HAM RAG

Visit our website for more club and area ham information
In the Rockford area at ***http://www.w9axd.org***

ROCKFORD AMATEUR RADIO ASSOCIATION

RARA Mission Statement

A member association with common interest of public service to the community through the use of amateur radio.

Presidents Log

With elections over we will move on. We have much to work on this year; namely rebuilding the club will be a top priority.

We have a number of officer positions to fill, and some committees to fill.
If anyone would like to sit on the board please contact me or any board member.

Jim Holich AB9SX will be putting on the November program. The topic will be
"The care and feeding of "boat anchors"

See you at the Club meeting.

Tom N9VJU

2012 Election Results

President: Tom Shouler N9VJU
Vice President: vacant
Treasure: vacant
Secretary: vacant

Board Members:
James Holich AB9SX
Robert Larson KC9ICH
John Lawrence N9OTC

Scott KG9SF says he makes many new contacts with his new tri-band beam. He also complains of "birdies" Are you feeding them Scott? One looks "trapped"

Latest news and events on our web page: http://www.w9axd.org

INSIDE THIS ISSUE

NEXT MEETING

FRIDAY
November 11, 2011
7:00P.M.

Location:
Foundation Room

Saint Anthony OSF
5666 East State Street
Rockford, Illinois

Program:
"Care and Feeding of Boat Anchors"

From The Treasurer

Treasurer's Report:
For the period 25 September 2011 to 22 October 2011
Submitted to the Ham Rag by John G. Olson 2011 RARA treasurer.

Income :	$ 0.00	
Expenses:	$ 0.00	
Ending Checkbook Balance:	$3405.25	(per check register 22 OCT 2011)
Cash deposit not yet made	$13.00	
Ending Repeater checking balance:	$ 300.00	(per 30 SEP 2011 statement)
Ending Savings Balance	$3219.66	(per 30 SEP 2011 statement)***
Ending total cash on hand:	$6937.91	(net gain of $13.83)

*** Savings account statements are issued by Alpine Bank quarterly

AMATEUR RADIO EXAM NOTICE

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October 15th there were 3 applicants resulting in 2 upgrades.

Upgrades:

Jeffrey T Anderson N9JTA - General
Jeremy M Horn KC9RMJ - Extra

Amateur Radio exams are held in Rockford IL on the 3rd Saturday of every month. The next session is November 19, 2011 at 9:00 AM. Walk-ins welcome.

Location:
OSF St Anthony Hospital
5666 E State St
Rockford IL

Exams will be held in the St Francis Room (just right of the front entrance after you enter).

Check-in is from 9:00 AM til 10:30 AM.

What you need to bring to a W5YI-VEC session:

1. Your original Amateur Radio license AND A COPY.
2. Any valid CSCE that you are using for exam credit AND A COPY.
3. Two forms of Identification with your signature on them. One must be a picture ID (drivers license, passport, school ID, library card, credit card, etc.)
4. Test fee $14.00 cash or check payable to W5YI-VEC.

Rusty Cordell WB9QYV
wb9qyv@aol.com

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Transmatches

The logical answer to many of the problems connected with SWR and power loss is the use of a Transmatch, The name was coined by George Grammer W1DF (SK) and Lew McCoy W1ICP (SK) in an article called "The 50 Ohmer Transmatch" They created the name to avoid the use of the name antenna coupler or tuner which is not appropriate (though common) because you do not tune an antenna. In practice, the antenna system (a combination of the antenna and the feed line) is an unknown load which is tuned to match the transmitter output impedance.

One of the most difficult technical points to understand is the load that exists at the end of the feed line connected to the transmitter. Many amateurs think that when a 50 ohm impedance line is attached to the rig, the load is going to be 50 ohms. About the only time such a condition exists is when the antenna impedance is exactly 50 ohms, and is non-reactive. In truth, the load can vary from as low as a fraction of an ohm to several thousand ohms; therefore, the problem becomes one of converting this unknown load to a pure 50 ohm load.

Essentially, a transmatch can be called an adjustable transformer and reactance "tuner outer". It takes the unknown load at the transmitter end of the coax and transforms that load to 50 ohms (the normal output impedance of the transmitter). Note that it was said "unknown load". The value of the load can be measured with the proper equipment, but that is not necessary. What is necessary is that we cancel out any reactance present and step up or down to achieve the match needed. The circuit designs of typical transmatches are shown in Figure 4-1 which is further detailed in 4-2. ***All diagrams appear at the end of the article.***

The above tends to emphasize the inherent problems in using coax with a transmatch and the handling of high SWR' But what about open wire line and a transmatch? As pointed out, open wire is an extremely low loss line which can tolerate almost any SWR no matter how high the ratio. Some open wire line has been used with ratios of 80:1. Always keep in mind that if a line is essentially loss less, then the power must go to the antenna to be radiated, Feed lines do not radiate simply because of a high or low SWR, There are some instances of feed line radiation that will be discussed later in detail, but regardless of what you hear on the air, SWR does NOT make a feed line radiate.

That being the case, the use of open wire feed line and a transmatch opens an efficient world of wire antennas without using complicated matching devices at the antenna which consumes rather than radiates power. Remember that every incremental improvement of an antennas performance is important whether applied to an indoor antenna in a closed space or a salt marsh on a 60,000 foot plateau.

These days many transceivers have built in transmatches or tuners. Most of these have very limited matching ranges usually on the order of 25 to 150 ohms, and most of them do not have provision for balanced loads (open wire). The question very frequently asked is "If my transceiver has a built in transmatch, do I still need a separate transmatch? "Obviously if there is a load outside the range of the unit then a wider range circuit is required. This brings up the subject of what kind of tolerances in SWR is acceptable to modern transceivers.

Most of the modern transceiver have built in protective circuits that will keep the final amplifier stages from being destroyed if the mismatch becomes too high. What is too high? From Many tests it was determined that if the load to the transceiver goes higher than 2:1, the transmitter will automatically shut down, In fact, some show that when the SWR started to go over 1.5:1, the output began to drop. From a realistic power loss standpoint, an SWR less than 2:1 is almost immeasurable, so we certainly can accept such a load.

Bits and Pieces

A good question frequently asked is "When is a transmatch needed?" Naturally, if the transmitter is in a shut down condition because of a high SWR, we will either have to match the antenna to the line or use a transmatch. Matching the antenna to the line can be an impossible situation in many cases, particularly when we QSY, etc. Therefore in this cse, a transmatch is the answer.

Also, don't be mislead by claims from makers of multi band trap dipoles that state that the antenna will stay below 2:1 on all amateur HF bands, 160 or 80 through 10. This cannot happen unless very high loss resistors are used, To reiterate, a transmatch is not needed if the SWR stays below 2:1 (but frankly, I prefer to use one anyway because my amplifier will always be working into a matched condition). On the other hand, I might add that multi-band trap dipoles and other antennas such as off center fed models will present a reasonable antenna system load for a coax fed antenna to work with a transmatch. (A transmatch will be needed to use all frequencies.) In other words, we don't want to use coax as a "tuned" line if the SWR is really high, as it can be with some antenna impedances. With multi-band coax fed dipoles we can expect the SWR to be a reasonable figure. It will always suffer to some degree if traps are used. Without using a transmatch, what is an "ideal SWR? Based on manufacturer limits covered earlier, I must say the ideal is 2:1 or less. Any loss in the transmission line from a match from 1:1 up to 2:1 is insignificant and is not considered important. I would say then if the antenna system feed stays below 2:1 on our operating bands and frequencies, we may not need a transmatch, Because of the transceiver 2:1 restriction; however, we do need a transmatch if this figure is exceeded.

Another bonus when using a transmatch is that it will offer a certain degree of selectivity to the station. For example, amateurs living close to commercial broadcasting stations or other high power RF installations like some industrial locations can get a lot of interference from cross modulation generated by the overloading of the receiver by these high power sources. In many cases a transmatch will eliminate this problem.

Because of the transmatch selectivity, there is a certain amount of harmonic rejection. However, I do not intend to get into a discussion of harmonic suppression and which of the transmatch circuits (T, SP, or Ultimate shown in figure 4-1) is best for harmonic reduction. Each has its advantages, and in any case, the argument about harmonics is academic because the FCC rules state that harmonics must be down at least 40dB from the final stage of the transmitter for the 160 to 10 meter bands, and as far as I know, all commercially built rigs meet this standard.

Regardless of which of the above mentioned circuits you use, all have the infinite beauty of matching any kind of antenna system. Think about that statement for a second.. I said ANY kind of antenna system! This means random length wires, rain gutters, guy lines on towers, or towers themselves. In fact, anything metal can be matched to a 1:1 ratio, with the circuits' mentioned above. I guess that I should add that most commercial units are usually for 80 through 10 meters and some include 160 meters.

To satisfy the statement of matching anything requires having the three main components (input capacitor, inductor, and output capacitor) all variable. Many of the commercial circuits use a switched tapped inductor. While this is OK in most matching cases, there are some loads that are impossible to match perfectly. Usually, however, a better than 2:1 match for any system can be achieved.

Another argument that has ensued over the years pertains to the use of roller inductors in transmatches. The original circuits Lew McCoy W1ICP (SK) designed used a variable inductor in the form of a coil that could be rotated, shorting out turns, and changing the inductance as it was rotated. There are transmatches that use tapped inductors whereby turns are are shorted by means of a switch to disconnect unused turns. In many instances an antenna system requires a very precise amount of inductance which cannot be achieved by the use of tapped turns, the ideal transmatch uses a completely variable inductor simply because it can be set precisely.

Some amateurs are concerned about a transmatch introducing some loss into the system. Some years back, I made extensive tests and found when using good RF connections on all of the components in a transmatch plus reasonable power handling components, the average power loss was on the order of 3% -5% depending on the load being matched. On the other hand, this loss can be more than compensated for by using the transmatch so that a rig is always working into its design load. Everything runs cooler with better efficiency etc.

Both sides of this coin must be looked at. What is to be gained? Keep the following point in mind. A transmitter is designed to work into a 50 ohm impedance line. By using a transmatch, we ensure that the rig is always working into the proper design load, producing the most efficiency. Any insertion losses are therefore quickly overcome,

Many years ago Lew McCoy W1ICP (SK) designed a unit known as the Ultimate Transmatch. It was very similar to the circuit shown in figure 4-1A and is shown in figure 4-1B. The problem he faced was how to get a basically unbalanced output to feed a balanced line such as open wire feeders. He realized first that the antenna load, although the feeders were 450 ohm impedance, would be, or could be, some value very far removed from 450 ohms. Baluns are designed to go from unbalanced to balanced loads, but in this case, although a balun might have worked, I was dealing with wide and varied impedances. If I used a balun, say a 4:1 ratio balun might have been able to convert that balanced load to an unbalanced coupling system. But again, I couldn't think in terms of baluns. I had to think strictly in terms of transforming an unknown load to 50 ohms. This presented crazy problems because of the extremely high SWR I could encounter. High SWR can cause high heating problems as I soon discovered.

In any case, I started out with a 4:1 basic transformer that used a T-200 powdered iron core. This worked fine at power levels less than a few hundred watts with some kinds of loads, but with other loads it heated up. I ran more power as a test and promptly shattered the iron core. To make a long story short, after many days of I finally ended up with three stacked, special insulated wrapped t-200 cores wound with #14 Teflon coated wire. The system worked with all loads and was tested to 2000 watts. That particular transformer (call it a balun if you like) has more than withstood the test of time.

Arguments erupted: I should have used 1:1 transformer ratios, not 4"1, or the cores saturated and generated spurious signals, etc. All of these statements have proven false over the years. Dr. Jerry Sevik, W2FMI, who is the authority on ferrite and powdered iron transformers, completely vindicated my transformer in an article in the November 1993 issue of C magazine. My selection and design is also supported by the fact that most of the commercial manufacturers use my circuit.

Before discussing the technique used to adjust a transmatch, let's see where a transmatch should be installed. See figure 4-5 for the basic set up. If a low pass filter is used, it should be installed between the rig and the transmatch, and also between the SWR bridge and the transmatch. In extreme fringe areas of television broadcast, special care should be exercised. The diodes used in the bridge can generate harmonics which the low pass filter must kill. The SWR placement is not important in cable TV areas or in strong signal locations, just in fringe or low signal spots. Filters are designed to work into 50ohms, and that point in the station set up is where a 50 ohm impedance will be.

There are many commercially available automatic transmatches, and many modern transceivers have the option of providing a built in automatic transmatch. I cannot get too excited about most of these units simply because the matching range is very limited. Amateurs purchase such transceivers expecting them to match any load, and are disappointed when they don't. On the other hand, there are some automatic tuners that handle practically any load. Some examples are the ICOM and TenTec units. They will handle any load an amateur will encounter. To be fair, there are other good commercial units available. The questions that should be asked are simple enough: "What is the matching range of impedances covered. and what is the power level that they will handle?"

An SWR indicator bridge should be placed between the rig and the transmatch as shown in the diagrams. This is important because the bridge provides the visual indication of when the system is correctly tuned. Many commercial units have an SWR bridge built in, so note what I said about weak signal areas (Digital TV has eliminated most TVI Issues – Jim Holich AB9SX). Keep notes as you do your adjusting, because once you find the correct settings, you will want to return to the proper settings when you return to a frequency.

Now for the best technique to tune or adjust a transmatch. First and most important, a transmatch must be adjusted using the minimum amount of power that provides indications. (Where do you think those annoying heterodynes come from? – Jim Holich AB9SX) If the SWR bridge has different power settings, the lowest power settings should be used for adjustments. Assuming we are using a multi band transmatch 80 through 10 meters. Let's review the procedure for 80 and 20 meters first.

Before applying power, the variable capacitors should be set to maximum capacitance (plates fully meshed). It is not unusual to find several different transmatch settings which provide a perfect match. Always use the match that provides the most capacitance in the circuit.

Next we switch the bridge to read FORWARD. Turn on the rig and adjust the drive to put out enough power for a reading. Usually 10 to 20 watts with a 100 watt rig is sufficient. This level of power could be used all day without hurting anything, If you have a roller inductor for your inductance, start at minimum inductance and run the roller out slowly increasing the inductance while observing the bridge meter. At some time, you will get an indication of more power output.

Next we switch to REFLECTED and adjust both capacitors, looking for a drop toward zero. The closer the reading gets to zero, the closer we are to a 50 ohm match. Next we carefully adjust the inductor and the capacitors looking for a zero reflected reading on the meter. Once we reach zero, we have matched the antenna system, an unknown load, to 50 ohms, the design factor of your transmitter.

We now bring the power to the rated transmitter level. The reflected reading may have to be touched up with the transmatch controls. The procedure foe 20 through 10 meters is similar except that the capacitors will be set at i/2 or ¼ mesh for the proper setting. Also, only a few turns of inductance are needed on these bands. In fact, on 10 meters, but it can be done if you use care. With switched, tapped inductor transmatches different switch settings will have to be tried. With some loads, 1:1 may not be able to be reached, but usually very close to a good match can be achieved. Personally, I accept a 1.5:1 or better. By using a transmatch, we now have a tuned system. It is important to know that neither the SWR on the transmission line, nor the pattern of the antenna has been changed. We have taken the antenna and feed line, an unknown load, or an unknown reactance and converted that load to one that the transmitter and receiver see as a pure 50 ohm load.

Excerpted from Lew McCoy on Antennas W1ICP (SK)

AREA Repeaters

146.610 -	ENC/DEC pl 114.8	W9AXD
147.000 +	ENC/DEC pl 114.8	W9AXD
223.880 -	ENC/DEC pl 118.8	W9AXD
ATV	input 1250 Mhz/ 434 Mhz output 421.25 Mhz	W9ATN
146.805 -	ENC/DEC pl 114.8	K9AMJ
224.440 -	ENC/DEC pl 118.8	K9AMJ
147.255 +	ENC/DEC pl 114.8	WX9MCS
444.725 +	ENC/DEC pl 107.2 Linked to FISHFAR	WX9MCS

2010 RARA Officers and Board

Officers:

President - Tom Shouler, N9VJU, 815-877-9129
Vice President - OPEN
Secretary - John Lawrence, N9OTC, 815-397-4624
Treasurer - John Olson W9JGO

Directors:

Steve Thorne, K9LLI, 815-399-9161
Web Master - Robert Larson, KC9ICH, 815-226-1875
Ham Rag Editor - Jim Holich, AB9SX, 779-552-8796
Repeater Chairman - Chuck Ingle, AB9KA, 815-979-1049

Diagrams from the Lew McCoy W1IPC (SK) Article

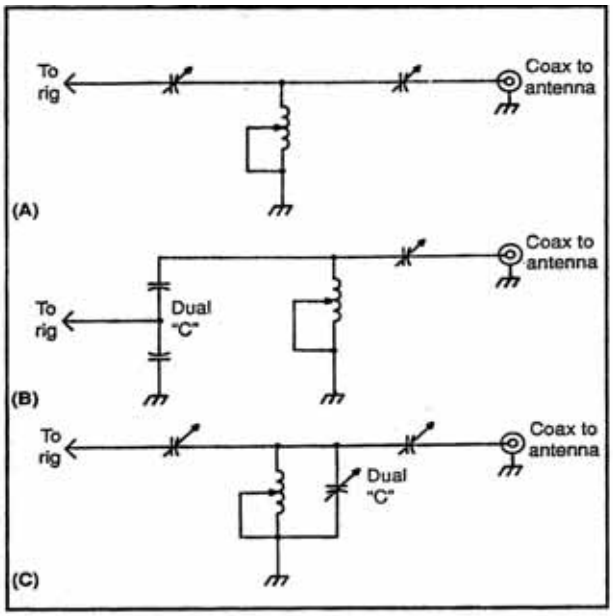

Figure 4-1. Three versions of the Transmatch. At (A) is the most popular of the Transmatch types. It includes two variable capacitors and a variable inductor. Shown at (B) is the Ultimate Transmatch and at (C) the SPC. Any one of these three, using proper values for the variables, will match any load an amateur is likely to encounter. The circuit at (A) is preferred because of its simplicity.

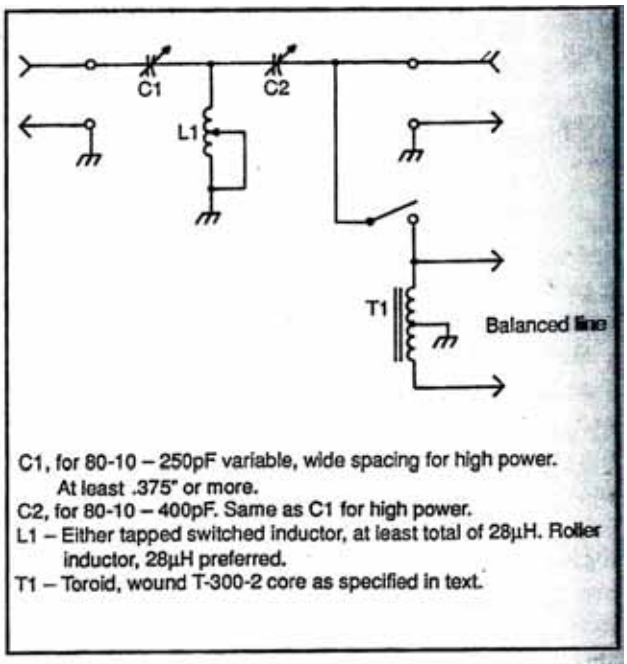

Figure 4-2. This is the circuit of the Transmatch for multiband use shown in figure 4-1(A). L1 typically would be 25 to 30 µH, and the band taps would be determined with the multiband antenna connected to the output. Before making permanent taps on the coil, use a clip lead to short out turns, adjusting C1 and C2 for a match. Use the tuning techniques outlined in the text. T1 is the transformer described in figure 4-5 and the photos.

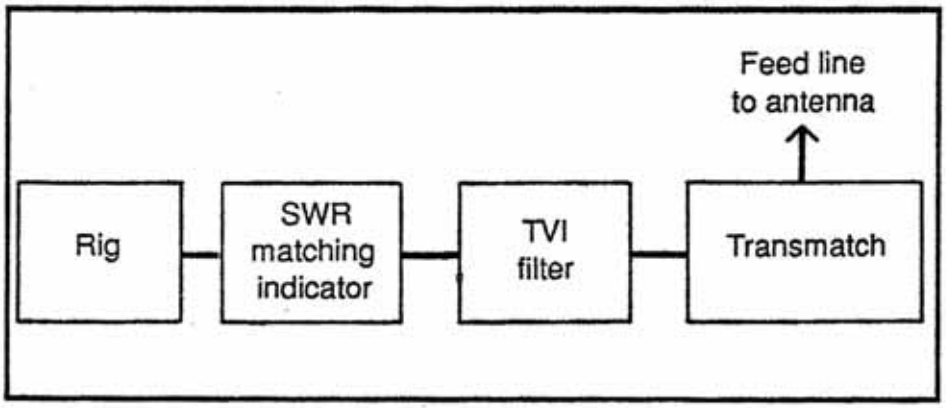

Figure 4-3. This is the normal setup for using a Transmatch and an SWR bridge. Sometimes the SWR indicator is built into either the transceiver or the Transmatch.

The K7RA Solar Update

SB PROP ARL ARLP044
ARLP044 Propagation de K7RA

First, a few solar cycle updates. As you might suspect, the average daily sunspot numbers for October shot way up, from 55.5 in June, to 67.2 in July, 66 in August, 106.4 in September, and 123.6 in October.

Our three month moving average of daily sunspot numbers was also up, of course, with the three month average ending in October at 98.6, up from 61.5 in July, 63 at the end of August, and 70.6 ending in September.

Because of increasing solar activity, for the third consecutive month NASA revised its prediction for the peak of the current solar cycle, each time estimating higher intensity and changing the projection for the month the cycle is expected to peak.

Note that these numbers are not the higher Boulder sunspot numbers we report here, but the much lower Zurich numbers. They are also smoothed sunspot numbers, meaning they represent an average taken over a year, with the indicated month in the middle.

September 1 they moved the expected peak from June 2013 to May 2013, and the smoothed sunspot number from 69 to 70. At one time they were predicting a maximum nearly the same as the 1907 maximum of Cycle 19, 64.2, but of course recent predictions are substantially above that value. NASA noted that the current cycle would still be the smallest in the past hundred years.

A month later on October 3 they upped it again, with the maximum smoothed sunspot number jumping from 70 to 77, and the peak moving again, this time from May to April 2013. But at this level, it would
still be the weakest cycle in 100 years.

This time on November 2 their prediction made a big jump, from 77 to 89, but with the peak moving back out, this time from April to May 2013. This makes the cycle slightly bigger and longer, and instead of 100 years, it is the smallest solar cycle in over 80 years.

Their prediction for solar max jumped nearly 30% in three months - not bad. Still, a graphic comparing the beginning of this cycle with the last three shows how weak it really is. See http://www.solen.info/solar/cyclcomp.html. But note this is a 13 month moving average, so the latest point on the graph is over 6 months ago, and the higher activity is recent.
The latest prediction from NOAA and USAF for the near term has solar flux at 165 on November 4-10, 160 on November 11, and 150 on November 12-15, 160 on November 16, and peaking again at 165 on
November 17-18, then falling to 155, 145, 140 and 130 on November 19-22.

For November 4-6 the predicted planetary A index is 15, 10, and 8, then 5 on November 7-10, 12, 10, 8, and 5 on November 8-10, 8 on November 11-13, and 5 again on November 14-23.

Geophysical Institute Prague predicts quiet to unsettled conditions November 4, unsettled November 5, quiet to unsettled November 6, and quiet conditions November 7-10.

A huge sunspot group, number 1339, with an area of 1400 millionths of a solar hemisphere has rotated into view. There was one new sunspot group on October 30, three more on October 31, another two
on November 1, and another new one on November 2. On Thursday, November 3, sunspot group 1339 was reported to be the biggest sunspot in a number of years. The total sunspot area for that day
was 2005 million of a solar hemisphere, and a larger total sunspot area has not been observed since July 18-23, 2004, when total sunspot areas were 2300, 2325, 2190, 2420, 2070, and 2050. It is interesting that no new sunspots appeared during that period, and the daily sunspot numbers were 169, 176, 147, 162, 117 and 86 over those same six days.

The K7RA Solar Update

The Sun is currently peppered with spots, so don't be surprised if a solar flare is released, possibly disrupting HF radio communications if it is aimed at earth. MSNBC ran an article on the latest solar activity, which you can read at, http://www.msnbc.msn.com/id/45157211/ns/technology_and_science-space/.

You can also watch a video of a flare from sunspot group 1339 at, http://www.universetoday.com/90653/largest-sunspot-in-years-now-on-the-sun/.

Note that you can select twice the default resolution by clicking on the 360p at the bottom, and restarting the video. This gives a very good picture for full screen viewing, accessed by clicking in the lower right of the screen.

Scott Smith, VK2AET of New South Wales, Australia wrote to say, "I was enjoying a CW contact with the USA on 10 meters today (November 3) at 2015 UTC when all of a sudden the band went completely dead. Before this I had just worked EA8 which was quite exciting. After this fadeout there were no signals at all on 10 meters. It appeared so dead that I thought my antenna had fallen down and I had to look out the window at it. Here in VK we get a great indicator of 10 meter propagation by listening to 27.025 MHz where US CBers are usually well over S9 when the band is in good shape. These guys had also disappeared completely whereas half an hour before they were their usual strength."

Scott must have observed an effect from the X-Class solar flare, which peaked about 12 minutes later at 2027 UTC. That is the same flare reported in the article at Universe Today linked above. ARRL CW Sweepstakes is this weekend, and the current solar activity should make 10 meters especially productive. See http://www.arrl.org/news/2011-arrl-cw-sweepstakes-are-you-ready.

If you would like to make a comment or have a tip for our readers, email the author at, k7ra@arrl.net.

For more information concerning radio propagation, see the ARRL Technical Information Service web page at, http://arrl.org/propagation-of-rf-signals. For an explanation of the numbers used in this bulletin, see http://arrl.org/the-sun-the-earth-the-ionosphere. An archive of past propagation bulletins is at http://arrl.org/w1aw-bulletins-archive-propagation. Find more good information and tutorials on propagation at http://myplace.frontier.com/~k9la/.

Monthly propagation charts between four USA regions and twelve overseas locations are at http://arrl.org/propagation.

Instructions for starting or ending email distribution of ARRL bulletins are at http://arrl.org/bulletins.

Sunspot numbers for October 27 through November 2 were 98, 104, 73, 80, 112, 141, and 121, with a mean of 104.1. 10.7 cm flux was 131.5, 133.9, 123, 126.7, 138.1, 138.6, and 153.6, with a mean of 135.1. Estimated planetary A indices were 4, 2, 2, 6, 8, 21, and 11, with a mean of 7.7. Estimated mid-latitude A indices were 4, 1, 2, 4, 9, 14, and 7 with a mean of 5.9. NNNN /EX

A submission from Jim Miller W4JR

US Amateurs Now 700,000 Strong!

10/12/2011

As the third quarter of 2011 came to a close, ARRL VEC Manager Maria Somma, AB1FM, began calculating the number of licensed Amateur Radio operators in the US, as well as the number of new licensees. "At the end of September, I saw that the number of hams in the US was high," she said. "When I started comparing that number with other years, I found that it was an all-time high." For the first time, there are more than 700,000 radio amateurs in the US.

"When looking at the three current license classes -- Technician, General and Amateur Extra -- these numbers are impressive," Somma explained. "The number of Technicians peaked in March 2011 at 342,572, while in September 2011, we saw both Generals and Extras peak at 159,861 and 125,661, respectively. As new Technicians earn their Amateur Radio licenses, and current Technician licensees move on to General and Generals upgrade to Extra, this can cause up-and-down fluctuations for these totals."

Somma said these high numbers mean that hams are upgrading and renewing in larger numbers and staying interested in hobby: "These are compelling statistics and I am thrilled to see the highest number of amateur radio licensees ever! When I began working at the ARRL back in the mid 1980s, there were approximately 450,000 amateurs in the US. Our VEC program conducted an average of 55 sessions a week. Today, we administer approximately 150 exam sessions each week, and our total number of licensees across all three license classes continues to grow each year."

In the past 40 years, the number of Amateur Radio operators in the US has grown at a remarkable rate:

- December 1971: 285,000
- December 1981: 433,000
- December 1991: 494,000
- December 2001: 683,000
- September 2011: 700,221

FRIDAY MORNING BREAKFAST

Meets every Friday morning from 8 am until about 9:30 am. An informal gathering of ham folks, no affiliations necessary, good food and good company.

Everyone is welcome to attend.

"The Stockholm Inn"
2420 Charles Street
Rockford, IL 61108

Hamfest Information

Milwaukee Repeater Club Hamfest
11/05/2011

Elks Lodge #46
5555West Good Hope Road
Milwaukee WI
Talk-in 146.910 (PL127.3)
Public Contact; Ken Jaeger KC9MXZ
Phone 414-491-0686

Indiana State Convention (Fort Wayne Hamfest and Computer Expo)
11/19/2011—11/20/2011

Allen County War Memorial Coliseum
4000 Parnell Avenue
Fort Wayne, IN 46801
Talk-In: 146.880-
Public Contact: James Boyer , KB9IH
PO Box 10342 Fort Wayne, IN 46851
Phone: 260-579-2196
260-579-2196

40th Annual Midwinter Swapfest
West Allis Radio Amateur Club
01/07/2012

Waukesha County Expo Center Forum
1000 Northview Road
Waukesha, WI 53186
Public Contact: Phil Gural , W9NAW
S67W12944 Larkspur Road
Muskego, WI 53150
Phone: 414-425-3649
414-425-3649

P.O. Box 8465, Rockford, IL 61126
Website: www.w9axd.org
E-mail: jholich@comcast.net

Nets

Monday 8 PM	RARA Info.	146.610 - 114.8
Thursday 7 PM	ARES	147.255 + 114.8
Thursday 8 PM	SATERN	146.610 - 114.8

place address label here

November, 2011

ROCKFORD AMATEUR RADIO ASSOCIATION MEMBERSHIP APPLICATION

Single Adult: $25.00 Adult w/Family: $30.00
Single Senior: $15.00 Senior w/Family: $20
Student: $15.00

Above rate includes the RARA monthly newsletter, Ham Rag, via email.

Ham Rag Via U.S. Postal Service: $12.00 extra

Name _____ Call Sign _____

Address _____

City _____ State _____ Zip _____

Home Phone _____

Work Phone _____

Email _____

Renewal _____ New _____ Retired _____

Radio Interests _____

_____

Other Interests _____

_____

Suggestions: _____

RETURN COMPLETED FORM TO:

ROCKFORD AMATEUR RADIO ASSOCIATION
P.O. BOX 8465
ROCKFORD, ILLINOIS 61126