

OFFICERS

- Bruce Brumm KCØZMT
President
- Open
Vice-President
- Alisa Payton KNØWME
Secretary
- Bill Claypool NUØQ
Treasurer

BOARD

- Rick Allen, NØCFL
- Dennis O'Brien KAØDOS
- Ray Harden WØRAY
- Bob Johnson, WØSMS
- Scott Kirstein NØOOD
- Mike Waldron AEØMW

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APRIL 2019

2019 DMRAA Hamfest

Good news! The DMRAA Hamfest is nearly here. The Hamfest is the best way we know to ditch those winder blues and wake up a dull Saturday morning. The date is April 27th and the location is in the beautiful Elwell Family Center at the Iowa State Fairgrounds. New this year is the addition of Associated Radio from Kansas City.



Details

When: April 27th, 2019

Where: Elwell Family Center, Iowa State Fairgrounds

Cost: \$10

Door Prizes: Kenwood TM-281 Anytone AT-D868UV

Field Day 2019

Its not too early to start planning for this years ARRL Field Day. The 2019 Des Moines Radio Amateurs' Association WØAK Field Day will be held at Fort Des Moines Museum & Education Center, 75 E Army Post Rd, Des Moines, IA , officially beginning at 1 p.m. on Saturday, June 22 and ending at 1 p.m. the next day, Sunday, June 23. WØAK will be operating as a 3A station — all stations will be running on emergency power, including three main HF stations, one VHF station, and a GOTA station.



**DMRAA Hamfest
Flyer Page 12**

Visitors from the public are welcome to join us at anytime throughout the event, where they can learn about amateur radio through hands-on operating... you do not need a license or prior experience to participate!

**Pay your 2019
DMRAA Dues
at the Hamfest**





Come enjoy the fellowship

DMRAA
meetings are the
4th Tuesday of
the month. Be
sure and mark
your calendars!



Upcoming Meetings

April 23rd, 2019
Magnetic Loop Antennas
7:00PM

Waveland Room, 2nd floor
Plymouth Congregational Church
42nd & Ingersoll Des Moines, IA

Rick Allen, NØCFL will explain the design and function of these antennas. He will also explain the uses best suited for these antennas.



May 28th, 2019
Dayton Recap
Annual Elections of Board and Officers
7:00PM

2nd Floor Waveland Room
Plymouth Congregational Church
42nd & Ingersoll Des Moines, IA
Join us May 28th for our annual elections. There will also be discussion with the members who were able to attend the Dayton Hamvention.

The DMRAA meetings provide an excellent opportunity to meet new friends and enjoy fellow hams. Please feel free to invite newly licensed amateurs or friends to attend.

Future Meetings

We're looking for meeting ideas and presenters. Please feel free to make suggestions and offer to help with a presentation.

Contact
Bruce Brumm
KCØZMT
at info@dmraa.com



You can Help?

Are you interested in helping the club? There are many ways you can help -- assisting with an event, taking a few pictures or even writing a piece for this newsletter.

~~We~~ YOU Can Help

We talk often about the many ways that the DMWAA can help the Amateur Radio community. We also want to discuss what you as a member of the DMRAA can do to help other in the club. Of course there are many positions of leadership in the club. There are 4 officers and the board has 6 members. Please consider making a commitment for any of these positions.



What else can you do?

Help set up at the Hamfest
Help tear down at the Hamfest
Help with the club Auction
Help with the Christmas Party
Help with Field Day
Help with the 1-Day Class
Help Elmer a new Ham
Make a presentation at a club meeting
Pay your yearly Dues
Attend the Monthly meetings
Vote in the annual elections
This list is small but the rewards are great. Thank you for all you do.



Giving back through community service

Scott Kirstein
NØOOD
Polk County ARES EC
515 490-7414 (cell)
n0ood@arrl.net



Polk County ARES



As I write this we are at the beginning of National Volunteer Week. While this is likely an observance developed with the greeting card industry – banks do not close, mail continues to be delivered, we don't get another day off from work – it is important to recognize the importance of the time each of us gives to help out in our communities. For a lot of us the time we spend "doing" amateur radio is the best way we have to volunteer.

Today is also the day after the American Lung Association's Fight for Air Climb. This event utilized 25 ARES volunteers for six hours during the event – that's 150 "people hours." Using a quick calculation from the Points of Light foundation from several years ago, the economic value of a trained radio operator is roughly \$19.00 per hour. That amounts to \$2,850 in value to the American Lung Association just in "people power" – which does not include equipment. They can use these "dollars" to further their mission, and fight lung disease.

The paragraph above does leave some gaps in its calculations. Several of those 25 operators drove an hour or more to get to and from the event. Most of us brought more than one radio. We used the 146.94 repeater (thanks to the DMRAA for letting us use it). There also isn't a calculation for the value of the actual work we do while helping out with an event.

What is it worth for the individual who was injured and needed our help to call the ambulance? What's it worth for the other person with a need for a wheelchair, and amateur radio coordinated getting it to them? What's it worth for the person putting on the event to have real-time situational awareness of these events – as well as a comfort level with knowing that the information she is being provided is accurate as well as timely?

This work is voluntary – we do not seek compensation for our efforts. Oh, sure, there may be a T-Shirt here and there in "thanks" for being a

volunteer for their organization. But the real "compensation" is knowing that you have given your time to help others – and your time has been well spent. To all of you who have "put on the orange (or yellow) vest" and "stood the post" at a water stop, I would like to say "Thank You!" AND "Happy National Volunteer Week!"

On a personal note, at the next club election, we will have a new President. Bruce Brumm, KC0ZMT, will not be seeking re-election. Bruce has been a long-time supporter of ARES – both in principal and in action – and he's spent countless hours volunteering as a member of the ARES team. I would like to thank him for his support through the years, and let him know how valuable that has been for both the DMRAA and ARES as well.

Scott, NØOOD

GET INVOLVED
Be a volunteer and reap the rewards

Polk County ARES Meetings
Polk County EOC
1907 Carpenter Avenue
Des Moines, IA



ARES MEETINGS DATES 2019

Monday, July 8
Monday, October 7

7:00 PM
Polk County Emergency
Operations Center
1907 Carpenter
Des Moines, IA

2019 ARES Events

Market to Market May 11th, 2019
ARRL Field Day June 22nd & 23rd, 2019
Iowa State Fair Parade August 7th, 2019
Head of the Des Moines Rowing Regatta
September 28th, 2019
IMT Des Moines Marathon
October 20th, 2019
Living History Farms Fun Race
November 23th, 2019

Sign-up online at DMRAA.com/ARES

2018 DMRAA Calendar

Calendar 2019

General Meetings and Events

27 April, DMRAA Hamfest
 23 April, 2019
 28 May, 2019
June 22—23 ARRL Field Day
 25 June, 2019
 23 July, 2019
 27 August, 2019
 24 September, 2019
 22 October, 2019
26 November, 2019 ChiliFeed
10 December, 2019 DMRAA Christmas Party
 28 January, 2019
 25 February, 2019

Board Meeting Dates

7 May, 2019
 4 June, 2019
 2 July, 2019
 6 August, 2019
 3 September, 2019
 1 October, 2019
 5 November, 2019
 7 January, 2020
 4 February, 2020
 3 March, 2020
 7 April, 2020
 5 May, 2020
 2 June, 2020



Plymouth Congregational Church
 42nd & Ingersoll
 Des Moines
 7:00PM



You now have the option of paying for up to 3 years when renewing your membership in the DMRAA.

1 Year = \$20
 2 Years = \$40
 3 Years = \$60

See Scott Kirstein
 NØOD
 for details.

Dues are calendar year

President's Soapbox

Swan Song

The general club meeting in May will be the conclusion of my 12 year tenure in DMRAA leadership. I joined the board immediately after being licensed in 2007 and served there for six years. The last six have been in the role of club President. As much as I have enjoyed organizing the Hamfest, Field Day, and other club events, I feel it is time for me to step back and reduce my role. I will of course remain active in the club's various events and activities. I also intend to continue to organize and participate in ARES events, as well as proctor ARRL VEC test sessions.

That said, "If I have seen further it is by standing on the shoulders of giants." Thus penned Sir Isaac Newton in a letter to Robert Hooke. Correspondingly, if we have succeeded while I was president

of this club, it is because of the successes of those who have gone before and worked alongside of me.

We currently find ourselves very well positioned as an organization. We have an active membership and a good reputation in the community. Our treasury is not depleted and our infrastructure of repeaters and antennas is in good shape. We have developed excellent educational programs for generating new and upgrading current licensees. Our Hamfest is well-attended and is a valuable fund-raiser and social event.

Please continue to volunteer and provide input. We have plenty of opportunities to help. Do consider participating on one of our committees. Some prime examples are Field Day, Hamfest, and Education. Do you have a great idea for a monthly meeting program? Is there a particular area of interest you'd like

to see explored? Please let one of the Board members know.

But again, those "shoulders" belong to all of you and represent the time, effort, and resources you have devoted to furthering the cause of Amateur Radio in central Iowa. I consider it my privilege and pleasure to have worked and served with you these many years, and I look forward to the years to come.

73,
 Bruce D. Brumm
 KCØZMT

I always wondered why somebody doesn't do something about that. Then I realized I was somebody.

Lily Tomlin



Don't forget to pay your 2019 DMRAA Dues





Have you
checked into a
net lately? →

ARES Nets serve
several purposes

- Operator training
- Training of Net control operators

Please check in!

Area Nets

AMES

Sunday	147.240+	7:00pm	Story County ARES Net
Wednesday	147.375+ t 114.8	9:00pm	Cyclone Amateur Radio Club

BOONE

Sunday	146.850-	8:00pm	Boone County ARES Net
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CRESTON

Sunday	443.400+ t 151.4	8:30pm	SW Iowa Amateur Radio Assn.
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DES MOINES

Sunday	145.390- t 114.8	7:00 pm	Saylorville Fellowship Net
Sunday	29.670- t 103.5	7:30 pm	Iowa Ten Meter Net
Sunday	146.610- t 114.8	8:00 pm	Central Iowa ARES Net
Sunday	146.940- t 114.8	follows ARES net	Central Iowa Technical Net
Sunday	443.400 t 151.4	8:30 pm	SW Iowa Amateur Radio Assn Net
Monday	146.940- t 114.8	7:00 pm	DMRAA information Net
Wednesday	53.250-	8:30 pm	Iowa 6 Meter Net 1.7mhz-
Thursday	146.940- t 114.8	7:00 pm	Polk County ARES Net

INDIANOLA

Saturday	146.60- t 114.8	7:30am	Warren County ARES Net
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PERRY

Monday	145.190- t 114.8	8:00pm	Dallas County ARES Net
Monday	145.190- t 114.8	follows ARES net	HARC Net

STATEWIDE NETS

Sunday	444.725+	7:30 pm	Iowa DMR User Group Net
Monday—Saturday	3,970	12:30pm & 5:30pm (6:00pm summer)	Iowa 75 Meter Traffic Net
Sunday	3,970	5:30pm (6:00pm summer)	Iowa Traffic and Emergency Net



Amateur Radio Testing Sessions



Des Moines 1:00pm

May 19 2019
July 21 2019
September 15 2019
November 17 2019

Registration starts at 12:30 PM (no admittance after 1pm) Location: Johnstone Supply Classroom (2nd floor) 11000 Justin Drive Urbandale, IA 50322

Contact: Rick Allen NØCFL
(515) 795-2162
n0cfl@arrl.net

Ames

Apr 20, 2019

(Saturday) @ 10:00 a.m. in
1220 Howe Hall

Location: Iowa State University campus, as noted above
Contact: Matthew Nelson,
KBØMGQ, 515-984-0010 , or
email at kb0mgq@gmail.com

Boone 9:00am

June 8, 2019
August 10, 2019
October 12, 2019
December 14, 2019

Time: 9:00 AM
Location: Conference room
behind the cafeteria at the Boone
County Hospital, 1015 Union St,
Boone, Iowa

Contact: Steve NØNEU
(515) 432-4006

Marshalltown 9:00am

May 4, 2019
August 3, 2019
December 7, 2019

Check-In: 9:30 AM
Exam Starts: 10:00AM
Location: RACOM Corporation
201 West State Street
Marshalltown, IA

Contact:
Brian Krumm, NØMXK
n0mxk@arrl.net
641-752-9658

Time to find a new home for your extra gear?

This Buy, Sell & Trade page may be your answer. This service is offered to DMRAA members.

Contact

info@DMRAA.com

Looking for something? We'd be happy to help you by listing your want items Here

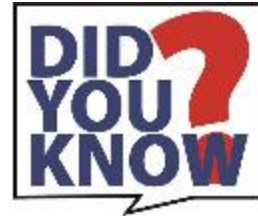


Time to Eat?

Buy / Sell

Kenwood TH-D72A dual band handheld (Standard accessories)
2) 2 extra (PB-45L) battery packs (Brand new in the box)
3) KSC-32 drop in desk charger (Brand new in the box)
4) Extra Diamond SRH-701A dual band antenna (Brand new in the package)
See attached picture for all included items.
Asking \$325.00 for package.

Contact: Kevin NØIWT
Phone:(515) 266-1738



The DMRAA.COM website sees on average 150 unique visitors a week. There are 190 visits and they perform over 650 actions per week. These visitors spend approximately 4 minutes enjoying the information available for and about the DMRAA.

Check us out at DMRAA.COM

Looking to add the slash zero Ø to your correspondence?

On your desktop computer using the numeric key pad hold the alt key while typing 0216. On a computer with no side key pad go to insert symbol and find the Ø in the list.

Are you checking the website?

Timely news and notices are posted on the DMRAA website.

dmraa.com



Hungry and looking to meet local hams? On Fridays at the Bonanza Steakhouse 5029 NE 14th St, Des Moines, a group of hams meet for lunch. This is an informal meeting and provides an ex-

cellent opportunity to pass information while enjoying a nice selection from the salad bar or menu. The group (around 15) usually arrives around



11:30 and breaks up at about 1:00. All are welcome, including family members.

Caution! Considerable amount of amateur radio topics will be discussed.



ARES Connect. A program that allows ARES managers to track members and activities.

Modern Reporting System

One of the key components of the proposed guidelines is a new volunteer management software system, called ARES® Connect, which is now being rolled out to ARES groups and which will be fully in place for all ARES members by the end of this year. The ARES Connect program has already gone through beta-testing by several ARRL Sections with large, active ARES teams, and the feedback from that testing did result in some changes and enhancements to the system. As an online volunteer management and activity-reporting system, a key feature of the new ARES Connect program is that it is easy to use, thereby making it easier for Emergency Coordinators (ECs) and other managers to report the activities of their group. With better and more efficient reporting, it will become easier for the ARES organization nationally to have a better understanding of what is going on at the local level. It also should allow for better communication among all levels of ARES. This modernization of the organization's reporting system also allows for better coordination between ARES and the other national emergency and disaster response organizations that it works with.

Administrative Permissions in ARES Connect

The ARES Connect system allows ECs, DECes, and SECs to create events that ARES participants may sign up for and log hours of participation. All ARES participants will have their own accounts on the system and be able to report their volunteer hours. ECs (at all levels) serve as administrators in the system. Emergency Coordinators will use this system to create events at a local level, approve hours, appoint members to their group, communicate directly with the group via built-in email tools, and generate reports. District Emergency Coordinators will have the ability to do all that Emergency Coordinators can do, but for all groups within their district.

Reprinted from Positioning ARES for Serving in Today's World

ARES Reflective Vests

Polk County ARES now has several Class 3 Level 2 Safety Vests available for purchase. These are better quality surveyor type vests with sleeves and several pockets in sizes m thru 3XL. They have the words "RADIO COMMUNICATIONS" on the back.

Cost is \$20.

Contact Tom, NØVPR

n0vpr@arrl.net

Note: You need not be a Polk County ARES or DMRAA member to purchase a vest.



Static Sheet Deadlines

Item submission deadline	Publish Date (Email sent)	Web edition posted
February 1 st	February 15 th	February 20 th
April 1 st	April 15 th	April 20 th
June 1 st	June 15 th	June 20 th
August 1 st	August 15 th	August 20 th
October 1 st	October 15 th	October 20 th
December 1 st	December 15 th	December 20 th

WØAK Board Minutes DMRAA

February Board Meeting Minutes

Tuesday, February 5, 2019

The meeting was called to order at 7:10pm

In Attendance

Bruce Brumm – KCØZMT – President

~~Rick Allen – NØCFL – Board~~

Dennis O'Brien – KAØDOS - Board

Michael Waldron – AEØMW – Board

Bill Claypool – NUØQ – Treasurer

~~Lisa Payton – KNØWME – Secretary~~

Ray Harden – WØRAY – Board

Scott Kirstein – NØOOD – Board

Bob Johnson – WØSMS – Board

Review January minutes: Motion to approve by Bob, 2nd by Ray. Motion carried.

Treasurer's report \$22,684.72, current balance

Bob turned in invoice for the one-day class, \$45.66.

501C3 updated, and insurance to be paid. Scott 1st, Bob 2nd, motion carried.

Unfinished business

Paypal – Need to rehome website to different provider; update SSL cert/SMTP capabilities

Mike, AEØMW investigating and will provide a recommendation.

Polk County ARES update

2019 events and meeting schedule – nothing to report

Subcommittee reports:

Hamfest – Associated Radio will be attending the event; working on embroidery/screenprinting vendor.

Field Day – "Always the fourth full weekend in June" Scott has reserved Yellow

Banks, Dennis is going to look into alternative locations. Dennis will also make

The Des Moines

Radio Amateurs

Association

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monthly in the

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East Euclid

Hy-Vee

2540 E Euclid

Ave

Des Moines

February Board Meeting Minutes cont.

an appeal for volunteers at the next regular meeting.

Repeaters – 146.940 repeater still has issues; NØVPR is heading up issues investigation

Education

May 1-day class – 12 books/\$300.00, not to exceed; 1st Scott, 2nd Ray. Motion carried.

Programming

January – magloop antennas by NØCFL – postponed due to weather

February – Weather Service Training

March – TLW Tom Weaver on Rock Climbing

April – Announce election slate; MagLoop Antennas by NØCFL

May – Elections and “Dayton Report”

Communications & Public Relations – Nothing to report.

Membership – Nothing to report

Awards – Nothing to report

New Business -- none

Motion to adjourn by Bob. 2nd by Rick. Motion carried at 8:24pm.

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Des Moines*



WØAK Board Minutes DMRAA

March Board Meeting Minutes

Tuesday, March 5, 2019

The meeting was called to order at 7:00pm
In Attendance

Bruce Brumm – KCØZMT – President
Rick Allen – NØCFL – Board
Dennis O'Brien – KAØDOS – Board
Michael Waldron – AEØMW – Board

Bill Claypool – NUØQ – Treasurer
Lisa Payton – KNØWME – Secretary
Ray Harden – WØRAY – Board
Scott Kirstein – NØOOD – Board
Bob Johnson – WØSMS – Board

Review February minutes: Motion to approve by Mike, 2nd by Ray. Motion carried.

Treasurer's report \$22,724.72, current balance

Mark turned in invoice for the one-day class, \$270.58.

Unfinished business

Paypal – Need to rehome website to different provider; update SSL cert/SMTP capabilities

Mike, AEØMW investigating and will provide a recommendation.

Polk County ARES update

2019 events and meeting schedule – nothing to report

Subcommittee reports:

Hamfest – Associated Radio will be attending the event; working on embroidery/screenprinting vendor. Repeater council meeting confirmed; perhaps a DMR presentation. KCØZMT will order wristbands as needed and print tickets.

Field Day – "Always the fourth full weekend in June" Scott has reserved Yellow Banks, Dennis is going to look into alternative locations. Dennis will also make

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January Board Meeting Minutes cont.

an appeal for volunteers at the next regular meeting.

Repeaters – 146.940 repeater still has issues; NØVPR is heading up issues investigation

\$40.00 for NØVPR fuel related to repeater repairs. 1st Ray, 2nd Mike; motion carried.

Education

May 1-day class – Mark Globuschutz reimbursed for books. 4-May.

Programming

January – magloop antennas by NØCFL – postponed due to weather

February – Weather Service Training

March – NØTLW Tom Weaver on Rock Climbing

April –MagLoop Antennas by NØCFL, Announce election slate;

May – Elections and “Dayton Report”

Communications & Public Relations – Nothing to report.

Membership – Nothing to report

Awards – Nothing to report

New Business -- none

Motion to adjourn by Mike. 2nd by Ray. Motion carried at 7:50pm.

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AMATEUR RADIO

DMRAA HAMFEST 2019

DMRAA HAMFEST

2019

IOWA STATE FAIRGROUNDS
Elwell Family Center



Saturday,
April 27th, 2019
8:00 am—1:00 pm

CQ CQ CQ

ADMISSION:

Adults \$10.00

12 & Under: FREE

- Talk-in: 146.940 tone 114.8
- Free Parking
- Handicap Accessible
- Snacks & Drinks
- Convenient Restrooms



The Des Moines Radio Amateurs Association is pleased to sponsor our annual Hamfest

Browse the wares of the featured vendors. Sell your unneeded gear for extra cash! Find that perfect addition for your rig.

VE Testing

Technician, General
& Extra exams are offered

Testing Fee: \$15.00

Registration: 9:00 am

Testing: 9:30 am

*No one admitted for testing
after 9:30 am

Flea Market

Tables: \$20.00 (1st table)

\$10.00 (ea. Additional)

Contact DMRAA

For advanced table reservations

<http://dmraa.com/hamfest>



The RF Adapter Guy



Featured Vendors

D & L Antennas

RF Adapter Guy

Associated Radio

A great location that's easy to get to



CONTACT US:

DMRAA

P.O. Box 88 • Des Moines, IA 50301

E-mail: info@dmraa.com

Web: <http://www.dmraa.com>

Door Prizes



Kenwood TM-281A

ARRL
Gift Certificates

More to be announced



Anytone
AT-D868UV

DMRAA 1-Day Class

Amateur Radio Technician Class

Offered by the Des Moines Radio Amateurs Association

This Class will prepare you to take the FCC Technician License Exam. The Saturday class will conclude with ARRL VE examiners administering the Technician Exam.



Reasons to get an Amateur Radio License

- I always wanted one.
- I want to help my community in times of need.
- I love to play with cool tech things.
- I want to increase the range of my RC aircraft.**
- It will drive my husband crazy
- I want to connect in a different way.
- No need to learn Morse code



What: Amateur Radio Technician Class

When: Saturday, May 4th, 2019 8:00 AM to about 7:00 PM

Where: 75 East Army Post Road, Des Moines, IA

Parking entrance is off Chaffee Road

Cost: \$ 100.00 This includes the text book, pre-course material, lunch with drink. HT Radio

Testing: Fee includes FCC Technician Class Test.

With successful completion of the examination each participant will receive a year's membership in the Des Moines Radio Amateurs Association.

The DMRAA philosophy concerning this Technician Class: **Yes you can!** We know that Ham Radio begins with a license and then the learning really starts. We encourage all interested person to consider this class. Enroll with a friend. There are no age restrictions as long as you are motivated.

To Pre-Register (a must)

Individuals wanting to take the class can contact me for payment and books at:

Mark Globuschutz, KØMJG

mglobuschutz@msn.com

2505 SW 36 St.

Ankeny, Iowa 50023

Home = (515) 289-4412 Cell = (515) 201-7669

Registrations with payment must be received by April 20th, 2019

Des Moines Radio Amateurs Association info@dmraa.com Or visit our webpage dmraa.com

NOT Another Double-A Battery Test??

By KA0FTO Larry

OK I added **Lithium Batteries** this time! The other testing tested Carbon Zinc, Alkaline, and Nickel Metal Hydride or NI-MH as they are called. Just the NI-MH was rechargeable.

Past articles were in Static Sheets 2010 April and 2018 April.

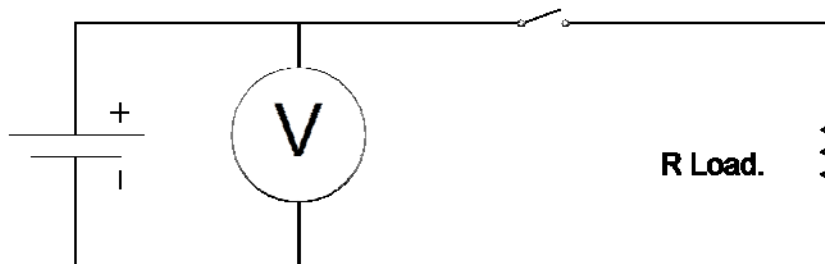


Figure 1

The test circuit, Figure 1, is identical to the other test except when I tested the Lithium battery. To increase the Load I used the load made out of copper wire to equal .8 ohms, that is 8 tenths of an ohm. Batteries other than Lithium used wire wound resistors with the value shown in the tables. As before readings were taken using a KRM AEEC 2890 Digital Voltmeter and my \$7.55 stop watch.

The test set up Figure 2 shows the Wire Wound resistors used for test other than Lithium batteries.

As before none of my testing determines shelf life or possible leaking or corroding!

The big name batteries do not always out last the less expensive but the rechargeable last longer. If you are using many batteries in a short time many of the less expensive ones will work. MAX short circuit current was as follows. This test lasted for less than 5 seconds!

Carbon Zinc	3 amps
Alkaline	5 amps
Lithium	11 amps.

IF YOU ARE NOT USING A DEVICE FOR MONTHS REMOVE THE BATTERIES TO SAVE IN CASE OF LEAKING.

IF YOU ARE NOT USING A DEVICE FOR MONTHS REMOVE THE BATTERIES TO SAVE IN CASE OF LEAKING.

Tables 9 and 10 with Figures 9 and 10 are new.

Note in table 9 the open circuit voltage of **1.794V, for the Lithium**, but drops to 1.250 within 5 seconds of connecting the load, could this cause a problem in the device the batteries are installed in?

Lithium out last them all even with a higher current drain, but is more expensive. I have a rechargeable type of Lithium, in my cordless drill, that set for 6 months and is still fully charged!!! Quad Copters use a type of Lithium that has a very high discharge current. Unfortunately this high discharge current under the wrong conditions can cause a fire.

NOT Another Double-A Battery Test (cont)

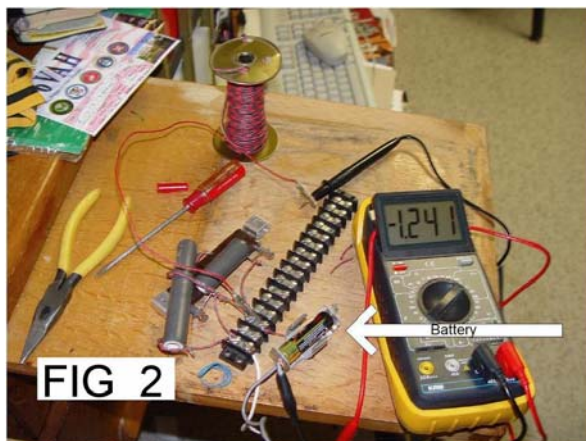


FIG 2

Detail tables to follow but here is what I found with the best as #1 in each table. Some of these tables were in the other article as well.

Figures or photos go with the like number table.

Table 5= 1.8 ohm load based on 30 minutes.

Power Cell blue	1.142V
NorthTech New Purple/Black	1.101V.
Pair Deer	1.097V.
Duracell Quantum (super battery)	1.093V.
NorthTech old Orange/Black	1.038V.

Table 7= 1.8 ohm load based on 30 minutes.

Power Zone	1.158V
AC DELCO Super	1.142V
Power Cell Blue (repeat test but new battery)	1.141V
DG/HOME	1.136V
Ultra Alkaline	1.118V
Northern	1.100V
Energizer	1.090V
IRONTON	1.030V

Energizer Rechargeable Load .8 ohms 1.140V
with twice the current drawn of 1.42A
as opposed to .633A on #3 above.

Table 8 with .7 ohm load for comparison only.

Duracell Quantum very warm. 5min	1.03V
Current = 1.47A	
Northern very warm. Less than	
5min was below 1.00V. 1.4A when was=	0.98V

Table 9 with 1.8 ohms on Power/Cell Blue,
Load changed to .8 ohm for the Energizer
Rechargeable NI-MH, and the Energizer Ultimate
Lithium not Rechargeable.

NOT Another Double-A Battery Test (cont)

Energizer Ultimate Lithium	60 min-1.43A	1.145V
Energizer Rechargeable NI-MH	60 min-1.31A	1.050V
Power/Cell Blue	60 min- .573A	1.032V
The Energizer Ultimate Lithium at 80 min still had 1.34A and 1.070V		

Table 10 with 1.6 ohm load with more Alkaline Batteries with some Old Carbon-Zinc thrown in!!! These test were based on 30 minutes.

Sunbeam Alkaline	1.175V
Panasonic Alkaline	1.167V
Thunderbolt Alkaline	1.156V
Pair Deer Alkaline (repeat new test battery)	1.125V
Insignia Alkaline	1.114V

Load 1.6 ohm but for 15 minutes only.

Panasonic Carbon-Zinc	1.007V
Thunderbolt Carbon-Zinc	1.004V
Sunbeam Carbon-Zinc	0.999V



Fig 5, 6, 7



Fig 8

NOT Another Double-A Battery Test (cont)



Fig 9



Fig 10

Alkaline Battery	Open Ckt	1.8 ohms	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	50 min	55 min	60 min	
Northern 24=\$8.00 New	1.61	1.42	.708A 1.275	.671A 1.208	.651A 1.173	.636A 1.145	.623A 1.122	.611A 1.100	.599A 1.079	.592A 1.067					
IRONTON 48=\$10. New	1.633	1.280	.633A 1.14	.617A 1.112	.605A 1.089	.594A 1.07	.584A 1.052	.572A 1.03	.559A 1.007						
Power Zone Alkaline, Fleet Farm \$2.19=4	1.648	1.420	.743A 1.339	.708A 1.275	.686A 1.236	.668A 1.203	.655A 1.179	.643A 1.158	.633A 1.140	.623A 1.122					
ULTRA Alkaline ST Louis MO?	1.635	1.380	.707A 1.273	.676A 1.217	.657A 1.184	.644A 1.160	.632A 1.139	.621A 1.118	.610A 1.099	.598A 1.077					
Energizer ALKALINE=USA	1.580	1.340	.677A 1.220	.655A 1.179	.642A 1.156	.630A 1.134	.620A 1.117	.605A 1.090	.599A 1.079	.593A 1.068	.588A 1.059				
AC DELCO Super \$10.00=24 at Theisen's	1.638	1.440	.731A 1.317	.697A 1.255	.679A 1.222	.662A 1.192	.650A 1.170	.634A 1.142	.622A 1.121	.614A 1.106	.606A 1.091				
DG/HOME Alkaline Dollar General.\$6.36=20	1.644	1.433	.721A 1.299	.693A 1.248	.672A 1.210	.653A 1.176	.643A 1.158	.631A 1.136	.622A 1.120	.611A 1.100	.600A 1.08				
DG/HOME HD Dry Cell \$3. =20	1.693	1.023	At 9 minutes had dropped to .999V.												
POWER/CELL blue tested again with a fresh cell at 1.8 ohms to try to find required time to drop to 1.00 volt. Required over 60 minutes.															
Power/Cell blue New	1.666	1.145		.696A 1.253	.673A 1.212	.658A 1.185	.645A 1.162	.633A 1.141	.622A 1.121	.613A 1.104	.603A 1.086	.593A 1.068	.585A 1.053	.573A 1.032	
4/6/2018	NOTE BELOW CHANGED TO .8 OHMS TESTING TO SEE HOW LONG BEFORE VOLTAGE DROPS TO 1.00 VOLTS.														
Energizer Rechargeable NIMH 1.2v	1.459	1.300		1.48A 1.188V	1.46A 1.171	1.44A 1.157	1.43A 1.148	1.42A 1.140	1.41A 1.134	1.41A 1.129	1.40A 1.124	1.39A 1.113	1.37A 1.098	1.31A 1.05	
TABLE 7.	NOTE LOAD INCREASED TO .8 OHMS!	CURRENT IN AMPS CALCULATED. I=E/R AT 61 MINUTES VOLTAGE STARTED DROPPING BELOW .99V FAST													

NOT Another Double-A Battery Test (cont)

Alkaline Battery	Open Ckt	.7 ohms	5 min	10 min	15 min	20 min				
Northern got warm.	1.635		1.4A 0.98V	Less than 5 minutes went below 1.00 volts.						
.7 ohm resistor got extreemly hot to touch!!!!										
Duracell Quantum got warm. USA	1.623		1.47A 1.03V	1.39A .978V	Dropped to 1.00 volts at 7min 47 seconds.					
Removed load and let set 20 minutes open voltage 1.436V.										
Current calculated I=E/R. Both were fresh batteries!										
Table 8 4/04/2018										

Alkaline Battery	Open Ckt	1.8 ohms	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	50 min	55 min	60 min
POWER/CELL blue tested again with a fresh cell at 1.8 ohms to try to find required time to drop to 1.00 volt. Required over 60 minutes.														
Power/Cell blue New	1.666	1.145		.696A 1.253	.673A 1.212	.658A 1.185	.645A 1.162	.633A 1.141	.622A 1.121	.613A 1.104	.603A 1.086	.593A 1.068	.585A 1.053	.573A 1.032
NOTE BELOW CHANGED TO .8 OHMS TESTING TO SEE HOW LONG BEFORE VOLTAGE DROPS TO 1.00 VOLTS.														
Rechargeable NIMH 1.2v	1.459	1.300		1.48A 1.188V	1.46A 1.171	1.44A 1.157	1.43A 1.148	1.42A 1.140	1.41A 1.134	1.41A 1.129	1.40A 1.124	1.39A 1.113	1.37A 1.098	1.31A 1.05
	NOTE LOAD INCREASED TO .8 OHMS!	CURRENT IN AMPS CALCULATED. I=E/R AT 61 MINUTES VOLTAGE STARTED DROPPING BELOW .99V FAST.												
Energizer Ultimate Lithium L91 NON CHARGEABLE.\$2.18	Battery Load = .8ohms 1.794VDC	1.250	1.54A 1.235	1.55A 1.240	1.55A 1.241	1.55A 1.244	1.55A 1.243	1.55A 1.237	1.54A 1.233	1.51A 1.209	1.49A 1.195	1.47A 1.180	1.45A 1.164	1.43A 1.145
Battery was very hot! This was to compare the Rechargeable NIMH Battery.	Cost about the same.	extended test past 60 minutes.	65min 1.40A 1.126	70min 1.38A 1.107	75min 1.36A 1.088	80min 1.34A 1.070								
Energizer Ultimate Lithium L91 NON CHARGEABLE.\$2.18	Same battery after 24 hour rest! 1.619	1.256	1.32A 1.05	1.32A 1.056	1.31A 1.047	1.28A 1.024	1.23A .990	STOPPED TEST.						
TABLE 9.	4/9/2018													

NOT Another Double-A Battery Test (cont)

1	Alkaline Battery	Open Ckt	1.6 ohms	5 min	10 min	15 min	20 min	25 min	30 min	35 min	40 min	45 min	50 min	55 min	60 min	65 min
2	Sunbeam Alkaline Dollar Tree \$1.06=4	China 1.670	WARM 1.492	.855A 1.368	.812A 1.300	.782A 1.252	.763A 1.221	.748A 1.197	.734A 1.175	.721A 1.154	.710A 1.136	.699A 1.119	.689A 1.103	.680A 1.088	.671A 1.074	.661A 1.059
3	Sunbeam Carb-Zinc Dollar Tree \$1.06=8	China 1.717		.672A 1.075	.639A 1.023	13 Min .999										
4	Panasonic Alkaline Dollar Tree \$1.06=2	Brazil 1.620		.836A 1.338	.800A 1.281	.777A 1.244	.758A 1.214	.743A 1.190	.729A 1.167	.716A 1.146	.705A 1.128	.691A 1.107	.680A 1.089	.670A 1.072	.658A 1.054	.647A 1.036
5	Panasonic Carb-Zinc Dollar Tree \$1.06=4	Brazil 1.679	Warm 1.280	.677A 1.084	.649A 1.039	.629A 1.007	16 Min .999									
6	Thunderbolt Alkaline Harb-Freight \$8.54=24	China 1.643	Warm 1.463	.839A 1.343	.799A 1.279	.771A 1.234	.755A 1.209	.736A 1.179	.722A 1.156	.710A 1.136	.698A 1.118	.687A 1.099	.672A 1.076	.660A 1.056	.649A 1.039	.643A 1.029
7	Thunderbolt Carb-Zinc Harb-Freight \$5.30=24	China 1.705		.677A 1.084	.644A 1.031	627A 1.004	15:50 Min .999									
8	Insignia Alkaline Best Buy \$5.29=8	China 1.637	Gets Hot 1.376	.780A 1.249	.749A 1.199	.731A 1.170	.718A 1.149	.706A 1.130	.696A 1.114	.685A 1.096	.672A 1.076	.660A 1.057	.648A 1.037	.639A 1.023	.632A 1.012	.626A 1.003
9	Repeat PAIR DEER Super Alkaline	China 1.635		.796A 1.274	.767A 1.228	.746A 1.194	.731A 1.170	.717A 1.148	.703A 1.125	.691A 1.106	.679A 1.087	.664A 1.063	.651A 1.043	.638A 1.022	.630A 1.009	.628A 1.005
10	Table 10 02/27/2019	All readings using KRM AEEC 2890 Digital Voltmeter. All test this table with 1.6 ohms!														
11																

Energizer Bunny got arrested. Charged with Battery.





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