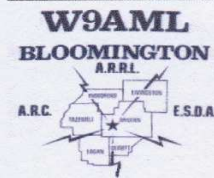


# CENTRAL ILLINOIS RADIO CLUB

## Short CIRCuits



February 2009

### From the President

**February Meeting – Wednesday, February 25<sup>th</sup> at 7:00 pm at the Red Cross on Westport Ct.**

The February meeting should be interesting with discussion about EchoLink, emergency communications and a follow up presentation, after the formal meeting, on PSK31. Gary, AB9M will discuss using PSK31 for DXing. Gary has a slide presentation ready for the meeting.

We will be discussing field day plans and the possibility of using Floyd's call, W9EX.

***Don't forget to invite a friend to the meeting. Let's try to pack the house.***

### Emergency Communications

Six of us, who committed to getting back into emergency communications, met Curt Hawk at the McLean County Emergency Management office at the McLean County Law and Justice building. Kurt talked to us for about an hour + about the operations of his office. We also talked about what our role as a club would be in emergency communications for the county. What was discussed was that we will be the backup communications for the command center, sort of an extra path for messages and communications. We will also be weather spotters in bad weather situations. Of course, we will be required to take some courses in order to officially become weather spotters. This doesn't mean you have to go out in the country side during bad weather, you can check in from home, school, work or wherever you happen to be at the time. Anybody in the club can join in and will be encouraged to do so.

As Kith reported in the November Short CIRCuits news letter there are two Alinco dual band radios at the ham radio operating desk. The memory backup batteries need to be replaced in both radios, but that shouldn't be a problem for a bunch of hams. As our involvement progresses we will keep you up to date.

Ed, KC9GF

### NOTICE FROM YOUR TREASURER

Just a reminder that the year ended. Check the address label for your membership's expiration date. If you get this newsletter by email you will have a message with it telling you your membership expiration date.

Please include the application with your check/payment as the application lets me check that my data is correct as well as making sure I credit those hard-earned dollars to your membership.

A *CURRENT* application form is included with the newsletter if my records as of preparation . No fair using those three or so year old ones floating around with the old dues amount.

73, N9ZKS

### 2009 VEC Test Dates

Please note the location change. We will now test at the: Red Cross Building - Route 9 East - Conference Room

1:00pm

On the following Saturdays:

3/14

5/09

7/18

11/14

The police department now wants a \$100 deposit each quarter; Bloomington Public Library will not schedule more than 3 months in advance; and Normal Public Library will not even allow us to use a room since we charge a fee.

I am trying to find a better venue, but I want to get the dates published. Rhea at the Red Cross did schedule us for the class room for a couple of the dates, but we are on for the conference room also and it is easier to list a single location.

Thanks --

Keith

## CIRC January 2009 Minutes:

New president Ed, KC9GF opened the meeting. Treasurers report was read by Norm, N9ZKS. Gary, AB9M motioned to accept as read. Rick, N9CKL seconded and motion was carried.

Comments were made on the December Christmas party. Keith, AC9S reported on classes for Ham licenses. He also reported on the Emergency Management courses and club members made comments on the programs that are available.

The upcoming testing dates are 3/14/2009, 5/9/2009, and 7/14/2009.

Six-week Heartland college courses start Feb 12th. Coffee klatch is at the Dairy Queen on College Avenue every morning at 9 AM.

New business:

The club would like to see more members attend, get new members and recruit new Hams. Ed, KC9GF suggested that we all take part by inviting existing members to attend.

Field day location was discussed. The options mentioned were the Red Cross location, Comlara park, and Old Town Township. Keith, AC9S motioned that we check out all 3 options. Rick, N9CKL seconded it and the motion passed.

Rick, WD9HRU brought up Pow-Wow. Keith, AC9S commented on what might be needed.

Norm, N9ZKS mentioned bike ride and motorcycle rides as ways of using ham communications and keeping our skills sharp as well as getting our name out there.

Ed, KC9GF commented on Echo link on the club repeater. There was much discussion on the subject and it was generally agreed it would be desirable to have the Echo link equipment on site with the repeater. We will have to see if we can get internet on site with the repeater to get that to work. Jim, WB9UWA mentioned that it would be highly desirable to have internet at the repeater site as it would not only improve Echo link operation, but open up a LOT of possibilities probably not yet considered, not to mention, the ease of linking receiver sites via the internet.

Norm, N9ZKS made a motion to form a committee to research what is needed for Echo link. Mark, AB9MP seconded and the motion carried. Committee was formed of ED, KC9GF, Justin, KC9LYU and Chuck, N9RZV and Mark, AB9MP.

Ed, KC9GF brought up the subject of a bereavement fund. Gary, AB9M motioned that we give flowers in the amount of \$70 when the time comes and pass the hat at the next meeting. This meeting was a few days before Floyd, W9EX passed away. Norm, N9ZKS seconded and motion passed.

Gary, AB9M made a motion to form a committee to go to the family so the club can get his call (W9EX) as a memoriam. Ed, KC9GF and Rick, WD9HRU is the committee.

Norm, N9ZKS seconded and motion carried.

Gary, AB9M motioned to adjourn the meeting. Mark, AB9MP seconded the motion and it carried. The meeting was adjourned.

## Scout Radio

Norm, N9ZKS

I applied and was accepted as a staff member of the amateur radio station (K2BSA) at the 100<sup>th</sup> Anniversary National Jamboree to be held at Camp A.P. Hill in Virginia in 2010. I hope to be able to expose a large number of young men to our hobby. I'm sure I will meet a large number of young men who have already joined our ranks. It should be a blast!

## New SEC

Pat Ryan KC6VVT has served with distinction as our Section Emergency Coordinator since 2002. He has led our EmComm efforts through the tumultuous post-911 period and has maintained the fine organization that is EmComm in this Section. Personal issues have forced Pat to reconsider his role in the Section. To that end, Pat will step down as SEC, effective on 1 February. In his stead, I am appointing Brad Pioveson W9FX as Section Emergency Coordinator. Brad brings a sterling record in the Service and in EmComm, including his current duties as Assistant Net Manager for the storied Hurricane Watch Net. He has Been There And Done That, and owns several t-shirts as verification. We'll have more about his qualifications in the next News. Brad will continue the fine tradition of Public Service in our Section. Pat will continue as ASEC not only to assist in the transition, but also special projects, and of course as an OES.

Please join me in extending congratulations and all possible assistance to Brad, and a hearty thanks to Pat for a job well done.

73--  
Tom KA9QPN

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ARRL Illinois Section  
Section Manager: Thomas T. Ciciora, KA9QPN  
[ka9qpn@arrl.org](mailto:ka9qpn@arrl.org)

## THE MILLENNIUM TRIP TO BOLIVIA 1999/2000

What better time to take a vacation to Bolivia than the dead of winter and the turn of the century. First thing to remember is its summer south of the equator. And it is a great time to party with Latin Americas (and family). The typical New Years Eve party goes until the sun comes up. The party we went to was at the house of my wife's cousin Carlos Cardona. Carlos is the owner of channel 2 in La Paz.

We stayed in Bolivia for 2 weeks, spending Christmas with Cristina's family. Cristina is one of 12, so her family is quite large. We don't travel to Bolivia very often, so everyone invites us to lunch or dinner leaving little time to go sightseeing. One thing I did want to do on that trip was to tour the La Paz Radio Club, CP1AA, in down town La Paz. We contacted the VP of the club and he agreed to meet us, my nephew and I, at the building where the club is.

A little explanation of the "Club House" is in order. 250 of the club members got together, pooled their money and built a three story stone exterior building. They have an office on the first floor where they manage all the licenses for Bolivia. You might say they are the FCC of Bolivia. In the office is where the Morse code key collection is displayed (see picture). A bank leases an office on the first which gives the club some of their income.

The second floor is the ball room and dining room. They lease this area out for weddings, parties and business meetings/receptions. This is another source of income.



Ed at CP1AA



CP1AA Key Collection

The ball room has a domed ceiling with the continents of the earth painted on the dome. Since you are looking at the globe from the inside of the dome they painted the continents backwards with the chandelier hanging from where Bolivia is.

The third floor is the club house where the club radio room and meeting room is. I did see a pool table there, so they probably hang out there. The radio room is a glassed off room with a nice view of the city to the south. As you can see from the picture they have some nice equipment. The equipment was donated, by a bank, for the club members help in identifying possible problems brought on by the "Millennium Bug".

The downtown La Paz building isn't the only location they have. They have another club house in a small town SSE of town. It is a small town that is along the main river that flows from La Paz and a smaller river that flows from the mountains behind the town.

Remember I mentioned they have their rainy season when we have our winter? Winters in Bolivia are very dry but summers are very wet! That summer was especially wet. They had floods everywhere. The small town where CP1AA had their 2<sup>nd</sup> club house was no exception. You can see from the picture the flood waters inundated the building. The club's VP told me by the end of the day the water was up to the roof. Bad news, no one was able to rescue the equipment before the flood.

I have a few more pictures not included her but I will bring them to the meeting to pass around. Hope to see you there.



ED in the radio room



Radio Club Annex

## A 14-24 Volt 40 Amp. Regulated Power Supply

Mark Snyder - 11/23/2008

This is a power supply I am designing to operate my transceiver and other equipment for my station and for experimental purposes. I have been discussing it and obtaining advice from a few, so some of you may already be familiar with this project. As my current power supply is rated just at the recommended minimum current, a larger unit has been desirable and this project will more than fulfill the need for my transceiver and for many high current projects I may desire to build in the future. My thanks go to Dan N9NSN, Chuck N9RZV and Jim WB9UWA for their thoughtful input.

It is based around a power transformer I obtained about 20 years ago and has been on my list of intentions for some time. Becoming a licensed operator, joining the Central Illinois Radio Club and getting acquainted with some of the members has been a real benefit to this project. The transformer, although not marked with any specifications, has a 20 volt center tapped secondary winding of what appears to be copper sheet. The leads are #8 old standard wire gauge insulated with silicon tubing and it should provide 40 amperes or more as the rating of the power supply it was salvaged from an old computer supply and was rated 45 amperes at 40°C. If temperatures in my shack get that warm I will not be doing much operating!

### HARDWARE CONSIDERATIONS

I have learned that a solid cabinet and thoughtful placement of components lend them selves greatly to the success of any electronic design. The transformer alone weighs 20+ pounds and a solid cabinet is required. It measures 6 inches high by 7 inches deep by 12 inches wide and is made from two finned heat sinks 6 by 7 inches and 1¼ inch thick to mount the pass transistors, 4 on each one. They form the two end pieces of the cabinet and are mounted vertically for maximum air flow. Front, rear, top and bottom are made of 1/16 aluminum sheet cut to and formed to my specification by a local shop. Holes were drilled and tapped for all component mountings and for fastening all cabinet pieces, not to imply that additional taps were not made during the progression of this piece. Hardware is at the heart of "Good Engineering Practices" as described in "Now Your Talking-All You Need for Your First Amateur Radio License" describing station layout and operator safety (8.1-8.40) and many hours of deliberation were contributed in this cabinet's design.

Components are then mounted including transformer, filter, metering, rectifiers, various switches, controls, circuit board, power line and power output terminals. The pass transistors are mounted on the heat sinks before any assembly as these required many connections with heavy gauge conductors and current limiting resistors. These are mounted to the heat sinks with hardware salvaged from the same equipment the transformer came from. With this, the assembly can begin, making the necessary connections as we go. See Fig. 1.

### THE CIRCUIT

When I first decided to do this project several years ago I intended to use discrete components (no integrated circuits), until I saw the circuit in "The ARRL Handbook 2005" that my circuit is tightly based on (17.37-17.40). The circuits are nearly identical except values were calculated around my voltage and current requirements. Because I have a higher design current more pass transistors were added to dissipate the extra power.

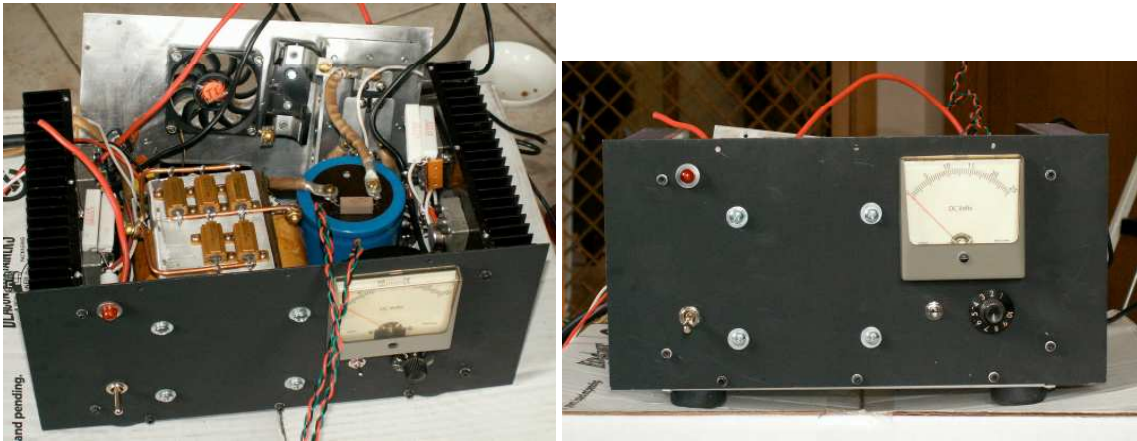
The circuit is built entirely around the 723 IC, according to "LM723" specification sheet it is a High Precision Voltage Regulator with input 0 up to 40 volts and output voltage adjustable from 2 to 37 volts with adjustable current limiting(1). See fig. 2. The output of the 723 (Vo) drives Q1 which in turn drives pass transistors Q2-9. Values for R8, R9 and R10 were chosen for a voltage output of 14-24 volts, the specification sheet shows how to do this. The value of R7 was selected for 40 ampere current foldback in the event of excessive current. In "Solid State Design for the Radio Amateur" by Wes Hayward, W7ZOI and Doug DeMaw, W1FB a circuit using discrete components uses this formula to calculate value of current sense resistor R7,  $1.4 \text{ volts} / I L (max)$  (158). In the 723 IC the case is somewhat different and

other values must be used in the formula as required. "LM723" Spec. sheet  $R_{sc} = 10\Omega$ ,  $I_L = .065$  amp, Fig. 3 making the voltage drop .65 resulting in .65 volts /  $I_L (max)(3)$ . The value for R7 in my circuit, see Fig. 4, is  $.02\Omega$  giving 30 amp current limit. R7 was constructed of 5  $.1\Omega$  25 watt resistors in parallel giving a 125 watt rating. The addition of another  $.1\Omega$  resistor will give  $.0167\Omega$  for a 40 amp current limit. Like the circuit in the "The ARRL Handbook 2005" overvoltage protection was also provided for with Q10, Q11 and D5. D5 prevents Q10 from triggering Q11 until its avalanche voltage is reached, in this case

26 volts (17.39). As of this writing the circuit is not yet complete, some concerns over the overvoltage circuit are yet to be addressed. The meter will indicate volts and amperes via a dpdt switch.

This circuit, though simple in design to me represents the heart of amateur radio, home building and experimentation, the roots of the hobby. I bring this project to the newsletter to encourage other members to do some of the same. Home building is a powerful learning tool that requires research, collaboration and experimentation and builds relationships in the amateur community to which we belong. The technology built into today's modern receivers and transceivers may be difficult for many operators to duplicate in a homebrew project, most especially myself but this circuit and others of this type should be quite easy for any technician or general class operator. I for one believe that simple circuits and experiments like this one have a lot more than a little to offer to the advancement of the art. So clearly there is opportunity for the active amateur to bring their observations to the industry through articles and editorials in the many technical publications on the subject.

Mark Snyder (AB9MP)



A

B

Fig. 1

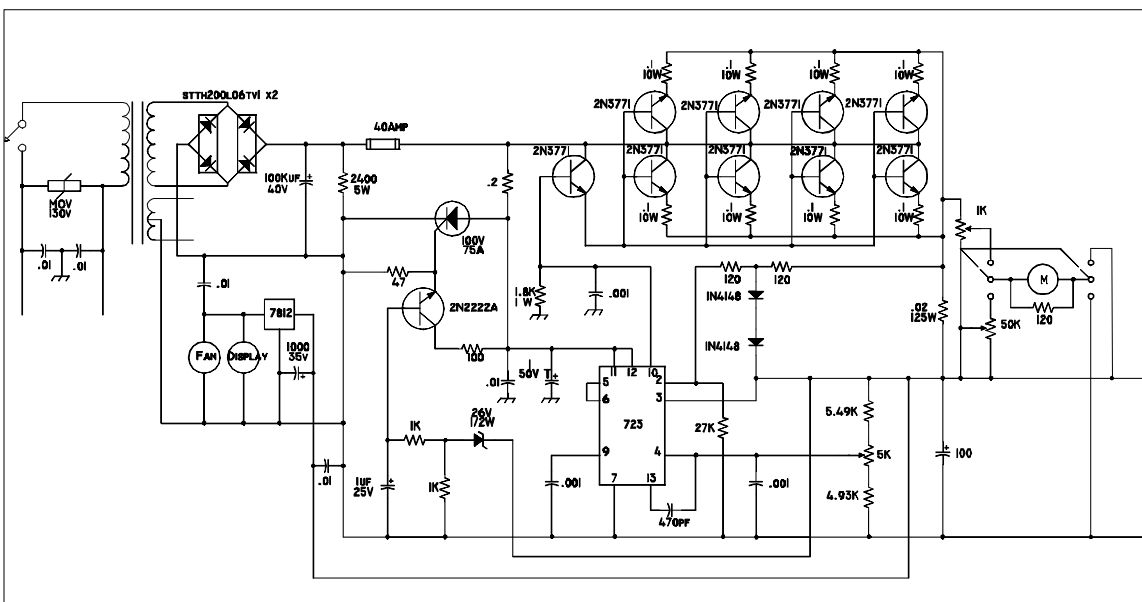
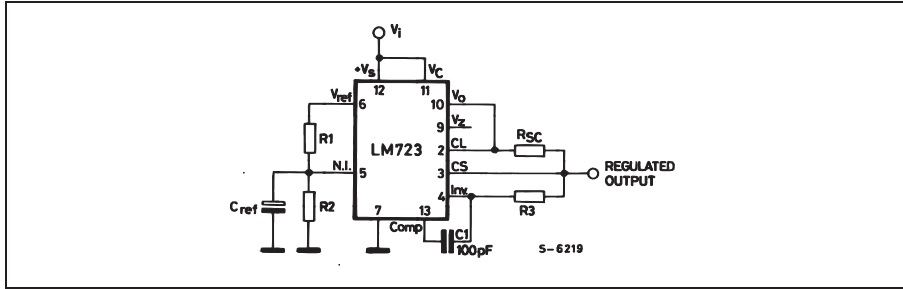


Fig.2

LM723



$V_I = 12V$ ;  $V_O = 5V$ ;  $I_O = 1mA$ ;  $R_1/R_2 \leq 10K\Omega$

**ELECTRICAL CHARACTERISTICS FOR LM723** (refer to the test circuits,  $T_{amb} = 25^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$\Delta V_O/\Delta V_I$	Line Regulation	$V_I = 12$ to $15V$		0.01	0.1	%
		$V_I = 12$ to $40V$		0.02	0.2	
		$V_I = 12$ to $15V$ , $T_a = -55$ to $125^\circ C$			0.3	
$\Delta V_O/V_O$	Load Regulation	$I_O = 1$ to $50mA$		0.03	0.15	%
		$I_O = 1$ to $10mA$ , $T_a = -55$ to $125^\circ C$			0.6	
$V_{REF}$	Reference Voltage	$I_{REF} = 160\mu A$	6.95	7.15	7.35	V
SVR	Supply Voltage Rejection	$f = 100Hz$ to $10KHz$	$C_{REF} = 0$	74		dB
			$C_{REF} = 5\mu F$	86		
$\Delta V_O/\Delta T$	Output Voltage Drift				150	ppm/ $^\circ C$
$I_{SC}$	Output Current Limit	$R_{SC} = 10\Omega$ , $V_O = 0V$		65		mA
$V_I$	Input Voltage Range		9.5		40	V
$V_O$	Output Voltage Range		2		37	V
$V_O - V_I$			3		38	V
$I_d$	Quiescent Current	$V_I = 30V$ , $I_O = 0mA$		2.3	5	mA
$K_{VH}$	Long Term Stability			0.1		%/1000 hrs
eN	Output Noise Voltage	$BW = 100Hz$ to $10KHz$	$C_{REF} = 0$	20		$\mu V$
			$C_{REF} = 5\mu F$	2.5		

Fig. 3

Larry D. Wolfgang, WR1B “Now You’re Talking! All You Need to get Your First Amateur Radio License” American Radio Relay League 2003-2004 pgs. 8.1-8.40

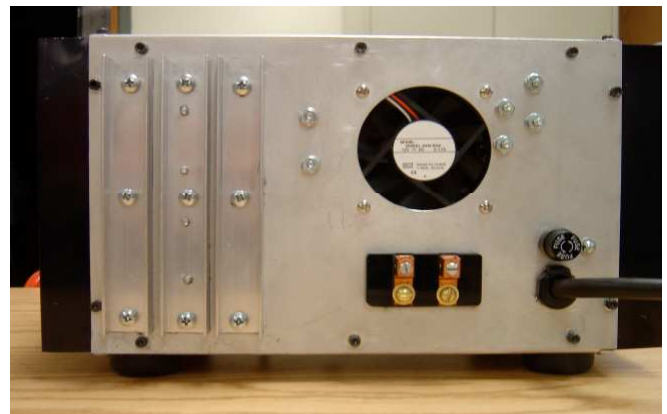
Mark Wilson, K1RO “28-V High-Current Power Supply” The ARRL Handbook 2005 2005 pgs. 17.37-17.40 American Radio Relay League

STMicroelectronics “LM723 High Precision Voltage Regulator” STMicroelectronics 2003 pgs.1-16 STMicroelectronics website 4/9/2007

Wes Hayward, W7ZOI and Doug DeMaw, W1FB “Solid State Design for the Radio Amateur” American Radio Relay League 1997 pgs. 157-158



Front View of Mark's power supply



Rear View of Mark's power supply

## Nets in the Area

Mon thru Sat	9:00 A.M. CT	14.2475 (HF)	Displaced Peorians
Monday	9:00 P.M.	146.730	123.0 PL Open Net
Tuesday	9:00 P.M.	146.255	(103.5 PL) Woodford County
Tuesday	7:15 P.M.	146.910	Tazwell County ESDA Net
Tuesday	8:30 P.M.	28.450	CIRC Open 10 meter Net
Tuesday	9:00 P.M.	146.940	(103.5 PL) CIRC Open Net
Wednesday	9:00 P.M.	147.060	Open Net Has Newsline
Wednesday	9:00 P.M.	442.250	103.5 PL ARES Open Net
Wednesday	Varies	147.100	103.5 PL <i>Sometimes</i> Trader's Net
			follows ARES Net held on 442.250
Thursday Newsline	9:00 P.M.	146.760	(162.2 PL) Open Net with
Thursday	9:00 P.M.	146.850	(103.5 PL) Open Net Peoria
Thursday	9:00 P.M.	146.895	North central IL Traders Net
Sunday	08:15 A.M.	1.815	Open 160 meter AM net
Sunday	7:00 P.M.	146.985	Clinton ARC net ( <b>NEW</b> )
Sunday	8:30 P.M.	147.075	Open Net with Newsline

(Please help me keep this list correct. I know it may not be up to date at this time. Norm N9ZKS)

## Central Illinois Area Repeaters

Freq	Callsign	Location	PL
145.390	N9EZJ	Lincoln	103.5
146.730	K9HGX	Decatur(Echolink)	123.0
146.790	WD9HRU	Bloomington	
146.850	W9UVI	Peoria	
146.940	W9AML	Bloomington	103.5 CTCSS
146.985	KA9YPK	Clinton	
147.015	NX9M	Normal	88.5 (open*)
147.075	W9UVI	Washington	103.5 CTCSS
147.105	WA9RTI	Decatur	103.5
147.150	WD9FTV	Bloomington	
147.345	K9ZM	Lincoln	103.5
147.390	WB9DUC	Pontiac	127.3
442.250	WA9RTI	Decatur	103.5
442.700	WB9UUS	Normal	107.2 (open**)
444.350	W9EX	Normal	107.2

\* Repeater is currently in open mode with pl for those with QRM

\*\* Repeater RX with tight carrier squelch and loose tone squelch (107.2)

## KC9LYU Echolink Update

The Frequency Is now set to 146.410 Simplex - NO PL  
To Connect To Node By Node Number - Dial (DTMF Commands) its Node number  
To Reconnect Last Station Dial \*69  
To Connect To Random US Repeater Dial 011 - The 011 command takes just a minute to connect.  
To Connect To Random Link Or Repeater Dial 01  
To Disconnect Dial #

## Calendar of Events

Sun	Mon	Tue	Wed	Thu	Fri	Sat

Daily Coffeeklatch Monday thru Friday  
 .....9:00 a.m. at Dairy Queen College Hills  
 Weekly 10 Meter Net

Every Tuesday evening at 28.450 mHz- at 8:30 p.m.

Weekly 2 Meter Net

Every Tuesday evening on the 146.940-repeater at 9:00 p.m.

10/10 Breakfast

First Saturday of every month at 8 a.m. in the IHOP in the Lowes lot near the Red Cross on Rt. 9.

CIRC Meeting

Fourth Wednesdays of the month at 7:00 p.m. at the Red Cross building in Bloomington (Just north of the airport).

## Central Illinois Radio Club

P.O. Box 993  
 Bloomington, IL 61702-0993

<http://www.qsl.net/w9aml/>

**President:** Ed Deutsch KC9GF  
 (309) 828-2227

**Vice President:** Mike Sallee, KC9FWL

**Secretary:** Chuck Kostelc N9RZV  
 (815)-842-4058

**Treasurer:** Norm Huber N9ZKS  
 (309) 378-4674

**Newsletter Editor:** Norman Huber, n9zks@verizon.net  
 (309)-378-4674

The CIRC is a not-for-profit ARRL special service club whose purpose is to advance the service of Amateur Radio. Located in Central Illinois, CIRC and its members welcome all to use the 146.94 repeater and to attend club meetings.

Submissions for the newsletter must be received by the 10th of the month and may be snail or e-mailed to the editor at:

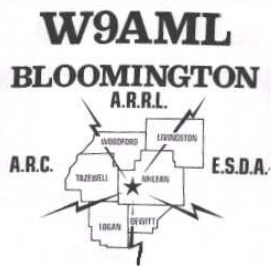
Norm Huber  
 19266 US Highway 150  
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**Meeting Wednesday February 25**

# Central Illinois Radio Club February 2009 Newsletter



Central Illinois Radio Club  
P. O. Box 993  
Bloomington, IL 61702-0993