

# *The eKilo - What*

Monthly Newsletter of the San Angelo Amateur Radio Club

October 2013



## PRESIDENT'S MESSAGE

Look for the Presidents Message in the next issue. *6Ed.*

The Anniversary Party took the place of the last meeting and so there are no Meeting Minutes. - *Ed.*

## Club News

**SAARC 89th ANNIVERSARY and TAILGATE PARTY A SUCCESS!**





Club News





Club News

Many thanks to Mr. Gregorio Gutierrez and the staff of Conexion Hispania for producing and publishing this piece which appeared just prior to the Party. Also thanks to Hector/KC5BRB for his help and support. Ed.



### Radio Amateur ayudando en las necesidades

The challenge is always to get younger people interested and involved.

Entre ellos están Peter y Cathy Norris junto con Héctor Guerrero del Servicio Meteorológico Nacional (NWS por sus siglas en inglés National Weather Service)

de radio. NWS informará a la especulación de que

Conexión San Angelo Traducción

San Angelo, Texas. El Club Amateur de San Angelo (SAARC) fundado en 1924 tiene el día de hoy aproximadamente 30 miembros activos. Entre ellos están

### able to Fill Need

cell phone communication useless.

SAARC will celebrate its 89<sup>th</sup> "birthday" October 12<sup>th</sup> from 9am to 4pm at its clubhouse, 5513 Stewart Lane (Mathis Field). The event will include the first annual tailgate and swap meet. Operators are invited to bring gear or just browse. The public is invited to attend and learn more about emergency services provided by amateur radio operators. There is no admission charge or tailgate fee. For more information contact Peter Norris/KJ at (325) 617-4387

Shirley's Collision  
Glenn & Linda Shirley

- Family Owned since 1966
- Insurance work welcome
- Hail work, P.D.R.

Monday - Friday 8 am - 5:30 pm  
Phone (325) 653-6357  
Fax (325) 655-3612  
crash\_gal@suddenlink.net

Se habla Español  
1020 East 19th Street  
San Angelo, TX 76901

This appeared in the Standard Times on Friday and Saturday prior to the Party.

### Calendar

**SATURDAY**

- 6 a.m. - ASU Homecoming: 5K & 1-Mile Fun Run, LeGrand Alumni & Visitors Center, 1620 University Ave.
- 8 a.m. - Grape Creek Pumpkin Patch, 7706 FM Road 2288
- 8 a.m. - Art-ober-fest, downtown San Angelo, South Chadbourne Street and Concho Avenue parking lot
- 8:30 a.m. - 17th annual House of Faith Golf Tournament, 2305 Pulliam St.
- 9 a.m. - San Angelo Amateur Radio Club's 89th anniversary party, SAARC Clubhouse, 5513 Stewart Lane
- 9 a.m. - Concho Valley Telephone Pioneers Club Retirees Reunion, McNease Convention Center, 500 Rio Concho Drive
- 9 a.m. - Music by John Carl Esque, Sealy Flats, 208 S.
- PAWS pet adoption / Sunset Mall, 4001 St. Drive
- Noon - Teen film set "The Mask of Zorro", Stephens Central Lib, 33 W. Beauregard Ave.
- 1 p.m. - Kids World, Mail, 4001 Sunset Dr.
- 1 p.m. - "Downtown Live" radio broadcast, 208 S. Oakes St.
- 1:30 p.m. - ASU Homecoming: campus tours, Houston Harte University Center, 19 Rosemont Drive
- 2 p.m. - Volleyball: A Tarleton State University Junell Center, 2235 S. Jackson St.
- 2 p.m. - Jordan Petrella benefit, Family PowerSports, 1610 W. Houston Harte Express
- 2 p.m. - Party in Pink Zumbathon charity event, Central High School, 100 Cottonwood St.
- 9 a.m. - Music by John Carl Esque, Sealy Flats, 208 S.
- 2 p.m., 7:30 p.m. - "Y"

### Scanner Jack's Corner



Here is the last of the military operation frequencies.am mode

140.600, 142.575, 238.100, 238.150, 241.650, 243.600, 244.300, 250.200,  
251.800, 301.800, 304.100, 304.300, 304.800, 305.700, 306.000, 306.500,  
307.300, 307.500, 308.400, 308.700, 308.800, 308.900, 310.000, 310.200  
311.000, 311.500, 311.800, 312.100, 312.200, 314.200, 314.400, 314.900, 317.950, 319.100,  
319.400, 319.500, 320.000, 320.525, 321.000, 321.300, 321.500, 323.000, 324.650, 327.800,  
333.300, 337.750, 338.300, 347.000, 349.400, 349.900, 354.050, 361.000, 363.500, 372.200,  
372.300, 372.800, 379.400, 383.200

From **SCANNER JACK ROBERTS KB5TMY**

## OF INTEREST

### Anderson Power Pole

Anderson Power Pole connectors have become the standard power connector for AREA, RACES etc. The radios at the Weather Bureau, EOC and clubhouse have Anderson Power Pole connectors. The big advantage is if a radio fails at the Weather Bureau we can substitute a radio from a personal vehicle and carry on.

I have a supply of housings (red & Black), pins (15, 30, 45amp), and power wire (#16, #14, #12, #10). I have a kit with the above parts and the tools (including the \$50 crimper) to install the connectors. I will bring the kit to a club meeting, or you can R to meet me at my hanger at Ducote Air Park to install Anderson Power Pole connectors. The cost for parts is \$1.00 per cable end for parts.

Bob Heiser W7IKT - 325-374-2720, w7ikt@fly-web.us

Jerry Gentry wrote:

I have written an easy to use ham radio logging program called *Microlog*. This is not a contest or DX logger. It does basic logging and is easy to use. I write it for Windows but I am thinking about an Apple version. Let me know if you use an Apple computer and want the Apple version.

You can download a free version from [www.wa0h.com](http://www.wa0h.com).

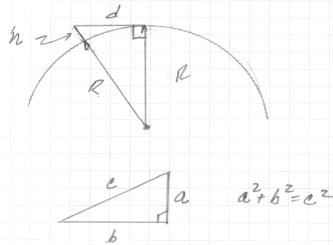
JerryWA0H@sbcglobal.net

OPERATING

Eastern Tom Green County SET Data Analysis

The earth is almost a perfect sphere. If the earth is cut through the poles along lines of longitude or through the equator, almost identical halves are produced. Examining the halves, the cut has produced almost perfect circles. Imagine standing on a circle as in Figure 1. The horizon is seen in every direction. This is especially evident standing on the seashore looking out to sea or in the Staked Plains of the Texas panhandle. Looking at the horizon, nothing can be seen beyond the horizon unless it stands higher than the horizon. Looking to the sea, the tip of the mast of a sailboat is seen first as the ship approaches, then the sails, and finally the hull.

The distance to the horizon, d, may be determined from the equation for the sides of a triangle ( $a^2 + b^2 = c^2$ ), as seen in Figure 2. Here  $a = d$ ,  $b = R$ , and  $c = R + h$ . Plugging in these values for Figure 2.



of

$$d = (3h/2)^{1/2}$$

which is valid to a high degree accuracy. This equation applies to a smooth, spherical earth.

Jiggling the equation to find h:

$$h = (2/3)d^2$$

The path of radio waves, however, is bent when close to the earth, as Figure 3. To make the LOS path a straight line, the radius (R) is adjusted by including a factor K in the 3/2 equation:

$$d = (3Kh/2)^{1/2} \text{ and } h = 2d^2/3K$$

Data was collected on September 18, 2013, to verify the ability to communicate in the simplex mode with the Emergency Operations Center (EOC) and various locations in Eastern TGC on 146.43 MHz. It was shown in the August issue of the eKilo-What that 1 mW (0 dBm) was theoretically sufficient to communicate 30 miles with about 20 dB S/N using a typical HT receiver in free space conditions. The following compares some of the test results with predicted propagation for the communication path.

K is the ratio of the effective (radio) earth radius to the true earth radius. K is dependent on atmospheric conditions and can range in value from 0.6 to 5.0 but 1.33 is typically used in temperate climates. Plugging in 1.33 for K gives:

$$d = (2h)^{1/2} \text{ and } h = d^2/2.$$

These two simple equations can be used to give a clear line of sight (LOS) for the distance to the radio horizon if the antenna height is known, or what the antenna height must be if the distance to the horizon is known to give a clear LOS.

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.Figure 4 shows a K = 1.33 curve along with three locations of interest<sup>1</sup>. For this value of K the h is simply  $d^2/2$ . Note that the curve is labeled 1900ø which is the elevation of the EOC ground level. The antenna, mounted on the EOC

Figure 1.

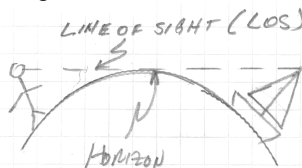
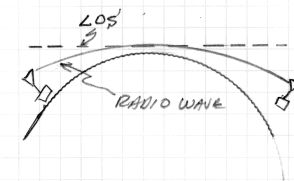


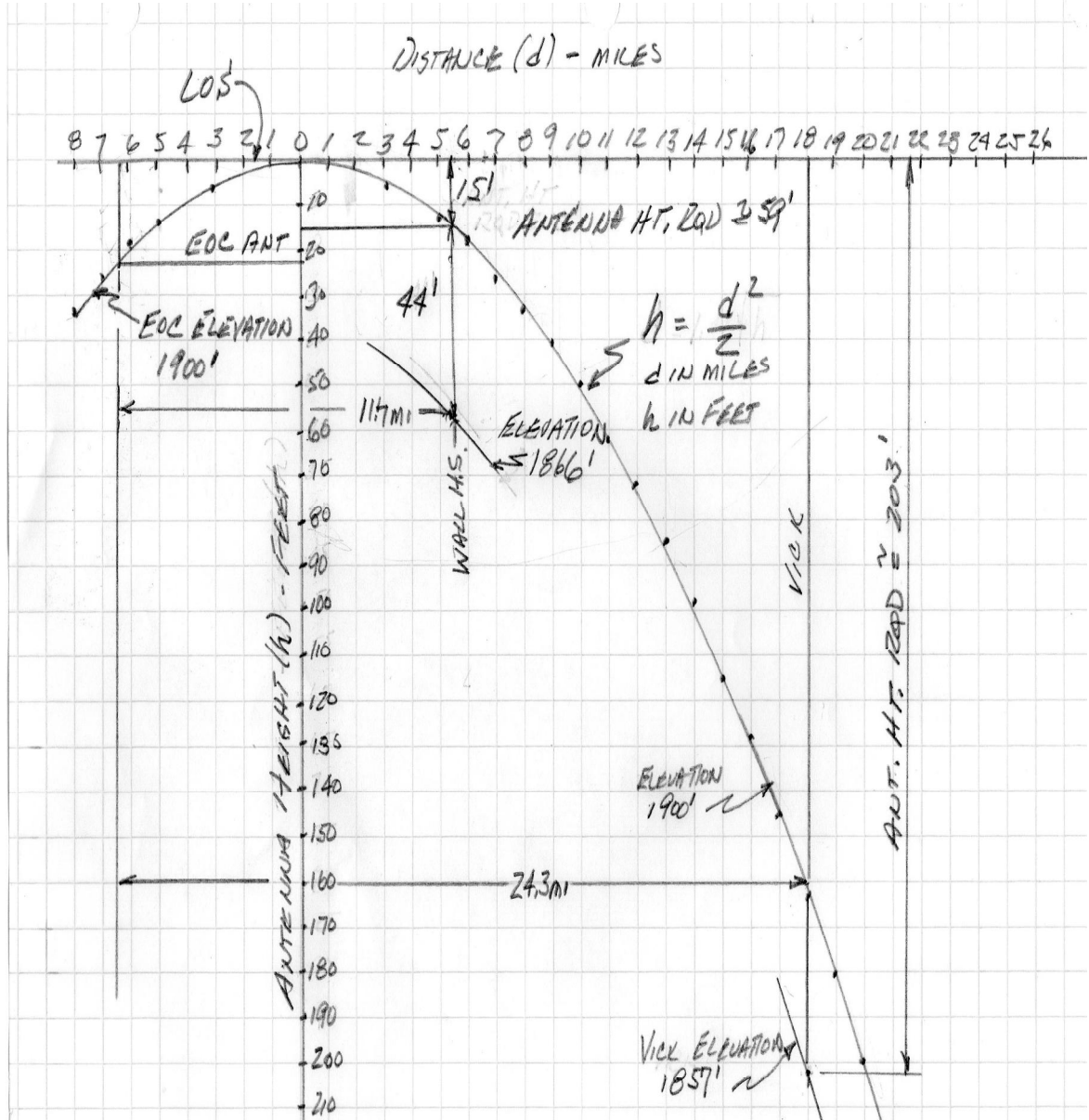
Figure 3.





**OPERATING**

Figure 4. Radio LOS for K = 1.33 and antenna height requirements for three locations.



Note:

Distance: Distance in miles to the left of 0 is to the EOC; distance to right is distance to another antenna location.

LOS: Radio Line Of Sight, not optical line of sight.

h: Height antenna must be in radio LOS from reference elevation.

Antenna height: Distance from elevation to line to the radio LOS. Wall HS is at 18660 so total distance is distance to reach reference elevation plus reference elevation to radio LOS.

The horizontal line is a flat earth.

## OPERATING

roof, is estimated to be a little over 200' above the ground. The three locations with distance and azimuth are:

Location	Distance	Azimuth
Wall HS	11.7 miles	86°
Vick	24.3 miles	93°
Eola	24.6 miles	84°

At all locations closer than Wall HS, 5 Watts were sufficient when using a HT and mag-mount antenna. At Wall HS the elevation is 1866' so the antenna height was about 59' less than that needed for a clear LOS to the EOC as shown on the chart. At that location 30 Watts was necessary to reach the EOC.

Moving out closer to the TGC border, the antenna must be raised to the LOS. Communication was not possible at Vick, even using an elevated J-pole antenna and 50 W. Note the elevation of Vick is 1857' adding to the antenna height requirement. But at Eola, at 1806' using the J-pole and 50W, a readable signal was obtained! (The reader may wish to locate Eola on the figure.)

Figure 5 shows the curves for K values of 0.6, 1.33 and 5. Notice the change in h for a given path with changes in K. This kind of atmospheric variation effect on the path can explain changes in signal strength over time for some fixed installations. A "worst case" design tries to maintain reliable communication for all conditions.

Speculation and conjecture, otherwise known as guessing, are necessary to reconcile the test results. First, an airport building seems to be in the LOS and is higher than the EOC for all three locations. Other nearby buildings may act as reflectors as well and will reflect the signals differently from the three locations which are at slightly different bearings. A recent trip through Eola and Vick did not reveal visible reflectors that might direct the signal to and from the EOC. Therefore, it seems if enough power is available, the signal can reach the intended destination.

For higher transmitter powers, another possibility is tropospheric ducting. For a receiver sensitivity of -150 dBW and a transmitter power of +17dBW (50 W), the path loss is 167 dB which is comparable to the numbers found in the ARRL *Antenna Handbook* in the Propagation chapter for a 30 mile path. As this propagation mode may be intermittent, it is not considered appropriate for emergency communications.

When passing through Eola did I hear the theme from the *X-Files*, or was it *The Twilight Zone* music I heard? One explanation is Vick is in a "dead zone". Moving some number of wavelengths from the site used might result in a path to the EOC. Moving the site in Eola likewise might cause the path to be lost. Dead zones are not uncommon when operating on 2m. It will be interesting to evaluate the remaining test results when these are available.<sup>2</sup>

Even with the results obtained, the template is useful and if the LOS antenna elevations, along with the other considerations mentioned in the previous article, are observed, reliable communication can be achieved.

David/W5DLL and Matt/W5MAT contributed significantly to this piece.

Questions or comments? Contact Pete/KJ5SS, 325-617-4387 or [norrispeter26@gmail.com](mailto:norrispeter26@gmail.com)

1. The curve of the equation  $h = d^2/2$ , a parabola, would normally be plotted in quadrants 1 and 4. To better represent the situation depicted in Figures 2 and 3, the parabola is rotated about the x-axis so the horizon is at 0 elevation and the height to the line of sight is shown increasing downward on the y-axis but as a positive number.

2. My experience with reflections is limited to a few designs with commercial reflectors to direct a microwave signal around obstructions. If readers have experience with buildings, water tanks, billboards, etc., as reflectors, or the many path loss equations in the literature for urban, suburban, etc., locations, please share with us. Experiences with tropospheric communications are also welcome as I have no operating experience in this area.

OPERATING

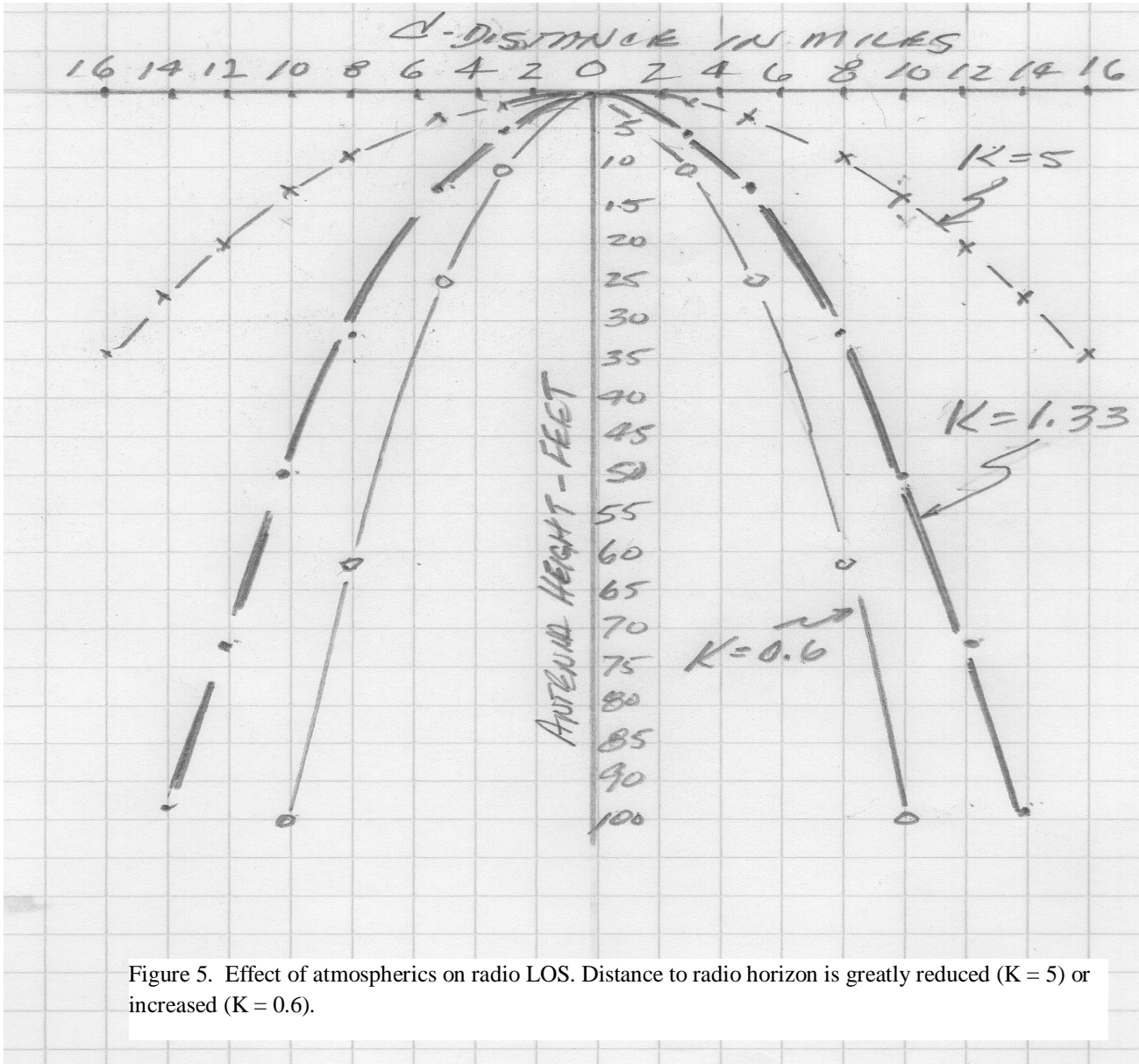


Figure 5. Effect of atmospherics on radio LOS. Distance to radio horizon is greatly reduced ( $K = 5$ ) or increased ( $K = 0.6$ ).

Note:

A spherical earth curve ( $K = 1$ ) lies between  $K = 0.6$  and  $K = 1.33$ .

The horizontal line is a flat earth.



# Hamfests

## BACK TO BELTON

This time we decided to take the really black highways to Belton. Starting on 785 and switching to 584, we arrived in Goldthwaite in time for lunch. This route is a very low traffic route and we enjoyed looking at the fields and seeing how the cotton crops were coming along. Although this was a low stress, low traffic drive, there are no services to speak of from San Angelo to Goldthwaite. After a club sandwich at the Wagon Wheel Restaurant, we were off to Lampasas to see the Hancock Park known for therapeutic springs. This park, owned by the city, is also known for midnight swims!

Arriving in Belton in the early afternoon, we checked into the River Forest Inn, an independently owned motel, as we have stayed there before. At about 4:00, I headed for the Hamfest. The intersection of Auction Barn and I-35 is still under construction but looked close to completion. Working the tailgaters, I had every item on my wish list by 6:00, with the exception of one unimportant item which is available locally. Several other items were bought, as they were bargains. There were many other items that were tempting but self restraint prevailed. Belton has never been a disappointment.

Saturday morning we debated going back to the Hamfest or returning directly to San Angelo. After a great breakfast at the motel restaurant with a delightful view of Live Oaks on the riparian of the Leon River, we decided to go to the Hamfest for a few more pictures. We met Gary/W5ETJ and visited for a few minutes before leaving.

We had noticed gas was \$2.91 a gallon in Lampasas and had wanted to visit one of several pecan stores described in *Texas Highways* in San Saba, the pecan capitol of the world. So back to Lampasas it was.

On the way to San Saba we heard Colorado Bend State Park was worth seeing so we took 580 to the town of Bend. There we took County Road 442 about 4 miles to the entrance of the park. After another 6 miles on a dusty, dirt road we arrived at Park Headquarters. The Park is a ðprimitiveö. Enough said.

In San Saba, we stopped at the courthouse square and had BBQ sandwiches for lunch. The proceeds went to the San Saba High School Cheerleadersö Scholarship Fund. The Great San Saba River Pecan Company was chosen as the place to shop as they advertise a ðPecan Pie in a Jarö. The store was found off 190, west of town in a pecan grove. I have no idea how many calories we bought but the stuff bought was, and still is, wonderful!

We continued on 190 to Brady, as there is no better way, and on into San Angelo arriving in time for dinner.ö Pete/KJ5SS



**Free**

I have the following free items for anyone interested:

- 1: diplexer set for 1090 MHz with 5 pole tuned cavity filter on transmit and 7 pole tuned cavity on receive. Tunable, should tune to 1200 MHz or 900 MHz with a screwdriver;
- 2: signal monitor probe 2 ports 30 db attenuation, about 6 n connectors appear to be silver plated for 1080 MHz;
- 3: 2 meter Yagi 100 feet long on two pieces of 200 pound nylon line. about 44 elements and 19 db gain. This antenna is really ugly but it works. I made it out of aluminum ground wire so the elements are flexible and sort of droop a lot.

James Fisher -kd6iwd@gmail.com

**For Sale****NEW ITEMS**

BETSY JAMAL [betsyjamal@gmail.com](mailto:betsyjamal@gmail.com)

I am the daughter of Marvin Strong (W5NUS) who lived in Lovington, NM. He passed away in early September, and I am charged with the responsibility of selling his ham gear. My Dad wasn't "on" for several years but he did have the following items:

Lodestar Signal Generator SB-4160B

Drake Model T-4xc Transmitter

Drake Model MS-4 Speaker

Drake Model DC-4 Mobile Power Supply

Drake TV-3300-LP Low Pass Filter

Tram 1180 Antenna 144-148/430-450 Mhz

Very old Western Electric Key

Books for the equipment

I am located in West Houston in the Westheimer/Kirkwood area. If you are interested in any of this equipment or know someone who would be, please call me at [281-844-5709](tel:281-844-5709) (cell phone) to arrange a time to view it.

Betsy Jamal [281-844-5709](tel:281-844-5709) (cell)



## For Sale

Used Yaesu G-800SA rotor and controller. Purchased from estate sale and stored for several years. Clearing shack. As is (I was told it worked before removal from tower). I replaced bolts on rotor top and put new brace on it). As is. \$300 from WB5ZAM [325-340-6102](tel:325-340-6102)



Coleman Powermate Generator, 6,250 Watt, excellent condition. Used one time for Field Day (approximately 36 hours). With wheel kit \$400.00; Kenwood 2000 \$1200.00; MFJ-4225 NV \$75.00; 2x IC-207H-\$200.00; 2x 2M-440 mobile antennas - Call; 2x 2M-440 base station antennas \$ Call. Contact Joe Kent/W5UI at [joew5ui@gmail.com](mailto:joew5ui@gmail.com) or (325) 896-2038. 18HT Hy-Tower for \$150. Rohn 60 tower with winch, \$250. Both are located in Christoval. Grady, K5EP, [325-716-0450](tel:325-716-0450)

60 foot Rohn tower in 6 sections, base plate, 3 Rohn galvanized anchors w/equalizer plates - \$360.00 for the package.

Gin pole - \$175.00

Climbing belt - \$75.00

John Marshall/KC5FMX , 655-5930, [jmarsh1014@aol.com](mailto:jmarsh1014@aol.com)

## Upcoming Hamfests/Conventions

Date	Event	Location	Information
11/2/2013	Coastal Bend Hamfest	Aransas Pass, TX	<a href="http://n5crp.org/">http://n5crp.org/</a>
11/09/2013	NC Tech 2013	Azle, TX	<a href="http://www.wc5c.org">http://www.wc5c.org</a>
1/11/2014	Amateur Radio Fiesta	Schertz, TX	<a href="http://w5sc.org">http://w5sc.org</a>
1/17/2014	North Texas Section Convention (Cowtown Hamfest)	Ft. Worth, TX	<a href="http://www.cowtownhamfest.org">http://www.cowtownhamfest.org</a>
3/1/2014	25th Elk City Hamfest	Elk City, OK	<a href="mailto:n5neb1988@gmail.com">n5neb1988@gmail.com</a>
3/8/2014	Williamson County ARC Hamfest	Georgetown, TX	<a href="http://wcarc.com">http://wcarc.com</a>

Hamfests are listed for all Texas, and as far into New Mexico and Oklahoma as the most distant point in Texas from San Angelo. -Ed.

## RECENT PROGRAMS

<i>Mar '13</i>	Tom Dufresne/WB5MTR - High Voltage Safety
<i>Apr '13</i>	Repeater Relocation Discussion
<i>May '13</i>	Field Day Planning
<i>Jun '13</i>	Field Day Planning
<i>Jul '13</i>	Field Day Planning
<i>Aug '13</i>	Buddy/KD5SBE6 Field Day 10 Year Results
<i>Sep '13</i>	Hughbert/KC5NPC-San Angelo Nets

## HF Nets of Note de Gary Chaffin/W5ETJ

NET	DAYS	LOCAL TIMES	DIAL
Concho Valley Ragchew	M-T-W-T-F	1800 - 1900	3825
Texas Traffic Net	S-M-T-W-T-F-S	0830 - 0930	7285
7290 Traffic Net	M-T-W-T-F-S	1000 - 1200	7290
7290 Traffic Net	M-T-W-T-F	1300 - 1400	7290
Texas Traffic Net	S-M-T-W-T-F-S	1830 - 1930	3873
Central Gulf Coast Hurricane Net	S-M-T-W-T-F-S	1900 - 2000	3935
Texas ARES Net	Monday	1930 - 2000	3873
Big Bend Emergency Net	Sunday	0830 - 0930	3922
Texas Trader's Net	Sunday	0900 - 1000	7245

### Emergency Communications

de Mike Dominy/KD5URW - Emergency Coordinator

#### Tom Green County ARES Net

Meets every Monday night at 8:30 CST (2030 hr) on the 444.350 MHz (PL 162.2) (N5SVK). The net can also be reached by EchoLink at WB5VRM-R or Node 412402. Other frequencies are announced on the Concho Valley Net at 8:00 pm.

### ARES Net Report

Date	Net Ctrl	Check-ins	Time	Freq
9/23	W5MAT	7	15	147.300
9/30	W5MAT	13	15	147.300
10/7	KD5URW	9	22	148.52 Simplex
10/21	KD5URW	10	30	147.300
10/28	KD5URW	11	25	147.300



**Concho Valley  
Two Meter Net**

<u>Date</u>	<u>NCS</u>	<u>Check-ins</u>	<u>Duration</u>
9/16	KB5FNK	13	9 min
9/23	KB5FNK	12	10 min
9/30	KB5FNK	17	11 min
10/28	KB5FNK	17	10 min

This net meets every Monday night at 8 p.m. on the club's 146.94 repeater. All amateurs licensed to operate on that frequency are invited to participate.

Concho Valley Open FM Repeaters			
2 Meter		70 centimeter	
145.27-	San Angelo PL 88.5	441.750+	San Angelo PL 162.2
or PL 100.0 for local transmit		442.250+	San Angelo PL 162.2
146.72-	Eldorado PL 100.0	444.225+	Robert Lee PL 162.2
146.88-	San Angelo PL 88.5	444.350+	San Angelo PL 162.2 (Echo-Link Node)
146.94-	San Angelo PL 103.5	444.875+	Brady PL 162.2 Linked to 444.225+
147.06+	San Angelo PL 103.5		
147.34+	Robert Lee PL 88.5	147.30+	San Angelo PL 88.5
146.90-	Brady PL 162.2		
147.30+	Brady PL 114.8 (Echo-Link Node)		

**Membership Renewal**

Membership renewals are due in January 2013. Prices are as follows:

- Regular memberships: \$20
- Each additional family member: \$5
- Seniors (age 65+) and Juniors (under age 19): \$10



**P.O. Box 4002  
San Angelo, TX 76902-4002**

Get all the latest club news  
on the World Wide Web at [www.w5qx.org](http://www.w5qx.org)

**2013 SAARC Officers:**

President - Tom Austin/K4OTM  
 Vice President - Joe Kent/W5UI  
 Secretary/Treasurer - Bob Freeman/KD5PIX  
 Emergency Coordinator - Mike Dominy/KD5URW  
 Activities Manager - Hughbert Robinson/KC5NPC  
 Grounds Chairman - Marcus OQuin/KF5GKC  
 W5QX Trustee - Charlie Campbell/KC5EZZ



**Next Meeting: 11/14//2013**  
**PROGRAM: TBD**  
*Mathis Field Clubhouse*