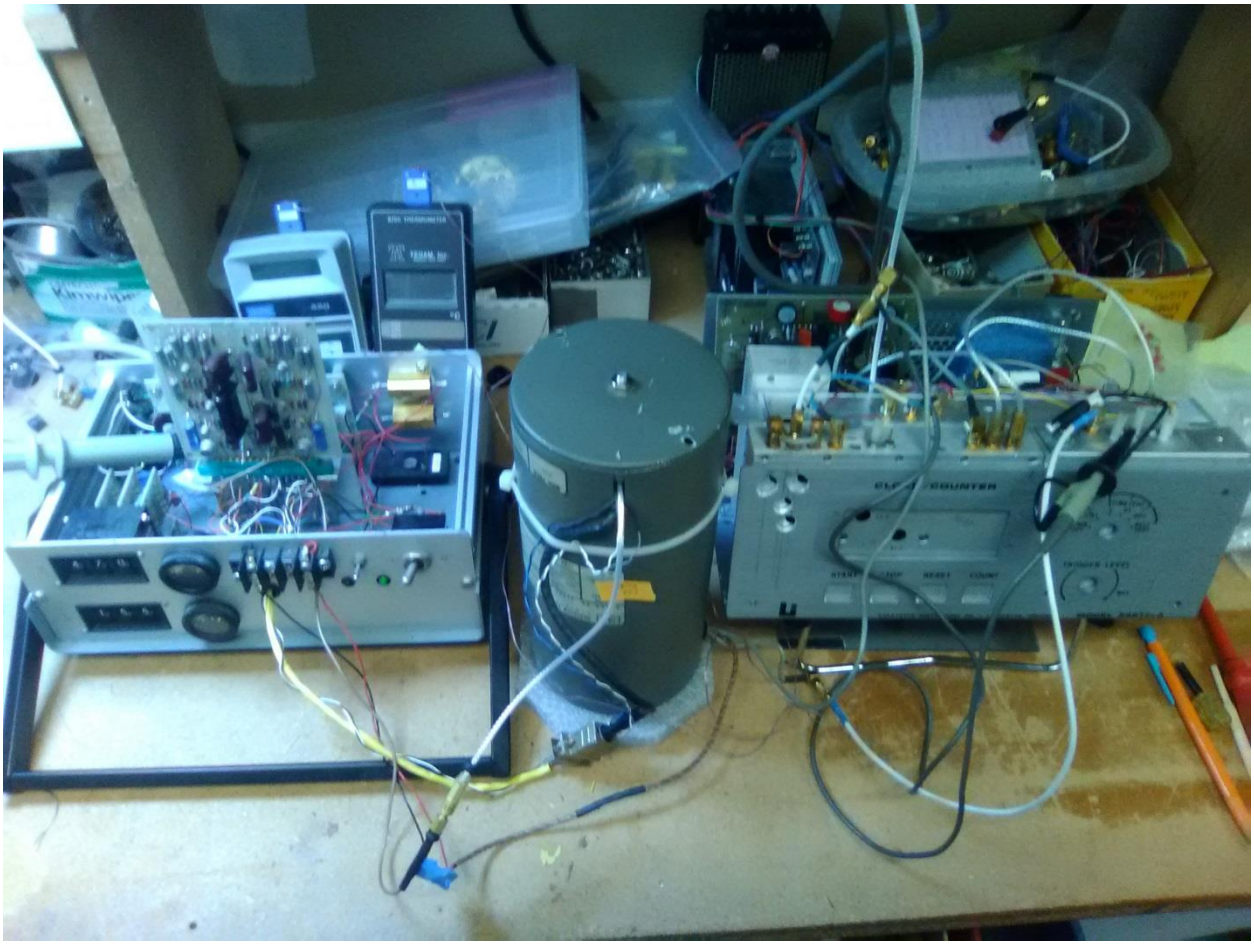
Some results of testing various Rb replacement lamps in the HP5065A

Well I'm finally retired and have gotten my workbench clear of 5065A repairs.

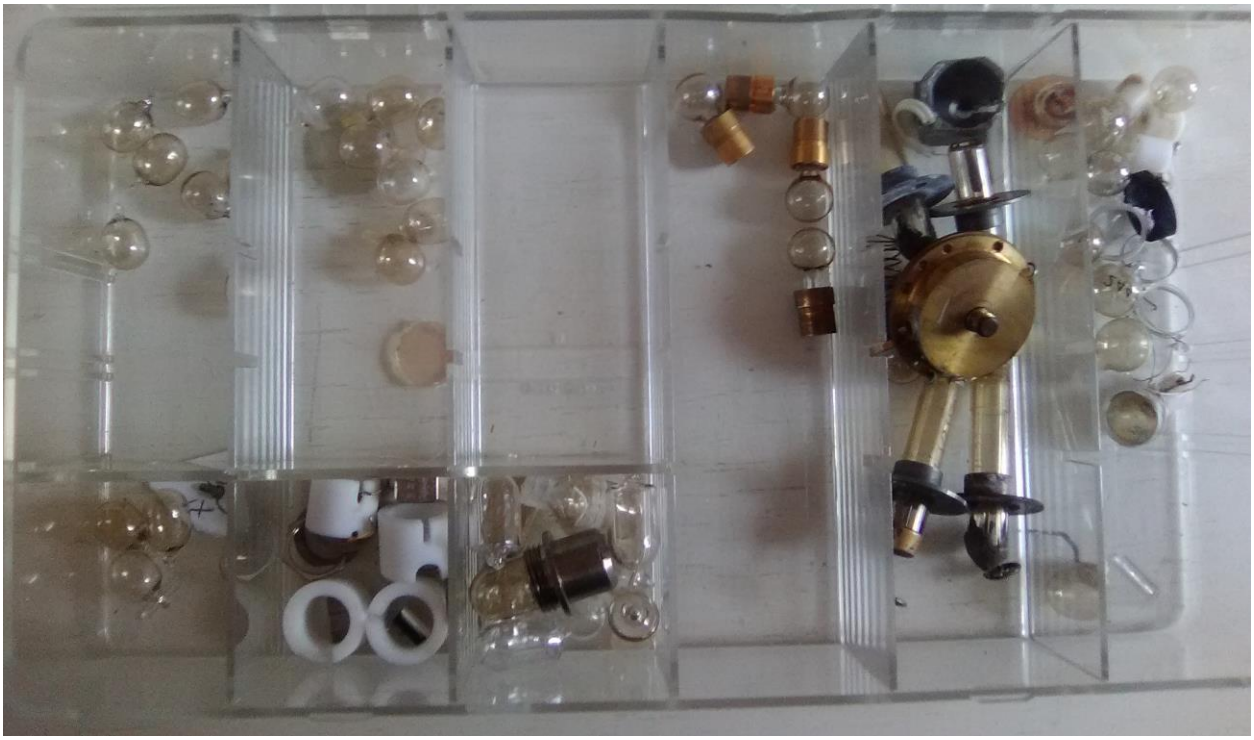
Many years back I had done some very preliminary tests on replacement lamps but decided to do some depth testing.

First since I currently have no 5065A in the repair cycle and I did not want to play with my "gold standard" 5065A I decided to make up a test jig.

I already had a jig for testing the A11 and the optical unit, so I threw together another jig out of spares to functionally replicate a 5065A chassis.



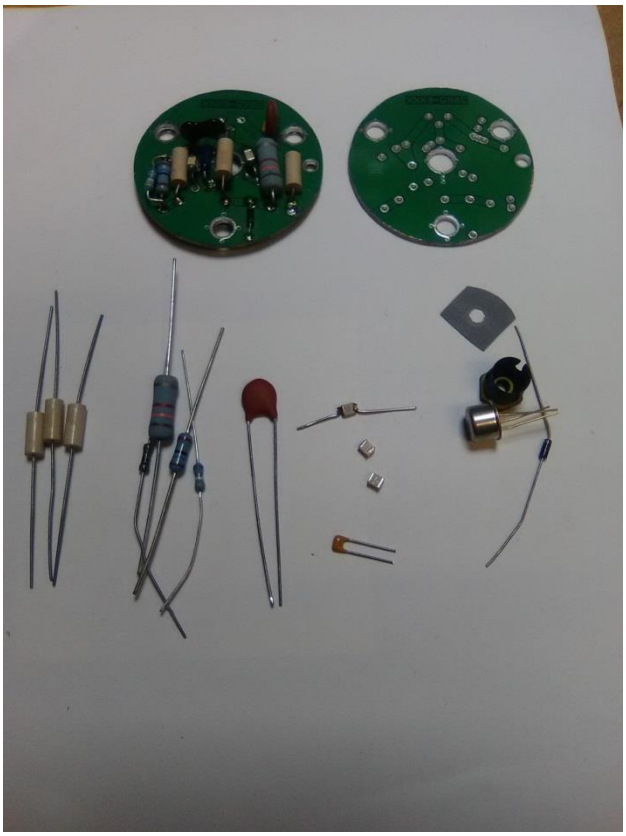
I then inventoried my “pile of lamps” As you can see there are quite a few!



Original HP lamps have the RF coil wound and cemented to the bulb.

Not wanting to have to wind coils on all these lamps I “cheated” and installed lamp coils from a couple Varian R20 units. These are nice as they are springy and you can remove and pop in a new bulb very quickly!

I built a couple brand new Lamp boards for the tests.



There were 6 Varian X4700 and R20 lamps and all 6 tested with all easily beating the spec. Two of the X4700 lamps were tested in their original lamp assemblies as they fortuitously were the exact diameter to slide into the HP lamp oven!

The HP lamps, seven bulbs removed from LPRO units and Nine FRS style bulbs tested good!

I also tested one FRK/M100 bulb and it just made spec.

At this point I had 5 PRS10 bulbs remaining to check. I have so far been unable to get them to work.

Either they won't start, or once started the go into oscillation during the warmup. Planning to do some more work and see if I can get them to operate

Here are the ADEV numbers showing ADEV at 1, 8, and 128 Sec with a few showing 1024 Sec.

I usually only ran them until the 128Sec AEDV dropped below 5X10-13th and the plots were continuing to flatten over time.

This usually took at least a day for the lamps ageing to slow down.

		-12th 1s	-13th 8s	-13th 128s	-13th 1024s
HP	300	2.12	8.30	4.01	-
	905	1.28	4.16	9.86-14	4.30-14
	260	2.87	1.01-12	2.90	1.53
	244	1.46	4.85	1.14	1.13
Varian	5525	2.01	7.46	4.08	-
X4700	1328	1.40	4.41	1.21	4.14
and R20	1401	1.46	4.80	1.36	2.07
* in	300	1.45	4.79	1.15	6.36-14
Varian	*889	1.27	4.03	1.57	-
Assy.	*344	1.28	3.97	1.03	-
LPRO	L1	1.89	7.52	1.68	8.42-14
	L3	1.61	6.01	1.56	1.20
	L4	2.42	8.59	2.23	1.03
	L5	2.90	1.34-12	3.74	-
	L6	2.82	1.32-12	3.52	-
	L7	3.65	1.83-12	5.00	-
FRS	F2	1.44	4.82	1.18	7.39-14
	F3	2.45	9.79	2.45	1.84
	F4A	1.80	6.10	1.91	-
	F4B	1.44	4.49	2.09	-
	F5	2.64	1.15-12	3.24	3.13
	F6	1.86	4.59	1.18	7.82-14
M100		3.60	1.39-12	4.53	4.76
UNK	U1	2.05	7.63	1.81	5.87-14
	U2	2.74	1.26-12	3.54	1.18
	U3	2.32	9.29	2.23	1.04

Top row shows column weighting unless otherwise noted.