# PVRC Newsletter May 2015

## President's Letter – Ethan K8GU

In my April column, I wished aloud that maybe Spring would finally arrive in the northern reaches of PVRC territory in April. I can tentatively say that it has, although we did get some snow on Saturday the 25th. I felt better about postponing power washing the exterior of the house in favor of quality time getting two 240-volt circuits wired into my shack. Summer is around the corner for sure!

As most members of the Club know, PVRC has been engaged in a three-way challenge between the Northern California Contest Club (NCCC) and the Society of Midwest Contesters (SMC) in the six North American QSO Parties every year. PVRC handily won the 2014 running of that event, but we find ourselves behind SMC this year. (See table below)

Although we've managed to essentially equal NCCC's effort this year, SMC is running away. Without going into more detailed analysis undertaken by Tom, K3AJ, the obvious reason is: more ops on SSB and especially RTTY.

I would hazard a guess that I'm rather typical among contesters in that I have a modest station that plays well on CW but SSB is more challenging. SSB doesn't hurt so bad to get on and pass out a few QSOs to those who are playing at it seriously. And, this NCCC challenge is one place where every log counts because each unique operator is a multiplier!

I swore off operating RTTY after I got ARRL's Triple Play Worked All States, but I can probably exercise the K3's internal RTTY encode/decode in July for the good of the Club! Hopefully, you can too! We may organize a little to build activity in these Summer NAQPs so don't be surprised if someone encourages you to get on the air for a while.

The NAQP Challenge is not going to replace Sweepstakes for the Club's focus, but we can exploit some of the same

"ground-game" machinery that we bring to SS. Thanks to everyone who got on in the Winter runnings!

May your E-skip be short and the openings long. May your antenna projects be tractable and blessed by the permit office. May you survive Dayton and live to operate the summer HF contests. Live long and work DX.

73, Ethan, K8GU

| 2015 NAQP | **NCCC** | | | **SMC** | | | **PVRC** | | |
|---|---|---|---|---|---|---|---|---|---|
| | Points | Ops | Total Score | Points | Ops | Total Score | Points | Ops | Total Score |
| Jan CW | 3,653,508 | 59 | 215,556,972 | 4,583,493 | 69 | 316,261,017 | 4,582,876 | 67 | 307,052,692 |
| Jan SSB | 2,790,613 | 69 | 192,552,297 | 3,192,372 | 81 | 258,582,132 | 2,144,679 | 60 | 128,680,740 |
| Feb RTTY | 1,325,677 | 37 | 49,050,049 | 1,704,755 | 60 | 102,285,300 | 774,556 | 38 | 29,433,128 |
| Jul RTTY | | | | | | | | | |
| Aug CW | | | | | | | | | |
| Aug SSB | | | | | | | | | |
| **Total** | 7,769,798 | 165 | **457,159,318** | 9,480,620 | 210 | **677,128,449** | 7,502,111 | 165 | **465,166,560** |

**PVRC Officers:**

**President:** K8GU Ethan Miller
**Vice President:** W3LL Bud Governale
**Vice President:** K3AJ Tom Valenti
**Secretary:** W4VIC Vic Culver
**Treasurer:** N3RR Bill Hider

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W3GRF, W4AAV, W4KFC, N0FFZ, W4LUE, W7YS, VP2VI/W0DX, W3IKN, W4KFT

**PVRC Website: http://www.pvrc.org**

## When You Look in the Contesting Dictionary Under "BIC" You See K3ZO's Picture – John K3TN

Back in the late 1980's Dave KM3T and Mike KC8C (SK) lived at Fred K3ZO's house while Fred was stationed in Thailand. We all operated at Frank W3LPL's multi-multi in the "Big 4" DX contests, but would occasionally do Multi-Single efforts from Fred's in contests like the IARU or WPX events.

One year I came over in the morning to put in a shift and Dave was sound asleep across two chairs while Mike was running on 15m. The placed smelled like diesel fuel, so I woke Dave up and we found what appeared to be oil leaking out of the oil tank in Fred's basement. We didn't know what to do but Fred had been spotted on 20m on the Packetcluster (it was still actually a **Packet** cluster), so Dave grabbed the radio and QSYed to 20m:

**HS0AC:** CQ Contest HS0AC, Hotel Sierra Zero Alpha Charlie, Contest
**KM3T:** KM3T, KM3T
**Fred:** KM3T 59 49
**Dave:** Fred, its Dave – the oil tank is leaking oil into the basement, what should we do??
**Fred:** You should get on 15M for the EU skew path opening!! What are you doing on 20??

Almost thirty years later I had this recent email exchange with Fred:

From: Alfred Laun < hs0zar@xyz.com>
To: John Pescatore < jpescatore@xyz.com>
Sent: Fri, Mar 27, 2015 3:33 pm
Subject: Thanks for the Stamps

Hi John: Many thanks for the stamps as a bureau contribution. Unfortunately this past Wednesday I was not able to make the lunch because Griffith Oil was here replacing my 1958-model furnace which finally gave out in the middle of the Russian contest so the "ground conductivity" in the shack was enhanced as my shoes were in water as I operated.

Hopefully nothing will impede my attendance at the May luncheon.

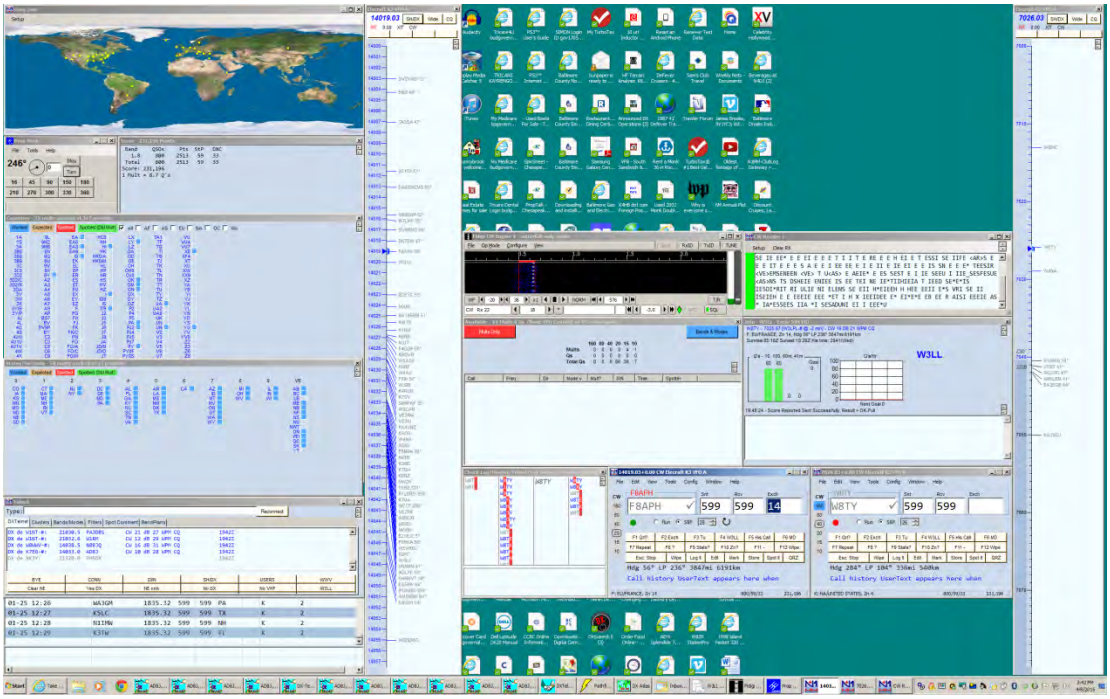
73, Fred, K3ZO

## Acom 2000A Amplifier For Sale – Jim N3JT

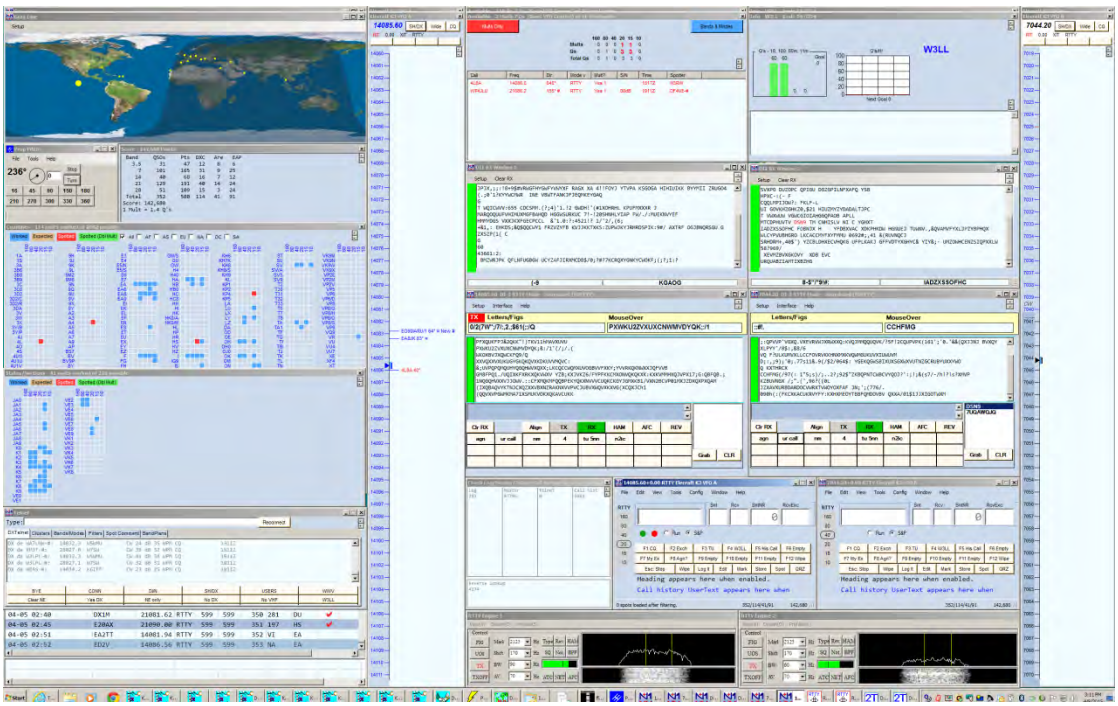
I have gone all-Elecraft (KPA500) and no longer need the Acom. It is in the sealed box from Array Solutions following a $1400 refurbishment, including new CPU, etc. The cabinet is less than perfect given it's from the early 2000's (non-smoking environment). It is, of course, about the most reliable amplifier of its kind on the market.

Going price on EHam is $5000-5800. The tubes were installed less than a year ago (and they're not that expensive anyway.) I'll expect $5400 considering what I just paid Array Solutions. **Contact jtalens at Verizon dot net**

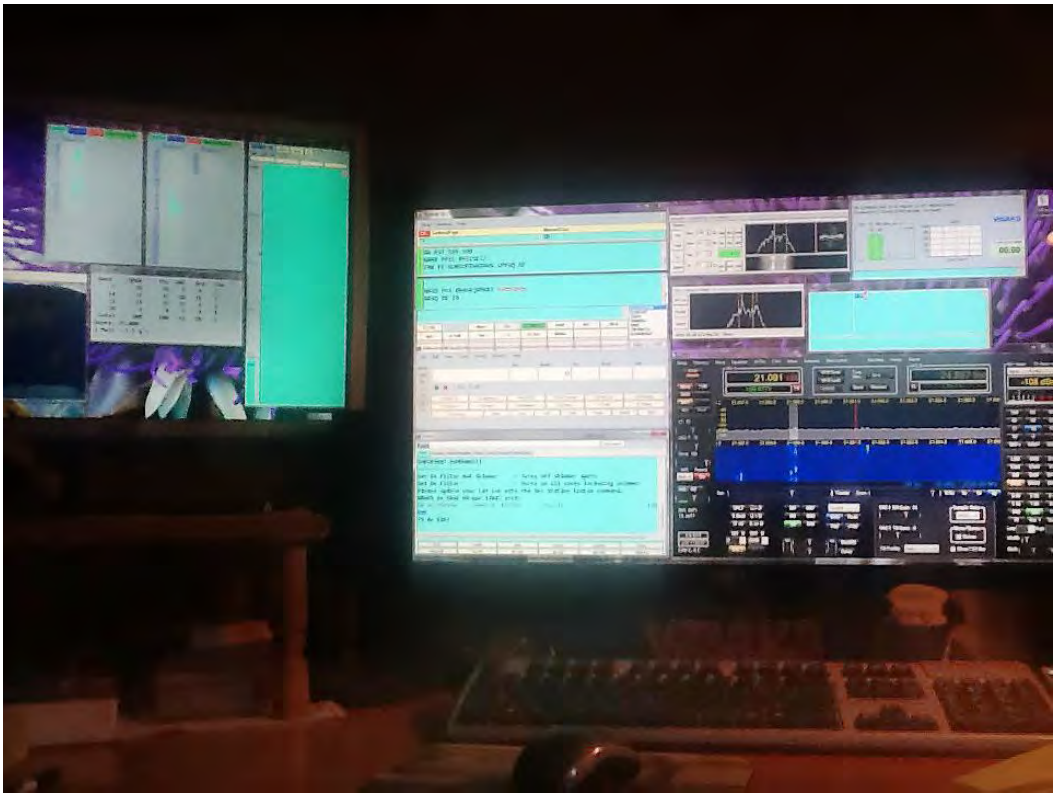
## What PVRCers Stare at All Weekend Long



W3LL's N1MM+ CW setup, showing CW decoder integrated in

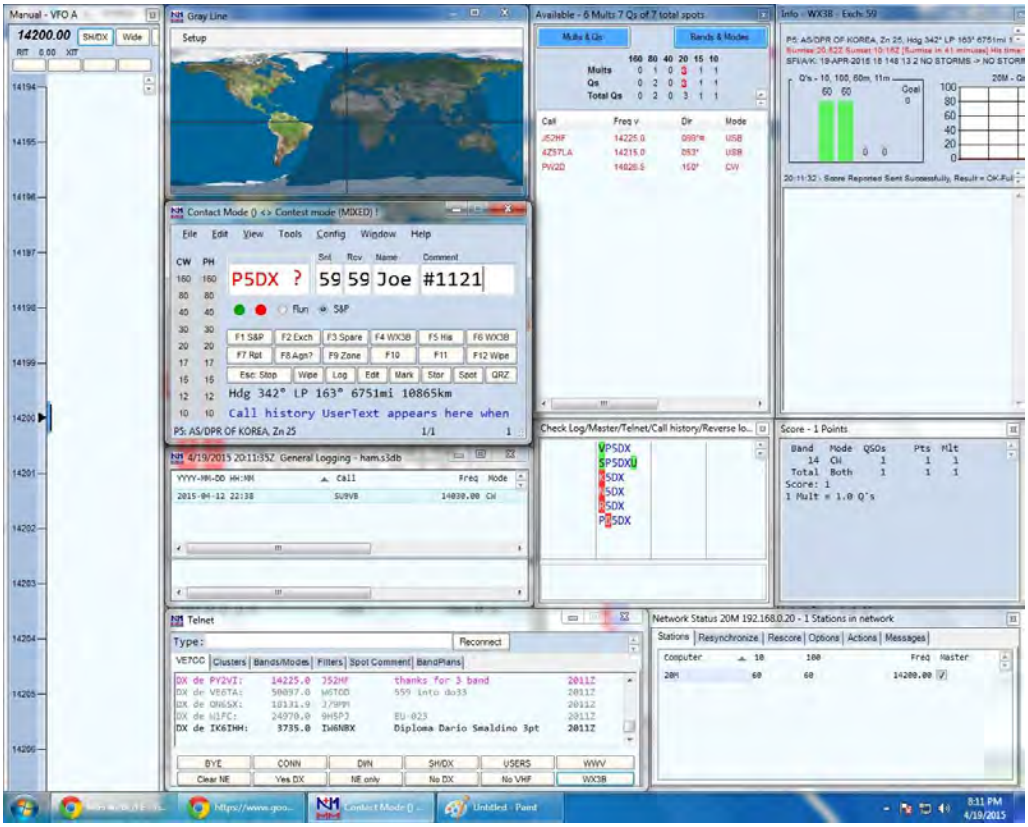


W3LL's N1MM+ RTTY setup, with multiple RTTY decoders running.

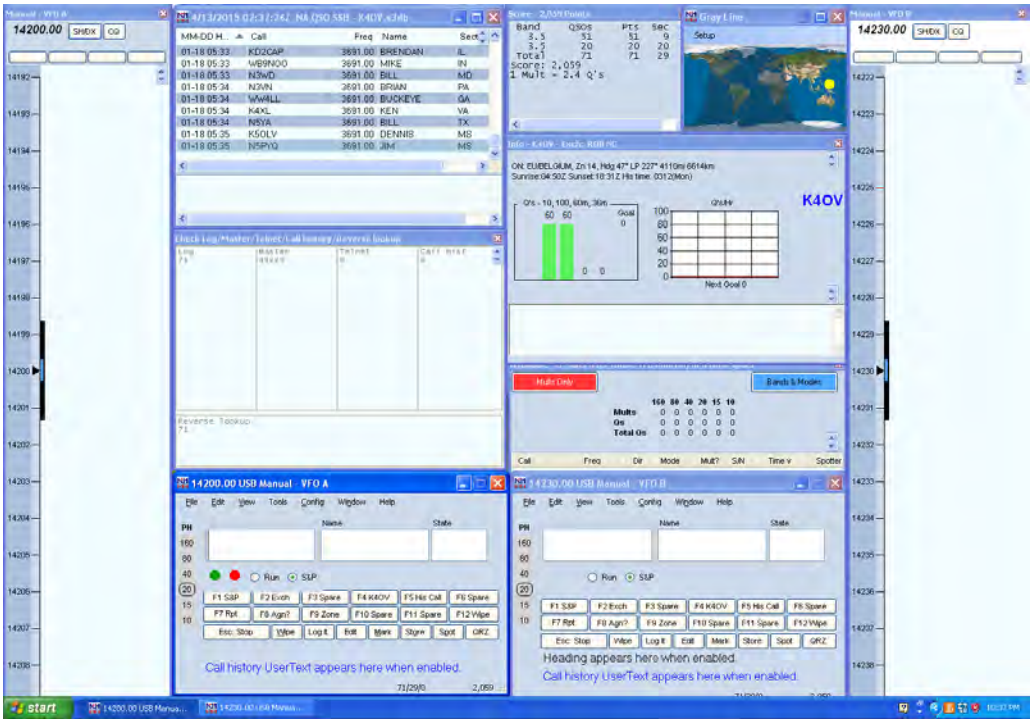


W8AKS RTTY setup, with multiple monitors

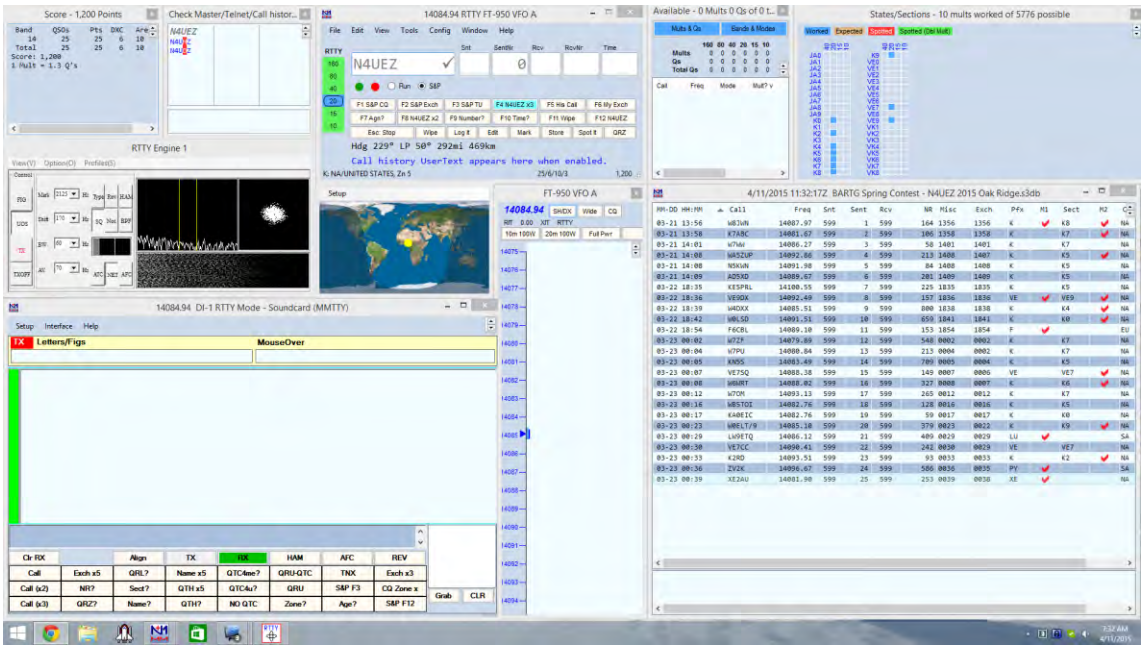
N3AM's remote setup: MacBook Pro running Parallels and Windows 7. Logging with N1MM Classic. Foscam web camera monitors the rotator control box and P3 monitor scope (shown).



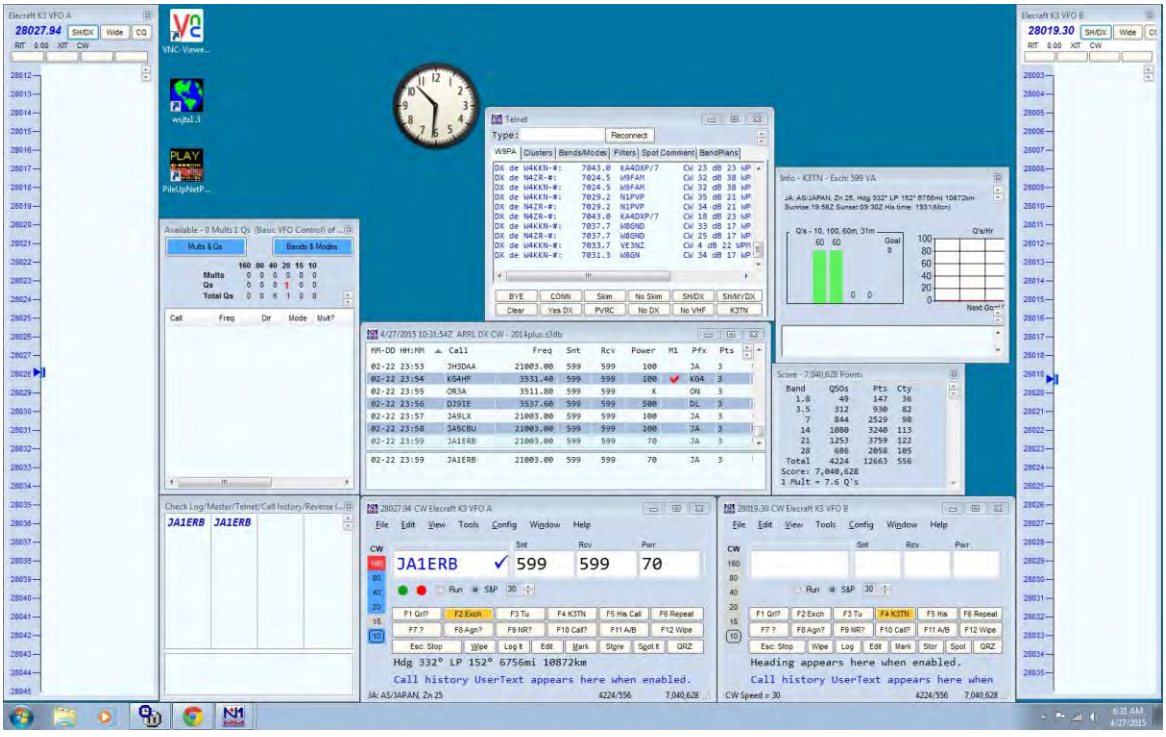
WX3B running N1MM+, working a very unique mult…



K4OV running N1MM+ in a very clean SO2V setup with some screen overlap.

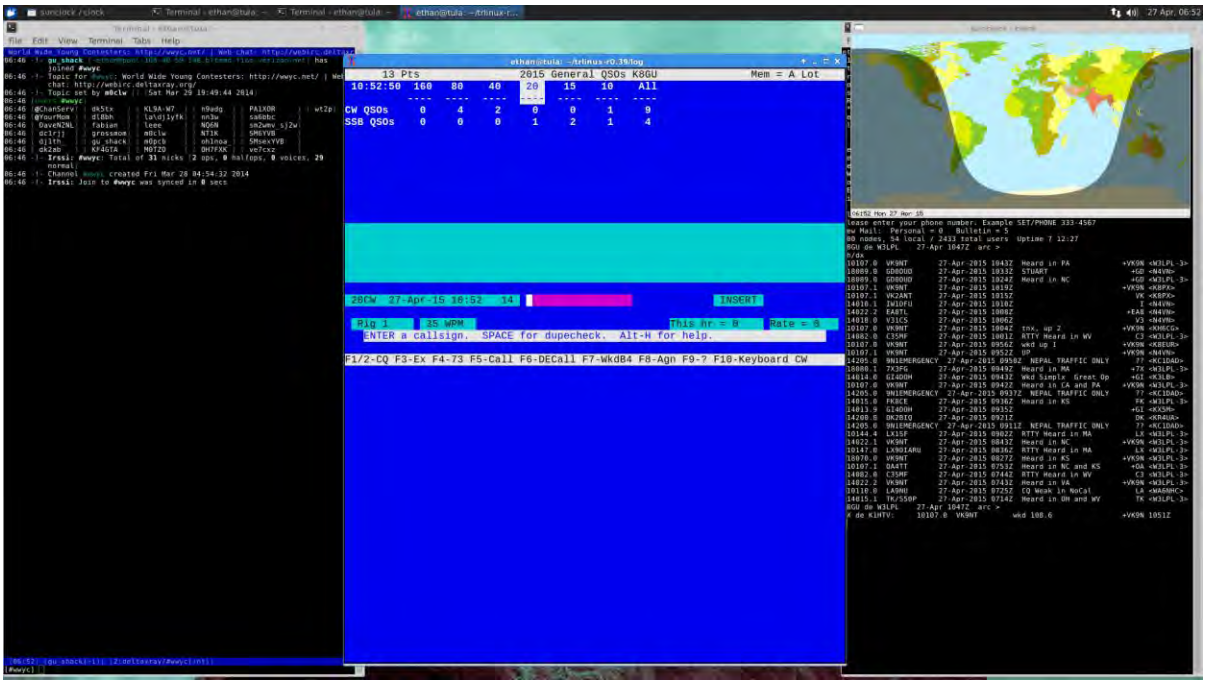


N4UEZ running N1MM+ on what must be a large monitor!

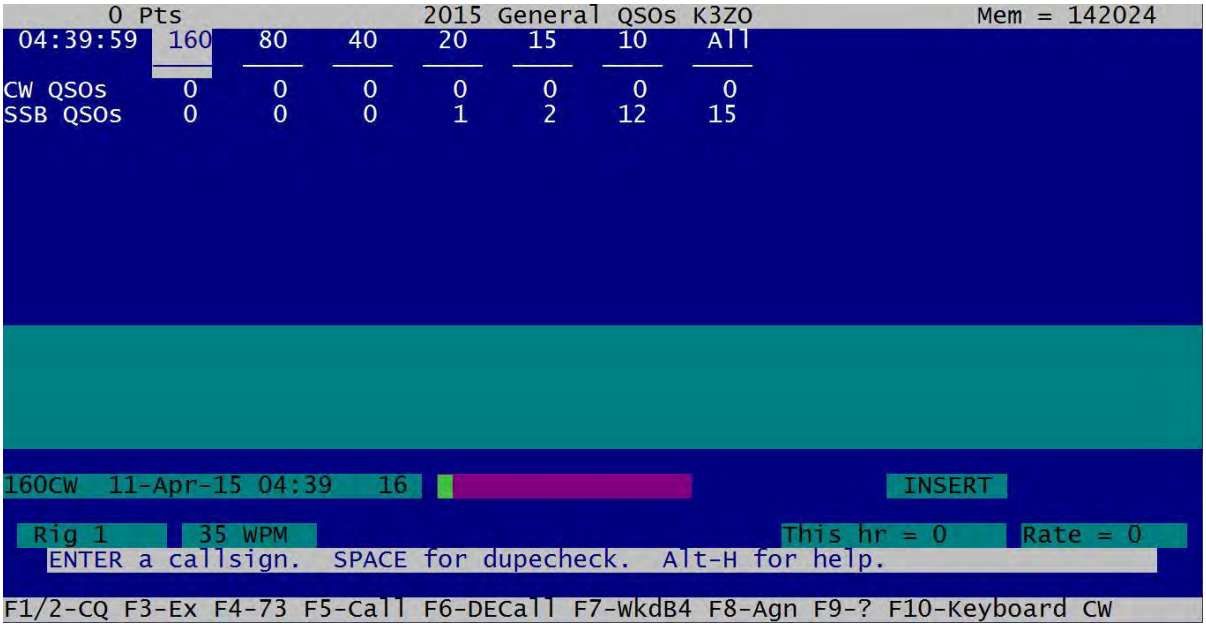


K3TN running N1MM in SO2V with some actual screen background showing!

That ends the 21st century section, now to highlight some Throwback Thursday screens:



K8GU running TR-linux with the World Wide Young Contesters IRC channel on the left.




And finally, Fred “I don’t need no steenken technology” K3ZO running “Good old TR-LOG for DOS. Done on a laptop with 32-bit version of Windows 7 so DOS programs will work.”

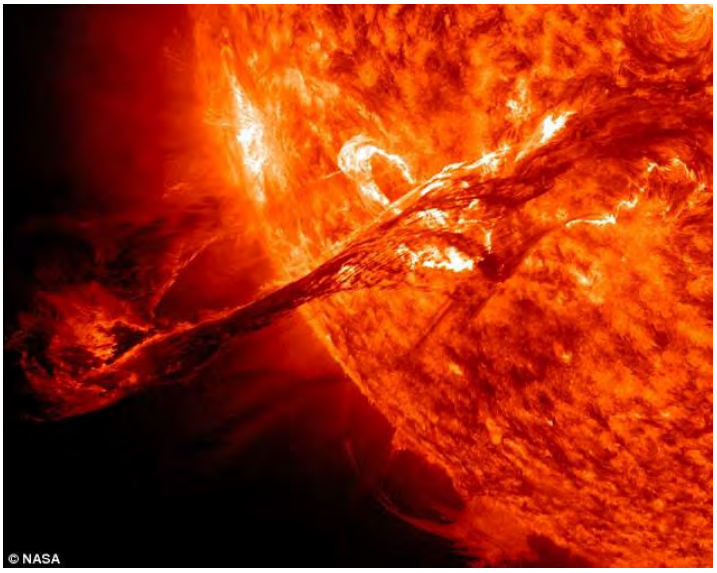
## Two Year Solar "Season" Observed – Daily Mail

**Seasons of the sun revealed: Twisted bands of energy may be driving super storms every two years**

By Jonathan O'Callaghan for MailOnline

Published: 11:19 EST, 7 April 2015

A previously unknown seasonal change on the sun is occurring every two years, according to a new study. Researchers have found that twisted bands of magnetic fuel reach the surface of the sun every two years - in addition to its existing 11-year cycle. And when the seasons combine, the activity of the sun can be amplified, producing mega storms that are even more dangerous to Earth than others.




Scientists in Colorado have found evidence for a new solar season cycle. Every two years it appears 'bands' of magnetic field move to the surface. This combines with the existing 11-year solar cycle, causing even more powerful coronal mass ejections (CMEs), pictured, and solar flares that can endanger Earth.

Scientists in Colorado have found evidence for a new solar season cycle. Every two years it appears 'bands' of magnetic field move to the surface. This combines with the existing 11-year solar cycle, causing even more powerful coronal mass ejections (CMEs), pictured, and solar flares that can endanger Earth The study was carried out by a team of researchers led by the National Centre for Atmospheric Research (NCAR) in Colorado.

They found that the changes seem to be driven by bands of strong magnetic fields in the sun's hemispheres which emanate from the solar interior. It was already known that the sun goes through a solar cycle of 11 years, during which its activity increases and decreases.

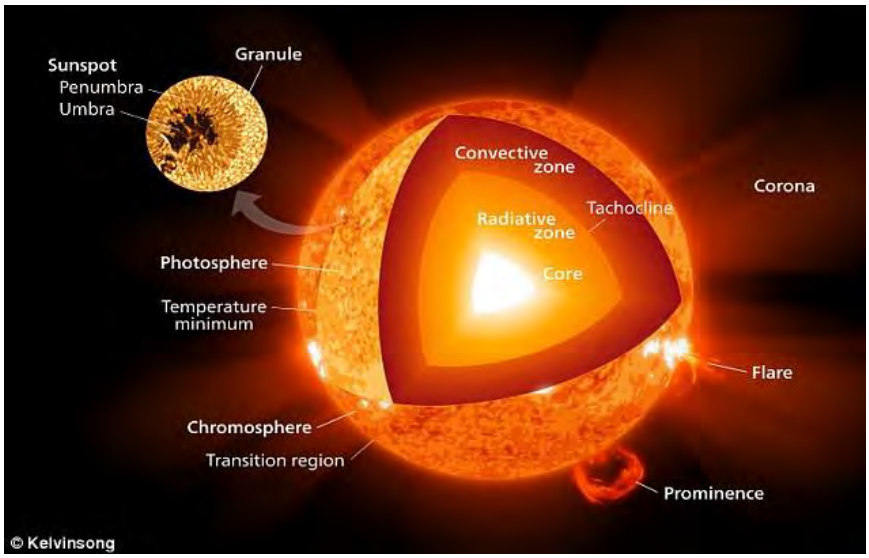
## SOLAR STORMS AND EARTH

Solar flares and coronal mass ejections (CMEs) can damage satellites and have an enormous financial cost. The charged particles can also threaten airlines by disturbing the Earth's magnetic field. Very large flares can even create currents within electricity grids and knock out energy supplies. A positive aspect, from an aesthetic point of view, is that the auroras are enhanced.

Geomagnetic storms are more disruptive now than in the past because of our greater dependence on technical systems that can be affected by electric currents. But this shorter two-year season seems to also play a part in the sun's activity, on a similar scale to the 11-year cycle - despite being much quicker. The new solar season occurs when twisted, ring-shaped 'bands' of magnetic field rise from the solar interior and pass to the surface through the tachocline - a 'transition' region in the outer third of the sun.

'Much like Earth's jet stream, whose warps and waves have had severe impact on our regional weather patterns in the past couple of winters, the bands on the sun have very slow-moving waves that can expand and warp it too,' said co-author Dr Robert Leamon, a scientist at Montana State University. 'Sometimes this results in magnetic fields leaking from one band to the other. In other cases, the warp drags magnetic fields from deep in the solar interior, near the tachocline, and pushes them toward the surface.'

The result of this motion is that the bands create turbulent regions of activity on the surface, causing solar flares and coronal mass ejections (CMEs). CMEs are the huge waves of material that are seen in images of the sun, and they can pose a threat to satellites in Earth orbit. Solar flares are flashes of energy on the surface of the sun, which are sometimes associated with CMEs - although their connection is not well understood.




The new solar season discovery occurs when twisted, ring-shaped 'bands' of magnetic field rise from the solar interior and pass to the surface through the tachocline - a 'transition' region in the outer third of the sun. Shown in this illustration are the various different regions of the sun and a sunspot.

The bands, which appear in each hemisphere of the sun, cause the 11-year solar cycle to actually become a longer cycle that lasts 22 years. The 11-year solar cycle sees a periodic change in the sun’s activity - such as the number of ejections - in addition to changes in the number of sunspots, flares and other visible differences.

**HOW DO SOLAR FLARES FORM?**

A solar flare occurs when magnetic energy that has built up in the solar atmosphere is suddenly released. Radiation is emitted across virtually the entire electromagnetic spectrum, from radio waves at the long wavelength end, through optical emission to X-rays and gamma rays at the short wavelength end. The amount of energy released is the equivalent of millions of 100-megaton hydrogen bombs exploding at the same time

A flare occurs when magnetic energy that has built up in the solar atmosphere is suddenly released - mostly in the active regions around sunspots. Their frequency varies from several a day, when the sun is particularly active, to less than one a week during quiet periods.

However, the cause of the 11-year cycle is poorly understood. And according to this new research, when the 11-year cycle combines with the two-year cycle, the solar storms that pummel Earth's atmosphere can be amplified.

The bands appear to take place separately in the northern and southern hemispheres, with activity peaking over 11 months, then dropping over another 11 months. The almost annual variations can be likened to regions on Earth that have two seasons, such as a rainy season and a dry season.

'What we're looking at here is a massive driver of solar storms,' said Dr Scott McIntosh, lead author of the new study and director of NCAR's High Altitude Observatory. 'By better understanding how these activity bands form in the sun and cause seasonal instabilities, there's the potential to greatly improve forecasts of space weather events.' The overlapping bands are fueled by the rotation of the sun's deep interior, according to observations by the research team.

The study, published this week in Nature Communications, could help lead to better predictions of massive geomagnetic storms in Earth's outer atmosphere that sometimes disrupt satellite operations, communications, power grids and other technologies. The research was funded by Nasa and the National Science Foundation, which is NCAR's sponsor.

The 11-year solar cycle sees a periodic change in the sun’s activity - such as the number of ejections - in addition to changes in the number of sunspots, flares and other visible differences. Shown here are images of the sun over one cycle showing changes in its activity.

The 11-year solar cycle sees a periodic change in the sun’s activity - such as the number of ejections - in addition to changes in the number of sunspots, flares and other visible differences. Shown here are images of the sun over one cycle showing changes in its activity. The surges of magnetic fuel from the Sun's interior catastrophically destabilise the corona, the sun's outermost atmosphere. They are the driving force behind the most destructive solar storms.

'These surges or "whomps" as we have dubbed them, are responsible for over 95 per cent of the large flares and CMEs - the ones that are really devastating,' Dr McIntosh said.

The almost-annual variability can also help explain a cold-war era puzzle: why do powerful solar flares and CMEs often peak a year or more after the maximum number of sunspots? This lag is known as the Gnevyshev Gap, after the Soviet scientist who first reported it in the 1940s.

The answer appears to be that seasonal changes may cause an upswing in solar disturbances long after the peak in the solar cycle. Researchers can turn to advanced computer simulations and more detailed observations to learn more about the profound influence of the bands on solar activity.

Dr McIntosh said this could be assisted by a proposed network of satellites observing the sun, much as the global networks of satellites around Earth have helped advance terrestrial weather models since the 1960s. 'If you understand what the patterns of solar activity are telling you, you'll know whether we're in the stormy phase or the quiet phase in each hemisphere,' Dr McIntosh said. 'If we can combine these pieces of information, forecast skill goes through the roof.'

Original Daily Mail article here.

## Membership News

PVRC added one new member since the last newsletter. Please welcome Bill N4SV in the Central chapter.

Chapter leaders please remember to complete the Meeting Attendance Report.

## Upcoming Contests and Log Due Dates

**Contests This Month**

- May 2 – ARI DX
- May 9 – CQM DX
- May 9 – VOLTA RTTY
- May 16 – EA CW
- May 16 – Baltic Contest
- May 30 – WPX CW

**Logs Due This Month**

- May 4 – YU DX
- May 12 – JIDX
- May 13 – Yuri Gagarin
- May 13 - Manchester Mineira

**See WA7BNM's Contest Calendar for more detail and the latest information.**

## The Editor's Last Word – John K3TN

There are only so many ways you can arrange the screens in N1MM but it seems like PVRCers have exercised most of the possible combinations… I mainly look at the Entry window and the Check window when running, and the Available Multiplier window when S&Ping. I try not to look at the rate window, unless I'm running and it feels agonizingly slow.

The Dayton Hamvention is in a few weeks. Last year a microdiscectomy knocked out my trip to Dayton, and the year before that rotator cuff surgery. Barring another session under the knife, I'll be presenting at the Dayton Contest forum on remote contesting at K4VV in what was billed as the "first all remote multi-multi." W1VE and W1UE will also be presenting on their remote contesting operation.

WPX CW is at the end of the month – I went out and got a club callsign. Look for KK3TN, a very rare prefix, and all I need to do for QSLs is glue another K in front of my call…

June is Field Day month – if you have any pictures of previous FD operations, send them to me for the Newsletter. Any other items of interest, pictures, contest soapbox thoughts, whatever you have – send to jpescatore at aol dot com.

## From the PVRC Treasurer – Bill N3RR

PVRC has chosen not to implement an annual Dues requirement. We depend on the generosity of all of our club members to finance our annual budget. In addition, active PVRC members are expected to participate and submit logs for at least two PVRC Club Competition contests per year.

When contemplating your donation to PVRC, each member should consider the benefit you are receiving from PVRC and its many opportunities for your personal growth in our wonderful hobby, then donate accordingly.

Direct donations to PVRC via Credit Card or PayPal may be made by clicking this "Donate" button and clicking the next Donate button that appears on your screen:

## Eyeball QSO Directions

The latest info on local club meetings and get together will always be sent out on the PVRC reflector and posted on the PVRC web site.

**NW Region:** Meetings are generally held on the third Tuesday of each month at the Golden Corral Frederick, MD
5621 Spectrum Dr.
Frederick, MD 21703
PVRC Meets in the BANQUET ROOM
(301) 662-5922

From Interstate 270 south of Frederick, MD
take MD Route 85, "Buckeystown Road" NORTH.
First right on Spectrum Drive.
Restaurant is in a couple of blocks. Most arrive about 6 PM for dinner and informal discussions. The meeting begins at 7:00 PM.

Contact: Jim WX3B

**Central Region:** Meets monthly the second Monday of each month, except June, July & August). The location alternates between the below MD and VA locations. Pre-meeting dinners start at 6:00 pm and meetings start at 7:30 pm.

VA LOCATION: Anita's, 521 E. Maple Ave, Vienna, VA. Tel: 703-255-1001. Meets at this location during the months of February, April and October.
Contact: Rich NN3W

MD LOCATION: Max's Café. 2319 University Blvd W, Wheaton MD 20902. Tel: 301-949-6297 People usually begin arriving at the restaurant around 6:30. Meets at this location during the months of January, March, May, September and November. Contact: Art K3KU

**The Laurel, MD Region: Bill N3XL** The PVRC get-together is held at the first LARC meeting each quarter at the clubhouse.

**The Annapolis Crew: Dan K2YWE** Meetings are held on the 4th Wednesday of each month at Broadneck Grill in Annapolis. We gather at about 5:30 PM and order dinner about 6. We break up usually before 8 PM. E-Mail K2YWE to be put on the e-mail reminder list.

**PVRC-NC:** The PVRC NC-East chapter meetings are held at Manchester's Bar and Grill on the 9100 block of Leesville Rd. in North Raleigh, with "QRM" beginning at 6:00pm and the dinner meeting following shortly thereafter. The meeting is held monthly on the 1st Thursday of most months, cancellations or changes usually announced on the PVRC-NC website. The PVRC NC-West Chapter holds its meetings on the 4th Monday of each month at the Mellow Mushroom, 314 W. 4th St., Winston-Salem, NC. Ragchew at 7:00pm, dinner meeting starts at 7:30pm. All contesters and interested guests are invited!

**Over the Hill Bunch:** The group meets for lunch at noon alternately in Maryland at the College Park Holiday Hotel Route 1 and the Beltway or in Virginia at the Parkview Marriot near route 50 and the Beltway. Meetings generally are held on the last Wednesday of the month and are subject to change. Meetings are announced by E-Mail. All PVRC members, non-members interested in membership and guests are welcome. For information contact Roger Stephens, K5VRX, 703-658-3991 for Virginia meetings; or Cliff Bedore W3CB or get on 147.00 for Maryland meetings.

**Downtown Lunch Group:** Meets on the 3rd Wednesday or Thursday of the month in the downtown area of Washington, DC. Locations occasionally change, but are always Metro accessible. Details are sent out on the PVRC reflector. Feel free to contact Eric W3DQ or Brian WV4V for details and directions.

**Southwest VA Chapter:** The Southwest VA group meets each Wednesday at about 8:30 AM at Hardees at 20265 Timberlake Road in Lynchburg, VA. This is an informal gathering, but normally has about 10-12 attendees. Contact Mark Sihlanick N2QT, Tel: 434-525-2921

**Southern Maryland Chapter**: We meet on the last Wednesday of each month at Nicolletti's Pizza located at: 22741 Three Notch Road, California, MD 20619 Phone: 301-863-2233. Check out their menu here.

Talk-in on 145.350 (-) PL-156.7

Meet and Eat 6:30 – 7:30, PVRC meeting afterwards.

Contact the Chapter Chair, Tom Shelton, ND3N at GL1800Winger<at>Verizon<dot>net or (240) 434-3811 with any questions

**The Tidewater Chapter meets** the 3rd Tuesday of every month at Frankie's Place for Ribs located in the Fairfield Shopping Center on the corner of Kempsville Rd and Providence Rd in Virginia Beach. The meeting starts at 7:00 PM.

Contact either Chapter Chair: Don Lynch, W4YZT, viaw4yzt.don@gmail.com or Ron Young, W8RJL, via w8rjl@arrl.net All Amateurs are invited.

If you'd like to add or correct a listing, contact K3TN for inclusion in the Newsletter!

## Now a Word From Our Sponsors

PVRC doesn't ask for dues, but the Club does have expenses. Please donate online here. You can also support the Club by buying from the firms listed who advertise in the newsletter, or by getting your company to sponsor the newsletter!

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Janet, KL7MF, Mgr.
anaheim@hamradio.com

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Magnolia between
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oakland@hamradio.com

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Tom, KM6K, Mgr.
Hwy. 163 & Claremont Mesa
sandiego@hamradio.com

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Dan K6DN, Co-Mgr.
Howard, W6HOC, Co-Mgr.
So. from Hwy. 101
sunnyvale@hamradio.com

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1509 N. Dupont Hwy., 19720
(302) 322-7092
**(800) 644-4476**
Rick, K3TL, Mgr.
RT.13 1/4 mi., So. I-295
newcastle@hamradio.com

**PORTLAND, OR**
11705 S.W. Pacific Hwy.
97223
(503) 598-0555
**(800) 854-6046**
Leon, W7AD, Mgr.
Tigard-99W exit
from Hwy. 5 & 217
portland@hamradio.com

**DENVER, CO**
8400 E. Iliff Ave. #9, 80231
(303) 745-7373
**(800) 444-9476**
John, N5EHP, Mgr.
denver@hamradio.com

**PHOENIX, AZ**
1939 W. Dunlap Ave., 85021
(602) 242-3515
**(800) 444-9476**
Gary, N7GJ, Mgr.
1 mi. east of I-17
phoenix@hamradio.com

**ATLANTA, GA**
6071 Buford Hwy., 30340
(770) 263-0700
**(800) 444-7927**
Mark, KJ4VO, Mgr.
Doraville, 1 mi. no. of I-285
atlanta@hamradio.com

**WOODBRIDGE, VA**
(Near Washington D.C.)
14803 Build America Dr. 22191
(703) 643-1063
**(800) 444-4799**
Steve, W4SHG, Mgr.
Exit 161, I-95, So. to US 1
woodbridge@hamradio.com

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(Near Boston)
224 N. Broadway, 03079
(603) 898-3750
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- Compact 5.3" x 1.5" x 6.5", 2.6 lbs
- FNB-85 NiMH battery + NC-72B included

**Call Now For Low Pricing!**

**FT-8800R** 2M/440 Mobile
- V+U/V+V/U+U operation
- V+U full duplex • Cross Band repeater function
- 50W 2M 35W UHF
- 1000+ Memory channels
- WIRES ready

**Call Now For Low Pricing!**

**VX-2R** 2M/440 HT
- World's smallest Dual-band HT w/ wide RX
- 1.5 W RF output
- WIRES compatible
- 1300 Memory channels

**Call For Low Price!**

**FT-60R**
- 2m/440 HT
- 5W Wide-band receive
- CTCSS/DCS Built-in
- Emergency Auto ID

**Low Price!**

**VX-7R/VX-7R Black**
50/2M/220/440 HT
- Wideband RX - 900 Memories
- 5W TX (300mw 220Mhz)
- Li-Ion Battery
- Fully Submersible to 3 ft.
- Built-in CTCSS/DCS
- Internet WIRES compatible

**Now available in Black!**

**VX-6R**
2M/220/440HT
- wideband RX – 900 memories
- 5W 2/440 , 1.5W 220 MHz TX
- Li-ION Battery - EAI system
- Fully submersible to 3 ft.
- CW trainer built-in

**NEW Low Price!**

**VX-150**
2M Handheld
- Direct Keypad Entry
- 5w output
- 209 memories
- Ultra Rugged

**Call Now For Special Pricing!**

**FT-857D**
Ultra compact HF, VHF, UHF
- 100w HF/6M, 50w 2M, 20w UHF
- DSP included • 32 color display
- 200 mems • Detachable front panel (YSK-857 required)

**Call for Low Price!**

**FT-7800R** 2M/440 Mobile
- 50w 2m, 40w on 440mHz
- Weather Alert
- 1000+ Mems
- WIRES Capability
- Wideband Receiver (Cell Blocked)

**Call Now For Your Low Price!**

**FT-2000** HF + 6M tcvr
- 100 W w/ auto tuner • built-in Power supply
- DSP filters / Voice memory recorder
- 3 Band Parametric Mic EQ • 3 IF roofing filters

**Call Now For Low Pricing!**

**FT-8900R** Quadband Transceiver
- 10M/6M/2M/70CM • Wires capable
- 800+ memories • Built-in CTCSS/DCS
- Remotable w/optional YSK-8900

**Call Now For Special Pricing**

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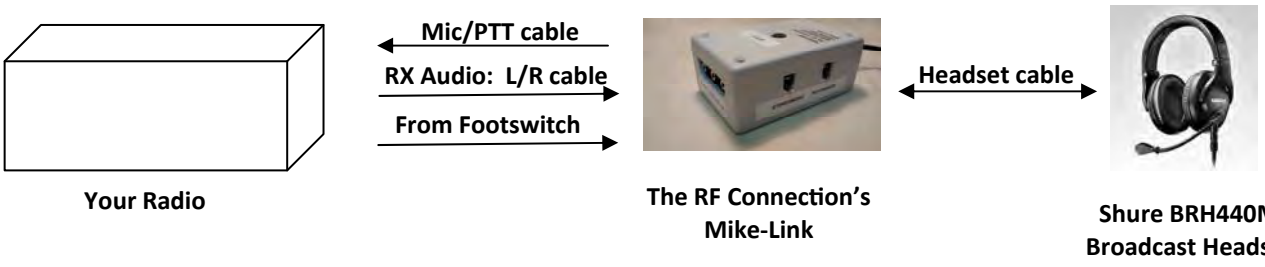
# Attention: Contesters

## 7 Big Problems that are Probably Affecting Your Scores Right Now!

and

## How The RF Connection's Mike-Link and Shure© Legendary Performance™ Broadcast Headsets Solve them ALL!




**Problem #1**: ***Foot Not Near Footswitch, QSO Missed***

**Solution #1**
**Use Your Finger Instead!**

- Mike-Link finger-touch PTT
- Momentary SPST switch
- Positive tactile feel


**Problem #2**: ***You wear eyeglasses and you have a "pain in the temple" after "X" hours on-air***

**Problem #3**: ***Brand 'Z' comfortable headset solves problem #2, BUT increases external background noise***

**Solutions #2 & #3**
**Use Shure BRH440M Broadcast Headset**

- External background noise isolating
- Closed back—noise isolating
- Gamer-style, circumaural (over-the-ear) ear cup pads

**Problem #4**: ***"RF in your mic audio OM!"***

**Solution #4 - Use Mike-Link**

**Ferrite RF suppression chokes included on:**

- microphone audio
- receiver audio
- PTT

**Problem #5**: ***Operating CW, you have a "pain in the head" after "Y" hours on-air***

**Solution #5 - Use Mike-Link**
**Periodically, Flip the Reverse/Inphase Audio Switch**

- Reverses mono audio source for greater listening pleasure


**Problem #6**: ***Special microphone is needed for your ICOM radio***

**Problem #7**: ***External batteries needed when your ICOM-specific headset is used with other radio brands***

**Solutions #6 & #7**
**Use Mike-Link & Shure BRH440M**

- Built-in, user-selectable, Active ICOM pre-amp
- External power/battery NOT required
- Built-in, user-selectable mic input impedance 2.5K or 10k

**Call For Your FREE REPORT:**

**"The R.F. Connection's 'Mike-Link' and Shure© Legendary Performance™ Broadcast Headsets"**

**Call Joel for your *SPECIAL PVRC PRICE*!**

# 301-840-5477

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Kenwood radios are well known to serious contesters. Now you can get every Kenwood Amateur Band Transceiver at DXEngineering.com. DX Engineering also carries genuine Kenwood Radio accessories.


## *Dual Vertical Array*

The Dual Vertical Array is an easy-to-install two-element vertical antenna phasing system that offers great HF performance. It uses a new design to increase array efficiency by eliminating the waste load port found on previous systems. The array can handle 2 kW, with a front-to-back over 20 dB and up to 3 dB of gain over a single vertical. Dual Vertical Array systems are available for the 160, 80 and 40 meter bands.

## *Skyhawk™ and Skylark™ Multi-band Yagi Antennas*

With over 7 dB gain on the 20 and 15 meter bands, plus over 9 dB on the 10 meter band, the DX Engineering Skyhawk has become the choice of experienced HF DXers. A trap-free design ensures the best bandwidth and lowest loss possible.

You get almost 8 dB gain on the 17 and 12 meter bands with the DX Engineering Skylark. The antenna also provides an SWR under 1.3 to 1 across each band, plus a front-to-back over 20 dB. The Skylark's simple design eliminates any moving parts, which contributes to all-weather reliability.

## *JK Antennas*

Built to withstand the wrath of Mother Nature, JK Antennas' time-tested Yagi designs are an excellent foundation for your high performance HF/VHF station. Each antenna delivers a perfect fusion of reliability, price, and results. JK Antennas has several models that you can only get at DX Engineering.

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