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[Milsurplus] Using Programmable Oscillators in Boatanchors1 message

David Stinson <arc5@ix.netcom.com>

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I have several WWII sets that need crystals to operate.
Finding "old stock" can take a very long time and purchasing
them "new" from the few remaining suppliers is prohibitively expensive. So.... alternatives.

I'm an advocate of leaving WWII equipment "operating as designed,"
meaning that limited changes that are 100% reversible which
allow the unit to live are OK. So I've often thought of "Borg Implants" like my simple converter to get them going.

My rare SCR-274N VHF set needs crystals, especially
for the BC-942 (ARC-5 R-28) receiver.
Programmable oscillators in both TTL and CMOS format
set for any frequency one would wish are cheap and plentiful. So I decided to try them out.

The BC-942 / R-28 uses a 12SH7 as an Electron Coupled Oscillator / Quadrupler. When using a regular crystal, I
scoped 3 V P-T-P at the cathode.

I had a couple of older can-type TTL output clock oscillator units for 4.000 MC, which puts the set on 102.9 mHz.
I powered the oscillator with a old, weak 6 Volt battery.
Under load, the battery sourced 5.3 Volts for Vdd.

Driving the osc. straight into the stage (with a blocking cap)
did not develop enough drive voltage, so I wound a little
4:1 UNUN and this developed 2 V P-T-P at the cathode,
which appears to be just enough because the set came right up and played. I think a 9:1 UNUN will do better.

Next, I ordered four Epson programmable oscillators
from Digikey: 4.652, 4.829, 5.722 and 5.818 mHz

There are probably better ones out there,
but I picked this one because it was a through-hole
package and *cheap* ;-)

<http://www.doveonline.com/pdfs/SG8002DB.pdf>

I ordered them pre-programmed from Digikey and they arrived in just a couple of days. Less than \$18 for four
channels-
less than half the price of a single "new" crystal.

Of course, the first thing I did was hook the blasted battery up *backwards.* A little smoke sword shot out of the
middle of the chip and it disemboweled itself..... "YAAAAAA!" So much for the very active 118.55 MC DFW airport
departure freq.....

When I quit banging my head on the floor,
I connected a survivor correctly and tried again.
The output of this chip would not work into an UNUN,
but for a wonder, it drove the 12SH7 directly (with the
DC blocking cap, of course) and developed the 2 Volts drive needed. I'm listening to the Unicoms
on 122.8 right now. If the "jitter" is causing a problem,
I can't hear it. Sounds like airplanes to me ;-)
Here's what it looks like "haywired" in.
I'll make a nice little circuit board for each later:

<http://home.netcom.com/~arc5/ItWorks.jpg>

This CMOS chip outputs about Vdd - .4V and it can be Vdd up to 7 volts, which would give me more drive.
I'll build a little regulator to supply all four boards
with 6.75 V and that should do it.
Here's a diagram of what's going on:

<http://home.netcom.com/~arc5/ItWorks2.jpg>

Next step- will it work in the BC-950 transmitter?

73 DE Dave AB5S

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