

QRZ NEWS

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

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AN AFFILIATED SPECIAL SERVICE CLUB OF THE ARRL, INC.

"Public Service through Communication"

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September 2010

President's Message

Jamboree On The Air

Mark the weekend of October 16 and 17 on your calendar. Those are the dates for the 2010 edition of Jamboree on the Air. JOTA is an annual event for Scouts to learn about Amateur Radio. Last year SPARC hosted a small group of scouts from Elizabethtown at our site. They got a chance to operate under the watchful eye of a control operator. This rugged group camped at the site and stuck it out on a cold and rainy October weekend.

We plan to host a JOTA operation again this year. If you know any scout leaders or scouts please invite them to come out, if only for a few hours. Anyone who wants to spend the weekend may bring their camping gear and practice their outdoor skills.

Last year the Club was represented by Dave, N3NDJ, Jon, K3QF, Ted, K3KSA and yours truly, Harry, WA3FFK. We were able to demonstrate SSB on 20 meters and 40 meters, digital modes on 20 meters, and, thanks to Jon, CW. Don't operate as much as you would like? Not only is JOTA an excellent way to introduce HAM radio to young people it is also an opportunity for you to enjoy your hobby in a different way and, you can inform your spouse that you are doing it for the kids!

Some of the members have been busy getting the operating building repaired and new antennas installed. A sloper has been installed for 75 and 40 meters. The beam needs to be lowered and repaired, and the floor needs some attention. This work benefits not only JOTA but also provides a station for members who, for whatever reason, cannot operate from their homes. Please come out and see what is happening at SPARC.

Harry, WA3FFK

Table of Contents

President's Message	Page 1
August Meeting Minutes	Page 2
Recycle Program Update	Page 3
Central PA IP Network	Page 3
Coming Events	Page 4
An Invitation	Page 5
EME Contest	Page 5
Editors Notes	Page 6
ARES/RACES Information	Page 7
SPARC Officers, Nets, Etc.	Page 8
Resources for Hams	Page 8
Tech Test Gets More Technical	Page 8
Sunspots, Gamma Rays & 6m skip	Page 9

**MINUTES OF THE AUGUST 2010
MEETING OF THE**

**SOUTHERN PENNSYLVANIA
AMATEUR RADIO CLUB
(SPARC)**

The following members and guests were present:

Dave Payne, N3LOM
Paul Herr, KD8WY
George Gadbois, W3FEY
Harry Bauder, WA3FFK
Ted Freedman, K3KSA
Dave Sarraf, N3NDJ
Steve Hass, KB3SJU
Dick Hess, KB3LOJ
Jim Silvius, KW3E
Dan Millgan, KA3KHR
Jon Rudy, K3QF

The meeting was called to order at 7:05 PM by Harry Bauder, with a round robin introduction by name and call.

Ted Freedman presented the Treasurer's report. On a motion by Jon Rudy and a second by Paul Herr, the report was accepted as read pending review by the audit committee.

The prior month's BOD and meeting minutes were discussed. As a follow-on to prior discussions about the underground tank, Harry announced that we need a placard on the tank stating Gravity Fill Only. A letter was sent to the oil company stating the same; a copy has been placed in the Building Amenities book on the site.

Discussion

- The price of paper is too low to be a viable source of income. We need to start a donation can or similar approach to replace that income. Dutch Wonderland is still a way to earn money for SPARC. Harry made \$90 over three days as a ride operator.
- We need to schedule some work days, including Adopt-A-Highway. We have done only one this year; we are obligated to do four. The road does look ok, so it is not obvious that we skipped.
- The site looks good. We should have a hand sanitizer station for the port-a-pot. Most members recommended scheduling work days during the week rather than on the weekends. Tentative dates include September 9th and September 23rd at 9:00 AM.
- Ted Freedman wants to be replaced as Treasurer and cannot serve another term. The other officers would also welcome replacement but would serve again if necessary. Nominations will be discussed at the September meeting.
- Paul Herr discussed HEARS and amateur emergency communication. He had a number of questions, starting with names of designated operators for hospitals. The last drill made it clear that filters are needed when operating simplex due to the proximity of the pager nearby antennas at the Ephrata site. Filters are supposed to have been ordered but have not yet been received. We should have digital capability, however we need to demonstrate competency prior to deployment, and a second radio should be available to use over a standard voice channel.

Events

- JOTA is scheduled for October 16-17th. SPARC will participate.
- A meeting of the Amateur Radio Working Group is scheduled for Wednesday September 22nd at the Emergency Training Center in Landisville.

Respectfully submitted,
Dave Sarraf, N3NDJ
SPARC Secretary

Recycle Program Update

Falling prices for recycled paper have reduced income from this source. Dave Payne is continuing to handle paper delivered to his home recycling center, or delivered to a club meeting, but traveling to collect paper is not economically feasible.

Recycling of metals is still profitable so please continue to collect copper and copper alloys, aluminum and stainless steel.

Recycling is an important part of the income required to keep the club operational. All recycling revenue is now being applied directly to the SPARC site mortgage.

Please take recyclables to Dave Payne's mini recycling center at 1373 Malleable Rd, Columbia or to a SPARC club meeting. You may also place recyclables in the recycle box at the SPARC club site.

Central Pennsylvania IP Network

(Ed note: The following article outlines the topic which will be presented by Gary

Blacksmith at the September SPARC meeting on 28 September 2010.)

This wide area network was built by hams for hams. This is not a government supported system, nor is it government controlled. Groups of amateur radio operators have voluntarily cooperated to form a wide area network. This network is used 99% of the time by hams and its integrity and operational status is assured by daily utilization of its functions. We have expanded the available frequencies by using some of the Part 15 allocations. The Part 15 rules have less oversight and allow more flexible operations. Most of the network is constructed in the 5.25 to 5.850 GHz range. The amateur band is 5.650 to 5.925 GHz. Inexpensive, mass produced equipment has made this possible as of January 2009. We are fortunate to be located away from the more populated urban centers where the available channels are more congested. We also have multiple mountain top sites available that are 500 to 1700 feet above the service area.

The Phase One Goal is to connect all the RACES rooms in the eight county Emergency Operation Centers and PEMA, together and to connect as many hams as possible to the network. This would allow disaster and humanitarian communication to occur without using the public internet, public phone system, cell phones, public safety radio, satellites, or traditional amateur radio voice/data circuits. The connections are at speeds in excess of 30 Mbps. The maximum aggregate backbone speed is 150 Mbps. An email server is used to send traditional email with large attachments. Internet Explorer is utilized to pick up the web based email. No special software is needed on the individual user's computer. A VoIP server supports an internal phone system. The phone is just plugged into an ethernet connection and is readily available

from multiple vendors. An IP based camera with a multicast capability has been requested for the PEMA RACES room. This would allow any computer on the network with Internet Explorer to view and listen to the signal from PEMA. Other cameras are planned as well. An IP connection to a steerable satellite dish is currently available on the network.

Each county will have at least one high speed internet connection. These can be utilized if needed and are functioning during a disaster. But if the disaster is serious or wide spread the likelihood that they will be available is reduced. Each user can access the internet in any county.

VOAD (Volunteer Organizations Active in Disasters) in Central Pa has expressed an interest in amateur radio data support. The throughput would permit additional users and the equipment cost is reasonable. The interested agencies include: Red Cross, Salvation Army, Episcopal Church shelters. Before adding agencies, the network must prove that it will function properly. This is a Phase Two Goal.

Multiple amateur radio operators are needed in each county to use the system on a daily basis to verify its operational status. This would also encourage innovation and testing of new ideas.

Multiple UHF amateur repeaters are being linked by the data network. Initially Harrisburg and Cornwall will be tied together by a multiplex audio system that utilizes 24 dual channels of audio. This T1 system is available throughout the entire data network. Additional linked UHF repeaters are planned at Lam's Gap, York, Newport, and Reeser's Summit, south of Harrisburg. This linked system will provide portable grade coverage in each area.

Portable data connections are possible where an access point is available. The typical RF connection would be a transmitter attached to a ten foot pole. This portable connection can provide all the services that are available to fixed locations. A computer would have access to email and video from any location in the system. An IP camera can send video from the field to multiple fixed locations in the system. A VoIP phone can give access to any VoIP phone in the system. A wireless router can provide connectivity to multiple computers in the field. These computers would also be able to access a public internet gateway in any county.

Access points in Lancaster, Dauphin, and Cumberland County are functioning now. Lebanon and York Counties are next. Adams, Franklin, and Perry Counties will take longer to complete.

This data network could be duplicated in most counties except near Philadelphia and Pittsburgh. Frequency congestion near the urban centers will probably limit the usefulness of this low power microwave. Existing amateur sites and ham friendly tower sites are available.

For more information contact:

Gary Blacksmith, WA3CPO
1215 Georgetown Circle
Carlisle, Pa 17013
717-574-0425
WA3CPO@arrl.net

Coming Events

Saturday 25 September 2010 Wide Vigilance III drill.

Contact Ron Small, WB2OOB, for details of the Amateur drill in Lebanon County.

Sat Sept 25Mid-Atlantic States VHF Conference****

NEW LOCATION: Quality Inn Conference Center--969 Bethlehem Pike--Montgomeryville, PA One Day Conference for experts and beginners alike hosted by the Mt Airy VHF RC Club.

Full info at: <http://packratvhf.com/>. One price \$70 early-bird includes CD, light breakfast, lunch, snack & buffet dinner. Raffles and Door Prizes--Indoor selling and outdoor tailgating VHF gear testing--Friday Night Hospitality Room--FREE BEGINNERS SESSION (must register)

AN INVITATION

I wonder if anyone in the North America, Europe, rest of the world is planning to join us at the **Martlesham Microwave Round Table** in November this year? The Round Table takes place on the 13th and 14th of November. Details can be found at: <http://mmrt.homedns.org/>

Each year, the Martlesham Radio Society organizes and runs this popular two-day microwave event. This is the 31st year of the MMRT. If you haven't been to the MMRT previously you will experience an event with an attendance of about the same size as the annual MUD events.

There is a talks programme, flea market (with some bits you don't see in the USA) and surplus prices that are still reasonable! There will not be a formal tour this year. We want to leave that until the next event (probably in April 2011).

The 'microwave' dinner (banquet) is on the Saturday evening. The UK prices are at their lowest in November and flights are also cheap in November. We have arranged really good accommodation prices at the

hotel and best of all, there are no registration fees for MMRT. We've always been a free event.

If you are thinking of coming to EME 2012, Martlesham is just about 1 hour away from Cambridge, so this would be a good chance to have an early look around Cambridge, during the week. There are lots of things to see and do in Cambridge. The Martlesham/Ipswich area has lots to see as well!

It would be great to see more visitors from overseas to our premier Microwave event in the UK.

If anyone wants more details of what to see and do in this area in November, drop me an e-mail at sam@g4ddk.com

**73 de Sam, G4DDK,
for the Martlesham Radio Society
MMRT Supported by the UK Microwave Group**

Reprinted from Scatterpoint September 2010

EARTH-MOON-EARTH OCTOBER²⁰¹⁰ CONTEST

By James L. Ibaugh, [AA3C](http://www.aa3c.com)

Get ready, get set and GO!
September 4-5: 2.3 GHz and Up to SHF
Only!

Round #1 VHF & UHF

October 2-3: EME Contest, 50 to 1296 MHz

Round #2 VHF & UHF

October 30-31: EME Contest, 50 to 1296 MHz

[COMPLETE E-M-E CONTEST DETAILS](#)
[Download a copy of Joe Taylor's WSJT9b Free.](#)

[Information about hearing WSJT9/JT65 signals](#)

download: [K1JT-Operating Procedures](#)
<PDF!

If you have a slower computer try [WSJT-7](#)
Free.

See [WSJT User's Guide JT65 for EME](#) at
VHF/UHF & HF skywave propagation
<PDF!

You may hear JT65 activity in / near the
ranges:

<> 6 Meters 50.175 – 50.200 MHz

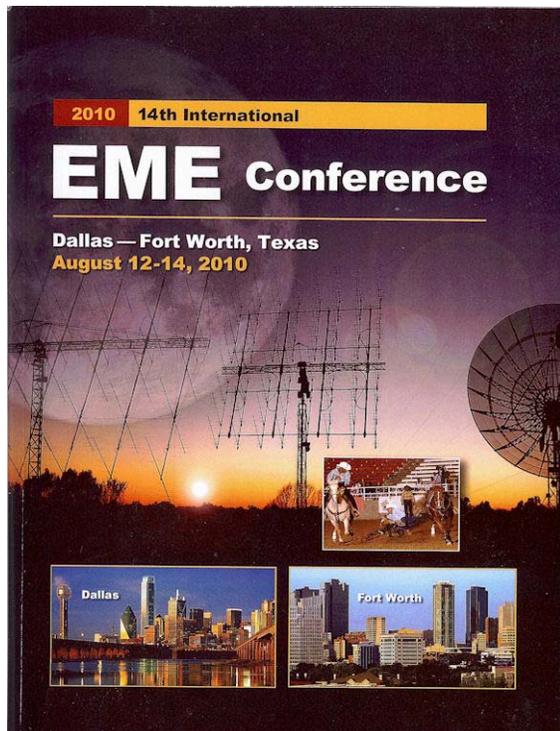
<> 2 Meters 144.110 – 144.140 MHz

<> 50.190 & 144.125 MHz calling
frequencies.

If you are doing space or subspace radio
grab a free PDF copy: [SPACE](#)
[COMMUNICATIONS](#)

Good luck with EME, MBC, ISC, Tropo,
Eskip
and more modes. . . 73's GL de AA3C –
[Jim I.](#)

Editor's Notes



The proceedings of the 2010 EME
Conference are now available from ARRL
for \$26 which includes shipment. Even if

you never plan to get on EME, there is a
wealth of technical information on
VHF/UHF equipment and construction that
is of value to everyone interested in weak
signal work. Al Ward, W5LUA, may still
have copies available.

From time to time I hear the comment that
hams don't build anything anymore.
Compared to 1951 when I received my first
license, that is mostly true. Even before I
had a license, I tried with mixed success to
build receivers. I never succeeded in
making a crystal set with the mounted
galena and the wire probe work. When the
1N34 came on the market, it worked great.

Today it doesn't make much sense to buy
hard to find components and build an FM
transceiver for local communications when
you can buy a readymade Japanese radio for
a few hundred dollars. Sophisticated HF
transceivers cost a lot more, but the skill and
tools required to build one from components
is hard to find.

There is a large area of experimental radio
activity that requires buying modules and
assembling them into a high performance
station. Some of those modules are sold by
enterprising individual amateurs who have
the necessary skills and tools. These
experimental setups span the extremes of the
radio spectrum from VLF to microwaves.

Some hams span the spectrum. Here is a
quote from W4DEX. "Operational on all
bands from LF at 2200 meters (136 KHz) to
24 GHz. FCC Part 5 experimental station
call is WD2XKO for 2200 meter operation.
For station details see
<http://www.w4dex.com> Available for skeds
on any band, especially microwave and LF.
73, Dex"

SPARC member Phil Theis, K3TUF, is currently building a 600w 23cm amplifier using 150w modules supplied by W6PQL.

Anyone interested in stepping beyond the constraints of a purchased transceiver can get in on the fun and satisfaction of rolling your own. Who makes the paper and grows tobacco to roll their own? Study up on techniques and do it.

73, George, W3FEY

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. Presently being held on the 145.310 MHz repeater.

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**



Amateur Radio Emergency Service®

(ARES) 75th Anniversary

The Amateur Radio Emergency Service® (ARES) consists of licensed amateurs who have voluntarily registered their qualifications and equipment for communications duty in the public service when disaster strikes. Every licensed amateur, regardless of membership in ARRL or any other local or national organization, is eligible to apply for membership in ARES. Training may be required or desired to participate fully in ARES.

FREE [ARES Membership Registration Form](#)

FREE [ARES MANUAL](#)
FREE [Public Service Communications Manual](#)

FREE [ARES Field Resources Manual](#)

ARES Operation During Disasters
ARES Local Level - It is at the local level where most of the real emergency organizing gets accomplished, because this is the level at which most emergencies occur and the level at which ARES leaders make direct contact with the ARES member-volunteers and with officials of the agencies to be served. The

local EC is therefore the key contact in the ARES.

I joined ARES as K3ITG in 1960 and participated in emergency ARES work dozens of times. 73's de AA3C- Jim Ibaugh ..._._

SPARC Nets

SPARC holds nets on the 2nd, 3rd, 4th, and 5th Tuesday (every Tuesday except the first) 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.

Club Officers

President Harry Bauder – [WA3FFK](#)
Vice-President: George Gadbois – [W3FEY](#)
Secretary - Dave Sarraf. - [N3NDJ](#)
Treasurer - Ted Freedman - [K3KSA](#)
Repeater Trustee - Dave Payne - [N3LOM](#)
Past President - [Mike Warner](#) – [N3XPD](#)
Board of Directors - Jim Silvius – [KW3E](#)

Nearby Nets of Local Interest

York County Sponsored Nets:

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

Tuesday Nets (Note new schedule for Technical Net)

Elmer/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.

Delaware Co. Mobile Sixers Net Schedule

Sunday 2000 50.550 MHz USB

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.

QRZ News Publication

QRZ News is published monthly on the third Tuesday of each month, one week before the monthly meeting. Deadline for article submission is the third Monday of each month. 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. Documents are in PDF format.

Resources for Hams

One of the best sources for stainless steel antenna mounting hardware in Lancaster County is Paul Bs hardware near Ephrata. Go to <http://www.paulbhardware.com/> for details.

Paul Bs is located one block south of route 322 at Durlach Rd west of Lincoln. There is a good selection of SS U bolts.

If it is Sunday, or you just don't want to drive to the Ephrata area, Lowes has a lesser selection of SS hardware.

TECH TEST GETS A LITTLE MORE TECHNICAL

Ever since the FCC dropped the code requirement and the Novice license exam, the Technician Class license has really been misnamed. Being the first license that most hams obtain, it really should have been called the Novice license. The question pool

was arguably at the appropriate level for newcomers to amateur radio, being heavy on rules and operating practices, and perhaps a little light on technical topics.

That's about to change. On July 1, 2010, the question pool for the Tech test changes, and this version has noticeably more technical questions than the previous test. You could say that the Tech test is getting, errrr, a little more technical. For example, the new question pool contains more questions about electronics components and their functions. In addition to that, examinees must also be able to identify the symbols for these components on a schematic diagram. This is a big change from the previous test, which had no diagrams at all. There are also more detailed questions about transistors and how they work.

There are also questions on how to make basic measurements with a multimeter and how to troubleshoot basic problems that Technicians are likely to encounter. One question asks, "What two measurements are commonly made using a multimeter"? Answer: voltage and resistance. A follow up question asks, "What is the correct way to connect a voltmeter to a circuit"? Answer: in parallel with the circuit.

To make room for these questions, the committee dropped questions on operating practices and rules and regulations. In general, these are not big losses, but two questions that I was sorry to see go are the questions on the "basis and purpose" of amateur radio. I think these are very important for new amateurs to learn and keep in mind. (If you don't recall them, go to <http://www.arrl.org/part-97-amateur-radio> and review them.)

By the time you read this--or shortly thereafter--the new version of my No-Nonsense, Technician Class License

Study Guide should be available. You can download it free of charge from my website, www.kb6nu.com. Look for the link in the right-hand column. It's currently in the hands of more than two dozen reviewers, who are proofreading it right now.

While it may not be in the initial release, I plan to include a section that contains links to websites that cover topics included in the study guide. That way, students can find more information on a topic, if they choose to do so. If you have any favorite websites that discuss making measurements with voltmeters or how to read schematic diagrams, I'd love to hear from you. (*Dan Romanchik, KB6NU*)

When not updating his No-Nonsense amateur radio license study guides, you'll find him on 40m, 30m, 20m, and if we ever get any sunspots to stick around, 15m and 10m pounding brass. You may even hear him trying to get the hang of using the bug he bought at Dayton this year. You'll find his blog at www.kb6nu.com, and you can e-mail website suggestions to cwgeek@kb6nu.com.

The preceding article is reprinted from the September issue of QRA News published by the QUANNAPOWITT RADIO ASSOCIATION

Sunspots, Gamma Rays & 6 Meter Skip

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

How a company assigned research project got tangled up with a super 6 meter DX band opening. I was the youngest member of an electro-optics R&D engineering department and I usually got the toughest, dirtiest, most complicated jobs nobody else wanted. The job was to design, build and do research on a "one

of a kind" nuclear gamma ray scintillation energy spectroscopy system. The project was the search for the lowest background radioactive components of various grades and vendor batches of borosilicate glasses. The company used this type of glass to make large vacuum photomultiplier tubes (PMT's). These PMT's are used in industry, medical, military and scientific instruments for very low level radiation detection and analysis. My colleague and project partner was Bob, WA3TNO. We had to build a lead shielded test chamber made out of pre-atomic era lead bricks (35 pounds each, about 100 Pb bricks). (Ed note: Pb is the chemical symbol for lead, it stands for the Latin word Plumbum.)

After laying about 3500 pounds of dirty lead bricks the chamber was about three feet tall and about two and one half feet on each side. The open top was covered with a pre-atomic era steel plate painted flat black to absorb any light reflections. In the bottom center of this monster Pb cave we attached an extra select grade 5" PMT optically coupled with a 5" sodium-iodide nuclear scintillation single crystal (very, very expensive). We designed and assembled a couple of six foot racks with electronics, one of which was a Hewlett-Packard HP5300 multi-channel nuclear analyzer. We did some programming, calibrating and some practice runs before we loaded the chamber with a real glass sample.

I couldn't believe it, it worked without any debugging or trouble shooting. We got a nice low gamma reading with an empty chamber and a reading just a little higher with a full load of glass in the chamber, which is the way it should work. We could even see the added potassium⁴⁰ and sodium²² isotope peaks! It worked, really!

Ok, I know, where is the ham radio connection?

Everything worked well for the next two weeks. We were getting real good data out of the system which was calibrated every day and all was recorded in our company owned laboratory notebooks. Then one day I got a high gamma ray measurement with a completely empty sample chamber. I went through the calibration procedure which yielded the same high biased gamma count that was out of line

with the data acquired during the last two weeks. It was well past quitting time so I put the HP5300 in the auto measure and print out timely mode. I then headed for the parking lot and my car in which I had installed, over the last weekend, a new 10 W Heathkit HW-10 Six Meter mobile transceiver.



I started the car and while the car warmed up, I turned on the 6 meter rig and waited while it warmed up. I had a quiet ~50.150 MHz dialed in when I turned it off in the morning. Now there was a pileup on that calling frequency and all up and down the band with a mix of AM, SSB and DSB signals all well above S9+10db.

I had taken the precaution to design a little one transistor crystal BFO board and wired it into the last IF amplifier stage. This allowed me to copy CW, SSB and DSB but could not respond in like mode. There was even a bunch of 599+ CW stations between ~50.015 and ~50.075 MHz. I grabbed my logbook, flipped to a blank page and started copying call signs like W4's, K5's, KP4's, VP7's all on CW. I tried to work a few of the AM'ers but the QRM was gloriously full of heavy heterodynes and sideband splatter, no QSO. I sat there for a half an hour trying to make a contact before I remembered that I had to drive across town to pick up the *Brigade* KA3IYJ (now N3CXY) at her government job. I copied the DX opening all the way home that night. By the time I got home the 50 MHz band was back to its' normal local non-DX crowd with very high power and big antennas.

What is the connection? After I arrived at home I checked WWV on my SX-115 and it's propagation message did not indicate any solar condition that would explain this wild 6 m DX opening. I even checked CHU, no high solar message either. What is going on here?

When I returned to the laboratory early next morning I checked the timely printed HP-MCA

output and analyzed the declining rate of gamma readings which arrived at the normal gamma ray background with no indication of system instability. The decline of the gamma data matched time wise with the decline of DX signal strengths. Both gamma level and 50MHz DX signal level were back to normal level by 6PM! I showed the data to my company boss, who was Dennis, a WA3??? (strictly HF-CW guy way back then). He agreed that there was about a 90% correlation between the two events and maybe worth the effort of research for an academic paper for one or more of my night classes at F&M College. This gamma event may explain the strange data we were getting periodically from the two Nuclear Data ND100's systems in the factory product testing area. We will bring the subject up at the next week's engineering department meeting.

I went on to other projects but left word to let me know if an elevated gamma level reappeared and to save the print out for me. During the next few months I spent my lunch period in the large and well stocked company technical library. I came across several references about random short lived bursts of heavy X-ray and Gamma Rays from non-solar sources. What have I got myself into?

Was there really enough non-solar gamma and heavy x-ray radiation to ionize the upper layers of the ionosphere to such a level, on a short time basis, to produce spontaneous VHF DX long distance band opening events? Where did this radiation come from? How could one (me) determine the directionality of such an ethereal thing?

[What I need is a gamma ray telescope!](#)

I stewed this over for 20 minutes and BLAMM!

The realization hit me that I already have access to a top notch gamma ray telescope! The lead test chamber isn't used every day and never between 5PM till 8AM or on weekends! It runs automatically and thanks to the earth's rotation it scans a nice stable (approximately) 20 degree wide swath of the cosmos from **~40.0degrees North True Latitude**. Which means a scanned cone of +/- 10 degrees of zenith meridian at Lat+40 deg N. for one rotation of the planet or 360 degrees every 24 hours. This meant that one spot in the cosmos was seen by the scintillation

crystal for only 1hr 20min each earth rotation. It will see all the stars in an earth rotation in a 20 degree arc during zenith transit..... I told my boss about the whole thing, he said it was a great idea; you may do it, but on your own time. Keep it quiet or everyone will want a piece of the action. Also, no interference with your company projects or assignments. I agreed, Tally Ho!

Every night before I left for home I replaced the steel top plate with a black painted plywood lid and also made sure there was a roll of paper in the printer. In the morning I put the black steel plate on top of the Pb cave and collected the night's data output. Over my lunch period or coffee break I scanned the roll of print out. In the six months I was allowed to run the nightly scan I detected only two gamma ray bursts and both of them were in the middle of the night, but separated by three weeks. I didn't know about the bursts until the next day, so no way to check out my gamma ray/radio skip theory. The first case the "gamma ray telescope" was pointed in the general direction of Constellation Canes Venatici and then Constellation Hercules three weeks later. I could not confirm there was any DX openings connected or even coincident with these two separate gamma ray bursts.

The company glass qualification project was a success and the nuclear HP MCA equipment was needed for other major company projects including one of mine in another lab. I think the pile of lead bricks was moved to the basement and is still there, last I heard.

I sold the HW-10 after less than a year's use, the TVI on Ch2 and RFI to 100 – 102 MHz was incurable. I had a close neighbor who liked to listen to FM101 all the time. I was using a full sized stainless steel CB whip inductively tuned up to a 5/8 wave @ 50.5 MHz, SWR=1.3:1, Gain=~3db, ERP=~20watts, FB signal reports. Before I made the sale I told the new owner about the TVI/RFI. He said, "That's OK", he didn't have any close neighbors with TV's or FM radios, they are all Amish.

That gamma burst thing just bugged me for two months. So I went to a much larger library, the Fackenthal at Franklin & Marshall College. Many visits to [F&M's Grundy Observatory](#) for more study and after many months worth of spare time research I finally concluded that

the sunspot cycle is not a simplistic 11 year periodic occurrence. There are more components to it than just one 11 year solar cycle factor. en.wikipedia.org/wiki/Solar_cycle#History

The famous astronomer George Ellery Hale's observations revealed that the solar cycle has a magnetic cyclical component "with an average duration of 22 years". All of solar activity is strongly modulated by the solar magnetic cycles. I believe there are many magnetic cycles and the two that modulate the solar cycle the strongest are the 22 year and to a slightly lesser extent the 13 year factor. Together they define a greater 'long solar cycle'. **Between 1134BC and 2012 AD.** There are 286 cycles of 11 years, 242 cycles of 13 years and 143 cycles of 22 years = 3,146 years total for the 'long solar cycle' (L S C). Every 3,146 years all three factors converge and are coincident in time. Fitting known cycle peaks and adjusting the 'long solar cycle' to fit. Peak coincidence occurs: **1134BC and 2012AD.**

LONG SOLAR CYCLE

<u>11YearCycle</u>	<u>13YearFact.</u>	<u>22YearFact.</u>
1134 BC	1134 BC	1134 BC
1123 BC	1121 BC	1112 BC
1112 BC	1108 BC	1090 BC
1101 BC	1095 BC	1068 BC
1090 BC	1082 BC	1046 BC
1079 BC	1069 BC	1024 BC
1068 BC	1056 BC	1002 BC
~~~~~		
SNIP	SNIP	SNIP
~~~~~		
1935 AD	1921 AD	1858 AD
1946 AD	1934 AD	1880 AD
1957 AD	1947 AD	1902 AD
1968 AD	1960 AD	1924 AD
1979 AD	1973 AD	1946 AD
1990 AD	1986 AD	1968 AD
2001 AD	1999 AD	1990 AD
2012 AD	2012 AD	2012 AD

What important thing of significance, if any, happened in the 12th century BC?

"Celtic peoples inhabited what is now Spain, France, Germany, Austria, eastern Europe, and the British Isles." Ancient Celtic sagas and epics speak of Oden and his Sky Warriors danced brightly across the northern sky for weeks. Sounds like the Vikings or Nordics

visited the Celts in the 12th century BC. Was it the Aurora Borealis, the arctic northern lights? Watch for northern lights during 2012, they may signal a very good band opening.

The 2012 sunspot cycle maximum may be 25% to 40% higher than the 2001 cycle peak possibly due in part to the coincidence of the three peak factors. [Other implications of 2012 link:](#) See also [Atmospheric Gamma-ray Imaging Cherenkov Telescopes:](#)

What has this to do with Ham Radio?

Answer, lots! The very same ionizing radiation that hams depend on to charge up the ionosphere for DX work is used by Cherenkov Telescopes (M.A.G.I.C.) to make very deep space images of strong gamma ray sources. When a gamma ray ionizes an atom in the ionosphere, there is a release of energy, photon(s) in the optical spectrum 400nm to 440nm (nanometers wavelength, very deep blue) towards the ultra violet (UV) range. When there's lots of gamma rays hitting F1 and F2 layers there are enough photons to build patterns and images. I used a sodium-iodide crystal to convert gamma energy to 410nm flashes detected by a very blue sensitive PMT which yielded strong electrical signals. Cherenkov astronomers use the air high above us for their scintillation converter. They should try tuning the ham bands for indications of heavy gamma ray events! <http://magic.mpp.mpg.de/index.en.html>

Try [WSJT-JT6M](#) for ionospheric scatter work (FREE)! May all gamma rays be kind to you, 73's ... de AA3C – Jim ...-
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[Thanks F&M for use of](#)
[Grundy Observatory in 1970's.](#)