AARC BULLETIN Albemarle Amateur Radio Club October 1995
Editor Joseph D. Fritz, KD4RWX Albemarle County and Charlottesville, Virginia

SEPTEMBER CLUB MEETING

TUESDAY OCTOBER 10, 1995 7:30 PM

Program: Greg, N4PGS, will be talking about the repeater and the programs that he has available and those he is getting ready to install, involving ARES etc.

Meeting: Committee Reports; Election of Officers and Board Members.

The following sections of the AARC Bylaws proscribe tonight's meeting. It is very important that members select individuals who they believe will manage the affairs of the Club, as described in the Bylaws, in a way which promotes the continued success of the Club.

So please plan to attend and participate. The Nominating Committee's slate is presented on this page. Each Officer will be voted on in the sequence listed. Nominations from the floor are always in order. Any person nominated for an Office, but not elected will be Automatically placed in nomination as a Director.

The final slate of Directors will be voted upon at one time. Those persons who receive the top five most votes will be elected. In the event of a tie with a sixth or more persons, a runoff vote will be taken.

All voting where opposition exists will be by written ballot.

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ARTICLE III Officers

Section 1: The officers of the Club shall be a President, a Vice-President, a Secretary, a Treasurer, and they shall comprise the Executive Committee. The Executive Committee and five Directors shall comprise the Board of Directors. These officers shall perform the duties prescribed by these bylaws and by the parliamentary authority adopted by the Club.

Section 2: At the regular meeting held on the second Tuesday in September, a Nominating Committee of five members shall be appointed by the President. It shall be the duty of this committee to nominate candidates for the offices to be filled at the Annual Meeting in October. Before the election at the Annual Meeting in October, additional nominations from the floor shall be permitted.

Section 3: The officers shall be elected by ballot to serve for one year or until their successors are elected, and their term of office shall begin on January first following the Annual Meeting at which they are elected.

Section 4: No member shall hold more than one Board office at a time, and no member shall be eligible to serve as President or Vice-President for more than three consecutive terms.

ARTICLE VIII Meetings

Section 2: The regular meeting on the second Tuesday in October shall be known as the Annual Meeting and shall be for the purpose of electing officers, receiving reports of officers and committees, and for any other business that may arise.

ARTICLE IV Board of Directors

The Board of Directors (hereafter called the Board) shall be composed of nine Full Members who are elected for a term of one year commencing January 1 and ending December 31. The Board shall be comprised of the Club President, Vice-President, Secretary, Treasurer, and five Directors.

Nomination Committee's Report

President:	**[Select (1) one]**
Jessie Preston	KE4QID
Pete Wildman	AD4TU
Vice President:	**[Select (1) one]**
Greg Faust	N4PGS
Secretary:	**[Select (1) one]**
Joe Fritz	KD4RWX
Treasurer:	**[Select (1) one]**
Sharon Duvall	KO4WQ
Directors:	**[Select (5) five]**
Rick Berman	KO4WQ
Dave Damon	KE4YLR
Mike Duvall	AC4ZO
Joe Giovanelli	W2PVY
Hein Hvatum	N4FWA
Gerald Nauman	KN4FM
Ron Richey	K4RKA
Ernie Sardi	W2EIU
Wil Seay	KJ4XZ
Elwood Shrader	KB4DJN
Bob Stannard	N6AAR
Pete Taylor	KC4UCK

CONTENTS

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CORRECTION

Last Issue the article "The Gloom and Toomb Boys" was written by Harry (W2HD).

NOTICE

The 146.925 Repeater sometimes experiences some interference and a tone is turned on. The tone is

88.5 Hz

AARC BULLETIN Albemarle Amateur Radio Club October 1995
Editor Joseph D. Fritz, KD4RWX Albemarle County and Charlottesville, Virginia

THE OLD

Since May, 1994, I have had the distinct privilege and pleasure of providing the Albemarle Amateur Radio Club members with a monthly newsletter. I had never undertaken such an endeavor before and I was therefore a little bit nervous about doing it. However, at the time the AARC was in a bind and I stepped (Editor: was pushed) forward and took my turn at bat. I was not able to set any duration record as Cal Ripken, Jr. did in baseball, but I came to bat for a lot of months.

I will not mention all of the people who have supported me in that task. You have been reading all of the articles, haven't you? I will point out a few: Harry (W2HD); LeRoy (WA4MHP); Rick (KO4WQ); Ron (K4RKA); Bill (KC4TQF); Pete (AD4TU); and Joe (W2PVY) {see this issue and future issues}. These and many others who wrote more periodically have made the newsletter what it has been. I just formatted it. An unsung hero has been Mike (KD4NNL) who has been a most cooperative and helpful assistant during the production of each issue. Thanks Mike!!!!!

I came very close to backing out of quitting even the day before the September issue was printed. I knew I was going to miss the nice feeling of doing something tangible for the Club. But, I knew too well that I had several personal projects I needed to get completed.

I wish to acknowledge all of you who have so kindly given me encouragement with your compliments concerning the newsletter. You probably do understand when I say that just like in a marriage situation: "those little things mean a lot."

I saw the example newsletters Eileen Dean distributed at the last Board Meeting, I suggest that the members of this Club will be treated to a newsletter which will be very good. The Dean Team has already demonstrated, for a previous Club, an outstanding ability in this field. Just as I had, they will have a wide latitude in designing their rendition of the AARC BULLETIN. It will begin to look different. It will have a different style. It will make you smile. I wish them much success. I will assist them fully during the transition period.

I must ask one thing of you - the AARC. Please, please look objectively at yourself and ask this one question. What can I do in the way of contributing to the enjoyment and education of my fellow Club members and Hams? Then write an article just as Elwood Shrader (KB4DJN) did. Already, some young Hams have taken the information from his article and built a J-Pole antenna. I suspect the articles in this issue on batteries will provide others with the assistance they can use to restore and understand the batteries they use frequently. Thanks Joe (W2PVY).

Joe (KD4RWX)

THE NEW

First, we'd like to offer a round of applause to Joe Fritz, (KD4RWX), outgoing Editor. Without Joe's efforts, there would have been no newsletter for the past year. He's been a patient teacher, too, while showing us the editorial ropes. Thanks, Joe!

Since we're not only new to the editor's chair, but somewhat new to Charlottesville, we'd like to introduce ourselves. Paul, WB9HGZ, has been a ham just about forever--well, anyway, long enough to be only a few months away from membership in the QCWA. WB9HGZ knows all about the technical aspects of Amateur Radio, and can handle everything from hooking up a packet station to repairing an ancient tube rig. Eileen, WD9EIA, has been a ham since "HGZ" rewrote the wedding vows to include "love, honor, and get a ham ticket." She knows how to find the on/off switch on her ICOM IC2AT handheld (okay, she did have to go look at it to get the name right), but, hey, she types eighty words per minute and can spell.

In future issues, we'd like to give you old-timers the opportunity of passing along your expertise in the field through a regular column for new hams. Send us experiences, covering anything from how you worked your first net to how to string a dipole, and give the newcomers something to learn. (Don't worry if you can't spell. That's what all this fancy computer equipment is for!) Please continue to send your articles on any topic of interest to the local amateur community.

Our electronic address is:

74146.446@COMPUSERVE.COM

Our low-tech address is:

4300 Sylvan Lane, Charlottesville, 22911

Our PACKET station is still packed in a box, courtesy of last year's move. Please keep sending your articles through PACKET to Joe Fritz, who'll forward them along to us. We're looking forward to hearing from you!

Thanks for giving us the opportunity to be a part of AARC, **Paul (WB9HGZ)** and **Eileen (WD9EIA).**

THE PRESIDENT SPEAKS

I would like to thank all those that attended the annual picnic that the club had at McIntyre Park. The food was delicious, the weather was great. All in all a very nice evening.

I would like to thank Eileen Dean-WD9EIA and Paul Dean-WB9HGZ for taking the editorship of the AARC news letter. I had a chance to review their work when they published a newsletter for an Illinois club; it was very nice work. The Deans are taking this position from Joe Fritz - KD4RWX. Joe has done an outstanding job on the newsletter the last 17 issues. Thanks Joe and thanks Eileen and Paul.

Don't forget that elections will be at the next meeting. If you know someone that would make a good officer or Board member, please contact that person, get their agreement to run and then if they are not one of the individuals submitted by the Nominating Committee- you may nominate them at the appropriate time during the elections.

Several people have asked why the club is applying for a Federal I.D. number. There are several reasons: We have been receiving donations from organizations that would like to record our Federal I.D. number for their tax records. Not having an I.D. number has made receiving these donations difficult. When we run classes, we have to present an I.D. number to receive a discount for the purchase of the books and tapes. The bank also requires that we have an I.D. number on file with them for their records. (At present, we are using an officer's social security number. This could freeze the officer's or club's account if some type of misfortune were to occur.) I hope this answers some of the questions that you may have had about the I.D. number.

Good seeing everyone at the picnic. Hope to see you at the next meeting. **LeRoy-WA4MHP, President-AARC**

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VEEP'S CORNER

WOW!! was that a picnic. We had around ninety people show up for it. I kept looking around to see if anyone was wearing spikes or a baseball uniform. I thought that people had wandered over from the baseball field, but they were all hams. Big Jim had to keep running back to the shop for more food and drink but I think everyone finally ended up with enough. A great crowd great evening and good food, thanks to Ron, K4RKA, and the recycling group.

Should be an interesting meeting next month. Greg, N4PGS, will be talking about the repeater and the programs that he has available and those he is getting ready to install, involving ARES etc. Sounds interesting.

We have a good group of people at the Novice/Tech class, ranging in age from nine to around sixty five. Five are taking the CW training and the rest show up for the no code tech part.The cw people are doing very, very well after only three weeks, copying at least parts of sentences. Very gratifying.

We have the horse event at Greenwood coming up tomorrow, September 16th, and weather permitting it should be a lot of fun. I'm looking forward to it, especially since it's just down the road from where I live.

As an afterthought, please try to make the October meeting, as the nominating committee will have nominations for the AARC officers for the next year. Very important!!
That should do it for this month.....73...

Rick (KO4WQ)

CW AND TECHNOLOGY

While relaxing and thinking about the subject for my next month's contribution to the AARC Newsletter, an article appearing in one of the club publications I receive monthly struck my eye. It was a subject near and dear to my heart and several of the other AARC members without doubt. Here it is in its entirety:

The CW mode has little intrinsic to it that mandates its preservation. Sure, we all know about its frugality of bandwidth, its ability to get through in bad conditions, and the way it allows hams who do not share a common language to communicate. But CW is old. And in this society, being old is the kiss of death.

When I learned Morse as a boy, it was a mark of distinction. Years later, when I became a ham, I found that I still remembered it. But by this time I had a hearing problem. I soon discovered that CW is easier to understand than speech - a reason for preference unique to the aged.

Some demean CW precisely because they associate it with the old operators. To the scoffers, loyalty to CW seems akin to stubborn espousal of outdated views. C. S. Elliot termed this denigration of things old "chronological snobbery."

Others say CW ought to be done away with simply because technology has superseded it. The guiding principles here seem to be that more complex is better, and that eliminating the human element is the aim of technical perfection.

Today's radios have advanced beyond our ability to repair (indeed for some of us even to see clearly.) One result is that homebrewing has largely become the province of underdeveloped countries.

But when it pares away human participation, a technological marvel often produces sheer boredom. For me, CW offers beauty, rhythm and economy of expression: it is language stripped to its essentials.

Wordiness is left to keyboard ops and those courtly hams whose courtesies occupy the greater part of their QSOs. But that's OK: I'd rather listen to them than to the cops in an SSB DX pileup. (On CW, even the obscenities acquire abbreviations.)

An image excites me still. An operator shrouded in a blanket hunches over his key at local midnight, straining to hear a faint signal from some far corner of the world where the very stars look different.

I'll not disparage other modes. I only want to suggest that those who must judge, judge CW by standards other than efficiency or modernity. Those who operate CW do so because they enjoy it. In a hobby, isn't that reason enough?

And many of them aren't old. I believe the people attracted to CW today are the same sort that found it fascinating 75 years ago. But a person must be exposed to a bug to get bitten. That's why live demonstrations at county fairs, Boy Scout jamborees, science museums and school are so important. Does your club do that?

(This article was written by Jim O'Keefe, WE6V, and reprinted in several newsletters around the country. It was copied from "QTC" the publication of the Suffolk County Radio Club (L.I.) As one who learned Morse Code at the age of ten, CW has been a companion for years and has served me well. It's fun! 73 de Harry, W2HD)

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Harry, (W2HD)

GROUNDING

Grounding is a complex subject which we will attempt to simplify and explore during our November meeting. Rather than this being a one way presentation, I tend to feel it would be more meaningful if we are able to address any of the specific grounding questions you may have about your current grounding configuration and specific plans to upgrade it. To that end, **you may want to answer the following questions prior to the November meeting.**

The following are geared to detached or duplex dwellings versus apartment complexes:

1) How is your electrical service grounded? Looking around the power meter on the outside wall, do you see the top of a copper ground rod at or just above surface level? Looking around the power panel on the inside wall, do you see some copper wires bundled and fastened to a copper pipe leading to you incoming cold water lead? Do you have both?

2) How does your power company route its power to your house? Do you see electrical service coming in directly from a pole line? If the service is buried, what pole does it come from and what route does it take? This is particularly important if you are going to erect and ground an antenna tower as you do not want the tower's ground system to be any closer than 12 ft (we can discuss this number) to the closest point of the power company's ground system. If you do not know the route, and are seriously considering a tower or any underground digging near your house, you can call Miss Utility (number should be in the front of your phone book) and ask them to locate the power/utility route for you. They will spray paint it in orange on the ground, so have a way of permanently recording this route.

In fact, to document what you find out in responding to questions 1 & 2, I suggest you plot the information as accurately as possible on a map. You can draw one from scratch, but good scale may be hard to achieve. If you have a plot map, it will show utility easements, water and sewer/septic. Make a copy and you have a fairly close scale map on which you can overlay your grounding information. If you are going to erect a tower, you will need to observe the setbacks normally shown on such a map.

3) Do you have an existing supplemental ground field set up to bleed unwanted current from your radio and/or computer equipment chassis? How does this get to earth ground? Where is this earth ground? Is it tied to your power company's multi-ground neutral (MGN)? Add this to you ground map. What are the local power company and code requirements for connecting a supplemental ground to their MGN. You definitely want to do this and anything else is unsafe. However, the requirements vary from location to location. In some places the home owner can just hook into the MGN, in others a certified electrician must do the connection, in others either of the above may apply with either a power company and or code compliance inspection added on top.

4) Have you constructed a supplemental RF ground plane at the base of your tower to enhance your HF propagation/reception? If so, you may want to add this on your grounding plot. RF grounding will not be the primary subject of the November meeting, and I am not prepared to address it. However, others may be able to provide some insight as to interaction, both positive and negative between RF and tower ground systems, as well as RF grounds themselves.
Mike (KE4WPG)

WHAT IF

One of the most interesting transmitter hunts that I participated in was the one that Bill-KC4TQF was net control of in April 94. This was a mock hunt for a downed airplane in Eastern Albemarle County. Bill established a Net, called for information and the hidden transmitter was found in about an hour and one half. All data reported to net control was good in assisting everyone in locating the hidden transmitter. But there was interesting thing that happened: The winner did not check into the net. I have decided to run another net similar to that one for the October transmitter hunt. I believe that this is a good training exercise to learn how to be part of a net that has a purpose; information needs to be transmitted from the field in order to zero-in on a homing device, but leaves the operator in the field to make the decision on where the next data should be taken .

The October Hunt will be on Sunday, October 15, 1995. It will start at 1:30 P.M. local time. The hunt will start on the 146.76 repeater and the net will then move to the 146.925 repeater. There will be two classes of operator for this hunt. The base station and the mobile station. If you start as a base station and the go mobile because of the excitement your points will not transfer. Scoring will be as follows:

Base Stations:

100 Points for checking in.
25 Points for stating your location, beam heading from your location and field strength reading off of your R.F. meter from your radio
25 Points for identifying a special feature of the transmission coming from the fox.

Mobile Stations:

75 Points for checking in.
10 Points for each location and beam heading of the fox. (50 point limit)
20 Points for finding the fox.
30 Bonus Points for finding the fox in less than 45 minutes.
0 Bonus Points if you take more than 45 minutes.

Winners will be announced for each class plus the overall points winner will be announced and certificates awarded in e category. Find a team mate as soon as you can. My wife and I will be hiding (that's a warning; you may remember how hard she was to find when she was the fox last year!).
LeRoy-WA4MHP

The November Turkey Hunt

The November Turkey Hunt is a transmitter hunt with a twist...registration is required for this one (you MUST be registered by November 1 in order to be eligible for any prizes)...speaking of prizes, we will be offering prizes for the 1st place finishers in each category. As of this writing the specific prizes have not been selected, but they will be appropriate for the upcoming Thanksgiving holiday. For this particular Hunt, we will be accepting entries in 2 categories - TEAM (2 or more people in a single vehicle) and SINGLE (only one person in a vehicle).

WHEN - This Hunt will take place on November 12th. This is one week earlier than normal because we want to give all interested parties the chance to participate before anyone leaves for the holiday. Check-in time will be 10:00 at a location yet to be determined. At the Check-in, we will brief all Hunters on the specifics of the Hunt (i.e. types of transmitters, freqs, etc). Also Each Team and Single will receive their Transmitter Verification Card. The Hunt will begin promptly at 10:30.

Overview - The Hunt will use 3 different transmitters within Augusta County. These transmitters can be voice, CW, or data. If voice, the operator may or may not talk to the Hunters. Power levels can be fixed or variable, high or low. Antennas may be horizontal or vertically polarized or variable. As an added bonus, the station may be fixed or mobile (if mobile, it will be within a specified area and between specified points). The object will be to find each of the 3 transmitters and return to the check-in site. At each of the transmitter sites, a Hunt official will note the time and sign off on the Transmitter Verification cards as the Hunters check in. The Hunters will then proceed to the next transmitter. Your Hunt will be against time. the first transmitter will go on the air at 10:30. The second transmitter will go on the air as soon as the first Hu checks in at the 1st transmitter site. Likewise the 3rd transmitter will go on air when the 1st hunter checks in at the 2nd transmitter site. This is important each transmitter will only operate until each Hunter has checked in or for 3 hours, whichever occurs first. ANY HUNTER THAT HAS NOT LOCATED A TRANSMITTER BY THE TIME IT GOES OFF THE AIR WILL BE ELIMINATED FROM THE HUNT AND WILL RETURN TO THE CHECK-IN SITE.

Scoring will be the number of minutes it takes to locate a transmitter multiplied by its difficulty factor (i.e. if it takes 2 hrs to find transmitter A with a difficulty factor of 2 then the score for that transmitter will be 120 minutes x 2 = 240). The winner will be the Hunter with the LOWEST score. This means that if it takes a long time to find one transmitter, the time (and score) can be made up on the next transmitter. The easier the transmitter is to find, the higher its difficulty factor, and the harder it is to find, the lower the factor.

Hunters may use any antenna/equipment configuration they desire. Base stations ARE NOT permitted to operate in this Hunt and the use of any base stations by any Hunter for any reason shall immediately disqualify the Hunter. The decision of the judges will be final. This hunt will proceed rain or shine. If you have any questions, please call me at 540-337-5179 (Stuarts Draft).

73 de Bill, KC4TQF

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BATTERIES
by Joe Giovanelli, W2PVY

Ever since one of our Northern Piedmont Emergency Net Tech sessions, there has been a great deal of interest about batteries, their life expectancy, and their reclamation. For this reason I am beginning a series on "Batteries."

Because of the AARC's increasing interest in emergency preparedness, my first discussion deals with a specific battery--the Power Station. If you find that this is a valuable tool for you, I'll give you one place from which you can obtain one:

Mr. Joe Brancato, Ham Contact, P. O. Box 3624, Long Beach, CA 90803, Phone 800/933-4264

What is a Power Station? In essence, it a 12-volt, 6.5 ampere hour battery, mounted within a plastic housing. It is the rest of the items contained within that housing which makes the Power Station the useful tool that it is.

On one of the long panels there are two cigarette lighter sockets, two switches and a voltmeter. One switch is the power switch which serves one cigarette light socket as well as a regulated power supply--more later. When this switch is turned on, the meter indicates the current voltage of the Power Station's battery. As I said, one of the cigarette lighter sockets is energized with the battery voltage. This is fused for currents no higher than 10 amperes. The voltmeter sits directly across the cigarette lighter socket.

Now we will begin to see some of the clever aspects of this tool. If the power switch is off, it is possible to use the voltmeter to measure external sources. A cable is provided which has a cigarette lighter plug at either end. Therefore, if you plug one plug into the Power Station and the other one into a car lighter socket, the Power Station will show the voltage of the car battery.

The other cigarette lighter socket on the Power Station is an input. It is diode-protected so that it cannot be used as a 12-volt output. If you plug the special cable just mentioned between that socket and the cigarette lighter socket in your car, you can charge the Power Station as you drive. Unless the Station is completely discharged, little charge will be possible when the car is stopped with the motor off. This is because the battery voltage of the car is too low. If the car is being driven, the Power Station can be charged in about 45 minutes.

I recommend that you use this charging method only as an emergency measure. There is a preferred method of charging it. The unit is supplied with one of those ubiquitous power cubes. There is a socket which is designed to accept the plug from this adapter. Charging using this system takes about 14 hours when the cell is relatively discharged. You do not need to be concerned about over-charging the cell (a bad thing to do to a jell cell). Win the housing there is a voltage sensor which puts the charge to a "trickle" mode once full operating voltage of the battery has been obtained.

There's more. The second of the two switches on the Power Station sets the output of a regulated power supply, built within the housing. The voltages available are 3, 6, and 9 volts, at a maximum current of .7 amperes (700 mA). You would expect this to be a low-current power supply when you see the 1/8-inch mini plug which is the power takeoff for that power supply.

There's still more! There is a door on the other long panel, which, when opened, reveals the fuse holder for the cigarette lighter output socket, along with two, heavy, quarter-inch threaded studs (metric). These provide direct output from the battery, with no fusing or power switch.

Although this is a 6.5 hour battery, it doesn't mean that this is the highest available current. It is possible to draw over 100 amperes for short periods. This makes it possible to use the Power Station to start a car whose battery is dead. You have perhaps 2 minutes of cranking power. If used for this purpose, be sure to recharge the Power Station as soon as possible.

This is a lead-acid jell cell. Unlike nicad cells and batteries, jell cells must be kept at full charge all the time. Failure to do this will shorten the life of the cells in the battery.

NICAD BATTERIES
by Joe Giovanelli, W2PVY

In this section I will make some general observations about the properties of nickel cadmium cells. In the next article I will discuss ways by which one can restore "dead" batteries and cells.

A "nicad" cell is composed of two, major elements: nickel and cadmium. (there is also an electrolyte just as in any cell or battery.)

A nickel cadmium cell has a starting output voltage of about 1.25 volt. As the cell discharges, this voltage stays more or less constant, gradually dropping. Near the end of the discharge cycle, the voltage drops precipitously. A standard alkaline cell, on the other hand, begins to decline in voltage rather quickly. As we'll soon see, it is still often better to use alkaline cells than nicads.

If we require a voltage which is higher than 1.25 or 1.5(in the case of alkaline cells), we must wire cells in series. The number of cells depends on the voltage requirements of your equipment. A group of cells wired in this way is known as a battery. For correctness, when we buy one alkaline or nicad, we buy a cell, not a battery. When we buy a handheld transceiver, we find a "battery pack" designed to supply the requisite voltage for that equipment. That pack houses a collection of individual cells.

Nicads are available in a variety of physical sizes, including AA, C, and D sizes. (There are many others as well.)

These cells are rated in terms of their current capacities. A typical AA type maybe rated as 500 mA hours. In other words, when fully charged, such a cell can be expected to be capable of delivering half an ampere for one hour. If the current requirements are less, the discharge time will increase; if current demand is higher than the rating, discharged will be shortened in accordance with the demand.

A Nicad C cell may have a rating of 1 ampere hour. A D cell might have a rating of 2 ampere hours.

Unfortunately size is no way to gauge the capacity of one of these cells. I have seen D cells which are capable of only 1 ampere hour. I have seen other D cells capable of 4 ampere hours and even more. I can recall seeing a "bargain" C cell rated at only 0.5 ampere hour.

The AA cell is a common type used in handheld transceivers. When these transceivers are set to transmit at high power (usually 5 watts), the battery drain is often more than an ampere. This means that they will operate reliably for a total of 30 minutes or less under key-down conditions.

The beauty of nicad cells and batteries is that they can be recharged numerous times, they cannot supply current for as long as can be expected from alkaline cells and batteries. It is for this reason that many hams have given up using nicads in their portable transceivers. With buying in bulk, the AA alkaline cells are cheap enough to be used for this purpose. The starting voltage of an alkaline cell is about 1.5 V, which is a quarter of a volt higher than that which is produced by a nicad cell. If your battery pack holds 8 cells, and if the pack is loaded with alkaline cells, it means that an additional 2 volts will be available to run your portable. Before using AA alkaline cells, be sure that your equipment is designed to handle this additional operating voltage.

I have said that a nicad cell or battery is rated as being capable of delivering an X amount of current for Y hours. There are, however, a number of factors which will reduce the amount of available current. If the cell is overcharged for extended periods, the heat generated within the cell will degrade its innards, and the cell (or battery) will no longer be capable of supplying its rated current for as long a time as is shown on its label. If I find that a battery is getting warm, I tend to figure that it is charged.

The battery manufacturer will recommend that it be charged at a specific current and for a specific amount of time. If you do not have this information, you can guess that the maximum charging current should be no greater than 0.1 of its rating. For instance, if the cell is rated at 0.5 ampere hour (500 mA per hour), the maximum charging current should be no more than 50 mA. This charging rate should be continued for perhaps 14 hours.

The battery manufacturer often sells a charger designed to handle his products. The manufacturer of your transceiver undoubtedly supplied a charger designed to recharge its battery pack in the proper way. Be sure to read the charging instructions before using the transceiver.

Another reason for a cell to fail to provide its rated current for as long as you thought it should is a matter of not permitting the cell or battery to be discharged as deeply as you should. If you use a device for just a few minutes, chances are that the battery will still contain most of its charge. If you repeatedly charge a battery under those conditions, the battery will "remember" the way you have used it and will be limited in its ability to operate your equipment. To avoid this problem, discharge the battery very deeply as often as you can. I do not mean by this that you are to discharge the battery so that there is zero output voltage present across its terminals. Doing that is very destructive to the battery. by the time you obtain zero voltage, some of the cells may actually take a charge in the opposite direction than is desired. That can ruin such cells.

Why won't all cells discharge to zero volts at the same time? It is a matter that all cells are slightly different in their current capacity.

How do you discharge your batteries then? You discharge them to a point where their voltage drops just below the point at which they can reliably operate the equipment.

Once a cell or battery has developed a "memory," its capacity is reduced as I have said. The capacity can sometimes be restored to nearly full ratings by deeply discharging and fully charging the cell or battery several times. In the case of individual cells, they can be discharged to near zero volt before recharging them.

Eventually the cell fails to provide current for a long enough period. Once this happens, the battery or cell must be replaced--most of the time. Sometimes, however, the cell can be restored. How you can do that is the subject of the next article in this series.

RESTORING "DEAD" NICKEL CADMIUM CELLS AND BATTERIES

by Joe Giovanelli, W2PVY

In the previous article we learned that nickel cadmium batteries have a finite life. Their lives can be reduced even more if they are permitted to take on a "memory." I discussed ways by which the memory set can often be eliminated.

Eventually, however, these batteries will fail to hold a charge, and they may need to be replaced. It is worthwhile to attempt to revive them--possibly bringing them to nearly their full current capacity. The purpose of this article is to explain exactly how to attempt ni resuscitation.

First I'll discuss the restoring of a cell. Even if you need to rejuvenate a battery of cells, please read this section because much of what I say relates to batteries.

If you have a cell which does not accept a recharge or which discharges within a day or two, even when not used, you have a candidate for revival.

Equipment needed:

a 12-volt power supply; it can be capable of relatively small current, provided that you have the second item a capacitor having perhaps 10,000 uF of capacitance or more. Voltage rating should be about 50 VDC.

I will assume that you have the capacitor because using it is the preferred method of treatment of dead cells.

Procedure: Before doing anything, make certain that your work space is clear of junk and clutter. You don't want scraps of paper, wire or what have you to be anywhere near the equipment.

If you are uncertain about the procedure, don't try it.

Connect the positive lead (or terminal) of the capacitor to one end of a 100-ohm, 5 watt resistor. Connect the other end of this resistor to the positive terminal of the power supply. Connect the negative lead of the capacitor to the negative terminal of the power supply. Turn on the power supply and wait a few seconds for the capacitor to charge.

Disconnect the capacitor and be careful that the positive and negative leads do not touch--discharging the capacitor. Next, connect the negative lead of the capacitor to the negative terminal of the cell. Next, touch the positive lead of the capacitor to the positive terminal of the cell. (There will be a spark produced at the moment of contact. Be prepared for this and do not panic.) Hold the connection for a couple of seconds. This may have given that cell a new lease on life. Charge the cell and see if it takes and holds the charge. If it does, great! If it doesn't, try the procedure a couple of times to see if the cell begins working properly. If it does not, throw it away.

If you do not have the needed capacitor, but you have a power supply capable of perhaps 30 amps, you can still restore a dead cell. Here's how to do it.

Turn on the power supply. Connect the negative terminal of the power supply to the negative terminal of the cell. Next, touch the positive power supply terminal to the positive terminal of the cell. (Remember, there will be a spark produced at the moment of contact.) Hold that connection for about one second. Holding the connection for too long may cause serious internal heating of the cell, ruining it for good. Wait about 30 seconds or so and repeat the process.

You might discover that the cell has started to take a charge. You should then charge the cell completely, using the proper charger.

Some power supplies have protection circuitry which might cause them to "trip out" during this process. With variable-voltage supplies, you might be able to lower the voltage to a point where high current still flows into the cell and yet permits the power supply to operate without its protection circuits coming into play.

I definitely prefer that you use the capacitor rather than making a direct connection to the power supply. The use of the capacitor avoids accidental damage to the cell. In extreme cases, the cell could explode and you could be injured.

I know one person who uses his 12-volt car battery rather than the power supply. Certainly the battery can supply the required high current, but the spark which may be produced when a connection is made to the battery could cause gases in the car battery to ignite.

We most often deal with dead battery packs rather than single cells. Still, the basic approach I have described is relevant.

What you must do is open the pack if at all possible. This often permits you to get to the connections of each cell individually. Measure the voltage which may be present in each cell. You will likely find that most of the cells are good and that just one or two of them are dead.

Use the methods discussed previously to restore the dead cells. Leave working cells alone.

WARNING! If you find it necessary to force high current into a transceiver battery pack, **DO NOT** use the charger connector as a convenient way in which to apply the current. There are often protective diodes and/or other components which cannot withstand the currents involved in this restoration process. What you **MUST DO** is to feed the current into the pack by way of the contacts which mate to the transceiver when the pack is slipped into it. Make very certain that you have correctly identified the positive and negative contacts.

I recently restored a battery used in a cordless phone. I wasn't able to get to each cell so I settled for forcing current through the entire battery of cells. Because the cells were "N" size, I kept the capacitor voltage to 12 volts. I successfully restored that battery to perfect operation and it ran the phone for many months. After that, it finally failed; I could not restore it again.

In that instance I had to force high current into all cells, good and bad. By doing that we run the risk of over-charging the good cells, possibly ruining them. This is why I suggested that you try to restore a battery one cell at a time.

When reconditioning small cells such as "N" or "AAA," reduce the voltage to 6 volts if you can. The aim is to minimize over-heating and possible damage to the cell or even worse, an explosion which could spray caustic material into your face.

If you are forced to restore a battery as a whole, it is sometimes necessary to raise the charging voltage above 12 volts. If the normal operating voltage of a battery is 8 or 9 volts, it is unlikely that you can force sufficient current into it with just 12 volts. I usually use 24 volts, especially for C and D cells.

Do not use this restoration method on anything except NICAD cells and batteries.

The watchword during these processes is "caution!" Think about what you're doing at all times. If you are uncertain about the procedure, don't try it. Either let someone with some experience do the work or just throw the dead battery away. Safety is always more important than the value of the replacement battery.

Do not use this restoration method on anything except NICAD cells and batteries. There are ways of recharging watch batteries, but what we have discussed is not one of them. I have had some limited success in recharging alkaline cells, but definitely not by using the approach discussed in this article.

Incidentally, the way to recharge watch batteries is to use a power supply of perhaps 12 volts. You need a high-resistance rheostat wired in series with the cell and the power supply. You need to measure current and adjust the rheostat so that the charging current is around 1 mA. Continue the charge for several hours. (Naturally, the positive charging voltage is connected to the positive of the cell being charged; the negative charging voltage is connected to the negative terminal of the cell being charged.)

I have been doing these restorations for perhaps 40 years and I have not had an accident. Please follow the steps outlined above, and you'll have equally good luck.

BITS AND PIECES

PUBLIC SERVICE EVENTS 1995

CONTACT HEIN (N4FWA) TO SIGN UP FOR EVENTS

DIA1 Sunday 01 October, 1000 EDT American Diabetes Association Walk in Charlottesville.
HRT1 Sunday 08 October, 1400 EDT American Heart Association Walk in Charlottesville.
HRS2 Saturday 04 November, Montpelier Horse Race.
MJH1 Tuesday 28 November, 1800 EST Martha Jefferson Hospital emergency drill

1996 Events: Some Early Plans

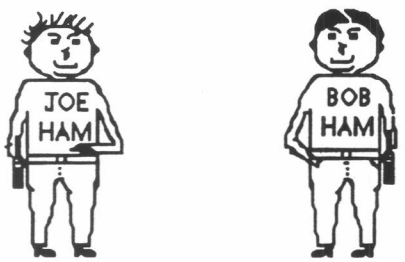
BKR1	Sunday 10 March 1996	Bike Race
BKR2	Sunday 24 March 1996	Bike Race
BKR3	Friday 31 May 1996	Bike Race
BKR4	Saturday 1 June 1996	Bike Race
BKR5	Sunday 2 June 1996	Bike Race

<<<<<<<<<---- OPEN HOUSE ----->>>>>>>>>

The Lake Monticello Fire Department and Rescue Squad will have an Open House on Sunday October 8. The Open House will start at noon and go to 4:00 P.M. There will be fire truck rides for the kids. There will also be a ARES booth set up for those that would like to put their name on the Fluvanna\Louisa roster. We will also be set up in the Emergency Command center with a VHF radio. Hope to see you there. Call on 146.76 for directions if you need them.

LeRoy-WA4MHP
E.C. Fluvanna/Louisa Counties

So long. It has been a fun time sending the newsletter to you each month.



Chris Stroot (KE4ZXE) zip code correction. **22923**
James Scuffham (N4DGR) address change to
P.O. Box 566

Linda Ruest (KC4MYI) home phone number correction is:
804 974-1783
Directories have been distributed (handed out and mailed)
Mobile Watch contact: Rick-KO4WQ
ARES- contact: Hein-N4FWA

FOR SALE or WANT

[If you wish to have something printed in this section please contact Joe (KD4RWX)]

FOR SALE: Various Items 7/31/95
4 Foot spun aluminum dish with polar mount and mounting pole; Universal SC-100 SCPC receiver; 30 degree LNBF; Realistic 10 band stereo equalizer; 12 Ghz feedhorn. Contact Ken Reitz, KS4ZR. Phone 703-967-2469

Wanted: Microphone Cable
Used 8-pin microphone (Kenwood) compatible or microphone cable for use with a homebrew mic/tnc switch box. The mic doesn't need to work as I only need the cable and plug. If you have one for sale contact me, Ted Bittner (KQ4MZ) at 804-979-3889(h) or 804-924-9399(w).

FOR SALE: STUFF - FREE 9/7/95
I have acquired some stuff (electronic mostly) from Continental Pipeline. For example: chart recorders with extra pens - circuit boards - card racks for rack mount cabinets - equipment fans (120 ac) (6 or 8) - 6 foot cabinets - a box of relays (new) about 24 count - disk drive and control panel - cabling - etc. Some power supplies also, maybe 6, look like 5 and 15 volt DC, heavy and well built. It is only partially out of the weather in my car port so it should be moved soon. If you have a use for it or can help me find a home for it I will be thankful. Plus a box of vacuum tubes. Call Jeff, KD4CUG, (804) 286-3550.

WANTED: FOLD OVER TOWER 9/7/95
Glen, N4KEI, is looking for a fold over / crank up tower in the 40 foot neighborhood. If you have something you wish to sell, contact him at (540) 298-9227 (Elton) or leave message with Ron, K4RKA at (804) 973-3640 or leave a message to K4RKA on WA4TFZ pbbs.. 73, Ron sk

FOR SALE: MODEM 9/7/95
I have for sale a Practical Peripherals PM 2400SA modem in excellent condition for PC or Mac with connecting cables, power cable and manual. Perfect for Telephone BBSs and other applications requiring up to 2400 baud. Reply to Rick, KO4WQ on BBS or call at (804) 823-1128.

FOR SALE: 2 METER MOBILE/BASE 9/14/95
Pete, AD4TU, wishes to sell a Kenwood TM255A mobile or base 2 meter xcvr, 45 watt fm,ssb,cw. $750. (804) 973-2913.

WANTED: APPLE COMMUNICATIONS PROGRAM 9/14/95
Mike, KE4WPG, is looking for a communications program to use with a KPC3 TNC and an Apple II computer. If you can help, call him at (804) 295-6915.

WANTED: 2M MOBILE & HT 9/14/95
Richard, KO4EV, is back from wonderful Costa Rica and is looking for a mobile 2 meter rig, preferably Alinco, and a HandiTalkie. If you want to sell either, contact him on 2 meters, pbbs or at (804) 973-3723....

FOR SALE OR TRADE: TAPE BACKUP SYSTEM 9/21/95
I have an external tape backup system for IBM/compatible computer. Sell or trade - would like a scanner or ??? Call Scottsville 286-2993 Bernard - K4PRT

FOR SALE: SKYRIDER 23 RECEIVER 9/21/95
Any antique radio buffs out there? I have a Hallicrafter Skyrider 23 receiver for sale for $60, cash & carry. This is an unusual model in good condition with original speaker. Call Ron K4RKA, 804-973-3640.

FOR SALE OR TRADE: ICOM IC04AT 9/21/95
KE4DDR, Don, has an ICOM IC04AT 450 ht for sale or trade for a 2m HT. If interested, call him at 804-978-1533.

Non-Ham Items

FOR SALE: GUNS From an Estate 9/21/95
12 gauge Magnum Browning BPS Pump w/(2) invector chokes ...$325
22 Remington Model 581 Tasco 4 power scope $150
20 gauge Winchester Model 101 .....$650
20 gauge J.C. Higgins Model 10-11-94C (Stevens) $75
Call Joe, KD4RWX, at 804 973-1738

AARC BULLETIN Albemarle Amateur Radio Club October 1995
Editor Joseph D. Fritz, KD4RWX Albemarle County and Charlottesville, Virginia

VE EXAMS

VIRGINIA VE TESTING INFORMATION

09/29/95,A,Stafford	703-786-8012,Jim McCloud
09/30/95,5,Gloucester	804-693-2117,Fran Sterling
09/30/95,A,Middletown,,703-636-1176,Thomas Blicharz	
10/07/95,A,Toano	804-566-1435,Lawrence Boellhoff
10/13/95,A,Galax	703-236-8672,Joseph A Kolb
10/14/95,5,Newport News	804-595-3574,Bruce Young
10/14/95,A,Richmond	804-798-5048,Rick Cook
10/15/95,A,Lynchburg	804-386-4651,Charles L Beard
10/15/95,A,Roanoke	540-890-6782,Terrance V Vlug
10/28/95,5,Gloucester	804-693-2117,Fran Sterling
10/28/95,A,Spotsylvania	703-373-7076,Carolyn Cavanagh
11/04/95,A,Portsmouth	804-484-2857,Arthur A Thiemens
11/04/95,A,Sterling	703-450-2304,Michael Weber
11/10/95,A,Galax	703-236-8672,Joseph A Kolb
11/17/95,A,Stafford	703-786-8012,Jim McCloud
11/19/95,A,Lynchburg	804-386-4651,Charles L Beard
11/19/95,A,Roanoke	540-890-6782,Terrance V Vlug
11/20/95,A,Coeburn	703-395-6595,Clinton W Hawkins, Jr
11/25/95,5,Gloucester	804-693-2117,Fran Sterling
12/02/95,A,Virginia Beach	804-468-9166,Judy Rogers
12/02/95,A,**Charlottesville**	Not officially announced yet
12/08/95,A,Galax	703-236-8672,Joseph A Kolb
12/09/95,A,Richmond	804-798-5048,Rick Cook
12/10/95,A,Lynchburg	804-386-4651,Charles L Beard

The following individuals seem to be the regular contact persons for VE Exams in their area. If you wish to check on the availability of future exams in their area, please contact them.

Culpeper	Bill Brown	703 547-3089
Harrisonburg		
Richmond	Rick Cook	804 798-5048
Lynchburg	Charles Beard	804 386-4651
Roanoke	Fred Horton	703 366-6266
Roanoke	Gordon Garrett	703-268-1017,
Orange County	Kelly Shaw	703 891-5581
Spotsylvania	Carolyn Cavanagh	703-373-7076,
Charlottesville	John Gray	804 973-1094 We will always announce the Charlottesville sessions in plenty of time.

CLUB BUSINESS

AARC Board Meeting: September 5, 1995

The concept of having a beeper assigned to the Club for emergency purposes was discussed by Hein, N4FWA. Elwood (KB4DJN) moved and it was approved the Hein look into the beeper concept.

The President (LeRoy (WA4MHP) appointed- and the Board concurred- Paul (WB9HGZ) and Eileen (WD9EIA) as new editors of the Club's newsletter. They will publish their first newsletter with the November issue.

There is a need for another antenna at a rescue squad building. Western Albemarle. Scottesville RS may also need an antenna.

AARC Regular Meeting Minutes-- September 12, 1995 **Picnic.** No Motions. Treasurer's Report is a repeat of last month's

Submitted by Joseph D. Fritz, Secretary.

ALBEMARLE AMATEUR RADIO CLUB, INC.TREASURER'S REPORT
MONTHLY REPORT
January 1, 1995 - August 28, 1995
Treasurer: Sharon Duvall, KO4OC

1995 - INCOME

DESCRIPTION		TOTALS
Total Income:Dues	$1117.50	
Total Income:Miscellaneous	180.00	
Total Income:Donations	2386.00	
TOTAL INCOME TO DATE		$3683.50

1995 - EXPENSES DESCRIPTION		TOTALS
Total Expenses:Equipment	$ 715.07	
Total Expenses:Miscellaneous	1721.89	
Total Expenses:Special Projects	854.02	
TOTAL EXPENSES TO DATE		3290.98
1995 GAIN OR LOSS TO DATE		$392.52
1994 Balance Brought Forward (1-1-95)		$4751.28
CURRENT BALANCE		$5143.50

OCTOBER 1995

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1 KN4FM Diabetes Walk 1000 EDT	2 INFO-NET 7:00 pm	3 **AARC BOARD MEETING 7:30 PM**	4 Lunch Bonanza 11-1 *CLASSES* KE4UFP	5 ARES NET 8:00 PM KD4HBX	6	7 KE4OIE
8 Heart Walk 1400 EDT	9 INFO-NET 7:00 pm	10 **AARC REGULAR MEETING 7:30 PM**	11 Lunch Bonanza 11-1 *CLASSES*	12 ARES NET 8:00 PM	13 KD4KWE	14
15 **T-HUNT** Albemarle County	16 INFO-NET 7:00 pm	17	18 Lunch Bonanza 11-1 *CLASSES*	19 ARES NET 8:00 PM	20	21 WA4QFL
22	23 INFO-NET 7:00 pm	24 KB4JNI AC4ZQ	25 Lunch Bonanza 11-1 ***CLASSES***	26 ARES NET 8:00 PM	27	28
29 N4TAV N4MKW WB4RBW KF4APM	30 INFO-NET 7:00 pm KE4BVR	31				

Novice/Technician Class ***General Class Wednesday Nights***

1995 - ALBEMARLE AMATEUR RADIO CLUB - 1995

OFFICERS & BOARD MEMBERS

President	LeRoy Sutter	WA4MHP
Vice-President	Rick Berman	KO4WQ
Treasurer	Sharon Duvall	KO4OC
Secretary	Joe Fritz	KD4RWX
Director	Brian Fox	KE4HIA
Director	Joe Giovanelli	W2PVY
Director	Bill Hariu	N4ZZB
Director	Gerald Nauman	KN4FM
Director	Elwood Shrader	KB4DJN

COMMITTEE LEADERS

Director		Committee	Chairperson	
Gerald Nauman	KN4FM	Technical	Mike,	AC4ZQ
		Digital (Sub-com)	Greg,	N4PGS
Elwood Shrader	KB4DJN	Publications	Joe Fritz,	KD4RWX
Brian Fox	KE4HIA	Education	Bob Ross,	WA2MFI
LeRoy Sutter	WA4MHP	Activities	Hein Hvatum,	N4FWA
Sharon Duvall	KO4OC	Fund-Raising	Bob Pattison,	KM4DU
Bill Hariu	N4ZZB (Co-Director)			
		Recycling	Ron Richey,	K4RKA
		Awards	Joe Fritz,	KD4RWX

OTHER POSITIONS

ARRL Liaison	Brian Fox,	KE4HIA
ARES/RACES Coordinator	Hein Hvatum,	N4FWA
AARL VE Coordinator	John Gray,	W6UZ
Trustee (WA4TFZ)	Morris Jones,	NM4R
Newsletter Editor	Joe Fritz,	KD4RWX

AARC BULLETIN
Contact Information

Joseph D. Fritz, Editor
2306 Williamsburg Road
Charlottesville, VA 22901-1431

packet:: **KD4RWX@WA4TFZ.VA.USA.NOAM**
Internet:: **Bucoda@aol.com**
Phone: **804 973-1738**

DEADLINE FOR EACH ISSUE

The 15th-17th of each month should be considered as the last dates to submit information for the NEXT MONTH'S BULLETIN. In some circumstances it may be possible to send information a week later. Check with me. **Joe, KD4RWX**

CLUB MEETINGS

Regular Meeting:
Second Tuesday of each month at 7:30 p.m.

Board and Technical Meetings:
First Tuesday of each month at 7:30 p.m.

Meetings are held at the National Radio Astronomy Observatory (NRAO) building, Edgemont Road (UVA area)

WA4TFZ REPEATERS

INPUT/OUTPUT TONE ACCESS (if required, etc.)

146.160/146.760 88.5 Hz (If enabled, DTMF 325* will produce temporary Tone off and 326* will turn Tone back on)
Emergency Autopatch to access the 911 Center.....DTMF 911*
Emergency Autopatch to access VA State Police.....DTMF 918*
Autopatch exit.....DTMF 0*
Time.....DTMF 10*
Tone status of repeater.....DTMF 700*

146.325/146.925 **91.5 Hz (If enabled)** 223.160/224.760 no tone
449.250/444.250 151.4 Hz (If enabled) 145.030 MACHO node
145.030 CHO WA4TFZ Packet Bulletin Board

NETS

Northern Piedmont Emergency Net
146.76 repeater Thursday 8:00 p.m.
Plus Swap/Trade & Technical sessions
Net Control: Morris, NM4R

Information Net
146.76 repeater Monday 7:00 p.m.
Newsline program and general news
Net Control: Mark, N4TZE

Albemarle Amateur Radio Club
P.O. Box 6833
Charlottesville, Virginia 22906

AARC BULLETIN
October 1995

Please check your mailing label for correctness of the information.. Notify Joe (KD4RWX) of corrections needed. It is time to renew membership.

CORRECTION OF LABEL INFORMATION REQUESTED ---TO CORRECT CALL PHONE 973-1738 Y D
KA4JJD N 1995 CURRENT MEMBER
Michael F. Rein
109 Sturbridge Rd.
Charlottesville VA 22901