

**The Central Texas Amateur Radio Club
meets the first Tuesday of each month at 7:00 PM at the
Bell County Communications Center, 798 West Avenue O, in Belton**

The Prez Says...

Priscilla Beauregard, KE5UES



Do you know what October means?

October is another great month where amateur radio activities abound. Starting out the month on October 5th is **HamExpo** and its VE Test Session. Hope y'all saved some money for it - and while you're there, TARC is looking for some volunteers to help out with this event. Be a part of the biggest Hamfest in Bell County and lend your support.

Then toward the middle of the month from the 13th to the 19th is the **National Wildlife Refuge Week**, where amateur radio operators will take to the field in various wildlife preserves to help others learn about the Nation Wildlife Refuge System. Immediately after this is **Scouting's 56th Jamboree on-the-air**, running from the 19th to the 20th.

You can let the tubes cool down for about a week, until the **CQ World-Wide DX Contest** takes place over the 26th and 27th.

I think most of us are aware of the lashing Mexico has taken on both of its coasts from what went from Tropical Storms, to Hurricanes Ingrid and Manuel. In the aftermath of

these two storms that hammered vast swaths of Mexico, more than 1.2 million people have been affected throughout that country. While you're prowling the bands this month, please keep clear of 7.060 and 14.120 MHz where on-going emergency communications are taking place.

Lastly, at the end of the month is Halloween and for your listening enjoyment, you're invited to tune-in to the "*Witch's Tale*" and discover the thrills and goose bumps that frightened a generation of listeners during radio's Golden Age. More on this and other events are contained further on in this month's newsletter.

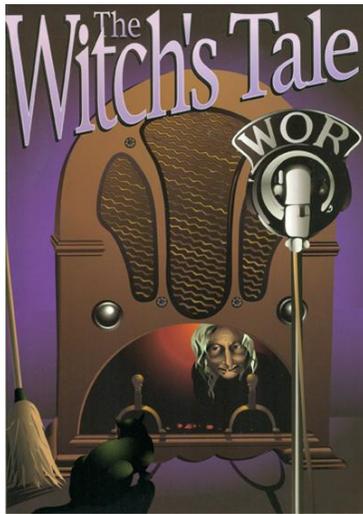
Hope y'all can attend our next monthly meeting on the 1st of October at 7:00 PM, at the Bell County Communications Center.

- 73 de KE5UES



Strays

“The Witch’s Tale! The fascination of the eerie. Weird, blood-chilling tales told by Old Nancy, the witch of Salem, and Satan, a wise black cat. They are waiting... Waiting for you...”



The Witch’s Tale was a horror-fantasy radio series which aired from WOR in New York on the Mutual Broadcasting System from 1931 to 1938.

People like to be scared, just as they like to eat candy. The “Witch of Salem” urges listeners to draw up to the fire and gaze in to the embers... gaze into ‘em deep! Once she has your rapt attention, she begins to tell you - with a gleeful cackle - her tales of ghosts, devils, and curses. The narratives she weaves convey countless examples of how jealousy, revenge, greed and ambition can result in circumstances as frightening as any caused by supernatural beings.

For your Halloween enjoyment, discover the thrills and goose bumps that frightened a generation of listeners during radio’s Golden Age by visiting: http://matineeclassics.com/radio/1935/the_witchs_tale

Sleep good until next time, little children... Hee-hee-hee-hee!



The Central Texas Amateur Radio Net meets every Thursday at 8:00 PM on the W5BEC repeater, on 147.140(+) PL 123.0
Join Us!

October NCS & Back-Up NCS Schedule:

October 3 rd :	October 10 th :
Net Control: W5VEX	KE5ISN
Back-Up: KE5ISN	AD5SK

October 17 th :	October 24 th :
Net Control: AD5SK	K6WXA
Back-Up: K6WXA	W5VEX

Fright Night, October 31st:
Net Control: W5VEX
Back-Up: KE5ISN



National Wildlife Refuge Week

Amateur Radio operators can help to let the public know about the National Wildlife Refuge System by operating from refuges during National Wildlife Refuge Week, October 13-19. The goal for participants is to combine their communication skills with their enjoyment of the outdoors and to help others learn about the National Wildlife Refuge System. More info on this is at: <http://www.arrl.org/news/amateur-radio-has-a-role-in-national-wildlife-refuge-week> and at: <http://www.nwrweek-radio.info>



Scouting’s 56th Annual Jamboree On-The-Air

The Jamboree-on-the-Air is held from October 19th to the 20th. The hours are from Saturday at 00:01 hours local time (right at midnight Friday) to Sunday 24:00 local time.

More info on this event is available at: <http://www.arrl.org/jamboree-on-the-air-jota>

CQ CQ World-Wide DX Contest

Contest period runs from 0001Z, October 26th through 2400Z October 27th, on 10, 15, 20, 40, 80 & 160 meters SSB. For further information, please visit: <http://www.cqww.com/rules.htm>



A Radio on Your Bicycle Makes Riding a Pleasure Trip

Put a radio on your bicycle and enjoy your favorite programs while riding. The job is easily done as shown in the picture below...



Attach a small radio set to a board fastened to the handle bars of the bicycle. To construct the antenna supports use bus bar or heavy wire fixed to the top of the radio set. The antenna and lead-in wire are plainly visible in the photograph. The battery supply is attached to the frame of the bicycle. The radio equipped bicycle made its appearance in Hollywood where movie stars have made a fad of bicycle riding. - *'Modern Mechanix' October, 1933*



FCC: Pending Amateur Radio Service Rule Changes Not On Back Burner

Bill Cross - W3TN, of the FCC's Wireless Telecommunications Bureau, states that pending proposals to modify the Amateur Service Part 97 rules are not on the back burner but still under review by the FCC.

Among the FCC proposals: Granting exam credit for expired and beyond-the-grace-period licenses; shortening the grace period during which an expired ham ticket may be renewed; revising the time a call sign remains unavailable to vanity applicants and reducing the number of volunteer examiners needed to administer examinations.

Additionally, NCVEC Question Pool Committee Chair Roland Anders-K3RA, reports that the committee has been working to update the Technician question pool. The new Tech question pool will go into effect next July 1.

FCC personnel were unable, however, to predict when the Commission would take action on the *Notice of Proposed Rulemaking and Order* in WT Docket 12-283.



Amateurs Asked to Keep 7.060 & 14.120 MHz Clear

In response to the effects of tropical storms Ingrid and Manuel, Mexico's Federacion Mexicana de Radio Experimentadores are using both 7.060 and 14.120 MHz in the wake of these severe weather outbursts for their amateur radio emergency communications activities. Amateurs elsewhere are asked to please keep those two frequencies clear until post storm communications have been secured.

HamEXPO!



Sponsored by the Temple Amateur Radio Club -W5LM, the *Belton Hamfest* returns to the Bell County Exposition Center in Belton, **Saturday, Oct. 5th** from 7:00 AM to 2:00 PM.

Getting there is easy; from U.S. Highway 190 take the exit for Loop 121 and follow the signs to the Exposition Center. Plenty of free parking!

Talk-in frequency is 146.820(-) PL 123, and call for W5LM.

General admission for the public is \$5.00 at the door. Admission price includes one free raffle ticket for various door prizes raffled off during the event. Winners must be present to collect their winnings.

For more information, please visit: <http://www.tarc.org/hamexpo>



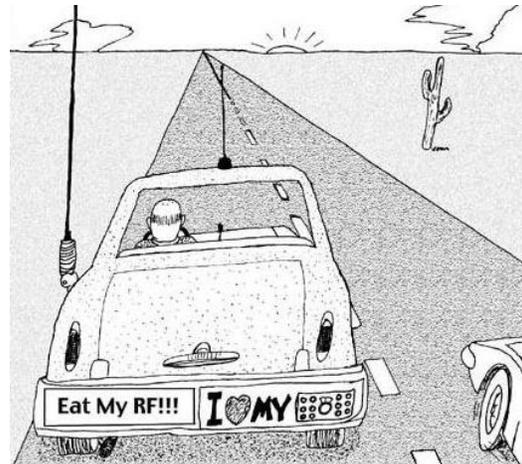
Ham Expo Amateur Radio Test Session

In conjunction with the HamExpo, amateur radio tests will be given in the main building of the Expo center, sponsored by the Central Texas Amateur Radio Club. The testing will begin at 9:30 AM and end when all applicants have been tested, probably around 11:00 AM.

Since the test session is in conjunction with the very popular Ham Expo, we expect between 25 and 50 people taking the tests. This requires at least 10 Volunteer Examiners to properly staff the event. The VE's participating should be on site by 9:00. Both General and Extra VE's are needed since all test levels are being made available.

This is a 'Ham Community' effort and all area VE's are needed and most welcome to participate. If you will be able to participate, please send an email to Joe Dorn - W5VEX, at: w5vex@arrl.net, or you can contact him by phone at (254) 939-5918 or (254) 721-0829.

People taking the test do not need to register before hand, just show up at test time. A photo ID and one other form of ID is required. The test fee is \$15.00.





K7AR will be active as **E51AAR** from Rarotonga in the South Cook Islands, between October 21st and the 26th. QSL via his home call.

PA3A, PD1AEG, PA8AD and PA8AN are active from Congo through October 11th as **TN2MS**. QSL via PA3AWW.

ZS6EZ and ZS6P will be active from Mozambique from October 15th to the 22nd as **C92Z** and **C91P** respectively. They will also be operational using the call **C82DX**. QSL C92Z via ZS6EZ. Cards for C91P go via ZS6P.

A group of Italian operators will be active from Mayotte Island 3-17 October as **TO22TT**. QSL via I2YSB.

AI5P, VE1RGB & WA4DAN will be active from Sable Island 1-11 October as **CYØP**. QSL via VE1RGB.

The Spanish Aitana DX Group will be on the air from Nicaragua as **YN2N** between October 1st to the 16th. Activity will be on 160 through 6 meters using CW and SSB. QSL via EB7DX.

October 5th from 10 am to 3 pm CST, the Starke County Amateur Radio Club will hold a Special Event in the city that never was, Radioville, IN. **W9JOZ** will be on all HF frequencies as band conditions permit. Radioville, was planned to be a booming community, but it just never developed. QSL direct.

The 107th Annual Circleville Pumpkin Show will be on the air as **W8P** Oct 16th, Noon thru Oct 20th 11:00 est. QSL as directed.

F4BDG will be active from Martinique Island 5-20 October as **TO4FM**. QSL via EA5GL.

IZØYIV will be active from Rarotonga Island 9-13 October and Aitutaki Island 13-17 October 2013 as **E51YIV**. QSL via his home call.

NØTG, **AA4VK** and **N1SNB** will be active **stroke FS** from St. Martin between October 24th to the 31st on 40 through 10 meters. QSL all operators via AA4VK.

Members of the Mexican Federation of Radio Experimenters will be operating October 2nd to the 7th using the callsign **XE3FMRE** to celebrate their National Convention. QSL via XE1LM.

A group of Spanish operators will be active from Nicaragua 1-16 October as **H7H**. QSL via EB7DX.

KZ1W and N7QT will be active from Raivavae Island in the Austral Islands 2-14 October as **TX5D**. QSL as directed.

DJ7ZG and DL7AFS will be active from Santiago Island 19 October - 7 November as **D44TXT** on 80-6m SSB, RTTY & PSK. QSL via DL7AFS.

Wake Island will be on the air as **K9W** from 7 to 18 October. Complete info is at: <http://www.wake2013.org/index.html>

OH2YY will be active from Bhutan 6 - 10 October as **A52YY** on 20-10m SSB. QSL via his home call.

CEØZOL is active from Juan Fernandez Island. He will be there for about six months with activity mainly on weekends. QSL as directed.

5th and 6th October **IQ7ET/P** will be operating from De Falcunibus Castle on 80, 40, 20, & 15 meters. QSL direct.

OH2YY will be active from Nepal 2-5 October as **9N2YY** on 20-10m SSB. QSL via his home call.

NØODK will be operational from Ho Chi Minh City as **3W2DK** between October 17th and the 24th, and then from Phu Quoc Island as **XV4MN**. After this he will return to Ho Chi Minh City and will again be on the air from there until November 2nd. QSL direct.

OH6KZP will be active as **CR2X** from the Azores during October 26th and the 27th. QSL via OH2BH.

Piracy on the Airwaves

There's been reported activity on the air from **T1ØVB** with a location of "Transnistria" in Moldova. This call sign is not approved by Moldova's government and should be considered an illegal operation in the Republic of Moldova. The official prefix of Moldova is **ER**.

The Daily DX reports that some pirate stations have been on the bands claiming to be in Vietnam. Apparently bogus call signs are **3WØIUR** and **3WØPQE**. Also questionable are **XV8LNS** on 20 meters, **XV2PC** on 15 meters and **XV2M** on 20 meters. *The Daily DX* says other call signs believed to be pirates include: **XV3DCM**, **3W2LGY** and **3W4RJF**. In addition, someone has been using the call sign **XV2T** on 15 meters CW, but the real **XV2T** does not operate CW.

New Williamson County EOC Includes Ham Radio

A new \$18 million Emergency Operations Center in Williamson County, will provide a room for amateur radio operators.

Jarred Thomas is the Emergency Management Coordinator, who says that local amateur radio operators will also have a room in which to gather. He notes that natural disasters such as a 1997 F-5 tornado with winds in excess of 200 miles per hour is in part the reason for the Emergency Operations Center's existence.

The new nerve center will be command central for major emergencies and also houses the county's 911 communications department, which had outgrown its home at the Sheriff's office. A large conference center and separate room for media are also included at the EOC.



Say "HI" to Juno!

NASA's *Juno* spacecraft will fly past Earth on **October 9th** to receive a gravity assist, putting it on course for Jupiter. To celebrate, the Juno mission is inviting Amateur Radio operators around the world to say "HI" to Juno in a coordinated Morse code message.



All transmissions will take place on 10 meters, with the suggested frequency determined by the last letter of your call sign. Sponsors say Juno will have a better chance of detecting signals from many operators if the transmissions are spread out across the spectrum.

The activity begins October 9th on or about 18:01 UTC and will continue until about 20:41 UTC.

If you participate and would like to receive a QSL card for contacting the Juno spacecraft, please send an email with your call sign and mailing address to: juno_outreach@jpl.nasa.gov. Cards will be sent to participants who email this information in the months following the event.

For complete details on the how-to's and suggested frequencies, please visit: <http://www.jpl.nasa.gov/hijuno> and then click on "How do I participate?"

For more information on the Juno mission to Jupiter, please visit: <http://missionjuno.swri.edu>



NOAA Aircraft Operations Center **Hurricane Hunters** *Destination: The Storm's Eye*

In last month's issue of the Wavelength, we looked at the U.S. Air Force Reserve's 53rd Weather Reconnaissance Squadron and mentioned that there were only twelve aircraft in the entire world that were allowed to fly into hurricanes. The 53rd has ten of them; the other two are NOAA's infamous Lockheed WP-3D Orion's, nick-named "Miss Piggy" and "Kermit the Frog."

Slicing through the eye wall of a hurricane, buffeted by howling winds, blinding rain, violent updrafts and downdrafts before entering the relative calm of the storm's eye, NOAA's two Lockheed WP-3D Orion turboprop aircraft probe the very nature of the storm, repeating the grueling experience a number of times during the course of a 9-10 hour mission.

Data collected during hurricanes by these airborne meteorological platforms and from a variety of other sources are fed into numerical computer models to provide better forecasts of how intense a hurricane will be, and when and where it will make landfall. These data, from the aircraft, fulfill two important purposes: to help forecasters make accurate predictions during a hurricane; and to help NOAA researchers achieve a better understanding of storm processes, thereby improving their forecast models.



Lieutenant Commander Cathy Martin aboard 'Miss Piggy'

Each aircraft is equipped with 4 Allison T56-14 Turbo Prop Engines, each rated at 4600 Shaft Horse Power. The aircraft have a take-off weight of 135,000 pounds with approximately 58,000 pounds of that being fuel which they burn at a rate of 4,500 to 6,000 pounds per hour depending on altitude and air speed.

The crew consists of two pilots, a flight engineer, navigator, flight director, two or three engineering/electronic specialists, a radio /

avionics specialist and up to twelve scientists or media personnel.

Based out of MacDill Air Force Base in Tampa, Florida, these versatile turboprop aircraft participate in a wide variety of national and international meteorological, oceanographic and environmental research programs in addition to their widely known use in hurricane research and reconnaissance. The aircraft are equipped with an unprecedented variety of scientific instrumentation, radars and recording systems for both in-situ and remote sensing measurements of the atmosphere, the earth and its environment. Obtained new in the mid-70's, these aircraft have an expected service-time of another 10 to 15 years.



Fall Forecasts...

Forecasters believe that beginning in late October, a secondary severe weather season will kick off in the lower to mid-Mississippi Valley across the Tennessee Valley and south to the Gulf Coast, ushering severe storms into the region. As colder and more stable air moves in during November the threat may be forced farther south toward the Gulf Coast states.

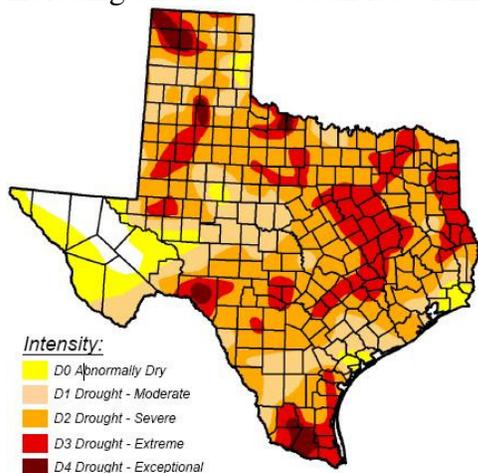


With the threat through the fall of the collision of stronger cold fronts and tropical moisture, the battle between the lingering humidity and the chill will create a corridor of moisture bringing the possibility of severe flooding events.

The Tropics – In 2012, Hurricane Sandy packed a punch for the East Coast in the last days of October, at the end of the season’s peak. This season, the threat for tropical development could again linger late in the season. Forecasters believe that tropical storm systems could form “here and there” through November. This year the principle concerns are with flooding from rainfall, more than the coastal surge and wind prospects.

Drought Synopsis

The prospects of October severe weather and flooding threats may in fact be a blessing in disguise what with drought disaster declarations in place in 254 counties in Texas, including all of the 46 counties within the NWS Fort Worth area of responsibility.



The current drought is drier than any other period for Texas since the late 1800’s except the 1950’s drought. Limited rainfall and late summer heat have intensified the drought across the region. At least Severe Drought (D2) prevails across nearly all of North and Central Texas, with many areas in Extreme Drought (D3).

Drought conditions are unlikely to ease any time soon, but with the prospects for above normal precipitation for the remainder of the year, the conditions could ease. However that being said, the extensive hydrological drought is likely to continue well into 2014.

Fire Danger – Within the NWS Fort Worth area of responsibility, only a handful of counties have no outdoor burn bans in effect. However, for much of North and Central Texas, the fire danger remains above average. This is based on the amount of available fuels and their moisture content. Although winds have been generally unfavorable for the spread of any fires that may initiate, over 800 acres have burned across the state during the first week of September.



6 + 2 = 1

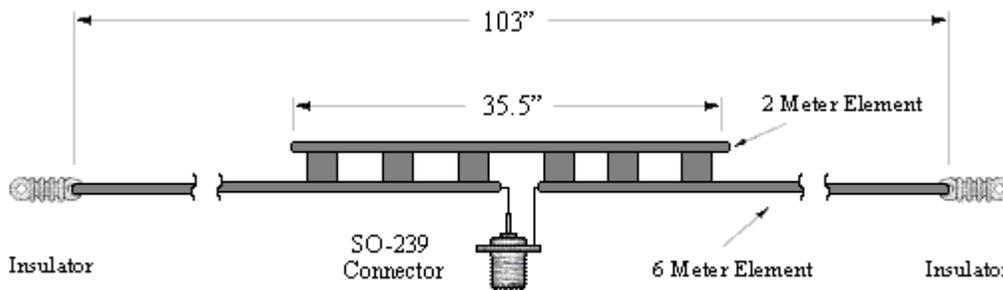
A Skeleton Dipole for 6 and 2 Meters

Steve Ford, WB8IMY

An inexpensive two-band dipole that will get you on the air on both 6 and 2 meters, and will take you a simple half-hour to build with minimal effort. The idea all came about through exploratory articles from the May 2011 and October 2011 issues of *QST* by Joel Hallas - W1ZR, who was making HF antennas using the “venerable skeleton sleeve” antenna to create some nifty dual band HF dipoles that anyone could put together.

The concept of coupling to a single conductor, rather than two or more of the traditional skeleton sleeve, was first described by Gary Breed - K9AY in the ARRL Antenna Compendium, Volume 5 of December 1st, 1996. He called it a “*coupler resonator antenna*.” It could also be called a “*half skeleton sleeve*.” The skeleton sleeve has been around for many years and has a parasitic element for the higher frequency on each side of the lower frequency directly fed element.

Refer to the following diagram... All that is needed is approximately 109 inches of 450-ohm ladder line, an SO-239 and a convenient length of 50-ohm coaxial cable.



W1ZR Skelton Sleeve Dipole with dimensions for 6 and 2 Meters

First, cut a length of 450-ohm ladder line to around 109 inches, giving about 3 inches at each end to wrap into the insulators. Second, attach the SO-239 connector to the exact center of the ladder line. Then, make two cuts in the wire opposite of the one chosen for the connector. Make the one cut of 17-3/4 inches to left of center and another 17-3/4 inches to the right for 35 inches total length. This arrangement creates the coupled resonator 2 meter element.

Next, use a sharp box cutter to carefully slice through the plastic insulation that separates the two wires, working from the ends back toward center and stopping as you reach the cuts in the 2 meter wire... throw away this unneeded insulation and wire.

Your goal is to end up with the 2 meter element uniformly separated from the 6 meter element and supported by the remaining insulation.

Using an antenna analyzer, it was found the VSWR on both 6 and 2 meters was well below 2:1. No need to trim the antenna at all. *Footnote:* if using this antenna on FM, be sure to mount it vertically, with the feedline running about 5 feet perpendicular.

This article first appeared in the October 2012 issue of QST and is reprinted here with permission of the ARRL.

Voyager 1 still in QSO

Voyager 1 was launched on September 5, 1977 with a mission of studying the planets Jupiter and Saturn and their related satellite moons. The spacecraft's 'official' mission ended on November 20, 1980 after leaving the Saturnian system. From there, it continued on through deep space.

Thirty-six years after it was launched from Earth on a tour of the outer planets, the plutonium-powered probe is now more than 11 1/2 billion miles from the sun, cruising through what scientists call interstellar space — the vast, cold emptiness between the stars, travelling at a speed of roughly 38,000 miles-per-hour.



Communicating with the spacecraft takes patience; with Voyager 1's position roughly 12 billion miles from Earth, a message from the spacecraft takes nearly 17 hours to be received once transmitted. The Voyager spacecraft uses a 23-watt transmitter, in the grand scheme of things it is a low-power transmitter. The key to receiving the signals is therefore not the power of the radio, but a combination of three other things: Very large antennas; directional antennas that point right at each other and radio frequencies without a lot of man-made interference on them.



Image of radio signal from Voyager 1

The antennas that the Voyager spacecraft use are big. You may have seen people who have large satellite dish antennas in their yards, which are 6 to 10 feet in diameter, the Voyager spacecraft has an antenna that is 14 feet in diameter, and it transmits to a 34 meter (100 feet or so) antenna on Earth. The Voyager antenna and the Earth antenna are pointed right at each other.

The Voyager spacecraft transmits in the 8 GHz range, where it transmits data to Earth on a frequency of either 2296.481481 MHz or 8420.432097 MHz, while signals from Earth to Voyager are broadcast on a frequency of 2114.676697 MHz. The antenna on Earth can use an extremely sensitive amplifier and still make sense of the faint signals it receives. Then when the earth antenna transmits back to the spacecraft, it uses extremely high power - tens of thousands of watts - to make sure the spacecraft gets the message. Voyager 1 also has a few built-in fail-safe devices to keep it talking to Earth. If it doesn't hear from us, it will go into a set pattern of activities. It will still send data to us even if it doesn't get information from home. It's programmed to assume its receiver has failed.

When the Voyager probes were launched in 1977, no one thought they would still be in operation today. The Voyager spacecraft is powered by a pair of nuclear reactors sitting on the back of the probe, but they will soon run out of steam. The nuclear power sources lose about 4 watts of power a year, and at this rate, Voyager should have enough power to communicate with Earth until 2022 or maybe 2025, but nobody is totally sure.

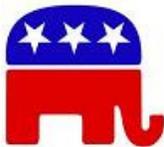
New EmComm Guide Book available from DHS

A very informative guidebook authored by Ross Merlin-WA2WDT, and titled *National Interoperability Field Operations Guide*, is described as a great go-to compendium of radio frequencies, channels, and other tidbits of information that can be essential in times of an emergency.

Merlin, who works in the Department of Homeland Security Office of Emergency Communications, authored the guidebook for the agency and says that it contains page after page of frequency information, operating procedures, formulas, and rules and regulations from both the FCC and the NTIA. Specific subject material includes frequency and channel data for Fire, EMS, and Law Enforcement as well as Mutual Aid channels in VHF, UHF, 700 MHz, and others. Also included is communications information for marine, aviation, NOAA weather, MURS, GMRS, FRS, and just about any radio you might encounter in an emergency.

This 98-page guidebook is available for download at:
http://www.publicsafetytools.info/nifog_info/downloads/NIFOG_1_4_J_rotated_for_viewing.pdf

CTARC Elections in November



November 5th will be the annual CTARC General Membership Meeting where the club will elect its officers to carry it through the coming year. This is an important meeting and one in which all of CTARC's members should try and attend.

The Nomination Committee, consisting of Gil Rymer-W5GLR, Jan Gregg-W5GNK and Terry Evans-KF5OHR have presented a slate of candidates to be voted on. Despite the slate presented, nominations from the floor and or write-in candidates for any of the offices to be voted on are welcome – maybe you might consider a position to let your decision making voice in the club be heard!

At present, the following positions and applicable candidates are as follows:

President: Priscilla Beauregard-KE5UES vs. Gerald Richmond-N5ZXJ

Vice President: Robert Shoemaker-KE5WVC (unopposed)

Secretary: Rick Murray-K6WXA (unopposed)

Treasurer: Kenneth Watkins-KE5ISN (unopposed)

Board Director: Teddy Bruski-KE5UET vs. Joe Dorn-W5VEX

Later, towards the middle of the month, each of you will be receiving an email notification of these elections along with a ballot in which you can print-out, make your selection and return via mail or bring with you to the meeting.



Again, this slate is not written-in-stone and write-in candidates as well as nominations from the floor will be accepted and voted on. Newly elected / re-elected individuals to CTARC's Board of Directors will begin their duties effective January 1st, 2014.

Vote - Get involved and let your voice be heard!

Radio Sets for Automobiles - Promise of Near Future

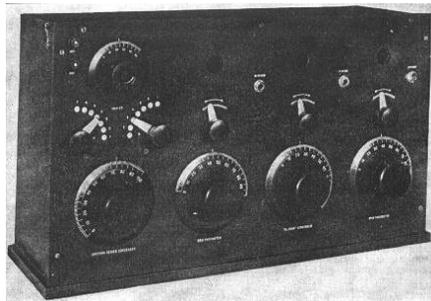
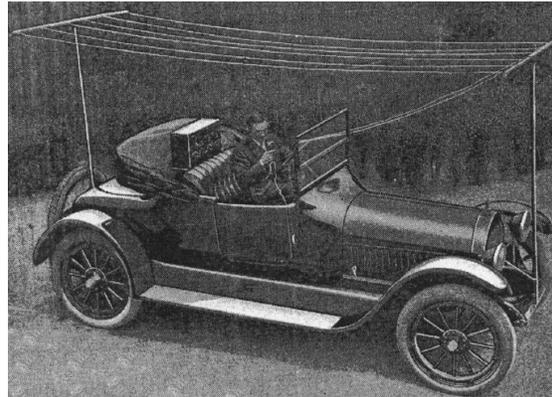
Popular Mechanics, October 1919

It is becoming quite apparent that practical and useful radio equipment for automobiles is not far away. Experimenters have been working with the problem for years, with some measure of success, but generally embarrassed by the awkwardness of the necessary antenna.

In a set of recent design, which talks 15 to 20 miles and telegraphs 40, the antenna masts, like miniature telephone poles, are carried on hooks under the running board and only installed at front and rear of the car, when emergency demands their use. The talking equipment, of the latest vacuum tube type, has been reduced to a practical degree of compactness.

All the radio equipment is carried without crowding, in odd corners of the automobile.

The antenna masts and wires are folded under the running boards when not in use. By using the telephone transmitter of the automobile radio set as a telegraphic sender, ranges up to 40 miles are possible with the portable antenna.



The complete transmitter and receiver combined

The transmitter consisted of a panel and cabinet assembly which included the vacuum tube mounting, chock coils, oscillating circuits and modulating system. Meters were provided for indicating the filament current, modulator and oscillator tube space currents and the radiated energy. Filament current was obtained from a storage battery located in back of the seat, and this battery supplied the current for operating a small

dynamotor, as well as the vacuum tubes in the receiver.

The receiver consisted of a variometer type of regenerative receiver with two stages of audio frequency amplification and for this particular purpose was altered so that the antenna was directly cut in the grid circuit of the detector tube. This was necessary owing to the fact that the receiver was designed for use with the usual amateur antenna, and the wavelength obtained with the car was therefore below the requirement.

Owing to the fact that all the tests were conducted on a laboratory basis, it is not possible at this time to furnish data regarding the distances covered but it is probably sufficient to say that the tests have shown that the auto-radio-phone is entirely practical and the near future should bring extensive developments along these lines.

