THE DUMMY LOAD

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serving the community since 1964

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Meetings

Meetings held at 8:00pm on the second Monday of each month , Board Room Preston Arena (Bishop St at Hamilton St) No meetings in July or August. Visitors always welcome.

Club Net

on the
VE3SWR repeater 146.790 Mhz
every Wednesday
at 2100R

VE3SWA
DXCC HONOR ROLL
(332/332)
WAZ, WAC, WAS.

Next Meetings

Mon Nov 8th 2010
Mon Dec 13th 2010
Mon Jan 10th 2011
Mon Feb 14th 2011
usual location and time

CLUB NEWS

Another fairly good turnout for our October meeting with 11 members showing up as follows :VA3AVR Tony, VA3CBE Calvin, VA3MP Mike, VE3BGG Bert, VE3BHZ Dave, VE3FC Fraser, VE3IHM Hugh, VE3NXV Gerry, VE3OAV Robin, VE3OEA Ryan, and VE3USP Steve. Secretary Gerry NXV read the minutes of the September meeting which were accepted as read, Treasurer Fraser FC then gave us a brief financial report indicating all is well with the club finances. This report was also accepted as read. The club received a "Thank You" card from Scott's mother, acknowledging and thanking us for our donation in memory of David Buell (Scott's father) who passed away recently. A request for a donation was received from the CNIB Amateur Radio Fund and this was authorized. Payment was also authorized for the New York Ontario repeater organization. A lengthy discussion ensued about "Fox Hunting" it apperently raised a lot of interest among the members present and various members added their opinions to the mix. Many suggestions were made regarding suitable easily constructed portable beams using steel tape measures. It seems that a recent article in CQ magazine had prompted the discussion about portable beams. No doubt the subject will contintue to be discussed at our next meeting. Unfortunately our coffee and doughnut man was unable to attend the meeting so we adjourned to only rag chewing. Gerry NXV went home with an extra $8.50.

PRIVATE HARRY PATCH 1898 - 2009
MACHINE GUNNER WW I
DUKE OF CORNWALL'S LIGHT INFANTRY

Harry became known as `The Last Fighting Tommy `. he passed away last year at the age of 111 and at that time he was the last surviving British serviceman from World War 1. In his book `The Last Fighting Tommy `, he describes the anxious moments before `Going Over The Top `.

On the far side of the flooded stream, we assembled. There was a look of apprehension in everyone`s eyes, and horror in a few. There was white tape laid there so we knew where to stand and in which direction we were expected to go, otherwise we might wander off course, or fall into a shell hole....We waited for the whistle to blow.

In his autobiography Harry vividly remembers his childhood in the Somerset countryside of Edwardian England . He left school at fourteen to become an apprentice plumber, but three years late was conscripted, serving as a machine gunner in the Duke of Cornwall`s Light Infantry. Fighting in the mud and the trenches during the battle of Passchendaele he saw a great many of his comrades die, and in one dreadful moment the shell that wounded him killed his three closest friends. In vivid detaill he describes daily life in the trenches, the terror of being under constant artillery fire, and going over the top.

Let us remember and give thanks to the following club members who served their country in peace and war

VE3BCK Ken Brook RCAF (SK) WWII
VE3CYK Bill Woodfield Cdn Signal Corps (SK) WWII
VE3IAM Frank Marsh RCAF (SK) WWII
VE3EHM Earl Mann RCAF (SK) WWII
VE3VG Dennis Elliot RCAF (SK)
VE3BGG Bert Grapes RCNR
VE3BHZ Dave Lott RN & RCNR

O Valiant hearts, who to your glory came
Through dust of conflict and through battle flame;
Tranquil you lie, your knightly virtue proved,
Your memory hallowed in the land you loved.

JUST A COMMON SOLDIER.

Lawrence Vaillancourt

He was getting old and paunchy and his hair was falling fast,
And he sat around the Legion, telling stories of the past
Of a war that he had fought in and the deeds that he had done,
In his exploits with his buddies; they were heroes, every one.

And tho' sometimes, to his neighbors, his tales became a joke,
All his Legion buddies listened, for they knew whereof he spoke.
But we'll hear his tales no longer for old Bill has passed away,
And the world's a little poorer, for a soldier died today.

He will not be mourned by many, just his children and his wife,
For he lived an ordinary and quite uneventful life.
Held a job and raised a family, quietly going his own way,
And the world won't note his passing, though a soldier died today

When politicians leave this earth, their bodies lie in state,
While thousands note their passing and proclaim that they were great.
Papers tell their whole life stories, from the time that they were young,
But the passing of a soldier goes unnoticed and unsung.

Is the greatest contribution to the welfare of our land
A guy who breaks his promises and cons his fellow man?
Or the ordinary fellow who, in times of war and strife,
Goes off to serve his Country and offers up his life?

A politician's stipend and the style in which he lives
Are sometimes disproportionate to the service that he gives.
While the ordinary soldier, who offered up his all,
Is paid off with a medal and perhaps, a pension small.

It's so easy to forget them for it was so long ago
That the old Bills of our Country went to battle, but we know
It was not the politicians, with their compromise and ploys,
Who won for us the freedom that our Country now enjoys.

Should you find yourself in danger, with your enemies at hand,
Would you want a politician with his ever-shifting stand?
Or would you prefer a soldier, who has sworn to defend
His home, his kin and Country and would fight until the end?

He was just a common soldier and his ranks are growing thin,
But his presence should remind us we may need his like again.
For when countries are in conflict, then we find the soldier's part
Is to clean up all the troubles that the politicians start.

If we cannot do him honor while he's here to hear the praise,
Then at least let's give him homage at the ending of his days.
Perhaps just a simple headline in a paper that would say,
"Our Country is in mourning, for a soldier died today."

Antenna Restrictions? Lose The Mic!

By Ray Soifer, W2RS

As we know, far too many hams are affected by antenna restrictions: CC&Rs, zoning problems, rental properties, etc. Possible solutions vary with the specifics of the situation, some being more "solvable" than others.

What about hams who find themselves in the "less solvable" category but still want to operate HF? Unfortunately, there's a pattern that I've seen repeated all too frequently. The ham (we'll call him Sam) puts up a "stealth" antenna of some sort, buys a transceiver, and goes on SSB because it's the only mode he feels comfortable with. Besides, his buddy Fred, you know, the one who lives on a farm with a 100-foot tower,

has so much fun yakking with his friends all over the world on 20 meters.

When conditions are right, Sam has a blast. Unfortunately, however, that doesn't occur very often, especially with sunspots being as rare as they are. In fact, Sam is getting increasingly frustrated. Why can't anybody hear him? When he does work someone, he has trouble getting his name and call across with a 3x3 report, let alone carry on a conversation. Sam now finds himself going on the air less and less. Before long, he'll probably sell the radio and go back on 2-meter FM, or even give up hamming entirely. I've seen it happen many, many times.

Does Sam's predicament sound like yours? There may be things you can do about it, even if you cannot improve your antenna situation. Here's one of the simplest: lose the mic, or put it away for use only on the local net. Switch to CW, or if that's not your thing, learn to use PSK or RTTY.

Don't get me wrong. I'm not anti-SSB. I've been on it since 1958, when I built a Central Electronics 20A phasing exciter. It's just that the laws of physics are what they are, and SSB is so inefficient compared with CW and digital modes that for those unable to have a good antenna, the latter will be far more effective.

How much more effective? Let's begin by looking at bandwidth. A CW transmission, at 25 words per minute, has a baud rate (bits per second) of 20. Typical keying and HF fading characteristics combine to produce an effective noise bandwidth at the receiver of up to 100 Hz. PSK31 has a baud rate of 31, by definition, and the typical effective noise bandwidth is also approximately 100 Hz. RTTY, with a baud rate of 45 and 170 Hz shift, has a typical effective noise bandwidth of around 250 Hz. The effective noise bandwidth of an SSB signal can be up to 3 kHz, but we'll use 2.4 kHz for our analysis. All of these figures are approximations, but they are close enough for our purposes.

CW, PSK31 and RTTY are all "key down" modes. When the transmitter is keyed, average power equals peak power. Not so for SSB. Without speech processing, average power is typically a small fraction of peak power (PEP), depending on voice characteristics. For our analysis, however, let's assume that the processing and ALC are turned up pretty far, so that average power is 50% of peak.

Now, we can put these figures together to determine relative effectiveness, as measured by the signal-to-noise ratio (SNR). As compared with SSB, the noise bandwidths of CW and PSK31 are about 24 times narrower, so the noise level is approximately 14 dB lower. Factoring in SSB's 50% average power results in the SNR for CW and PSK31 being approximately 17 dB greater than that of SSB. A similar analysis for RTTY produces an SNR advantage over SSB of approximately 13 dB.

What do these SNR figures mean for you? If you are running 100 watts (PEP) to a dipole, switching from SSB to CW or PSK31 would be equivalent to adding a 1 kW amplifier and a 3-element beam (at the same height as your dipole). If you then switch from CW to RTTY, that would be equivalent to turning that 1 kW amplifier down to 400 watts, but that's still 20 times more effective, in SNR terms, than 100 watts to a dipole.

Looking at it another way, let's say that you are running 100 watts to a "stealth" antenna on CW or PSK31. Switching to SSB would be equivalent, in SNR terms, to reducing your power output to just 2 watts. No wonder Sam has so much difficulty being heard!

For ham radio to be fun, you have to have a signal good enough for the receiving operator to understand you easily. That usually requires a reasonable antenna -- for example, a dipole, in the clear, at least half a wavelength above ground. The performance of many "stealth" antennas is often several "S" units below that. If you've already done all you can to improve your antenna, why not put the 13-17 dB advantage of CW and digital modes over SSB to work for you?

42 VOLT CAR BATTERY ANYONE

VA3CBE

A motor vehicle mechanic student in trade school was having a class discussion in the possibility of increasing the voltage of which our cars are now using. Back in the 80's this was a topic I had once heard rumor of, and I think it was the same week I heard the rumor of the Leafs winning the cup HI! Well not to get off topic this is how I had explained it to him and I hope this makes sense to all of you. Be prepared, as years pass and technology evolves we will indeed see changes in the automotive industry. Remember just ten years ago did anybody own a 36 volt lawnmower, or a 48 volt bicycle?

Twelve volt batteries in an automobile? That's absurd! I am sure that is what the old timers must have said back in the day when six volt batteries were the normal. So why would we consider running a forty-two volt system today? The venerable system has served us well for many years but as technology evolves and our electrical demand continues to grow the power supplied has to grow with it.

To understand how the higher voltages will affect our needs it is important to understand that we cannot look at our usage of current in amperes or resistance in ohms, but to view the wattage of the load which is doing the work we need it to do. The power consumption in watts will remain equal if one or one hundred volts are applied. Lets take an ordinary sixty watt headlamp for example. At 12 volts it will draw 5 amps. Using ohms law (you do remember ohms law and watts law don't you?) we can calculate it has a resistance of 2.4 ohms. Now using that same load at 42 volts it will draw 1.43 amps and ohms law says 29.27 ohms. The loads power consumption is relative to the voltage and resistance. So why mess with the voltage? Many reasons, one is wire size. Lets look at back at our headlamp bulb. 5 amps vs 1.43 amps, which one requires larger more expensive wire? Your thinking big deal its just one headlamp right? How many bulbs are there in a car? What about taking a look at a larger load? perhaps the starter motor, for this example we will assume it is "free running" with no load. A typical car starter is rated at 1.2 KW (that's one thousand two hundred for the number challenged folks) 1200 watts divided by 12 volts equals 100 amps draw. Now that same starter at a higher voltage would be 1200 watts divided by 42 volts equals 28.6 amps, how about them apples! Think of not only the small wire to start a car but the large relays and solenoids could be replaced with tiny cost effective transistors.

What would be the advantage of higher voltage cars? How about smaller wire, more efficient control units (transistors vs cumbersome relays), less weight thus less fuel. How about less loss? Assuming a run of wire and its assorted connectors has just for argument sake 1.2 volt loss that is a 10% loss at 12volts, now same 1.2 volt drop at 42 volt would only be 2.5% that is much less to say the least. Cannot have good without bad, disadvantages, oh yes indeed. Picture cross boosting a dead 12v battery with a 48v battery, trailer lighting, accessories such as aftermarket radios. Increased shock hazard from poor connections (I bet "little timmy" wont pee his pants while the seat heater is on anymore!) There are many more and pros and cons but I think we can get the idea where this is going.

Now for a real world example. Using the formulas calculate the following.

A 1998 dodge truck 5.9 diesel has a 2.7KW starter motor. Calculate current at 6v 12v, 42v and 120v.

Pick a kitchen appliance at random. Look at its specification tag (usually located underside) calculate current at 120v, 42v,12v and 6v

Plasma Physics for the Radio Amateur, IV
Listening for the Screams

Eric P. Nichols, KL7AJ

We mentioned in Part One that most of what we know about the ionosphere is inferred from ground based radio, which is quite a distance from the ionosphere, generally speaking. We know what the ionosphere IS primarily from what it DOES. This is not always a very direct method.

At HIPAS Observatory, one of our sage elder scientists said, “Ionospheric research is like shooting a gun into a dark room and listening for whatever screams.” I think that was a wonderfully apt description. Occasionally, we send a rocket through the ionosphere for “in situ” measurements, but these are very expensive and few and far between. There are some satellites that give us topside sounding, which allow us to see what the electron profile is ABOVE the critical height, something you can't do at ALL with ground based ionosondes.

And we also have plasma chambers. By “WE” we generally don't mean WE as individual hams, but WE as the scientific community as a whole. A lot of the phenomena we see in the natural ionosphere can be reliably reproduced in plasma chambers....things like long-delayed-echoes (an ion acoustic phenomenon), parametric amplifications, (no it's NOT your imagination, the ionosphere CAN amplify signals under the right conditions), and all kinds of weird and wonderful VLF phenomena like whistlers and choruses. But despite all these tools, for the most part ionospheric studies are still pretty much shooting into a dark room and listening for the screams. The real trick is to have a finely trained ear. Or, preferably, a LOT of trained ears. And this is where Amateur Radio fits in.

Doing ionospheric research from your back yard is not rocket science. But it does take good methodology and attention to detail...things most of us should have learned in high school chemistry class. However, I've learned, sadly enough, that anything resembling the scientific method seems to be lost on the majority of most new hams. This is most ironic, since ham radio is supposed to be a scientific hobby. All is not lost, however. Ham radio is still the best avenue for diving into low budget science. All it takes is some discipline. Here are the tools you need as a radio amateur to contribute to the state of the radio art, when it comes to ionospheric study.

1) Something resembling an actual S-meter. It's inexcusable in this day an age to have any receiver with a meaningless S-Meter. The technology is readily available to build an S meter that is absolutely consistent across the entire H.F. Spectrum, even if the sensitivity of the radio itself ISN'T. One of the primary principles of the scientific method is that you can't eliminate all instrumentation errors...but you CAN know exactly what they are and compensate for them! Get in the habit of giving REAL signal strength readings during all your H.F. Operating. In fact, if you start giving close estimates of actual FIELD STRENGTH, in microvolts per meter, it would be even better. It's not THAT difficult to calibrate the gain of your antenna, at least within a few dB of absolute. Any move in that direction is going to be a vast improvement of the normal way of doing business. NEVER promiscuously fling out S9 signal reports. Commit yourself to giving REAL signal reports!

2) Accurate record keeping. Start LOGGING meaningful signal strength readings from every station you work. And suggest that the other feller does the same. If you have a directional antenna, log the actual headings that give you the best signal. Do NOT assume these are great circle headings! This is CRUCIAL information to have if you want to make meaningful scientific contributions. Also, see if the beam heading you have for best reception ALSO is the best heading for your signal getting to the other guy! (Hint: it most likely will NOT!) The only way to know is to ask! LOG both these headings. Radio is only reciprocal in free space. The ionosphere does not qualify.

3) Count your skips. You need to know how many hops your signal is taking on its way to the other guy. And you need to know how many hops his signal is taking to get to YOU. Again, do NOT assume these are the same! You can usually get a good guess of this by looking at the critical height from a local ionosonde, and then do some simple trigonometry. You're basically going to be doing DF work in three dimensions. Here's a caution about skip counting, however. You can have overlapping skips! In other words, you can have both a one hop and a two-hop signal landing in the same place. Or a three hop and a five hop landing in the same place. Why? Because you don't launch a pencil beam on H.F.! You have a beam which can be as

broad as a barn door....essentially with an INFINITE number of “takeoff” angles simultaneously. The only REAL way to resolve this is to have an antenna with a steerable vertical pattern...where you can sweep the elevation for maximum signal strength. If you can reasonably determine the vertica angle of arrival, you can resolve the skip count with some confidence. Again, this can't be done haphazardly, but it CAN be done. But you need to care.

4) You need to know your X from your O. This is CRUCIAL information to have, if you intend on doing meaningful ionospheric research. If you don't know whether you're dealing with an O ray or an X ray, you are basically one hand clapping in the dark. Remember, ALL ionospherically reflected signals will be either one or the other. Determining ray paths and processes is impossible without this information. Again, this property of H.F. Skywave is not a mere footnote; it's FUNDAMENTAL to how the ionosphere works.

5) You need to know your ERP That's Effective Radiated Power. You don't need to know this to six significant digits, but you do need to know it within a couple of dB. This means you need to know the gain of your antenna, at the frequency of interest, AND the actual R.F. Power reaching that antenna. The ancient and venerable method of measuring R.F. Current at the antenna is preferable, but if you know your transmission line losses with reasonable accuracy, you can come close enough by measuring your transmitter output power.

6) You need to care. This is THE most important ingredient of all. We radio amateurs need to justify our existence in order to maintain our highly coveted H.F. Frequencies. Frankly, this whole EMCOMM emphasis is really grasping at straws; it only addresses ONE out of five major points for Amateur Radio's existence as described in FCC Part 97.1. “When All Else Fails” may sound self-important, but what about the 99% of the time when all else WORKS? The fact is, we have a LOT more to offer when it comes to justifying ourselves when it comes to contributing to man's knowledge. Ionospheric research is in its infancy in terms of rigorous, methodical study. We can make a HUGE contribution here, with no more than the hardware on our desks and our gardens, and a bit of discipline. In fact we are the ONLY ones equipped to do this kind of research as a body. There IS no competition from the Department of Homeland Security, the Red Cross, your local fire department, or countless miscellaneous local whackers. If we, as rdio amateurs, get back to doing what we're SUPPOSED to do, our future will be untouchable.

SO TRUE

As the final paragraph in our Remembrance month issue I consider the following quote from H.M. King George V to be most appropriate and so very true.

"We can truly say that the whole circuit of the earth is girdled with the graves of our dead... and, in the course of my pilgrimage, I have many times asked myself whether there can be more potent advocates of peace upon earth through the years to come, than this massed multitude of silent witnesses to the desolation of war."

King George V, Flanders, 1922