

— • — • — — • — — • • • — • — — • • • — • • • • — • — •

VOA Bethany Museum

(former VOA transmitter site in West Chester, Ohio)



Adam Farson VA7OJ

Copyright © 2015 North Shore Amateur Radio Club

VOA Bethany Relay Station: *beaming across the Iron Curtain*



- Broadcast VOA to Europe, South America & Africa
- Located near WLW-AM site in Mason, OH
 - ◆ A “must-visit” for Dayton Hamvention attendees!
- Opened in 1944
 - ◆ Intended as backup for East Coast VOA relay sites
 - ◆ 8 SWBC transmitters: 250, 175 and 50 kW
 - ◆ Original transmitters built by Crosley Broadcasting Corp.
 - ◆ Initially broadcast into Axis-occupied Europe
 - ◆ Hitler denounced VOA as “those Cincinnati liars”!
- Relayed VOA programming in many languages
 - ◆ Studios in NYC until 1954, then moved to Washington DC
 - ◆ Retired and shut down in 1994; towers removed 1997-98

This is what the VOA was up against during WW2



“Tell the truth and let the world decide.”



— • — • — • — • • • — • — • • • — • • • • — •

■ **After WW2, VOA mission adapted to Cold War.**

- ◆ Multi-lingual programming continued, but many new languages were added.
- ◆ Broadcasts to P.R. China and Asia ramped up significantly after 1949, mainly from sites in Philippines and Japan.

■ **Soviet and Chinese jamming became very refined.**

- ◆ This necessitated major equipment upgrades at VOA sites.
- ◆ New developments in frequency synthesis and power-tube technology led to *frequency-agile* high-power transmitters.
- ◆ Station engineers could now QSY in minutes or even seconds, rather than several hours. Down-time was minimal.
- ◆ Automatic antenna switching and broadband antennas also facilitated rapid frequency/beam heading changes.

The VOA Bethany building



Front of the restored building, viewed from the driveway

Historical marker & description



Antenna switching field

manual switches; at rear of main bldg.



Feedlines from transmitters were in buried conduits.

Antenna switch field detail

Note copper busbars & steatite insulators



Engineers walked outside to reconfigure switches manually!

Mains service cubicle

... not too many interlocks in those days!



14.4kV 3-phase isolators



Voltage/current transformers

Crosley transmitters, 1968

In service 1943 – 1968; replaced by Collins



Crosley MW/SW receiver dial

“American Overseas” console model



**The CROSLY
Receiver and
Transmitter...**

*go
together!*

Collins 821S-1 transmitter

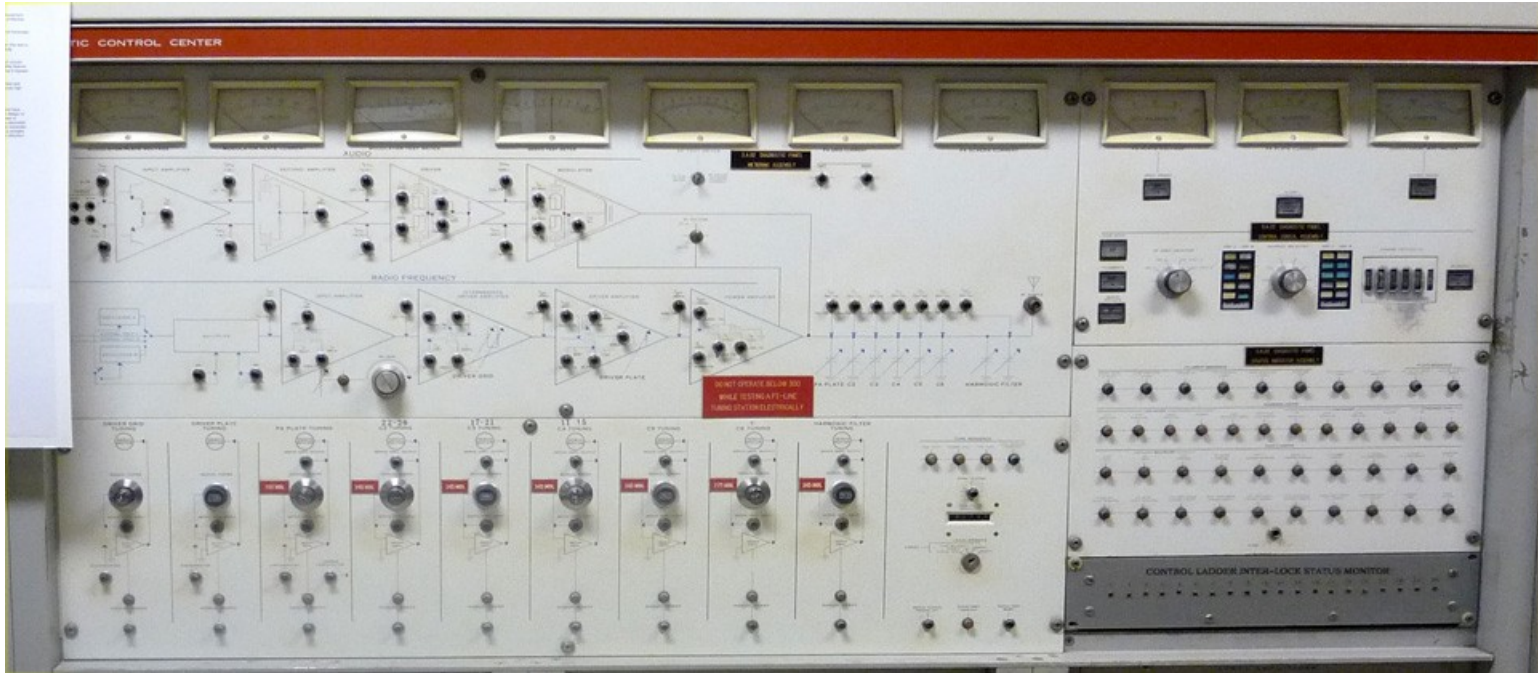
250 kW, PLL exciter, frequency-agile



One of the two 821S-1's is still on-site. Note mimic diagram.

Collins 821S-1 diagnostic panel

Mimic diagram provides operating flowchart



This panel presents the start-up sequence and operational status of all audio and RF stages.

821S-1 remote control consoles



Frequency selection & transmitter supervision from control room

2 July 2015

NSARC HF Operators – VOA Bethany

14

Control room, 1950



Crosley transmitter bays to left & right of control position

Control room, 1960's



Collins transmitter consoles on right

View of main control console (current)



Meters & faders for program feeds to multiple regions

Detail of fader panel



Meters: % modulation (upper), VU (lower)

Detail of program switching matrix



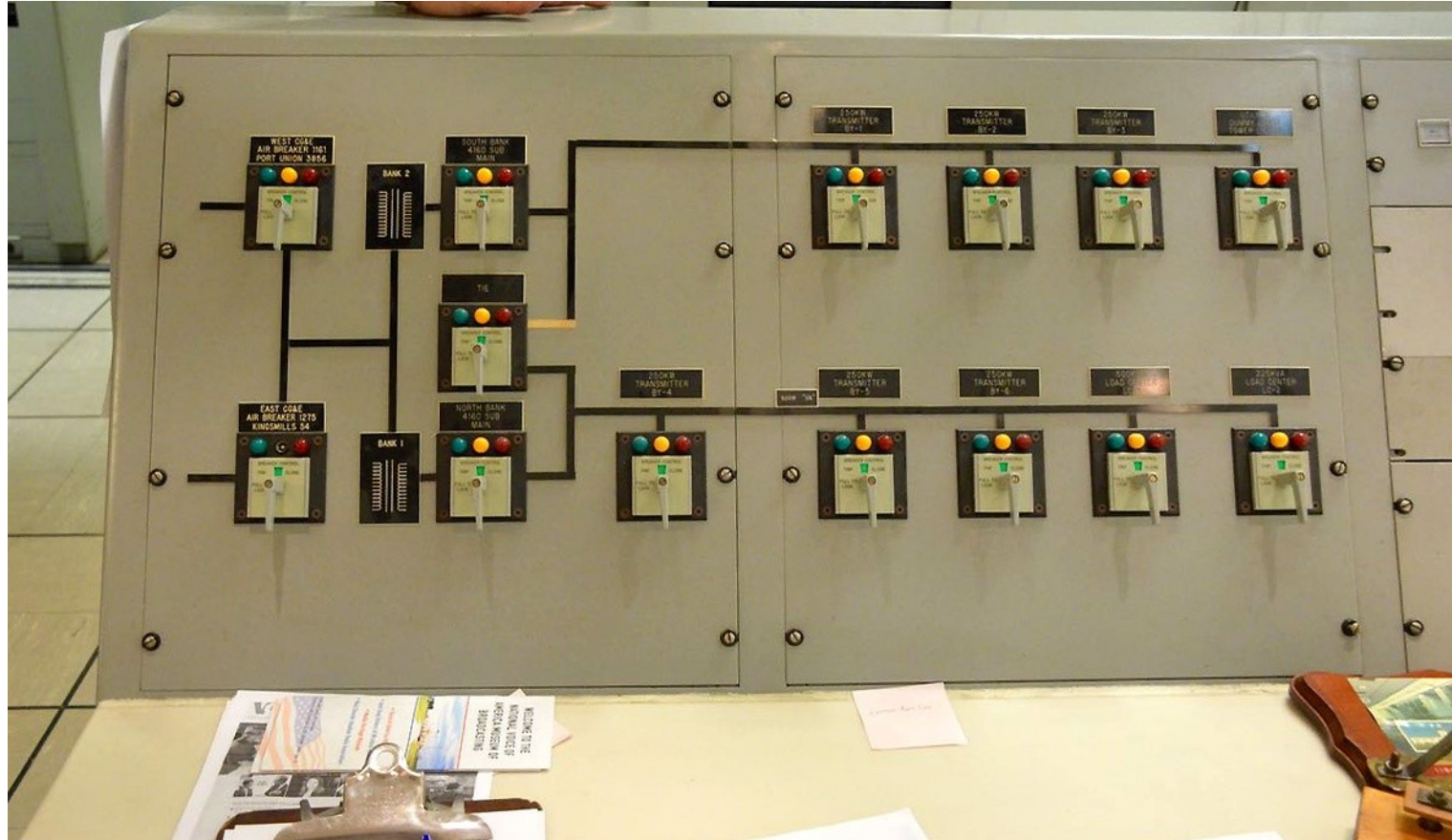
BY-1, BY-2 etc. = Bethany 1, 2, etc. transmitter number

Program line equipment in control room (line amplifiers etc.)



Program lines originally AT&T wirelines, later satellite feed

Mains power switching console



Controls mains supply from 2 HV utility feeders to 8 transmitters

Former satellite earth station: *was used for program feeds*



Amateur radio club now uses satellite dish for EME

Amateur radio antenna tower used by West Chester ARA, WC8VOA



HF Yagi & wire antennas on tower

West Chester ARA station WC8VOA *in Bethany transmitter building*



HF Position 1

2 July 2015

NSARC HF Operators – VOA Bethany

24

West Chester ARA station WC8VOA *in Bethany transmitter building*



HF Position 2 (note Henry 2K amplifier)

2 July 2015

NSARC HF Operators – VOA Bethany

West Chester ARA station WC8VOA *in Bethany transmitter building*



HF Position 3 (digital)

2 July 2015

NSARC HF Operators – VOA Bethany

West Chester ARA station WC8VOA *in Bethany transmitter building*



VHF/UHF Position 4

Notes on WC8VOA:

website, repeater, equipment conservation



- Visit WCARA (WC8VOA) [Website](#)
- WC8VOA Repeater: Yaesu Fusion DR-1
 - ◆ 145.390 MHz, -600 kHz, carrier access



- Equipment conservation:
 - ◆ Plans to restore vintage Collins, Drake and other equipment in museum collection & add a working vintage operating position

References for further study



1. <http://www.voanews.com/>
2. www.voamuseum.org/
3. Wikipedia: [VOA Bethany Relay Station](#)