ROUNDTABLE

The Denver Radio Club Newsletter

February 2013 Since 1917

PRESIDENT'S MESSAGE

By Bryan Steinberg – KB0A

It came a little late but we did finally have our 2012 club holiday party. The weather, this time, was nice and the turnout was terrific. Pete, WD4IXD, gave a great presentation on the DXpedition he attended at Fort Jefferson in the Dry Tortugas off the coast of Florida. Besides the expected ham activities Pete took some time to discuss the history of the national park and the fort. It was also nice to see so many faces of those members who cannot make the regular meetings. I also took the time to acknowledge some club members who have gone above and beyond in supporting our members. More info on this can be found later in this issue.

I still get emails from my previous job, one of which is from Electronic Design magazine. In reading the emails I came across a few articles that I thought would be of interest to other club members. I contacted the author of two of the articles to request permission to reprint in the RoundTable. He responded, by the way he is also a ham, and informed me that the publisher does not allow reprinting. Later that same day I received another email from the magazine's editor-in-chief informing me that, being a non-profit organization, we can reprint the articles. So, you will see the first of these in this month's newsletter. Thanks again to Lou Frenzel, W5LEF, and Joe Desposito, of Electronic Design magazine for their support of our club and amateur radio.

It's already February, and despite the resent snow we are still very dry. Now's the time to make sure that you are fully prepared for any emergency. Make sure your family has a plan for actions to take in the event of fire or weather related emergencies.

For those who live in the wild land area, take a look around your house and evaluate any mitigation items that you can perform to reduce your fire risks.

ARRL Field Day this year will be the weekend of June 22nd & 23rd. We are already working to secure that same location at Chief Hosa campground as we had last year. Hopefully, it will not be as hot as it was last year. Though it was definitely cooler up in the foothills than it would have been out at Hudson. Speaking of June, make plans for the 2013 ARRL Rocky Mountain Region Convention. It's the Colorado Section's turn, again to host it. The event will be held in Estes Park on June 28, 29 and 30. If you plan on attending don't wait too long to make reservations. This is the peak season for Estes Park so the rooms blocked out for the event will probably go quickly. You can find more info at http://www.hamconcolorado.org or find the link on the club website.

Till next time…
Bryan, KBØA

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JANUARY MEETING - WHAT'D I MISS

By Bill – W6OAZ

We had an exceptional turnout for our re-scheduled Christmas party at the Golden Corral. The service and food were outstanding. *See photo above.*

Bryan started the meeting by handing out Certificates of Appreciation for outstanding performance and lasting contributions to the Denver Radio Club. Certifications were given to: Becky Campbell, KD0AOE; Dave Baysinger, WG0N; Bill Hester, N0LAJ; George McCray, AG0S; Steve Reilley, KD0CPE; Bob Willson, KC0CZ; Tom Kociaski, KC2CAG and Bill Rinker, W6OAV. Thank you all.

W0GV then encouraged attendees to sign up for Colorado Hamcon which will take place June 28-30, 2013 in Estes Park, CO. There will be seminars, vendors, prizes, etc. Registration starts February 1st.

Afterwards, KB0A turned the meeting over to the guest speaker, Pete, WD4IXD. Pete presented a very interesting slideshow and video on their (9 hams) Dxpedition to the Dry Tortugas Islands on March 11 -15, 2010. The island is part of the Islands on the Air (IOTA) locations and in the top 10 of the most wanted IOTA islands.

Pete started with an overview of the history of islands and their topography. He then presented a "virtual tour" of Fort Jefferson, the island, and their Dxpedition camp site. Pete described with slides the processes required for planning, shipping, assembling, operating and then disassembling the stations and necessary supplies.

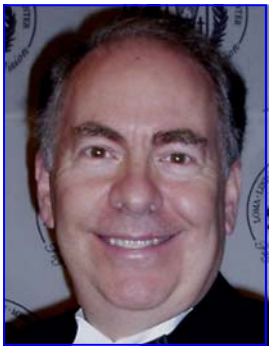
The stations consisted of:

- An SSB and a CW station each using a Butternut vertical with 32 radials.
- Two satellite stations, one with an M2 CP yagis, the other with an egg beater antenna.
- A portable satellite station using an Elk antenna.
- A six meter station using a 4 element Yagi.
- Solar power, backup batteries and a wind generator.
- Laptops for logging.

The Dxpedition was a complete success. During the operation, over 8000 contacts were made to 104 countries. 400 contacts were made via satellite. This was the largest Dxpedition to use 100% "green power" and the largest Satellite Dxpedition ever!

The dinner ended with many attendees receiving prizes.

FEBRUARY MEETING ANNOUNCEMENT



Is digital radio in your future? The February meeting presentation by Steve, KF0RW, will cover the following topics. You will learn even more about digital radio technology.

Answering the question: "Can analog do this?".

- Large, full-color display with a flexible menu-driven interface. Icons and large easy-to-use navigation buttons ease message reading and menu navigation.
- Day/Night Mode on display has improved resolution for easier viewing even in broad daylight. It also features a night mode that makes the screen easier to read in dark environments.
- Loud front-facing speaker and Intelligent Audio feature automatically adjusts the radio volume according to the environment's noise level.

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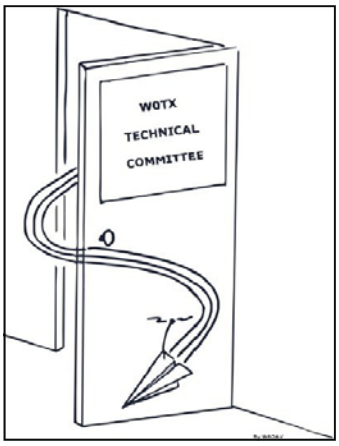
- Bluetooth Audio and Data embedded into the radio and enables connectivity with wireless accessories, including Motorola's unique Operations Critical Wireless earpieces designed for rugged and reliable communications. Share real-time information easily by connecting radios to Bluetooth-enabled data devices.
- Use text messaging when discretion is required or routine communication needs to be delivered without interrupting workers or guests.
- IP Site Connect compatible. IP Site Connect is a digital solution that uses the Internet to extend the voice and data capabilities of MOTOTRBO. Use it to link up to 15 sites for communication among geographically dispersed locations, to create wide area coverage or enhance coverage at a single site with physical barriers. More hookups with C-Bridge! Bridge networks together.
- Certified as intrinsically safe by FM approvals when purchased and equipped with an FM battery for use in hazardous environments.
- Transmit Interrupt enables a user to interrupt another radio conversation to deliver critical communication exactly when and where it's needed (upgradable at additional cost).
- Locate mobile work teams using integrated GPS.
- Features the industry's largest application developer program to enable a wide variety of customized applications including: location tracking, Bluetooth data, email gateways, dispatch, telephony, man-down and work order ticket management.
- Capacity Plus single-site digital trunking system compatible (upgradable at additional cost). Maximizes the capacity of your MOTOTRBO system. Use it to enable a high volume of voice and data communication for over a thousand users at a single site without adding new frequencies.
- Linked Capacity Plus compatible. Linked Capacity Plus is an entry level, multi-site digital trunking system configuration for the MOTOTRBO platform. It leverages the high capacity of Capacity Plus, with the wide area coverage capabilities of IP Site Connect to keep your staff at various locations connected with an affordable high capacity, wide area trunking solution (upgradable at additional cost).
- Tightly sealed against wind and dust, and submersible in up to one meter of water for 30 minutes (IP57).

Emergency Button can be optionally programmed to send an alert to a supervisor or dispatcher during an emergency situation.

NO TECH COMMITTEE REPORT FOR JANUARY

Although there hasn't been anything to report from the Tech Committee for a couple months the crew has been working long hours on a new APP of which the result is depicted in the graphic.



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.

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 7pm. For new hams we have the Elmer session which starts at 6:30pm before the regular meeting.

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

Larry Salis	K0DOC
Philip Walker	WA2CLX
John Movius	KD0SYE

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 of the meeting day.

What's The Difference Between Watts And Volt-Amperes?

May 2, 2012 Gary Raposa | Electronic Design

Both watts (W) and volt-amperes (VA) are units of measurement for electrical power. Watts refer to "real power," while volt-amperes refer to "apparent power." Usually, electronic products show one or both of these values to provide information about how much energy they will consume or how much current they will draw. Each of these values can be used for various purposes.

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What Are Watts?

The real power in watts is the power that performs work or generates heat. Power in watts is the rate at which energy is consumed (or generated). One watt is one joule (energy) per second (1 W = 1 J/s). You pay your utility company for watts expressed as energy, which is power consumed for a time period, typically shown by your utility company in kilowatt-hours. For example, a 100-W light bulb left on for 10 hours consumes 1 kW-hour of energy (100 W x 10 hours = 1000 W -hours = 1 kW-hour).

How Are Watts Calculated?

Real power for dc circuits is simply the voltage (V_{dc}) times the current (I_{dc}):

$$\mathbf{W = V_{dc} \times I_{dc}} \qquad \mathbf{(1)}$$

The concept for calculating the real power for ac circuits is straightforward, though performing the calculation is much more difficult. To get the power in watts, you need to know the instantaneous voltage with time, v(t), and the instantaneous current with time, i(t). When you multiply these together, you get the instantaneous power with time, p(t).

Since this instantaneous power is changing over time, we need to get an average value, so we integrate the power over a period of time and divide by the time period to get the average. That gives us the watts dissipated by the device in a circuit with voltage v(t) across it and current i(t) through it for the period of time evaluated. Assuming that the voltage and current are both periodic waveforms of period T, the strict mathematical way to express the power calculation for a periodic waveform of period T is:

$$\text{Average power in watts} = \frac{1}{T}\int_0^T v(t) * i(t)\,dt = \frac{1}{T}\int_0^T p(t)\,dt$$

So while this may be easy to visualize, it is not easy to calculate. Even the measurement of real power in watts for ac circuits requires specialized equipment (a wattmeter) because the voltage and current waveforms must be measured over a precise period of time, the measurements must be simultaneous, and the average must be calculated over the measurement time period. A standard multimeter can't make this type of power measurement.

What Are Watts Used For?

These ratings are useful if you have to get rid of the heat generated by the device consuming the watts or if you want to know how much you will pay your utility company to use your device since you pay for kilowatt-hours (power used for a period of time). To combine the real power of multiple dc or ac devices, you can just add up the individual power ratings in watts of each device to get the total power (watts add linearly).

What Are Volt-Amperes?

The apparent power in VA is used to simplify power ratings, making it easier to calculate current draw. Since VA = RMS volts x RMS amps, you can divide the VA rating by your RMS voltage to get the RMS current the device will draw. Knowing the RMS current helps you properly size wires and circuit breakers or fuses that supply current to your device.

How Are Volt-Amperes Calculated?

The apparent power for dc circuits is simply the voltage (V_{dc}) times the current (I_{dc}):

$$\mathbf{VA = V_{dc} \times I_{dc}} \qquad \mathbf{(3)}$$

The apparent power for dc circuits is the same as real power for dc circuits (for dc, VA = W).

For ac circuits, VA are the product of the RMS voltage (V_{RMS}) times the RMS current (I_{RMS}):

$$\mathbf{VA = V_{RMS} \times I_{RMS}} \qquad \mathbf{(4)}$$

You can calculate the apparent power in volt-amperes for ac circuits by multiplying the measured RMS voltage times the measured RMS current. A standard multimeter usually can make both of these RMS measurements.

What Are Volt-Amperes Used For?

Volt-amperes provide insight into the amount of current drawn by a product or circuit, assuming you know the voltage. For example, the standard residential voltage in the United States is 120 V_{RMS}.

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If a product is rated for 300 VA (the rating implies this is the maximum VA the product will draw) and is powered from a 120-V_{RMS} ac line voltage, you can calculate the expected maximum current as 300 VA/120 V_{RMS} = 2.5 A_{RMS} maximum *(see the figure)*. Thus, you would want to ensure that the wires and associated circuitry supplying this product accommodate at least 2.5 A_{RMS}.

Electronic products typically list information such as their ac power ratings, ac line voltage, frequency, and maximum VA ratings.

To combine the apparent power of multiple dc devices, volt-amperes add linearly. However, to combine the apparent power (or current) of multiple ac devices, there is no straightforward way to get an exact total because the currents for each device are not necessarily in phase with each other, so they don't add linearly. But if you do simply add the individual VA ratings (or currents) together, the total will be a conservative estimate to use since the actual total will always be less than or equal to this value.

Another term that is useful in this discussion is power factor (PF). The power factor is defined as the ratio of W to VA:

Power factor = PF = W/VA (5)

Power factor is always a number between zero and one because the watts drawn by a device are always less than or equal to the volt-amperes. Note that it is possible for a circuit to have a large voltage across it and to draw substantial current, but consume no energy (dissipate zero watts).
While this seems counterintuitive, it is true if the circuit is purely reactive (a pure capacitor or pure inductor). The circuit will do no work and produce no heat, so it is drawing (and dissipating) zero watts. Yet it can draw substantial current, resulting in substantial VA.
In this case, the power factor is zero. This is possible because the phase relationship between the voltage and current waveforms is such that the circuit is alternately absorbing real power and giving that real power back, so the net real power consumption is zero.

Summary

W and VA are both units of measurement for power, but that's where the similarity ends. Watts do work or generate heat, while volt-amperes simply provide you with information you need to size wires, fuses, or circuit breakers. Watts add linearly, while volt-amperes doe not. And to measure W, you need a special wattmeter. You can calculate VA by using a standard multimeter to measure V_{RMS} and I_{RMS} and finding the product *(see the table)*.

WATTS VERSUS VOLT-AMPERES

	Watts	Volt-amperes
Type of power	Real	Apparent
Abbreviation	W	VA
Calculation	For dc: $V_{dc} \times I_{dc}$ For ac: $\int v(t)*i(t)dt$	For dc: $V_{dc} \times I_{dc}$ For ac: $V_{RMS} \times I_{RMS}$
Used for	Evaluating heat generated or dissipated and calculating cost of energy	Properly sizing wires, circuit breakers, and fuses
To add multiple ratings together	Add W ratings linearly	No straightforward method to add VA, but if added linearly, result will be greater than or equal to actual total (adding linearly provides a conservative estimate)
Instrument needed for measurement	Wattmeter (a typical multimeter cannot measure watts unless the V and I are both dc)	Typical multimeter capable of measuring V_{RMS} and I_{RMS} ($VA = V_{RMS} \times I_{RMS}$)

References

For more articles focused on ac and dc power-related topics, visit Agilent Technologies' power blog, "Watt's Up?" at http://powersupplyblog.tm.agilent.com/.

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D-Star Repeater Map of the USA

If you own a D-Star Radio you probably want to know where the repeaters are located in the USA. Check out the Link below.

http://www.jfindu.net/DSTARRepeaters.aspx

January VE Testing Results

As of January 10th, 6 Hams passed their exams and received upgrades to their license. Congratulations to all!

Upgrade to Extra

Warren (Bud) Chick – K0HVA
Lloyd Willever – K9LJW

Upgrade to General

Linda Parker – KA0MRH
Barbara Stuart – KD0SYD
Gary Freeman – KD0SQA
John Grey – KD0NPP

Thanks to the VE's for conducting the exam session.

Mel Minnick – K0MEL
Bill Burek – AC0VC
Wally Gamble – AC0T
Robert White – K0RCW

Here are the dates to mark your calendar, June 28-29 & 30, 2013. That is HamCon Colorado 2013. This Event has been in the planning for nearly two years and is proving to be the Biggest and Best HamCon every for our state. For easy access to the HamCon web page go to the DRC web page and simply click on the HamCon banner. Once there you'll find all the information on Tickets, Meals, Seminars, Vendors and Great Tours and Activities in Beautiful Estes Park, Colorado (Don't miss the great Early Bird offers) Book your hotel at the Rocky Mountain Inn early. HURRY, rooms WILL sell out!

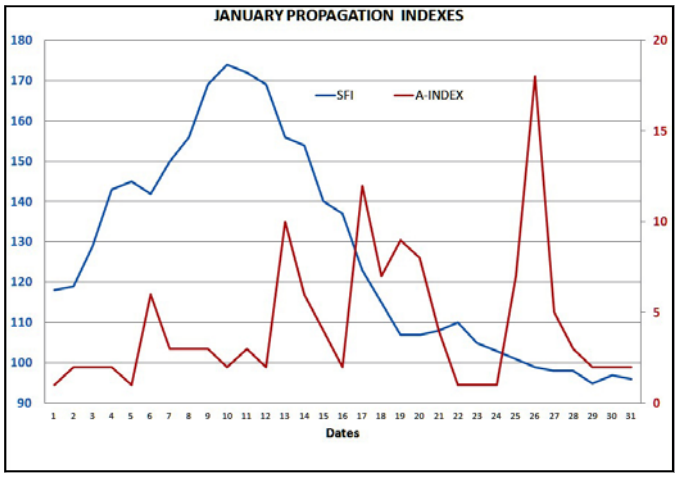
Don't forget to join in Wednesday nights at 7:30pm for the DRC Learning Net ! 145.49/448.625 machines Watch the RoundTable for Upcoming changes to Learning Net Schedule

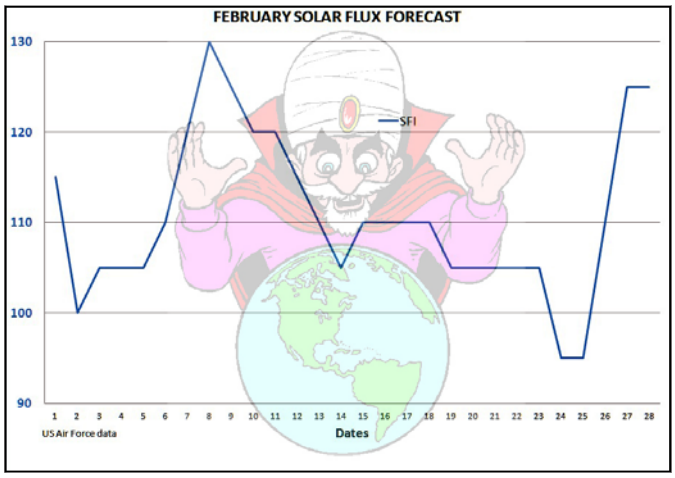
Past & Future Propagation Conditions

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 **www.w0tx.org**.





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**.*

February 10 – **ARA Swapfest**
Adams County Fairgrounds
http://www.n0ara.org

April 6 – LARCfest
Boulder County Fairgrounds
http://w0eno.org

June 28 – Rocky Mountain Division Convention
Rocky Mountain Park Inn, Estes Park, Colorado
http://www.hamconcolorado.org

July 27 – PPRAA Megafest
Lewis Palmer High School, Monument, CO
http://www.ppraa.org

August 27 – DRC HamFest
Contact Bryan - KB0A for More info.

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

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**. On the left side of the page, click on "Roundtable".

Note to DRC Members:
Due to the fact that many ISP's reject documents which contain active hyperlinks, the URLs in the RoundTable are not active. However, you can copy and paste the link into you browser and view the web content. Sorry for the inconvenience. *Editor*

February 2013

DRC Net Sunday's at 8:30pm Local on 145.490 & 448.625 (No PL)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 National Freedom Day 	2 Ground Hog Day 
3 Last Quarter	4	5	6 *Learning Net* 7:30pm	7	8	9
10 ARA Swapfest New Moon	11 *ARRL* School Club Roundup Begins 1300U	12	13 *Learning Net* 7:30pm	14 Valentine's Day 	15 *ARRL* School Club Roundup Ends 2359U	16 *ARRL Int'l CW DX Contest* Begins 0000U
17 *ARRL Int'l CW DX Contest* Ends 2400U First Quarter	18 President's Day 	19 *ATV Lunch Meeting* See note in Up Coming Events	20 *DRC Meeting* Elmer 6:30pm General 7:30pm	21	22	23
24	25 Full Moon	26	27 *Learning Net* 7:30pm Leap Day	28		

Check www.ARRL.org for Contests and Rules!

DRC Board of Directors

President	KB0A	Bryan Steinberg	303-987-9596	kb0a@arrl.net
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Board Member	KD0CXX	Paul Meenach	720-746-1488	TBD
Board Member	N3PQ	Frank Ortega	303-452-0283	n3pq@hotmail.com

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VE Team	KC2CAG	Tom Kocialski	720-493-1426	kc2cag@arrl.net
Swapfest Mgr	KB0A	Bryan Steinberg	303-987-9596	drcfest@comcast.net
Field Day	OPEN for 2013			
Tech. Committee Chair	W6OAV	Bill Rinker	*Check Roster*	
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Web Master	N0LAJ	Bill Hester	*Check Roster*	

DRC Repeaters

BAND	Freq / Shift / PL Tone	Additional Information
6m	53.090mHz (-1mHz)	
Packet	145.05mHz<>14.105mHz	
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	**Not in service at this time!**
1.25m	224.380mHz (-) 100Hz PL	
70cm	447.825mHz (-) 100Hz PL	**Saint Anthony's**
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	446.7875mHz (-)	**MotoTRBO Repeater | Slot 1 – DMR-MARC WW, Slot 2 – Local**

Editor's Note

DRC members - this is your newsletter. If there is something which is club or amateur radio related that you'd like to see as a regular feature, email suggestions to the editor. Members are the heart and sole 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 AG0S@arrl.net. Submission deadline is the 25th of the Month. **Editor**