



# ROUNDTABLE

### PRESIDENT'S MESSAGE

By Gerry Villhauer – W0GV

Hello DRC Members,

Spring is coming...well maybe not soon enough! As I start writing my message for March and look outside it is snowing like crazy. Well, spring is coming I am sure but, just when is the question. We could still have some snowy conditions in March.

If the weather looks threatening; please listen to our net repeaters, 145.490 or 448.625 prior to setting out to the meeting. If cancelling the meeting is necessary it will be announced on these frequencies as early as possible.

If you were at the February meeting you know I made the announcement that the club will be getting a Yaesu Fusion Repeater, brand new in the box. The bad news is I expect the dock workers strike out west to have a major effect on the delivery. I will tell you the new repeater will be UHF and hopefully by next month I can tell you the frequency. In brief, the Fusion System will accept narrow band FM, 12.5 kHz and retransmit the same narrow band FM, OR... it will receive a digital C4FM FDMA signal format and retransmit that same format. It is also capable of some other digital features I won't take the space in this message to explain. For more technical information see the latest issue of QST or check Yaesu's website.

Welcome to our new DRC members. Thank you for making the DRC "YOUR CLUB". You will find your name and call sign in the body of this issue. Please come participate in meetings and other on and off air activities. We had a large attendance and a great program at our February meeting. We had over 50

members and guests attending...Super!

Thanks to Jack, W0JMC, for the program on ARES. It was well received as you could tell from the many great questions from the floor. And thank you to the ARES leadership from Denver, Adams and Jefferson Counties for their input and answering questions about activities in their districts. I understand several new ARES members were recruited after the meeting.

Our March 18<sup>th</sup> meeting program will be presented by Skyler, KD0WHB. Skyler will be telling us about AllStar Link. AllStar is one of the newest Radio over Internet Protocols. It is similar to IRLP and EchoLink but, has many advantageous differences. For example, AllStar can be operated full duplex. This is a very interesting technology so, mark your calendars for March 18<sup>th</sup>, and don't miss this one.

I would like to see DRC have a local Salvation Army repeater net. I am soliciting a volunteer to champion such a net and, be or arrange for, a net control operator. Such a net would be a boost to our relationship with The Salvation Army. Anyone interested, please contact me directly.

73,  
Gerry, (W0GV)  
President



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## FEBRUARY MEETING - WHAT'D I MISS?

By Bill, W6OAV



There were 53 attendees this month. After introductions, Gerry (W0GV) announced that Field Day will take place again at the Chief Hosa camp ground. Jason (AC0UA) and Dave (K0HTX) will chair Field Day. Gerry also announced that the club has ordered a Yaesu Fusion repeater and described some of the Fusion's capabilities.

The meeting was then turned over to Jack (W0JMC). Jack's PowerPoint presentation covered ARES. Jack started with an overview of the history and structure of the ARRL. One primary consideration of the ARRL is emergency services. ARES is the emergency services branch of ARRL. Jack's presentation covered the following points:

- Types of ARES activities.
- A description of the many agencies supported by ARES.
- An overview of national/international emergencies and disasters that ARES has supported.
- Types of support by and for Arapahoe County ARES.
- Why and how members train.
- How you can become a member of ARES.

At the end of the presentation Jack introduced Norman Brown (KB1SGJ) EC Adams County ARES R1D1, Colin Whitmore (AC0S) EC Jefferson County ARES R1D6 and Simon Jones (KE0ABH) from Denver ARES R1D4. They along with Jack answered the many attendees' questions.



Jack (W0JMC) presenting on ARES.



Jack (W0JMC), Norman (KB1SGJ), Colin (AC0S), and Simon (KE0ABH)

**Don't forget to join in Wednesday nights at 7:30p.m. for the DRC Learning Net !**  
**145.49/448.625 Repeaters**

**THE ROUNDTABLE ARCHIVE**

Have you been looking for a back issue of the Roundtable? Many are available on the DRC web site. Access <http://www.w0tx.org/RoundtableAccessPage.htm>.

## 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.

John Hendrickson	WA0IRZ
Luis Uribe	KD0FKI
David Tancrell	KB4GIA
Harvey Fagler, Jr.	KE0CNU
Kris Meredith	WD0ESY

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 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>.

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## FEBRUARY TECH COMMITTEE REPORT

By Bill, W6OAV

The following is an overview of the items discussed during the February Tech Committee meeting. The project coordinator's callsign is in **RED**.

### .TS-940 Repair (K0TOR)

Goal: Determine if re-soldering and cleaning connectors will fix radio: K0TOR has completed the many repairs and has the TS-940 "cooking" on the bench.

### Voter System (W0GV)

Goal: Develop a network configuration based on location of main transmitter:

- KF0RW will investigate a possible central transmitter site downtown.
- Paper work has been submitted for a possible tower site east of town.
- W6OAV will analyze the present system coverage maps (Station 4, K8ZTT and N1ETV) to locate weak metropolitan signal areas.

### Voter System Expansion (W0GV)

Goal: Locate additional sites: Investigation still in progress.

### 145.49/448.625 Repeater - Controller and Radio Upgrade (AC0UA)

Goal: Replace the S Com 7k with a preprogrammed S Com 7330 and replace the Sytnors with Kenwood's: The controller is programmed and ready for installation. The tech committee will schedule a work party to accomplish this project and the grounding of the hard line as listed below.

### DRC Allstar (Group discussion)

Goal: Determine if AllStar will add enhancements to the DRC/EchoLink system: KD0WHB will give a Power-Point presentation at the March meeting.

### DRC/TSA Aurora Site (W0GV)

Goal: Maintain contact with TSA relative to establishing a "communications room" for the DRC: The move-in phase is going very slowly. No prospects yet.

### DRC Fusion Repeater (W0GV)

Goal: Once received, program and install a new Yaesu Fusion repeater: Fusion has been ordered and expected to arrive in several months.

### MotoTRBO Repeater (K0HTX)

Goal: Troubleshoot the DRM-Marc to determine why the Shamburg, IL repeater is on the local timeslot: A troubleshooting session will be scheduled ASAP.

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## MARCH MEETING PRESENTATION

By Bill, W6OAV

Are you interested in the latest Radio over Internet Protocol technology? IRLP and EchoLink has dominated for many years, but each have disadvantages.

AllStar, an open source system enables high quality voice communications without any limitations and a variety of hardware options at various prices. Unlike EchoLink and IRLP, AllStar is full duplex, meaning it can be



controlled while someone is talking, and each node can connect to as many nodes as the internet bandwidth will allow. Please join us for the March 18th meeting, if you would like to learn more about AllStar and how you can set up your own node. Skyler (KD0WHB) will be our guest speaker presenting this subject.

### QUESTION OF THE MONTH

By Bill, W6OAV

#### Question

Replacing a  $\frac{1}{4}$  wavelength vertical antenna with a longer wavelength vertical antenna increases the signal gain towards the horizon. However, I understand that lengthening a vertical antenna beyond wavelength is detrimental to signal gain towards the horizon. If this is true, then how do commercial dual band verticals longer than wavelength develop signal gain towards the horizon?

#### Answer

This response will discuss:

- What happens when a wavelength vertical antenna is lengthened.
- The categories of commercial dual band antennas.
- How commercial dual band antennas physically longer than wavelength increase gain towards the horizon.
- Analyzing antenna gain figures.

#### $\frac{1}{4}$ VERSES $\frac{5}{8}$ VERSES $\frac{3}{4}$ WAVELENGTH VERTICAL ANTENNAS

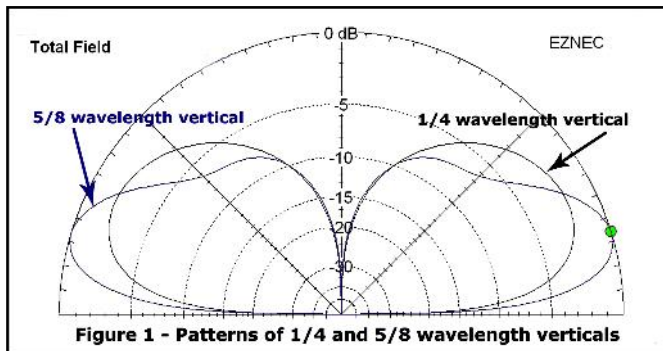


Figure 1 compares the horizontal radiation patterns of both  $\frac{1}{4}$  wavelength and  $\frac{5}{8}$  wavelength vertical antennas. The  $\frac{5}{8}$  wavelength vertical antenna has greater gain towards the horizon than the  $\frac{1}{4}$  wavelength vertical antenna. This gain occurs because, due to the current pattern on a  $\frac{5}{8}$  wavelength vertical antenna, more of the signal is concentrated in a narrower lobe towards the horizon. Increasing the length of a  $\frac{1}{4}$  wavelength vertical antenna to a  $\frac{3}{4}$  wavelength vertical antenna decreases the gain towards the horizon.

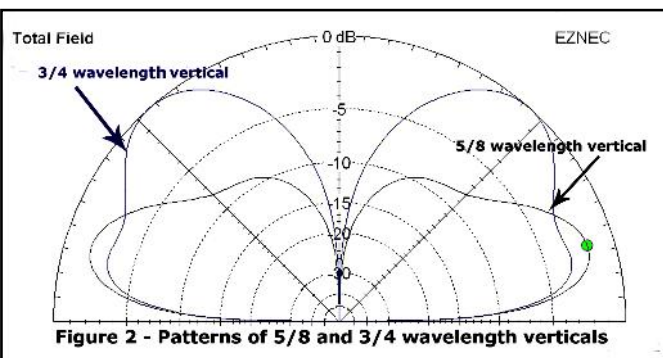
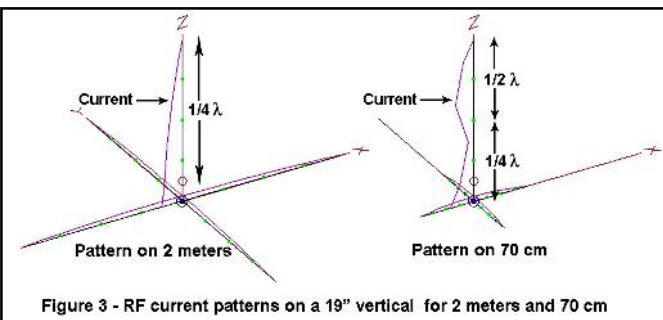


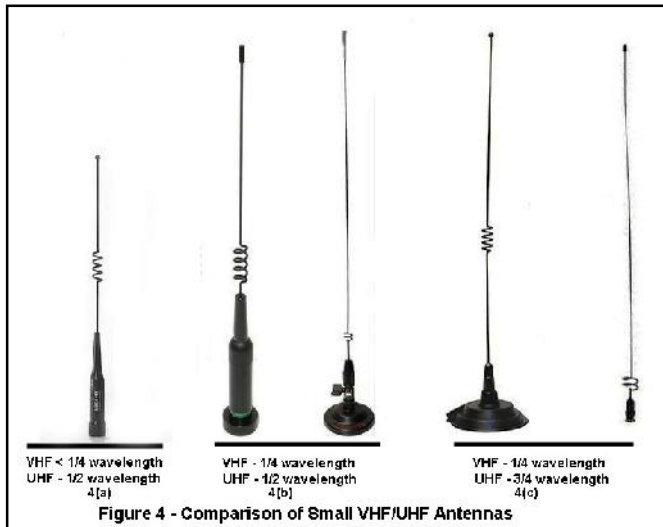
Figure 2 compares the horizontal radiation patterns of both  $\frac{5}{8}$  wavelength and  $\frac{3}{4}$  wavelength vertical antennas. Most of the latter's radiation, due to the current pattern on the antenna, is concentrated at higher angles above the horizon. This may be ok if one wants to work aircraft!

Sometimes one will hear a ham say that he can use a 2 meter  $\frac{1}{4}$  wavelength vertical antenna on both 2 meters and 70 cm with relative low SWR. This is true. A  $\frac{1}{4}$  wavelength antenna can be considered as a  $\frac{3}{4}$  wavelength antenna on the third harmonic of its fundamental frequency. For example, as shown in Figure 3, a 19.1" vertical will look like a  $\frac{1}{4}$  wavelength antenna on 147 MHz and like a  $\frac{3}{4}$  wavelength antenna on 443 MHz. The antenna input impedance will be relatively close to the same on both frequencies.



As shown in Figure 2, this is a compromise dual band antenna due to the high angle of radiation on 70 cm. However, it is an inexpensive and easy way to construct a temporary dual band antenna.

Based on the above discussion, how do the manufacturers make long dual band VHF/UHF antennas that avoid the above discussed issues? As described below, there are three basic categories of VHF/UHF dual band antennas.



**CATEGORIES OF VERTICAL VHF/UHF DUAL BAND ANTENNAS**

Category 1 – Antennas under 19” in length.

These antennas are small and provide no gain on VHF and minimal gain on UHF. Figure 4(a) shows a relatively simple 12” antenna that is a short loaded 1/4 wavelength antenna on VHF and an end fed 1/2 wavelength antenna on UHF. Gain specs are 0.0 dBi on VHF and 2.15 dBi on UHF.

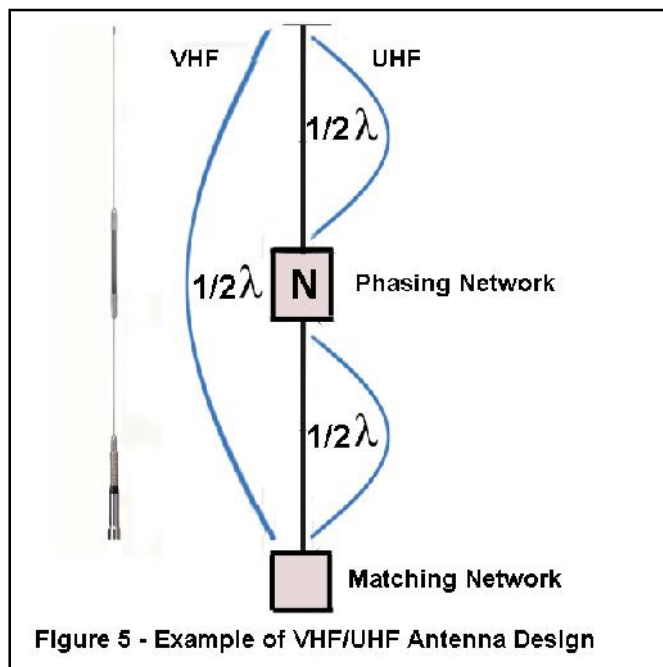
Category 2 – Antennas approximately 19” in length

This category includes simple dual band antennas that are approximately 19” in length. Caution must be taken with this category. Depending upon their construction, some of these antennas function as 1/4 wavelength antennas on VHF and as 1/2 wavelength antennas on UHF. Others function as 1/4 wavelength antennas on VHF and as 3/4 wavelength antennas on UHF. As discussed earlier, the latter group has a high angle of radiation on UHF. The former group has a nice low angle of radiation on UHF. Figures 4(b) and 4(c) show examples of both types of antennas.

How does one tell to which group one of these similar looking antennas belong? Some antenna manufactures do not indicate the configuration of these antennas. Gain figures can be deceiving. For example, the left antenna in group 4(b) is advertised as having 2.1 dBi of gain on VHF and UHF. Due to its construction, the radiation angle is about 20 degrees above the horizon for both bands. The left antenna in group 4(c) is advertised as having 2.1 dBi of gain on VHF and 3.0 dBi gain on UHF. The problem, as discussed earlier, the UHF angle is about 70 degrees above the horizon! A good site to find out dual band antenna configurations is [www.dxengineering.com](http://www.dxengineering.com).

Category 3 – Antennas greater than 19” in length

These antennas are usually between 27” and 50” and provide good low angle gain on both VHF and UHF. They are made up of phasing networks and matching networks which create collinear antennas, sometimes just on UHF and sometimes on both VHF and UHF. A collinear antenna is an array of electrical half wave dipoles in line and fed in phase to achieve gain.



**HOW DO LONG VERTICAL ANTENNAS DEVELOP GAIN?**

Figure 5 shows an example of a collinear antenna and a schematic showing how low angle gain is achieved.

The antenna is an end fed loaded 1/2 wavelength VHF antenna and a two half wavelength collinear UHF antenna. This 27.5” antenna has gain specifications of 2.15 dBi on VHF and 4.9 dBi on UHF. The phasing network provides two functions. The first function is that it acts as a loading coil at VHF to electrically lengthen the antenna since the antenna isn’t a physical 1/2 wavelength on VHF. The second function is that it reverses the phase of the UHF signal by 180 degrees as it passes through the network. Without the network, the upper half wave would be reversed and become a full wave sine wave. The matching network matches the low impedance of the coax to the high impedance of the antenna. There are many ways of designing these antennas. The longer the antenna, the more the networks and the higher the resultant gains.

Figure 6 shows some of the various available high gain VHF/UHF antennas. Note the number of phasing networks. Some antennas have collinear 1/2 wavelength sections and some have collinear wavelength sections. Others have a combination of both.

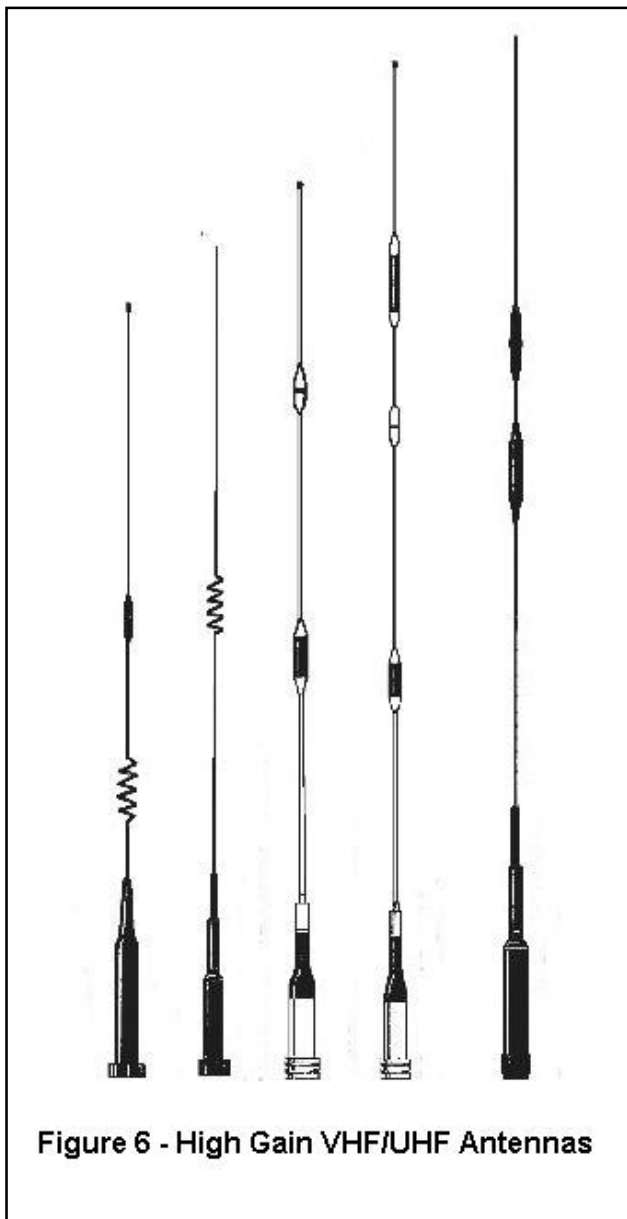


Figure 6 - High Gain VHF/UHF Antennas

**ANALYZING ANTENNA GAIN FIGURES**

When analyzing antenna gain figures verify that the figures are specified in either dBi or dBd. Gain figures such as dB are meaningless. If possible, locate the manufacture’s horizontal radiation patterns as shown in Figure 1. It’s important to know where the specified gain occurs relative to the horizon. For more information, refer to the January 2014 Roundtable article titled “Analyzing Antenna Gain Specifications”. All past Roundtables are available at [www.w0tx.org](http://www.w0tx.org).

**TELL US YOUR STORY**

By Jessie, N0HI

The club members would love to hear about your ham project or experiences with our wonderful hobby. Have you bought a new rig you are putting through your assessment, or installed a homebrew antenna that you would like to tell the world about?

Not a writer? No worries, we have members who love to throw down on some pencils and paper. They will be happy to take your information and perform some character manipulation that will result in an article that is ready for RoundTable primetime. You don’t have to be concerned about accuracy, you will get an opportunity to review your material prior to publication.

Of course you can also take your best effort at doing it yourself and we also will be happy to provide editorial recommendations. Just contact Jessie (N0HI) or Bill (W6OAV) for information on getting your article printed.

**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 compile a list and publish it at a later date.

We will not include or retain your name, call or email address. To respond to this request send your information to [NOHI@arrl.net](mailto:NOHI@arrl.net).

*Subject: I'm located in...*  
*Thank You*



*Happy  
St. Patrick's  
Day*

## VE SESSION RESULTS

By Bill, W6OAV

On February 7<sup>th</sup>, Will (W1ZRV) conducted a one day Technician license preparation class in Lakewood. A VE exam was given at the conclusion of the class.

Will's class (plus two extra folks who showed up for the exam) had a good exam success rate. Seventeen (17) of eighteen (18) passed the Technician exam. Six folks decided (since it was "free") to take the General exam, and one succeeded. **Congratulations!**



February 7, 2015 VE exam.

The VE's were: Dave (K0HTX), Fred (AA0JK), Wally (AC0T), Bill (WZ0S), Gerry (W0GV), Will (W1ZRV), and Tom (KC2CAG). A thank you to all.

## WHAT IS A SOLAR FLARE?

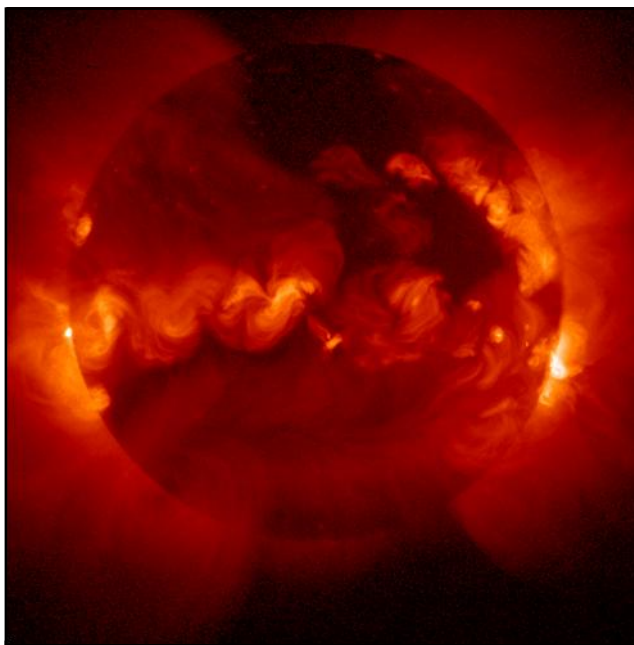
BY GEORGE, AG0S

A flare is defined as a sudden, rapid, and intense variation in brightness. A solar flare occurs when magnetic energy that has built up in the solar atmosphere is suddenly released. Radiation is emitted across virtually the entire electromagnetic spectrum, from radio waves at the long wavelength end, through optical emission to x-

rays and gamma rays at the short wavelength end. The amount of energy released is the equivalent of millions of 100-megaton hydrogen bombs exploding at the same time! The first solar flare recorded in astronomical literature was on September 1, 1859. Two scientists, Richard C. Carrington and Richard Hodgson, were independently observing sunspots at the time, when they viewed a large flare in white light, (*all visible wavelengths*).

As the magnetic energy is being released, particles, including electrons, protons, and heavy nuclei, are heated and accelerated in the solar atmosphere. The energy released during a flare is typically on the order of  $10^{27}$  ergs per second. Large flares can emit up to  $10^{32}$  ergs of energy. This energy is ten million times greater than the energy released from a volcanic explosion. On the other hand, it is less than one-tenth of the total energy emitted by the Sun every second.

There are typically three stages to a solar flare. First is the *precursor* stage, where the release of magnetic energy is triggered. Soft x-ray emission is detected in this stage. In the second or *impulsive* stage, protons and electrons are accelerated to energies exceeding 1 MeV (*MegaelectronVolts*). During the impulsive stage, radio waves, hard x-rays, and gamma rays are emitted. The gradual build up and decay of soft x-rays can be detected in the third, *decay* stage. The duration of these stages can be as short as a few seconds or as long as an hour.



Shown here is an image of the Sun in soft x-rays. The white (brightest) region on the right hand side shows post-flare loops, hot loops that remain after a solar flare. (Image from the Yohkoh Soft X-Ray Telescope)

### WHAT IS A SOLAR FLARE?

*(continued from pg. 7)*

Solar flares extend out to the outermost layer of the solar atmosphere of the sun called the corona. The corona consists of highly rarefied gas. This gas normally has a temperature of a few million degrees Kelvin. Inside a flare, the temperature typically reaches 10 or 20 million degrees Kelvin, and can be as high as 100 million degrees Kelvin. *(To understand the temperature range 10 million degrees K is equal to 17,999,540.33 degrees Fahrenheit.)* The corona is visible in soft x-rays, as in the above image. Notice that the corona is not uniformly bright, but is concentrated around the solar equator in loop-shaped features. These bright loops are located within and connect areas of strong magnetic field called *active regions*. Sunspots are located within these active regions. Solar flares occur in active regions.

The frequency of flares coincides with the Sun's eleven year cycle. When the solar cycle is at a minimum, active regions are small and rare and few solar flares are detected. These increase in number as the Sun approaches the maximum part of its cycle. The Sun will reach its next maximum in the year 2022, give or take one year.

A person cannot view a solar flare by simply staring at the Sun. **(NEVER LOOK DIRECTLY AT THE SUN! EYE DAMAGE CAN RESULT.)** Flares are in fact difficult to see against the bright emission from the photosphere, *(the visible surface of the sun)*. Instead, specialized scientific instruments are used to detect the radiation signatures emitted during a flare. The radio and optical emissions from flares can be observed with telescopes on the Earth. Energetic emissions such as x-rays and gamma rays require telescopes located in space, since these emissions do not penetrate the Earth's atmosphere.

### CLASSIFICATION OF SOLAR FLARES

"THE ABC'S OF SOLAR FLARE CLASSES"

A solar flare is an explosion on the Sun that happens when energy stored in twisted magnetic fields *(usually above sunspots)* is suddenly released. Flares produce a burst of radiation across the electromagnetic spectrum, from radio waves to x-rays and gamma-rays. Scientists classify solar flares according to their x-ray brightness in the wavelength range 1 to 8 Angstroms. There are 3 categories: **X-class flares** are big; *they are major events that can trigger planet-wide radio blackouts and long-lasting radiation storms.* **M-class flares** are medium-sized; *they can cause brief radio blackouts that affect Earth's Polar Regions.* Minor radiation storms sometimes follow an M-class flare. Compared to X- and M-class events, **C-class flares** are small with few noticeable consequences here on Earth.

### REPEATER PROTOCOL & COURTESY

By Fred, AA0JK

While reviewing articles written on repeater protocol, one procedure seemed missing. What frequency are you using to make your call?

In areas that have multiple repeaters that are monitored by hams using scanners, your call might be heard but it would help to know which frequency you are using.

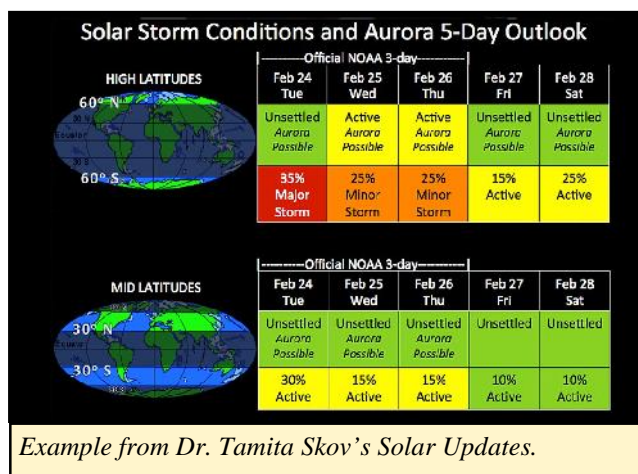
Many calls heard are brief and after one call, if no response is heard, the caller assumes no one cares to have a QSO. For example: "KB0FQH monitoring 145.490", will more likely net you a return call from someone who has their radio in the scan mode. They will know where to return your call. Give it a try and see if you net more contacts.

### SPACE WEATHER TV

By Fred, AA0JK

For those DX'ers, and anyone interested in solar activity, here is a link to Dr. Tamitha Skov's solar updates.

She addresses conditions for the amateur radio operators. <http://spaceweather.tv/>



**The Denver Radio Club  
Is an ARRL  
Special Service Club  
Support your hobby  
Join the ARRL TODAY**



*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 10.*

# Aerial View

1	2	3	4	5		6	7	8	9		10	11	12	13	
14						15					16				
17						18					19				
20						21					22				
					23				24	25					
26	27	28	29					30							
31						32					33	34	35	36	
37						38					39				
40						41					42				
					43					44					
	45	46	47						48						
49								50				51	52	53	54
55						56	57				58				
59						60					61				
62						63					64				

**Across**

- 1. 10 kilogauss
- 6. UA parliament
- 10. Kludge
- 14. Kind of socket or tube
- 15. Ancient OA-lander
- 16. Competent
- 17. Improbable dream VHF/UHF antenna
- 20. Achy, as after an antenna project
- 21. Transceiver knob label
- 22. Part connections
- 23. Ckt.between IF and AF
- 24. Suffix with bio- or proto-
- 26. Loud speaker
- 30. Eye part
- 31. US hams do it every 10 years, usually
- 32. "That's great, friend", on CW
- 33. Be next to
- 37. What rural hams fancy themselves?
- 40. Feedline badness
- 41. Baseball stats
- 42. Symbol in coax specs
- 43. Go out of your cell area
- 44. Unidirectional dipole
- 45. Where all good signals go, eventually?
- 48. Late summer contest
- 49. Tribander parts
- 50. Kind of FET
- 51. They have replaced tuning dials in modern rigs, often.
- 55. Improbable dream HF antenna
- 59. K, on phone
- 60. Elser-Mathes Cup target
- 61. Look of disdain
- 62. One meaning of V
- 63. Switch type
- 64. They deliver power

**Down**

- 1. Narrowest tower sections, often
- 2. EME signal
- 3. Sirius, for one
- 4. Emit coherent light
- 5. Draft pick
- 6. One's self, on CW
- 7. Ampere, for one
- 8. Lots and lots of Hz in the old days
- 9. Word to a doctor
- 10. Bugs, Roger, Peter, et. al.
- 11. Garfield's middle name
- 12. Copper often does it
- 13. Enables, as a transmitter
- 18. Kind of hunter, in radio
- 19. Word of regret
- 23. "See you \_\_\_\_ the log"
- 24. Univ. teachers
- 25. Kilo follower
- 26. Not written
- 27. W7-land city
- 28. What this puzzle is about, for short
- 29. Connectors named for their shape
- 30. Italian yagi?
- 32. One C per V
- 33. BBs, e.g.
- 34. E, to a non-ham?
- 35. Encourage
- 36. Bygone UA leader
- 38. It glows amber
- 39. Part
- 43. Sometimes causes antenna failure

- 44. Window part, where the feedline might come in
- 45. Group of trees
- 46. 5 wpm, 70 mph, etc.
- 47. Eyeball benders
- 48. Least good
- 49. Gait faster than a walk
- 50. QSLs often go via them (abbr.)
- 51. Lead-ins to P
- 52. Future ham, sometimes
- 53. Became SK
- 54. Switching semiconductors
- 56. RX spec.
- 57. Break, during a long contest, say
- 58. Sig. src.



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Is an ARRL  
Special Service Club  
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**FACT OF THE DAY**

**Loop Antenna Shape**

It often is said that loop antennas should enclose the greatest possible area and that because with a given wire length a circle encloses more area than any other shape, a circular shape is optimum. That is true for loops with circumferences that are small compared to a wavelength, but generally is not true for large loops. The shape of a loop that has a circumference significantly greater than a wavelength has a big effect on its directional pattern. It also affects other important characteristics. It is possible that a circular shape will happen to be optimum for a particular large-loop application, but the odds are high that it won't be. Antenna modeling programs such as MMANA make it easy to experimentally investigate the characteristics of various loop shapes. ©2005 Martek International All

**WHAT IF THE WEATHER CHANGES?**

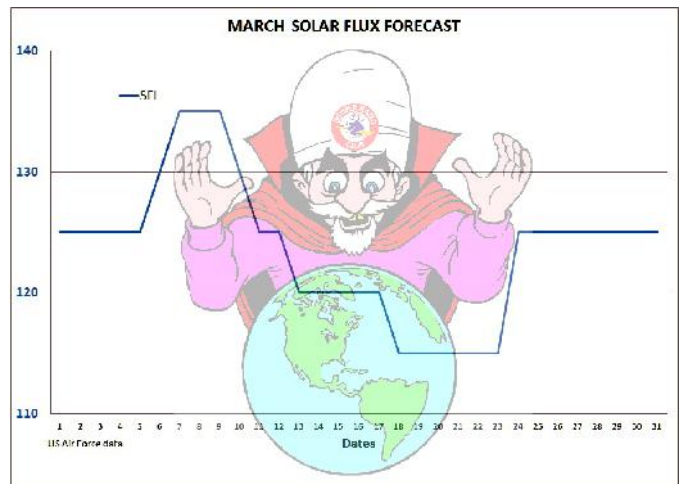
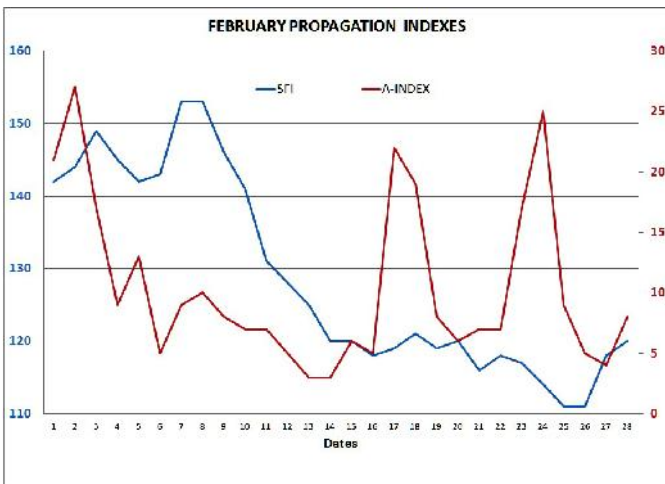
As every Coloradoan knows our winter weather can take a sudden change for the worse. If we should experience a turn in the weather on the day of our monthly DRC meeting it may be necessary to cancel the meeting. If this should happen listen for meeting status reports on 145.49 or 448.625 MHz repeaters during the afternoon on the day of the meeting.

**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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# UP COMING EVENTS

## HAMFESTS & CONVENTIONS

The following are the HAMfests & Conventions which have been registered with the ARRL so far. More information can be found on [www.arrl.org/hamfests](http://www.arrl.org/hamfests).

### 2015

- April 4** – **LARCFest**  
Longmont, CO  
Boulder County Fairgrounds  
<http://www.w0eno.org>
  
- June 6** – **Montrose ARC Tail Gate Party**  
Delta, CO  
Delta Lions Club Pavilion  
<http://www.montrosehamradio.org>
  
- July 11** – **PPRAA MegaFest**  
Monument, CO  
Lewis-Palmer High School  
<http://ppraa.org/megafest>



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**ELMER SESSION START TIME**

The Elmer Session Starts at 6 p.m. before the regular DRC Meeting!

Come out and join in on the sharing of information.

<b>MARCH 2015</b>							DRC Net Sunday's at 8:30 p.m. on 145.490 / 448.625 (No PL)
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
1	2	3	4 <b>Learning Net</b> 7:30 p.m. 145.490 / 448.635 (No PL)	5   Full Moon	6	7 <b>ARRL Int'l DX-Phone</b> Begins 0000 UTC	
8 <b>ARRL Int'l DX-Phone</b> Ends 2359 UTC 	9	10	11 <b>Learning Net</b> 7:30 p.m. 145.490 / 448.635 (No PL)	12	13   Last Quarter	14	
15	16	17 	18 <b>DRC Meeting</b> Elmer 6:00 p.m. General 7:00 p.m.	19	20 <b>Spring Equinox</b>  The First Day Of Spring  New Moon	21	
22/29	23/30	24/31	25 <b>Learning Net</b> 7:30 p.m. 145.490 / 448.635 (No PL)	26	27   First Quarter	28	

## DRC BOARD OF DIRECTORS

President	W0GV	Gerry Villhauer	303-467-0223	w0gv@arrl.net
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Board Member	K0LAI	Larry Irons	303-763-8112	<i>Check Roster</i>

## DRC STAFF AND VOLUNTEERS

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Web Master	N0LAJ	Bill Hester	<i>Check Roster</i>	<i>Check Roster</i>

## DRC REPEATERS

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

## EDITOR'S NOTE © 2007 - 2015 Denver Radio Club; All Rights Reserved; Articles in the RT may be reprinted with permission for non-commercial or educational use only.

DRC members - this is your newsletter. Email your club or amateur radio related suggestions to the editor. Members are the heart of The Denver Radio Club, 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**