

QRZ NEWS

A MONTHLY PUBLICATION OF
SOUTHERN PENNSYLVANIA AMATEUR RADIO CLUB, INC
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AN AFFILIATED SPECIAL SERVICE CLUB OF THE ARRL, INC.

"Public Service through Communication"

Website: WWW. K3IR.org

Email address: k3ir@arrl.net

Repeaters: 145.230 - 449.975 - Packet 145.030 - ATV 923.250, FN10se

Club site 1715 Breneman Road, Rapho Twp. (Manheim P.O. 17545 no delivery)

September 2011

President's Message

No Rain, No Rainbows

Some of you may have seen the T-shirt I have with that saying on the front. On the back is a series of sage sayings like "when you're over the hill you pick up speed" or "the un-aimed arrow never misses the target".

The events of the last month have caused me to give renewed thought to those sayings. With the rain, the wind, the rain, more rain, the wind and even more rain, the heat and humidity, more rain, we may ask – Where are the rainbows?

With all the rain we have had in the last few weeks it is hard to find someone who has not been impacted by the rising water in some way. It seems that everyone I talk to has at least had a wet basement if not more. Nearly every conversation starts with - "Were you affected by the flooding?" Many people in Marietta, Middletown, Hershey and other areas have lost their homes to rising waters. Both the Manheim area and Hummelstown, among others, have experienced the tragedy of the loss of a loved one. Suddenly my wet feet and floating carpet don't seem so bad.

Yet, through all the pain and suffering there have been rainbows. I have witnessed neighbors who have not spoken in years suddenly coming together to help each other. I have seen those who have damage in their own

homes taking time to travel miles on partly flooded or washed out roads to help friends, relatives, and people they don't even know. I have seen fellow Hams leave their dry comfortable homes to spend the night in a hot smelly gym with flood victims. Hard times seem to bring out the best in people. Unfortunately, after a short time the rainbows fade and we return to our old ways.

Most of us have recovered from Irene and Lee, but there are still many who need help. There are families who will be showing the effects of this weather for years to come. Let's not forget them.

Harry, WA3FFK

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**MINUTES OF THE AUGUST 2011
MEETING OF THE
SOUTHERN PENNSYLVANIA
AMATEUR RADIO CLUB (SPARC)**

Held Tuesday, August 23, 2011 at 7 PM at the
SPARC Repeater Site

The following members and guests were
present:

Dave Sarraf, N3NDJ
George Gadbois, W3FEY
Paul Miller N3APD
Paul Herr, KD8WY
Jim Silvius, KW3E
Gerry Wagner, KB3SJZ
Matt Greenbery
Ryan Bunting
Kevin Lampo
Steve Hass, KB3SKU
Gerry Wagner, KB3SSJ
Mike Warner, N3XPD
Jerry Wilson, KB3GNB
Harry Bauder, WA3FFK

This meeting was held at the club repeater site
and started with supper on the grill provided by
Paul Miller. There was no technical program;
the purpose of the meeting was to provide a
chance to for the members to socialize and to
operate SPARC's equipment as desired.

The business meeting was called to order at
about 8:00 PM by Harry Bauder.

The minutes of the July meeting were presented
by Dave Sarraf. On a motion by Dave Payne
and a second by Gerry Wagner they were
accepted with no objections or comments.

Mike Warner presented the Treasurer's report.
On a motion by Dave Payne and a second by
Jim Silvius, the report was accepted as read
pending review by the audit committee.

New Business

- Harry noted that the generator's battery was replaced and that it now starts automatically. The previous battery had a date code 10 years prior. He also noted that the trickle charger fuse had to be replaced. That could have been a consequence of the original dead battery.
- We need a person to mow the repeater site. Gerry Wagner volunteered.
- Harry tentatively scheduled Adopt-A-Highway for the first Saturday after Labor Day.
- We had helped the township on their recycling days in exchange for receiving the waste paper, but had stopped helping when the value of paper fell. The township noted that they enjoyed working with us. As a goodwill exercise we should continue to volunteer our time. They run recycling the second Saturday of every other month. Harry will get a firm schedule and notify the members.
- We had a work day last Saturday. Several updates to the linking system were made to mitigate lightning damage, including installing shielded network cable to the radios on the tower and surge suppressors at the entry to the building. A tower-mounted radio and the hub were replaced. The Cornwall-facing dish now works again. The Red Lion-facing dish needs further investigation. The power supply / Ethernet adapter does not appear to be working. Dave Sarraf is building a rig to bench test the supplies under load.

The meeting was adjourned after it became too
dark to take minutes.

Respectfully submitted,
Dave Sarraf, N3NDJ
SPARC Secretary

Coming Events

SPARC programs for 2011

Tuesday, 27 September 7:00PM will be at the club site. There will be a short business meeting.

Friday, September 30, 2011 Vigilant Focus 2011 HEARS Drill. Setup starts 0830, Drill starts at 0900 until approximately noon.

Volunteer operators are needed at Lancaster County hospitals. Contact [Paul Herr, KD8WY](#) if you are available.

Editor's Notes

This is the month I decided to stop talking about getting on digital and do something about it. The Vigilant Focus 2011 drill on Friday, September 30, 2011 has everything to do with my decision. Handling of large amounts of ICS213 forms via voice does not work at all well.

FLDIGI testing has been actively pursued on the Tuesday and Friday digital nets listed below for several months. There is a lot of expert help available on the nets. By the time you read this our SPARC expert Jon Rudy, K3QF, will soon be on his way to Afghanistan. Sorry, Jon is not taking any radios on this trip.

I have my FT897D working digital on the air, but I still have a huge amount to learn. I can only help with the most basic questions.

I do recommend the Signalink USB by [Tigertronics](#) as the interface to your rig for digital. Most radios have a 6 pin mini DIN Data port. These are standardized across the

industry so only one [Plug & Play Jumper Module!](#) is needed for all radios with the data port. If you want CAT control of your radio, you will need a separate serial connection.

73, George, W3FEY

Six Meter DX Report

18 September 2011

Six has been quiet here, although the TEP season has begun. There have been multiple contacts from Southern Europe to various areas in Southern Africa, and from the Caribbean to South America. There have been a few contacts from South America to the Canary Islands, and the Cape Verde Islands. Solar flux numbers are rising so we may get some north south F openings beginning around the end of October if we are lucky.

73,

Chris W3CMP

EASY MODIFICATION OF THE TS-570 FOR TRANSVERTER USE

By Chris Patterson, W3CMP

Late last year, after a gift certificate from Downeast Microwave finally burned a hole in my pocket, I ordered a 70MHz transverter to monitor transatlantic propagation. While waiting for the transverter, I looked around for a suitable transceiver to use with it. After considering several options, I settled on a Kenwood TS-570(S).



Figure 1

Shortly afterwards, I was fortunate to find one at an attractive price through the Packrats. The TS-570 is a mid-range transceiver produced by Kenwood from 1996 to about 2005. The radio incorporates audio DSP, accommodates an optional crystal filter at the 8.83MHz 2nd IF, and with the TS-570(S), 50MHz operation. Its compact size, good performance, and reasonable price on the used market make the 570 attractive for use with a transverter.

To some degree the TS-570 was engineered for use with a transverter. The frequency display can be changed to read 50MHz, 144MHz, or 430MHz (the 570(S) display can be changed to 144MHz or 430MHz). When the transverter display is activated, power output is reduced to five watts. Unfortunately, the power output cannot be reduced below this level and the radio has no dedicated transverter jack. Even with two antenna connections, there is no easy way to accommodate separate IF cables.

Because of these shortcomings, I was determined to add a low level transmit output with the ability to easily return the rig to normal operation. After some thought, I came up with a modification that requires two internal patch cables, two RCA (phono) jacks and external patch cable.

The RCA jacks came from Radio Shack. I suppose single hole BNC connectors

can be substituted, but rear panel space was pretty tight, and I decided not to use them.

The internal patch cables came from a parted out TS-850 listed on Ebay. They can also be purchased from a Kenwood spare parts distributor. The part number for a 14 1/4" gray cable with connectors on both ends is E31-2103-05¹. Alternatively, you can make your own cables by using RG-174 and TMP-K01X-A1 plugs manufactured by Taiko Denki.

The external patch cable is a TS-950 item. It is used on the 950 to do the same thing as I intended here. It is described as a connecting cord with plug, and the part number is E30-2176-05.

To perform the modification, the top and bottom cases, and the internal cover plate on which the speaker is mounted must be removed. The AT connector on the rear panel is then temporarily removed from its hole and pushed aside.

The next step is to measure and drill two holes for the phono jacks below the AT connector hole. The location of these holes is limited by the fan extrusion, main circuit board, and vertical chassis support to the left of the AT hole.

¹One plug will have to be removed. Two cables are required.

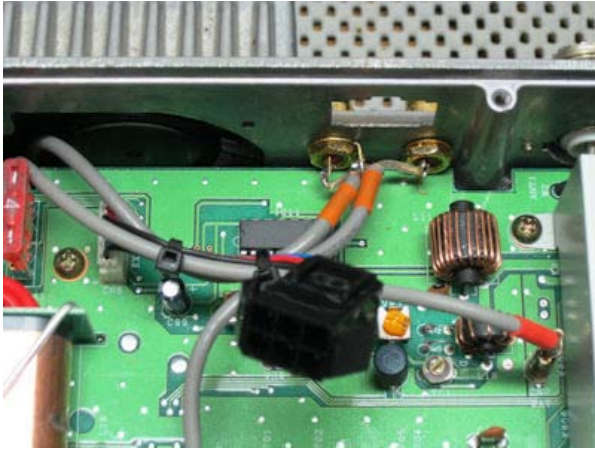


Figure 2

After the holes are drilled, and all shavings are vacuumed off, the existing gray cable running from the output jack of the driver board (CN10) to the input jack of the final board (CN1) is removed. In its place, the two gray coaxial cables are run from CN1 and CN10 to the phono jacks and soldered in place.



Figure 3 shows the cable running from CN1 to the rear panel phono plug. After a quick continuity check, the AT plug can be reinstalled and the cover plate and case reattached. The external patch cable can then be plugged in and proper operation verified.



Figure 4 shows the external patch cable as installed on the rear panel.

Tests show no reduction in output power with the new arrangement. Low level power output from the new IF jack is 6.5 milliwatts (8.13 dBm). It can be lowered to about 1.0 mW (0 dBm) with the front panel power control.

With this quick and simple modification the TS-570 is fully equipped for transverter use, and can be reconfigured for normal operation in a matter of seconds.

ARES/RACES



As part of the SPARC commitment to emergency communications, the SPARC repeater system is maintained as available for linking with other area repeaters.

Lancaster County RACES VHF Net is held on the first Tuesday of the month at 2030 hours local time on the 145.310 MHz repeater in Rawlinsville.

The Lancaster County primary ARES/RACES repeater is on 145.310 MHz with minus offset and 118.8 PL.

Combined York County Amateur and ARES/RACES NET convenes at 8:30 PM (2030) Mondays on 146.97.

Pennsylvania RACES HF Nets are held at 3993.5 kHz LSB on all Sundays except holidays.

The statewide net is on the first Sunday of the month at 0800 hours local time.

The Central Area (including Lancaster County) net is at 08:30 local time.

EPA NBEMS Net, Tuesday, 7:30pm local EST,

3.5920mhz Mode: Olivia 8/500 1khz,
Net Mgr: WA3WSJ@arrl.net

SPARC Nets

SPARC holds nets every Tuesday at 2100 local time on 145.230 MHz minus offset and a PL of 118.8. The 449.975MHz repeater is linked to the 2m repeater for the net.

As reported last month, SPARC is starting a digital net to immediately follow the voice portion of the Tuesday night net as listed above. The start date for this net is being indefinitely delayed because the NCS, Jon Rudy, is traveling out of the country until December and again in early 2012. A volunteer is needed to step into this position.

Club Officers

President Harry Bauder – [WA3FFK](http://www.arrl.net/ham-radio/qrp/qrz-net)

Vice-President: George Gadbois – [W3FEY](http://www.arrl.net/ham-radio/qrp/qrz-net)

Secretary - Dave Sarraf. - [N3NDJ](http://www.arrl.net/ham-radio/qrp/qrz-net)

Treasurer - Mike Warner – [N3XPD](http://www.arrl.net/ham-radio/qrp/qrz-net)

Repeater Trustee - Dave Payne - [N3LOM](http://www.arrl.net/ham-radio/qrp/qrz-net)

Nearby Nets of Local Interest

York County Sponsored Nets:

Tuesday Nets DIGITAL NET -- Tuesday, 8 PM on the York 146.97 Repeater --
The first 15 minutes or so will be open to questions.
DIGITAL Communications testing will continue after that.

Friday Digital Net

Friday evenings starting at 8 PM on the 146.610 (PL:131.8 Hz) EARS repeater on Ephrata Mountain.

This is an excellent Digital net called by Bob, AB3GF. Check in is by digital, BPSK125. It is an informal, well run net with plenty of Digital transmissions along with discussion by voice.

PACKRAT MONDAY NIGHT NETS

Visit the Mt Airy VHF Radio Club at:

<http://packratvhf.com/airtimes.htm> for the latest information on VHF/UHF nets.

QRZ News Publication

QRZ News is published monthly approximately ten days before the monthly meeting. Please submit items for publication as early as possible. If a large amount of editing is required, earlier submission is required.

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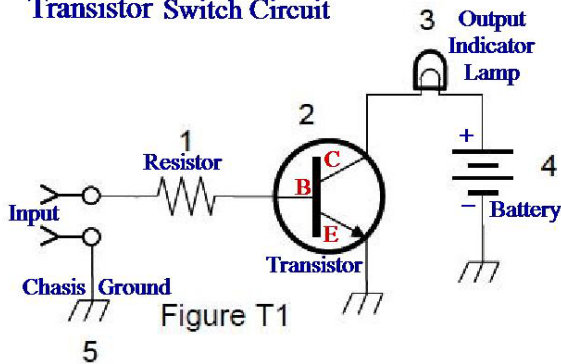
Documents are in PDF format.

Technician Class Exam Diagram T1

By James L. Ibaugh, [AA3C](http://www.arrl.net/ham-radio/qrp/qrz-net)

There are seven diagrams in the Technician's exam, of which three are schematic and four are block diagrams. The Figures T1, T2 and T3 are schematic symbol diagrams. The names of schematic symbols in Figure 1 are:
Input Terminals, chassis ground (3ea), resistor, transistor, incandescent lamp and a two cell battery.

Transistor Switch Circuit



Below are four possible questions that may be in the exam about Figure T1 above.

~~~~~  
T6C02-What is component 1 in figure T1?

True Answer: Resistor

~~  
T6C03-What is component 2 in figure T1?

True Answer: Transistor

~~  
T6C04-What is component 3 in figure T1?

True Answer: Lamp

~~  
T6C05-What is component 4 in figure T1?

True Answer: Battery

~~~~~  
Of what is Figure 1 a schematic diagram?
With only one active electronic component the possibilities are very limited. It depends on what kind of signal is applied to the input terminals. If you put a small DC voltage on the input the indicator lamp would light up. That function is an electronic switch. A small input of audio voltage might cause the lamp to flash in step with the audio.

That function would be an electronic audio amplifier. Circuits can be Analog & Digital.

What does the resistor do for the circuit?
One thing, it limits the amount of current supplied to the base of the transistor and it may establish an input impedance. The transistor is a bipolar type NPN. If the base is at a higher voltage than the emitter, current flows from collector to emitter. A

small amount of current also flows from base to emitter. Voltage at the base controls the amount of current flow through the transistor (collector to emitter). In Figure 1 a DC voltage applied to the input would "close" the transistor switch, create a low resistance path for the electrons to flow from the (+) side of the battery through the lamp (it lights up) and down through the transistor's collector to the emitter. Then down through the chassis ground and back to the (-) side of the two cell battery. The small arrow in the emitter leg indicates the direction of the electron current flow.

The Output Indicator Lamp could be an LED or a small speaker. The two cell battery has four plates, two + and two - ; note that the positive plates are wider and negative plates are much narrower.

There isn't much to that one transistor circuit but it demonstrates two basic faces of electronics, digital (electronic switch) and analog (audio amplifier).

Please pass this newsletter or article onto anyone that may want to take the Technician Class Amateur Radio Operator Examination.

Stay tuned for "Technician Class Exam Diagram T2" in a future issue of QRZ

News

73's de AA3C – Jim
AA3C@ARRL.NET
Echo Link # 490650



Collinear Dipole Design

By James L. Ibaugh,
[AA3C, ex-K3ITG/KL7](mailto:AA3C@ARRL.NET)

I have spent 54 years as a licensed ham studying and experimenting with antennas (57 as an SWL), everything from bed springs to electric cow pasture fences (great beverage

receiver antennas). I was using a Johnson Viking Ranger which had a built in antenna tuner and matched from about 40ohms to over 600ohms with SWR down to 1.2:1 at resonance. Modern transmitters don't have that luxury and they assume all loads are a perfect 50ohms flat. I made collinear antennas for different bands (when I had the room). Impedance of 50ohms occurs close to quarter wave and 5/8wave points. A little higher impedance's at 3/4 and full wavelengths. SWR measurement was made with a military version of a Bird Wattmeter.

Formulas for element length:

Ft = 936/MHz = Full wave.

Ft = 585/MHz = 5/8th wave.

Ft = 468/MHz = Half wave.

Ft = 234/MHz = Quarter wave.

Full wave. = 18.52ft \diamond 50.52MHz

33.01ft \diamond 28.35MHz

44.15ft \diamond 21.2MHz

65.9ft \diamond 14.2MHz

130.9ft \diamond 7.15MHz

5/8th wave. = 11.57ft \diamond 50.52MHz

20.63ft \diamond 28.35MHz

27.6ft \diamond 21.2MHz

41.2ft \diamond 14.2MHz

81.8ft \diamond 7.15MHz

Half wave. = 9.26ft \diamond 50.52MHz

16.50ft \diamond 28.35MHz

22.07ft \diamond 21.2MHz

32.95ft \diamond 14.2MHz

65.5ft \diamond 7.15MHz

Quarter wave. = 4.63ft \diamond 50.52MHz

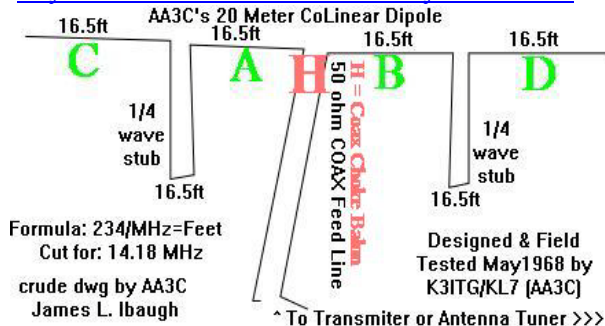
8.25ft \diamond 28.35MHz

11.03ft \diamond 21.2MHz

16.5ft \diamond 14.2MHz

32.7ft \diamond 7.15MHz

[Try Antenna Calculator Link by WA3DSP](#)





Referring to the (not to scale) diagram above, elements A and B were always quarter wave and elements C and D were quarter wave for first experiment; results in about +3 db gain over a 1/2 wave dipole (reference antenna). Second experiment used 5/8th wavelengths for elements C and D; results were about +5 db gain over reference antenna. Coax Choke Balun at red point "H". Experiment conducted on the 20 meter ham band at 14.2 MHz.



Hallicrafters SX-115 Triple Conversion Rcvr.

Equipment used was a military AN/URM-25D signal generator and a 5763 1 watt wide band generator post-amplifier into a half wave dipole. On the experimental collinear antenna was a Hallicrafters SX-115 triple conversion ham band receiver with the **AGC turned off**.

The SX-115 and the URM-25D/5763 amp were about 100 yards apart at fixed locations for both experiments. Experiments conducted

at 626th Radar Squadron in 1968, laws of physics have not changed since then. I was the Technical Training NCOIC and included this set of experiments in my "hands on" technical training program. I used the 20 meter collinear antenna for the 626th Radar Sq's 1968 KL7FAO Field Day. You can bend the ends "C" & "D" into a wide "U" like  horizontally or up/down vertically to save on space. You can even bend them  this way and still have them radiate a good signal.

At 14.2MHz I used 16.5ft quarter wave phasing stubs of 600 ohm flat ladder line soldered short at the bottom and tied off to the ground peg by heavy nylon fishing line. Important, the phasing stub blew back and forth wildly in the wind without being tied down. When the ladder line danced around the SWR danced around in synchronization. I tried rolling the 1/4th wave stub into a coil but that detuned the phasing and the SWR went way up to 4.5:1! Unacceptable for today's solid state rigs.

Another improvement in performance was made by using an Air Choke Coax BalUn (at point "H") which prevents the feed line (coax shield) from radiating or distorting the dipole's radiation pattern. The Air Choke isolates the feed line from the driven elements of dipoles or beams. A very excellent balun explanation in ["Analysis of the Balun" by Bruce A. Eggers, WA9NEW](#).

If you are running less than 300 watts PEP (~212 watts avg) you can use RG-58 coax to build your air core choke. Higher powers you must use RG-8 or RG-9 and a 6 inch coil form. About 18ft of coax wrapped on a 4 inch plastic (PVC) coil form would handle 3.5 to 30MHz dipoles. The coil must mount at 90 degrees to the plane of the dipole. The coil form must be hung close under the center insulator and the dipole connection must be as close as possible or the coax shield will capacitively couple to active elements. The decoupling of the feed

line may add up to a measurable increase in signal strength at the receiving station.

Serious effort must be made to weather proof the connection of the balun assembly to the antenna elements. Water in the coax is the most frequent reason that an antenna system suffers a failure. Many commercial center separator/balun units are completely sealed in plastic. The coil forms we used in our experiments were donated by the 626th Chow Hall cooks. While on the dirty dump detail duty, I noticed these nice one quart plastic spice canisters were thrown away when they were empty. I asked the Mess NCOIC to save me a few of these empty canisters and he said he would if I would fix his newish transistor portable radio. I took the radio over to my GATR-Tx radio shop and looked inside the box. The batteries were all corroded, needed new batteries with new holder contacts. Thirty minutes of scraping, cleaning, cutting and soldering. New battery and the radio popped to life with AFRN-F.I. 640Kc! I took the radio back to the Mess NCOIC in less than an hour. The Sgt. was so impressed he took an almost empty pepper canister and emptied it out AND washed it out for me! He promised several more by the end of the week. The canister was an ideal balun assembly container. They were used on our 1968 KL7FAO Fire Island Field Day antennas on 20 & 40m.

One of my A1C Trainee Troops asked just what "collinear" actually means. I first asked how much math did he have in high school and he said only one year of algebra and two years of book keeping. I said, "That was very good. Two parts of an antenna radiating a field in the same polarity, phase and direction, where the power is additive, are considered collinear elements." Good Luck antenna building.

**73's de AA3C - Jim, ex-K3ITG/KL7,
ex-AK1LE, ex-Sgt.USAF30454**