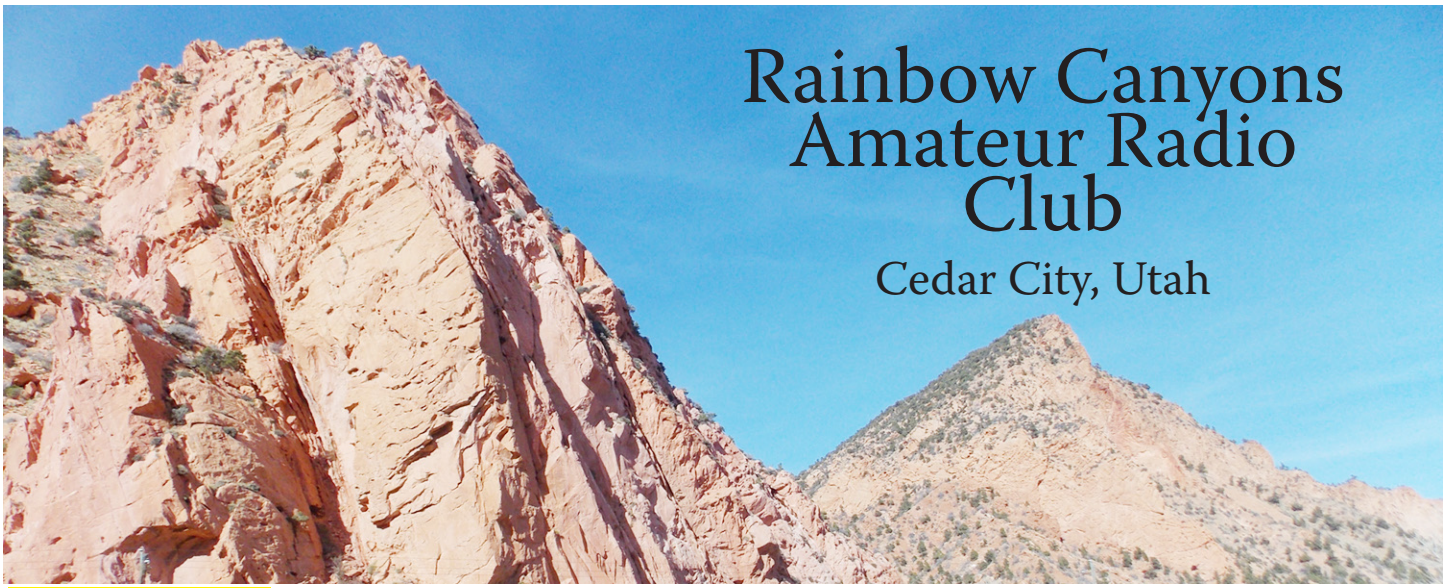


Rainbow Canyons Amateur Radio Club

Cedar City, Utah

Club Officers:

President:
KR7KR
Ken Richter

Vice-President:
K7ZI
Richard Parker

Treasurer:
AL7BX
George Gallis

Secretary:
K6QOG
Bill Stenger

Local Repeats:
146.980 Mhz
No Tone

146.940 Mhz
Tone 100 hz

146.760 Mhz
Tone 123.0 hz

Remote Base
449.500 Mhz
Tone 100 hz

Remote Base
449.925 Mhz
Tone 100 hz

IRLP/Echolink
449.900 Mhz
Tone 100 hz

Club meets on the second Tuesday of each month at Sheriffs Search & Rescue Bldg.

RCARC NETS:
Breakfast Net: 7:00am 146.98Mhz, no PL tone required, every weekday.
Friendship Net: 9:00pm 146.98Mhz, every evening.

Next club meeting is Tuesday, March 10, 7:30 pm

Club breakfast is Saturday March 7th, 9:00am at the Pastry Pub. Come in and place your order then come to the side room to be with other hams and your order will be brought to you. It is most relaxing and friendly meal.

TOPIC:

Antenna theory and hands-on 2M antennas.

Local News

LEPC
Local Emergency Planning Committee
Meeting February 18, 2015

Paulette Valentine, the Director of Emergency Preparedness and Response Division of the SWUPHD (Southwest Utah Public Health Department) discussed this year's trainings and drills in preparation for the June 4 Medical Surge Functional Exercise. Several groups, including the ARES of Washington County, the RCARC in Iron County, the Medical Reserve Corps with the SWUPHD are involved in this full scale exercise. She is a passionate and highly knowledgeable speaker who emphasized the importance and need for continuous training, drills to help improve our emergency responses in event of disaster. Next meeting March 18 at 12 noon at the Heritage Center.

Submitted by Debra Franks KG7MAZ

CERT
Community Emergency Response Team
Meeting February 19, 2015

A digital communications demonstration was presented by our RCARC President Ken Richter KR7KR, Brad Biederman WA7HHE, Linda Shrokian KG7PBX and Debra Frank KG7MAZ. Brad provided an overview of various radio communication options, pros and cons and then added the newer technology available today to add to the arsenal of emergency communications. Digital ICS forms that included long lists of evacuation names and addresses as well

as disaster photographs were sent between demonstrators. Linda and Debra simulated being out in the field transmitting using handheld radios sending information thru their laptop computers. It was fun, stimulating interest among the attendees.
Next meeting March 19 at 7 pm at the Cedar City Visitor Center.

Submitted by Debra Franks KG7MAZ

The 2nd Annual 5 County Citizen Corp Conference

February 28, 2015
Cedar City at the Heritage Center.

The keynote presenter was Tal Ehlers, an Emergency Manager with many years of Police, S & R and EMT-experience.

He found that many first responders were they themselves not prepared for disasters, nor had many of them adequately prepared their families. The biggest concern in any disaster event is ones family, and for a responder to be able to do their jobs, they needed piece of mind and knowledge that their families were going to be safe and secure. He said you can choose to be a victim or a victor. He stated that from an emergency standpoint, depending on the degree of the disaster, prepare for 30 days minimum. Citizens need to be self sufficient for at least a minimum of 1 month, preferably prepared for 3 months. Start small, you don't want to be in line at the store doing the "panic" buying that many do. Start with 72 hours, and work your way to 1 month, then 3 months. Although we have all heard a lot about preparedness, it was still an excellent refresher and full of new inspiring thoughts to get your family and supplies in order. His "Ready to Prepare" handout will be available at the next Ham Club meeting, March 10.

Submitted by Debra Franks KG7MAZ

Need fiberglass poles?

Greg Jackson K2GRG I have two sets of fiberglass poles available to the group, free.

The first set is in its original bag.

The second set is out of the bag and spent a year in the sun, but are fully functional.

From ARRL Newsletter

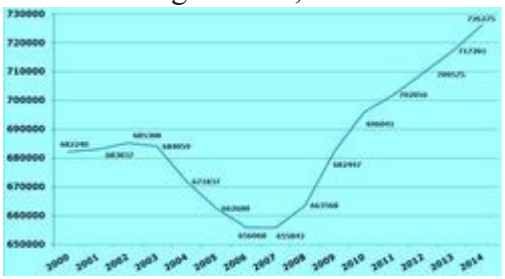
Amateur Radio Parity Act of 2015 Introduced in Congress

"The Amateur Radio Parity Act of 2015" -- H.R.1301 -- has been introduced in the US House of Representatives. The measure would direct the FCC to extend its rules relating to reasonable accommodation of Amateur Service communications to private land use restrictions. US Rep Adam Kinzinger (R-IL) introduced the bill on March 4 with 12 original co-sponsors from both sides of the aisle -- seven Republicans and five Democrats. Kinzinger also sponsored "The Amateur Radio Parity Act of 2014, which died at the end of the 113th Congress. H.R. 1301 is an essentially identical piece of legislation.

"The introduction of H.R. 1301 with so many original co-sponsors, so early in this session of Congress, is very encouraging," said ARRL President Kay Craigie, N3KN. "Several additional members of Congress already have agreed to be co-sponsors. This bill has momentum, but introduction is only the first step. Many of the next steps will be taken as ARRL members contact their US Representatives urging co-sponsorship and thanking them as they sign on to the bill."

Number of US Amateur Radio Licensees at All-Time High

The US Amateur Radio population continues to soar. At the end of 2014, the total number of US Amateurs in the FCC's Universal Licensing System (ULS) database reached an all-time high of 726,275 -- and the trend has continued in the first 2 months of 2015, which saw the total rise to slightly more than 727,000. The figures exclude expired licenses that are within the 2-year grace period, and club



Amateur Radio numbers in the US from 2000 through 2014. The FCC dropped the Morse code requirement in 2007. Click to enlarge the graphic. [Prepared from statistics compiled by Joe Speroni, AH0A]

station licenses. Outside of a little dithering last fall, growth in the Amateur Radio Service in 2014 was steady, according to figures compiled by Joe Speroni, AH0A, on his FCC Amateur Radio Statistics web pages. Over the past decade, the number of Amateur

Radio licenses in the ULS database grew by some 8.1 percent. But 2014 was also a banner year for the ARRL Volunteer Examiner Coordinator (VEC).

"For the first time in the ARRL VEC program's history, we have conducted more than 7000 Amateur Radio exam sessions in a year, an important milestone," said ARRL VEC Manager Maria Somma, AB1FM. "A total of 7216 ARRL-sponsored exam sessions were administered in 2014, compared to 6823 in 2013."

Somma said the number of new licensees spiked to more than 33,000 in 2014, up by about 15 percent from the previous year. Successful license upgrades rose last year by an unprecedented 13 percent over a year earlier.

At the end of 2014, there were 136,405 Amateur Extra, 169,524 General, and 357,236 Technician class licensees -- all record numbers, Somma pointed out.

Malawi 7QAA DXpedition Will Help Kick Off New Africa All-Mode International DX Contest

The 7QAA Multinational DXpedition to Malawi will take part in the inaugural Africa All-Mode International DX Contest over the March 14-15 weekend, operating SSB, CW, and digital modes. The DXpedition is scheduled begin on March 11.

Unusual call signs such as 7QAA have been issued for at least one prior Malawi operation.

The 7QAA Multinational DXpedition will employ two teams -- one for CW and RTTY -- which will operate from March 11 until March 21, and a second for SSB and RTTY, which will be on the air from March 22 until April 1. Both will operate on 160 through 10 meters.

The DXpedition will upload logs to Logbook of The World (LoTW) following the DXpedition and to ClubLog daily. The second team will take part in the CQ World Wide WPX Contest (Digital) on RTTY and PSK. The team will listen on 50.110 MHz CW and SSB for any possible openings.

What Happened at the last Meeting?

President Ken Richter KR7KR called the meeting to order at 7:30pm.

Those present were:

WD0CDG	Larry Heddings
KG7PBX	Linda Shokrian
KG7NYJ	Devin Elliott
WA7HHE	Brad Biedermann
KF6OBH	Alan Fannon
N7SIY	Joel Clements
KB7UMU	Sylvia Clements
KC7IHE	Gavin Hollinger
K2GRG	Greg Jackson
KG7AHS	Travis Horton
N7DLJ	David Johnson
KG7PVK	John Healey
K7NJ	Riki Kline
KF7YWY	Cameron Abbaticchio
N7TCE	Merlin Mackay
W7DRO	Darrell Olmsted
KC7UT	Roger Simister
KG6LFU	Jim Beal
KG7HTJ	David William
AL7BX	George Gallis
K7ZI	Dick Parker
WA7GTU	Don Blanchard
K6QOG	Bill Stenger
KR7KR	Ken Richter

Guest from Parowan VIPS: Dennis Gaede

Ken Richter KR7KR welcomed everyone and invited everyone to introduce themselves.

George Gallis AL7BX presented the treasurer's report:

Previous Balance: $887.57
Deposits: $150.00
Balance as of January 31: $1037.57

Greg Jackson K2GRG motioned to accept the report and Don Blanchard WA7GTU seconded. Vote: unanimous.

Bill Stenger K6QOG called for corrections to the minutes. None made. Gavin Hollinger KC7IHE motioned to accept the minutes, seconded by Don Blanchard WA7GTU. Vote: unanimous.

Up coming events:

Field Day: Hams set up their radios on portable electricity, batteries, solar, generators with mobile or portable antennas and operate. After the station/stations are operational then the contest is for contacts. Bryan Lamoreaux KG7OOW has volunteered to help and many more are needed. We also have a trailer with a tower that needs repairs. So when we have some good weather we need to get some work done. **Field Day is June 27 & 28.**

Zion 100: No one had any information.

Equestrian Endurance Ride: Larry Heddings WD0CDG said the event is October 3 & 4. The event is a charity event for cancer.

Linda Shokrian KG7PBX mentioned the Weather Spotter Training program held in St. George on February 4th. She provided handouts for those interested.

Don Blanchard WA7GTU gave an update on the repeater systems: all intertie repeaters and the link radios are now state of the art. Rowberry replaced a broken antenna; Hurricane Mesa noise problem resolved by turning down the volume.

Debra Frank KG7MAZ mentioned the LEPC meeting is February 18th and the CERT meeting is February 19th.

Ken Richter said he wants to establish an ECOM committee rather than leave the responsibility for one person. Brad Biedermann motioned to accept the appointment of a committee and was seconded by Debra Frank. Vote was unanimous.

Dick Parker K7ZI presented: "Sun, Earth and Ionosphere". Information can be found on the ARRL website.

Dick used a model globe to demonstrate many points.

*globe has magnetic fields going from pole to pole

*Sun's rays effects the earth's magnetic fields

* Two indexes: A and K

A index is a 24 hour period of time

K index is logarithmic scale

A index comprises 8 three hour indexes

scale is 0 to 400 (quiet to super storm)

K index scale is 0 - 9

Best for HF communication:

A index is 15 or lower

K index is 3 or lower

*Circling the earth are four layers:

Closest and going outwards:

D Layer, E Layer, F1 and F2 Layers

The sun emits electromagnetic radiation and measured in Angstroms.

Wavelengths of:

-100 to 1000 Angstroms (ultraviolet) ionizes the F1 and F2 region.

-10 to 100 Angstroms (soft X-rays) ionizes the E region.

-1 to 10 Angstroms (hard X-rays) ionizes the D region.

Grey Line is at sunrise and sunset, the area between sunshine and darkness. During daytime the D layer builds up and absorbes signals and so communication is poor. In darkness the D layer disappears, F1 and F2 become one layer and radio signals can reflect back to earth and so communications becomes more reliable for 10 or so minutes.

Equatorial Propagation is along the grey line there will be good propagation between the northern and southern hemispheres.

Influences on the ionisphere:

Solar flares are charged particles sent out from the sun that can affect to our ionisphere, especially the E and F layers.

Many sunspots cause E and F layers to harden and that causes 20 meters up to 6 meters to be good.

Few sunspots cause E and F layers to weaken and that causes 160 meters through 40 meters to be good.

Coronal Mass Ejection (larger than a flare) that affects the D, E and F layers. They are classified as "C", "M" or "X". X classification can cause a blackout for HF communications and has affected power girds. C class might cause more noise and M class might affect the upper portion of HF.

Sunspot cycle is averaged over 6 months behind a date and 6 months after the date. We are in cycle 24 and cycles rise quickly and go down slowly. There are charts on the ARRL website.

Dick presented charts about cycle plotting and what are best frequencies to use on a particular date.

FROM THE FLOOR

Don Blanchard WA7GU talked about how radiation affects 2 meters and 440 Mhz. Because these two bands are such short wavelengths, they are not greatly affected by radiation in the ionisphere. These bands are generally referred to as "Line-of-sight" frequencies.

Riki Kline K7NJ mentioned free software program called W6EL PROP that helps determine what frequencies are usable.

A discussion about the repair of the tower trailer followed.

A motioned was made and seconded with a unanimous vote to adjourn. Meeting adjourned at 9:43pm.

The following is a continuation from January 2015 Newsletter.

The Sun, the Earth, the Ionosphere:

What the Numbers Mean, and Propagation Predictions -- a brief introduction to propagation and the major factors affecting it.

By Carl Luetzelschwab, K9LA
Part Two

Solar flares and CMEs are related, but they can happen together or separately. Scientists are still trying to understand the relationship between them. One thing is certain, though--the electromagnetic radiation from a big flare traveling at the speed of light can cause short-term radio blackouts on the sunlit side of Earth within about 10 minutes of eruption. Unfortunately we detect the flare visually at the same time as the radio blackout, since both the visible light from the flare and the electromagnetic radiation in the 1 to 10 Angstrom range from the flare travel at the speed of light--in other words, we have no warning. On the other hand, the energetic particles ejected from a flare can take up to several hours to reach Earth, and the shock wave from a CME can take up to several days to reach Earth, thus giving us some warning of their impending disruptions.

Each day the Space Environment Center (a part of NOAA, the National Oceanographic and Atmospheric Administration) and the US Air Force jointly put out a Solar and Geophysical Activity Report. The current and archived reports are on the Near-Earth Data Online at SEC page in the "Daily or less" section in the "Solar and Geophysical Activity Report and 3-day Forecast" row. Each daily report consists of six parts. Part IA gives an analysis of solar activity, including flares and CMEs. Part IB gives a forecast of solar activity. Part IIA gives a summary of geophysical activity. Part IIB gives a forecast of geophysical activity. Part III gives probabilities of flare and CME events. These first three parts can be summarized as follows: normal propagation (no disturbances) generally occurs when no X-ray flares higher than class C are reported or forecasted, along with solar wind speeds due to CMEs near the average of 400km/sec.

Part IV gives observed and predicted 10.7-cm solar flux. A comment about the daily solar flux--it has little to do with what the ionosphere is doing on that day. This will be explained later.

Part V gives observed and predicted A indices. Part VI gives geomagnetic activity probabilities. These last two parts can be summarized as follows: good propagation generally occurs when the forecast for the daily A index is at or below 15 (this corresponds to a K index of 3 or below).

WWV at 18 minutes past the hour every hour and WWVH at 45 minutes past the hour every hour put out a shortened version of this report. A new format began March 12, 2002. The new format gives the previous day's 10.7-cm solar flux, the previous day's mid-latitude A index, and the current mid-latitude three-hour K index. A general indicator of space weather for the last 24 hours and next 24 hours is given next. This is followed by detailed information for the three disturbances that impact space weather: geomagnetic storms (caused by gusts in the solar wind speed), solar radiation storms (the numbers of energetic particles increase), and radio blackouts (caused by X-ray emissions). For detailed descriptions of the WWV/WWVH messages, visit www.sec.noaa.gov/Data/info/WWVdoc.html and www.sec.noaa.gov/NOAAscales/. Normal propagation (no disturbances) is expected when the space weather indicator is minor. A comment is appropriate here. Both the Solar and Geophysical Activity Report and WWV/WWVH give a status of general solar activity. This is not a status of the 11-year sunspot cycle, but rather a status on solar disturbances (flares, particles, and CMEs). For example, if the solar activity is reported as low or minor, that doesn't mean we're at the bottom of the solar cycle; it means the sun has not produced any major space weather disturbances.

In order to predict propagation, much effort was put into finding a correlation between sunspots and the state of the ionosphere. The best correlation turned out to be between SSN and monthly median ionospheric parameters. This is the correlation that our propagation prediction programs are based on, which means the outputs (usually MUF and signal strength) are values with probabilities over a month time frame tied to them. They are not absolutes; they are statistical in nature. Understanding this is a key to the proper use of propagation predictions.

Sunspots are a subjective measurement. They are counted visually. It would be nice to have a more objective measurement, one that actually measures the sun's output. The 10.7-cm solar flux has become this measurement. But it is only a general measure of the activity of the sun, since a wavelength of 10.7-cm is way too low in energy to cause any ionization. Thus 10.7 cm solar flux has nothing to do with the formation of the ionosphere. The best correlation between 10.7-cm solar flux and sunspots is the smoothed 10.7-cm solar flux and the smoothed sunspot number--the correlation between daily values, or even monthly average values, is not very acceptable.

Since our propagation prediction programs were set up based on a correlation between SSN and monthly median ionospheric parameters, the use of SSN or the equivalent smoothed 10.7-cm solar flux gives the best results. Using the daily 10.7-cm solar flux--or even the daily sunspot number--can introduce a sizable error into the propagation predictions outputs due to the fact that the ionosphere does not react to the small daily variations of the sun. Even averaging 10.7-cm solar flux over a week's time frame can contribute to erroneous predictions. To reiterate, for best results use SSN or smoothed 10.7-cm solar flux, and understand the concept of monthly median values.

For short-term predictions, the use of the effective SSN (SSNe) may be helpful. In this method, an appropriate SSN is input to the propagation prediction software to force it to agree with daily ionosonde measurements. Details of this method can be found at www.nwra-az.com/spawx/ssne24.html.