



NOVEMBER 2015

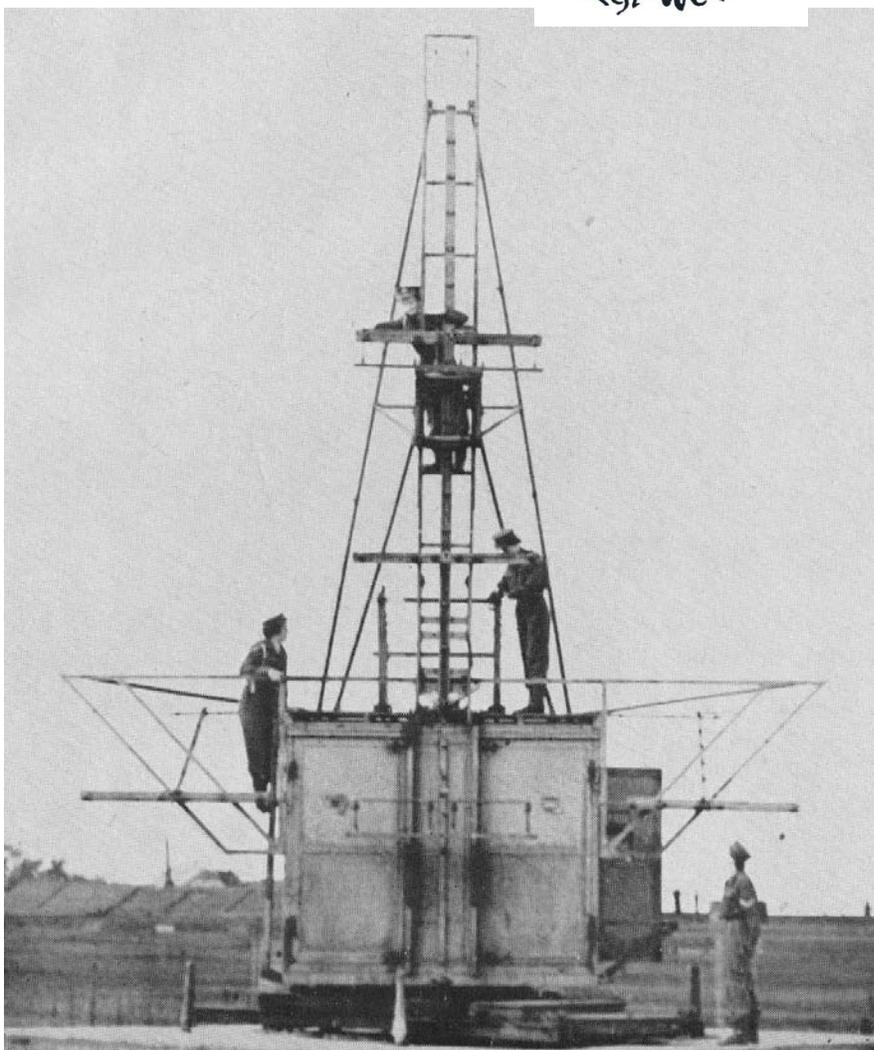
Volume 4 Issue 11

VE3ERC-LUB



IN THIS ISSUE
PREZ SEZ P.2
Radio History P.3
Good Repeater Habits p.5
The Avro Aero book p.7
Wednesday Net p.8
Heathkit Come-Back p.9
The Mems Mike p.13
November Minutes p.10

- President: Rich VE3DCC
- Vice-President: John VE3JXX
- Secretary: Tom VE3DXQ
- Treasurer: Reg, VE3RVH
- Trustee: Al VA3TET
- Newsletter Editor: Bob VE3IXX
- QSL Manager: Joyce VA3WXU
- Repeater manager and maintenance:
Carl VE3FEF
- Website Admin: Ted VE3TRQ
- Maple Syrup Joyce, VA3WXU
- Display: Judd, VE3WXU
- ERC REPEATERS:**
- UHF 444.700 TONE: 131.8**
- VHF 147.390 TONE: 131.8**
- EMERGENCY SIMPLEX 147.51**



A Gun Laying Mark II radar receiving antenna 1942.
 {www.google.ca/search?q=ww2+radio+antenna}
 More on page 3.

THE PREZ SEZ!

This club is Radio-ACTIVE

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President's Update for November 2015



This update will bring you up to date on our club status as of Nov. 17, 2015.

As part of our incorporation procedure, we now have a CRA (Canada Revenue) business number. Our year end is Sept. 14th so our books will have to be completed over the summer. We may need an accountant so if you have a friend.....!!!!

Our affiliation application to RAC has now been mailed. The Elmira Public Library has accepted our donation of a subscription (\$8 per year) to The Canadian Amateur magazine. The issues should start arriving in January so for those who are not RAC members, you have a handy way to keep up to date on the latest developments in Amateur Radio. I have been very impressed with the recent articles on Arduino, SDR and satellites. The mag is also a great way to track prices and products. RAC will follow-up with a quote on our insurance rate. I anticipate that we will have all the details worked out in the new year.

I want to especially thank Bill Graham and his XYL, Maree for a wonderful evening at their QTH. This has become a yearly tradition-- the goodies and good cheer are wonderful. You are "spoiling us" !!! Thank You.

I am concerned that some of our older members are unable to attend our evening meetings. Since our speciality is communications, is there a way we could somehow "broadcast" (a nasty word in the Radio Act) in such a way that members who cannot make a meeting, can be part of the presentation part—it would be unwise to broadcast the business portion. Is there a possibility using Skype, the internet or other means which we have access to at the hall? Is there a "mesh" application that would allow streaming video or audio out to our older members who are reluctant to travel at night (and, especially, during the winter).? Is there a possibility of using our repeaters to feed real-time, compressed audio/video to decoders, or could we have a "reporter on the spot" providing commentary via uhf/vhf to remote station sites. This could certainly be an interesting ham project.

What do you think? Any ideas....

Our Christmas Party is coming up on December 9th? This was a date deviation because our regular 4th Wednesday is Dec. 23rd—not a good idea, eh?

Mark that date: December 9th.

Regards,
de ve3DCC, Rich

SHORT HISTORY OF COMMUNICATIONS

BY BOB KOECHL VE31XX



In any military action, whether we look at the successful campaigns of Alexander the Great from ancient Greece to present day modern High tech warfare in the twenty-first century there is one thing that is totally indispensable— communication. Information from reconnaissance units, orders to the battlefield, reports of progress, requests for more assistance are vital to the success or failure of a military operation.

Julius Ceasar and other ancients used elaborate systems of riding messengers at interval posts. Genghis Khan during the 1100's added homing pigeons to his regular messengers in his successful conquests. For naval communications signal flags, lights, or numbered cannon shots were developed in the 16th century. In the late 1700's Claude Chappe developed the visual semaphore using towers with moveable arms and this was used successfully by the Prussian army in 1833.

After the 1844 invention of the electric telegraph by Samuel Morse along with his Morse Code, communications took a giant step forward. Now communications could be made very quickly over large distances. It was used extensively during the American revolution.

With the invention of wireless telegraphy at the turn of the century, communications took another step forward. Because radio was no longer private, elaborate codes had to be developed during WW1. However, thousands of miles of wire for telephone connections were still rolled out because radio sets were far too large and bulky to use in the trenches.

After the war, the pioneering efforts of amateur radio operators supplemented industry and scientific research into the VHF spectrum. This opened up the development of short range communication for military use. By 1938 Germany had



Wireless Set No. 19 was a Second World War mobile radio transceiver designed for use by armoured troops of the British army.



SCR-536, an AM "handie talkie" developed in 1940 by Galvin Manufacturing Corp., later to become Motorola.

The German "blitzkrieg" proved it's usefulness.

In the late 1920's Edwin Armstrong developed another advance in communication, frequency modulation (FM). It was first accepted by the U.S. army because it was not affected by ignition noise.

By the time WW2 was in full progress, there were radios in every tank, in every plane, on every ship and continued down the ranks to every platoon. High powered wireless stations were set up at all tactical headquarters that could reach 100 miles. Radio relay sets were developed as troops moved large distances very quickly. Incidentally, relaying mes-

sages was one of the original purposes for the founding of the American Radio Relay League. Technology was developed so that many voice channels along with teleprinter data could all be combined on one radio carrier wave that could be sent across the channel and on to Washington, D.C. Radiotelewriter conferences called "telecons" could be sent back and forth to Europe or the Far East as fast as the characters could be sent.

Other advances in electronic equipment came very quickly. Loran to assist in navigation for ships and aircraft was developed. Radar and radio direction finding equipment came into general use. Radio controlled guidance systems for bombs were in the early stages. Jamming transmitters were built to jam enemy radio transmissions.

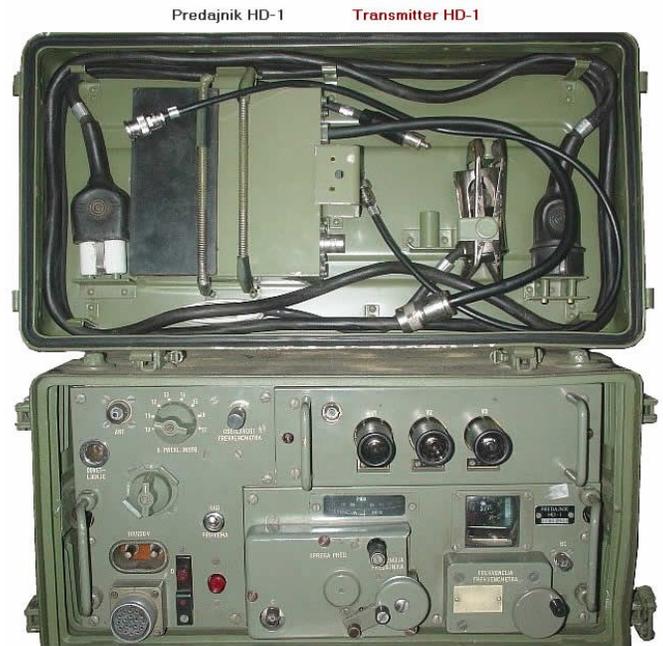


BC-654 in operation. The Crosley Corporation of Cincinnati, Ohio manufactured the Signal Corps Radio set SCR-284 that consisted of the BC-654 and associated support equipment.

All in all, WW2 fast forwarded the technology of sending messages quickly and efficiently which was pivotal in any armed conflict.

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- <https://www.google.ca/search?q=radio+communication+in+ww2>



HK-1 radio relay unit with two helicoidal antennas AS-1 with antenna mast and a tool kit.



Marconi R1155 receiver used in Lancaster bombers. Pictured above the receiver in the Lancaster, is the 1154 transmitter.

DEVELOPING GOOD PRACTICES ON REPEATERS

By Bill Graham VE3ETK

A club's net can provide members with a lot of enjoyment, help everyone feel part of the larger group and learn more about each other. It also forms part of our training towards being part of an emergency net – the habits and routines we learn here stick with us when we are involved in emergency traffic. GOOD OR BAD!

So, our informal gatherings need to be done in a good and proper manner. I have put together here the good points, gathered from various North American well known nets.

Repeater etiquette

The first and most important rule is LISTEN FIRST. Nothing is more annoying than someone that "keys up" in the middle of another conversation without first checking to make sure the repeater is free. If the repeater is in use, wait for a pause in the conversation and simply announce your call sign and wait for one of the other stations to acknowledge your call.

When you are using the repeater leave a couple of seconds between exchanges to allow other stations to join in or make a quick call. Most repeaters (our NEW ERC repeaters DO NOT have this feature) have a "Courtesy Beep" that will help in determining how long to pause, so just remember to pause when on ERC. The courtesy beep serves two purposes, a) a repeater timeout function, and b) it allows others to join in or make a call. Repeaters have a time out function that will shut down the transmitter if the repeater is held on for a pre-set length of time (normally three minutes). This ensures that if someone's transmitter is stuck on for any reason, it won't hold the repeater's transmitter on indefinitely.

When a ham is talking and releases the PTT switch on their radio, the controller circuit in the repeater detects the loss of carrier and resets the time-out timer. When the timer is reset, the repeater sends out the courtesy beep. If you wait until you hear this beep (normally a couple of seconds), before you respond, you can be sure that you pause a suitable length of time. After you hear the beep, the repeater's transmitter will stay on for a few more seconds before turning off. This is referred to as the "hang time". The length of hang time will vary from repeater to repeater but the average is about 2 or 3 seconds. You don't have to wait for the "hang time" to drop before keying up again, but you should make sure that you hear the courtesy beep before going ahead.

Note: If you don't wait for the beep and allow the time-out timer to reset, or run on longer than the timer is set for, you will time-out the repeater. The repeater will not function till you allow the timer to reset.

PRACTICE THE FOLLOWING COURTESIES:

- 1) Listen and listen again before making a call.
- 2) If in doubt, listen again and ask "is the frequency in use?"
- 3) Enter the repeater with your call sign alone or simply "VE3XXX, listening" or "VE3XXX mo-

bile" or "VE3YYY this is VE3XXX."

4) Don't say "**Break**" – See point 5). However, it is common on repeaters to say BREAK as the signal of an emergency.

5) Don't jump into QSOs to make another call without asking; ask courteously. Other stations will welcome your courtesy and acknowledge your call.

6) Don't "kerchunk" the repeater. The Industry Canada defines this as an illegal transmission. If you want to see if you're "getting in", and the frequency is clear, call "VE3XXX, testing."

7) Stay off the other ham's squelch tail by not tailgating. Wait until the signal drops (your 'S-meter' will show you when there is no signal from the repeater) before responding. The repeater will automatically shut down if tailgating is deemed excessive. This isn't DXing where a moment lost is a contact lost.

8) There is no need to say "for ID" when you identify. Simply say your callsign.

9) Be patient with newcomers.

10) Give others a chance to use the machine and move long conversations to a simplex frequency. In other words, don't be a repeater hog.

11) Yield to others because they have asked courteously.

12) YIELD IMMEDIATELY TO EMERGENCY TRAFFIC

13) Don't give directions to places if you don't know them, or can't describe them clearly and simply.

THE NET CONTROLLER'S NIGHTMARE:

The participant who hogs the time. Repeaters do time-out, resulting in a Net shutdown spoiling things for others.

'Dropping' the repeater may defeat the time-out circuit, but isn't courteous to those waiting for their turn.

Casual NETs can be fun, but need to keep moving along so others feel they too can participate.

Respect Net Controller's role. If you need a long QSO with someone use the phone or another frequency, if it's a short comment or question, request a BRIEF moment from Net Control. Short response time also applies to the person replying.

In Summary:

As with all ham radio; LISTEN first.

COURTESY is always the by-word. Think of others.

Remember, nets are practice for EMERGENCIES.

Follow NET CONTROL instruction.

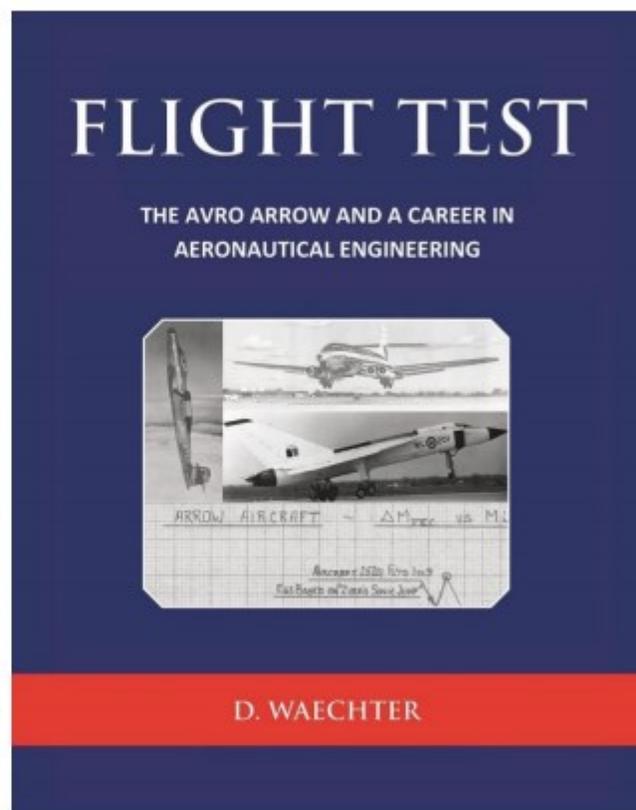
I received an interesting e-mail from Richard Marchuk, of Kitchener who is one of our newsletter readers. He told me about this book written by one of his friends. Unfortunately, the book launch and signing took place on Nov. 20, before the newsletter normally comes out. However, for those aviation enthusiasts, this book written by a local author might be a welcome addition.

Flight Test:

The Avro Arrow and a Career in Aeronautical Engineering

By David Waechter

This new book describes the work of the author's late father, Ralph William Waechter, and those with whom he worked at Avro Aircraft Limited. Ralph Waechter's work included Machmeter calibration and performance analysis for the CF-105 Arrow. The book reproduces and explains key excerpts from aircraft performance reports that Ralph Waechter retained after leaving the company. The foreword was written by Hon. Col. Gerald P. J. Haddon (RCAF), the grandson of J. A. Douglas McCurdy, who piloted the Silver Dart for the first controlled powered flight in the British Empire.



**CHECK OUT
THE NEWLY REVIVED
ELMIRA RADIO CLUB WEBSITE
AT**

www.ve3erc.ca

WEDNESDAY NITE NET CONTROLLERS

DECEMBER 2 - REG VE3RVH

DECEMBER 9 - CHRISTMAS PARTY

DECEMBER 16 - PAUL VE3PVB

DECEMBER 23 - BOB VE3IXX

DECEMBER 30 - JUD VE3WXU

JANUARY 6 - TED VE3TRQ

JANUARY 13 - AL VA3TET

JANUARY 20 - BILL VE3ETK

JANUARY 27 - MEETING

FEBRUARY 3 - REG VE3RVH



**DON'T MISS THE ANNUAL
ERC CHRISTMAS PARTY
WEDNESDAY, DECEMBER 9, 7pm
BRING YOUR FAVOURITE FINGER
FOOD**

AND BE PREPARED TO HAVE FUN!!!

From Dan KB6NU who is a regular Blogger and invites reproduction:

A new Heathkit! So, why am I not excited?

By Dan Romanchik, KB6NU

A couple of weeks ago I got an e-mail from Heathkit. Yes, the NEW Heathkit. you might remember that a couple of years ago, there was all this hype about a "new" Heathkit and how they were going to start designing new kits as well as revive popular old designs.

Then, nothing. They went completely quiet—until a couple of weeks ago. In an e-mail sent to their "insiders," they say:

"Dear Heathkit Insider,

'What I really hope Heathkit will produce,' a Silicon Valley colleague recently told me, 'is a new radio kit with a beautiful finish, maybe in rosewood.' Something great to enjoy building and learn from, and also visually stunning, so he could put it in his living room and keep it forever.

"Today, my friend gets his wish."

They then go on to explain all of the work they've been doing in relocating Heathkit to Santa Cruz, CA, acquiring a second company, and securing all the intellectual property rights to the old Heathkit manuals and logos (meaning no more bootleg copies on the Internet). The e-mail continues:

"That's a lot, but there's more. We've designed and developed a wide range of entirely new kit products. We authored the manuals for these kits, complete with the beautiful line art you rely on, preserving and respecting our iconic historic Heathkit style. We developed many new inventions and filed patents on them.....We built the back office infrastructure, vendor and supply chain relationships, systems, procedures, operations methods, and well-thought-out corporate structure that a manufacturing company needs to support its customers, to allow us to scale instantly the day we resume major kit sales. All this effort enables us to introduce a fleet of new kits and helps ensure Heathkit can grow, prosper, and continue to bring you great new products for a very long time."

So, what's the exciting news? A new QRP transceiver? Maybe a shortwave radio? A new 100-in-1 experimenter kit for Makers?

Uh-uh. Sorry. The "exciting" news is a tuned radio frequency (TRF) AM band (yes, I said AM band) radio kit that costs \$150 (<https://shop.heathkit.com/shop/product/explorer-jr-trf-am-radio-receiver-kit-black-case-gr-150-bk-16>). Not only is that crazy expensive for an AM radio, it doesn't even come with a speaker. On top of that, there's no soldering. You screw all of the components to the board. I'm speechless (well, figuratively, not literally).

I'm not sure what the target market is for this product. It's certainly not amateur radio operators, who expect a lot more (in terms of both functionality and "fun") for their money. Nor is it the "Maker" folks, who want something more challenging than an AM radio. I think that if I took this to show off at the local Ann Arbor Maker group, they'd laugh me out of the place.

I really hope that they have something better up their sleeves. A strong Heathkit would be good for the Maker movement and for ham radio.

73, Dan KB6NU

=====

When not thinking about what kit to build next, Dan, KB6NU, operates CW on the HF bands (mostly 40m and 30m). His #1-rated amateur radio blog can be found at KB6NU.Com, and you can e-mail questions, comments, or complaints to cwgeek@kb6nu.com.

Elmira Radio Club BY TOM VE3DXQ

Minutes from November 25, 2015

Present:

VA3TET Al, VA3GWM Gord, VE3WXU Jud, VA3WXU Joyce, VE3TRQ Ted, VE3XTM Terry, VE3DCC Rich, VA3PDC Paul, VE3JMU Jim, VA3FJM Frank, VE3IXX Bob, VE3DXQ Tom, VE3PVB Paul, VE3KCY Ken, VE3JXX John, VE3QB Bruce, VA3QB Bill, VE3CXU Doug, Rob VE3AHP, VE3DCC Rich, VE3JVG Jason, VE3KCY Ken, VE3CXU Doug, VE3FEF Carl, VE3EIX Harry

The meeting was opened at 7:30 pm by VA3TET our Trustee as VE3DCC Rich was going to be late due to another meeting he had to attend.

AL VA3TET advised we would move along to discussion and video of the Poynting Vector Antenna. Both Al VA3TET, and Paul VE3PVB having been working on various modifications and versions of this antenna for several years now. Paul VE3PVB showed by video the various types of poynting vector antennas his Friend and Amateur radio operator Connie in Sweden has been working on. The types shown were a flute shaped one and a globe shaped one and one that looked like a Guillotine. The antennas worked well and really cut down on back ground noise.

VE3DCC Rich arrived around 8:00 P.M. and proceed with the roll call.

Minutes from October meeting and old business: Rich VE3DCC brought a copy of the RAC affiliation application form fill out and passed to Tom VE3DXQ for record keeping purposes. Also a copy of the form filled out for donation of The Canadian Amateur Radio Magazine to the region of Waterloo Library.

Rich VE3DCC said we now have a



Paul VE3PVB showed a video of his long time friend, Conny SM6DCO from Sweden demonstrating how well the Poynting Vector Antenna worked on 20M skeds.

business number and have to make arrangements for payment of tax.

Tom asked if there were any errors or omissions from last month's minutes. None were mentioned. Tom moved that October 2015 minutes be accepted. The acceptance of the minutes was seconded by VE3PVB Paul carried.

Rich asked Tom about the dates for next year's meeting. Tom advised he will figure them out and put them in the November minutes. Rich said they have to be transcribed to the new calendar at the fire hall when they get the new calendar.

Repeater Status: The 2M repeater is working fine presently. However the 440 repeater has some issues with the 123 PL tone. Al suspects a bad cable. If the 440 at the fire hall works ok once repaired then we can look at retiring the one at the feed mill. Al said the 2M has some coverage the old 440 did not have before however handhelds have more difficulty getting in.

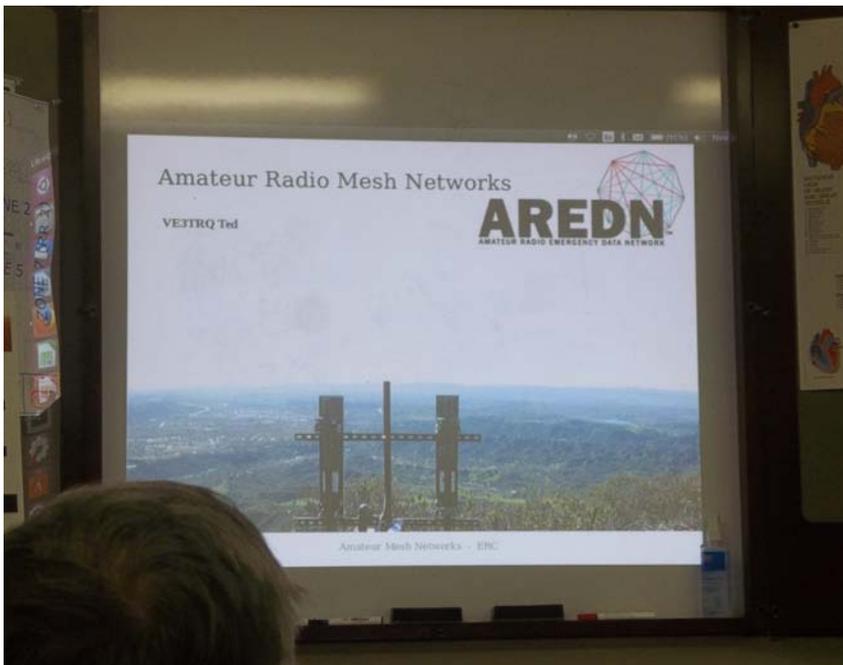
Frank VA3FJM mentioned that a 70 ft tower he had hoped the club could acquire was unfortunately destroyed when the demolition company had tried taking it down.

Treasurer's report: Reg VE3RVH was not present, but Al VA3TET advised our current balance is \$1,107.81.

Nominations committee: Rich VE3DCC mentioned that we should start thinking about nominations for Club Elections which are only 6 months away. Paul VE3PVB asked to see him, if you are interested in any positions. Jim VE3JLC has left the club, so we need a new person on the Nominations committee.

Incorporation and Constitution Committee: Rich VE3DCC mentioned that we need an accountant to file a report to CRA. Terry VE3XTM advised the cost of this is about \$500.00. Rich advised we will have to see if we can file ourselves to avoid costs.

Elmira Maple Syrup Day: Judd VE3WXU advised we have to apply by January.



Ted VE3TRQ gave his talk on Mesh Networks. The topic was so interesting that the meeting went into overtime with all the questions afterwards.

Health and safety officer: Tom advised nothing to report other than all went well with changing to 2M repeater at the Hose Tower. No incidences.

Lighthouse Project: Bruce VE3QB all OK for next year.

Retrofit for the fire hall: VE3JXX John said antenna switch was done in 15 minutes. John asked, if the End Fed antenna that VE3JLC donated can still be used and as far as we know he is still OK with that. Jim also has some cable for it to be picked up. John also mentioned he is trying to get an antenna up at the arena, and if he does it would be available from 6:00 am until 11:00 pm. The Arena is also the evacuation centre in case of emergency.

Ad Hoc emergency plan update: Rich VE3DCC advised that the Fire hall may be renovated as opposed to building a new one. This is still in discussion at the township. John thanked the club for the sympathy card regarding his mother's passing.

Technical Reports: VA3TET AI nothing to report.

QSL report: VA3WXU has taken over the position of QSL manager. Joyce asked the question when we log club contacts with ERC as we move towards a club station at the fire hall. Rich VE3DCC said yes.

Christmas party Dec 9, 2015: Chair persons are Reg VE3RVH and Jim VE3JMU.

Volunteers for set up for the Christmas party are Tom VE3DXQ, Joyce VA3CXU, AI VA3TET, Reg VE3RVH, and Jim VE3JMU. Volunteers are to be at the fire hall for set up at 1:00 Pm on Dec. 9, 2015.

This is a potluck event so bring your favorite finger food.

Presentation: Mesh networks by VE3TRQ Ted. Ted showed a Power Point slide show showing the mesh various mesh network configurations. There are 2 types that are mostly used one 2.4 GHz, one 5.8 GHz.

They are basically data communications over the air in which you can use for video, data, and voice communications. He passed around 2 sample antennas one for the 2.4 GHz and one for the 5.8 GHz. John VE3JXX advised he will add a link on the ERC web site for those interesting in reviewing his presentation.

Dates for ERC meetings 2016:

Jan 27, 2016 - DMR digital voice capable portable radio (15 min) Gregory Smith.

FEB 24, 2016 - SDR Radio update (Terry VE3XTM)

Mar 23, 2016 - Digital Modes PSK (Dennis VE3UTN). Also Maple syrup preps.

April 27, 2016 - ?

May 25, 2016 - elections

June 22, 2016 - Financial reports and CRA return. Field day also in June.

July and August - no meetings.

September 28, 2016

Oct 26, 2016

Nov 23, 2016

Dec Christmas party

My Two MEMS Microphones

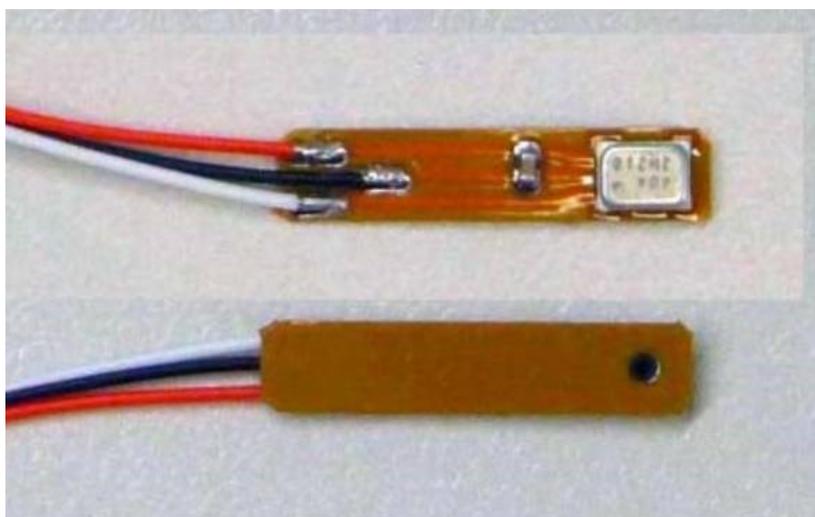
by

Paul V. Birke BAsC MEng PEng VE3PVB

MEMS Microphone #1

MEMS = **M**icro-**M**achined **E**lectro-**M**agnetic **S**ystem. The MEMS microphone element used is an Analog Devices ADMP510 Flex MEMS. The product line has since been sold to InvenSense. See URL <http://www.invensense.com/products/analog/>

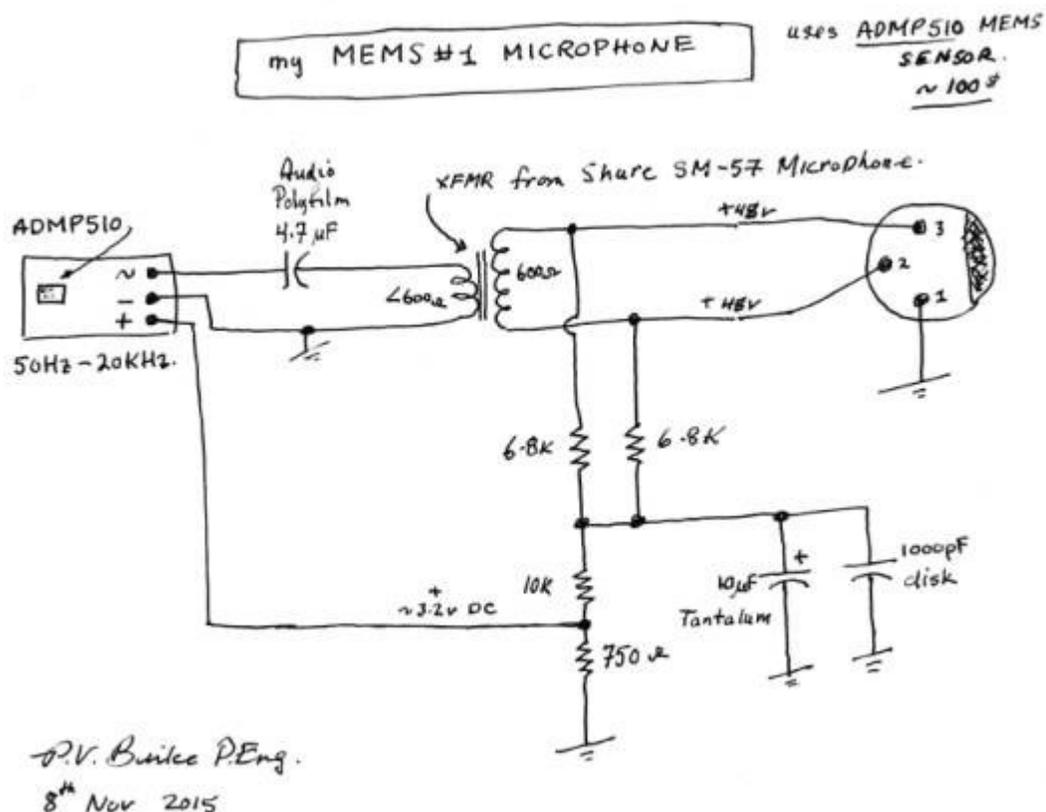
THE ADMP510 Flex MEMS Microphone element looks like this.



A non-working Shure SM-57 microphone was obtained from eBay for a reasonable price. Its body is used to house the MEMS device and the circuit elements. The excellent Shure audio output transformer is also a key ingredient of the new MEMS microphone. MEMS#1 are both phantom powered at 48 volts.



The following shows the circuit used. It has been developed with the honoured assistance of Bill Graham, VE3ETK from the Elmira Radio Club. Bill is a former Audio Engineer from CTV and has now made three MEMS microphones himself. Bill claims the MEMS microphones can perform better than the sophisticated professional microphones used at capturing audio at CTV such as the much-vaunted Ribbon Microphone and the newer excellent high-end Condenser Microphone. Learning that from Bill was a big surprise to me and illustrates what can be obtained with these relatively inexpensive MEMS sensors (15\$ to \$100+), if one is willing to try to "roll your own" high-grade mike.

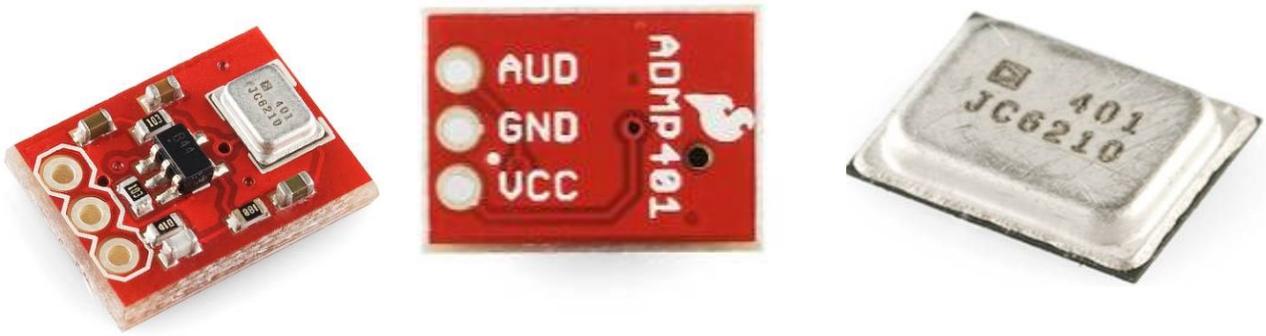


Firstly, I had mounted the MEMS port wherein the audio passed by the port. I had received reasonably good reports when running the Sandbox Roundtable Net, Sundays 6:30pm to 7:30pm at 3733 KHz (I have been the SBN Controller for last 6 years).

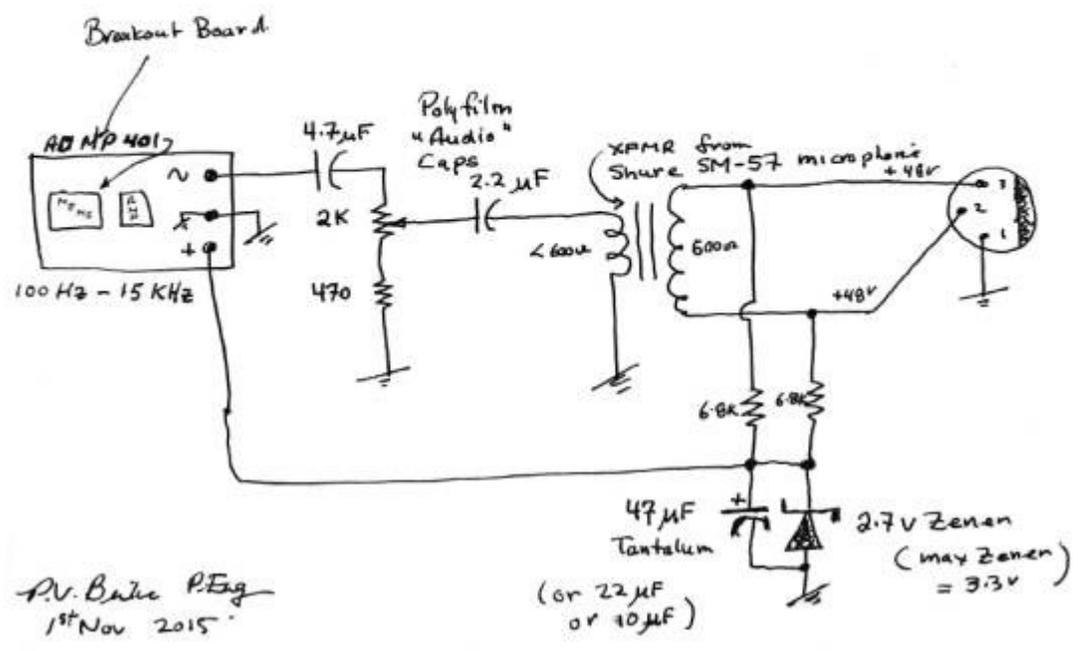
I have changed the sensor position by 90° so that the audio is coming directly into the port's small opening. I have now received excellent reports from my Amateur Radio colleagues.

MEMS Microphone #2

This microphone was developed as a result of a challenge from Bill to use an inexpensive MEMS ADMP401 breakout board he knew I had also purchased. As incentive, Bill gave me a non-working Samson microphone as a housing for the new prototype and a 2.7 volt Zener diode to regulate the voltage to the MEMS breakout board. Illustrated below are the board and MEMS ADMP401 sensor. It is available on eBay from China for ~ \$15.



my MEMS #2 MICROPHONE uses ADMP401 MEMS SENSOR ~ 15\$



I have received excellent reports for its crisp audio on the air. When compared, Radio Amateurs favour the rebooted MEMS#1 microphone due to better lower bass response and clarity.



Here are photographs of the two operational microphones. Top left is the rebooted MEMS#1 microphone and top right is the new MEMS#2 microphone. I cannot overemphasize the necessity of obtaining a high performance audio transformer such as that found in the non-working Shure SM-57 microphones via eBay. Should you attempt to duplicate one of these MEMS microphones, please obtain a Shure SM-57 even though upwards of \$50. Also use the Zener 2.7 volt regulator as defined by Bill Graham. Note I have bypassed the Zener with a high valued tantalum capacitance. Also make sure the microphone case is grounded.