



PARTicles

The newsletter of PART of Westford, MA – WB1GOF

July/August 2013

President's Column

- *Andy Stewart (KB1OIQ)*

Field Day was a fantastic success! The 13 Colonies Special Event was also a fantastic success! In addition, we had a few people participating with the WRTC 2014 activities. I am really pleased to see so many different people participating!

At the upcoming August PART meeting, Rick (W1RAG) will show us a more amusing side of Field Day with his now famous slideshow based on photos taken during the event. This has been a very entertaining part of our post-Field Day activities for a couple of years, and you won't want to miss it. I've discovered that bribery does not work for getting your photo and its amusing caption omitted from the slideshow.

Elections will be held during the September PART meeting, run by Alan (K1ALL). The elected positions are President, Vice President, Treasurer, and Secretary, currently held by Andy (KB1OIQ), Rich (AB1HD), Alan (W1AHM), and Steve (WA1KBE), respectively. In addition, the Board appoints a Director-at-Large, and that position is currently held by Rick (W1RAG). Those 5 people collectively serve as the voting members of our Board of Directors. The term of office is one year. The Board also gets lots of helpful advice from our Senior Club Advisors Bo (WA1QYM) and Terry (KA8SCP), as well as many others. Please take a look at the PART website (<http://www.wb1gof.org>) in the "Officers and Volunteers" section, for more details. If you are interested in running for an elected office, please contact Alan (K1ALL). Nominations will close at 1700 local time on September 6th, 2013.

In addition to elected positions, there are a number of appointed positions such as Field Day chairman (Bob W1IS), membership chairman (Hugh N1QGE), public information officer (Lela KC1ACV), WRTC 2014 liason (Brian W1BP), QSL manager (Andy KB1OIQ), 13 Colonies Special Event

Chairman (Charlie K1PUB), and K1P Special Event chairman (Andy KB1OIQ). Bob (N1RXV) is our club photographer, Christmas Party Chairman (Hugh N1QGE), Apple Blossom Parade Chairman (Terry KA8SCP and Alan W1AHM), Grace Race Chairman (Andy KB1OIQ), Kit Building Chairman (Scott NE1RD), Net Control coordinator (Rich AB1HD) plus several regular net control operators (Dave W1IR, Rick W1RAG, Andy KB1OIQ, John WB1HBE, Bill K1NS). (I hope I haven't forgotten to mention anybody). Oops, let's not forget the Pumpkin Patrol, run by Terry (KA8SCP) for many years, with help from many others, our overseer of Elections (Alan K1ALL), and all of the people who were on the Field Day Committee. Our webmaster is Rich AB1HD and Dave W1IR manages our email lists, domain name and website hosting. Terry KA8SCP also serves as our newsletter editor, PARTicles.

Look at that long list! Go back and read it again! This is great stuff! One reason that I believe our club is so successful is due to the willingness of people to volunteer for these different positions. Thank you very much! If you have an interest in helping in any of these areas, or possibly a desire to be a chairman for one of those activities, please see me.

The ARRL National Centennial Convention will be held in Hartford, CT on July 17-19, 2014. (On this occasion, the biennial convention normally held in Boxboro, MA will not take place.) There has been a call for papers and programs, with a deadline of October 15, 2013. If you are interested in being a presenter at the convention, now's the time to submit your idea. Submissions can be made at this website:

<http://www.arrl.org/arrl-centennial-convention-2014>

73 de Andy KB1OIQ

Next PART meeting: Tuesday August 20th

@1930 – Westford Police station

Treasurer's Report

PART Treasury between 21-May '13 & 17-June '13 (As of 18- June '13)

	General Fund	Repeater Fund	Checking Total
Old Balance	3649.19	2245.82	5895.01
Income	40.00	7.00	47.00
Expenses	-147.15	0.00	-147.15
Net	-107.51	7.00	-100.51
New Balance	3541.68	2252.82	5794.50

PART Treasury between 18-June '13 & 15-July '13 (As of 16-July '13)

	General Fund	Repeater Fund	Checking Total
Old Balance	3541.68	2252.82	5794.50
Income	143.00	145.00	288.00
Expenses	-864.15	(\$0.00)	-864.15
Net	-721.15	145.00	-576.15
New Balance	2820.53	2397.82	5218.35

PART 2012 Membership as of 3-August '13

	Individuals (= New for 2013 + Renew for 2013)	Households (= New for 2013 + Renew for 2013)
Full (\$25)*	35 (= 7 + 28)	35 (= 7 + 28)
Senior (\$15)*	36 (= 3 + 33)	36 (= 3 + 33)
Family (\$30)*	19 (= 2 + 17)	9 (= 1 + 8)
Student (\$15)	0 (= 0 + 0)	0 (= 0 + 0)
Associate (\$10)	0 (= 0 + 0)	0 (= 0 + 0)
Grand Total*	90 (= 12 + 78)	80 (= 11 + 69)
ARRL members*:	82	
ARRL Life members*:	8	

NOTE: * Starred lines changed since 3-June '13

##To pay dues##

PART, P.O. Box 503, Westford, MA 01886-0015

-or-

Club Meeting, Westford P.D., 7:30PM, 3rd Tuesday

Latest new PART members:

Lyman/W1LKS (North Billerica)
Lela/KC1ACV (North Billerica)
Mark/K1MGY (Littleton)
Mike/AB1LD (Arlington)
Alan/W1CCE (Framingham)
David/KB1EDE (Framingham)
David/KE7CAP (Bozeman, MT)

Upcoming PART Meetings/Events

August 20th, 2013

- PART Meeting. 7:30 -9 p.m. Westford Police station

September 6th, 2013

- PART elections – Nominations close (contact K1ALL, allod@comcast.net if you are interested)

September 7th, 2013

- PART monthly breakfast. Westford Regency. 8-10 AM (\$15/\$9; kids: \$8 – see note below)

September 17th, 2013

- PART Meeting. 7:30 -9 p.m. Westford Police station

October 5th, 2013

- PART monthly breakfast. Westford Regency. 8-10 AM (\$15/\$9; kids: \$8 – see note below)

October 15th, 2013

- PART Meeting. 7:30 -9 p.m. Westford Police station

Monthly PART Events

- Every Sunday, 8 PM – PART Net on 146.955 repeater
- Every 3rd Tuesday, 7:30 PM – PART Meetings at Westford Police station
- Every 1st Saturday, 8 AM, Regency Inn Westford – PART Monthly Breakfast
- Every Wednesday, 6 AM, Owl Diner Lowell – Breakfast

Ham Fleas/Events

New England Area Ham/Electronic Fleas:

<http://web.mit.edu/w1gsl/Public/ne-fleas>

2013

10 Aug Milo ME PARC @AmLegion George WA1JMM 207 441 6112 A+
10 Aug St Albans VT StAARC @VFW Arnold N1ARN 801 309 0666 A+
18 Aug Cambridge MA FLEA at MIT Nick 617 253 3776 F+
25 Aug N Adams MA NoBARC @BoweFld \$5@9 \$10TG@8 Tim KE3HT 413 822 7075 F
7 Sept Ballston Spa NY SCRACES @FG @7 Darlene N2XQG 518 587 2385 +
7 Sept Windsor CT VR+C Mus 115 Pierson LN @8AM Outdoor John 860 673 0518 +
7 Sept Windsor ME AARA @FG Bill K1NIT 207 512 0312 A+
8 Sept Newtown CT CARA @TownHall \$5@8:30 \$10/TG \$15/T Joe AB1DO 203 938 4880 +
15 Sept Cambridge MA FLEA at MIT Nick 617 253 3776 F+
21 Sept Forestdale RI RIAFMRS @VFW \$5/Sp@8 Rick K1KYI 401 864 9611 +
21 Sept Manchester CT PVRA @MarcusComm George AB1GL 860 716 3367 A+
21 Sept Alexander ME StCVARC @EISch Roger W1LH 207 454 2174 A+
28 Sept Brookline NH NEARC Antique \$10@7:30 \$4@8:30 Bruce 603 772 7516 F
6 Oct Queens NY HoSARC Stephen WB2KDG 718 898 5599 A+
11,12 Oct Deerfield NH NEARFest XIV @FG Mike K1TWF 978 250 1235 T+
13 Oct Meriden CT Nutmeg @Sheraton was Wallingford John N1GNV 203 440 4973 +
19,20 Oct Wakefield MA Photographica @AmericalCtr ~photo~ John 781 592 2553
19 Oct Longueuil PQ CRAR-S \$7@9 \$10/T@6 Martin VE2DNF 450 466 2810 R+
20 Oct Cambridge MA FLEA at MIT Nick 617 253 3776 F+
26 Oct Gales Ferry CT TCARC Auction @FireCo @10 Darryl WA1DD 860 443 7799 +
27 Oct Hicksville NY LIMARC @LevitHall Richard K2KNB 516 694 4937 +
2 Nov Londonderry NH IRS \$3@8 \$15/T Chris KB1QVM 603 434 6137 F+
9 Nov Bourne MA FARA @UpperCC VoTech \$5@9 \$10/S@7 Ralph N1YHS 508 548 0422 +
30 Nov Windsor CT VR+C Mus 115 Pierson LN @8AM Indoor John 860 673 0518 +



**Get on the Air
with K2BSA at the
National Scout
Jamboree**

Powered by 



D-STAR QSO PARTY 2013

Mark your calendar! **SEPTEMBER 20 (Fri.) ▶ 22 (Sun.)**

Repeater Nets

146.955 Nets – There are a number of nets that are regularly scheduled on the 955 repeater.

- Sunday night at 2000/8:00 PM Sunday Night PART Net – every
- Sector 1C Emergency Communications Net – this net occurs the 1st Monday or every month (except when it is a holiday). Skywarn and ARES Nets – these nets are spontaneous when local conditions warranted.

NOTE: You can LISTEN ONLY to this repeater audio by linking to this URL:
<http://www.radioreference.com/apps/audio/?feedId=10933> (effective 2/2012)

442.450 D-Star Nets – There are a number of nets that are regularly scheduled.

- Sunday 8:00 PM [Ozark Mtn D-STAR Net](#) – Reflector 001C
- Tuesday 8:00 PM [New England Amateur D-STAR Net](#) – Reflector 010C

NOTE: The Port B node (442.450) is connected to [REF010C](#) Mon – Fri from 10:00 am until 3:30 pm. **CHANGE!!** - The Port C node (145.330) is connected to [XRF038A](#) Mon – Fri from 07:00 am until 11:00 pm. Users can LISTEN ONLY to D-Star Reflector 10C by linking to this URL: <http://www.radioreference.com/apps/audio/?feedId=5031>

Monthly PART Breakfast

Don't forget the monthly PART breakfast the 1st Saturday of each month at the Westford Regency Inn at 8 AM. The full hot & cold buffet breakfast costs about \$15 (includes tip) per person, a cheaper, lighter fare is available for adults and children. **NOTE: PLEASE let the folks who are settling the bill with the staff know whether you had a full or continental breakfast!**

Monthly Breakfast Pricing ****CHANGED****

The full breakfast is $\$11.95 + 18\% + 6.25\% = \15.00 (rounded up slightly). This price has recently changed. Here is the math for completeness and full disclosure.

Continental breakfast: \$9.00 (same price)
Full breakfast: \$15.00 (new price)
Kid's breakfast: \$8.00



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Special Thanks

- Darrel Mallory-K1EJ

The North Middlesex ARES Group guided the Annual Chelmsford Fourth of July Road race and Parade for the seventh year with course monitoring and float order indexing for the announcer.

Operators were privileged to receive a pre-parade briefing on emergency procedures by Chelmsford PD Lt. Colin Spence.

14 operators and assistants took part in this event for the Lions club and parade committee. It was ACS in action under the direction of super net control, KB1KYS.

Filling out the compliment was KC1ACV, KB1HLX and XYL Jody, KB1KTR, and Jon (Billerica Emergency Management Agency trainee). With the exception of a sidelined antique fire truck, the event went smoothly.

This is an ideal way to assure that procedures are adequate for emergencies, and it shows the fact that a good plan comes together with enough people to do the job.

A Large thank you for all participants and looking forward to the Billerica YD parade and the Lowell Bay State Marathon.



Field Day 2013 Wrap Up

- *Bob Glorioso-W1IS*

(This is a summary of the presentation I gave at the July meeting on our 2013 Field Day event.)

Once again, thanks to Joe, KB1SSA, and the other members of PART who are also members of the Concord Rod and Gun Club, we had full access to their wonderful facility for Field Day. This year we took advantage of the new rules allowing us to begin set-up early so several of us met on Friday afternoon spending a few hours getting all the ropes into the trees. This proved a good move on Saturday.

Saturday morning we had a terrific crew show up to put up antennas and get stations on the air. We had a goal, actually I had a goal, of getting all stations ready to go on-the-air by 1100. We came close, as all was ready by 1130 when everyone was able to attend Tool Box Talks by, Scott, NE1RD, Anita, AB1QB, and Andy, KB1OIQ. The talks were excellent and I think we all benefited from them.



Our early completion of set-up allowed us all to lunch together sharing our experiences and enjoying great Ham Radio Fellowship.

Our configuration this year was similar to last year in 3A QRP Battery with Solar Chargers. The HF stations and station managers were Digital (Fred, AB1OC, and Anita AB1QB), CW (Bill, AA1O, and Bob, W1IS) and SSB (Scott, NE!RD) all Elecraft KX3s. The VHF station used Allison, KB1GMX's, TenTech. We had a full antenna farm thanks to the Antenna Committee, of Fred, AB1OC,

Anita AB1QB, Allison, KB1GMX, Steve, N1BDA and Bob, W1IS. The antenna farm from low frequency bands up were, G5RV, PAR 40, 20, 10, 2 Element full size 40 M wire beam, Hy Gain, TH3 Jr, Tri-band beam for 20, 15 and 10, Full size 3 element 15M Buddipole beam, Full size 3 element 10 M Buddipole beam, 3 Element 6M beam, 2M beam, (Unfortunately, 2M was not active again this year, not even locals, so we are considering dropping 2M and putting up a larger 6M beam in the future.) and Bob, KB1SWZ's Satellite antennas. All stations had solar chargers and we probably came very close to running all the stations with solar power as we had

great weather that kept the panels producing through the day and NO THUNDERSTORMS. Thanks to whoever had the presence of mind to order great weather!

The patch panel that I built to connect stations to all the antennas in the “farm” seemed to work well and made it easier to change bands.

There are many pieces to a successful FD and not all of it is rigs and antennas. There is the facility, of course, but there are many other tasks that contributed to our FD fun including, Signage, Finance, Sign-In and Welcome Desk that Alan, W1AHM, managed, Logging SW & Computers by Andy, KB1OIQ, Safety under Steve, N1BDA, PR handled by Steve, N1BDA, and Bob, W1IS, Traffic and Message Origination handled so smoothly by Rich, N1HY, Anita, AB1OC and Steve, N1BDA, that most didn't even notice that they quickly and efficiently got us those bonus points.

Finally, FOOD! Again this year Charlie, W1ADL, and Rick, W1RAG, did a great job of feeding the multitudes. The homemade Mac and Cheese, the ham and cake were big hits! Completion of these tasks and all the jobs in between were filled by a smiling crew of PART members and guests who helped wherever help was needed. Thanks to all.



Now for some of the feedback we received:

There was little inter-rig interference even when both were in different modes on the same band.

KX3s worked well but we need

more training for new ops

PowerPoles for all power connections was a plus again this year

People did label things this year and most lost items were recovered.

Six meters was only OK this year and 2M was a bust.

Tape all the windows where wires are brought through – the nighttime mosquitos had a feast.

The Field Day Conundrum: Go for Score or Get Everyone to Operate?

I admit that I started this by pushing for us to get a better score than last year. I will, in turn, blame my Elmer, the long deceased, Joe, W1ADW, winner of the very first Sweepstakes waaaay back and a leader in the club in CT I first joined that was at least first in NE every year in the 3A category.

There are several issues we have in thinking about going for score and/or getting everyone to operate including;

Untrained Contest operators show up or sign up for Prime operating times- not the “graveyard shift.”

We can leave many club members out if other activities like toolbox talks suffer.

Can we really staff the stations for 24 hours? Anita and Fred did it last year and this year and we finally got CW on for most of the time but SSB had problems and, admittedly, CW, only had 2 operators take the graveyard shift.

Can we use a GOTA (Get On The Air) station so new contest ops can get into the fray while our contest operators go for score?

This is a topic for all of us to talk about through the winter.



So, how did we do? Pretty well. The charts below show how we did compared to last year where we beat last year's score by 1010 points!

Total Scores

Category	2012	2013
Bonus	1200*	1050
QSOs	587	722
QSO Score	5145*	6305
Total Score	6345	7355

*Estimate – Total Score is Correct

Score by Mode

	QSOs	POINTS
CW	378	3780
Digital	161	1610
SSB	183	915
TOTAL	722	6305

QSOs by Band

	80M	40M	20M	15M	10M	6M
CW	65	170	103	34	5	0
DIGITAL	0	51	104	3	3	0
SSB	0	68	47	39	5	24
TOTAL	65	289	254	76	13	24

As you can see, we did increase our QSO count due to extended operation through the night. We did well on 40M and 20M and probably missed some opportunities for Digital and SSB on 80M.

I hope all who participated agree that we met at least one of the goals of FD to have a great time. I certainly did. Thanks to all who stepped up to help make 2013 FD a success, the outstanding FD Committee and all the members who participated. Finally, I thank all the members of PART for allowing me to chair FD again.

Member Contribution

Solar Power on Field Day

- B. Scott Andersen-NE1RD

Photovoltaic cells: turning sunlight into electricity

On a bright sunny day about one thousand watts of energy falls to the Earth on every square meter in the form of sunlight. This energy heats the Earth, drives the winds, gives plants the energy they need to grow, and can give you a wicked sunburn. (With a thousand watts constantly irradiating your roughly one square meter of hide it is no wonder you can get burned in just a few minutes if conditions are right.)

Solar cells, also called photovoltaic cells, convert the energy of light directly into electricity. What a wonder it would be if we could convert 100% of the energy we receive into electricity. That is, imagine a home that needs roughly 10 megawatts per year to run. That comes out to be about 1200 watts every hour of every day (on average). Sometimes that home would draw more. For example, the there are lights on at night when none are needed during the day, the dishwasher runs occasionally, and hairdryers run in the morning. There are also plenty of times when that household would use far less than 1200 watts. Very little is used when everyone is sleeping, for example. If the sun would shine 24 hours a day, and we could

convert 100% of that solar energy to electricity, we could provide 100% of the power for that household with a panel a little more than a meter square and a suitable battery system. That would be truly amazing!

Of course the Sun doesn't shine at night and solar cells are far less than 100% efficient. The best solar cell technology available commercially is based on *monocrystalline silicon* and it can be about 17% efficient. Other technologies such as *thin film* and *polycrystalline silicon* are even lower (around 10% efficient). These sound like small numbers but don't be discouraged. Significant amounts of electricity can be produced by solar panels if one is willing to cover a big area.

Solar panel efficiency

If 100% of the energy falling on to the panel could be converted into electricity then the panel would be 100% efficient. Given a particular panel can we estimate its efficiency? The answer is yes, and it can be done with little more than a ruler and a calculator.

Consider the Goal Zero *Nomad 7* solar panel unit. This product is organized as a folding unit with two solar cell areas rated at 7 watts. To determine the solar panel's efficiency measure the active solar cell area (in square meters), and multiply that by 1000 to determine the number of watts that would be generated by a 100% efficient panel. In this case, there are two areas measuring 180mm x 125mm. That is a total area of 0.045 square meters. Multiplying by 1000 we get 45. That is, if this panel were 100% efficient it would produce 45 watts.

Since the panel only produces 7 watts, we can determine the efficiency by dividing 7 by 45 (the amount it delivers divided by that theoretical maximum) and we get a value between 15 and 16% efficient. Since the product is made from monocrystalline silicon cells we expected a number close to this.

Goal Zero also makes a solar panel system with eight solar cell sections instead of two. The *Nomad 27* panel is rated at 27 watts. The surface area receiving the light is four times greater than that of the *Nomad 7* (0.18 meters). Multiplying 0.18 by 1000 we get 180 watts for a 100% efficient panel. Since the panel only produces 27 watts we divide 27 by 180 and get 15% efficiency. (This is what we expect; it is the same technology so it should have the same efficiency.)

What about a panel that uses different technology? Global Solar model *P3-15* is a solar panel rated at 15 watts. It uses a flexible, non-silicon based technology called CIGS (Copper Indium Gallium di-Selenide) that is tough enough to be used by the military. This panel has 12 cell areas that are 90mm x 210mm for a total area of 0.23 square meters. Multiplying 0.23 by 1000 we get 230 watts that would be produced by a 100% efficient panel. This panel only produces 15 watts. So, 15/230 is about 6%. This panel is less than half as efficient as the rigid monocrystalline silicon-based panels. Then again, the manufacturer claims the flexible panel will take a bullet and keep working! That's an interesting trade-off.



Figure 1 The Goal Zero Nomad 7 solar panel system



Figure 2 Global Solar model P3-15 solar panel

Expected performance from a solar panel

All of this discussion is based on receiving the maximum amount of sunlight: 1000 watts per square meter. You might get that in the summer afternoons in Arizona (or Ecuador), but you are unlikely to get it here in New England. Far less than that 1000 watts falls upon our panels. So, the maximum rating for a solar panel will not likely be achieved.

Solar panels are sensitive to temperature changes. Specifically, solar panel efficiency goes down as temperature goes up. So, a hot panel does not perform as well as a cool one.

Solar panels work best when they are facing the Sun directly. Laying the panel flat on the ground is less effective. The orientation of the panel relative to the Sun also has an effect on the power produced.

Converting solar power

Solar panels produce power from light but that power might not be in a form that is immediately useful. Devices typically demand power at a particular voltage. Phones, music players, and GPS units are often charged from USB ports at a regulated 5 volts. Other devices such as radios expect 12-14 volts. Solar panels might deliver their power at anywhere from a fraction of a volt to over 20 volts. Such unregulated power would destroy many devices if you were to connect them directly to panels.

Some panels (such as the Goal Zero panels) have a small converter on them that provides a regulated USB-style supply that can be used directly. A more typical arrangement is to have the panel charge a battery and then one can draw power from the battery. This requires a *charge controller*, a device that converts the solar panel power into a voltage appropriate for charging the battery. A typical charge controller, a Morningstar *SunSaver-10*, appears below.



Figure 3 Morningstar SunSaver-10 solar charge controller

the one for voltage

The *SunSaver-10* has three connections: one for solar panel to provide power, one for a battery, and a “load.” The solar panel supplies power with a

anywhere from 0-30 volts. The circuitry in the device converts that into a steady voltage appropriate for charging a lead-acid battery. When the battery is fully charged the device stops charging (to avoid overcharging the battery). The third connection is for devices powered by the system (the “load”). Note the small shorting spade on the right side of the barrier strip. This allows the *SunSaver-10* to be configured for either sealed lead-acid (SLA) batteries or flooded batteries (like car batteries) since the two battery types have different charging characteristics.

Another feature of charge controllers such as the *SunSaver-10* is the “low voltage disconnect” or “LVD.” Batteries can be damaged if they are discharged too much. The *SunSaver-10* disconnects the load from the system if the battery voltage falls below a certain point, preventing battery damage.

All-in-one designs

The modular approach makes it easy to substitute solar panels, batteries, and charge controllers. There are advantages, however, to all-in-one designs that make connections more simple and the whole system smaller and more manageable. Goal Zero makes a variety of units that combine a high-density battery, solar charge controller, and various voltage regulators into a small, easy to carry package. The *Sherpa 50* is such a unit.

The Goal Zero *Sherpa 50* contains a 50 watt-hour battery, a solar charge controller, USB charging port, super-bright LED flashlight, a 12-volt regulated power port, and a 19-volt regulated power port for PC laptops. The device weighs just over a pound and is 4.5 x 5.2 x 1.5 inches in size.

The connections in the field are simple: connect the solar panel to the input (blue port), connect the radio to the 12-volt port (via one of the various adapters that are available), and work away. The internal battery can be charged from house current with an AC charger, from a 12-volt car adapter, or from solar



Figure 4 Goal Zero Sherpa 50 power unit

panels. It is small enough to stick in your bag while traveling to help keep your phone, music player, and electronic book reader charged. It is powerful enough to keep a 3-watt light such as the matching Goal Zero Light-a-Life LED light working for about 15 hours.

Experience at the SSB station

The PART Field Day effort included three HF stations: one for CW, Data, and SSB. The SSB station was powered by a Goal Zero *Sherpa 120* unit, the big brother to the *Sherpa 50*. (The *Sherpa 120* unit has a 120 watt-hour battery instead of the 50 watt-hour in the smaller unit.)

Two 27-watt solar panels were placed flat on the ground just outside the window to continuously charge the battery. Trees threw some shade over the panels and occasional cloud cover reduced the total amount of light the panels received on Saturday but the battery showed a 100% charge until well after sundown. In other words, though the radio was in constant use from 2:00 PM on, the battery did not waver from 100% charged while the Sun was shining. We were operating on the power of the Sun alone (using the battery to buffer that power). The Elecraft KX3 drew about 1 watt on receive and about 25 watts on transmit. Even with the reduced light falling on the two panels there was enough power to run the radio and keep the battery topped off.

After sundown the system was running completely on the battery and the energy stored from the Sun the previous day. The battery meter showed 60% remaining when the Sun peeked over the horizon Sunday morning. Sliding the panels out of the shadows and into the sunlight started the recharging process. The radio continued to work chewing up QSOs until nearly 2:00PM. The battery showed 80% full when we stopped. So, not only did the panels run the radio Sunday after daybreak, it also was able to put back approximately 25 watt-hours of energy into the *Sherpa 120* battery.

Everyday uses

My main reason for having the *Sherpa 120* and *Sherpa 50* units is to provide emergency power and lighting. They are also tasked with keeping my phone, tablet, and electronic readers charged. Some of these devices can be quite thirsty as they may have very large internal batteries. Consider the Apple iPad with Retina display and its 42.5 watt-hour battery. That is nearly the same capacity as the *Sherpa 50*!

Phones are less power-hungry. The Phone 5 Battery is a 5.45 watt-hour battery. Something like a *Sherpa 50* can recharge a phone several times before needed to be replenished itself. Then again, we have two phones, two iPads, several electronic book readers, and a few other devices that may need to stay charged during an extended power outage. Multiple solar-charged batteries provide for all this and lights as well.

When the Sun shines power is delivered to your home—even when the power company fails. Are you ready to catch some rays?

Web resources

Global Solar P3-15 at the alt E Store: <http://www.altestore.com/store/Foldable-Flexible-Solar-Panels/Global-Solar-Energy-P3-15-15W-12V-Portable-Power-Pack-Woods/p562/>

Goal Zero Nomad 7: <http://www.goalzero.com/shop/p/11/Nomad-7-Solar-Panel/3:4/Goal Zero Nomad 27: http://www.goalzero.com/shop/p/10/Nomad-27-Solar-Panel/3:4/>

Goal Zero Sherpa 50: <http://www.goalzero.com/shop/p/151/Sherpa-50-Power-Pack/2:8/>

Goal Zero Light-a-Life: <http://www.goalzero.com/shop/p/18/Light-a-Life/4:8Elecraft KX3: http://www.elecraft.com/KX3/kx3.htm>

Boston Strong

- Ron Knight-KB1UXT

First of all my heart felt condolences and sorrow for those who were tragically taken away, injured and emotionally scared from the Boston Marathon Bombing. I am still at lost for words and everyday hear of another connection from someone I know who was somehow involved. Thank You to the First Responders/Clinical Staff who were there taking care of the injured, participated in the multi day incident response, and continues now as we restore a sense of normalcy.

WOW, as a kid growing up I remember about hearing about terrorist events in other countries. The first that comes to mind for me, when I was a mere six years old was the events at the 1972 Munich Olympics. Thru the years I remember terrorist events around the world. Events in the Middle East, Asia, Europe, Africa and finally hear in North America. I have always felt that the majority of people living hear have always thought it will happen overseas and not here.

Well we are now seeing these events on our own soil. With events occurring in Oklahoma, New York City, Atlanta, and now Boston. I was home watching the marathon with my radios on. I had my public safety and ham rigs chirping away. Then a blast and a second blast. My radios went from occasional chatter to non-stop.

I have for many years been involved with behind the scene preparedness activities. I have participated on state, local and region wide committees and working groups. Some of these groups were public safety communications. We had done lots of work upgrading, expanding and tweaking communication systems. We had some great lessons from the events of 9/11 in New York and in the event of an issue in the Boston Area we did not want to see the same failures that they saw in New York City.

As predicted from previous events, the mobile phone networks became overwhelmed and in many cases were inaccessible to end users. Old Fashioned portable radios continued to work and work well. We had Law Enforcement, Medical, Fire, Ham, Race Officials, Private Sector and State Officials push them to their limits.

Over the years we have done exercises and had some small public safety events and were able to put a strain on radio systems. The Boston events not only strained the systems, it did it for a long period of time. We had agencies respond from all over the country. Many of them needing access to communications. These radios were either supplemented from a stockpile of radios or intergraded their own radios right into the Metro Boston Area Public Safety Radio Networks. We had VHF, UHF, 800, Digital and Analog all patched in and users on these different bands were given channel assignments. As an example we had end users who may have been on UHF p25 Digital talking to other end users who were on 800 Analog.

This would not of been able to been achieved 10 years ago. It shows that with planning, training and technology almost anything can be achieved when migrating radios systems and its end users. It was also nice knowing that what you worked on functioned they way it was expected to and better.

Some Public Safety Updates:

Methuen Fire operating on VHF and UHF. VHF 154.010 pl 192.8 and 484.925 pl 162.2

Massachusetts State Police continue to upgrade their 800 MHz system by zones. Best location for up to date information is Scan New England www.scannewengland.net

Homework until next month is to monitor your local utility company. There has been some changes and during the last couple of storms some of the frequencies in the PART listening area were too quiet. We are now in Hurricane Season and it can be interesting monitoring those guys/gals that keep us going. The Scan New England Website can provide information on last known frequencies for your area. Email your reports to KB1UXT@comcast.net and we will report them in an upcoming issue of Particles. Until then Happy Listening and 73's.



Southgate Amateur Radio News

- 4 August [Propagation Report from Hannes Coetzee, ZS6BZP](#)
[Durban RTA date changed, Gauteng up next](#)
[Take part in the SARL HF contest today](#)
[AO8LH Punta Aldea Lighthouse](#)
[The Telford Hamfest](#)
[2013 Oceania DX Contest](#)
[ILLW picked up by news media](#)
[HamTV transmitter launched to ISS](#)
[432 and Above EME Newsletter](#)
- 3 August [Propagation de K7RA](#)
[Amateur Radio Discussion Reflectors](#)
[Ham radio club reaches out to younger audience](#)
[Charlotte radio hams in the press](#)
[First Perseid fireballs reach Earth](#)
[New 6 meter beacon](#)
[UK Government wish to amend Ofcom's statutory duties](#)
[ATBSG13 on-the-air this weekend](#)
[Radio Astronomy at Bletchley Park](#)
- 2 August [Dave Raycroft's ICPO Bulletin](#)
[Ofcom Communications Market Report](#)
[GPS Spoofing experiment knocks ship off course](#)
[Ham radio club a crucial player](#)
[Lighthouse in the middle of Australia](#)
[Wednesday August 7, ARISS contact scheduled with school in Fleurance, France](#)
[YOTA 2013 Estonia](#)
[DX News from the ARRL](#)
[New AOWA yagis for 2m band](#)
[Upcoming ARISS contact with Octave Chanute Aerospace Museum, Rantoul, IL](#)
- 1 August [Tony's 10 Metre Band Report](#)
[IOTA news from the Deutscher Amateur Radio Club](#)
[G100RSGB from Norfolk](#)
[Radio Ham's Leaky Spacesuit](#)
[Ham Radio Winlink 2000 Position Reporting](#)
[Curiosity first anniversary event](#)
[Lighthouse to go international](#)
[The 3rd World ATV QSO Party](#)
[AmateurLogic.TV - Voice of America Museum Special](#)
[Tour of Croatian Islands](#)
- 31 July [Offshore radio event in Harwich August 10](#)
[28th Chelmsford Amateur Radio Foundation Course](#)
[AMxCB: 30 years of CB in Spain](#)
[The G8VHI tower cam](#)
[Corsican IOTA Op](#)
[Nordic HF conference](#)
[Wideband HF Radio Communications book](#)

[Change of name for Midland Amateur Radio Club Inc.](#)

- 30 July [ILLW - Ardrossan Lighthouse activation](#)
[ARISS ham radio contact on Echolink and IRLP](#)
[Netherlands Special Event](#)
[Namibian holiday op](#)
[Blue Mountains rescue efforts continue](#)
[CQ ZS - The SARL HF Phone Contest](#)
[Important message from WIA on EMR](#)
[Upcoming ARISS contact with Oshkosh Air Venture Air Show, Oshkosh, Wisconsin](#)
- 29 July [FT5ZM - Amsterdam Island DXpedition](#)
[Yasme supports developer of ViewProp](#)
[D-STAR AMSAT User's Net](#)
[ICQ Amateur Radio Podcast](#)
[ARRL propose an end to symbol rate restrictions](#)
[Waters & Stanton 40th Anniversary Open Day](#)
[Three Ham Radio heroes do state proud](#)
[Ham Radio and Information Theory](#)
[JAXA plan CubeSat deployment from ISS](#)
[History This Week](#)
- 28 July [Dominica op planned](#)
[NCDXC donates 8,000 USDs to NCDXF](#)
[The Amsterdam Island Expedition - 2014](#)
[Hamfest Twitter account](#)
[GB5LPI Lincolnshire Poacher International Scout Camp](#)
[Propagation Report from Hannes Coetzee, ZS6BZP](#)
[SARL YL Sprint](#)
[SARL to take the next step in 5 MHz propagation research](#)
[HF Weekend](#)
[JA DX Convention](#)
[Canadian Liberation March Special Event](#)
[Ham Radio Workshop](#)
[Republic of Congo DXpedition - date change](#)
[Bogong High Plains Adventure](#)
- 27 July [IOTA news from OPDX](#)
[Dorset 434 MHz balloon launched !](#)
[DXCC Country/Entity Report](#)
[Propagation de K7RA](#)
[Five August Days of Radio and Camping in Essex](#)
[Dorset 434 MHz Balloon delay](#)
[Introduction to Amateur Radio video](#)
[UHF and VHF spectrum planning - Call for inputs](#)
[Operators prepare to host ham radio 'Olympics'](#)
[28th EU Star Award](#)

AMATEUR RADIO NEWS (various sources)

Jupiter Lighthouse Plans Weekend Activities:

by sun-sentinel.com on August 4, 2013

The Jupiter Inlet Lighthouse and Museum will take part in International Lighthouse-Lightship Weekend Aug. 17 and 18 for a sixth year. The lighthouse will participate in the weekend with two local amateur radio operating groups. The Jupiter-Tequesta Repeater Group and the Martin County Amateur Radio Association will broadcast from behind the museum building from 9:30 a.m. Aug. 17 through 3 p.m. Aug. 18.

Owensboro Amateur Radio Club Reaches Out to Younger Audience:

by surfky.com on August 3, 2013

OWENSBORO, Ky. (8/2/13) - The Owensboro Amateur Radio Club has been a non-profit corporation in the Commonwealth since 1954. The club is a medium for training operators and for exchanging idea between members to increase knowledge about the ham radio to the public. Ham radios, more popular in the past than they are today, are used by designated radio frequency for recreation, emergency communication, and exchanging of messages using Morse Code and the International Phonetic Alphabet. Amateur radios were formerly popular for emergency services, but that has shifted over the years to entertainment purposes, says club member, Walt Shipman. "We still use them during emergency situations in Owensboro and Daviess County," Shipman said. "They provide communication to emergency workers and also weather reports." In order to operate the radios on a frequency, technicians have to be licensed, which is determined by a test. The club helps members taking tests for new licenses and also to renew licenses. Members also practice their Morse Code techniques. The language containing dashes, dots, and spaces, can be very difficult to new learners. The club hosts a children's program at the Owensboro Museum of Science and History where kids can learn the Phonetic Alphabet while making crafts. "We are trying to get younger folks interested," Shipman said Thursday. "It's where it starts."

Lighthouse to Go International:

by journal-register.com on August 3, 2013

Medina Journal-Register -- Radio Operators from around the world will be including the Oak Orchard Lighthouse in Internatinal Lighthouse Lightship Weekend, Aug. 17 and 18. It is the first time the lighthouse is participating in the event fully.

It's Radio-Active: Charlotte Ham Radio Club Transmits Message to Iceland:

by minthilltimes.com on August 2, 2013

Members from the Charlotte Amateur Radio Club set up their equipment every other Saturday in the Assay office at the Carl J. McEwen Historic Village in Mint Hill. Their priorities are to provide information to the public about the history of ham radio, and to help those interested learn how to begin their hobby by offering support from the club which meets once a month. The cost of getting into the hobby is not exorbitant and are mostly incurred over time. "It doesn't take a whole lot of money to get into ham radio," says club member and vice president Joe Ducar. "The antennae is the most important part of the set up, and it's fairly inexpensive. You can get one for about \$45," he says. Other expenses are associated with purchasing the radio, a "to go" box, if you plan to use your radio in remote locations, instructional manuals, and fees for taking the FCC tests. In the United States there are three kinds of ham radio licenses; the technician class, the general class and the extra class. Each class requires more extensive knowledge of ham radio operation and theory, and provides the user with access to more frequency options worldwide. Gone are the days with the need for huge, unsightly towers that are restricted in many neighborhoods. Websites offer advice on how to "stealth" your antennae so it is still effective but not unsightly on your property, like what has been done at the assay office. "Conditions here at the assay office are not always the best," says Ducor. "We're here at a fixed time, and that can be a disadvantage. But we have made contact with so many places around the world. We have even talked with people from Iceland and Greenland." But in this age of email, Twitter, Skype, and iPhones, it seems unlikely this hobby would survive much into the 21st Century. Surprisingly, though, the latest FCC information posted in August 2012, indicated that there are over 755,000 licensed operators in the United States alone, which was an increase of 30,000 from the year before. Some attribute the increase to the phasing out of the Morse code test as part of the licensing requirements. But for others, it is just the right time to get started.

ARNewsline Report 1877 -- August 2 2013:

by Bill Pasternak (WA6ITF) on August 2, 2013

The following is a Q-S-T. Hams in Hawaii go on alert for Pacific Storm Flossie, India recognizes three hams as rescue radio heroes; more than 400 attend ARRL sponsored Hurricane readiness webinar; vandals topple a radio

tower that's home to at least one ham radio digipeter; Monitoring Times to cease publication at years end and a lighthouse in the middle of the Australian desert will take part in International Lighthouse and Lightship weekend. Find out the details are on Amateur Radio Newsline report number 1877 coming your way right now.

[Propagation Forecast Bulletin #31 de K7RA:](#)

by W1AW Bulletin via the ARRL on August 2, 2013

The weekly averages of daily sunspot numbers and solar flux barely changed at all compared to the previous week. Average daily sunspot numbers went from 73.4 to 79.6, while average daily solar flux decreased from 110.6 to 109.7.

[DX News -- ARRL DX Bulletin #31:](#)

by W1AW Bulletin via the ARRL on August 1, 2013

This week's bulletin was made possible with information provided by NC1L, the Weekly DX, the OPDX Bulletin, 425 DX News, The Daily DX, DXNL, Contest Corral from QST and the ARRL Contest Calendar and WA7BNM web sites. Thanks to all.

[This Week in Radiosport:](#)

by The ARRL Letter on August 1, 2013

This Week in Radiosport:

[ARRL Reiterates Call to Evaluate Interference Potential of U-NII Devices:](#)

by The ARRL Letter on August 1, 2013

In reply comments filed July 24 with the FCC, the ARRL reiterated its argument that any decision to authorize unlicensed National Information Infrastructure (U-NII) devices at 5 GHz "should await a full and complete evaluation of interference potential and interference mitigation techniques among the varied and incumbent users."

[Hams Aid Crew of Foundering Vessel:](#)

by The ARRL Letter on August 1, 2013

According to news reports, hams in Hawaii and California played a role July 23 in efforts to rescue the two-person crew of a sailboat stranded on a reef more than 3500 miles away in Micronesia. The vessel C'est la Vie, a 53-foot sailboat reported running aground on a reef in western Chuuk Lagoon.

[Senate Commerce Committee Gives Nod to Nominee for FCC Chairman:](#)

by The ARRL Letter on August 1, 2013

Tom Wheeler, President Barack Obama's nominee for chairman of the Federal Communications Commission, this week received the approval of the Senate Commerce Committee. Reuters reported that some Republicans on the committee wanted to hold up the nomination of a new Democrat to head the FCC until the President also named a Republican to fill the remaining vacancy on the five-member commission. Wheeler got the okay by voice vote July 30.

[Ham Club Relocating Gear from Tower Topped by Vandals:](#)

by The ARRL Letter on August 1, 2013

In the wake of what authorities in California believe is a case of vandalism that led to the collapse of a 200 foot radio tower on the West Coast, the Mount Diablo Amateur Radio Club plans to relocate its gear from the Rocky Ridge tower site to another tower nearby.

[ARRL Education and Technology Program Continues to Grow with Latest Grants:](#)

by The ARRL Letter on August 1, 2013

What started out in 2000 as "The Big Project," an initiative of past ARRL President Jim Haynie, W5JBP, continues to grow today as the ARRL Education and Technology Program (ETP).

[Operations Approved for DXCC Credit:](#)

by The ARRL Letter on August 1, 2013

The ARRL DXCC Desk has approved these operations for DXCC credit:

[Monitoring Times to Cease Publication:](#)

by The ARRL Letter on August 1, 2013

Monitoring Times magazine will cease publication at year's end after 33 years. "We will publish through the December 2013 issue," publisher Bob Grove, W8JHD, told ARRL. "The decision wasn't an easy one, but economics played a greater part than personal. Judy and I are in excellent health, but the gradual drift downward of subscribers and advertisers made the decision clear."

July 17-20, 2014 -- Hartford, Connecticut



In the News

- [ARRL Centennial Convention](#) (PDF)
- [ARRL Plans Centennial Celebration in Hartford in 2014](#)

More information coming soon.

Near-term local fleas,

from <http://web.mit.edu/wlgs1/Public/ne-fleas>

Flea at MIT

Sunday, 18-Aug'13

Buyers \$5.00, 9:00AM-2:00PM (\$1.00 discount with flyer:

<http://web.mit.edu/wlms/www/swapfest/swapfest-2013.04.pdf>) Parking Lot&Garage on Albany St.

Cambridge, at Portland St.

<http://goo.gl/maps/KpTQO>



NoBARC Hamfest

Sunday, 25-Aug'13

Buyers \$5.00, 8:00AM-2:00PM, Children <12 free <http://www.nobarc.org/hamfest.htm>

Adams Agricultural Fairgrounds, Bowe Field Old Columbia St., Adams, MA

<http://goo.gl/maps/oMPbv>

Repeater Information

Repeater Interference

The 146.955 repeater continues to see interference to existing conversations as well as at random quiet times throughout the day and night. The repeater interference committee needs your help in collecting data. If you hear any type of interference, please report the following info to "**repeater**" at "**wb1gof.org**":



- Time: When did the event happen?
- Observing location: Where were you? Were you mobile?
- Frequency: Input only (146.355 MHz)
- What you heard: Voices, tones, kerchunking or whatever.
- Signal strength: Either by ear (noisy, quiet or full quiet) or S meter
- Radio: To get an idea of the reporter's radio situation.

* Most important - what direction: How did you determine direction? This is the most essential piece of information. Even if it's an estimate as in "Roughly east" or "from the Northeast" it's useful. NEVER EVER reply or direct any thing to the sick person causing the interference. Because some of us have answered this person, he knows we are aware of him and that is what keeps him doing it. Also since you are communicating with a non IDing station you are operating just as illegally as he is. YOU ARE BROADCASTING! NEVER TALK ABOUT INTERFERENCE on air. NEVER

If you are interested in assisting in helping us identify the sources of interference, contact Terry-KA8SCP.

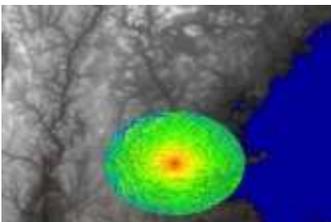
EmComm events and repeater use

Most everyone knows that the 146.955 repeater is used during times of emergency situations, drills and exercises. Skywarn and the monthly EmComm drills are the normal events.

So what does this mean to those that are just looking for regular QSOs with other users? It means that if you are in a regular QSO and there is a significant weather situation that has been getting press/air-time lately, you can expect that if severe weather develops in our area, the folks from Taunton-WX1BOX may interrupt a QSO and ask anyone on frequency what may be happening weather wise. The BOX operator will probably ask for specific information, hail, wind damage, property damage from lightning or wind, etc. Please give him the information he needs or tell him that you've not heard of any such activity. You don't need to tell him it is sunny in Nashua!

There may come a time when an unexpected emergency situation arises. These will significant events that may affect life and property. This is where EmComm activity may step in. Usually an NCS will interrupt a QSO and announce the situation and ask for a QSO to cease or to be "aware" of the possibility of priority calls/traffic. Please make sure you leave breaks between transmissions so stations with traffic can get in between QSOs. If there is enough traffic, it may be necessary for your existing/interrupted QSO QSY to another frequency. You should use your best judgment or check with the NCS on what he feels is best.

If you have any questions, please feel free to correspond with either Hugh-N1QGE (Westford EmComm/Skywarn NCS) or Terry-KA8SCP (MEMA Region 1 Communications Officer and Skywarn NCS) . They will be more than happy to talk about these programs with you.



Repeater info is now available on the PART [website](#). Check out the links to the summit information as well as coverage and plot plans maps for the WB1GOF repeaters. Complete info on the site can be found at this [URL](#).

PART Gear

The PART Quartermaster has lots of great PART-ware for sale including mugs and shirts. You can get information how you can obtain your PART-ware at the monthly club meetings.

Club members are also encouraged to obtain an official PART badge from [The Sign Man](http://thesignman.com/clubs/part.html) (<http://thesignman.com/clubs/part.html>) PLEASE NOTE: Please check with Hugh Maguire-N1QGE, hulin127@verizon.net, if you need a badge.



EmComm

Emergency Communications – The WB1GOF 146.955 repeater is used on the first Monday of every month (except federal/state holidays) for an EmComm Net starting at 1930 local time. If you are interested in being part of the local emergency communications team in your community, feel free to contact any of the following folks:
Terry Stader – KA8SCP, MEMA Region 1 Communications Officer
Hugh Maguire – N1QGE, for the Town of Westford
Bill Ohm – W1OHM, for the Town of Chelmsford

- We need radio operators that can pass messages on to the local emergency management directors in several towns in northern Middlesex County.



Skywarn - The WB1GOF 146.955 repeater is also used for reporting significant weather events to the National Weather Service from our local spotters. We expect to have a local Skywarn training class in 2010, more information as it becomes available. You can provide valuable information even if you have not attended one of the training sessions. Listen to the Skywarn Net Control Station for reporting criteria, when you have information that qualifies, please advise him with your report.

Situational Awareness – Recently, the Massachusetts Emergency Management Agency has asked the Amateur Radio community to provide situational awareness and disaster intelligence information within your local community via EmComm nets and/or Skywarn stations. Significant events such as widespread power outages can be reported and by agencies such as MEMA to evaluate the scope of a blackout for example. Initially, you should try and contact the EmComm Net Control Stations on the Westford 146.955 repeater to pass this information. More on this new program will be forthcoming.

PART Sunday Night Net – The PART Net each Sunday night is an IMPORTANT part of our regional EmComm function. With each station that checks in from the surrounding communities, we test our ability to communicate vital information to the ham radio community. Sure we announce club info but we can also communicate regional disaster news and serve as a “hub” for news of situations in our communities. The repeater is on a generator, so even if we loose power in the region, an HT with a supply of batteries will reconnect you to other local hams.

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This month's editor: Terry Stader – KA8SCP

PART official mailing address is:
PART, PO Box 503, Westford, MA 01886

Our website is: <http://wb1gof.org>

Our forum is: <http://wb1gof.net/forums/>

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