



PVRC Newsletter

December 2020

Newsletter Editor: John K3TN jpescatore@aol.com

Website: <http://www.pvrc.org>

Meeting Info: <http://www.pvrc.org/chapters.htm>

Facebook: <https://www.facebook.com/groups/PotomacValleyRadioClub/>

President's Letter – Tom K3AJ

How Many Cats Are Too Many Cats?

One of my daughters used to have four cats. I would often ask her: "How many cats are too many cats?" then immediately answer my own question: "Four cats are too many cats." Now, before the cat lovers out there start flaming me on the reflector for making an anti-cat statement, let me disclose that here at K3AJ we have two cats. (*Editor's note: we, too, have two cats and two cats is too, too many, too.*) They are well fed and have the kind of soft life they know they are entitled to.

We could never ask "How many PVRC members are too many?" of course, but from time to time we engage in pondering the surprising question: "How many PVRC members are there?" You mean we don't know the answer to that question? How can that be? Because we have a membership for life policy and don't charge dues as a condition of membership, I often tell new PVRC members that PVRC is a lot like the French Foreign Legion: the only way out is to die. This makes the question hard to answer definitively.

Conducting the 2020 PVRC elections using an on-line service caused us to undertake a deep dive into PVRC membership and activity. So, we now have the answers to that question. Yes, that's plural.

There are 1381 members listed in the roster, including 107 silent keys for a net of 1274 members. So that's one way of looking at it. But surely there are many listed here who are no longer active.

To define members who "participate in club activities" we counted how many members have attended a PVRC chapter meeting or turned in a score in the last two years. We also counted anyone who had ever earned a 5M plaque regardless of current activity. That number is 580.

Remembering that PVRC is a contest club, after all, we also looked at how many members have turned in at least one score in the 5M program (contests with club competition) in the last two years. That number is 392.

Even that last, smaller number is pretty big – representing the core of PVRC members who are active and turn in scores. And we still have a lot of upside potential to reengage some of those who still show up for meetings but aren't active in contesting right now.

73 and Go PVRC!
Tom K3AJ
President, PVRC

<u>PVRC Officers:</u>		<u>Trustees:</u>
President:	K3AJ Tom Valenti	K3MM, N3OC, K2AV, K4ZA, W3LPL, N4MM, N4ZR, W2RU, W3LL
Vice President:	N4GU Mike Barts	
Vice President:	W3MMM Jay Horman	<u>PVRC Charter Members (all SK):</u>
Secretary:	N3QE Tim Shoppa	W3GRF, W4AAV, W4KFC, N0FFZ, W4LUE, W7YS, VP2VI/W0DX,
Treasurer:	K2YWE Dan Zeitlin	W3IKN, W4KFT

Newsletter Editor: John K3TN jpescatore@aol.com
PVRC Website: <http://www.pvrc.org>
PVRC Meeting Info: <http://www.pvrc.org/chapters.htm>
PVRC on Facebook: <https://www.facebook.com/groups/PotomacValleyRadioClub/>

Support Our Newsletter Advertisers!

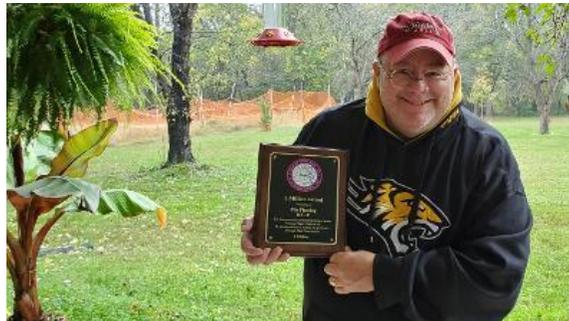
PVRC Award Winners Rogue Gallery – Dan K2YWE



K2YWE presents W4MYA trophy to AA3S, Laurel Chapter chairman



K3AJ models PVRC Olympics gold



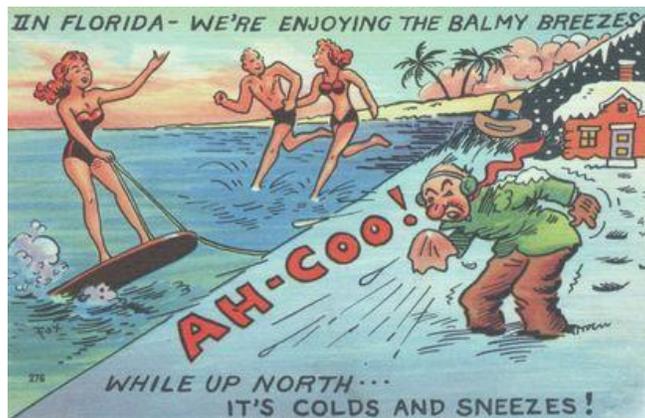
Top: K3LU displays his newly awarded 5M plaque
Bottom: Mike KA4RRU and Lar K7SV posing with their Olympic Medals (and Top Gun Award for Lar) at KA4RRU QTH. (K3AJ photos)

Snowbird Antenna Raising at N3JT/4 – Jim N3JT and John N3AM



N3JT: Every year the installation presents a new problem. This year it was, “Now where did I put down those hinge bolts?””

N3AM: Jim has to remove the antenna when he leaves to head north. So, storage in his garage tends to “modify” the alignment of his capacity wires. Holding the ladder is Art WA8VSJ, a fellow member of the local Boca Raton Amateur Radio Association we are in down here. He is not trying to shake N3JT off the ladder, just offsetting Jim’s lean to the right – the ladder is secured by the fascia board at the top.



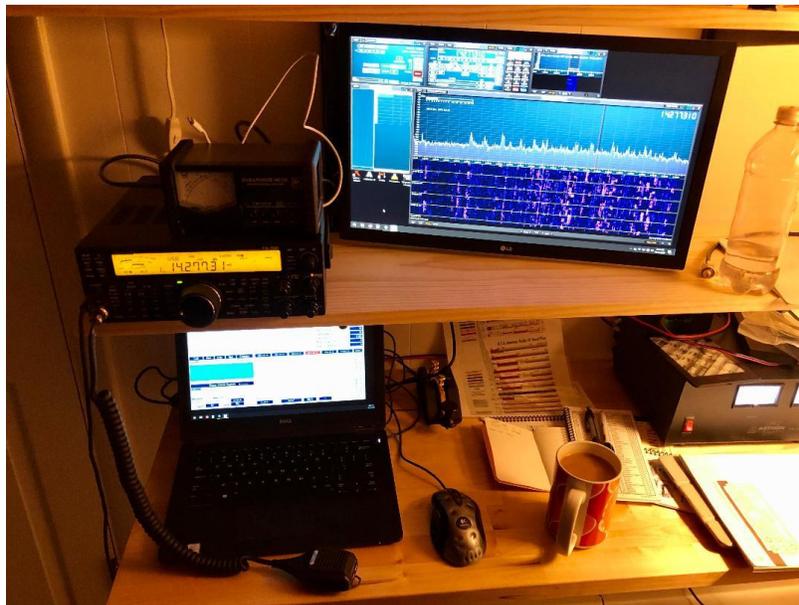
CQ WW SSB 2020 as Experienced by a Rookie - Roy WN3F

Hello from a new PVRC member who is relatively new to amateur radio and very new to contesting. Many thanks to Eric W3DQ, Fred K3ZO, Tim N3QE and others in the Downtown DC Chapter for welcoming me into the fold.

I thought I would write up my experience with the recent CQ WW contest while it was fresh in my mind. To help see where I am coming from: my total number of lifetime logged amateur radio contacts (I log almost everything) prior to this contest was a mere 490. And worse than that, many those were on FT8.

This was the first contest I approached with any degree of commitment. But, even before Saturday morning, I did not expect to get a very early start. Around 8 am I drove from DC out to our place in Page County, Virginia, west of Shenandoah National Park and on the eastern slope of the high ground in George Washington National Forest. The radio contest was the primary goal of my trip, but I haven't yet reached the level of dedication needed to put aside other activities for the full weekend.

My antenna there is an off-center-fed dipole in kind of an M shape, with a lower feed point around 30 feet above the ground and the middle of either wire supported in two different trees. But when I arrived in the late morning, I found one end of one wire had come loose. Out came the slingshot, a one-ounce fishing weight I'd painted orange to help find after launch, and my cheap fishing reel. Although I got the end of the wire off the ground and to a reasonable height, things got snagged up and I couldn't properly secure the end. It proved serviceable anyway - I didn't want to waste any more time on it so long as it stayed up for the duration of the contest.



Armed with this simple antenna, a new-to-me Kenwood TS-590SG coupled to an SDR as a panadapter, N3FJP logging software and the knowledge imparted by K1DG's excellent book "[Amateur Radio Contesting for Beginners](#)," I waded in. I hadn't even adjusted the transceiver's factory microphone settings, but I had checked them earlier with another radio and they were not bad.

The dipole has a lobe facing northeast out of the valley towards Europe and it wasn't too hard to make contacts on 20 meters, though I found many pileups simply impenetrable. 15 meters was a little less crowded but still offered a lot of activity. I made contact with a few new countries which was fun. When 15 meters got crowded, I tried 10 meters and was surprised to be able to work Brazil. The logging software was great for avoiding dupes and makes me wonder how people managed in the old days.

Later Saturday afternoon I decided to try and get the most out of my 100 Watts by tweaking the audio settings. I parked on a quiet spot on 17M, set transmit power to the minimum (I will have a dummy load next time), fired up the Kenwood software to adjust transmit EQ, and was getting ready to start my second radio to record when I was startled to hear someone asking if the frequency was in use and then calling CQ right on the frequency I was ready to use. After my wham-bam contest contacts, I was in the rare mood for a longer QSO so I wound up having an enjoyable chat for about 15 minutes with John K5XL in Texas, my first-ever ragchew on sideband. The low RF noise at my place in Virginia makes a huge difference - such a thing would be much more difficult at my station at home in DC.

On Saturday I started to lose the ability to make DX sideband contacts with my setup. I contacted a few Canadians on 40m and 80m and a small number of Americans to get zone multipliers, but eventually I turned off the radio and relaxed for the night.

Sunday morning it was neat to see the bands open to Europe with the sun rising - not something I had really experienced before. I snagged a few more new countries and tried to optimize phonetics. My other big avocation is aviation and I'd learned the NATO phonetics for that, but I was ready with "Whiskey Norway 3 Florida" in cases when that seemed to go over better. One DX station was using Nancy for N so that is what I used there.

The panadapter was great for search-and-pounce especially interfaced to the radio for tuning. I didn't try calling CQ at all.

My 3830 report can be seen [here](#). With seven and a half hours in the chair (less in reality, since I wasn't diligent about turning off the log software timer during breaks), I made 83 QSOs on 80 - 10 meters, with 31 countries in 16 zones.

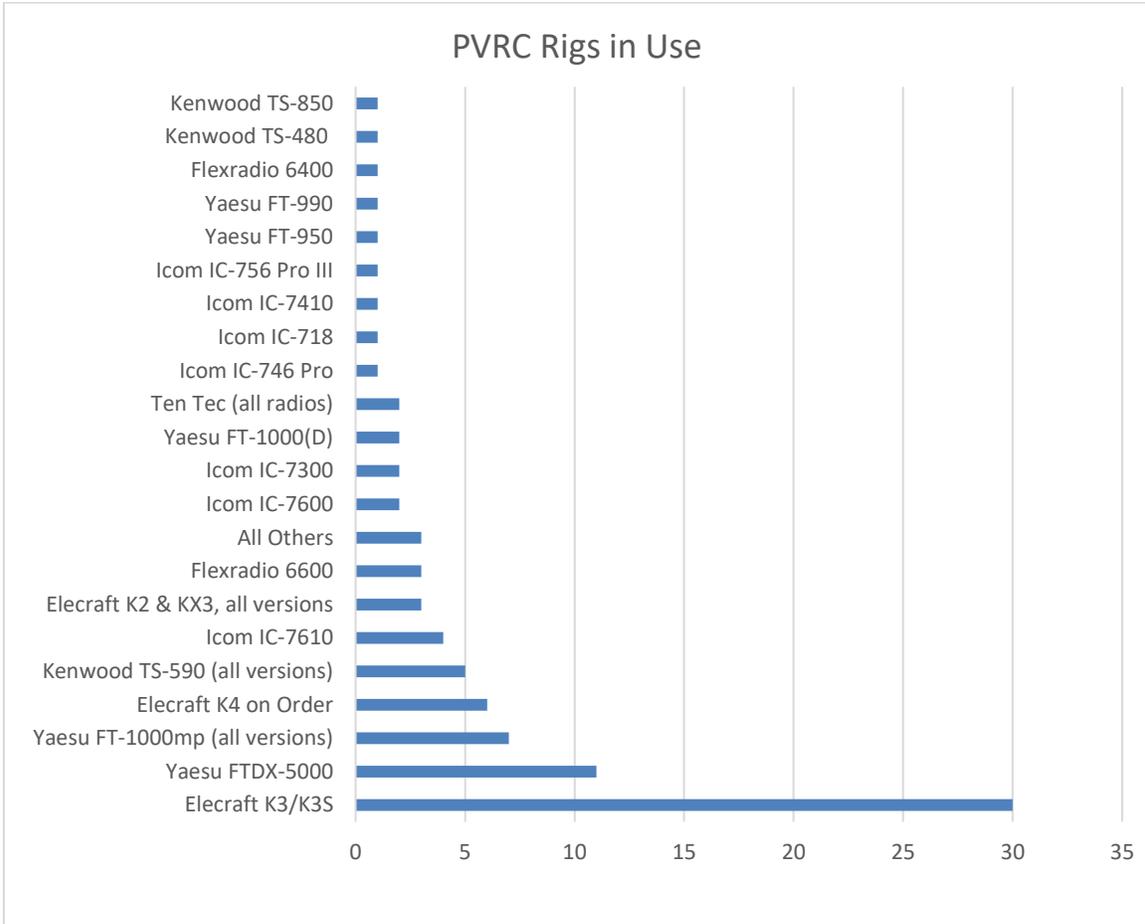
My highlights, or moments which put a smile on my face:

- contacting CQ3W (Madeira Islands, I had to look that up later!) soon after he started calling CQ on 15 meters and then hearing a pileup coalesce after me
- a contact with a French station on 10 meters where we exchanged "merci beaucoup"
- hearing a very American voice and almost tuning past but then catching that he was /HR9
- getting through a pileup to reach a patient station in eastern Europe (9A3TR I think) who managed to hear me after some repeats and later commented "lots of strong stations"

All told, it was a lot of fun and I look forward to the next one!

PVRC Transceiver Choice Survey – Jim WX3B

Jim WX3B asked PVRCers what transceivers they are using, and the results are below:



Elecraft was the clear winner – there are already more K4s on order than there are Kenwoods being used! Jim notes that Flex is probably underrepresented, as ops like N3KS and N4YDU are using them but didn't respond to the survey call.

Oddly, no one was using the Heathkit SS-9000...



PVRC Scholarship Fund – Frank W3LPL

PVRC members should encourage their eligible family members and friends, and members of their local clubs to apply for the [PVRC Scholarship](#).

Contributions to the scholarship can be made through 31 December 2020.

The Potomac Valley Radio Club (PVRC) Scholarship

- **Amount:** \$1,500
- **Number of Awards:** 1 per year
- **License Requirement:** Any current, valid FCC-issued amateur radio license
- **Region:** Preference given to applicants who are residents of, or attending a post-secondary institution located in, the District of Columbia or any of the states comprising the main territory of PVRC: Pennsylvania, Maryland, Delaware, West Virginia and North Carolina
- **Field of Study:** Any
- **Institution:** Applicant must be pursuing full-time studies at an accredited undergraduate degree-granting institution
- **Other:** Applicant must be a US citizen

Virus Safety Risk Chart – Dave W4JVN

My doctor gave me this Virus Safety Risk Chart. It may be of interest to all in PVRC. It's a good risk guide for all us old timers in the club. It is not radio related but helps keeps everyone safe when we consider close contact contesting.

Take care and stay well

COVID-19 Risk Index
Risk levels for exposure vary based on four main factors:

- Enclosed space**
- Duration of interaction**
- Crowds** (Density of people + challenges for social distancing)
- Forceful exhalation** (Sneezing, yelling, singing, and coughing)

When near people, wear a mask

Low

- Walking outdoors (with or without pets)
- Running or biking (alone or with others)
- Staying at home (alone or with members of your household)
- Outdoor picnic or porch dining (with fully vaccinated people and physical distancing)
- Picking up takeout food, coffee or groceries from stores
- Grocery shopping (avoiding aisles with high-touch surfaces)
- Retail shopping (avoiding aisles with high-touch surfaces)

Medium

- Visiting hospital emergency department
- Medical office visit
- Dentist appointment
- Taking a taxi or a ride-sharing service
- Museum
- Outdoor restaurant dining

Medium / High

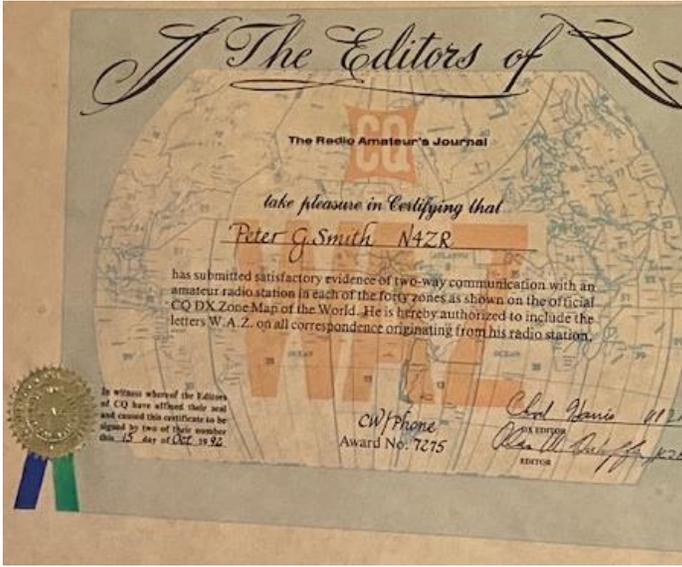
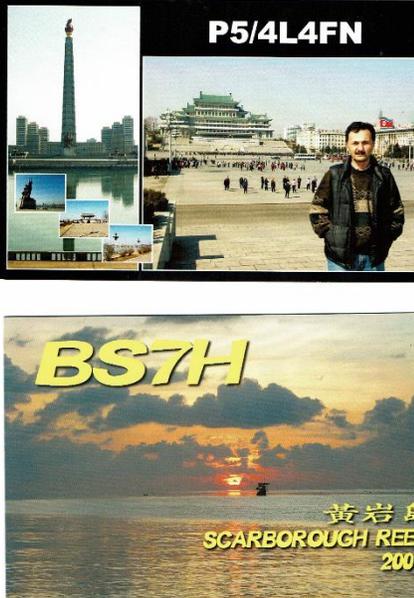
- Exercising at a gym
- Hair/nail salon and barbershops
- Working in an office
- Indoor restaurant or coffee shop

High

- Indoor party
- Playing contact sports
- Air travel
- Public transportation (Subway or bus)
- Concert
- Religious services
- Movie theater or live theater
- Watching sports
- Bars and nightclubs

REOPEN INTELLIGENTLY. REOPEN SAFELY.

What Matters Most to PVRicers? – Jay W3MMM

What Matters Most? If they could only save one thing, what would PVRC members grab?	
<p style="text-align: center;">N4ZR - Pete</p>  <p>I think this is it. Certainly the hardest to get, considering that I was living in a townhouse with 100w and wires.</p>	<p style="text-align: center;">W3EKT – Ed</p>  <p>My QSL cards from P5 and BS7. Hi!</p>
<p>Email W3MMM.Radio@Gmail.com to add your story!</p>	

Jay has 2 more installments of his survey results that will come out in upcoming PVRC newsletters.

Is There Hope for More Sunspots in Cycle 25? – Doug AA3S

(NOAA Forecasts the maximum will be the same as Cycle 24)

As someone who is interested in ionospheric radio propagation for Amateur Radio purposes and hoping for better propagation in the solar cycle 25, I was excited to read a few months ago a pre-print scientific paper (version 2) that presented a science-based forecast that the upcoming “sunspot cycle 25 will have a magnitude that rivals the top few since records began.”

That got my attention. The most recent version of this paper (version 3) is at [here](#), and in my comments below I will refer to this paper as the “subject paper”.

Before I make some observations about that paper, some background is essential: Generally speaking, we are happier ham radio operators when the maximum number of sunspots in a solar cycle is high, like 254 as it was in March 1958 (cycle 19 ending in

1966). This is the smoothed (running average) monthly number of sunspots. I was first licensed in 1966 so I missed that fun.

In November of 2001, the sunspot maximum of 180 was reached for cycle 23. During that cycle I recall many times that 5 watts from a car whip antenna on 10 meters would succeed easily for voice contacts from Maryland to Texas whenever the sun was shining. My recollection is that QSOs with Japan using 5 Watts CW were not rare.

In the most recent cycle, 24, the smoothed monthly number peaked in April 2014 at 114 as reported in the NOAA/NASA Prediction Panel announcement ([here](#)) saying *cycle 24 was the weakest cycle in 100 years*. I felt there was a big difference in propagation between cycle 23 and 24 as cycle 24 was not very satisfying. Just imagine the spectacular year of 1958!

Now the bad news: the NOAA/NASA Prediction Panel forecasts for the coming cycle 25 a maximum in July 2025 of only 115 sunspots! Practically the same as last year's weakest cycle of the last 100 years! Any credible source that forecasts a larger number of sunspots will get my attention, as did happen with the subject paper. The author, Dr. Scott McIntosh, is Deputy Director at NCAR - The National Center for Atmospheric Research in Boulder, CO. He holds a PhD in Astrophysics from The University of Glasgow, Scotland; a credible source to say the least. His co-authors have NASA and academic backgrounds. He has many [previous publications](#) on related topics.

In my comments below, I will use the term "McIntosh" to refer to all authors of the subject paper. Also, my use of "cycle" refers to the nominal 11-year sunspot cycle. A nominal 22-year magnetic polarity cycle, the Hale cycle, will be referred to as the Hale cycle.

The two main points of the McIntosh paper for me are:

1. There is a strong correlation between duration of the cycle and the maximum number of sunspots in the *following* cycle: the shorter the cycle the more sunspots in the next cycle. Whether or not the suggested scientific reasons for sunspot variations are correct, the correlation exists in all the historical sunspot data and may have predictive worth.
2. Cycle 24 looks like it will be short rather than long. That suggests more sunspots to follow!

Since cycle 25 has been declared by NOAA (and others) and early cycle 25 sunspots have been appearing for months, don't we already know when cycle 24 terminated? See for example [here](#).

The answer is "no" for the purpose of forecasting using the McIntosh method. A key to determining when a cycle ends for his method is to identify when the magnetic forces of a cycle are extinguished at the Sun's equator, called the "termination" event or just "terminator". That event has not yet occurred as residual magnetic forces do remain from cycle 24 near the equator. Another key to forecasting using the McIntosh method is analyzing the sunspot data on a Hale cycle, plus and minus 11 years from a cycle termination, rather than analyzing only on the basis of the 11-year sunspot cycle as most investigators have done previously.

Is there a scientific reason explaining why a short cycle will be followed by more sunspots in the next cycle? In a 2014 paper, McIntosh inferred that there will be more sunspots in a cycle that begins with more ‘left over’ magnetic energy from the previous cycle. There are presumed to be multiple latitudinal bands of opposite polarity magnetic structures beneath the sun’s surface (e.g. Figure 2 in the subject paper) as evidenced by the pattern of observed sunspots. Less overlap (in time and distance) of these magnetic bands on the sun at the end of one cycle contribute to less cancellation of magnetic energy so that more magnetic energy is ‘left over’ and available to create sunspots in the following cycle. McIntosh assumes that a proxy for the amount of ‘left over’ magnetic energy is the inverse of the time duration of the cycle. Not being versed in solar physics, my description is no doubt imprecise, but the takeaway is still: for the entire record of sunspot data the clear trend is that the shorter a cycle the more sunspots in the following cycle.

In order to use this forecasting method, it is important to have a reliable measure of the cycle duration. This is not as straightforward as it might seem at first. Measuring between sunspot cycle maximum amplitudes might be one way, but when looking at historical sunspot data some cycles have multiple “peaks” (even after multi-month smoothing) that may be years apart. Which peak should be used?

Measuring between sunspot cycle minimums might be another way, but looking at historical sunspot data, many cycles have years-long stretches of very low or zero sunspots and multiple “minimums” that may be years apart. Which minimum should be used? The subject paper spends several pages discussing previous methods of measuring cycle duration from sunspot data.

McIntosh chooses a modified cycle duration definition method that creates an-end-of-cycle signal which develops over approximately one revolution of the Sun (28 days) rather than months or years and is relatively stable for different assumptions of initial conditions. Briefly, that method uses the historical monthly sunspots data, subtracts out the long-term (40 year) statistical trend, and applies a Hilbert transform that is very sensitive to phase transitions to create the “Terminator” signal (rather than signaling on amplitude alone as in previously mentioned methods). In this way McIntosh derives cycle duration times for all 23 completed cycles that have historical data. His cycle durations are in good agreement with previously derived durations from various sources and methods (i.e. the McIntosh terminator dates are neither unusual nor contrived).

Plotting the maximum smoothed sunspot count versus these cycle durations reveals a clear correlation that strongly suggests a predictive capability, see Figure 4 in the McIntosh paper.

In general terms McIntosh describes varying implications of the differing forecasts made by his paper, the NOAA/NASA Prediction Panel and the ‘polar predictive methodology’.

On November 12, 2020 during a live presentation of the subject paper, McIntosh felt the terminator was occurring now or would in the next solar rotation (28 days) or shortly thereafter. He thought that the cycle 25 sunspot peak would occur in 2023. Noting that the early cycle 25 sunspots have been observed and that they are at high latitudes, McIntosh reminded us that particular scenario has historical correlation with large numbers of sunspots later in that cycle (e.g. ‘polar predictive methodology’). These are encouraging indications. He felt that the termination event will occur in the near future

when the 10.7 cm solar flux exceeds and stays above 90 solar flux units (sfu). The subject paper defined the “official” terminator event date based on sunspot number statistics (Hilbert Transform, etc.) not solar flux. To anticipate the official terminator date, we can look to the current solar flux numbers as McIntosh suggests.

As of November 16 the weekly update of the NASA forecast for 10.7 cm solar flux was for 75 or less through December 12. NOAA issues their 27-day Space Weather Outlook Table each Monday by 1500 UTC [here](#). The multi-year NOAA forecast including solar flux is [here](#) and solar flux is predicted to stay above 90 only after August 2022. This is not so encouraging.

But on November 12, 2020 0433 UTC a single energetic event resulted in a solar flux number of 170 so stay tuned! Also see these sites for solar flux data: [here](#) and [here](#).

Solar flux data is available beginning 1947 (collected from near Ottawa, Ontario Canada) and since 1990 that data have been collected near Penticton, British Columbia Canada. Daily reports are available [here](#). Use the ‘adjusted’ solar flux number rather than the observed number. The November 18, 2020 number was 76.9 sfu.

What might we expect in cycle 25 using the McIntosh forecast method? Using Figure 4 from the subject paper and visually deriving the equation for that regression line, I’ve done some math for what-if scenarios to give us a feel for what the McIntosh forecasts of maximum sunspot count in cycle 25 might be for various official (McIntosh) termination dates for cycle 24. Recall that the official cycle 24 termination event has not occurred yet (November 18, 2020) and that the NOAA/NASA Prediction Panel forecast for cycle 25 is only 115 sunspots maximum, practically the same as we experienced in cycle 24 (maximum occurred in 2014).

Possible Cycle 24 Termination Dates	Approximate McIntosh Forecasted Maximum Sunspots in Cycle 25	Approximate 68% Confidence Range of the Forecast Sunspot Maximum	Reduction in Cycle 24 Duration from Cycle 23 (years)
December 1, 2020	215	194 - 237	3.0
March 1, 2021	207	186 - 228	2.7
June 1, 2021	200	180 - 220	2.5
September 1, 2021	192	173 - 211	2.2
December 1, 2021	185	167 - 204	2.0
December 1, 2022	155	140 - 171	1.0
December 1, 2023	125	113 - 138	0.0

None of the 23 recorded cycles since the 1750’s has had a reduction in the termination duration of more than 2.7 years from one cycle to the next and the median reduction is 1.08 years. A cycle reduction of between 1.08 and 2.7 years might be a reasonably optimistic value for cycle 24. A 2-year reduction in the 12.83 year duration of cycle 23 would have our cycle 24 ending about December 1, 2021 and that is why that date is in bold in the Table above. That’s not my prediction, but it is a way of putting into perspective the amount of cycle reduction that might be expected for cycle 24.

It will be very interesting to monitor solar flux over the next weeks or months and receive the official declaration of the cycle 24 terminator event from Dr. McIntosh. If that terminator event occurs soon enough to forecast a significantly different maximum sunspot number than the NOAA/NASA prediction, then the stage may be set for a showdown that could change how scientists think about the Sun's dynamics. Or cycle 25 may unfold in a way that neither method predicts. Hope to hear you on the air!

PVRC DXCC Challenge Standings – Frank W3LPL

Below are the DXCC Challenge totals for PVRC members, transcribed from the ARRL [DXCC data](#) as of the 20th of each month or so. Thanks to Frank for the data each month to make this a regular feature. Please report any omissions or errors to [Frank](#).

CALL	DXCC	CALL	DXCC	CALL	DXCC	CALL	DXCC
W4DR	3185	WS6X	2493	N3QE	2000	N4ZR	1491
W3UR	3152	K5RT	2443	N3KN	1968	K3WC	1430
W3LPL	3137	W2GG	2436	K5RJ	1961	N3HBX	1428
K4CIA	3116	N4TL	2406	N3KS	1906	N3AIU	1415
N2QT	3085	K5VIP	2400	N3ND	1867	N8II	1390
W4PK	3038	N4GG	2377	W3KB	1815	W8AKS	1390
N4MM	2981	K1GG	2352	K4EU	1795	W4PRO	1377
W3DF	2939	W3OA	2344	W3DM	1791	KF7NN	1377
WX4G	2934	W2YE	2334	K3SX	1772	W9GE	1364
K1HTV	2924	WA2BCK	2316	KE4S	1758	AK3E	1348
K2PLF	2903	K1ZZI	2308	N4GU	1738	ND3F	1319
K5EK	2900	W4VIC	2304	W2CDO	1729	N1SZ	1317
KG7H	2880	W3YY	2297	N4XYZ	1720	N3MK	1317
N4DB	2849	N3RC	2294	W4GP	1710	K4ZA	1313
N3NT	2835	W2GPS	2255	W3FOX	1704	KM3V	1265
W0VTT	2824	NW4V	2219	K4QE	1682	NR4M	1224
W3LL	2823	K3TN	2212	NE3H	1668	KG4USN	1199
K3WA	2796	K4FJ	2208	K3WI	1652	N3RR	1199
W3KX	2793	N4ZH	2188	W3UL	1627	K4HQB	1198
KG4W	2782	K1EFI	2176	K3KY	1606	W3NRJ	1188
K1AR	2754	K2BA	2129	K3STX	1579	N3OC	1183
AB3CV	2682	W3TN	2125	KE3X	1571	K3IXD	1090
WB3AVN	2655	K3PU	2107	NA1DX	1564	W3US	1082
W4FQT	2622	W3MR	2104	K3AJ	1562	N3COB	1049
N3KK	2575	W3GG	2071	N3AO	1527	W3OU	1046
W3BW	2546	N4NW	2068	WB2ZAB	1522	W4ZV	1046
K4SO	2499	AA4NC	2061	AA4FU	1519	K4ZW	1038
K3JT	2495	K4WNW	2004	WB4DNL	1506	NE3K	1036
N4QQ	2494	W0YVA	2001	KU1T	1501	K4VX	1021

Membership News – Tim N3QE

PVRC did not add any new members in the latest reporting period.

Chapter leaders please remember to complete the [Meeting Attendance Report](#).
Members can check and update their roster details via the [Roster Lookup](#).

Upcoming Contests – from [WA7BNM](#)

December 2020	
+ ARRL 160-Meter Contest	2200Z, Dec 4 to 1600Z, Dec 6
+ FT Roundup	1800Z, Dec 5 to 2359Z, Dec 6
+ ARRL 10-Meter Contest	0000Z, Dec 12 to 2400Z, Dec 13
+ RAC Winter Contest	0000Z-2359Z, Dec 19
+ OK DX RTTY Contest	0000Z-2400Z, Dec 19
+ ARRL Rookie Roundup, CW	1800Z-2359Z, Dec 20
+ Stew Perry Topband Challenge	1500Z, Dec 26 to 1500Z, Dec 27
+ RAEM Contest	0000Z-1159Z, Dec 27

Editor’s Last Word – John K3TN

Thanks to a long list of PVRCers for awesome contributions to this issue of the PVRC newsletter: **Tom K3AJ, Dan K2YWE, John N3AM, Jim N3JT, Roy WN3F, Jim WX3B, Frank W3LPL, Dave W4JVN, Jay W3MMM and Doug AA3S**. A big round of thanks to outgoing President K3AJ for 2 years of great leadership!

I’m putting the newsletter out a bit early this month – I wanted to clear the decks before my daughter gives birth to our first sub-harmonic, what Luca Brasi in The Godfather would celebrate as a “masculine child.”

The early publication also gives me the chance to remind everyone to get on in SSB Sweepstakes – should be a bit easier to get the sweep than it was on CW. I will be activating the University of Maryland club call – look for me as **W3EAX** sending the S precedence and a very low CK number!

The quality and usefulness of the PVRC newsletter depends on contributions from members. If you have photos from club meetings, screen shots of new contest software, or brief writeups on station improvements or contest war stories, send them in any format to [jpescatore at aol dot com](mailto:jpescatore@aol.com).



From the PVRC Treasurer – Dan K2YWE

PVRC has chosen not to implement an annual dues requirement. We depend on the generosity of all 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.

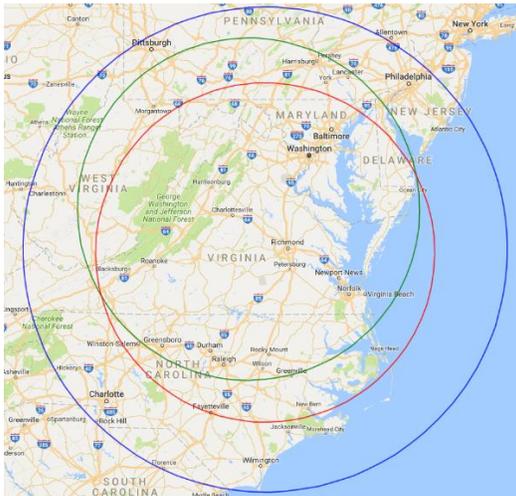
Direct donations to PVRC via Credit Card or PayPal may be made by clicking this "Donate" button and clicking the next Donate button that appears on your screen:



Donations to PVRC are not tax deductible

Eyeball QSO Directions

The latest info on local club meetings and get togethers will always be sent out on the [PVRC reflector](#) and posted on the PVRC [web site](#).



Green: ARRL VHF Circle
175 mile radius
Around 38.075N,
78.171W

Red: ARRL HF Circle
175 mile radius
Around 37.43168N,
77.858482W

Blue: CQ HF Circle
250 mile radius
Around 37.43168N,
77.858482W



Now a Word From Our Sponsors

PVRC doesn't ask for dues, but the Club does have expenses. You can also support the Club by buying from the firms listed who advertise in the newsletter!



Your source for DX News!

Get a free two week trial of The Daily DX and The Weekly DX by sending a request to bernie@dailydx.com.

The Daily DX
3025 Hobbs Road
Glenwood, Maryland 21738
Phone: 410-489-651



PVRC QSL Cards
by
LZ1JZ QSL Print



GREEN HERON ENGINEERING LLC

(585) 217-9093
www.greenheronengineering.com

RT-21 DIGITAL ROTATOR CONTROLLERS
Unmatched Performance for any Rotator

RT-21



RT-21D



RT-21 AZ/EL



Rotator Packages



FREE Shipping for PVRC Members
At Checkout Enter Coupon Code "PVRC"

Heavy Duty Custom Mast Clamps
-for G-2800 and Orion



Wi-Fi Option
-control your rotator from any web browser device

GH EVERYWARE WIRELESS CONTROLS

- Internet access for switches and rotators
- Eliminate cables and tethered control boxes
- Create customized on-screen controls
- Great circle maps

GH Everywhere Base and Remote

- USB and wireless relay controls
- Utilizes your existing antenna switches



Select-8 Wireless Remote Coax Switch

- Built-in GHE Wireless
- Powered through the coax
- Tower leg Mount
- Amphenol RF connectors






Need Gift Ideas? Call Our Santa Helper Hotline!

From paddle pads to transceivers, winter caps to tool kits, you'll find everything for the Hams in your life at one convenient place—DXEngineering.com. Not sure what to buy? Order a DX Engineering Gift Card in denominations from \$25 to \$500. And if you have questions about finding that perfect gift, our Elmers are only a phone call or email away. From all of us at DX Engineering, 73 and Happy Holidays!



Holiday Shopping Made Easy!

Check DXEngineering.com for the most up to date holiday shipping information.



Showroom Staffing Hours:
9 am to 5 pm ET, Monday-Saturday

Ordering (via phone):
8:30 am to midnight ET, Monday-Friday
9 am to 5 pm ET, Weekends

Phone or e-mail Tech Support: 330-572-3200
8:30 am to 7 pm ET, Monday-Friday
9 am to 5 pm ET, Saturday
All Times Eastern | Country Code: +1
DXEngineering@DXEngineering.com

800-777-0703 | DXEngineering.com

**CELEBRATING
20 YEARS
2000-20**

**We're All Elmers Here! Ask us at: Elmer@DXEngineering.com
Email Support 24/7/365 at DXEngineering@DXEngineering.com**



Array Solutions Your Source for Outstanding Radio Products

Professional Grade Equipment from Array Solutions




OM Power Amplifiers, The New RF Power Benchmark!




Summer Sale - July 15 - August 31 on ALL OM Power Amplifiers



\$300-\$400 Off

Call us or see the Array Solutions website for details. Now is the time to get the most powerful and reliable amp for Contesting, DXing, Ragchewing and those Digital Heavy Duty Modes!

Tubes



**GU-74b
GU-84b
FU-728f**

Tested singles and matched pairs available, 1 year warranty

Amplifier Repairs

- We service ACOM, OM Power, Alpha, ETO, and most brands.
- Fast turnaround, and communication with our test Technicians
- Service report and test data included
- Tube testing for some common tubes www.arrayolutions.com/amplifier-service

Switches for Six Antennas



**5kW - DC to 6m
RATPAK - 1x6
Choice of Multiple Controllers**

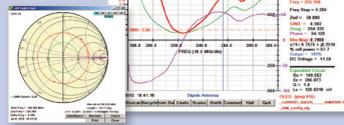


SIXPAK - 2x6

VNAuhf Back in Stock!

Vector Network Analyzer

5 kHz - 1.3 GHz **\$1295**



Surge Arrestors

AS-302, AS-303 Coaxial cable arrestors. DC to 500 MHz. N-type or SO-239 connectors. **AS-300SB** Stacking fixture available. **AS-309H**, ladder line arrestor. All have static bleed function. **AS-8SP, AS-12SP** and **AS-16SP** control cable arrestors. Protect your rotator's and other control cables.



Baluns & RF Transformers

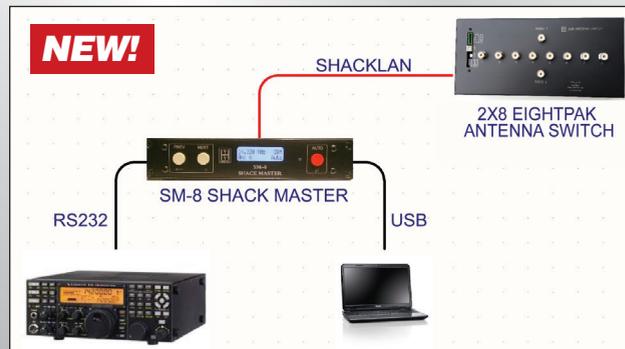
Ratios 1:1, 1:2, 2:1, 4:1 and more. RF line isolators. Ratings 3, 5, 10 kW+. Get the most out of your antenna by stopping the coaxial cable from becoming part of it.



Hamation Station Automation

Hamation remote and Local Station Control products allow you to automatically or manually select antennas, bandpass filters, and control accessories. Accessories can be StackMatches, Antenna switches, antenna phasing systems, SteppIR controller, turning radios on and off, etc. All of this can be done directly from the Ethernet as well!

Wiring are simple phone cables that daisy chain to all the devices. Wireless control is also available to your tower-located switches. Call us to learn how to set up simple or complex systems. Below is a simple basic system that can switch antennas as you change bands. We can interface to any radio CAT port, not just RS232.

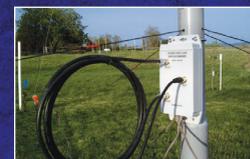


A more complex system could be a SO2R contest station as shown.



The Shared Apex Loop Array™!

Capture the whole band or the whole HF spectrum at once with the Shared Apex Loop Array 2nd Generation. Can be remote controlled over the internet or in your station. 8 directions of directivity.



The Shared Apex Loop Array™ is a revolutionary receiving antenna that will change the way that you listen to the radio! The patented design provides performance in a size and over a wide range of frequencies that will please both the rag-chewer and DXer alike.

Three models to choose from:

- AS-SAL-30 - optimized for VLF, BCB, 1.8-10 MHz
- AS-SAL-20 - optimized for BCB, and 1.8-30 MHz
- AS-SAL-12 - optimized for 3-30 MHz



StackMatch

The original, not the imitations. For phasing 2, 3, 4 and even 6 antennas. Also it can be used to combine vertical and horizontal polarized antennas to diminish fading.



PowerMaster II



RF Power and SWR meter. Couplers for 3 kW, 10 kW or higher available for HF/6 m. VHF and UHF couplers for 1.5 kW. You can connect up to 5 couplers to the display to monitor RF power on different TX lines.



www.arrayolutions.com

2611 North Beltline Rd., Suite 109
Sunnyvale, Texas 75182 USA
sales@arrayolutions.com
Phone 214-954-7140 Fax 214-954-7142

Check our Website for more new products!

Array Solutions' products are in use at top DX and Contest stations worldwide as well as commercial and governmental installations. We provide RF solutions to the DoD, FEMA, Emcomm, UN, WFO, FAA and the State Dept. for products and installation of antennas systems, antenna selection, filtering, switching and grounding. We also offer RF engineering and PE consulting services.

HAM RADIO OUTLET

WWW.HAMRADIO.COM

NOBODY BEATS AN HRO DEAL!



IC-9700 | All Mode Tri-Band Transceiver

- VHF/UHF/1.2GHz • Direct Sampling Now Enters the VHF/UHF Arena • 4.3" Touch Screen Color TFT LCD • Real-Time, High-Speed Spectrum Scope & Waterfall Display • Smooth Satellite Operation



IC-718 | HF Transceiver

- 160-10M** • 100W • 12V operation • Simple to use • CW Keyer Built-in • One touch band switching • Direct frequency input • VOX Built-in • Band stacking register • IF shift • 101 memories



ID-5100A Deluxe

VHF/UHF Dual Band Digital Transceiver

- Analog FM/D-Star DV Mode • SD Card Slot for Voice & Data Storage • 50W Output on VHF/UHF Bands • Integrated GPS Receiver • AM Airband Dualwatch



IC-7851 | HF/50MHz Transceiver

- 1.2kHz "Optimum" roofing filter • New local oscillator design • Improved phase noise • Improved spectrum scope • Dual scope function • Enhanced mouse operation for spectrum scope



IC-705 | HF/50/144/430 MHz All Mode Transceiver

- RF Direct Sampling • Real-Time Spectrum Scope and Waterfall Display • Large Color Touch Screen • Supports QRP/QRPP • Bluetooth® and Wireless LAN Built-in



ID-4100A | VHF/UHF Dual Band Digital Xcvr

- Compact, Detachable Controller for Flexible Installation • DV/FM Near Repeater Search Function • Apps for iOS™ and Android™ devices • Wireless Operation with VS-3 & UT-137 Bluetooth® Headset & Module • MicroSD Card Slot



IC-7700 | HF/50MHz Transceiver

The Contesters' Rig • HF + 6m operation • +40dBm ultra high intercept point • IF DSP, user defined filters • 200W output power full duty cycle • Digital voice recorder



IC-7100 | All Mode Transceiver

- HF/50/144/430/440 MHz Multi-band, Multi-mode, IF DSP • D-STAR DV Mode (Digital Voice + Data) • Intuitive Touch Screen Interface • Built-in RTTY Functions

IC-V86 | VHF 7W HT

- 7W Output Power Plus New Antenna Provides 1.5 Times More Coverage • More Audio, 1500 mW Audio Output • IP54 & MIL-STD 810G—Rugged Design Against Dust & Water • 19 Hours of Long Lasting Battery Life • 200 Memory Channels, 1 Call Channel & 6 Scan Edges



IC-7610 | HF/50 MHz All Mode Transceiver

- Large 7-inch color display with high resolution real-time spectrum scope and waterfall • Independent direct sampling receivers capable of receiving two bands/two modes simultaneously



IC-2730A | VHF/UHF Dual Band Transceiver

- VHF/VHF, UHF/UHF simultaneous receive • 50 watts of output on VHF and UHF • Optional VS-3 Bluetooth® headset • Easy-to-See large white backlight LCD • Controller attachment to the main Unit



IC-R30 | Digital/Analog Wideband Xcvr

- 100 kHz to 3.3 GHz Super Wideband Coverage • P25 (Phase 1), NXDN™, dPMRTM, D-STAR Mode • 2.3" Large LCD Display & Intuitive User Interface • MicroSD Card Slot for Voice & Data Storage • USB Charging & PC Connection



IC-7300 | HF/50MHz Transceiver

- RF Direct Sampling System • New "IP+" Function • Class Leading RMDR and Phase Noise Characteristics • 15 Discrete Band-Pass Filters • Built-In Automatic Antenna Tuner



IC-2300H | VHF FM Transceiver

- 65W RF Output Power • 4.5W Audio Output • MIL-STD 810 G Specifications • 207 alphanumeric Memory Channels • Built-in CTCSS/DTCS Encode/Decode • DMS

ID-51A PLUS2

VHF/UHF D-STAR Portable

- RS-MS1A, free download Android™ application • New modes for extended D-STAR coverage • Terminal Mode & Access Point Mode allow D-STAR operation through Internet • DV & FM repeater search function • Dplus reflector link commands



New Ham Radio Outlet Coming Soon!



Tell Us Where To Build The Next Ham Radio Outlet Superstore!
For everyone who wanted an HRO store close to them... now is your ultimate chance. Let us know now at: www.hamradio.com/newstore

Except 60M Band. *Frequency coverage may vary. Refer to owner's manual for exact specs. QST May 2020. The Icom logo is a registered trademark of Icom Inc. Toll-free including Hawaii, Alaska and Canada. All HRO 800-lines can assist you. If the first line you call is busy, you may call another. Prices, specifications and descriptions subject to change without notice.

HAM RADIO OUTLET

WWW.HAMRADIO.COM

***FREE 1 OR 2 DAY DELIVERY TO MOST OF USA!**

NEW



FTDX101MP | 200W HF/50MHz Transceiver

- Hybrid SDR Configuration • Unparalleled 70 dB Max. Attenuation VC-Tune • New Generation Scope Display 3DSS • ABI (Active Band Indicator) & MPVD (Multi-Purpose VFO Outer Dial) • PC Remote Control Software to Expand the Operating Range • Includes External Power With Matching Front Speaker



FT-891 | HF+50 MHz All Mode Mobile Transceiver

Rugged Construction in an Ultra Compact Body • Stable 100 Watt Output with Efficient Dual Internal Fans • 32-Bit IF DSP Provides Effective and Optimized QRM Rejection • Large Dot Matrix LCD Display with Quick Spectrum Scope • USB Port Allows Connection to a PC with a Single Cable • CAT Control, PTT/RTTY Control



FTM-400XD | 2M/440 Mobile

- Color display-green, blue, orange, purple, gray • GPS/APRS
- Packet 1200/9600 bd ready • Spectrum scope • Bluetooth • MicroSD slot • 500 memory per band



FTDX3000 | 100W HF + 6M Transceiver

- 100 Watt HF/6 Meters • Large and wide color LCD display • High Speed Spectrum Scope built-in • 32 bit high speed DSP /Down Conversion 1st IF



FTM-300DR | C4FM/FM 144/430MHz Dual Band

- 50W Reliable Output Power • Real Dual Band Operation (V+V, U+U, V+U, U+V) • 2-inch High-Res Full Color TFT Display • Band Scope • Built-in Bluetooth • WiRES-X Portable Digital Node/Fixed Node with HRI-200



FT-70DR C4FM/FM 144/430MHz Xcvr

- System Fusion Compatible • Large Front Speaker delivers 700 mW of Loud Audio Output
- Automatic Mode Select detects C4FM or Fm Analog and Switches Accordingly • Huge 1,105 Channel Memory Capacity • External DC Jack for DC Supply and Battery Charging



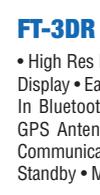
FT-991A | HF/VHF/UHF All Mode Transceiver

- Real-time Spectrum Scope with Automatic Scope Control • Multi-color waterfall display • State of the art 32-bit Digital Signal Processing System • 3kHz Roofing Filter for enhanced performance • 3.5 Inch Full Color TFT USB Capable • Internal Automatic Antenna Tuner • High Accuracy TCXO



FT-2980R | Heavy-Duty 80W 2M FM Transceiver

- Massive heatsink guarantees 80 watts of solid RF power • Loud 3 watts of audio output for noisy environments • Large 6 digit backlit LCD display for excellent visibility • 200 memory channels for serious users



FT-3DR C4FM/FM 144/430 MHz Xcvr

- High Res Full-Color Touch Screen TFT LCD Display • Easy Hands-Free Operation w/Built-In Bluetooth Unit • Built-In High Precision GPS Antenna • 1200/9600bps APRS Data Communications • Simultaneous C4FM/C4FM Standby • Micro SD Card Slot



FT-65R | 144/430 MHz Transceiver

- Compact Commercial Grade Rugged Design • Large Front Speaker Delivers 1W of Powerful Clear Audio • 5 Watts of Reliable RF Power Within a compact Body • 3.5-Hour Rapid Charger Included • Large White LED Flashlight, Alarm and Quick Home Channel Access



FTDX101D | HF + 6M Transceiver

- Narrow Band SDR & Direct Sampling SDR • Crystal Roofing Filters Phenomenal Multi-Signal Receiving Characteristics • Unparalleled - 70dB Maximum Attenuation VC-Tune • 15 Separate (HAM 10 + GEN 5) Powerful Band Pass Filters • New Generation Scope Displays 3-Dimensional Spectrum Stream



FTM-100DR | C4FM FDMA/FM 144/430 MHz Xcvr

- Power Packed System Fusion Transceiver • High Audio Output Power • Rugged Powerful Transmitter • Integrated 66ch High Sensitivity GPS • 1200/9600 APRS Data Communications



FT-60R | 2M/440 5W HT

- Wide receiver coverage • AM air band receive
- 1000 memory channels w/alpha labels • Huge LCD display • Rugged die-cast, water resistant case • NOAA severe weather alert with alert scan



5 Ways to Shop!

- **RETAIL LOCATIONS** – Store hours 10:00AM - 5:30PM - Closed Sunday
- **PHONE** – Toll-free phone hours 9:30AM - 5:30PM
- **ONLINE** – WWW.HAMRADIO.COM
- **FAX** – All store locations
- **MAIL** – All store locations

YAESU
The radio

ANAHEIM, CA
(800) 854-6046

OAKLAND, CA
(877) 892-1745

PORTLAND, OR
(800) 765-4267

PHOENIX, AZ
(800) 559-7388

MILWAUKEE, WI
(800) 558-0411

WOODBIDGE, VA
(800) 444-4799

PLANO, TX
(877) 455-8750

SAN DIEGO, CA
(877) 520-9623

DENVER, CO
(800) 444-9476

ATLANTA, GA
(800) 444-7927

NEW CASTLE, DE
(800) 644-4476

SALEM, NH
(800) 444-0047

Shop Anytime From Anywhere
with Our Online Superstore
WWW.HAMRADIO.COM

*On most orders over \$100 in the continental US. (Rural locations excluded.) Contact HRO for promotion details. Toll-free including Hawaii, Alaska and Canada. All HRO 800-lines can assist you. If the first line you call is busy, you may call another. Prices, specifications and descriptions subject to change without notice.

HAM RADIO OUTLET

WWW.HAMRADIO.COM

NOBODY BEATS AN HRO DEAL!



\$600
INSTANT SAVINGS

TS-990S | 200W HF + 6M Transceiver

- World's first dual TFT display
- 200W output on all bands
- ±0.1ppm TCXO ensures both high stability and reduced power consumption
- Triple 32-bit DSP's dedicated to main/sub receivers and band scope
- Main receiver employs full down conversion, new mixer & narrow band roofing filters
- Third order intercept point (IP3) +40dBm for highest level of RX performance (main receiver)

Call For Special Price!



\$40
INSTANT SAVINGS

TM-D710G | 2M/440 Dualband

- V+V/V+U+U operation
- Built-in GPS
- Built-in TNC for APRS & DX-Cluster operation
- 50W 2M & UHF • 1,000 memories
- Dual receive
- Green or amber backlight colors
- Latest APRS firmware w/new features
- Sky Command II remote functions

Call For Special Price!



\$50
INSTANT SAVINGS

TH-D72A

2M/440 HT w/extended RX

- 5W TX, RX 118-524 MHz, VxU, VxV, UxU
- APRS w/built-in 1200/9600 TNC
- Built-in GPS, Built-in USB, digipeater
- Echolink® compatible
- Mil-Spec STD810

Call For Special Low Price!



\$700
INSTANT SAVINGS

TS-890S | HF/50MHz Transceiver

- Receive performance on a whole other level from narrow bandwidth roofing filters that only full down conversion can provide
- CW Morse code decode/encode possible with stand-alone unit
- 150dB Blocking dynamic range (BDR)
- Expanded touch operation scope
- Kenwood Sky Command® II Support
- Remote operation achieved without host PC Direct remote-control function (KNS)



\$25
INSTANT SAVINGS

TM-V71A | 2M/440 DualBand

- High RF output (50W)
- Multiple Scan
- Dual receive on same band (VxV, UxU)
- Echolink® memory (auto dialer)
- Echolink® Sysop mode for node terminal ops
- Invertible front panel
- Choice of green/amber for LCD panel
- 104 code digital code squelch
- "Five in One" programmable memory
- 1000 multifunction memory

Call Now For Your Low Price!

TH-D74A

2M/220/440 HT w/D-STAR!

- D-STAR compatible
- APRS ready w/ built in GPS
- Color weather station information
- Built-in KISS mode TNC
- High-performance DSP voice processing
- Standard compatibility for Bluetooth

Call For Low Price!



\$50
INSTANT SAVINGS



\$300
INSTANT SAVINGS

TS-590SG | HF/50MHz Transceiver

- Equipped with 500 Hz/2.7 kHz roofing filter as standard
- ALC derived from TS-990S eliminating spike issues
- Antenna output function (shared with DRV connector)
- CW - morse code decoder function
- Improved 1st mixer
- New PFB key with multi-function knob
- New split function enabling quick setting
- LED backlight with selectable color tone



\$25
INSTANT SAVINGS

TM-281A | 2M Mobile

- 65 Watt
- 200 Memories
- CTCSS/DCS
- Mil-Std specs
- Hi-quality audio

Call For Special Low Price!



TH-K20A | 2M Handheld

- 2M 5.5W
- VOX
- CTCSS/DCS/1750
- Burst built-in
- Weather alert

Call For Special Low Price!

HRO is family owned and operated by active hams!

5 Ways to Shop!

- RETAIL LOCATIONS – Store hours 10:00AM - 5:30PM - Closed Sunday
- PHONE – Toll-free phone hours 9:30AM - 5:30PM
- ONLINE – WWW.HAMRADIO.COM
- FAX – All store locations
- MAIL – All store locations

KENWOOD

ANAHEIM, CA (800) 854-6046	OAKLAND, CA (877) 892-1745	PORTLAND, OR (800) 765-4267	PHOENIX, AZ (800) 559-7388	MILWAUKEE, WI (800) 558-0411	WOODBIDGE, VA (800) 444-4799
PLANO, TX (877) 455-8750	SAN DIEGO, CA (877) 520-9623	DENVER, CO (800) 444-9476	ATLANTA, GA (800) 444-7927	NEW CASTLE, DE (800) 644-4476	SALEM, NH (800) 444-0047

Shop Anytime From Anywhere
with Our Online Superstore
WWW.HAMRADIO.COM