COIL DATA FOR:

HB & LB COIL COMBO

USING FIXED CORE, ROTATABLE COILS FOR CONTINUOUSLY VARIABLE ANTENNA TAP AND SPLITTING CONDENSER STATOR FOR LB & HB COILS.

STAT

RS-6- 1-25-5 x

7-16 mc.

L = 1.87 mh. WITHOUT SLUG.

DIAM - I.D. = .505 (1/2") OD = .5553

LENGTH = 1.27 (1 1/4")

PITCH = 16 T/IN

TOTAL TURNS = 21

CORE LENGTH = 1 1/2 DIAM .370 (3/8)

ACTUL TURNS FOR 1.87 mh = 19

3-7 mc.

L = 4.8 mh, WITHOUT SLUG, SAME LENGTH AS ABOVE

DIAM: .5347 - I.D. OD. = .5853

PITCH = 22 T/IN.

TOTAL TURNS = 28

ACTUAL TURNS FOR 4.8 mh = 31

3-7 mc

G4 CORE MATERIAL

L = 14.5 mh

C = 200 MAX - 36 MIN

7-16.5 mc,

G2 CORE MATERIAL

L = 5.16 mh

C = 100 MAX 19 MIN

STAT

L. C. DETERMINATION

L LOW BAND 14.5 uh. C MAX = ~~2070~~ - 36

L HIGH BAND 5.16 uh. C max = 100 - 19

X_L = 410 Ω @ 4.5 MC

X_H = 410 Ω @ 10.5 MC = 6.2 uh

$\frac{3400}{10.5}$ = 240 X = 5.16 uh

Z_{0} 7 - .227 2270 Q 15

Z_{0} 16 - $\frac{16}{7}$ 5171.5 Q 6.6

STAT

Z_{0} 10 - 3400 Q 10

COIL PARAMETERS

d = .370 FOR G_1 OR G_2

PITCH = ON BOT COILS

COIL LENGTH EQUAL - 1.27 = SAME BOTH

SLUG LENGTH " 1.5X " = SAME BOTH

G_1 LOW BAND μ = 10.5 14.5 uh

G_2 HIGH BAND μ = 10 5.16 uh.

D/D = 1	D = 1.27
D/D = 2	.635
" 4	.317
" 6	.212
" 8	.158

EXPERIMENTAL FIGURES / DID NOT USE

STAT

D N'

D = .2 # 3
D = .3 2.37
D = .4 3.37
D = 5 1.43 6.5
D = 6 1 6.26
D = 7 1.8.15
D = 8 10.35

D	#1 G_1	#2 G_2
1/2 = .635	5.1	4.6
.317	7.8	7.
.212	9.7	8.7
.158	10.7	9.5

G_2 HIGH BAND
OD .5553
ID .5047

$\frac{5.6}{3}$ 1.87 uh

G_1 LOW BAND
OD .5853
ID .5347

$\frac{14.5}{3}$ ✓ 4.83 uh
2 3
1.49

STAT

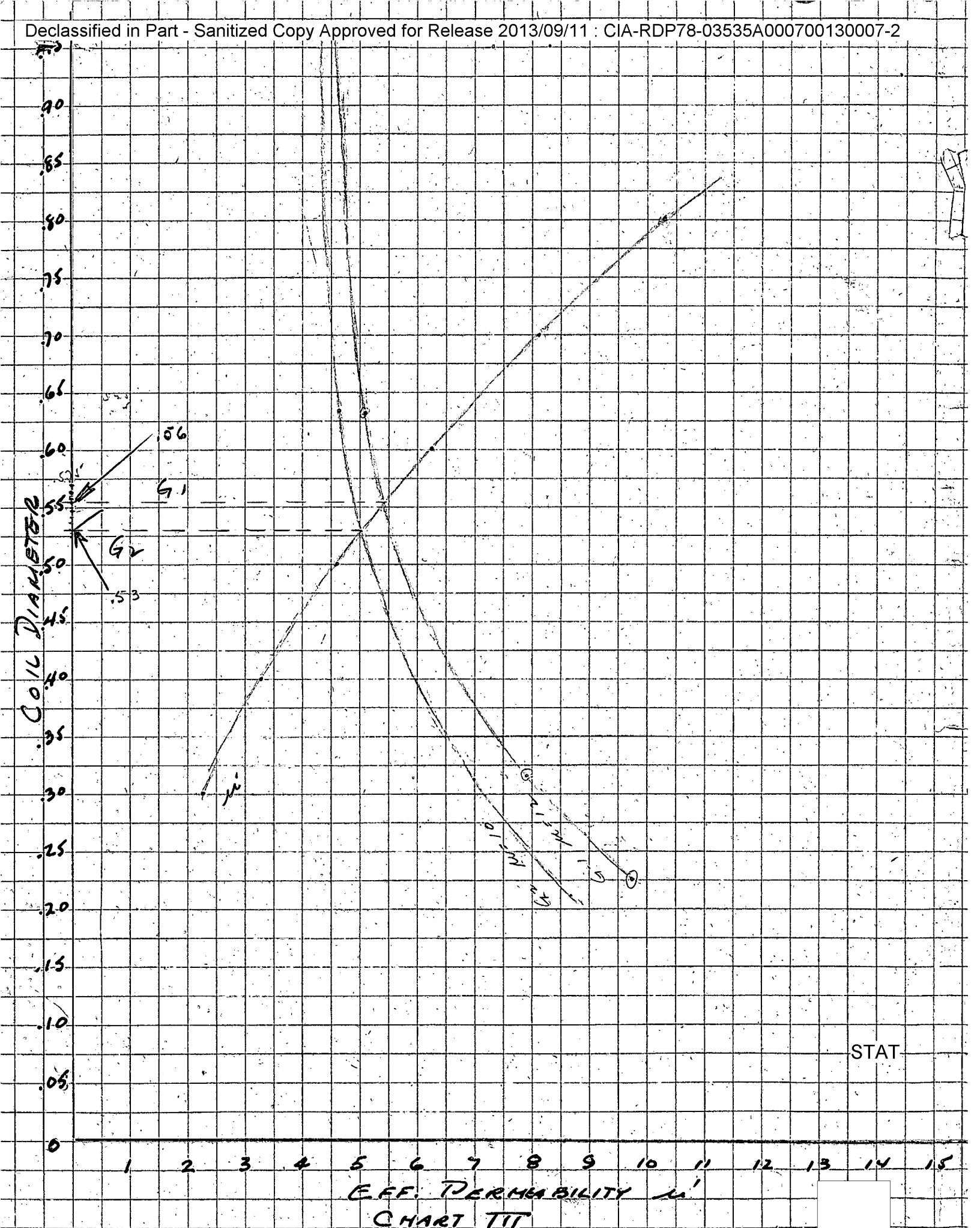
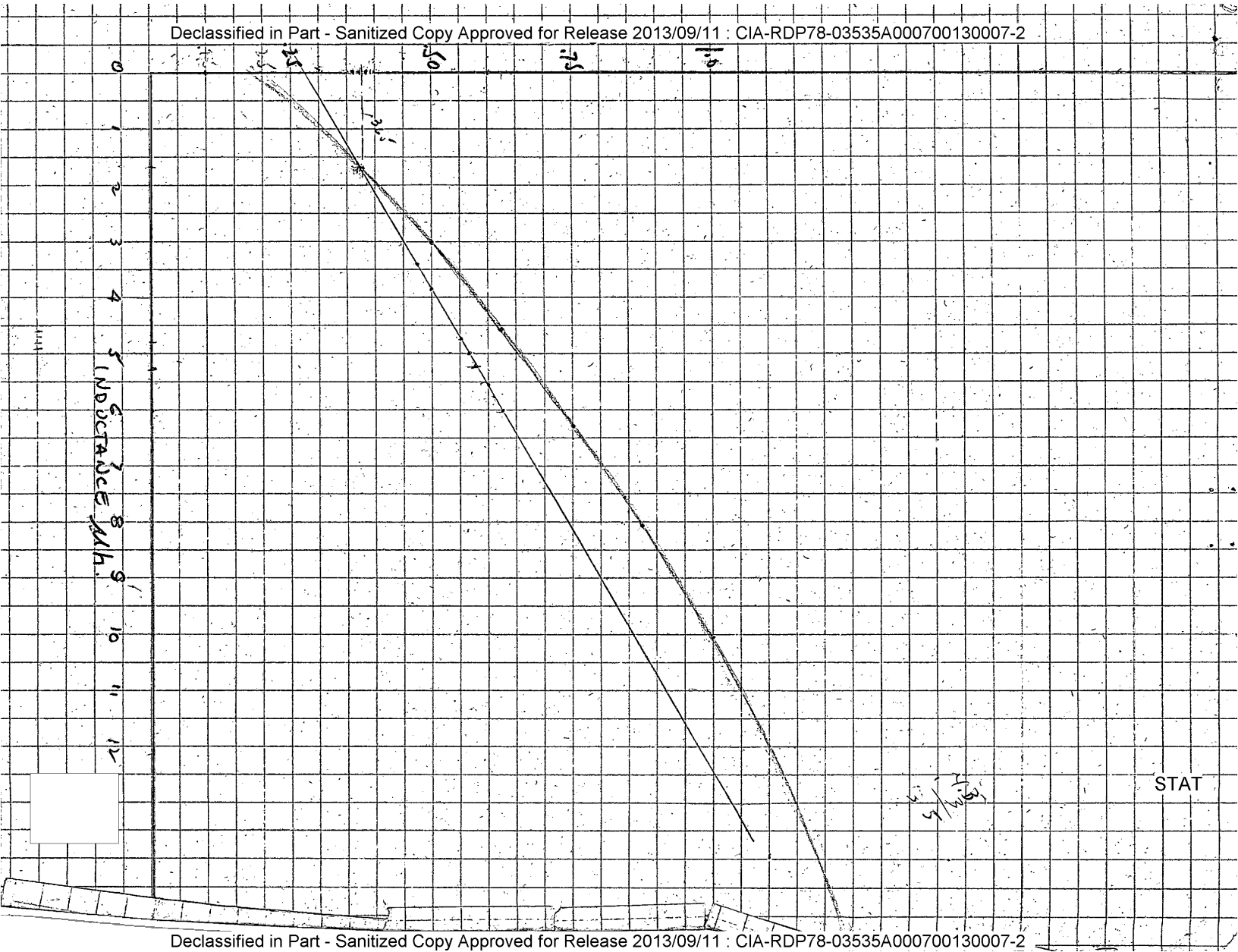


CHART III

STAT



STAT

RS-6 - 11/25/52

D = .53 G-2

$\frac{D_1 + D_2}{2} = .53$

$\frac{D_1 - D_2}{2} = .0253$

$D_1 + D_2 = 1.0600$
$-D_1 + D_2 = -.0506$
$2D_2 = 1.0094$
$D_2 = .5047$

$D_1 = .5553 = O.D.$
$D_2 = .5047 = I.D.$

G-2

$D_1 + .5047 = 1.06$
$D_1 = 1.06 - .5047$
$D_1 = .5553$

D = .56 G-1

$\frac{D_1 + D_2}{2} = .56$

$\frac{D_1 - D_2}{2} = .0253$

$D_1 + D_2 = 1.1200$
$D_1 + D_2 = +.0506$
$2D_2 = 1.0694$

$D_2 = .5347$

$D_1 + .5347 = 1.12$
$D_1 = 1.12 - .5347 = .5853$

$D_1 = .5853 = O.D.$
$D_2 = .5347 = I.D.$

G-1

STAT

RS-6 1-25-52

$$3 = \frac{.137}{D^2}(n'-1)+1$$

$$3D^2 = .137(n'-1) + D^2$$

$$2D^2 = .137(n'-1)$$

$$D^2 = \frac{.137(n'-1)}{2} \qquad \frac{2D^2}{1.37} + 1 = n'$$

$$n'-1 \quad \frac{2D^2}{.137}+1$$

$$\frac{2.09}{.137} = \frac{.18}{.137} = 1.31+1 = 1.1311 \qquad 2.31$$

$$\frac{2.16}{.137}+1 = \frac{.32}{.137}+1 = 2.34+1 = 1.3.34$$

$$2.25 = \frac{.5}{.137}+1 = .365+1 = 1.365$$

$$\frac{2.36}{.137}+1 = 1.52+1 = 1.6526$$

STAT

$$\frac{.98}{.137}+1 = .715+1 = 1.715$$

$$\frac{2.64}{.137} = \frac{1.28}{.137}+1 = .9.35+1 = 1.935$$

$\gamma_{.6} = \frac{.137}{(.6)^2}(5.2-1)+1 = .338 \quad 1.6+1 \quad 14.5/2.6 = 5.57$ wh

$\gamma_{.575} \quad \frac{.137}{(.575)^2}(5.2-1)+1 = 1.78+1 \quad 2.78 \quad 5.2$ wh

$\gamma_{.55} \quad \frac{.137}{(.55)^2}(5.4-1)+1 \quad 2.04+1 \quad 4.5 \quad 3.04 \quad 4.76$

14.5

$\gamma_{.5} \quad \frac{.137}{(.5)^2}(6.0-1) \quad 2.74+1 \quad 4.5 \quad 3.74 \quad \boxed{3.88}$

$\gamma_{.475} \quad \frac{.137}{(.475)^2}(6.3-1) \quad 3.22+1 \quad 4.22 \quad 3.44$

$\gamma_{.380} \quad \frac{.137}{(.380)^2}(6.75 \quad 7.75$

$.475$
$.370$

D = .6 L = 5.57
D = .575 L = 5.2
D = .55 L = 4.76
D = .5 L = 3.88
D = .475 L = 3.44

STAT

$\frac{L_1}{L_0} = \text{ratio} = \frac{.137}{D^2}(\mu' - 1) + 1$

$\frac{L}{D}$; D = 1.27 = 1 $\quad \mu = 3.2$

$\frac{L}{D}$; D = .635 = 2 $\quad \mu' = 5.1$

$\frac{L}{D}$; D = .317 = 4 $\quad \mu' = 7.7$

D = .211 = 6 $\quad \mu' = 9.7$

$\frac{L}{D}$ D = .158 = 8 $\quad \mu' = 10.2$

$\gamma_{1.27} = \frac{.137}{(1.27)^2}(3.2 - 1) + 1 \quad \frac{.137}{1.6} = .0855 \times 2.2 = 18.8 \times 10^{-2} = .188 + 1 = 1.188$

$\gamma_{.635} = \frac{.137}{(.635)^2}(5.1 - 1) + 1 \quad \frac{.137}{.403} = .13^3(4.1) + 1 = 1.35 + 1 = 2.35$

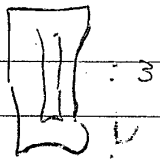
$\gamma_{.317} = \frac{.137}{(.317)^2}(7.7 - 1) + 1 \quad \frac{.137}{.1}(6.7) = 9.2 \quad = 10.2$

$\gamma_{.211} = \frac{.137}{(.211)^2}(9.7 - 1) + 1$

$\gamma_{.158} = \frac{.137}{(.158)^2}(10.2 - 1) + 1$

STAT

d varies
ratio varies
$\frac{L_F}{\text{Ratio}} = \text{Ind}$



$G_2 = .53 = D$ $\quad R L_1 = L \quad f(2, D) = L_0$

$G_1 = .56 = D$ $\quad L_{\text{Varies}} R = \text{Fun } L$

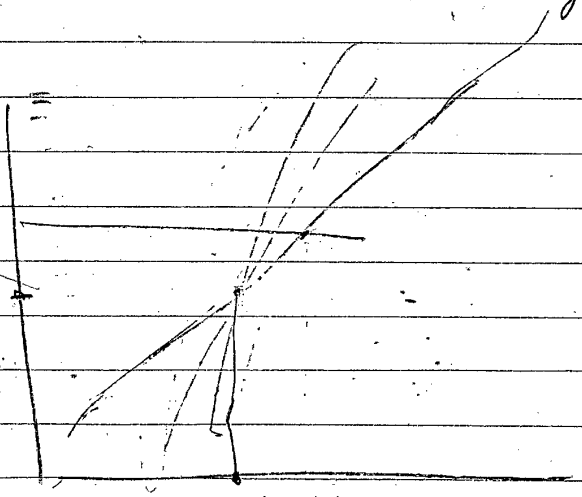
Vary d such that ratio varies during 14.5 by ratio

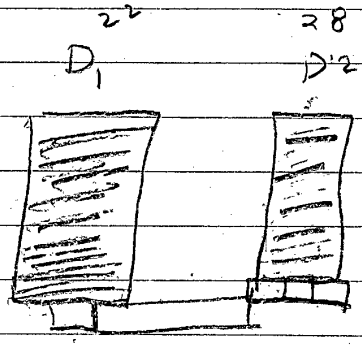
$\frac{L_1}{L_0} = \text{Ratio} = \frac{d}{D}$

3 ✓
3

$\frac{L_F = 14.5}{x}$ $\quad D$ $\quad D'$

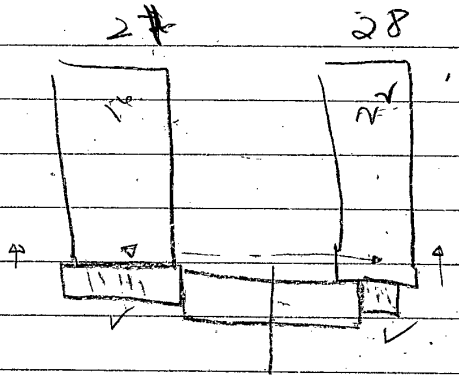
d = f(ratio varies)





$\frac{28}{22} = \frac{D_2}{D_1}$

$\frac{22}{16} \quad \frac{D_1}{D_N}$



$\frac{28}{22} = \frac{D_1}{D_2}$

R 5-6

1-25.5

L = 1.27

L/D = 1	D = 1.27
L/D = 2	D = .635
L/D = 4	D = .317
L/D = 6	D = .212
L/D = 8	D = .158

D	m'	
D = .2		
D = .3	1.131	2.31
D = .4	1.234	3.34
D = .5	1.365	4.65
D = .6	1.526	6.26
D = .7	1.715	8.15
D = .8	1.935	10.31

L

L = 1.27

	G-1 MATERIAL. m'	G-2	1.27
L/D = 1	3.2	3.0	1.27
L/D = 2	5.1	4.6	.635
L/D = 4	7.8	7.0	.317
L/D = 6	9.7	8.7	.212
L/D = 8	10.7	9.5	.158

D m'

STAT

$L = 1.27 \, N$

L (IND)
1.7
3.0
4.6
6.25
8.1
10.05

TURNS = 21

D	
3/8	.375
1/2	.5
5/8	.625
3/4	.75
7/8	.875
1	1.0

$4 \overline{)1.10}$ → .27

$.403 \overline{).1370}$ → .3, 1209

$.5 \times .5 = .25$

$.3 \times .3 = .09$

$6.7 \times .13 = 201 + 67 = .871$

.1

.415

$.13 \overline{).13}$ → .415, .1

$1.37 \overline{).137}$

6.7×1.37

STAT

$.4.3 \times .4 = 1.72$ → .25

D = 1,27 = 1.188

D = 1,0

D = .8

D = .7

D = .635			2,38	6.7
D = .65	2,11	μ = 5,2	2.6	5.57
D = .575	2,2	μ = 5,3	2,78	5,2
D = .55	2,3	μ = 5,4	3,04	4,76
D = .50	2,54	μ = 6,0	3,74	53,88
D .475	2,68	μ = 6,3	4,27	63,44
D .425	2,99	μ = 6,8		
D .40	3,18	μ = 6,9		
	3,2	μ 7,5		

STAT