



ROUNDTABLE

The Denver Radio Club Newsletter

Since 1917

January 2016

PRESIDENT'S MESSAGE

By Gerry Villhauer – W0GV

Hello DRC Members,

First off I want to wish each and everyone a HAPPY NEW YEAR! I wish I knew how that time and age thing really works. When I was 16 I could not wait until I was 21. Now it seems like you blink your eyes and it is another new year. Anyway, I hope 2015 was good for you and 2016 will be even better.

Like the year, our annual DRC Holiday Party has come and gone. I think you will agree, if you attended, it was another very successful party. The food was good and very plentiful, the program was wonderful and very informative, and we gave out many prizes and lot of good ham fellowship was shared. A *BIG* thank you goes out to Rita Baysinger (N0UEW) for doing an excellent presentation on wild land fires and how they can affect our lives and property; even if you live in a suburban area. Her pictures were especially descriptive of the tremendous power this force of nature can deliver.

The January program will be another very special one presented by two highly qualified gentlemen on the subject of natural and manmade Electromagnetic Pulses; how their energy is propagated and the severe damage they can cause. Dwight Eckert and Glenn Rhoades will be presenting this very interesting subject. More on this program in this issue of the RoundTable; this is a program that you don't want to miss.

Remember it is the time of year for bad weather, so please listen to our repeaters for any cancellation announcements before you head out to our monthly meeting. If you have a subject that you think would be fitting for a presentation or if you have seen a program elsewhere that would be suited for our needs, PLEASE let me or Bill (W6OAV) know about it. We will attempt to schedule the presenter for one of our meetings.

Thanks to all of you who recently joined and made the DRC "Your Club". Please stay active on the air, come to meetings, programs and events. Your name and call will be listed in the body of the RoundTable. I hope to see you at the January 20th meeting.

73 for now,
Gerry (W0GV)
President



INSIDE THIS ISSUE

December - Meeting, What'd I Miss?	2	Nixie Tube Project	8
Solar Disturbances And Their Effect	3	Looking Back At The DRC	13
Who's New In The DRC?	5	Propagation And Forecasts	15
Technical Committee Report	5	Upcoming Events & Contests	16
Solar Update	6	DRC Repeater	17
January Meeting Presentation	7	DRC Calendar	18
Learning Net Report	7	DRC Board & Staff	19

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W0TX

<http://www.w0tx.org>



DECEMBER MEETING - WHAT'D I MISS?

By Bill, W6OAV

There were over 70 attendees who enjoyed socializing and the variety of food available at the Golden Corral.

The guest speaker was Rita Baysinger (N0UEW). Rita's extremely interesting PowerPoint presentation covered many aspects of wildfires. Topics covered were:

- An overview of various major wildfires from 1910 to the present.
- The dynamics of wildfires, how they propagate and why they are so dangerous.
- How and why wildland fires have increased in number and become more dangerous.
- The definition of the Wildland Urban Interface (WUI) and the fact that many people don't know that they live in the WUI.
- How to protect a home from an unexpected nearby wildfire.
- How to prepare and to safely evacuate a home when threatened by a nearby wildfire.
- Where to obtain information on fire safety.

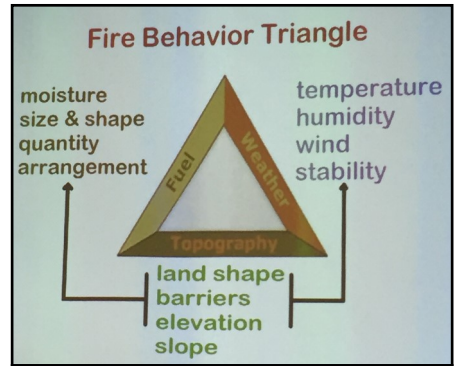
The party ended with ticket drawings which provided many nice prizes to lucky winners.



Gerry (W0GV) Introductions



Rita (N0UEW) on Wildland Fires



Presentation Slide

Please Let Us Know

Over the years we occasionally hear from hams who have read the RoundTable in other states and countries around the world. We appreciate the comments and we would like to know where you are located. So if you live outside the Front Range or Denver Metro Area and read the newsletter either online, email or hard copy please send a short note via email with your *City, State* or *City, Country*.

We will publish it at a later date in our new regular feature called RoundTable RoundWorld.

To respond to this request send your information to n0hi@arrl.net.

Subject: I'm located in...

SOLAR DISTURBANCES AND THEIR EFFECT ON RADIO PROPAGATION

PROVIDED BY FRED, AA0JK

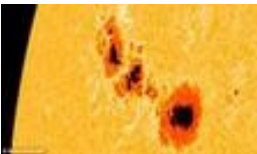
A basic overview of Solar Flares, including CMEs, Coronal holes, Solar Wind, and their effect on radio propagation.

As electromagnetic waves, radio signals interact with the medium in which they travel. Radio signals are subjected to reflection, refraction, diffraction, absorption, polarization, and scattering.

Solar activity has a major impact on the ionosphere and radio propagation. It affects a variety of forms of, radio communications using the HF bands. Point to point radio communications, Aviation navigation, GPS, and Amateur Radio communications. Solar conditions can enhance radio communications and the HF propagation conditions. Under other circumstances they can disrupt the HF bands. At the same time solar activity may provide enhanced conditions, advantages to VHF bands used by radio amateurs.

Basic disturbances of interest to the amateur radio operator: Sun Spots, Solar Flares, Coronal Mass Ejections, CMEs, Coronal Holes, and Solar Wind.

Sun Spots



Sunspots are temporary phenomena on the photosphere of the Sun that appear visibly as dark spots compared to surrounding regions. They correspond to concentrations of magnetic field flux that inhibit convection and result in reduced surface temperature compared to the surrounding photosphere. Sunspots usually appear in pairs, with pair members of opposite magnetic polarity.

Individual sunspots may endure anywhere from a few days to a few months, but eventually decay. Sunspots expand and contract as they move across the surface of the Sun with a size ranging from 16 kilometers (10 mi) to 160,000 kilometers (100,000 mi) in diameter. The larger variety are visible from Earth without the aid of a telescope. They may travel at relative speeds ("proper motions") of a few hundred meters per second when they first emerge.

Reflecting intense magnetic activity, sunspots accompany secondary phenomena such as coronal loops (prominences) and reconnection events. Most solar flares and coronal mass ejections originate in magnetically active regions around visible sunspot groupings.

Solar flares



A solar flare is a sudden flash of brightness observed near the Sun's surface. It involves a very broad spectrum of emissions, requiring an energy release of up to 6×10^{25} joules of energy (roughly the equivalent of 160,000,000,000 megatons of TNT, over 25,000 times more energy than released from the impact of Comet Shoemaker-Levy 9 with Jupiter). Flares are often, but not always, accompanied by a spectacular coronal mass ejection. The flare ejects clouds of electrons, ions, and atoms through the corona of the sun into space.

These clouds typically reach Earth a day or two after the event.

Solar flares affect all layers of the solar atmosphere (photosphere, chromosphere, and corona), when the plasma medium is heated to tens of millions of Kelvin, while the cosmic-ray-like electrons, protons, and heavier ions are accelerated to near the speed of light. They produce radiation across the electromagnetic spectrum at all wave-lengths, from radio waves to gamma rays, although most of the energy is spread over frequencies outside the visual range and for this reason the majority of the flares are not visible to the naked eye and must be observed with special instruments. (NASAs SOHO & STERO satellites).

Flares occur in active regions around sunspots, where intense magnetic fields penetrate the photosphere to link the corona to the solar interior. Flares are powered by the sudden (timescales of minutes to tens of minutes) release of magnetic energy stored in the corona. The same energy releases may produce coronal mass ejections (CMEs).

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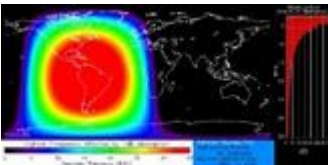
X-rays and UV radiation emitted by solar flares can affect Earth's ionosphere and disrupt long-range radio communications. Direct radio emission at decametric wavelengths may disturb the operation of radars and other devices that use those frequencies.

Effect of solar flares: For most solar flares, the main effect felt on Earth is an increase in the level of solar radiation. This radiation covers the whole electromagnetic spectrum and elements such as the ultra-violet, X-rays, will affect the levels of ionization in the ionosphere, thus, it has an effect on radio communications via the ionosphere. Often an enhancement in ionospheric HF propagation is noticed as the higher layers of the ionosphere have increased levels of ionization. However, if the levels of ionization in the lower levels start to rise, then this can result in higher levels of attenuation of the radio signals and poor conditions may be experienced. Additionally an increase in the level of background noise at VHF can also be detected.

Flares generally only last for about an hour, after which the surface of the Sun returns to normal although some Post Flare Loops remain for some time afterwards. The flares affect radio propagation and the effects may be noticed for some time afterwards.

Solar Flare Classifications: Flares are classified by their intensity at X-ray wavelengths, i.e. wavelengths between 1 - 8 Angstroms. The X-Ray intensity from the Sun is continually monitored by the National Oceanic and Atmospheric Administration (NOAA) using detectors on its satellites. This data is then used to classify the flares. The largest flares are termed X-Class flares. M-Class flares are smaller, having a tenth the X-Ray intensity of the X-Class ones. C-Class flares then have a tenth the intensity of the M-Class ones.

CMEs



A **Coronal Mass Ejection (CME)** is a massive burst of gas and magnetic field arising from the solar corona and being released into the solar wind, as observed in a coronagraph. Coronal mass ejections are often associated with other forms of solar activity, most notably solar flares or filament eruptions. CMEs most often originate from active regions on the Sun's surface, such as groupings of sunspots associated with frequent flares.

Coronal mass ejections, CMEs, are another form of disturbance that can affect radio communications. Although much greater than flares in many respects, CMEs were not discovered until spacecraft could observe the Sun from space. The reason for this is that Coronal Mass Ejections, CMEs can only be viewed by looking at the corona of the Sun, and until the space age this could only be achieved during an eclipse. Using a space craft the corona can be seen when viewing through a coronagraph, a specialized telescope with what is termed an occulting disk enabling it to cut out the main area of the Sun and only view the corona.

CMEs can give rise to ionospheric storms and can result in a black out to radio communications.

Coronal Holes



Coronal holes are part of the Sun's corona and are constantly changing and re-shaping. Coronal holes are areas where the Sun's corona is darker, and colder, and has lower-density plasma than average because there is lower energy and gas levels. The sun contains magnetic fields that arch away from areas in the corona that are very thin due to the lower levels of energy and gas, which cause coronal holes to appear when they do not fall back. Thus, solar particles or solar wind escape and create a lower density and lower temperature in that area. The aurora borealis that is seen at the northern and southern poles are the result of solar wind entering the Earth's atmosphere.

Solar Wind



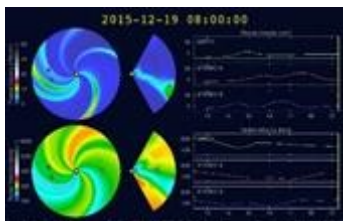
The solar wind is a stream of charged particles released from the upper atmosphere of the Sun. This plasma consists of mostly electrons, protons and alpha particles with energies usually between 1.5 and 10 keV; embedded in the solar-wind plasma is the interplanetary magnetic field. The solar wind varies in density, temperature and speed over time and over solar longitude. Its particles can escape the Sun's gravity because of their high energy, from the high temperature of the corona and magnetic, electrical and electromagnetic phe-

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 nomena in it.

The solar winds flow outward supersonically at varying speeds depending on their origin reaching up to around one million miles per hour to great distances, filling a region known as the heliosphere, an enormous bubble-like volume surrounded by the interstellar medium. Other related phenomena include the aurora (northern and southern lights), the plasma tails of comets that always point away from the Sun, and geomagnetic storms that can change the direction of magnetic field lines and create strong currents in power grids on Earth.

WSA-Enlil (SWPC)



WSA-Enlil is a large-scale, physics-based prediction model of the heliosphere, used to provide 1-4 day advance Warning of solar wind structures and Earth-directed coronal mass ejections (CMEs) that cause geomagnetic storms. Solar disturbances have long been known to disrupt communications, wreak havoc with geomagnetic systems, and to pose dangers for satellite operations.

Summary

Solar disturbances are responsible for major changes in the ionosphere. The effects of both CMEs and solar flares can cause major disturbances to radio propagation, often disrupting them for hours or sometimes days. As a result, a knowledge of when they are happening, and their size can help in predicting what radio propagation will be like.

Videos of interest:
 NASA - The Difference Between CMEs and Solar Flares
<https://www.youtube.com/watch?v=TWjtYSRIOUI>

Propagation 101
<https://www.youtube.com/watch?v=yShIAI2kMZw>

Ham Tip ~ If you have knowledge of a **GREAT** ham radio related website or just a general tip, let us know and we will share it with the rest of the club membership here in the RoundTable. Send to n0hi@arri.net.

Who's New In The DRC?

The DRC is a very active club in the Denver metro area and we'd like to have all of our members listen for these new calls and personally to make them feel welcome.

Philip "Phil" Smith KE0FPN

Welcome to our newest members. We have a number of activities throughout the year and we'd like very much for you to participate in serving your community.

If you have questions please feel free to ask on any of the repeaters or see the contact information on the last page of this publication. Also please join us once a month at the regular club meeting on the 3rd Wednesday at 7:00 p.m. For new hams we have the Elmer session which starts at 6:00 p.m. before the regular meeting.

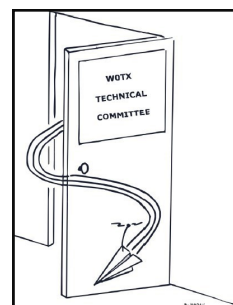
More information can be found on the Denver Radio Club website at <http://www.w0tx.org>.

TECHNICAL COMMITTEE REPORT

By Bill, W6OAV

No TECH COMMITTEE REPORT FOR DECEMBER

Although there isn't anything to report from the Tech Committee from the December meeting, the crew has been working long hours on a new APP of which the result is depicted in the graphic.



~ Editor's Note: The Technical Committee meeting is open to members of the DRC. It is held in the Arvada room, starting at 6:00 p.m. on the evening of the DRC monthly meeting.

Happy New Year !

SOLAR UPDATE

PROVIDED BY FRED, AA0JK

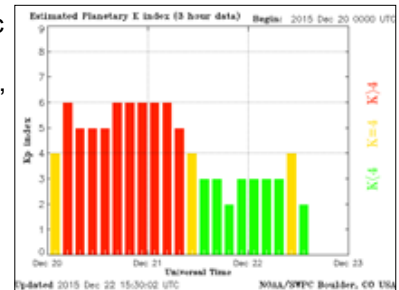


December started out with vast hole openings in the Sun's atmosphere. A "Coronal Hole", opened up in the northern hemisphere, and spewed a broad stream of solar wind into space during the early hours of December 3rd.

Coronal holes are areas where the sun's magnetic field opens up and allows solar wind to escape. Hot plasma flows outward at speeds exceeding one million mph. In the above extreme-ultraviolet image, the boundaries of the coronal hole are traced by dashed lines, arrows, indicating the escape of hot plasma. The solar wind flow reached Earth

Dec 6th and dominated the environment for several days after contact. The Kp index jumped up to over Kp5 on December 6th. (Kp indices, - 6 equates to major storm levels on a 0-9 scale).

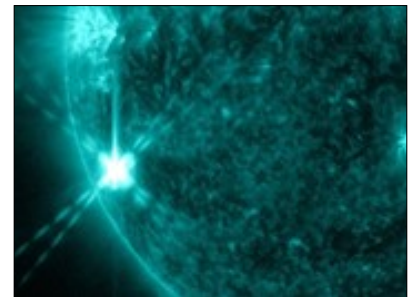
December 10th saw a co-rotating interaction region (CRI), hitting Earth's magnetic field. CRI's are transition zones between fast and slow moving solar wind streams. Solar wind plasma piles up in these regions producing density gradients, and shock waves that do a good job of sparking aurora activity. The Kp index rose to over Kp5 during this period.



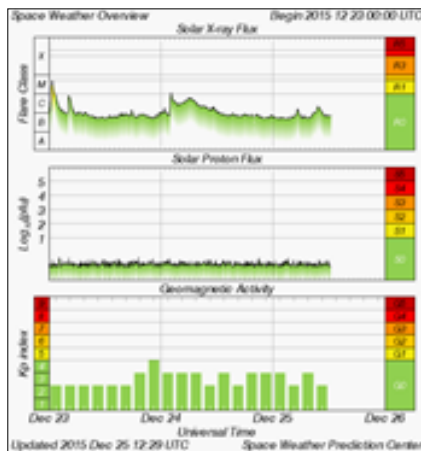
December 16th. A pair of CMEs billowed away from the sun. Both were predicted to hit earth on December 18 and 19th. These were relatively minor storm clouds. Nevertheless, the double blow was expected to spark G1-class geomagnetic storms over the weekend.

December 23 saw radio blackouts as sunspot AR2473 quadrupled in size. At 00:40 UTC, it erupted, producing an M4-class flare.

The image on the right shows the extreme ultraviolet flash of the M4 class flare. UV radiation bathed the top of Earth's atmosphere, ionizing the regions, and altering the normal propagation of radio transmissions. Around the South Pacific Ocean, where the sun was high in the sky, a full-fledged shortwave radio blackout occurred affecting aircraft, and amateur radio. Amateur radio operators are the first to detect these blackouts.

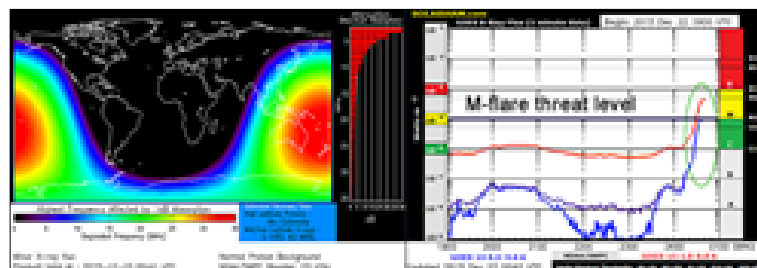


Space Weather Overview



Space Weather Outlook

Solar Activity Forecast: Solar activity is expected to be low. Solar flare risk as of December 25th, - M-class: 40% - X-class: 05%. For the latest first hand solar reports go to SPACE WEATHER PREDICTION CENTER <http://www.swpc.noaa.gov/>.



JANUARY MEETING PRESENTATION

By Bill, W6OAV

Are you interested in learning about natural and manmade Electromagnetic Pulses (EMP), how their energy is propagated and the severe damage they can cause? If so, plan to attend the January meeting. Dwight Eckert and Glenn Rhoades will discuss these this and much more.

Dwight Eckert has over 35 years of experience in Electrical Engineering in the Aerospace Industry. Much of his career has been in support of the exploration of Deep Space including sample return from the tail of a comet (Wild II) and several Mars Exploration missions. He now works on the U.S. human rated space program as the Orion Spacecraft Avionics Architect.

Glenn Rhoades joined Dr. Peter Pry's EMP Task Force on National and Homeland Security in 2014 as the Colorado State Coordinator to bring awareness of either man-made EMP or natural caused GMD threats to the American Electrical distribution grid. He is also a member of InfraGard's EMP SIG and is a National State Steering Committee member of the Secure the Grid Coalition, part of the Center for Security Policy.



Manmade And Natural EMPs

✂

HAM SITE OF THE MONTH

[Mac Ham Radio](#)

✂

W0TX LEARNING NET REPORT

By Fred, AA0JK



Another great month for the Learning Net. Great to hear W2DPR step-up as net control. Great job and hope to hear you taking the helm again soon. We encourage others to help with the net control duties. Good experience for those who might be called upon in the event of an emergency.

Learning Net and Yahoo Learning group topics:

- Band-plan usage.
- Tuning your radio prior to joining a QSO in progress. Never tune on the frequency in use.
- Preferable tuning should be done on a dummy load.
- Butternut vertical antenna. Ground radials.
- Tuning techniques for your mobile screwdriver antenna.
- What's that I hear? Out of band stations operating SSB in the CW portion of the band?
- Antenna tuning kit made from an Arduino Uno microcontroller-based board.
- Wind storm damage to the dipole. That's interesting, it seems to be operating better! Could it be that it has become vertically polarized and thus a better configuration for a net control station?
- Solar conditions and their effect on our communication efforts.

Great topics from our group. We certainly enjoy everyone's input and participation. Thanks to all.

If you are listening and don't yet have your license, you can contact us at the [W0TX web-site](#) or at elmer@w0tx.org.

If we don't have the answer here on the net, we have a lot of experienced hams in the club that can help. Questions can also be submitted on the [YAHOO Learning Net](#) web page. Here you will also find information from past activity that you might find of interest.

Getting that first Technician license? Upgrading to General or Extra? We're here to help. We encourage those who have been Hams for several years to also join us. Your experience and input is welcomed.

What topics would you like to discuss? Join us Wednesday nights, 7:30 PM, 145.490.

(Note: The third Wednesday of the month is devoted to the DRC club meeting. See the [W0TX web-site](#) for additional information.

A NIXIE CLOCK PROJECT - Bringing Past Technology Back to Life

By Steve, NO9B

What are Nixie Tubes?

Take a look at any digital display, say on a clock, stove, or media player. Most likely they'll have red or bluish-green digits. If they're red, LEDs are probably being used and if they're bluish-green, it's **vacuum fluorescent display (VFD)** that are behind the scenes. No matter the color, both of these display sources use "segments" in separate bars to make their displays so prominent.

Before LEDs and VFDs overtook displays in consumer products, there were **Cold Cathode Numerical Display Tubes**, or **Nixie tubes**. They were originally used primarily in measuring and scientific instruments like frequency counters, calculators, voltmeters and multimeters.

Nixie tubes are essentially glass tubes containing a wire-mesh anodes and shaped wire cathodes, filled with a low pressure gas. Although they resemble vacuum tubes, they do not operate like them. Instead collisions between atoms, electrons and ions are responsible for releasing a photon which produces an attractive neon orange glow.

The name Nixie is actually a brand name, it comes from "NIX I", an abbreviation for, "Numeric Indicator eXperimental No. 1", named by Burroughs Corporation, who were the first to introduce Nixie tubes back in 1955. "Nixie" came about accidentally, after "NIX I" was misinterpreted, but the name stuck.

My Nixie Clock Project

I fell in love with Nixie tube displays. ANYTHING with a Nixie tube gets my attention! I love that the digits appear to move when changing, giving a 3 dimensional look to the display. One day, I saw two clock-like displays up for auction on E-Bay. I didn't pay much attention to the details, the fact they were Nixie was all I needed to place my bet.

Once I got them home and took them apart, it was clear that they were just displays, not really a clock, since there was no logic inside to keep time. There were two large Cannon (military) connectors on the back, wired in parallel, which led me to believe that originally there was a very large cable with 46 wires. This cable would have carried the 5VDC "time" signals to the boards with transistors that are inside.

Nixie tubes run off of 170-300VDC and you need a transistor to sink the 18-22mA of current at that voltage to turn on the digits, plus you need a transistor for every digit. 5VDC is used to drive the transistor to its ON state in order to light a single digit. I confirmed this by applying AC to the displays and applied 5VDC to each digit to make sure all the Nixie tubes were good.

I am an Amateur Radio Operator (Ham) and we use Greenwich Mean Time (GMT) in our logs. We usually have two clocks, one displays GMT and the other local time in 24 hour military format. I thought, why not make the "clock" logic to drive the digits and make each of these into a standalone clock, one for GMT and one for local time?

Designing and Building My Nixie Project

Working with Multisim Blue, many parts, datasheets, and Eagle layout software, I came up with a design.

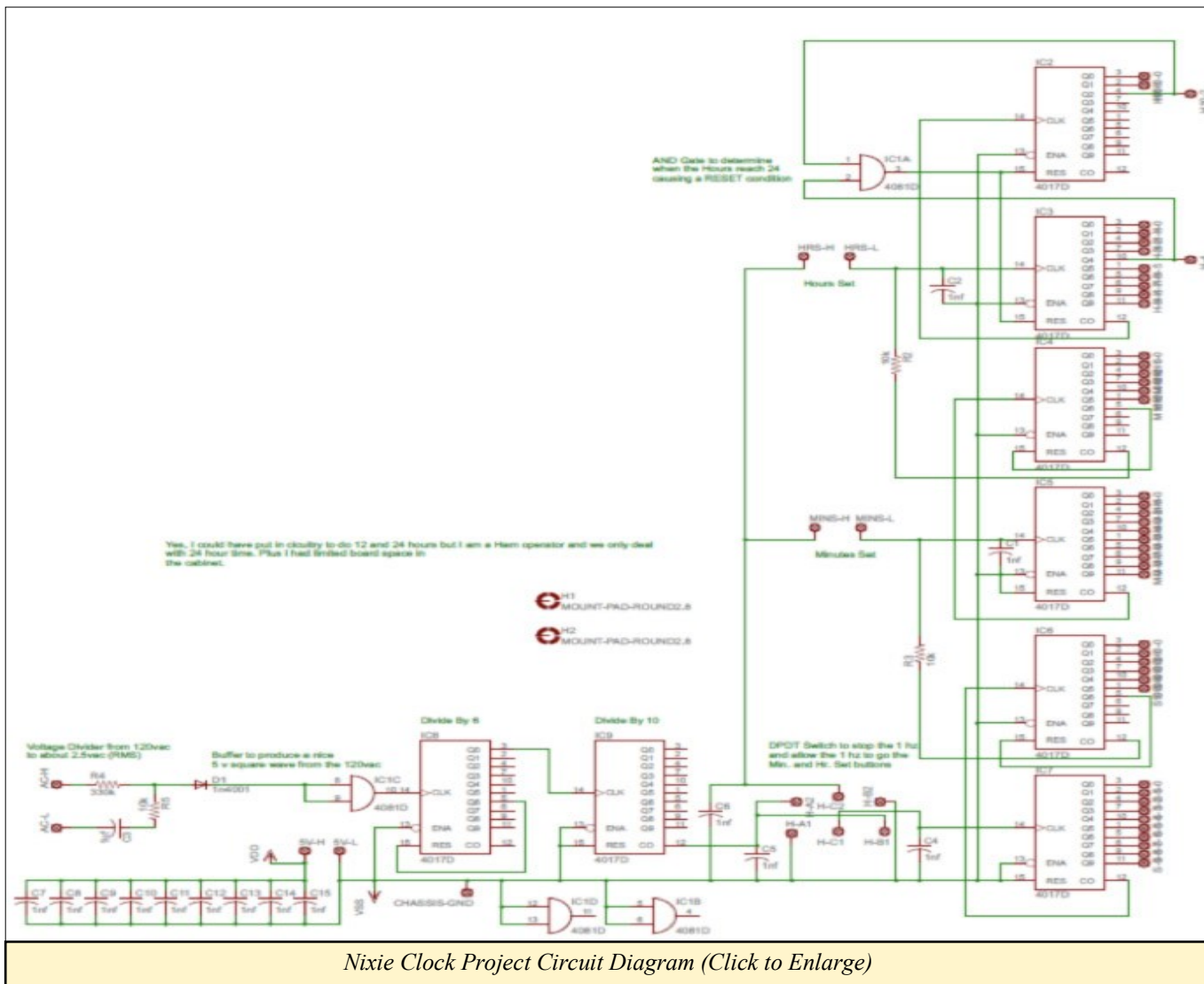


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My project requirements were:

- Standalone, no external timing
- Use the 60Hz AC for clock timing
- Circuit board had to fit inside the display case
- 24 hour display only
- Able to be set by hand
- Cheat on 5 VDC by using a wallwort instead of designing a 5 VDC power supply



Nixie Clock Project Circuit Diagram (Click to Enlarge)

I created a breadboard design using CD4017 decade counter chips since these came in DIP and SOIC packages. These chips were perfect since only one output is on with each clock cycle, and it had 10 outputs (one for each digit). Once I got the basic clock circuit working, I wired it to the Cannon connector, and it worked perfectly!

(Continued on page 10)

(Continued from page 9)

60Hz Pick Off Circuitry

I used Multisim Blue to proof out a design and then put it on a breadboard. The idea was to create a voltage divider and feed that into a CD4017. In the process, I blew up my Heathkit digital trainer board because the 120VAC wire popped out of the breadboard and touched the 5VDC supply wire, letting the magic smoke out of not only the trainer but every CD4017 on the breadboard! After re-ordering more CD4017s and replacing them, I was able to take on the task of the 60 Hz division.

I placed a CD4017 right after the 120VAC voltage divider and wired the now 2.5VAC (rms) to the clock end of the chip. Viewing the waveform revealed the output had some jitter and wasn't quite square. I did three things, added a diode after the voltage divider to create a DC voltage, changed the voltage divider to give a little more voltage and added a CD4018 Quad AND gate chip. I needed the AND gate for the 24 hour reset signal anyway and I decided to use one of the left over gates as a nice 5VDC buffer. I ran the now 3VDC half wave signal to both inputs of the gate. It worked! A nice clean 5VDC square wave came out of the CD4017. I tied the "6" digit output to the reset line which gave me a Divide By 6 signal and fed that to another CD4017. The Carry Out (CO) signal produces a Divide By 10, thus a perfect 1Hz signal. I would argue that the 60Hz signal is a good time base. There is an informative [white paper](#) on the accuracy of the 60Hz .

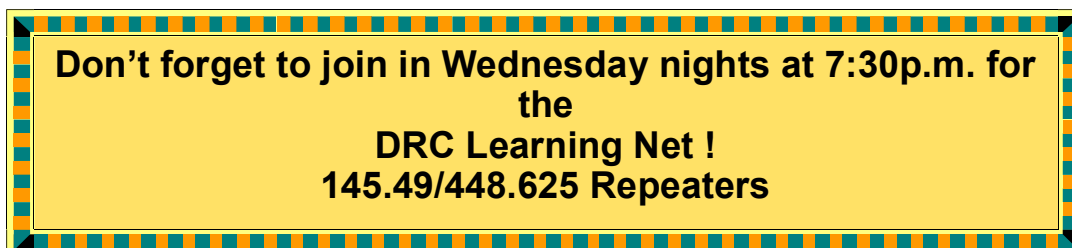
Setting the Circuit

You might think setting the circuit is pretty straightforward, but it's not since buttons have "bounce" which can cause extra transitions that are seen by the chips. I added multiple capacitors and resistors based on research regarding switch debouncing. I also added capacitors on each chip (5VDC) as close as I could get them to the chip, as recommended by many electrical engineers.

Getting a Custom Circuit Board

With every change in the design, I always update the schematic in Eagle and layout the board again. I always use Eagle's "Auto Route" feature to route the circuit board traces instead of doing it by hand. There were a couple wires I had to move by hand after the router was finished. Once I finally got the layout I wanted with the right size, I started looking for a board house to produce them for me. The first board house wanted \$800 for 10 boards! Well, that was not going to fly with my wife, so I kept searching. My next attempt got me closer at \$400, but was still too much. After searching and finding nothing really cheaper than \$300, I put my project on the shelf.

I told everyone I knew about my clock project, and one day I found out about [Seeed Studios](#). They allowed me to reduce the size and quantity of the boards, and the price reduced accordingly. I ordered 5 boards for \$16; two boards were for the clocks, one was for "show and tell" and two in case I screwed up the design and need to hack up the boards with red wires. The boards are excellent quality and the best part, the design was PERFECT, no red wires were needed.

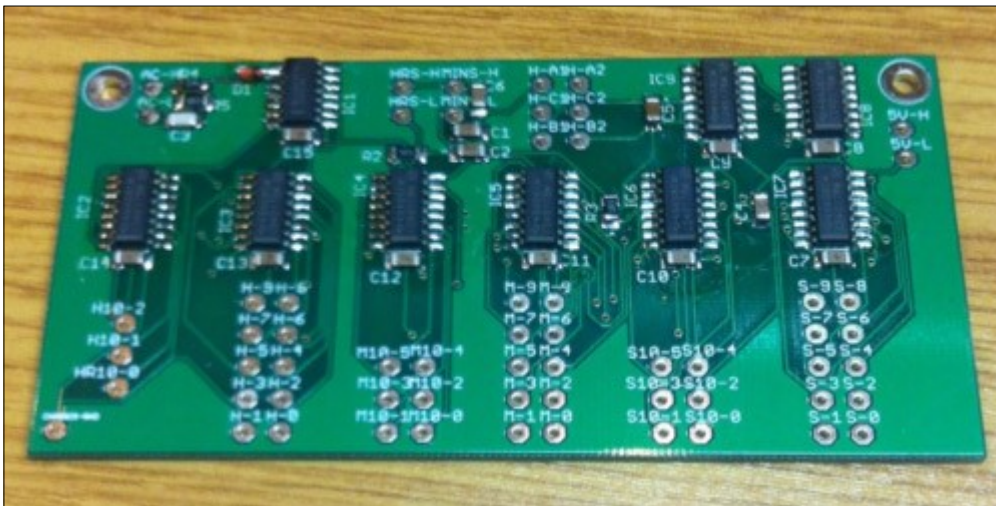


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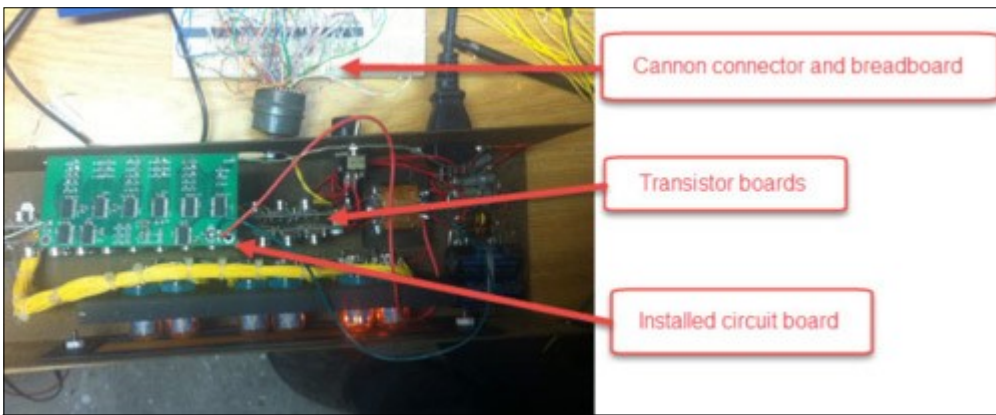
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Nixie Tube Clock



Custom PCB For Nixie Clock



Nixie Clock Project Parts

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Lessons Learned

This was my very first circuit board design and the only help I had was my research. I recommend that you do the design and put it on a breadboard to make sure things work the way you thought they would. It's also good to lay it down for a short while; sometimes you will get a really good idea by backing off the project for some time. I also learned that things don't always work the way they are designed, as was evident with the 60Hz to 1Hz circuitry.

When it comes to soldering, tin one pad of the SOIC chips and solder, and then do one other leg on the other side. This will allow a nice solder joint, and the chip and its legs will sit flat. Tinning all the pads first causes the chip caps and resistors to be up on one end and SOIC chips to not sit flat either.

I replaced the Military AC input connector to a typical "D" type computer AC cord, since they are so plentiful. Also, I added a switch to turn off the 250 volts to the Nixies so that if I am sleeping or not home, the Nixies don't need to be on, but the timing circuitry still runs.

I had great fun and enjoyed every minute of bringing these old units back to life. I learned a lot and hope this article inspires you to do some project that gives you great joy. If you lack the skills or knowledge of design, (I'm self-taught), try it anyway! Letting magic smoke out of things teaches you a lot fast!

How have you used electronics to liven up your holiday decorations? Share your stories at MyStory@Jameco.com.

~ Editor's Note: This article is reprinted with the permissions of Steve (NO9B) and Jameco Electronics. ([Website](#))



The ARRL Rocky Mountain Division Convention

May 13-15, 2016

At the beautiful Keystone Conference Center
in Keystone, Colorado

Two action packed days of informational forums, nationally recognized speakers, opportunity to get on the air at the W1AW/Ø special event station, vendors galore, VE testing, fun contests and of course the Wouff Hong ceremony.

Registration Now Open!

REGISTER AT: www.hamconcolorado.org

LOOKING BACK AT THE DRC PROVIDED BY WOUI) ROUNDTABLE, DECEMBER 1960

Before cable and satellites, interference to TVs (TVI) was a real issue for hams.

EDITORIAL

After being accused of maintaining the notion that TV's gotta go, an idea was born. Why not give some facts and comments.

Last month's issue of the Round Table listed members of the local TVI committee.

First, we would like to take a few lines to thank the participants of said committee for taking their time (which could have been consumed operating or building) to assist the TV viewers in locating their troubles.

The TVI committee reports that the cooperation of both the complainant and amateur has been most gratifying. (With only a small percentage of deviation.)

A case of TVI was reported to the F.C.C. which in turn notified the TVI chairman, non other than Walt Gardinier, KØCLJ. Walt called for an appointment to check his set. The complainant quickly replied, "you knock on my door and I'll shoot you." Needless to say "Walt didn't insist." With that in mind the problem was still ironed out.

A Denver TV viewer reported "ham interference," but when the TVI committee of the Denver Radio Club checked the trouble, the party was found to have no trouble when not "rocking." The automatic rocking chair had a motor that was the culprit.

In Pueblo a ham put up an antenna. The neighbor reported TVI to the committee. The problem was discussed and found to have a white line across the picture tube. When asked at what times does it appear? Answer—all the time that it's on. Question—What about when the ham is listening? Answer—Oh, I never thought about that. I just saw the antenna and figured it was his fault.

There are some cases of BCI. Always found to be AC/DC sets. The question is this—why spend \$12.50 for a line transformer when the set only cost \$9.95 new. That's really not our worry, if people buy BC receiving sets *not* of good engineering design. But yet we get calls.

I wonder how many people call the Air Force when a plane goes overhead and drives the TV batty? Or who calls Detroit

when a car goes by with a lot of ignition noise?

We know these cases persist. I know, I can hear certain makes of automobiles spark gap for blocks but I do not have TVI from my own rig and my TV antenna is six feet under and on the same mast with the 15 meter dipole.

The suggestion was made to the complainant to install a hi-pass filter. Walt called the party a few weeks later to see if it had been done and all was serene. Yes, it had been done but the party was going to take it off because she was lonesome.

At the moment things are quiet. The week after sweepstakes, calls got to Walt at the rate of two or three per day. This is believed to be the "hangover" from the hectic contest. Involving 21 Mc IF strips.

Last Christmas there were cases where the blinking circuit of Christmas tree lites were causing TVI. We expect the "ham" to be blamed again this year.

One case of TVI was blocking out TV's in a four block area. Seems as though the complainant was an electronics man and had applied higher voltage to take care of a larger picture tube he had installed. Editors note—If he was that good in electronics, you would think he could find his own trouble. He was causing TVI to his neighbors, too. "Make a ham out of him."

Of all the complaints investigated, more than 98% are *not* at fault of the ham. In general, the amateur wants to know if he has a sour signal and is anxious to clean it up at once.

In TVI relations it must be remembered, the TV set is a part of the family, therefore must be discussed as such, and in a tactful manner before you say, "it's possibly your television receiver."

It goes without saying, the DRC TVI Committee enjoys and deeply appreciates the cooperation it has received from the F.C.C. engineers.

One woman insisted that an amateur was fouling up her TV. The district engineer said it was the TV set. The man of the house was contacted later and reported that he had invited the ham in for a chat and he fixed my television.

The club could still use more volunteers and another portable TV set. This would lighten the load for the present group over a wider area.

L. C.

Page Three

This puzzle is provide courtesy of Chris Codella - W2PA. The URL for his website is <http://www.w2pa.com>. The solution for the puzzle is on page 15.

No Towers?

Across

- 1. Siemens, before 1971
- 4. Word with in or out of
- 9. Burn soother
- 13. Bearing
- 14. Connector
- 15. With 63-across, a multiband kind of 38 across
- 16. A W5, maybe
- 17. "QSL"
- 18. EA crazy?
- 19. Match type
- 21. Queue before Q
- 22. They hold up 38 across
- 23. Young winged hunter
- 25. FD bed, perhaps
- 26. Popular kind of 38 across
- 29. Least tight

- 33. Horse coloring
- 34. F CULs
- 37. QSL routing word
- 38. This puzzle's theme
- 41. Photo, esp. digital
- 42. Maximum
- 43. Implore
- 44. Troop formation
- 46. Storm, with nor-
- 48. Non-OMs
- 49. F capital
- 51. Equipment maker Millen
- 54. Modern VFO comp.
- 55. HA composer Franz
- 59. Like AM or SSB communication
- 60. What an old capacitor does, sometimes

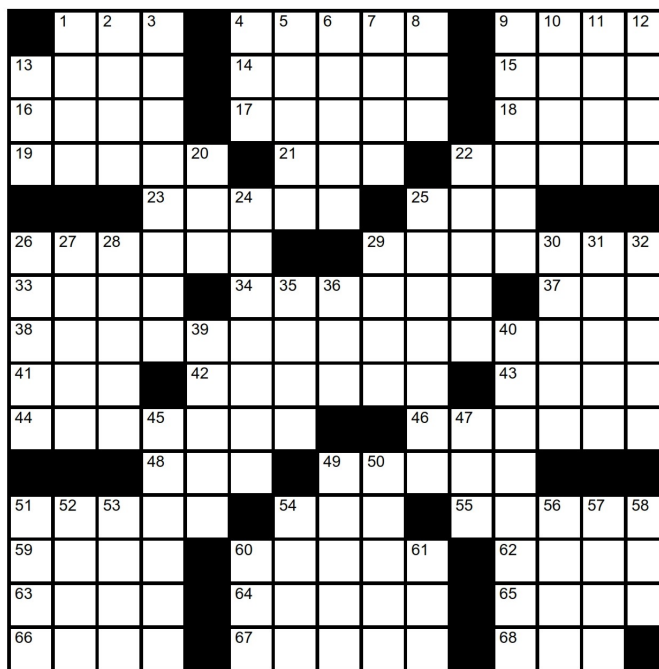
- 62. Away from the wind
- 63. See 15-across
- 64. Slacker antenna?
- 65. "Uh-uh"
- 66. Zulu's position
- 67. Begali's entity
- 68. VHF QSO party mo.

Down

- 1. 2-down's product
- 2. Audio Bob
- 3. Match maker's goal
- 4. Part of PA, abbr.
- 5. Possible Hispanola prefix
- 6. Hamspeak, for example
- 7. Trickle
- 8. Flub
- 9. Apportions

- 10. Quad part
- 11. Story starter
- 12. They can be inflated
- 13. Ckt. alteration
- 20. Piercer
- 22. It's for the birds
- 24. Simple dwellings
- 25. Turns measurer
- 26. Hang
- 27. Charged
- 28. Word with cable or panel
- 29. KH6 loops?
- 30. 7x F-Open winner
- 31. attack
- 32. Stun gun
- 35. Condemn
- 36. Prefix with -tropic

- 39. Radiation pattern features
- 40. Most UAI's
- 45. Place for a lace
- 47. Be sick
- 49. Town square
- 50. Methyl, ethyl, e.g.
- 51. Cheek
- 52. Diva's solo
- 53. E-M cup target entity
- 54. ___ moss
- 56. Gin flavor
- 57. End-fed 26-across
- 58. Coax fitting
- 60. 75A-1 maker's middle
- 61. Short

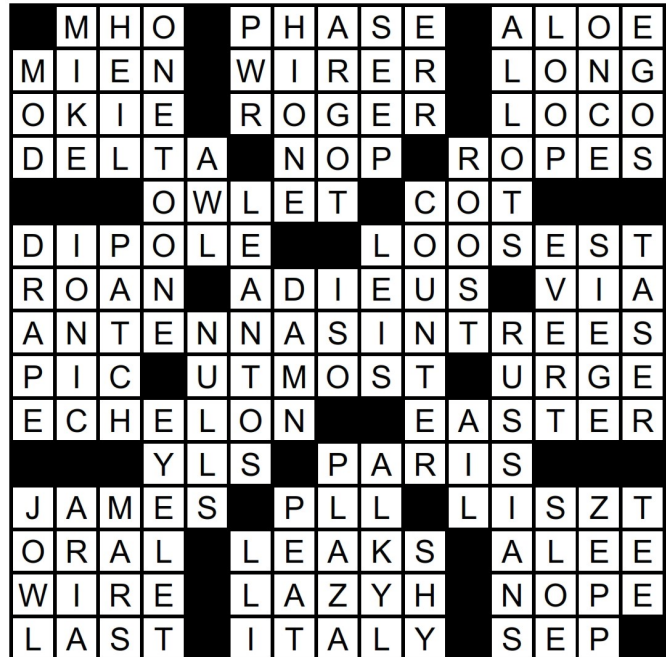


FACT OF THE DAY

Lithium-Ion Batteries

Lithium-ion (Li-Ion) batteries have twice the charge density of nickel-cadmium batteries. They can be recharged approximately 400 times. They do not have discharge memory like nickel-cadmium and certain other types of batteries, so there is no need for deep-discharging to preserve performance. They have longer runtimes, lighter weights, and less self-discharge than any other battery available to consumers. They are 'environmentally friendly,' because they do not contain mercury, cadmium or other toxic material. Their only significant disadvantage in most applications is comparatively high cost.

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WHAT IF THE WEATHER CHANGES?

If we should experience a turn in the weather on the day of our monthly DRC meeting it may be necessary to cancel the meeting. If this should happen listen for meeting status reports on 145.49 or 448.625 MHz repeaters during the afternoon on the day of the meeting.

THE ROUNDTABLE ARCHIVE

Scan the QR code or go to <http://www.w0tx.org/RoundtableAccessPage.htm>

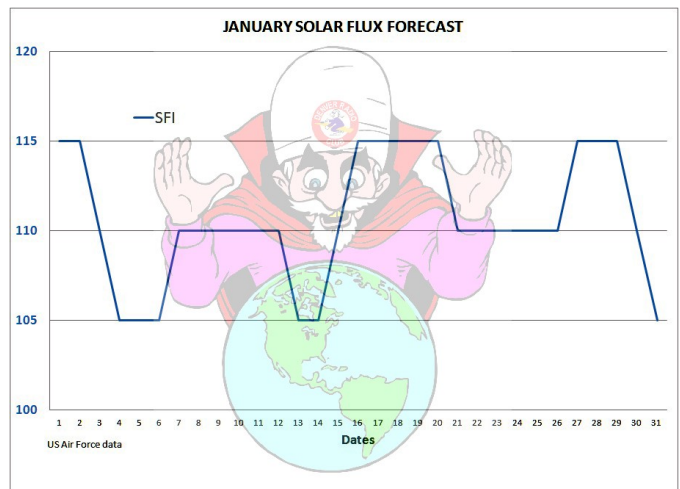
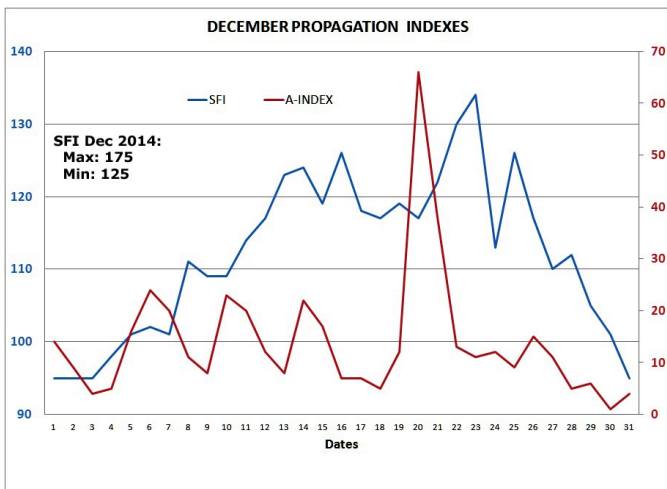


PAST & FUTURE PROPAGATION CONDITIONS

By Bill, W6OAV

The charts below show the Solar Flux and "A" indexes for last month and the forecast for this month's Solar Flux index.

Refer to the September 2010 *Roundtable* for more complete information on interpreting these charts. Issues of the *Roundtable* are available at <http://www.w0tx.org/RoundtableAccessPage.htm>.



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UPCOMING EVENTS

HAMFESTS & CONVENTIONS

Event	Date	Location	Sponsor Website
Winter 2016 Hamfest	01/23/16	Loveland, CO	Northern Colorado Amateur Radio Club
The SwapFest	02/07/16	Brighton, CO	Aurora Repeater Assn., Cherry Creek Young ARC, & Rocky Mountain Ham Radio
LARCFest 2016	03/26/16	Longmont, CO	Longmont Amateur Radio Club
Rocky Mountain Division Convention	05/13/16	Keystone, CO	HamCon Colorado

UPCOMING ARRL CONTESTS

[ARRL CONTEST CALENDAR](#)

Contest	Start Date	Start Time	End Date	Stop Time	Notes
Straight Key Night	01/01/2016	0000 UTC	01/01/2016	2359 UTC	This 24-hour event is not a contest; rather it is a day dedicated to celebrating our CW heritage
RTTY Roundup	01/02/2016	1800 UTC	01/03/2016	2400 UTC	Any station may work any other station. Stations may be worked once per band, regardless of mode
Kids Day	01/03/2016	1800 UTC	01/03/2016	2359 UTC	Operate as much or as little as you like.
January VHF	01/30/2016	1900 UTC	02/01/2016	0359 UTC	All authorized frequencies above 50 MHz (6 Meters).

UPCOMING QSO PARTIES

The following are the Contests not sponsored by the ARRL. Please submit additions for future issues.

State/Province	Start Date	End Date	Sponsor Website	Notes
Montana	01/23/2016	01/24/2016	Flathead Valley Amateur Radio Club	
British Columbia	02/06/2016	02/07/2016	Orca DX and Contest Club	
Vermont	02/06/2016	02/07/2016	Radio Amateurs of Northern Vermont	
Minnesota	02/06/2016	02/06/2016	Minnesota Wireless Association	Based on 2015 date.
New Hampshire	02/13/2016	02/14/2016	Port City Amateur Radio Club	Based on 2015 date.
South Carolina	02/27/2016	02/28/2016	Columbia Amateur Radio Club	Note new date.
North Carolina	02/28/2016	02/29/2016	Raleigh Amateur Radio Society	
Idaho	03/12/2016	03/13/2016	Idaho QSO Party	
Louisiana	03/12/2016	03/13/2016	Louisiana Contest Club	Based on 2015 date.
Wisconsin	03/13/2016	03/14/2016	West Allis Radio Amateur Club	
Oklahoma	03/19/2016	03/20/2016	Oklahoma DX Association	Based on 2015 date.

DRC REPEATERS

BAND	Freq / Shift / PL Tone	Additional Information
6m	53.090MHz (-1MHz) 107.2Hz PL	
Packet	145.05MHz<>14.105MHz	HF port out-of-service due to technical issues.
2m	145.490MHz (-) 100Hz PL	Linked to the 70cm - 448.625MHz machine.
2m	147.330MHz (+) 100Hz PL	Local Area, Members Auto-Patch Does Not TX a PL!
2m	147.330MHz (+) 131.8Hz PL	Test Mode Operation. Send signal reports to Tech Committee.
1.25m	224.380MHz (-) 100Hz PL	
70cm	447.825MHz (-) DCS~073; NB 12.5; +/- 2.5	Saint Anthony's Note: This is a narrow band repeater requiring DCS.
70cm	448.625MHz (-) 100Hz PL	Linked to the 2m - 145.490MHz machine.
70cm	449.350MHz (-) 100Hz PL	Wide area coverage with Echolink Node # 4140.
70cm	449.775 MHz (-) 100Hz PL	Yaesu Fusion Digital / Analog, 100 Hz Tone Required for Analog.
70cm	446.7875MHz (-)	MotoTRBO Repeater Slot 1 – DMR-MARC WW, Slot 2 – Local



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
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JANUARY 2016							<i>DRC Net Sunday's at 8:30 p.m. on 145.490 / 448.625 (No PL)</i>
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
					1 ARRL Straight Key Night Begins 0000 UTC Ends 2359 UTC 	2 ARRL RTTY Roundup Begins 1800 UTC	
3 ARRL RTTY Roundup Ends 2400 UTC ARRL Kids Day Starts 1800 UTC Ends 2359 UTC	4	5	6 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	7	8	9 	
10	11	12	13 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	14	15 	16	
17	18	19	20 DRC Meeting Elmer 6:00 p.m. General 7:00 p.m.	21	22 	23	
24/31	25	26	27 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	28	29	30 ARRL January VHF Begins 1900 UTC Ends 02/01/2016 0359 UTC	

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~ GET PUBLISHED ~

We welcome and encourage all members to share their experiences and stories so that we can all learn from one another. It can be long or short. If we can't fit it into one newsletter, we can split it across multiple issues. Not a writer? We have volunteers that will listen to your story and put it into an article, and of course you will have the opportunity to review and approve prior to publication. Your contribution to the club is welcomed and appreciated. ~Editor

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DRC members - this is your newsletter. Please email your club or amateur radio related suggestions to the editor. Members are the heart of The Denver Radio Club, so if you have an expertise or an interest in a particular segment of ham radio that you'd like to write about, you may email your submissions to n0hi@arrl.net. The submission deadline is the 20th of the Month. ~ Editor