



# ROUNDTABLE

### PRESIDENT'S MESSAGE

By Gerry Villhauer-W0GV

I hope you all are doing fine as we approach spring time. Our planned program for last month fell through at the last minute when Mike Higgins, K6AER, had a business trip come up. We are hopeful to reschedule Mike for a future date. We did some scrambling and were able to get Joe Beach to move his presentation up a couple months. Thanks to Orlen WA9TVH, for making the arrangements. Joe did a wonderful job telling us all about photovoltaic cells, how a system connects to the power grid and how his system powers a large portion of his personal electrical needs. Thanks to Joe for a very informative program on short notice. I have been asked why we do not always hold our meetings in the upper room at the church. We always try to do this. It is not always possible due to other activities scheduled at the church which have priority. The board has discussed having a social activity in addition to our annual holiday party in December. What do you think? Any suggestions on what and where to hold such a function? Any volunteers to help plan and make it happen?

I would like to welcome new DRC members: Reese Arnett, KB0WGM, Tony Austin, W0SBS, Jeff Shuey, W0JAZ Paul Olson, KD0GMD, and Sherwood Patterson, AJ4OH. Please come to the meetings and activities and be an active member.



The March guest speaker at the Denver Radio Club meeting on March 18th will be Dr. Steve Lee, curator of Planetary Science at the Denver Museum of Nature & Science. Dr. Lee is one of the nation's small number of scientists studying the "red planet" Mars. His current research is using the Mars

Color Imager Camera (MARCI) aboard the Mars Reconnaissance Orbiter (MRO) to make seasonal changing, high-resolution maps of the polar regions of Mars. The following is a link to Dr. Lee's personal web page. <http://www.dmns.org/main/en/General/Science/ScientificExperts/Biographies/Lee+Steven.htm>

This will be Dr. Lee's second appearance guest speaker for the DRC, he last shared with members his initial work with MARCI several years ago at the annual Christmas Dinner event. At our next meeting he will present a "Mars Exploration Update", detailing the latest results from the Mars Exploration Rovers Spirit & Opportunity (still exploring after more than five years), the Mars Reconnaissance Orbiter (beginning its third year of surveying Mars from orbit), and the Phoenix Mars Lander (touched down last Memorial Day, and spent 150 days searching for evidence of buried water ice in the Martian arctic). He'll also take a look forward at future robotic missions and possible human exploration of the Red Planet.

Join us for fascinating and newest views from Mars from a very knowledgeable local researcher.

See you all at the meeting March 18<sup>th</sup> at the St. Joseph's Episcopal Church, 11202 West Jewell Ave., Lakewood, CO. That is about two blocks West of Kipling on West Jewell. And remember to check our website, [w0tx.org](http://w0tx.org), for lots of important information about the DRC. The Elmer Session and Tech Meeting start at 6:30 pm. followed by the Regular Meeting and Program at 7:30 pm.

Gerry, W0GV  
President

### INSIDE THE ROUND TABLE

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# FEBRUARY MEETING - WHAT'D I MISS

By Bill - W6OAV

There were 45 attendees at this month's meeting! W0GV began the business meeting with introductions.

N1ETV then gave a brief description of the newly invented "nanotube radio". This single carbon nanotube, less than one ten-thousandth the width of a human hair, tunes in a broadcast signal, amplifies it, converts it to audio for an external speaker. Visit [www.SciAm.com/nanoradio](http://www.SciAm.com/nanoradio) to hear the song "Layla" which was produced by a nanotube.

The meeting was then turned over to Joe Beach.

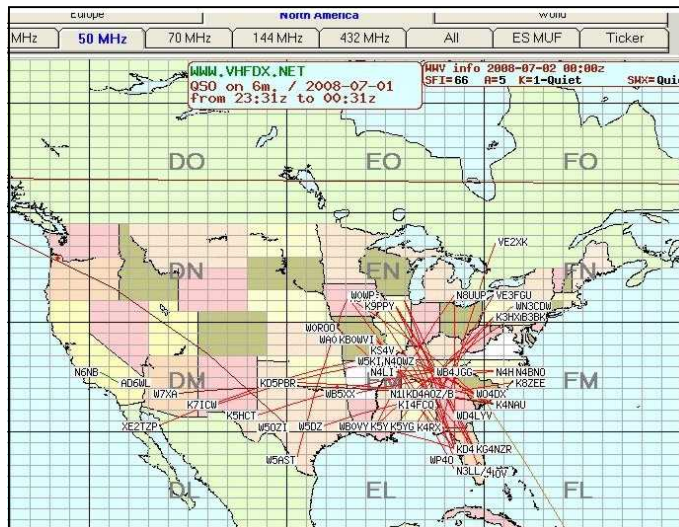


Joe is a research faculty member of the Colorado School of Mines Physics Department. He is a co-owner of Starfire Energy, a solar energy design and installation business. He is also a

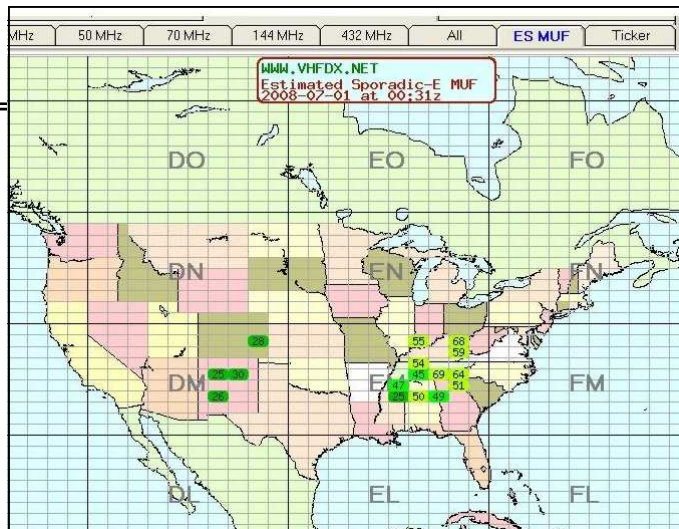
founder of a thin film photovoltaic manufacturing company. Joe gave a very enlightening presentation on solar cell technology. He covered the history of the solar cell, how they are designed and built, how they are tested and spec'd, and how solar power systems are designed and installed. Joe presented graphs showing how his home system functioned, including feeding his excess power into the power grid.

At the conclusion of the meeting, drawings were held for door prizes.

uses 25.950 mHz. These links are narrow band FM and run 1 to 200 watts. Google "<http://www.schotmans.net>" for a list of studio links.



**Es WEB Sites** – These WEB sites provide a wealth of information on current, and past, Es activity. Above shows a screen from the Es site at "<http://www.vhfdx.net>". Note the intersection of most of the lines in the southeast. This intersection shows the location of the Es cloud. Below shows the various Es clouds (in green) and the highest frequency they will reflect.



## WORK DX VIA SPORADIC E – PART 3

By Bill, W6OAV

Part 3 discusses using the available tools to determine when Sporadic E (Es) is occurring.

### How does one determine when Es is occurring?

There are many tools available for determining when Es is occurring.

These tools are:

**Beacons** – Scan the beacon bands on 10, 6 or 2 meters. As of this writing there are 370 beacons in the 28.1154 to 28.322 mHz band and 450 beacons in the 50.00 to 50.945 mHz band. Google "10 meter beacons" or "6 meter beacons" for a current list.

**26 mHz Studio Links** – Scan studio links. Many broadcast stations use the 25.705 to 26.906 mHz band to link their transmitters and studios. For example, KOA radio

**Calling Frequencies** – Stations frequently call CQ on the standard calling frequencies rather than calling CQ somewhere else in the band. The odds of another station hearing CQ elsewhere in the band are pretty remote. So, monitor the calling frequencies.

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The calling frequencies are:

Mode	mHz
10/10 Intl CW Calling Frequency	28.101
10/10 SSB Intl Calling Frequency	28.380
10/10 SSB Intl Calling Frequency	28.425
10 Meter FM Calling Frequency	29.500
10 Meter FM Calling Frequency	29.600
6 Meters International SSB	50.110
6 Meters SSB	50.125
6 Meters AM	50.400
6 Meters FM	52.525
2 Meters SSB	144.200
2 Meters FM	146.520

10 Meter FM Repeaters – Scan the 10 meter repeater frequencies. Most repeaters ID even when not being used. If you operate 10 meters, call on the various channels to see if a repeater comes back to you. The channels are:

Channel	Repeater RX - TX mHz
1	29.52 - 29.62
2	29.54 - 29.64
3	29.56 - 29.66
4	29.58 - 29.68

HF Skip Distances – Tune the various HF bands and look for signals that are closer than the “normal” skip distances. This phenomenon often indicates that Es is active at VHF. The “normal” minimum skip distances are:

Band	“Normal” skip distance (Miles)
20	500
17	750
15	800
12	1000
10	1200

Part 4 will discuss working Sporadic E.

## WHY ARE RADIO AMATEURS CALLED "HAMS"?

From Florida Skip Magazine - 1959

Have you ever wondered why radio amateurs are called "HAMS"? Well, it goes like this:

The word "HAM" as applied to 1908 was the station CALL of the first amateur wireless stations operated by some amateurs of the Harvard Radio Club. They were ALBERT S. HYMAN, BOB ALMY and POOGIE MURRAY.

At first they called their station "HYMAN-ALMY-MURRAY". Tapping out such a long name in code soon became tiresome and called for a revision. They changed it to "HY-AL-MU", using the first two letters of each of their names.

Early in 1901 some confusion resulted between signals from amateur wireless station "HYALMU" and a Mexican ship named "HYALMO". They then decided to use only the first letter of each name, and the station CALL became "HAM".

In the early pioneer days of unregulated radio amateur operators picked their own frequency and call-letters. Then, as now, some amateurs had better signals than commercial stations.

The resulting interference came to the attention of congressional committees in Washington and Congress gave much time to proposed legislation designed to critically limit amateur radio activity.

In 1911, ALBERT HYMAN chose the controversial WIRELESS REGULATION BILL as the topic for his Thesis at Harvard. His instructor insisted that a copy be sent to Senator DAVID I. WALSH, a member of one of the committees hearing the Bill. The Senator was so impressed with the thesis is that he asked HYMAN to appear before the committee.

ALBERT HYMAN took the stand and described how the little station was built and almost cried when he told the crowded committee room that if the BILL went through that they would have to close down the station because they could not afford the license fees and all the other requirements which the BILL imposed on amateur stations.

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Congressional debate began on the WIRELESS REGULATION BILL and little station "HAM" became the symbol for all the little amateur stations in the country crying to be saved from the menace and greed of the big commercial stations who didn't want them around. The BILL finally got to the floor of Congress and every speaker talked about the "...poor little station HAM".

That's how it all started. You will find the whole story in the Congressional Record. Nation-wide publicity associated station "HAM" with amateur radio operators. From that day to this, and probably until the end of time in radio, an amateur is a "HAM".

### NEW NASA TOOL ALLOWS AMATEURS TO EXPLORE THE IONOSPHERE FROM THE INSIDE

Last week at the Space Weather Workshop in Boulder, Colorado, NASA released a 4D [live model](#) of the Earth's ionosphere. Without leaving home, anyone can fly through the layer of ionized gas that encircles Earth at the edge of space itself. All that is required is an Internet connection and a free copy of [Google Earth](#). NASA calls the ionosphere the "last wisp of Earth's atmosphere that astronauts leave behind when they enter space. The realm of the ionosphere stretches from 50 to 500 miles above Earth's surface where the atmosphere thins to near-vacuum and exposes itself to the fury of the sun. Solar ultraviolet radiation breaks apart molecules and atoms creating a globe-straddling haze of electrons and ions."



Using a *Google Earth* interface, users can fly above, around and through these regions getting a true 4D view of the situation. "The fourth dimension is time. This is a real-time system

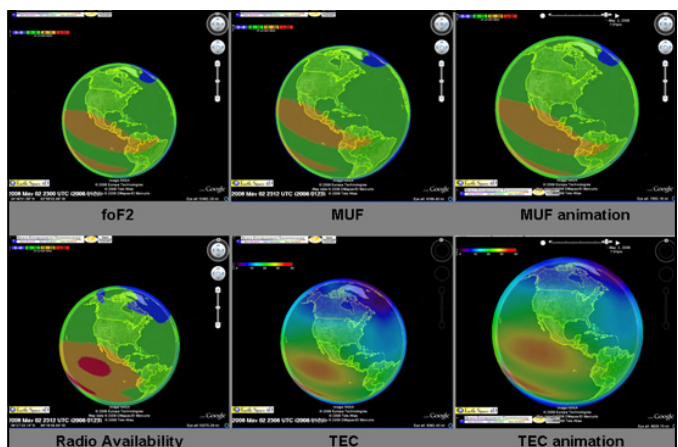
updated every 10 minutes," said W. Kent Tobiska, president of Space Environment Technologies and chief scientist of its Space Weather Division. The proper name of the system is CAPS, short for Communication Alert and Prediction System. Earth-orbiting satellites feed the system up-to-the-minute information on solar activity; the measurements are then converted to electron densities by physics-based computer codes. It is important to note, Tobiska said, that CAPS reveals the ionosphere not only as it is now, but also as it is going to be the near future.

According to propagation specialist Carl Luetzelschwab, K9LA, this model "can provide Amateur Radio operators a broad view of what the ionosphere is doing 'now.' This broad view is due to the fact that the resolution in the color coding schemes only gives coarse estimates of the six parameters available." Luetzelschwab, former editor of *National Contest Journal (NCJ)*, writes a propagation column in *NCJ* and other publications.

"This is an exciting development," said NASA solar physicist Lika Guhathakurta. "The ionosphere is important to pilots, ham radio operators, earth scientists and even soldiers. Using this new 4D tool, they can monitor and study the ionosphere as if they're actually inside it." Guhathakurta made his comments on the NASA Web site.

NASA understands that "[h]am radio operators know the ionosphere well. They can communicate over the horizon by bouncing their signals off of the ionosphere -- or communicate not at all when a solar flare blasts the ionosphere with X-rays and triggers a radio blackout." As radio amateurs, we use -- and depend on -- the ionosphere to make contacts.

Tobiska agrees: "For ham radio operators, this is a great application because it enables them to figure out what frequencies that are going to be available for communicating with any part of the world they want to communicate with at that moment in time. So ham radio operators who are in South Carolina want to talk to someone in Europe or Africa, they can know exactly what frequencies to turn on their dial."



Luetzelschwab explained that the figure above shows the six parameters that can be superimposed on the *Google Earth* image. They are foF2 (the F2 region ordinary wave critical frequency), MUF (maximum usable frequency of the F2 region, which is approximately three times foF2), MUF animation (you can select any time in the 24-hour period), RA (radio availability), TEC (total electron content, which is the total number of electrons in a vertical column

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going up through the ionosphere) and TEC animation (also selectable for any time in the 24-hour period). All six parameters in the figure are for a time around 2300 UTC (7 PM local in the Eastern Daylight Time zone) on May 2, and depict the ionosphere in the North American and South American sector.

"Looking at the MUF image (the middle image in the top row) indicates the MUF on a path from the East Coast of North America to Europe at the indicated time is anywhere from 8-15 MHz (green) on the North America end and from 3-8 MHz (blue) on the Europe end," he said. "That certainly doesn't pin it down too well, but it does give a broad view of the ionospheric conditions along that path. Also note that the robust equatorial ionosphere, with its concentrated areas of high electron density on either side of the geomagnetic equator, is readily seen."

Luetzelschwab said he personally believes that "The importance of this new product is the fact that this is likely the first physical model of the ionosphere available to the widespread Amateur Radio community. This is in contrast to the model in our current propagation predictions -- such as VOACAP, W6ELProp and the like -- that is based on years of measured ionospheric data correlated to a proxy for the true solar ionizing radiation (the proxies being sunspots and 10.7 cm solar flux)."

NASA explained that it appears that this new physical model takes satellite measurements of solar radiation at extreme ultraviolet (EUV) wavelengths (the true ionizing radiation) and inputs this data, along with a geomagnetic field activity index, into a model of the atmosphere to determine electron densities. Luetzelschwab said "Yes, it only offers a broad view now -- but I think it is a sign of things to come."

*Excerpted from www.Arrl.org - May 2008*

## THE PRACTICAL AMATEUR RADIO PODCAST

New to amateur radio? Want to learn more about this exciting hobby? Check out The Practical Amateur Radio Podcast by fellow Denver Radio Club member Jerry Taylor, KD0BIK. The Practical Amateur Radio Podcast is produced monthly and includes a feature topic; an introduction to other amateur's who are going above and beyond for the hobby, a featured website segment and much, much more.



Don't own an iPod or other MP3 player? No worries....you can listen to KD0BIK's podcast from any internet connected PC.

The Practical Amateur Radio Podcast can be downloaded through iTunes or direct from <http://www.kd0bik.com/podcast/>.

Thank you for your time and thank you for listening to the Practical Amateur Radio Podcast. Creating Elmers one podcast at a time.



*Happy  
St. Patrick's  
Day*

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**e-mail: denver@hamradio.com**



## UP COMING EVENTS

### APRIL 4 – LARCFEST

Longmont Amateur Radio Club For more information go to <http://w0eno.org/node/266>

### 15-17 May – ARRL NATIONAL CONVENTION (DAYTON HAMVENTION)

Dayton ARA  
<http://www.hamvention.org>

### HAMCON COLORADO 2009

MAY 29, 30 & 31ST



The 2009 HamCon Colorado convention will feature both new and time-tested technologies. Although the technical sessions have not been finalized, topics you can expect will include D-Star, Satellite Operations, and a presentation on the Mars Phoenix Lander, ARES and the popular ARRL Forum.

Go to [www.hamconcolorado.org](http://www.hamconcolorado.org) for more information and current information.

### 27-28 JUNE – FIELD DAY

Watch for more information in future RoundTables.

### 18 JULY – PPRAA MEGAFEST

Pikes Peak Amateur Radio Association  
<http://w0eno.org/node/266>

### 16 AUGUST – DENVER RADIO CLUB SWAPFEST

<http://www.w0tx.org>  
Contact: Bryan Steinberg, KB0A  
1011 South Foothill Drive  
Lakewood, CO 80228-3404  
Phone: 303-987-9596  
Email: [drcfest@w0tx.org](mailto:drcfest@w0tx.org)

MARCH 2009							<i>DRC Net Sunday 8:30pm Local</i>
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
1	2	3	4 <i>Learning Net</i> 7pm 	5	6	7 <i>ARRL Int'l CW DX Contest</i> Begins 0000U	
8 <i>ARRL Int'l CW Ph</i> Ends 2400U 	9	10 PURIM 	11 <i>Learning Net</i> 7pm	12	13	14	
15	16	17 ST. PATRICK'S DAY 	18 <i>DRC Meeting</i> Elmer 6:30pm General 7:30pm 	19	20 FIRST DAY OF SPRING 	21	
22	23	24	25 <i>Learning Net</i> 7pm	26 	27	28	
29	30	31					

*Check [www.Arrl.org](http://www.Arrl.org) for Contests and Rules!*

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## DRC REPEATERS

BAND	Freq / Shift / PL Tone	Additional Information
<b>10m</b>	29.620mHz (-100kHz) FM	<b>NOT IN SERVICE</b>
<b>6m</b>	53.090mHz (-1mHz)	
<b>Packet</b>	145.05mHz<>14.105mHz	
<b>2m</b>	145.490mHz (-) 100Hz PL	<b>Linked to the 70cm - 448.625mHz machine.</b>
<b>2m</b>	147.330mHz (-) 100Hz PL	<b>Local Area, Members Auto-Patch</b>
<b>2m</b>	147.330mHz (-) 131.8Hz PL	<b>NE Area Remote</b>
<b>1.25m</b>	224.380mHz (-) 100Hz PL	
<b>70cm</b>	448.625mHz (-) 100Hz PL	<b>Linked to the 2m - 145.490mHz machine.</b>
<b>70cm</b>	449.350mHz (-) 100Hz PL	<b>Wide area coverage with Echolink Node # 4140.</b>

## EDITOR'S NOTE

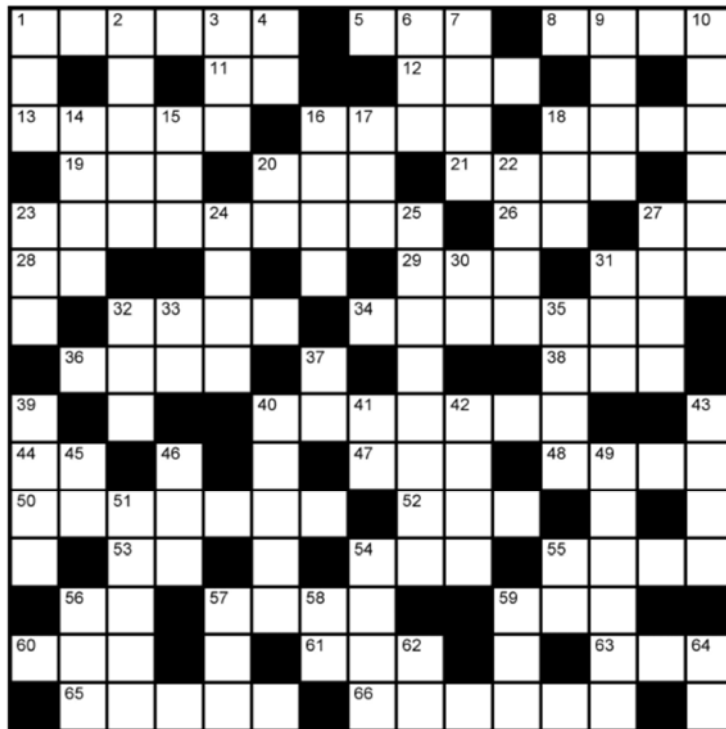
*DRC members - this is your newsletter. If there is something which is club or amateur radio related that you'd like to see as a regular feature, email suggestions to the editor. Members are the heart and sole of The Denver Radio Club, if you have an expertise or an interest in a particular segment of ham radio that you'd like to write about, you may email your submissions to DRC\_RT@comcast.net. Submission deadline is the 25th of the Month. Editor*

# “What say, Old Man?”

What DO you say? What DID the other guy say? Everybody has those little “huh?” moments, so this puzzle dabbles in the jargon basket of ham radio along with the usual collection of oddities and surprises. Have fun with my 100th puzzle for readers of QST or Web visitors!

By H. Ward Silver, NØAX

**NOTE: Puzzle solution on page 5.**



### Across

1. Paper from the FCC
5. Q-signal for fading
8. Steel-core wire is copper....
11. Populous continent (abbr.)
12. It's world wide!
13. Means "Let me in!"
16. Be healthy
18. Sponsor of Kid's Day (abbr.)
19. Most important part of the operator
20. Discovered resistance law
21. What kind of line is the telephone?
23. Another word for kids
26. Battery-type power
27. Bane of multi-operator
28. Width of a pipe (abbr.)
29. Greek letter that rhymes with "Pi"
31. Goes with feathers
32. Rearranged contact
34. Radio messages
36. Some capacitors look like this kind of knob
38. Before transmitting
40. Rapid fading on a mobile signal
44. Who makes the radio go? (abbr.)
47. Award certification without submitting QSLs (abbr.)
48. Primary power wire or bus
50. Repeater
52. The best kind of radio
53. Third port of a mixer besides RF and IF
54. Cheat
55. Unit of land area
56. Machine intelligence (abbr.)
57. Smear
59. Location (Q-signal)
60. Abbreviation for radio club
61. No or not
63. What do man, boy, and chap have in common?
65. Filter response just outside its passband
66. The bell that ends a QSO

### Down

1. Keystroke that jumps a few spaces
2. Means "I am leaving the frequency"
3. A mouse!
4. Thanks (CW abbr.)
6. These folks listen only
7. The ASCII character CTRL-G rings this
9. Accept and radiate power
10. Tinker or repair
14. What you do to the mail
15. Activate or make ready
16. Flexible mobile antenna
17. Electromagnetic compatibility (abbr.)
18. Popular RF connector style
20. Powered up
22. File format for Logbook of the World
23. Bounce off the ionosphere
24. Transmission is finished
25. Means "Your signal is mixed with noise"
27. Scatter that reverses a signal
30. Prefix for the country which makes paprika
31. The ARRL service that provides technical material to hams
32. CW emergency signal
33. Knock-out (abbr.)
35. A collection of antennas
37. Unmarried woman (abbr.)
39. What kind of brew is it when you make your gear yourself?
40. The last transmission of a conversation
41. Prefix for RF connector types
42. Tuned circuit that isolates a portion of an antenna
43. How many times do you touch a live wire?
45. Amplifier (abbr.)
46. Unit of conductance
49. The kind of boat you buy at a hamfest
51. Spurious emissions on a CW signal
54. The square you live in
55. You are .. a location or odds
56. Abbreviation for ham radio organization
57. Katie does this to the door
58. Goes with 'bal'
59. Atmospheric static (Q-signal)
62. Roman numeral for one less than a dozen
64. Logarithmic ratio