



RAINBOW CANYONS AMATEUR RADIO CLUB
CEDAR CITY, UTAH 84720

Volume 1

Club Web Site www.rcarc.info

May 2010

MEETING HIGHLIGHTS

In the absence of club President Steven Judd, KB7BGS, club Secretary Bill Stenger, K6QOG, conducted the meeting and read the minutes because they had not been posted to the Club web site as of meeting date. Minutes were approved and seconded, as read.

Prior to meeting time, Russ Chaffee, N7BO, conducted a test session. Several VE's were present, representing the club, and assisted in administering the test. Two individuals tested, and both passed. One person, Larry Heddings, KF7JFY, passed 2 levels of the battery and left the test session as General, no small feat in itself! The other person, Dave Myers, KF7HTE, upgraded from Technician to General. Congratulations to both gentlemen for successfully completing the test.

Club business was kept to a minimum to allow as much time as possible for the presentation. Items covered were the acknowledgment of a good turnout at the monthly club breakfast and the future Scout Expo/Special Events station and 100th anniversary celebration of Scouting.

FEATURE PRESENTATION

Don Blanchard, WA7GTU, presented a Power point presentation he developed a few years ago for educational purposes on the GPS System. It was most informative and interesting to learn how Global Positioning actually works, what can be done with it, the actual accuracy of each hand-held receives and the satellites required to make the system works. Originally developed for the military, its usefulness has become world-wide and indispensable in today's commerce.

As in any technology, Global Positioning is evolving into a highly sophisticated, multi-faceted technology, finding new and better uses than what it originally was intended for—guided missiles in both defensive and offensive posture. Some of you, not doubt, have a GPS unit associated with your cell phone, in your vehicle to give you direction or possibly use it in your employment, manufacturing and warehousing of every-day products. Others have fun using it as a gaming device, such as in *geocaching*, and other recreational or commercial ventures.

Thanks, Don, for enlightening us on another interesting aspect of the use of radio waves in our life.

HF SPECIAL EVENT STATION

On May 15, 2010, RCARC will sponsor a *Special Event* station in partnership with Cedar Breaks District, Boy Scouts of America, celebrating the 100th anniversary of Scouting.

What is a special event, you ask?

In answer, it is any good excuse to set up a portable HF station and get on the air and make contacts. Any noteworthy person, place, event or activity will do. In this case, it is the 100 anniversary of Scouting.

How does it work?

Very well, thank you! Once the station is set up you sit back and call; "CQ, CQ, special event station WR7AAA, celebrating 100 years of Scouting"

When a contact is made, you get to explain the celebration associated with the Scout Expo and Spring Camporee, sponsored by the Cedar Breaks District, Boy Scouts of America—and anything else you wish to add.

Why the call sign WR7AAA?

Because it belongs to RCARC and is unique in that it was the 1st **repeater** call sign issued by the FCC in the United States. That alone is reason enough to have a special event station.

Just think—we get to use the call sign, celebrate 100 years of scouting, mention the Scout Expo, recognize Cedar Breaks District for its sponsorship and support of Scouting—any one of which would be a good reason to set up a special event station!

Sounds fun! How do I fit in all this?

Easy! Just show up Friday evening and help set up the shelter, table, chairs, etc. We will be there about 6:00pm for the preliminary work.

Saturday morning we will add the radios, antennas, handouts, etc. Radio operations will begin about 8:30 or 9:00am—or maybe a little earlier, if we get things ready, sooner.

You are invited to operate the radio, talk ham radio to visitors, hand out literature and answer questions or just hang around with the other hams there. Work as long as you like, leave whenever you want, tour the Expo exhibits and activities, buy some food—relax and have fun—just like a mini Field Day!

Field day—what's that?

Oh, that's coming up in a couple months. We'll talk about that next month. See you there!

--TO BE GIVEN AWAY--

Ken Munford, N7KM, has a 30 foot pole that he would like to get out of his yard. That's right—a **free** 30 foot pole! It would make a great mast or the beginning of a vertical antenna. He wants you to have it!

Please contact him at 586-3048 for details. Your welcome!

EMERGENCY DRILL

On April 26, 2010, Iron County Fire Marshall conducted a drill involving 14 other Federal, State County and Civic agencies. The Scenario:

Evacuate the Green Lakes area residents because of fire threat.

The actual drill began about 9am Tuesday morning when the ICS Command System began operation. By 9:30am, most agencies had been called out and were in various stages of response. Ham radio callout went out at approximately 9:45am, over the '76 repeater.

Because this was a drill, advanced warning had been given beforehand. Still, it took about 45 minutes for everyone to assemble, receive instructions and formulate plans for their respective organization.

Early on, initial plans changed. Many groups had to reevaluate and dispatch their people, causing confusion and using up valuable time.

Ham radio operators set up a base station, backup base station, received orders to partnership with CERT members and do actual field visits to each resident. Prepared literature was left with each resident giving instructions on what to do if there were an actual fire and preventive measure to take in their vulnerable, wooded, area.

According to Merlin Mackay, N7TCE, coordinator for this operation, 10 hams responded with personal communication equipment and supplies. All club members were dressed alike in their orange colored vests, making them highly visible and identifiable among the other participants.

Once the orders were given, the frequency was changed to 146.46 simplex for the duration of the exercise and tactical call signs assigned.

Following the debriefing, organizers asked some pointed questions causing each organization to rethink their current plan-of-operation. This was intended to identify weaknesses in each organization and stimulate thinking of improvements that will make their organization better prepared.

Special thanks needs to be given to those involved and who were able to respond, conduct themselves professionally and have backup measures in place. The following list is as complete as I can determine. My apologies to anyone whom may have been overlooked.

Merlin Mackay, N7TCE
Harel Adams, KE7OCJ
Trevor Adams, AE6HR
Brad Biedermann, WA7HHE
Dave Myers, KF7HTE
Jim Beal, KG6LFU
Fred Getman, N6OJS
Fred Sheffield, KF7GPZ
Bill Stenger, K6QOG
Bill Rankin, K7BTE

OPERATOR ERROR—OR IS IT SKILL?

During HF radio work you often hear an interesting station calling and want to work him. You got his call written down, he's a good S7 and you call him back—but he never seems to hear you. You try and try and try, to no avail. What is wrong? Poor operator skill, equipment problem, propagation, or is he ignoring you?

The following article copied from the May 2010 issue of QST may answer that question. There are other answers not covered in the article, as well. Thoughtful study and a little understanding will go a long way in helping you make that contact—or understand why you can't.

COMINTARY

There are probably more items of interest in ham radio to write about or learn than any other single discipline. Because of that an editor has a wide choice from which to choose—and to wonder what his readership is interested in.

That is my present dilemma. What do you want to read about? Where are your interests? It would really help a writer to know which direction to go. I can only write what I know or what I can find out about.

During this next club meeting, please hand me a note on topics you would like to see in this newsletter. If I don't receive suggestions, you will only get what you get. I would be much more efficient and it would take less time to produce a quality newsletter if I knew what to write about.

Thank you. Richard Parker, K7ZI.

Rainbow Canyons Amateur Radio Club
Minutes for
April 13, 2010

Bill Stenger, K6QOG, Secretary, opened the meeting at 7:30pm. President Stephen Judd, K7BGS, Co-vice Presidents Ken Munford N7KM and Jon Rice NR7T were absent. Bill extended a welcome to all members and visitors. He introduced and congratulated David Myers KF7HTE and Larry Heddings (no call) for passing their General exams. 30 people were present and each introduced themselves.

The minutes along with the newsletter were posted on the website and read by some and so approved.

Bill opened the floor for any comments to the group. Merlin Mackay N7TCE announced during the introduction that those interested in emergency communications to see him after the meeting. Sylvia Clements KB7UMU announced the club breakfast would be Saturday, 9am at Denny's Restaurant. Please let her know.

Ken Oliver, W7KBM, announced there was a shortage of funds. Many members have not paid their dues and he would be available after the meeting. He also mentioned that those who order coax, the coax has arrived and they can make arrangements to pick it up along with payment.

Dick Parker, K7ZI, said the Special Event station at the Scout Expo, celebrating their 100th anniversary is on schedule for May 14th & 15th but help is needed.

GPS (Global Positioning System) and locators is the Presentation by Don Blanchard, WA7GTU.

- GPS project began as a joint military endeavor but eventually fell to the US Air Force. It began in the 1970's at a cost of \$12 billion.
- Positioning is determined by time, not triangulation.
- GPS uses two transmitters, a spread spectrum transmission.
- L1 is the standard positioning service for civilians and L2 is the precise positioning service for the military.
- There are 24 satellites, 12 in each hemisphere. They are in 12 hour orbits. A minimum of three satellites are required for two dimensional direction (latitude and longitude) and four satellites for three dimensional direction (latitude, longitude and elevation).
- The more satellites the greater the accuracy. The satellites know where the other satellites are and what the time frames are. They talk to each other.
- 24 GPS satellites are approximately 12,000 miles above the earth traveling at 7,000 mph. They are visible at times. The geosynchronous satellites are 22,300 miles above the earth and the space shuttles do not go that high and can not service them.

- The GPS satellites are solar powered with backup batteries. All satellites have small rocket boosters so they can be moved around. Satellites are good for ten years. They weight about one ton, are 17 feet across and transmit power is about 50 watts.
- For a precision measurement the receiver measures the time to receive signals from 4 satellites. The on board clock is accurate to 3 nano seconds.
- The grid system begins at the equator which is 40,000 km round, divided into 360 degrees around the earth. Each degree can be divided by 60 which is 21,600 minutes (smaller sections around the earth). At the equator one minutes equals one nautical mile. The minutes can be divided down into seconds so one second equals 101 feet at the equator.
- Don showed a one second bit of computer information and explained the meaning of the data.
- There are several sources of commercial GPS software as well as freeware for your computer so you can see what's on the GPS receiver.
- A good source of GPS information is [HTTP://joemehaffey.com](http://joemehaffey.com)
- Newer GPS receivers have a Wide Area Augmentation System (WAAS) that improves accuracy by 4 or 5 times.
- Applications for GPS:
 - On-Star
 - APRS (Automatic Position Reporting System) for hams
 - GeoCaching (learn how to use the GPS)
 - Data logging with GPS
- To improve accuracy is to use a Beacon receiver which operates on 303 - 312 KHZ. Grid Squares measures approximately one degree latitude by two degrees longitude and measures approximately 75 by 100 miles in the continental United States. A grid square is designated by to capital letters called the field followed by two numbers called the square. Cedar City is in square DM 37. Each square has a sub square designated by two lower case letters after the square number.

Don fielded questions and comments throughout the presentation.

The meeting was adjourned at 8:55 pm.

Respectfully submitted;

Bill Stenger K6QOG
Secretary

I Can Hear Him — Why Can't He Hear Me?

Yes — radio propagation is usually reciprocal. Then why can't the other station hear me?

Joel R. Hallas, W1ZR

While there are occasional exceptions, most times the radio propagation between two points in both directions is the same. They say "you can't work them if you can't hear them," but why is it that sometimes when you can hear them, you still can't work them?

There are a number of straightforward answers to this apparent mystery and we will explore the most common. An important consideration is that while you know the capabilities and conditions at your station — you generally don't know the situation at the other end of the link — the usual answer to the puzzle.

How Much Power is Coming Toward You?

If you have the usual 100 W transmitter and a dipole, and the other station is running 1.5 kW (12 dB more than you) from a three element Yagi (perhaps another 6 dB), her signal should be 18 dB, or 3 S-units stronger than yours. Yes, her Yagi will also make your signal stronger, but depending on band and conditions, the chances are the Yagi will pick up additional noise, canceling the receive advantage. So if you are receiving an S-7 signal, she will be receiving the equivalent of an S-4 signal, perhaps at or below the noise. If you hear her talking to someone else, you may be able to hear her station description and verify the situation.

What's the Far End Noise Level?

As hinted above, the real key is the signal to noise, or signal to interference ratio. If you are operating in quiet winter conditions in the northern hemisphere, while the other station is in a warmer but noisier southern latitude location, you will be able to hear a weaker signal than the station at the far end. Your noise level might be at S-3, while theirs could easily be at S-7. The same could be the

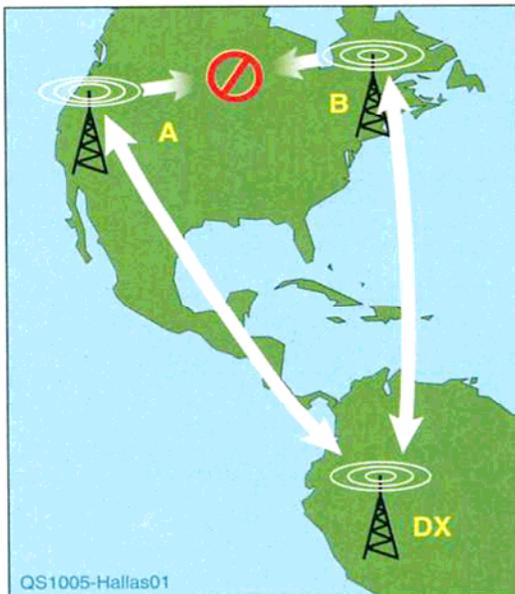


Figure 1 — A DX station in South America can hear many North American stations from across the equator, but they likely can't hear each other, so have no clue about the level of competition they face.

case if you are in a quiet country spot, while they are in a city.

That 4 S-unit difference means it will take a 24 dB stronger signal from you to be heard as well at the far end as you hear them. Look at what it took to get an 18 dB boost in the above example, and that should give you an idea of what you're up against.

You Can be Up Against Signals from Other Areas

If you're trying to work a distant station in a far off land without success, you may get a clue as to what's happening by listening to the call signs of the stations they are working. A classic example occurs with transequatorial propagation, north-south transmission across the equator. You are in New England

and are hearing an interesting station from South America loud and clear. You hear no other stations on frequency. The station replies to a W8, and then a W9, but not to you — what's happening here?

Take a look at Figure 1. You have a reciprocal transequatorial path to South America, but not an east-west path to the central and western parts of the US. In fact it may be that there are solid paths to the South American station from across the US. There may be hundreds of stations that can't hear each other calling the poor beleaguered DX station. It will take quite a signal to pop through all that interference, and it's no wonder that your 100 W and dipole don't make it on the first call. If the other folks weren't there, you could get through fine, so keep trying and after the DX station works the high power and big antenna folk. He will then begin to hear you in the next tier — if you aren't up against the other problems described above.

Keep Trying — If You Can't be Louder, be Smarter

I have worked DXCC, and then some, with 100 W and wire antennas, so it's not impossible. One big plus is to work CW — you can move frequency slightly off the big piles and still be heard. If the DX station announces that he is listening on a different frequency, *up 2 kHz*, for example, note that he likely will not be working people who are calling at *exactly* 2 kHz up, but *around* 2 kHz up. Try to figure the DX station's listening patterns and transmit where he may listen next — instead of where he listened last. There is a good chance he will hear you — if you persist.

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