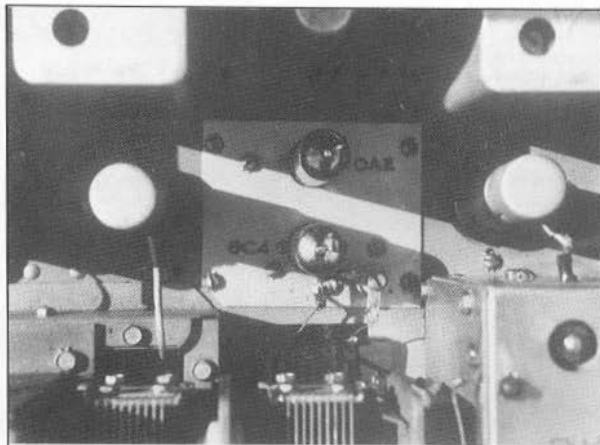




The new oscillator, compensating capacitor, and regulator tube.

the period that the HRO-5A and HRO-5A1 were advertised. Since mine was clearly unusual, I examined all of the HRO improvement articles published during the period. Finally, in the June 1949 QST, I found an article by Loren Windom, W8GZ, who described the exact steps required to update an HRO-W or earlier model to an HRO-7. In this article he describes the steps required to stabilize the oscillator, which include the following:

- Replacing the 6C6 oscillator with a 6C4-OA2 combination mounted on a subchassis.
- Modification of the coil sets, adding a temperature-compensating capacitor placed near the oscillator tube.
- Replacing the second detector with a 6H6; adding a 6H6 noise limiter and 6SJ7 first audio stage.

Because all the modifications listed had been applied to it, I was now sure that my HRO-5A1 was an HRO-7 in an HRO-5 case. However, the color of the main tuning dial troubled me. The HRO-7 had been released in the new National gray cabinet and the PW tuning dial was light gray

to match. Another advertisement, in the May 1949 QST, resolved the problem. The rack-mounted version of the HRO-7, the HRO-7C, had been supplied in a black crackle finish and the knob was black to match. My HRO was "factory stock."

Obviously, National had had the ability in early 1946 to release an HRO with significant improvements. With its highly stable oscillator and effective noise limiter, the improved HRO-5A1 might have given the Collins 75A some real competition. National's conservative move, to hold up the release of the HRO-7 until new sheet metal was ready, proved to be a costly

error. National never recovered their momentum and the rest is history.

The process that I went through to identify the HRO and study its differences illustrates the importance of caution and a good reference library. Collectors should avoid hasty actions to repair old radios. Radios were continually improved by their manufacturers. A factory "mod" is very difficult to differentiate from a quality repair-shop or "ham" modification. Collectors must learn to distinguish when restoration is unavoidable or a good cleaning will suffice. There is no question that a 50-year-old radio will have leaky capacitors and resistors that have changed value. Should the radio play "as good as new," or should it be preserved intact, leaky condensers and all, as an example of the radio manufacturer's art? I, for one, cannot answer this question. I like radios that play well, and will tinker with a set endlessly until it does. However, I try to avoid replacing parts unless they are inoperative. The fact is that a beautiful restoration will be less valuable than an original which has been cleaned and preserved intact.

THE RDG: AN UNUSUAL HRO-DERIVATIVE

Alan Douglas

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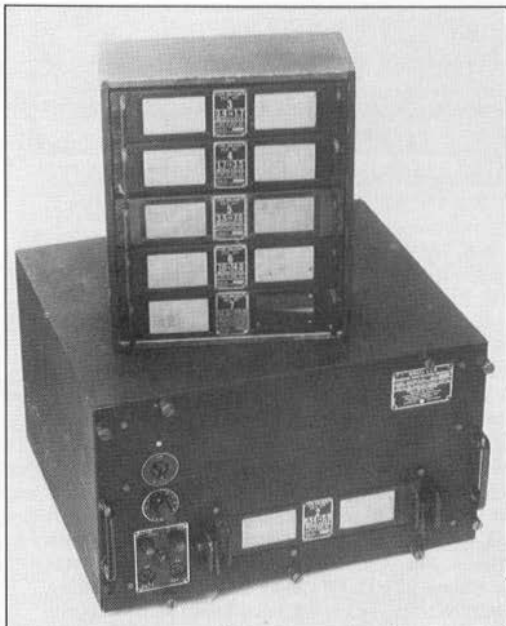
Ludwell Sibley

44 E. Main St., Flemington, NJ 08822

A little-known offshoot of the metal-tube HRO receiver is the Navy RDG (CNA-46ADU). This set, built for spectrum-surveillance use, is intended solely to operate an external oscilloscope display. Like a panoramic adapter, the 'scope displays frequency on its horizontal sweep, and signal strength on its vertical axis, thus showing all activity in a given frequency band as a series of spikes.

A system like this is valuable for frequency-management or electronic-intelligence purposes. Once an unknown (or suspicious) signal appears, a second, conventional, receiver would be used to identify it, possibly using a separate frequency meter like the LM-series to measure its exact frequency. A direction-finder network could then be brought to bear.

The RDG is a repackaged HRO Jr., less the

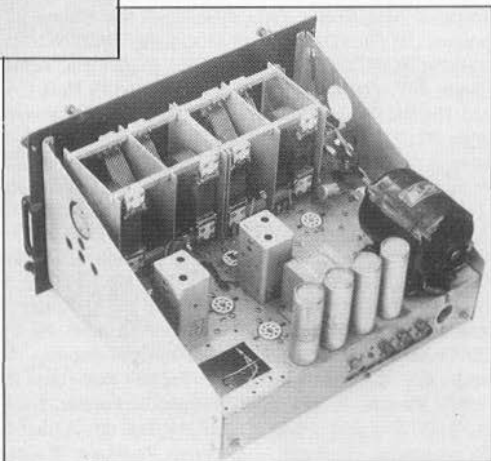


intended for a 455-kHz IF, with nameplates specifying their being part of the RDG set. Frequency ranges differ slightly from the usual for HROs: 0.54-0.9, 0.9-1.7, 1.7-3.5, 3.5-7.0, 7.0-14, and 14-29 MHz. The tuning capacitor is an unusual split-stator design with two sections in series for mechanical balance. Front-panel controls are minimal: power, motor, and plate switches, fuses, a pilot light, and an RF gain control. The set is housed in a panel-and-cabinet format 11-7/16" above the shock mounts and 16" deep. Weight is a dainty 100 pounds.

The RDG output was to be viewed on a "panoramic dual display unit, experimental model XCW." During the several months before the XCW was ready, modified Dumont 241 scopes were pressed into service.

The National drawings covering the RDG are dated June 1944. The set pictured, S/N 62, is stamped May 1, 1945. Photos: Alan Douglas.

noise limiter, AVC, and BFO, but with power supply built in. The output tube is triode-connected as a cathode follower. Because tracking of the RF stages is important in this application, it has an untuned antenna-isolator stage. A 1/20 HP synchronous motor constantly turns the tuning capacitor at 900 RPM through a worm gear. Thus the receiver sweeps its frequency band 15 times per second. With each revolution, a cam switch sends a synchronizing pulse to start the 'scope sweep. There is no provision for manual tuning. The IF stages are loaded with resistors to give a wide bandwidth of 10 to 15 kHz (6 dB down).



The RDG uses non-bandspread coilsets

