



SEPTEMBER 2019

Volume 8 Issue 9

VE3ERC-LUB

- President:** Brian VA3DXK
- Vice-President:** Ted VE3TRQ
- Secretary:** Tom VE3DXQ
- Treasurer:** Paul VA3PDC
- Trustee:** Wes VE3ML
- QSL Manager:** Tom VE3DXQ
- Repeater Trustee:** Wes VE3ML
- Website Admin:** Ted VE3TRQ
- Lighthouse:** Al VA3TET
- Maple Syrup Display:** Al VA3TET
- Newsletter:** Bob VE3IXX

ERC REPEATERS

- UHF 444.700 TONE: 131.8**
- UHF 444.700 TONE: 123.0**
- VHF 147.390 + TONE: 123.0**
- EMERGENCY SIMPLEX: 147.51**
- UHF- IRLP node 2404**
- VHF- IRLP node 2403, ECHOLINK node VE3ERC-R**

**In an emergency, tune
 Into our repeaters,
 UHF 444.700 or
 VHF 147.390 or
 HF 3.755 LSB or
 Simplex 147.510
 For coordination and
 assignments.**



How to make sure your tower never falls down. Thanks to Tom VE3DXQ for this pic.



THE PREZ SEZ!

This club is Radio-ACTIVE

THE CLUB IS RADIO-ACTIVE



President's Update for September 2019

September has past, summer is over for the Elmira Radio Club VE3ERC. October's hit and miss weather is upon us and with upcoming bouts of rain and cool weather we are reminded to get outside and attend to our towers, antennas, and coax and perhaps get in some timely seasonal inspection to these various components before it gets too cold or icy to allow it.

September saw the 2nd year of Elmira Radio Club's Ham Tech seminars in an event-filled day at the legion. Four guest speakers provided very informative, leading edge insight into the latest in amateur radio and associated technologies. Kudos goes out to Frank VA3FJM for his tremendous efforts in organizing this year's event, and to all those from the club who gave of their time to help out and speak.

Please Join us on the evening of Wednesday, October 23th for an evening beginning with our Elmira Radio Club's Silent Key Memorial Dinner from 5:30 to 7:00pm at the Crossroads Restaurant in Elmira, followed by our regular meeting back at the firehall.

Thinking ahead, our Christmas Pot Luck Party is tentatively planned for a date TBD between December 10th - 20th from 6-9:30pm at the Elmira Legion. Details will be finalized during the October and November meetings.

Guest speakers are lined up for both our October and November meetings. Keep in mind we are always looking for speakers, presentations, outings and other ideas for our club meetings. They do not necessarily have to be radio related. All ideas and suggestions are welcome. Let's continue to dress our meetings up a little with some excitement, innovation, and entertainment.

From QST October 1997– Reprinted with permission.

Catch a Falling Star

A beginner's guide to meteor-scatter communication— just in time for "stormy weather!"

By Kirk Kleinschmidt, NT0Z

Conclusion

Leonid Meteors: Potential Satellite Killers?

Like the plot of a pulp science-fiction novel, an intense Leonids storm sometime during the next few years—which would easily be the most powerful of our modern electronic era—may destroy or damage satellites (ham satellites included), space stations and spacecraft.

In decades past, when comet Tempel-Tuttle passed near Earth's orbit (every 33 years; the next perihelion will be in February 1998), awesome, apocalyptic meteor storms sometimes turned pre-dawn skies into terrifying, unforgettable displays. These fireworks, unfathomable and frightening to civilizations a thousand years ago, are sought-after events today.

The last big Leonids storm, in November 1966, with its amazing zenith hourly rate of 150,000 meteors per hour, was dazzling by even Leonids standards. It happened, however, before Earth's space age began to pick up steam. Unlike today, citizens in 1966 didn't rely on fleets of communication, weather, Amateur Radio and spy satellites. They didn't launch space shuttles and build space stations, either!

If you think there's no danger—you're wrong. Satellites have recently been killed by micro-meteoroids encountered during meteor showers far less active than those predicted for the 1997-2003 Leonids. And *Mir*, the Hubble Space Telescope and US space shuttles have been visibly damaged by debris and micrometeoroid collisions.

What might happen to the manmade satellites now in orbit during a meteor storm 10,000 times more intense than normal—with particle impact speeds exceeding 150,000 miles an hour?

What indeed! Those conditions were measured during the tremendous 1966 Leonids storm, and scientists are worried that we'll see a repeat performance (or one or *more* showers of lesser, yet potentially destructive intensity) during November Leonids showers over the next several years.

Physical collisions alone are cause for concern, but a second threat may be even more ominous. Because of the tremendous impact velocities involved (closing with the Earth at 71 km per second, the Leonids are the fastest-colliding cometary fragments known), the highly charged plasma clouds generated by the impacts of even extremely small Leonids particles

may be powerful enough to kill satellites that would have been minimally affected by the physical collisions.

Death of a Satellite

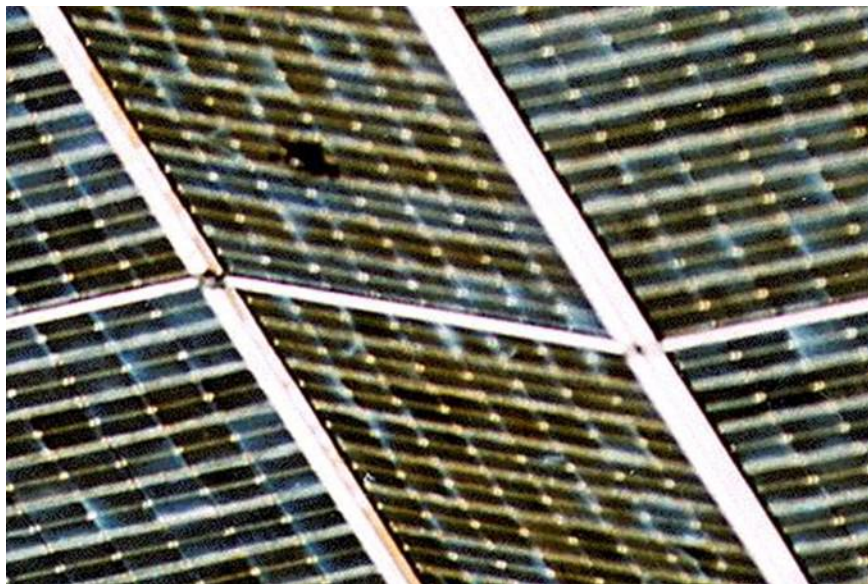
Objects in orbit are constantly bombarded by very small particles. Space shuttle windows get “sandblasted” and pitted during missions and are routinely replaced before the craft is re-launched. Long-duration orbiters such as *Mir* have protective window covers to reduce cumulative micrometeoroid damage. The space station *Freedom* will even be armored to withstand the impact of a 1-cm aluminum sphere traveling at 10 km per second.

And while micrometeoroids don’t usually kill satellites on the spot, a large satellite was killed in such an encounter in 1993.

The incident spurred scientists to study micrometeoroid streams more closely.

The casualty was *Olympus*, a large communications platform operated by the European Space Agency. During the 1993 Perseids meteor shower, an outboard solar panel was hit by a meteoroid. The kinetic energy transferred during the hit spun the satellite off axis and a highly charged plasma cloud “bathed” the satellite and entered its internal structure, causing gyro errors. Ground-control operators eventually stabilized the satellite, but with no remaining station-keeping fuel the satellite was effectively dead.

During the same 1993 shower a space shuttle launch was delayed and the Hubble Space Telescope was positioned so that its powerful optics were aimed directly away from any incoming meteors. Later shuttle missions would reveal that the Hubble’s high-gain dish antenna was cleanly punctured by a meteoroid (or orbiting debris), as were several *Mir* solar modules. Whether the hits took place during the Perseids shower isn’t known.



This photo, taken by shuttle astronauts, shows the large “cookie-cutter” hole punched through a *Mir* solar panel. It was caused by a collision with a passing meteoroid or other orbiting space debris. Photo courtesy of NASA.

Kinetic Encounters or Plasma Attack?

When most of us think about particles hitting satellites we tend to imagine *ballistic* damage. Much like shooting a bullet at a target, we visualize meteoroids punching into satellites at tremendous speeds. We might even picture the satellite breaking up or even exploding—like a scene from a Clint Eastwood movie.

Ballistic damage is a pressing concern, especially when even a tiny, speck-like particle moving at incredible velocity can pack as much punch as a missile. A particle's kinetic energy increases with the square of its velocity, and Leonids particles, with closing velocities much faster than those of typical meteoroids, can pack a tremendous punch.

(Unlike most comets, Tempel-Tuttle orbits the Sun in nearly the same plane as Earth—but in the *opposite direction*. When Earth moves through the comet's very narrow debris field, this head-on collision results in a closing velocity of 71 km per second.)

Simple ballistic models make sense, especially when particles hit thick, solid objects such as the main bodies of spacecraft or satellites. This allows the tremendous kinetic energy stored in the fast-moving particle to be transferred to the "target."

Kinetic damage is bad enough, but scientists are more concerned about the plasma clouds produced when superfast particles hit just about anything (such as those that were likely produced in the *Olympus* incident). As scientists are discovering, slower, bigger micrometeoroids cause more kinetic damage and produce less "plasma effect" than faster, smaller particles.

When particles collide at Leonids velocities, the physical matter simply "falls apart" and disintegrates into a charged plasma cloud before the bulk of its kinetic energy can be transferred to the target.

Imagine an Iowa Farm-League pitcher who could throw a baseball so fast that when the hitter smacked it dead to rights with his bat, instead of the cover being knocked off the ball, as in the old movies, the ball literally "poofed" into nothing (a plasma cloud) while the batter corkscrewed around as if he missed the pitch entirely!

The intensity of the plasma field generated on impact varies with the particle's velocity *to the fourth power*. It's amazing to think that a Leonids particle weighing a thousandth of a gram might strike the main structure of a satellite at 155,000 miles an hour and leave only a microscopic pit in the paint—micro-seconds before consuming the satellite's electronic systems in a powerful plasma cloud, shocking it as though it had been struck by lightning!

A second effect of plasma clouds may be just as deadly. If the affected satellite survives the direct plasma pulse, it may still be destroyed or damaged by electrostatic discharges between its own components.

In orbit, the vacuum of space is an excellent electrical insulator. Insulated spacecraft components such as antennas and solar panels gradually accumulate static charges picked up by "brushing against" the continuous stream of solar emissions, much like an airplane that becomes charged by flying ("frictioning") through the air.

Under normal conditions these charges can safely accumulate. But when a satellite is enveloped by a highly conductive plasma cloud, the charged components can “flash over,” potentially damaging or knocking out electronic circuits.

At Leonid speeds, meteoroid hits don't have to cause *any* mechanical damage to kill or damage a satellite. In fact, at 71 km per second, scientists think plasma damage may be much more of a problem than mechanical damage.

What's NASA Doing?

NASA is sifting through Leonids data on several fronts and is taking the potential threat seriously enough to delay shuttle missions and critical launches during the November 17 shower periods. And if astronauts are aboard the yet-to-be-launched space station, they will likely be moved into *Freedom's* protected internal areas or emergency crew-recovery modules during the relatively short-duration peak periods.

The Bottom Line

Determining the *precise* odds of a spacecraft colliding with a Leonids meteoroid is difficult at best because orbiting structures vary in size, and objects over different parts of the globe see widely varying particle rates.

Using 1966 storm data, scientists calculate an impact probability of approximately 0.1% per hour for satellites of “standard area” (10 square meters) exposed to peak-rate particle streams. Many satellites are much larger, especially when their solar arrays are exposed to the stream.

An impact probability of 0.1% per hour doesn't sound all that risky, but when you consider that a satellite of standard area normally has a 0.07% impact probability *per year*, the meteor storm figure stands out. The space station *Freedom*, with an exposed area of almost 500 square meters, should experience an impact probability of about 0.5%, with a maximum risk of 1%.

This figure assumes the station's heavy shielding, however, and estimates the risk associated with a *critical* impact. Its chances of being hit by smaller particles may be greater. And how the station may be affected by potential plasma discharges is unknown.

Even with impact probabilities that seem mathematically insignificant, there are hundreds of objects in orbit, each one a potential target for the fast-moving Leonids.

More Information

Information on the Leonids threat is emerging daily, so the best place to get the latest scoop is on the Internet. Point your browser to <http://medinfo.wustl.edu/~kronkg/> to get started. Meteorologist and Leonids expert Joe Rao's excellent article, “Leonids: King of the Meteor Showers,” can be found in the November 1995 issue of *Sky & Telescope*. It's provides a must-have Leonids education. Much of this sidebar was excerpted from my article, “Bracing for the Leonids Firestorm,” which appeared in the March/April issue of *Satellite Times*.—NT0Z

Meteor Scatter Soapbox

If you think meteor-scatter hamming is too tricky, requires too much hardware or massive antennas, think again. We asked several meteor-scatter aficionados to share their thoughts and experiences with potential newcomers.

"I've had two meteor-scatter contacts from my car while running 150 W to a Comet CA-HV antenna!"—*Earl Needham, KD5XB*

"I have worked many 2-meter meteor-scatter stations with 150-W brick and single Yagi. What is more interesting is the 2-meter SSB meteor-scatter QSOs we make in the Midwest with 25 W and 20-element OSCAR antennas (crossed 10-element Yagis). That adds a little more challenge to working random meteor-scatter QSOs. The same setup is also very effective for 2-meter aurora contacts."—*Ed Fitch, W0OHU*

"150 W and a small/medium Yagi (14- to 21-foot boom) is more than adequate for meteor-scatter work. In fact, I worked 37 states on 2 meters and much more than VUCC with just such a station. Mark, KM0A, has worked hundreds of stations with

150 W at his end. I worked him when I was portable from South Carolina in early June without the benefit of a meteor shower. I was running 150 W to a portable 14-foot Yagi antenna from the top of a condo."—*Gene Zimmerman, W3ZZ*

"I started out with a converted Midland CB [converted to 6 meters—*Ed.*], giving me 10 W output to a five-element Yagi that I built from plans in an old *ARRL Antenna Book*. I worked stations in ZS2, ZS4, ZS5 and ZS6 via meteor scatter with no problems. You *can* do it with a low-budget station, I did!"—*Johan le Roux, ZR1AEZ*

"I lived in an apartment in Wichita, Kansas, during the mid '80s and ran 80 W on 2 meters to a four-element quad. I was able to work the following in the 1983 Perseids shower: N8AXA, OH; W9IP, IL; K6PVS, CA; W5FF, NM; WA7JUO, NV; and W5RCI, MS. Last year I went on a grid expedition during the Perseids meteor shower to DM98 in western Kansas. I used a TR-751A and a 100-W amp to a medium-size Yagi operating from a rest stop near Kalvesta, Kansas, on 2 meters. On August 12 I worked 16 stations!"—*Jon Jones, N0JK*

**Legend holds that Thomas J Watson, founder of IBM,
once remarked:**

**"I think there is a world market for maybe
five computers."**

ONTARIO DISTRACTED DRIVER UPDATE

Kirk VA3XKS sent the following update about the Distracted Driver Exemption for Amateurs. The Ontario Government is looking for comments from all interested parties. It is currently considering making the exemption permanent.

I saw this update from RAC on distracted driving law updates in Ontario and thought this group might be interested.

Distracted Driving in Canada update: Ontario considering permanent two-way radio exemption for Amateurs

<https://www.rac.ca/distracted-driving-ontario-considering-permanent-exemption/>

Kirk
VA3KXS

To send any of your personal comments, go to the following website, scroll down to the bottom and click on "comments."

<https://www.ontariocanada.com/registry/view.do?language=en&postingId=30387>

CONDOLENCES

The members of Elmira Radio club would like to offer our condolences to Reg VE3RVH on the passing of his wife, Evelyn last month. Evelyn was well known by the club members and was always present at our Christmas party get togethers.



VE3ERC Elmira Radio Club Inc.

Minutes from September ,25 2019

1. Call to Order & Welcome

The meeting was open at 7:30 pm by our Club president Brian VA3DXK

2. Roll Call: VE3DXQ Tom, VA3GWM Gord, VE3DCC Rich, VE3DWI Tony, VA3QB Bill, VE3ML Wes, VA3FJM Frank, VE3JMU JIM, VA3TET Al, VA3PDC Paul, VE3RVH Reg, VA3DXK Brian, VE3YBM Brian, VE3DCC Rich, Kirk VA3KXS, VA3SQD Dan, VE3JLC Jim, VA3JBO Johan, VE3AUS Al, VA3DZZ Al, VE3PVB Paul, VE3QB Bruce, VE3IXX Bob, VE3TRQ Ted, VE3BYP Graham, VE3WTJ Jack, VE3KCY Ken, Tom Daniel Guest.

3. Adopt Agenda : Brian VA3DXK showed the Agenda on the flat screen TV and Agenda was accepted.

4. Secretary's Report: VE3DXQ Tom asked if there were any errors or omissions in the June 2019 minutes. None were mentioned. Tom made a motion to have the June minutes accepted 2nd by VA3JBO Johan. Carried.

5. Treasurer's Report: Paul VA3PDC made a presentation of a spread sheet with June, July, and August financials. Tom VE3DXQ asked if there were any outstanding dues. Paul said there were only 4 outstanding. Paul VA3PDC said he and Brian VA3DXK have been working on the club roster and feel it is up to date. He passed it around to see if any corrections are needed. Bill VA3QB asked about profits from the hamfest which were good this year. The amount shown was from donated equipment. Paul VA3PDC made a motion to have treasurer's report accepted, and this was seconded by AL VA3TET.

6. President's Report: Brian VA3DXK said the various committees would give reports concerning events held over the summer.

7. Committee Reports:

Safety Officer-) Tom VE3DXQ). Nothing new to report.

Point Clark Light house.: Brian said he had been unable to attend due to circumstances. He said he would turn it over to Paul VA3PDC and AL VA3TET for comments. Paul VA3PDC said the weather was a little sketchy Saturday morning. He and Frank VA3FJM set up for ONTARS on Friday night. Frank was overnight security as he had his trailer there. Paul VA3PDC said there was a good turn out for AL's burgers on Saturday, but Sunday was pretty quiet with just Paul VA3PDC and Frank VA3FJM. Paul said Frank was all over the province on ONTARS and there were thunder storms going on in some areas. Paul said he made 5 satellite contacts. Also Bob VE3IXX could hear 2 of the contacts on his hand held radio. Tom VE3DXQ said we probably could have used 2 BBQ's as there was a line up for burgers.

Ham Tech- Frank VA3FJM said there was at total of 19 at the Ham-Tech including the presenters. He said we needed to sell 3 more tickets to break even. He said the food and coffee were good. He said that no one showed up from the Guelph club excepting Paul VE3PVB, who was one of the presenters, so perhaps better advertising would be in consideration for next year. However he considered it a success none the less. There was a round of applause for Frank and his efforts.

Alma Repeater- VE3DWI Tony, VE3KCY Ken, VA3QB Bill. Bill VA3QB thanked Brian VA3DXK for the tower and Tony for the repeater, and the labour involved. Bill said the filters need a little tweaking. In the future he said they will add 2 more sections to get it up higher. Wes VE3ML said he purchased a ground rod and has number 1 or 0 ground wire. Bruce VE3QB will supply the link radio. The frequency of the repeater is 147.255 Mhz. PL 131.8. Brian VA3DXK thanked everyone involved in getting the repeater working and there was another round of applause.

Paul VE3PVB said that the Guelph Club will be buying a mesh node. He let them know that Ted VE3TRQ is up on mesh nodes and to contact him about linking up with the Elmira club. Jim Brubaker contacted Al VA3TET and said the Ralph's Garage is ready for pick up of surplus ham equipment. So Al asked for a show of hands who could come out Monday and help pick up equipment. Ken VE3KCY said that there is also some old tube equipment in the basement. Ken said there is also a TV tower along side the house they would like removed. A few people volunteered to go this Monday.

8. Unfinished Business:

Hats & T-shirts- Brian VA3DXK and Al VA3TET. Brian said that back in June at the ERC meeting the issue of Club shirts and hats came up and he said he sent out a survey with survey monkey and there were more hits with hats than shirts. Brian said that at the time he was not sure of the costs. He would like to see where we stand as a club with regards interest in this. He asked how many present would be interested in hats not including new members. The show of hands was 5. How many are interested in the black T-shirt . The show of hands was 10. He also asked about an alternate lighter colored t-shirt and there were a show of 20. Johan VA3JBO volunteered to follow up on this. Brian VA3DXK said he will send out another survey on this. He said that he will also get a consensus on a different color shirt.

Feed Mill 2 meter repeater- Brian VA3DXK said he had a very busy summer and did not get a chance to get there. He apologized for that. He did call the contact there today and left a message for him. Brian said he would like to make contact with the manager at the Mill (Mr. Godard). Then he will see what the possibilities are to set things up. Bill VA3QB said he would like to come along with Brian , also Jim VE3JMU, and Tony VE3DWI if available.

9. New Business: Silent Key Memorial Dinner. Brian VA3DXK said the 4th Wednesday in October we have a dinner in remembrance of the silent keys from our club. The dinner takes place at the Crossroads at 5:30 and Bill VA3QB mentioned another restaurant call Bonnie Lou's. Rich VE3DCC spoke about the history of how the Silent Key dinner started after Bill Graham passed away. We used to have a get together at Bill's every October meeting with food and refreshments on hand. Brian VA3DXK said that as it is only a month away we should keep it at the same venue, and perhaps discuss at a later date suggestions for a new Venue and night. Brian VA3DXK mentioned about presenters for October and November. Tom said he had a contact who would be willing to talk about radar on the Avro Arrow project at the November meeting. Brian said he may have a meteorologist lined up for the October meeting.

Amateur Radio & Distracted Driving Exemption- Brian said that the current exemption expires in 2022. However RAC is saying that the government may make it a permanent exemption. The government will have an online form where you can place your comments. The form closes on Nov 4, 2019. There will be a link to the form in the ERC newsletter.

Paul VA3PDC said the club needs a new G5RV antenna. Al VA3TET said he has new wire for it. Reg VE3RVH said that he also has a G5RV that belongs to the club. Brian said we could also use a couple more field antennas like a half wave end fed antenna and a dual band antenna. Brian made a motion to have a budget for obtaining field antennas. The budget would be in the amount of \$500.00. This was seconded by Bill VA3QB. Motion Carried.

Tom VE3DXQ asked if would be possible to have the Club Equipment list accessible on our website with the same password as the club roster. Ted VE3DXQ said this could be done and Tom will be forwarding the equipment list to Ted.

10. Presentations/Speakers/Workshop: Brian had a short 10 min video on flexible glass.

11. Announcements: Next meeting is on Oct 23, 2019. Silent Key dinner same night.

Club membership list is being updated. The constitution and bylaws will also go up on the website.

12: Adjournment

Meeting adjourned at 9:00pm

Ham Tech



It was a successful day. The Legion provided, coffee, treats and a tasty lunch. The format was casual yet intense. There were four speakers: Tony, ve3DWI, gave a fabulous 1.5 hour presentation on connectors and feedlines. He had many samples that circulated during the talk.

Ted, ve3TRQ, demonstrated FLdigi and related software that allows digital transmission of text, pictures and spreadsheets over radio. Transmission of Forms for use in emergency communications was highlighted.



Paul, ve3PVB, outlined the details of the now commercially available FLUTE Poynting Vector antenna.. At \$7000, it is pricey but provides the durable performance demanded by the US Military. Al, va3TET, and Paul developed prototypes early on for the Elmira Club. It is wonderful to see the product actually go to market.



Nick, va3NWW, gave a hands-on presentation on time division multiplexing and decryption and error correction of messages as used in G3 and G4 cellular networks. It was excellent.

A special thanks to Hammonds for donating the four power bars and to Tony VE3DWI for donating several antennas for the door prizes.

And a big thank you to the Chairman, Frank Montieth,ve3FJM for his hard work and a very successful day.

Rich Clausi VE3DCC

Elmira Radio Club Silent Key Memorial Dinner

Wednesday October 23th
5:30-7:00pm
Fireside Alcove at the
Crossroads Restaurant, Elmira ON
Soup & salad bar \$13.99, Buffet
\$25.99, or order off the menu
Regular club meeting to follow at
the Firehall

ERC SILENT KEYS

Harry Eix VE3EIX
Wallace Caughell VE3LCR
Ralph Brubacher VE3EUC
Ken Moore ?
Syd Lennox VE3CQO
Bill Graham VE3ETK
Michael Dent VA3FTL
Bing Harris VE3BAH
Ross Mills VE3BZC
Wayne Peti VE3CWY
Bob Naylor VE3AEE
Fred Mosher VE3IXY
Ted Bodman VE3CD
Alan Ward VE3UTO

Elmira Radio Club Christmas Party

6:00 – 9:30pm Date TBD
(between Dec 10-20, 2019)

Festivities at the
Elmira Royal Canadian Legion Branch 469
11 First St. E. Elmira ON

CONTRIBUTIONS TO VE3ERC-CLUB NEWSLETTER

Do you have an article you'd like to submit? Or photos? Do you have any comments you'd like to make?

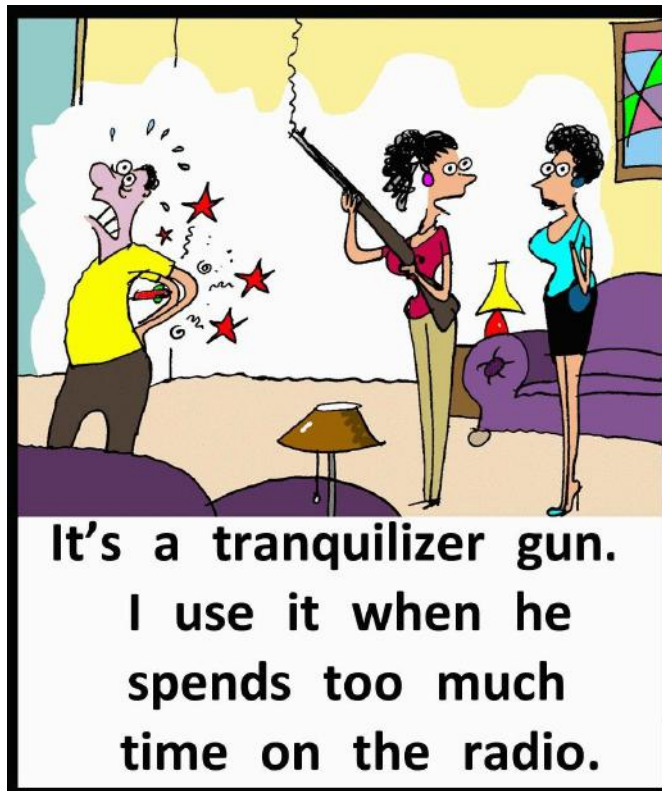
Perhaps you'd like to share a photo of your shack, a special project you are working on or a special

interest!

SEND THEM TO:

Bob bobve3ixx@gmail.com

(519-787-2279)



WEDNESDAY NITE NET CONTROLLERS

AUGUST 21 - BOB VE3IXX

AUGUST 28 - TED VE3TRQ

SEPTEMBER 4 - AL VA3TET

SEPTEMBER 11 - REG VE3RVH

SEPTEMBER 18 - FRANK VA3FJM

SEPTEMBER 25 - MEETING

OCTOBER 2 - BILL VA3QB

OCTOBER 9 - TOM VE3DXQ

OCTOBER 16 - WES VE3ML

OCTOBER 23 - MEETING

OCTOBER 30 - PAUL VE3PVB

NOVEMBER 6 - BRIAN VA3DXK

My (Radio) Hobby

PART ONE

by

Thomas Daniel
(*Dániel Tamás*)

World War I ended with Hungary losing 74% of its landmass and 64% of its citizenry due to the Treaty of Trianon (Versailles). WWII ended with the Red Army of the Soviet Union invading and setting up a puppet communist government. The use of lower case for the word communist gives that system more respect than it deserves, but that's another story. One of the first things that was imposed on the population was strict censorship. That meant that all radios capable of receiving transmission from outside the country were to be turned in at designated centres set up for that purpose. Hungary is in the middle of eastern Europe and just hours by car from Austria and Italy. Even weak stations can be picked up in Hungary from just about anywhere in Europe. Therefore, nearly everyone with a radio would have to give them up. This was just one the many ways in which the system tried to control information by limiting the amount of foreign influence on the population. Having lost not one but two World Wars, people felt intimidated by the new system and most turned in their radios as required. My father wasn't one of them.

Dad was a Pilot during the War and had access to equipment that was not available to civilians. When it became evident that Germany and its allies, Hungary being a reluctant one, was going to lose the War, dad "liberated" some of radios from the airfield where he was stationed. He gave a couple away to friends, but kept the least military-looking one for himself. It was a Phillips, seven tube "World Receiver," as it was called in Hungarian. It was made of black Bakelite and the dial had little gold-coloured dots with the names of cities etched on the back face of its dial. The whole set was just over a foot wide, nine inches tall and nine inches deep. It was completely illegal to own one of these as it could receive broadcasts from as far away as Washington. Dad took a chance just leaving it sitting in plain view on our kitchen table. *Kossuth* and *Petőfi* radio were the two local stations and I was allowed to listen to the kids' shows on Saturday and Sunday morning.

Listening to foreign broadcasts was a bit more involved than tuning a radio. People were encouraged to snitch on each other. The result was that if you had a disagreement with someone, all you had to do was report that he or she was listening to a foreign broadcast. The person would then be the subject of a house search, looking for a clandestine receiver and more likely involved a three day interrogation which usually included a stiff beating. That's if you did not in fact have a radio. If the house search revealed a radio, you could be either jailed or be sentenced to up to two years of forced labour. By the way, if you got jail time, you would be handed a bill for your room and board when you got out. Forced labour could mean anything from being sent to work in a mine or, if you were lucky, you would be required work at your regular job, except without pay. There were other interesting features of being convicted of even trivial crimes like owning a radio or listening to a foreign broadcast. If a crime was considered to be serious enough by the judge who passed sentence on you, and it would be completely up to the judge to determine how serious your crime was, you could also lose your privileges of citizenship. Among these were the "right of assembly." That meant that you could not be found to be in the company of more than one other person at any one time. For instance, if you were looking at a shop window and two other people stopped to look at the same window, you were required to move on. The revoked "right of assembly" extended into your

home as well. In other words, you could have dinner with your wife or one of your kids, but not two or more of them at any one time. But I digress.

When I was very young, less than five, I was always sent to another room when my parents listened to the radio. This was so that I would not hear what was being said, possibly repeating what I'd heard and expose us to becoming targets of someone who wanted to snitch. Oh, I forgot to mention. There were rewards for people who snitched.

Therefore, in my early years, I never got to listen to any foreign or shortwave broadcasts. That changed when I was five and we changed apartments. Well, it wasn't as easy as that. Since all housing was state-owned and controlled, my parents had to apply first. If the authorities determined that they were indeed eligible for a larger apartment than in five to ten years they would be allowed to rent a different or larger unit. My parents were allocated our previous one room apartment (with no bathtub, just a toilet and washbasin) while they didn't have a child. When I was born, they applied for a larger unit and a mere five years later, we were allowed to move into a two room unit.

I slept in the bedroom and my parents had a bed in the day room. We also had a kitchen and a bathroom with an actual bathtub in it. Dad still had to haul wood or coal from the basement to fire up the water heater. I took a bath first, then my mother and then my dad, all in the same water because there wasn't enough hot water for each of us to bathe in our own tub of water. Therefore, we only bathed once a week, but at least we didn't have to go to grandma's house to do it like we did when we were in our previous home.

Radio Free Europe, Deutsche Welle, Radio Netherlands, US Armed Forces Radio and Voice of America as well as the BBC all beamed signals toward Hungary and the other Iron Curtain countries in their own language. This was the anti-propaganda campaign to counteract the systematic brainwashing that we were getting from our own governments behind the Iron Curtain. We were eager to listen to these broadcasts since it was our only link to the real, outside world. Finally I had reached the age when my parents could explain to me the importance of keeping secret the fact that we had a radio and we listened to shortwave. But I also had to keep secret what I heard. My dad explained the difference between systems of government in the free world and ours. Radio made me aware that there was another completely different world beyond our borders.

I lived with my cousins during the week because our apartment was in a part of the city that was so new that they hadn't built schools anywhere nearby. On Friday nights my parents would pick me up and we'd go out to our apartment in the suburbs. After supper, dad would take the Phillips out of the pantry from where we now kept it under a sack of potatoes. He'd take it to the day room and put it on the bed which was carefully located to be as far as possible from our neighbours' walls, to reduce the chances of them hearing the foreign broadcasts to which we were listening.

In those days, the amount of interference, whistles, pops and electrical disturbances (QRM and QRN) were louder and more frequent than today. The government wanted to make sure that it would be as aggravating as possible for anyone who still owned a radio to listen to foreign broadcasts. They knew the frequencies of the foreign stations and built jamming stations. This consisted of very powerful stations located at numerous locations behind the Iron Curtain that would broadcast noise on the same frequencies as the ones that were beamed at us from the free world. To counteract this, the stations would change frequencies when a jamming station started transmitting. These frequency changes would sometimes happen in mid sentence. It required the listener to retune to the new frequency. The order of transmitting frequencies for any given station was made known by a kind of underground system of information so that the jammers could not easily switch to a new frequency, but would have to tune around to find it.

The order of frequency changes varied with the broadcasting station, the day of the month and sometimes the program being transmitted. It was a game of cat and mouse between the broadcasters, the listeners and the jammers. During the height of the cold war, the jammers were frustrated to the point where they erected giant stations that would transmit not only on specific frequencies, but on entire bands at the same time.

The act of retuning to a different frequency brought with it more whistles, pops, crackling and sounds of jamming that could tell neighbours that you were doing something illegal. Mind you, your neighbours were probably doing the same thing, but you could never be sure who might report you. In addition to the bed being placed farthest from our neighbours' walls, the radio was also placed under heavy winter coats and blankets to muffle the sound. We would crawl under the blankets and listen to news from the free world by the dim orange light of the dial light and the green magic tuning eye. Heat from the seven little tubes inside the set made it warm. It was all kind of romantic, but the lack of oxygen soon put me to sleep.

One day in late October during the Hungarian Revolution of 1956, listening to Radio Free Europe we heard for a fourth time that the United Nations had discussed "the Hungarian situation" - for them it was just a situation whereas for us it was a matter of life and death as there was shooting just outside our window. The announcer said that the UN had "condemned" the actions of the Soviet Union for sending the Red Army into Hungary to squelch the revolution. We knew by then that "condemning" meant that they'd be doing absolutely nothing to help Hungary. Apparently, they were preoccupied with the Suez Crisis which took precedence over 120,000 people being killed or fleeing from the country. Dad turned down the volume and looked at me under the covers. He said, "Tom, what do you think? Should we leave for the West as well?" I replied, "Yes. Let's go in the morning before the shooting starts again." Well, it wasn't that easy, but leave we did. How we ended up in Canada is another story. I was nine years old.

From the very first, my parents were homesick. It is ironic that although they had fled a system that we all hated, they wanted to hear news from "back home" and had a desire to hear the language, the news and the music of the place where they were born. I didn't share their same homesickness, but I did want to hear some of the kids' broadcasts to which I'd listened on Saturday and Sunday mornings on the black Phillips receiver. Dad regretted leaving it behind, but it would have been too heavy and fragile and there were items of higher priority to bring than a radio. Besides, it ran on 220 volts and wouldn't have worked anyway.

After about two years in Canada, my mother decided to open a ballet studio. For this she required some kind of a device that would play records and something whose sound would fill a large room. The Seabreeze record players of the time, although cheap, would not do the job. She got my dad to buy a German Leowe Opta radio that had a record player integrated into it under its top cover. It had the power and sound quality that mom needed for her studio. It also had another feature that intrigued me more than the record player. It had a dial on which there were little gold dots and the names of cities etched on it. "Budapest" appeared on two places on the dial.

I was determined to find a way of bringing in a Hungarian station, not only to please my parents, but for myself as well. The radio sat in the dance studio which was a separate room that had been added onto the back of our house. The studio only operated during the regular school season which meant that I could take it to my room during the summer. Sometimes I would haul it into my room on weekends even during the school season. I hunted around on shortwave, looking for Budapest. There was nothing there except the same whistles, pops, interference and jamming that I'd heard before. There were a couple of stations that I could pick up. There was Voice of America, CBC, CFRB which used to broadcast on short wave and WWV. I could get the CBC and CFRB on AM already and after listening to the correct time for five minutes on WWV, I lost interest.

I started looking at the back of the Leowe Opta and saw four screws with symbols next to them. The instruction manual for the set was written in German, but it had pictures as well. That's how I found out about the existence of antennas and grounds. The screws were two for FM, one for AM and one for ground. I should have known this because there was always a piece of wire hanging from the back of our old Phillips.

I went to the library and started reading about radios. That led me to finding out more about electronics. I didn't understand anything in the books and had little patience for reading. I just wanted to make our Leowe Opta bring in more than local broadcasts, but mostly it was Radio Budapest that I was after.

I found a piece of extension cord in a garbage can on the way to school one day. I brought it home and attached it to the terminal with the antenna symbol next to it on my mother's radio. It was a revelation. Cuba came in clearer than CFRB and it was all over the dial, just like now. But I also picked up the BBC, rebroadcasts from the east coast, Radio Netherlands from the Antilles and Voice of America. There was nothing from continental Europe itself.

I started reading some more and found out about Amateur Radio and the American Radio Relay League. I got a subscription to QST and later to Popular Electronics. I understood virtually nothing, but after enough reading, I started to associate things that with other things that I had read. It became apparent that the receiver of choice for my purposes would be a Hammarlund HQ-180A. Unfortunately, that would cost more than our car at the time.

My dad finally agreed to buy me a Hallicrafters S-120. It had a telescopic antenna and I was able to receive all of the stations that I'd received with the Leowe Opta. Suddenly, there was also a lot of CW, as well as some strange sounds that were clearly human voices, but I couldn't understand them. After some more reading, I discovered what the BFO knob was for. Now I could tune in sideband and with it, I found out about ham radio.

It became clear that I needed a proper antenna if I was going to hear anything from overseas. Dad and I went to Electro-sonic and bought a shortwave radio antenna kit. I attached a length of wire and proverbial porcelain egg to the top of the clothesline pole in the backyard. Next came a climb onto the roof to attach a strap to go around our chimney with of course, a second egg to it. A third egg went on a 2X2 at the opposite peak of the roof, just above my bedroom window which was two floors below. I strung the copper wire from the clothesline pole to the chimney where it turned 90 degrees and ended at the egg on the 2X2. From there I attached a piece of black (for "stealth") insulated automotive hook-up wire and dangled it two stories down to my bedroom, two floors down. We went to a surplus electronics store on Yonge Street in Toronto and found one of those flat, insulated lead-in strips that allowed you to close a window on the lead-in. Once the lead-in wire was connected to the radio, I was ready for serious shortwave listening. Well, not quite.

My first experience with actual electronics came when I tried to connect a ground to the terminal on the S-120. I had read about connecting grounds to a cold water pipe, but there was no cold water pipes in my room and I wasn't allowed to drill through the floor. Drilling through the floor would have been ideal since the water meter was about eight feet below my radio. I decided to ignore the "cold" part of cold water pipe decided to connect to a radiator pipe. It was summer, the radiator pipe was cool which I decided to interpret as "cold" And I thought I'd be OK. As I got my ground wire close enough, there was an almighty spark about two inches long from the radiator pipe to the wire in my hand. I thought it was just static electricity because up till then, that was my only experience with sparks. Well, actually I had experienced a spark incident earlier in my life. It was when I was in hospital and I talked the lad in the bed next to me into sticking a girl's hair bobby pin into the wall socket between our beds. But I only re-

membered that incident and the darkness that it caused in our ward, a few days later. So I tried again, but this time I made my second mistake which was to hold onto the uninsulated wire while I grabbed the radiator's bleed valve. I got a tingling sensation up my arms to about the elbow which made me let go of everything really fast. I didn't own a meter nor did I know how to use one and I never found out what the potential was between the ground terminal of the S-120 and the radiator. Looking back on it, the S-120 probably had a hot chassis that was still in vogue in those days. I never did get around to connecting a ground to the S-120.

My second experience with electronics, so far as it concerned radio, came when I connected the antenna wire to the antenna terminal. I was rewarded with more "bacon frying" noises and a never-ending stream of very loud, random clicking noises along with the customary QRM and QRN (expressions that I'd learned from magazines in the meantime). However, I also picked up some distant international broadcast stations, including the BBC, Vatican Radio and occasionally Radio Netherlands, but no other European stations. After learning how to use the BFO, I started listening to hams and looked into getting a licence. The Morse code requirement was too intimidating.

What I didn't know yet was that my antenna setup was contrary to just about everything that made for a good antenna. First off, the wire was oriented at least 45 degrees to the ideal direction for Budapest, although with a random length long wire, that should not have mattered very much. The second thing was that the hydro wires on our side of the street ran on poles about 30 feet from my antenna. The third thing that made for a less-than-ideal antenna was that there was a fairly major above ground transformer station across the road from our house. But to top it off, was the fact that there were another two sets of power wires running about 45 feet from my antenna. These were for the trolley buses that ran in front of our house. That meant that every time a driver moved the accelerator to start up, accelerate or decelerate and the corresponding relays energised or de-energised in any of the buses on the entire line, I would hear them on my radio. It was hopeless, except I was too dumb to know it.

Just to end the story, I lost the S-120 when our house was robbed by a tenant. We moved and I didn't have a shortwave set till 1980. By then I learned to fly, got married and moved to Vancouver where I flew for Air BC and could afford a receiver. The World Radio and Television Handbook recommended a Panasonic receiver that wasn't too expensive and had a new innovation, a digital frequency display. The receiver was a vast improvement over my Hallicrafters, but antenna problems still plagued me. We lived in a south-facing concrete apartment building and I only had about twenty feet of wire running parallel to and just a few inches from the balcony railing. I could receive South America and well into the mid-US states, but Europe eluded me once again. I got so frustrated that I gave away my receiver to a colleague who became infatuated with it.

PART TWO CONTINUED NEXT MONTH

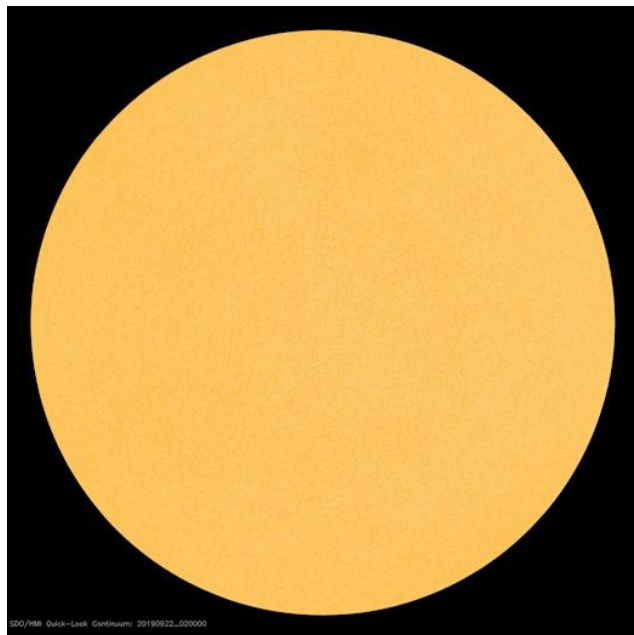
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Tom is presently working his way through the RAC Canadian Amateur Radio Basic Qualification Study Guide and is just a few chapters away from taking the exam for his ham radio ticket. He submitted this story of his journey which started as a young boy in his native Hungary.

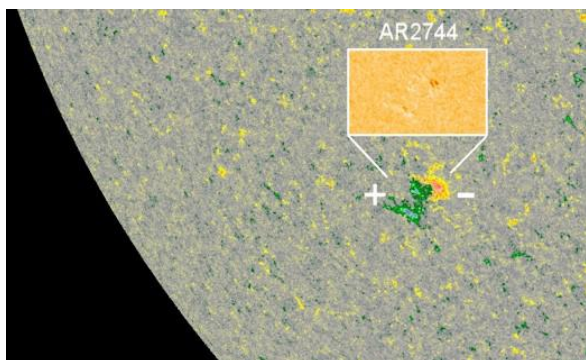
A SUMMER WITHOUT SUNSPOTS:

Could northern summer 2019 go down in history as "the summer without sunspots"? From June 21st until Sept 22nd, the sun was blank more than 89% of the time. During the entire season only 6 tiny sunspots briefly appeared, often fading so quickly that readers would complain to Spaceweather.com, "you've labeled a sunspot that doesn't exist!" (No, it *just* disappeared.) Not a single significant solar flare was detected during this period of extreme quiet.

This is a sign that Solar Minimum is underway and probably near its deepest point. For 2019 overall (January through September), the sun has been blank 72% of the time, comparable to annual averages during the century-class Solar Minimum of 2008 (73%) and 2009 (71%). The current Solar Minimum appears to be century-class as well, meaning you have to go back to the beginning of the 20th century to find lulls in solar activity this deep.



Contrary to the sound of it, "Solar Minimum" is not boring. During this phase of the solar cycle, the sun's magnetic field weakens, allowing cosmic rays to enter the solar system. This doses astronauts and possibly air travelers with extra radiation. The sun also dims, especially at extreme ultraviolet wavelengths, causing the upper atmosphere to cool and collapse. Space junk accumulates in Earth orbit as a result. Finally, streams of solar wind punch through the sun's weakening magnetic field, lashing Earth with gaseous material that can cause geomagnetic storms. (One such stream is due later this week on Sept. 27-28.)



Interestingly, the summer of 2019 also brought us a sign that Solar Minimum is coming to an end. One of the numbered sunspots that briefly appeared on July 7th had a reversed magnetic polarity:

According to Hale's Law, sunspots switch polarities from one solar cycle to the next. This small summer-time sunspot was +/- instead of the usual -/+, marking it as a member of the next solar cycle, Solar Cycle 25. Solar Minimum won't last forever!

Solar cycles always mix together at their boundaries. We can expect to see more new-cycle sunspots in the months ahead as Solar Cycle 24 dies out and Solar Cycle 25 slowly comes to life. If forecasters are correct, the next Solar Maximum will be in full swing by 2023.

Thanks to Mike VE3MKX for sending this e-mail.

There was a short but interesting bit posted on Space Weather today about the current solar minimum

<https://spaceweather.com/archive.php?view=1&day=25&month=09&year=2019>

DXpedition to use FT8 robot?

By Dan Romanchik, KB6NU

It's inevitable. At some point, machines are going to render humans irrelevant. It's been a recurring theme in science fiction since before I was born (1955), and there are numerous predictions of the Singularity, the point in time when machines will be smarter than human, occurring between 2030 and 2045.

It may happen in amateur radio sooner than we think. A couple of days ago, one of my readers, sent me a link to a blog post by John, AE5X: Automated FT8 "FoxBot" in upcoming DXpedition – confirmed. He wrote:

"A DXpedition to Tokelau will take place from 1 to 11 October and it will be your chance to work an FT8 robot operating in Fox/Hound mode.

"Stathis SV5DKL has been working on a "FoxBot" for some time now, is listed as a partner to this DXpedition and has confirmed that the DXpedition will be using his FoxBot."

John has since updated this post, noting "The SV5DKL logo has now been removed and the DX team will be in 'full compliance' with the mode." Full compliance meaning following the rules set up by the ARRL DXCC rules.

The ARRL is, of course, against the use of robots. A recent *ARRL Letter* noted:

"ARRL has incorporated changes to the rules for all ARRL-sponsored contests and DXCC, prohibiting automated contacts and requiring that an actual operator is initiating and carrying out a contact. These changes also apply to Worked All States (including Triple Play and 5-Band WAS), Fred Fish W5FF Memorial, and VUCC awards. The changes are effective immediately and affect the rules for both HF contests, and VHF/UHF contests as well as DXCC.

"A resolution at the July ARRL Board of Directors meeting pointed to 'growing concern over fully automated contacts being made and claimed' for contest and for DXCC credit. The rules now require that each claimed contact include contemporaneous direct initiation by the operator on both sides of the contact. Initiation of a contact may either be local or remote."

As AE5X says, however, the use of FT8 robots in the future is a certainty. Sooner or later, some DXpedition is going to use an FT8 robot without saying anything about it. How is the ARRL going to know that a DXpedition is using robots if the DXpedition operators don't tell them?

I'm wondering when some DXpedition is going to give up on SSB and CW altogether. Why bother with those modes when you can make hundreds or thousands more contacts by just operating FT8?

Another thought just occurred to me. If the ARRL gets its way and Techs are awarded HF digital privileges, how long will it take for some enterprising Tech to make the DXCC Honor Roll using FT8 exclusively. Oh, the horror of it all!

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Dan Romanchik, KB6NU, is the author of the KB6NU amateur radio blog (KB6NU.Com), the "No Nonsense" amateur radio license study guides (KB6NU.Com/study-guides/), and often appears on the ICQPodcast (icqpodcast.com). When he's not wondering when robots are going to take over the world, he likes to (manually) operate CW on the HF bands.