

Collins Radio



History & Collecting

Real Radios Glow in the Dark

CE Field Day 7/22/2018

George Maier

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Arthur A. Collins

1909-1987

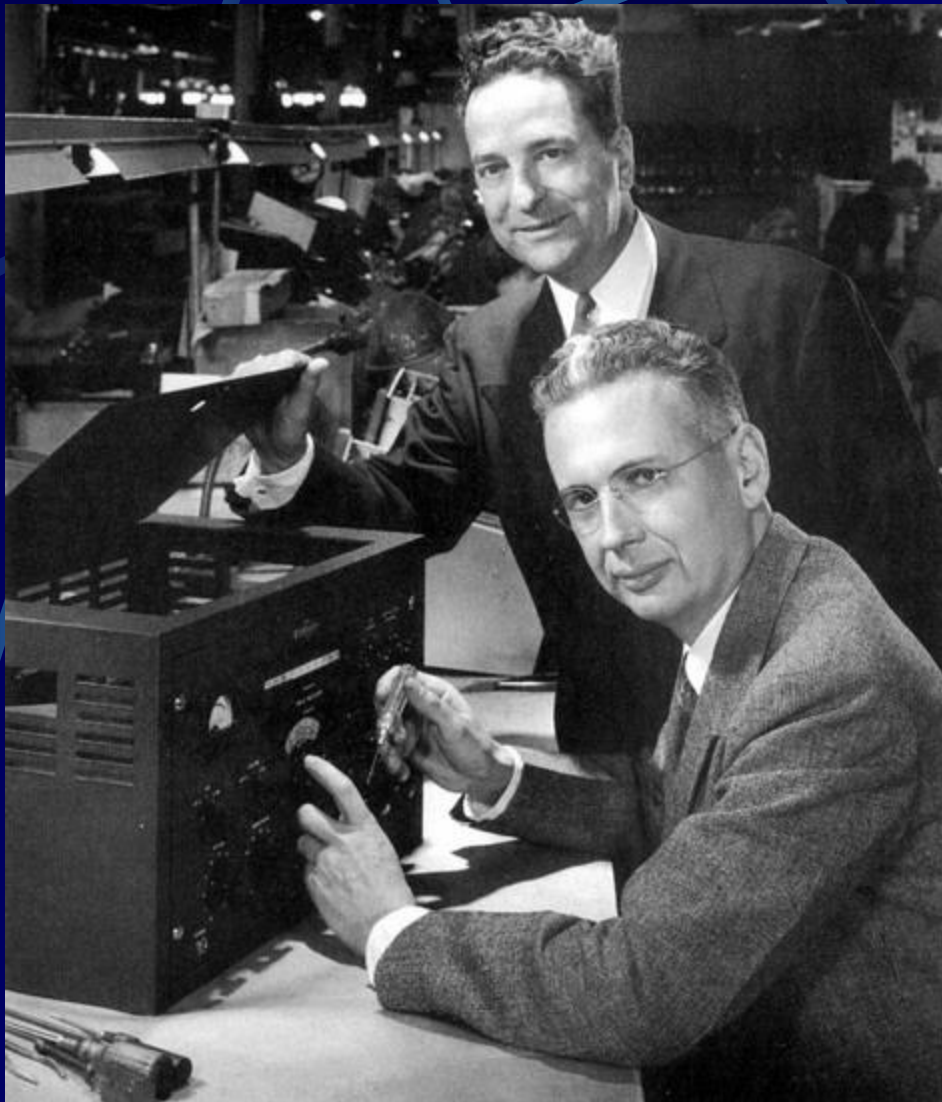


9CXX
W9CXX
WØCXX

Why people collect Collins radios?

- Arthur Collins was a passionate engineer, driven to perfection...
- There was a mystique about Collins that we still talk about today....
- In the minds of most hams of that era, owning Collins was owning the best!
- The radios were well ahead of their time, and set standards that held up for decades...
- Construction was mil-spec, and Collins radios kept on working long after others had quit...

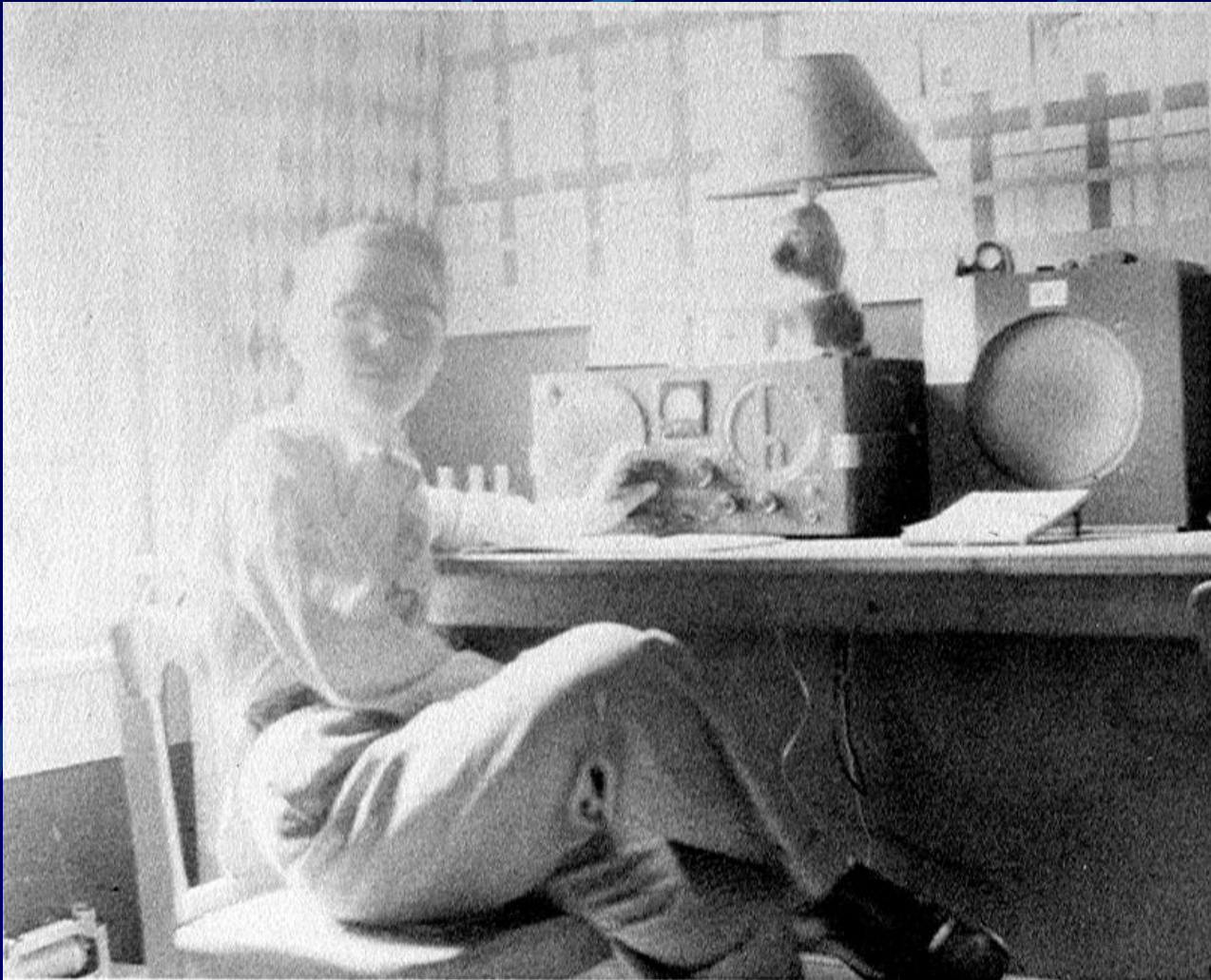
Simply put; it was the best!



Clyde Hendrix - WØHBG
Taking delivery of the first
75A-2 receiver in 1950
from Arthur Collins

Hendrix was the CEO of
Pillsbury at the time!

In my case, it started here.....



SWL days - 1957!

Hallicrafters S-20R
Simple Six 6M Conv
CushCraft 5 el Yagi

WOW !!! I PASSED



HQ-100
Globe Chief 90
Globe Hi-Bander
Int'l Xtal 2m Conv
Tapetone 6m Conv

KN1GXT – 1958

Added Collins 75A-2 receiver in 1963



KWM-2 in 1966

plus an SB-200 & TA-33



My everyday rig today, except....



when I run the 32V-3 & 75A-1



dust off the S-Line...

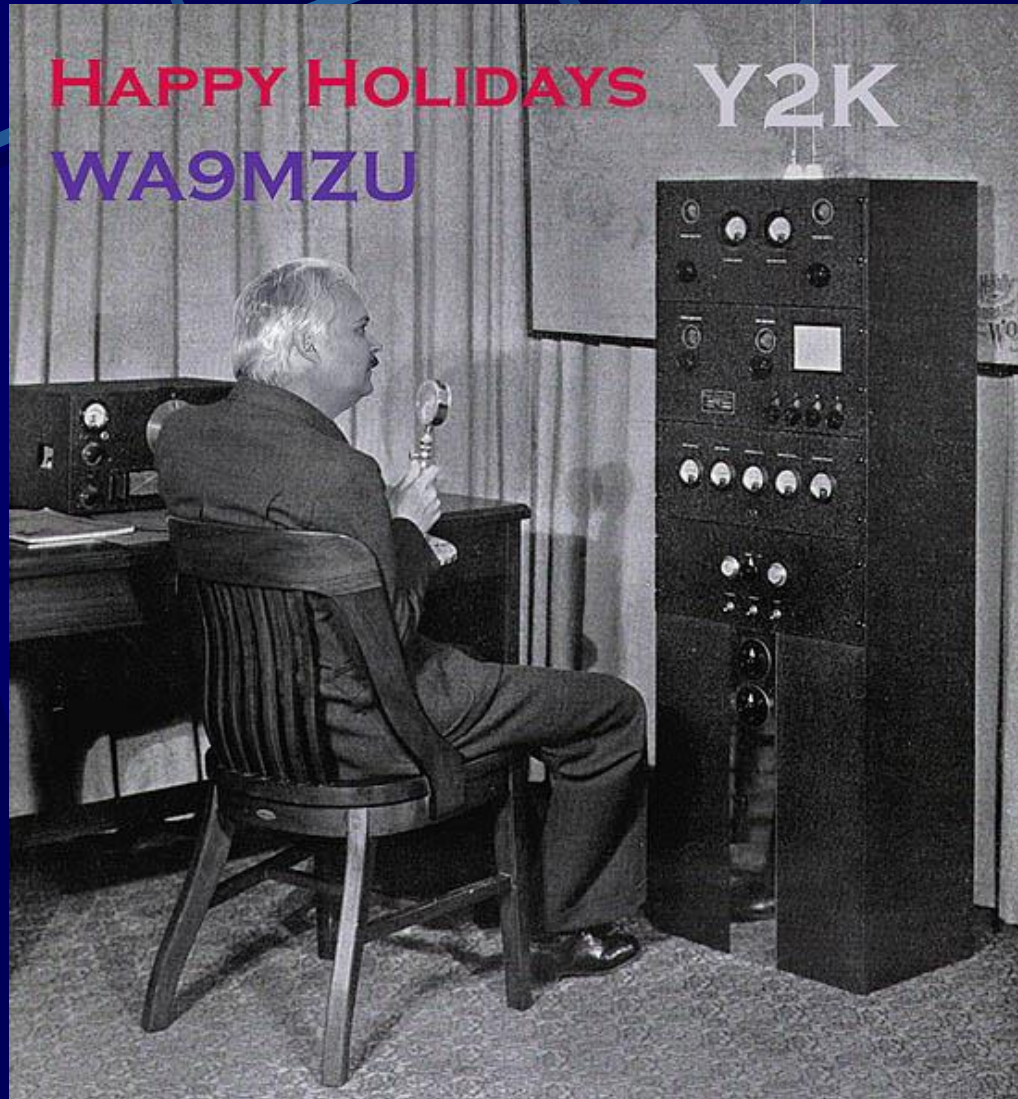


or the Gold Dust Twins

KWS-1 + 75A-4



Meet Gary Halverson



Gary's call is now K6GLH

WA9MZU - San Jose, CA
Gary Halverson



K6GLH - 1930's Rig



K6GLH - 1950's Rig



Gary is an expert...

- On pre-war Collins
 - Let's watch...

St. James Gray - My Favorite Color

75A-1 (1946)



75A-2 (1950)



32V-1,2,3 (1946-1951)



75A-3 (1952)



The St. James Gray Family

Produced from 1946 to 1958

- 51J-1
- 51J-2
- 51J-3
- 51J-4
- 75A-1
- 75A-2
- 75A-3
- 75A-4
- 310A,B,C,
- 30J-1
- 30K-1
- 32V-1
- 32V-2
- 32V-3
- KW-1
- KWS-1

The last Collins AM Transmitter



KW-1 Transmitter

- Introduced - 1952
- Units made ~ 150
- New price \$3850.
- Tube Line-up:
 - 2 x 4-250A PA
 - 2 x 810 Modulator
- RF Specs
 - 1000W input AM, CW
- Price today \$20-30K

Serial # 147 shown in photo
Built originally for Faust Gonsett - W6VR
Now owned by Mac McCullough W5HPM

KW-1 under the hood



RF deck

Exciter

Audio deck

PS & Mod deck
(2) 872A's
(2) 810's



PA deck
Two 4-250A's



PS deck
Power Xfmrs
Plate Xfmr
Mod Xfmr

Collins in the Military



TCS-12 Transmitter



R-392 Receiver



ART-13 Auto-tune Tx

What motivated Collins to go SSB?



General Curtis LeMay
Arthur Collins

SAC was having a hard time staying in contact with aircraft using AM, and had launched two contracts. One with Collins to demonstrate an SSB solution, one with Continental to prove the feasibility of megawatt AM transmitters.

In the end Collins won!

Why was SSB better?

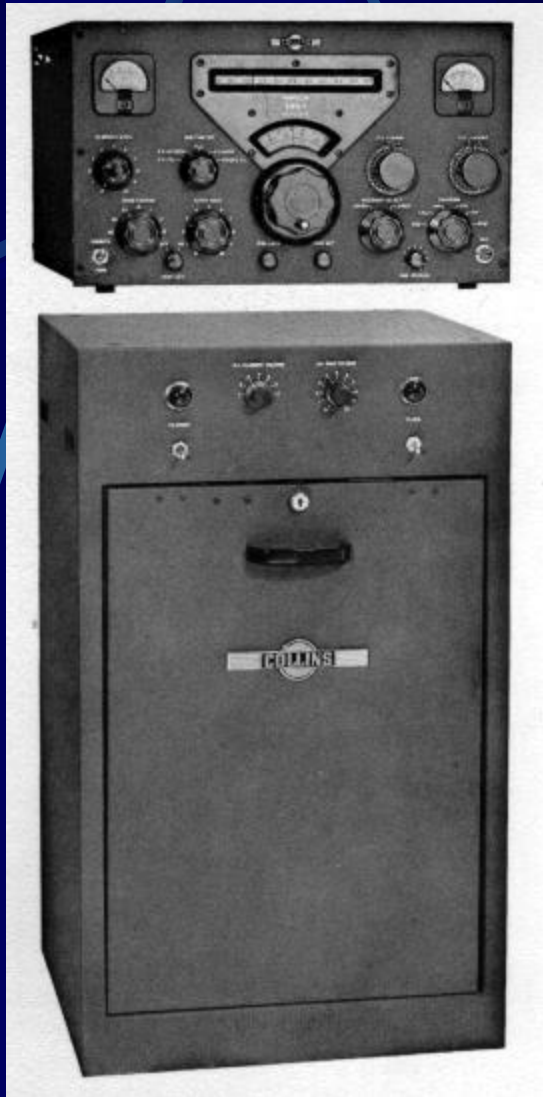
- SSB-SC has a ~ 9dB advantage over DSB-AM
 - 100% modulated AM
 - 50% carrier power + 25% power in each sideband
 - Eliminating carrier provides 3 dB gain
 - With no carrier, each sideband is 50% of total power
 - Eliminating one sideband provides another 3 dB gain
 - One-half the bandwidth increases Rx sensitivity
 - Another 3 dB gain
- It would take 15.8 kW in AM to equal 2 kW PEP

First ad for “Gold Dust” Twins



KWS-1
75A-4
QST
April 1955

Collins first SSB transmitter



KWS-1 Transmitter

- Introduced - 1955
- Units made ~ 1600
- New price \$1995.
- PA Tube Line-up:
 - 2 x 4CX-250B's
- RF Specs
 - 1000W input CW, SSB
 - 500W input AM (one SB)
- Price today \$1500-2500

KWS-1 under the hood

RF deck

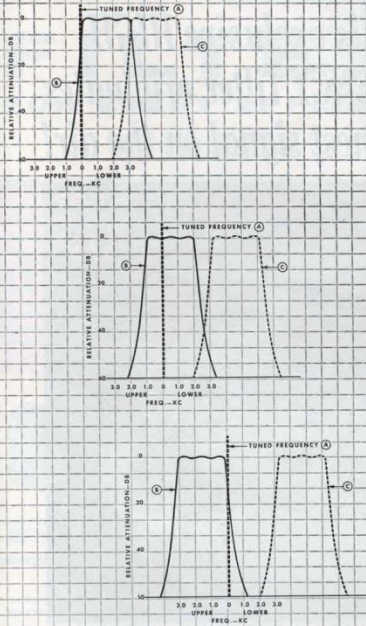


Power Supply Pedestal

The 75A-4 Receiver

Set the standard for years to come

SUBJECT: PASSBAND CONTROL AND COLLINS 75A-4



The scourge of Amateur reception is interference from neighboring signals. The most effective method of dodging this interference is passband tuning, and only Collins 75A-4 has it.

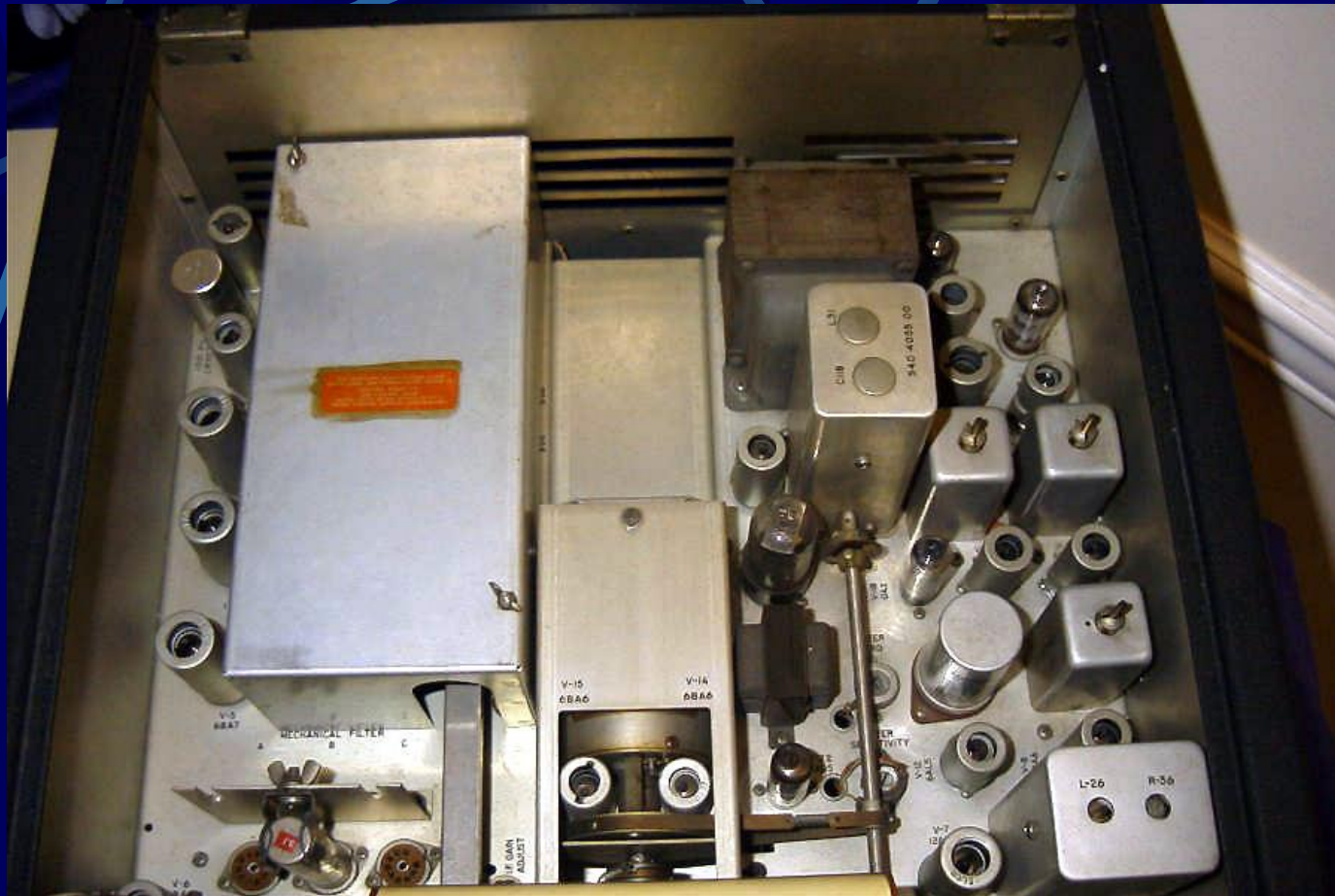
With passband tuning, the passband — which is continuously adjustable — is actually *moved around* the dial frequency. As may be seen in the drawings at left, the tuned frequency (A) remains constant while the IF passband (B) may be moved in either direction to drop interfering signals (C) "off the cliff." This same action is also useful for dropping out either high or low audio frequencies.

Passband tuning also provides an effective method of selecting sidebands by merely moving the passband right or left as in the top and bottom drawings.

Passband tuning is augmented by such other features as the Mechanical Filter and Rejection Tuning. The Filter's steep selectivity will sharply cut interfering signals on the passband's edge, and the rejection tuning notch will eliminate any single carrier heterodyne in the passband. These are typical of the features that make the 75A-4 easily the *best* receiver buy on the market.



75A-4 Under the Hood



USAF SSB Tests - March 1956

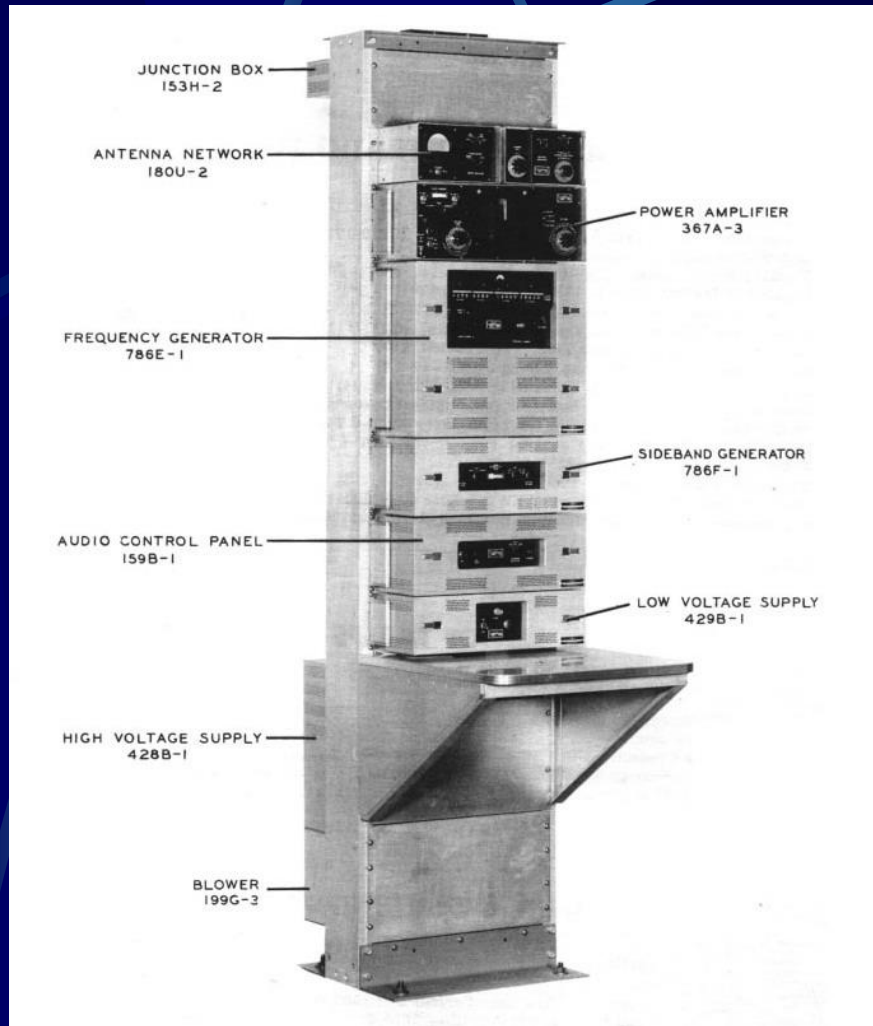


W5DTA - KØDWC - WØCXX

Operation Loud Voice



The final outcome



KWT-6
AN/URC-32 Shipboard xcvr

618S
AN/ARC-38 Airborne xcvr



A-Line Production

Radio	Approx Units Made	Highest Serial #
75A-1	2000	1911
75A-2	2200	2125
75A-3	1800	1775
75A-4	5840	5835
75A-4 (C)*	180	4000-4200
KWS-1	1600	1590

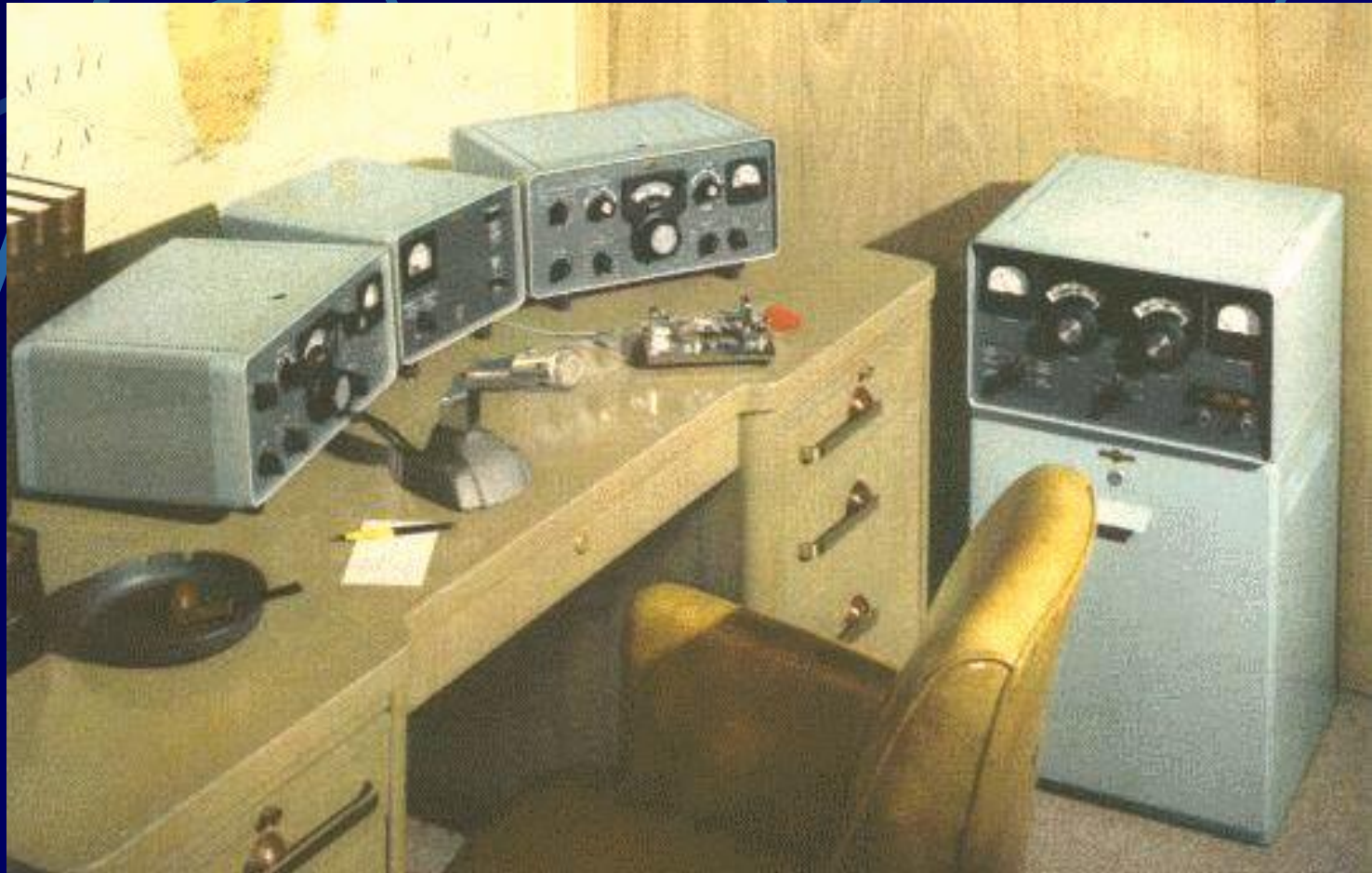
* Canadian made 75A-4

KWM-1: the first true SSB Xcvr

About 1150 produced from 1957-1959



The New S-Line November 1958



S-Line Product Family

- 51S-1
- 75S-1
- 75S-2
- 75S-3
- 75S-3A
- 75S-3B
- 75S-3C
- 32S-1
- 32S-2
- 32S-3
- 32S-3A
- 312B-4
- 516F-2
- 62S-1
- 30S-1
- 30L-1
- DL-1

KWM-2/2A

About 26,000 produced from 1959 to 1982



KWM-2 Product Family



- KWM-2
- KWM-2A
- 312B-5
- 399C-1
- 30L-1
- 62S-1
- 516E-2

The S-Line/ KWM-2 series.....



Send in the clones...



Eldico T-104
Transmitter

Eldico R-104
Receiver



Heathkit SB Series



Allied SX-190 or AX-190



In reality, a 75S-3 copy

KWM-380

last of the breed in 1982 – about 3000 made



Come with me to Cedar Rapids..



The History Center



Original Collins factory - 1933



2920 First Avenue, Cedar Rapids, IA

Collins Factory: Brick # 1



32W-1 Exciter

Prototype – never produced



310 Exciter Prototypes



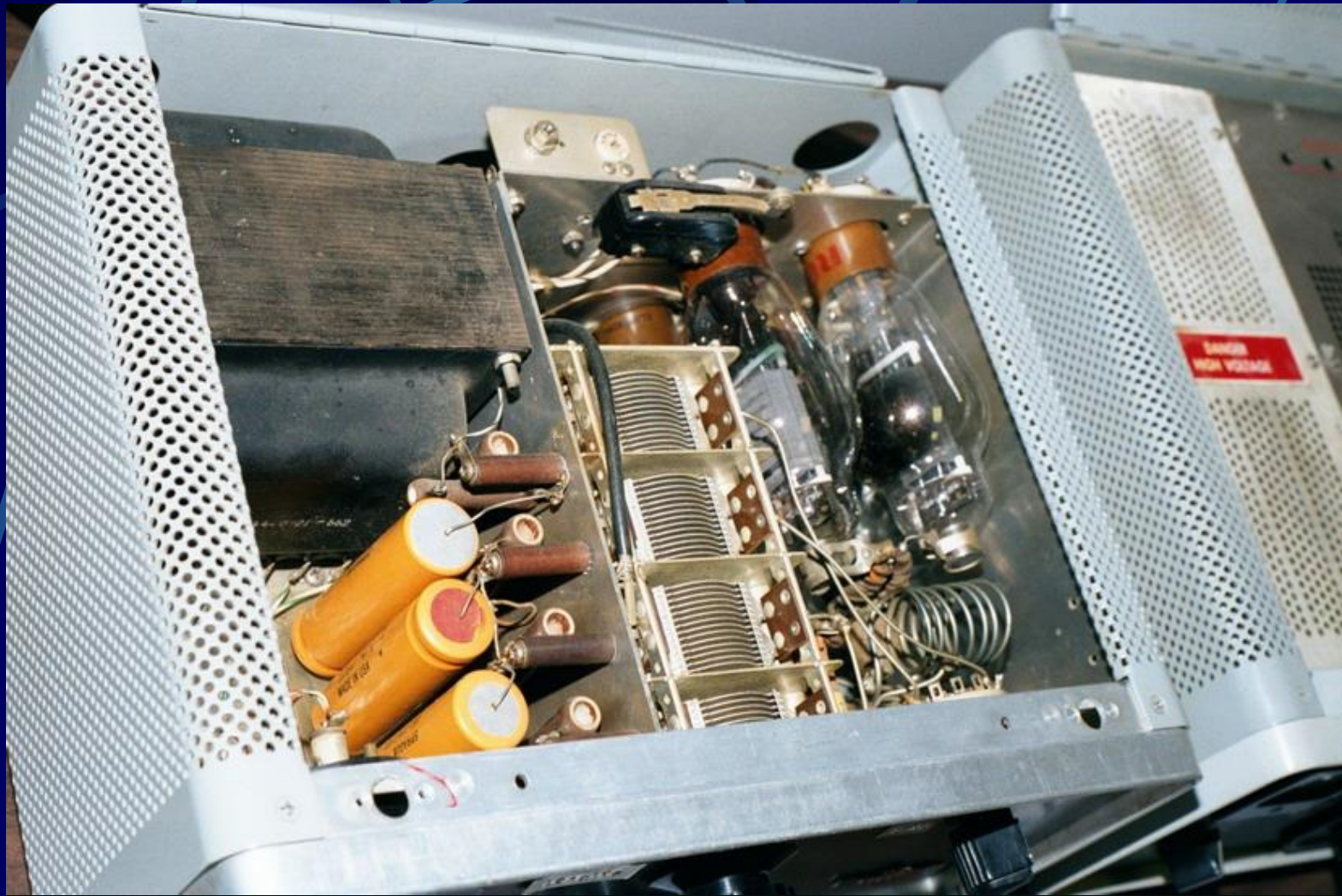
KWM-1 Prototypes



30L-1 Prototype

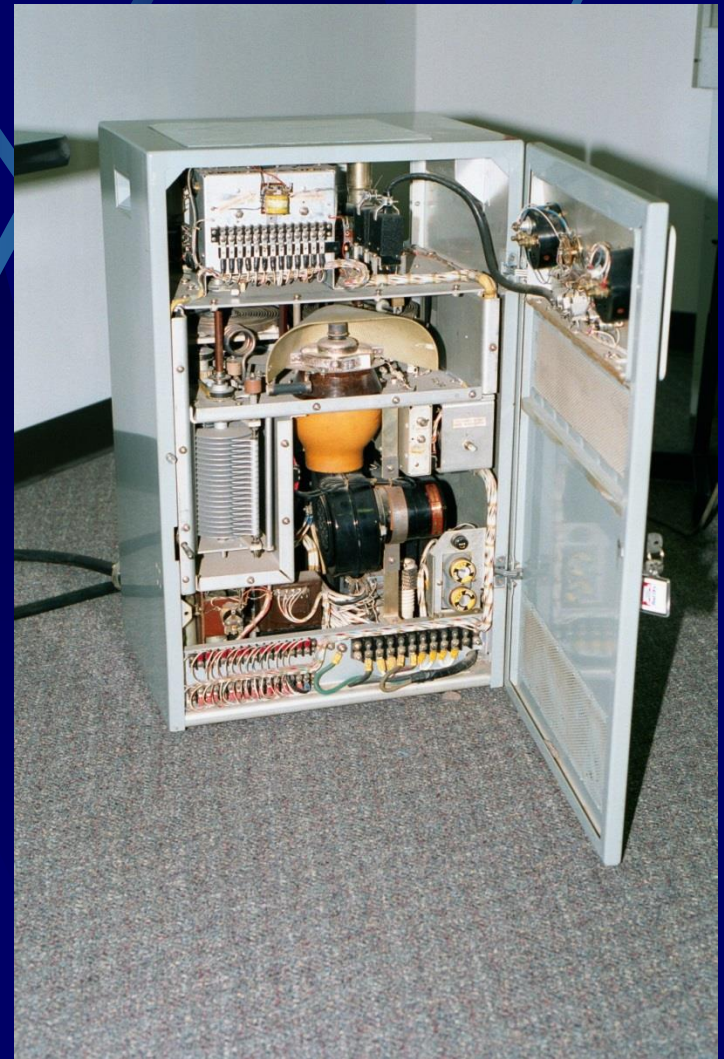


30L-1 Prototype - inside view



30S-3 Autotune Linear

Prototype – never produced



KWM-3

Balsa wood model – never produced

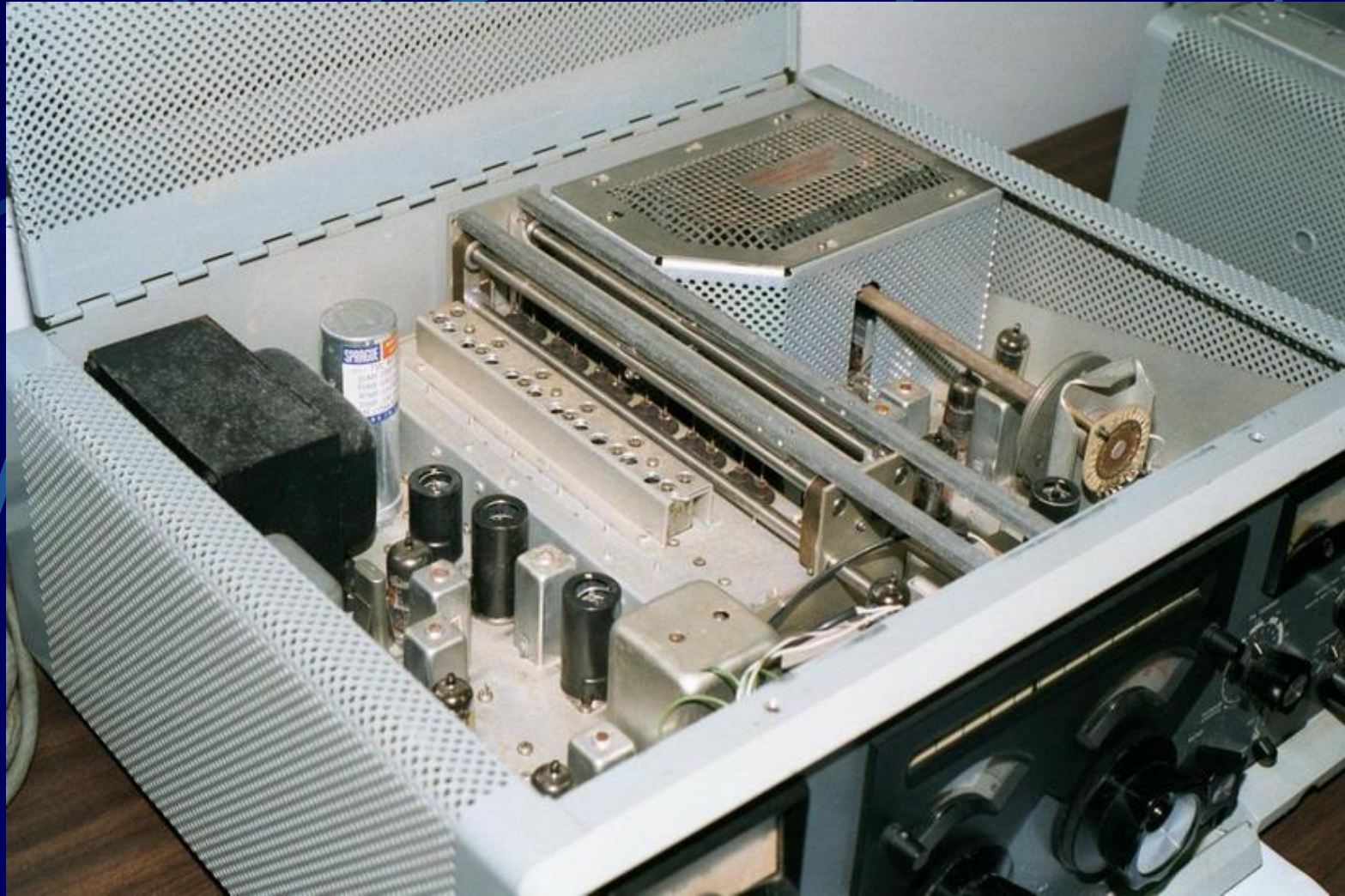


KWM-5000

Prototype – never produced

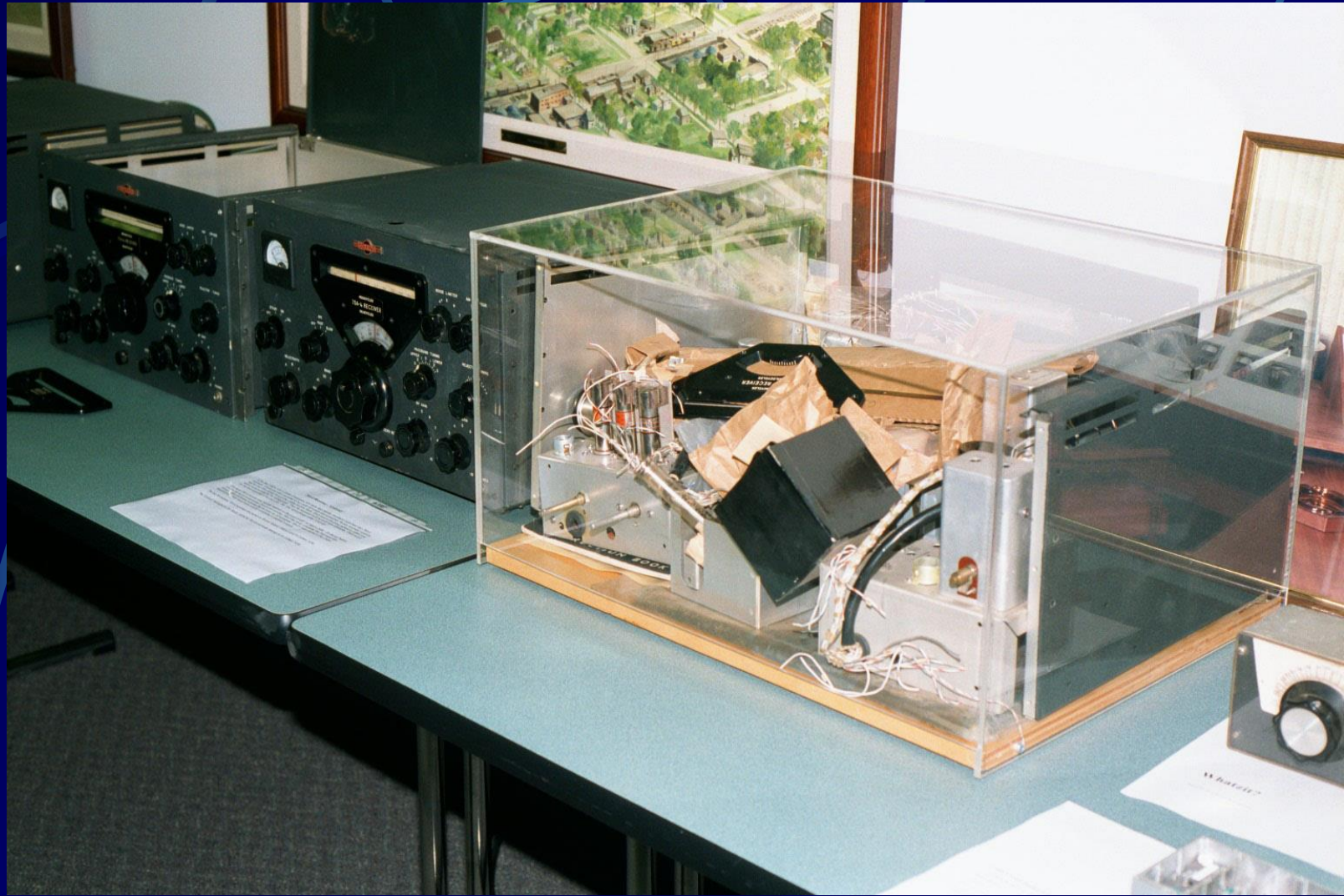


KWM500 - inside view



Unbuilt Colli-Kit

Parts bought at Collins employee store



75A-4 Colli-Kit



KWS-1 Colli-Kit



KWS-1 Transmitter - "Colli Kit"

The KWS-1 was a very complicated transmitter. The task of building one would have required a very dedicated and skilled amateur.

The builder appears to have been a Mr. McDonald as his name is engraved into the escutcheon. Who Mr. McDonald is, currently unknown.

Owner: Mark Hovda, N0JWI

Collins Van - Restored by WA3CEX



JB Jenkins - W5EU (SK)



75A-1 Prototype

W5EU Collection



W5EU - 1930's shack



W5EU's "Garage"



Replica of Arthur Collins' 1925 Amateur Station – by W5EU

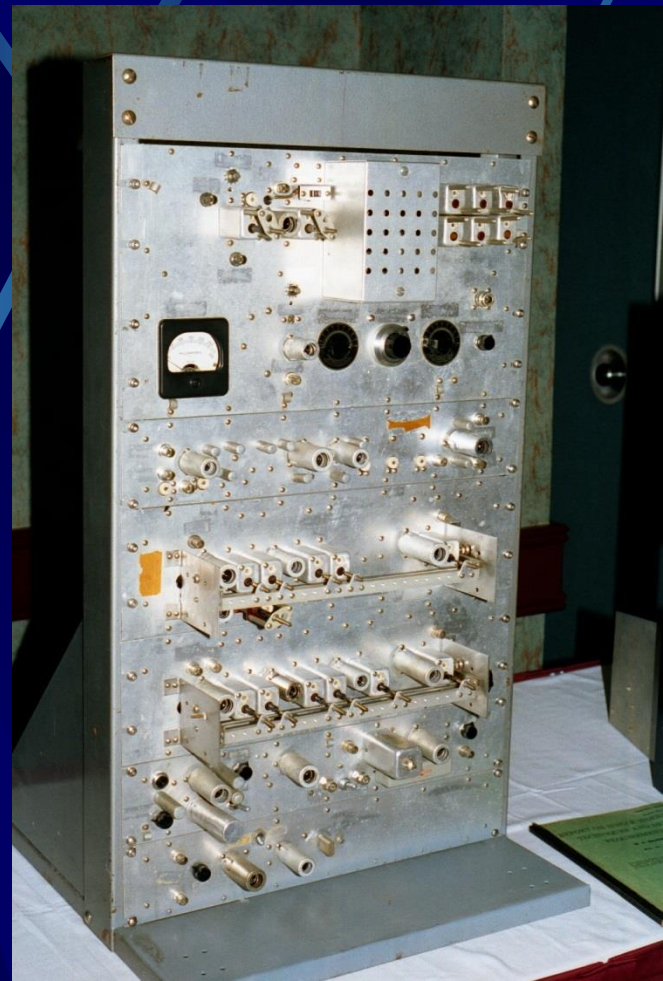


Prototypes Saved from the Dumpster

W5EU collection



75A-4



KWS-1

W1 prototype: 32V-3 Replacement

W5EU collection



Collins SSB Pioneers

Jim Maccani
WØHUP

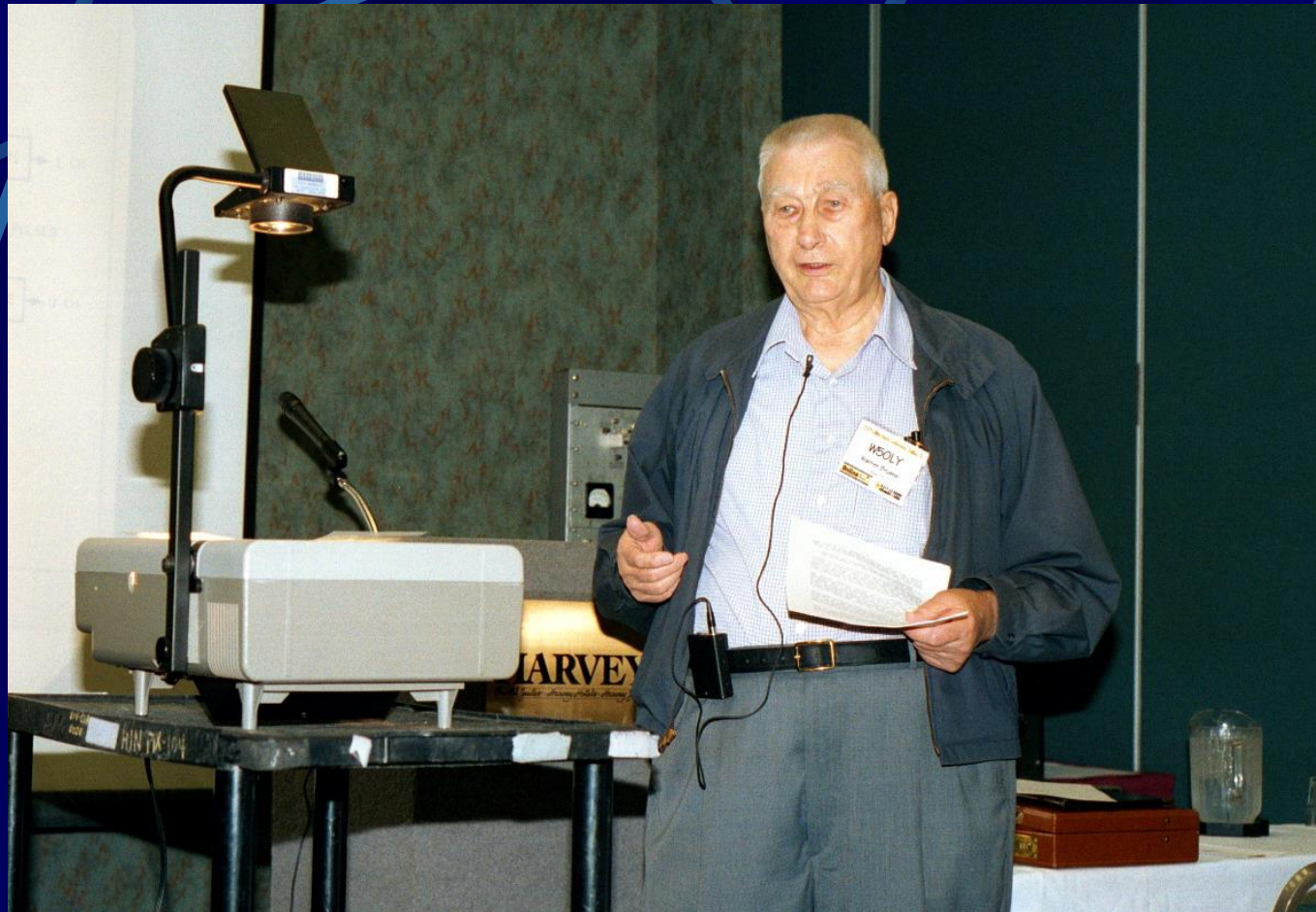
Chuck Carney
WØGDJ

Dennis Day
WØECK

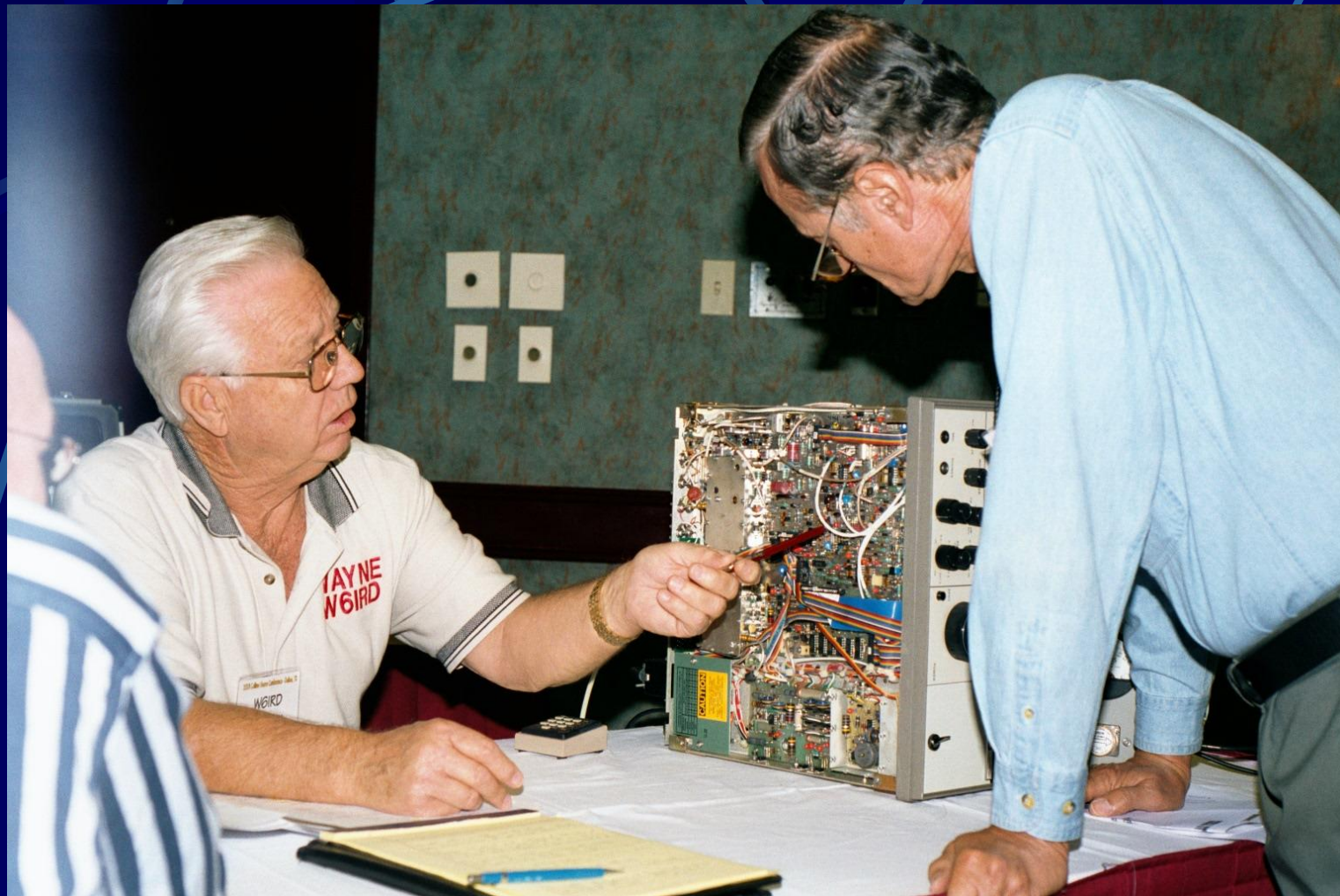
Arlo Meyer
WØLBK



Warren Bruene - W50LY (SK)



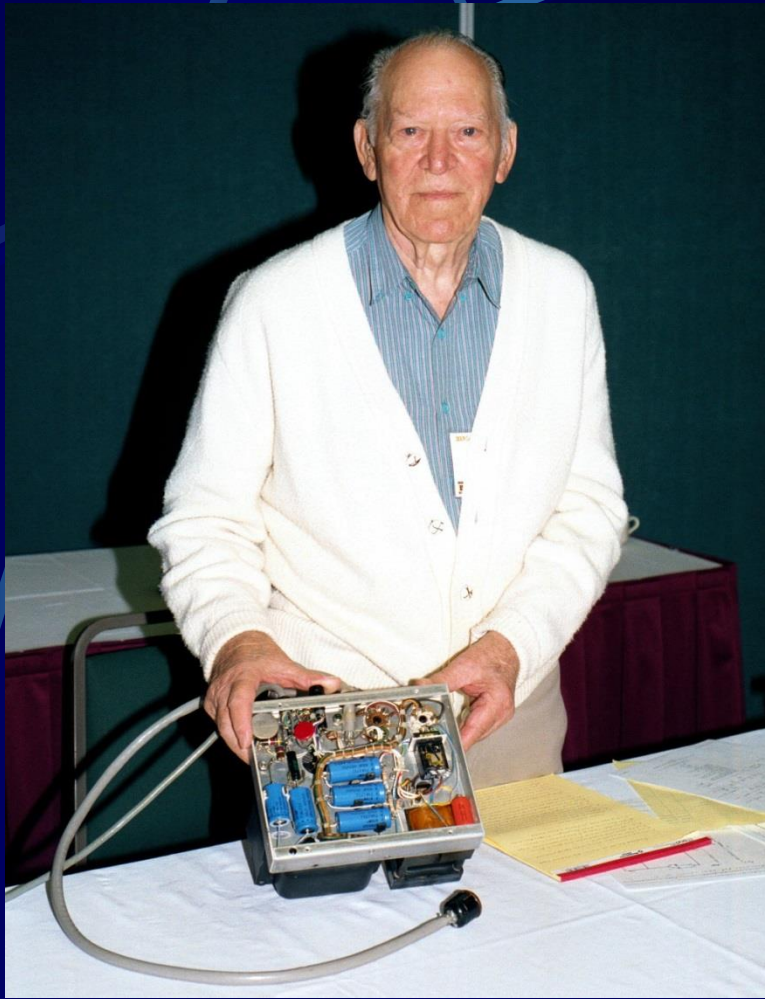
Wayne Spring - W6IRD



WB6ACU & KØFLY



K7RMT (SK) - The "Budster"



516F-2 Restoration

Butch Schartau - WØBS



CCA at NAB



Interesting Web Sites

- Collins Collector Association
 - <http://www.collinsradio.org>
- WA3KEY Virtual Collins Museum
 - <http://www.wa3key.com/collins.html>
- Central Electronics
 - <http://www.ce-multiphase.com>
- AMfone
 - <http://www.amfone.net/>
- AM Window
 - <http://www.amwindow.org/>
- Boatanchor Manual Archive (BAMA)
 - <http://bama.sbc.edu/>

Recommended Reading

● Periodicals

- Electric Radio - www.ermag.com
- CQ - Radio Classics - www.cq-amateur-radio.com
- QST – Old Radio - www.arrl.org
- Antique Radio Classified - www.antiqueradio.com

● Must have books...

- A Pictorial History of Collins Amateur Radio Equipment
 - Jay Miller - KK5IM
- Communications Receivers The Vacuum Tube era, 1932-1981
- Transmitters, Exciters, and Power Amplifiers, 1930-1980
 - Raymond S. Moore
- Shortwave Receivers Past & Present
 - Fred Osterman
- Heathkit, A Guide to the Amateur Radio Products
 - Chuck Penson – WA7ZZE

More Reading Material

- 50 Years of Radio Innovation
 - Joe Veras, K9OCO (published by ARRL)
- Single Sideband for the Radio Amateur
 - ARRL - four editions from 1955 to 1968
- GE Ham News – 1946 to 1963
- RCA Ham Tips – similar to GE



Questions ?

Thank You!

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