K9YA Telegraph

Robert F. Heytow Memorial Radio Club — Volume 10, Issue 11 November 2013



International Law & Ham Radio

Part I: 1912 to 1932

Philip Cala-Lazar, K9PL

Peter B. Schroeder's, W1PNY, article, "The Radio Amateur in International Legislation and Administration" appeared in the July 1954 issue of *The American Journal of International Law*. The article offered an outline and overview of the international conventions that implemented the regulatory measures governing amateur radio to that time.

The radio conventions held in Berlin in 1906 and London in 1912, although not directly addressing amateur operations did, for the first time, establish frequency allocations for ship and shore stations. Additionally, the London Convention mandated the licensing of all radio stations, as did the U.S. Radio Act of 1912.

The 1912 Act authorized the issuance of amateur licenses with operators permitted a maximum output power of 1,000 watts. Frequencies were allocated in a rather unexplored part of the RF spectrum thought of little use and of no commercial value, the 200-meter band. Clinton DeSoto's classic book *200 Meters and Down* records this period. The 1920's transatlantic tests showed what dedicated amateur radio operators could do with their assigned bit of RF "wasteland" by spanning international borders.

In 1924, U.S. Secretary of Commerce Herbert Hoover helped secure the five "Hoover Bands" at the National Radio Conference held in Washington, D.C. The bands, harmonically related, included "160, 80, 40, 20, 10 and 5 meters."

Established in 1925, the International Amateur Radio Union has represented amateur radio at international radio conventions since 1927.

1927-Washington, D.C.

The first international radio convention was held in Washington in 1927. This convention was plenipotentiary (*having full power to take independent action*) and administrative. Russia was excluded, an omission that would create significant consequences in years to come.

> *"The five 'Hoover Bands'"*

The fruits of Russia's exclusion propelled that nation into creating "her own system of allocations, the adjustment of which to the world-wide allocations proved to be most difficult."

Hams licensed prior to the Soviet Union's dissolution will find Schroeder's lines strike a definite chord: *There are currently several thousand Russian amateurs on the air who establish contacts daily with amateurs in other parts of the world but who rarely go beyond mention of technical radio problems in their conversations. Russian amateurs apparently operate largely from club stations where close supervision can be maintained.* Ah, shades of Box 88, Moscow.

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Pelican Brief

Hal Mandel, W4HBM



QRO HF-2000
Linear Amplifier

The last time this amplifier went on a trip it was carried in a MILSPEC wooden packing crate that was just a fraction of a bit lighter than the amplifier itself, but had four carrying handles to get the crate and amp out of trains, planes and automobiles.

At that time, 2007, there were no convenient lifting handles on top of the amp chassis, and getting the beast out of the crate was sometimes hazardous, especially when hands were slick with sweat and rain. Hence, the STANLEY barn-door handles on the top, now making it a one-man easy operation to lift and carry around.

All the hardware was changed to stainless Allen head screws wherever possible. The addition of lock- and flat-washers under the Allen heads make for a workmanlike appearance. A FAN switch was added on the front panel and the amp rewired to allow the internal muffin fan to keep going even though the Master Power switch was shut off, allowing the two EIMAC 3-500Z tubes to cool down. Inside the amp, a Kilovac vacuum relay was added and wired to the unused part of the OPERATE/STANDBY panel switch that removes the High Voltage from the tube anodes as well as inhibits keying the amp up.

All the power in the station and in the field that is meant for amplifiers is run on 10 AWG, three-conductor SO cord, meant for wet locations, and terminated with NEMA L6-30P Twist-Lock plugs. This system conveys the 120 VAC-neutral-120 VAC lines to the equipment, and the AC electrical ground is by separate attachment of 4 AWG cables to the chassis frames. This is to ensure that the AC return is on a Neutral and not on chassis ground.

There is an auxiliary fan added to the top of the amplifier. It pulls hot air out of the tube plenum. Both tubes have finned aluminum heat radiators, but since this amplifier sees digital service with long key-down times, the additional air movement around the tubes can't hurt. The blower is a Papst 120 VAC ball-bearing model with a rope cushion glued to its bottom to lessen fan noise and help with the air seal.

"Pelican 'Pick and Pluck'"

In order to stop the amp from flopping around in the suitcase, a buckboard was prepared out of plywood and furring strips, with holes cut for the feet. This at least will keep the amp centered in the carrying case.

Shown on page 3 is an image of the Pelican 1640 case with the 4X4X4 shipping foam cubes on the bottom layer. The Pelican "Pick and



Modified Amplifier with Handles and Stainless Steel Allen Head Screws



10 AWG Three-Conductor Cables with NEMA L6-30P Twist-Lock Plug

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Plywood Backboard with Furring Strips and Holes Cut for the Amplifier's Rubber Feet

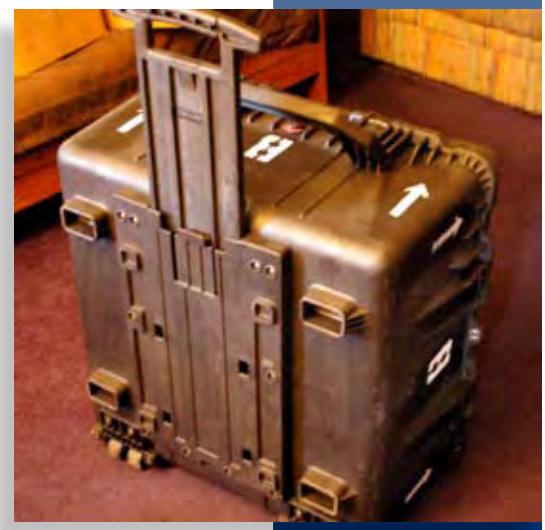
Pluck" foam packing system is great for the smaller cases, but can you imagine the nightmare having to deal with 1" X 1" X 1" cubes in this bathtub? Later, the foam cubes were sliced down to 4X4X2 to allow the cover to seal. (By the way, my Army Ranger friend Vince showed me how to actually use Pelicans as bathtubs and washing machines. Just add hot water and soap.)



Foam Cubes Set on Top of Case to Ensure No Movement During Transit

With enough 4X4X4 cubes, the amplifier is snugged-up inside the case. Great care is taken as to the placement of the foam on the front panel, in other words so as not to break meter lenses or knobs, but to provide cushioning. The buckboard was fabricated to fit the Pelican in a way that will allow the front panel to be on the upper side when carried as a suitcase.

All six locks buttoned down, the top cover is compressing the foam blocks just enough so there's no gap left on the Pelican edges where the O-ring seal sits. This is a critical measurement as too much foam will break the seal and allow moisture to enter. Each Pelican case has a pressure release valve on the front surface that is great when flying in aircraft with un-pressurized fuselages. The Pelicans all have metal reinforced locking holes on two sides for security. Pelican recommends TSA-approved locks for these cases. The only ones I ever saw locked up were the gun cases, and they used hardware a bit beefier than TSA recommends.



Amplifier Ready to Ship in Custom Fitted Pelican Case

Here we go!

Ready to schlep through Newark APO, by gum! Think they'll stop me at security?

Pelican makes a backpack harness to fit these cases. Now isn't that just what I need? I know Vince could manage it, probably all day.

With the QRO HF-2000 amplifier, buckboard, foam cubes and Pelican, this piece just breaks one hundred pounds, still not qualifying as the heaviest piece in the lineup. (The 7KW Propane genset wins that award.) ■

Don Wallace, W6AM, And Howard Hughes, 5CY

"Howard Hughes, 5CY" in the October 2009 *K9YA Telegraph*, reviewed Hughes 1938 around the world flight aboard the Lockheed Electra *New York World's Fair 1939*. Radio operator for the flight was Richard Stoddart. According to contemporary news reports Stoddart and Charles Perrine, W6CUH, designed the aircraft's radio gear. Stoddart, in 1940, going on to found the Stoddart Aircraft Radio Company.

Then there's famed amateur radio operator Don Wallace, W6AM. Author Don Wallace, W6AM's grandson, in the May 2006 *Harper's Magazine* article, "Antenna of the Universe" wrote that while visiting Radio Ranch, his grandfather's extensive hilltop installation, the elder Wallace on apprising a framed photograph: "'Oh well, that's Howard Hughes,' said Grandpa, shrugging, 'right after I set up the radios for his round-the-world plane flight.' Hughes was a ham; he'd been rag-chewing with W6AM since 1921."

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X1M QRP Transceiver

A New Kid on the Block

Paul W. Ross, W3FIS



X1M QRP Transceiver

I have always been fascinated by "small," and "simple." Maybe this is due to my training as an engineer. The larger and more complicated you make something, the less likely it is to work reliably, and the less you will enjoy using it. Case in point, consider the current crop of modern amateur radios, with their embedding processors (a good thing), and their myriad (not a good thing) collection of knobs, buttons and features. These can be a real turnoff. When the reference manual for the rig runs to 100 pages, my eyes glaze over, and my credit card stays in my wallet.

Well, I recently acquired a really interesting transceiver, the X1M HF QRP transceiver, manufactured by Chonqinq Xiegu Technology Co., Ltd. of China, and imported by Import Communications, Inc.

I waited until the second version (Platinum model) of the radio came out before ordering mine, as the initial offerings seemed to have a few more bugs and quality control issues than I was comfortable with. Being on the "cutting edge" of new technology can often find you on the "bleeding edge." My supply of Band-Aids is a little sparse.

Well, off goes the order, and eventually a rather small package arrived via priority mail. Inside I found a very small radio (3-13/16" x 1-9/16" x 6-1/8") in a bubble wrap, with a pretty black aluminum extruded case. Included was a microphone, which appears to be a re-purposed HT microphone, a 3.5 mm stereo plug for the key (straight or paddle), and a 5.5 x 2.1 mm coaxial power plug. The instruction manual is downloadable from the importer's Web site.

An inspection of the rig shows that the back, in addition to the power jack, BNC antenna connector, and headphone jack, is fitted with an RS-232 9-pin connector–more about that later. A cheap set of "drugstore" stereo headphones works nicely. Audio quality from the internal speaker is satisfactory, given its small size. When you plug in the headphones, the speaker cuts off, as you might suspect.

As you can see from the front panel photograph, there is an on/off/volume switch, a knob for changing frequencies (and some other stuff), the microphone jack and a set of six small buttons for front panel menu option selection.

Out comes my small power supply (you need about two amps at 12.8 volts DC), paddle and a jumper to my automatic antenna tuner. "Power up" is greeted with a "beep" and an illuminated screen with the usual suspects for icons. Nothing too strange here–the bottom group of icons clearly correspond to the buttons below them, with the exception of the right hand one, which locks the keyboard with a short press (nice for us fumble- fingered people), or with a longer press gives access to the internal system menus.

"Power up"

Successive presses of the frequency change knob cycles through a series of four menus for things such as VFO selection, mode (CW, USB, LSB), memory access (there are 32 presets available), split mode, etc. A more extensive system menu allows control of screen brightness and contrast, etc., and best of all, a "system reset" to factory values, in case you mess something up.

The radio is rated for 5 watts on the 80-, 40-, 20-, 15-, and 10-meter amateur bands. "Out of band" operation is met with a nasty warning beep. However, the radio will receive from 100 kHz through 30 MHz, which gives you a nice general coverage receiver. You can configure it to transmit "out of band," but make sure to put in a suitable band pass filter, as the built-in filters only cover the noted ham bands. Make sure you are transmitting on a frequency that is legal for you.

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My Special Event

Duke Wahl, Jr., WA9WJB

Occasionally along comes one of those "special events" you just have to share with everybody.

You've seen those large plastic storage boxes with a locking lid. They make great weatherproof housings, which is what I used to protect my desktop "L" tuner from the weather. It all sits outside at the base of my short vertical and I feed it with 50-ohm coax cable.

A couple of weeks ago, I had to retune my short vertical antenna using that "L" tuner. I went outside to make adjustments and found the tuner was very erratic. It didn't behave very well, so I decided to bring it inside to the workbench and have a look inside.

I pulled off the metal cover and a million frantic ants started running in all directions. In a panic, I grabbed the ant spray and committed mass genocide on the pests, but I don't think I got them all.

After that crisis abated, a close inspection revealed toasted ants in the capacitor plates and crushed ants in the roller inductor. And something was binding the roller inductor knob. I pulled off the counting dial and more ants ran from hell to breakfast. More spray, more spray! Jeez, creepy.

"…infested with earwigs!"

I grabbed the vacuum cleaner to suck up the live and dead ant carcasses. And for good measure, I sprayed into the nozzle of the vacuum cleaner while it was running to finish the massacre. Bad idea. In my haste, I didn't have an opportunity to read the cautionary label on the can. The propellant was propane. My old reliable Sears vacuum cleaner was 30 years old and probably needed to be replaced anyway. The motor brushes were worn and sparking, which incidentally is a good ignition source.

I characterize the minor explosion as "POW." It permanently removed the lid; the bag erupted and evenly dispersed a million dead ants and everything else that was in the bag for the last six months all over the damn place. So what would have been a one-hour job was now four hours, not counting time spent rummaging around resale shops for another vacuum cleaner.

The very next day after I cleaned and lubed the tuner, it was back outside for the installation. It tuned up just fine.

All of this reminded me of the XYL's incident a few weeks ago.



She likes to decorate the outside of the house in seasonal colors. She has a vine type wreath hanging near the front door. She puts plastic flowers and leaves interwoven with the wreath. She removed the wreath and brought it inside to the laundry room to change the decor.

I was in my shack when I heard a blood curdling scream, followed by "Get Away, Get Away!" and more screaming. That was enough for me to grab my pistol and bolt downstairs to do battle with the forces of evil. As I rounded the corner, I found her wildly hitting the washing machine with a rolled up magazine. The wreath was infested with earwigs!

God went out of his way to make these bugs look as disgusting as possible, which added fuel to the frenzy as the XYL tried to dispatch as many of the critters as possible. The defenseless bugs instinctively realized the dangerous threat from this mad woman, so they took their chances and made a hasty departure in all directions.

And of course I'm standing there with a pistol in hand, feeling both under-equipped and over-equipped at the same time. I wouldn't have enough bullets to match all the bugs, but I could have put the tired old washing machine out of its misery. By the time I returned with the bug spray, the event was over. And then I realized the instrument of death she was using was the current month's *QST* magazine. At least it was good for something.

So now I'm just waiting for the cold weather and the spiders to migrate inside the house. ■

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Continued - International Law from Page 1

The 1927 convention determined the "procedure by which international control was extended to amateur radio through the medium of the international conferences."

1. Secrecy of communications

2. Connections with a country's general communications

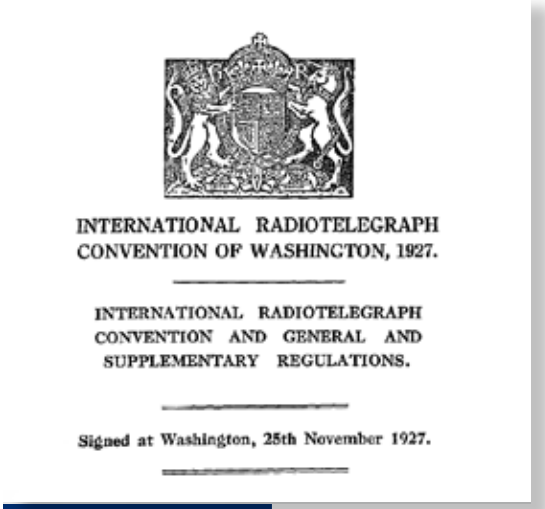
3. Violations investigation

4. Information exchange regarding stations and services

5. Distress calls priority

6. Dispute arbitration

Amateur radio stations for the first time defined.



INTERNATIONAL RADIOTELEGRAPH CONVENTION OF WASHINGTON, 1927.

INTERNATIONAL RADIOTELEGRAPH CONVENTION AND GENERAL AND SUPPLEMENTARY REGULATIONS.

Signed at Washington, 25th November 1927.

Convention Cover

Selections from the 1927 International Radiotelegraph Convention and General and Supplementary Regulations

Article 1-2

the term "private experimental station" means–

(1) a private station intended for experiments with a view to the development of radioelectric practice or science;

(2) a station used by an "amateur," that is to say a duly authorised person interested in radioelectric practice with a purely personal aim and without pecuniary interest.

The person operating an amateur station "must have demonstrated his ability to transmit and receive in Morse code, and that he could be replaced only by a person possessing like qualifications."

Article 5-6

§ 18.–(1) Each Administration may assign to amateur stations frequencies taken from the bands allotted to amateurs in the table of distribution.

(2) The maximum power which these stations may use is fixed by the Administration concerned, account being taken of the technical qualifications of the operators and of the conditions under which the stations must work.

(3) All the general rules laid down in the Convention and in these Regulations apply to amateur stations. In particular, the frequency of the waves emitted must be as constant and as free from harmonics as the state of technical development permits.

(4) In the course of their emissions, these stations must transmit their call signs at short intervals.

Governments would take steps necessary to "verify the technical qualifications of persons operating such a station." Amateur stations had also to comply with the "general rules laid down" for other stations as to monitoring one's wavelength emitted "constant as the state of the art permits." Also covered were secrecy of communications, false or deceptive signals and avoidance of interference with other stations.

Present at this convention was "great pressure from non-American administrations either to eliminate amateur radio altogether or to limit it to narrow bands that were not regarded as desirable for other services."

It was at that convention that American amateurs were granted third-party traffic, messages of a personal nature, to points within the U.S.

"hostility to amateur radio"

Many governments were hostile to the amateur service: *[T]he United States being the only great Power that proposed generous frequency grants to amateurs.*

Those hostile nations included "Great Britain, Germany, Switzerland, Hungary, Japan, and The Netherlands." They "would virtually have eliminated amateur radio as an international service."

Schroeder opined the cause of the hostility to amateur radio at the convention was "that in most countries the entire communications system is under government



Photo: ITU

1927 Radio Convention - Washington D.C.

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control and that there has been a decided repugnance toward licensing private individuals to engage in communications activity often on a personal and non-commercial basis." In other words, these countries wanted to maintain, enlarge or create a monopoly on all radio communications in their territories.

The Shaughnessy Subcommittee: E.N. Shaughnessy, of Great Britain, Assistant Chief Engineer of the British General Post Office; Captain Montefinale, of Italy; and Lieutenant Commander Craven of the United States, was tasked with amateur radio matters. Montefinale and Craven championed amateur radio's cause. Craven, working informally, outside of official channels "with members of the various national delegations," was able to come away with their support assured. Thanks to Montefinale and Craven's efforts the "amateurs of the world emerged with bands of frequencies that followed on a narrower basis, the pattern of the 'Hoover bands…'"

1932-Madrid

At the 1932 Madrid Convention, the International Telegraphic Union resolved to combine the International Telegraph Convention of 1865 and the International Radiotelegraph Convention of 1906 to form the International Telecommunication Convention. This action prompted a name change, thus the International Telecommunication Union. The new name, effective January 1, 1934, was chosen to properly reflect the full scope of the Union's responsibilities, which by this time covered all forms of wired and wireless communication.

> *"bit of historical trivia"*

Thanks to support from "Great Britain, France, Italy, many of the Latin American states, and the milder backing of the Soviet Union," amateur frequency allocations remained mostly unchanged from 1927.

The Madrid Convention further clarified the status of the amateur service by differentiating it from "private stations with a commercial or semi-commercial purpose, and from purely experimental stations such as those maintained by many universities for the investigation of radio phenomena."

Selections from the 1932 Final Protocol To the General Radiocommunication Regulations

Article 8.

Amateur Stations and Private Experimental Stations

§ 1. The exchange of communications between amateur stations and between private experimental stations in different countries is forbidden if the Administration in one of the countries concerned has notified objection to such exchange.

§ 2. (1) When such exchange is permitted, the communications must be conducted in plain language and must be limited to messages relating to the experiments and to remarks of a personal character for which, by reason of their unimportance, recourse to public telegraph service would be out of the question. The licensees of amateur stations are absolutely forbidden to transmit international communications on behalf of third parties.

§ 3. In amateur stations and in private experimental stations, authorized to make emissions, any person operating the apparatus, either on his own account or for another, must have proved his ability to transmit messages in the Morse Code and to read, in radiotelegraph reception by ear, messages thus transmitted. He may be replaced only by authorised persons possessing the same qualifications.



1932 Radio Convention
Madrid, Spain
Photo: ITU

Article 14.

Call Signs

§ 1. (1) All stations open to the service of international public correspondence, and also private experimental stations, amateur stations and private radiocommunication stations, must have call signs taken from the international series assigned to each country in the following table of distribution. In this table, the first letter or the first two letters provided for the call signs show the nationality of the stations.

(g) one or two letters and a single figure (other than 0 or 1), followed by a group of not more than three letters, in the case of private experimental stations, amateur stations and private radiocommunication stations; ***the prohibition of the use of the figures 0 and 1, however, does not apply to amateur stations****.* (Note: emphasis added)

An interesting bit of historical trivia from the 1932 Protocol: "(2) For an aircraft performing a service concerning the work of the League of Nations, the words 'League of Nations' take the place of the name of the owner of the aircraft." ■

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Amateur Radio On Television

By Bob Cashdollar, NR8U

THE TWILIGHT ZONE: *THE MONSTERS are DUE on MAPLE STREET*

First broadcast March 4, 1960, Rated NR, approximately 24 minutes.

Rod Serling, in a compact 24 minutes, provides a story that packs a wallop. As a part of the early black and white series *The Twilight Zone*, Serling gives the viewer a story about what happens to a neighborhood when the electric power goes out for some inexplicable reason.

Amateur Radio In The Episode

There is no real amateur radio equipment or use of amateur radio in the episode, but that is not to say that amateur radio does not play a part in the story.

After viewing the episode, I got to wondering about my neighbors and what they thought I was doing in my basement with my radio. If you don't look at your neighbors a little differently after viewing the episode, something is wrong with you.

Without giving away the story, in today's television rating system the episode could possibly be rated PG-14 V (violence).

On the DVD I had there were several other episodes from the early *Twilight Zone*. They include: *Time Enough at Last, The Odyssey of Flight 33* and *Nightmare at 20,000 Feet. Nightmare* features a young pre-"Captain Kirk," William Shatner, as the lead.

Ham Lingo

DICK SYLVAN, W9CBT



MATCHBOX – ANTENNA MATCHING DEVICE

CONTINUED - X1M QRP XCVR FROM PAGE 4

Being quite interested in digital modes, I decided to explore this possibility. The RS232 connector is not standard, but requires a supplied converter, followed by a RS232 to USB converter (unless your computer has a real RS232 connector on the back). The radio will nicely respond to the command set for an Icom 718 under the Ham Radio Deluxe suite. I had to fabricate a jumper cable to feed the audio into the X1M and connect to my SignaLink USB interface. This was done with a cannibalized Ethernet cable and a 3.5 mm stereo plug scrounged from my junk box.



In the interest of not running the X1M "hot," I cut back the output drive level on the SignaLink to more modest levels. The radio seems to have a very sensitive and stable receiver, as I as easily able to recover wsprnet signals. I want to experiment with recovering SSTV signals, either with MMSSTV, or the DM780 package. So many things to try, so little time!

It appears the "big boys" might have some reasonable competition here. Also, for a new ham wanting to try their hand at HF, this seems like a potential entry level HF transceiver, with the usual caveats about QRP operation requiring some patience. I look forward to packing this radio on my next outing for "picnic table" portable operation, with a SLA gel cell and antenna tuner. ■

Your Defining Moment...

Of course you remember the defining moment that led you to getting your ham ticket. BANG—your eyes opened wide and you couldn't soak it in fast enough. Tell us about it—your Elmer—your first contact—your first rig, etc. Include pictures to tell the whole story.

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