

# HAMATEUR CHATTER

The Milwaukee Radio Amateurs Club

February 2012, Volume 20, Issue 2

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



## Presidents Letter

We didn't get any takers to head up a Christmas Party plan. That plus this being an anniversary year (95 years) and also hopefully coming after another successful hamfest, and maybe a really good FM simplex contest, makes us decide to have a party for the February meeting. Be sure to let Al KC9IJJ know you will be attending ([kc9ijj@arrl.net](mailto:kc9ijj@arrl.net)) so we get a handle on how many people will be attending. Also, the meeting will start at a SPECIAL TIME - watch the Yahoo group and the web site and the Friday night net (if that doesn't cover you, you are a ham right?).

I hope this is a trend. Another new member who is also a new ham. Welcome Dale Webler KC9SHB. Dale hasn't been able to make meetings so he has a certificate and welcome letter waiting for him. Welcome Dale (and bring a few more new hams in also).

By the time you read this the FM Simplex Contest will be over for 2012. I hope you operated in it, had fun, and have your log ready to submit. You did let your score be applied to MRAC, right? After all, we do sponsor and administer the contest. MRAC has won 3 times. Badger Contesters have won 6 times. Winners will be announced at the March meeting.

Ahh, the March meeting. Once again Gordon West WB6NOA will be there along with more special guests. More details to follow. In the meantime, be sure to tell others you talk to on the air (really! On the air!), in person, via email, twitter, whatever about the club and meetings especially meetings like this one.

After all, if you like to have a big deal program for meetings, we NEED TO LOOK GOOD to our invited guests if we expect to attract more. Put yourself in their position. If you were doing a presentation to a group you don't know, would you want to talk to 20 people or 40 or more people?

The day after the March meeting starts AES Superfest. As always MRAC will have a table there and special for this year, we will be running the demo HF radio under the W9RH call as a special event station for our 95th anniversary. We need volunteers to manage the station, operate the station, handle the log and the distribution of certificates. It's not just good enough to say, "Sure, I'll be there. I'll help." Again, put yourself in the position of those of us on the board. How do you plan for an operation if you have no idea of how much help you are going to get and who wants to do what?

I do a lot of moaning about not getting help with club activities. This year marks the 95th year of continuous operation of MRAC. We didn't get to this point by only the 6-10 people who were on the board at any given point in time being the only ones who organized the club's activities. Since I've been in the club long enough I have been lucky to have been able to meet a number of those people who helped to build the club over the years. Some of you knew some of them also. Many of their names often get mentioned, even now, sometimes decades after they are gone. Will anyone be mentioning your name years from now? Contests, hamfests, dinner meetings, celebrity meetings, manufacturer presented programs, regular nets, a repeater used for nets by other organizations, working with other organizations on events - We Do Radio AND We Do Stuff. Do you?

### MRAC Officers:

#### Terms Expiring in 2012

- President – Dave, WB9BWP
- V-President – Vacant
- Secretary – Mike, KC9CMT
- Treasurer – Joe, N9UX
- 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](http://www.w9rh.org)

Mail correspondence to:

**M. R. A. C.**

P.O. Box 240545

Milwaukee, WI 53223

## Board of Director's Meeting Minutes

Board of director's meeting called to order at 7:04 pm by Dave, WB9BWP, club president and board president.

Members present: Al, KC9IJJ, Hal, KB9OZN, Dave, WB9BWP, Michael, KC9CMT, Dave, KA9WXN, Mark, AB9CD, Joe, N9UX.  
Absent: None.

### Preliminary discussions:

Al, KC9IJJ reports that he has had problems opening the Club HamChatter PDF. More than likely, problem with Al's computer setup. Some small proofreading errors reported by Hal, KB9OZN. Editor, Michael, KC9CMT will handle the situation.

Joe, N9UX has agreed to take over as club treasurer. Let's all welcome Joe back into the club officer ranks. He will be a valuable addition. Joe would like to have the clubs accounting book audited before he takes over. Dave, WB9BWP has asked for a 2012 club budget to be constructed. The outgoing Treasurer will coordinate this with the incoming Treasurer. Michael, KC9CMT will handle the clubs roster, and will work on the publication of a club roster for distribution to club members.

Mailing fee will be passed on to the Newsletter editor to cover budgeted costs. Any overage will be absorbed by the editorial staff.

Twenty stamps were allocated to the swapfest committee to cover costs for the mailing of table reservations.

### New Business:

Outgoing treasurer gave a MRAC general Ledger preliminary report to the Board of Director's. As of now the Club is running in the black for 2011, pending an audit of the books.

Badges are still available to club new members are a reasonable fee. Bob & Jan's club badges were delivered to them by Al, KC9IJJ at the WARAC swapfest on January 8<sup>th</sup>.

Insurance: The ARRL can provide Liability insurance for member clubs. MRAC will be looking into this valuable asset. Liability insurance is a must. ARRL quoted a \$120 difference in price from our present Insurance Company. This looks like a winner for the club. All of their insurance quotes are a cost advantage to the club. \$2 Million general liability as required. clubs former insurance company was the Seabury Smith insurance Company, through the Hays brokerage group.

January's membership meeting will cover the FM Simplex Contest coming on February 18<sup>th</sup>, 2012. Also more on antenna work, and with general electronic questions answered. February's meeting will be a food gathering. Quality of the food gathering catering will depend on the funds generated at the MRAC/MAARS Swapfest on the 18<sup>th</sup>. Our club will invite the MAARS group who will be helping out at the joint swapfest. Email RSVP would be preferable. Al, KC9IJJ will be accepting the Email at his Email account.

March meeting will include Gordon West. The meeting will be the day before the AES SuperFest. Dignitaries will be in town for the AES show. The club will be taking Gordon to dinner on the night of the club meeting. West Mountain radio has been invited to make a presentation at one of our Club meetings. No answer back yet, Dave, WB9BWP will be looking into this. West Mountain radio has a location in Wisconsin. April will be the general election and followed by a show & tell again this year. May will be the club auction. No club meetings in July or August again this year. The beginning of a club attendance prize was brought up, and is being considered by the Board of Director's.

Ralph Ennis is interested in giving a presentation on stacked antenna's sometime in the future. Joe, N9UX will be discussing this with him when the time comes.

### Committees:

#### Repeater committee:

Noise has been reported during the Friday night general discussion net. Dave, KA9WXN will be looking into this. The noise is described as a crackle. Dave looked into this and found and replaced a defective N connector. This crew will be back in the spring. Dave found a bad N connector at the main site which he corrected. This may positively affect the problem.

#### Net Committee:

Club needs a net manager and people to help run the repeater net on Friday night. The Ten meter net is being run by Jerry, K9FI and Pancho, KA9OFA. Net controls on the two meter net should promote club activities during the net. The next membership meeting should at least be promoted during the net. It is alright to promote other activities also, but, club activities should take priority. Our Club needs to work on its public image through the net.

#### Telephone:

Club pays business rates on the phone service we receive. The answering machine that we have was reported to not be working. The Milwaukee VEC people have been contributing to the annual club phone bill. No funds have been received for some time now. Mark, AB9CD will be discussing this with Tom Fuszard, K9PU. The club would like the funds dispensed to the club each January, instead of in June as has been the past practice. The VEC does not use the MRAC post office box. The VEC and MRAC have always been like minded groups.

#### History Committee:

Dave, WB9BWP will continue to update the history aspect of club operations. He reports he is up to 1953 on the documenting of the club roster.

### Field Day:

Dave, KA9WXN has been discussing field day operations with the Fire Chief of Greenfield. We would like to jointly hold a presentation with the Fire Department. Field day will be held again at Konkel Park in Greenfield, across from the Fire stations. The joint venture will more than likely happen this year. In addition, MAARS may be asked to join us at the Field day site. More to come on this. Pioneer village still has Club equipment stored there. All club radios are at Dave, WB9BWP's residence. Our club must decide on where to store this equipment if we are not going to use the Pioneer Village site, or even if we as a club should be keeping any equipment. Dave, KA9WXN & Al, KC9IJJ did a excellent job in setting up the field day site last year. Pioneer village is still under consideration as a FD site. Perhaps in 2013.

### Christmas Party:

February will be a pseudo-Xmas party for our Club along with the MAARS group.

### FM Simplex Contest:

The printing of certificates for performance during the contest will be underway soon. Joe needs all of the contest logs mailed to the club address. This FM contest will be discussed at the membership meeting this Thursday.

### Anniversary special event station:

To take place during AES SuperFest. Gordon West has agreed to take the "mic" during this important event. The club's 95<sup>th</sup> anniversary. We will be using the AES ham station. Bob Heil may also take the "mic".

### Attracting new members:

Club needs to attract new members to remain a viable club. This has been a problem for a number of years, and no resolution has been discovered as of yet.

### Swapfest:

ARRL sent the club a packet of gift certificates to use in a raffle at the Swapfest. Very good to be sponsored by ARRL. Sherm has promoted the MARC swapfest on his weekly newsletter. Reservations will be mailed out by the club secretary beginning January 24<sup>th</sup>. N9PSN will be doing the talk-in this year again.

Al, KC9IJJ will put out a bulletin on APRS regarding the GPS location. Dave will be doing the setup on Friday along with volunteers from both clubs. Financial status: Fourteen table reservations since January 1<sup>st</sup>. Looks like a winner again this year. One table will be reserved for the MRAC club members to sell anything that they may have excess. Dave Shank, KA9WXN, will have tables with free stuff again this year on the West side of the building. The club needs someone to do the drawing for the free stuff that has been accumulated. Dave, WB9BWP has volunteered to do this duty.

### Ham Classes:

West Allis & Greenfield fire Departments have shown an interest in the MRAC running Amateur radio classes to their members. Others will be invited when this is scheduled. The Greenfield station #2 room will hold up to 30 people. Some people are on hold with the club as to Ham Classes. Dave, WB9BWP has the Gordon West PowerPoint Presentation that has over 400 slides included. So we have enough instructor supplies; we just need to solidify a schedule. Instructor's may be rotated along with the subject.

Motion made by Michael, KC9CMT to move the February meeting up one week, the week of the 13<sup>th</sup>, to finalize the discussions leading up to the MRAC/MAAR swapfest. Motion made to adjourn meeting at 8:54 pm by Mark, AB9CD, Seconded by Michael, KC9CMT.

Meeting adjourned at 8:55pm. Room returned to normal.

End of Meeting.

## Membership Meeting Minutes

Meeting called to order at 7:05 pm by Dave DeFebo, WB9BWP, Club President. Mic passed around for introductions or present & potential new members.

The club received a letter from Viking Communications looking for a Job candidate for a radio technician. Tonight's program will consist of the FM Simplex contest & any remaining antenna subjects/presentations left over from the November Meeting. The February meeting will consist of a Food Gathering in conjunction with the MAARS group. Quality of the Food Banquet will depend on the success of the Coming Club Swapfest.

Question: Okay to bring a dish to pass. Answer: Yes, Al, [KC9IJJ@arrl.net](mailto:KC9IJJ@arrl.net) will be taking RSVP's for the Food Gathering meeting organizational aspect. Club would like to know in advance how many too expect for the February meeting.

March meeting will fall immediately before AES SuperFest this year, March 29<sup>th</sup>. Gordon West will be giving his most excellent program at our meeting.

The MRAC will be having a special event station at the AES SuperFest this year. Certificates will be printed out and mailed too people along with special 95<sup>th</sup> Anniversary QSL cards.

May is the club Auction night. April will be the annual election if there are candidates.

Pancho states that we have had good participation on the Club nets the last two weeks, 2 meter & 10 Meter. Some noise interference has been reported on the 10 meter net at Ponchos location. Our Club still looking for people to work the nets as control operators.

## Membership Meeting Minutes Concluded

### FM Simplex Contest:

Joe, N9UX gave a presentation on the coming FM Simplex Contest this coming February 12th. It is an excellent contest that is catching on nationwide. If you take first place in any category, you will receive a certificate. Anyone working the Club call sign will be receiving a certificate. There are no power limits for the contest. Fm polarization is vertical. Joe gave a slide presentation of his shack antenna configuration, along with this rover vertical. Joe uses a Icom-706 & a 220 meter radio for his FM contesting. Joe places his mobile station on the passenger side of his truck. He has built a wooden shelf to hold his radio's etc... Joe uses ham sticks for this HF work.

FM simplex contest runs from 1-3:30 pm. Working Frequencies are suggested to concentrate the action and activity. Club members are urged to work their stations in conjunction with the club to add to the club score. Badger contesters' has been winning this contest frequently in the past years. It would be good if MRAC won this year. Grid squares will be used as multipliers again this year. Joe plans on using his rover vehicle again this year. Contacts consist of Callsign and grid square. Since we are the club sponsoring the contest, it would be nice to win. Be sure to send in your logs. You can not use a repeater for the contesting portion. You can use a repeater to set up a contact though.

The results of the contest and the updated contest plaque will be available by AES Superfest.

### Swapfest:

Dave, KA9WXN gave a talk about the coming inter-club swapfest on February 18<sup>th</sup>. Activities will commence for setup at 6 am. We are still looking for Club volunteers to man the swapfest ticket tables and watch the doors. Vendor's will start their setup on Friday night prior to the swapfest. There will be a lot of free stuff donated by the MATC friends of TV 10/36. Club will be raffling off prizes this year. Two part tickets are being printed out. Club will be setting up and manning a table. We need someone to man this table and the club will allow some sales from our table.

### SuperFest:

March 31<sup>st</sup>, Saturday will be the clubs special event station at AES. We will be using the new radios at the AES permanent stations. Need people to man the special event station.

### Elections:

April will be the annual election this year again. We need to form a election committee to ask for candidates for office. Club officers will be picked from the board of director's.

### Home antenna presentation:

Dave DeFebo, WB9BWP, gave a presentation about his home antenna configuration. He uses horizontal loops on a mast that also supports his wire antenna. He has a rotator on his vertical antenna mast, this is not yet a finished installation. He has a 132ft off-center fed wire that loads HF bands. Also has a inverted L, 33ft tall by 96 ft long, for 160 meters along with a Butternut vertical. He has about 30 radials on the Butternut vertical. The Butternut has an attachment for 160 meters, it does not work very well, very small bandwidth. Dave also has antenna's in the attic of his garage.

Membership Meeting adjourned at 9:04 pm by Dave, WB9BWP, club president.

*Submitted by Club Recording Secretary  
Michael B. Harris, KC9CMT*

## Upgrade from the Technician Class License.

Exam Requirements: 35-question General written exam (Element 3). License Privileges: All VHF/UHF **Amateur bands** and most HF privileges (10 through 160 meters).

Technicians may upgrade to General Class by passing a 35-question multiple-choice written examination. The written exam covers intermediate regulations, operating practices and electronics theory, with a focus on HF applications. Non-licensed individuals must pass Element 2 and Element 3 written exams to earn a General License. The FCC grants exam Element 3 credit to individuals that previously held certain older types of licenses.

The General Class is a giant step up in operating privileges. The high-power HF privileges granted to General licensees allow for cross-country and worldwide communication. In addition to the Technician privileges, General Class operators are authorized to operate on any frequency in the 160, 30, 17, 12 and 10 meter bands. They may also use significant segments of the 80, 40, 20 and 15 meter bands.



## News from the ARRL Newsletter

### Amateur Radio Balloon Flight Crosses Atlantic, Sets Records

Ron Meadows, K6RPT, and his son Lee -- leaders of the California Near Space Project -- successfully launched an Amateur Radio high altitude balloon from San Jose, California on Sunday, December 11 at 4:43 PM PST. The balloon reached a cruise altitude between 105,000 and 115,000 feet, where it continued its travel across the United States, the Atlantic Ocean and Spain and into the Mediterranean Sea. For most of its trip, the balloon traveled at about 150 miles per hour and eventually covered 6236 great circle miles in just 57 hours 2 minutes. According to the CNSP, this is a new Amateur Radio balloon flight record for both distance and duration. Read more [here](#).



The high altitude balloon released by the California Near Space project traveled more than 6000 miles before it burst in the Mediterranean Sea.

## Next Regular Meeting

The next meeting will be February 23rd at 7:00PM. We meet in the Fellowship Hall of Redemption Lutheran Church, 4057 N Mayfair Road. Use the south entrance. Access the MRAC Yahoo Group for important information regarding February's meeting.

**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](http://www.w9rh.org)

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



## 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](mailto:Kc9cmt@earthlink.net)

**or by Post at:**

Michael B. Harris

807 Nicholson RD

South Milwaukee, WI 53172-1447

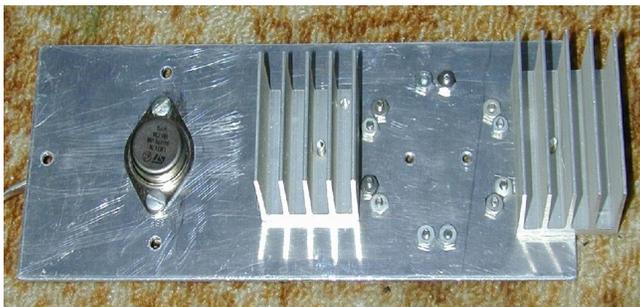
## Regulated 24 Watt Broad Spectrum LED Lamp

(C) G. Forrest Cook 2010

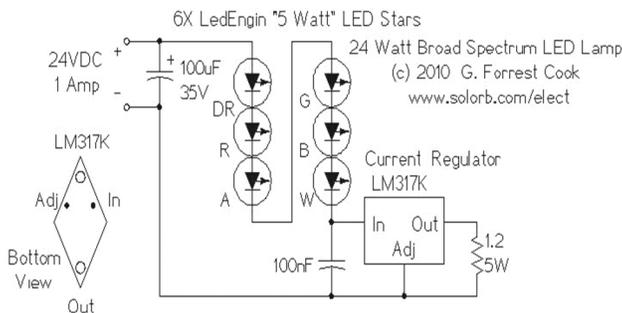
This circuit can be powered by a [CirKits](#) SCC3-24V solar circuit kit.



Above photo: LEDs running at a much reduced power level.



Above photo: Back side of the 24W LED Lamp



## Regulated 24 Watt Broad Spectrum LED Lamp

### Introduction

This project involves constructing an energy efficient broad spectrum LED lamp system. The lamp is useful for indoor reflective room lighting. It has a broad color spectrum that more closely approximates the light of the sun when compared to fluorescent bulbs and white-only LEDs. The light level is regulated and the light that is produced does not flicker. The six differently colored LED stars, made by LedEngin, Inc., are rated at 5 watts (nominal). The LED array and associated current regulator consume 1 amp at 24VDC (24 Watts). NEVER stare directly at this lamp when it is running at full operating power, it is DANGEROUSLY BRIGHT.

With the LEDs shown, the combined color of the lamp has a pinkish white hue. The 5 Watt ratings of the LEDs are not precise, the white, blue and green LEDs consume about 4W and the lower voltage red, orange and deep red LEDs consume about 3W.

The current regulator keeps the LED brightness constant and insures that the LED series string never draws more than 1 amp of current.

The project has also been coined "Bold as LED" in reference to the Jimi Hendrix song "Bold as Love" which has the lyric: "My yellow in this case is not so mellow".

### Specifications

Nominal operating power: 24 Watts (24V DC at 1 Amp)  
 LED power consumption above regulation point: 18.6 Watts  
 Maximum operating voltage: 28V DC  
 Minimum voltage for regulated light: 23V DC  
 Led's produce light down to 11V

Deep Red LED voltage: 2.55V

Red LED voltage: 2.37V

Amber LED voltage: 2.60V

Green LED voltage: 3.92V

Blue LED voltage: 3.56V

White LED voltage: 3.7V

Voltage across regulator when current becomes regulated: 4.2V

### Theory

The lamp is wired as a current loop which includes the power supply, the LED series string and the 1 amp current regulator circuit. The LM317K and 1.2 ohm 5 Watt resistor act as a current regulator that limits the loop current to 1 Amp. During regulation, there will always be 1.2V across the 1.2 ohm resistor. The current regulator insures that the LEDs always run at their maximum brightness, but not so bright that they burn out. A 100uF electrolytic capacitor bypasses the DC power input to the device and a 100nF monoblock capacitor bypasses the LM317K input.

### Construction

The LEDs and current regulator circuit were mounted on a 3" x 8" chunk of 1/8" aluminum stock. The LM317K regulator and LED heat sinks were bolted to the chassis directly, heat sink grease was used on the regulator, the heat sinks and the six LEDs. Connecting the LM317K directly to the aluminum plate makes the plate electrically hot at 1.2V, the plate should not be allowed to come into contact with any live conductors. By using a few more parts, the LM317 can be mounted with an insulator and plastic shoulder washers for electrical isolation from the mounting plate.

The LEDs come mounted on their own small star-shaped aluminum substrates, these were attached to the aluminum plate using two 7/16" 4-40 screws and nuts per LED. A drop of silicone heat sink grease should be applied to the center of each LED star when it is mounted to the plate for heat conduction. It is important to use insulating plastic washers on the top side of the LED stars to prevent electrical contact with head of the screw. The LED stars were soldered together using short pieces of #20 tinned wire after being mounted on the plate. It is necessary to use a fair amount of heat to solder the contacts, a 200/240W soldering gun did the job. Be very careful not to melt the lenses on the LEDs, the LEDs cost around \$10 each. The positive and negative leads of the LED series string were connected back to the current regulator circuitry using #20 wire covered with Teflon insulation. The initial mechanical arrangement did not pass the "rule of thumb" test, which says that if a semiconductor is too hot to hold your thumb on, it will not live a long life.

Two large aluminum heat sinks were bolted to the back of the aluminum plate and seem to be sufficient to keep the lamp operating at a reasonable temperature. The LED array produces more heat than the LM317K.

**Use**

Connect this circuit to a 24VDC power supply or other power source such as a solar-charged lead acid battery. Be sure to observe the correct polarity. Look away from the LEDs and apply power. Again, do not stare directly at the LEDs, they are bright enough to harm your vision. A switch-mode power supply rated at 24VDC and 1 Amp or more is probably the most energy-efficient way to power this device from line power.

**Parts**

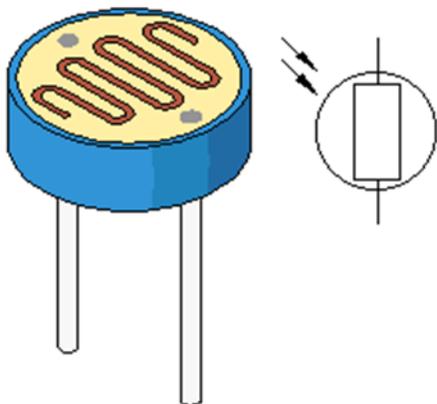
- 1x LM317K T03 case 1.5A adjustable voltage regulator
- 1x 1.2 ohm 5W resistor (or 2x 2.4 ohm 2W resistors in parallel)
- 1x 100uF 35V or higher electrolytic capacitor
- 1x 100nF 35V or higher monolythic capacitor
- 1x LedEngin LZ1-10R205 deep red 5W LED
- 1x LedEngin LZ1-10R105 red 5W LED
- 1x LedEngin LZ1-10A105 amber 5W LED
- 1x LedEngin LZ1-10G105 green 5W LED
- 1x LedEngin LZ1-10B105 blue 5W LED
- 1x LedEngin LZ1-10CW05 cool white 5W LED
- Miscellaneous wire, solder lugs, termination strips and hardware, Large aluminum mounting plate, heat sinks if necessary.

**Resources**

- [LedEngin, Inc](#)
- [Mouser Electronics](#)

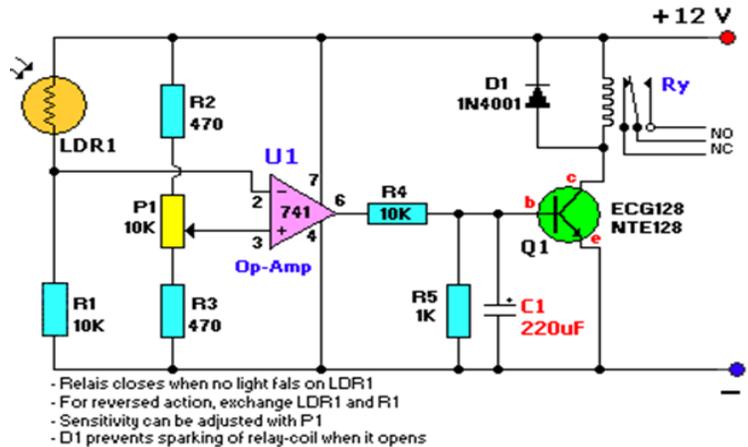
**LM741 Light Dark Sensor Circuit**  
**Build a light/dark sensing circuit to automatically turn on/off lights and other devices**

A **light/dark sensing circuit** is extremely useful and versatile in a wide range of **renewable energy** projects from automatic lighting to security systems. In our article [Light Dependent Resistor](#) we explained how an **LDR** can be used in simple circuits to control devices according to the ambient levels of lighting - for example, **automatically** turning on a lamp above a doorway at nighttime.



The circuits provided in that article were very basic and therefore not without their problems. The main problem is that the automatic turn-on is not *sharp* - i.e. rather than switching the lamp on fully as soon as ambient levels of light fall to a fixed point, the lamp turns on slowly getting brighter and brighter as light levels fall. This is not a serious problem when controlling a lamp - in fact it may even be desirable - however when controlling other devices (such as a night vision camera) it is not optimal.

One way around this is to use a [relay](#), however a typical **12 Volt relay** draws 300-500mW of power - a significant waste of energy when a [1 Watt LED spotlight](#) for example is to be controlled.



**LM741 Light/Dark Sensor Circuit (with Relay)**

Above is a **schematic** diagram of an **LM741** light/dark sensor circuit (from the excellent [741 Op-Amp Tutorial](#) by *Tony van Roon*).

The ECG128/NTE128 **transistor** stipulated can be substituted with any **NPN transistor** rated at sufficient gain and current for the chosen **relay** coil.

**1st Nov 2007 Update** - Modifications have been made to the schematic diagram above with the addition of a **220uF smoothing capacitor** between the base of **transistor Q1** and ground. Without this capacitor, the **relay chatter** (relay switching on and off many times per second) was terrible around the switch on/off light level. By adding the capacitor, **relay chatter was completely eliminated**.

According to the designer of this circuit, the relay will be closed only when "NO light falls on LDR1", however, in testing this circuit proved to work very well with the user able to adjust the **potentiometer** (P1) to automatically close the relay at whatever light level they chose.

By swapping the positions of the 10K **resistor** (R1) and the **LDR** (LDR1), the relay will be closed when the LDR is under light rather than under darkness. Therefore a device can automatically be switched off at nighttime.

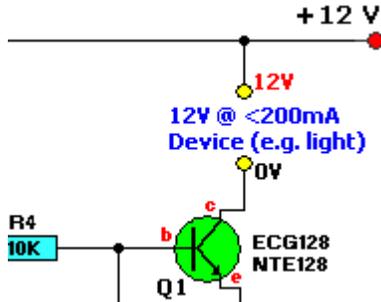
Since this circuit still contains a **relay** we need to make some changes\* to reduce the amount of power to make it more suitable for **renewable energy** powered low-current applications.

\* Where devices of more than a couple of Amps are to be powered, the energy loss in the relay becomes insignificant and so the above illustrated circuit should be used as is.

## The Experimenters Bench Continued

### Modification One (Low Current Applications <200mA)

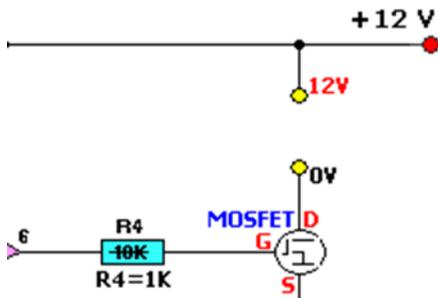
If this circuit is to be used to provide <200mA of current (for example, to power just ONE 12V MR16 LED spotlight with around 100mA), the relay can be removed altogether as illustrated below:



### Modification Two (Medium Current Applications <2Amps)

If more current is required - for example to power a string of LED spotlights - the transistor can be replaced by a **MOSFET**. A MOSFET is similar to a transistor, but it can carry much **more current**. In our testing we used an *STP36NF06* MOSFET since that's what we had lying around.

The MOSFET circuit requires just a couple of small modifications to the original circuit as illustrated below



The MOSFET version of the circuit (suitable for maximum total output currents of 2 to 3 Amps) is now available from the [REUK Shop](#) and is pictured above. Click here for more information and to make a purchase: [Light/Dark Sensor Circuit \(Low Current\)](#).

NEW - We now also have the **relay** version of the circuit (suitable for maximum total output currents of 10 to 12 Amps) and it is also available in the REUK Shop: [Light/Dark Sensor Circuit \(Relay\)](#).

## Early Radio: Combat Communications

Chuck Truitt - Whoosh, Pop: Mad Minute - September, 1969

I had only been on Dong Ha Mountain for just a little while before they gave me the "low down" on our defensive fires, and procedures. We had an area of the perimeter to defend that was right adjacent to our Operations bunker there on the



NW side of the mountain top. Our assigned defensive area was just a few yards long, and it was just a little past the bend in the wall on our left. There the side of the mountain fell away at about a 45 degree angle, and we had maybe 60 or 70 yards cleared out for a clean "field of fire." A ravine was on past our cleared area. There were, if I recall properly, about three strands of coiled French concertina, "razor wire." Plus several other strands of just plain old barbed wire. The whole area was booby trapped with numerous cans in the wire, to detect any movement,

plus there were illumination flares, Foo Gas barrels, and Claymore Mines. Foo Gas was nasty stuff, a mixture of napalm, diesel fuel, and some kind of detergent to help it stick to what ever it landed on, rather than just run off like a liquid. The Foo Gas was mixed and poured into some kind of container, (usually a drum, or artillery round tube container) and they were usually at least half buried and sandbagged behind it (towards us) so that when it was detonated, it would blow out towards the bad guys. Most of the time the Foo Gas was blown with a charge of C4, using a electrical blasting cap and a squeeze detonator.

My first "Mad Minute" brought a slight amount of trepidation, as I didn't know quite what to expect. I kind of had images of "little people" coming at us in mass through the coils of concertina, razor wire. Actually, the OIC (Officer In Charge) would call for the Mad Minute if there was something suspect happening outside our perimeter. The word was passed and everyone would go on the firing line in their defensive positions. So the whole mountain top perimeter was heavily manned within just a couple minutes. Everyone had their "overlapping fields of fire" covered. All or a sudden a Pop UP hand flare would go "woosh, pop" and the brightness of the flare would burn for about 40 to 45 seconds. During that time everyone would open up with everything they had. It was actually just short of a minute of "Final Protective Fire." The noise and din of a Mad Minute was unbelievable. I could usually empty four full magazines of 18 rounds, and be ready to go with one more by the time the flare flickered and extinguished.

Personally, I didn't like to put tracers in my rifle magazines, but some of the guys did which only added to the spectacle. It was always an extremely exciting time with a huge adrenaline rush. I understand that the 105mm howitzers had flechette (little nails with fins) canisters ready to be loaded and fired over the edge by lifting up the back of the gun, although I never witnessed that event. Seems to me that the gun would have gone flying off the other side of the mountain - they weren't recoil-less rifles - you know!

A few times, rather than my M-16, I'd take my M-79 (Bloofer) on the line and pop as many HE (High Explosive)



rounds as I could in that short minute, but most of the time I'd just use the Bloofer for "H & I" because we could do that at any time after dark. It broke open just like a single shot, shotgun by using a little lever on the back of the gun. When a 40mm round was inserted into the chamber, you'd just close it and fire. Most anyone could fire three before the first one exploded by firing up at a 50 or 60 degree angle and letting the round fall into the ravine to our front. But, by being very familiar with the operation a person could usually get four rounds out before the first one exploded. On two occasions, after setting the rounds along in a line on the sand-bagged wall, and working the mechanism really fast there in the dark, I was able to get the last of five just squeezed off before the first detonation. The Bloofer wasn't really suitable for Mad Minutes though, because the object was to cover your own designated "field of fire" as thoroughly as possible in that short time span.

As soon as the flare extinguished, there was total silence on the whole FSB (Fire Support Base), as everyone listened intently. Periodically, after an instant of listening someone would open up on a perceived sound, but almost always there was nothing but dead silence. Any enemy probes or reconnoitering had been quashed.

Once a Mad Minute was called because of some noise in the trash pile a couple hundred feet down on the left of our position, near the salient that extended over towards the other ridge. That was where the bend in the mountain top formed an elbow, and where the trash chute was located. Woosh, Pop went the flare, and everyone opened up in their own field of fire, but then we immediately saw movement down to our left. It was a big cat of some kind or other, that went bounding in huge leaps, towards the protection of the ravine. Immediately, a couple score of guns shifted fire towards the cat, and the ground erupted behind it, but I never saw any indication of anybody actually hitting the thing. The next day a patrol that covered that section of the perimeter and beyond happened to find the body and brought it back up. Then the carcass was displayed for all to see there by the LZ. I have no idea what kind of "cat" it was, though it was pretty big, seems like maybe 60 or 70 pounds. He sure had been a pretty thing before carelessly making noise in his reconnoiter of our trash area. I guess it was an NVA cat.  
Di Dah, Di Da Dit - Chuck Truitt sends.

### Chuck Truitt - Take This, You Rat! - October, 1969

On top of Dong Ha mountain, FSB Fuller in the fall of 1969 I think that some of those guys from the "Grunt" Company of 2/4 were cheating! I don't know how, but they just had to be cheating because their rat body-count was growing rapidly, faster than mine. I'm sure some of them must have been pooling their kills. I had shot two with my 45 (man that makes a mess, but not as much as the story I'm about to relate) but I had missed a couple times. Unfortunately, I had put a bit of a ding in the leg of one of the cots. It's hard to aim well enough to hit a rat in subdued light, and we had to have the light low to get those NVA rats to come out far enough to see them, usually. I say usually, because sometimes they'd appear right there - nearby - when you least expect it, and weren't ready. By the time you get your 45, and chamber a round - well - "no workie" if you know what I mean. Well, we had been fooling around with an M-26 grenade, I had field stripped the thing, and popped the cap on it, which "twanged my twanger" into thinking about increasing my NVA rat body-count (now Joe Armstrong, don't go getting ballistic on me here, again!).

I got a bunch of electrical blasting caps, the kind that we used with the claymore mines, and a little hand squeeze detonator. After pulling the cots away from the dirt wall, I proceeded to put a cap in each rat hole, and run a wire to my rack. After completing that part of the FireEx, I donned my flack jacket and helmet, lit an 81mm mortar, twisted wax candle, then sat quietly waiting. My idea was to insert the proper wire into the detonator when a rat appeared, and squeeze that thing. The problem was, those NVA rats were slick. They didn't appear and look out of the hole to check if it was all clear, then come on out. That's what I was hoping for, and expecting. Nope! It was woosh, those rats were already moving by the time I could see them. Over a period of a couple days, the only thing I was doing was scaring little rat pooopies out of them, enlarging the holes in the dirt wall, and getting dirt all over the guys cots. I did manage to make a real mess of one rat who must have had a brain seizure when he saw me, because he made the fatal mistake of going back into his hole, just as I gave "The Squeeze." Whammo, and then a big gob of rat guts, fur, and a leg went splut on top of the guys cot next to me. (Did you ever stop to consider how long rat intestines are?) I quickly got rid of the mess and I'm sure that Marine (I'll not tell you who it was) never had any idea what happened for several reasons. First off, every thing was filthy (the only water we ever had up there was heli-lifted to us in water blivets, or once in a water buffalo (there's a great story here) so we never washed our gear, and very rarely ourselves. One of those times the water heater caught fire while I was in the shower (I'll let one of you other guys from Dong Ha, who remembers it better than I, relate that story). Secondly, it was just a blood stain on the poncho liner which quickly dried, and it was dark in there anyhow. Those grunts wouldn't count my rat in the body count because it wasn't all there. They said "someone else might turn in the rest of the rat and it'd get counted twice." Oh, yea! - thirdly, the other guys were over in the Ops bunker doing the SigInt thing, or playing "Back Ally," or "Spades" or something; I was the only one who saw the results/mess. Well I did get another rat never-the-less. But, I stopped trying to blow-up the rats because it wasn't all that productive, and it was really messy. Plus, they didn't count the rat, and I didn't want to waste a good kill for nothing.

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## VE Testing:

Saturday, February 25th, 2012 - AES - 9:30 AM

Saturday, March 31st, 2012 - AES (Superfest) - 8:00 - 11:00 AM

Saturday, April 28th, 2012 - AES - 9:30 AM

Saturday, May 26th, 2012 - AES - 9:30 AM

Saturday, July 28th, 2012 - AES - 9:30 AM

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

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## Area Swapfests

Feb. 18<sup>th</sup>, 2012 **MRAC/MAARS Midwinter Interclub Swapfest**

Location: Brookfield, WI Type: ARRL Hamfest

Sponsor: Milwaukee Radio Amateurs' Club

& Milwaukee Area Amateur Radio Society

Website: <http://w9rh.org/>

March 4<sup>th</sup>, 2012 **Sterling-Rock Falls ARS Hamfest** Location: Sterling, IL

Type: ARRL Hamfest Sponsor: Sterling-Rock Falls

Amateur Radio Society Website: <http://www.w9mep.org>

March 10<sup>th</sup>, 2012 **25th Annual Equipment Auction**

Location: Eau Claire, WI

Type: ARRL Hamfest Sponsor: Eau Claire Amateur Radio Club

Website: <http://www.ECARC.org>

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## MRAC Working Committees

### 95th Anniversary:

- Open

### Net Committee:

- Open

### Field Day

Dave, KA9WXN, AI, KC9IJJ

### 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@arri.net](mailto:w9rh@arri.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  $\pm$  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. 8:00 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.**

## Local Storm Reports via the Internet

The National Weather Service in Milwaukee/Sullivan, Wisconsin would like to know about any adverse weather you have experienced in [Southeast and South Central Wisconsin](#). **We are especially interested in hail one inch /1"/ in diameter or larger, winds 58 mph or greater and/or wind damage, or any tornado occurrence.** We would also like to know about *funnel clouds, lightning damage, heavy snow, sleet or freezing rain, heavy rain and flooding*. This information is extremely important and will be used for verification and training purposes so that we may provide more accurate warnings and forecasts in the future. With all of the technology that we now possess, your reliable storm reports still are perhaps our greatest asset.

**IProviding This Information Is Voluntary:** Trained Spotters/Emergency Managers Please Use the **eSpotter** program at [www.NOAA.Gov](http://www.NOAA.Gov). To sign up for the eSpotter program visit: <http://www.crh.noaa.gov/mkx/?n=stormreport>

**\*NOTICE:\* Information provided on this form may be used by the National Weather Service (NWS) for official purposes in any way, including public release and publication in NWS products. False statements on this form may be subject to prosecution under the False Statement Accountability Act of 1996 (18 U.S.C. § 1001) or other statutes.**