AARCOVER

Keeping Austin Wireless
for Over 94 Years!

Bulletin of Austin Amateur Radio Clubs **ISSN 1067-0262**

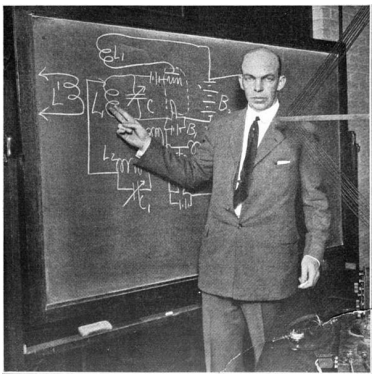
April 2014 **Issue 4-2014**

The Development of Very High Frequency Radio

By Crockett Grabbe, KF5LTT

Amateur Radio & the Depression

In the Radio Act of 1927, amateur radio lost 38% of its overall frequencies, despite efforts of the ARRL & the IARU. However, it kept 160, 80, 40, 20, & 5 meters, and also gained 10 meters. Amateur radio grew, & d uring the Depression grew the fastest, from nearly 17,000 to nearly 47,000 amateurs. The Communications Act of 1934 divided amateurs up into Class A, Class B, & Class C. 17 years later they would becomes the Advanced Class, the General Class & the Conditional Class.



Edwin H. Armstrong

The Cairo Conference in 1938 took away 40 meters from the amateurs, but the FCC added 2 new "UHF" bands (as frequencies above 25 MHz were then called) -- 2.5 and 1.25 meters (112 MHz & 224 MHz). It had become known ever since Marconi had found it unworkable to transmit those high frequencies across the Atlantic that that these high frequencies were not as useful for distance communication. However, means of making them more useful had already been invented.

Development of FM Radio

Radio pioneer Engineer Edwin H. Armstrong received a patent on frequency

(Continued on page 4)

Periodic Events

Sun	7:00 p.m.	Travis ARES net	147.36 MHz + (131.8)
Sun	8:00 p.m.	Travis ARES Packet	145.73 MHz -
Sun	8:00 p.m.	Williamson ARES net	146.64 MHz - (162.2)
Sun	9:00 p.m.	ARO Swapnet	146.94 MHz -
Sun	(After Swapnet)	Newsline	146.94 MHz -
Mon.	7:30 p.m.	STX ARES Net	3.873 MHz
Tues.	7:30 p.m.	Hays ARES net	147.100 +
Tues.	8:00 p.m.	Bastrop ARES Net	443.750 + (114.8)
Wed	11:30 a.m.	Ham Social Luncheon, Jim's	146.94 MHz -
Thu	9:00 p.m.	2m SSB Net	144.250 (USB)
Thu	11:00 a.m.	Lunch, Pokey Joe's 183&Great Hills	444.1 MHz+
Fri	8:00 p.m.	6m SSB Net	50.230(texasvhf.org/)
Sat	7:00 - 8:30a.m.	Breakfast @ Waterloo Ice House	444.1 MHz +
Sat	9:00 a.m.	Chapter 67 QCWA QSO Net.	3.920 MHz LSB
Daily	6:30 p.m.	Central Texas Traffic Net	147.14MHz+

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Ham Radio Exams Results

The following are the results of the ARRL VE Test Session held on March 1st at Bethany United Methodist Church:

Technician Class Licenses Processed
Robert T. Hannabery KG5AQI
Joe E. Parsons KG5AQK
Matthew W. Turner KG5AQJ

General Class License Processed
Salim G. Salem KG5AGE

Extra Class Licenses Processed
Jeffrey D. Fletcher AF5PI
Walter R. Carver AF5PG
Todd L. Tredeau KF5RXQ

Examiners Participating in this Test Session
Dave Anderton AE5XY
Larry Gunter WB5BEK
Jim Kinter K5KTF
Joe Makeever W5HS
Tom Nevue W2MN
Joe Thiel N5SMN

Next ARRL VE Test Sessions
April 5th - Bethany United Methodist Church, Disciple Bldg. Room 203/204
May 3rd - Bethany United Methodist Church, Disciple Bldg. Room 203/204

TNX ES 73 DE W5HS
Joe
3-15-14
The South Austin W5YI VE team heartily congratulates the following people who earned new or upgraded amateur radio licenses at our March 15th session:

Extra Class
Timothy Lauer KK4VVA

General Class
William F. Mills (NEW)

Technician Class
Kirk Gossage (NEW)
Bobby Kent, Jr. (NEW)
Charles Mathes (NEW)
Julian Rifera-Cruz (NEW)

Our administering volunteer examiners were:
Craig Bean, AC5KW
Billy Duke, AF5JD
Scott Bryan, W5TS
Gary Popp, AE5JR
David Glosson, N5DPG

Our next two amateur radio exam sessions will start at
2 PM on April 19th and May 17th in
Fleck Hall, room 118 on the campus of St. Edward's University.
All sessions are walk-in and the exam fee is $14.

For additional information regarding our amateur radio examination sessions, please contact Craig, AC5KW at (512) 474-6443 or by e-mail to hamradioexams@hotmail.com or visit our web page at
http://texashams.org/w5yi-austin/

Austin Amateur Radio Club, Inc., PO BOX 4739, AUSTIN TX 78765-4739, Web site: http://www.austinhams.org

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TC ARES PIO	Steven Polunsky	W5SMP		tcares-pio@gmail.net

Please contact a club officer, attend a meeting, mail us to join the organization, you can also join or renew online.
The Austin Amateur Radio Club, Inc. (AARC) has annual membership dues of $20.00 per person or $30.00 per family. AARC maintains the following repeaters:

FREQUENCY	AUTOPATCH	USE
146.780	No	
146.880	Yes	General
146.940 107.2 PL Tone	No	Most popular, WX, Swapnet & Newsline
224.800	No	
444.100	No	
440.650 +5	No	70cm D-Star Repeater [W5KA]
146.480/+1.0	No	2m D-Star Repeater [W5KA C]
1293.200/-20	No	23cm D-Star Repeater[W5KA A]
1248.200	No	23cm D-Star DD (data, simp./reversible)[W5KA A]

Persons using the repeaters are asked to join the club to help support these valuable resources. To use the autopatch, announce your call sign, press * and dial the phone number then release the PTT. When finished, press # to hang up the phone. Dial 911 (no * needed) for emergency services.

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Members and other readers are encouraged to submit material for publication. Call Mitch London, if mailed submissions are
required. Electronic files are encouraged! Submissions may be edited for publication. **Deadline is the 22nd of the month.**

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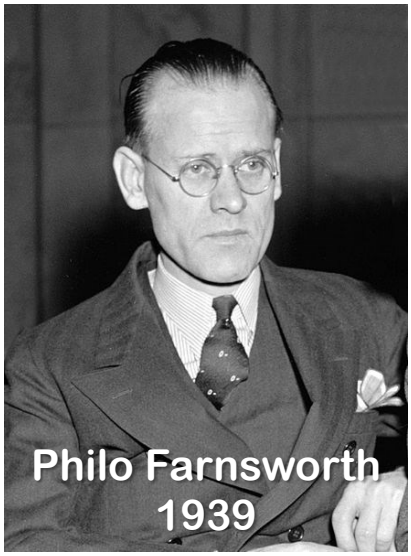
For Changes in your ADDRESS, PHONE NUMBER or CALL SIGN:
See Jay Hoffman, KA5OST ka5ost @ arrl.net
Jay handles all changes for membership information .

(Continued from page 1)
modulation (FM) in 1933 that he had submitted 3 years before. Armstrong is generally considered the inventor of the superheterodyne receiver, although his patent for it awarded to him in 1918 was disputed and awarded instead to Levy of France in 1928. Armstrong explored FM receivers, and finally convinced other engineers of the advantages of FM broadcasting on the very high frequency (now called VHF) band. FM radio was demonstrated to the FCC in 1936, & they granted a permit for the 1st station (W1XOJ) in 1937 -- an experimental station created by Armstrong. In 1940 by the FCC set apart 35 channels on the VHF band for commercial FM broadcasting and 5 for non-commercial educational use, all in 42 to 50 MHz band. The 1st modern commercial station W47NV (becoming WSM-FM) began in Nashville, TN in 1941.

These led to FM transmissions in the US in the 1940s. The advantages of FM over AM are: (1) It makes room for many more stations in the VHF band. (2) It gives improved signal-to-noise ratios in many areas, allowing for a much wider dynamic range of sound. (3) FM receivers are relatively insensitive to impulsive electromagnetic interference. (4) Only the loudest signals are normally heard, so there is much less interference. There are also disadvantages, such as the increased complexity of circuits needed for AM/FM reception. However, the advantages well outweighed them in the development of the VHF band.

When the US entered WWII all amateur activity was suspended. When WWII ended in 1945, a major battle ensued between ARRL (amateur radio), Armstrong (FM Broadcasting) & Sarnoff (RCA & NBC TV) over frequency allocations. The FCC moved FM commercial stations to the 88-108 MHz frequency band because of David Sarnoff, who desired disruption of FM development to further AM development, & moved the ham band to 144-148 MHz, allowing hams to come back on the air at 10m & 2m. Armstrong lost much of the investment he had made into FM stations in the previous band.

By late 1947 there were only 3,000 FM receivers in use for this new band, whereas there were 21,000 obsolete ones for the old band. FM did not really recover from this 1945 setback till the upsurge in hi-fidelity equipment in the late 1950's.



In addition, RCA claimed invention of FM radio & won its own patent on it, claiming to have developed it independently. Armstrong sued them for interference in 1948. After 6 years of costly patent fights with RCA & because of losses from Sarnoff's influence in altering the use of FM, he was destitute & distraught. Edwin Armstrong committed suicide in 1954. Philo Farnsworth, who had patented a television system, also went broke battling RCA, and the millions he had dreamed of from his invention went to RCA. Armstrong's wife continued the battle over FM with RCA, & in 1967 the Supreme Court ruled Armstrong (not RCA or any of the other companies accused of infringing his patent) indeed had invented FM.

Development of Oscillators

The superhet uses both amplifiers & oscillators, & it is worth noting a historical contribution of local significance. Popular oscillators had been developed in the 1920's, but George W. Pierce of Elgin, TX came up with a important innovation in them in the 1930's.

Pierce found that if an inductor in the Colpitt's oscillator is replaced by a quartz crystal, it becomes very stable because the crystal is piezoelectric (it deforms mechanically when a voltage is applied to it.). The resonance is precise, & one does not have to build an LC tank circuit to achieve the resonance frequency. A patent for this low-cost oscillator was issued to Pierce on October 18, 1938.

Development of Repeaters

Manual repeaters were built as early as 1932, & required a control operator to be present before they could be used. Several manual AM repeaters appeared in the 1950's. However, in the 1960's fully automatic repeaters for FM were developed by hams from revamping VHF commercial equipment. That equipment became available because the FCC narrowed the allowed commercial transceiver bandwidth, so the

(Continued on page 6)

Club Dues for 2014 are Due!

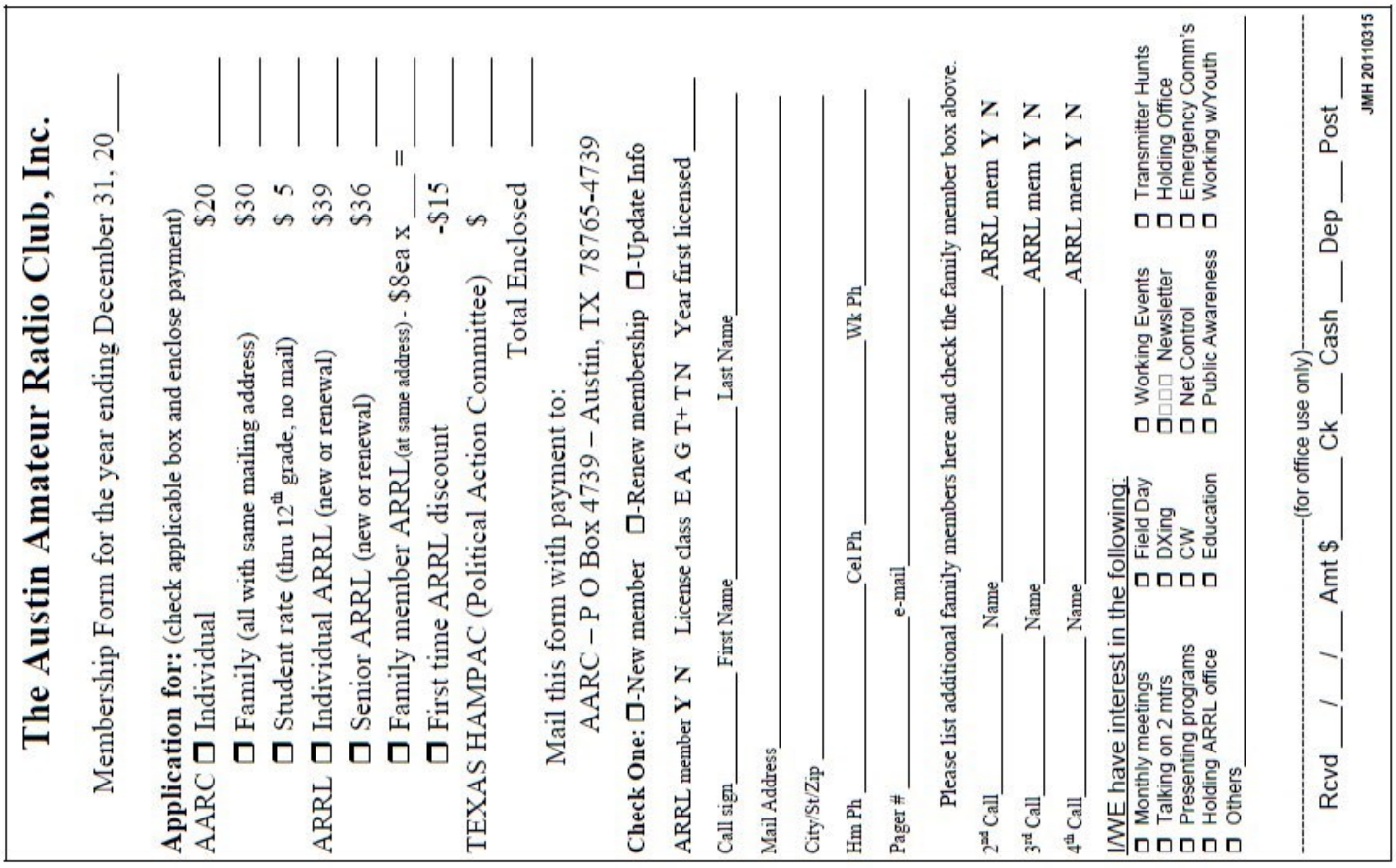
The new year is here and you might as well get a jump on things by paying your dues for the 2014 year.

Besides the admiration of your friends, you also get guilt free use of all club repeaters, access to club equipment, online help through the use of the Austin Hams Yahoo group and much more! Be the first on your block to be a renewing member in 2013!

You can pay online at- **http://www.austinhams.org/join.htm**

Just fill out the .pdf form and mail to:

The Austin Amateur Radio Club
PO Box 4739
Austin, TX 78765-4739



The Austin Amateur Radio Club, Inc.

Membership Form for the year ending December 31, 20___

Application for: (check applicable box and enclose payment)

AARC ☐ Individual $20 _____
☐ Family (all with same mailing address) $30 _____
☐ Student rate (thru 12th grade, no mail) $ 5 _____
ARRL ☐ Individual ARRL (new or renewal) $39 _____
☐ Senior ARRL (new or renewal) $36 _____
☐ Family member ARRL(at same address) - $8ea x ___ = _____
☐ First time ARRL discount -$15 _____
TEXAS HAMPAC (Political Action Committee) $ _____
Total Enclosed _____

Mail this form with payment to:
AARC – P O Box 4739 – Austin, TX 78765-4739

Check One: ☐-New member ☐-Renew membership ☐-Update Info

ARRL member Y N License class E A G T+ T N Year first licensed ____

Call sign _____ First Name _____ Last Name _____

Mail Address _____

City/St/Zip _____

Hm Ph _____ Cel Ph _____ Wk Ph _____

Pager # _____ e-mail _____

Please list additional family members here and check the family member box above.

2nd Call _____ Name _____ ARRL mem Y N

3rd Call _____ Name _____ ARRL mem Y N

4th Call _____ Name _____ ARRL mem Y N

I/WE have interest in the following:

☐ Monthly meetings ☐ Field Day ☐ Working Events ☐ Transmitter Hunts
☐ Talking on 2 mtrs ☐ DXing ☐ ☐☐☐ Newsletter ☐ Holding Office
☐ Presenting programs ☐ CW ☐ Net Control ☐ Emergency Comm's
☐ Holding ARRL office ☐ Education ☐ Public Awareness ☐ Working w/Youth
☐ Others _____

(for office use only)

Rcvd ___/___/___ Amt $_____ Ck ___ Cash ___ Dep ___ Post ___

JMH 20110315

(Continued from page 4)
wideband transceivers were no longer usable commercially. FM broadcasts & automatic repeaters were used extensively by hams in 1969 when Hurricane Camille devastated the Gulf Coast & Virginia. The growth of FM repeaters took off in the 1970's.

By 1970 the FCC proposed the 1st repeater rules, specifying the input & output frequencies allowed for repeaters on the 6m band, the 2m band, the 1.25m band, and the 70cm band. They did not allow automatic repeaters, but required a licensee in attendance to monitor all transmissions. However, rules like this were relaxed in the next few years, and in 1978 the FCC eliminated regulations against automatic repeaters. Austin has 9 repeaters, with 4 on the 2m band, 1 on the 1.25m band, 2 on the 70 cm band, and 2 on the 23cm band. One of the 2m repeaters has an autopatch on it for telephone access.

Role of Personal Computers in Radio

Radio was considerably changed as the personal computer developed and became available as an increasingly useful tool in it use. This was predicted in 1964 by David Sarnoff, the man who found RCA in 1919. From Sarnoff's biography, he said: "The computer will become the hub of a vast network of remote data stations and information banks feeding into the machine at a transmission rate of a billion or more bits of information a second. Laser channels will vastly increase both data capacity and the speeds with which it will be transmitted. Eventually, a global communications network handling voice, data and facsimile will instantly link man to machine--or machine to machine--by land, air, underwater, and space circuits. [The computer] will affect man's ways of thinking, his means of education, his relationship to his physical and social environment, and it will alter his ways of living... [Before the end of this century, these forces] will coalesce into what unquestionably will become the greatest adventure of the human mind."

Most of this prediction has happened, as the World-Wide Web has become the most used internet resource, with Email the 2nd most used of those resources. This has transformed the world & had its impact on the development of digital radio, including wave packets, the Automatic Position Reporting System (APRS) & the new HF digital mode PSK31.

2 computer-ham services are primarily 21st century developments. One is Hamsphere, which is a worldwide HF service using connections of all hams over its internet software. The other is Broadband-Hamnet services which are being developed at the upper UHF & even higher frequencies. The latter started with the labelling of High-Speed MultiMedia (HSMM)-MESH. It is a connection that is expanding across Texas & will soon hit nearby states.

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"Pierce Oscillator", online at http://en.wikipedia.org/wiki/Pierce_oscillator

Info for Hams from the Navy

Rick Herndon, K5FNI

The U.S. Navy has a series of 24 downloads that will certainly interest and educate hams, as it has their own personnel. Even if you know quite a bit about the topics covered, there are bound to be portions of some modules that have new information for your continuing education. They are available here: http://artikel-software.com/blog/2006/10/11/neets-navy-electrical-and-electronics-training-series/

The modules are:

Module 1, Introduction to Matter, Energy, and Direct Current, introduces the course with a short history of electricity and electronics and proceeds into the characteristics of matter, energy, and direct current (dc). It also describes some of the general safety precautions and first-aid procedures that should be common knowledge for a person working in the field of electricity. Related safety hints are located throughout the rest of the series, as well.

Module 2, Introduction to Alternating Current and Transformers, is an introduction to alternating current (ac) and transformers, including basic ac theory and fundamentals of electromagnetism, inductance, capacitance, impedance, and transformers.

Module 3, Introduction to Circuit Protection, Control, and Measurement, encompasses circuit breakers, fuses, and current limiters used in circuit protection, as well as the theory and use of meters as electrical measuring devices.

Module 4, Introduction to Electrical Conductors, Wiring Techniques, and Schematic Reading, presents conductor usage, insulation used as wire covering, splicing, termination of wiring, soldering, and reading electrical wiring diagrams.

Module 5, Introduction to Generators and Motors, is an introduction to generators and motors, and covers the uses of ac and dc generators and motors in the conversion of electrical and mechanical energies.

Module 6, Introduction to Electronic Emission, Tubes, and Power Supplies, ties the first five modules together in an introduction to vacuum tubes and vacuum-tube power supplies.

Module 7, Introduction to Solid-State Devices and Power Supplies, is similar to module 6, but it is in reference to solid-state devices.

Module 8, Introduction to Amplifiers, covers amplifiers.

Module 9, Introduction to Wave-Generation and Wave-Shaping Circuits, discusses wave generation and wave-shaping circuits.

Module 10, Introduction to Wave Propagation, Transmission Lines, and Antennas, presents the characteristics of wave propagation, transmission lines, and antennas.

Module 11, Microwave Principles, explains microwave oscillators, amplifiers, and waveguides.

Module 12, Modulation Principles, discusses the principles of modulation.

Module 13, Introduction to Number Systems and Logic Circuits, presents the fundamental concepts of number systems, Boolean algebra, and logic circuits, all of which pertain to digital computers.

Module 14, Introduction to Microelectronics, covers microelectronics technology and miniature and microminiature circuit repair.

Module 15, Principles of Synchros, Servos, and Gyros, provides the basic principles, operations, functions, and applications of synchro, servo, and gyro mechanisms.

Module 16, Introduction to Test Equipment, is an introduction to some of the more commonly used test equipments and their applications.

Module 17, Radio-Frequency Communications Principles, presents the fundamentals of a radiofrequency communications system.

Module 18, Radar Principles, covers the fundamentals of a radar system.

Module 19, The Technician's Handbook, is a handy reference of commonly used general information, such as electrical and electronic formulas, color coding, and naval supply system data.

Module 20, Master Glossary, is the glossary of terms for the series.

Module 21, Test Methods and Practices, describes basic test methods and practices.

Module 22, Introduction to Digital Computers, is an introduction to digital computers.

Module 23, Magnetic Recording, is an introduction to the use and maintenance of magnetic recorders and the concepts of recording on magnetic tape and disks.

73, Rick Herndon, K5FNI, Mathis, TX

HERE IS A GOOD IDEA FROM THE GLOWBUGS CROWD. (Old radio fans)

Forwarded by Stuart Rohre, K5KVH

This started as a Milsurplus application, but I now plan use it on several of my older table-top radios.
I was looking at a major excavation job on a BC-312N receiver I have. Several leaky bypass caps in the AGC chain, Black Beauties of Death (BBOD's) in RF cans.....Ugly.

One fellow on another list said he runs much of his "ARC-5" (Command Set WWII receivers) and related gear on reduced B+ voltage, placing less strain on the old parts and doesn't have to do nearly as much cap replacement. Performance is adequate for headphones or medium audio on a speaker.

I tried it this weekend and listened to SSB stations on 20 through 80 all day from 1400 to 2130.....at 40-50VDC. BFO worked fine.

I used a dedicated 12VAC transformer to warm the filaments and a homebrew HV PSU with a small variac. At 120VDC, I could hear the AVC caps starting to crackle, so dropped the voltage down while turning up the volume. 50-70VDC did the trick with the volume at ~80% of maximum.

The rig ran much cooler than usual with only the filaments creating any significant heat. Shack stayed nice and cool.

73 ES GUD DX DE JIM K6FWT

EUREKA, CA

Silent Keys

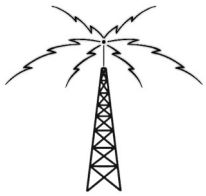
It with great sadness that we share the passing of our beloved friend Jim Reese - WD5IYT. Jim was a great friend to all of us and a pivotal driver in the development of the Armadillo Intertie System. Most of us have known Jim throughout his adult life and have watched him grow into a great engineer, leader, husband, father, and most importantly - friend.

Please keep Jennifer, Audrey, Jaime, and the rest of the Reese family in your thoughts and prayers through this difficult time. Jennifer has indicated there will be a memorial service in the near future and she'll let us know as plans are made.

73s my friend.

Greg - K5GJ

Over the WWWaves...



A Collection of useful and interesting Websites sent in by our readers

(All links have been checked by editor as working at time of publication)

A Do-It-Yourself Site
http://www.whatimade.com/
Forwarded by Steve Richey

* * * * *

This video
http://www.youtube.com/watch?v=dHRSsbpy2aU&feature=player_embedded
shows how one operator does 20 & 40 meter phone operations and what material he takes in his backpack.

Even if your living arrangements preclude having an HF dipole or other HF antenna in proximity to your house, this video may give you ideas about operating from places like Mt. Bonnell Park, after you make the climb up the steps from your car. The op in this video has a simple dipole for 20 meters and add-on lengths of wire in case he wants to operate on 40 meters.

Enjoy, as the chances for DX are good this year.
Rick Herndon, K5FNI

* * * * *

About 10 minutes to view, but you won't regret it. I suppose right now a can of this stuff costs a bundle. Spray on nano capacitor's. AMAZING !!!

This may change everything:

http://www.youtube.com/watch?feature=player_embedded&v=4efE_gO9IFo

Juanita Miyasaki, KD5OIE

* * * * *

The Times-Republican reports Tom Morgan W4UTK, 81, has use of three operating stations with a 500-watt amplifier in a comfortable ham shack at the Embers Retirement Community.

The newspaper says Tom, who has been a short-wave or "ham" radio enthusiast much of his life, knew he wanted to become an electrical engineer at age 12.

The ham shack and equipment were all made possible by Brad Lee W0VFT, of Phoenix and CEO of Trilogy-Embers, the company that owns Embers and a number of other retirement centers in the United States.

Read the story at:
http://www.timesrepublican.com/page/content.detail/id/558660/Embers-installs--ham-shack--for-short-wave-operator.html

Juanita Miyasaki, KD5OIE

Some Ham Radio Tips and Ideas

Forwarded by Pete Jordahl, K5GM

1. If, by chance, you are not yet a licensed Ham Radio Operator, get your license this year. If you have not yet passed your General or Extra test, do it this year. Having trouble studying/passing? I have some tips on my Web Site that I think will be helpful. Click here to see them

2. Explore new bands and modes. If you're reading this, you already have a computer. New digital and sound card modes seem to appear weekly. An interface is inexpensive to buy or build. D-Star seems to be growing by leaps and bounds. With the sunspots finally returning, 12 meters can be a great place to rag-chew. And 10 meters? My favorite band has been wide open lately. Every Ham has at least some Phone, CW, and Digital privileges there. Antennas are relatively small and easy to construct from hardware store parts. It doesn't have to be pretty. An ugly antenna will radiate just as well. Use your imagination and try something different!

3. Set an achievable Ham Radio goal for the year -- and then work at it! Earn DXCC or VUCC, maybe on a single band? Better your contest score by xx%? Get your CW speed up to xx WPM? Reorganize and rewire the shack? Order a copy of the ARRL Handbook or Antenna Book, and start increasing your technical knowledge? Convert your paper logs to electronic format and start using Logbook of the World? Or?

4. Build something. Too many years ago, as I newly licensed Ham I got very involved in Packet Radio. With a double throw switch and some mic connectors, I built a box to allow either phone or packet use by just flipping the switch. Not exactly cutting edge, but it worked and led me to build plenty of other handy gadgets over the years. Simple projects can also be a great way to teach new hams the basics of soldering and kit-building. Or string up that antenna you've been thinking about forever and see how it plays. Or download a free antenna modeling program and learn how to use it to design and build your own BandBlaster. Or order a kit and assemble it. Melt some solder and have fun! Once you start you'll be hooked.

5. Become a "HAMbassador". Get just one person (or two, or three) interested in Amateur Radio. Offer to demonstrate Ham Radio at the Senior Citizens' center, the Boy or Girl Scout meeting, the Rotary Club, or any similar group. Most of them are always looking for an interesting speaker. A simple but impressive and effective demonstration is to bring an HT and ask for a "Roll Call". Notify your club in advance... all they need to do is reply with "This is (name, callsign) in (town)." Remember that we're Hams because we enjoy talking to other people. The more Hams, the more people we can talk to.

6. Get involved! Join your local Radio Club. If you already belong, attend the meetings. Just about every club (not just Radio Clubs) has the same problem -- 10% of the people do 90% of the work. As President of my Club, I know this all too well. You don't need to volunteer for everything... select an area that interests you, and help with that. Even better, suggest an activity and then take the lead in organizing it. Something as simple as "I'm going to set up a portable station at the park on Saturday, everyone is welcome to come by" can be a lot of fun.

7. Most of all, resolve to have more fun with Ham Radio in 2012! (Yes, it is dated, but still valid– Ed.)

Once again, my sincerest best wishes for a happy, healthy, and safe Holiday Season and New Year.

Thanks and 73,
John Bee, N1GNV
Quicksilver Radio Products

AARC Meeting Info.
Waterloo Icehouse
8600 Burnet Rd. South of 183
(Come early and have dinner!)

Business Meeting 7:00 pm

April 1—"Encryption" and Amateur Radio

and Solar WX summary by Lew W5IFQ.

Officers Meeting 6:30 pm

April 15 - Officers meetings are open to club members.

2013 Upcoming Amateur Exams

ARRL VEC– April 5th & May 3rd 9a.m. at Bethany United Methodist Church. Contact Joe Makeever, W5HS (345-0800) or Joe Thiel, N5SMN (832-0450) for info. $15 fee.

W5YI VEC- April 19th & May 17th
2p.m. in **room 207**, Fleck Hall, St. Edwards Univ. Contact Craig Bean, AC5KW @arrl.net, (474-6443) for more info.
http://texashams.org/w5yi-austin/

2014 Calendar of Events

Apr 2 ***TCARES ABIA Drill*** 12:20 until 16:30.

Apr 5-6 ***Texas State Parks On The Air*** (2014)
promote public awareness of ham radio and Texas' beautiful state parks system; contribute to the recognition that Texas has a very diverse and wonderful ecology; and to promote camaraderie within the ranks of Texas Amateur Radio operators.
http://tspota.com/

Apr 7-? ***W5WIA Technician class*** (Mondays 18:30 -21:30) Roger w5wia@arrl.net 512-453-2193

Apr 12-13 ***MS-150 HOU-LaGrange-ATX bike ride***
Drivers/Navigators for Box Trucks & SAG Vans
Rest Stop Comm Volunteers
Steve Shirk. Cell 281-389-2078
Susan Shirk Cell 832-289-2328
Randy May Cell 512-921-1819
MS 150 SAGs ms150sags@gmail.com

Apr 26 ***Red Poppy Ride***
ROUTES of approximately 14 (Family Circle), 27, 40, 50, 63, and 100 miles
START & FINISH at the Georgetown High School Annex.
RIDE STARTS AT 8:00 a.m. with no riders leaving after 9:00 a.m.
Course closes at 4:00 p.m.
www.redpoppyride.org/

Upcoming Meetings...

Apr	May	Austin Meetings/Happenings	Time	Address
1	6	AARC Meeting Waterloo Ice House	7:00 p.m.	8600 Burnet Rd.
20	no	QCWA Tres Amigos $	1:30 p.m.	7535 U.S. 290
23	28	Digital Wednesday at CATRAC	7:00 p.m.	4100 Ed Bluestein Blvd.
28	26	Travis Co. REACT Jim's 183 & Burnet	7:30 p.m.	9091 Research Blvd.
22	27	Travis County A.R.E.S., ARL Auditorium	7:00 p.m.	10000 Burnet Rd.
24	22	CERT Meeting, CTECC	6:30 p.m.	5010 Old Manor Rd.
22	27	CTDXCC Meeting Old Quarry Library	6:30 p.m.	7051 Village Ctr Dr.

% New Meeting Location for ATV
$ QCWA Now meets quarterly visit http://www.qcwa.org/chapter067.htm for info