suspended its semiannual testing for commercial Radio Operator Licenses and has established an interim testing procedure. Because of budgetary constraints and the Commission's recent decision to privatize the administration of examinations for commercial radio operator licenses, the FCC has suspended its regular scheduled Commercial Radio Operator testing sessions.

A license may be obtained with a letter from a soon to be employer that his or her job requires a license.

The May 1 issue of the W5YI report has several articles on packet Hf and VHF. I do not have packet equipment. With very little knowledge of packet I am not writing about it. There were some reports on the STS-56 SAREX mission. The mission was a Big Success.

The novice VE testing is working out quite well, with VHF and UHF rulemaking changes to affect novices, PR docket 92-2-89. These articles were taken from the W5YI report.

"I want you to come out to my place and ride my new horse."  
"But I've never ridden a horse." Then you'll be starting even. This horse has never been ridden.

73, WA5PFK, Ralph

## Editorial Staff

Scott Walsh, N6NYS, Editor  
Terry Tiller, K85RGT, Circulation/Editor  
S.A. Kelly, AB8MI, Alternate Circulation  
Joe Harding, WA5ZNF, Editor Emeritus

## CORA

Frank Tatone, AA6GI, President  
Kathy DeGraftenried, AA6RU, VP  
Jen Buswell, N5BEO, Secretary  
Tom Mingham, K5IDI, Treasurer

Dear Subscriber,

PLEASE help us keep your information up to date. What are, where, when, who are your officers, editors, and their phone numbers. Check your entry, it can be changed. If there appears to be a mistake, check with your club official. We can't do a thing about it if you don't. Below is a sample label:

4 92/01 2  
Wilson, Mike WA3RTY  
1234W 49  
McCloud OK 74851

The "4" means Autopatch Club. "92/01" means he is overdue. The "2" is for postal rates.

Dear Secretary/Treasurer,

When you want a change of any sort to your membership, you must fill out completely a subscription slip. Watch for the date you received their money and the date the subscription expires. Have your slips, or list of deletions submitted by the 22nd of each month. If there is anything about C&E subscriptions you need to know, please contact us.

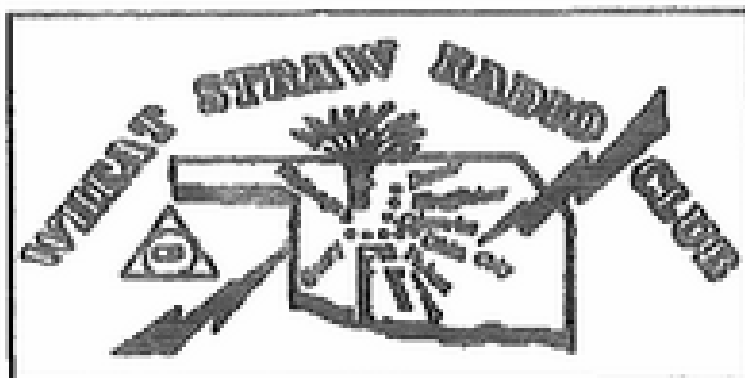
Story information, as well as letters to the editor should be sent to Scott Walsh, 600 Annewood Dr, Yukon, OK, 73099-2603 or left in their entirety on the Q&T BBS at (405) 354-3241. You can also leave your article in N5PHW's packet mailbox on 145.03.

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Hearing a lot of tune ups on net and qso frequencies in session. I do not believe all of the tuners are members or wanting to join in.

I was talking to two other amateurs out of state. We moved to what we called the other frequency. We were found and had to close down. This is not too often nor is it being an amateur.

The only reason for mentioning this, is I had been doing some reading about antenna tuners. Not having an amplifier nor planning to get one. I got me a model MFJ-949-E with a dummy load built in. You can tune up on a dummy load which does not go out on the air. Then if the swr is not on zero and the net control says we'll pause for tune up, it takes just a quick touch. In fact when you are transmitting you can bring the swr to zero. You will not get an accurate reading on the output. It handles 300 watts.

I do not wish to tell anyone what brand of mdse. to buy. I am satisfied with mine. For the ham who does not have the space, going on a vacation or DXpedition. In the June issue of the QST. Page 149. Read all about the Super Hi-Q Loop Antenna. 10 to 30 MHz, continuous tuning. Only 36 inches in diameter. Its rugged all welded aluminum. It can be used in a hotel handling 150 watts.

#### REPRINTS FROM W5YI

New Club Call sign Assignment System

The FCC Commissioners have

adopted an Order to implement legislation which authorizes the commission to use volunteer organizations to provide amateur service club and military recreation call signs. The new rules, released May 19th, provide for the establishment of call Sign Administrators that enter into a written agreement with the Commission.

The American Radio Relay League (ARRL) immediately expressed an interest in being seated by the FCC as the only club and military station call sign administrators.

There are more details in the W5YI REPORT.

Novice testing under VEC system

In the last issue we mentioned that the FCC Commissioners had agreed to place Novice amateur operator testing under the VEC system. At that time we only had a copy of the FCC press release. We have now received the actual text of the report & order (R&O) which was released on May 14th and can now report on the matter in a more accurate and thorough manner. Here is a complete rundown on the FCC's decision to fold Novice testing into the VEC System as extracted from the R&O.

Accordingly, the FCC has decided effective July 1, 1993 to change the amateur service rules to place the responsibility for the preparation and administration of Novice Class operator license examinations under the VEC System and to allow recovery of out-of-pocket costs for coordinating and administering such examinations.

73's WASPFK Ralph

#### ALTUS AREA AR ASSOC.

Two extra testing sessions were held this month, primarily to fit those technician candidates who had been preparing for their exams using the present study guides. It was a great success. A total of 25 people tested at the two sessions and nine qualified for Technician licenses, one upgraded to Advanced Class and one qualified for 4B Extra Class theory. Two new "Now You're Talking" study guides have been placed in the Altus Public Library so those who wish can benefit by the new criteria. Many thanks to the many V.E.s who made this possible.

Good participation is expected for Field Day and we will hold our first hidden transmitter or "BUNNY HUNT" in early July. In August we will provide communications for the Annual Quartz Mountain Bike Race. The Altus Area Amateur Radio Association is growing not only in numbers but in enthusiasm as well. Programs at our meetings are more and more interesting and the attendance is growing constantly.

73 de Bob Heron, KE4BN



# The City of Oklahoma City

## Proclamation

WHEREAS, Ham Holidays is the largest amateur radio event or "hamfest"; and

WHEREAS, Ham Holidays attract over 1,500 amateur radio operators from Oklahoma, Texas, Kansas and Arkansas; and

WHEREAS, there are over 6,500 amateur radio operators in the State of Oklahoma who willingly volunteer their time, equipment and personal resources to assist Oklahomans in many emergency situations and public events;

WHEREAS, Ham Holidays have been held in Oklahoma City since 1973 with Ham Holidays '93 marking the 20th anniversary; and

WHEREAS, Ham Holidays have many events that the citizens of Oklahoma City can enjoy and participate which includes various technical programs, exhibits, equipment dealers, flea markets, entertainment and organization of a state-wide communications network.

NOW, THEREFORE, I, RONALD J. NORICK, Mayor of The City of Oklahoma City, do hereby proclaim the week of July 19 through 25, 1993 to be

"AMATEUR RADIO APPRECIATION WEEK"

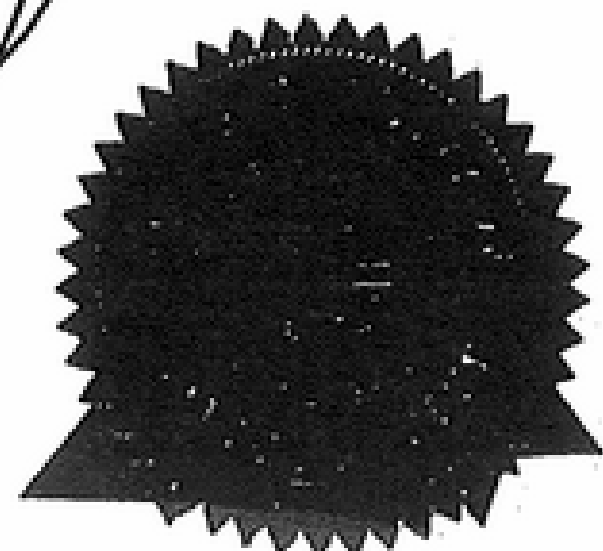
in The City of Oklahoma City and call upon all citizens for their support for ham radio operators and Ham Holidays'93.

Given under my hand and the Seal of the City of  
Oklahoma City this 8<sup>th</sup> day of June, 1993.

Attest:

Thomas L. Hawley  
City Clerk

Ronald J. Norick  
Mayor





Federal Communications Commission  
Field Operations Bureau  
9330 LBJ Freeway, Suite 1170  
Dallas, Texas 75243  
June 1, 1993

CERTIFIED MAIL NO. P 994 011 868  
RETURN RECEIPT REQUESTED

Refer to: DL-93-325

Mr. John W. Lewis  
3508 Smokey Hollow  
Edmond, Oklahoma 73013

Dear Mr. Lewis:

This office has received an inquiry from the Oklahoma County Civil Defense regarding the status of Amateur license K2JDV which you reported to be your Amateur Call Sign. We have searched the FCC computer records and do not find call sign K2JDV or any other call sign assigned to you. In view of the information stated by you on your application for RACES, and the indications of our records, your attention is directed to the provisions of the Communications Act of 1934, as amended, and the Commission's Rules and Regulations governing the operation of radio transmitting equipment.

Under the Communications Act and the Commission's Rules and Regulations, radio transmitting apparatus (other than type accepted transmitters properly operated in the Citizens Band and Remote Control Radio Service, and certain low powered devices operated in accordance with Part 15 of the Commission's Rules and Regulations) may be operated only upon issuance by this Commission of a station license covering such apparatus. Unlicensed operation may subject the operator to serious penalties provided for in the Communications Act, including for a first offense an administrative fine of up to \$10,000, or criminal penalties of up to \$100,000 or one year imprisonment, or both, and for subsequent offenses a fine of \$100,000 or two years imprisonment, or both. Because unlicensed operation creates a definite danger of interference to important radio communications services and may subject the operator to penalties provided for in the Communications Act, the importance of complying strictly with the legal requirements mentioned above is emphasized. Unlicensed operation of this radio station should be discontinued immediately.

In view of the foregoing, you are requested to submit a statement to this office within ten (10) days of receipt of this letter concerning your claim to be licensed as a General Class Amateur Radio Operator under call sign K2JDV. If we are unable to resolve this matter by letter, please be advised that we will investigate this matter further when we are next in your area and that we will take appropriate enforcement action on any Communications Act or FCC Rule violations we observe.

You are further cautioned that willful false statements, or the concealment of a material fact, in response on this letter is a violation of the U. S. Criminal Code, Title 18, Section 1001 for which severe penalties are provided. Your full cooperation in this matter is encouraged.

If you have any questions concerning this matter you may contact me at (214) 235-3369. When contacting this office, please refer to case number DL-93-325.

Very truly yours,

Robert E. Darling  
Acting Engineer in Charge



VHF Club  
**NEWS**  
W5LOW  
*The Elmer Gochler Memorial  
Station*

### Minutes of June Meeting

Meeting was called to order at 12:01 P.M. by President J, KB0QJ, with 20 members and guests present. Minutes of the last month's meeting were not yet published in the C&E so I grudgingly read them. They were accepted anyway. Treasurer Ellard, W5KE, gave his report and advised that the bank finally got our account charges straightened out.

Charlie, WA5JGU, gave the CORA report, and Bob, W5HXL, advised where the QCWA breakfast would be held Ham holiday weekend..

Meeting adjourned at 12:24 P.M. and I passed around exhibits that will be described in this month's C&E.

Joe, K5JB, Sec'y

### Pecuniary Interest

The following bulletin was forwarded to me by Dave, WB5FWE, who suggested it may be interesting to those who frequent the packet bulletin boards and may from time to time post bulletins offering things for sale:

#### *Packet and business*

Just a brief reminder - business is not legal on ham radio. This would include solicitations for an electrician to do work, or tell a customer that his rig is repaired and ready for pickup. It's quite easy to forget that we have these restrictions. Packet is a very informal and casual mode. I've sent replies to a few who forgot, and invariably received a big "thanks" for reminding them. Hopefully this note will jog all our memories a little.

Another business practice is listed in part 97.113 (a)

(2) Inform other amateur operators of the availability of apparatus normally used

in an amateur station, including such apparatus for sale or trade. This exception is not authorized to any person seeking to derive a profit by buying or selling such apparatus on a regular basis.

This specifically limits equipment offered for sale via packet to "apparatus normally used in an amateur station". Applying a little logic here helps us ascertain pretty clear-cut guidelines. Business band radios are OK, because we convert them to amateur frequencies. Even rigs that don't readily convert could be sold for parts, or to be used with converters. Scanner receivers are also OK, because they receive amateur radio. Computer equipment can be used for amateur radio - even hand scanners, printers, CD-ROM's, and many other exotic peripherals. However, your Dodge Caravan would not fall under this, even though it may be top-heavy with antennae and closely resemble a porcupine. Its primary purpose is transportation; communication is incidental.

Also, notice an exception to this rule: buying or selling on a regular basis. In "want" and "sale" ads, there are a number of recurring call signs. Could these be doing business? It's rather likely. It's not reasonable to be losing money week after week, especially if you're married :-)) Also, this prohibition includes buying for profit on a regular basis.

The FCC is proposing new rules for packet. It would be a terrible shame if packet bulletins were limited to ham related topics only, and SALE@ALLUS made illegal. Right now, we're being examined under a microscope. Perhaps if we conduct ourselves properly, and show responsibility and sensibleness, the rules they feel it necessary to impose will be light ones.

Am I playing "packet police"? Call it what you will. If we hams don't police ourselves, someone with big, ugly teeth and the initials "F.C.C." will; and their notices are more annoying than mine.

73, Mike Curtis WD6EHR

### My Two Cents

I define BBSs as packet radio devices designed to generate random ASCII data signifying nothing. If you are unfortunate enough to browse some of the material forwarded by packet BBSs it will make your heart sink when you think of what is happening to our hobby. Some of these intellectually disadvantaged people must have had help filling out their amateur radio license applications -- Lord only knows what the VEs were doing when they took their tests! (Or maybe the tests are more perfunctory than I imagined.)

What gripes me is the stupid things people send as bulletins to be distributed all over the country. The Help bulletins are case in point. For example, one with a subject, "Need Help!", doesn't give a clue about what the poor fellow needs help on. And the "MOD" bulletins; Give me a break! I just deleted one that said, "I am thinking of buying an Icom 720A. What mods are available for it?" Well I could take the time to explain to the fellow about the Icom supplied modification I did to mine to reduce chance of static electricity damage to the RF input circuit. Do you think he would appreciate it? I doubt it. He wants to know how to transmit out of band, illegally, with the thing. As I said, Give me a break! Joe, K5JB

### I HATE NiCds!

I wish they had never been invented! Nothing fouls up my day more than getting ready to use some kind of Nickel Cadmium (NiCd) battery powered appliance and find out that the battery has gone south. I don't mean just discharged, I mean dead, muerto, zonked. One of the most cruel hoaxes perpetrated is that NiCd batteries are supposed to be reusable hundreds of times. Wrong! I have one that I only used once and when it was time to recharge it and use it again it was dead. (Note in the griping that follows; a cell is one thing, and a battery is another. A battery has multiple cells.)

The defective battery normally won't be completely dead, but after charging and checking with a voltmeter I find that it is low in voltage by the amount of one or more cell voltages. One or more cells are shorted out. Supposedly this will happen with certain cell designs if you discharge them so deep that the weakest cells take on a reverse charge, but folks, it happens even if the battery just runs down without any external load attached. Back in my early 2M FM days I would suffer in silence with my Motorola HT-220 batteries, having to regularly do surgery to replace bad cells. I knew that I was dealing with old, worn out stuff, and didn't mind the nuisance so much. But since then, I have had Icom, Kenwood, and Yaesu radio and all kinds of other "appliance" batteries do the same thing, and they were fresh out of some pacific rim factory. Sometimes when I discover a shorted cell I am able to open the short with a gross overcurrent pulse, but it almost always shorts out again when I am not looking. The only solution I have found if I want to keep using that appliance is to leave it on charge all the time, eventually roasting the battery anyway.

The often repeated superstition about NiCd batteries having memory problems is most likely kept alive by this shorted cell syndrome. Space wizards found out that NiCd batteries being tested for satellite use would develop memory if short cycled repeatedly and exactly the same way under controlled conditions. People can't do that to a battery. I have never had any problem with walkie talkie batteries having bad memory, instead they get shorted cells. When you charge a battery with one or more shorted cells, the radio appears to work, but for only a short time. The difference is that when a battery starts out with less voltage it more quickly discharges to the radio's minimum voltage. A test with a \$5.00 voltmeter will show you this.

Self discharge is another bad trait of NiCd batteries. My General Electric NiCd battery book shows that a cell stored at room temperature can self discharge at a rate as high as 2.5% per day.

This means that the capacity would be down to 46% after 30 days, down to 22% after 60 days. At 95 degrees F, this daily self discharge can be as high as 3.8%. Capacity would be down to 31% and 9% after 30 and 60 days, respectively. If I sold you a battery for your Energizer Rabbit and warned you that his drum probably wouldn't thump after you returned home from a month's vacation, would you think that was quite all right? I bet not.

NiCd batteries are supposed to provide more energy density than most other batteries, but I am not convinced that it is enough more to quibble over. A 4 Ampere-Hour (AH) NiCd cell is about the size of a size D flashlight cell. A Gates sealed lead acid cell of that size is about 2.5 AH. OK, NiCd is better, eh? But wait, A sealed lead acid battery that produces 12 volts takes six cells. A NiCd battery requires ten cells to do get the same voltage. If you get out a pencil and paper and figure, the lead acid battery has 96% of the volume of the equivalent energy NiCd. I think we've been snookered. If somebody out there hadn't been pushing NiCds for some reason maybe we could be loading lead acid batteries in our talkies and not finding much interesting to talk (or write) about them.

But seriously, the Gates cell design came along much later than the sealed NiCd cell design. Too bad. I'll go a little further into the Gates lead acid cells in the following article.

I remember when I worked in the defense industry, I was told we couldn't use zinc plated fasteners, but must use cadmium plated parts, because major sources for zinc were offshore, (or some politician's buddy had a bunch of cadmium to sell.) (Zinc coating, or galvanizing, is much cheaper than cadmium plating, but holds almost the same position on the electromotive series, meaning zinc coated parts would have had similar galvanic corrosion characteristics to cadmium.) Galvanized parts would have worked just as well but that is the way it was. Maybe this cadmium supplier guy had convinced

someone that lead is also defense critical material. I know the reason can't be a shortage of sulphur, which we Okies pump out of the ground with incidental quantities of oil.

Note that all this bitching is about the sealed cylindrical NiCd cells. I haven't had any particular problem with the wet cells, nor with the (rare) rectangular shaped cells. I have one really old battery pack that I made by discarding all the cylindrical cells from a Sony black and white video recorder power package (they were all shorted) and replacing them with a battery made with rectangular cells. These cells appeared to be the same as General Electric type GR4.0 cells. Each cell is 2.37 by .642 inches measured at the top, by 2.9 inches tall. The top has screw terminals and what appears to be a filler plug, though if it is removed and the battery is upended nothing spills out. The cells are tied together with metal straps and the ten cells make up a nominal 12 V battery pack with 4 AH capacity. What prompted me to build it some 15 years ago was need for a small power source that was capable of enough current to power a 100 W HF rig while I was travelling. Since the cell impedance is only 4 milliohms the total voltage drop with 15 Amps was only 0.6 V making it a dandy power supply indeed.

I haven't thought of it in years and while typing this I dug it out, checked it and found it didn't have any shorted cells. I charged it for about an hour at 400 mA and put a load test on it. The cell I tested had 40 milliohms impedance so by the time I finish this I should be able to report if the old battery comes up to snuff. (It did.) This battery has really been neglected and yet it seems like it is still usable.

On the other hand, the power tools, walkie talkie, flashlight, etc. were babied to make the NiCds last but soon or later, mostly sooner, they crap out!

The most recent aggravation was failure of the battery in my Toshiba laptop com-



puter. That battery is expensive. It consists of four, four AH cells assembled with shrink wrap. At Dallas Hamcom, I made a lucky deal on some used cells and can select 4 out of 12 that I got for \$2.00. After initial testing the flea market cells I graded them into two classes, good and excellent. During test I did notice something unusual. During discharge, the two weakest cells reversed themselves before I could catch them. Both had a steady negative voltage that was what I would expect if there were reverse biased Germanium diodes across them. Might be. These two cells recharged and appeared to act normal after the next charge.

I don't think my complaining will cause any manufacturer to stop using those cursed sealed cylindrical NiCd batteries, but it makes me feel better to grouse about it. Joe, K5JB

### I LOVE Gate's Cells

Over the past 25 years I have had a lot of experience with lead acid batteries in my amateur radio operation. I won't go into the wet cell automotive design here, having covered that pretty thoroughly before. For portable and all around useful low to medium power applications, I have made wide use of sealed lead acid batteries. Initially, I used the Globe Gel-Cell design and had good results. Some of the used ones I picked up didn't perform up to specifications, but I had very little problem using them. In later years, the Gel/Cell design has been replaced around my ham shack with Gates sealed lead acid batteries. In general, you can identify the cell type from its shape. If the cell is rectangular, it is a Gel/Cell type. If it is cylindrical, it is a Gates type. I will use the term "Gates cells" for all the cells I have of that design though the same design is sold by General Electric, and most of the cells I have are GE, having 5 AH capacity. As far as I know the Gates and GE cells have identical characteristics.

The Gates cell differs in design from the Gel/Cell. For all I can tell, the Gel/Cell

has the same electrical characteristics as an ordinary lead acid wet cell. The Gates has some differences that makes it better, I think. I once got to examine one that exploded and it appeared to have a fiberglass mat plate separator and there was no evidence of liquid acid present. Apparently the mat was only dampened with acid. (The cell was exploded when an intellectually challenged technician put an uncontrolled power supply on a 140 V battery to charge it.) I got the benefit of his accident. I hosed the thing down in my drive way to remove all residual acid and excised and discarded all the bulged cells. What remained is my lifetime supply of cells.

Since my experience with the Gates lead acid sealed cells has been pleasant, I haven't had reason to write much about them. I see amateurs carting them out of the flea markets so I guess others are using them also. Since sealed lead acid cells have charging requirements that are completely different from NiCd cells, I thought it might be worthwhile to write a few paragraphs about them.

First, the reason why I LOVE these things: Of several old, castoff, sealed lead acid batteries that I use for all kinds of things, I have never had a failure from

a shorted cell, and seldom have a problem with cells that won't produce the full rated capacity! Lead acid cells don't hardly self-discharge at all. If I am in a heck of a hurry to get a battery charged for an application, I can charge it in an hour or two without hurting it at all.

I initially presumed that the Gel/Cell and Gates cell electrical designs were pretty much the same until I reread the Gates literature more carefully. It contained comparison information that pointed out some differences (to Gate's advantage, naturally). The careful rereading corrected a misunderstanding I had about lead acid battery sulfation, which I won't get into here.

The cells from the exploded battery I referred to earlier had been left in a discharged state for a long time and were apparently shot. They wouldn't take a charge because they had high impedance. I assumed they were sulfated but actually, the sulfuric acid was depleted. At the time, thinking that they were sulfated I set them out of sight in the garage and put a small charging current (about 40 mA) on them for a period of months. Eventually the cells started developing lower impedance and were capable of taking a normal charge and

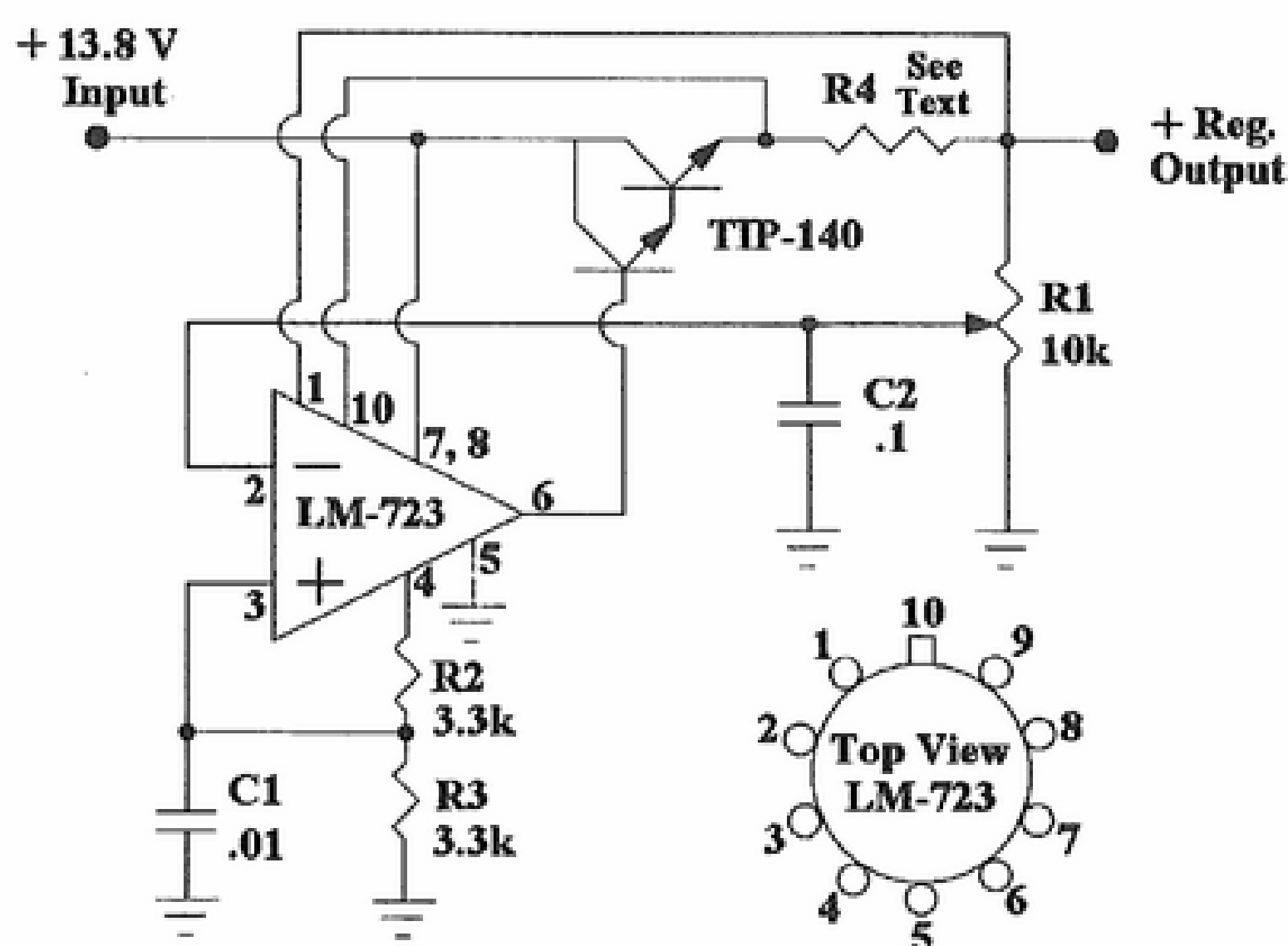


Figure 1. Gates Cell Charger



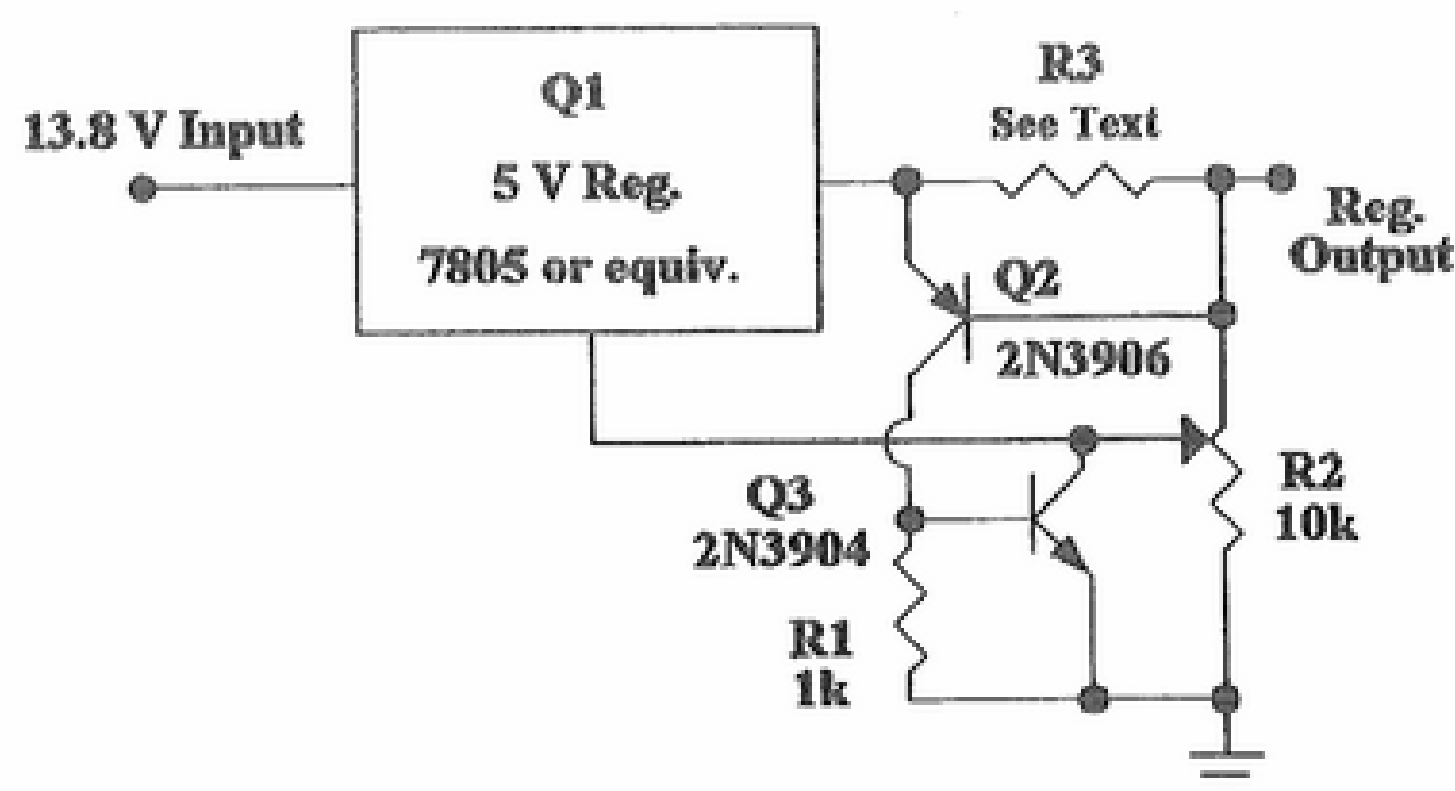


Figure 2. Simplified Gates Cell Charger

showed normal capacity. I made the cells into 6 and 12 Volt batteries and use them all the time around the ham shack. I don't have to worry about charging them before use, even if months have lapsed since last charge.

Charging the lead acid cells is accomplished a little differently than charging NiCds. Rather than supplying them with a constant current and letting the voltage go where it may, you also have the option of supplying a relatively high current to them at a fixed terminal voltage until they are charged to about 90%. You then top off the charge with tapering current. Charging in this manner can be done in as little as an hour.

I use a modified form of this method since I am not in that much of a hurry, and the cells will last longer if charged slower. I charge my 5 AH, 6 Volt batteries (three cells) with a charger that supplies 500 mA until the battery reaches 7.20 volts. At this point I continue the charge at that voltage until the current drops to about 50 mA. At this point the battery is fully charged. As a practical matter, I don't re-

ally worry too much about leaving a battery on charge too long. The battery can remain on the 50 mA charge indefinitely.

I specially designed the charger control circuit for this application. Since voltage control is important, I used the LM-723 regulator IC which has separate voltage sensing pin, and also has a current sensing provision. Also, my junk box happens to have several LM-723 regulators that need to be used up. The schematic is in Figure 1. The potentiometer R1 is adjusted to set the desired voltage limit. The resistor, R4, (1.73 Ohms) is a section of resistance wire I pruned to get the 500 mA current limit and then wrapped around a resistor body for support. The power darlington transistor is heat sinked sufficiently to dissipate (13.8 - 6) times .5 A, or 3.8 Watts. To use this circuit at higher currents you should make two sets of connections between the regulator and the battery. One pair would carry the current, and another pair carry the sensed voltage back to the regulator. I didn't think I needed that complexity.

I constructed my regulator using the

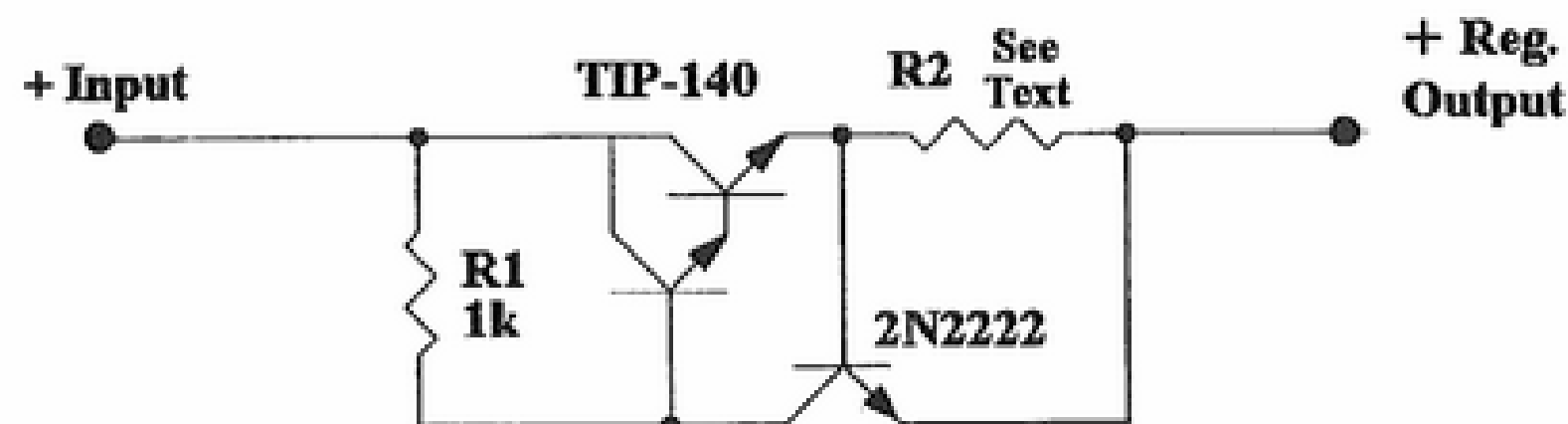


Figure 3. Constant Current Regulator

"dead bug" technique. I started by bolting the pass transistor to a suitable heat sink, gluing the 10K trim pot nearby, upending the LM-723 and connecting up the wires. I tested it to make sure it worked by temporarily shunting where R3 was to go and measuring the voltage regulation. Then I added R3 and trimmed the length of the resistance wire until the current limit was set to 500 mA. If you want to charge your battery faster, this current limit can go as high as 2A or more. (You will have to have very low impedance battery connections, or add separate voltage sensing wires as I mentioned.)

While thinking about this article, I sketched a simpler circuit I think would work. It uses just a 5 V regulator in a popular circuit to set the battery voltage level, and uses a couple of added transistor in a feed back circuit to provide the current limiting.

The simpler circuit is shown in Figure 2. You can supply the 13.8V from any source you have. I happen to use the 12V bus in the ham shack. The resistor R3 would have to be hand made or hand selected in the same manner as R4 in the LM-723 circuit. When sufficient current flows through R3 for transistor Q2 to be biased on it also turns on transistor Q3. Q3 pulls the ground terminal of the regulator to nearly zero limiting the regulator's output voltage to a little over 5 V. If the battery you are charging has less than this voltage, this current regulator circuit won't work.

Incidentally, if all you want is a constant current regulator to charge NiCds, there are some simple circuits that will do the job. The one I use is shown in Figure 3. Again in this case R2 would have to be hand made to get the desired current. For my 400 mA current regulator on a 14 V battery, I have to supply about 22 volts. The TIP-140 has about 6 Volts across it when it is regulating at maximum current. This isn't a real efficient way to use the thing but it is sure simple! (It makes a good dummy load for capacity test too.)

Joe, K5JB



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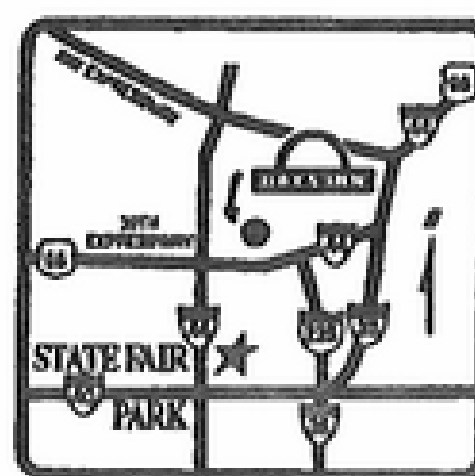
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CORA

# MORI

## MEMBERSHIP IS NOW ABOVE 200!

Membership is still rising. We are now at the 207 mark and climbing. We wish to thank everyone for their support.

What you really want to know is...

The 444.1+ machine is up and running beautifully. It is perched atop ch.4's tower at an altitude of 1440 feet above average terrain. It is easily one of the tallest repeaters in Oklahoma (not counting an occasional satellite).

MORI now has a brand new RC-85 with the very latest upgrades to it's vocabulary driving the 444.1 machine. The purchase was made possible through the payment of 10 years of dues by every member of the executive committee. This way the bank account is still at a Hefty \$1000+. This brings MORI up to 3 brand new solid state repeaters, 2 on VHF and 1 on UHF, and 3 ACC controllers, 1 totally brand new and 2 completely refurbished ones.

MORI actually owns all of the equipment that it is using. No individual can lay claim to any piece of equipment like they have been able to do in the past. Before, all of the repeater equipment was on loan, and if the person loaning the equipment got mad, they took there toys home with them, effectively crippling MORI's ability to survive as a club. MORI is now in the position to last well over a year even if we didn't collect another dime in dues, even then, the only thing that would happen is that the phone patch would go away. The repeaters would keep going, and going, and going...

So what's next? What could we POSSIBLY do now?

Are you ready??? Well, starting sometime before the end of July there will be a new repeater in OKC. What? A new Repeater you ask? Yes! The assigned frequency of the repeater will be 145.21-. It will also be recieving from our perch atop CH4's tower and transmit from the Liberty Bank Building. It will not have an autopatch on it YET! But with the comming of the end of the summer that might be possible. The controller won't be anything fancy to begin with, (it will probably only ID), but we can work on that later. Here is the important part. MORI will be the only club supporting three 2m repeaters.

And after this?

After this I think that we can work on another 440Mhz machine, and t h e n

definatly a 220 Mhz machine.

After that, I see MORI having an excellent ATV repeater. We have the whole hobby at our disposal.

Maybe we'll have a

repeater linked to one of the satellites that pass overhead so that hams can work satellites from their 2m handheld. One thing is for sure. MORI (although I personally hate this term now...) is on the MOVE.

Come and join us at our monthly meetings at Favorites Restaurant. 36th and S. Western. on the first TUESDAY of EVERY month.

73 de N5NYS



## MINUTES OF THE OCAPA MEETING June 15, 1993

The meeting was called to order by John NJ1V at 7:30pm.

The minutes of the last meeting were read by John N5SAM, seconded and passed.

Treasurers report was read by Mike N5VIT, seconded and accepted.

### TECHNICAL COMMITTEE

Mike N5VIT told of the feedline upgrades to antennas on the tower and that plans for installation of new hardline in July.

### FIELD DAY COMMITTEE

Larry KF5JN went through the Field

D a y plans. Most major equipment is set but back HF gear, coax, power supplies and such are always needed.

Richard WOKPK had his HF rig stolen the first week in the Oklahoma City area. The rig is a Kenwood TS-120 serial #1010119. If you see it, contact Richard at 739-1952 during the day or contact the OKC police.

The little things really needed.

### EQUIPMENT COMMITTEE

Ed WA5YDF plans a week-end examination of emergency trailer equipment.

### PUBLIC SERVICE/INFORMATION COMMITTEE

Tom WA9AFM will be on KTOK Friday the 18th at 8pm talking about ham radio and the services it can provide.

Continued on pg XXX

### Message from the President

Howdy! This is NJ1V. By the time you get this to read, we will have completed another successful Field Day Exercise. I hope we will be able to publish results in the next issue of C&E.

Since all of my article last month didn't make it in to the C&E because of space limitations due to needing to get a large mailing out with the Ham Holiday info, I will first try to conclude what was omitted.

Work continues on the repeaters and antenna systems. I don't know if anyone noticed, but we managed to come through the horrendous rains without experiencing the usual "water in the feed line" problems that have plagued us in the recent past. The repeaters' "ears seem to be hearing better also. Please thank the guys on the Technical Committee when you hear them.

Brad KJ0W's classes have been a big success up to now. TNX to Tom WA9AFM for his presentation on satellite communications prior to the May meeting. (Current News: I enjoyed conducting a class on contesting prior to the June meeting, which was well attended by 14 folks. I hope I peaked your interest in contesting. We will skip having a class before the July meeting, and resume in August. Brad promises a class on antenna theory then.)

One of our members, J.C. N5KLN was recently hospitalized at the Mercy Health Center in OKC. J.C. suffered kidney failure, and has begun a program of regular dialysis. Our prayers and Best Wishes go out to J.C. and his family.

It is with regret that I advise of the recent death of Sue Wilhite's mother. Sue is the wife of Chuck K5NK. Our condolences, Sue and Chuck.

Concerning upcoming elections, Jim KA5PSF has been appointed to serve as Nominating Committee Chairman. Jim will be looking for additional help with the committee, whose job will be to present a slate of prospective officers at the July meeting. The election meeting will be the regularly scheduled meeting in August.

Relative to my own re-election status, I have advised the other OCAPA officers and Jim that I do not wish to be considered for re-election. While I am honored that you selected me to be your President for the last year, and I have thoroughly enjoyed serving, my schedule is such that I must devote more time to personal and professional commitments. I strongly believe that there are several extremely qualified and dedicated individuals from which to pick your next slate of officers.

Your current officers, committee heads, and committee members have worked hard for you this year. I certainly would like to give them a BIG TNX for the support and cooperation they gave me, and hope you all agree and will do the same. Anyway, please plan to be in attendance at the next two very important meetings!

Just a reminder - when you are planning your rigs, antennas, and station accessories - don't forget the local "Candy" store. They have supported your club quite often, and may have just the things you need, new or used!

CU down the log!

73....."victor"

OCAPA Continued...

## SALVATION ARMY

Tom N5TCG told us that the rotator on the Salvation Army station is broke but being repaired.

## NEW BUSINESS

John NJ1V told us that Chuck K5NK's mother-in-law was seriously ill and ask that our thoughts be with them.

Richard W0KPK had his HF rig stolen the first week in the Oklahoma City area. The rig is a Kenwood TS-120 serial #1010119. If you see it, contact Richard at 739-1952 during the day or contact the OKC police.

Jim KA5PSF has been ask to head the Nomination Committee for officer selection. If you have desire to lead this group or help Jim, let him know.

## OLD BUSINESS

Baron WZ3F still has 4 OCAPA hats that were ordered but not paid. John NJ1V thanked the group that supported the 1993 Multiple Sclerosis Bike-a-Thon with the communications. Charles N5FMU, Tom N5TCG, Robert N5QKI, Ed WA5YDF, Mike KB5WHJ, Butch WY1W and Terry N5YGO and the use of the 146.925 MORI Repeater. The June prize drawings went to: Hal KB1ZQ a ARRL repeater directory and GENERAL Marvin WB5DXZ a ARRL operating manual.

ATTENDANCE 36

Meeting adjourned at 8:55pm

John Brassfield N5SAM

OCAPA Secretary

<p>1. AERONAUTICAL CENTER ARC Meets: First Thursday, Flight Standards Building, FAA, South MacArthur 7:30 pm. PR Jack Iman, WB5SVN S/T Brad Nelson, KJOW AsVP Harold Todd, WA5VAQ 685-3685 Asvp Charlie Greene, WA5JGU 943-5631 Editor: Jack Iman, WB5SVN</p>	<p>11. EDMOND AR SOCIETY Meets: Odd Months, 3rd Sunday, 2:00 pm, Edmond EOC; Dinner, Even Months, 3rd Friday PR Ken Stepp, N5DBM 341-4874 VP Bob Long, N5KUE 373-2540 SE Lynice Hamlin, KB5FOH 427-2828 TR Ed Granger, KB5DZU 348-3454 Editor: Bob Long, N5KUE 373-2540</p>
<p>2. CENTRAL OKLAHOMA VHF Meets: 11:00 am, 3rd Sat., Golden Skillet, 3401 N. Classen Blvd, OKC PR Jack Muse, WB5ZKZ 691-1152 VP Fred Boardman, W5NL 427-2505 SE Joe Buswell, K5JB 732-0676 TR Ellard Foster, W5KE 769-6702 Editor: Joe Buswell, K5JB 732-0676</p>	<p>12. OKLA. PACKET RADIO ASSN. Meets: At Major Hamfests, Green Country, Ham Holiday, and Texhoma. PR Hank Blackstock, WA5JRH 722-0840 VP S/T Editor: Hank Blackstock, WA5JRH 722-0840</p>
<p>3. MID-OKLAHOMA REPEATER, INC. Meets: 1st Tuesday, 7:00 pm, Favorite's Cafe, 36th &amp; S. Western, OKC PR Scott Walsh, N5NYS 787-3804 VP Larry Benedict, N5VYC 728-7824 SE Tim Hanna, N5USM 842-3812 TR Robert Moose, N5QKI 720-0073 Editor: Dean Ward, N0PAD 681-4606</p>	<p>14. CIMMARON ARS Meets: 7:30 pm, second Thurs., WX5Y Playhouse 827 S. 13, Fairview PR Terry McColl, N5MLT (405) 227-3672 VP John Medley, N5WVU (405) 227-3534 SE Dennis Painton, WK5V (405) 764-3589 TR Nadine Painton, N5FMH (405) 764-3589 Editor: John Medley, N5WVU (405) 227-3534</p>
<p>4. OK CITY AUTOPATCH Meets: 7:30 pm, third Tuesday, Salvation Army, N.W. 50th &amp; Penn. PR John Guida, NJ1V 340-6518 VP Chuck Wilhite, K5NK 721-4926 SE John Brassfield, N5SAM 685-8070 TR Mike Begley, N5MT 732-2827 Editor: Chuck Wilhite, K5NK 721-4926</p>	<p>15. SOUTH CANADIAN ARS Meets: 9:30 am, Second Saturday, Red Cross Bldg., North OU Campus, Norman PR Don Schader, K5TP 321-9849 VP Mike Winkel, N5SOF 366-8839 TR David Gates, N5LCL 392-5877 SE Gary Skaggs, WB5ULK 799-5363 Editor: Ken Brown, N5KUK &amp; Gary Skaggs, WB5ULK</p>
	<p>16. EDMOND AR CLUB Meets: 7:00 pm, Second Monday, Various locations. PR Mark Northcutt, WD5DYI 755-4672 VP Wendell Cochran, WB5ISO 943-4308 S/T Kay Northcutt, WD5DYJ 755-4672 Trustee: Dennis Orcut, WB5ISN 340-0034</p>
<p>6. ALTUS ASSOCIATION Meets: 7:30 pm, Second Thursday, North Main Fire Station, (CD) Altus PR Jim Romines, K5YY VP None S/T Bob Heron, KE4BN Editor: Jim Romines, K5YY</p>	<p>18. GREAT PLAINS ARC Meets: 2:15 pm, First Sunday, Home of N5LRR, 2914 Osage Drive, Woodward PR Bob Bayles, WB0GAX, Woodward 254-3561 VP Andy Taylor, N5LRR, Woodward 256-4017 SE Rod Ford, WB5OVT, Gage 923-7683 TR Freida Patterson, N5EOX, Woodward 256-2111 Editor: Phillip Perry, N5QCN 938-2453</p>
<p>9. WHEATSTRAW ARC Meets: 2:30 pm 2nd Sunday, Location Varies, see Club Section for Details PR Ray Barnes, AB5Z, Longdale 274-3334 VP Neal Kappus, N5KCO 262-1551 S/T Joe Garland, WA5FLT, Calumet 893-2660 Editor: Ralph Wilder, WA5PFK, Watonga 623-5421</p>	<p>CENTRAL OKLA RADIO AMATEURS Meets: 7:30 pm, Fourth Tuesday, Salvation Army, Penn &amp; NW Highway, OKC, (Back Door) PR Frank Tassone, AA5GI 341-1124 VP Kathy DeGraffenreid, AA5RU SE Jim Buswell, N5BEQ TR Tom Mangham, K5LDI 677-5291 Editor:</p>
<p>10. OKlahoma DX Association Meets: Quarterly - Hamfests, DX Net Saturdays - 1600UTC-7.195MHZ, Box 88, Wellston, 74881 PR George W. Adkins, AD1S VP Darrell Reed, KF5DA SE Paul Harrop, WB5NDN TR Paul Wardell, N5PYD Editor: George W. Adkins, AD1S 356-4101</p>	

## FCC DECLARES POSITION IN 902-MHZ PROPOSAL

The FCC has clarified its recent proposal to adopt rules for automatic vehicle monitoring (AVM) systems with a word change which will be of interest to amateurs.

In a Notice of Proposed Rule Making in PR Docket 93-61 in April the FCC proposed creation of a new location and monitoring service (LMS) in the 902 to 928 Mhz. band, which is currently shared by amateurs with several government and scientific services as well as various non-licensed, low-power "Part 15" devices.

The FCC said that AVMs in the band "could lead to rapid-congestion of available spectrum," and asked for comments on possible solutions, "such as removing Part 15 users and amateur operations from the band, or placing stricter limitations on the operation of such users in this band."

In its May 6 erratum to the NPRM, the FCC changed "such as removing" to "short of removing."

The comment date is June 29, 1993; reply comment date is July 14, 1993.

## FCC SAYS NO TO ARRL REQUEST FOR 216-220 MHZ.

From the July, 1993 issue of Worldradio, we learn that the FCC did not grant the ARRL petition seeking access to 216-220 Mhz. in order to compensate for the loss of 220-222 Mhz

in 1990, but has instead issued a NPRM proposing to allocate 219- 220 Mhz for amateur point to point backbone packet networks on a secondary non-interference basis.

The reason for the FCC's refusal to grant 216-220 was to avoid interference to TV channel 13 and to the new Interactive Video and Data Service (IVDS).

The Text on this page was reprinted from the Enid ARC Light Newsletter dated June 1993.



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## ALTERNATE CURRENTS-"And Our Survey Says..."

By S.A. Kelly (AB5MI)

Howdy all! I flatly do not know if this is going to work, but its something that I have wanted to try every since I started writing these columns; a short (and largely unscientific, but hopefully interesting) survey of the hams who read this newsletter. Now in order for this to work (or even amount to anything, for that matter) a large number of you are going to have to participate and unfortunately the price of a postage stamp is involved. Hey! Where you folks going? Come back here! Seriously, I hope that its not too much ask of you, gentle-readers.

Here's how it works: The questions that follow are numbered 1 through 25. On a seperate sheet of paper answer the questions in the order they are listed and make very sure that your answers are numbered to correspond to the questions. Then mail it (this is where that 29 cent stamp part comes in) to the address at the end of this article.

I will collect the answer sheets for a period of one month following the publication of this survey, then collate the information and publish it in a future Alternate Currents.

The questions that follow were picked at random and are not intended to prove anything or make any specific point. The degree of effectiveness of this project will be based completely on the number of hams who respond, so if enough of you don't mind taking the time (or that 29 cent stamp thing, of course!) then this could be an interesting little experiment.

Another thing, in order to facilitate anonymity please do not put your name, call sign, or any other identifying information on your answer sheet. It is not necessary to rewrite the questions, but again, please be very careful to number your answers to correspond with the numbered questions. Here then are the survey questions and if you choose to participate then Thank You Very Much!

1. What is your approximate yearly income?
2. What is your age?
3. Are you male or female?
4. Approximately how many hours per week do you spend "On The Air, "any band or mode?
5. How many hams live in your household?
6. Are you happy with the way your station is organized right now?
7. Do you enjoy this hobby MORE, LESS, or THE SAME as when you first got into it?
8. Are you a member of any ham radio clubs and, if yes, then how many clubs are you a member of?
9. How many ham radio related "get togethers" (breakfasts, lunches, coffees, etc.) do you participate in per week?
10. Are you a member of the ARRL?
11. How old were you when you got your first Amateur Radio License?
12. How long have you been an Amateur Radio Operator?
13. What class of Amateur Radio license do you currently hold (please indicate Tech or Tech Plus, if applicable)?
14. What class was your first Amateur Radio Operators License (please indicate Tech or Tech Plus, if applicable)
15. Do you plan to upgrade your license class in the next six months (Extras need not answer)?

Continued on back page...



# July

				1 Aeronautical Center	2	3
4th Great Plains?	5	6 MORI	7	8 Altus Cimmaron	9	10 SCARS
11 Wheat Straw	12	13	14	15	16	17 VHF CLB SAT VE TEST
18	19	20 OCAPA	21 CORA Meeting.	22	23	24 Ham Holiday
25 Ham Holiday	26 C&E Edit Night	27	28	29	30	31

Alternate Currents continued...

16. Do you think you will change your current call sign at any point in time, because of an upgrade or for any other reason?
17. Which do you operate more, HF or VHF/UHF?
18. List the following modes of communication in the order that you use them, from most used to least used: AM, FM, CW, SSB, ATV, COMPUTER (Packet, RTTY, AMTOR etc.)?
19. How many two-meter transceivers do you currently own?
20. Do you own and operate a packet station on two-meters?
21. What is your favorite two-meter transceiver (brand and model)?
22. Do you own and operate an HF transceiver?
23. Not counting antennas, have you built any of the Amateur Radio equipment that you currently own?
24. What one peice of Amateur equipment would you most like to add to your station right now?
25. If you operate HF, what do consider to be your favorite band?

That's it! My mailing address is: P. O. Box 1030, Bethany OK, 73008. I will collect the answer sheets for one month from the publication date of this article and publish the results in an upcoming issue. Thanks again, to anyone who participates. 73 es cul!

I have just a few additions to make. If you do write in, help me out by answering these questions too...

26. What single article of the C&E do you find the most useful?(Calendar,AC,etc...)
27. What do you think could be added to the C&E to make it more interesting and enjoyable to read? Do you think Cartoons would help?

Thanks,

*Scott*

Dear Scott,

First, let me say what a great job you're doing with the newsletter. I know you must be getting a lot of great comments on it.

Second, could you put a short note somewhere in the next issue announcing that there is now an ARRL VE Team operational in Norman? Our regular testing sessions normally will be on the first Saturday of each month at the Cleavland County Fairgrounds (601 E. Robinson). However, we may have to locate or re-schedule depending on building availability. I do intend to get any changed information to you before the Emitter's deadline each month.

We encourage pre-registration and folks can do that using the voice mail system of the McCoy Tree Surgery, 329-1654, ext. HAM. Walk-ins will be accommodated, of course, whenever possible.

Finally, the recent decision to place Novice testing under the VE program increases the need for VE's

For more information, Call me at 329-1681 after 6:30pm and before 9pm.

73 de Jim, NWOK