Society for the Preservation of Antique Radio in Canada

Newsletter of the SPARC Vintage Radio Museum

Coquitlam, British Columbia, Canada

Issue 2014 – 2

Welcome to the Fall edition

This years Field Day open house on June 28th and 29th was only partially successful. It was an opportunity to welcome new visitors, however very few duplicates were sold.

An updated website for SPARC is being developed. A page for "de-acquisitions" will be included and membership renewal reminders and use of PayPal for payment. More detail in the next Newsletter. Our new website will be www.sparcradio.ca

Earlier this year, Craig Marston stepped down as a Director. Pat Jones agreed to accept an interim position until the next AGM. Craig continues as an active volunteer, contributing his promotional ideas and "colourful" radios.

CHRISTMAS CONNECTION :

Join us December 14th, 12:30 till 3:00 pm for our annual Christmas get-together. Snacks, soft drinks and goodies will be provided, but feel free to bring something to share. Have a SPARC-ling Christmas one and all!

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COQUITLAM MAYOR VISITS :

Coquitlam Councillor Terry O'Neill and Mayor Richard Stewart visited SPARC during Field Day June 28, 2014.

The mayor remains hopeful the Riverview Hospital grounds can be retained and Community Heath Services in some form will return. Our good wishes to the Mayor on his recent re-election.

A June 2014 report from Dr. Higenbottam makes the case for establishing a mental health research & treatment facility on the Riverview grounds. See page 6 for the link to his full report.

Museum News

Tired of your old brown lack luster radios?

Craig has turned his hand to creating some very unusual colour schemes for otherwise mediocre Stewart Warner table radios. Talk to Craig most Sunday's and update your collection!

Our award winning Stromberg Carlson radio is now on display in the front foyer cabinet.

Rentals / Loans

Rogers Majestic 1954 Television
&
CJOR Radio announcements from 1954 for the BC Sports Hall of Fame exhibit

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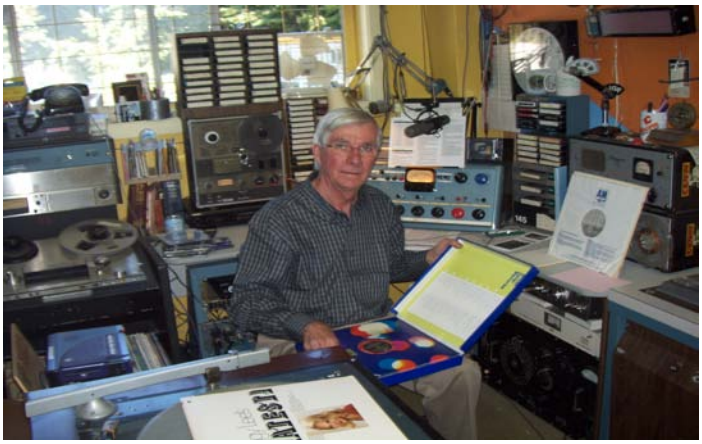
WW 1 Trench Set on loan to the POCO Heritage Society

Philco Predicta Television rental to the Disney production "Off The Island"

Treefest 2014 :



Peter at the mic.
Listen to the day's broadcast of September 13th from the SPARC listen live website.

The CKNW "Remembrance" program was broadcast for the week of November 11th.

MEMBERSHIP RENEWALS FOR 2015

Renew support for your Radio Museum
Only $ 20.00

SPARC Memberships c/o
4757 London Green, Delta, V4K 4X1

Restoring the QUAD AM II Tuner

By Gerry O'Hara

Introduction :

Ever since I was a teenager (late-60's/early-'70's), I have admired QUAD audio equipment. I am not entirely sure what the attraction is, but there are several contributing factors that I can identify: **great styling** – their designs from the 50's through 70's don't (at least in my opinion) look odd or dated; **well-constructed** – the layout of the point to point wiring or circuit boards is second to none (exceptionally neat, verging on the 'regimental'); **innovative circuit design** – the QUAD II power amplifier is a classic, innovative amplifier dating from the early-50's and is still much-sought-after today, and their approach to filtering and equalization in pre-amps ('control units' in QUAD parlance) was revolutionary, including a by-pass facility of the tone control circuitry; **system integration** – thought-through designs of system components so they work well together; and, of course, **great sound** – the various systems sound really good!

Back in the day, I could only aspire to owning QUAD equipment, it being at a price point that was well outside of my reach. In more recent years though, while the 'classic' QUAD system components are still not cheap, they are at least affordable to me, especially when they are in need of some attention (and I love giving radio and audio gear my attention!). So, over the past few years I have been acquiring QUAD gear on an ad-hoc basis as it becomes available, either locally in BC/Canada, or on EBay if the price is right. I first acquired a 405 amplifier and 33 control unit, followed by an FM3 tuner – a classic 1970 HiFi set-up. I was then offered a QUAD II power amplifier and QCII control unit, dating from the mid-50's. I paired this up with a large period 'University' speaker to provide a superlative mono system. A 303 power amplifier was then picked up from a museum sale, and some time later, I spotted a second QUAD II power amplifier on the CVRS Forum, which was also purchased, shortly to be followed by a QC22 (stereo) control unit and FM1 tuner. All I needed then was the matching '50's/60's AM tuner...

Background :

Well, serendipity struck for me (it occasionally does), when I was discussing my QUAD equipment with a friend at the SPARC radio museum in Coquitlam, BC. Turned out that he bought a QUAD AMII tuner back in the 60's and still had it – hardly-used, and complete with mint manual. A deal was struck and I became the proud owner of a QUAD AMII tuner (Serial No. 8846) in 2014.

It may seem a bit odd that a company specializing in HiFi components would produce an AM tuner. The explanation lies in the fact that when FM radio was introduced in the UK in the mid-50's, coverage was very 'spotty' and many HiFi enthusiasts could not receive a good (or any) FM signal to feed to their tuner. Tuners were a very popular sound source at that time, as BBC broadcasts were of good quality and program content included popular concerts and other music shows. Given this situation, it was natural that QUAD supplemented their range with a high-quality AM tuner, giving access to the programming material at a lesser, though acceptable, sound quality for many – the AMII manual states "*With the selectivity switch in the Wide position the IF amplifier allows an overall response to over 10kc/s and the RF amplifier ensures a very low level of receiver background noise. When reception conditions are suitable the quality of reproduction is comparable with that provided by a VHF-FM service*". QUAD produced four AM tuner models over a period of some 24 years. The AMII described here was introduced in 1960 and discontinued in 1969, being replaced by the AM3, basically the same tuner with a modernized case and dial, itself produced until 1973. Around 10,000 AMII's were manufactured.

On Arrival :

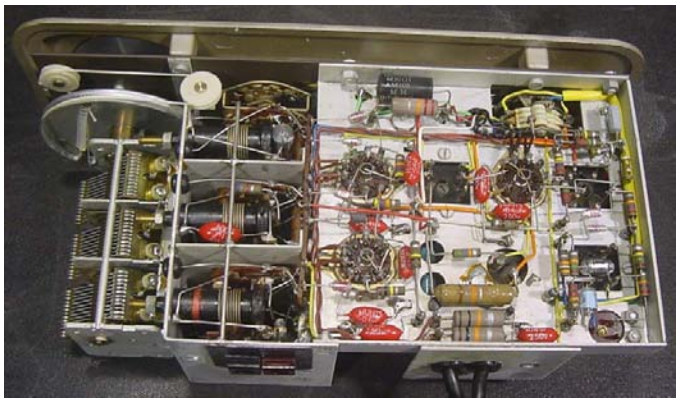
As noted above, the full provenance of this particular AMII tuner is known, with only one owner from new in 1968. The former owner noted that it had not seen much use, though the four pin power plug had been removed such that he could supply the needed filament and HT voltages without having the requisite QC22 control unit.

Luckily, I had the correct type of plug in my 'junk box' and this was fitted.

Cosmetically the case paintwork is in perfect condition, as are the tuning knob and other controls. The only issue being the common problem with the gold paint departing from parts of the rear of the acrylic tuning dial as shown in the photo below. The chassis was exceptionally clean – looking like it had just left the factory a few weeks before – no dust, grease or tarnish present.

Restoration :

The chassis contained a number of Hunts brand paper capacitors (red and black plastic encapsulated types), and a twin 16uF Hunts can type electrolytic capacitor, as well as several (clear) polythene capacitors.

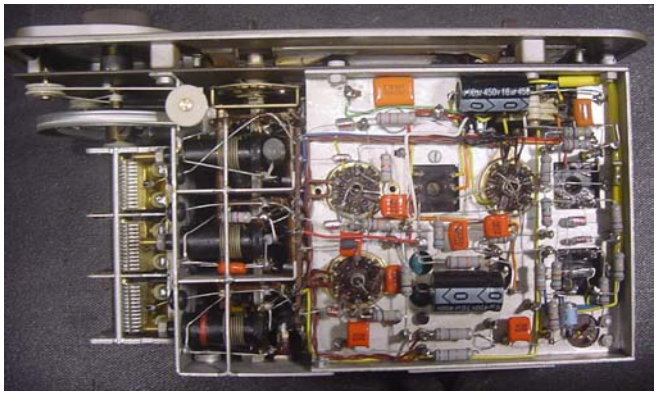


The latter type rarely give problems but should be treated with care during any re-work of the chassis as they tend to be very heat-sensitive. A couple of the Hunts paper capacitors were tested and were confirmed to be leaky, and so all were replaced with plastic film types. I attempted to re-form the twin electrolytic: one section reformed ok, but the other did not, so I removed it from the circuit (leaving the can in place for cosmetic reasons). I did not attempt to re-stuff the can with new parts as the ones I had in stock were physically too large (higher voltage rating than the original). Indeed, the replacements only just fit under the chassis. I would note that a range of 'skinny caps' is available through some suppliers (they are designed for use in flat screen TVs and monitors) – such types may be used to re-stuff cans of this dimension. A selection of the higher-value resistors were also checked – some were well out of tolerance and many marginally so. I decided to replace all resistors with the exception of three low value ones (that tested ok anyway) in the coilpack, as these were very difficult to access without significant disturbance to the circuitry, and the 2kOhm dropper resistor, which is a high-quality porcelain wirewound type (located above the chassis for efficient heat dissipation). Replacement resistors are mostly 1W metal film types, with the exception of two in the heater circuitry, which were replaced with 2W metal film types. As for all my other QUAD restorations, I took great care with component orientation, lead dressing and general workmanship, such as to preserve the original extremely neat layout (under-chassis before component replacement shown on this page (photo, below, left), after on page 4).
The band change switch was cleaned with Deoxit and a Q-tip, though to be honest, it did not really need it. The tuning gang roller race was cleaned and re-lubed with lithium grease and the contacts cleaned with Deoxit.
The dial was cleaned and the peeling-off tape and gold paint cleaned off. Remnant gold paint in the peeled-off areas was removed and the edges of these areas trimmed neatly prior to applying fresh gold paint from the rear of the dial. Care was exercised in trimming the remnant gold paint as this was covering the control function lettering. The end result is not perfect, but is neat and does not detract from the appearance, especially when viewed from a short distance.

Performance :

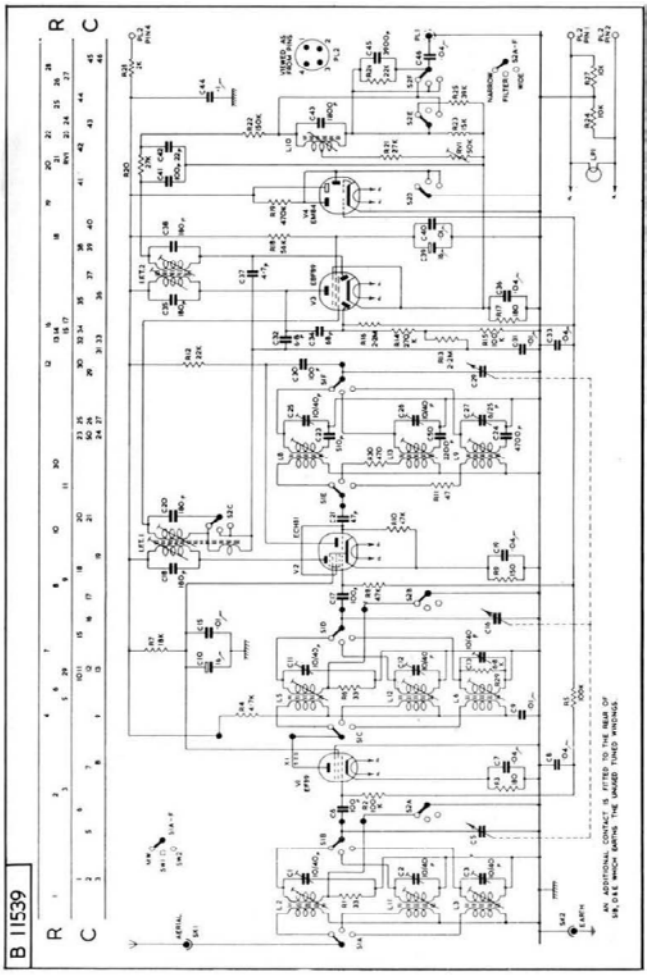
Once the above work had been undertaken and some basic resistance and continuity tests had been completed, I connected the AMII tuner to the QC22 control unit and pair of QUAD II power amplifiers, added a few feet of wire to the antenna socket and... was amazed by the quality of the audio from the setup on the Broadcast band – simply the best-sounding AM tuner I have ever heard! – especially when listening to my SSTRAN low power AM

transmitter. The selectivity control and EM84 tuning indicator work very well, using the narrow selectivity setting (which engages the EM84) to tune a station and then setting the tuner to the wide selectivity setting. Shortwave performance is also good – rock steady receiving WWV on 10MHz.



Circuit and Construction :

The circuit of the 'export model' is reproduced at the right. The aerial transformer is coupled by a variable-mu RF amplifier pentode (EF89), the anode circuit of which is transformer-coupled to the mixer grid. Both the grid circuits are tuned on all wave-bands, and the Q of the medium wave (Broadcast band) circuits is reduced when switched to select a wide-band response.
A triode-heptode (ECH81) is used as the local oscillator and mixer. The oscillator anode circuit is tuned, and is tracked by high stability, close-tolerance capacitors.
The 470 kHz output from the mixer anode (note the departure from the North American 455 kHz IF standard) is transformer-coupled to the IF amplifier. The coupling is critical (Qk=1) in the narrow band condition. In the wide band condition, the coupling is increased (Qk=4) by including a tertiary winding; this method ensures that the response remains symmetrical about the centre frequency.
The IF amplifier is the pentode section of a double diode pentode (EBF89). This tube has a high slope, combined with a low anode-grid capacitance. A simple fixed neutralizing circuit is used to further reduce the anode-grid capacitance. This allows a high stage gain without tilting the response within the IF pass band.
One diode of the EBF89, with a small delay voltage applied, is used to provide the AGC voltage. This voltage is applied fully to the RF and mixer stages, and partially to the IF stage. The AGC circuit provides good control and large input signals are accepted without overload.



The IF amplifier anode is transformer-coupled to the diode signal rectifier. The loaded Q of this transformer is half that of the first IF transformer and the coupling is critical. In the wide-band condition, the combined IF frequency response is within +/-1db to 12kHz, and in the narrow-band condition, it is -3db at 3.5kHz. The narrow-band frequency response is equalized to 5kHz by an audio frequency circuit. In the Filter position of the selectivity switch, an adjustable bridged-T rejection circuit tuned to the adjacent channel 10 kHz heterodyne (whistle) is combined with the wide-band response.
The audio output is taken from a small fraction of the diode load in order to minimize distortion with heavily-modulated signals.

The tuning indicator (EM84) had a variable-mu characteristic and gives a clear indication of the correct tuning point over a wide range of input signal levels. The greatest accuracy of indication is given when the IF amplifier has a narrow pass band. The indicator is therefore made inoperative in the wide-band selectivity switch positions.
The tuner has an extremely compact design: the right-hand side of the very shallow chassis contains the four tubes, IF transformers and smoothing capacitor can. To the centre of the chassis is the coilpack, and to the left of this the three-gang tuning capacitor. The above chassis layout is neat, with the major components arranged in rows. Beneath the chassis the components are arranged at right-angles to each other, as is the component lead dressing, altogether providing a very visually pleasing layout, typical of QUAD construction in this period. The tuning arrangement is via a standard spring-tensioned cord, however, a neat feature is a slow-motion drive that operates over a narrow tuning range whenever the tuning dial is set to a frequency by turning the tuning knob more slowly – a very effective system, especially useful when tuning stations at the upper ends of the Short wave bands. The front panel layout is simple and in line with other QUAD HiFi components of the period: the large tuning knob is located to the left, flanked to the right by a very clear 'sliderule' dial. Inset, immediately below the dial are the band-selector switch to the left and selectivity/filter switch to the right. There is no power on/off switch or volume control as these functions are carried out by the QCII or 22 control unit. A single dial bulb illuminates the dial, and the EM84 magic eye is located horizontally in the lower part of the (acrylic) dial. Parts of the dial are masked by a gold paint applied from the rear and, as in the QUAD FM2 tuner I have, clear plastic tape had been applied (for no apparent reason) to this, and over the years, this tape has shrunk/ warped and peeled off the dial, taking parts of the gold paint with it, the result being rather unattractive (photo, top of page 4). The tuner chassis is enclosed in a pressed metal enclosure that matches the other similar era QUAD HiFi components. These were really designed to be installed in a larger enclosure, as was the vogue in the 50's and 60's for this type of equipment. A great tuner, both in design – electrically and mechanically, as well as off the air performance.

Renewing Riverview

A public consultation process initiated by

BC Housing

Dr. John Higenbottam

"Into the Future:

The Coquitlam Health Campus"

From the report and of interest to SPARC -

15. Other current and proposed uses of the site including: filming, **museums**, amateur radio clubs and BC Ambulance Services be supported. These current and future uses are appropriate and do not conflict with the proposed clinical, educational and residential uses.

View the full report at www.coquitlam.ca/riverview

Our thanks to museum member John Wicks for acting as the SPARC representative at the Riverview Heritage Society meetings.

Most recent news indicates the "Hillside" building is to be re-opened for patients.

The last open house "Ideas for a Vision" was held Sept. 23 & 27th.

Follow the dialog at

www.renewingriverview.com

A final decision taken from all the community input is expected in the New Year.

The **S.P.A.R.C. Newsletter** is published by The Society for Preservation of Antique Radio in Canada, for all interested in preserving the heritage of early vintage radio and communications technology.

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Memberships :

Annual membership cost is $ 20.00
Cheques may be sent to:

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4757 London Green
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The 2014 Society Executive

Gerry O'Hara / Director - President
Jurgen Peterat / Director - Secretary
Bruce Winter / Director - Treasurer
Barb Boman / Director
Brian Murtsell / Director
Peter Trill / Director
Pat Jones / Interim Director

Museum Hours :
Sundays 10:00 am to 4:00 pm

The museum is located on the Riverview Hospital Grounds, Coquitlam, British Columbia. Take exit 44 from Highway #1 onto the Lougheed Highway or from Coquitlam Centre, travel South on the Lougheed Hwy. Enter the grounds by turning at the Colony Farm Road traffic light. Follow Holly Drive, turning up the hill at Oak Crescent. See you there!

Henry, one of our regular volunteers, shown demonstrating our Edison cylinder phonograph to a group of visitors during TreeFest Day.

Phone : (604) 777-1885

e-mail : radiomuseum@telus.net

website: www.sparcradio.ca

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Please note :
The Annual General Meeting of the Society will be held February 1, 2015 at 1:00 pm in the museum.

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SPARC acknowledges the support provided by the City of Coquitlam and the Government of British Columbia.