

# THE “WIRELESS ROOM” BRINGS BOTH MARINE AND AMATEUR RADIO TO THE MARITIME MUSEUM OF THE ATLANTIC

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Nova Scotia’s Maritime Museum of the Atlantic (MMA) is an excellent museum on the renovated Halifax waterfront that receives about 175,000 visitors annually. It displays classic small craft and ship-related artefacts highlighting the rich maritime history of Canada’s east coast. While visitors enjoy excellent displays of colonial shipping, the ages of sail and steam, fishing, the great Halifax explosion of 1917, wartime ships and events, and the sinking of the *Titanic*, until recently there was nothing on the revolution that radio made in ship safety, navigation, and communication.

## The Halifax Amateur Radio Club becomes involved

In the spring of 2015 Halifax ARC (HARC) President Brian, VE1CC and HARC members Byron, VE1NFD, Dick, VE1AI, Eric, VE1JEH and Scott, VE1QD, met with Gerry Lunn of the MMA to discuss setting up a permanent Amateur Radio station exhibit in the museum, manned by HARC volunteers.

The MMA was very enthusiastic and expressed its willingness to build a dedicated “Wireless Room” in a prominent location in the museum, to purchase a complete new Amateur Radio station and to install antennas on the MMA’s roof. In turn HARC agreed to supply a list of the needed equipment, set up the station, assist with antennas and to organize HARC volunteers to demonstrate the Amateur station and Morse code to visitors on a regular, ongoing basis.

## VE1FA suggests adding a 1940s ship’s radio to the MMA’s wireless room

I’m interested in radio history and restoration. Therefore, in an April 2015 HARC-MMA meeting I offered to restore a classic 1940s Canadian naval-commercial ship’s radio to its original appearance and operating condition. The wireless room display would be split, with one half displaying a modern Amateur station and the other half a 1940s “blue water” shipboard radio station. The MMA liked this idea so I agreed to locate, obtain and restore a suitable 1940s Canadian marine radio, with correct “period” accessories.

After the MMA’s ready acceptance, the ball was in my court! I had heard that the Musee Quebecquois de la Radio in Sorel, Quebec had lost its building and was disposing of its equipment. I phoned Jacques Hamel, VE2DJQ, of the Musee.



Some of the MMA staff and HARC volunteers in MMA’s Wireless Room during its construction. Left to right: Roger Marsters, Curator of Marine History; Dick Grantham, VE1AI; Laura Pierce; Derek Harrison; Kim Reinhardt, Museum Manager; Jason Climie; standing: Gerry Lunn, Curator of Exhibitions; Jeanne Church; Johanna Kristiansson and Erik Hein, VE1JEH.

Not only did he have two Canadian Marconi CM-11 shipboard LF-MF-HF integrated transmitter-receivers, the ideal radio, but he generously gave both of them to the MMA project. Merci beaucoup Jacques!

The CM-11 was designed and built in the huge Canadian Marconi factory in Montreal. In 1942 it was state-of-the-art and a very good and reliable LF-MF-HF radio for its time. The Royal Canadian Navy (RCN) used CM-11s on all of its ships of corvette size and larger, and they were used well into the 1970s. The CM-11 was ideal for the MMA wireless room because: a) it’s pretty, with large illuminated multi-color half-circle tuning dials; b) it will run on 120 VAC; and c) it can produce 100 watts (AM, MCW or CW) on 160, 80, 40, 30, and 20 metres.

The first challenge was to get the pair of CM-11s from Sorel to my shack-workshop in Canard, Nova Scotia. Did I mention that they weigh 479 pounds each? True “boat anchors”! They arrived thanks to the herculean efforts of Don, VE1SS and Erik, VE1JEH. Returning from Sorel, Erik’s Hyundai Elantra rolled (on its axles) into my driveway with a passenger, about 75 pounds of radio accessories and *both* CM-11s.

## The CM-11 restoration

They arrived coated with 70+ years worth of dirt, grime and minor rust, but luckily the electronics were not seriously

corroded, water-damaged or modified. Thanks go to Canadian Marconi for using heavy galvanized steel chassis and anti-rust interior paint! One CM-11 was built in 1943 and the other, a CM-11A, was built in 1944.

We were very lucky to have gotten two CM-11s as each had many parts missing, but in most cases not the same parts so I was able to combine the two and get a nearly complete CM-11.

The restoration took me about 150 hours of actual work. The details of all the problems encountered and solved would take most of this issue of TCA so I’ll just list the general steps.



The CM-11’s CSR-5 receiver undergoing surgery by VE1FA. Numerous defective “organs” can be seen on the bench to the left of the “patient”; and yes, that propane torch was used a few times on seized hardware!

1) Disassemble the two CM-11s and the power supply into 12 subunits.

2) Choose which subunits to restore and which to cannibalize, then swap all the best parts to the subunits to be restored.

3) Remove all tubes, lamps, knobs, handles, front panels, drawer slides, ID tags, shields, front panels and bottom plates and then clean everything.

4) Overhaul mechanically, replacing all missing, damaged and incorrect hardware. Straighten bends and dents, lubricate shafts, detents and gear trains. Clean all the switch contacts.

5) Repaint the subunits and cabinets with computer-matched paint. The original paint was preserved wherever possible.

6) Overhaul electrically. First, everything was checked, using an ohmmeter, tube tester and capacitor tester. I replaced more than 90 defective electrical components.

7) Apply power to the individual overhauled receiver, exciter and power supply subunits. Locate and repair faults, align units and measure their performance.

8) Install the subunits (exciter, receiver and tank-tuner) in the CM-11 cabinet and install the three power supply chassis in the power supply cabinet. Build four new power supply cables to radio and power supply.

9) Apply power to the complete CM-11 and test the performance on transmit and receive.

Unfortunately, *both* CM-11s were missing: a) their 575 kHz IF filter crystals; b) three cables connecting the radio and power supply; c) the “Marconiphone” AM handset;



When first powered up, the transmitter had three problems. Once they were solved and all bands aligned, the exciter multi-meter (centre) showed full grid drive to the 813 PA tube!



and d) the “CM-11 test cable”. After much searching I found a radio restorer, Tom Brent, in British Columbia, who gave me an IF filter crystal gratis. Thank you Tom!

Incredibly, Amphenol still makes the *same* multi-pin connectors today that they made in 1942 for the CM-11 cables so I was able to get a set and fabricate cables that mated perfectly with the connectors on the CM-11 power supply and radio cabinets. However, I couldn’t find the unique test cable that came with every CM-11 and, without it, radio adjustment and alignment is very difficult. Then Jim VE1JG, a former Royal Canadian Navy (RCN) CM-11 operator, put his formidable talents to work and obtained both an original Marconiphone AM handset and the loan of a CM-11 test cable, courtesy of the RCN! He also donated a beautifully restored Signal Electric R-63 brass Morse key, as originally specified for the CM-11.

### MMA's Wireless Room today

Using some “repurposed” MMA floor space, by late 2015 Nova Scotia Museum’s technician Corey Mullins had built a large room with two windowed walls for visitors to look through and a long operating bench against a paneled wood rear wall, perfect for mounting radios and accessories.

A 10-12-15-17-20 metre multiband vertical and a 40-80 metre trap dipole were put on the museum roof, and feedlines run down to an antenna switch common to both the Amateur and ship radios. Both the Amateur station – based on a beautiful new Icom IC-7600 transceiver – and the 1940s CM-11 ship station are now on the air using the call sign VA1MMA.

The CM-11, now bolted to the rear wall and bench on its original rubber shock mounts, is surrounded by the correct Marconi speaker, brass key, Marconiphone AM handset, CM-11 remote control/AM handset box, CM-11 manual, period typewriter, thermocouple antenna

A visitor’s view through one of the Wireless Room’s windows. Below the window are some of the keys and oscillators that museum visitors earn their Morse certificates on. On the left is MMA volunteer Arthur, G5DJW/VE1 and the modern Amateur station (rear bench). To the right is the 1940s ship’s station with Fred, VE1FA and the Canadian Marconi CM-11 transmitter-receiver, with its power supply by VE1FA’s knee. Far right is the “organ donor” (second) CM-11 and the remote AM phone and control box for the CM-11. The display is still a work in progress.

current meter and vintage “open” coax switch, 1947 Canadian “Maple Leaf” calendar, and a beautiful 1940s brass Smiths radio room clock with the 500 kHz silent (listen) periods marked in red. To activate the transmitter you have to turn the “Man Aloft” key to “Safe to Transmit”! Below the CM-11 is its power supply, with the steel front panel replaced with a Plexiglass one so visitors can see the four #816 mercury-vapour rectifiers flash electric blue when CW is sent!

### On the air!

Using the 73-year-old CM-11, Dick, VE1AI, an experienced CW operator, made the first CW contact (with a Polish station): he was as excited as a kid! Two local RCN veterans – Jim, VE1JG and Wayne, VE1BAB – were radio operators who routinely used CM-11s in the 1960s and 1970s on RCN ships. They’re now quite anxious warm up the CM-11 and “work a few” with that Signal Electric brass key or a bug!

In front of the Wireless Room’s windows where museum visitors stand and watch, code practice oscillators and keys are set up so that visitors, especially children, can learn to send their names in Morse code. If successful, the visitor receives a nice certificate!

Since spring 2016 volunteers from our club and the MMA have been manning the Wireless Room. It has aroused an amazing level of interest in thousands of visitors. Especially the hands-on sending of their names in Morse code has drawn enthusiastic responses from adults and children alike. As of November 2016, about 3,600 Morse certificates have been awarded. If you’re visiting the Halifax waterfront, be sure not to miss the MMA and its new Wireless Room.

*Fred, VE1FA, is a retired research scientist and professor of microbiology who worked at McGill University and the Pulp and Paper Research Institute of Canada. He received his first Amateur call (VE2SEI) in 1988 and enjoys DXpeditions, DXing, ragchewing, restoring old radios, homebrewing antennas and gear, and introducing “newbies” to our great hobby! He lives in Canada, Nova Scotia with XYL Helen, VA1YL, and can be contacted at hfarchibald@ns.sympatico.ca.*