HAMATEUR CHATTER

The Milwaukee Radio Amateurs Club

September 2011, Volume 19, Issue 9

One of the World's Oldest Continuously Active Radio Amateur Clubs—since 1917

Presidents Letter

It's September. Back to school, close up the summer home, get back to club and radio stuff. We didn't meet in July and August. Just like the first 70 years or so of the club (even back when meetings were weekly). The board did meet in August to talk about future stuff. You'll hear about that.

Also getting back to normal is yet another silent key to report on (the fourth of 2011). Les Petersen W9YCV passed away in August. Les was a club member since 1972. Through much of the 90's Les was the number 2 guy running the VEC behind Jack Krause W9JK (SK). Les went about his work quietly, so it was never officially announced that he was doing the job. Well consider this better late than never.

The September meeting will feature Kermit Carlson W9XA ARRL Central Division Vice Director and former Chairman of the Central States VHF Society. He will be talking about ARRL stuff and maybe we can get him to talk about some of his VHF activities as well as his day job at Fermi Labs outside of Chicago (after all, your tax dollars at work there).

The October meeting will be the design and construction of a multiband Moxon antenna which had it's debut at the club's other "private" Field Day which happened at Pioneer Village.

I had an idea for the November meeting. In April we do a show and tell meeting where people display projects or purchased items and talk about them. A lot of people, especially new people ask about antenna installations. How about a show and tell of your antenna setup. Whether it consists of multiple 100 foot towers with single band beams or a 2M quarter wave whip on top of your refrigerator, let's see what you've got.

Grab the nearest digital camera and take some pictures and bring them to the November meeting and take a couple of minutes telling us what you have.

You never know what ideas you may get from seeing what someone else has done. June 25 and 26 saw Field Day. MRAC has operated in every Field Day since the very first in 1930. I don't think any other group around here can say that. For this year we tried a new location, Konkel Park in Greenfield.

Officially we operated in conjunction with MAARS as we have for the Hamfest and the Christmas Party. I would like to thank Dave Schank KA9WXN and Al Maahs KC9IJJ for their work organizing and bringing out much of their personal equipment to make Field Day happen. I would also like to thank CQ magazine who sent a photographer up from Florida to spend 3 days with us taking pictures. We also showed him the community repeater site (where MRAC is) as well as the Gateway Tech College Field Day in Racine (our own Pat Hoppe WW9R is the advisor to the group). Of course there is no guarantee that any of his pictures will make the magazine but at least, we will have copies for our own archives.

Not exactly in the middle of the county, but close. I was eagerly awaiting all those people who for years said that Pioneer Village was to far to travel to show up. I'm still waiting. I guess now you will need to come up with another excuse. And Field Day is always the last full weekend in June, so don't say you didn't know the date. Actually "we" had 2 Field Days. I use we kind of loosely. Mark Tellier, AB9CD and Tony Kohler AB9PN operated from Pioneer Village so as to have sort of a MRAC presence there for this year since we have equipment stored there and have no current provision for storing it anywhere else (your house?). I expect this is a one time thing as we will make some decisions about Field Day and club equipment in the coming months, a discussion started at the board meeting in August. Before I leave the subject of Field Day, just one last comment. I know some people do not like to follow any rules especially regarding Field Day operations (I heard this in years past), including setup and tear down. A few years ago one of the club radios ended up at a members house because it was almost left on a picnic table after everything was supposedly cleaned
up.

MRAC Officers:

Terms Expiring in 2012

- President – Dave,WB9BWP
- V-President– Vacant
- Secretary – Mike, KC9CMT
- Treasurer – Vacant
- Director – Mark, AB9CD
- Director – Dave,KA9WXN

Terms Expiring in 2013

- Director – Al, KC9IJJ
- Director – Hal , KB9OZN
- Director – Vacant

The Club Phone Number is: (414) 332-MRAC or

(414) 332- 6 7 2 2

Visit our website at:

www.w9rh.org

Mail correspondence to:

M. R. A. C.

P.O. Box 240545

Milwaukee, WI 53223

Presidents Letter concluded.

For a few years the club didn't use the vertical that we purchased from a member in new condition. The reason given by a number of people was that it was broken and parts were missing. A couple of years ago one of the board members collected all the aluminum we had in storage at Pioneer Village and guess what? Not only did he find all the vertical parts, he found parts for a second vertical we didn't even know we had. This year at another group's Field Day (no, not MRAC / MAARS) a tower was damaged as a result of people not following the rules regarding the tower. No one was hurt luckily. Rules, especially for something like Field Day need to be communicated and followed. If you don't like to follow the rules, either be in charge and make your own rules (and personally take responsibility) or stay home.

Oh at least one of the pictures taken by the CQ photographer will make a magazine. While at the repeater site Larry (the photographer) asked Dave Schank to see the TV transmitters there. Popular Communications (also published by CQ) will run a picture of Dave Schank KA9WXN hard at work on one of the TV transmitters at the community repeater site. That will be in the October issue of the magazine. Pick up a copy and see if Dave will autograph it for you.

If this newsletter is sent to you, you must be a member of the club. I would like to ask, why are you a member? I say that because you were not at the Christmas Party or the pancake breakfast. You did not participate in the FM simplex contest or Field Day. You did not bring anything to the show and tell meeting. You did not attend the auction. You do not check into the Friday night nets (let alone be net control). You did not run for
office or volunteer for any of the committees that need participation. Obviously we are not doing anything that interests you. Maybe, if you let the board know what you want, we can get whatever that is going. If nothing we do interests you, why are you a member?

The June meeting attendance was rather poor. I want to thank all club members for supporting the club. The board meeting we had in August included a discussion about the future of the club. Do you have anything you want to say on that subject? Speak up (to the board, either in person or by whatever means you have available - not just whining in public) or accept what happens.

Club Business & Opportunities to Volunteer

Do you want to help?
There are some major activities the club has going in the first half of 2012. We need (we really NEED) people other than the board to work on them.

They include:

Hamfest - Feb 18
95th Anniversary Special Event Operation at Superfest - end of March/beginning of April 95th Anniversary Other Event - no set time. Field Day - Jun 23-24.

Each operation has the basics set. Now time for some details. Each needs at least 2 or 3 people for a committee. The more, the merrier. The more, the less work for each.

Board of Director's Meeting Minutes

Meeting called to order at 6:59 PM by President Dave DeFebo, WB9BWP.

Present: Dave, KA9WXN Mark, AB9CD, Dave DeFebo, WB9BWP Michael, KC9CMT, Al, KC9IJJ, Hal, KB9OZN, Joe, N9UX.

Absent: None

Dave, WB9BWP made a motion to accept the minutes of the last meeting; seconded by Michael KC9CMT. Accepted by a vote of 6-0

Treasurer report not read. Club has no treasurer.

PRELIMINARY DISCUSSIONS:

Field day wrap up, funds need to be dispensed for fuel expended by the generator at the Club site. Funds dispensed by Mark, AB9CD. The club will more-than-likely use Konkel Park again next year. Dave, KA9WXN has volunteered to be the facilitator of the Greenfield site again next year.

Joe, N9UX attended the Board of Directors' meeting this month at the invitation of Dave, WB9BWP.

Board discussed what to do with club materials still being stored out at Pioneer Village and the antenna equipment stored at various locations. A big question we must consider is if we are permanently leaving the Pioneer Village site. If so, any club property should be moved out of the buildings basement.

Since the club has rotatable dipole antennas' within our equipment roster, the board discussed the issue of acquiring antenna rotation equipment to facilitate the usable of this equipment.

A special event station has been proposed for the Pioneer Village site to coincide with our 95th Anniversary. Mark, AB9CD has volunteered to be the go-between with Pioneer Village. Discussion was undertaken on the possibility of running a special event station from the Discovery World Museum. More discussion on this topic to follow.

How much money should the club contribute toward the MAARS/ MRAC joint picnic this past summer?

Old Business:

The Club still has been working on ways to attract new members into the club. More discussion and work needs to be done in this regard. We are a club that does things, not necessarily a repeater focused club.

Repeater: More information regarding repeater nets needs to be included in the chatter each issue. Such as; schedule of topics, club news & views, and club activities we would like to promote. Poncho will be asked to work on this problem.

New Business:

SwapFest: MRAC wants to have a ARRL sponsored event next year. Dave, KA9WXN will query ARRL to ascertain what needs to be done in this area to get ARRL affiliation. We also need ticket printed up in advance to send out to area clubs as a promotion.

Club Flyers: Flyers should be made up in advance of all club activates such as the may auction and our February Swapfest.

Club Anniversary: MRAC will be Celebrating our 95th anniversary in the year 2012. A article about our club and its' history should be constructed and submitted to ARRL for inclusion in the QST. We will be having a special event station at the 2012 AES SuperFest. We need QSL cards printed, Certificates, and a schedule of station operator shifts. **A Committee is needed to work on this event**.

Net Committee: John KB9SXH and Poncho KA9OFA, have been running the 2 meter and 10 meter nets that the club offers. A committee is still needed for this important club function.

PA System: Al, KC9IJJ provided the sound system for our June Meeting.

Meeting Site**:** Mark, AB9CD will ask the Church if they can provide a locker for storage of club meeting gear.

History Achieving: Dave, WB9BWP has updated the clubs' history books for this year. They will continue to be on display at each meeting.

Programs:

September: A representative from the ARRL will be giving a presentation.

October through December: Open

Motion to adjourn at 8:55 PM . Motion made by Mark AB9CD, Second by Hal KB9OZN. Passed by a voice vote of 6-0.

Room returned to condition as found upon arrival.

Respectfully submitted,
Michael, KC9CMT

Next Regular Meeting

The next meeting will be September 29th at 7:00PM. We meet in the Fellowship Hall of Redemption Lutheran Church, 4057 N Mayfair Road. Use the south entrance.

Please do not call the church for information!

Club Nets

Please check in to our nets on Friday evenings.

Our ten meter SSB net is at **8:30 p.m.** at **28.490 MHz USB.**

Our two meter FM net follows at 9:00 p.m. on our repeater at **145.390 MHz** with a minus offset and a **PL of 127.3 Hz.**

Visit our website at: **www.w9rh.org**

Or phone (414) 332-MRAC or 332 - 6722

From the ARRL Newsletter

Heathkit's Amateur Radio Plans Taking Shape

Heathkit Educational Systems hopes to reenter the Amateur Radio market by the end of 2011. Back in August, Heathkit announced its return to the kit business and actively solicited suggestions. The response from Amateur Radio operators convinced Heathkit to develop several Amateur Radio products.

"When we made the announcement on our web page about a month ago, we had no intention of entering the Amateur Radio kit market," Ernie Wake, Heathkit's Director of Sales and Marketing, told the ARRL. "The response was really overwhelming, exciting and scary. The scary part is that the brand name has so much loyalty that we don't want to disappoint the people who have such fond memories."

Wake said that Heathkit is presently working on developing a few Amateur Radio kits. "Initially, the kit line will include a few 'accessories,' like kits for a Dual Watt Meter, Antenna Tuners and the Cantenna," he explained. "Once we are a little more 'settled,' I think we will develop a QRP receiver. We won't rush to market just to get there. We want to develop a line of kits in the tradition of Heathkit. I'm hoping to have one or two kits by the end-of-the-year."

Chatter Deadline

The **DEADLINE** for items to be published in the **Chatter** is the 15th of each month. If you have anything (announcements, stories, articles, photos, projects) for the 'Chatter, please get it to me before then.

You may contact me or Submit articles and materials by e-mail at: **Kc9cmt@earthlink.net**

or by Post at:

Michael B. Harris

807 Nicholson RD

South Milwaukee, WI 53172-1447

VOLTAGE MULTIPLIERS

You may already know how a transformer functions to increase or decrease voltages. You may also have learned that a transformer secondary may provide one or several ac voltage outputs which may be greater or less than the input voltage. When voltages are stepped up, current is decreased; when voltages are stepped down, current is increased.
Another method for increasing voltages is known as voltage multiplication. VOLTAGE MULTIPLIERS are used primarily to develop high voltages where low current is required. The most common application of the high voltage outputs of voltage multipliers is the anode of cathode-ray tubes (CRT), which are used for radar scope presentations, oscilloscope presentations, or TV picture tubes. The dc output of the voltage multiplier ranges from 1000 volts to 30,000 volts. The actual voltage depends upon the size of the CRT and its equipment application.
Voltage multipliers may also be used as primary power supplies where a 177 volt-ac input is rectified to pulsating dc. This dc output voltage may be increased (through use of a voltage multiplier) to as much as 1000 volts dc. This voltage is generally used as the plate or screen grid voltage for electron tubes.
If you have studied transformers, you may have learned that when voltage is stepped up, the output current decreases. This is also true of voltage multipliers. Although the measured output voltage of a voltage multiplier may be several times greater than the input voltage, once a load is connected the value of the output voltage decreases. Also any small fluctuation of load impedance causes a large fluctuation in the output voltage of the multiplier. For this reason, voltage multipliers are used only in special applications where the load is constant and has a high impedance or where input voltage stability is not critical.
Voltage multipliers may be classified as voltage doublers, triplers, or quadruplers. The classification depends on the ratio of the output voltage to the input voltage. For example, a voltage multiplier that increases the peak input voltage twice is called a voltage doubler. Voltage multipliers increase voltages through the use of series-aiding voltage sources. This can be compared to the connection of dry cells (batteries) in series.
The figures used in the explanation of voltage multipliers show a transformer input, even though for some applications a transformer is not necessary. The input could be directly from the power source or line voltage. This, of course, does not isolate the equipment from the line and creates a potentially hazardous condition. Most military equipments use transformers to minimize this hazard.
Figure 4-44 shows the schematic for a half-wave voltage doubler. Notice the similarities between this schematic and those of half-wave voltage rectifiers. In fact, the doubler shown is made up of two half-wave voltage rectifiers. C1 and CR1 make up one half-wave rectifier, and C2 and CR2 make up the other. The schematic of the first half-wave rectifier is indicated by the dark lines in view A of figure 4-45. The dotted lines and associated components represent the other half-wave rectifier and load resistor.

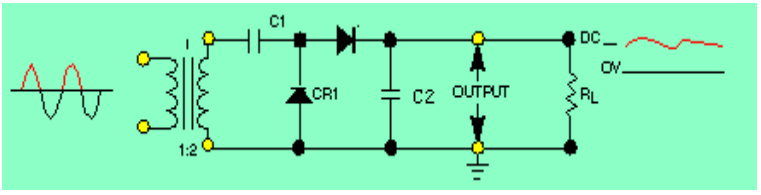


Figure 4-44. - Half-wave voltage doubler.

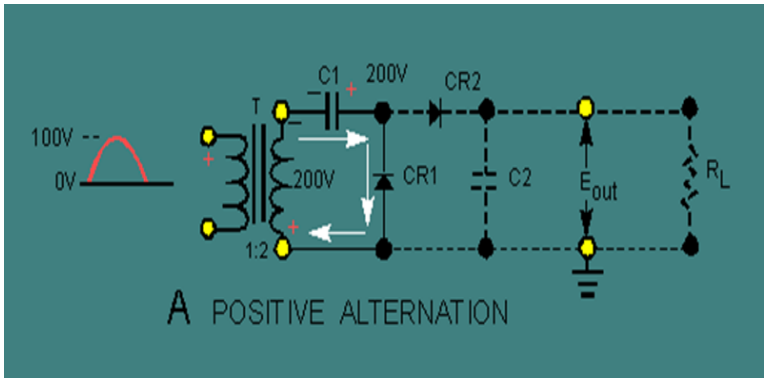


Figure 4-45A. - Rectifier action of CR1 and CR2. POSITIVE ALTERNATION
Notice that C1 and CR1 work exactly like a half-wave rectifier. During the positive alternation of the input cycle (view A), the polarity across the secondary winding of the transformer is as shown. Note that the top of the secondary is negative. At this time CR1 is forward biased (cathode negative in respect to the anode). This forward bias causes CR1 to function like a closed switch and allows current to follow the path indicated by the arrows. At this time, C1 charges to the peak value of the input voltage, or 200 volts, with the polarity shown. During the period when the input cycle is negative, as shown in view B, the polarity across the secondary of the transformer is reversed. Note specifically that the top of the secondary winding is now positive. This condition now forward biases CR2 and reverse biases CR1. A series circuit now exists consisting of C1, CR2, C2, and the secondary of the transformer. The current flow is indicated by the arrows. The secondary voltage of the transformer now aids the voltage on C1. This results in a pulsating dc voltage of 400 volts, as shown by the waveform. The effect of series aiding is comparable to the connection of two 200-volt batteries in series. As shown in figure 4-46, C2 charges to the sum of these voltages, or 400 volts.

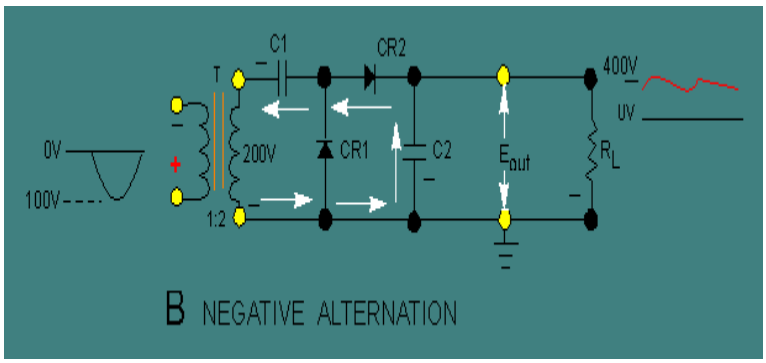


Figure 4-45B. - Rectifier action of CR1 and CR2. NEGATIVE ALTERNATION

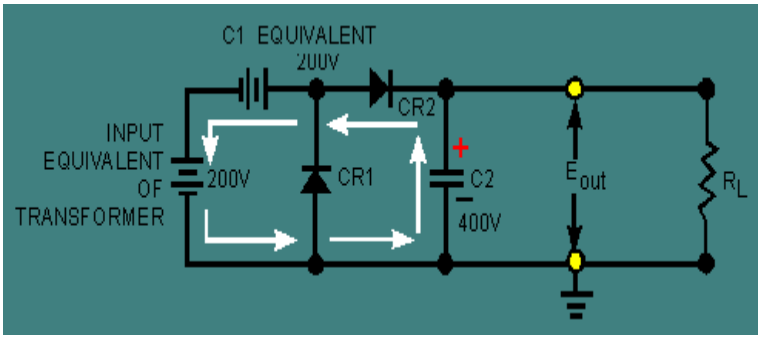
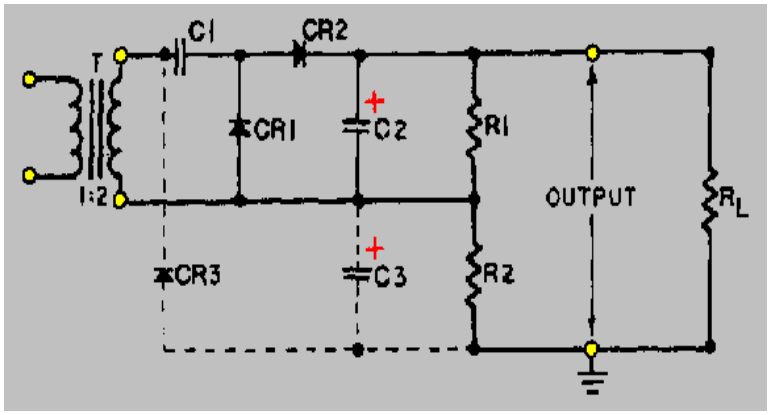


Figure 4-46. - Series-aiding sources.

The schematic shown in figure 4-47 is an illustration of a half-wave voltage tripler. When you compare figures 4-46 and 4-47, you should see that the circuitry is identical except for the additional parts, components, and circuitry shown by the dotted lines. (CR3, C3, and R2 make up the additional circuitry.) By themselves, CR3, C3, and R2 make up a half-wave rectifier. Of course, if you remove the added circuitry, you will once again have a half-wave voltage doubler.



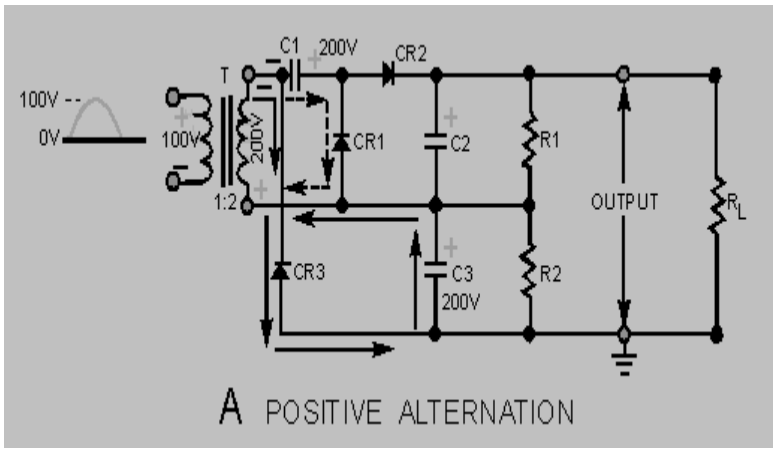


Figure 4-47. - Half-wave voltage Tripler.
Figure 4-48A. - Voltage tripler. POSITIVE ALTERNATION

View A of figure 4-48 shows the schematic for the voltage tripler. Notice that CR3 is forward biased and functions like a closed switch. This allows C3 to charge to a peak voltage of 200 volts at the same time C1 is also charging to 200 volts.

The other half of the input cycle is shown in view B. C2 is charged to twice the input voltage, or 400 volts, as a result of the voltage-doubling action of the transformer and C1. At this time, C2 and C3 are used as series-aiding devices, and the output voltage increases to the sum of their respective voltages, or 600 volts. R1 and R2 are proportional according to the voltages across C2 and C3. In this case, there is a 2 to 1 ratio.

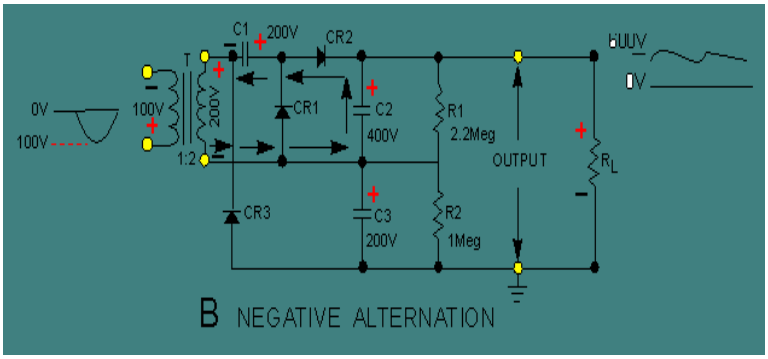


Figure 4-48B. - Voltage Tripler. NEGATIVE ALTERNATION

The circuit shown in figure 4-49 is that of a full-wave voltage doubler. The main advantage of a full-wave doubler over a half-wave doubler is better voltage regulation, as a result of reduction in the output ripple amplitude and an increase in the ripple frequency. The circuit is, in fact, two half-wave rectifiers. These rectifiers function as series-aiding devices except in a slightly different way. During the alternation when the secondary of the transformer is positive at the top, C1 charges to 200 volts through CR1. Then, when the transformer secondary is negative at the top, C2 charges to 200 volts through CR2. R1 and R2 are equal value, balancing resistors that stabilize the charges of the two capacitors. Resistive load R_L is connected across C1 and C2 so that R_L receives the total charge of both capacitors. The output voltage is +400 volts when measured at the top of R_L, or point "A" with respect to point "B." If the output is measured at the bottom of R_L, it is -400 volts. Either way, the output is twice the peak value of the ac secondary voltage. As you can imagine, the possibilities for voltage multiplication are extensive.

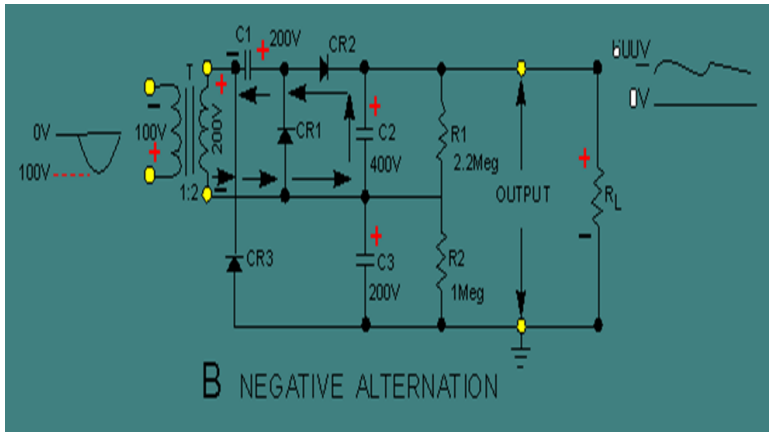
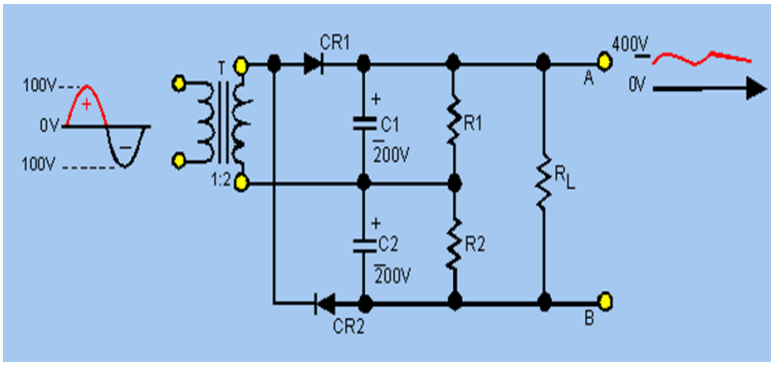


Figure 4-49. - Full-wave voltage doubler.

The Experimenters Bench Continued

The circuit shown in figure 4-49 is that of a full-wave voltage doubler. The main advantage of a full-wave doubler over a half-wave doubler is better voltage regulation, as a result of reduction in the output ripple amplitude and an increase in the ripple frequency. The circuit is, in fact, two half-wave rectifiers. These rectifiers function as series-aiding devices except in a slightly different way. During the alternation when the secondary of the transformer is positive at the top, C1 charges to 200 volts through CR1. Then, when the transformer secondary is negative at the top, C2 charges to 200 volts through CR2. R1 and R2 are equal value, balancing resistors that stabilize the charges of the two capacitors. Resistive load R_L is connected across C1 and C2 so that R_L receives the total charge of both capacitors. The output voltage is +400 volts when measured at the top of R_L, or point "A" with respect to point "B." If the output is measured at the bottom of R_L, it is -400 volts. Either way, the output is twice the peak value of the ac secondary voltage. As you can imagine, the possibilities for voltage multiplication are extensive.

Figure 4-49. - Full-wave voltage doubler.



Early Radio: Aircraft Communications

A Classic Radio, the ARB Navy Aircraft Receiver

by Frederick W. Chesson

(Orginally appeared in August, 1990 Issue of "The Old Timer's Bulletin" of the Antique Wireless Asso.)

We've grown old, or at least older, together, my ARB radio and me. I was still technically a teenager when I received it, Christmas Day, 1949. On the 26th, I would be all of twenty and starting my fifth year in the Electron Art.

My ARB was a compromise between another Command Receiver, probably a BC-454 to match my BC-455 of two Yuletides ago, or a desirable but presently unaffordable BC-348. The ARB, covering 195 through 9050 Kc in four bands, also had one feature absent from the 348, a Standard Broadcast Band.

My set, from Arrow Sales in Chicago, was a well-used veteran, if not of combat, then of the repair bench. Both fuse and spare were gone from the front panel and the dynamotor leads hung slack. But, not to worry, the dynamotor is to be ousted anyway by a power transformer. So unleash the diagonal cutters, and let the Great Conversion begin...!

This I did, thanks to R. E. Goodheart Enterprises of Los Angeles, which published a variety of schematics and conversion plans. So, by January, 1950's end, my ARB was ensconced on my bed-side table. There, except for a college sojourn, it has been in daily usage ever since, tuned mainly to WOR or WCBS for the first news of the day or the last word at night.

Over the years, its short and long wave bands brought the world to my ears. Sometimes the Cold War news became all-too warm, as during a certain rainy weekend night in June, 1950, when the first hints of the Korean War's opening came from the eight-inch speaker housed under the bed in an old RCA R-100 enclosure. During that conflict some ARC-274Ns and ARBs were still airborne in a world of AN/ARC-5s and ARR-71s.

Or again, in the Hungarian Uprising of October, 1956, when I listened to the UN's largely futile protestations, or in another October, six years later, when the rumblings of the Cuban Missile Crisis began to spread across the bands. There were minor repairs in the course of time, but mostly it's been a long and happy association with ARB No. 12,266....

VITAL DETAILS

For the purist, ARB stood for the overall equipment package, just as SCR-274N was the Signal Corps designation for the receiver-transmitter group (SCR = Set, Complete Radio) of which the BC-453 family was a part (BC = Basic Component). The receiver, according to its engraved nameplate, was actually CRV-46457, the CRV standing for RCA in the military's wartime nomenclature system. My set's Serial number was a rather low 12,266. Its weight, of 26.8 pounds also stamped into the nameplate. For some reason, no doubt in the interests of National Security, the Contract date had been defaced. But since these determined measures did not extend to new, still-boxed, equipment, it was no great feat to determine the mystery date as February 23, 1942. The Contract Number, NOs-98559, was left intact, as was Camden, New Jersey, the place of its manufacture. The first manual for the ARB was IB-38142, issued in February, 1942, and followed a year later by NAVAER 08-5Q-3.

Manufacture at RCA's Indianapolis, Indiana plant was indicated by an "I" prefix of the serial number. This was part of a realistic, if fortunately unnecessary, dispersal plan, to relocate critical industries away from vulnerable costal locales. At any event, a total of some 30,000 sets were made, enough for a quarter of all Navy aircraft, making the ARB one of the more common, and affordable, receivers on the Post War surplus scene.

In the heady surplus era of 1947-49, the set was almost as common as the ubiquitous SCR-274N, and often available for around ten dollars, used. They were almost as long-lived on the market, as well, with Fair Radio Sales of Lima, Ohio advertising them well into the 1960s. Brand new control boxes were still being offered even as late as 1985.

The ATB Transmitter companion of the ARB was almost NEVER seen, however, on the market. Its range was 3.2 to 9 MHz, via two plug-in tuning units. Optimum power output was 25 watts CW and 20 watts voice. This may have been the set's major shortcoming, as its DC input power requirements were 12 amperes

at 28 volts, close to 360 watts! One legend has it that, in order to achieve stability over its tuning range, the set's output had to be drastically reduced.

Photos show the ATB to be a masterpiece of complexity, with elegant panel controls and neat little pull-out calibration charts in each tuning unit. Only 4,000 were reported made, accounting for its scarcity, and the familiar Collins ART-13 "Auto-tune" soon replaced it in aircraft use.

According to an RCA internal publication on its World War II contributions, the ARB receiver and ATB transmitters were the outgrowth of earlier civilian aircraft models called ARV-50 and ATV-50, respectively. The ARB has two control boxes, a dual-control version for the Operator, with the designation CRV-23256, and a simpler one for the Pilot, type CRV-23254.

The Operator's Control Box has a Local-Remote change-over switch, which could be over-ridden by the Pilot, via a flexible-cable linkage. The band switch is divided into two modes, HOMING, with 195-560 and 560-1600 Kcs Bands and Communications, with the above two bands, plus 1.6-4.5 and 4.5-9.05 Mcs. The function switch has five positions. OFF, C.W., M.C.W., SHARP, BROAD. A mechanical interlocking system limits HOMING functions to C.W. and M.C.W. (continuous wave, straight code, and modulated continuous wave or code sent with a built-in tone, so that no BFO was needed). In addition, the BROAD mode of reception, typically AM voice, can not be employed on the lowest 195-560 band.

Both boxes have the above band and function switches, plus an INCREASE OUTPUT volume control and two headphone jacks. The audio system of the ARB is rather complex, the OUTPUT control being a three-decker pot, fed by 600 and 4000 ohm taps on the output transformer. According to the Operator's Instruction Manual, this was to prevent "blasting" in the user's headphones when going from AVC to manual gain functions. Circuit-wise, the ARB is relatively simple, taking advantage of its four Muti-function 12SF7 diode-pentode tubes. A block-diagram is shown in Figure....
A 12SF7 RF amplifier is followed by a 12SA7 converter and two more 12SF7s as IF amplifiers. Another 12SF7 does duty as BFO. A 12A6 beam-tube, common also to the SCR-274N and ARC-5 Command Receivers, follows as AF output. The diodes in the last two 12SF7s are used for audio and AVC detectors, respectively. A 955 neon tube regulator is used in the mixer stage, but its removal does not seem to seriously affect tuning stability.

Two IF frequencies are employed, adding a bit of circuit complexity. 135 KHz is used for the two lower bands, and 915 KHz for the upper bands. The BROADSHARP function is brought into play by a relay shunting resistors to ground in extra windings on the first two IF transformer's secondary windings. This is only available on the two upper bands.

HOMING refers to the secret ZB navigational aid for enabling carrier aircraft to home in with less risk to the ship than by open transmissions. In this system, an audio signal modulated an RF carrier in the lower two bands of the ARB's range, say at 1000 Kcs. This, in turn, was then used to modulate a UHF transmission in the 234-258 MHz range. While the enemy might easily detect the UHF signal, its modulation, being at an RF frequency, would not be so readily detectable. In addition, coded signals, representing the homing quadrants, were changed daily.

A long, narrow converter, the ARR-1, using 954 pentode acorn tubes and permeability tuned, was clamped to the top of the ARB, receiving its B+ and heater voltage from a connector on the top-left front panel. The RF output was fed through a relay box to the ARB's FIXED Antenna post. A loop-antenna direction finder, the DU-1, was connected to the L1 and L2 antenna posts and through a change-over relay, operated by the control box. Normally, a trailing antenna, wound on a motorized reel was used for the upper two bands, and usually for the transmitter as well, through a another change-over switch. The ARR-1 Converter was later replaced by a complete receiver, the ARR-2.

Conversion Information.

The fortunate owner of a still-intact ARB receiver should seriously consider leaving it intact, as much as possible. Compact, solid-state power supplies of 28 VDC are available for operation in the original dynamotor mode. However, unlike the BC-348 and similar receivers, the ARB requires an external control box and external tuning head. The internal tuning dial has a Lucite magnifying window, but its relatively tiny aperture seems intended more for the convenience of servicing personnel, with the airborne operators relying on the typical "coffee grinder" remote tuning units.

Duplicating the control box functions is relatively simple, as the inter-locked switches and complex audio level system can be dispensed with. Band switching can be done via the front panel knob (counter-clockwise only, please) and there is ample space for local controls once the band-change-motor switch and fuse-posts have been removed. Removal of the two Cannon receptacles also gives mounting room for RF and AF gain-control pots. Experience will soon show what control modes are best used. For the most part, the RF gain can be run wide open and the AF gain adjusted for listening level.

The set also suffers from the lack of a variable BFO, which makes SSB reception on the difficult side. Running a 25K control to R137 can make for a passable operation, but installing a varactor diode across L-110 is a better overall solution, even though requiring a stable source of low-voltage DC.

As mentioned at the start of this article, removal of the dynamotor leaves plenty of room for a power transformer. A unit having a secondary winding rated at 500 V at 75 MA is adequate. In the Author's conversion, the band-change motor was removed and its mounting frame modified to accept a 7Y4 rectifier. Later, silicon diodes were retrofitted. Unless period antiquity is required, a 5Y3 or 6X5 would be the vacuum tube of choice.

Without the remote tuning head, a spline and knob can be fitted directly to the threaded shank of the gearbox, though this method is awkward; so as long as extensive front panel modifications are being made, one should consider dispensing with the worm-gear drive and going direct to a flush-mounted tuning knob.

As You Were....

In closing, we return again to another era, where the ARB apparently flew in nearly every US Navy plane having a radio operator, and certain single-place aircraft, as well.

Early Radio: Aircraft Communications

Such craft included the multiengine PBY Catalina and PBM Mariner patrol bombers and the later Coronado, and in single-engine planes such as the Seagull scout, SBD Dauntless divebomber and TBM Avenger torpedo plane.

President Bush, as a young pilot, may very well have operated the CRV-23254 Control Box for a certain ARB and spun its tuning crank, as he flew the fateful mission in his TBM on September 2nd, 1944, from the small carrier San Jacinto. Over the Japanese island of Chichi Jima in the Bonin Archipelago, enemy flack stuck the plane and soon it and its three-man crew were plunging towards the East Philippine Sea. When the American submarine Finback surfaced some time later, Lieutenant George H. Bush was found to be the sole survivor. Somewhere, at the mile-deep bottom of the Bonin Trench, a certain ARB receiver loyally waits, perhaps now bringing in deep-six DX for the many residents of Davy Jones' Locker.

Amateur Radio Communications Training

SET (Simulated Emergency Test) October 1, 2011

http://www.arrl.org/chapter-2-simulated-emergency-test-set

The ARRL Simulated Emergency Test is a nationwide exercise in emergency communications, administered by ARRL Emergency Coordinators and Net Managers. Both ARES and the National Traffic System (NTS) are involved. The SET weekend gives communicators the opportunity to focus on the emergency communications capability within their community while interacting with NTS nets. SET weekend is held in October, and is announced in *QST*.

Purpose of SET

To find out the strengths and weaknesses of ARES and NTS, the Radio Amateur Civil Emergency Service (RACES) and other groups in providing emergency communications.
To provide a public demonstration -- to served agencies such as Red Cross, Emergency Management and through the news media -- of the value to the public that Amateur Radio provides, particularly in time of need.

To help radio amateurs gain experience in communications using standard procedures and a variety of modes under simulated- emergency conditions.

SET Format
The scoring format reflects broad objectives and encourages recruitment of new hams and use of digital modes for handling high-volume traffic and point-to-point Welfare reports out of the affected simulated-disaster area. Participants will find SET an opportunity to strengthen the VHF-HF link at the local level, thereby ensuring that ARES and NTS are working in concert. The SET will give all levels of NTS the chance to handle exercise-related traffic. The guidelines also recognize tactical traffic on behalf of served agencies.

ARES units and other groups are free to conduct their SETs anytime during September 1 and November 30 if an alternative date is preferred. The activity period should not exceed 48 hours. The deadline for receipt of all reports is January 31. A complete array of reporting forms will be sent to affected Field Organization appointees.

Preparing for SET
Emergency Coordinators sign up all available amateurs in their area and work them into the SET plans. They make special efforts to attract new Technicians as outlined earlier.
A meeting of all ARES members and prospective members is called to briefly outline (no details!) SET activities, and give general instructions. ECs contact served agencies and explain the intent and overall purpose of the SET, offer to send test messages to other branches of their agencies, and invite officials to ARES meetings and SET operating sites. Publicity is arranged in consultation with an ARRL Public Information Officer in local newspapers and radio/TV stations.

18 Ways to be a Good SET Participant

1. When you check in to a net, keep listening. If you have to leave, check out.

2. Know where your traffic is going; know who is in charge of what you need. Is it a request to a DEC? Is it information for the SEC?

3. Remember that formal messages are best for documentation -- such as requests for materials or operators, information on starting or ending operations, and messages on behalf of other agencies.

4. Listen carefully to avoid doubling; relay if needed.

5. Use only the words necessary; avoid commentary and explanation.

6. Follow the directions of the net control. If he says standby, stop and listen.

7. We can't anticipate what kind of traffic will be coming in. Traffic can be sent off frequency when possible to free up the net for the listing of other -- perhaps emergency or priority -- traffic.

8. Try to find a clear frequency ahead of time to anticipate moving to it for traffic handling.

9. If you're sent off frequency to handle a message, and the spot you're going to is in use, keep going in the same direction and listen. The receiving station usually calls first.

10. Don't start a message number with zero or include punctuation in it. Use local time in 24-hour format. Avoid using Q signals on voice.

11. Use ARRL Numbered radiograms when appropriate. They save time.

Amateur Radio Communications Training

12. If you're going to send a message in ICS-213 format, tell the receiving station ahead of time. We're expecting NTS format, so it's a surprise when we hear something else.

13. Remember to insert the words "test message" at the start of the text.

14. Pace yourself -- especially when sending traffic. Folks speak much faster than they usually write -- especially if they're excited. If you write it out as you send it, it will help the receiver.

15. Offer to serve as NCS. Changing net controls gives more experience and also can be good to combat poor conditions.

16. It would be good to designate specific stations for routing to other nets -- who can take traffic for a particular district, who can go to another level of the NTS, who has WINLink capabilities, etc. So tell the NCS, if you can serve this way.

17. There may be an absence of simulated health/welfare traffic, which would normally be part of a disaster scenario. This is what can slow down a traffic system, but it's a valuable service we can provide. In keeping with NIMS guidelines - we may or may not need to open the BEN to help. Be aware.

18. If a message requests an answer ------- please answer it.

73 -- K9LGU/STM-WI

VE Testing:

Saturday, October 29th, 2011 - AES - 9:30 AM-11:15 AM

Saturday, November 26th, 2011 - AES - 9:30 AM-11:15 AM

ALL testing takes place at: Amateur Electronic Supply 5720 W. Good Hope Rd. Milwaukee, WI 53223

Area Swapfests:

September 24th ORC Fall Ham & Hobby Swapfest
Location: Cedarburg, WI
Sponsor: Ozaukee Radio Club
Website: http://ozaukeeradioclub.org
November 5th Milwaukee Repeater Club Hamfest
Location: Elks Club Milwaukee, WI
Sponsor: Milwaukee Repeater Club
Website: http://www.mrc91.org

MRAC Working Committees

Field Day

- Open

FM Simplex Contest

- Joe – N9UX
- Jeff – K9VS
- Brian— K9LCQ

Ticket drum and drawing

- Tom – N9UFJ
- Jackie – No Call

Newsletter Editor

- Michael-KC9CMT

Webmaster

- Joe Schwartz—N9UX

Refreshments

- Hal—KB9OZN

Membership Information

The Hamateur Chatter is the newsletter of MRAC (Milwaukee Radio Amateurs' Club), a not for profit organization for the advancement of amateur radio and the maintenance of fraternalism and a high standard of conduct. MRAC Membership dues are $17.00 per year and run on a calendar year starting January 1st. MRAC general membership meetings are normally held at 7:00PM the last Thursday of the month except for November when Thanksgiving falls on the last Thursday when the meeting moves forward 1 week to the 3rd Thursday and December, when the Christmas dinner takes the place of a regular meeting. Club Contact Information Our website address **http://www.w9rh.org**

Telephone (414) 332-MRAC (6722)

Address correspondence to:

MRAC, Box 240545, Milwaukee, WI 53223

Email may be sent to: **w9rh@arrl.net**

Our YAHOO newsgroup:

http://groups.yahoo.com/group/MRAC-W9RH/

CLUB NETS:

• Our Six Meter SSB net is Thursday at 8:00PM on 50.160 MHz USB

• Our Ten Meter SSB net is Friday at 8:00PM on 28.490 MHz ± 5 KHz USB.

• Our Two Meter FM net follows the Ten meter net at 9:00PM on our repeater at 145.390MHz - offset (PL 127.3)

Milwaukee Area Nets

Mon.8:00 PM 3.994 Tech Net

Mon.8:00 PM 146.865- ARES Walworth ARRL News Line

Mon.8:00 PM 146.445 Emergency Net

Mon.8:00 PM 146.865- ARES Net Walworth

Mon.8:45 PM 147.165- ARRL Audio News

Mon. 9:15 PM 444.125+ Waukesha ARES Net

Mon.9:00 PM 147.165- Milwaukee County ARES Net

Tue.9:00 AM 50.160 6 . Mtr 2nd Shifter's Net

Tue. 7:00 PM 145.130 MAARS Trivia Net

Tue. 8:00 PM 7.035 A.F.A.R. (CW)

Wed. 8:00 PM 145.130 MAARS Amateur Radio Newsline

Wed. 9:00 PM 145.130 MAARS IRLP SwapNet d FM-38 Repeaters (IRLP 9624)

Thur. 8:00 PM 50.160, 6 Mtr SSB Net

Thur. 9:00 PM 146.910 Computer Net

Fri. 8:30 PM 28.490 MRAC W9RH 10 Mtr Net SSB

Fri. 9:00 PM 145.390 W9RH 2 Mtr. FM Net

Sat. 9:00 PM 146.910 Saturday Night Fun Net

Sun 8:30 AM 3.985 QCWA (Chapter. 55) SSB Net

Sun 9:00 AM 145.565 X-Country Simplex Group

Sun 8:00 PM 146.91 Information Net

Sun 8:00 PM 28.365 10/10 International Net (SSB)

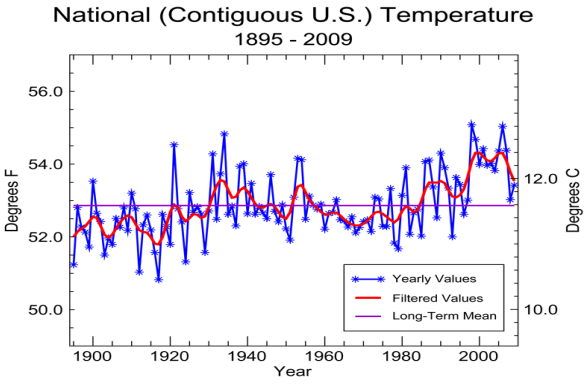
Sun 9:00 PM 146.91 Swap Net

2 meter repeaters are offset by 600KHz - - 70 centimeter repeaters are offset by 5 MHz

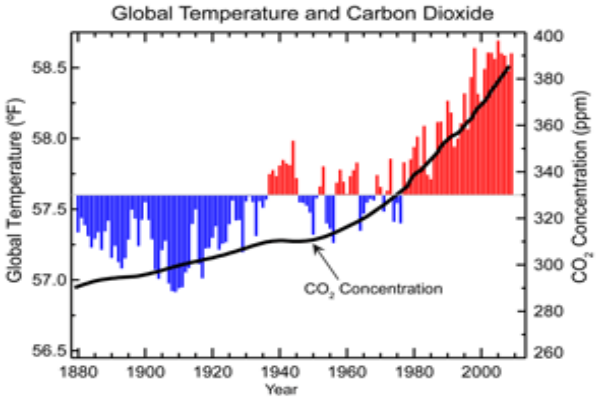
SSB frequencies below 20 meters are LSB and for 20 Mtr and above are USB.

Global annual average temperature measured over land and oceans. Red bars indicate temperatures above and blue bars indicate temperatures below the 1901-2000 average temperature. The black line shows atmospheric carbon dioxide concentration in parts per million.

U.S. Surface Temperature is also Rising



The Global Surface Temperature is Rising



Global average temperature is one of the most-cited indicators of global climate change, and shows an increase of approximately 1.4°F since the early 20th Century. The global surface temperature is based on air temperature data over land and sea-surface temperatures observed from ships, buoys and satellites. There is a clear long-term global warming trend, while each individual year does not always show a temperature increase relative to the previous year, and some years show greater changes than others. These year-to-year fluctuations in temperature are due to natural processes, such as the effects of El Ninos, La Ninas, and the eruption of large volcanoes. Notably, the 20 warmest years have all occurred since 1981, and the 10 warmest have all occurred in the past 12 years.