CENTRAL OKLAHOMA RADIO AMATEURS
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Merry Christmas!

Edmond Amateur Radio Society
Reaching out to Oklahoma and the World

REPEATER FREQUENCY
147.135/735

The votes have been counted and it is now official. Our new club officers for 1992 are:

President	Alton Sage	KB5LIC
Vice Pres.	Jim Richardson	N5OHL
Treasurer	Ed Granger	KB5DZU
Secretary	Lynice Hamlin	KB5FOH
Board	Pat Gray	N5SGV
Board	Bob Ellsworth	KB5BIN

Congratulations to all our new officers!

The Technical Committee has been doing a great job with the repeater. Both Lee - KA5WIS and Tommie - KA5WAV have been to the repeater site many times and have everything just about ready for the two link receivers. But before that happens, the 850 controller is going to come out for repairs. Lee says he should be able to keep the 135 machine going during this time, but if 147.135 is ever down you can use the N5KUE repeater on 145.37(-) as a back-up.

On Saturday, December 14th, the club will be handling the staging and communciations for the first Edmond "PARADE OF LIGHTS." About 30 hams with hand-held radios will be needed for both the staging area and along the parade route. If you would like to help out, please contact Mike Mise - KB5BIX, Alton - KB5LIC, or any club officer.

Welcome back to Joel - KB5FCF who is back from working for Uncle Sam in Mississippi!

Now that Fall is here, the HF bands are doing fine. The 10-meter band is wide open during the day with lots of DX. Larry - N5IXV picked up a new rare one, the ZA operating from Albania. Did anyone in the club pick up Mynamar (Burma)? I heard on them on 20-meters, but with my rig I cannot work split. Someone please tell Santa that I need a new 440 or 735!

Several club members made the trip to the Texoma Ham-Fest. Next time, KA5WIS says that he will sell more than he buys!!! *(I wanna see that!)*

Make plans to join the fun and festivities at the EARS Christmas Dinner on Friday, December 6th at 7 pm at St. John's Catholic Church in Edmond. By now, you should have received an invitation letter. Please let Kay - KB5LDO know if you plan to attend the dinner as reservations are required since it will be catered.

Remember to check in to the EARS Information Net every Monday night at 8 pm on the 147.135 repeater. Every evening at 10:30 pm, you are welcome to join the OK NITE OWL NET which also meets on the same frequency.

I had a great time during the second week in November operating an HF portable rig from Kimble County, Texas while I was on a hunting trip with my father - KB5MRU (now general class!!!). We ran his Kenwood TS-440 on battery power. For antennas, we did the trick with a bow and arrow to get a line over a cedar tree limb at about 35 feet. I pulled up a dipole that let us operate on 40 and 80-meters. I also put up a 15-meter vertical to work DX.

Didahdidahdit es 73,

Jim - N5OHL

The South Canadian Amateur Radio Society

SCARS met on November the 9th at the Norman Red Cross. The meeting was called to order at 9:30 by vice-president Steve, NI8W. The treasurers report indicated $707.30 in the account. There was no October meeting due to conflict with the OU-Texas football game and only a few members left in town. David Gates, N5LCL has taken over as interim treasurer for the remainder of the year.

The main business of the day was election of officers for the coming year. The new SCARS officers are; president Don, KI5TP; vice president Mike, N5SOF; treasurer David, N5LCL; and secretary Gary, WB5ULK.

Due to the uncertainty of our meeting place at the Red Cross building a committee was appointed to meet with the Red Cross officials to determine the best way of scheduling our activities. The committee members are new president Don, KI5TP; Bill Oliver, K5KDR; and Jerry Broudy, W5MCJ.

A question was raised about the status of the two meter antenna at the Red Cross building and NI8W agreed to climb the tower and check the feedline after the meeting. Several people assisted and the antenna was completed at that time. All antennas have now been installed and checked out.

Arrangements for the Christmas party have were settled and the club agreed to have a pot-luck dinner with the meat items furnished as has been done in the past. The party will be Friday December 13 at 7pm at the Oklahoma Electric Cooperative community room on west 24th Ave just north of Main street. The cost is $5.00 per person. A sign up sheet is being circulated to coordinate the food items. Dorinda, N5IUA is coordinating the food items and several of the ladies have volunteered to help with the preparation.

The start of a novice class was once again discussed. Gary Skaggs, WB5ULK has volunteered to be the coordinator and Jerry, W5MCJ has offered to help out with CW classes for those wishing to upgrade. No class date or time has yet been set.

Don discussed CORA plans for the next Ham Holiday which will be held at the fair grounds in Oklahoma City. Due to other commitments for the weekend of Ham Holiday the event will be in the Made in Oklahoma building next year.

Without much more discussion the meeting adjourned at 10:15.

de Ken, N5KUK

WHEAT STRAW RADIO CLUB

Meeting was called to order by our President WO5B Edgar with 38 present. Report on the new repeater is that there are some changes to be made yet. I got the word that WA5VNF Mary Ann won the biggie down at Texhoma Hamfest, an Icom IC 726 with 6 meters built in. WA5GHK Joe drew a dual bander antenna - a 2 and 70 cm along with repeater guide and certificate. Congratulations t Mary Ann and Joe.

Two of our people took the VE test at Texhoma, K5GKX passed his theory and N5WWB Dale passed her extra class in just four months from the Novice license. Congratulations to both of them with big special to Dale. I know she worked hard on it.

Next month December the 8th will be the regular meeting along with our Christmas Dinner. The place is the Brass Apple in El Reno. We do not go in to eat until 2:30 pm. The meeting will follow dinner. For directions to the Brass Apple: If you come in from the east turn off at the El Reno, Kingfisher and 81 South highway. From the west stay on I-40 to the same turnoff. If you come from the north down 81 follow through town, when you turn south toward I-40 watch closely, it is just about a block and a half south. It is on the west side of the road. Visitors are welcome. The cost will be $7.00 each.

N6CL Joe Lynch the Oklahoma SM gave a report of what has been going on with the ARRL. Joe has been very busy this last month. He attended the El Paso Ham Fiesta, Texhoma, and the Enid Ham Fest. Word was that they were all good meetings with lot of comments on how good the ARRL Forum was at Texhoma. Everyone I heard spoke of having a good time at ElReno's Ham Fest. We could not go, Goldie and I were working at the Cheese Fest in Watonga that weekend,

It was time to nominate officers for 1992, as they will be elected in December. For president N5IKN Tom nominated WO5B Edgar. For Vice-President K5GGL George nominated AB5Z Ray. For Secretary\Treasurer KB6MPM Venus nominated WA5FLT Joe. For reporter N5IKN nominated WA5PFK. Other nominations can be made at the time of the elections.

K5GBN Johnny had a tape made by a scientist on numerous subjects. The subject that interested me the most was the mixing of Hydrogen Peroxide with water for an excellent fertilizer. Understand this is not approved by some colleagues. You may want to consult your county agent before using. In the experiment he took a tomato plant that normally matures into a small plant, using this mixture the plant grew to 7 feet tall. I did not

Continued

PLAY IT SAFE... DON'T LET HAM RADIO BE THE DEATH OF YOU

BY JOE LYNCH, N6CL

Most of you know me as the Oklahoma Section Manager. Many of you also know that I write the VHF Plus column for "CQ" magazine. This month my theme for my column pertains to safety and ham radio. I feel very strongly about this message. Therefore, I took the unusual step of granting permission within the column for reprinting that portion of the column pertaining to the message on safety.

Therefore, the following is excerpted from my December column and is copyright © 1991 by "CQ" magazine and Joe Lynch, N6CL, VHF Editor. It is reprinted here in C&E by special permission from "CQ" magazine and Joe Lynch, N6CL:

VHF PLUS
All About the World Above HF.

All of us writers have a soapbox item that we feel that we have to write about. Mine is safety. This month I want to get on my soapbox for a short time. So, please bear with me for a part of this column this month while I editorialize safety.

Several years ago I wrote for the now defunct "CB Magazine." One of my articles was entitled "Play it Safe... Don't Let CB be the Death of You." I think that I should subtitle this column "Play it safe... Don't Let Ham Radio be the Death of You." Since you, the VHF and above operator, are the most likely of the ham population to experiment with your equipment, it is only appropriate that you know how to be safe. Therefore, what I have to write about will be addressed to you. However, you should share this part of the column with all of your ham friends (after all, they may decide to read the whole column and ask you what is so exciting about VHF and above).

As you can guess, the principle theme of this column is safety. I want us to look at the whole amateur radio station, from the outside to the inside, to see where we can be safe or safer than we are presently. When I was a teenager, I was the Safety Officer of the South Bay Amateur Radio Society in Chula Vista, California. One task that I assigned myself to do was to go to all of the club members' shacks and perform a safety inspection. I made a safety checklist from the chapters pertaining to safety in the ARRL Handbook. What I will write about is from that experience of being Safety Officer, from experiences of my friends and from personal experience. Perhaps you can profit from our collective experience.

Some of us like to pride ourselves on having a shack look like Alan Dorhoffer's desk. While Alan's desk does not pose any safety threat (at least as far as I am aware, OSHA, the Occupation, Safety and Health Administration, has not condemned it) your messy shack does pose a threat. There is a Chinese proverb concerning a disaster looking for a place to happen. Your messy shack has found that place for the disaster to happen.

YOUR ANTENNA INSTALLATION:
Let's look at the shack from the top down, by starting at the antenna. Before beginning any work, you should plan every step. You should draw a diagram and a plot plan showing the location and height of the antenna support, the length of guy wires and the location and relative height of any power lines. The foremost thing to remember about antenna installation is the power line. According to OSHA, the minimum distance between an overhead power line and your antenna is ten feet. Your local ordinances may require a larger separation. Check with your electrical utility company for the regulations in your area. You should look at wherever the power lines run and plan as if your antenna were to come down. If your antenna is higher than the power lines, ask yourself if it will fall into them on its way down. If you are planning to install your antenna on top of a dwelling that has a service drop from the utility pole, ask yourself if your antenna will fall on or anywhere near that service drop.

Next, you should determine the kind of support will you use for your antenna. The light weight of many VHF antennas allows for the relative easy use of push up or telescoping masts. Many times these masts are installed on the roof of a dwelling. First, if you are going to install that mast on the roof, I would recommend that you not use a mast longer than thirty feet. Although masts come in telescoping sections that reach a height of nearly fifty feet, the extra twenty feet makes the installation potentially very unstable for the amateur installer. The twenty-seven or so feet of the mast, coupled with the usual fifteen feet of the peak of the roof places your antenna up around forty feet. That is plenty high enough for most casual weak signal work. In fact, Mark Ammann, KM0A, has worked almost three hundred grid squares on two meters with an antenna installation of a height of less than thirty feet and 150 watts! Also, use a new or undamaged mast. If it is damaged in any way, discard it.

Continued

This is the smallest Collector and Emitter that I have put out in some 17 years. In a way it was kind of nice that there wasn't too much copy sent (or brought) in because I didn't feel too well But if there had been 32 pages sent in I would have arranged it so that you would be able to keep up with all of the happenings in amateur radio land, Oklahoma Edition.

We are looking for someone to take over the publication of the C & E but haven't managed to do that just yet.

Do you have some spare time? Do you want to see the C & E continue? It has been 17 years of fun for me but time has crept up and I - No I won"t quit publishing it as long as no one volunteers. No I won't quit as long as I am needed so everyone send in some copy next month and let's have a big one.

Joe Harding, WA5ZNF

More Wheatstraw

hear him say how much fruit the plant produced. The mixture makes H202. Other subjects were that ozone and chlorine in our water creates acid rain, I hope I remember this right. Any way we are supposed to be using 18 times as much oxygen as is being made. The maker of the tape suggested that we start using hydrogen peroxide and ozone to disinfect our drinking water, swimming pools and such. It is estimated that the people on the universe are pumping several hundred pounds of waste into the atmosphere daily. Some changes have to be made and soon. This is over my head, the smarter one will have to work it out. Good program, Johnny.

More information may be obtained from the Environmental Research in Boulder CO.

We adjourned for the greatest home-made refreshments and fellowship.

73, Ralph

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DON'T KILL YOURSELF Cont...

Next, always have a buddy with you. Any antenna installation goes easier and is safer with someone helping you. Also, you and your buddy should wear hard hats. Something you aren't expecting to be above your head may find your head as a target. In order to extend the mast, it is necessary to climb up a ladder to reach the top of the mast and pull up. Always use an electrically safe ladder for any antenna work. One made from wood or a non conducting material will be satisfactory. Your buddy should hold that ladder steady all of the time you are on even the first step of the ladder.

If you are going to install the mast on the roof, make sure the roof is safe and dry. If it needs repair, stay off until it is repaired by a skilled person. If it is wet, stay off and fill out QSL cards. When you go up the roof, take a handheld with you. It may be a bit embarrassing to ask someone on the repeater to come over and reset the ground to roof ladder for you. However, it is far safer than for you to jump off the roof and reset it yourself. Remember, when you are on the roof, you can fall off. Know where cables, guy wires and tools are with relationship to your body. Wear shoes that have the necessary traction for walking on the incline of the roof. If the incline is too steep for you, stay off.

When installing the mast on the roof, make sure that the bottom of the mast has no way to move. Use a tripod that is securely bolted to the roof and supported from underneath the roof with reinforcement to secure the mast to the roof. Before you put the rotator and the antenna on the mast, calculate the amount of guy wire you need to reach the top section of the fully extended mast. (This should be done beforehand as a part of your project diagram).

Next, carefully extend the mast, without the rotator or antenna, and attach the guy wires to the guy points securely but with enough slack so that the mast is not binding when it is fully extended. Now, you can install the rotator first, then the antenna. Do not attempt to install the rotator and antenna simultaneously. Never install an antenna that is too large for the capacity of the mast. If you have some doubt, go to a place that sells television antennas and look at the largest log periodic they sell. If your antenna is bigger than that, use a tower or some other support. That long boom antenna may seem relatively light when you lift it. However, it presents a tremendous torque when whipped back and forth by 60 MPH winds. There is enough torque to damage the rotator break and cause the antenna to freewheel on the mast or even to twist the mast. If you want to install a long boom antenna on the roof, use a properly installed and guyed roof mounted tower and a mast with a minimum outside diameter of two inches. Always use a rotator that can support the wind load of the antenna. Always use guy wires that can handle the wind load of the antenna, rotator, and mast. Make no compromises on anything ever.

Once the antenna is in the air, make your mast turning adjustments for calibrating the rotator control box. I have found that a large pipe wrench snugly affixed to the base of the mast makes this job very easy. Then, tighten the guy wires and the bolts on the tripod to secure the mast.

Finally, you have now created a lightening rod with your antenna/mast installation. Therefore, attach one end of a number eight size wire to the base of the mast and connect the other end to an earth ground via the shortest path possible. An earth ground is an eight foot long copper rod pounded into the ground its entire length. I know that after six feet the hammer and arms are real tired. However, you must resist the temptation to saw off that remaining length above ground. Use no substitutes for a proper earth ground.

If you are planning to put up a tower, first check with the local authorities about engineering requirements, zoning regulations and restrictions concerning tower installation. Always use a tower and rotator strong enough to withstand the wind load of the antennas you are installing. If your tower is to be guyed, make sure the guy wires are the proper strength and will not travel into power lines should the guy wires snap. Carefully follow the manufacturer's instruction when installing the tower. Also, consult the ARRL Antenna Handbook as a source of background information while you are installing your tower/antennas. The first chapter is on safety. Before proceeding with any work, you might want to read that chapter.

Throughout this, and any, antenna installation, give yourself plenty of time to complete the instaliation. Take your time putting the antenna up, and keep your mind on your work. It is not a good idea to be putting up any antenna hours before you absolutely have to use it. I know that Field Day encourages swift emergency type installation of entire stations. However, I think that it would be prudent to go through a dry run exercise prior to quickly installing any antenna setup. This way, you can go slow and work out the bugs associated with that particular installation.

If you are planning to work during a time of the year when it is hot, have plenty of thirst quenchers, juice, and bananas available. Take frequent rest breaks and replace your lost liquids and potassium with the above drink and food items. Sodas and beer are not good sources of the nutrients your body needs under these circumstances.

When on the tower, wear a safety belt designed for your weight. Check it every time before you use it for cuts or nicks in the leather. If it is cut or nicked, discard it and get a new one. Have all members of your team wear hard hats. You may forget about that antenna or gin pole that is just above you as you

are looking down while climbing up. Also, one never knows when a wrench or an antenna may come down. Resist the temptation to follow the item down. If it falls, even if it is your new $300 antenna, let it go. It can be replaced. Can you?

Ground your tower to at least three ground rods installed in a triangle around the base of the tower. These ground rods need to be connected together with each other and to each leg of the tower. If your tower is a crank up model, be sure that someone you know, who can be contacted in an emergency, understands how to lower the tower.

One final thing about antennas: Do not work around or near any antenna that has power applied to it. According to ANSI, the American National Standards Institute, your body has an increased susceptibility to RF damage in the 30 MHz to 300 MHz range. Remember, the 6, 2 and 1.25 meter ham bands fall within this frequency range. Also, keep in mind that your microwave oven uses microwaves to cook meat. Like it or not, your body is a piece of meat. A friend of mine once worked on a fire control radar antenna when it was live. He told me later that he felt parts of his body get warm from the RF radiation. The jury is still out on whether or not RF radiation can cause cancer or cataracts. However, it is better to be safe than sorry.

YOUR SHACK:

The electricity to your shack should be on separate circuit breakers. The location of these circuit breakers should be shown to responsible members of your family. The circuit breakers should be the kind that can be "locked out." That means that they should be designed so that a lock can be attached to them to prevent them from being thrown "on" when they are off. The wiring to the shack should be the modern three wire (hot, neutral and ground) type of adequate current carrying capacity relative to the circuit breaker used. All receptacles should be the three wire grounded type. Plenty of receptacles should be available so that no one receptacle is "loaded up" with a number of plugs. The wiring and circuit breaker installation should be done by a qualified electrician. The ground for the shack should go to an eight foot ground rod as close to the shack as physically possible. Care should be taken to protect the shack from electromagnetic pulses (EMP) and lightening. Surge suppressors should be installed in the electrical lines to prevent surges from power company variations and from nearby lightening strikes from causing damage to your equipment. Lightening arrestors should be installed in the lines of the coax. A way should be provided for grounding all the coax lines during a lightening storm. The ground wire connecting each piece of equipment should be flat, braided copper, at least a half inch wide in order to prevent the ground wire from becoming an antenna. Each connection to every piece of equipment should be mechanically sound, and should be checked periodically to maintain that mechanically sound connection.

YOUR CONDUCT:

Unless you are qualified, never work on anything "live." By "qualified," I mean that you have attended a school, received proper training and been certified to work on the equipment. Two reasons should cause you to think twice about working on "live" equipment. First, voltages as low as forty volts can kill you and three thousand volts can overkill you. Therefore, in order to work on high voltage equipment you must have special high voltage certification. Second, leaking RF may possibly cause some physical problems. An RF burn is most painful and heals very slowly because you cook from the inside out. Ask that hamburger you cooked in the microwave oven how long it will take to recover from its "RF burn." Stay off the air during an electrical storm. No band opening is that important! Finally, remember the safety rule: "When in doubt, don't."

While these paragraphs by no means entirely cover the subject of safety, it is hoped that they will cause you to think about what you are doing. The hardest subject for me to write about is the Silent Key. And the last way I want to write about you is your becoming an accidental Silent Key. Please be safe!

The two books from the ARRL, mentioned above, are available from the CQ Bookstore (1-800-457-7373) (They are also available from Oklahoma Comm Center--ed) and are invaluable references for your ham radio library. For those of you who are club newsletter editors, permission is granted (and, indeed, encouraged) to you for reprinting the above paragraphs pertaining to safety, provided that credit is given to "CQ" magazine and to me, your column editor. While the above information on safety has been presented somewhat lightheartedly, please never be cavalier about your own safety. I have been in ham radio for over thirty years and know of several hams who paid dearly for ignoring safety. The Elmer of my fiancée (Carol King, K5CPZ) died shortly after giving her the Novice exam when he walked a pole into an overhead power line. A couple of years ago an extra class "N5" in Texas fried himself when he came in contact with the high voltage power supply of his linear (he died three days after the accident). (You read about this in the C&E a few years ago--ed). More recently, a good friend of mine in Oklahoma City, almost lost a finger twice when he tried to rush the installation of a 6 meter beam. I know that you can play it safe with the hobby and I hope this part of the column will help you take a little time to think "safety."

VHF Club
NEWS

WSLOW
The Elmer Goekler Memorial Station

Minutes of November Meeting

Meeting was called to order at 12:00 p.m. by President Jack, WB5ZKZ, with 12 members and guests present. Ellard, W5KE, gave his report and the minutes were accepted as published in the C&E. Since I was late, I was elected "Turkey of the Month!"

After some discussion about Christmas parties, motion passed that the December meeting be a regular lunch meeting.

The VHF Club would like to extend to all of you a Very Merry Christmas and a Happy New Year! Joe, K5JB, Sec'y

Steve, W5VCJ, Silent Key

As most of you already know, T.W. "Steve" Stevens, became a Silent Key this month. Our condolences are offered to Clara for her loss. We too will miss Steve. Steve and silent key Carl Drumeller sponsored an invitation to me to join the Radio Club of America, for which I will always be grateful. Steve, Clara and I had the pleasure of attending an RCA annual awards banquet in New York the year Steve made fellow. You don't receive such an honor from the RCA without making a significant contribution to radio. One of Steve's contributions was the initial design of the Oklahoma Highway Patrol radio system. I strongly suspect the reason for the preponderance of General Electric two-way radios in the state police departments can be traced to the success of that early design and the performance of the GE equipment Steve sold.

Steve was a vigorous supporter of amateur VHF radio. His activities during sun spot peaks make wonderful stories of the fun that we can have with the 6M band, which is kind of VHF sometimes, kind of HF at others. My first band to operate on was 6M and I bet that my log would show Steve's call on the first page.

I observed and learned an important lesson from Steve. As we mature and absorb things from our associates we develop good habits and bad habits. In early maturing years we are impressed by practices we don't quite understand, and we copy them. As we further mature we pause to ask why, and we become more confident that we don't need to copy anybody -- we become our own persons; make our own decisions; develop our knowledge into wisdom. When we were re-writing the club's by-laws, Steve said, "Why do we need all these rules? Why do we need all these details? Let's simplify these by-laws so they only contain what we need!"

Steve's draft of the revision was a model of simplicity. Instead of many paragraphs of pseudo-legalize, he simply crafted a set of rules that would adequately govern the conduct of the club, with the flexibility to adapt to future needs. Not only did Steve help build the initial foundation the club when it was the Six Meter Net, he helped maintain it and assure its continued existence with changing times.

Steve, we will truly miss you! 73 Joe, K5JB

Now Let's Run it Down!

Now that you have all kinds of clever ways to charge those Nickel Cadmium (NiCd) batteries, here is a way to run them down!

In keeping with last month's theme of little, easy to build circuits, I thought I would this month contribute a simple converse of what I provided last month. Since last month's circuit provides DC power, this month's eats it up!

Actually, this is an updated version of a NiCd battery discharger, similar to ones I published a long time ago to use for testing Motorola HT-220 batteries. I used to be heavy into 2M and 450 FM phone operation and kept HT-220s running all the time, eating batteries in the process. I never did have any problem running the batteries all the way down, but from time to time I wanted to run one through a full charge-discharge cycle just to see how good it was, so I built a discharger that would put a reasonable load on the battery and disconnect before the battery got so low that some of the cells could reverse charge. (Remember that a cell is one unit and a battery is two or more cells. A single cell is not a "battery". The name "flashlight battery", applied to a size D carbon-zinc cell, is wrong.)

A NiCd cell is considered fully discharged when it drops to 1.1 Volts. A Motorola battery has 12 cells, thus it is discharged when it drops to 13.2 V. With this high a voltage to work with, I simply used a small 12 Volt relay, let the battery current hold the contacts closed, and with the use of selected Zener diodes allowed the relay to drop out at the right point.

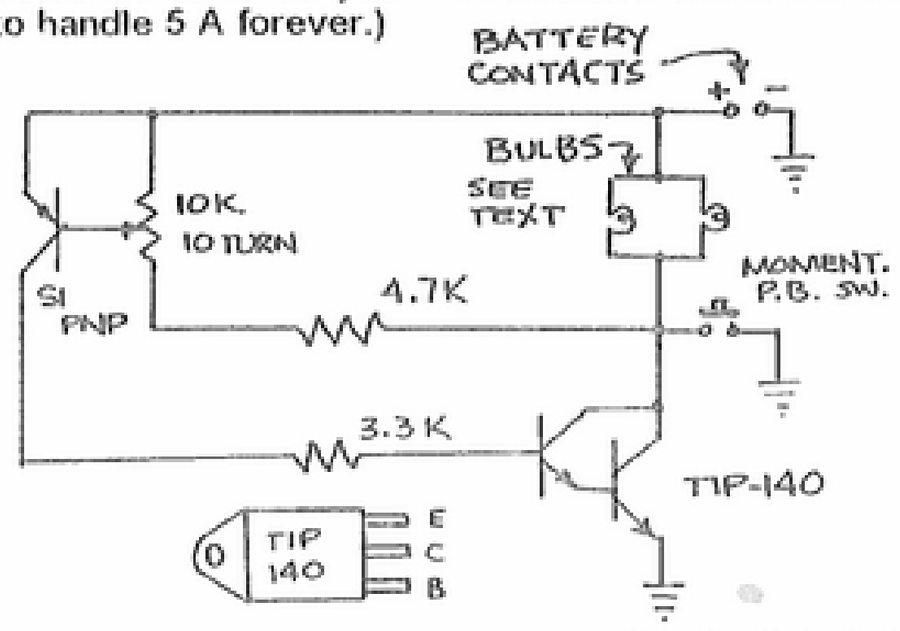
This month's circuit is one I needed to perform the same function, but for a different purpose. I have a video camcorder that uses a nominal 6 Volt NiCd battery. It often gets used for short periods, or not at all, making it difficult to run the battery through a full discharge cycle. The "memory effect" of NiCd cells gets a lot of hysteria from the press, and NASA discovered that it could happen under carefully controlled conditions, but I have never experienced it. I have experienced shorted cells, and quite often. The result, to the uneducated observer looking at the battery from the outside, seems to be the same as a "bad memory", but it is not reversible like the "memory effect". The latter problem is solved by cycling the battery through a full charge discharge cycle.

Anyway, myth that I think it is, I thought I should follow Sony's advice and fully discharge my battery before charging it. Sony says to put it in the camera and run the camera until it stops. If you do this and remove the battery immediately I suppose it OK, except for the wear on the camera. If you leave the battery in the camera and its voltage drops low enough, it doesn't have enough power to tell the camera's low voltage circuits that it has had enough and the stalled electronics drain the battery to zero voltage. Great! Now you get shorted cells and Sony gets to sell you another battery! That is a good way to keep batteries from getting memory effect, eh? They don't last long enough for that to happen.

Well, now you know the reason for this month's circuit. You may not have such an application for it, but study it for the intrinsic trickery you can do with transistors.

The utility part of the circuit is the power transistor, another Texas Instruments (TI) TIP-140 from my junk box. As I mentioned last month, it is a Darlington configuration giving it a high gain, approximately 1000 at 5 Amps. It is to be switched fully on in this circuit so I selected the 3.3k base resistor to supply it with plenty of drive. Since it is switched fully on there is a minimum voltage drop across it so the power dissipation is quite low. It doesn't need heat sinking

at the 500 ma design current of this circuit. If you want it to handle few Amps you probably would want to heat sink it. (It is rated at 10 A so you should be able to handle 5 A forever.)



The lamps were selected to get the desired 500 ma load for the battery. By experimenting I found that the running light filament of an automobile tail light bulb pulled 350 ma in this circuit, and a No. 47 pilot lamp pulled 150 ma. (If you want to discharge a higher voltage battery use something other than the No. 47 lamp which is rated at 6.3 V.)

The switch portion of the circuit is simple; the trick came in designing the latch circuit that would keep the switch transistor in conduction until a low voltage set point was reached. For simplicity, I selected a junk box silicon PNP transistor. (You can tell a silicon from a germanium junction by measuring the voltage across it when it is conducting. The silicon will have close to .7 volts, the germanium one less than a third of a volt. An ohmmeter will show a lower forward resistance on the germanium one. Measure the base to emitter junction of a transistor to see if it is Si or Ge.) I selected the silicon PNP because I thought it might have a sharper, more predictable switching characteristic.

To start the discharge, close the momentary push button switch causing battery to complete a circuit through the 10k pot and the 4.7k resistor to ground. The bias voltage developed across the emitter to base of the PNP transistor turns it on causing it to conduct current that biases the TIP-140 on. The collector of the latter drops to near ground potential taking over the circuit function of the push button switch. And you have light!

When the battery voltage drops low enough for the voltage across the PNP transistor's emitter to base junction to drop to below 0.7 volts it stops conducting sufficient current to drive the TIP-140 fully on. When the latter switches off, the bias across the PNP drops to zero and it switches fully off. The bottom end of the 4.7k resistor is connected to the light bulb filaments to sharply drop the bias on the PNP when the darlington turns off. Residual current draw on the battery is so low I couldn't measure it. (It would be a good idea to check it because there could be a leaky part in the circuit and it would defeat the design purpose of this thing, to not discharge the battery to zero.)

I initially set the 10k pot with the aid of an adjustable power supply and tweaked it with an exhausted 6.3 V Gel-Cell battery which I could charge a little and watch the voltage as it discharged. For this particular application I set the turn-off voltage to 5.5 Volts since my camcorder battery has five cells.

By now, you electronic technicians have probably recognized that what I built is an RS (reset-set) flip-flop, without the reset (or the "set" depending on how you view it). Your homework is, "Where do you put the reset switch in the circuit?"

This is such a simple circuit -- what could I do to make it more elaborate so it would be worth the $50 to $100 that they sell these things for? Maybe if it had an elapsed timer it could be sold for $200! Joe, K5JB

Ham Radio Bulletin Board

Mac, K2GKK, pointed this message out to me as a possible for the C&E:

The telephone number is (405) 482-5534 for the new WILDCAT! Telephone BBS. We have abt 30 Megs of Amateur files and programs. Please try it and let us know what you think of it. You will complete access the first call. No fees, and (or?) request for funds. I have the newest RLI, BPQ and MODS Data Base files. 73 Chuck Smith, WB5MJS

The Halloween Party

This one is floating around the packet BBS circles. For those few of you non-packeteros who are left, here it is:

A couple was invited to a very swanky Halloween party, so the wife got costumes for herself and her husband. On the night of the party, she developed a terrific headache and told her husband that he should go without her.

He protested, but she said that all she was going to do was take a couple of aspirin and go to bed, and that since the costumes were paid for, it would be wasteful to not attend. So he donned his costume and off he went.

The wife, after sleeping soundly for about an hour, awoke without any sign of pain and as it was just a little after nine, she decided to go to the party. In as much as her husband didn't know what costume she had rented, she thought it would be a good idea to just slip into the party and observe how he acted when she wasn't around.

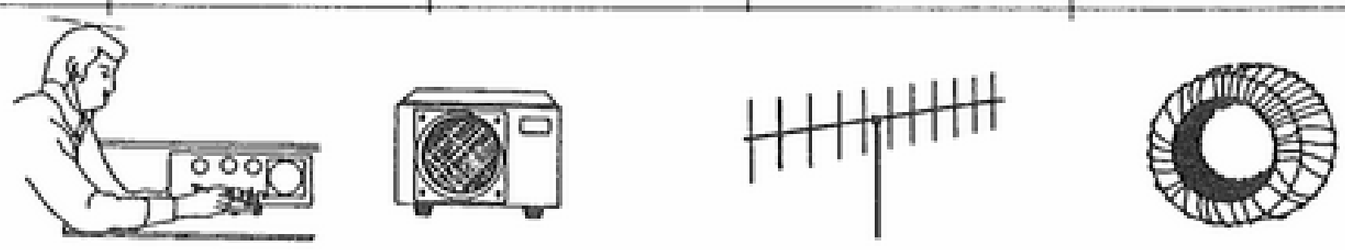
This she did, and as soon as she joined the party, the first one she spied was her husband, cavorting around the dance floor first with one slick chick and then another, copping a little feel her and there. So the wife sidled up to him and being rather seductive herself, he left the current partner high and dry and devoted his attention to the "new stuff" that had just arrived. She let him go as far as he wished, Naturally, and finally he whispered a little proposition into her ear. She agreed to this and they went out to one of the cars parked nearby, Etc., etc., etc.

Just before unmasking at midnight, she slipped away, went home and got into bed just wondering what kind of explanation her husband would make as to his behavior. He came home around 1:30 A.M., and went straight to the bedroom to see how she was. She was sitting up in bed reading and asked, "What kind of time did you have?" He said, "Oh, the same old thing. You know I never have a good time when you aren't there." Then she asked, "Did you dance much?" He said, "Well, I'll tell you, I never danced a dance. When I got there, Pete Jones, Bill Brown and some of the other guys were stag too, so we just sat back in the den and played poker, but I'll tell you one thing, the fellow I loaned my costume to sure had one helluva a time!" (Anon?)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8			11	12	13	14
15			18 Edit C & E	19	20	21
22	23	24	25	26	27	28
29	30	31				

December is the month for Christmas Dinners and since the only one I was sure of I didn't want to make it stand out so you are on your own. Check your repeaters, get on the low bands or just talk to other members. Someone will know.

DECEMBER



Great Plains A.R.C.

The Great Plains Amateur Radio Club's October meeting was held at the QTH of N5LRR and N5OKF.

The members present were: N5OO Willis,N5LEP Lorene, N5LRR Andy, N5OKF Saundra, W5KFK Lewis, N5EOX Freida, WB5OVT Rod, N5JGQ Lois,, N5VJE Don, N5QCN Phillip, AA5YV Larry, WB0GAX and WG5Z Gerald.

The club discussed the upcoming Hamfest to be held on the first full weekend in April at Mooreland once again. We also discussed the Christmas Party, but I forgot the date it is going to be held.

At the conclusion of the meeting, everyone enjoyed ice cream and cake. Rod was a little upset however, because he said his dog ate all of his avocado ice cream. MAYBE NEXT TIME ROD. I received word on the net last night that Lee W5HGH is in Presbitarian Hospital for surgery. The club wishes Lee a speedy recovery.

Bob WB0GAX and I Phillip N5QCN helped out the Boy Scouts of Woodward with the Jamboree on the Air. We had ten scouters out there and also had a great time.

That is just about it from this part of the world, so with that I'll say 73 all.

Phil N5QCN