

The Henry Ford Broadcasting Network

By Wayne Gilbert CRC Member

On May 16, 1923, Jim Tachner closed the front door to his store early. That evening his son was to be the featured performer on WWI, Henry Ford's radio broadcast station

in Dearborn, Michigan. Mr. Ford had personally announced that starting tonight there would be big changes at station WWI. Broadcasting would begin 2 hours earlier, at 8:00 pm, and station WWI would be broadcasting on a new wavelength of 273 meters, with an increased power of 250 watts. Moreover, Tachner's son Frank, would give a violin solo for the keynote performance of the evening.

Jim didn't remember who else would perform that evening. Maybe it would be a full evening of musical entertainment, or

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perhaps an educational program about the proper way to clean the oven in the kitchen stove, or maybe it would even be another episode in the health care series of talks, most popular men in America in the early 1920s. Ford for President political organizations were sprouting up all over the U.S. in spite of Mr. Ford's continuing denial he

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Dearborn Station

similar to the one about the explanation of gall bladder disease, which was broadcast last week. Whatever it was, he knew that many other Michigan area listeners would be tuned to WWI, too, for they all knew that Mr. Ford always insisted the programs be something wholesome and, very likely, educational as well.

There would even be more distant listeners like Mrs. M. Sparks of Bushnell, Illinois, who wrote to the Ford Motor Company Broadcasting Co. in Dearborn, Michigan; saying, "We enjoy the programs and look forward to each broadcasting day." She adds that the Sparks family machine is a Westinghouse RC, with an aerial 108 ft long atop a pair of 35 ft poles.

It was family value programs like these and loyal listeners like the Sparks family that helped to make Henry Ford one of the had any intention to run for a political office. Finally, Henry relented to public pressure and announced his intention to not only run for president, but to implement a new type of presidential campaign. No campaign trains or rallies for him; he was going to broadcast his speeches directly into voters homes over the radio, broadcast from one of his soon-tobe built 400 radio stations.

Alas, Frank Tachner never

became a concert violinist, Henry Ford never became president, and his broadcast network would never exceed about 20-30 stations. Even this smaller count includes one transmitter located on his private yacht, the Sialia, several others located aboard some Lake Michigan iron ore ships he owned, and at least half that were in some way associated with the D T & I Rail Road¹, another of Ford's many enterprises. Also included were the daily broadcasts transmitted from his station at Fordlandia. his rubber plantation in Brazil, South America. It should also be noted that not all of these stations were licensed to broadcast to the public, and some even devised ways to encode their broadcasts to prevent

(Continued on page 3)

 D T & I is/was the abbreviation for the Detroit, Toledo, and Ironton railroad. Ford purchased this railroad in 1920 and built it into one of the best-managed and equipped small railroads in the country.



COLORADO RADIO COLLECTORS ANTIQUE RADIO CLUB

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Message from the President

Presidents Message

OH MY!! WHAT A START TO 2011 !

Well, we lost our Jan. meeting place due to a broken pipe at the Littleton Library, first time in years.



Did you notice?

We did not have a meeting in January.

Notices were emailed to those in the e -group and Tom Kelly called quite a few people. I understand that three people did show up, so that was pretty good, unless you were one of the three.

ΝΟΤΙΟΕ

Hey, it's only 2 weeks until the next CRC Show/ Vintage Voltage.

Mark your calendar: 3/27

This is one of the premier events of the club.

Don't miss it.

Oh well, we meet in Castle Rock on March 13th. We need to final-

ize our "Specialty" category for the Vintage Voltage show on March 27th. Should be a really big turnout of the public which will be great for us.

See you in Castle Rock on March 13th.

Tom

Just in case you are wondering,

We STILL need a SHOW COORDINATOR for the annual CRC Show.

Duties of the show manager: * Be at the hotel as soon as show participants and get in * Coordinate with the Vintage Voltage Expo operator: tables/chairs, costs, power * Check that the show tables are laid out in an appropriate style * Coordinate getting show items for the various categories displayed together * Check that category signs are displayed * Check that the show ribbons are available * Coordinate info and last minute decisions

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Upcoming Events

1/9—CRC Meeting 2/14—Valentines Day 3/13—CRC Meeting

3/27-Vintage Voltage/CRC Show

Meeting Locations

d otherwise)
Castle Rock
March
July
November

CRC MEETINGS

Meetings are held on the 2nd Sunday of every other month starting in January (except 3rd Sunday of May) at 1:00 pm. The meetings consist of business, "show & tell", raffles, auctions, swap meets, technical discussions and other subjects of interest

CRC MEMBERSHIP

Annual membership in the CRC runs from July to June. Dues entitle members to attend meetings, "The Flash!" our newsletter, discount book prices, participation in our spring show and Fall auction. Current annual dues are \$12. New memberships will be prorated to the following June.

Be the "go-to" guy

(Continued from page 1)

the public from eavesdropping on their broadcasts.

Henry Ford first became interested in radio in 1919, when he became disgusted with paying, what he felt, were, outrageous telephone bills, and stopped the business editor of the Dearborn Independent (another of Ford's enterprises), Fred Black, in the Dearborn corporate office hallway and asked, "Say Fred, what do you know about wireless?" When Black replied, not much, just what he had read in the newspaper, Ford told him, "Well I think it would be a damned good time to learn." "You make me one of those wireless outfits." That day Black nearly resigned his position with the Ford Corporation, before reconciling himself to take on what was just another of the many projects Henry Ford had already assigned him.² As strange as this last assignment seemed, it was hard to argue with the man whose other strange ideas had made him one of the richest men in America. Several, now, much poorer men had declined Ford's offers to work with him in developing the ubiquitous Motel T just about 20 years earlier!

Black recruited a young former U. S. Army Signal Corps officer, Edward G Chambers, an employee from one of the electrical departments, to be his advisor and began building a crystal radio receiver that very night. Black insisted that he himself had to do the construction but relented to building the set in a cleared area in Chamber's bedroom.

By the fall of 1919 Chambers and Black had not only finished their crystal set, but they had also constructed a small transmitter. Finding there was not enough space available in Chamber's bedroom for this additional project, Black requisitioned an unused building on one of Ford's properties in Dearborn. The main qualification for this building was the 150-foot tall water tank already on the property, which Chambers thought would make a good support for their transmitter antenna. But they found that even with the taller antenna their amateur-built transmitter had a lim-

2. It was little wonder that Black considered resigning, as he had previously also been assigned the task of proving that John Wilkes Booth had not been killed in a Virginia farm building, but had lived until 1903, when he committed suicide. ited broadcasting range of about four to five miles. This convinced Black to purchase a professionally built unit from one of DeForest's companies. There is no clear indication that tells which model transmitter he chose, but descriptions of its use and functionality indicate it was a Model O, Radio Telephone and Telegraph Oscillion transmitting unit.

By March 1920, Black and Chambers made a test broadcast which was received quite clearly in Cleveland, and felt they



DeForest Radio Telephone Transmitter

had proven that Ford's concept of replacing the expensive telephone system with an interplant radio network was feasible. By April they had built or acquired the equipment for a second Ford station, located at Ford's Northville, Michigan plant. When this new station was completed, they began ordering parts and sending management messages via radio instead of the more costly telephone. It was soon discovered, however; that even with the new DeForest equipment, voice communication between the plants was not reliable or fast enough, and most communications were made in Morse code.

Both the Dearborn station and the one at Northville (using call letters KDEP) were licensed as 'limited commercial usage' stations, thus making it legal for them also to broadcast via voice to the public. As a public service, KDEN, the Dearborn plant station, broadcast the results of the Cox-Harding election to the few families in the Dearborn area who owned their own receiver. However, although Ford himself had encouraged his employees to install radios in their homes, the demand for public broadcasts were limited, as there were not many other listeners in all of the U.S. in 1920.

Although the capability was there to broadcast via voice to the general public, Ford viewed it as merely a public service, whereas the interplant radio network was a moneymaker. Chambers left the Ford Company in 1922, and to replace him, Ford pirated one of DeForest's engineers to supervise the installation of broadcasting equipment in several more of his plants. It's not been possible to determine if these additional plants were equipped with De-Forest equipment, or perhaps with equipment made by Ford's new ex-DeForest engineer, in his new home at Ford's radio facilities. In either event, the equipment was continually modified and improved upon and transmitting power was increased as the government allowed. Soon Ford's radio operators were sending as many as 2000 messages from plant to plant during an 8hr shift, two shifts a day.

There seems to have been some concern among the Ford management that competitors, or some other unauthorized listener might eavesdrop on these messages. However, there is no evidence or indication that anything other than Morse code was used to encrypt these messages. The Morse code transmitted was created by a break in the carrier wave, which prevented those with crystal sets from receiving any signal, thus deterring most ordinary radio listeners from eavesdropping. As a possible further deterrent each plant was assigned a specific frequency to transmit on, and the operators at plants receiving these messages would adjust their receiver to receive an audible tone. This could be viewed as a way to more easily pick out the desired Ford transmission from any other nearby transmissions, or could be viewed as an additional deterrent to eavesdroppers, especially if the transmitting frequency was changed in a prescribed but unpublicized pattern.

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Ford's broadcasting license for his new voice station, WWI, allowed it to be located in the Dearborn transmitter facility, and to use the same transmitters as the interplant station KDEN used during regular business hours. Initially WWI was assigned to broadcast on 360 meters at 250 watts, from 10:00 p.m. to 11:00 p.m. nightly. The popularity of these broadcasts became so great that soon the transmitting power was increased and programming broadcasts were begun at eight p.m. Although most of the performers were Ford employees, who readily volunteered their talents, Ford always felt that work should be rewarded and paid them for their performances.

As the popularity of the Ford broadcasts increased, so did Ford's personal popularity. Nearly anything he said or did was treated with great fanfare, even if some proclamations were later retracted because they were found to be impractical to implement. A good example of this was Ford's announcement on October 23, 1922, that he would expand his radio-broadcasting network to 400 stations, broadcasting all across the US.³ Ford believed this larger network would justify his making his own transmission tubes, and he soon announced that he would open his own transmitter tube manufacturing facility, to be run by an engineer he pirated away from the Eitel-McCullough company.⁴ However, he may have found this new project to be unfeasible, since there is no record of any radio tubes being made in any of Ford's facilities in this era.⁵

By 1924, Ford was faced with several additional challenges to his broadcasting net-

3. This announcement was published by all of the Ford owned publications, and reported to have been published in newspapers nationwide, but an examination of the archived Denver Post newspaper for that date turned up no mention of these newly planned stations, and as mentioned before, Ford's broadcast network was never that large.

 The Eitel-McCullough company thrived during world war by selling tubes to the U.S. military for use in radar equipment

5. Ludwell Sibley, president of the Tube Collector's Association, has no information about any Ford-manufactured tubes in the 1920s. work vision. Pressured by RCA and Western Union the government was forced to discourage the use of private broadcasting networks for exchanging private messages, such as Ford was doing from plant to plant. And other regulations were implemented that would force Ford to accept and broadcast programs from outside sources on WWI, which his broadcasting station intended for public listeners.⁶ This was happening at a time when Black was estimating it would cost an additional \$250,000 to upgrade the Dearborn WWI facility to make it competitive with other broadcasting stations being built in that area.

Discouraged, Ford quietly stopped publishing WWI programming schedules, and in 1926 WWI went off the air. Instead of financing a broadcasting station, Ford switched to financing individual programs to be broadcast on other, larger networks. Although he was winding down his public broadcasting network, he continued to fund plant-to-plant broadcasts, looking for a way to avoid or circumvent the new government regulations. He licensed two new stations, WAV and WBO during this time. WBO was a short-wave station and WAV was a long wave station; both were used to communicate messages to his oceangoing ships and his rubber plantation at Fordlandia in South America.

Ford made one final try to circumvent the new federal communication laws and regulation that had shut down WWI, by establishing a separate Ford Communication Company. It was to be owned by both him and his son Edsel, not the massive Ford Company. But he was soon informed that this new company would also have to comply with many of the same regulations and laws that he had hoped to avoid. Defeated this one last time, the project was abandoned.

Then one day, Ford simply walked into his offices and announced that it was time to drop radio broadcasting. Interplant communications went back to being made via the hated telephone company, or via telegrams over Western Union's lines. Little is recorded about how he continued to communicate with his ocean and lake go-

6. Ford was opposed to this because he feared being held responsible for the content, accuracy, and opinions that might be aired on some of the programs, if broadcast over the Ford Broadcasting Network. ing ships, or his plantation in South America.

When all is said and done, it is not the size of Ford's broadcasting network that is important, but its innovation and vision. As always, Henry Ford thought big, and if the federal government had been only slightly more flexible, he might have built 400 new broadcasting stations. After all, the KDEN -WWI transmitting station was the largest in the world at that time.

Note: I would especially like to thank Don Andrus, Rick Ammons, Larry Weide, Mark Dittmar, Neil Gallensky, and all the others who spent a lot of their time trying to explain some of the technical aspects of Henry Ford's transmissions and transmitters in terms I could understand.

Sources:

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2011 Colorado Radio Collectors Annual Show and Competition

WHAT? It's that time again? Yes friends and neighbors, it IS that time again. The 2011 CRC Annual Show in conjunction with Vintage Voltage is upon us. By the time you receive this issue you will only have two weeks to complete the work on your entries. This year, the Special Category is

(TBD at the March meeting)

I believe this is the 4th year that we will be joining with the Vintage Voltage Show at the Ramada Plaza Inn at I -25 and 120th Avenue in Northglenn. Last year the turnout was tremendous with perhaps as many as 2,000 people going through the facility.

This is your chance to strut your stuff. Bring your cherished radios to show everyone and see what others have brought. Although the re will be a featured category, don't forget that all of the standard categories will still be available. We have yet to run out of space for the display of radios, so dig deep and bring it along.

These are the judging categories:

Accessories Bakelite Battery - 1926-1929 Catalin Cathedral Classic Audio Communication Gear Console - Full Length Console - High/Low Boy Crystal Set Homebrew Kit Metal Box - 1920's Metal Case Military Novelty - Transistor Novelty - Tube Plastic - Tube Portable - Pre 1939 Portable - Post 1938 Pre 1926 Speakers Specialty Television Test Equipment Tombstone Transistor Tube/Parts Display Wooden - Line Powered No Judging - Display Only Best of Show Best Restoration Peoples Choice

March 27, 20	The Special Ca	itegory this yea utegory this yea	ar is: ies on this form and give
<u>it to Larry v</u>	vhen you register.	R	egistration deadline 9:3
<u>Name</u>		Phone #	
Brand	Model	Year	Category (listed above)

Broadcast Station Call Crossword Puzzle

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Location of Stations 1. Lacey, Wash 2. Oakland, Calif 3. Toledo, Ohio 4. Arlington, Va 5. Everett, Wash 6. Everett, Wash 7. Salt Lake City, Ut 8. San Jose, Calif 9. Lincoln, Nebraska 10. Providence, R. I. 11. Chicago, Ill 12. Oakland, Calif 13. Chicago, Ill 14. Clarinda, Iowa 15. Escanaba, Mich 16. Houghton, Mich 17. Cleveland, Ohio 18. Omaha. Neb 19. Rossville, N. Y 20. Northfield, Minn. 21. Philadelphia, Pa. 22. Birmingham. Ala.	Wav	e-Le 2 2 2 2 2 2 2 	ngth 46 08.2 52 34.3 52 4 431 75 05.9 02.8 40 466 42 56.3 89.4 583 .9 268 .9 288 .9 2888 .9 2888 .9 288 .9 2888 .9 2888 .9 2888 .9 2888 .9 288		Ju <i>Rac</i>	ily 1	926 <i>New</i>	ie 2 5	$\begin{array}{c} 1 \\ 1 \\ 2 \\ 3 \\ 5 \\ 6 \\ 9 \\ 11 \\ 12 \\ 13 \\ 14 \\ 15 \\ 16 \\ 17 \\ 18 \\ 19 \\ 20 \\ 22 \\ 23 \\ 26 \\ 27 \\ 28 \end{array}$	Tao Tao Los Los Hai Los Los Los Los Los Los Los Los Los Los	coma s Ano rris rris licagt rtido rtido rtido rris licagt rtido rris ano ris ano rris ano ris a ris a ris ano ris a ris a ris a ris a ris a ris a ris a ris a ano ris a ris ris a ri ri ris a ri ri ris ri ri ri ri ri ri ri ri ri ri ri ri ri	.f st gen,od,g,ot,kd,orspires, gen,n,er,kd,orspires, savebuo,,er, savebuo,savebuo, s	atio sh. C. Ohiof as, D. Oiof s, C. Jash Y. Jash Y. Mags Ma, rg, A. Sllaso Slla	ns Wave-Lengt 	h 5 3 99 5 2 5 8 4 7

The complete list of broadcast stations, arranged for convenient reference, appears every month in RADIO NEWS, with revisions and changes up to the closing date of the magazine. The first number after the call letters of the station is the wave-length of the station, expressed in meters; and the second number its power, expressed in watts.

KDKA,	East Pittsburgh, Pa309.1	var.	KFVG, Independence, Kas 23	36	15 кz	M, Oakland, Calif 240	100
KDLR,	Devils Lake, N.D 231	5	KFV1, Houston, Texas 24	10	10 кz	RQ, Manila, P. I 222	500
KDYL,	Salt Lake City, Utah 246	50	KFVN, Fairmont, Minn 22	27	50 KZ	UY, Bagulo, P. I 360	500
KFAB,	Lincoln. Neb 340.7	1000	KFVS, Cape Girardeau, Mo 22	24	50 NA	A. Arlington, Va 434.5	1000
KFAD,	Phoenix, Ariz 273	100	KFVW, San Diego, Calif 24	16 5	00 WA	AD, Cincinnati, Ohio 258	25
KFAF,	San Jose, Calif217.3	_50	KFVY, Albuquerque, N. Mex 2	50	10 WA	AF, Chicago, Ill 278	200
KFAU,	Boise, Idaho280.2	/50	KFWA, Ogden. Utah	2 2	00 WA	AW, Omaha, Neb 384.4 & 278	500
KFBB,	Havre, Mont 275	50	KFWB, Hollywood, Calif	1 5	00 WA	BB, Harrisburg, Pa 204	10
KFBC,	San Diego, Calif215.7	100	KFWC, Upland, Calit 211	. <u> </u>	50 WA	BC, ASHEVITTE, N. C 254	100
KEBK,	Sacramento, Calli 246	100	KFWF, SL. LOUIS, MO 214	2 Z	50 WA	BI, Bangor, Me 240	100
KEDL,	Tripidad Colo 238	15	KEWT So San Erancisco Calif 2	04 1	00 WA	BO, RUCHESLEF, N. F 270 RO Haverford Pa	100
KEBII	laramie Wyo 270	500	KEWM Oakland Calif 206	8 5	00 WA	BR Toledo Obio 263	50
KECB	Phoenix Ariz 238	100	KEWO Avalon Calif 211	1 2	50 WA	BW Wooster Objo 206.8	50
KEDD	Boise Idaho 278	50	KFWU, Pineville, La	18 1	00 WA	BX. Mount Clemens. Mich 246	500
KFDM.	Beaumont. Tex 315.6	500	KFWV. Portland. Ore	8	50 WA	BY. Philadelphia. Pa 242	50
KFDX.	Shreveport. La 250	100	KFXB, Big Bear Lake, Calif., 202	6 5	00 WA	BZ. New Orleans. La 275	50
KFDY,	Brookings, S.Dak 273	100	KFXD, Logan, Utah 205	4	10 WA	DC, Akron, Ohio 258	500
KFDZ,	Minneapolis, Minn 231	10	KFXF, Colorado Springs, Colo. 2	50 5	00 WA	FD, Port Huron. Mich 275	500
KFEC,	Portland, Ore 248	50	KFXH, El Paso, Texas 24	12	50 WA	GM, Royal Oak, Mich 225.4	50
KFEL,	Denver, Colo 254	50	KFXJ, Denver, Colo 215	.7	10 WA	HG, Richmond Hill, N. Y 315.6	500
KFEQ,	Oak, Nebr	500	KFXR, Oklahoma City, Okla 214	.2	15 WA	IT, Taunton, Mass 229	10
KFEY,	Kellogg, Idaho 233	10	KFXY, Flagstaff, Ariz 205	4	50 WA	IU, Columbus, Ohio 293.9	500
KFFP,	Moberly, Mo 242	50	KFYF, Oxnard, Calif 205	.4	10 WA	MD, Minneapolis, Minn 244	500
KFGQ,	Boene, Iowa 226	10	KFYJ, Houston, Texas	88	10 WA	PI, Auburn, Ala 248	1000
KFH,	Wichita, Kans, 268	500	KFYO, Texarkana, Tex 209	. /	10 WA	RC, Medford Hillside, Mass. 261	100
KEHA,	Gunnison, Colo 252	50	KFYR, BISMARCK, N. DAK 2.		10 WA	II. Boston, Mass 243.8	100
KEHL,	USKalousa, IOWa 240	4000	KGU, UAKIANU, CAIK	2 40 0	00 WB	AA. West Lalayette, Ind 275	230
KFI, VETE	Bortland Oro 248	100	KGII, Sali Flancisco, Calli. 200	.0 70 5	30 WB	AK, Hallisburg, Pa 275	5000
KETO	Spokane Washington 265 3	100	KGW Portland Ore 491	5 10	00 WB 00 WB	AC, Bartimore, Mu	100
KETO,	Yakima Wash 256	100	KGY Lacev Wash 24	16 10	50 WB	ΔP Fort Worth Texas 475 9	1500
KFTU	Juneau Alaska 226	10	KHI LOS Angeles Calif 405	2 5	00 WB	ΔX Wilkes-Barre Pa 256	100
KFIZ.	Fond du Lac. Wis 273	100	KHO, Spokane, Wash	73 5	00 WB	BL. Richmond. Va	100
KFJB.	Marshalltown. Iowa 248	10	KJBS. San Francisco. Calif 22	20	5 WB	BM. Chicago, 111 226	1500
KFJC.	Junction City, Kansas, 218.8	10	KJR. Seattle. Wash 384	4 10	00 WB	EP. Petoskev. Mich 238	200
KFJF,	Oklahoma City, Okla 261	500	KLDS, Independence, Mo 440	9 10	00 WB	BR, Rossville, N. Y 273	500
KFJI,	Astoria, Ore 246	10	KLS, Oakland, Calif 2	50 2	50 WB	BS, New Orleans, La 252	50
KFJM,	Grand-Forks, N. Dak 278	100	KLX, Oakland, Calif 508	.2 5	00 WB	BW, Norfolk, Va 222	50
KFJR.	Portland, Ore 263	50	KLZ, Denver, Colo 20	6 2	50 WB	BY, Charleston, S. C 268	10
KFJY,	Fort Dodge, Iowa 246	50	KMA, Shenandoah, Iowa 2	52 5	00 WE	BZ, Chicago, Ill 215.7	50
KFJZ,	Fort Worth, Tex 254	50	KMJ, Fresno, Calif2	34	50 WB	CN, Chicago, Ill 266	500
KFKA,	Greeley, Colo 273	50	KMMJ, Clay Center, Neb 228	9 10	00 WB	C, Grand Bap Ids, Mich 256	500
KEKU,	Lawrence, Kans 275	500	KMO, Tacoma, wash	2 1	00 WB	ES, Takoma Park, Md 232	100
KEKX,	Hastings, Nebr, 288.3	5000	KMUX, K1rKWOOD, (St. LO), MO 280	2 IS	00 WB	NY, NEW YORK, N. Y 209.7	100
KEKZ,	Albuquorquo N Mox 254	100	KMIR, LOS Angeles, Calif 23	כ סי	00 WB	DU, RICHMONU HIII, N. Y 250	500
KFLK,	San Bonito Tox 236	10	KNRC, LUS Angeles, Calif 200	0 10	30 WB	PI, Newalk, N. J. \dots 205 PC Pirmingham Ala 248	500
KELU,	Pockford T11 220	100	KOA Denver Colo 322	4 50	00 WB 00 WB	RE Wilkes-Barre Pa 231	100
KFLV,	Galveston Tex 240	10	KOAC Corvallis Ore 22	$\frac{1}{20}$ $\frac{1}{25}$	00 WB	T Charlotte N C 275	250
KFLZ,	Anita. Towa	100	KOR, State College, N. M 348	6 10	00 WB	7. Springfield. Mass 331.1	2000
KEMR.	Sioux City. Towa	100	KOCH. Omaha. Neb	58 2	50 WB	ZA. Boston. Mass	250
KFMW.	Houghton. Mich	50	KOCW, Chickasha, Okla2	2 2	00 WC	AC. Mansfield. Conn 275	500
KFMX,	Northfield, Minn 336.9	500	KOIL, Council Bluffs, Iowa2	78 5	00 WC	AD, Canton, N. Y 263	250
KFNF,	Shenandoah, Iowa 263	1000	KOWW, Walla Walla, Wásh2!	58 5	00 WC	AE, Pittsburgh, Pa 461.3	500
KFOA,	Seattle, Wash 454.3	1000	KPO, San Francisco, Calif 428	3 10	00 WC	AJ, University Place, Neb 254	500
KFOB,	Burlingame, Calif 226	50	KPPC, Pasadena, Calif 22	29	50 WC	AL, Northfield, Minn 336.9	500
KFON,	Long Beach, Calif 233	500	KPRC, Houston, Texas 296	9 5	00 WC	AM, Camden, N. J 236	250
KF00,	Salt Lake City, Utah 236	250	KPSN, Pasadena, Calif 315	6 10	00 WC	AO, Baltimore, Md 275	100
KFOR,	David City, Nebr 226	100	KQP, Portland, Ore 212	6 5	00 WC	AP, Washington, D. C 468.5	500
KFOT,	Wichita, Kans 231	150	KQV, Pittsburgh, Pa 2	5 5	00 WC	AR, San Antonio, Texas 263	500
KFOX,	Omana, Nebr	100	KQW, San Jose, Calif	SL 5	00 WC	AI, Rapid City, S. D 240	50
KFUY,	SL. Pdul, MIIII 252 Dublin Toxoc 252	50 1 E	KRE, BEFRETEY, Callin	7 5		AU, Philadelphia, Pa 276	100
KEPL,	Creenville Texas 242	10	KSD St Louis Mo 545	1 5	00 WC	RA, Buillington. VC	15
KEPR	Los Angeles Calif 230.6	500	KSI Salt Lake City IItah 299	8 10	00 WC	BA, Arrencown, Fa	5000
KEPW	Carterville Mo 258	20	KSMR, Santa Maria, Calif 209	7 7	50 WC	BE. New Orleans, La	5000
KFPY.	Spokane. Wash	100	KSO. Clarinda. Iowa	12 5	00 WC	BH. Oxford. Miss 242	50
KFOA.	St. Louis. Mo	100	KTAB. Oakland. Calif 24	10 10	00 WC	BM. Baltimore. Md 229	50
KFOB.	Fort Worth.Texas 508.2 & 263	1000	KTBI, Los Angeles, Calif 293	9 7	50 WC	BQ, Nashville, Tenn 236	100
KFQD,	Anchorage, Alaska 227.1	100	KTBR, Portland, Ore 20	53	50 WC	BR, Providence. R. I 209.7	100
KFQP,	Iowa City, Iowa 224	10	KTCL, Seattle, Wash 305	9 10	00 WC	CO, Minneapolis, Minn 416.4	5000
KFQU,	Alma (Holy City) Calif 217.3	100	KTHS, Hot Springs, Ark 374	.85	00 WC	LO, Camp Late, Wis 231	50
KFQW,	North Bend, Wash 215.7	50	KTNT, Muscatine, Iowa 2	56 5	00 WC	LS, Joilet, Ill 214.2	150
κfQΖ,	Hollywood, Calif 225.4	50	KTW, Seattle, Wash 454	3 10	00 WC	OA, Pensacola. Fla 222.1	250
KFRB,	Beeville, Tex 248	250	KUOA, FayetteviIIe, Ark 299	8 7	50 WC	SH, Portland, Me 256	500
KFRC,	San Francisco, Calit 268	50	KUOM, MISSOUIA, Mont 24	4 2	50 WC	SO, Springfield, Ohio 248	100
KERU,	Columpia, Mo 498.7	500	KUSD, Vermillion. S. D 2	'8 1 21 5	00 WC	WS, Providence, R. I 209.7	T00
KERW,	Urympia, wasn 218.8	50	KUI, AUSLIII, IEXAS 2:	ος Σ	00 WC	AD Nachvillo Topp 226	150
KESG,	LUS Allyeres, Call 2/3	200	KWCP Cedar Papids Towa	.0.) 78 -	00 WD	AD, NASHVIIIE, IEIII 220 AE Tampa Ela	220
KEUM	Colorado Springs Colo 220 0	100	KWG Stockton Calif	0 D	50 WD	ΔΕ Kansas City Mo 365 6	500
KEUM,	St Louis Mo $5/5$	500	KWKC Kansas City Mo	36 1	00 WD	$\Delta G \Delta marillo Texas 263$	100
KFUP	Denver, Colo	50	KWKH, Kennonwood, La 24	51 5	00 WD	AH. El Paso. Tex	50
KFUR	Ogden. Utah	50	KWSC, Pullman. Wash 348	6 5	00 WD	AY, Fargo, N. D	50
KFUS.	Oakland, Calif 256	50	KWUC. Le Mars, Iowa 2	52	50 WD	BE, Atlanta, Ga 370	100
KFUT,	Salt Lake City, Utah 261	100	KWWG, Brownsville, Texas 2	78 5	00 WD	BJ, Roanoke, Va 229	50
KFUU,	Oakland, Calif 220	50	күw, Chicago, Ill535	4 35	00 WD	BK, Cleveland, Ohio 227	100
KFVD,	San Pedro, Calif 205.4	50	KZIB, Manila, P. I249	9	20	·~ · ·	
KFVF.	St. Louis. Mo 240	500	KZKZ, Manıla, P. I 21	ω 1	00	(Continued on r	page 8)

(Continued from page 7)	WHBY, West De Pere, Wis 250 50	WOAW, Omaha, Nebr
(Commune from page 7)	WHD1, Minneapoils, Minn	WOAX, Irenton, N. J
WDBZ, Kingston, N. Y	WHN, New York, N. Y	WODA, Paterson. N. J
WDOD, Chattanooga, Tenn 256 500 WDRC. New Haven. Conn	WHT, Deerfield. Ill	WOK, Homewood, Ill
WDWF. Cranston, R. I 440.9 500 WDZ. Tuscola. Ill	WIAS, Burlington, Iowa 254 100 WIBA. Madison. Wis 236 100	WOO, Philadelphia, Pa 508.2 500 WOOD, Grand Rapids, Mich 242 500
WEAF, New York, N. Y 491.5 5000 WEAI. Ithaca. N. Y 254 500	WIBG, Elklns Park, Pa 222 50 WIBH. Now Bedford. Mass 209.7 30	WOQ, Kansas City. Mo
WEAM, North Plainfield, N. J 261 250 WEAN, Providence, R. I 270 500	WIBI, Flushing, N. Y 218.8 50 WIBJ, Chicago, Ill 215.7 50	WORD, Batavia, Ill 275 5000 WOS. Jefferson City. Mo 440.9 500
WEAO, Columbus, Óhio 293.9 500 WEAR, Cleveland, Ohio 389.4 750	WIBM, Chicago, Ill 215.7 10 WIBO, Chicago, Ill 226 1000	WOWL, New Orleans, La 270 10 WOWO, Fort Wayne, Ind 227 500
WEAU, Sioux City, Iowa 275 100 WEBC, Superior, Wis 243 100	WIBR, Weirton, W. Va	WPAK, Agricultural Col, N.Dak. 275 50 WPCC, Chicago, Ill 258 600
WEBD, Anderson, Ind 246 15 WEBE, Cambridge, Ohio 234 10	WIBU, Poynette, Wis 222 20 WIBW, Logansport, Ind 220 100	WPDQ, Buffalo, N. Y 205.4 50 WPG, Atlantic City, N. J 299.8 500
WEBH, Chicago, Ill 370.2 2000 WEBJ, New York, N. Y 273 500	WIBX, Utica, N. Y 205.4 150 WIBZ, Montgomery, Ala 231 10	WPRC, Hamsburg. Pa 215.7 100 WPSC, State College. Penn 261 500
WEBL, New York, N. Y	WIL, St. Louis, Mo,	WQAA, Parkesburg, Pa 220 500 WQAC, Amarillo, Tex 234.2 100
WEBR, Buttalo, N. Y	WIP, Philadelphia, Pa 508.2 500 WJAD. Waco, Texas 352.7 500	WQAE. Springfield, Vt
WEEZ, Savannan, Ga	WJAG, NORTOTK, NEDR	WQAN, Scranton, Pa 230 100 WQAO, New York, N. Y 360 100
WENS, Evanston, 111	WJAM, Cedar Rapids, 10wa 208 100 WJAR, Providence, R. I 305.9 500	WRAF, Laporte, Ind
WEW, St. Louis, Mo	WJAX, Jacksonville, Fla36.9 1000 WJAZ Mount Prospect Ill 322 4 1500	WRAM, Galenburg, Ill
WFAM, St. Cloud, Minn	WJBA, Joliet, Ill	WRAW, Reading, Pa
WFBC, Knoxville, Tenn	WJBC, La Salle, Ill	WRBC, Valparaiso, Ind
WFBE, Seymour, Ind	WJBK. Ypsilanti, Mich 233 10 WJBL, Decatur, Ill 270 500	WRCÓ, Raleigh, N. C
WFBH, New York, N. Y	WJBO, New Orleans, La 268 100 WJBU, Lewisburg, Pa 211.1 100	WREO, Lansing, Mich 285.5 500 WRHF, Washington, D. C 258 50
WFBL, Syracuse, N. Y	WJJD, Mooseheart, Ill 370.2 500 WJR, Pontiac, Mich 516.9 5000	WRHM, Minneapolis, Minn 252 50 WRK, Hamilton, Ohio 270 100
WFBR, Baltimore, Md 254 100 WFBZ, Galesburg, Ill 254 20	WJY, New York, N. Y 405.2 1000 WJZ, New York, N. Y 454.3 Var.	WRM, Urbana, III 273 500 WRMU, Richmond Hill, N. Y 236 100
WFDF, Flint, Mich 234 100 WFI, Philadelphia, Pa 394.5 500	WKAF, M11Waukee, W15	WRNY, New York. N. Y 238.5 500 WRR, Dallas, Tex 246 500
WFRB, Chicago, 111	WKAK, East Lansing, Mich 265.5 1000 WKAV, Laconia, N. H	WRST, Bdy Shore, N. Y 215.7 230 WRVA, Richmond, Va 258 1000 WBW Tarrytown N. Y. 273 500
WGBB, Fleeport, N. Y	WKBE, Webster, Mass	WSAI, Mason, Ohio
WGBF, Evansville, Ind 236 500 WGBI, Scranton, Pa 240 10	WKRC, Cincinnati,Oh. 325.9 & 422.3 1000 WKY. Oklahoma City. Okla 275 100	WSAN, Allentown, Pa 229 100 WSAR, Fall River, Mass 254 100
WGBM, Providence, R. I 234 30 WGBR, Marshfield, Wls 229 10	WLAL, TUISA, Okla	WSAX, Chicago, Ill
WGBS, New York, N. Y 315.6 500 WGBU. Fulford, Fla 278 500	WLB. Minneapolis, Minn277.6 500 WLBL, Stevens Point, Wls 278 500	WSB, Atlanta, Ga 428.3 1000 WSBC, Chicago, Ill 209.7 1000
WGBX, Orono, Me	WLIB, Elgin, Ill 302.8 4000 WLIT, Philadelphia, Pa 394.5 500	WS8F, St. Louis, Mo
WGES, Oat Park, III	WLS, Crete, 111	WSDA, New York, N. Y 263 250 WSKC, Bay City, Mich 261 1000
WGHP, Detroit, Mich 270 1500 WGMU, Richmond Hill, N. Y 236 100	WLNS, Chicago. 111	WSM, Nashville, Tenn
WGR, Buffalo, N. Y	WMAC, Cazenovia. N. Y	WSMK, Dayton, Ohio
WGY, Schenectady, N. Y 379.5 5000 WHA. Madison, WTS.	WMAK, Lockport, N. Y	WSRO, Hamilton, Ohio
WHAD, Milwaukee, WIS	WMAN, Columbus, Ohio	WSUI, Iowa City, Iowa 483.6 500 WSVS. Buffalo. N. Y 218.8 50
WHAP, New York, N. Y	WMAY, St. Louts, Mo 248 100 WMAZ, Macon, Ga 261 500	WSWS, Wooddale, Ill
WHAS, Louisville, ky	WMBB, Chicago, Ill 250 500 WMBC, Detroit, Mich 256.4 100	WTAD, Carthage, 111
WHAZ, Troy, N. Y	WMBF, Miami Beach, Fla 384.4 500 WMC, Memphis, Tenn 499.7 500	WTAL, Toledo. Ohio 252 10 WTAM, Cleveland, Ohio 389.4 3500
WHBA, 011 City, Pa 250 10 WHBC, Canton, Ohio 254 10	WWCA, HODOKEN, N. J	WIAP, Cambridge, III
WHBD, Bellerontaine, Onio 222 20 WHBF, Rock Island, Ill 222 100	WNAC, BOSTON. MASS	WIAR, NOTTOIK, Va
WHBH, Culver, Ind	WNAL, Uniana, Nebr	WTAZ, Lambertville, N. J 261 15
WHBJ, Chicago, Ill	WNBH. New Bedford, Mass 244 100	WWAD, Philadelphia, Pa
WHBN, St. Petersburg, Fla 238 10 WHBP, Johnstown, Pa 256 100	WNOX, Knoxville, Tenn 268 100 WNRC, Greensboro, N. C 224 10	WWAO, Houghton, Mich
WHBQ, Memphis, Tenn,	WNYC, New York, N. Y	WWI, Dearborn, Mich
WHBW, Philadelphia, Pa 215.7 100	WOAN, Lawrenceburg, Tenn 282.8 500	WWL, New Orleans, La 275 100 Tex
씪 <i>晕뤑쳝졒둲룑뤝셡쳝졒윭둲</i> 졅졅졅셣숺	<u>૾ૢૢૢૡૢૡૢૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡૡ</u>	옱흤뷶룑棍츑쳝쳝츴윭셡셡롩쳝줥쳝뤊
I recently sold som	FYI e MIII LARD hrand tubes on eRay Five tubes	brought me \$550
Check your junk pile and see what y	ou have, then check eBay to see if what you hav	e is being sold for the big \$\$\$\$\$.
	Good luck, Rich Kuberski	
<u>*************************************</u>	***	***************************************
		NOLUME 22 LOGUE 2

MARCH/APRIL 2011—THE FLASH

VOLUME 22, ISSUE 2



<u>The Open Trunk</u>

Member submitted advertisements



WANTED: Buy/Sell/Trade: "Heavy Metal" communications gear, telegraph related items, vintage calculators & microphones.

Robert Baumann,	303-988-2089
HQ180A@aol.com.	(07/09)

REPAIR SERVICE:

Radio repairs for club members. Reasonable rates. Good references.Call David Boyle303-681-325811/09

For Sale: by Dave Boyle

All of the following older but "classic" radio and TV repair instruments have been expertly refurbished, repaired, and calibrated as appropriate.

All Instruments come with test leads, as required and most have manuals. Prices might be negotiable.

1) Heathkit TV Alignment Generator; IG-52. \$65.00 2) Heathkit's best "Laboratory" Signal Generator, IG-42 (I use one myself). \$105.00 3) Heathkit Capacitor Tester, C-3. Also checks leakage, power factor, and resistance, \$65.00 4) Heathkit Tube Tester, IT-21. Tests older types too! \$50.00 5) Eico Model 324 Signal Generator. \$60.00 6) Precision Apparatus Company (PACO) Model E-400 Sweep Signal Generator. \$55.00 Call David Boyle, 303-681-3258 3/10

WANTED: Shirt pocket transistor radios, working or not.

Tom Keeton

303-797-8073 9/10

FOR SALE: Tube tester, Hickok model 533A w/supplements for European types Electrical condition - very good, the unit is

fully functional Cosmetic condition - fair, some of the fabric covering is torn I'll deliver the unit to Castle Rock.

Price is \$125. Pete Rawson 719-687-7144 5/10



variac. Includes volt meter, ammeter and integral fuse to protect the connected load. Price is \$75



For Sale:

I have a few #45 tube replacements. These are 8 pin to 4 pin adapters and one #1619 tube. This is a direct replacement and does not require any change to the chassis. When this is tested as a #45 tube it give a strong reading.

Tube and adapter is \$20

Also, I am in need of some 4-pin and 6-pin tube bases to make adapters. If you have a few dead tubes that you want to part with, I would appreciate it. Thanks.

Call Rich Kuberski 303-422-9510

3/11

I have another 120v power supply with

variac fuse protection and volt and ammeter, but this one has an internal isolation transformer. Price is \$90

If interested, five me a call and I will bring them to the meeting.

Rich Kuberski 303-422-9510



11/14

SUBMISSION OF ARTICLES AND ADVERTISEMENTS

Classified Ads for The Open Trunk and articles of any radio/electronic or historical related subject to be published in the Flash are encouraged and welcomed. The article(s) should be submitted in Microsoft Word, RTF, or as text cut/paste into your email to Steve Touzalin, either by email at stevetou@comcast.net, or by postal mail to 417 So. Queen Circle, Lakewood CO 80226.

Formatting isn't necessary, but if you do, set the font to Times New Roman, size 10, left justified. If you have graphics (.jpg files) to be inserted, please name them and be specific about how you would like them placed. We will do our best based on space limitations.

Directions

From I-25: Take the Plum Creek Parkway, exit #181 Turn East onto Plum Creek Parkway. Turn Left (North) onto S. Wilcox Street and continue north 2 tenths of a mile. The Philip S. Miller Library is on the east side of the street at 100 S. Wilcox St. The building is towards the back of the parking lot, past the Dairy Queen.



Colorado Radio Collectors Antique Radio Club 417 S. Queen Cir. Lakewood CO 80226

FIRST CLASS MAIL