

# QRZ NEWS

A MONTHLY PUBLICATION OF  
SOUTHERN PENNSYLVANIA AMATEUR RADIO CLUB, INC  
PO BOX 1033 - LANCASTER, PA 17608-1033

(Founded June 1960)

AN AFFILIATED SPECIAL SERVICE CLUB OF THE ARRL, INC.

*"Public Service through Communication"*

Website: WWW. K3IR.org

Email address: k3ir@arrl.net

Repeaters: 145.230 - 449.975 - Packet 145.030 - ATV 923.250, FN10se

Club site 1715 Breneman Road, Rapho Twp. ( Manheim P.O. 17545 no delivery)

**June 2011**

## President's Message

If you received your newsletter later than usual this month, don't blame George. Your president was on TDY in Iowa and did not get this article ready in time. I started to write it while still in Grinnell but just could not get my thoughts organized, not that I usually do but this time it was even worse. I was in Iowa visiting our only daughter and doing a variety of repair and remodeling jobs on her home. The point I am trying to make is that family comes first. Taking the time to go to Iowa for two weeks caused me to miss out on a lot of other activities, and some things I should have been doing concerning Ham Radio in general and SPARC in particular did not receive my undivided attention. However, spending a little time in the mid west with family was priceless.

I need to thank those who took over for me while I was gone. The vice president covered for me at the June BOD meeting and helped with some other club details. Paul, N3APD and Gerry KB3SSZ did a lot of work preparing for Field Day. I am sure others contributed in ways I didn't even know about. Thanks to all.

Harry, WA3FFK

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## MINUTES OF THE MAY 2011 MEETING OF THE SOUTHERN PENNSYLVANIA AMATEUR RADIO CLUB (SPARC)

Held Tuesday, May 24, 2011 at 7 PM at the  
Rapho Township Municipal Building

The following members and guests were  
present:

Dave Sarraf, N3NDJ  
Harry Bauder, WA3FFK  
Mike Warner, N3XPD

Dave Payne, N3LOM  
Jack Reed, K3BBC  
Gerry Wagner, KB3SSZ  
George Gadbois, W3FEY  
Paul Miller, N3APD  
Paul Herr, KD8WY  
Dan Milligan, KA3KHR  
Ted Freedman, K3KSA  
Don Pickell, KB3LHT

The meeting was called to order at 7:00 PM by Harry Bauder, with a round robin introduction by name and call.

### Reporting

The May BOD meeting minutes were read. They were accepted as read pending one correction (Harry Bauder was not present and did not start that meeting).

The prior membership meeting minutes were read. On a motion by Ted and a second by Don they were accepted as read.

The Treasurer's report was presented. On a motion by Don and a second by Ted it was accepted as presented with no objections.

### Gretna Glen.

SPARC members will provide a ham radio demo at Gretna Glen on June 5<sup>th</sup> from 1:30 – 2:30 PM. Jon Rudy will provide a VHF FLDIGI station. Harry will set up an HF station using a G5RV antenna and Don's TS-857 with an auto-tuner. Harry appealed to the club members to be on the air during the demo to help them make contacts.

### Field Day.

Paul Miller is Field Day chairman. Dianne Gadbois will provide food. The amount of food will be scaled back from prior years to avoid waste. Harry presented an operating schedule. Paul is asking for help from the club

to help staff operating positions. We are operating class 3A, which means three operator positions. Several members offered the use of their rigs. Harry reported that we need coax. We have a VHF squalo; George offered the use of his M-squared 3-element beam.

We will have a work party on Saturday June 4<sup>th</sup> to clean up the site, test antennas, and otherwise prepare for Field Day.

We need a generator – Dick Hess has provided one in the past; however, he has not been heard from in some time. Fuel and fire extinguishers should be provided.

Publicity should include press releases to local TV and radio stations (WGAL, WITF) and to local newspapers. The township has approved our request to put up signs as long as their display time is limited. We can repurpose campaign-style signs from the recent primary election. The brochure should be updated.

Logging software is needed. We will most likely use M1NN. Choice and usage of logging software would make a good technical topic with Jon Rudy or Phil Theis as likely presenters.

Dave should be sure that the linking system is working so we can log on-line.

### Radio Museum Tour

The tour attendees spoke highly of the event. A group photo was taken in front of a 1928 Ford Roadster.

The meeting was adjourned at 7:50 PM.

Respectfully submitted,  
Dave Sarraf, N3NDJ  
SPARC Secretary

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## SPARC Digital Net Update

In the coming months SPARC will be hosting a Digital net immediately following the 9pm Tuesday night voice net on the 145.230/118.8 repeater. Net control will be Jon Rudy, K3QF. The net will call for check ins by voice, announce the digital mode, and then generate messages digitally.

Because of scheduling constraints this net will begin sometime in the Fall. Until then, you can email Jon at [JonK3QF@gmail.com](mailto:JonK3QF@gmail.com) or call on the SPARC repeater with any questions about software, interface or computer setup.

There are two other digital nets in the area, one in York Tuesdays at 8pm on the 146.97 repeater and one hosted on the Ephrata 146.61 repeater Fridays at 8:00PM. It is the intention of this net to compliment the good work already being done.

73...Jon, K3QF

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## Field Day from Space: International Space Station Could be Active for ARRL Field Day

<http://www.arrl.org/news/field-day-from-space-international-space-station-could-be-active-for-arrl-field-day>

06/20/2011

According to NASA ISS Ham Radio Project Engineer Kenneth Ransom, N5VHO, the crew on board the International Space Station (ISS) could very well be on the air for ARRL Field Day, June 25-26.

Listen for them on the downlinks of 145.80 and/or 437.55 MHz."

Potential configurations are:

Packet -- 145.825 simplex

Voice VHF -- 144.490 up and 145.800 down for ITU region 2

Voice UHF -- 437.550 simplex

Crossband voice repeater (U/v) -- 437.800 up and 145.80 down

Currently, there are four hams on board the ISS: Ron Garan, KF5GPO (NASA), Mike Fossum, KF5AQG (NASA), Sergei Volkov, RU3DIS (RKA), and Satoshi Furukawa, KE5DAW (JAXA)

AA3C: Do space contacts get bonus points?

.... ..

73's, .-.-.

Jim ...-.-

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## Coming Events

### SPARC programs for 2011

Tuesday 24 May Paul Miller, N3APD, Field Day planning session

Tuesday, 28 June Phil Theis, K3TUF, will present a talk on "Solar Basics: Bimodal, Hybrid and Grid-tied"

Tuesday, 26 July Field Day report & debriefing. Field Day committee & membership.

If you would like to offer a presentation for a future meeting, please contact George, [W3FEY](mailto:W3FEY). The September program must be at the club site or another venue. The Rapho Twp meeting room is not available.

\*\*\*\*

**25-26 June 2011 ARRL Field Day** See you at the club site any time during the contest.

Operating hours will be approximately noon Saturday to noon Sunday. Set up starts at 10:00 Saturday.

\*\*\*

### **Green Bank Star Quest 8, June 29th - July 2nd, 2011**

**Star party at the National Radio Astronomy Observatory. There are few opportunities to see the Greenbank observatory. See <http://www.greenbankstarquest.org/> for details. I am sure they will not allow any radios.**

\*\*\*\*

### **Saturday JULY 2nd 2011 Firecracker Hamfest Marysville Lion's Park**

105 Park Drive (GPS 40° 20.209' N 76° 55.666' W)

\*\*\*

### **Aphelion, Monday, 4 July 2011 at 1500UTC**

This is when the Earth is at its' greatest distance from the Sun and the approximate maximum of the Summer Es season. Look for Es openings on 6m from about two months before aphelion until two months after aphelion.

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### **August 3, 2011, 6:30 pm, AELC (Astronomy Enthusiasts of Lancaster County) meeting at the Lititz Public Library**

Presentation: ExtraSolar Planets by Mike Smith

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## **Editor's Notes**

Field Day is our largest operating event of the year so I hope to see all of you at the club site next weekend. We don't expect a big score, but the exercise is great. Don't forget your sunscreen.

You'll find an article below by Jim Ibaugh about Coronal Mass Ejections and their potential damaging effects. There was a brush with a billion ton CME earlier this month which received a lot of media attention.

The largest CME to hit the Earth in recorded history was the Carrington event on September 1, 1859. See the Carrington event article in the December 2009 issue of QRZ News [http://www.k3ir.org/QRZ\\_News/QRZ\\_News\\_December\\_2009.pdf](http://www.k3ir.org/QRZ_News/QRZ_News_December_2009.pdf).

Recycle prices are up a bit and this is helping with our mortgage payments.

73, George, W3FEY

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## **Six Meter DX Report**

12 June 2011

There have been a number of reasonably good openings to EU, the Caribbean and the Pacific this summer. The peak of the sporadic E season is still 10 days away, so there is hope for a pretty good season.

On May 31 the band opened to central Mexico; on the same day KG4EM was on from Guantanamo Bay, which is quite rare on 6.

On June 4th the band opened to Europe; EA, CT, G, GW, EI, F, YU, and HA (Hungary) were worked here. HA was a new one for me.

On June 5th the band opened to EA8 (Africa), CU, and F (Europe), and the Caribbean. 9Y, FG, YV, FM, V4, NP2, 8P6, KP4, C6, CO and other stations were in. Stations in PJ2 (Curacao) and PJ4 (Bonaire), which are new countries, were also in. I worked the PJ4 but missed the PJ2.

Over this weekend a T4 (Cuban contest station), ZF (Cayman), VP5 (Turks and Caicos), C6 (Bahamas), VP9 (Bermuda), YS (El Salvador), YN (Nicaragua) and other Caribbean and Central American stations were in.

A number of west coast stations have worked KH6 and KL7. Yesterday KH6 was into Florida. The SSSP season has also started with JA stations coming into various spots of the US on at least 3 evenings so far. Peak time for the SSSP to JA is about 00:00 UTC.

That's about it as the VHF contest winds down.

73,

Chris W3CMP

P.S. On the 10th of June there was a 2 meter sporadic E opening to the midwest. I worked stations in KS, MN, and IA. Best DX was NOLL in EM09.

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## ARES/RACES



As part of the SPARC commitment to emergency communications, the SPARC repeater system is maintained as available for linking with other area repeaters.

Lancaster County RACES VHF Net is held on the first Tuesday of the month at 2030 hours local time on the 145.310 MHz repeater in Rawlinsville.

The Lancaster County primary ARES/RACES repeater is on 145.310 MHz with minus offset and 118.8 PL.

Combined York County Amateur and ARES/RACES NET convenes at 8:30 PM (2030) Mondays on 146.97.

Pennsylvania RACES HF Nets are held at 3993.5 kHz LSB on all Sundays except holidays.

The statewide net is on the first Sunday of the month at 0800 hours local time.

The Central Area (including Lancaster County) net is at 08:30 local time.

EPA NBEMS Net, Tuesday, 7:30pm local EST,

3.5920mhz Mode: Olivia 8/500 1khz,  
Net Mgr: WA3WSJ@arrl.net

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## FEMA ADMINISTRATOR CALLS AMATEUR RADIO "THE LAST LINE OF DEFENSE"

In an [FCC forum](#) on earthquake communications preparedness, Federal Emergency Management Agency ([FEMA](#)) Administrator Craig Fugate described the Amateur Radio operator as "the ultimate backup, the originators of what we call social media." The forum-- held May 3 at FCC Headquarters in Washington, DC -- brought together officials from the White House, the Department of Homeland Security ([DHS](#)), the United States Geological Survey ([USGS](#)), FEMA, the FCC and the private sector.

Fugate and FCC Bureau of Public Safety and Homeland Security Chief Jamie Barnett gave the opening remarks. Later in the forum, Fugate spoke more on Amateur Radio. "During the initial communications out of Haiti, volunteers using assigned frequencies that they are allocated, their own equipment, their own money, nobody pays them, were the first ones oftentimes getting word out in the critical first

hours and first days as the rest of the systems came back up," he told the forum. "I think that there is a tendency because we have done so much to build infrastructure and resiliency in all our other systems, we have tended to dismiss that role 'When Everything Else Fails.' Amateur Radio oftentimes is our last line of defense."

Fugate said that he thinks "we get so sophisticated and we have gotten so used to the reliability and resiliency in our wireless and wired and our broadcast industry and all of our public safety communications, that we can never fathom that they'll fail. They do. They have. They will. I think a strong Amateur Radio community [needs to be] plugged into these plans. Yes, most of the time they're going to be bored, because a lot of the time, there's not a lot they're going to be doing that other people aren't doing with Twitter and Facebook and everything else. But when you need Amateur Radio, you really need them."

You can watch a video of the forum on YouTube. Fugate's remarks begin at 18:55.

[http://www.youtube.com/watch?v=bzx-kvoli\\_Y](http://www.youtube.com/watch?v=bzx-kvoli_Y) – ARRL Letter

Reprinted from W9RCA News

<http://www.w9rca.org/>

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## ARES/RACES Technology Update

Many of us have participated in emergencies and drills over many years where almost all of the traffic was handled by voice messaging. This mode is becoming progressively less viable as the quantity of information increases. There are a growing number of digital nets in the area. See the net listing below. SPARC is joining this digital effort in the near future.

Note the following comment from Craig Fugate later in his presentation. "At one point, for

example, Fugate held up a cell phone and told the audience to think of this device as both a data point and a sensor. Folks with cell phones can help emergency responders by sending video and audio of the situation, preparing the responders for what to expect when they do arrive. I don't know how many ARES/RACES groups have incorporated video into their emcomm plans, but it sounds like it should be."\*

In October 2008, the SCTF sponsored a Wide Vigilance II drill. This activity was reported in the November 2008 issue of QRZ News. See [http://www.k3ir.org/QRZ\\_News/QRZ\\_News\\_November\\_2008.pdf](http://www.k3ir.org/QRZ_News/QRZ_News_November_2008.pdf) for the details on that operation. This provides background for the present discussion.



WA3CPO 3480MHz receive setup at the Harrisburg HACC training site. About 15 miles from the N3TWT repeater

Gary Blacksmith, WA3CPO, collected video information at the Harrisburg HACC exercise site and transmitted it to the ATV repeater at White Rock where it was broadcast on 3480MHz. This was received at the Cumberland County EOC and displayed on their big screen in the command center.

Anyone within the coverage area of the repeater could also see the action. SPARC has a link to the 3480 ATV site. That is the dish on the side of our tower pointed west. It would

not take much to link this to our 923.250MHz repeater. We need someone to lead an ATV project.

George, W3FEY

\*(Dan Romanchik, KB6NU)

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## SPARC Nets

SPARC holds nets every Tuesday at 2100 local time on 145.230 MHz minus offset and a PL of 118.8. The 449.975MHz repeater is linked to the 2m repeater for the net.

**As reported last month, SPARC is starting a digital net to immediately follow the voice portion of the net as listed above. Starting date to be determined.**

### Club Officers

President Harry Bauder – [WA3FFK](#)

Vice-President: George Gadbois – [W3FEY](#)

Secretary - Dave Sarraf. - [N3NDJ](#)

Treasurer - Mike Warner – [N3XPD](#)

Repeater Trustee - Dave Payne - [N3LOM](#)

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## Nearby Nets of Local Interest

### York County Sponsored Nets:

**Tuesday Nets** DIGITAL NET -- Tuesday, 8 PM on the York 146.97 Repeater --

The first 15 minutes or so will be open to questions. DIGITAL Communications testing will continue after that.

### Friday Digital Net

Friday evenings starting at 8 PM on the 146.610 (PL:131.8 Hz) EARS repeater on Ephrata Mountain.

This is an excellent Digital net called by Bob, AB3GF. Check in is by digital, BPSK125.

It is an informal, well run net with plenty of Digital transmissions along with discussion by voice.

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### PACKRAT MONDAY NIGHT NETS

Visit the Mt Airy VHF Radio Club at:

<http://packratvhf.com/airtimes.htm> for the latest information on VHF/UHF nets.

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## QRZ News Publication

QRZ News is published monthly approximately ten days before the monthly meeting. Please submit items for publication as early as possible. If a large amount of editing is required, earlier submission is required.

We operate on an exchange basis with other non-commercial publications. Articles printed in QRZ News may be reprinted in a not for profit publication provided proper credit is given

QRZ News is archived at

[http://www.k3ir.org/QRZ\\_News.html](http://www.k3ir.org/QRZ_News.html).

Documents are in PDF format.

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## SPARC club license K3IR

By James L. Ibaugh, [AA3C](#)

The club was in identity transition from CAARC (Columbia Area Amateur Radio Club) to SPARC (Southern Pennsylvania A.R.C.) and a club outing for a tour of Cardinal Technologies in Lancaster facilitated the gathering of a large number of members. Until that time the club, QTH at the IRonville Fire Station Annex, used a members personal call sign for club activities. It was at that short meeting at Cardinal Tech the club picked "K3IR" out of several available call signs; K3IR as representative of IRonville's only radio club. The rules under which this club call was granted are listed below.

**Get out your copy of FCC R&R's Part 97. Don't have one? Download a PDF copy FREE from this US Gov. link: [FCC Part 97 R&Rs download, CLICK HERE.](#)**

**A copy should be kept at K3IR operating QTH.**

Quotation in part of 47 CFR Ch. I (10–1–09 Edition) § 97.5 Station license required.

"(2) A club station license grant. A club station license grant may be held only by the person who is the licensed trustee designated by an officer of the club. The trustee must be a person who holds an Amateur Extra, Advanced, General, Technician Plus, or Technician operator license grant. The club must be composed of at least four persons and must have a name, a document of organization, management, and a primary purpose devoted to amateur service activities consistent with this part. "

There is a common misunderstanding that the club call "K3IR" automatically confers Extra Class operating privileges.

It does not confer any license class privileges, it is a club station license, not an operators license. Only an operators license conveys a singular class operating privileges of mode, frequency and power levels. K3IR was issued to SPARC for the club's organized and/or sponsored group activities and use on club systems like repeaters, radio links, data packet radio, ATV systems and other club operating systems. Club authorized activities like HF/VHF/UHF contests, EME work, DX contests, Field Day operations and any other such group operating activities organized and/or recognized by or coordinated with the club, should use the K3IR call sign.

47 CFR Ch. I (10–1–09 Edition)  
Subpart A—General Provisions  
§ 97.105 Control operator duties.  
(Found on Part 97 PDF page 11)

"(a) The control operator must ensure the immediate proper operation of the station, regardless of the type of control.  
(b) A station may only be operated in the manner and to the extent permitted by

the privileges authorized for the class of operator license held by the control operator."

The designated Control Operator on Duty, (COoD) who is responsible for proper and legal operation for each club activity, should ensure that K3IR operations conform to the control operators license privileges. The COoD must be at the point of radio transmission, the location of the station.

Each station must have a control operator and if the individual users are alone they are by default the control operator required by § 97.105 Control operator duties.

If the control operator holds a General class license, K3IR operations must be limited to General class frequencies and mode allocations found in Subpart D—Technical Standards § 97.301 Authorized frequency bands.[By license class.] (PDF page 20)

If an Advanced class licensee is found in the operations crew the Control Operator on Duty could shift to the Advanced operator and K3IR could legally operate in Advanced class allocations. Likewise, if the COoD has a Technician license, K3IR must operate only in the Technician class allocations.

An individual's A.R.O. License is a dual purpose credential, it is an operator and a station license. Club licenses have only a single purpose, a club's station license.

Subpart B-Station Operation Standards  
§ 97.119 Station identification.

"(e) When the operator license class held by the control operator exceeds that of the station licensee, an indicator consisting of the call sign assigned to the control operator's station must be included after the call sign."

[ie: KA3IYJ / AA3C as in  
Novice / Extra call signs. ]

Special regulations for control operators

of radio repeater and data repeaters are covered in § 97.205 Repeater station. (PDF Page 16) and § 97.221 Automatically controlled digital station. (PDF Page 20)

SPARC Inc. has a very liberal membership usage policy of the club's Rapho Twp. QTH. A paid-up member, in good standing and a club key holder, may access club property and operations facility for the purpose of individual radio operations. The individual is obligated to operate under the FCC rules and conform to the modes and frequency allocation assigned to his/her own license class. Since it is an individual activity and not the club's, the individual's call sign must be used. There is an advantage in doing this, your DX QSL cards will come to you instead of to [K3IR@ARRL.NET](mailto:K3IR@ARRL.NET) or K3IR's postal mailbox! Boot leggers are easily caught when their DX QSLs for 20 meter band SSB QSOs arrives at the K3IR Trustees mail box and they only hold a technician class license.

One very easy solution is to get everyone upgraded to the Extra class license. Now that there is no 20 WPM code test to get to Extra Class, it is more than 100% easier to get your Extra. SPARC's QRZ News letter published a short version of my license upgrade home study method early this year. Here is the full article PDF link: [FAST TRACK TO HAM RADIO LICEN SE.pdf](#)

Under "GoogleDocs" select FILE and Download Original or Print a PDF copy (only if you have a printer connected). It is a HTTPS: secure site.

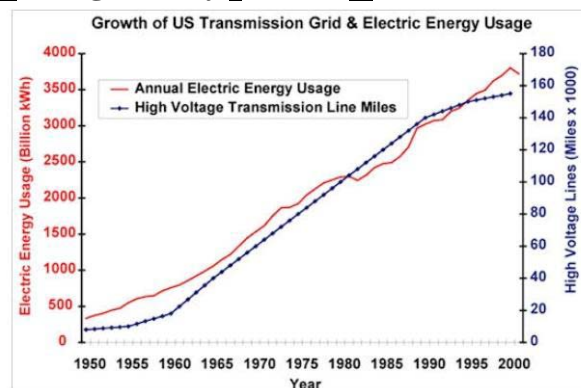
BONUS: Complete access to SPARC's [QRZ NEWS ARCHIVE via TechIndex.](#)

73's de AA3C – Jim [AA3C@ARRL.NET](mailto:AA3C@ARRL.NET)

## You Have the Biggest Antenna in the World

By James L. Ibaugh, [AA3C](#)

Since the beginning of the Space Age (~1957) the total length of high-voltage power lines crisscrossing North America has increased over 10 times. This has turned high-line power grids into giant antennas for Geomagnetically Induced Currents.



Growth of the High Voltage Transmission Network and annual electric energy usage in the United States over the past 50 years. Credit: North American Electric Reliability Corporation and the US Dept. of Energy.

If your Ham Radio is plugged into a wall socket and commercial power mains when the next GIC hits, you could risk damage to your radio or computer equipment. The High Voltage Transmission Grid is now longer than 175,000 Miles and the consumer service lines to the end users are estimated to be greater than ~200,000,000 MILES. That is a very long antenna or induction pickup loop for GIC's and your radios and computers are connected to it.

Historically, the largest GIC recorded was the Carrington Event of 1859, due to the GIC on the long wire telegraph lines, operators with their hands on the telegraph key were actually electrocuted or burnt. There was only about 10,000 miles of telegraph lines at the beginning of the American Civil War in the 1860s. The induced current also set some telegraph offices on fire. Since 1859 electric lines have been added for more telegraph/teletype,

power lines, telephone lines, coaxial lines for cable TV and computer services. All, except fiber optic (glass) signal cables, are very susceptible to GIC. Even railroad rails are susceptible and rail traffic controllers could be destroyed.

From where is all this induced current coming? Look at the NASA photo below.



**NASA: Super Solar Coronal Mass Ejection**

When a coronal mass ejection (a billion-ton solar storm cloud) hits Earth's magnetic field, the impact causes millions or billions of field lines to vibrate, move back and forth, to and fro (modulate) across the elevated electrical lines. Buried cables are not immune to this GIC since magnetic field lines go deep into the Earth. Magnetic field lines crossing metal wires induces electrical current. The stronger the field, the larger the induced current. When a super coronal mass ejection hits Earth's magnetic field, the entirety of Earth's defensive magnetic field is moved or modulated. These magnetic vibrations induce currents almost everywhere, from Earth's upper atmosphere to the ground beneath our feet. Powerful GICs can overload circuits, trip breakers,

and in extreme cases melt the windings of heavy-duty transformers.

There were other geomagnetic storms, one happened in Quebec on March 13, 1989, when a geomagnetic storm knocked out power across the entire province for more than nine hours and damaged transformers in Quebec, New Jersey, and Great Britain, and caused more than 200 power anomalies across the USA from the eastern seaboard to the Pacific Northwest.

A similar series of strong solar storms in October 2003 triggered a regional blackout in southern Sweden and may have damaged transformers and equipment in South Africa.

### **Is There Any Defense Against GIC's?**

While many utilities have taken steps to fortify their grids, the overall situation has only gotten worse. A 2009 report by the North American Electric Reliability Corporation (NERC) and the US Dept. of Energy concluded that modern power systems have a "significantly enhance[d] vulnerability and exposure to effects of a severe geomagnetic storm." Modern electronically controlled (via computers) power systems increases GIC vulnerability greatly - a recipe for trouble, according to the National Academy of Sciences: "The scale and speed of problems that could occur on [these modern grids] have the potential to impact the power system in ways not previously experienced."

"A large-scale blackout could last a long time, mainly due to transformer damage." As the National Academy report notes, "These multi-ton units cannot be repaired in the field, and if damaged in this manner they need to be replaced with new units which have lead times of 12 months or more." AA3C: Few of them made in USA!

[NASA's SOLAR SHIELD PROJECT](#)

A new NASA project called "Solar Shield" could help keep the lights on. "Solar Shield is a new and experimental forecasting system for the North American power grid," explains project leader Antti Pulkkinen, a Catholic University of America research associate working at NASA's Goddard Space Flight Center.

"We believe we can zero in on specific transformers and predict which of them are going to be hit hardest by a space weather event." "That is why a node-by-node forecast of geomagnetic currents is potentially so valuable. During extreme storms, engineers could safeguard the most endangered transformers by disconnecting them from the grid. That itself could cause a blackout, but only temporarily.

Transformers protected in this way would be available again for normal operations when the storm is over."

The innovation of Solar Shield is its ability to deliver transformer level predictions.

Pulkkinen explains how it works:

"Solar Shield springs into action when we see a coronal mass ejection (CME) billowing away from the sun. [Images from SOHO](#) and [NASA's twin STEREO spacecraft](#) show us the cloud from as many as three points of view, allowing us to make a 3D model of the CME, and predict when it will arrive."

### <>How can I protect my QTH from GIC's?

- [1.] [Install AC Line Power Surge Protectors](#)
- [2.] Prepare for a long power outage.
  - (a.) [Build up a 12VDC backup system.](#)
  - (b.) QRP by candle light is great.
  - (c.) [Study Urban Power Outage Stories.](#)
- [3.] Disconnect AC power and antennas when not using your radio and/or computer equipment. Don't forget the computer's modem or cable.
- [4.] [ArmySurvivalManualDownloadFREE](#)
  - (a.) [Chapter 19 - Signaling Techniques](#)

[5.] [How to Survive When Disaster Strikes](#)

[6.] [NOAA/Space Weather Prediction Cntr.](#)

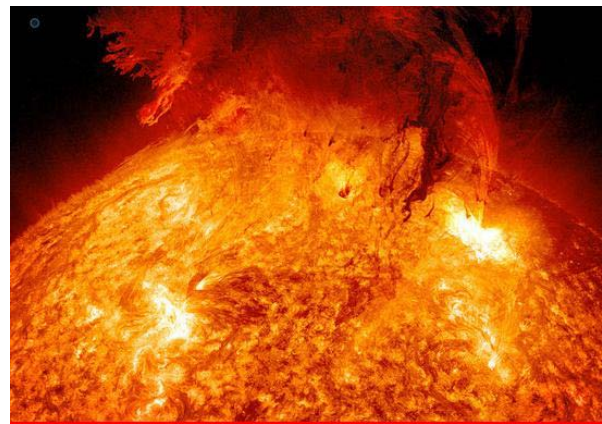
[7.] [NOAA - SPWPC Alerts by Email.](#)

(a.) Receive alerts, warnings, watches, forecasts, and summaries via email within moments of issue by NOAA.

73's de AA3C – Jim  
AA3C@ARRL.NET  
AA3C@AMSAT.ORG



PS: Solar explosion, June 6th & 7th, only registered as a class M2.5, only moderate. The coronal mass ejection billion ton solar storm cloud is going to miss the earth for the most part. Northern lights (Auroras) will be seen in the northern states.



June Solar Flare 6-6-2011 Image source: Lights in the Dark

Click the image for the [NASA SDO - The June 6&7th Prominence Eruption video.](#)

Some High Frequencies affected and possible VHF propagation enhancement. Probability of major damage due to GIC: ~0.05%!

73's de AA3C .-. . .-. .-

## AJ4CO's Amateur Radio Astronomy Observatory

By James L. Ibaugh, [AA3C](#)

David A. Typinski, [AJ4CO](#) opened his Cosmic Observatory "for astro business Monday night" (21 Sept 2009), quoting his report (25 Sept 2009-20:51 GMT) to the

Space Forum - Amateur Astronomy - October 2009 issue. Quote: "Nonetheless, within a few minutes of operation, we--as in me and nobody else--did manage to receive signals from Jupiter buried in the noise; even got confirmation of the events from another observatory in Virginia. The setup consists of two half-wave dipoles [1] phased to create a single beam aimed south with a 45° elevation. As the Earth's rotation slews the beam across the sky--and across Jupiter's position therein--you can hear and record stuff. The receiver is a narrow band, direct conversion [2] affair operating at 20.1 MHz. The audio output from the receiver is sent to a computer sound card, which is a great analog to digital converter. Some nifty software [3] made for the purpose records a strip chart and creates a wav file." [4].

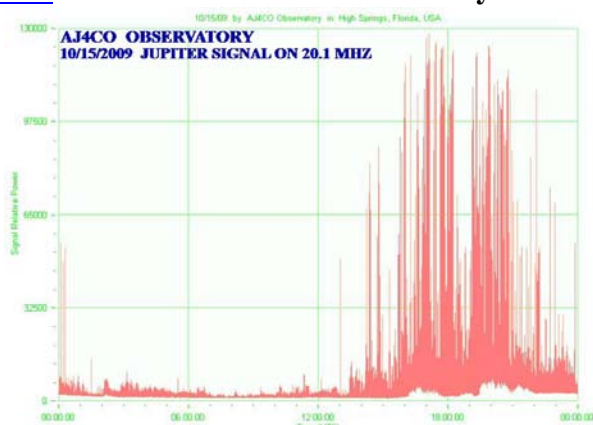
AA3C notes:[1] This type of phased dipole pair is described in the FREE antenna PDF manual [JOVE RJ1.2 Dual Dipole Antenna Array](#). This antenna manual contains a useful chart (Fig. 1.5) page 9.

“Elevation angle of Jupiter at transit, observers at different northern latitudes from 2003 to 2013.”

[2] A [special Radio Astronomy receiver kit](#) is for sale to non-hams who do not have access to a good HF receiver. The receiver was developed for [NASA Radio JOVE \(Jupiter\) Project](#).

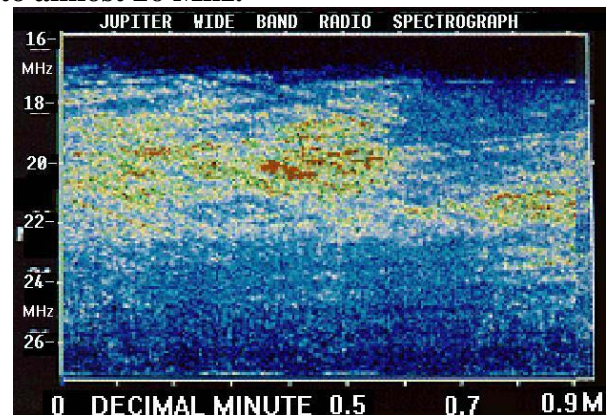
[3] [Radio-SkyPipe II - An Internet Enabled Strip Chart Recorder \(Information\)](#) I have the new ver 2.1.9 running on my Laptop in Windows7, OK. FREE 2.1.9 download: [RADIO-SkyPipe 2.1.9install.exe](#) .

[4] From a WAVE file [Old Jove's Voice, Click Here](#). This voice was slowed down by a factor



of 128 to get it into human hearing range.

Jupiter isn't the only space object that emits radio waves. The sun is the loudest RF signal in this solar system. Dave's first setup at AJ4CO Observatory was simple; a dual dipole antenna, a single frequency HF receiver, a computer with a sound card and a program to record signal events. A lot of radio astronomy can be done with this kind of spartan setup. Most hams already have an HF receiver and a computer. HF astronomy isn't limited to just 20.1 Mhz. Jupiter's RF output spans from 16 Mhz to almost 26 Mhz.

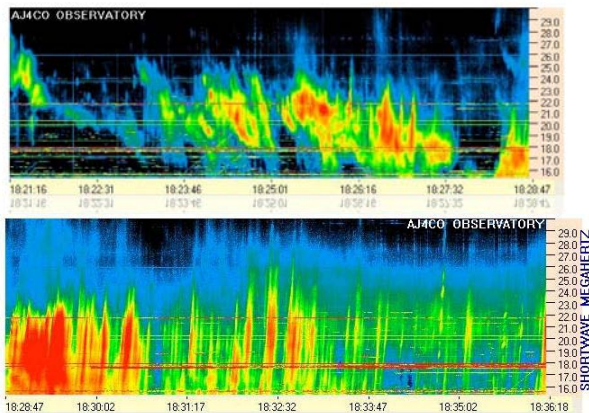


When you need to look at that kind of wideband frequency a special purpose receiver is necessary. Dave, AJ4CO upgraded the equipment at his radio observatory.

In 2010 the Dave's station was equipped with



a new SDR-14 multi-function receiver.



SDR-14 with Radio-Sky software captures solar X-Ray flare impacting HF Shortwave bands. Images courtesy of Saturday, August 7, 2010

David Typinski @ AJ4CO Observatory

With Dave's new SDR-14 multifunction receiver/computer/spectrum analyzer and Panoramic Adapter, he was able, after continuous observation, catch a violent Solar X-Ray Flare on Saturday, August 7<sup>th</sup> 2010. That flare impacted all HF bands from ~14 Mhz to ~26 Mhz.

There have been several new [Software Defined Radios having Spectrum Analyzer and Panoramic Adapter with other rare features](#) introduced since the SDR-14 was put on the market.

The heart of SDR's are the Digital Signal Processors (DSP) in their many forms. A good (free) DSP tutorial is this course: "[BORES Digital Signal Processing \(DSP\)](#)".

Course covers: basics, time domain processing (TDP), frequency analysis, filtering, IIR filters, DSP processors, programming a DSP processor. ( 284 Kbytes, PDF file) Tutorial by Rob Frohne - KL7NA, QST April 1998, pages: 40-43. This course describes how the radio signal processing software demodulates AM, DSB, CW, SSB (LSB & USB) and ISB. I thought this article would make a good tutorial when I first read it back in 1998.

[BORES OnlineBooks](#) - Quote BORES; "Our onlineBooks are available on our new online training site. They can be viewed on your computer and printed out as a useful

reference in full colour. The printed [sample] copy is only for your use; please *do not* give printed copies to other people to use but encourage them to buy their own copy".

**BORES OnLine Books (Samples) [UK]**

[DSP Foundation \(3 page sample\)](#)

[DSP Lite \(3 page sample\)](#)

[DSP Basics \(free if register, otherwise only 3 pages\)](#)

[DirectFB \(3 page sample\)](#)

There are other sources of information about [Digital Signal Processing and Software Defined Radio](#), just Google either or both of those two terms (one at a time).

There is room for those not wanting to spend money for a special purpose receiver and already own a good HF receiver perfectly suited for monitoring any HF frequency, not just 20.1 Mhz for Jupiter's radio signal or any other RF generating space object. Adding an antenna, computer with sound card and free [RADIO-SkyPipe](#) software is still a viable and easy path to Radio Amateur Astronomy. I stumbled into Radio Astronomy in late 1974 as recorded in "Jupiter's Radio Signals", [Page 7 in SPARC's QRZNews Dec 2010](#).

It would be a great project for two types of clubs to combine their expertise; a joint project of an Amateur Radio Club and an Amateur Astronomy Club. Since radio astronomy is a passive activity (no radio transmitting) so no FCC license required to set up a radio observatory.

The [Society of Amateur Radio Astronomers \(SARA\)](#) has a sample list of [like-minded Affiliate Organizations](#) :

[The SETI League, Inc.](#)

<http://www.setileague.org/>

SETI League's [Project Argus](#) is a very interesting world wide effort to find space signals natural (pulsars, etc...) or ETI's. "[Project Argus](#) employs much smaller, quite inexpensive amateur radio telescopes, built

and operated by SETI League members at their individual expense."

[European Radio Astronomy Club.](http://eracnet.org/)

<http://eracnet.org/>

If you take that side trip into (amateur) Radio Astronomy and catch a signal from space, please let us know all about it. Write all about it and <mailto:k3ir@arrl.net> and

CC: <mailto:AA3C@AMSAT.ORG>  
; TNX

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## SPARC Visit to the Ron Frisbie Marconi Museum

SPARC visited the Marconi Museum on May 21, 2011. Six members and one guest attended

the showing of this very fascinating exhibit. Ron and his son Jim took us through the tour. The number preserved radios is mind boggling.

Our guest, Tom Kranch son of Don Kranch, W3BXU(SK) was especially interested in seeing the Kranch early coin operated radio in the display.

Many photos were taken by the attendees. Far too many to display here. See the April and May issues for more pictures of the museum.

George, W3FEY



Jim Frisbie photo

L-R Ron Frisbie; Ted Freedman, K3KSA; George Gadbois, W3FEY; Gerald Wilson, KB3GNB; Gerry Wagner, KB3SSZ; Dianne Gadbois; Tom Kranch; Mike Warner, N3XPD

Almost hidden by the attendees is a fully restored 1928 Modal A roadster.

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