

The **Call Letter**

August, 2012
Vol. 38 – No. 8



NEXT MEETING: AUGUST 11th

The Northwest Vintage Radio Society

Post Office Box 82379

Portland, Oregon 97282-0379

The Northwest Vintage Radio Society is a non-profit historical society incorporated in the State of Oregon. Since 1974 the Society has been dedicated to the preservation and enjoyment of “Vintage radio” and wireless equipment.

Membership in the Society is open to all who are actively interested in historic preservation. The dues are \$25.00 for domestic membership, due on January 1st of each year (prorated quarterly).

The Call Letter has been a monthly publication since 1974. It was originated with the founder, Bob Bilbie, and our first president, Harley Perkins. Through several editors and with the assistance of numerous society members, the Call Letter has continued to be a publication that informs members of the society’s business and that supports the hobby of collecting, preserving, and restoring vintage radios.

Society meetings are held the second Saturday of each month at the Abernethy Grange Hall at 15745 S. Harley Ave. in Oregon City, Oregon. They convene at or about 10 AM for the purpose of displaying radios, conducting Society business, and exchanging information. Guests are welcome at all Society meetings and functions (except board meetings).

Other Society functions include guest speakers, auctions, radio shows, and radio sales which are advertised in the Call Letter and are held in and around Portland.

With each issue of the Call Letter, we remember Jim Mason, a charter member of the society who remained active until his death in 1999. A generous bequest from Jim's estate ensures the vitality of the Northwest Vintage Radio Society, and continued publication of the Call Letter.



Society Officers for 2012:

President	Mark Moore (503)286-5224	mark@pdxhistory.com
Vice-President	Mike McCrow (503)730-4639	tranny53@frontier.com
Treasurer	Ed Tompkins	edtomp@Q.com
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August 2012

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On the cover: Zenith Trans-Oceanic and all other multiband portables will be featured at this month’s meeting.

The next meeting is August 11, 2012

Monthly feature: T/O & all Multiband Portables

Visit our web site at <http://nwvrs.com>

and on Facebook:

www.facebook.com/northwest-vintage-radio-society

Next Call Letter deadline: August 24, 2012

The *Call Letter* is the official publication of the Northwest Vintage Radio Society. Circulation is limited to the membership and guests of the Society. The Society is not responsible for the material contributed for publication, nor the quality, timeliness, or accuracy of the items or services offered for sale in the SWAP SHOP. By common agreement of the board of directors, the buyer assumes all responsibility for the satisfaction of any transaction.

NWVRS July Meeting Minutes

by Recording Secretary Charlie Kent

President Mark Moore called the July 14, 2012 meeting of the NWVRS to order at 10:00 a.m. Two new members were in attendance: Andy Chumbley who likes Zenith radios, and Michael Hurley who likes tube amplifiers for most anything. The minutes of the June meeting as published in *The Call Letter* were approved as presented.

Club Correspondence

James Harper reported the NWVRS website is now linked on the Radio Attic website. He believes the Pearl District Antique Dealer will add NWVRS to their club portfolio.

Library

Robbie Robinson brought fresh books to view in his rotation of our library's contents.

Tech Committee

Mike McCrow reviewed the radio rules for the November 10th Don Iverson Restoration Award Contest.

Website

Pat Kagi told about new features and information which can be seen on the club website.

Old Business

Damon Vandehey was given a round of applause for disposing of the June Trash Bash items and making \$26.32 for the club.

Rosters

Updated rosters are available for pick up at the meetings. If you would like your picture taken for roster supplements, see Rick Walton. Rick reported at the beginning of next year we will need a new Membership Roster volunteer. He relayed the duties of the position.

Monthly Feature

A membership vote decided the topic for August as **T/O Radios, All Multi-band Portables.**

Leads and Needs

Dick Howard needs a WWI buzzer for a radio he's working on.

'Ray' needs an electronic vibrator for a car radio.

Michael Hurley needs to electronically repair his Philco 90. It was suggested he take it to Blake Dietze's Wednesday night gathering for help.

Damon Vandehey needs packing material.

Mike McCrow needs the first I.F. transformer triple turned for a Climax Model 92.

Good and Welfare

Bob Lee was hospitalized, but is home now recovering.

Liles Garcia shared that long-time member Bob Ewing, who now resides in Arizona, was in town for a visit and gives his regards to all.

Monthly Presentation

Liles Garcia gave a presentation on Building Power Supplies for Battery Radios.

There were 46 members in attendance. The meeting adjourned at 11:11 a.m.



NWVRS Monthly Meeting Tech Talk Calendar

by Mike McCrow

August 11 **Unusual Radios: Two-tube Superheterodynes.** Guest speaker: George Kirkwood

September 8 **Wood Radio Cabinet Restoration.** Guest speaker: Esteban Mendoza

Antique Radio Swap Meet

**Celebrating our 30th Year.
Tune in to the largest vintage radio event in the Northwest.
Collectors, hobbyists and sellers alike are invited to buy,
sell and trade old radios and related gear.**

Sunday, August 19, 2012

9:00 a.m. to 1:00 p.m.

(new location)

**Shoreline Community College
16101 Greenwood Avenue North
Shoreline, WA 98133**

**FREE ADMISSION
Vendors \$10 donation
recommended**



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**Puget Sound Antique Radio Association
P. O. Box 7567, Tacoma, WA 98417-0567
<http://www.eskimo.com/~hhagen/psara/>**

GR Type 1680-A Auto Capacitance Bridge

by David Wise

Part II

It's edifying to study how the requirements drove the design, and how GR got everything into the sweet spot - or not.

1. Computer Interface.

This box got GR into the Automated Testing business. The control signals and decade counters go straight out to a connector that you can cable over to a parallel board in your departmental PDP-8 or whatever, to record individual serialized readings or do unattended environmental runs. Western Electric bought one and made it into a cable tester, and another company made an automatic hopper-fed test jig.

2. 1V max unknown drive.

You can measure the capacitance of P-N junctions and other easily-damaged, nonlinear parts. This requirement fits in with turning the transformer around on the low ranges. They could have stepped up the drive voltage, to 10V then 100V, but by stepping up the sense current instead, 1V drive is enough.

3. 20000 counts.

Piece of cake, just give the DACs a gain of 2. But here's why the specs only say 1500uF and so on, instead of the 2000 I said before. (I sort of lied.) Due to phase shift in the detector preamp when it's overloaded, the phase detectors can read backwards. With an unknown between 15000 and 19999 counts, I've seen one counter stepping down, towards the correct value, while the other steps up, away from the correct value, until the latter overflows and kicks the instrument up to the next range. This becomes more and more likely the closer the unknown is to full-scale,

making full-scale not really realizable. This fuzziness makes me prefer to think in terms of half-scale and 10000 counts.

Mine was a gift. It was very sick, and it took me months to get it going. Thank goodness all four extender boards were still bolted in place inside the control unit.

On to the problems:

GR used a plastic foam to cushion the Measurement Unit's boards and keep them seated. Over time, it disintegrated into gooey black ukkumpukky. Not only is this a mess to clean up, it turns out to be an excellent solvent for the ink that TI used to stamp part numbers on their transistors.

Many Sprague type 30D electrolytic caps were either bad or failing, as my ESR meter quickly revealed. If you service any transistor gear, keep an eye out for these. Unfortunately this was only a drop in the "trouble" bucket – the instrument worked no better after replacing them, although I'd swear that at least a few of those caps would have kept it from working if it were otherwise okay.

There was a shorted transistor on Logic board #1, which messed up the display.

There was a shorted transistor on the Range Decade board, which caused it to select two or three ranges at once.

Bad M and MT comparator alignment prevented start. These comparators measure the absolute magnitude of the sense current while ignoring its phase. They tell the logic how far off-balance the bridge is, so it knows when to slow down and when to stop. MT goes low when we're within ten counts of null, M goes low at one count. Since they were always low, the logic thought the measurement was finished before it started!

You can't stack the chassis when they're out of their cabinets; 60Hz from the poorly-located power transformer gets into the ratio transformer and fouls the detector. This is the second time I've seen magnetic problems in GR gear. (The first was my Type 1001-A Standard

Signal Generator, where the power transformer was buzzing the oscillator coil cores and causing residual FM.) What's up with this? GR is usually the best of the best. At one point, I built a three-channel hum canceller, to inject equal and opposite 60/180/300Hz hum. In the end, hum turned out not to be a problem - barely. With everything else trimmed just right, it's not enough to cause trouble, and I removed my canceller. I guess I can see why they did not bother with this. Although it improves confidence, it's a lot of circuitry for a negligible result. On the other hand, they could have moved that power transformer! Oh well, it was fun and interesting and I learned some things. Why else do it?

Lamps. The 1680 uses over fifty Chicago Miniature type 330's. GR provided holes on the front panel to store spares, but they were empty. Fortunately for my sanity that first night, I discovered that each Numerik has two decimal points, one on each side of the digit, and GR used only the left. I stole most of the RH lamps to replace burn-outs. Later I got a pack of spares.

Readout sockets. The Numerik is a Rube Goldberg. Each module presents its dozen lamp bases to the rear. The module is clipped onto a socket on the end of the board. The socket has a "bed of nails" grid of spring-loaded contacts which press against the lamps. Many of these contacts had poor or no connection to the socket's lead wires. I zapped them with a charged cap, about 20uF at 25V. This helped in most cases but not all. The socket lead wires are silver, and it looks like GR didn't clean them before soldering. Silver oxide may be a good conductor, but it doesn't solder worth a darn! Under a magnifier several had clearly not been wetted. I began to wonder if this particular instrument was a lemon.

Power supply drift. A previous technician had fought this and lost. Almost every pad on the PS board was resoldered. But trouble's always one spot beyond the last place you look. One of the 10-turn pots - which he had not touched - that trim the supply voltages was noisy. After I replaced it, Vcc was rock-solid.

This supply stacks several voltages, and unless you follow the adjustment procedure exactly, you'll make it worse instead of better. The master supply is a six-volter that goes between -15 and -9. If it doesn't come up the others won't either. Next is the fifteen-volter between -9 and

+6. This is the beef in the system, putting out several amps through one of those stud-mounted hockey puck germaniums, a 2N2077. Most of the load is across these two points. (The mica insulator was dry. I added thermal grease to move heat off the transistor and onto the fan-cooled chassis.) Then, like the master, another TO-3 transistor boosts the +6 up to +12. Finally, an absurd little TO-5 without even a heat sink tugs between +6 and ground until +6 is really +6. Only a few loads are ground-referenced and depend on this little guy - reserve capacity is only 10mA!

There was still an odd effect - sometimes the instrument wouldn't light up for several seconds after I turned on the power. I traced it to a power supply 2N1304 that drives the big hockey puck. It had insufficient gain. Apparently, as it heated up, the gain increased. I stuck in a 2N2222 and it was fine.

Intermittent extender board sockets. This was subtle. I was pulling out what's left of my hair fighting a control board that was doing nonsense, until I discovered an open ground connection. The socket contact wasn't quite "making" against the board edge. I bent the contact and it cleared up, but I've "buzzed" the extenders on every use ever since.

Even after all this, it was still fighting me. Wierd intermittents; every time I looked, it changed. Usually it behaved for a while after I poked around, but I didn't really accomplish anything. Finally I got it - an Amphenol "Champ" connector hidden under the Oscillator/Comparator box. I didn't know it was there, as the manual is spotty in places. The schematics showed wires going to a "PL601", but there was not one word of description elsewhere. As soon as I cleaned it, everything straightened up like I'd waved a magic wand.

I saw an odd thing. Right after powering on, the first few starts either went crazy or ended up on the wrong range (e.g. range 2 with a 10pF unknown). But once it went right, it stayed right. It was like something wasn't getting initialized, but after enough jostling it slipped into the groove by itself. Eventually I traced this to a "short between the ear-phones". The master oscillator starts very slowly, taking about ten seconds to reach operating frequency. Just wait a couple breaths after switching on, and it's fine.

Another thing. When I run the bridge at 120Hz, if the cap has series resistance, the bridge "hunts" - jiggles the rightmost digit without ever settling. I traced this to distortion. It comes from the signal used to synchronize the oscillator to the 60Hz mains. The result is harmonics, which the bridge lets through because it only nulls the operating frequency. The harmonics make the logic think we're off balance even when we are. (If the unknown is pure capacitance, it works okay, because the cap attenuates the harmonics.) I made a simple design change which fixes this perfectly. It's just an RC low-pass filter on the sync signal. This is where I really get my kicks, making it better than new.

After all this kvetching, don't get the idea that I dislike my 1680-A. I'm having a blast just checking my old stock of caps. It's mesmerizing to hit the START button, hear the ripple of relay clicks as it ranges, and see the digits whirl and come to a stop. It's like a slot machine, except the jackpot is knowledge!

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That Darn Expensive 1L6 Tube

by Art Redman

Forget trying to find WD11s if you seeking a rare and costly tube. A WD-11 can be bought today for sixty-five dollars from a Washington state collector. I bought a 1L6 pentagrid converter tube in 1985 at the price of \$27.50 from the local Zenith dealer Electronic Distributors Incorporated and NWVRS charter member Alan Shaddock, currently from Roseburg, most likely paid around thirty dollars for the same tube from the same Portland Zenith dealer.

The tube was well worth the price because it allowed both of us to listen to our Model Trans-Oceanic without making any circuit changes or realignment. The 1L6 introduced by Sylvania in 1949 is a seven pin miniature tube designed to perform simultaneously the functions of a mixer tube and oscillator in superheterodyne circuits.

Today according to the 2008 second edition of the book Zenith Trans-Oceanic: The Royalty of Radios the price is over \$50.00 if you can find one. The Tube Depot sells a new old stock 1L6 for \$99.95 while my Trans-Oceanic model H500 is worth less than \$95.00.

The 1L6 is used in the Trans-Oceanic Models G500 through the 600 series and in the competitor manufacturers the RCA Strato-World 3-BX-671 and Hallicrafters World-Wide TW-1000 adding to the demand for this miniature tube. Some collectors used the more common 1R5 as a direct replacement sacrificing sensitivity on the short wave frequencies above 10 MHz unless the set is realigned. Solid state replacements are also available for \$44.00 on E-bay. Some collectors are afraid to play the radio with the good 1L6 in place and opt out by using the solid state replacement thereby saving the tube.

The 1U6 tube is almost identical to the 1L6 and can be used if a 56 ohm resistor is connected in parallel with the 1U6 filament so that the other tubes in the series filament string will receive the correct current. Also octal to miniature adapters are available to use the octal 1LA6.

The moral of the story for all NWVRS members is to go into miniature tube boxes and not throw out any 1R5s, 1U6s or the precious 1L6 which is worth more than a WD11. The H500 is the most common of the Zenith Trans-Oceanic radios and I have the most common Trans-Oceanic with this good and most expensive tube. The question is whether the **Model H500** will become a more desirable and collectable

radio because of its 1L6 tube configuration. However, I tried to sell my model H500 for \$95.00 at the June 2012 NWVRS meeting with a good 1L6 at proving the radio is not yet considered rare enough or desirable by collectors in the Pacific Northwest

Roster Updates

New members who joined at the July meeting:



Chumbley, Andy K7DDH

R

3606 SE 147th Ct.
Vancouver, WA. 98683
360-607-9762
360-256-5914 - fax
andychum@comcast.net



Hurley, Michael

R

93206 Brownsmead Hill
Astoria, Oregon 97103
215-528-2956
snockfarm@yahoo.com

Renewing member (missed the roster):



Seymour, Ken KA7OSM

R

9115 SW 176th Ave
Beaverton, OR 97007
503-724-6110
Vintage amateur radio equipment, test equipment, technical literature, radios
30's-50's.
ken.seymour@comcast.net

From The Bench of WRNO

by Sid Saul

Your Wednesday Radio Night-Out Gang 1,000 Ohms per Volt or “Why is my voltage high?”

There’s nothing like troubleshooting our 1930’s vintage radios, only to find that our high priced, super accurate, Harbor Freight *digital multimeter (DMM)* consistently reads high when checking DC voltages. Sometimes twice the expected value or more!

Before the late 1930’s and Alnico magnets became available for meter movements, VOM’s (*volt-ohm-milliamp*) meters needed more current to operate. These DC meter movements were rated 1,000 ohms for every volt on the meter’s scale.

The extra current needed to move that old meter had to come from somewhere, and that somewhere was the circuits under test. If the meter loaded the circuit the voltages came down with it.

We can better grasp meter sensitivity by doing a little math. Ohms law finds the *full scale* current required. Easily found by dividing 1 by sensitivity, 1,000 ohms/volt in this case. This gives us a 1 mA meter movement, common for the early 30’s meters.

My 1950’s Simpson 260 meter is rated at 20,000 ohms/volt. 1/20,000 or a 50uA meter movement compared to the hefty 1 mA movements of two decades earlier. So why is this important? Enter our modern DMM with its digital meter rated at 10 Megohms per volt. Doing the math as before gives us our answer. This infinitely smaller current draw does not rob the circuit of as much current. Hence voltages will read higher than in the 1930’s. Meters usually state their ohms/volt DC rating right on their faces.

I hope the next time you look at a Rider schematic you will check the meter rating indicated in the diagram. Here’s a neat trick used to emulate the old analogs using your DMM. All that’s required is to shunt (*connect in parallel*) a resistor across the voltage probes on the DMM.

The first thing to determine is the voltage scale that would have been used in the old analog to arrive at the published numbers.

Let's say we are looking for 34 volts as shown in Riders. I would set our hypothetical meter to the next higher scale, say 50 volts. For example: 1,000 ohms/volt our meter sensitivity times 50 volts yields a 50K resistor across the probes of our DMM as shown in *photo*. Otherwise we may feel compelled to replace a perfectly good resistor seeing voltages in the mid 40's using our DMM.



Briefly, accuracy is just a percentage of full scale, and preferably the meter should read half scale or more. Let's say our antique meter is rated at 5 percent accuracy. On a 50 volt scale, we may be off as much as 2.5 volts. But using the 250 volt scale, we could be off as much as 12.5 volts! You can see the logic for using the lower scale.

Also, have you noticed I have said nothing about the AC ratings? These are also shown on meter faces, usually much lower than the DC rating. If measuring AC, the same exercise applies for DC, only use the AC sensitivity listed on the meter. Don't get me wrong, DMM's and Vacuum Tube Voltmeters have their advantages, just not in all cases.

So, until next time from the *Wednesday Radio Night-Out Bench*, any free *old VOM's* out there? Sure saves some trouble!

Sid

NWVRS Calendar of Events

Most of the hamfest and ham swap meet information comes from: PNW Hamfair web page at www.n7cfo.com/amJradio/hf/hf.htm

- August 11** NWVRS monthly meeting 10 am; tailgate swap 8:30.
- August 11** **Radio Club of Tacoma Hamfair.** Graham, WA. *This is an ARRL sanctioned event.*
<http://www.w7dk.org/>
- August 19** **PSARA Swap Meet.** 9-1. *NEW LOCATION!* Shoreline Community College, 16101 Greenwood Ave. North, Shoreline, WA, 98133.
<http://www.eskimo.com/~hhagen/psara/swap.html>
- August 25** **Annual Clark County Amateur Radio Club (CCARC) Ham Fair, Vancouver, WA.** *This is an ARRL sanctioned event.* Held at the Clark County Square Dance Center, 10713 NE 117th Ave, Vancouver, WA. clark-countyhamfair@w7aia.org or www.w7aia.org
- September 22** **Spokane Hamfest/ARRL Washington State convention.** University High School, 12420 E 32nd Ave, Spokane Valley WA 99216. *This is an ARRL sanctioned event.* For information contact Bob, AC7GP
ac7gp@hotmail.com .
- October 20** **North Kitsap Amateur Radio Hamfest.** Bremerton, WA. *This is an ARRL sanctioned event.* <http://www.nkarc.org/>
- October 27** **Swap-Tober-Fest. Mid-Valley ARES.** Polk County Fairgrounds, Rickreall, OR. Contact: Don sch, k7un@swaptoberfest.net
 . <http://www.swaptoberfest.net>

Swap Shop

FOR SALE: Thousands of tubes, hundreds of radio parts, panels, meters, surplus, etc. R5-D3 electronic surplus, Bob Lee, 9770 S.E. Stanley Ave., Milwaukie, OR 97222, (503) 513-0410

FOR SALE: **Reducing collection for moving. Consoles and other stuff. Extremely reasonable. Contact Rick Walton, 503-701-3260, rewalton@gmail.com.

Leads and Needs

Questions about restoration of vintage radio? Visit Radiolaguy's web site often for this information plus lots of other interesting displays, photos, virtual museum plus lots of other information on vintage radio and television. Oh, yes, there are items for sale as well and NVRS members get a substantial discount on most of these items. Thank You, Sonny the Radiola Guy
Visit my vintage radio web site: <http://www.radiolaguy.com>

Radio Service

These members have indicated they are willing to perform radio repairs:

Roger Brown – (503) 693-6089

Bruce Baur - (503)-708-4537, brucebaur@comcast.net

Blake Dietze – (360) 944-7172, wb6jhi@ix.netcom.com

Jack Doyle – (503) 305-8097

Pat Hickman – (503) 887-9015 Web: www.classictubeaudio.com

Email: phickman@comcast.net

Jim Myers – (509) 525-6264

Todd Ommert – (503) 246-4141 Web: www.burlingame-radio.com

Email: burltv@msn.com

Tony Ranft – (360) 944-8489 or walterranft@hotmail.com – General repairs.

Dave Wise – (503) 648-0897, david_wise@phoenix.com

If you are willing to repair radios, give your name, phone and/or e-mail, and any comments to the *Call Letter* editor.

The Northwest Vintage Radio Society is not responsible in any disputes arising from services provided by members listed here. By common agreement of the board of directors, the buyer assumes all responsibility for the satisfaction of any transaction.

June/July Monthly Display

Some of the Member's Choice items from the June and July meetings.



Airline 62-245
Mike McCrow



Charles Austin Display
Dick Howard



W-E 2-button mic
Rudy Zvarich



Clarion 61
Rick Walton



Echophone 60
Mark Moore



Majestic 440
George Kirkwood



Electronico Generalde Mexico
Dan Howard



Tech Talk
Liles Garcia



Stewart-Warner 1261
Ed Tompkins



Philco 623
Alan Shadduck

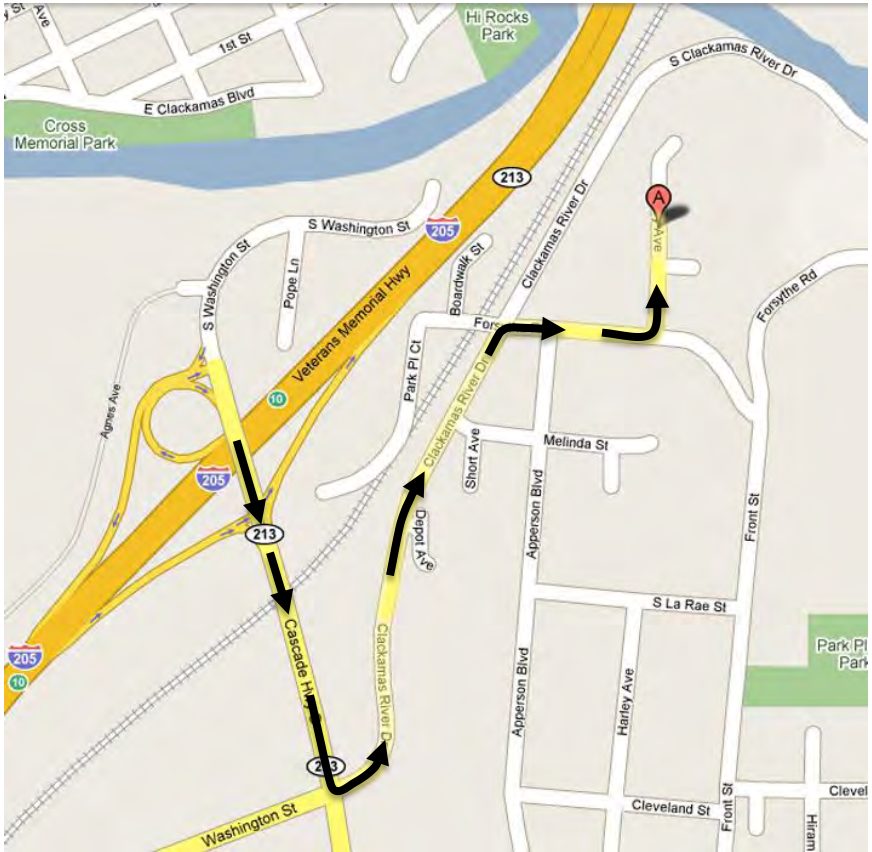


GE Stereo Literature
Damon Vandehy



Simplex V
Sonny Clutter

Meeting Location

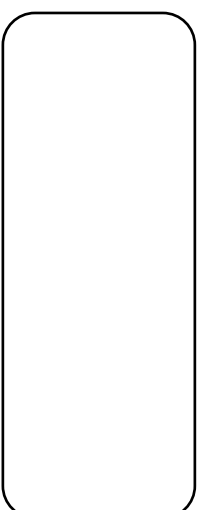
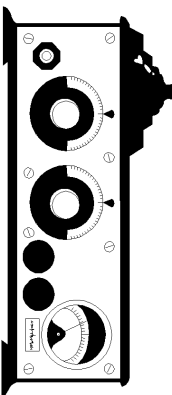


To get to the Abernethy Grange Hall:

1. Exit I-205 at SR-213 (Exit 10 to Molalla) and head south on 213.
2. At the first intersection (the traffic light), turn left onto Clackamas River Dr.
3. Turn right at Forsythe Rd.
4. Turn left onto Harley Ave. The Grange Hall is on the left about a block and a ha



NW Vintage Radio Society
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