The eKilo - What

Monthly Newsletter of the San Angelo Amateur Radio Club

June 2014

San Angelo Radio Club Officers

President: Tom Austin/K4OTM
Vice President: Hughbert Robinson/KC5NPC
Secretary/Treasurer: Bob Freeman//KD5PIX
Activity Director: Gary Chaffin/W5ETJ
Emergency Coordinator: Mike Dominy/KD5URW
Grounds Chairman: Open

Appointed Positions

SAARC Trustee: Charlie Campbell/KC5EZZ
Registered Agent: Charlie Campbell/KC5EZZ
Public Information Officer: Matt Healy/W5MAT

Club House Location
Mathis Field
5513 Stewart Lane

Mailing Address
P.O. Box 4002
San Angelo, TX 76902-4002

World Wide Web
www.w5qx.org

eKilo-What
norrispeter26@gmail.com

SAARC COMING EVENTS

ARES Meeting

July 17, 7:00 PM at the Clubhouse

General Membership Meeting

July 10, 7:30 PM at the Clubhouse

Other Events

September 20th - Lily Fest

October 11th - SAARC Club's Birthday Party

December 6th - SKYWARN Recognition Day

- Field Day is covered in a Special Field Day 2014 Edition
- Major ñOooops!ò on Page 2.

Meeting Minutes

As the last meeting was devoted to final Field Day issues, minutes were not recorded. - *Ed.*

OF INTEREST

Hello everyone,
I just wanted to remind you that we have a Yahoo Group set up for all ham operators in the area to use.
You may find it at https://groups.yahoo.com/neo/groups/saarg76903/info
It is a closed group, so you need to request to join.
There are 2 ways, you may email me at saarg76903-subscribe@yahoogroups.com
or send me a note at ka5ule@arrl.net.
I am the owner and Sam Morgan K5OAI is a moderator.
The group got it's start in Feb 2011 and has a lot of neat features.
We will go through these over the next few months and explain a little about them.
In the mean time, join up and poke around. You can't break it.
It has among other things, a message board, a calendar for posting events, a place to post your favorite pictures or even files and documents that
you think others may be interested in. It even has a link section for posting your links to interesting websites.
Remember, this group is moderated so every thing has to go through Sam or myself before it is posted.
Enjoy and if you have any questions, just ask!
de Ralph KA5ULE

Bill/WB5ZAM wrote:

Nice article in FW Star Telegram:
http://www.star-telegram.com/2014/06/24/5924053/on-saturday-ham-radio-operators.html#my-headlines-default?rh=1

Oooops!

In the May issue, a list of new Hams and upgrades was shown. This information was reported by Glenn/AA5PK but incorrectly transcribed. The call signs should have read:

Jimmy Whitaker/KG5BQH -Technician

Susan Whitaker/KG5BQG -Technician

William Fuller/KG5PW - Technician

Thanks to Joe/W5UI for catching the errors. - *Ed.*

TECHNICAL

A Solar Panel Charger – Part II

In Part I, a simple circuit was presented for a solar panel and charge regulator. This circuit is shown again in Figure 1. Without any loss in the regulator, the solar panel is capable of delivering 1.25 amps to a short circuit, but the current decreases as the load resistance (voltage) increases with more of the current flowing in to the internal resistance of the solar panel. The maximum power transfer occurs when the load is matched to the internal resistance of the source (current through the internal resistance and the load are equal). So the panel is capable of supplying 6.25 Watts (1.25/2=0.625A, 0.625^2X16) to a16 Ý load, not 25 W (20 Vx1.25A) or 15 W (12 Vx1.25 A), or anything else *for this equivalent circuit.*

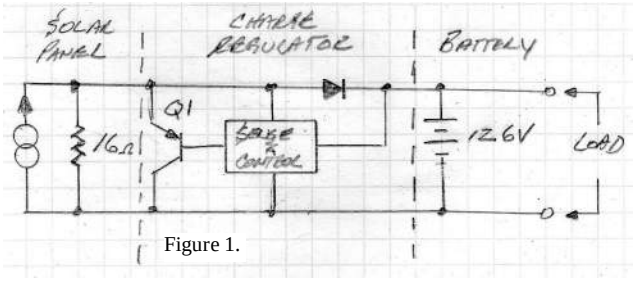
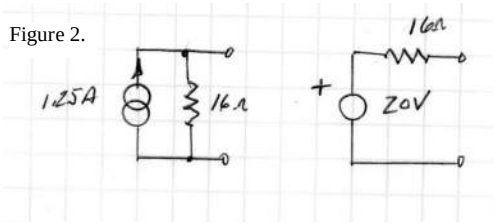


Figure 1.

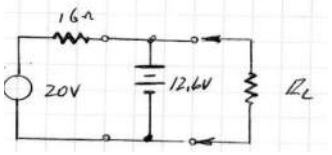
The current equivalent has a voltage equivalent as shown in Figure 2. The reader can test the equivalence of the two by testing: Does $I_{SCI} = I_{SCV}$ and $V_{OCI} = V_{OCV}$? In both cases, the I_{SC} and V_{OC} are the same. Maximum power transfer, which is the same as maximum power available from the source, is achieved when the load is matched to the source, which is 16 Ý in this case. Sometimes a current model is more useful than a voltage model for analysis of a circuit. An example is shown in the sidebar.

Figure 2.



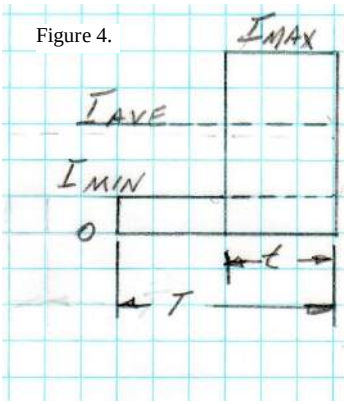
The maximum current available, 0.625 A, is not is not available to the load, however, as seen in Figure 3 (notice no regulator loss) . If the battery voltage is 12.6 V, then the current available is only 0.46 A ({20-12.6}/16). If the load requires more current than 0.46 A, the battery will supply the difference. When the load is removed, then 0.46 A will be available to recharge the battery.

Figure 3.



A typical 2 M base station might require 450 mA in the receive mode (depending on the audio volume setting) and 5 A (60 W), in the 25 W transmit mode. The transmit power consumption exceeds the 0.46 A panel output capability so the battery will make up the difference. To keep the battery from discharging, the transmit time must limited to keep the average of receive and the transmit currents less than 0.46A over time. Figure 4 is an aid to this calculation. The average current is:

Figure 4.



$I_{AVE} = I_{MIN} + (I_{MAX}$ ï $I_{MIN})*t/T$,

where T is the total time in a receive-transmit period and t is the transmit time.

Solving for t/T:

$t/T = (I_{AVE}-I_{MIN})/(I_{MAX}-I_{MIN})$

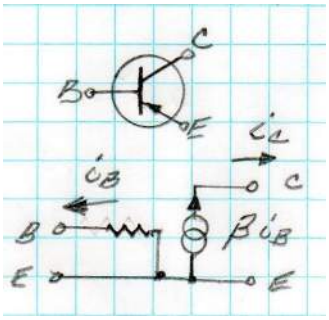
Using 0.46 A, 450 mA and 5 A results in 0.022 or 2.2 % transmit to receive time, which is probably not practical in most cases.

To improve this ratio, the audio output can be minimized and the transmit power reduced. Using the minimum currents of 300 mA for receiving and 3 A for low power transmitting results in 0.059 or 5.9%. Better, but transmitting 3.5 minutes out of every hour may not suffice either.

The battery can supply 0.46 A, from first equation, to the radio for about 74 hours (34 Amp-Hours/0.46 Amps). Amateur radios usually can operate on 13.8 V ± 15%, or a range of 11.56 to 15.64 V, which exceeds the minimum and maximum battery voltages.

A VHF station might require 1.2 A in receive and 20 A in transmit modes. For equal transmit and receive time the average current is, from first equation, 10.6 A. This requires a solar panel with a V_{OC} of 24 V to be able to supply 121 W (11.4x10.6). Reducing the transmit time to 25%, requires 5.3 A, or 60 W panels, and so on, plus regulator losses.

A very simple equivalent circuit for a pnp transistor is shown below. The collector-emitter port equivalent is shown as a current generator with a value ßi$_B$ Amps. The symbol ß is the current amplification factor similar to the voltage amplification factor, µ, in vacuum tube technology. ß may have a value of perhaps 10 to several hundred depending on the transistor.



Replace the transistor (Q1) in Figure 1 to gain insight as to how the circuit functions. The ñSense & Controlò circuit produces a current (i_B) proportional to the battery voltage ï the higher the voltage, the greater i_B will be. i_B is amplified by ß and the collector-emitter current increases causing the solar panel output to be diverted from the battery, thus preventing overcharging.

TECHNICAL

Figure 5 is the system introduced in Part 1. A number of components seen are not required for the typical battery charger. The meters were included in the solar panel output and battery circuits for the fun of it and to watch under battery charge and discharge conditions, as the loads vary, to see the effects of clouds passing overhead, and so on. The meters were described in the December issue of the *eKilo-What*.

Next time: A little more on solar panels and regulators.

Questions or comments? Contact Pete/KJ5SS: 325-617-4387 or norrispeter26@gmail.com

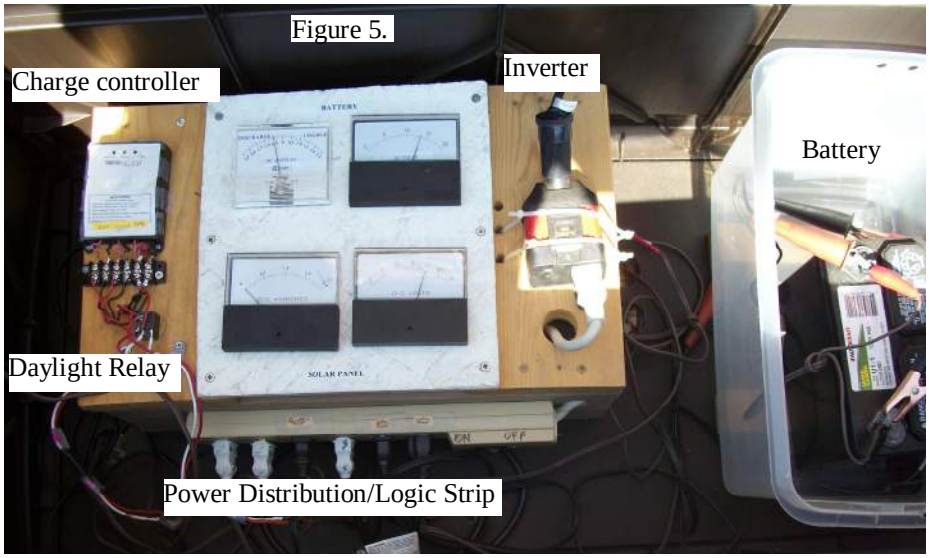


Figure 5.

OF INTEREST

Glenn/AA5PK submitted the following:

From The ARRL Letter, June 26, 2014:

Changes to Amateur Service Part 97 Rules Go Into Effect on July 21

The FCC's recently announced revisions to the Part 97 Amateur Radio rules governing exam credit to former licensees, test administration, and emission types will go into effect on Monday, July 21. The new rules were published in *The Federal Register* on June 20. Earlier this month, the Commission announced that it would grant examination credit for written elements 3 (General) and 4 (Amateur Extra) to holders of "expired licenses that required passage of those elements." The FCC will require former licensees falling outside the 2-year grace period to pass Element 2 (Technician) in order to be relicensed. The Commission declined to give exam credit to holders of expired *Certificates of Successful Completion of Examination* (*CSCEs*) or to extend lifetime validity to *CSCE*s.

The FCC also embraced the use of remote testing methods, allowing volunteer examiners and volunteer examiner coordinators "the option of administering examinations at locations remote from the VEs." The National Conference of Volunteer Examiner Coordinators (NCVEC) in 2002 endorsed experimental use of videoconferencing technology to conduct Amateur Radio testing in remote areas of Alaska. The Commission dropped its earlier proposal to permit two VEs to administer exams; the requirement remains at three VEs. The Commission did not spell out the "mechanics" of remote testing, however, which, it said, would "vary from location to location and session to session." VEs administering examinations remotely must grade such examinations "at the earliest practical opportunity," rather than "immediately," as the current rule for conventional exam sessions requires.

In addition, the FCC adopted an ARRL proposal to authorize certain Time Division Multiple Access (TDMA) emissions in the Amateur Service. The Wireless Telecommunications Bureau in 2013 granted an ARRL request for a temporary blanket waiver to permit radio amateurs to transmit emissions with designators FXD, FXE, and F7E, pending resolution of the rulemaking petition. That waiver becomes permanent on July 21.

The Commission also made "certain minor, non-substantive amendments" and corrections to the Amateur Service rules.

OF INTEREST

Steve Hicks/K5TRA sent SAARC an announcement of the Central States VHF Society Conference to be held in Austin July 24-26. Readers are encouraged to visit:

http://www.csvhfs.org/2014conference/2014Registration.html

Technical Program

PRESENTATIONS:

FRIDAY

1305 - 1335*Adding Another Dimension to Your Roving Experience - Jim Froemke K0MHC*

1335 - 1405*A Reduced Size 6m Moxon For Roving - Jon Platt W0ZQ*

1405 - 1445*High vs. Low Antennas Revisited - Wayne Overbeck N6NB*

1445-1500 15 minute BREAK

1500 - 1540*A Comparison of Driven Elements - Kent Britain WA5VJB*

1540 - 1615*Using the Si530 XO in Your Projects - Bob Hillard WA6UFQ*

1615 - 1700*A Common Design for 6M Through 23cm Beacons - Tom Apel K5TRA*

SATURDAY AM

0835 - 0905*Simple VHF Contesting - Sandra Estevez K4SME*

0905 - 0940*Contest Computer Logging and Interfacing Experiences- Bob Lear W4ZST*

0940 - 0955 *15 minute BREAK*

0955 - 1040*SMT Solder Reflow in Toaster Oven - Brian Straup N5YC*

1040 - 1130*F-Region Propagation and the Equatorial Ionospheric Anomally - Jim Kennedy K6MIO*

SATURDAY PM

1300 - 1340*Equipment, K3 Digital Interface, Amps & Antennas - Dick Hanson K5AND*

1340 - 1425*1296 MHz Remote 100W PA and LNA - Tom Apel K5TRA*

1425 - 1440 15 minute BREAK

1440 - 1530
Solid State Kilowatt Amplifiers - Jim Kitzing W6PQL

From Tom/K4TOM: One of the San Angelo Radio Club members shared this article from Fox News on Monday.

http://www.foxnews.com/tech/2014/05/19/ham-radio-old-technology-gets-new-respect/?cmpid=cmty_twitter_fn

Thanks, Tom - *Ed.*

For Sale

Below is a list of radio equipment owned by Rob Mowrer/N5OIU, now SK.

Kenwood MC-80 microphone - $70
Kenwood TM-G707 dual band mobile - $150
Kenwood TM-241A 2 meter mobile - $90
Alinco DR-110 2 meter mobile - $85
Yaesu FT-60R dual band handie-talkie w/spare battery - $175
Realistic PRO-2040 scanner - $80
Realistic HTX-202 2 meter handie-talkie- $35
Astron RS-25M power supply- $125
Astron RS-12A - power supply $45
Cushcraft Ringo Ranger II 2 meter vertical- $50
Hustler G6-270R dual-band vertical- $75

If you are interested in any, contact Gail Mowrer at 942-7599 (evenings) or e-mail her at glmowrer@aol.com.

Glenn AA5PK

Scanner Jack's Corner

THESE ARE THE VHF INTEROPERABILITY TACTICAL SIMPLEX FREQUENCIES.
155.7525 V TAC 10 CALLING
151.1375 V TAC 11
154.4525 V TAC 12
158.7375 V TAC 13
159.4725 V TAC 14
155.475 NATIONWIDE POLICE CH

FROM SCANNER JACK ROBERTS KB5TMY

Upcoming Hamfests/Conventions

Date	Event	Location	Information
7/24/2014	Central States VHF Society Conference	Austin, TX	http://csvhfs.org
7/25/2014	Oklahoma State Convention (Ham Holiday 2014)	Oklahoma, OK	http://www.hamholiday.org
8/1/2014	Texas State Convention (Austin Summerfest)	Austin, TX	http://www.austinsummerfest.org
8/8/2014	Rocky Mountain Division Convention	Albuquerque, NM	http:dukecityhamfest.org/
8/30/2014	Alamogordo ARC Hamfest	Alamogordo, NM	http:www.qsl.net/k5lrw/ index.htm
9/13/2014	Ada Hamfest 2014	Ada, OK	kd5nqa@yahoo.com

Hamfests are listed for all Texas, Oklahoma, and New Mexico. *–Ed.*

OF INTEREST

Let's Eat!

The current Eating Schedule for TGC Hams is:

Wednesday, 8:00 AM, T-Bears Café, 2105 Knickerbocker Rd

Thursday, 9:00 AM, McDonaldôs (Wal-Mart), 5501 Sherwood Way

Saturday, 7:30 AM, T-Bears Café, 2105 Knickerbocker Rd

Saturday, 9:00 AM, McDonaldôs (Wal-Mart), 5501 Sherwood Way

HF Nets of Note de Gary Chaffin/W5ETJ

NET	DAYS	LOCAL TIMES	DIAL
Concho Valley Ragchew Net	S-M-T-W-T-F-S	0600	1900*
Concho Valley Ragchew Net	S-M-T-W-T-F-S	1700	3825**
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
Concho Valley 6 M Roundtable	Sunday	2100	50.135

* Alternate frequency: 3825. ** 7212, or close, for summer months.

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 meets the 3rd Thursday at 1900 of each month at the Clubhouse unless announced otherwise on the Monday net.

ARES Net Report

Date	Net Ctrl	Check-ins	Time	Freq
6/2	KD5URW	12	14	444.350
6/9	KD5URW	10	15	444.350
6/16	KD5URW	15	22	444.350
6/23	KD5URW	15	18	444.350
6/30	KD5URW	14	15	444.350

Concho Valley

Two Meter Net

Date	NCS	Check-ins	Duration
6/2	W5MAT	21	17 min
6/9	KB5FNK	17	19 min
6/16	KB5FNK	12	14 min
6/23	KB5FNK	20	20 min
6/30	KB5FNK	20	21 min

This net meets every Monday night at 8 p.m. on 145.27 or 146.94 as an alternate repeater. All amateurs licensed to operate on that frequency are invited to participate.

Concho Valley Open FM Repeaters

2 Meter

145.27- San Angelo PL 88.5

146.88ï San Angelo PL 88.5

146.94ï San Angelo PL 103.5

147.06+ San Angelo No Tone

147.30+San Angelo PL 88.5

146.72- Eldorado PL 100.00

147.34+ Robert Lee PL 88.5

146.90ï Brady PL 162.2

147.36+ Brady PL 114.8 (Echo Link Node)

Echo Link: N5TBR-L Node#920069 145.7850 Simplex PL-88.5

147.39+ Eden PL 114.8

70 centimeters

441.750+ San Angelo PL 162.2

442.250+ San Angelo PL 162.2

444.225+ Robert Lee PL 162.2

444.350+ San Angelo PL 162.2

444.875+ Brady PL 162.2

6 M

53.63ï San Anglo PL 88.5 Linked to 442.25 Repeater

New Member Application/Membership Renewal

Membership renewals are due in January 2013. Regular memberships: $20, Each additional family member: $5; Seniors (age 65+) and Juniors (under age 19): $10, Renewal package deal: 5 years for $80, Associate members: $20

Dues may be paid to the secretary at any club meeting or mailed to the club's post office box.

SAN ANGELO AMATEUR RADIO CLUB

Application for Membership

Last Name: First Name: Call Sign:

License Class: Year First Licensed: Previously Held Calls:

Mailing Address:

Physical Address (if different from above):

City: State: ZIP:

Home Phone: Work Phone: Cell Phone:

E-mail address:

I hereby give permission to publish the above information in the club's membership roster which is distributed to all club members. Check here ☐ if you do not want your e-mail address linked on the club's Web site.

Signature	Date