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# WEST PARK RADIOPS



# LOG



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Oct. - Nov. 2011  
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Our Nets 28.450/147.36 Mondays 9 p.m. local

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FIELD EVENTS  
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PUBLIC SERVICE  
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WAS & VUCC CHECKERS  
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ARRL VE'S  
AF8C, N8CX, K8TTL, N8WB, W8MET

ARTICLES THIS TIME  
N8CX, K8ME

ANTENNAS  
W8PN, W8IDM

CLUB AWARDS  
W8IDM

CONTESTS, SATELLITES  
W8IDM

DX  
N8WS

8TH AREA BUREAU LETTER MGRS.  
N8WS (T) & (W), AF8C (V)

EDITOR, WEBMASTER  
AF8C

LABELS  
N8CX

## WEST PARK EVENTS \*

\* Subject to Change

### Oct. 7 - FIRST FRIDAY BUSINESS/ FIXIT NIGHT

Bring your questions or answers to the radio problems of the day/week/month.

### Oct. 21 - PROGRAM NIGHT - G5RV ANTENNAS

There's been a lot of discussion about G5RV antennas on the Monday night nets. Our antenna design guru Hal, W8PN, will present the theory of operation and EZNEC data showing the real deal with the G5RV antennas.

### Nov. 4 - FIRST FRIDAY BUSINESS/ FIXIT NIGHT

Bring your questions or answers to the radio problems of the day/week/month.

### Nov. 18 - PROGRAM NIGHT - FIX IT WITH A BALUN

Club members have expressed great interest in learning more about baluns for antennas. We will talk about balun types, impedance matching, 4:1 and 9:1, winding your own balun, coax baluns, and more. It's BYOB also, Bring Your Own Balun.

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## CONTESTS AND EVENTS

- de WA7BNM & ARRL

Oct 8-9 PA QSO PARTY

Oct 15-16 10-10 FALL CW CONTEST

Oct 17-22 ARRL SCHOOL CLUB RNDUP

Oct 27 RSGB 80M CLUB SPRNT SSB

Oct 29-30 CQ WW DX SSB

Nov 5-7 ARRL SS CW CONTEST

Nov 18 YO INTERNAT PSK31

Nov 19-21 ARRL SS SSB CONTEST

Nov 24 RSGB 80M CLUB SPRNT CW

Nov 26-27 CQ WW DX CW

## SOAPBOX

Solar cycle 24 has been producing activity lately. With the cold winter months approaching, it's time to plan and install your winter contest antennas.

We have been getting new people checking into our Monday night nets and even have Skype capability for out-of-state snow birds. Listen or check in. Join the fun.

This document was created using Libre Office 3.3, and a PDF creator. Usage of Microsoft products was limited to as little as possible.

## Prez Sez...

Hi everyone,

Well, summer has gone for another year. We had some great outdoor activities and I hope everyone that participated had fun. Summer goes by so quickly it seems. In the meantime, the fall/winter contest season starts this month (October). There are many, many activities on-the-air to participate in, some of which have club competition. Whether you're looking for awards or just like contesting, there is something for everyone.

Although I realize that antenna weather doesn't arrive for a few months yet, try to avoid the rush and get things done now. That way you can enjoy operating from your comfy, cozy shack when it's 10 degrees outside and you couldn't see your antenna anyway because of the raging snow squall.

Well, until we meet again at the next meeting, vy bes 73s to u es urs.

Al, N8CX, President

## WEST PARK PUBLIC SERVICE...

The next LCAC delivery will occur in November before Thanksgiving. For the record: in 2010 we helped LCAC three times. On May 7, 2011, N8CX, AF8C, K8VUS, and W8KH helped with LCAC Spring Cleaning supplies deliveries.

Also, in June as a club event we supported the North Olmsted All Scouts Weekend amateur radio demonstration on June 11. They want us back next summer! Summer 2011 has gone!

## RECENT NETS & TALK...

For the Club's nets, on 28450 kHz +/- and 147.36+, many interesting discussions have been summarized in our almost weekly net reports. Our Skype check-ins have been working well with a few technical glitches now and then. Remote check-ins so far have been: K8GVK(MI), K3USC(FL), W8NNX (FL).

## FIELD DAY 2012 ...

We are in need of ideas on how and where to conduct Field Day next year. Should we return to the Field? Should we go with only wire antennas? Should we have a generator and go with 100 watt operation? Think!

## ARRL BRIEFS WHITE HOUSE STAFF...

(from ARRL Web pages)

White House Cybersecurity Coordinator Howard A. Schmidt, W7HAS invited the ARRL to the White House to brief staff on the part that Amateur Radio plays in Emergencies. Attendees included ARRL resident Kay Craigie, N3KN, ARRL Chief Executive Officer David Sumner, K1ZZ, and ARRL Emergency Preparedness Manager Mike Corey, W5MPC,

On September 12, at the invitation of White House Cybersecurity Coordinator Howard A. Schmidt, W7HAS, the ARRL briefed several members of the National Security Staff on the capabilities of the Amateur Radio Service to communicate in emergencies. "The White House is looking for ways that the great work of Amateur Radio operators can continue to support emergencies in the future with particular attention to increased use and dependency on Internet-based technologies," Schmidt said.

The ARRL presentation, conducted by Emergency Preparedness Manager Mike Corey, W5MPC - along with President Kay Craigie, N3KN, and Chief Executive Officer David Sumner, K1ZZ - focused on Amateur Radio's current and evolving capabilities to provide Internet messaging connectivity.

**SELECTED DX NOTICES...**

(from KB8NW's "OP/DX Report")

CQ all hams. It's big time contesting starting late October through the second weekend in December.

3D2R, ROTUMA (Update). The 3D2R team is now on the air. Last day of operations will be October 6th.

A7, QATAR. Members of the Lufthansa Amateur Radio Club (LARC) in cooperation with the Qatar Amateur Radio Society (QARS - A71A) will once again be active as A71DLH from here between October 22-29th. Their activity will be on all bands using CW, SSB and the Digi modes.

AH0, MARIANA ISLANDS. Kan, AB2RF/JJ2RCJ, will be active as AH0/AB2RF from the Saipan Rental Shack on Northern Mariana Island (OC-086) between November 2-5th. Activity will be focused on the low bands, RTTY and PSK.

HK0NA The current plan has the team QRV on or about January 23rd for 12-14 days.

T32, CHRISTMAS ISLAND (Reminder). The Five Star DXers Association (FSDXA) group is now active as T32C from Kiritimati (Christmas Island) until October 25th.

VK0, MACQUARIE ISLAND. A second operator has joined Kevin, VK0KEV, on the Island of Macquarie (AN-005). Look for Trevor, VK8TH, to be active as VK0TH.

[This is just a small selection from what's going to be on the air].

**AMSAT NEWS...**

(From various AMSAT news emails.)

NASA is giving the public the power to journey through the solar system using a new interactive Web-based tool. The "Eyes on the Solar System" interface combines video game technology and NASA data to create an environment for users to ride along with agency spacecraft and explore the cosmos. Screen graphics and information such as planet locations and spacecraft maneuvers use actual space mission data. Begin your ride at:

< <http://solarsystem.nasa.gov/eyes/> > .

ARISSatTLM software author, Douglas Quagliana, KA2UPW/5 says a new ARISSat-1/KEDR telemetry web page is now available at:

< <http://www.arissattlm.org/live> >

The new telemetry page is intended to be viewed on a computer (or large screen computing device). It shows all of the telemetry values that you would see if you were running ARISSatTLM at your station.

The data on this page is updated once a minute when ground stations are within range of ARISSat-1/KEDR and forwarding live telemetry received via ARISSatTLM. Since it depends on stations forwarding telemetry over the Internet, there will occasionally be periods without any updates.

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We have software defined radios ... are you ready for a software defined antenna tuner (of sorts)? A series capacitor, parallel inductor T-network radio frequency impedance match written in JAVA that runs on a web page can be tuned at:

< <http://fermi.la.asu.edu/w9cf/tuner/tuner.html> >

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Mark, N8MH recorded several passes of ARISSat-1 using the Funcube Dongle (FCD) Software Defined Receiver and the HSDR program. The resulting file from a 10 min pass, recording the whole FCD passband, is about 250MB. Mark posted a file on the AMSAT FTP server at:

< <http://tinyurl.com/3d87h8l> >

This file can be played back using the HSDR software which you can download from:

< <http://www.hdsdr.de/> >

Mark's recording was made with NO correction for Doppler. About a minute into the recording (click to fast forward, back up, etc. you'll see signals--CW telemetry, the BPSK telemetry, the linear transponder, and the FM voice channel. Move around, change modes, listen, etc. You can back up to a previous spot on the recorded signal at will, just with a click.

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[ There are numerous AMSAT announcements for Cubesat, spacecraft, the size of a 10 cm x 10 cm x 10 cm cube weighing less than 4 kg. You can find a full story on various Cubesat data on Wikipedia at

< <http://en.wikipedia.org/wiki/CubeSat> >

The term "CubeSat" was coined to denote nano-satellites that adhere to the standards described in the CubeSat design specification. Cal Poly published the standard in an effort led by aerospace engineering professor Jordi Puig-Suari. In 2004 dollars you could make and launch one for \$65,000 to \$80,000. --- de AF8C ]

## GALVANIC CORROSION...

On a daily basis most of us don't notice the effects of *galvanic corrosion*. What is that, you say? Well, place two different types of metal ("dissimilar metals") together and the interface between the metals exchanges electrons and a voltage is introduced. For example, when a pair of wires, one containing an alloy called chromel and the other containing alumel are connected together, they form a known junction potential that is dependent on the temperature of the wires at the junction and the temperatures at the other ends of the wires. We call that device a thermocouple. There are many types of thermocouples for different purposes and temperature ranges.

However, put together the wrong types of metals in the presence of humidity, and you end up with something that corrodes at the junction due to the electrical potentials of the metals. This is called galvanic corrosion.

So I sort of glossed over the fact that in galvanic corrosion there is a third requirement besides the two metals. The third requirement is something that allows

a path for the current flow. Sometimes when it is necessary to use certain metals in the application, if the metals have some kind of finish applied, such as plating or paint, the metal-to-metal joint is sealed from humidity and galvanic corrosion will not occur.

The galvanic action is like the operation of a battery. The induced voltage is on the order of millivolts. What is going on a microscopic scale is based on the "anodic index" of the metal. The table below lists indexes for some types of metals.

So for outdoor use for antennas where there can be moisture almost year such as in our locale, it is important to know what metals should NOT be used together. It is best in this case to have the difference between the anodic index of the metals to be less than 0.15. This severely limits what you can do. You can put silver in contact with gold, or nickel in contact with silver, or copper in contact with nickel. But copper in contact with solder (that's what we do all the time) yields a difference of approximately 0.35 could be way too high for our environment.

(Next issue: What this means for coax and coax connectors.)

Anodic Index Metal	Index (V)
<i>Most Cathodic</i>	
Gold, solid and plated, Gold-platinum alloy	0.0
Rhodium plated on silver-plated copper	0.05
Silver, solid or plated; monel metal. High nickel-copper alloys	0.15
Nickel, solid or plated, titanium and s alloys, Monel	0.3
Copper, solid or plated; low brasses or bronzes; silver solder; German silvery high copper-nickel alloys; nickel-chromium alloys	0.35
Brass and bronzes	0.4
High brasses and bronzes	0.45
18% chromium type corrosion-resistant steels	0.5
Chromium plated; tin plated; 12% chromium type corrosion-resistant steels	0.6
Tin-plate; tin-lead solder	0.65
Lead, solid or plated; high lead alloys	0.7
2000 series wrought aluminum	0.75
Iron, wrought, gray or malleable, plain carbon and low alloy steels	0.85
Aluminum, wrought alloys other than 2000 series aluminum, cast alloys of the silicon type	0.9
Aluminum, cast alloys other than silicon type, cadmium, plated and chromate	0.95
Hot-dip-zinc plate; galvanized steel	1.2
Zinc, wrought; zinc-base die-casting alloys; zinc plated	1.25
Magnesium & magnesium-base alloys, cast or wrought	1.75
Beryllium	1.85
<i>Most Anodic</i>	

## SMALL SCALE AMATEUR RADIO SPACECRAFT...

On another page of this newsletter you may have read about what's happening in AMSAT amateur radio activity. It's been known for ever 30 years that with 10 meter through 70cm amateur transceivers and the proper antennas you can operate through one of the "AO" satellites and make contact back on the ground with other radio amateurs in the U.S. or in foreign countries on a basis competitive with ionospheric propagation modes.

Shaking up this paradigm is a whole new suite of teams all over the world working to build per a new kind of low size low cost amateur radio spacecraft called CubeSats, PacketQubs or even Ukubes. On the web page < <http://www.amsatuk.me.uk/iaru/finished.php> > there are no less than 148 groups listed for building these kinds of craft for past or future launches.

CubeSats were initially defined when, beginning in 1999, California Polytechnic State University (Cal Poly) and Stanford University developed the CubeSat specifications to help universities worldwide to perform space science and exploration.

The standard 10×10×10 cm (one liter) basic CubeSat, weighing 1.33 kg maximum (about 3 lbs.) is often called a "1U" CubeSat meaning one unit. CubeSats are scalable in 1U increments and larger. CubeSats such as a "2U" CubeSat (20×10×10 cm) and a "3U" CubeSat (30×10×10 cm) have been both built and launched.

Because of the low cost, a large number of universities and some companies and government organizations around the world are developing CubeSats. The advantage of CubeSats is first that the spacecraft have a common size format, so that the launcher structure can be standardized. (A launcher is by another name a rocket. While the spacecraft is small and inexpensive, a launcher is obviously too much for small experimenters.)

Nanosatellites are able to perform low-cost science experiments in space, such as experiments with *e coli* in microgravity, observation of cosmic dust, earthquake detection via magnetic signals, and other investigations limited only by one's ability to think up an experiment.

So another impact of CubeSats placed in orbit is that the data must be sent down (downlinked) to receivers on the ground. But, just like the launchers are expensive, the use of government satellite tracking networks is also difficult to obtain. So where can you find a frequency to downlink on? Hmmm. It's not hard to spot a location in frequency band: the amateur radio 70 cm band. However, according to whatever we have learned about amateur radio, one rule is that you can't make money transmitting on amateur

radio and you can't transmit business information there. So, the question now arises about whether use of the 70 cm amateur radio band to downlink data for scientific research at a university or for a business venture is acceptable in FCC Part 97 rules. But we know that the ITU (International Telecommunications Union) has approved use of our 70 cm band for small spacecraft data downlinking. So that naturally leads to the next activity below. Yes this is from their web site:

## BE A PART OF A GROUND STATION NETWORK..

myGroundStations.com ("MGS") is a project to build an open source, open access Redundant Array of Inexpensive Ground Stations (RAIGS) to support CubeSat, PocketQub and other nanosatellite missions. This site is for everyone interested in designing, building and operating one or more such ground stations.

MGS can provide hardware and software designs so you can build your own ground station from off the shelf components. MGS encourages all participants to join the MGS network of ground stations and make their ground stations available to the community.

When your ground station is idle, it can download and forward data for other people's missions, and vice versa. If you allow it, all data downloaded by your ground station can be forwarded to the central MGS data repository from which anyone can download any data submitted.

MGS client software will also be GENSO compatible if you want your ground station to be a node in one or more GENSO networks. The goal is to have sufficient ground stations around the world to provide near continuous coverage for as many nanosatellite missions as possible. Ideally all the data transmitted on amateur radio frequencies by nano-satellite missions will be collected and stored centrally for anyone to use. MGS hopes to allow innovative applications such as virtual satellite radar applications to be made possible by such a collection of data.

MGS has several types of ground stations to fit your interests and budget:

- LEO Class 1 – low-speed downlink only ground station
- LEO Class 2 – medium speed uplink and downlink ground station
- NEL Class 2 – high-speed uplink and downlink ground station

See < <http://www.mygroundstations.com> >

WEST PARK RADIOPS **LOG**  
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-- MAILING DATE \_\_\_\_\_

## **FIRST CLASS MAIL**

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A NON-PROFIT SCIENTIFIC AND EDUCATIONAL CORPORATION, FAIRVIEW PARK, OHIO.  
MEETINGS: WEST PARK RADIOPS ARC meets the FIRST and THIRD Friday evenings each month at  
Ascension Lutheran Church, 28081 Lorain Road, North Olmsted, OH (across from North Olmsted Park) at 8 PM sharp.  
Dues \$12/yr. We welcome anyone interested in amateur radio to our meetings.  
We operate 10m net (28.450) and a 2m net (147.36) on alternate Mondays at 9 p.m. local time.

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# **W8VM**