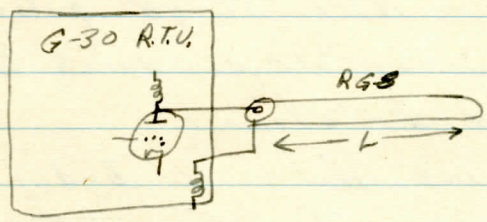
ADA 54 A

70 MM

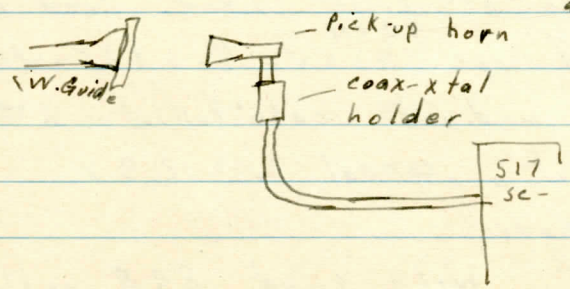
Emulsion # 5-225-356-20

5/11/54 Obtained G-30 - Computer, R.T. Unit, V.R. —
Make up cables + control unit - checked at 2Kg
A.B. Radar —
Fired Up + Checked wave forms
Ran into trouble with leakage into C.R. scope
+ Coax probe is next to useless
~~Wave form~~ R.F. envelope looked more reasonable when picked
up With Hi-imp probe of 517 Tetrx. Sc.

Test set-up as follows



Run into all kinds of troubles in trying to view
R.F. envelope —
Got some reasonable semplance of envelope
with following set up - a lot of jitter but
appe



.26 x 500
.5
.130

For L of 36 ft. (RG-8U) T should be

$\frac{\cancel{184\ yds/\mu s = 1S}}{\cancel{24\ yds}} \quad \frac{24\ yds}{184\ yds/\mu s} = .13\ \mu s$

By no manner or means can anything vaguely resembling a pulse envelope - some jizzle could be obtained with a horn pickup ant. However when using the X-tal. det. on the ant. coupler a neg + pos spike appear which appear to be associated with a wave form with stepp rise & fall times - ~~when used~~ when checked against the ½ μ sec. pulse line it was .52 μs which checked with a current waveform from the the pulse xfmr. - With 12 yd pulse line its duration (spike to spike) was .13 μs which checks precisely with computed duration -

Made pulse line with 15' (5yds) of RG 58-U should have time of $\frac{2 \times 5}{184} = \cancel{.25}\ .0543\ \mu s$

Measuring from edge to edge of jizzle from horn ant pickup + Xtal. det -

Vern $\frac{.93}{.37}$ $\frac{}{.56\ cm}$ $.56\ cm \cdot \mu s/cm = .056\ \mu s$

5 yd line

Photographed pulse at pulse xfmr. Used Hi-Z probe at J-110 - 517 scope 12 KV 1/30 s f3.5 PRF 800 swp - ½ μs cm med. int. scale full int - 2nd Exp same as first except it is of cal tr. 12.9 V (1st exp)

1st Shot

2nd Shot same as above

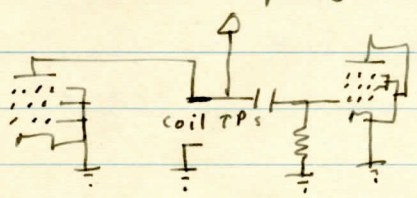
3rd " " " " with 12 yd RG8 cable

4th " " " " " " " "

5th

5/12/54 Deter. interstage cap of 5702's

Chose two Raytheon 5702's at random & arranged as follow



measured at 10 mc with Br. T & G.R. 1001A

			C
R_1	C_1 - 400 nn	C_2 - 391.2 nn	8.8 nn
R_2	C_1 - 400	C_2 - 391.5	8.5 nn
R_3	C - 400	C_2 - 391.8	8.2 "
R_4	400	391.6	8.4 "
	400	391.4	8.6
		391.5	8.5
			51.0

mean 8.5 nn

Two other tubes chosen at random

C_1 400 nn	391.3	8.7	
	391.3	8.7	8.7 nn
	391.3	8.7	

Two more tubes

C_1 400 nn	391.3	8.7	
	391.2	8.8	8.7
	391.3	8.8	25.9

mean 8.6

504
504
2016
2500
29016

2016
25200

Laid out IF strip as follows

Wind Coils

L_1 71.4 mc — .584 μH

AC = 435 μμ

L_2 60 mc — .821 μH

AC = 309 μμ

L_3 50.4 — 1.162 μH

AC = 218 μμ

Wound 14 T. enam. # on ceramic core with powdered iron slug — Wound 17/32" long

With slug out

AC = ~~357~~ 357 G = 370

$L = \frac{1}{4\pi^2 f^2 C} = \frac{.712}{.802}$ μH = .712 μH

$Q = \frac{B}{G} = \frac{6.28 \times 357 \times 10^{-12} \times 10^{14}}{370} K = \frac{606}{436} \quad Q = \frac{22400}{370} = 60.7$

$B = 6.28 \times 357 \times 10^{7} \times 10^{-12} \times 10^{6} = \frac{22400}{370}$ μmho = 22400 μmho

With slug in

$\frac{604.5}{400}$ / $\frac{}{204.5}$ G = 370 $Q = \frac{B}{G} =$ 34.7

$B = 6.28 \times 204.5 \times K = 12850$

$L = \frac{1}{39.4 \times 204.5} K = \frac{1.28}{.800}$ μH

Wound identical core with 13T # enam. Wound $\frac{18}{64}$" long

Slug out

$AC = 331\ \mu\mu$ $\quad G = 291\ \mu mho$

$B = K \times 6.28 \times 331 = 20800\ \mu mho$ $\quad Q = \frac{20800}{291} = \boxed{71.4}$

$L = K\frac{1}{39.4 \times 331} = \boxed{.766\ \mu H}$

Slug in –

$AC\ 167.3\ \mu\mu$ $\quad G = 155\ \mu mho$ $\quad Q = \frac{10430}{155} = \boxed{67.4}$

$B = K \times 6.28 \times 167.3 = 10430\ \mu mho$

$L = \frac{1}{K \times 39.4 \times 167.3} = \boxed{1.519\ \mu H}$

Rechecked first coil — O.K.

Wound 2nd Coil same as above with 10 T # enam.

Slug out –

C_2 856.8

C_1 400.0

$AC = 456.8\ \mu\mu$ $\quad G = 405\ \mu mho$

$Q = \frac{28700}{405} = \boxed{70.8}$

$B = K\ 628 \times 456.8 = 28700\ \mu mho$

$L = \frac{1}{K_{394} \times 456.8} = \boxed{557\ \mu H}$

Slug in –

$C_2 = 635.4$

$C_1 = 400.0$

$AC = 235.4\ \mu\mu$ $\quad G = 197.5\ \mu mho$ $\quad Q = \frac{14790}{197.5} = 74.9$

$B = K\ 6.28 \times 235.4 = 14790\ \mu mho$

$L = \frac{1}{K \cdot 39.4 \times 235.4} = \boxed{1.001\ \mu H}$

Wind L_1 with 8 T # enam.

Slug out

C_2 - 1075.9
C_1 - 400.0

$G = 670 \mu mhos.$ $Q = \frac{42500}{670} = 63.4$

$AC = 675.9 \mu\mu$

$B = K\ 6.28 \times 675.9 = 42500 \mu mhos.$

$L = \frac{1}{K \times 39.4 \times 676} = .376 \mu H$ min.

Slug in

C_2 - ~~1075.9~~ 349.2
C_1 - 400.0

$G = 300 \mu mho.$ $Q = \frac{21900}{300} = 73.1$

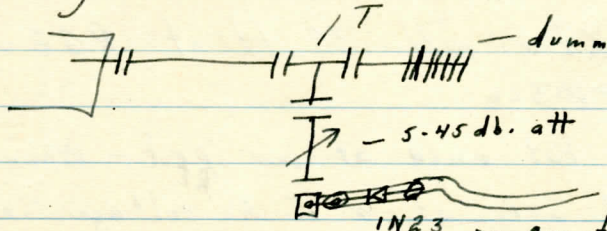
$AC = 349.2 \mu\mu$

$B = K\ 349.2 \times 628 = 21900$

$L = \frac{1}{K 39.4 \times 348.} = .727 \mu H$ max.

Monday—

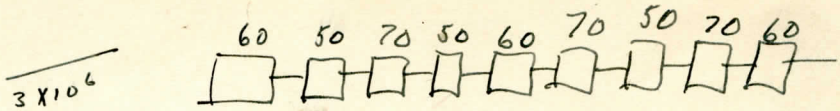
Obtained more microwave gear and ~~dbl~~ got a decent R.F. envelope as follows—



Previous difficulties were probably due to faulty dir. coupler—

crystal type has little visible effect—

With set of 15' of RG58 (for pulse line) maggie firing becomes erratic + critical. It would with some Fiddling around fire—with a good bit of jitter on the trailing edge—~~Tb~~. T was x .02 μs

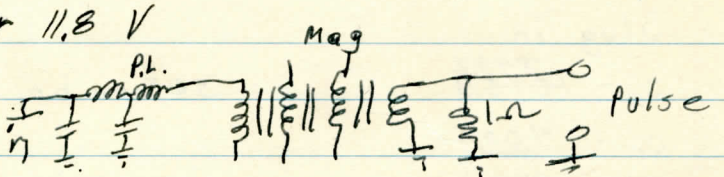


Make Osgr. of Voltage+Current of Maggie
+ r.f. pulse

Voltage = 2 K.V.

5th #4 / 1st Exp 24 KV full ret brill f-3.5 1/30 sec swp 100 mus/cm
R.F. envelope xtal det. thru T + 40 db. att- input Z of scope = 170Ω
2nd Volt tr. .14V ret. full brill 1/30

6th #5 / 1st 24 KV same as 5th Hiimp 2 probe swp 100 mus/cm
2nd Volt tr 11.8 V



7th #6 Exp Same as 5th Except for swp. of 200 mus/cm
& Volt calib .13 V.

8th #7 Exp Same as #6 13V calib + 200 mus/cm swp
In With .5 μs. pulse center freq. was
on Microline Fr. M. 3.5-11.6 Mkr.
Mag. fired normally throughout range ~~[illegible]~~ prf
with no jiller-
Replaced pulse Xfmr. with 30 Ft of RG8U cable
184 = ~~[illegible]~~ .0326
Mag still fires but only at low prf - When first switched
on it fires but only at a 5 db RF voltage loss - after
30-60 secs. it begins to fire normally Freq ~~was~~ is 3.5-12
No apparent misfiring pulse is .09 μs long

9th Photo #8 Same as 5 except for 50 mus/cm. swp. .19 V cal
10th " #9 Same as #6 " " " " 10.4V
11th #10 Same as #9 ex. 20 mus/cm swp - .2V cal
12th Ph. #11 Mag. cur. pulse 200 mus/swp 10.8 V cal.
13th " 12 " " " 500 " " " "

Reduced pulse line to 25 ft. Mag Fired as before except for less jitter pulse was ~.08μs long freq. remained the same –

~~14th~~ Photo 13 same as 5th except for 20mv/5cm swp. + .11 V. cal

~~15th~~ " 14 " " " " " 50 " " " " "

~~16th~~ " 15 " " 6th " " 20 " " 8.7 " "

removed 3' line ~~17~~ " 16 " " " " " 50 " " " " "

~~18~~ " 17 " " " " " 200 " " " " "

~~19~~ " 18 " " 5th " " 20 No cal tr

~~20~~ " 19 " " " " " 50 " " "

~~21~~ " 20 " " " " " 100 " " "

~~22~~ Removed 3 ~~no~~ ft of line + there was little change in operation of mag - slight jitter appeared on leading edge of pulse - freq remained the same - appreciably more FM shown by freq. meter. reduced 3 ft more + only slightly more jitter + FM. same freq.

22 " 21 same as 5 – ~~50~~ 50 mv/cm sw no cal

23 " 22 " " " 20 " " " "

24 " 23 " " " 100 " " " "

25 " 24

Reduced line by 3 ft more – PRF had to be raised to get Mag to Fire (Variations in waveform at Thyratron ?) looked fair relatively small amount of jitter

21 exp 26 " 25 " " " 20 " " "

27 " 26 " " " " " " "

28 " 27 " " " 50 " "

Cut off 3 more ft. jitter ~~●~~ peak pwr red.

29 28 same as 5 sweep 20 mus/cm No cal

Took off 3 more ft + Mag would not fire

Test f-1.5 lens on M-1 Osc. camera

Fed in 50 mc wave from GR 1021 P3 Gen.

$\frac{4\text{in} \times 2.5\text{cm}}{3\,\mu s} = \frac{10\text{ cm}}{3\,\mu s} = 3.33\text{ cm}/\mu s$ or $\frac{3}{10}\,\mu s$ cm

Almost max. brill 24 KV ~~Run~~ swp .5 μs/cm 800 prf

f 1.5 FD = 13 5/8" XX film. Ran O.K.

2nd Run same but with swp of .2 μs/cm

Ran O.K.

Monday

Supply - 1X2 Hi Volt rect - 6BQ6 - 6CU6 Flyback Xfmr.

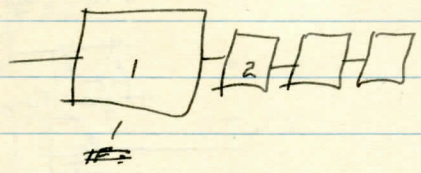
check on Hulcher + C.R.T.'s

Have 2.75" reflector built + rocket model built.

Get Camera ready for inst -

5/10/54

Work on IF strip



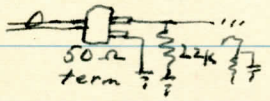
Ckt. V. at		Aligned to
+ ~~1.95~~ 1.25	1 - 50 to 72. Mc	60 MC
~~1.85~~ 1.72	2 - 60 to 83 "	70 "
~~1.95~~ 1.8	3 - 38.2 to 55 "	50 "
~~1.80~~ 2.2	4 - 48.1 to 85 "	71 ~~60~~ "
~~1.80~~ 1.9	5 - 48.0 to 68 "	60 ~~50~~ "
1.92	6 - 42.5 to 59 "	50 ~~60~~ "
1.8	7 - 65 to 91 "	71 ~~74~~ "
1.65	8 - 58 to 40.5 "	50 "
1.75	9 - 50 to 70 "	60 "

Check Sens & Align.

Measure D.C. voltage at Det. - See reverse page for Ckt

Used 1001-A GR Gen. & H.P. 608A - H.P.'s Voltage Calib. is obviously wrong - ~~reads~~ is very low - assumed it was flat however & took initial calib. from 1001-A -

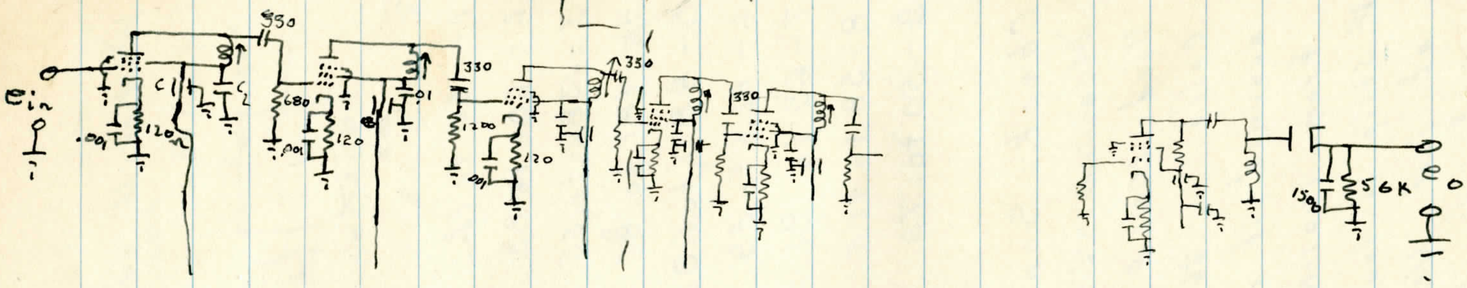
IF Strip is touchy on B+ decoupling - has ~ ~~15~~ 4 V. noise at last I/C ckt. observed on 517 tek. scope - fed signal in as follows -



$$X_L = \frac{1}{6.3 \times 3 \times 10^{-3}}$$

$$= .05 \times 10^3 = 50\,\Omega$$

2 identical triples



Shot noise puts bias of +.75 volt on e_o

e_{in}	e_o	Freq	G
$.4 \times 10^{-3}$	+1.0	50mc	
.85 "	+1.5	50mc	
2.1 "	+2.5	50 mc	
3.0 "	+3.0	50 mc	
~~4.5~~ 10 "	4.0	50 mc	
14 "	5.0	50 mc	
18	6.0	50mc	

Held e_o at + ~~1.5~~ 1.

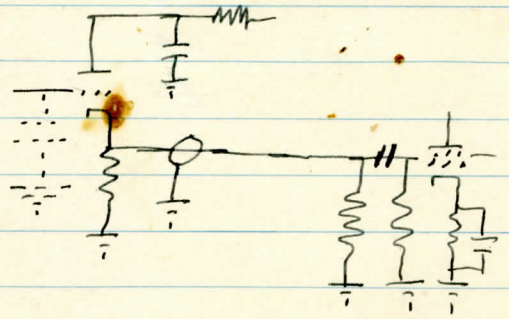
e_{in} ~~E~~	f mc	e_{in}	f mc
~~210~~ ~~425~~	~~50 mc~~	200	72
~~500~~ ~~1000~~	45.6	370	74
425	46.0	500	~~76~~
260	47.0		~~78~~
180	48.0		~~80~~
130	49.		
100	50		
80	52		
78	54		
70	56		
62	58		
62	60		
55	62		
60	64		
60	66		
80	68		
110	70		

Parts - .01 ceramic cond.
Wire + resistors for R.F. chokes

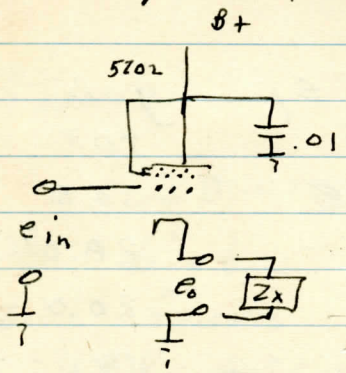
$$\frac{Z_1}{Z_2} = \frac{T_1^2}{T_2^2} \quad \frac{1080}{300} = \frac{121}{36} \quad \frac{36,300}{1080}$$

Rise time = 2.2 RC = $2.2 \times 5 \times 10^{-12} \times 10^{3} = 5 \times 10^{-9}$

4
4
16
.07
100
.07 | 1600
1/100 x 3
3/100



Det. freq. Respone of C.F.



Case 1. Connected 3' of RG-55U across e_o
had 11 db loss at 50 mc
Had some loss at 1.5 mc

$r_p = \frac{A_{ep}}{A_{ip}}$ | $_{grk}$ Theor. loss using 5703

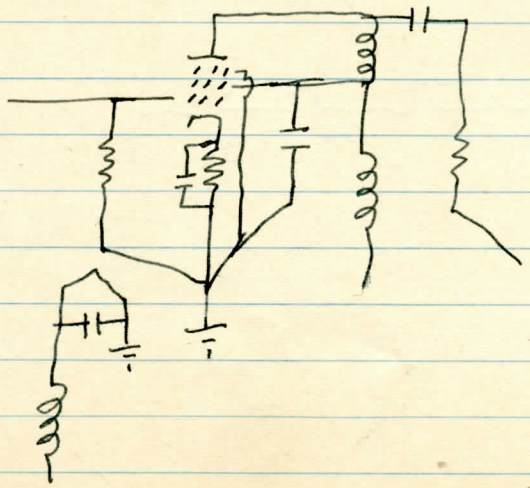
$$\gamma = \frac{\mu R_K}{r_p + (1+\mu) r_K} = \frac{25(75)}{5\times10^3 + (26)75} = \frac{1950}{7000} \approx \frac{2}{7} = .29$$

$\approx$ 11 db loss.

$\frac{2}{2} = 3.5$
.545
20
10.900

20
3.8×10^{-2}
$\approx 5\times10^3$
12.2 75
8x 26
38 150
150
1950
5000
6950

Try to salv. I.F. built on Cu-strip
Change grounds, Improve decoupling + shielding

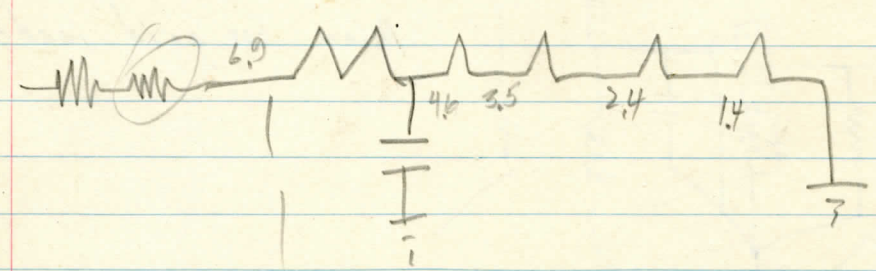


Allow for grid loading

.5 T. Determine Freq. Resp. of M-1 A-scope

100 kA gen e_g

Freq. mc	e_{in}	e_p	gain
.150	1V	[illegible]	40X
.5		~~2.3~~ -1.78	35.5
1.0		-1.78	28.0
1.5		-1.78	20.0
2.0			14.
~~2.5~~		-1.99	~~8.9~~
3.0		-2.24	8.9
~~4.5~~		-2.5X	5. X
4.0			
~~4.5~~			
5.0			
10		-4.4	



5/23/54

Run move test on osc. camera.

$\frac{4\text{ in}}{3\ \mu\text{sec}} \times 2.5\ \text{cm/in} = \frac{10\ \text{cm}}{3\ \mu\text{sec}} = 3.3\ \text{cm}/\mu\text{sec}$

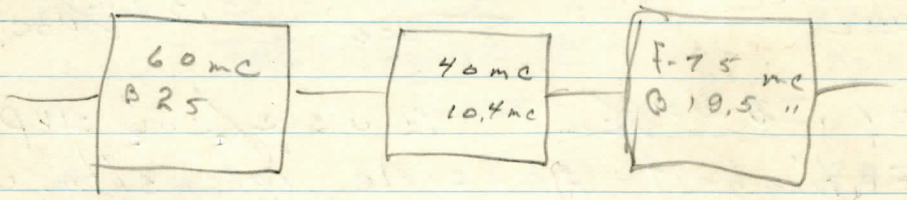
$3.3\overline{)1.0:0}$ or .30 μsec/cm — .2 μsec/cm swp highest possible intensity with which focus could be maintained +24 KV acc—

Shot first roll at f-16
" 2nd " " f-1.5

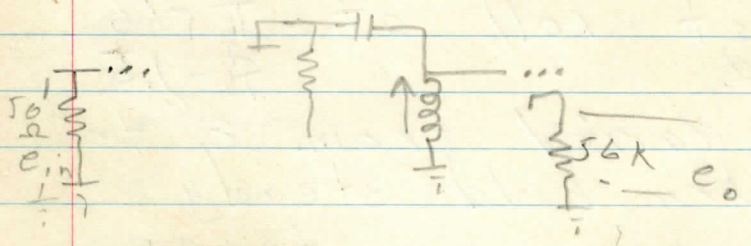
F.D. 12" Varied from 8" to 16" & then held steady

Forgot to turn on trace so ran again same way also ran #1 over

Test of 25 mc IFAmp



detection method -

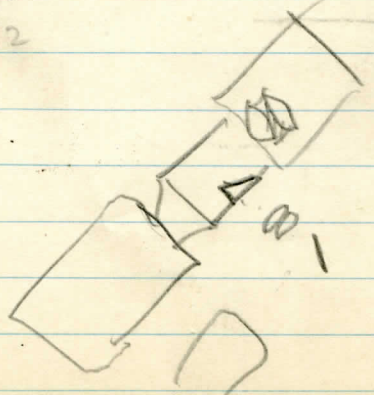


at output of 1st 3X const d,c, of +38 V
at e_o — B+ @ 120 I_p = 44 ma.

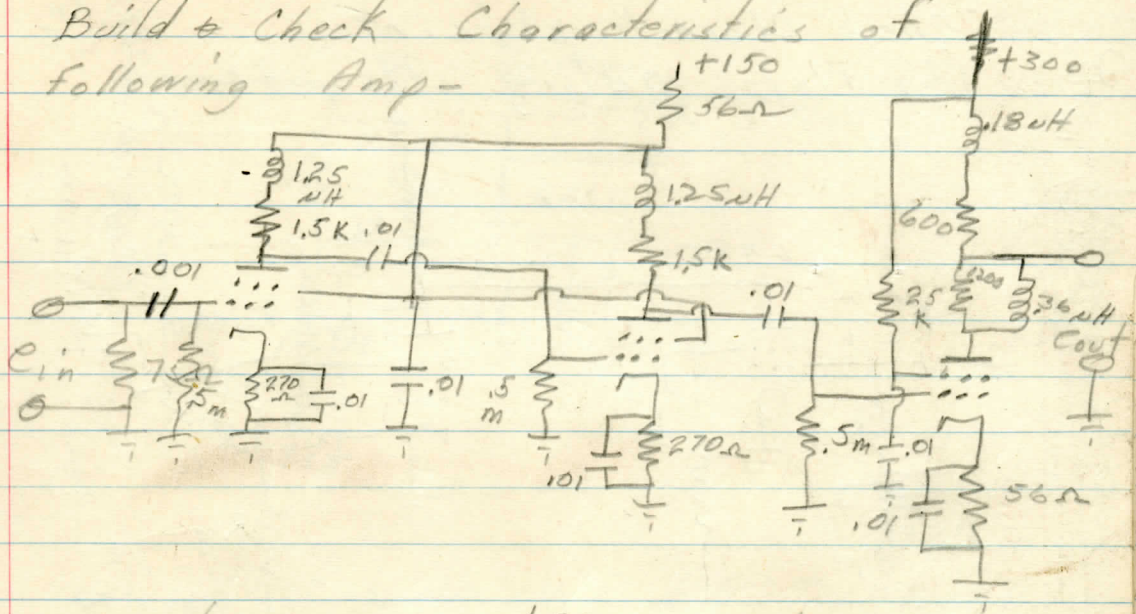
f	e_i	e_o	G
60	.04	1	.04 | 1.00 (25)
75	.14	1	7.1

thru 2nd triple steady .46 V 120 @ 90 ma

60	.002	1	.002 | 1.000 (500)
75	.01	1	100
70	.007	1	142



Build & Check Characteristics of following Amp -



$$X_c = \frac{1}{6.3 \times .01 \times 10^{-6}} = \frac{1.00}{.06} = 16 \times 10^6 \times f$$

.01 ceramic

56Ω – 68Ω

600Ω 25 KΩ 2W

X_L – 10 mc $\qquad L^{\Phi} = \frac{1}{4\pi^2 f^2 C}$

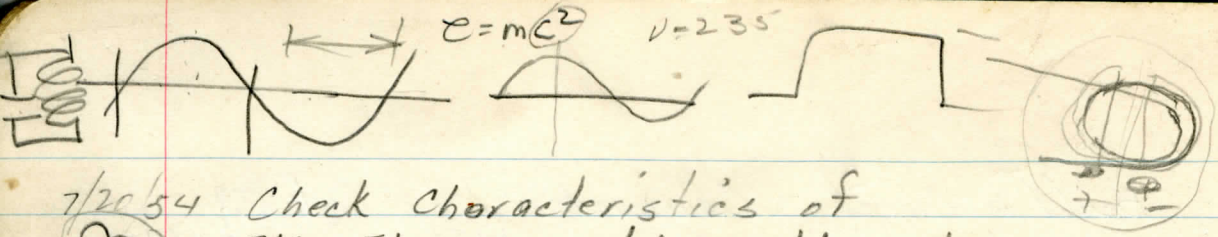
$$C_1 = \frac{1}{39.4 \times 10^{14} \times 1.25 \times 10^{-6}} = \frac{1}{49.2 \times 10^{16} \times 10^{-6}} = 2.015 \times 10^{-10}$$

$$C_2 = \frac{1}{49.2 \times 10^{12}} =$$

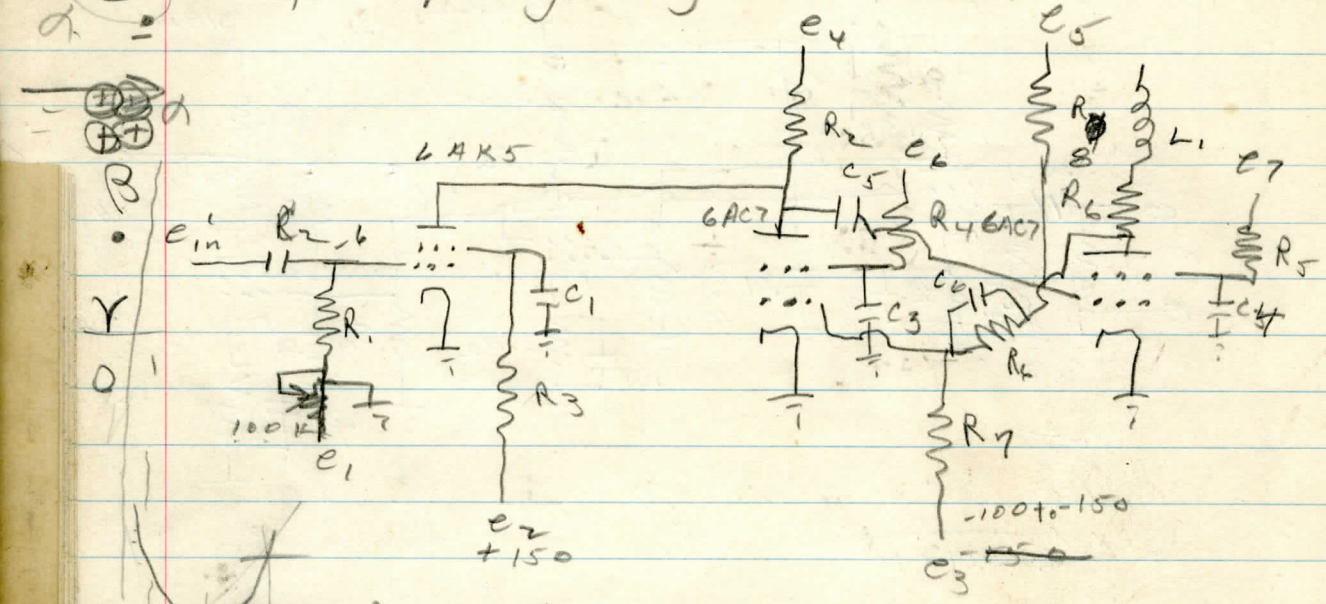
$$= .0002 \times 10^{-6}$$

$$= 201.5 \mu\mu$$

$$C_2 = \frac{1}{49.2 \times 10^{-6} \times 10^{16}} = 2$$



7/20/54 Check characteristics of Flip Flops gating ckts etc.



R_3 - 200K

R_1 - 20K C_2 - 27 nn

R_2 - 10K 1W C_3 C_4 - .01

R_6 - 15 K 4W C_6 - 50 nn

R_7 - 120K ½ ~~R_7 - 4 = 7.5 I~~

R_6 - 150K ½

R_{4-5} 7.5 K 1

R_8 - 120K 1W

$\frac{10^2}{4.5 \times 10^3} = 2.3 \times 10^{-2}$ 2.3×200

$\frac{7 \times 10^{-3}}{3 \times 10^{-3}} = 2.3$ $10^2 \times 2.3 \times 230$

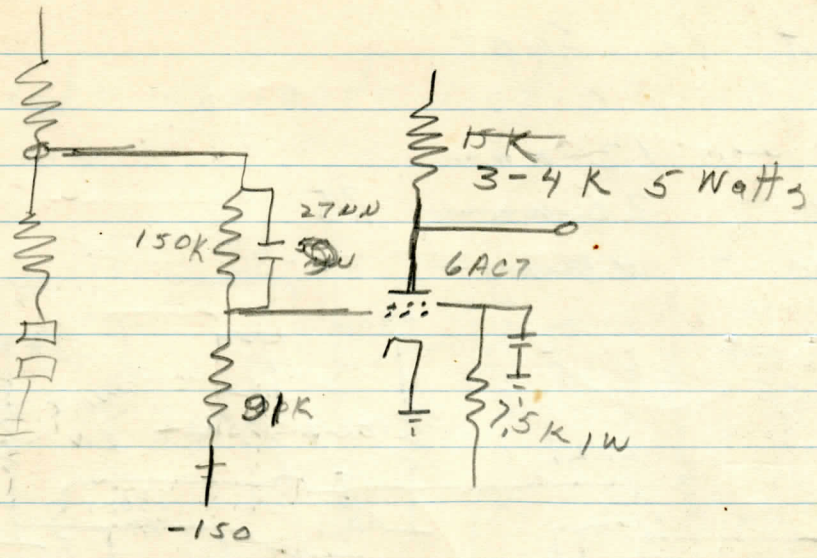
5.28

looks good - starts in 50 m sec

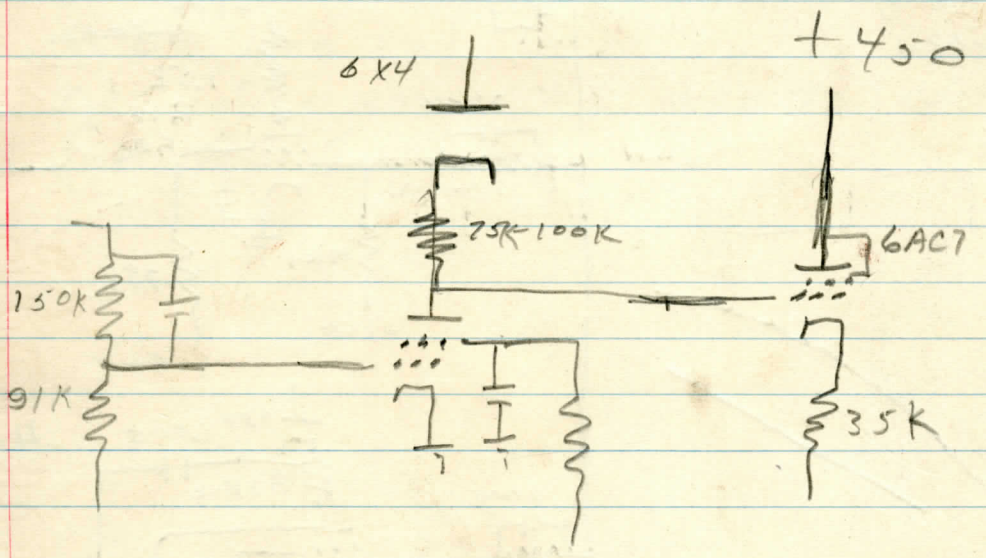
300 draws B+ 150 — 5 ma B+300 — 15 ma

$\frac{2.3 \times 10^2}{1.8 \times 10^4} = 12.8$ ma

6AC7 - 1.8×10^4



Use 6AG7 slightly above 6AC7 ratings looks good

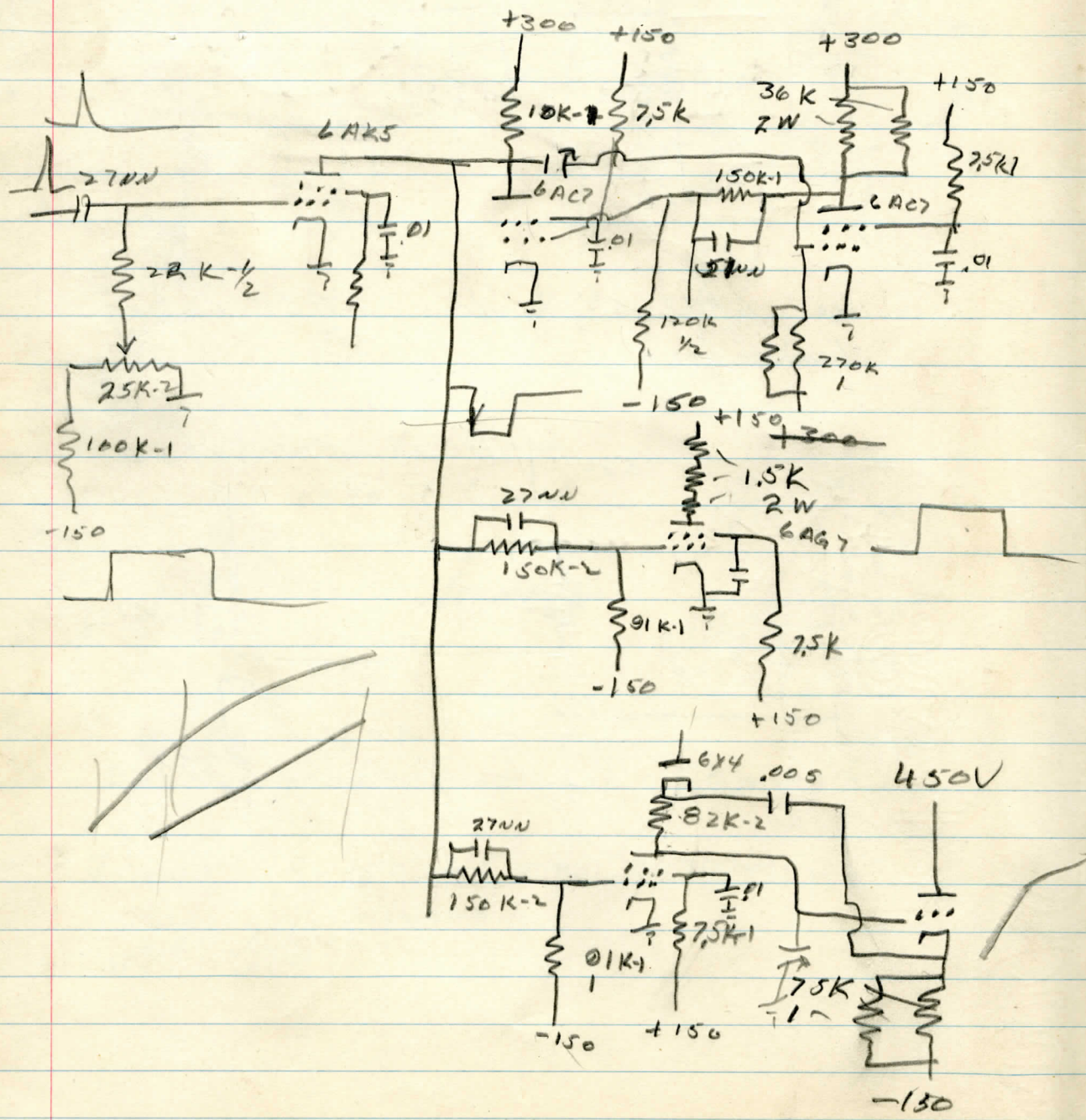


Input to Swp-

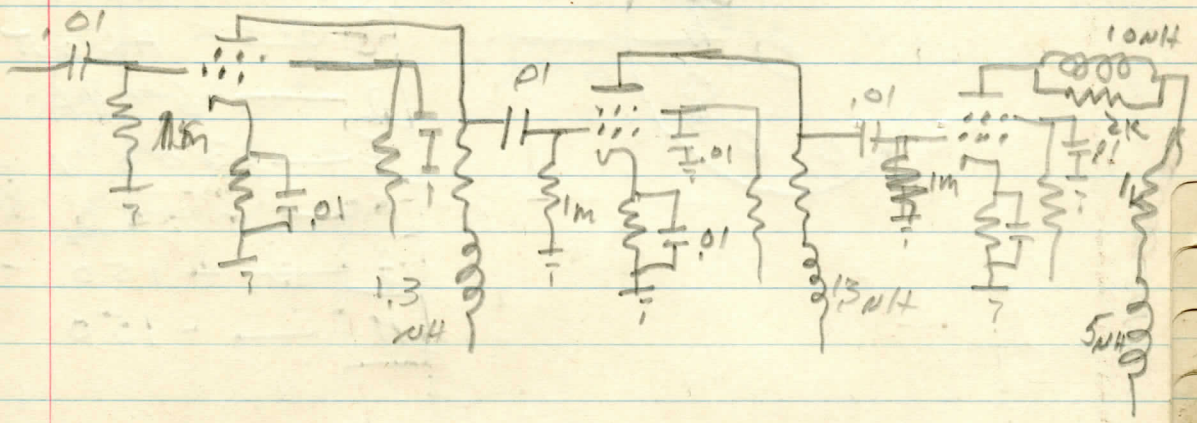
-150 — 12 ma-

+150 — ~~20 ma~~ — 25

+300 — ~~45 ma~~ — 30-35

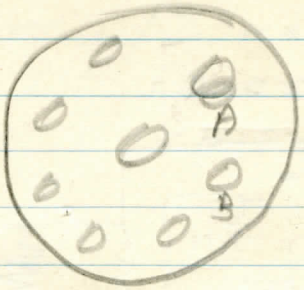


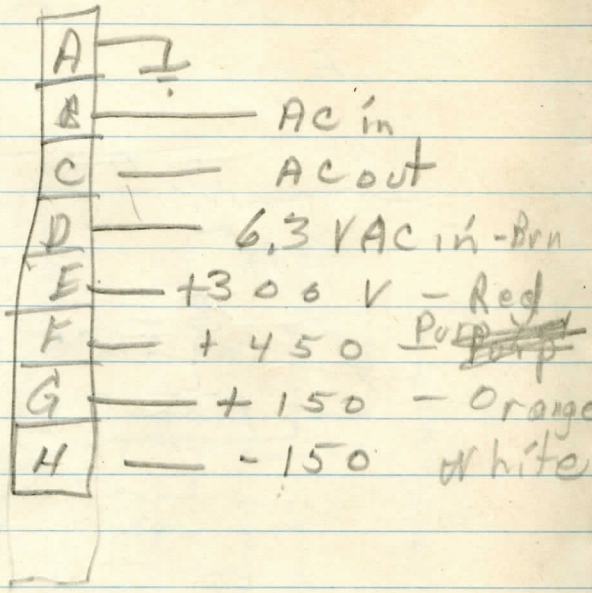
Check characteristics of this Amp



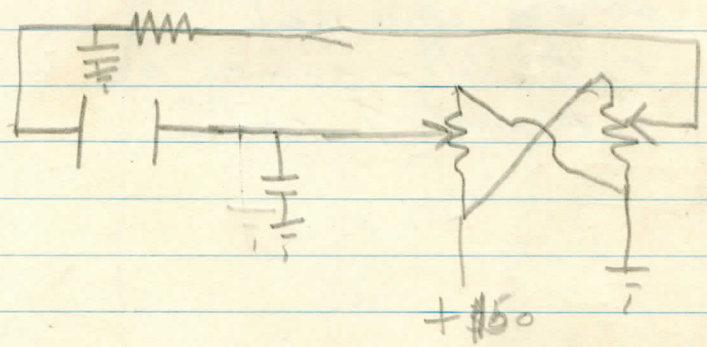
5μH coil - 3 meg ohmite 1W res scramble wound with 40T #28 enamel
5μH coil - same as above except for 62 Turns.

Inter connections

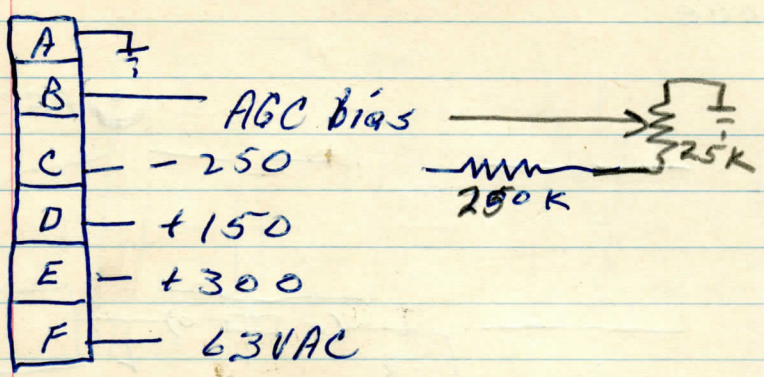




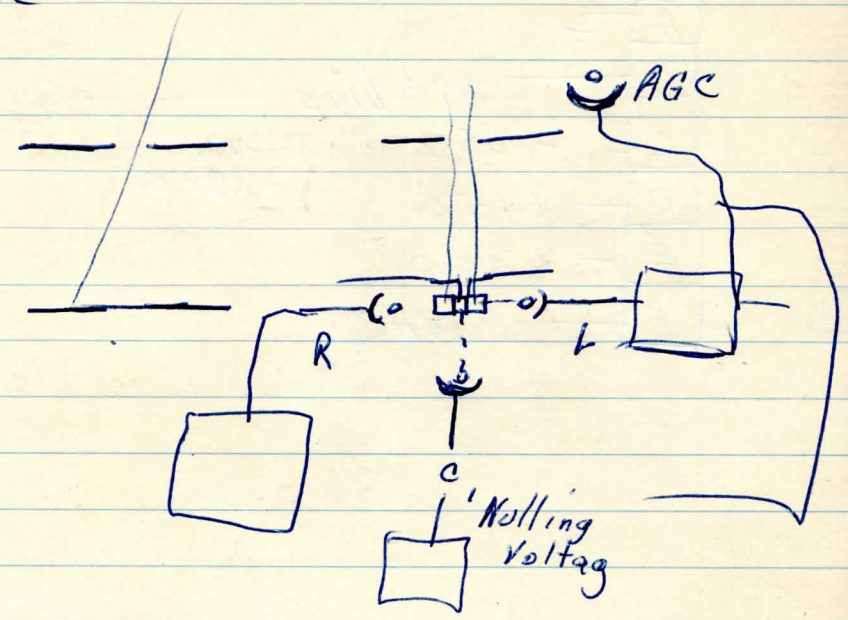
300
250

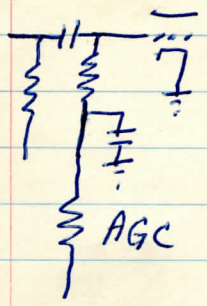


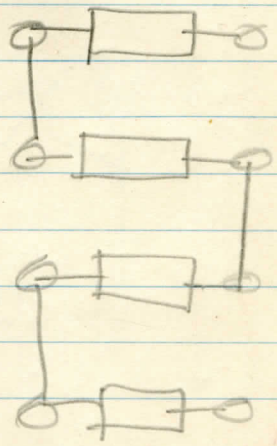
B Sweep & Video For M 2b A scope

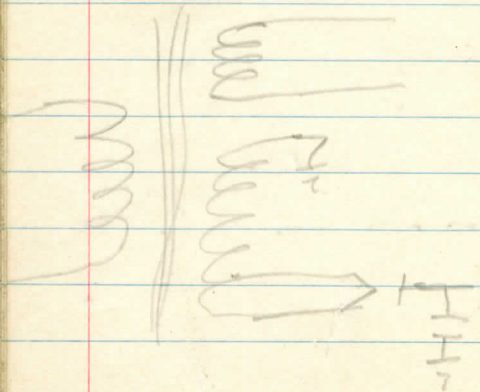


7/28 servo for positing Solar furnace

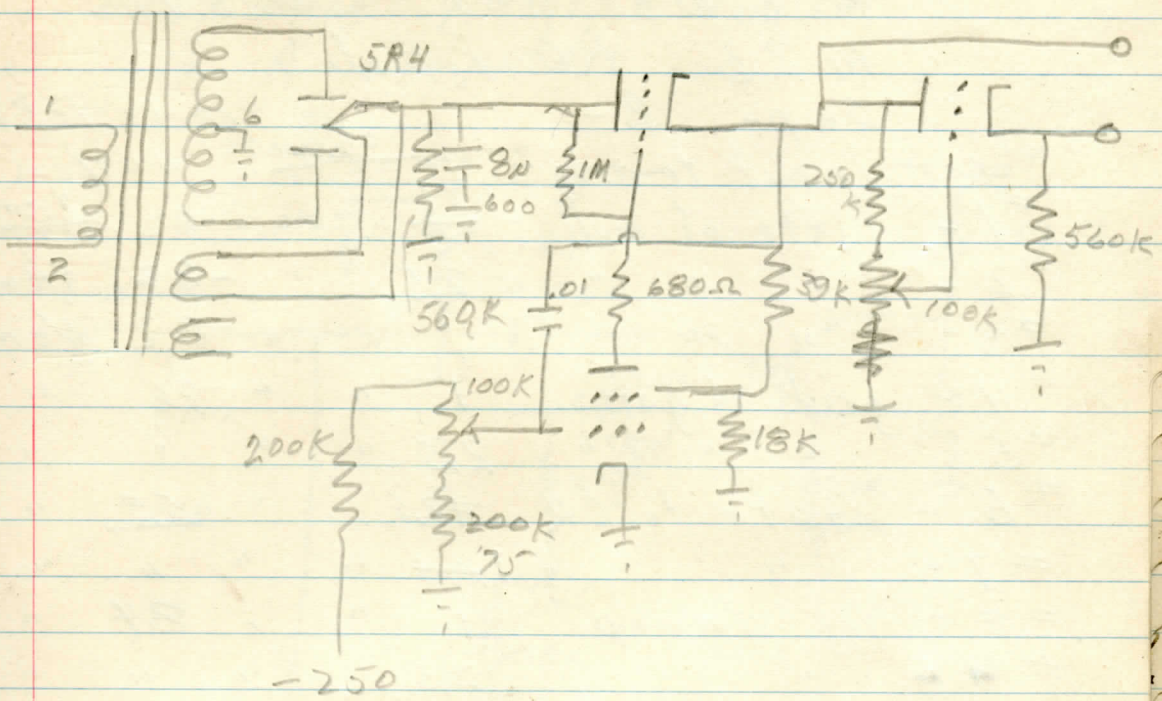


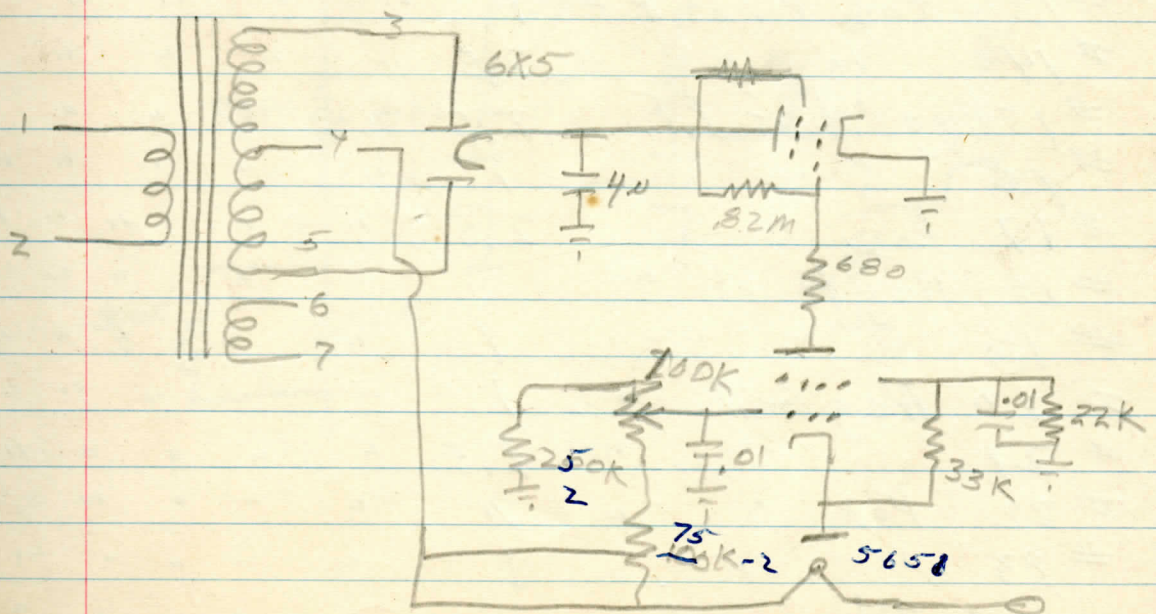






Power Supply A for M-2 b supply





Roll - 1A

7/31

Photos for Canada

M26 R.O. F.E.1.

Swp - B - all traces 12kV 1/30 F-4

#0 - Input to trig - 1 ~~μsec/cm~~ cm/μsec - 40 V/cm

#1 - Plate of multi - ~~1/15~~ " cm - 82 ~~V/cm~~ r/cm] int trig -

#2 - " " " 2.5 " " - 82 r/cm]

#3 - " " " 1 " " - 82 V/cm ext trig

#4 - grids of gates 1 " " 26 " "

#5 " " " 2.5 " " " " "

#6 - Gate to CR ~~#~~2.5 " " 55 " "

#7 - " " " ~~2.5~~ 1 " " " " "

#8 - Neg sweep 1 " " 84 " "

#9 - " " 2.5 " " " " "

#10 - Pos " 2.5 " " " " "

#11 ——— spoiled " " " "

#12 Pos. sw. 1 " " " " "

#13 Pos. Pl. of FF 1 " " " " "

#14 " 2.5 " " " " "

#15 Neg grid of F.F. 2.5 " " " " "

#16 " 1 " " " " "

#17 Pos " 2.5 " " " " "

#18 Neg Pl of " " " " " " "

#19 " " " " 1 " " " " "

#20 Neg Grid " 1 " " " " "

#21 " " 2.5 " " " " "

#22 Pos " " 2 " " " " "

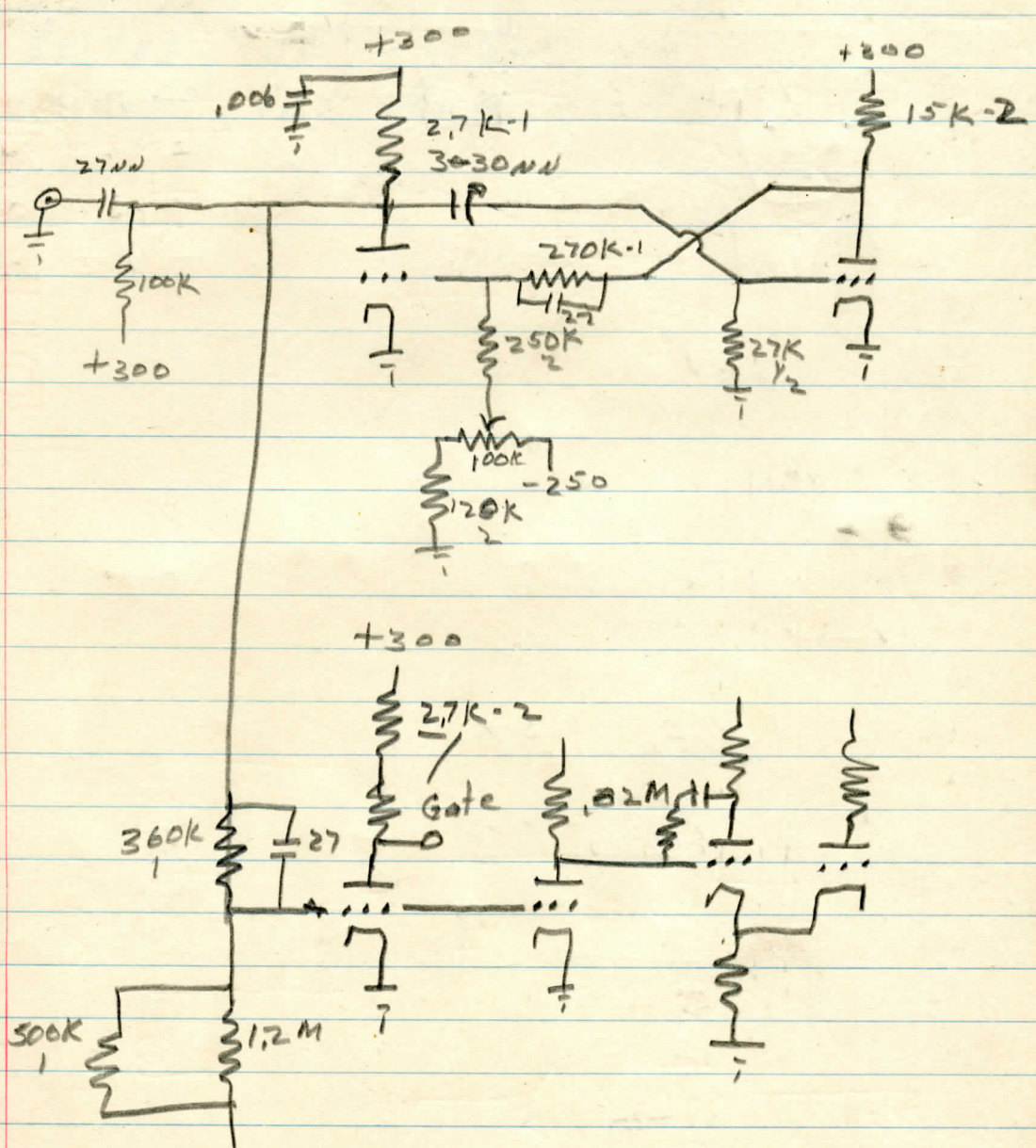
#23 " " " 1 " " " " "

#24 Video grid 1 " " " " "

#25 ~~—~~ " Pl 1 " " " " "

~~Remove~~

Left only V-615 & V-614
in R computer



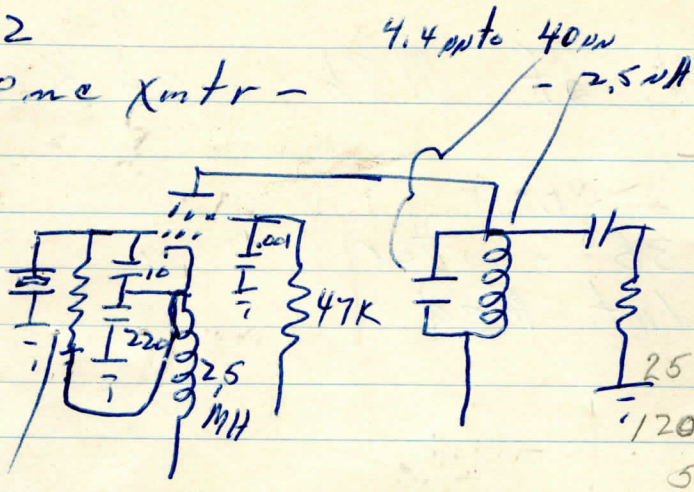
8/1/54

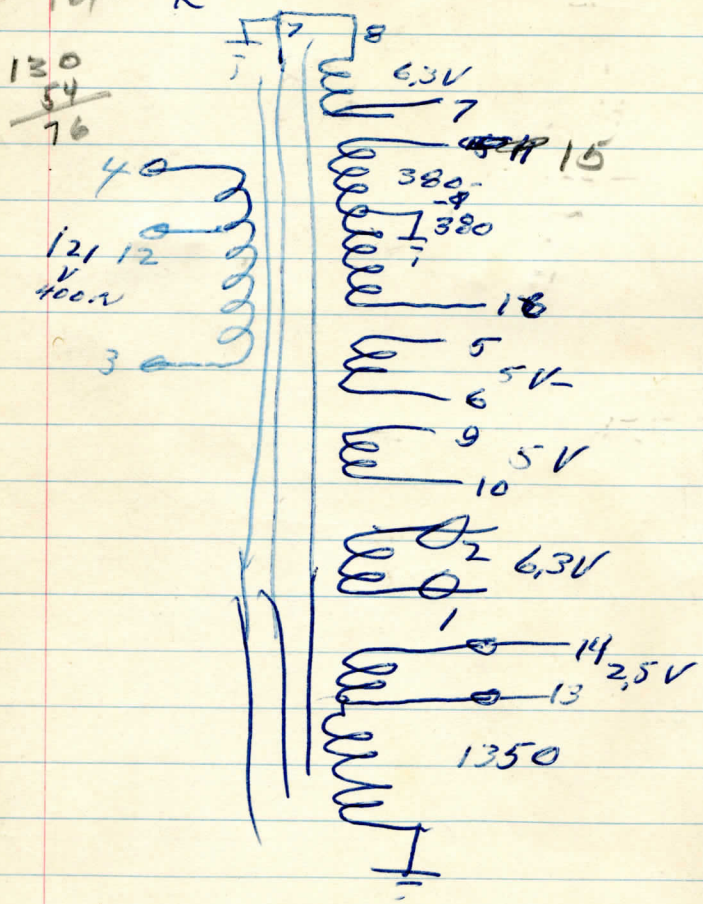
Test flt. of M26 Tank BBG

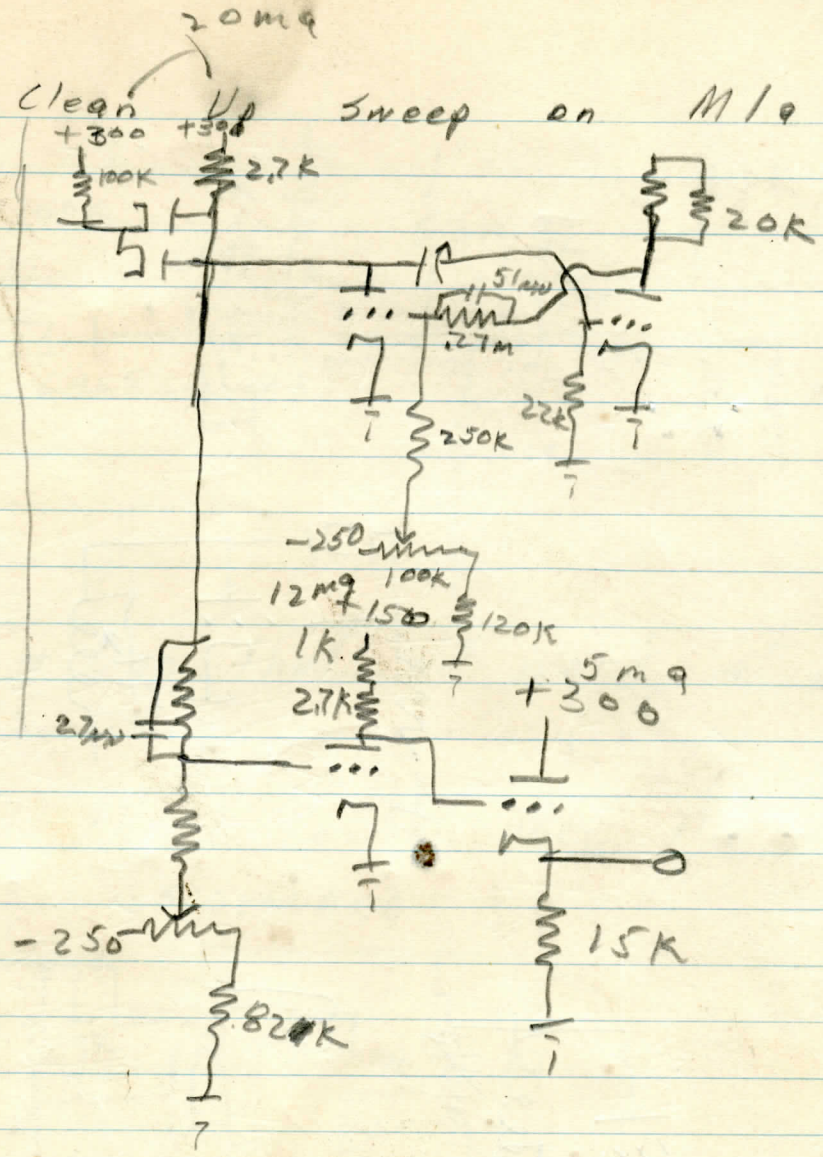
F-11 Cl. A
20 fps 36° shutter
Scope Int Med

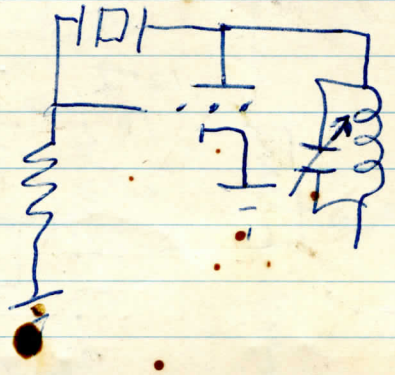
B-2

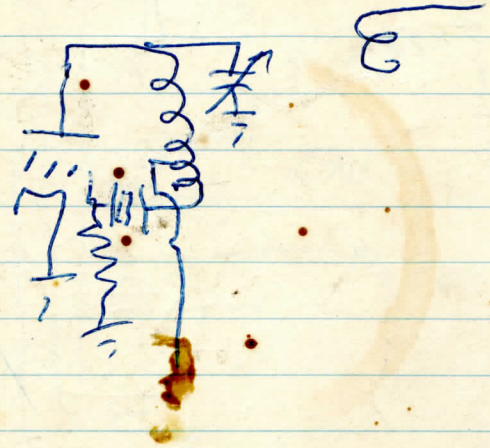
30 mc Xmtr -

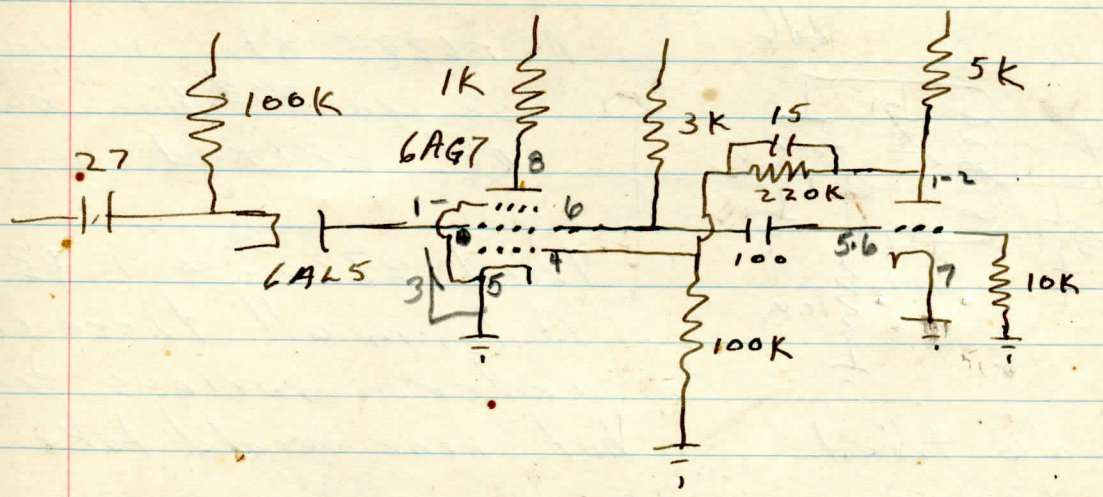

4.4 mh to 40 mh
- 2,5 mh
.001
10
220
2,5 mh
.001
47K
100K


7
8
6,3V
7
15
380
380
16
5
5V
6
9
5V
10
2
6,3V
1
14
2,5V
13
1350
4
12
3


20mg
Clean Up Sweep on M/g RO
+300
+300
100K
2.7K
20K
51 mw
.27M
250K
22K
-250
12mg
100K
+150
120K
1K
27K
5mg
+300
22mw
-250
820K
15K



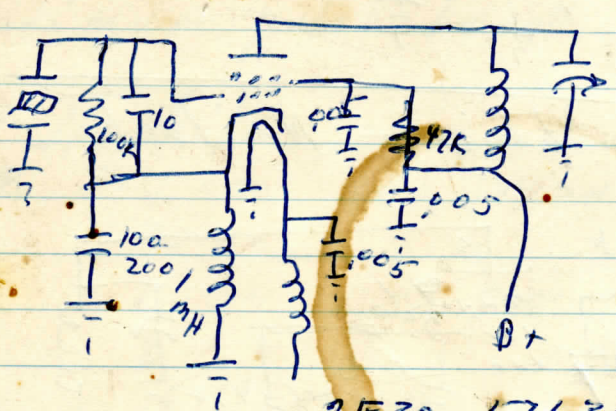




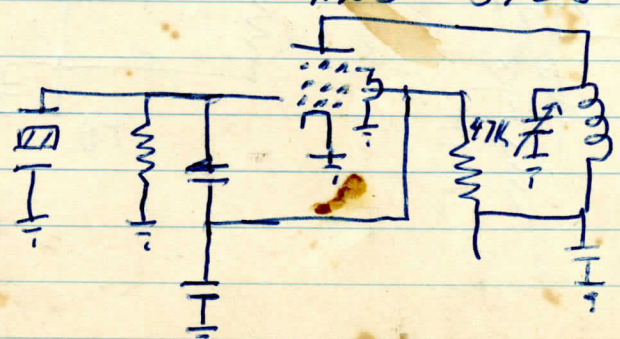
Build a Osc that will work at 27.25

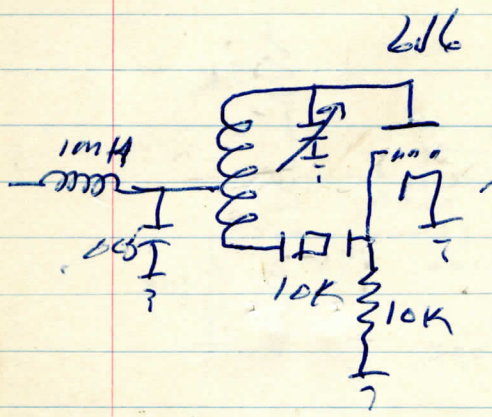
Tried the following ckts W/o luck

5763 & 6AK6



2E30-5763-6AK6

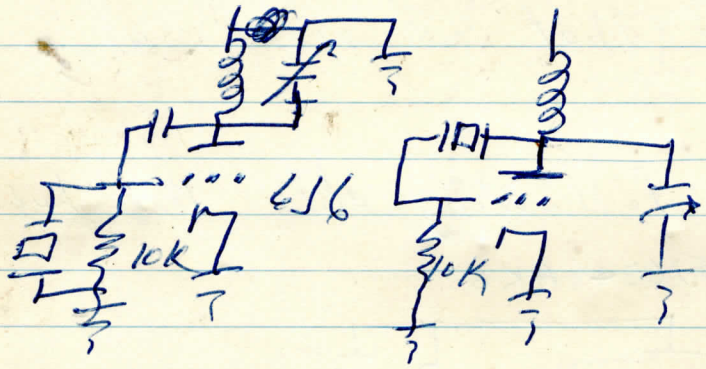




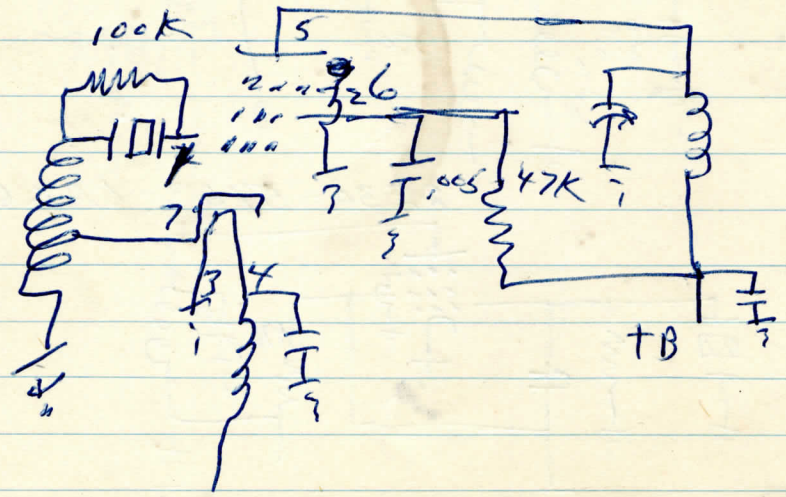
A 13627.5 X'tal would osc on 3rd Har but not second

Tried 27.255 & 13627.5 X'tals, in all these ckts under various conditions but none would take off

also tried these

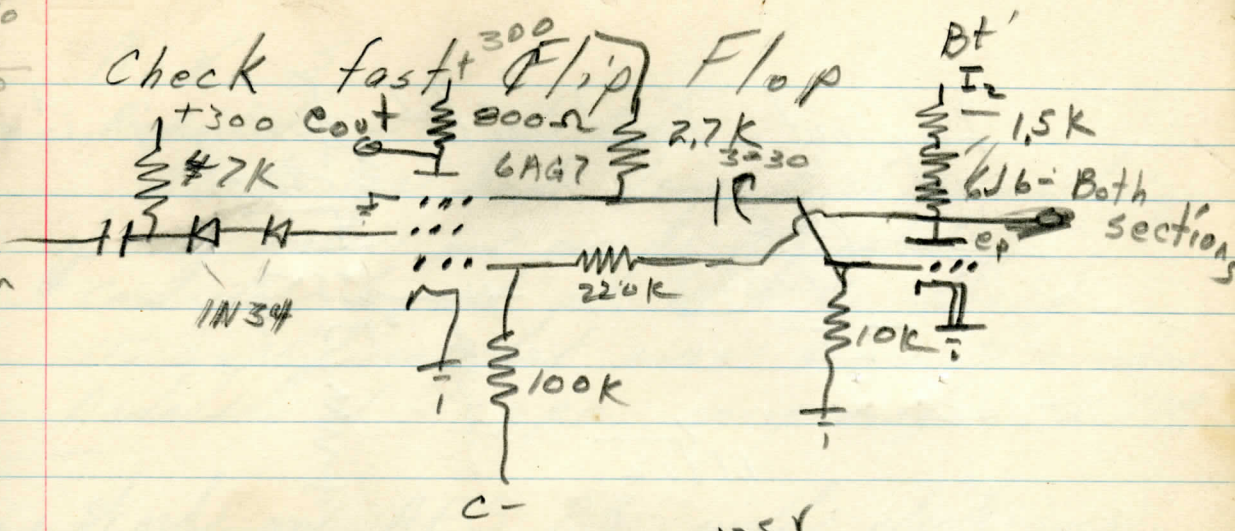


Try this — No luck



490
.025
245 0
980
1225 0

Check fast flip flop



Good Ckt. $e_p = 125$ V

with B+' = 300 I_2 is 40 ma

" " = 150 I_2 " 17 "

Current drawn by 300 V is negl. ≈ 1 ma.

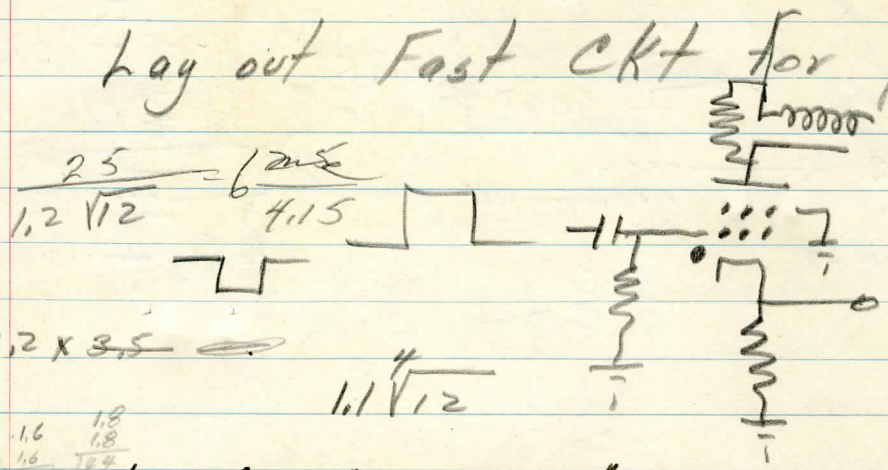
Minimum pulse length ≈ .3 μsec

1.25
.020
2.5

Roll II film — pulse out ? B+' = 300V

#0	f-8	T-1 sec	swp	100 nsec/cm	V = 115V	Ch
#1	"	2 "	"	"	V =	
#2	"	1 "	"	200 "	V = 100 V	B+ = 150V
#3	"	2 "	"	"	"	"
#4	"	1 "	"	100 "	"	"
#5	"	2 "	"	100 "	"	"

Lay out Fast CKt for pip Gen—



$\frac{25}{1,2\sqrt{12}} = \frac{6}{4,15}$

$= 1,2 \times 3,5$

$1,1\sqrt[4]{12}$

1,6 1,8
2 1,6 1,4
4 96
2 1,6
256 1,8
256
32 1,8
5,80 1,1
1,8
1,8
4,4 1,8
58
10,44

Work to be done

Build 20 KV hi volt supply

" low "

Nov 3

Reported in & started.

Electronics had done little or nothing of any value on work requested.

Contacted Garret at R & C about I.F. amplifiers that were a month overdue.

Ordered 1 scope comp. of SCR 718

---

1. Run test on horn antenna

2. Work on APS 23 with electronics.

Observe + photograph waveforms as follows:

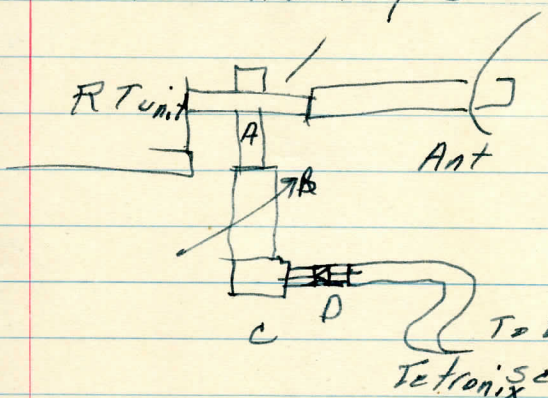
R.F. envelope and spectrum.

Magy voltage and current.

Pulses from detectors

RF envelope Mag Current + Volt Pulses

R.F. envelope



Wouldn't work bad Adapt (C)

A directional coupler 20db loss Sperry #235

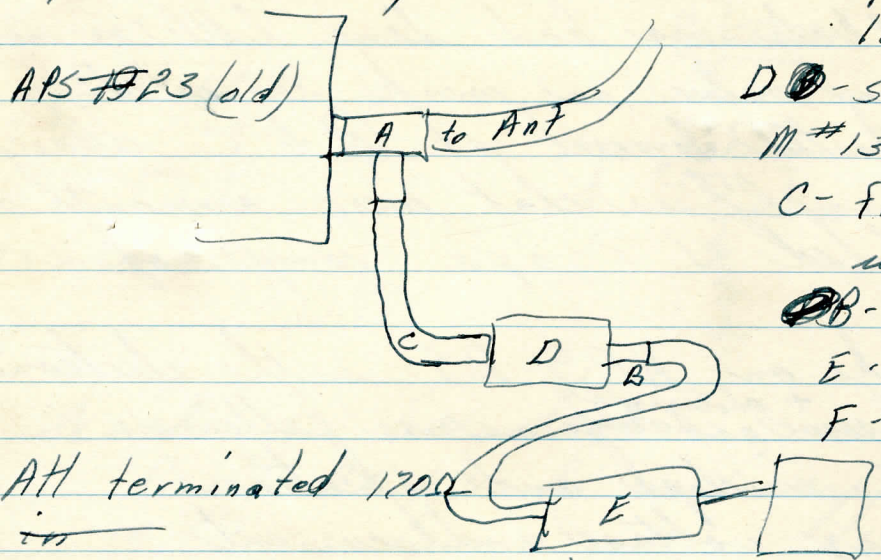
B - Var Att. Sperry ~~Dot~~ 134

C - Waveguide to coax adpt. Sperry 167 A

D - detector coax with 1N23 x tal.

K L M M9 N O P Q R S T U V W X Y Z

RF envelope



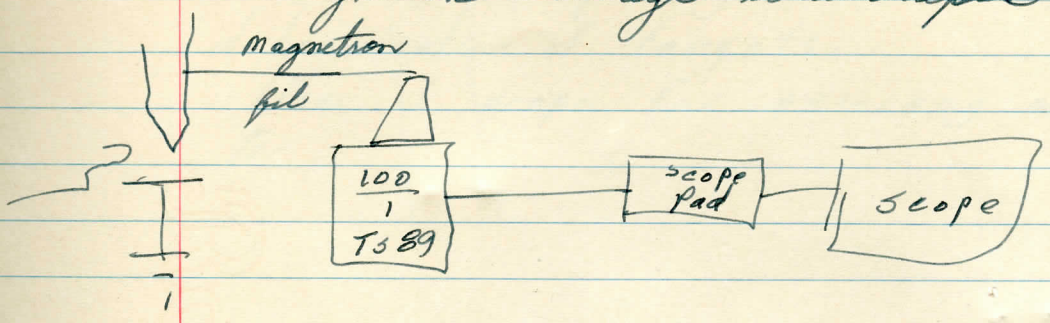
A- Sperry T 165 A
D - Sperry AH M #134 A
C - flex X band waveguide
B - coax detector
E - Tetronix AH
F - " scope

Scope AH terminated 1200Ω

RF spectrum

	.25 μsec/cm	R.F. AH	Vid. AH
Exp 0 -	"	45 db	23 db
Volt across fil of 1 -	"	"	"
Mag 2 -	"		58 db
3 -	"		"

Magnetron voltage waveshapes



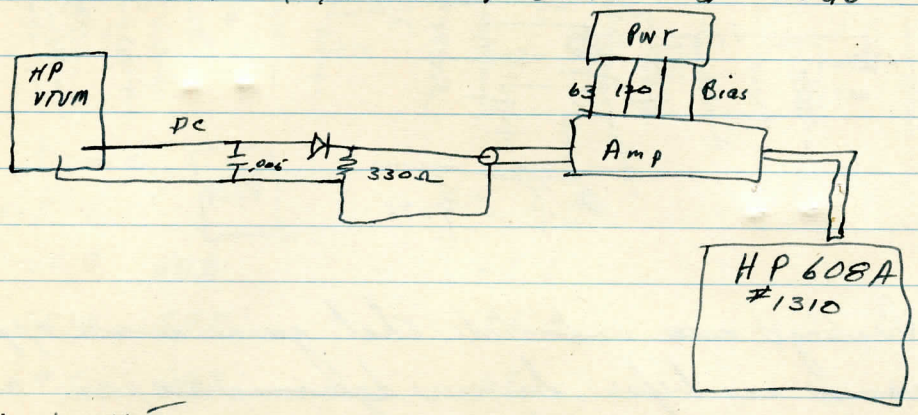
Problem: Simple yet accurate range determination of targets.

Use J scope for accuracy and delayed trigger to

$db = 20 \log \frac{V_1}{V_2} = 20 \log 10^4$

Nov 20 '54 Test I.F. strips—

50Ω in & out — B=10 mc f=60 m G=80db—



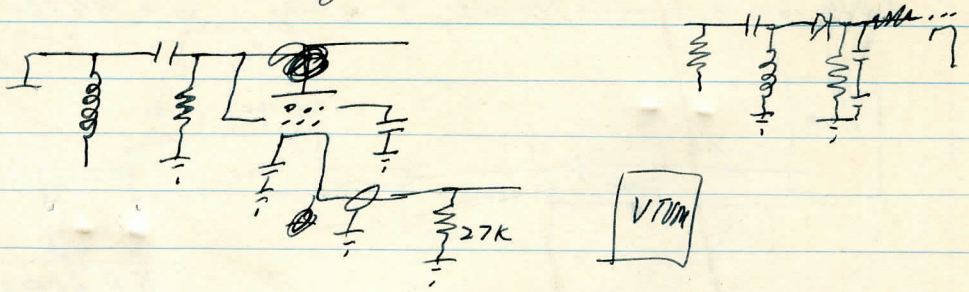
Unit #4—

Oscillates under all conditions

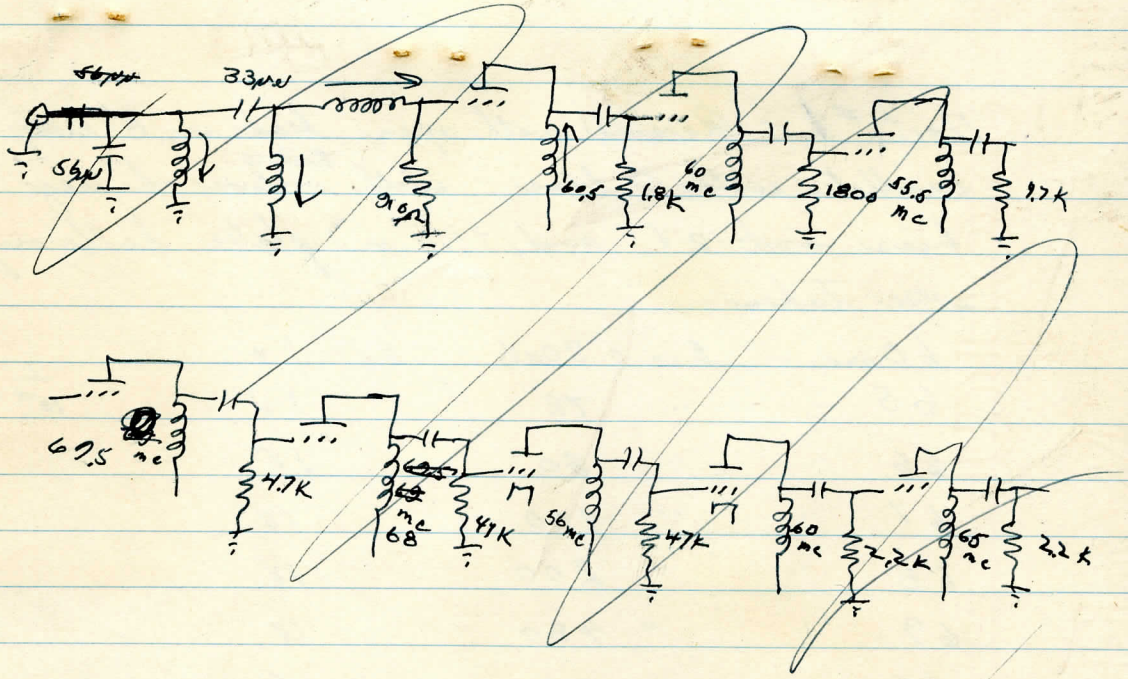
Unit #2 — Received with open lead in B+ liner Oscillates with 0 bias — with high values of neg bias ~~and~~ -2 V and +110 on plates following were taken

60 mc —	Ein — 90μV	Eo — 1 v	
65 "	" 72	" 1 V	$\frac{1}{10^{-4}} = 10^4$
66 "	" 80	1V	
67 "	" 100	1V	
68 "	" 200	1V	
69 "	" 480	1V	
55 "	" 95	" 1V	
54 "	" 89	1V	
53 "	" 260	1V	
52 "	" 1000	1V	

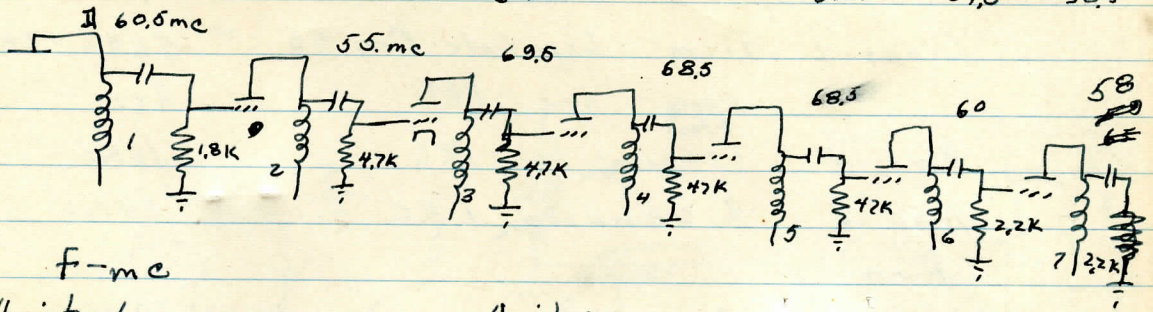
Modified last stage of I as follows —



Readings ~~were~~ indicated that gain was approximately same as before, however ~~dynamic respon~~ amplitude range was much greater



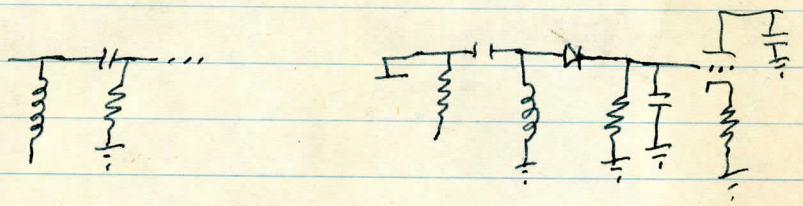
		55.5	69.3	68.5	56.	60	65.5
II	61–						
I	60.5	56	67.5	68.0	56.0	64.5	58.5



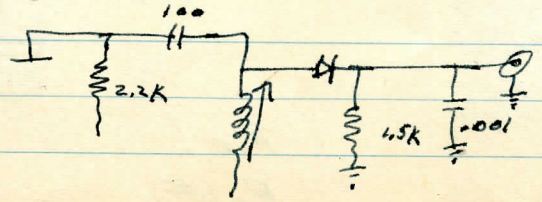
F-mc

Stage	Unit I		Unit II
1	61.0	60.8	63.2
2	55.5	55.7	56.0
3	69.5	69.3	67.3
4	68.5	68.3	68.0
5	56.1	56.0	55.7
6	60.0	59.7	65.0
7	65.2	65.3	58.3

Detector CKt –



When Strip was modified as follows it's performance seemed unaffected — Still oscillates with less than -3 v. bias — Amp is not flat but has three peaks-

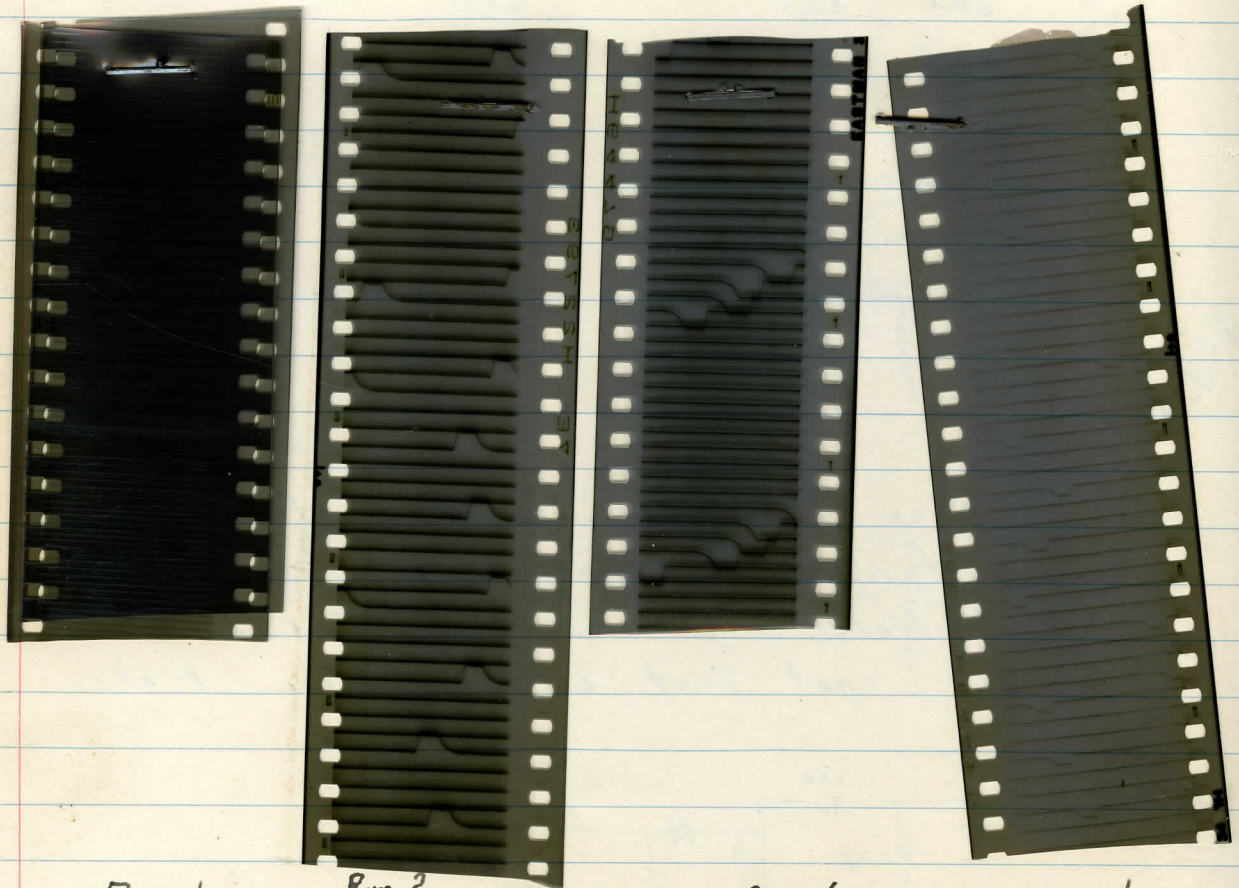


Nov21 – Test Exposure Necc. with 5XP-11 tube usin Tetronix 217 scope
Class L film Exp. Date Dec 55 # 5232-383-1

		Sweep Speed	PRF	Acc	F
Roll 1	Run 1	250 mμsec/cm	1KC	12KV	1.5
	Run 2	200 mμsec/cm	1KC	24KV	1.5
Roll 2	Run 1	"	"	"	1.5
	Run	250 mμsec/cm	"	12KV	1.5

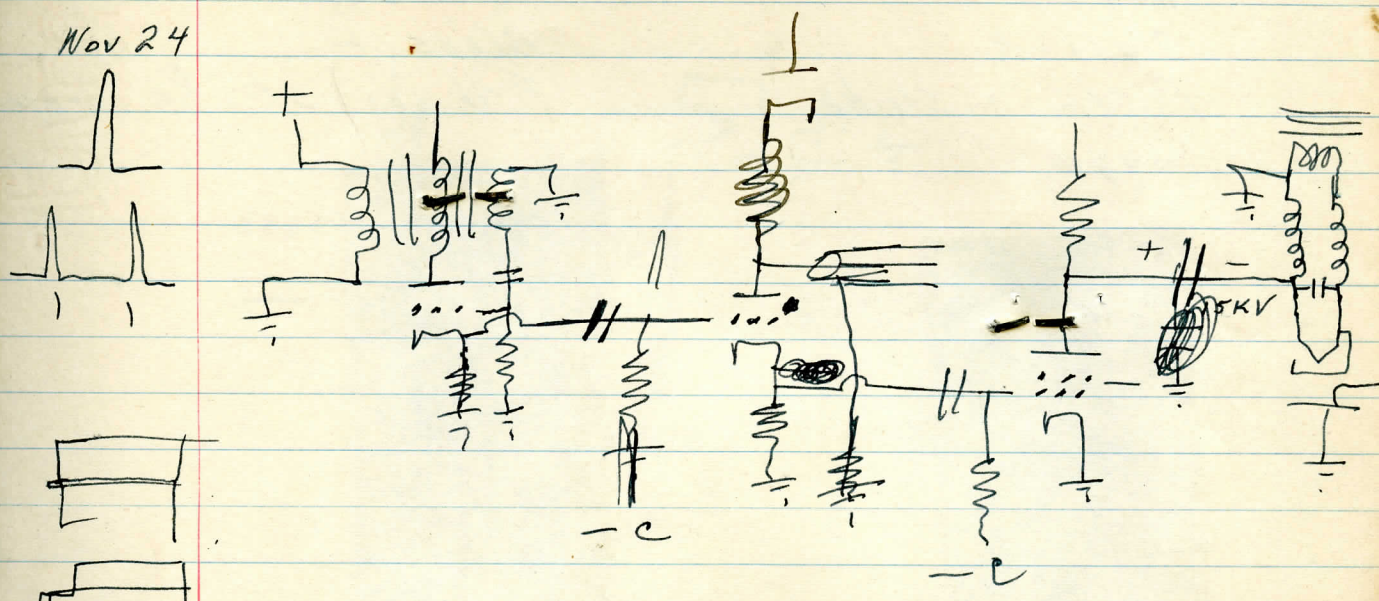
Turned inten. up to max – ie. until spot appeared ~~at left~~ placed pulse at 10KC Rep Rate on trace & adj. to 1 cm

Roll 1	Run 1	250 mμs/cm	1K	Jammed camera	12KV	1.5
	" 2	200 "	"		24 "	1.5



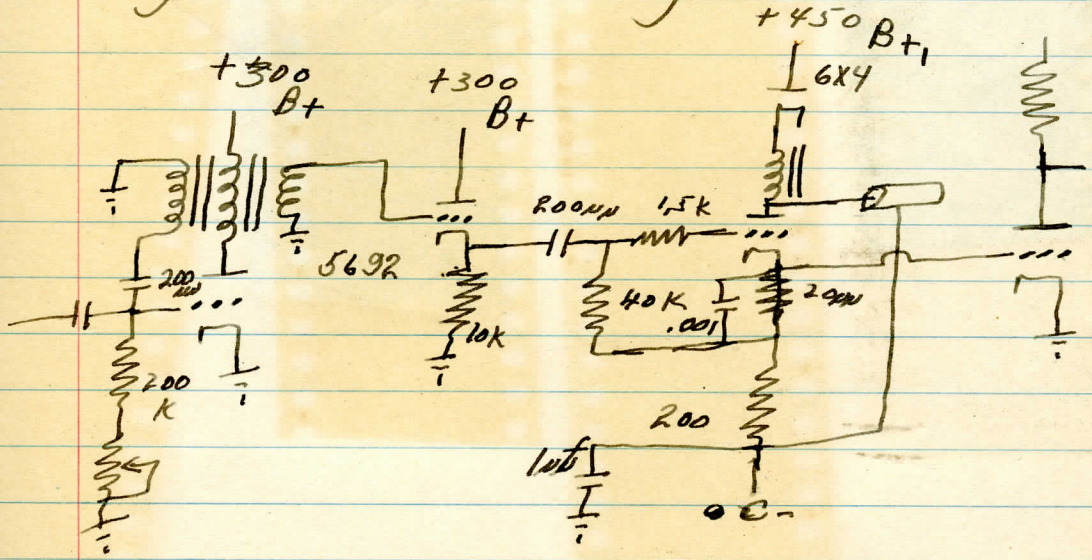
Run 1 Roll #1 | Run 2 Roll #1 | Run 1 Roll #1 | Run 1 Roll #2

Nov 24

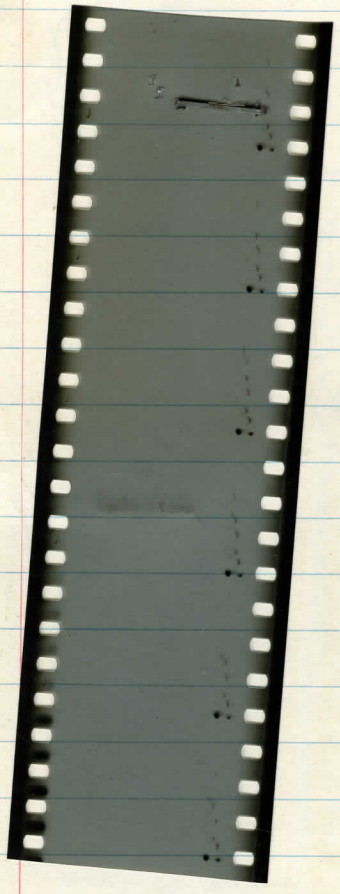


Laid out above CKt with 2C23 (Hg) but deionization time defeated it.

Try the following—

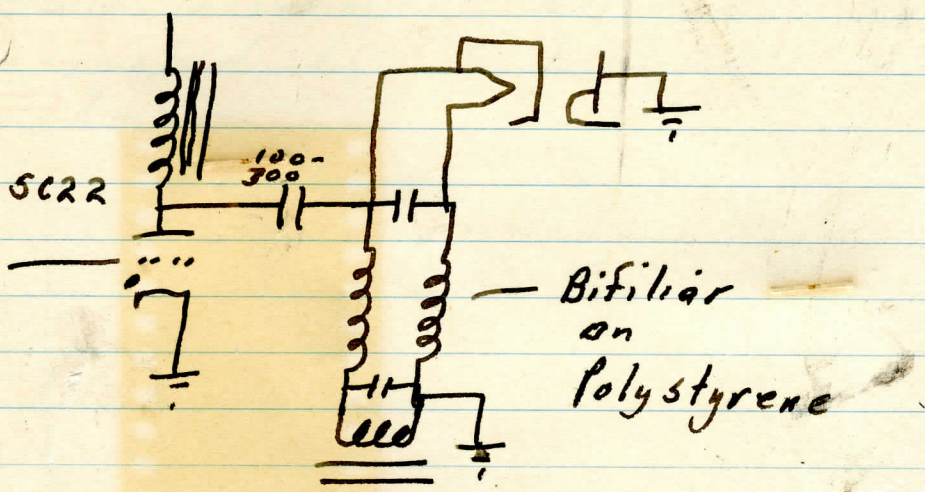


Mod II b FEI
Class K
F-16 on Strike
Image



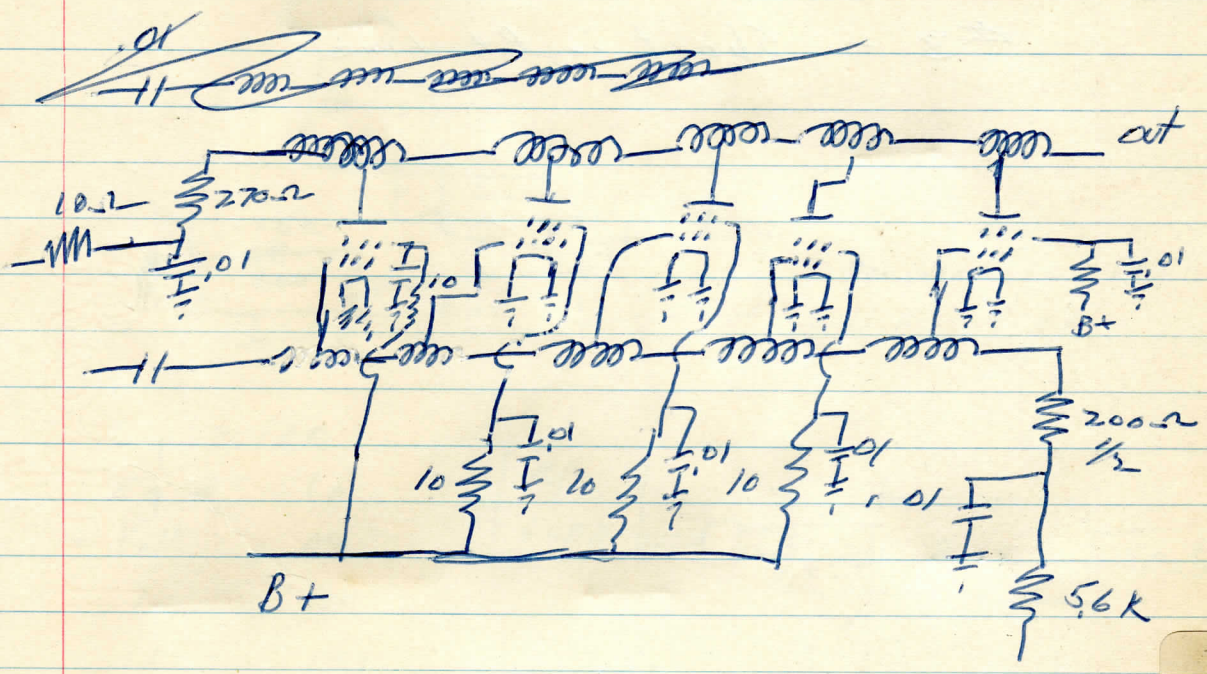
Mod II b FEI
Class L
F-16 on Strike Imag

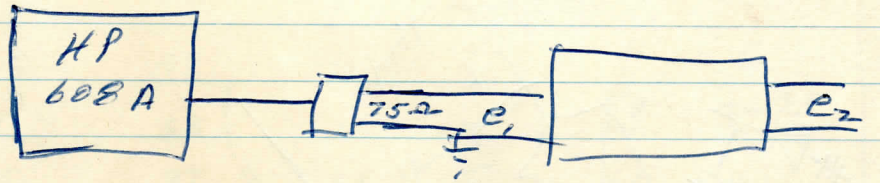
Try this Ckt-



1/6/55 Build blocking osc which can be synched to .8 to 1 KC — & to 2 mc —

1/6/15 Test of distributed Amps-





#1

@ -2.35 V & B+118 I_p = 82 ma.

$G = \frac{e_2}{e_1} = \frac{7.3}{.5} = 14$ @ 10.5 mc

@ -1.5 V V B+118 I_p = 130 mA

e_{in} $G = \frac{8.6}{.5} = 17$ @ 105 mc $\frac{5.6}{5} = 11$

range @ 50 mc $\frac{80}{5} = 16$ 75 mc $\frac{78}{5} = 15$

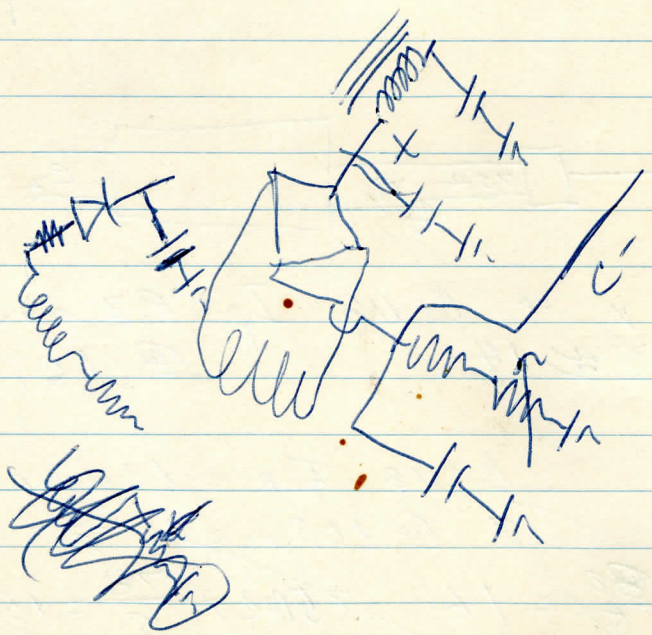
85 mc $\frac{76}{5} = 15$ 95 mc $\frac{65}{5} = 13$

120 mc $\frac{65}{5} = 13$ 130 mc

#2 @ ~~1.2V~~ 2.8 B+ ~~12~~

Gain looked OK @ 100 mc

#3 – Short in B+ line

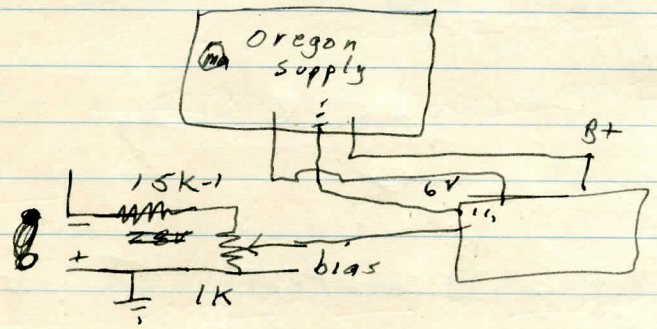


Run complete test on amps — unit # 1

Max on 6AK5 = 18 ma for strip of 12 tubes

18
12
36
18
216

12 × 18 = 216 ma —



900

Measured V_s with HP 410A

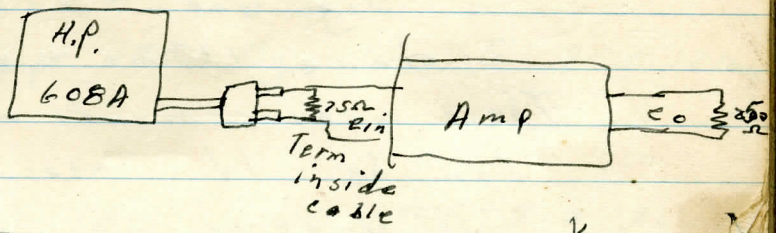
$E_p = 120$

E_g Volt	I_p Ma
1	195
1.5	159
2	121
2.5	92
3	65
3.5	47
4.0	30
4.5	20

$E_g = 1.5$ K

E_p V	I_p Ma
90	76
100	95
105	105
110	112
115	122
120	132

E_p	I_p
125	145
130	
153	



F mc	e_{in} V	e_o V	G
10	.5	4.7 ~~to 20~~	~~to~~ 9.4
25	.5	4.6	8.1
50	.5	4.1	8.02
75	.5	4.6	8.12
100	.5	3.8	7.6
112.5	.5	3.8	7.6
125.0	.5	3.4	6.8
137.5	.5	2.4	4.8
146.	.5	2.5	5
150.	.5	2.5	5
155	.5	2.6	5.02
160	.5	2.5	

K

$e_g = -1.5$

$e_p = 120$

$I_p = 130$

K O P Q R S T U V W X Y Z

Unit #1

measuring devices off

f	e_{in}	e_o	G
mc	~~.5~~	~~3~~	~~6~~
165	.5	3	6
120	.5	3.6	7.2
125	.5	4	
180	.5		
190	.5		
200	.5		

~~Try scale on meter~~

Using scale on meter

Sig Gen + VTVM are inconsistent above 130 mc & below 20 mc

These measurements made using att on Gen as std - measurements ~~are obviously~~ subj. to error

e_g = k@.5V

f mc	e_o	G
30	4.3	8.6
50	4.5	9
95	4.2	~~8.8~~ 8.4
100	~~4.3~~ 3.9	~~8.6~~ 7.8
110	~~4.1~~ 3.7	~~8.8~~ 7.4
125	4.4	~~8.8~~ 3.5 7.
136	3.4	6.8
145	3.2	6.4
155	2.5	5.

Gain as f(ep)

f = 50mc

Gain as $\frac{e_o}{E_{in}}$ f E_p

E_p	G
90	5.6
100	6.8
110	~~7.8~~
120	~~8.~~ 9.2
130	10.4

e_g = -1.5 e_p = 130 I_p = 180

#2

E_p -120 I_p = 155 e_g = -1,5

G = 8 @ 100 mc

#3 E_p = 120 I_p = 158 e_g = -1,5 G = 9 @ 100mc

#4 E_p = 120 I_p = 150 e_g = -1,5 G = 8,7

#5 E_p = 120 - I_p = 180 e_g = -1,5 G = 9 @ 100mc

#6 E_p = 120 I_p = 180 e_g = -1,5 G = 9 @ 100mc

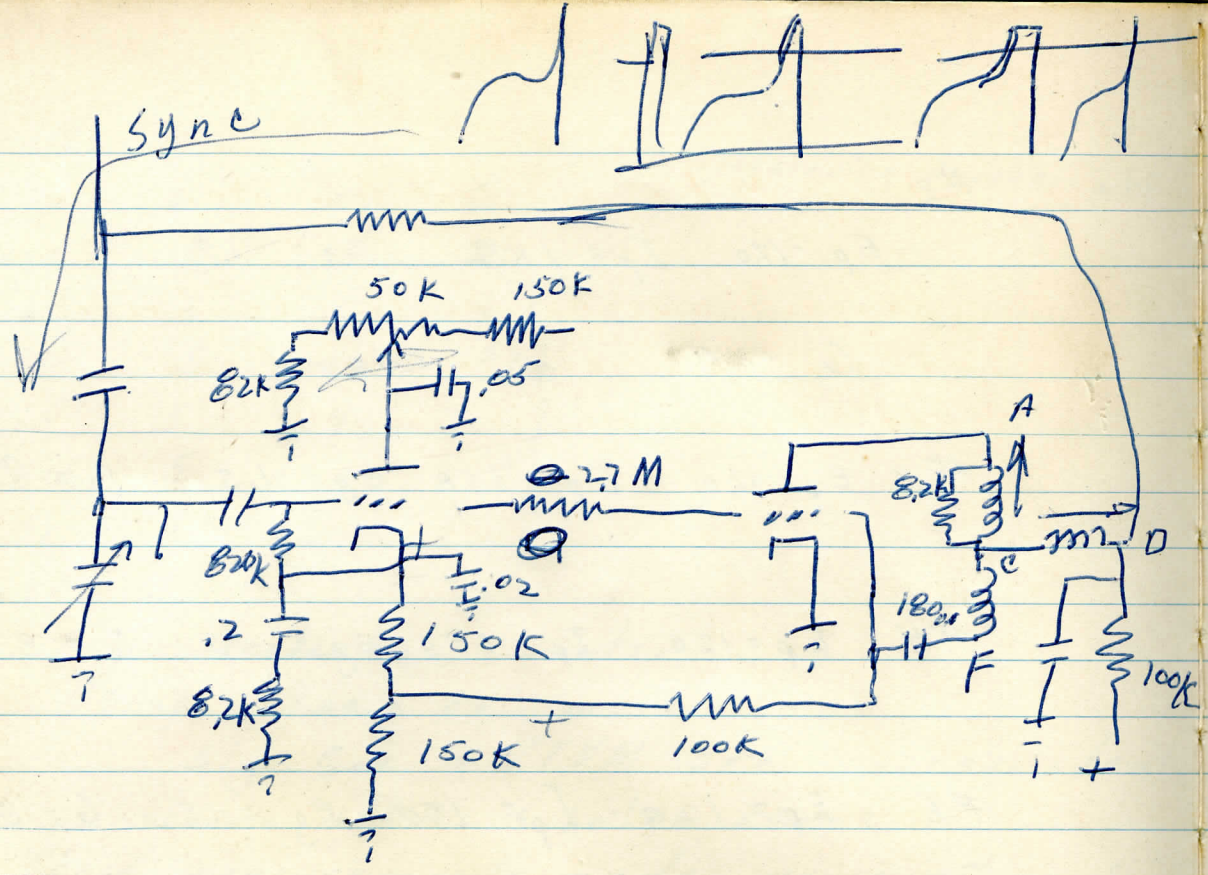
270
.02
5.40

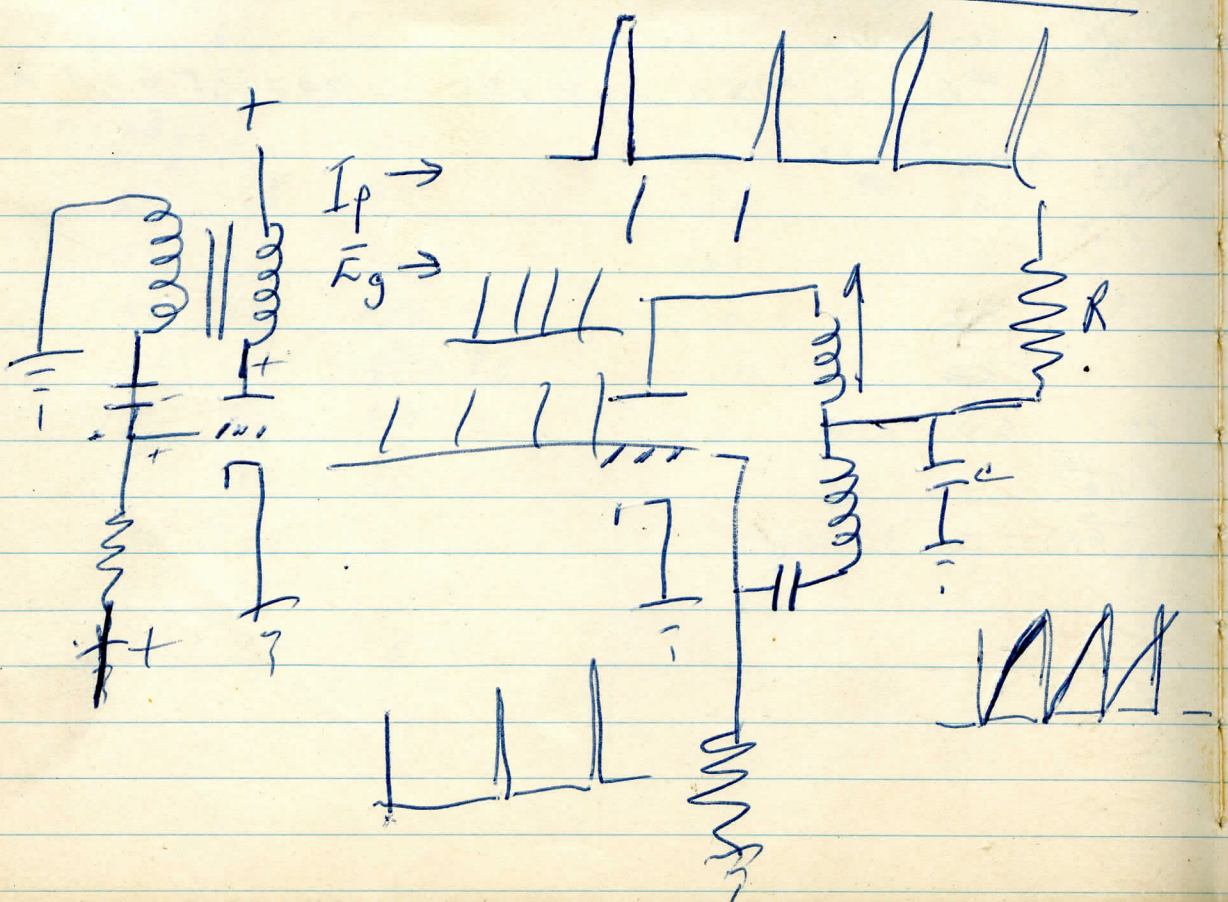
.14
.14
56
14
.0196

$P = I^2R$

39
12 | 15
12
60

180

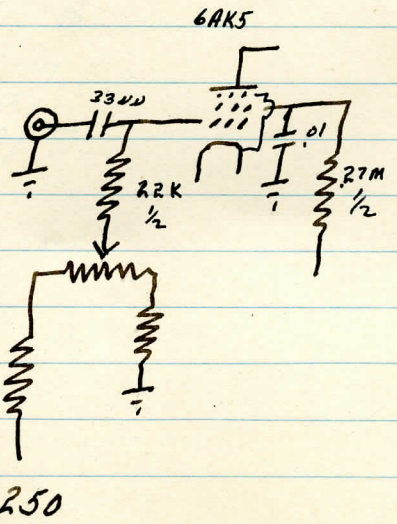

Sync
50K
150K
8.2K
.05
2.7 M
A
8.2K
B
.02
.2
150K
8.2K
180
F
100K
150K
100K


+
I_p →
E_g →
R
C

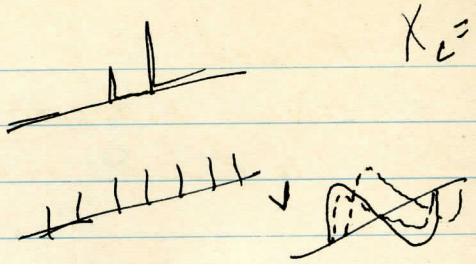
Set up M2b as test veh. for M3

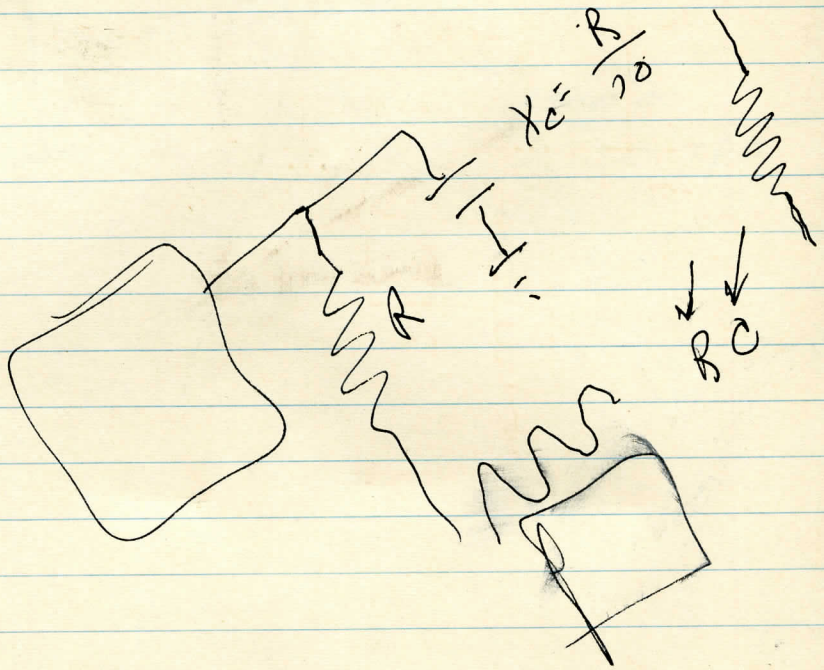
change sweep length to max of 35-40μs
and add gain control to Vamp.
Add Range MKs if possible—

Modification

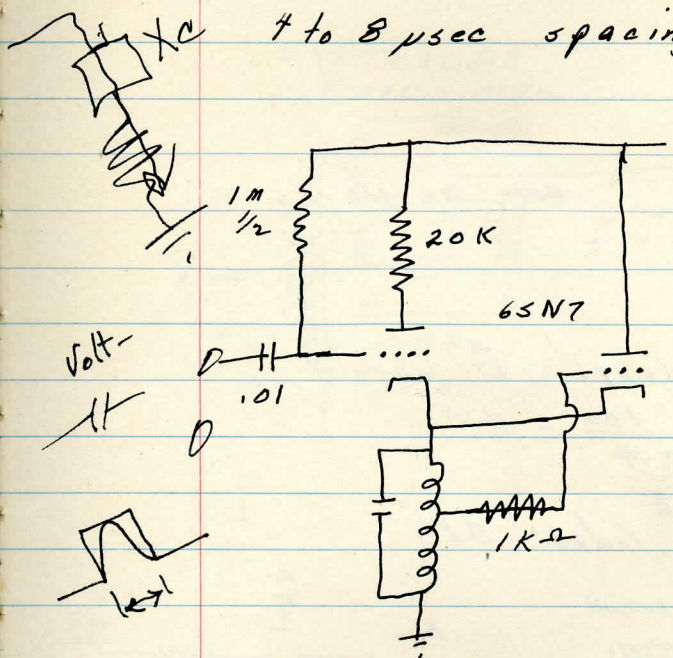


$X_C = \frac{1}{2\pi fC}$





Pulsed L/C oscillator to generate time fiducial for M3
4 to 8 μsec spacing



$$X_C = \frac{1}{2\pi \times 10^5 \times .01 \times 10^{-6}}$$

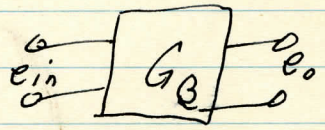
$$= 6.3 \times 10^{-1}$$

$$\frac{1}{.006} = 166\,\Omega$$

$$.006 \quad 1{,}000\,\Omega$$

Video Amp. for M-3

$\tau = \frac{1}{2} \times 10^{-6}$ sec e_o



-3JP- C.R. tube defl. ~~80~~ 90 - 120 v/in

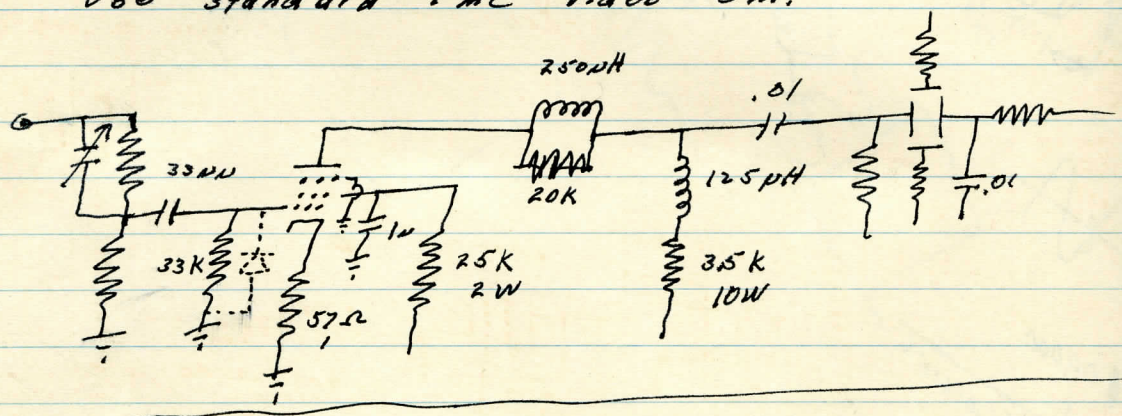
e_{in} – noise is 4V

assume same signal level G should

$$\frac{100}{4} = 25$$

$\frac{4 \times 10^4}{2.5 \times 10^4} =$

Use standard 6AG7 4mc Video Ckt.



$\frac{175}{175}$
$\frac{875}{175}$
262.5
$W = \frac{E^2}{R}$

$2.2 \times 1.5 \times 10^3 \times 45 \times 10^{-12}$

2.2×10

6×10^{-8}

$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$

$300 \overline{)5.00}$

$\frac{1}{R} = \frac{1}{100} + \frac{1}{150}$

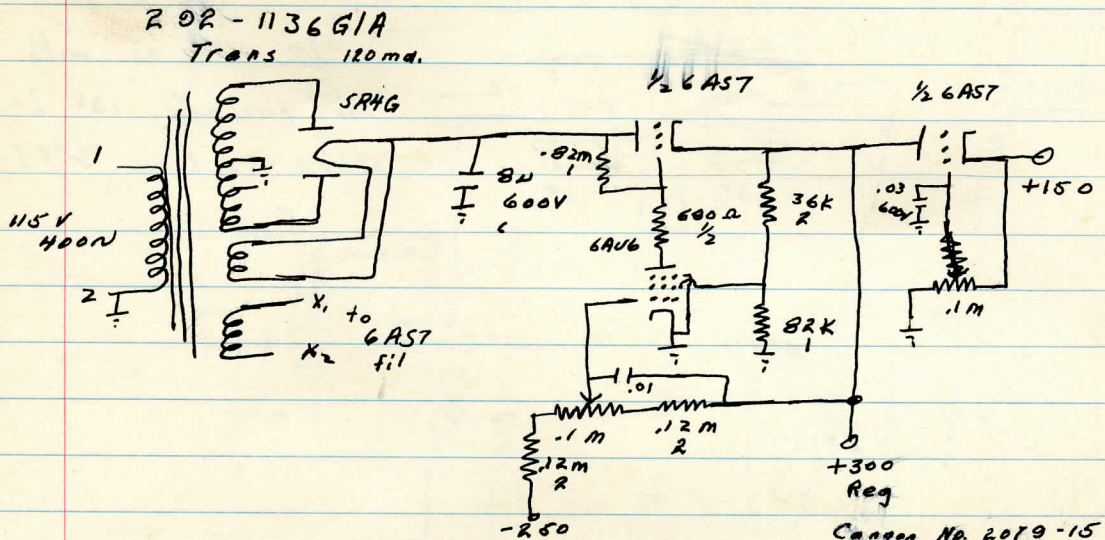
$\frac{1}{R} = \frac{3}{300} + \frac{2}{300}$

$5R = 300$

$R = 5 \overline{)300}$ 60

$\frac{1}{R} = \frac{5}{300}$

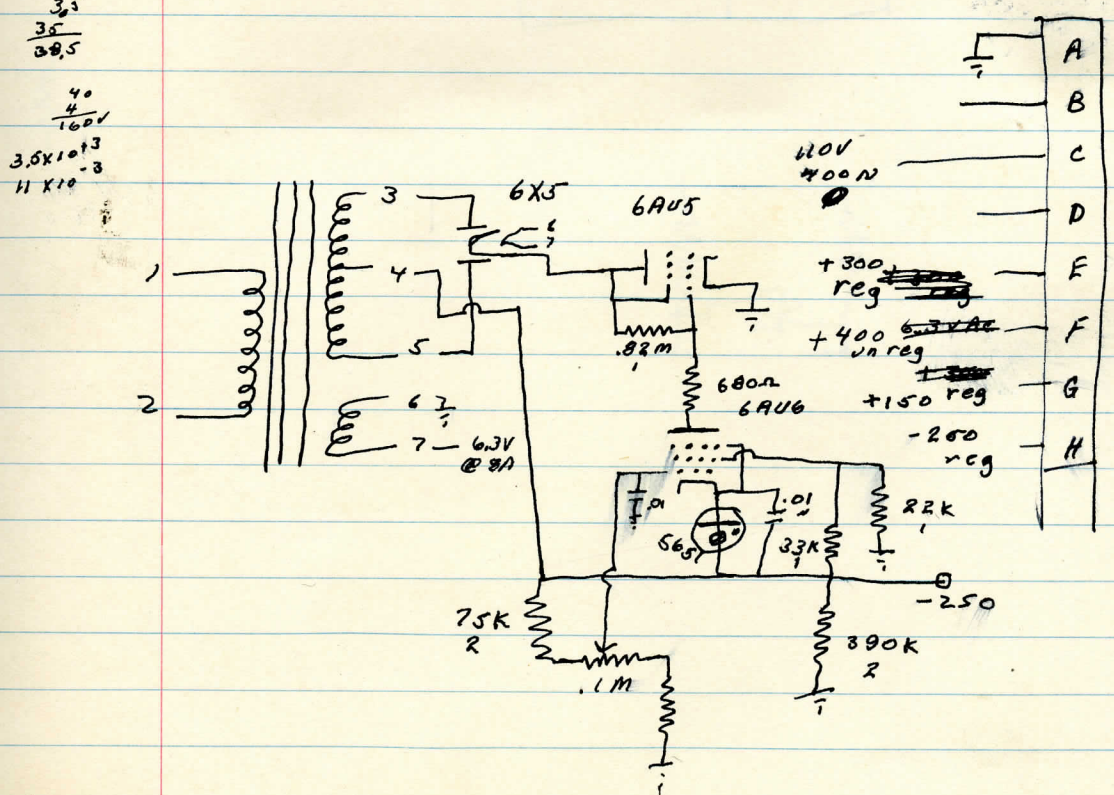
Power Supply for M1a + M3 Scopes



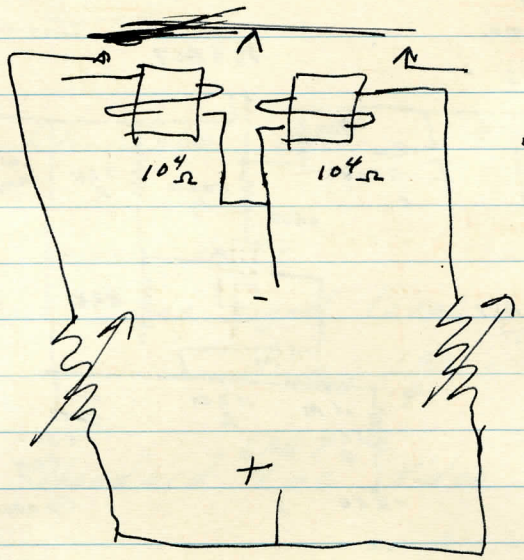
3.5
35
38.5

40
4
160V

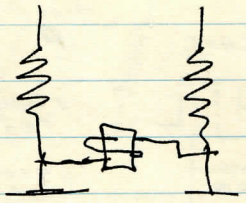
3.5x10+3
11 x10 -3



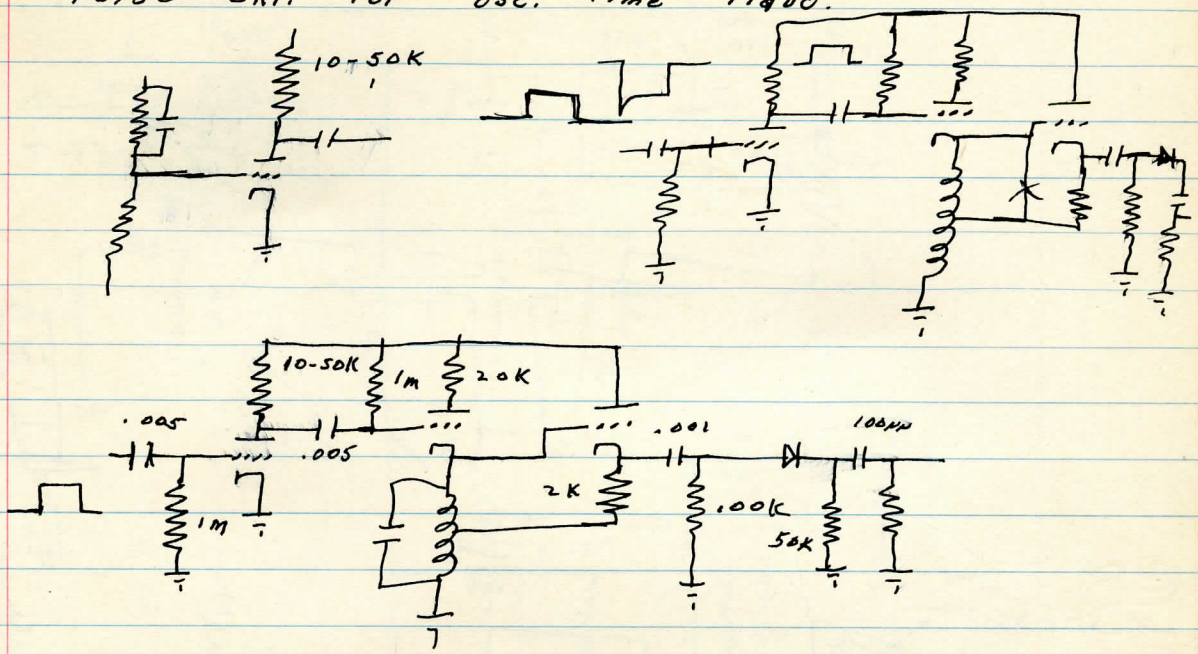
Differential Relay

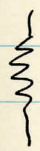


to pull in with
V in one coil 13V $I = \frac{13}{10^4} \times 1.3 ma$
other must be 4.4V $I = 4.4 ma$

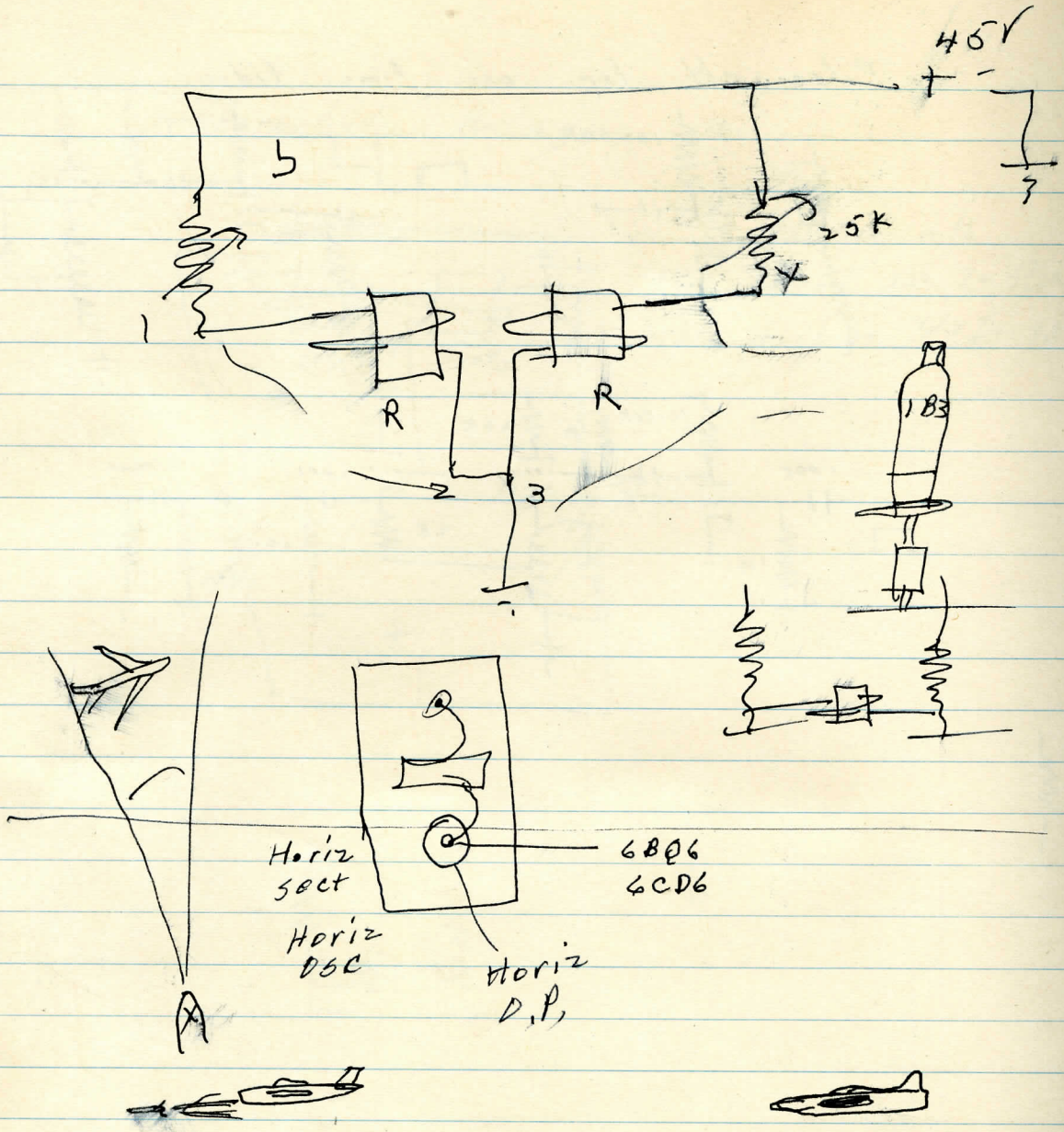


Pulse ckt. for osc. time fiduc.





Q
R
S
T
U
V
W
X
Y
Z



Hulcher

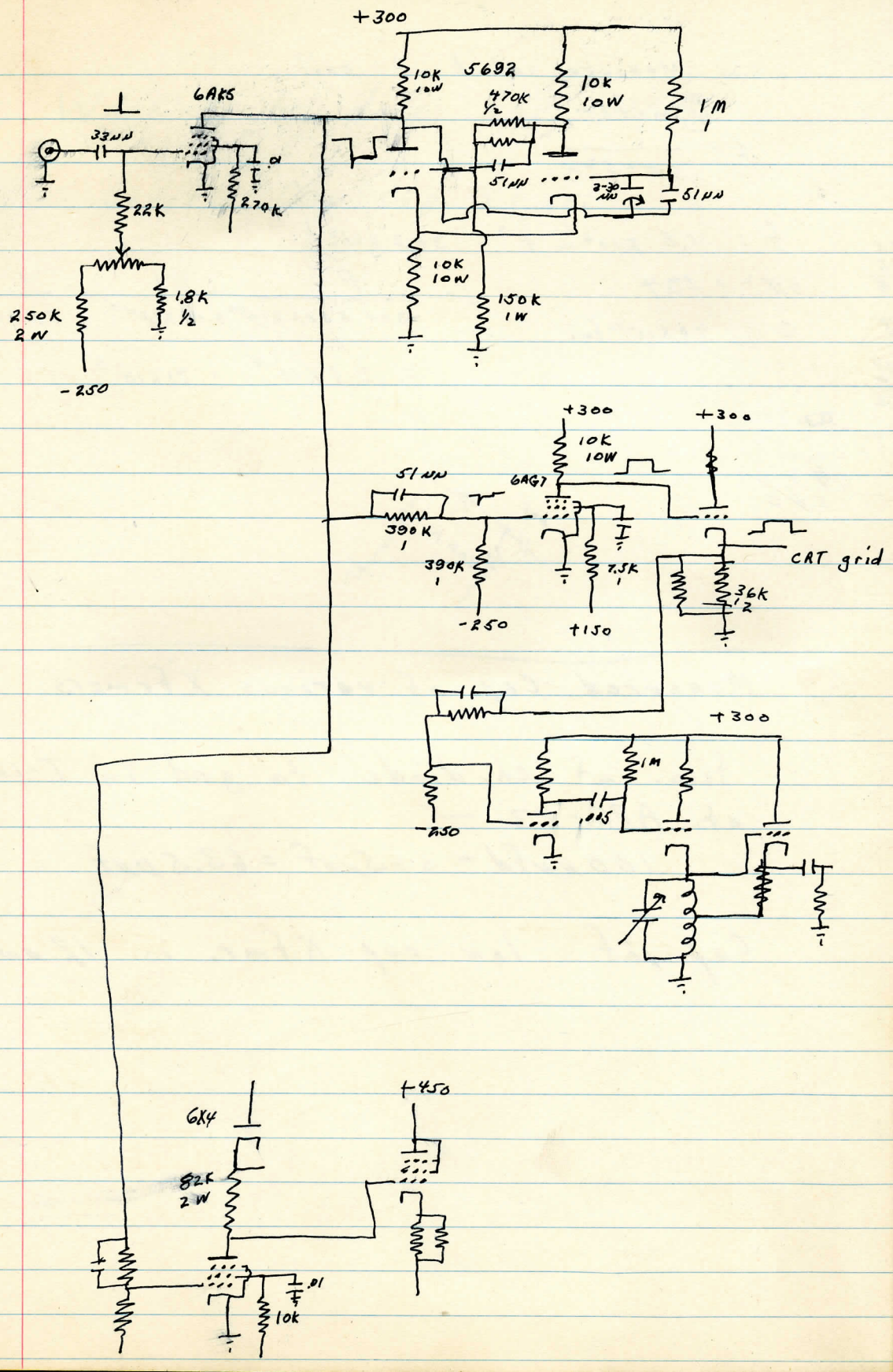
~~Hc~~ MIC

A'scope + G-40

1.3 mi

A6

$I = \frac{E^2}{R}$ $\sqrt{R} = F$ 25×10^4 5×10^2


+300
10K 10W
5692
470K
1/2
10K 10W
1M
6AK5
33MM
.01
22K
270K
51MM
2-30 MM
51MM
10K 10W
150K 1W
250K 2W
1.8K
1/2
-250
+300
+300
10K 10W
51MM
6AG7
390K
390K
-250
7.5K
+150
CRT grid
36K
1/2
+300
1M
.005
-250
6X4
+450
82K 2W
.01
10K
680Ω/150,000
.02

R S T U V W X Y Z

Measure induct of coil

$$L = \frac{1}{4\pi^2 f^2 C}$$

Q meter

$f = 5.5 \times 10^6 \sim f^2 = 30.2 \times 10^{12}$

$4\pi^2 = 39.4$

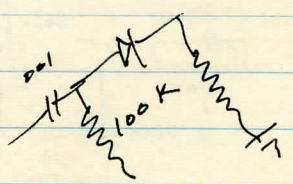
$C = 40 \times 10^{-12}$ far.

$$L = \frac{1}{39.4 \times 30.2 \times 10^{12} \times 40 \times 10^{-12}} = \frac{1}{3.94 \times 3.02 \times .4 \times 10^{8}}$$

$= .21 \times 10^{-4} = 21 \times 10^{-6}$

55
55
275
275
30.25

394
3
11.82
.4
4.72 | 1.0000
944
560



Measured cap of various X'frmers.

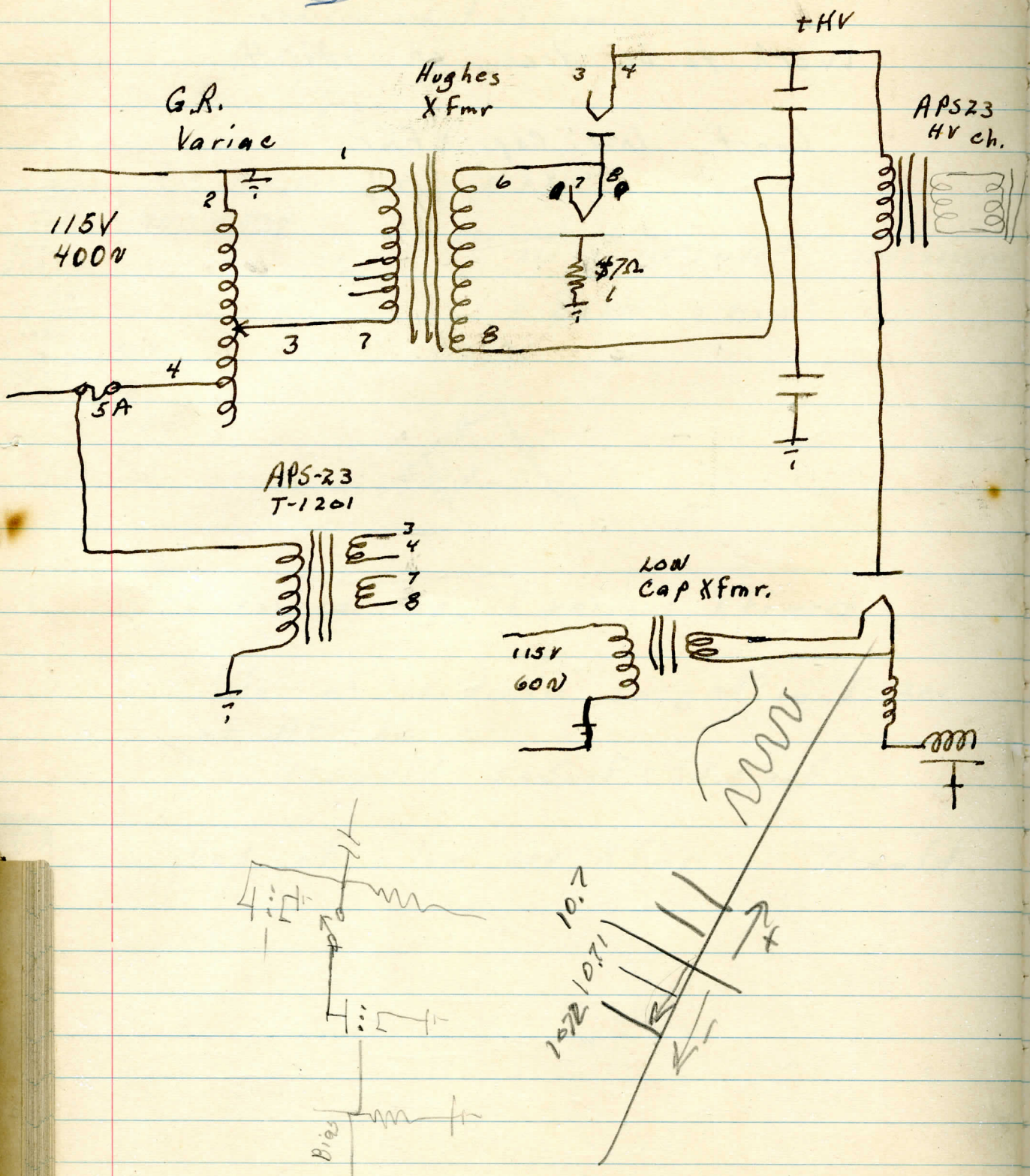
fils. of ch. diode to gnd in T-1201 of APS-23 —

100 mmfd - 36.5 mmf = 63.5 μμf

Cap of low cap X fmr. is 12 mmfd

Work to be done on M-4

Const. low Cap. X Fmr.


+HV
Hughes
X fmr
3
4
G.R.
Variac
1
2
115V
400N
6
7
8
$7Ω
3
7
8
4
5A
APS23
HV ch.
APS-23
T-1201
3
4
7
8
LOW
Cap X fmr.
115V
60N
10:1
10:1
10:1
Bias

M-3 set up — 1/26/55

35 μsec sweep —

adj all Volts -250 +300 +150

3.5
5
+75

Film assessment

A Run 1 — B.S. 3 mi — 8.5 div —

2 — B.S. — 2 mi — 6 div

3 — B.S. — 1 " — 3 div

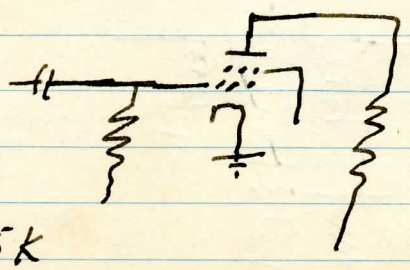
4 — shot at 1 mi. rocket faintly visible

5 — " " 2 " " undet

6 — " " 3 " " "

house
12
3.5
60
36
420

Work to be done on A scope
For Fri's mission.
Change Hi Volt XFmr.
Lower Amplification
Add - B.O. time Fiduc —



3.5K

Det need for peaking —

Decrease Amp by 1/3 — $\frac{3500}{3} = 1160$ ✓ 1200 ✓

$RT = 2.2\ R.C.$ $\quad R = 1.2 \times 10^2 \quad C = ?$

$R.T. = .25 \times 10^{-6}$

$.25 \times 10^{-6}\ sec = 2.2 \times 1.2 \times 10^3\ C$

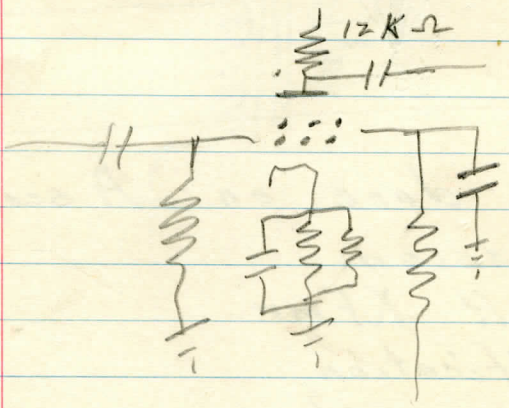
$C = \frac{.25 \times 10^{-6}}{2.6 \times 10^3} \approx .1 \times 10^{-8} = .1000 \times 10^{-12}$

$.1 \times 10^{-8} \times 10^3 = .1 \times 0$

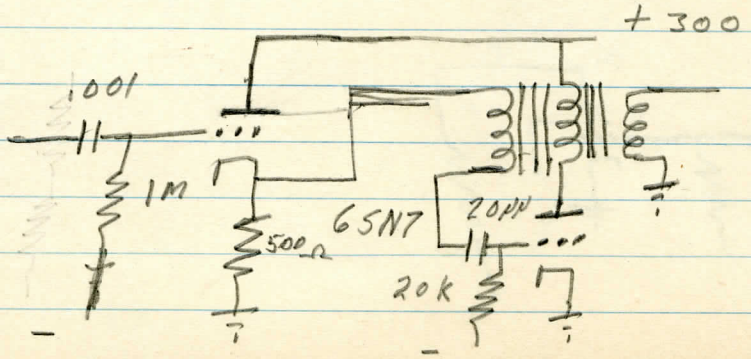
$\approx .1 \times 10^{-9} \approx 100$ $\quad .001 \times 10^{-6} \times 10^3$

$\approx .100 \times 10^{-12}$ $\quad = .1 \times 10^{-5} =$

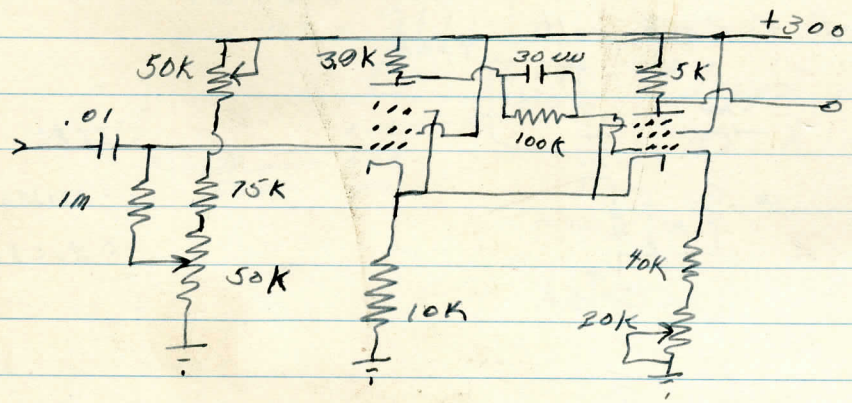
OK



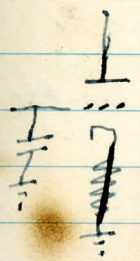
B.O.



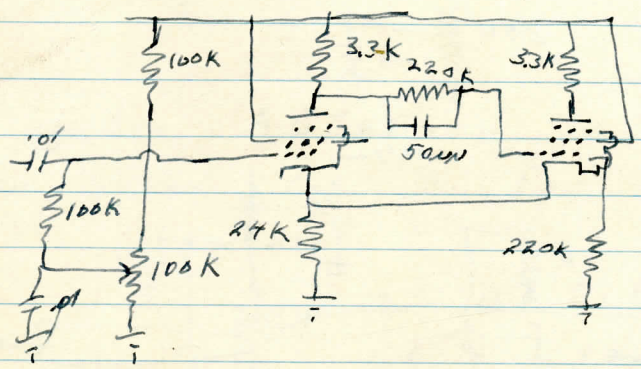
Examine limiting properties of ckts -
Try this discriminator

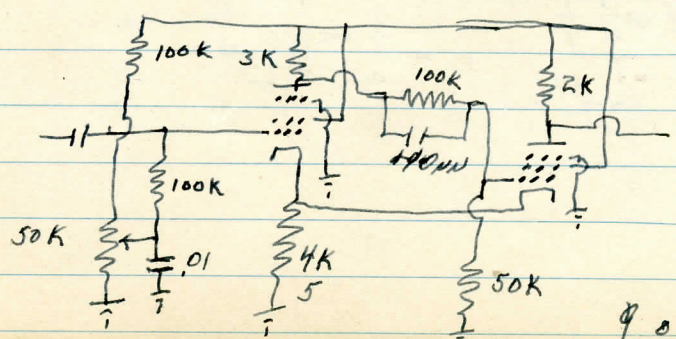


$\frac{9 \times 10^4}{150 \times 10^4}$



Circuit is tricky — has neg - undershoot - unstable
will not accept pulses less than 10 v Amp —
tends to go into a relatively long quasi-stable state
1 hr to try these ckts





Displayed about the same characteristics of the other
go to sat-Amps

S T U V W X Y Z

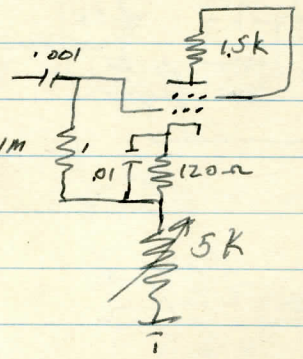
$g_m r_p = .005 \times \frac{500}{2500}$ $\frac{.005}{2,500}$

$5 \times 10^{-3} \times .5 \times$

9

6AK5 - grid or plate sat -

Input - 2 - 8 volts



15

3.3

2.5

165

66

825

2.2 RC

$= 2.2 \times 45 \times 10^{3} \times 2.5 \times 10^{-12}$

$= 8.25 \times 10^{-8} = .08 \mu sec$

Looks good - With low plate voltages it easily saturates

Gain works OK.

at 30 ~~V~~ B+ limits to 10 V out at +4 V in

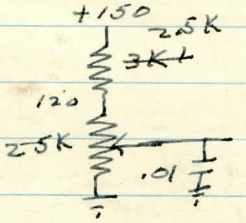
.01

120 @ 10 ma

E = IR

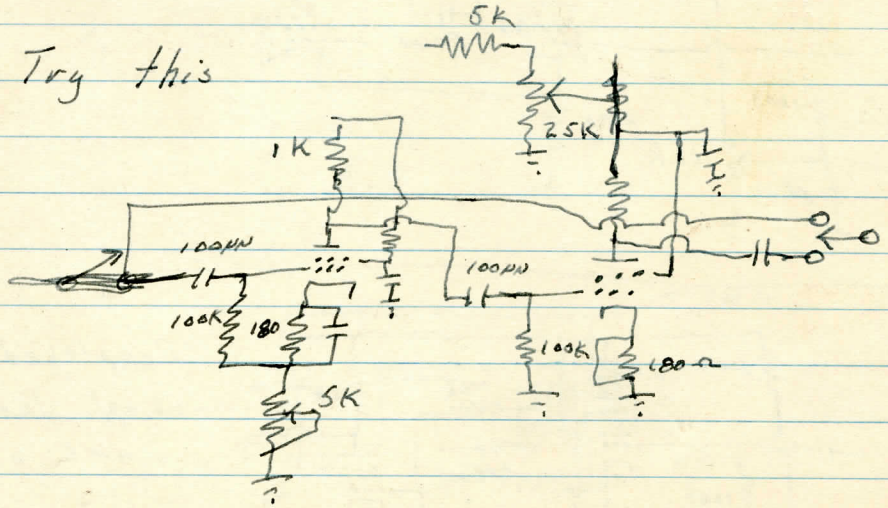
$\frac{30}{.01} = 3$

.01 30,00

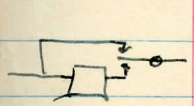


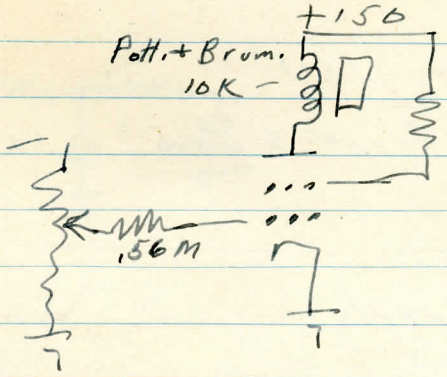
$\frac{2}{3 \times 10^{4}}$

Try this



Tried 6AK5 for relay tube to use in

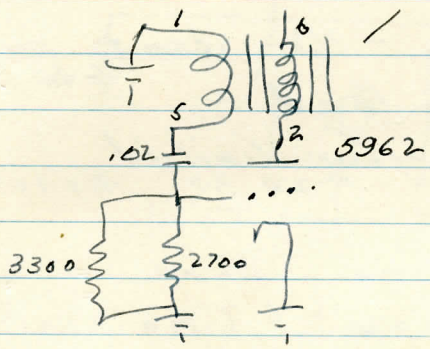




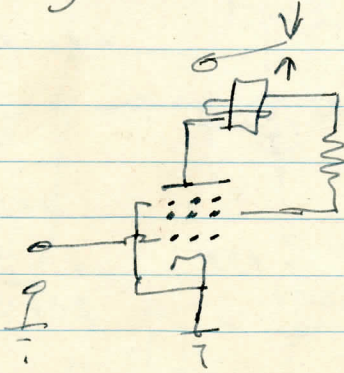
pulls in at -3.9 ~~-2.5~~ V
drops out at -2.6 V
Look O.K.

Try Pulsed Blocking Osc —

With C-81 osc xfmr pulses could be obtained as fast as -.25 μsec



System AGC bias is approx -1.5 for no signal to -8 for signal



$$\frac{.010 \times 10^{-3}}{.98 \times 10^{+9}} = 10 \times 10^{-6}$$

$$10^{+9} \times .1 \times 10^{-3} = .1 \times 10^{6}$$

2/5/55 Test H.V. Supply

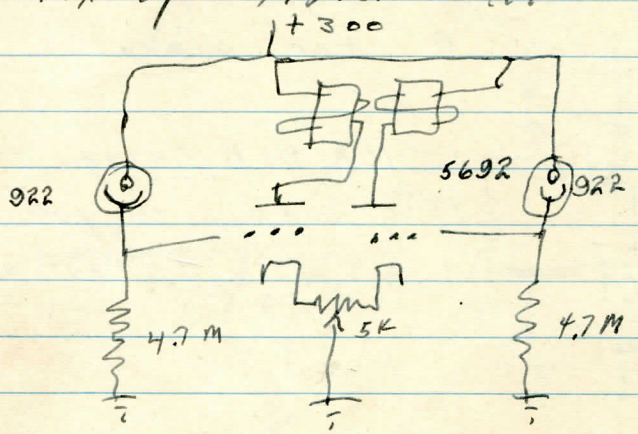
Hookup according to Tek-517 ckt & using their transformers

Some discrepancies in the measured values of + & - H.V. - - H.V. seems high may be caused by no load —

10KV adjustment seems limited

	10 KV	20 KV	No load on HV
-250 -			
-225 -	22 ma	22 ma	
+400 -	30 ma	67 ma	

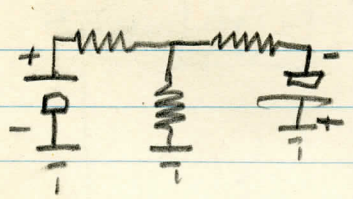
Fix up P.E.C. ckt

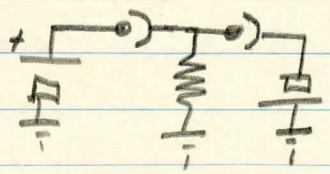


differential relay was extremely insensitive

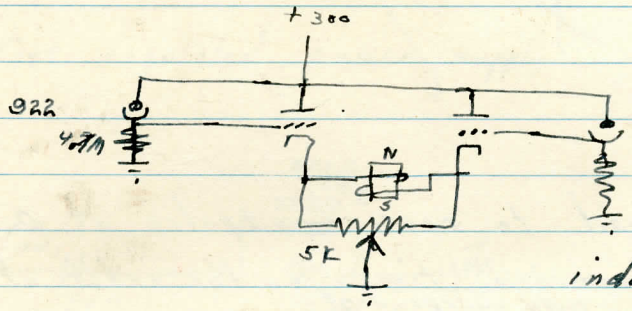
$$\begin{array}{r} .4\,V \\ 20ma \;\overline{)\;2000} \end{array} \qquad \begin{array}{r} 50 \\ \end{array}$$

$$\begin{array}{r} .02 \\ 20\overline{)\;.40} \end{array} \qquad \begin{array}{r} .002 \\ 200\overline{)\;.400} \end{array}$$



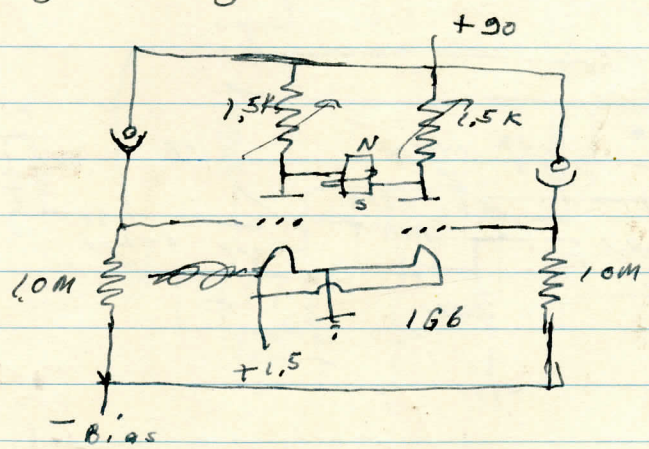


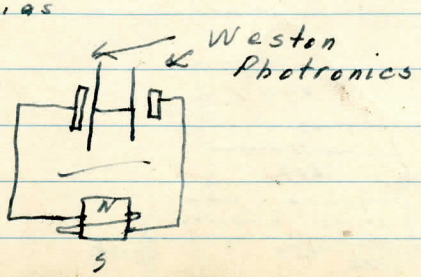
Tried Barb. Col. 'Micro positioner', a polarized relay coil D.C. res of ≈ 200 Ω would operate readily on .4 W which is current sens. of $\frac{.4}{200\Omega} = .002A = 2ma$ –



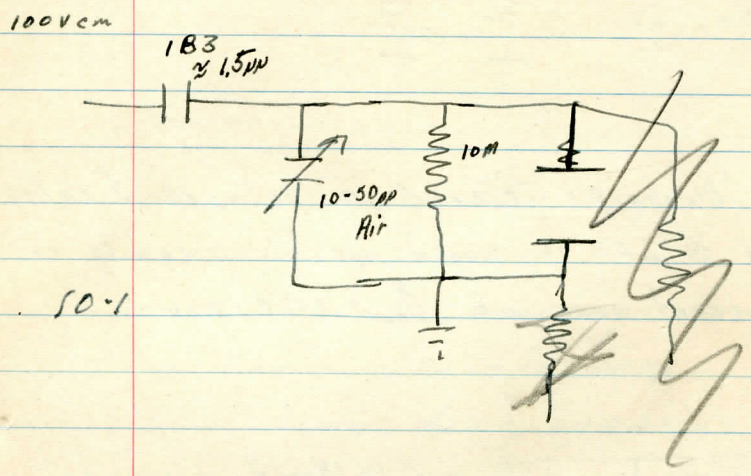
Would operate readily with this ckt using indoor lighting

Might try these –

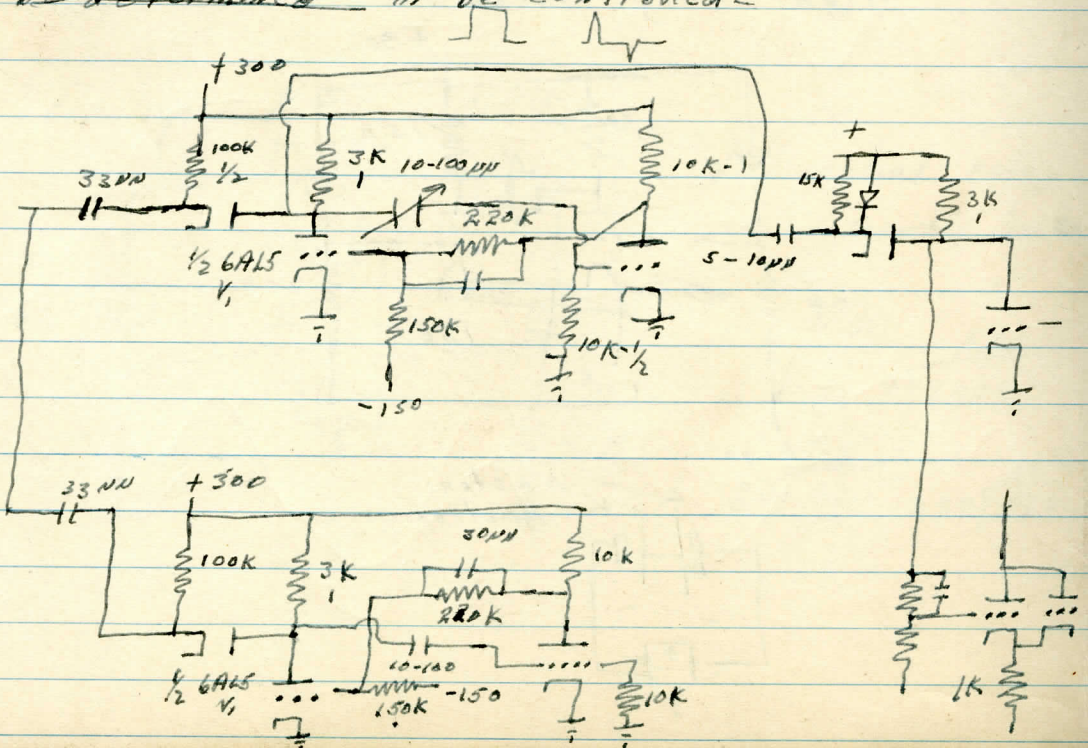


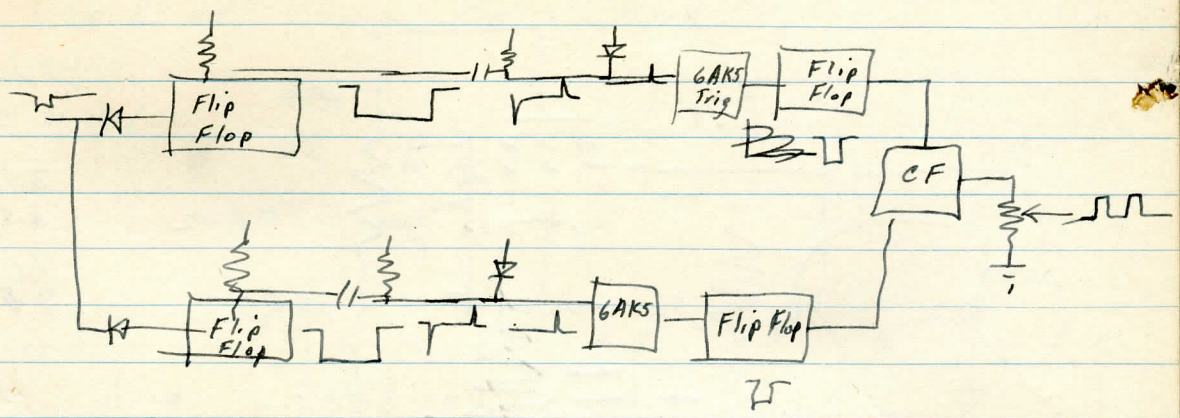


Design a Hi Voltage probe for direct coupling to 5"XP-scope plates

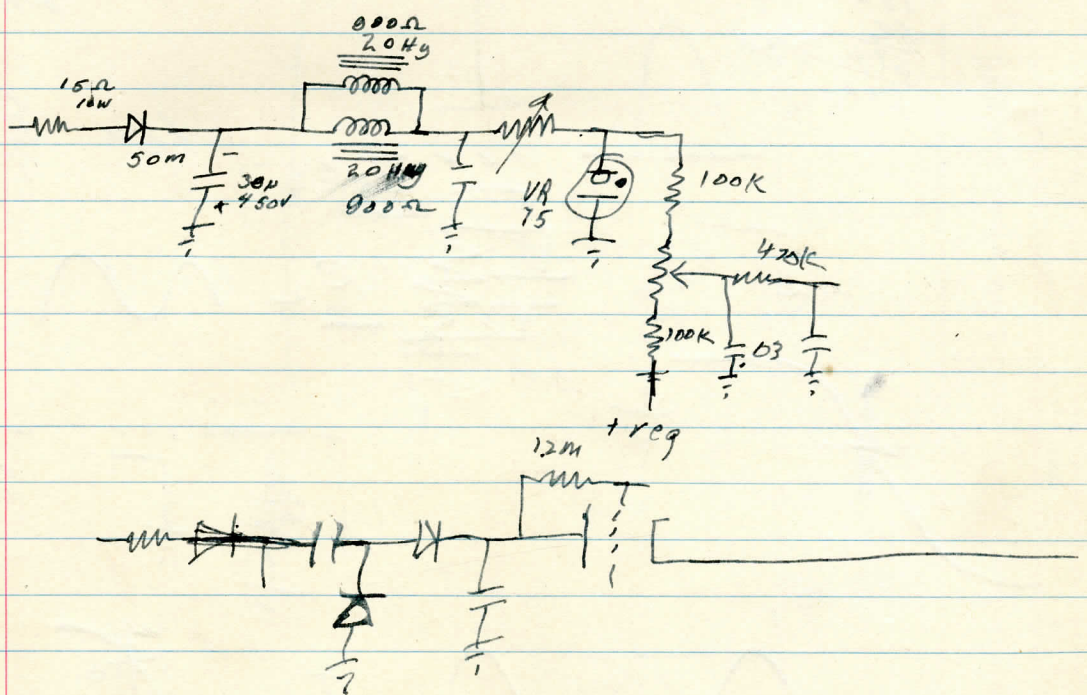


Design a unit to receive a tpulse at 0 time and after predetermined times on the order of 1 to 5 μsec generate two time independent pulses of ½ μsec whose phase ~~be determined~~ m can be controlled.

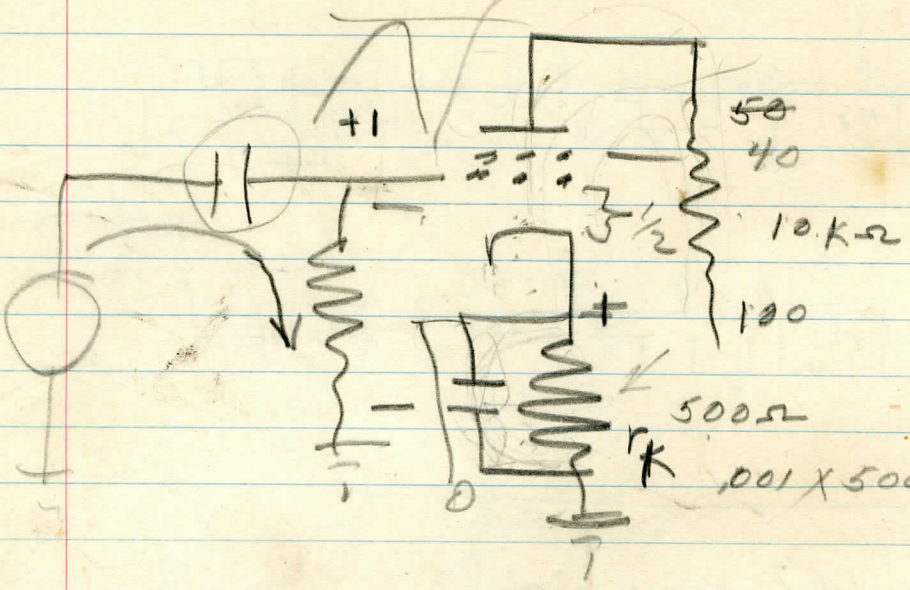




Test regulated power supply



$g_m r_p$



$10^4 \times 10^{-3}$

35
35
21
91

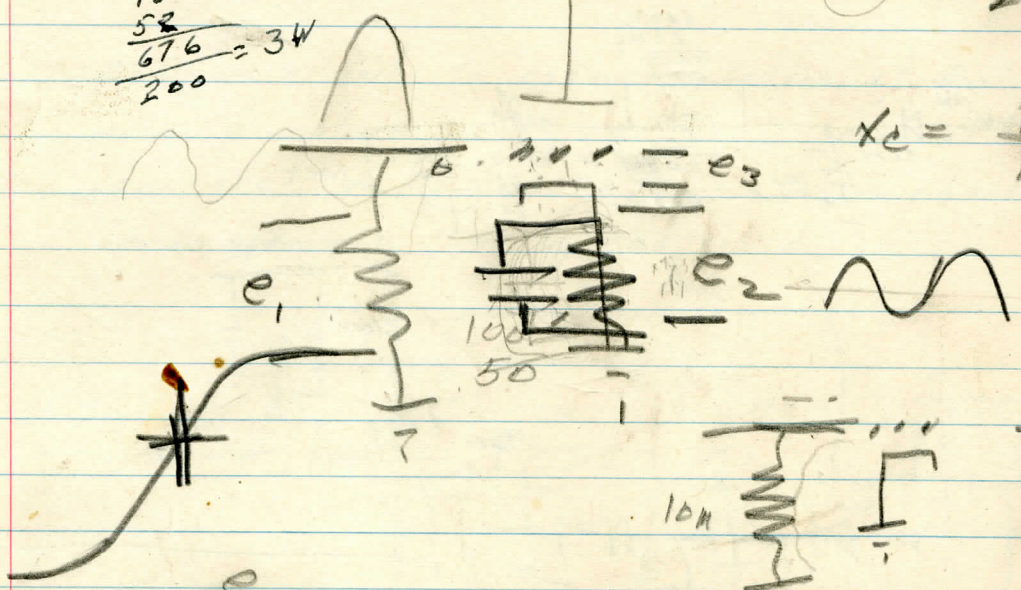
117
01 01
15 26.00
15
200

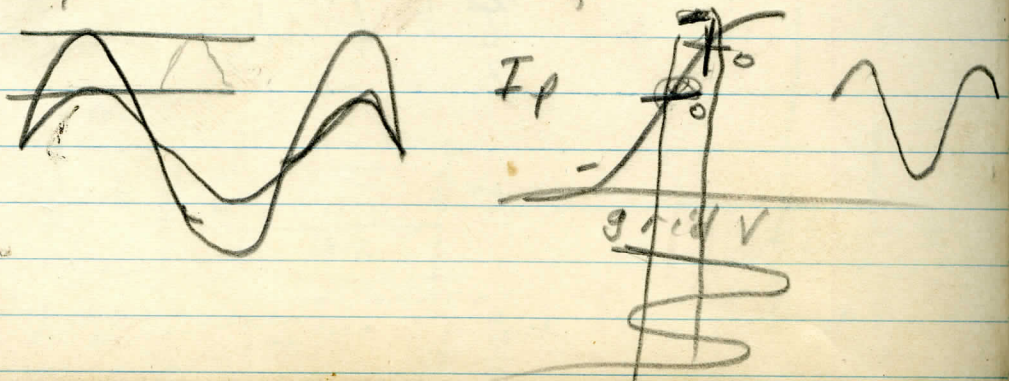
.001 × 500 = .5V

26
26
156
52
676 = 3W
200

$X_c = \frac{1}{2\pi f C}$

$X_c = \frac{R}{10}$

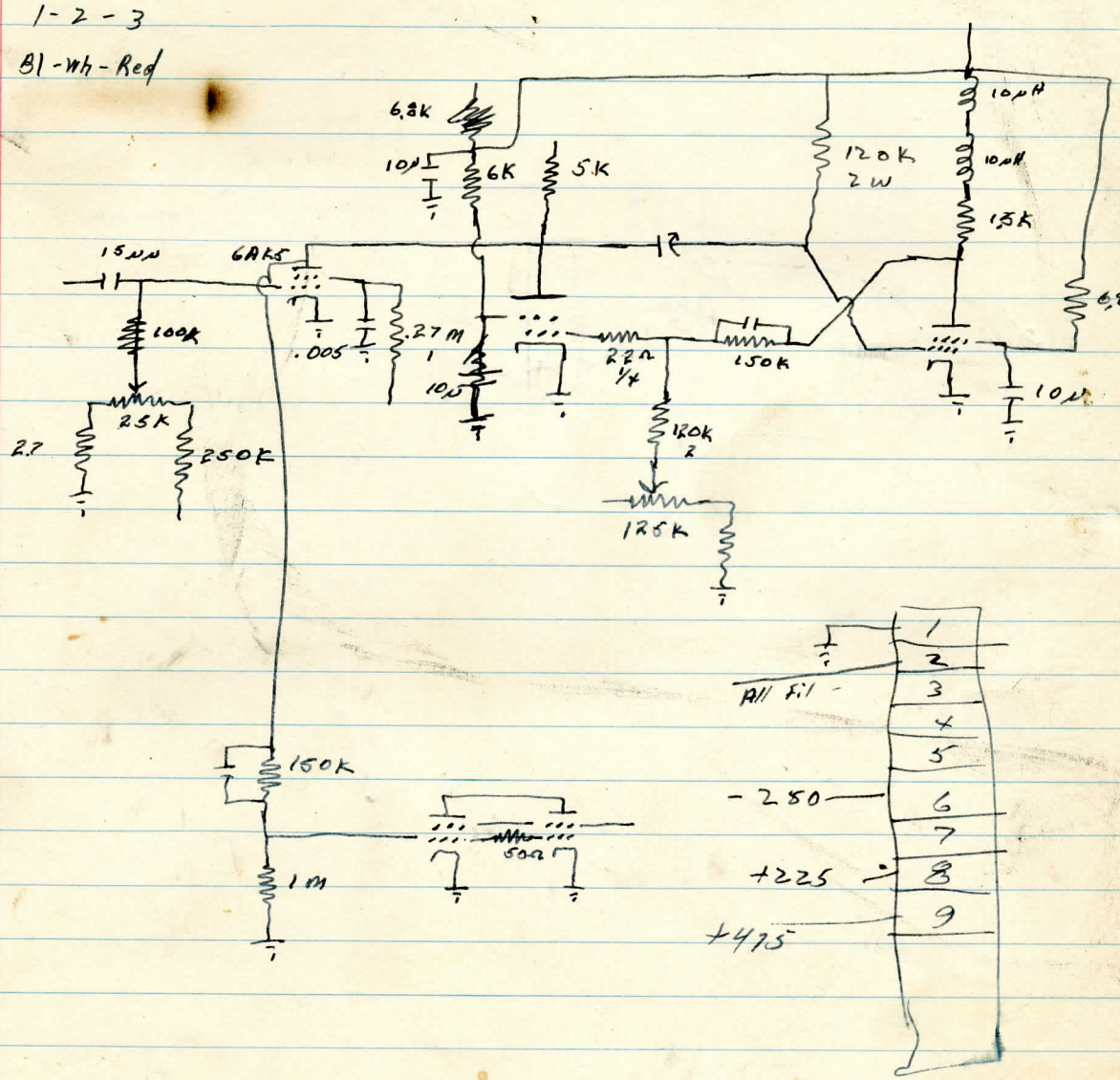


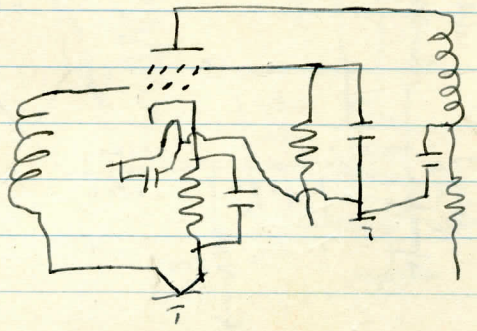


Check out Chain Video Amp

1-2-3

Bl-Wh-Red





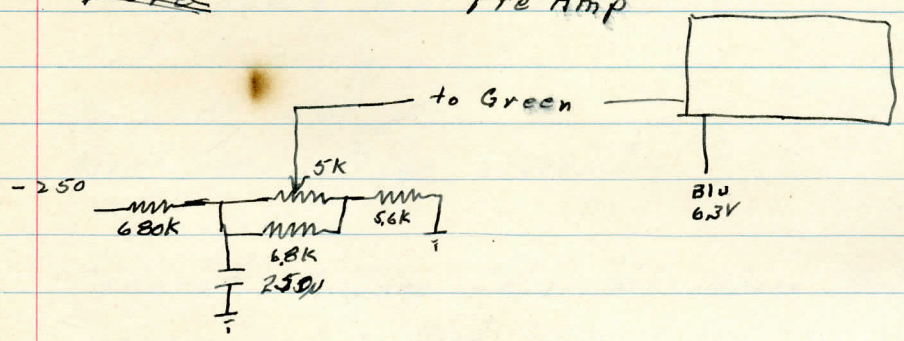
Test Video Amp –

3

~~Bare~~

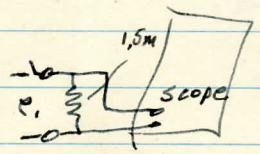
Pre Amp

.16
16
96
16
2.56



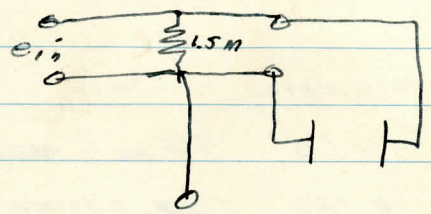
Bread board a sweep ckt. suitable for M-3
Med linearity
Hi Volt Output
First det- voltage neccessary

Comared Voltage Calibrators whose Outputs were inconsistent - Used setup below to check calibrators

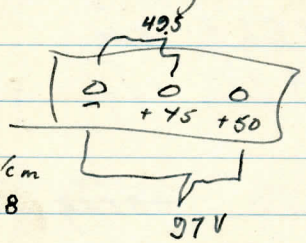


Cal W Ser # 977 Was 54 V @ 50 V
Ser # 674 " 65 V @ 50 V

Check defl factor of 5XP. CR tobe
+HV -HV
on 10 KV pos 8.4KV 1.9 KV installed in Tek 517
20 " " 17 KV 3.9KV



ein supplied from Dry Batter Ray O Vac # 07R6055



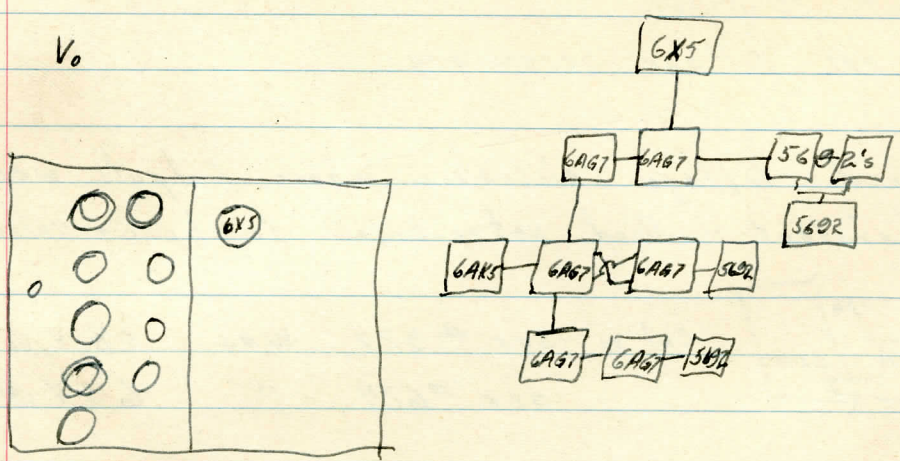
10 KV pos		V/cm	24 KV pos		v/cm
49 V	-9.5mm	5.15	49V	-5mm	98
97V	19 mm	51.0	97V	9.5mm	102
190	39 mm	48.7	390 V	3.75 "	104
		151.2			1304

Av 50.4 V/cm or Vin Av 101. V/cm =

Tobe face = 11.8 cm
10KV ace = 595 V 24 KV = 1090 V

~~Shoot for Voltage of 800 try -250 +300 +150 +~~

Stick with Tex 517-



~~#~~ Layout Sweep Ckt
Pwr Supplies

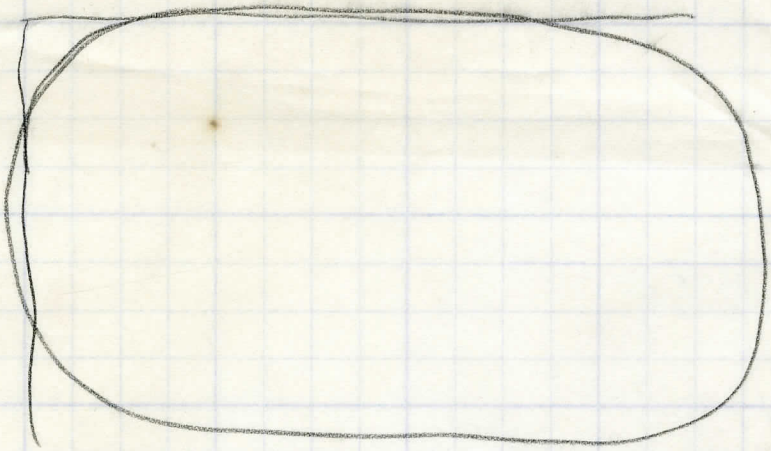
Power for ~~sweep~~

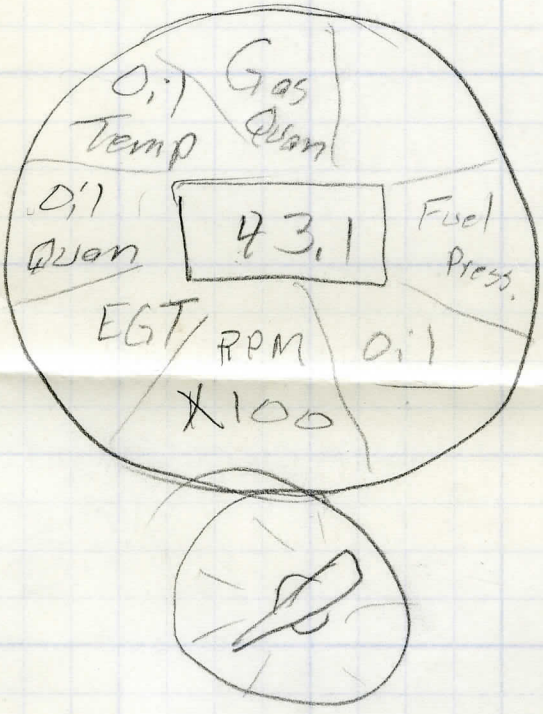
-250 reg - 50ma + 350 unreg - 100ma

+225 reg - 450 ma + 150 470 ma ~~ma~~ 10mv ripple

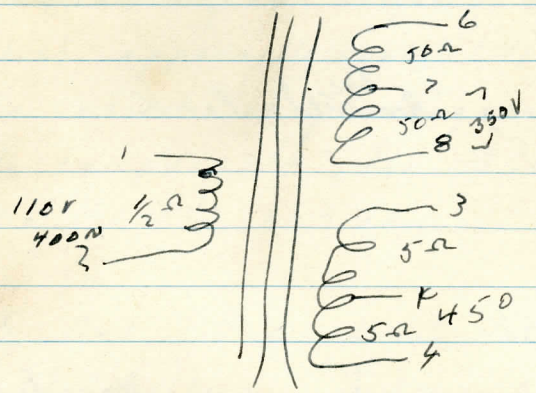
+475 reg - 150 ma + 180 ~~80~~ 250 ma unreg

+ 250 ~~unreg~~ reg 60 ma

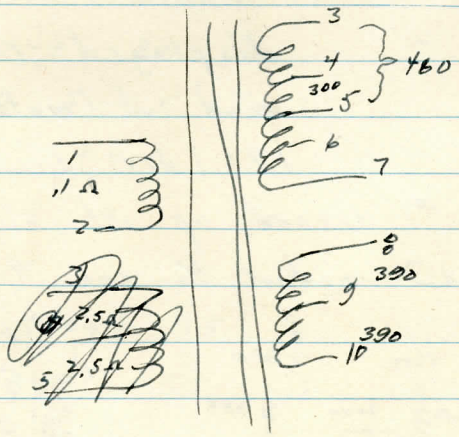



Oil Temp
Gas Quan
Oil Quan
43.1
Fuel Press.
EGT
RPM X100
Oil

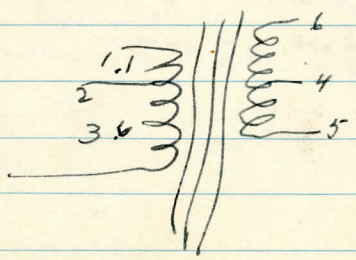
Checked Hughes Xfmr 420-70-0891



Peerless 420 70-0827

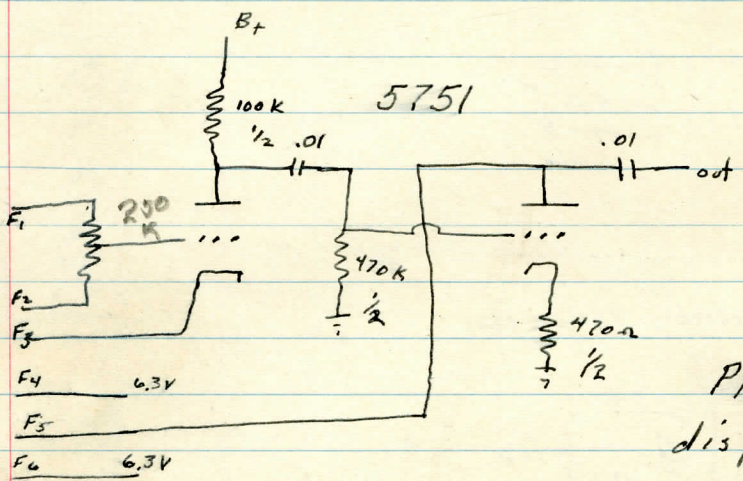


Peerless



Checkout CKts on audio osc & Master Trigger

Audio Osc using Am. Time Std. Fork



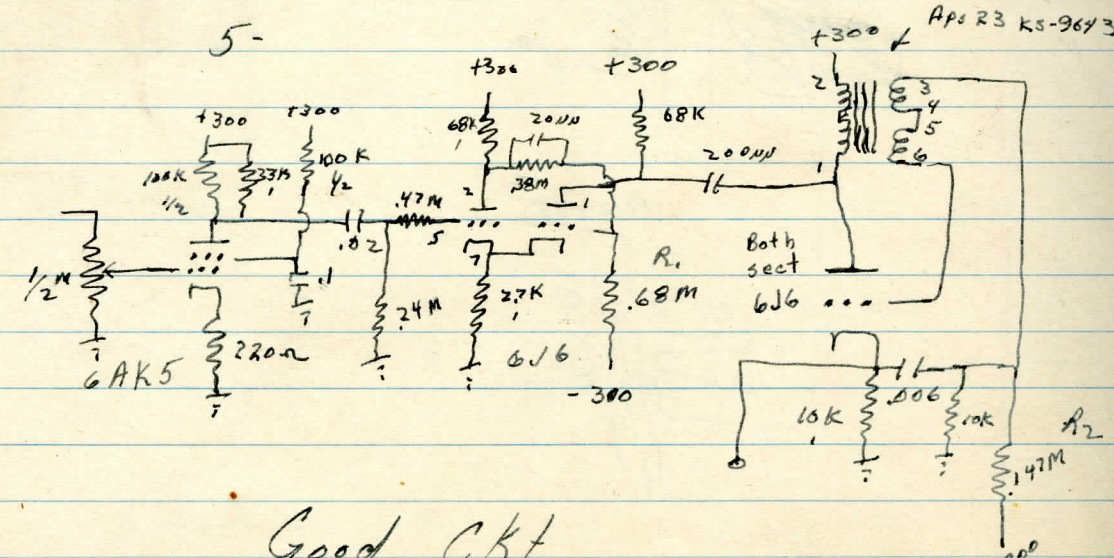
Waveform - dist sine wave Vout 16 div

Photo 1 3 cycles displayed - reticle Follup med int (matched reticle) 1V = 1 div directly into scope B+=300

#0 #1 turned up int slightly f-3.5

2 - f 3.5 med.int. 3 - med.int. ½ sec 4 - 1.5 sec med. int.

5 -



Good CKt

Current @ 300 V for pulser & time std. = 20ma

The preceding ckt gives pos pulses of ≈200 v A which apparently have little jitter — Test further for effect of phasing + environmental effects to compensate for −250 v bias drop r_1 + r_2 to 500 k + 120 k resp.

Sq ware 1 div: 50 V 3 cy

#5 Ret full up - f - 3.5 1/30 sec 3 cy From Pin 2 of multi 1 div = 50 V

#6 f - 5.6 1/30 med int

#7 f - 3.5 1/2 sec med int

#8 " " 1.5 " " "

Sq w. 1 div = 50 V Pin 1 multi 3 cy at pl. of Amp 1 div = 50 V

#9 f - 3.5 1/2 sec " "

#10 f - 3.5 1/30 " "

#11 f - 3.5 1/30 " "

#12 " " 1/2 " "

#13 " 1/2 " "

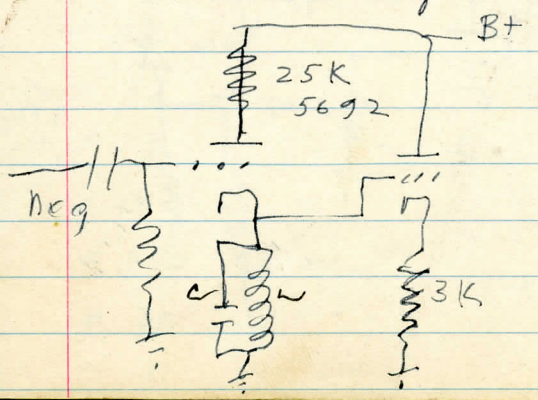
#14 " 1/30 " "

Plate of B.O. 1 div = 2 V

#15 f - 3.5 1/30 med int pulse out Tek. Scope 12 KV

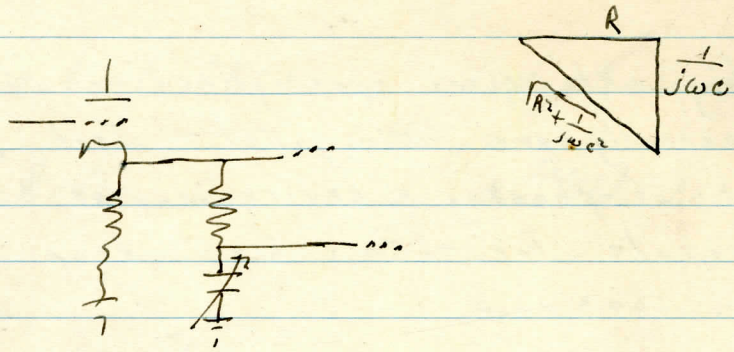
#16 f - 3.5 1/30 " " pulse out 1 cm = 2.5 μsec

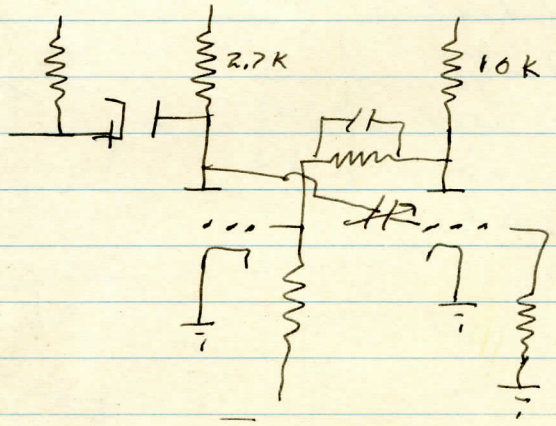
Try a ringing ckt for possible use with ∫ Scope

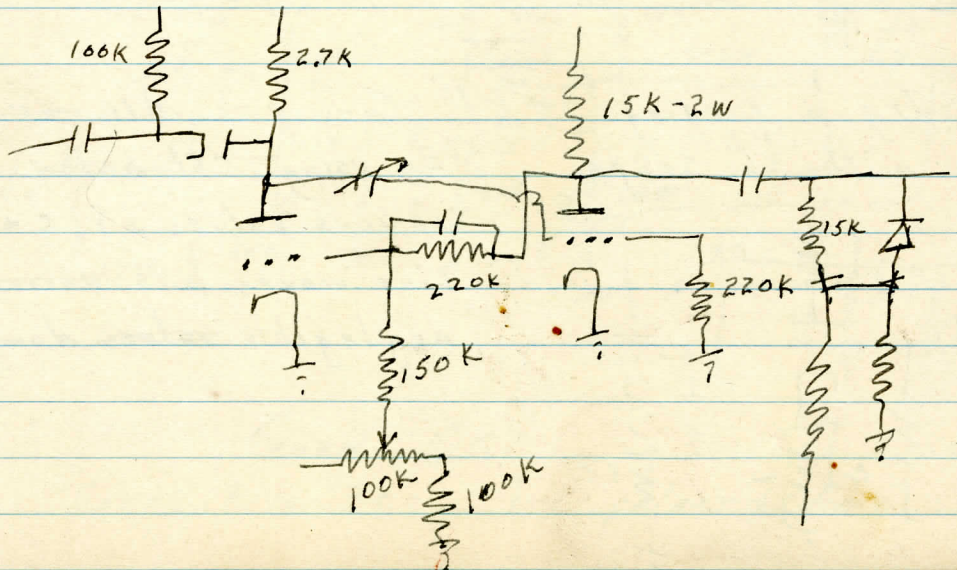


By using ckt below with various values of C + L sine waves with ~~varior~~ almost negligible ~~values~~ damping -

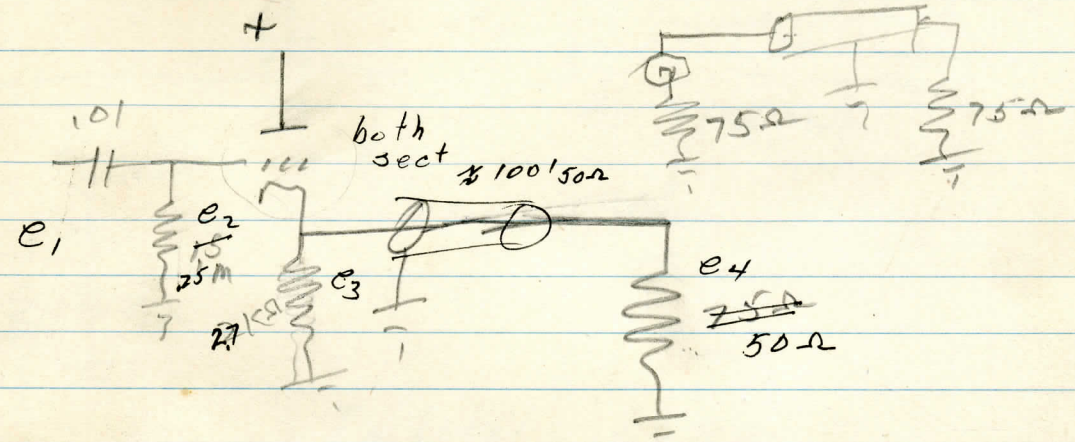
W X Y Z


R
$\frac{1}{j\omega C}$
$R + \frac{1}{j\omega C}$


2.7K
10K


100K
2.7K
15K-2W
15K
220K
220K
150K
100K
100K

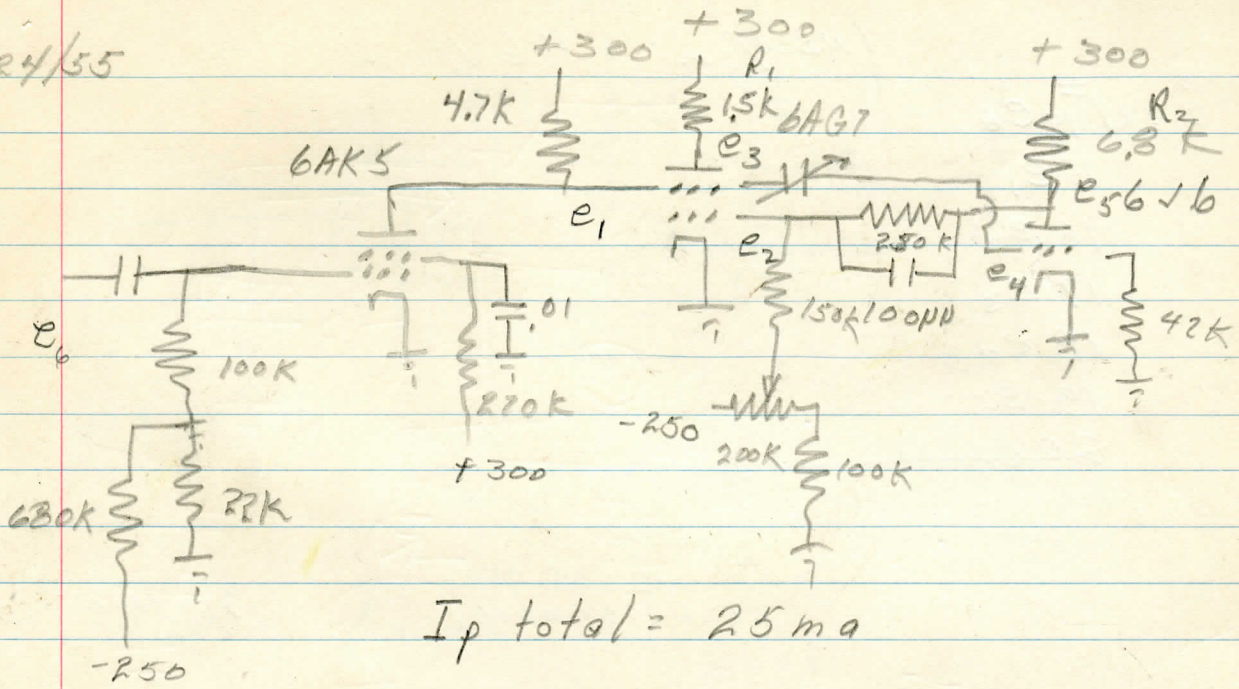
2/23/55 Cathode follower to transmit ½ μsec signals #25'



Tried	5844 -	6J6	G
I_p	15 ma	10 ma	≈ .5
E_b	105V	105V 10 ma	≈ .5

Photo #18 xx f 3.5 1/30 60 cps .2 μs cm 9 V/cm 24KV ½ μs pulse from Gen
#19 " .2 μs cm e_2 " " " "
#20 " " e_3 " " "
#21 " " e_4 " " "
#22 e_1 " " e_1 " " " 1.8V/cm
#23 " " e_4 " " " "
#24 " " " " " " "
#25 " " " " " " "
#26 " " " " " " "
Poss double #27 " " " " " " "
#28 " " e_1 " " " "
#29 .05 μsec/cm " " " " " "
#30 .02 " " " " " " "
#31 " " " " " " "

2/24/55



I_p total = 25 ma

Tried this ckt - Output Amplitude was insufficient even with larger values of of R_1 - e_5 sloped badly

Photo ~~60~~ F-3.5 - 1/30 XX

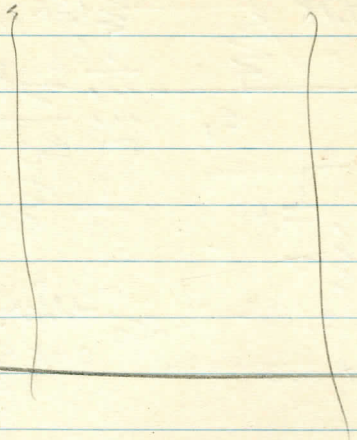
PRF=60 #1 12KV e_6 ½ msec cm 46 V/cm
#2 " e_1 1msec " "
~~#3~~ " " " " "
#4 " e_2 " " "
#5 " e_2 " " "
#6 " " " " "
#7 24 KV e_6 2msec/cm " "
#8 " e_6 1msec/cm " "
#9 " e_1 " " "
~~#10~~ " e_3 } ? " " "
#11 " " } 1 " " "
#12 " e_2 } " " "

X
Y
Z

1 μsec/cm 46 V/cm

60 ~ 24 kV

14 e_6
15 e_1
16 e_2
17 e_3
18 e_4
19 e_5
~~20~~ e_6

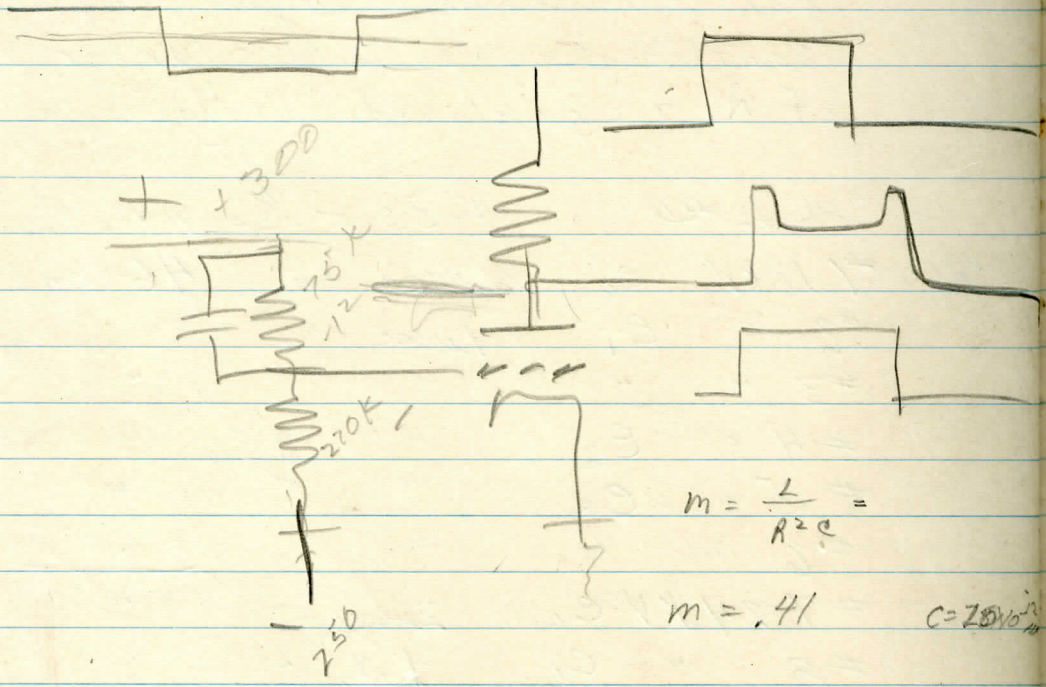


$10^{-3} \times 9 \times 10^{-3}$

$$.0025 \overline{)150.0000} \quad 60{,}000$$

$10^{3} \times 15 \times 10^{-12} = 15 \times 10^{-9}$

$= .015 \times 10^{-6}$



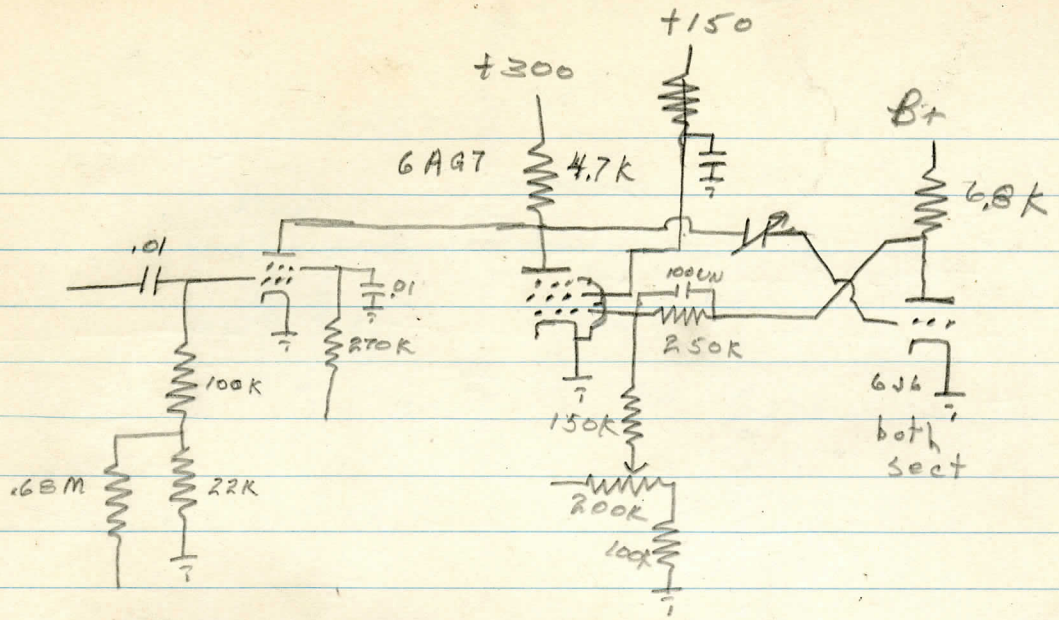
$m = \frac{L}{R^2 C} =$

$m = .41$ $C = 20 \times 10^{-12}$

$$.82 \overline{)1.00} \quad .12$$

$$.41 = \frac{L}{10^{6} \times 20 \times 10^{-12}}$$

$$L = \frac{1}{22 \times 10^{-6}}$$



Video Amps—

input — Asq. wave ½ usec 1.5 – 3.5 V

Output ⇒ 60 V limited

FTC if desirable · Neg out

Rise Time ≈ 2.2 RC short

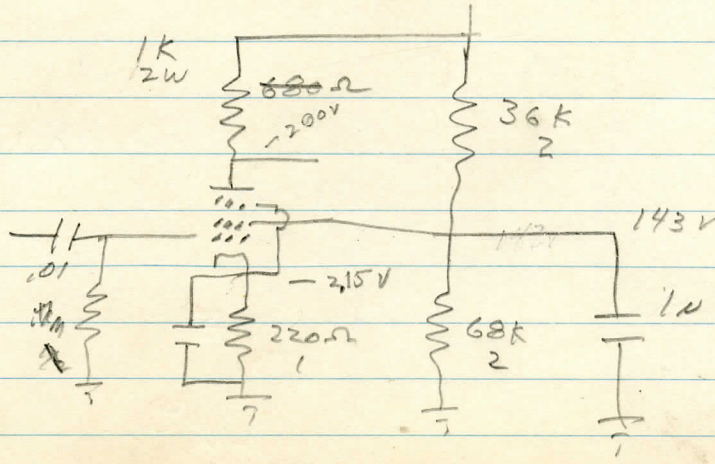
$m = \frac{L}{R^2C}$

m = .25 no o.s.

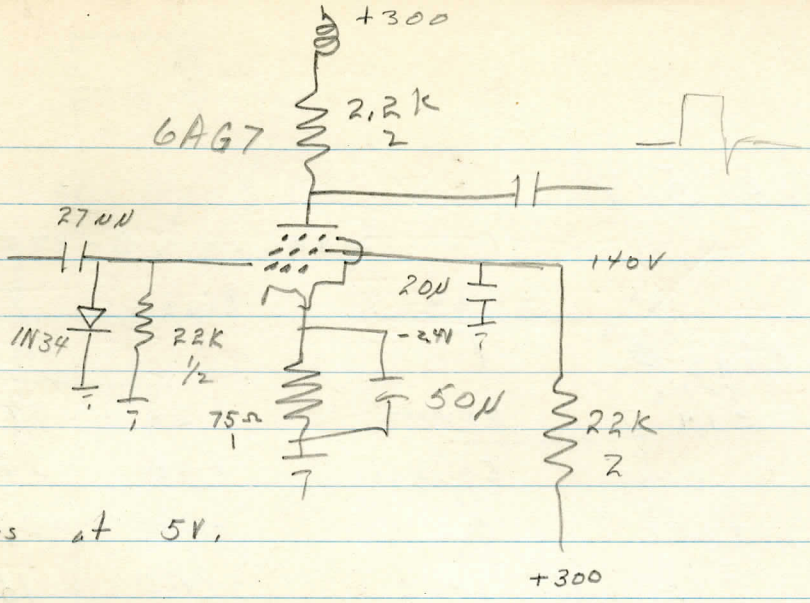
m = .41 = 3.5 % o.s.

$G_{overall} = \frac{60}{1.5} = 40$

6AC7 +300 B+ = 12 ma

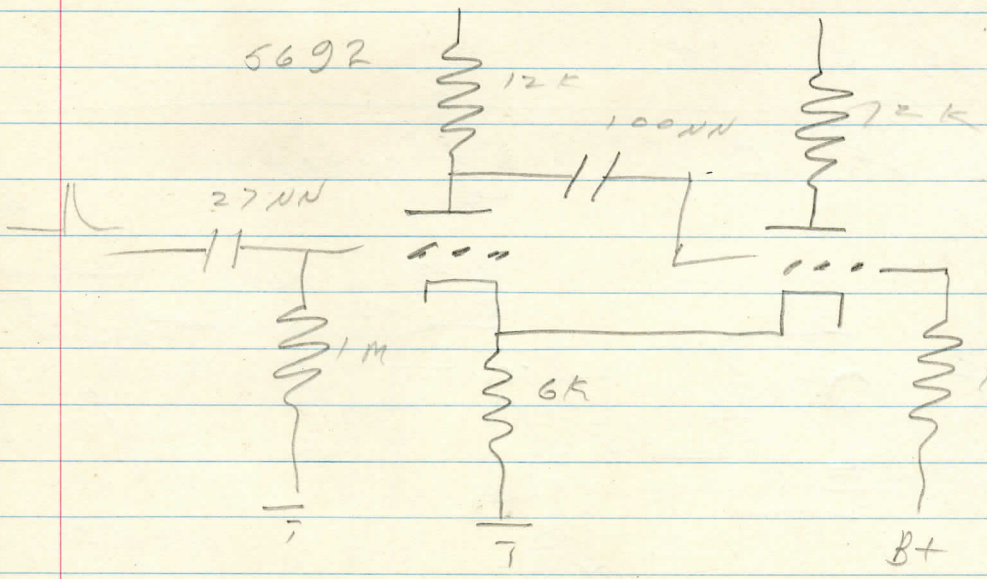


X
Y
Z

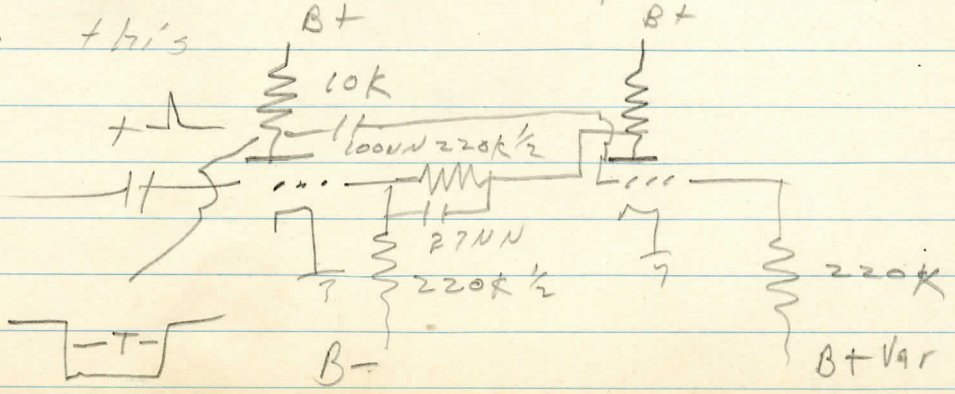


Limits at 5V.

Voltage controlled Flip Flop



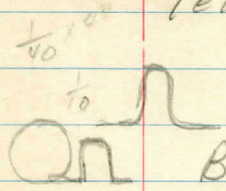
This ckt would not flip went to this



6

4

Tek 517

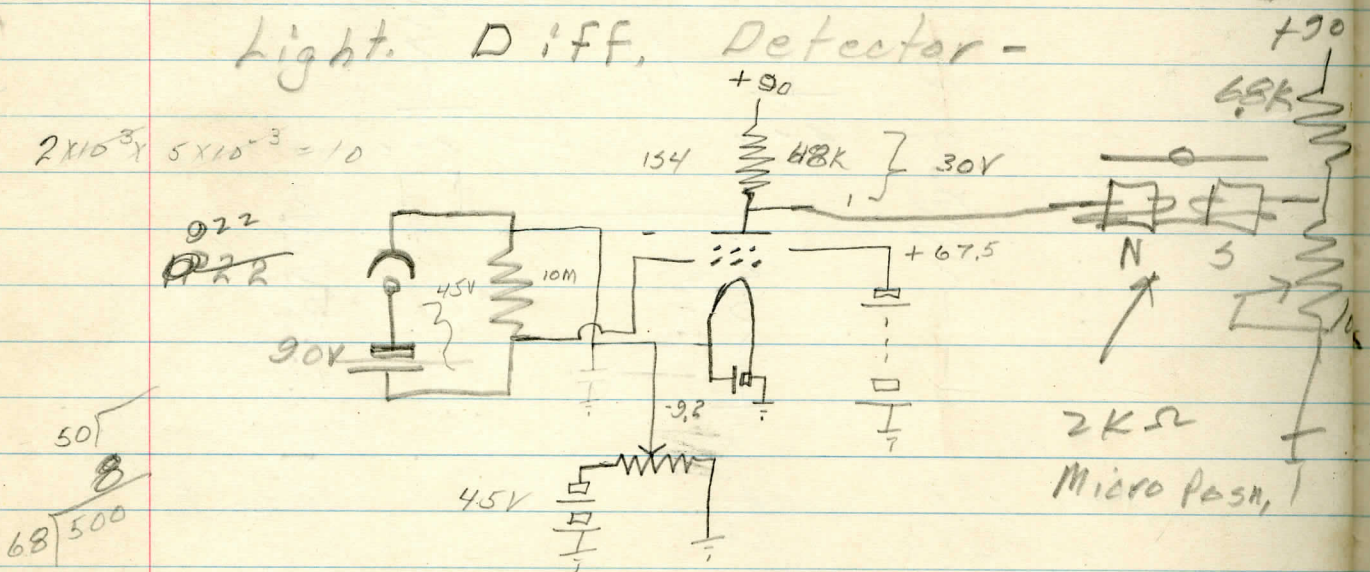


B+ 210 C-175

Bias Volts	B+ Var T	Bias	T
-1.4	60 nsec	+25	34
0	55 nsec	+40	28
+1.5	53 "	+60	22
+3.0	50 "	+100	15
+4.5	48 "		
+6	46 "		
+10	43 "		
+15	40 "		

6"

Light Diff. Detector -



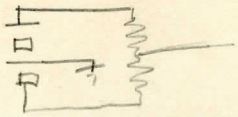
$2 \times 10^{-3} \times 5 \times 10^{-3} = 10$

50

8

68 | 500

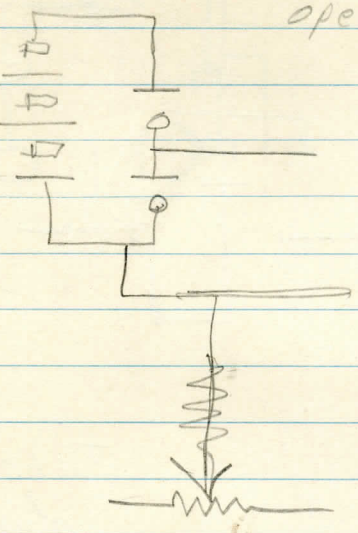
Worked ok on this ckt

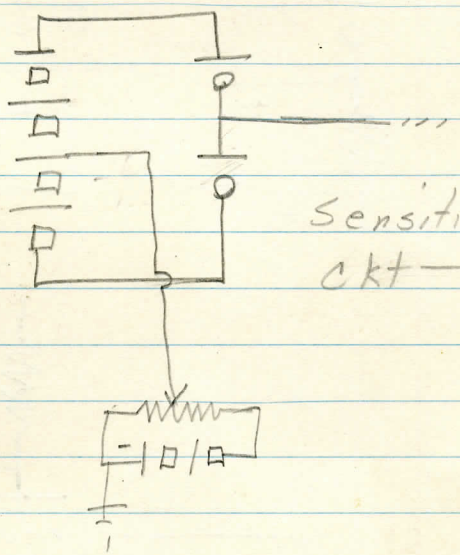


Replace input ckt with this

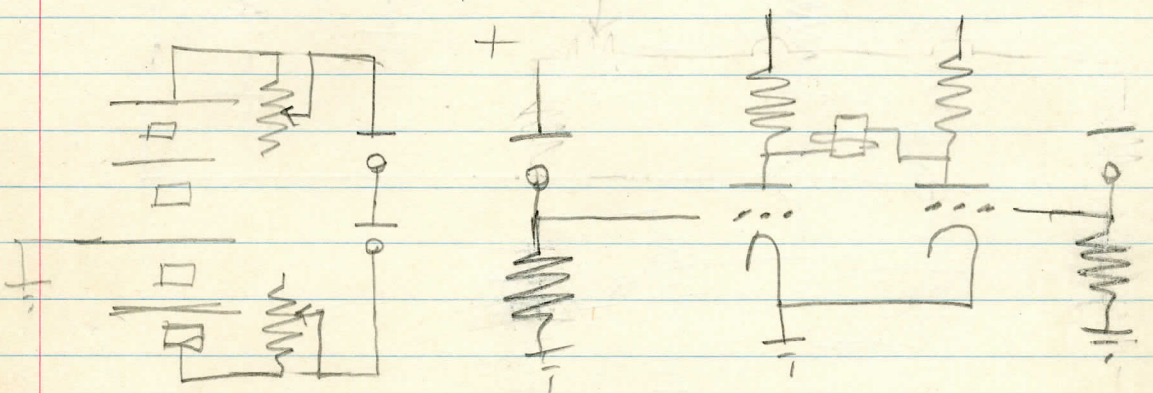
operated

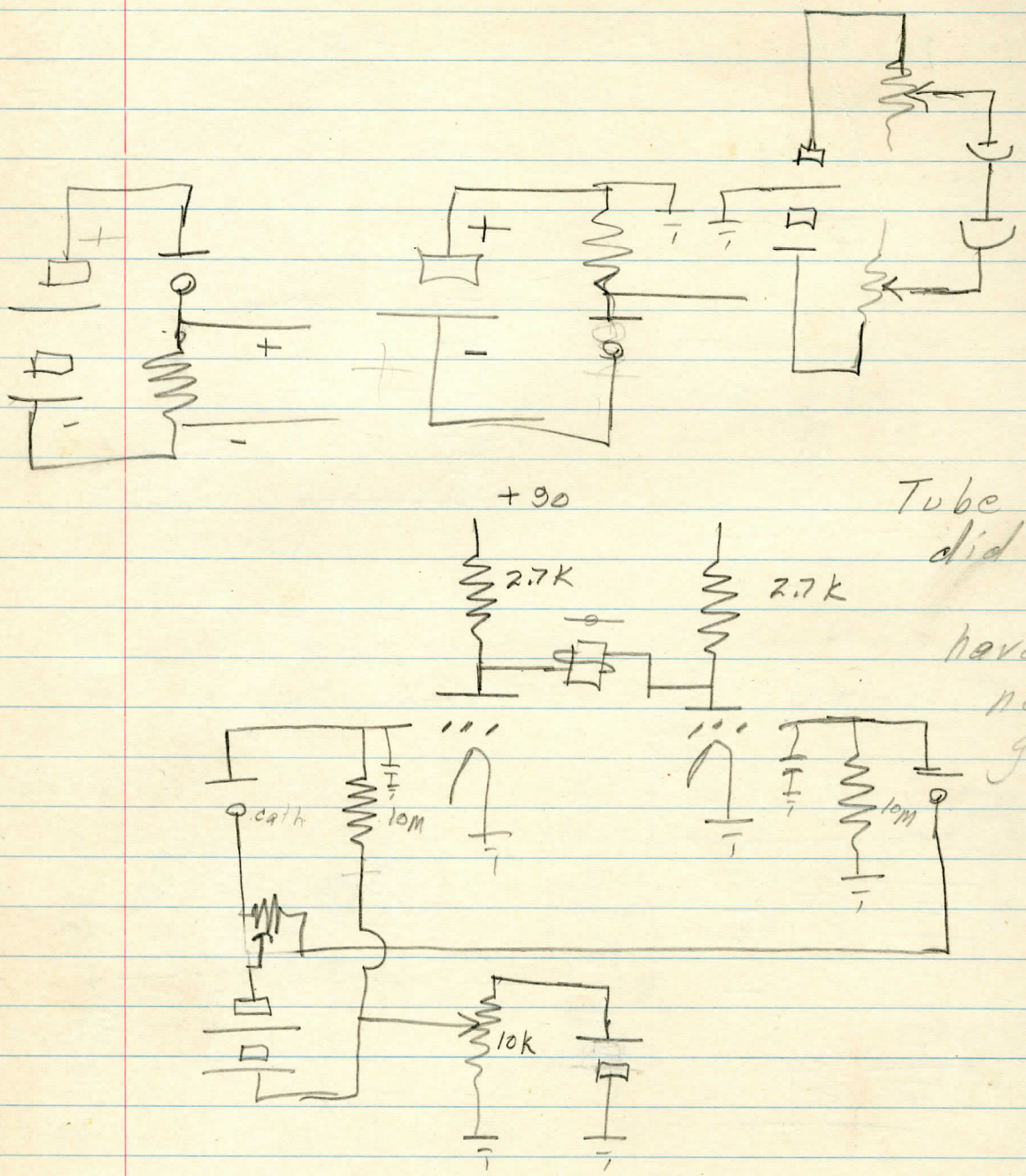
changed to this



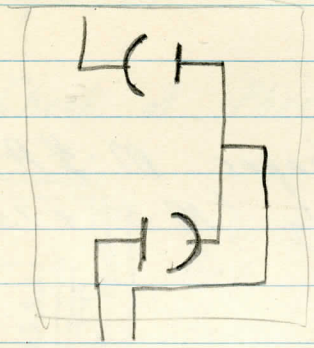


Try this





Tube did not have neces- gm—



Y

Z

Pulse Generator

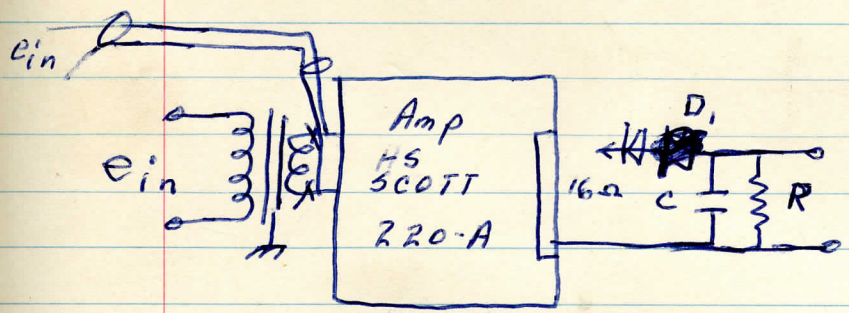
Diagrams

— MKI pulse shaper M-3A ROFEI

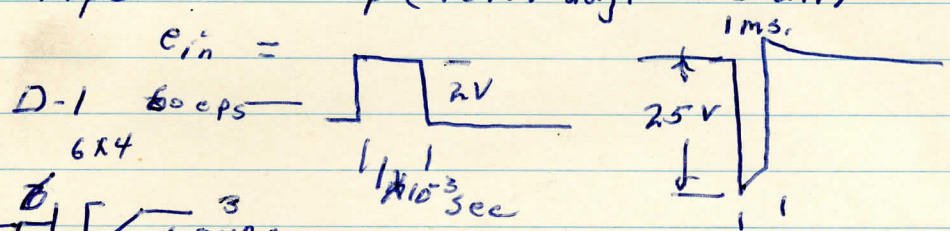
T-7 Pwr Supply (M3 +750)

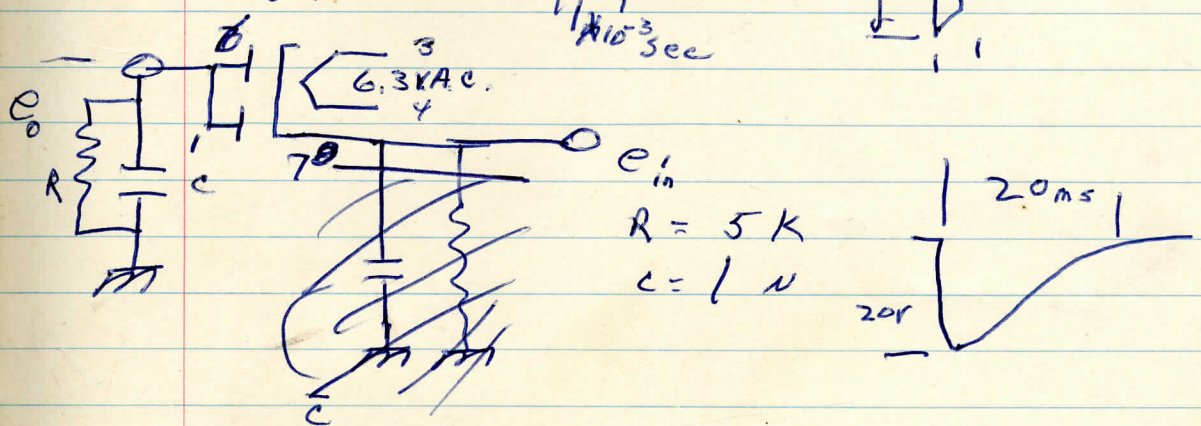
9/3/57

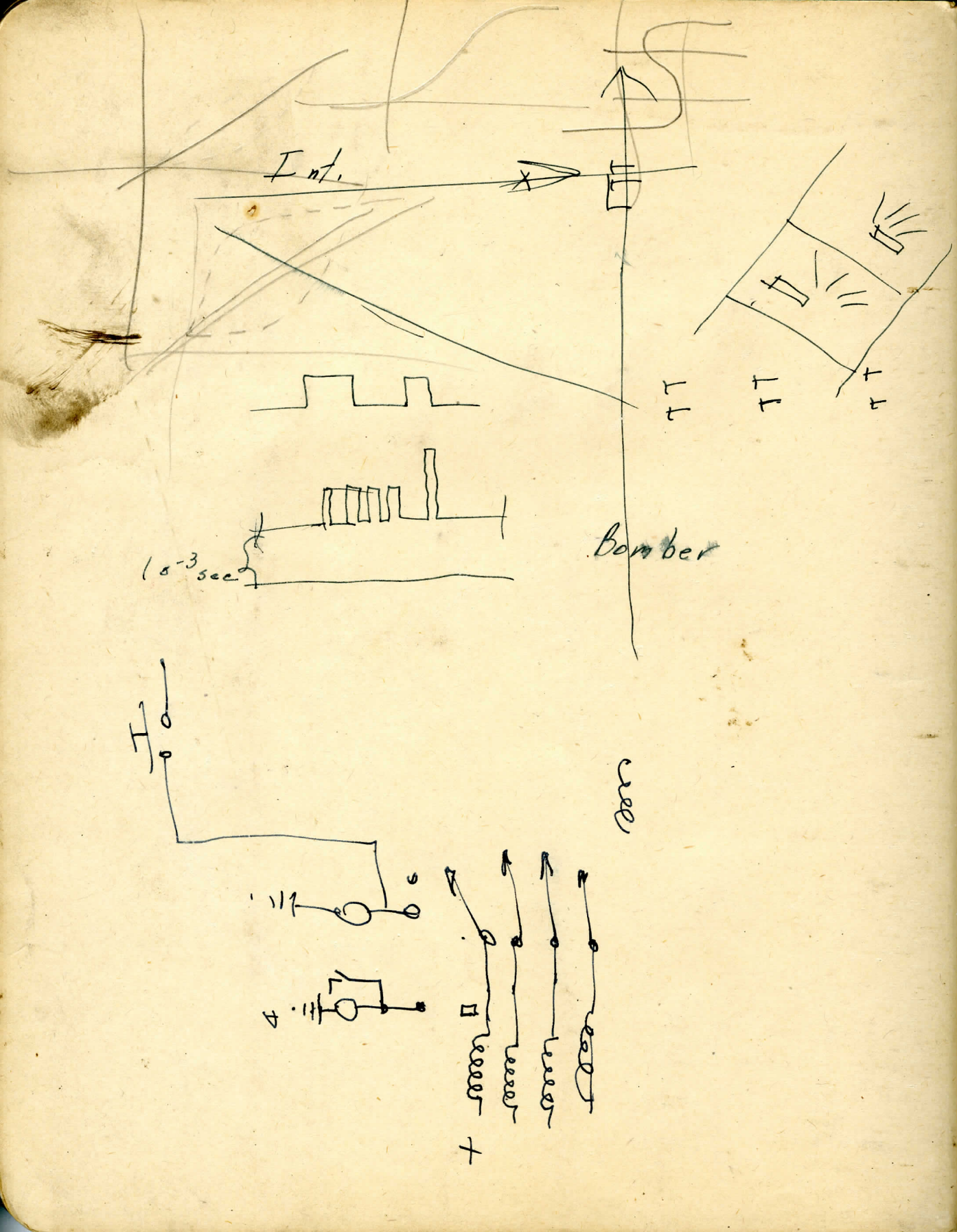
Check of Phrenic Integrator -



$\bar{c}$ o.p. of GR-1217A directly into direct input of Amp (level adj. = 33 div)






Int.
Bomber
10^{-3} sec