

PTS 2008

STS PTS Archive2011

COMPUTATION BOOK

Wm Thornton, M.D. NAME 210 698 3616
7640 Pimlico Ln. Boerne TX 78015

Course DMA Cal Bal 3-06 -
P-37 to Prod. of STS RAP



www.ampad.com

Made in USA • #22-156



0 74319 22156 2

©2001 AMPAD, Plano, TX 75074
Division of American Pad & Paper LLC

Index

	Page
Cal Bal '06 BDM etc	5-36
Enspire and PAP	37 to 51
Pulse transduction	51
Demo and Bench Replacement, Computer maintenance	53
STS-PAP, 07-Cardionics Demo	67-83
Cardionics Pulse Training System	85
Archive Index	135

06

16 Mar- Meeting @ Ryann

Agreement was reached on following 0930-1030, 68mi
 • W.R. will send confidentiality agreement to DMA today
 Proprietary items include:

- Trade Mark
- Application for Patents
- Existing hard and software (records)
- Copyrights on Manuals
- Changes in Patent

Need to address:

Consulting;

Fixed rate vs hourly

$$\frac{10^3}{2 \times 10^2} \sim 5 \times 10^1$$

Expenses;

Hardware

Travel

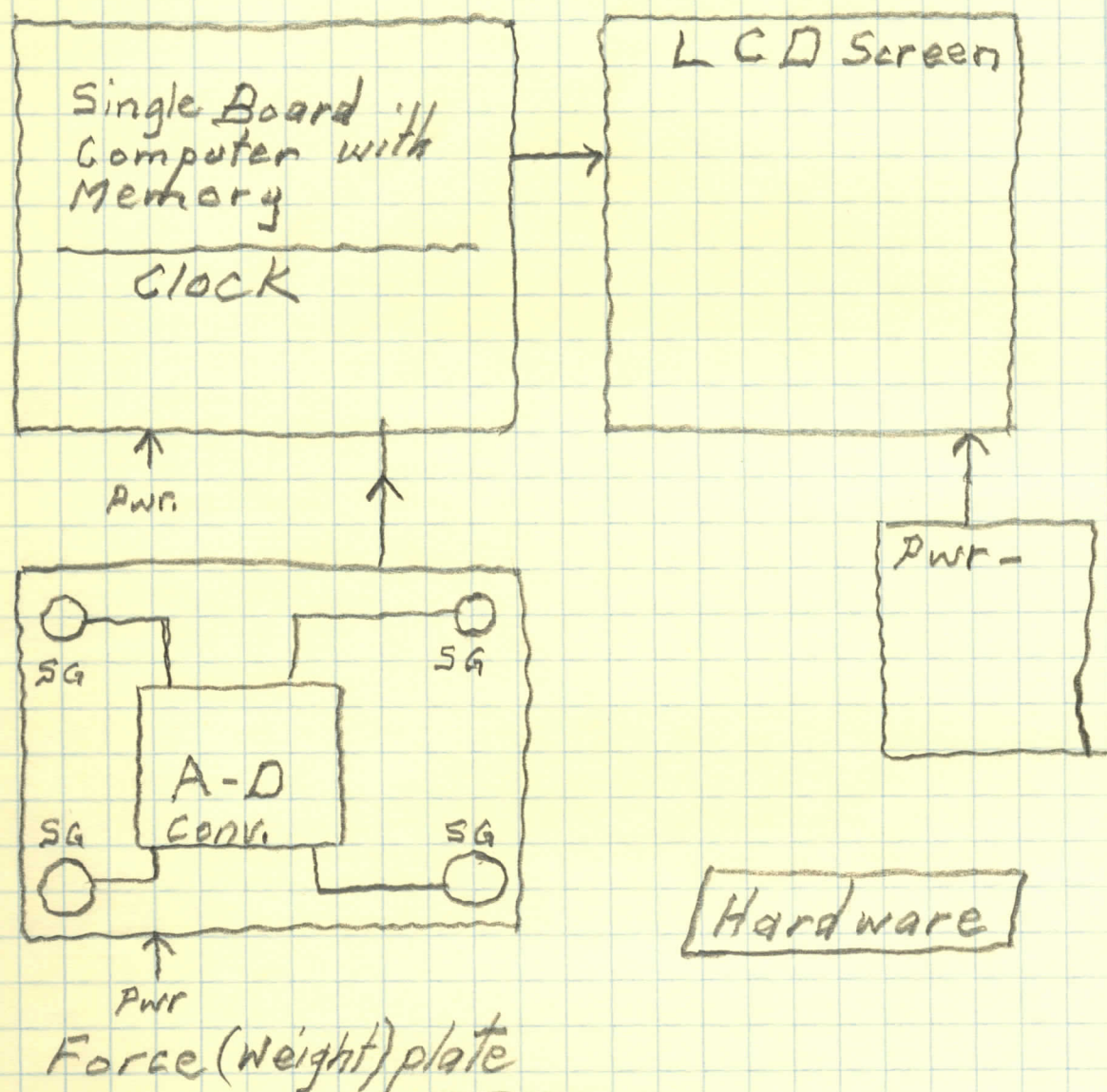
Mileage

Non-exclusivity

Ryann feels work to date, hard, and software should be rolled into nominal consulting fee.

Agrees that plan is next step.

16 Mar. Basic Element for all models Dev. Plan Fig. 2



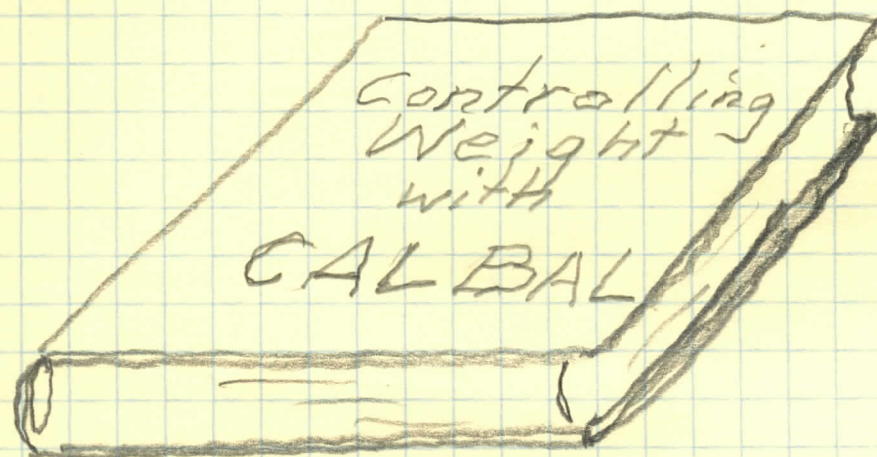
Hardware

Software

-
- Weight Processing for display, storage
 - Subj. I.D. by weight
 - Weight Validity by time
 - Memory File - Wt., Subj., date
 - Generation of prescription line
 - Generation of sliding avg. line
 - Generation and control of display

16 Mar. Added Hard & Software to create CALBAL DIY
MKI Dev. Plan Fig 3

Hardware



User's
Manual/
Text

Software

- Subject reset function
- Subject final weight detection and auto change to zero slope
- Memory stick port

16 Mar Hardware & software to add to CAL BAL DIX to
produce CAL BAL Semi. Pro - Dev. Plan Fig. 4
MK II

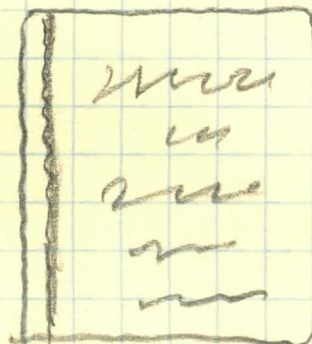


Audio
Chip -



Spkr.

Hardware

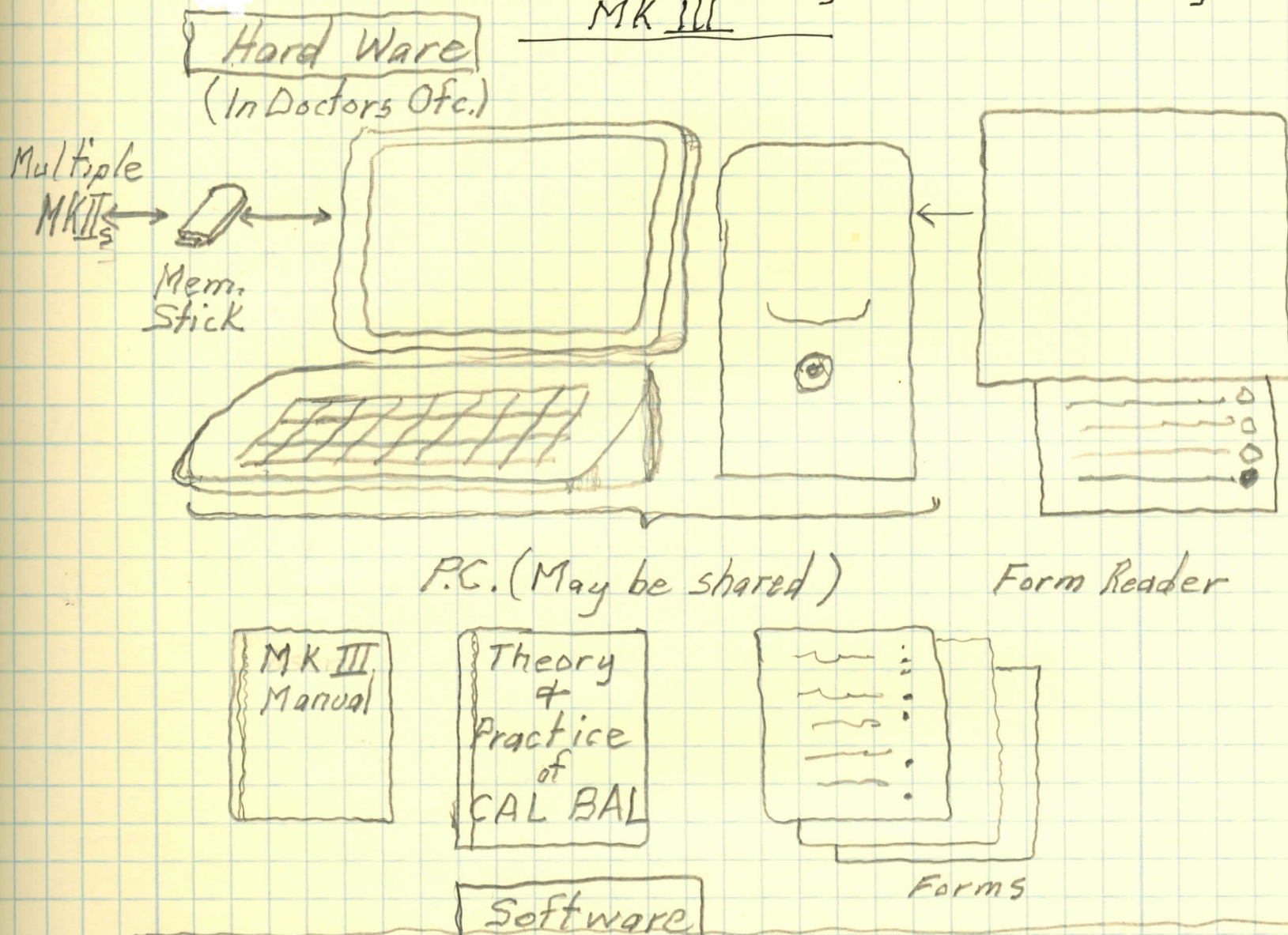


Users Manual

Software

-
- Voice synthesizer prog.
 - Message generator for voice synthesis
 - Program for calculating data to generate messages from stored and current data
 - Storage programs for pt. data, food and exercise values
 - Means of transmitting data to other sites

17 Mar Hard and Software to add to C.B. Semi-Pro (MKII)
to make a Professional System. Dev. Plan Fig-5
MK III



Extensive Programs will be required for:

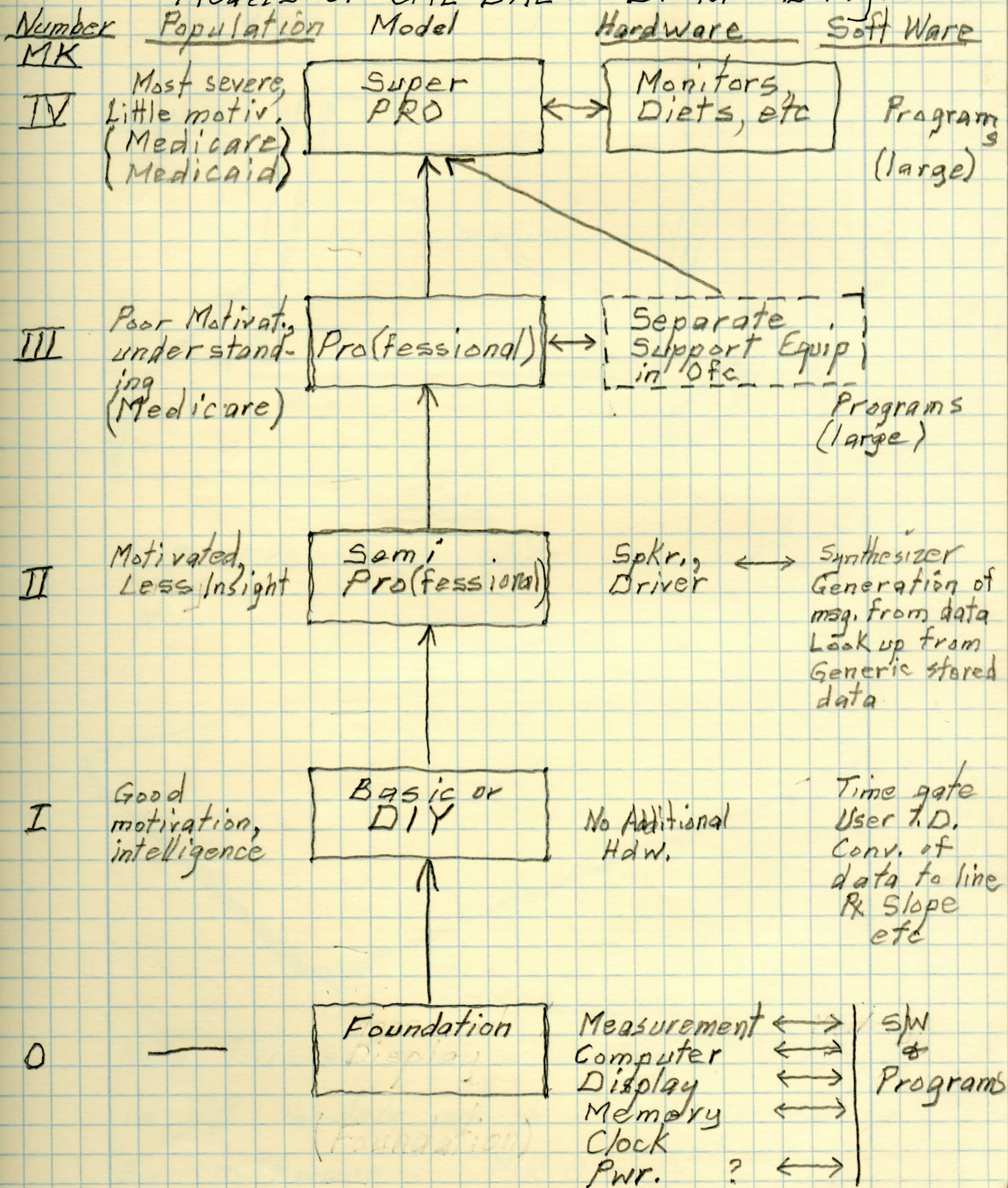
Generation of personal (individual) programs for MK II's

Conversion of pt. form info to data (psychology, food, exercise + health info)

P.C. display of MKII data

Also design of forms will require special expertise as will writing of the book.

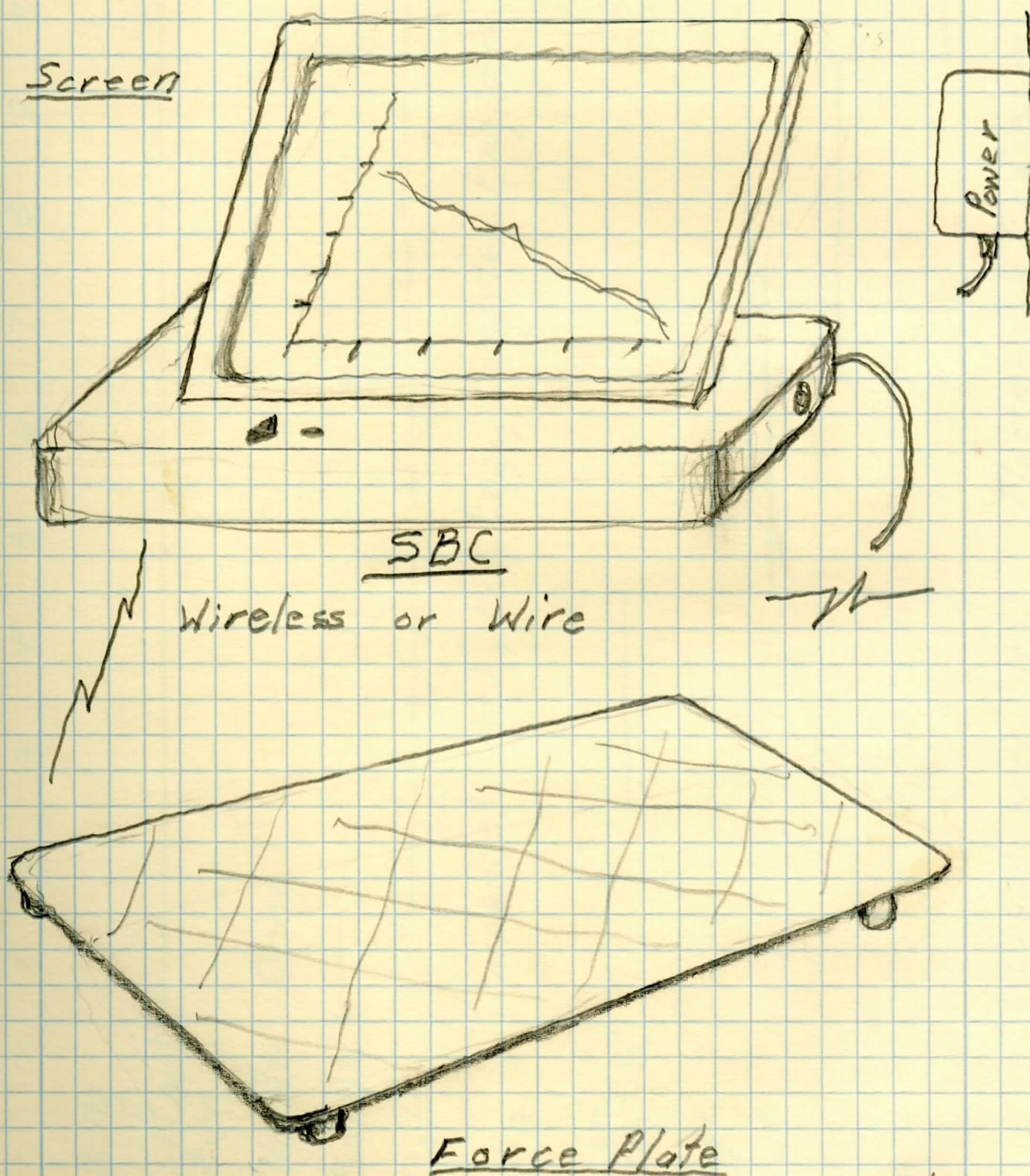
18 Mar '06 List and proposed nomenclature for Initial
Models of CAL BAL DP for CB Fig. I



20 Mar '06 Dev. plan for CAL Bal

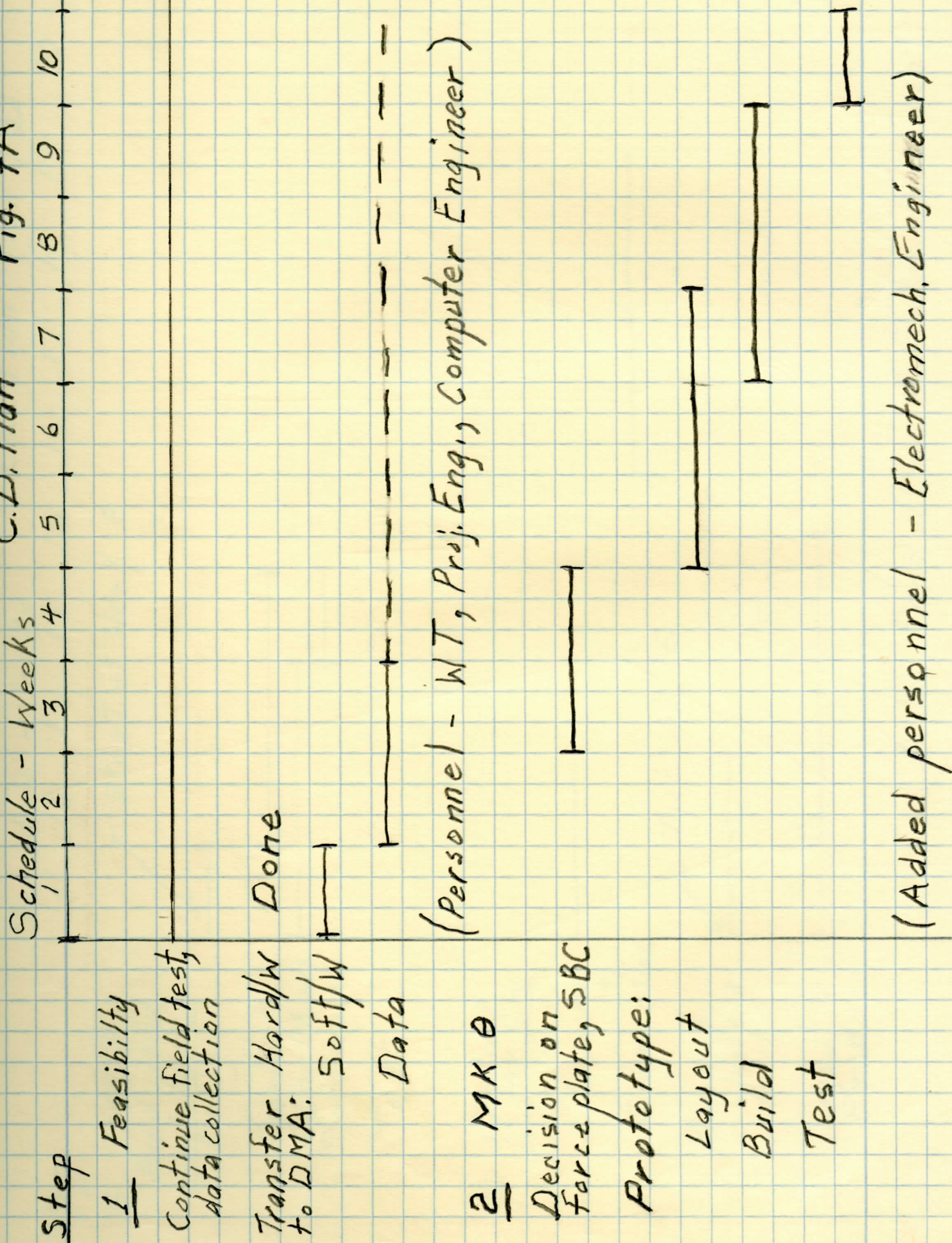
Fig. 6

Config. Sketch for all patient hardware models



Note: This or similar config is identical in all models which differ primarily by software - MK 0 - IV

C.B. Plan Fig. 7A



22 Mar '06

C B Plan

21

C.B. Plan Fig. 7B

Schedule - Weeks

11 12 13 14 15 16 17 18 19 20

Step

3 MK I
Production
Prototype
Design

Fabricate,
Adapt & add
Software

Test

4 Produce
12 MK I's

Planning

Fabrication

Manual:
Write &
Edit

Layout &
Produce

Start at Week 8

Start wk. 6

(Add Production & Sales Personnel)

22 Mar '06

CAL BAL Plan

C.B. Plan Fig 7C

Schedule - Weeks

20 21 22 23 24 25 26 27 28 29

Step

5 MK II
Production

Prototype:
Design

Add Hardware

Software
Design
Produce
Test

Production
Planning

Fabrication

Manual addit.

Write, edit,

Layout,
produce

(use MK I Proto.)
(start at WK 16 - finish WK 20)

(WK 16-17)
← (start WK 17)

(Wks. 16-20)

27 Mar 06 BDM - Summary

Sent BDM Figs. on prev. pg. + 4 pgs. of descr.
Received another proposal $\approx$ sched. from DMA

Date:
DMA
Trip -

Jack Hammond - Thinks: MK III is viable -
Doesn't want to touch MK I + II, Pat. is disagree
Need complete plan - Mentioned show in
Oct -

FEB-7-9th Estimated Expenses:
Since 10K from DMA;

(Purch) Tanita repl. DM Scale

Lap top. 1000

S.W. Tanita - 500

" " Mettler - 500

Xfer. DMA Mettler -

Trip to HOLL to coord. Xfer. 250

" " " " " " 250

Patent expense

Time: 9th Feb 3 hrs Exp - 225 (R) mis 60

13 " 8 " Ups 20

15 " 2 " 22 Ups 24

20 " 8 " 22 Ups 24

23 " 5 " TTX -

27 " 7.5 " 225 (Rya) 60

10 " 1. 44 Ups 15

6 Mar 2 30 Ups 30

10 3

13 2

15 3

16 6 225 (Rya) 68

18 6

20 6

21 4

22 5

27 Mar Development Costs: C.B

S/W Development: \$ 5,000

S/W Maintenance: 4300

Hardware: (5 protos + 2 DMA protos)
Avg. Proto Cost - 1200 + 800 18,000

Trips: Houston	12 X 500	6000
N.C.	5 X 750	3750
Galveston	1 X 600	} 800
Lgh. miles.	1000	

Overhead:

Util 1500

Space 3600

Comp. 1100

Time:

3000 + hrs

300,000

Patent:

8500

T.M.

1000
45,650

$$\frac{10^6 \times 5 \times 10^{-2}}{5 \times 10^4}$$

27 Mar.

3.10⁵~~2.012~~6x10⁶10⁴

10

Patent - pay for time

Soft ware

Trade mark -

S/W copy right

28

Raised above issues and others c Ryan:

- Who confirmed that two consideration had been rolled into one; Consultancy and Licensing
- Licensing will cover intellectual property; Patent, T.MK., Copyright of S/W, Text books, etc. I cannot control quality or nature of products produced.
- Consultancy will cover time sched etc.

We agreed to change Woodies document as little as possible but restrict it to consultancy + have W send us a new license agreement.

29

I went to Austin and there was a big comm Flail - W.R. + I agreed to my discussing it c Bruce before sending it.

30

Couldn't get BDM til late afternoon. I had told him to go to BB+B and get a Tanita BC 324 to examine. Instead he bought + sent me a Wt.W. (Conair) which was all over the scale. It had provision for digitally storing and displaying differences between current, initial, prior + goal wt.

30th

cont'd next pg.

Received	Wt Watchers (Conair)	scale from BDM	WT
W.T. 264.4	31.4 60.6	193.8	63.2
268.8	34.5 50.5	W.T. 178.2	63.2
31.4	21.4	65.9	62.9
Calib. 35.8	62.1	189.1	2.7
Wt. 25.6	Calib. 62.8	186.9	3.0
41.9	63.2	189.4	3.0
24.5	Wt. 63.2	182.0	3.0
	63.4	193.0	3.6
	63.1	186.1	3.6
	63.2	197.3	7.6

7.6

31 Mar. 06

Cont'd. -

188.3

181.4
 166.4
 186.1
 186.1
 183.4
 180.9
 185.6

65.9

6 3.7
 3.7
 3.7
 5.8
 5.7
 5.7
 5.7

193.5*

19 2.9*
 2.8
 3.2
 3.2
 3.2
 3.2
 3.2

65.9

65.4
 5.4
 5.4
 .7
 .7
 .7
 .7

193.5

19 2.6
 2.6
 3.2
 3.3
 3.3
 3.2
 3.4

65.9

63.5
 ↓
 ↓

1 Apr. 195.6WT 2200189.5 189.0

183.1 9.0

179.0 8.1

183.1 8.1

181.7 8.9

181.7 8.2

90.7

2 W.T.*

190.1

182.1

3.9

3.8

3/ WTK

194.1

182.5

5.6

5.6

7.2

31 Mar. BDM panicked at the sight of all the "competition" + J.H.
 Summary encouraged the panic. After a long non communicative
 conversation I promised to send a summary

10 Jan Status and Review

Enspire have made two failed attempts to produce the Introduction or first look. Also the scope and content have been reduced to meet Enspire's capability and contract restrictions which are now being defined in a contract addendum.

The following is a review of the modified introduction

<u>Section</u>		<u>Segments</u>	<u>Shots</u>	<u>Time</u>
1	Introduction	12	20 16.7	3 15 sec 5.25 min (26.25)
2	Rate	23	35 1.52/seg	7 01 11.68 (30.48/seg)
3	Rhythm	13		
4	Amplitude	211		
5	Shape	$\frac{10}{67}$		

The above is an initial revision ~~based~~ based on Segment being a "coherent concept" - Shots/segment remain undefined -

Enspire's copy of the M/S including graphics will be done -

16th Received addendum to Enspire contract - At first glance the agreed upon clarification appears reasonable but a large complex addition on cost and effort has been added - Requested signed copy of original contract

17th Received unsigned copy of 8 pgs - undated

18th Requested confirmation of above from Bayer
Plan - Review Contracts ~~an~~, Performance and Comm.

Offer alternatives -

- 1) Review current M/S to Enspire producer to reach signed agreement
 - 2) Remove time cost constraints
 - 3) Cnx. contract
 - 4) W.T. will reimburse portion paid -
 - 5) " " produce work book portion and limited hardware
- Make recommendation

18 Jan '07 Enspire Contract Review -

Having difficulty $\bar{c}$ documents under several categories
Will try chronological Approach -

Pre Contract -

Contract, PIM to FL

PIM to FL + 2nd Look

PAP

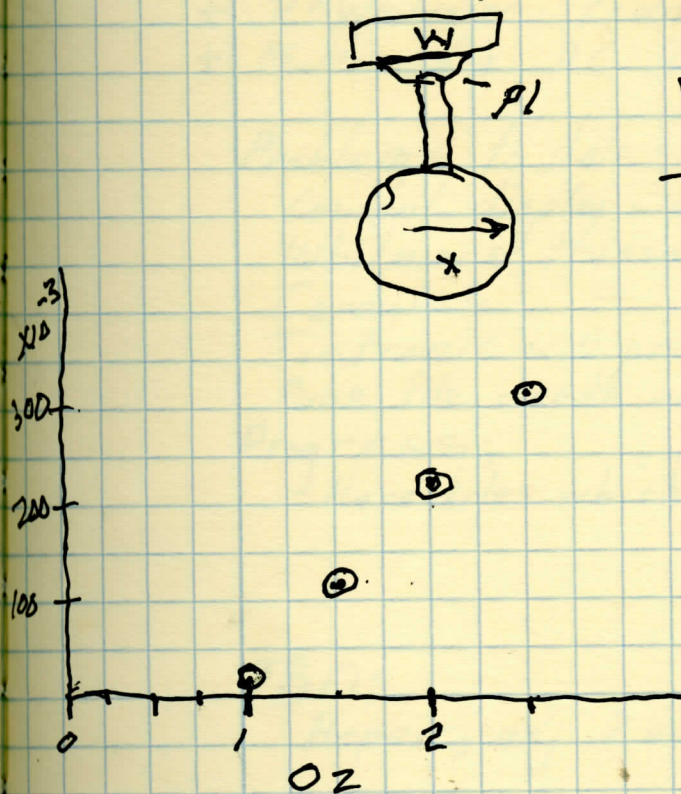
23 Jan. Organized and reviewed all data and sent e-mails to S. Leib -
I let Enspire slip out of contract - ~~the~~ contract is crx - there are numerous
options - but I have to get things in order at home -

March - Now scheduled for conf call $\bar{c}$ Shan, Lieberman & I - Plans (options)
26th are:
• Enspire wants to rewrite contract and deliver 180 hrs.
of a revised PAP
• W.T. wants to complete a first look at a much reduced introduction.
+ If necessary W.T. will pay for 2 scenes above 10 spec.
in contract -
• • < Enspire has spent $\frac{1}{2}$ of contract, \$19K, on startup -
That money was wasted for they have to start over. >
• • W.T. will talk to Tang at Tietronix about incremental
production - ie. Introduction & Rate & Rhythm - plus (?) demo.
hdw. - If UTMB will give me rights to later prod -

N.B. Need to inventory hardware and bench -

26 Mar. Transduction and tactile Sensation

Set up 3" 8 Ω 40 W Infinity Tweeter c Al cone-dust cover to meas. displacement. c dial gauge



W
oz

1
↓
1 1/4
1
1 1/2
1 3/4
2
2 1/4
2 1/2

Displ.
 $X \times 10^{-3}$ ins

off ctr

14 plunger sticky
53* consistent by pushing to
16* zero stop and releasing
112*
158
228
263
315

Now need compliance of finger but 0030

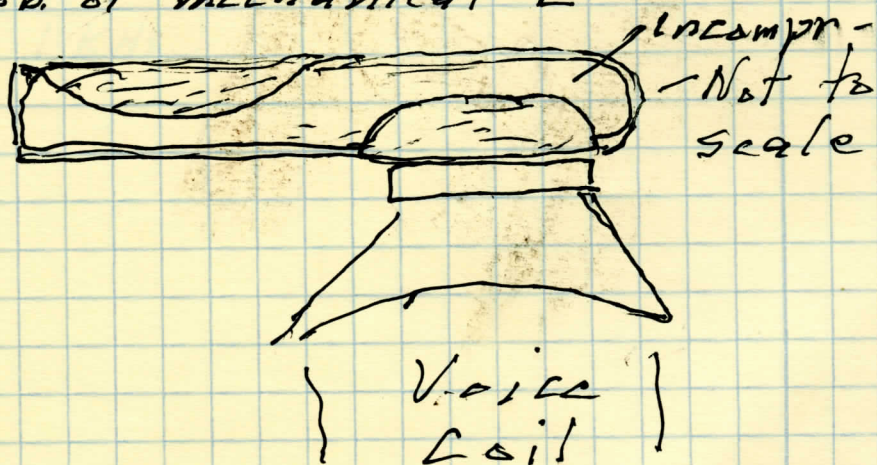
Using 3 V. displ was $\approx 65 \times 10^{-3}$ " but $\neq$ displ. against finger was unremarkable.

Strongly suspect pressure or $\Delta P / \Delta T$ produces sensation.

Order of mag. press - 120 mm Hg = $1.36 \text{ gm/cm}^2 \cdot 1.2 \times 10^2$
 $\approx 163.9 \text{ gm cm}^{-2}$
 $= 1.63 \text{ " mm}^{-2}$

It now becomes a prob. of mechanical Z

Z_m
changer



19 Apr. 07 Pulse demo and bench upgrade
 Demo for Cardionics - Nurse convention in SAT end of Jun

- Agreed to produce a quick, cheap demo $\bar{c}$;
 + 12 pulses from ATA (1 KHz AM)
 + 2 Whitmore transducers driven by
 + Multimedia P.C. $\bar{c}$ Text & diagrams only

Problems to date;

Couldn't display wave forms so replaced $\bar{c}$ drawings -

Whitmore transducers are marginal

Cardionics " " inadequate

Tietronix will probably want too much to produce this file)

Pulse file needs amplitude Δ 's

Progress;

Have files which need ampl. adj.

TBD;

Repair, adj. 2 ea. W/m Pulse Xducers.

Inventory Lab records (Hdw.)
 " "

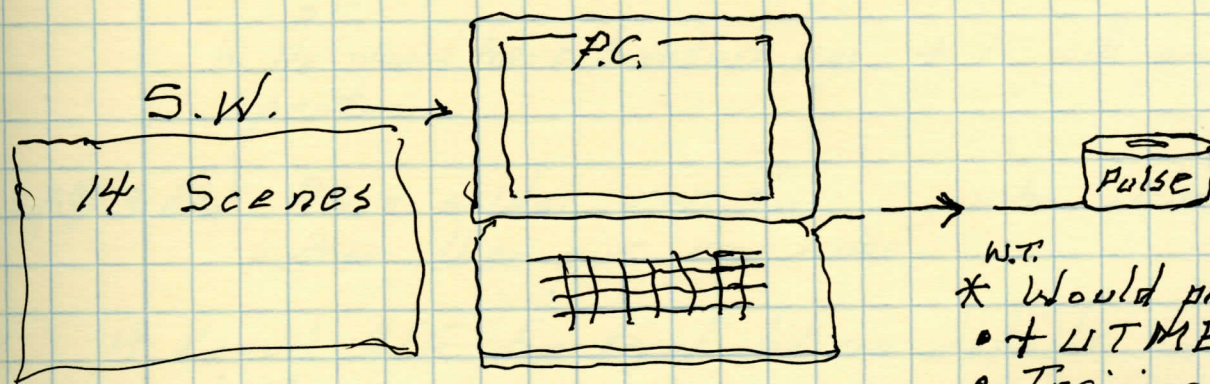
Demo Components
 Proto Xducer - 1 KHz -

23 Apr '07 Pulse Demo - AM

K. Johnson Wants Demo for Shows -
Agreed to put something together for him -

NB put on
paper

The system below has evolved -



W.T.
* Would provide: 2 xducers
• + UTM B permission
• Training & Aid in present-
• Poster/Man ?

Potential Users

K. Johnson - *

? Karnath -

W. T. in proto devel. ??

} Logo, etc.

Expenses

W.T. hourly + bench hours
travel, etc.

Hdw. repairs - hours

S.W. \$ 1,500

License to limited copyright -
\$ 1500 + expenses

24 Apr. Demo

1. Sent memo to K.J. as per Pg. 56 - He is on vacation til 30th

2. " " to V. Tang suggesting:

a. I return one of my ALLS MK I sys in lieu of his which would become his property for credit to my acct ~ 65 \$ + reasonable sum to use Pulse memo -

or
b. He would have to return sys. + I will pay for the proto -

(See Pg 59) 3. Rtd. P.S. & solder irons to who issued VISA credit rather than give new ones -

" 4. Recvd AFG for trial but no details on generating AF's.

Major Current Prob. Generation of FM pulses -

27 Apr. No word from Tang - Sent e-mail.

28 " Tang agreed to offer of Hdw for demo. I agreed and try to get demo ASAP - Lieberman wants UTMB on title - Will try to get T²X to

• modify title of Aus 4 to

UTMB

• (?) Palp. of Arterial Pulse, Demo - Add Pix

Se

Arterial

Pulse Demo -

• Will Cardionics want credit line? eg Made ~~over~~ Presented at new by Cardionics

• Produced by Tietronix

Palpation of

Arterial Pulses

Demonstration

• Reduce amplitude of Tones by ? No

• Correct glitches

30 Apr

Marco - Glitches Doesn't ans.

Inventory Hdw in my possession

repair " " " "

1 May

Talked to Marco (see above)

26 Apr.

P

p L-105

C-122

p 5th-

13.0

12.2

Computer, improved utilization

Dell has run continuously since 5 attention
Performed defragmentation, H. drive error ✓
Have 72 % of 74.5 Gb disc space left

Deleting Folders, Files

Problems -

Clean Up

De fragmentation

Updates

Slow

MSN-

1800 836

5550

866 234

6020

Want to use Outlook Express - with Norton 61
password ?

Try with Norton

remember " enabled

800 936

57007

Fee Based

Want to add power point to programs -
20011st MS rep. couldn't speak English - 2nd rep. - need to install Svc. PK 2 from
WWW.MICROSOFT.COM / Windows XP / SP2 /
default + mspkStarted install process and appeared normal 'til some form of
cleanup msg. appeared at ~ 80% (2 hrs) didn't move for hr then
msg. that MSN had insoluble soln. for prob. Followed by
recommendation that SP-2 be installed - Crx all prgs.
Auto restart - hung on & wouldn't respond to update pgs. Man
restart hung after calling on Wt - 2nd restart took 5-10 mins
Now appears as usual - 1230 Tried for help - Call again 90 mins -

1) Do precautionary back up of Pix and letters & e-mail.

10374372996

Uninstall Norton

Tech Info - Mgr

V-2 RAVIA @ m\$ support
microsoft.com

Shree

Msg.

Windows Svc. PK

C:\DOCUMENTS ~\ADMIN ~\LOCALS ~\TEMP

\b4d7 - appcompat.txt

emp

30 Apr '07

Inventory STS Hdw -

TransducersSound - Stetko:

STS MKI Orig. Proto - WT
 STS MKI UTMB SN 016
 STS MKI Orig. Proto. SN 13 WT
 STS MKI UTMB SN 023
 Cardionics Proto
 Andries PO109 WT

Phones

Sony MDR CD 770 WT
 2 ea. Koss TNT 55 Cardionics - eval
 Koss Titanium Cardionics - eval

Pulse

STS MKI Proto type, tuned WT
 STS MKI Proto, tuned 1 kHz W.T.
 STS MKI Proto UTMB 022 ?
 MKII Proto W.T.
 Cardionics Proto

Junction Boxes

STS MKI Mod 1 SN 005 ?
 STS MKI Mod 1 SN 012
 STS MKI SN 022

Tape Players

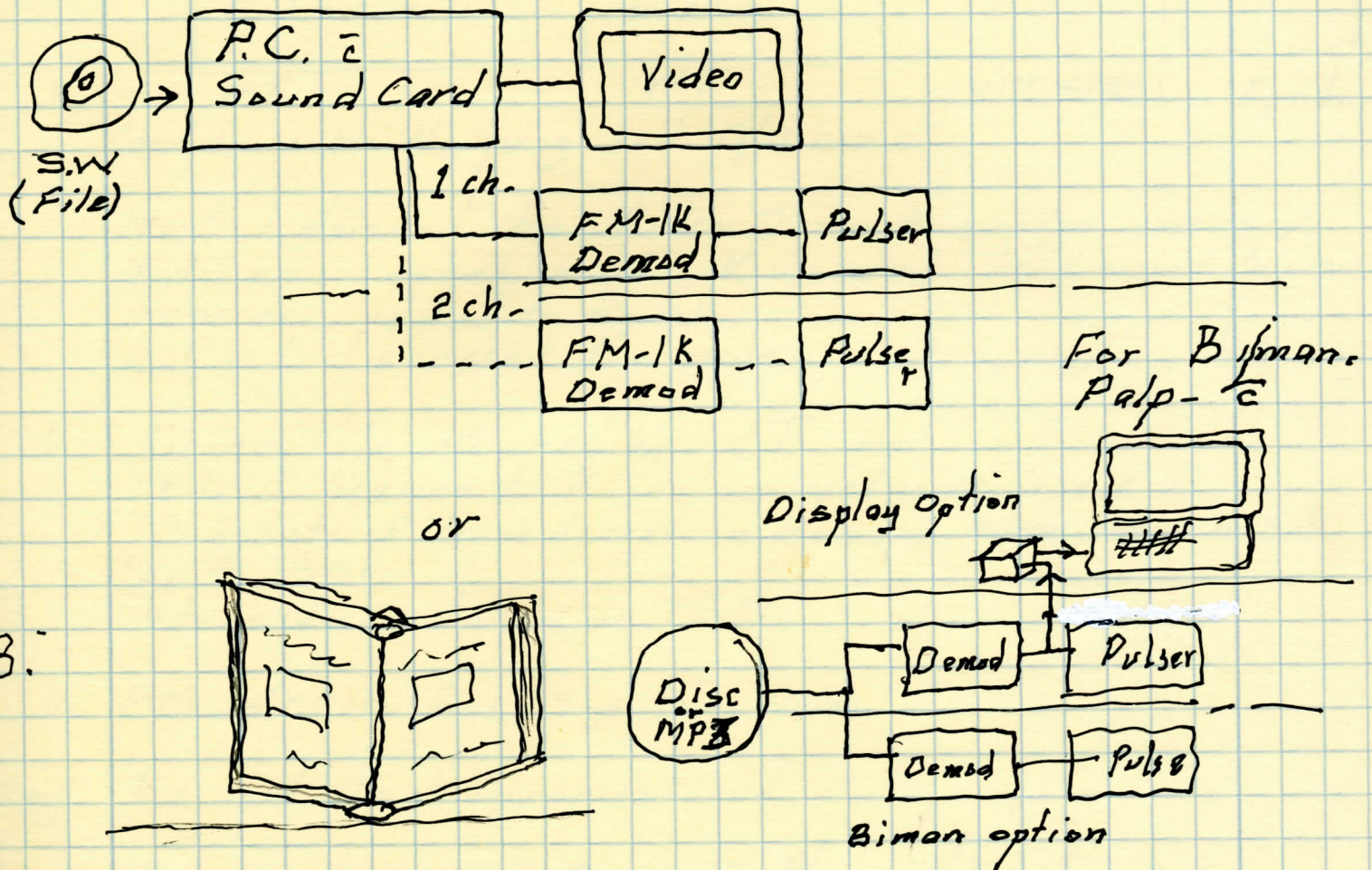
Sony Discman D368 (17) defect UTMB
 Sony Walkman D-EJ758CK (6) UTMB
 Sony Walkman D-EJ758CK (7) UTMB
 Sony Minidisc - MZ-E40 SN 586552 (#5) ?

ATA - Salvage -
 #2 -

2 May '07 Pulse Systems

Goal: Produce a simple STS quickly -

A. For nurses? (Call Keith)
~~Multimedia~~ Text and Pulse



TBD -

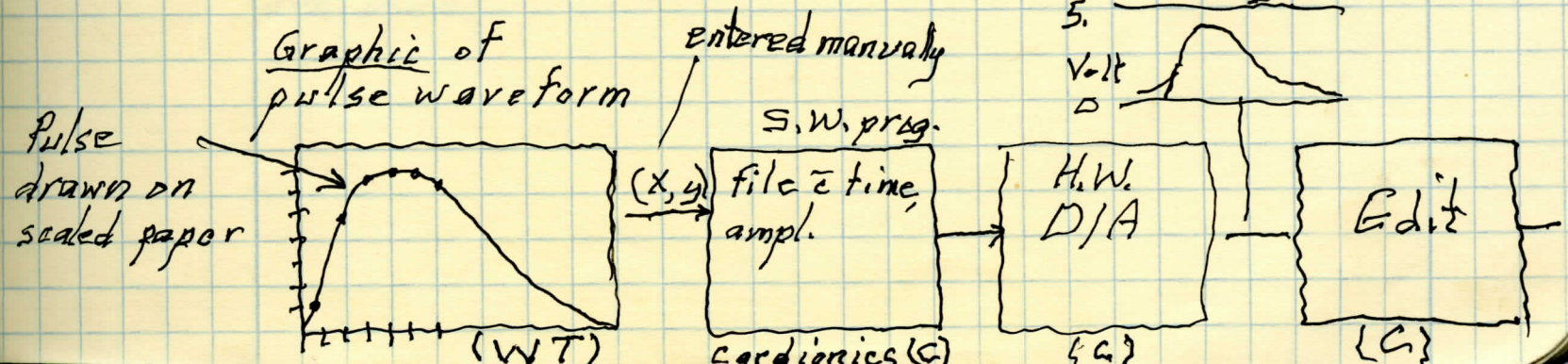
Demod.
K's Pulser

3 May K.J. uses A/D - 2 ch. to display waveforms

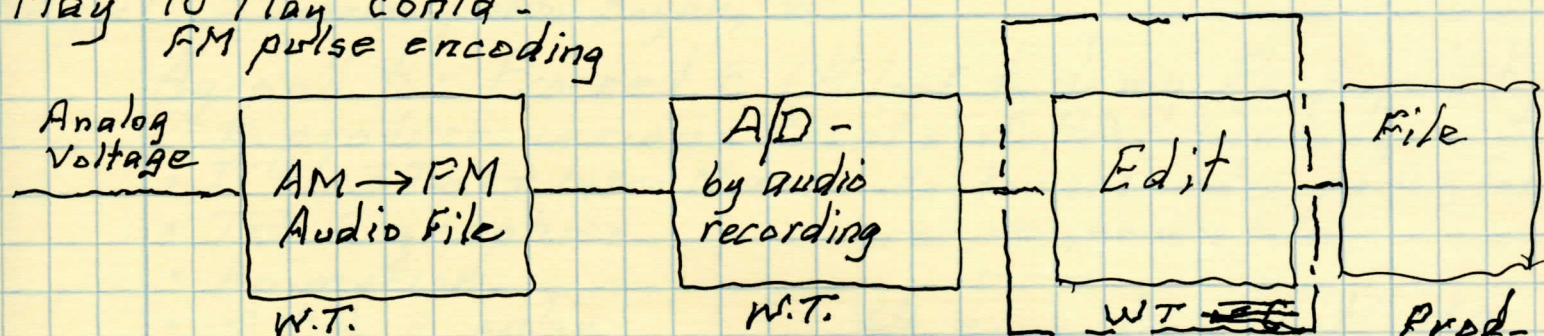
Use 'wide band' F.M. - 1-5 KHz -

10 May - M.Z., Tfx. Cleaned Up Demo

1030 K.J. - Said ✓ for demo would be in mail next day -
 Tommy, consulting eng. and Mark plus K.J. and I
 discussed generation of FM encoded pulses.



12 May 10 May cont'd.
FM pulse encoding



Cardionics has the prog. and D/A conv.

Next I demoed the Pulse Demo & a W/m. solenoid Xducer. Looked good - K wanted Cardionics Imprim - reverse - added to dig. file
K.J. & I discussed two issues; and agreed on following:

1. Demo. File : Owned by W.T. who
 - Will license to K.J. on non exclusive basis &
 - 2 sets of transducers on loan for Nurses show in SA For \$1500
 + transducer follow an TBD
2. FM intro to Aus Sys" Bon P-68

22 May K.J. sent ltr. of agreement and ✓.

Returned C.D. of Demo & P/s and pulse X'ducer.

5 Jun K.J. says everything was in order - will demo on 27, 8 Jun at Crown Plaza, SAT.

Pulse Tone Dilemma -

2 ch. MP-3 allows wide band - 4-5 KHz

Gamble that a 2nd w/b can be added when needed for biman. palp. However this eliminates use of common demod - unless smart electronics are used.

Enspire Phone Call

17 May '07 S. Lieberman, Sharon Boyer, W.T.

Agreed to: Proceed c 1st look to demo. E's. capacity to produce various facets of PAP incl. 3

- Title c Text + Intro Music
- Txt c graphics
- Animation
- Q & A c pulse
- Txt. c pulse
- Voice Over

Features: Index, pause, for, rev., etc., source file, 4/6 animation, 'art', V.D., 2 samples of pulse -

$\Sigma = 5-8$ Scenes

I agreed to provide sample graphics, and list, and to meet c Enspire and delineate features, by the 3rd week in June.

6 Jun. Called Dave Russel approx above arranged, then cnx. mtg, for above but didn't have prep. time. Will ship to him next wk.

1. Title

2. Index

3. Animation (coronary or peripheral color Δ)

4. 'Art' demo -

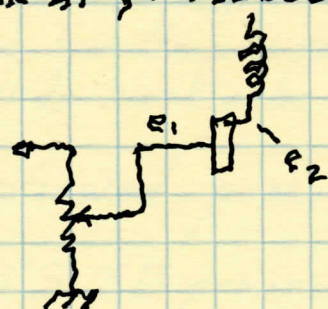
Pulse "
5. • 'normal' c arrhythmia
6. • bisferiens c Q/A

7. Px Dx demo -

20 Jun '07 Repair of Whitmore STS xducer for B/L of
Cardionics demo - P-55
W.T. prototype $\bar{c}$ tuned amp.

Rpl. plug.

Look at, ? reduce gain



$f=1 \text{ KHz}$

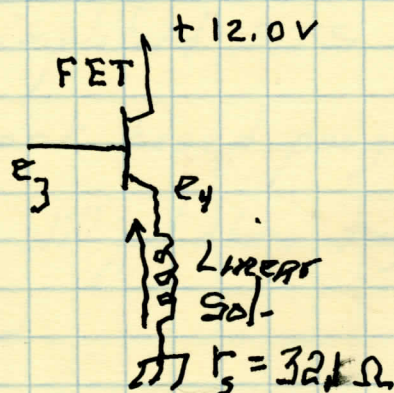
$E_1 V_{pp} = 200 \text{ mV} - .6 \text{ V}_1$

$G = 16.7$

$E_2 \text{ "}$

$E_2 \text{ saturates } 20 \text{ V.P.P.}$

10.4 Vpp



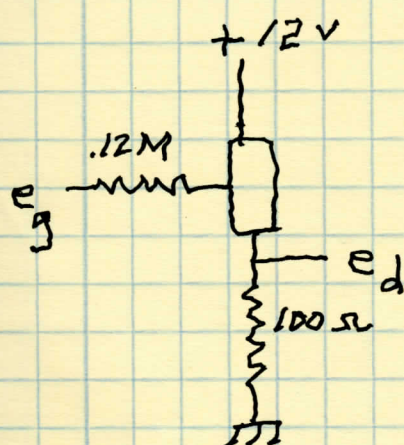
Max. baseline
 $E_{GS} = \frac{4.31}{2.75} = 1.56$

e_3 0 2 4 6 8 10 12

e_4 0

Find FET $\bar{c}$ $\downarrow E_{GS}$ to increase solenoid bias - $r_s = 10^2 - +12 \times 10 \text{ V}$
 $W = \frac{644 \times 10^2}{10^2} = 64 \text{ W}$

21 June



	volts			
$\bar{Q}$	E_g	E_d	E_{gd}	
K2314	8.61	6.92	1.69	
4	2	6.94	1.67	

Removed sponge layer, replaced F.E.T. & Mechanically adjusted W/m.
pulse xducer #022 - Will loan to Cardionics - as B/L for Nurses
demo 27 & 28th June.

2 July '07 Results of Cardionics Pulse Demo -

Went to Crowne Plaza 30 Jun to meet KB who had dptd. the day before - He called -

He considered the demo a success - 40 nurses palpating the demo and 38 showing interest - Points/features he emphasized -

Fidelity of pulse - good - better than Harvey

Show location

Have simultaneous visualization

Include weak pulse

I reviewed possibilities for product:

- STS 3D program can't be considered at this time
- Simplified STS might be possible - Don't have time -
- Book based program recommended -

Will put above together for K.B.'s review, tomorrow

Need:

1) Agreement

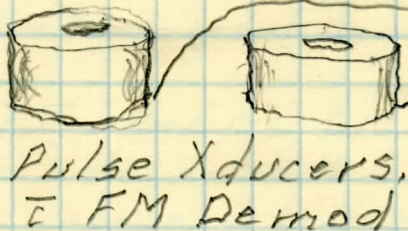
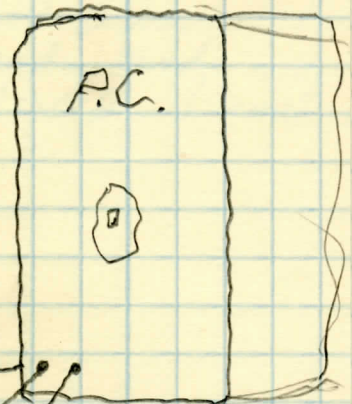
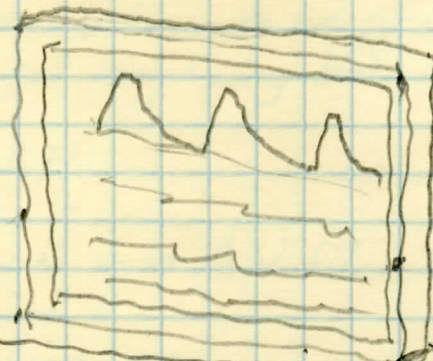
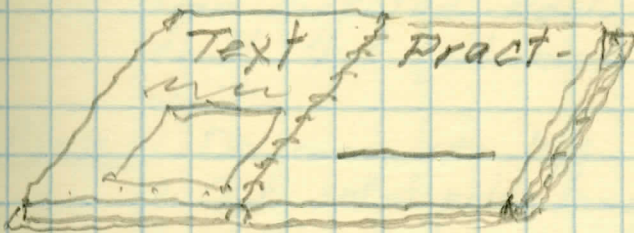
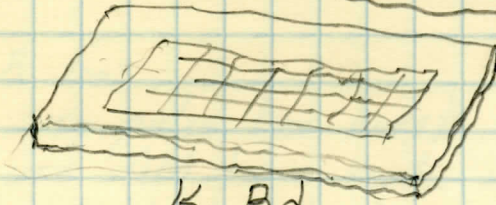
2) Demo of FM capability

2008 PTS

26 May Review: In an effort to get something into the CV
 P&Dx inventory for nurses, PA's, med. students, EMTs, etc.
 Cardionics and I are try. to prod an introd. to palp. of art.
 pulse - Cardionics prefers - Pulse Training Sys. PTS!

Txt. Wk. Bk.

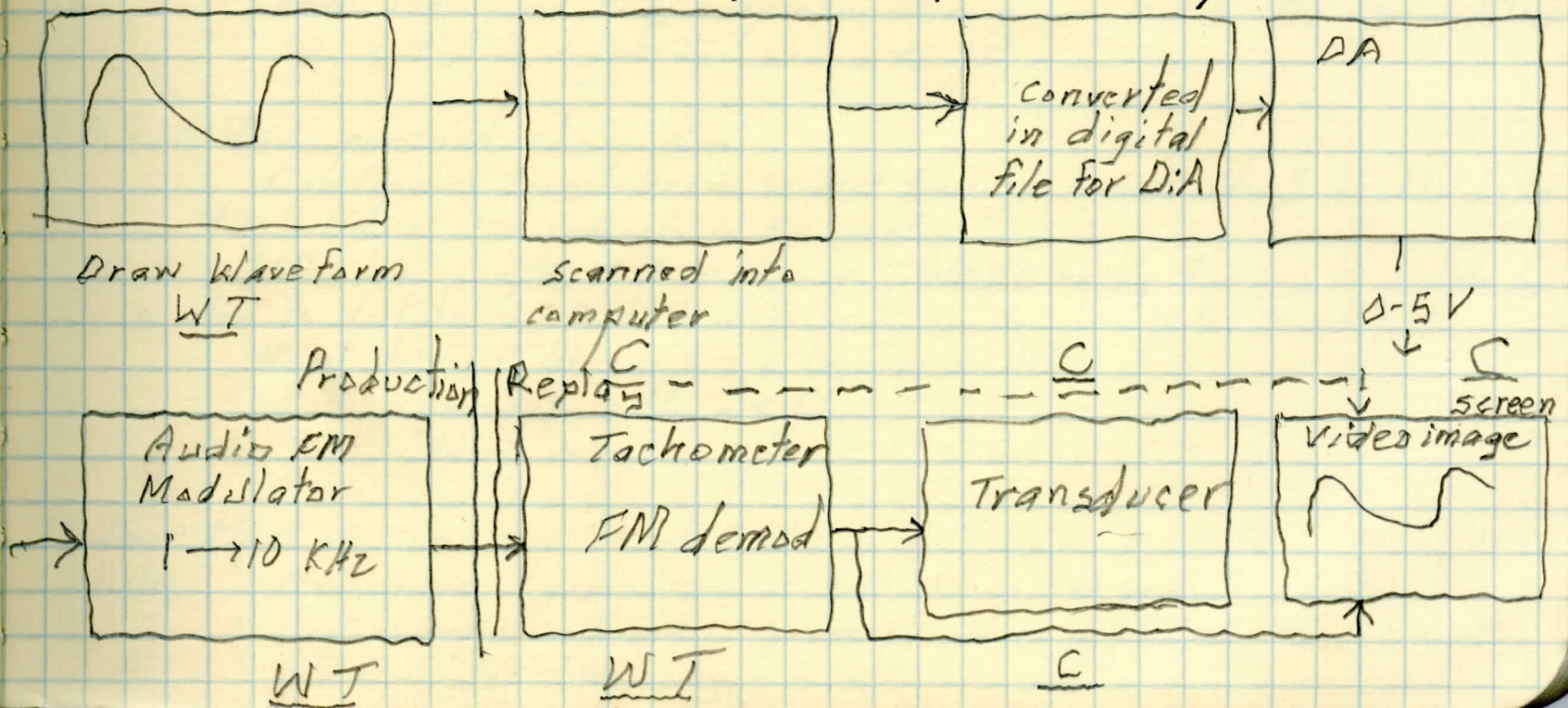
Screen

Pulse Xducers,
FM Demod

Kb Bd.

or
Lap Top

Text-Work: Didactics, practical instructions and ques./ans. & space
 Book: for dwg. etc. Relies on self exam - and synthetic pulses - Biman.
 palp. is option & 2° Xducer. Pulses will be F.M. on R+L channels &
 of stereo audio and their waveforms displayed on screen &
 transduced into pulses. Audio is other wise unused - These pulses
 are called up by student per book - NB This schema is embarrassingly
 crude but can't find a digital program to repl. it. Current process:



2008 PTS

26 May -

The only good feature of this pulse transduction arrangement is that it works. Video production is troublesome for images have to be generated from the subcarrier or synchronized $\bar{E}it$.

Schedule and alternatives:

The txt, wk, bk, is T ch., or Sch.ckman palp. and S have been dictated. Hdw. and tones have to be produced - and doubt that Cardionics can get anything before 2009. I can't wait.

Plan:

1. Do complete M/s ASAP
2. Get set of pulse tone files "
3. W.T. produces both book + A.V. files $\bar{E}$
 - A - up front payment from C -
 - B - Agreement in production runs
4. W.T. rewrites txt-WB for
 - a. rate and rhythm - use pulse tone burst for timing - C, D, etc.
 - b. above + profile - use AM tone mod - C, D, etc. - no visible or palp profile only audio in a. + b.

Cardionics has torso simulator $\bar{E}$ 4 heart sounds & carotid pulse - Wants to use STS text to augment a v. poor manual - Will probably acquiesce - Manual needs rewrite but:

There isn't time so: complete above - PTS txt, hdw, ASAP

2. Sell him rights to use STS txt,

13 Jun Have pursued above plan:

Cardionics transferred several tracings I sent into 1 usable data file which a D/A converts to 5V analog.

W.T. has written 8 of 10 chs. of TWKBK ready for gen to dictate for Sen to dictate for D to transcribe for me to give to S.J. to edit!!

Need to: finish txt, graphics, side, bars, biblio -
generate audio FM file
design demod

15 ~~Jan~~ July Most of time was lost to 2 wks in N.C. and wk. in CA.

Now have 1st generation of text of chs. 1-9 in Sid's hands.

- Ch 10 is review which K.J. agrees should be in clinical case format - This will take time and goes on hold.

2008 PTS

15 July Production of Txt/Wk Bk - contd.

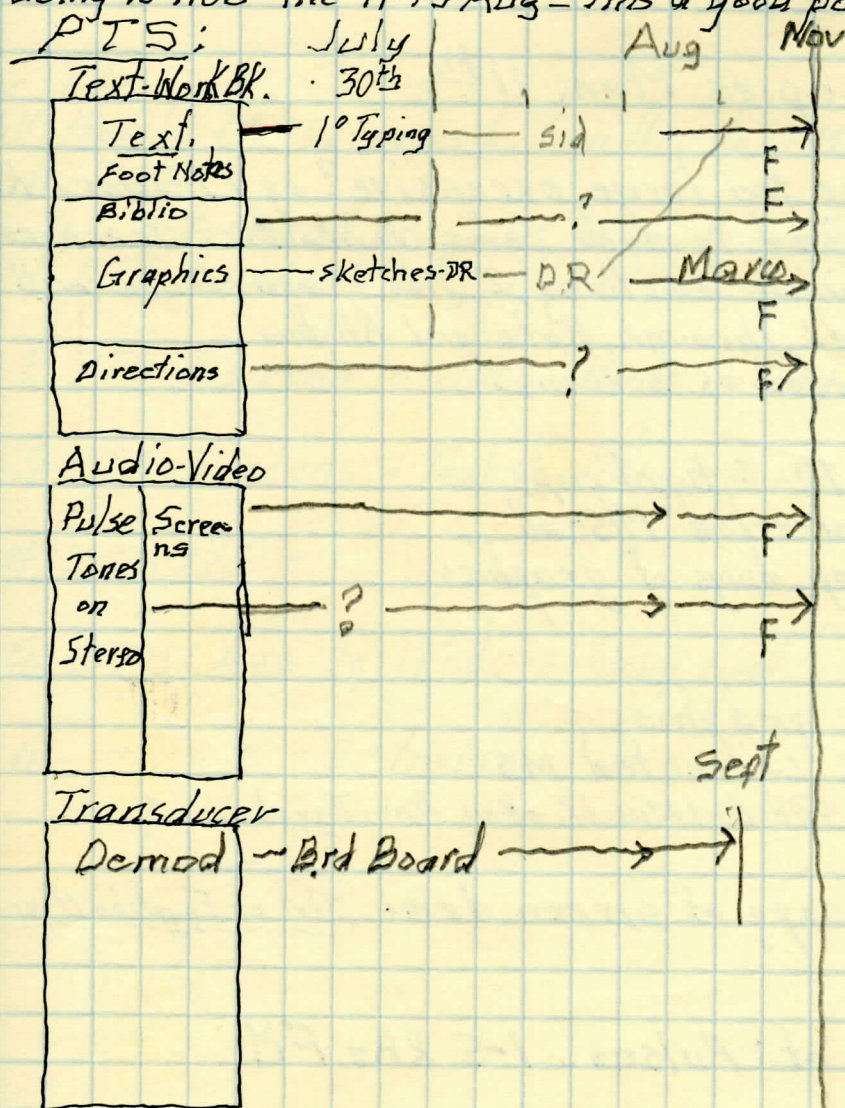
- Sid wants illustrations^(finals) to continue effectively - Will get these to Dave R. ASAP
- Will also do foot notes and biblio
- Need analog wave forms - apparently did^{not} send all to Cardionics + promised to confirm which WFs. from K.J. were good - + " to send additional WFs.

We discussed my getting Ttx. to produce Video except Cardionics add on. K.J. agreed but we need a contract between K.J. + I

- Reviewed pulse copies recvd. from L'omics. Only one is usable told Keith
- Promised to send addl. tomorrow -

29th

- Haven't started sketches!
- Have finished text which D. is putting into a dig. file
- K.J. is still late on digital waveforms
- Going to HOU the 11-13 Aug - This a good point to review



Production — Meet to
Printer

(Over)

2008

31 July Book M/s-

Complete graphics

List today/
tomorrow
Make Sketches by 11 Aug

Carry to & Rev. 12 Aug

8 Aug Out of Time -
• Truncate Illustr to Ch 5 to D.R. 12th• Take corrected txt. to Sid 12th• Do One or two Complete Screens (A+B)
to discuss c Ttx. 12th• Make copies Mon. 11th9 Aug. Has this become too large, excessive? eg 77 Scns. K.J. doesn't
think so. He promised to make some contacts c teachers for me.
In any event, to finish something, c Sids. concurrence will go for
first half of book, through Rate and Rhythm.

11 Aug. First half completed ex. Screens.

Take to Sid:

- CD of Ch. 10 c hard copy
- Copy of; corrected M/s - all 5 Chs
; top dwgs of graphics

Dave R;

Copy of; graphics
; corrected MSBooks; The Brit. Mus. bk. on Anc. Egypt,
Tietronix? : copy of screen demo - Art of Egyptian Hieroglyphics

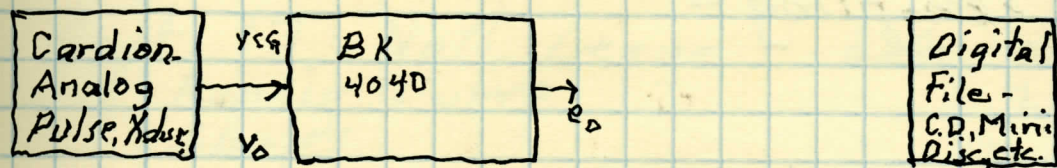
Try to do audio of: Pulses - 1-5 kHz FM

Cardionics; Pulse generator

Other; Noz bks. c PTS MS I, II, III

11 Aug

Transcription of F.M. Tone pulses



V_a Volts	E_a Hz	ΔV	Δf	$\frac{\Delta f}{\Delta V}$ Hz/V
- .021	1442			
+4.527	10457	4.548	9015	1982.
2.643	6848	2.664	5406	20 29
1.690	4968	1.711	3526	2061 3.45%

V_o came from variable P.S.
monitored by
VOM - Internal B+K counter
meas freq.

Pulse Xducer failed - Will return to Card. tomorrow - Will also take F.M. generator.

Items for Tfx.

1. Will they do Tfx. Screens? Can they do FM tones -
2. Settle bills -
3. Explore transfer of programs to new technology:
 1. PTS to sound only iPods + Book

2. PTS Screens to video iPods + Book + light + sound

3. PTS Screens + Text to video iPods $\bar{c}$ " " "

4. STS PAP -

5. STS Aus to iPods $\bar{c}$ timing light -

6. " " $\bar{c}$ lights

Tfx -

Const. sampling -

13

- 1st Bill will provide tracings.
- 2nd Titronix will provide quote for chapters 1 thru 5 of Pulse Training estimate.
- 3rd Bill will provide Titronix with text, Images

Flash III

Aug. 20th Dave Russel quoted [#]4 K for Art work for Chs 1-5 - The book won't bear this -
 • Reduce scope of graphics • Reduce Chs covered
 • Hold book and redo -
 V. Tang - left msg. 281 389 5731 - 3.6-4 K for 1/2 bk
 Will set \$10 K limit for screens + bk.

14

Tfx. wants to consider art work
 Alternatives another artist or do it myself.

15

21st M.Z. claims to have text on screens and all of Ch 4 done.
 Sid has edited txt ex. Ch 10(?) & disc & copy to be deliv.
 tomorrow.

Quark
 4.1
 Exp

Graphics - Told Dave to return my sketches, etc. & invoice for work he has already done. He is meeting Sid tonight for salvage?
 Will send MZ sketches and txt. of book.

18

Plan: Complete proto hds ASAP ①

1500

• Finish 1st Five Chs. " - - - - - → AM Pulses

Comple

• " " " " → 6 Screens -

21 Aug -

Sig
 for
 B/k

13 Aug Cordionics

Sept. 17. Natl. Leaye 256 - 8.333 m/s -
 • Running Curve 2048
 • Chaps -

$$\frac{2, \times 10^3}{8.} \\ \hline 16-$$

Agreement STS Txt.

Think about - Agreement + Book + Screen
 How -

Bill Nelson 21 Den St. Jos. Ca | Pulse Teacher
 > 1400 - 303 837 6822 | Contact

14th PTS Screens
 Had planned to do audio properly but Marco insists
 on doing this in two wfs

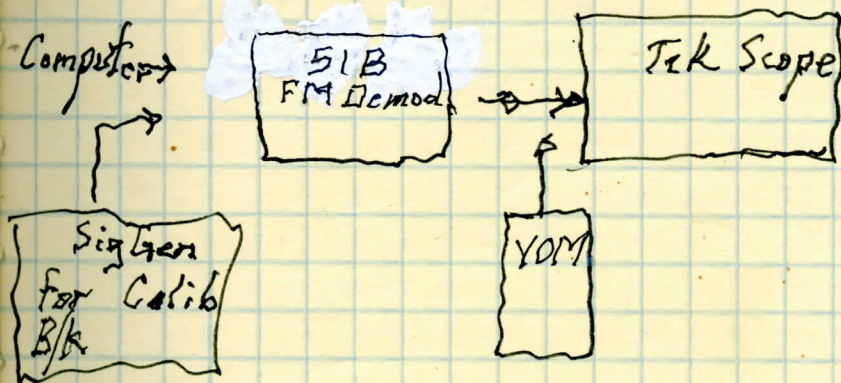
I can get the pulse waveforms today or tomorrow

15th Sent Marco by FAX • W.F.s for Ch 4+5, 4.7 and Introd.
 • suggested 1KHz pulse tone for R+R demo - Also for EPod audio, light
 • Will get txt illus ASAP today ?? and tomorrow

M/Z - MTW - Trace W.F. - f[~] spline - 8.33 - m Fr.
 - Audio - CD -

18th Have faxed Marco the Screen wfs and text - After much Frustration Marco
 may have found an FM conversion program and will send me a test tone ASAP
 I need to get H/W done ASAP.

1500 Marco sent sample of W/F + synched FM - looks good but need
 to verify FM.



Freq. Hz	Volts	W/F 4.1A Scope
1000.	1.000	
3000.	3.000	
		3.0V baseline
		3.5V Peak
		Peak meas, offset 0.5V

94

2008 FM Pulse Sys.

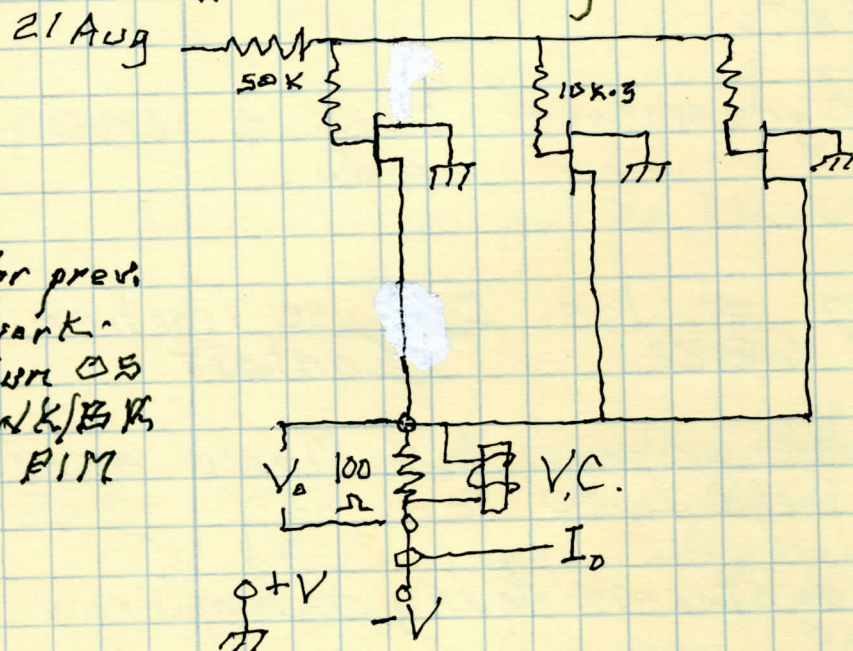
19 Aug. Products of Tietronix:

See Prev. Pg. Base line 1 KHz. (1.0V)
 38% pk. $\Delta 1V = \Delta 1 \text{ KHz}$

$$\text{Mod.} \approx \frac{10^3 \text{ Hz}}{38} = 2.63 \text{ KHz}/100\% \\ \Delta 1 = 3.63 \text{ MHz}$$

What ΔV_C Defl. $\rightarrow$ Power $\rightarrow$ Volt is reqd?

Have an array of 3 ~~FET~~ FET's (K 2314) as below



For prev.
 work.
 sum 0.5
 W.K./B.K.
 PIM

Need to know:

Max voltage
 reqd across
 V_C

$$\bar{V}_D 14.88 \text{ V}$$

$$V_{GS} = \pm 1.8 \text{ use } 2 \text{ V}$$

$\Delta 2 \text{ V}$ pulse $\rightarrow$ natural carrier
 $\Delta 5 \text{ V}$ " $\rightarrow$ hyper kinetic

$$\text{Gain} = \frac{\Delta 2 (\text{in-out})}{\Delta 4.6} = \frac{4.6}{4.6} = 1.0$$

$$\text{at } \Delta 5 \text{ V} = \frac{4.6 \text{ V}}{7 \Omega} = 0.66 \text{ A}$$

Need LM Measured FM carrier input from my cell. 2.4 V.P.P.

2917 N-ND

F to V chip

Order 10

from ~~the~~

Digi Key

Deliver

Tues 26

21 Aug - Review of A/B screens

22 Screen -

- 4.1 Won't play
3KHz
- .2 W.T. should be .65
3KHz
- 3 OK
3K
- 4 OK
3K
- 5 OK
3K
- + 6 No 10 sec delay
- 7 Put exponential in
- 8 O.K.

2
tic

5.1 A

22%

.2

.3

.4

.5

.6

7.7

Items - Title
Entry
Instruction pg -

Text:
Title All
A - without -

Amp/Rate

25% 50

N.C.

50%

A - needs Carotid tqt.

OK

B. regular extra

75

→ A
B 70
A 48

→ B
A - corr to "randomly dropped"
54

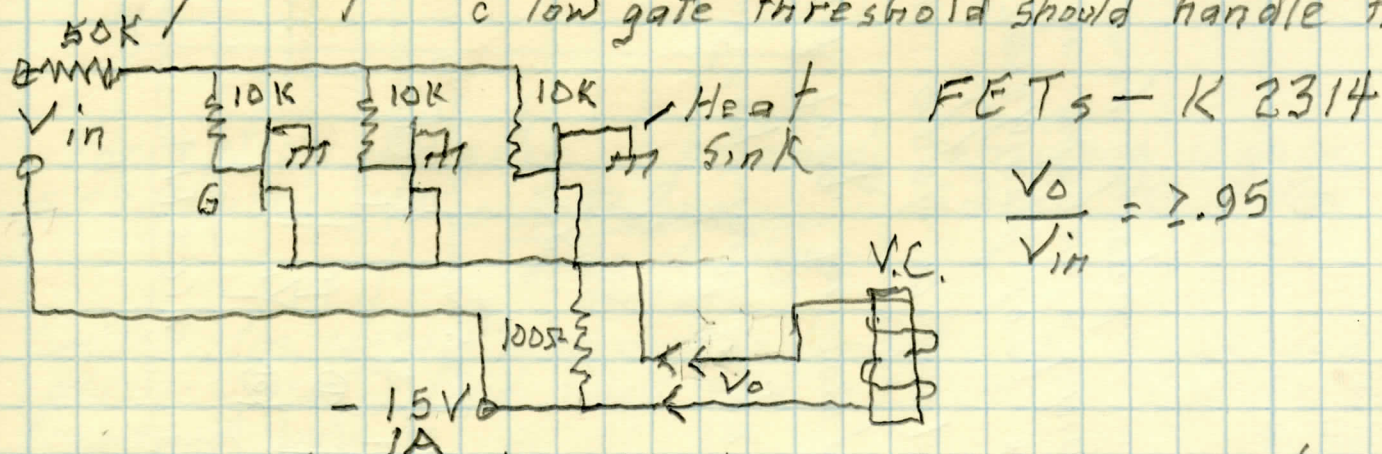
B. move - irregularity - 56

→ A
B
B

58

23 Sep '08 MK II pulse system contd.

Since the transducer is the most difficult item to change we start $\bar{c}$ that - or rather the highly empirical design of voice coil input to perception. This mechanical design will be treated last! I have found a well designed V.C. (Infinity 7 Ω 1" dia.) requires ~ 4.0 V min. for 100% pulse. Also it works better for me $\bar{c}$ a +1.0V bias. This makes a minimum of $\frac{V}{R} \approx 0.7$ A. The supply should have a very stiff 1.0 A capacity (regulation $\leq 1\%$) at say 14.0 V. without ripple ($\leq 0.1\%$). The volt. will depend on the FET drive. Driver - I have used a FET voltage follower $\bar{c}$ 3 FETs in parallel* to forget about gm, power & dissipation probs - as below. A good single FET $\bar{c}$ low gate threshold should handle this.



This is driven directly by a LM 2917 D-ND (14 pin) A copy of the original spec/application sheet is attached - A more current one should be available - There may be better chips now but it has been cheap, rugged, accurate and has a number of useful features. Operation, application and design are well defined in the old sheets that accompany this.

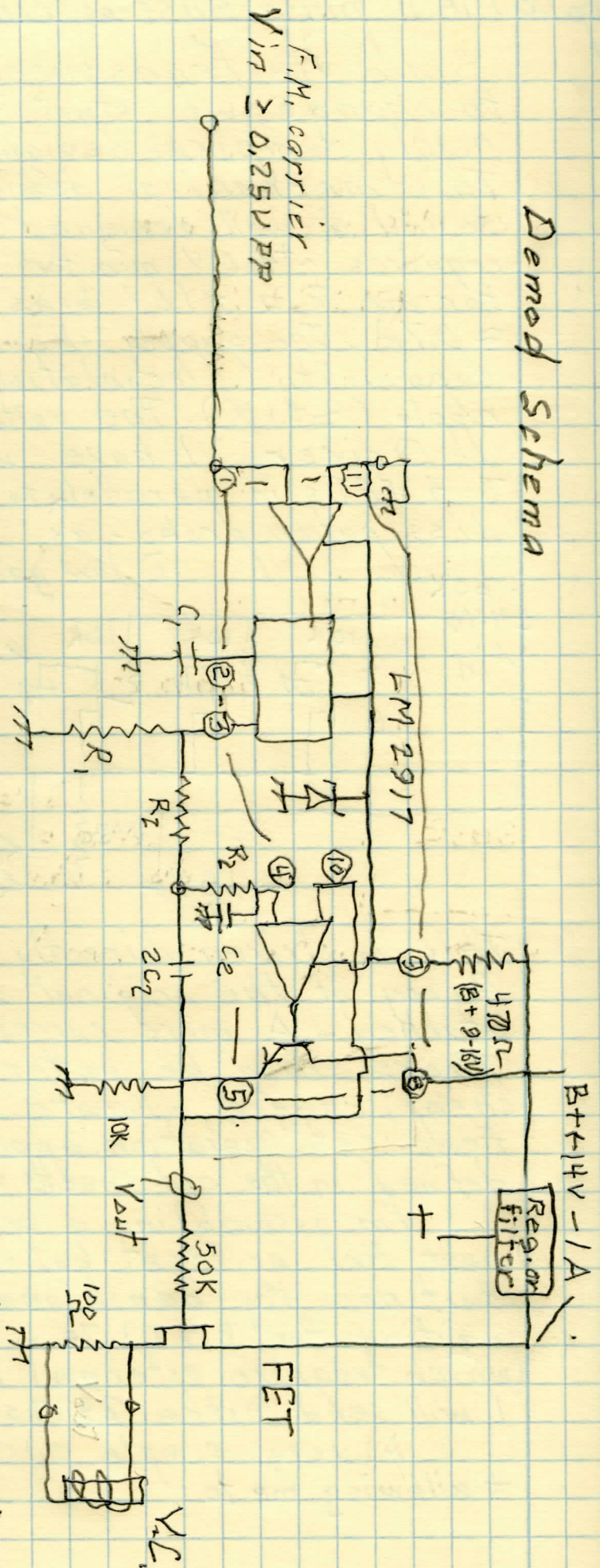
I'm assembling a brd. bd. & hope to get it to you by next Fri or Mon. but this is so simple you could start now. My bench and parts were destroyed & I'm waiting for LM 2917s - You may have some or LM 2901s (which require external Zener or reg. supply for V_{+}). I will send extra 2917s $\bar{c}$ the bread board.

A very simple system / block diagram is on P-98 * allowing me to

Sh. 5 Aug '08

23 Aug '08 MK II Pulse sys., contd.

Demod Schema



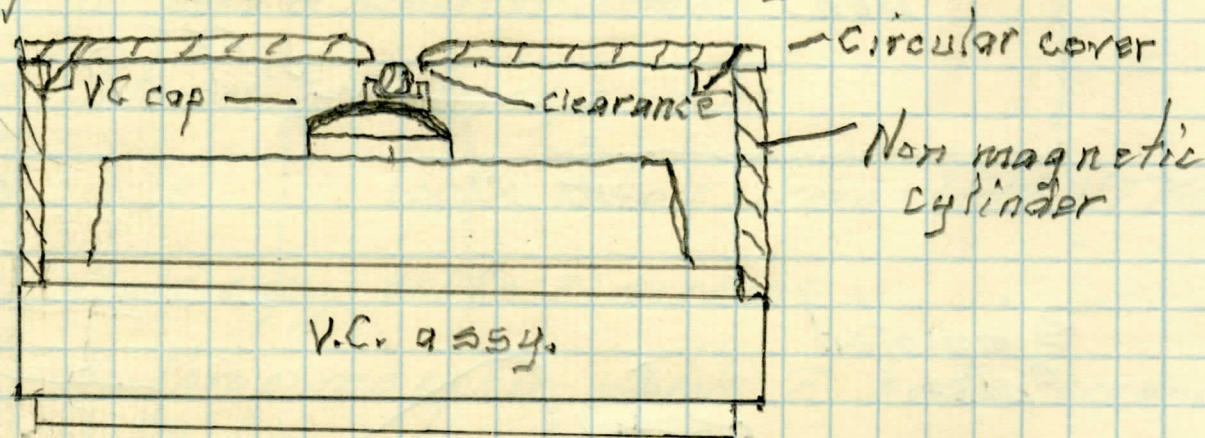
24.5 Aug '08

23 Aug

99

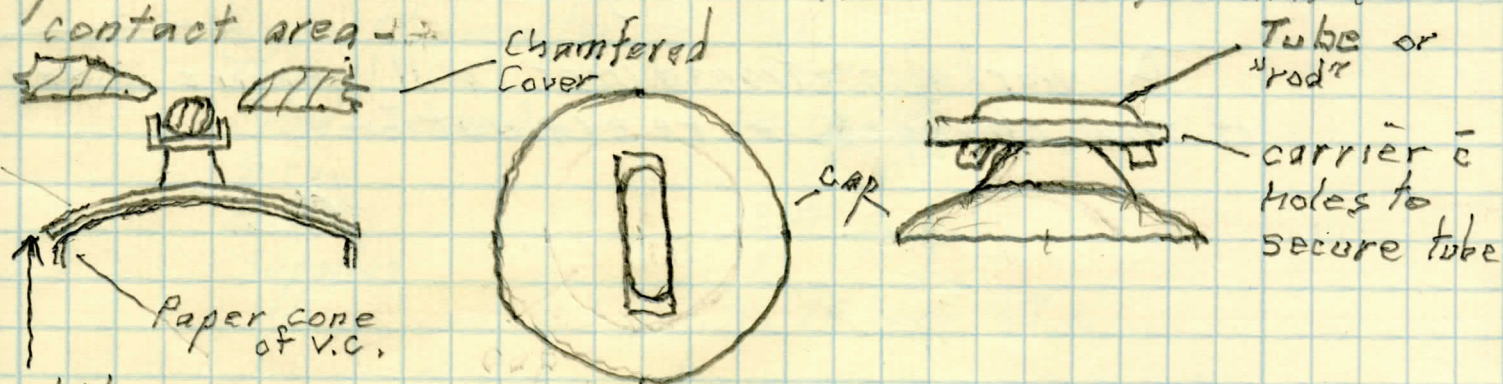
Notes on pulse transducer design -

This is art and not science for perception of pulse is psychophysiological - Cut, try, cut, try - - - -

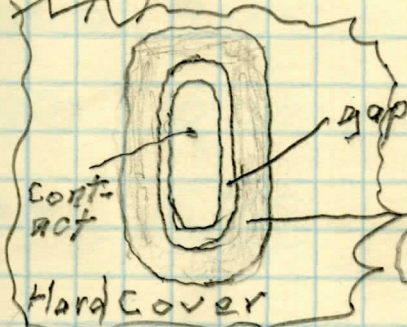


Perception of a pulse is primarily sensing a change in pressure $\Delta P = \frac{\Delta \text{Force}}{\text{area of finger contact}}$ Since V.C. force is

limited, the contact area must be limited - say a compliant plastic "rod" or fluid filled tube $\frac{1}{2}$ " x $\frac{1}{8}$ to $\frac{3}{16}$ " dia. for contact area -



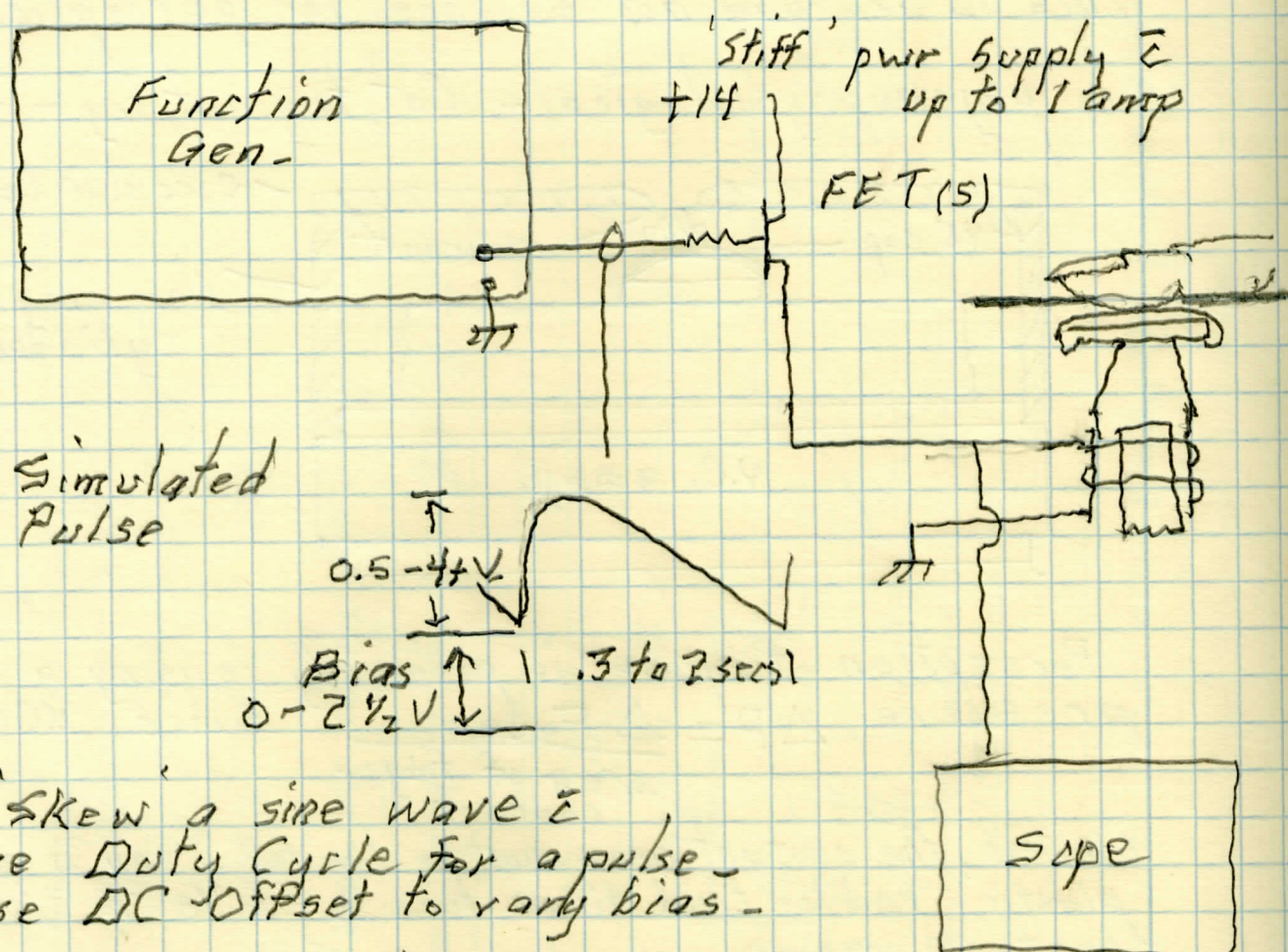
light metal cap on paper cover



This is only one concept. A variety of materials for the contact will have to be tried. The cover between finger and simulated vessel must be thin and compliant, even slack.

Go to P-100
21.5 Aug 08

24 Aug. MK II Pulse Sys., Contd.
Development and Test jig for pulse generator



Skew a sine wave &
the Duty Cycle for a pulse -
Use DC Offset to vary bias -

A workable transducer will require many hours
of trial, changes & reevaluation

Th. J.

Notes on development-

New system that add new dimensions using cheap multimedia sys. can be pat'd. will be copyrighted

May be used in numerous formats:

- Internet & Text and screens
- " " books, video & screens (GLG UTMB STS)
- Hard copy books & screens -

Anthropomorphic models & books screens -
Other -

W.T. costs exclusive of labor

$1.5-2 \times 10^7 \times 5 \times 10^1$ 10^5

3+ yrs development -

Transducer	# 2 K
Bench + Instruments	5 K
Support (computer, etc	5 K
Travel	3.5 K
Prod. Screens	10.0
Scty-	.25
Book	5.0
Supplies	2.
	<u>32.75</u> vs 47 K

New Product Line - \$50K upfront - → \$5.

\$26 K. agreement

2 2008 8.155.

1/2 qtr 10.00

2nd qtr 15.000

PTSMI

\$1 K expense - show

2506 K 5 6250. 2
→ 4.450 \$1800. Incl-
8050.

25 Aug

Review of PTS screens

Keyboard access NO

* 50%+ vs 30% Ampl. Done

A

4

3

1.2

64

Cover

4.7 A target

5.2 S in ht

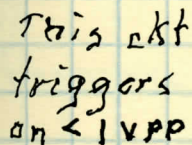
* apparently Marco encoded the audio in 16 bits but FM modulator uses 1 bit for command, ? doubling gain

Current commitment to Keith.

- make agreement today
- get proto hdn. this wk. if possible
- get a few pgs. of book next wk.
- Screens this week

Book Sample:

Cover
Contents

$B + 14.0V$ 

corn Sal

$$\frac{X}{1000} = \frac{1}{.735} \quad C_x = 1.36 \text{ NF}$$

$$\Delta C = 360 \text{ pF}$$

f_{in} kHz	e_o V _{eff}	e_o V	e_{IK} 7.61 → 1.286	7.66 1805
0	0.18	2.106	1.286	1.301.745
1	.759	"	2.057 1.287	2.046.745
2	1.510	"	Inter. 1.287	.791.745
3	2.266	4.263	1.287	3.528.745
4	3.013	4.967	4.276	4.262.745
5	.757	5.682	5.045	4.995.745
6	4.499			5.726.745
7	5.241			6.243.745
8	5.979			— 44
9	6.274			
10	6.274			

Final

$$B+ = 14.03 \quad Z(P-9) \quad 7.66$$
$$C_1 = 1.0 \text{ nF}$$

$\epsilon, 1.284 \epsilon, 1.289 \epsilon_{FFT} 007$

$$C_1 = 1.3 \text{ nF}$$
$$C_1 = 2.3 \text{ nF}$$

F KHz	e_o V	e_{load} V	e_o	e_{L_0}	e_o	e_{L_0}	
0	0.	1.289	0.007	1.287	0.010	1.287	0.020
1.00	2.040	0.451	2.251 ⁹⁶⁴	0.653	2.973	1.339	
2.01	2.788	1.134	3.218 ⁹⁵⁹	1.540	4.644	2.933	
3.00	3.524	0.833	4.153 ²⁴³	2.445			
4.	4.251	2.533	5.095 ⁹⁴³	3.361			
5.	4.989	3.244	6.034 ⁹³⁸	4.285			
6.	~	~	6.340	4.591			
7			6.340	~			
8							

28 Aug. 08

Notes on STS/PTS Demod/Driver

- You will receive a bread^{bd.} of items on P-107 which might work after a trip to HOU. but put a proto on a P.C.B. for test should be built immediately.
- This unit was tested with a well regulated 14V, 1A lab supply - You might get away $\approx$ 12V. depending on the FET. Suggest you look at a universal AC input board mtd. unit. A typical sheet is enclosed. For production a single box would hold everything - Don't use wall plug supplies.
- One good FET should replace the lash up I sent.

Ckt design:

The input will accept 250mV to 25V P.P. and see no need for input filtering or protection.

See the notes on the internal zener - I took a few ma. for output bias.

C_1, R_1 need a bit more care since the combination determines e_o as f (freq.) - To allow $\approx$ 1 KHz STS pulses (AM) to be used a switch can be add to increase gain by add a second cap. C_1 to C_2 .

N.B. this is designed to be a fixed gain sys.

Filtering did not seem necessary but the V.C. is a spkr.

Notes on the 2907/17 chips discuss this and an example of a two pole Butterworth but a simple 1 pole R.C. low pass should be adequate if necessary.

I had trouble finding them and have included a half dozen LM 2917 - Should you ever want to go to higher output voltages use a 2907 $\bar{c}$ external Zener.

CALL $\bar{c}$ Questions or Problems

210 698 3616

Sh. S.

STS MKII FM Demod

+140V

29 Aug. PTS Contd.

'08

Tfx. put product on their Web Site in executable and source file format. Review of screens using proto. ckt. P-107 and Whitmore Xducer & vinyl tubing looked and felt good (P).

FAX'd Pgs. 106, 7 + Lambda P.S. Spec sheet last night

Sending proto P-107 + Xducer by UPS today - per K.J.

Mailing contract letter to K.J.

10 Sept. PTS (Cardionics) STS (WT) Review -

To insure Cics had a pulse sys. for a nurses convention on 17th the following actions were taken:

Txt. / WK / bk text was computed

- A handout of 4 pgs. will be printed by Cics. - ? now ready

- The initial vol. I will be first 5 chs. 5 Q/A - Rate / ~~1/2~~ 1/4 th 26

The ^g Video Screens for Ch. 1-5 are complete

graphics for Ch 1-5 are in work @ Marco

Expect completion in ~ 2 wks.

Proto h/w. finished, sent to Cics. Pgs. 106, 7 for copying

Plan to publ. PTS Vol I & sys. ASAP

- " " finish " Vol II in a month -

Need -

Screens → pulse and txt. to Marco

Graphics → " "

- Signed contract (Pg 101) + rec'd. last qtr. 08 guaranteed royalties -

JAS - Internet Explr. → Favorites → Google
witherton

PW withern
Rosa

Ovid pass word

2008

10 Sep. Organize Working area:
For Txt work books:

Text M/S I : hardcopy
computer
Discs

26 Sept. Hurricane Ike closed Cardionics / Tietronix $\approx$ 10 days.
Cardionics did not take hdm. to nurses show.

- Sid has e-mail & fax up and running; is waiting for graphics to complete PTS/PA STS-PAP Vol. 1 - Requested he send Marco copy of attachments
- Marco sent cost proposals of \$1.4 K for 2D illus V.1
Hoped for better but adequate - Hope to get deliv. in a week - He promised to send Marco Sid copy of proposed graphics & both of us copies of final graphics - as completed
- Numerous issues discussed $\bar{c}$ K. Johnson - see note on his email of 25 Sept -

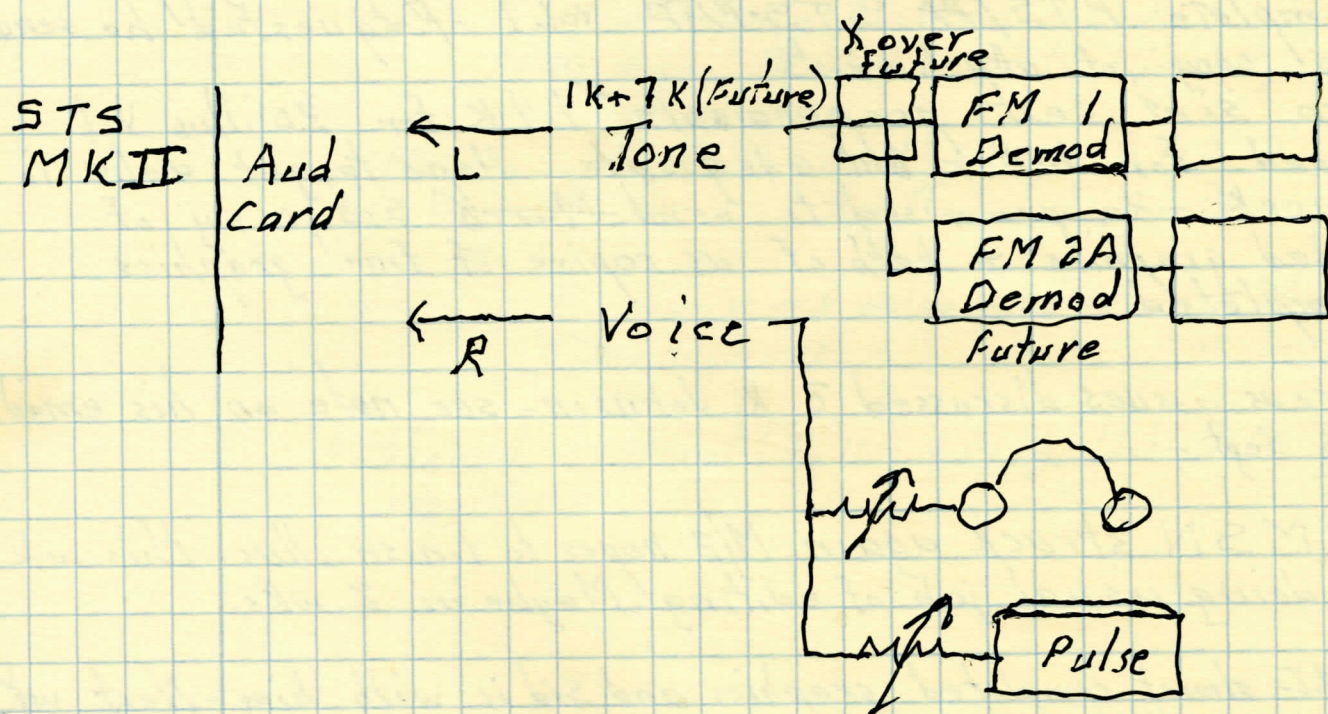
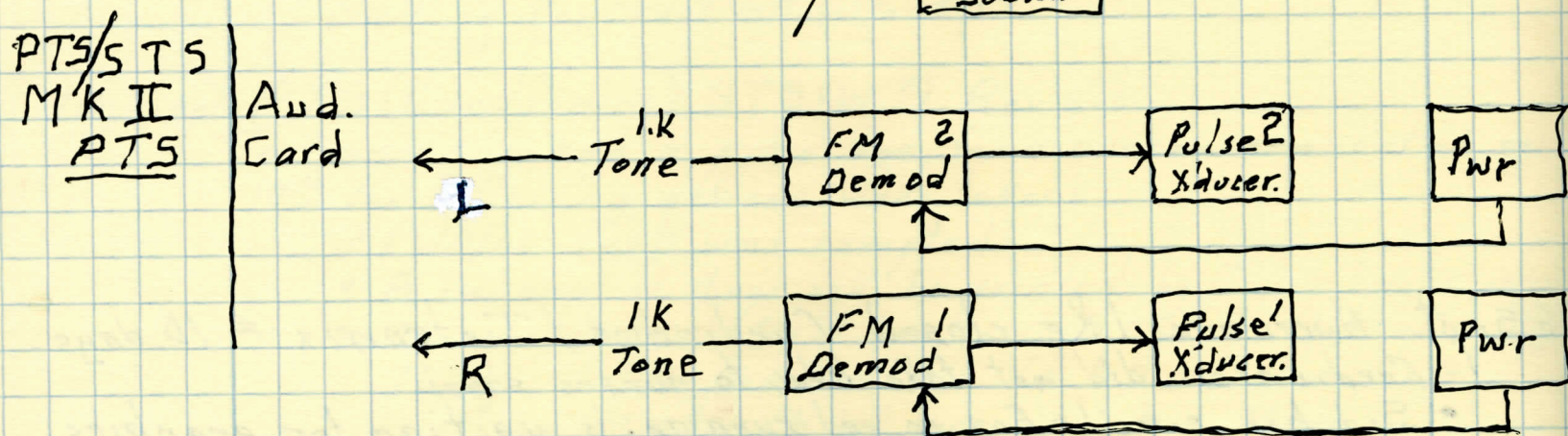
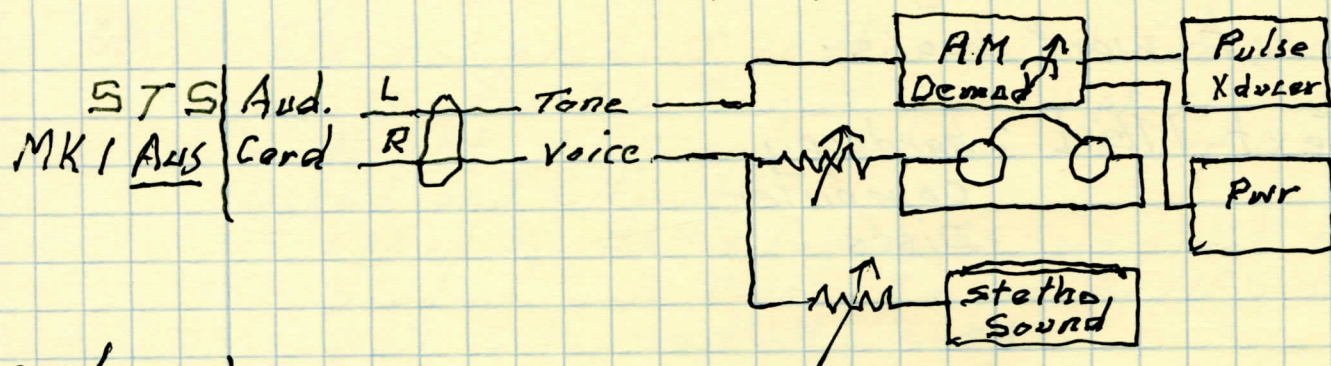
30 Sept. MSN struck again. M/Z hopes to finish illus. this wk.
Sid doing usual job of editing. Maybe in 2 wks.

- 1 Oct. M.Z. almost completed graphics and Sid is with him - Next wk.!
- No evidence that K.J. has done any thing on hdm.
 - Discovered that plastic cap for pipe fits nicely over magnet. Can make pulse xducer for #25.
 - Salt H₂O wiped out STS Hdm. in LTMB
- Replied to B. Karnath's e-mail

13 Oct. First attempt $\bar{c}$ proof print - lcl. Kinkas - had distorted color - Sid worked it for 8 hrs but 2nd run is much improved on photos but blue & saturation are bad - This really Marco's probl

1 Oct. '08

New hdw. for AM (STS) and FM (PTS)



2 Oct.

Cardionics

1. Contract
2. STS for UTM B
3. Lieberman

W.T. S/W - limited

" Book -

" Hdw. sample only

+ Promised today
 + no urgency ??

agrees to my giving limited use
 owe UTM B nothing
 " " "

6th Review contract for PTS

6th Not sure when if ever Cardionics will complete a pulse x'ducer. It now appears possible to do a simple x'ducer using PVC pipe end caps, a bit of machining and the infinite V.C. assys. Will try to contact Dale Wise (SAM shop) now a local gun shop or a machine shop, to do it myself. - Found machinist who turned adapter & cover for V.C. Need driver for V.C. to test it.

13th To finish PTS need:

V = 240ct.

<u>Txt/WK BK</u>	<u>Draft</u>	<u>Final/Rev</u>	<u>Proof</u>	<u>Product</u>
Sect. 1	✓	✓	✓	✓
Sect. 2	✓ 290ct			
Test Sect.	✓			-
<u>Screens</u>				
Sect. 1	✓	✓	✓	✓
Sect. 2 ^{Pulse} _{illus}	✓			
Test Sect. _{txt}	✓			
<u>Demodulator</u>	✓			✓
<u>Pulse Xducer</u>	✓			
<u>Owner's Manual</u>				✓

7 Oct. 2008

~~24~~ STS-PTS status:

Sect. 1 STS, PTS Txt. Wk Bk - finished, reviewed, can't get copies
10 CD's of Screens are en route

Apparently nothing has been done on prod.
Transducer or Driver

Have not received invoice for "φ2"

Est. for φ3, completion of Screens, Illus. for Txt.

8.4 K screens

2.1 " Illustrations

At this point:

- Need bk. reproductions - 10 min.
- Files for: Illustrations
 - Tones / Txt.
 - Master Screens
 - Specs for replay
- Demod. / driver electronics x 3
- Transducer x 3

Plan: Put everything on φ3 on hold.

- build hwn.
- get copies
- rev. CD of screens
- get source files

9 Oct. STS PAP USER manual-

? 1 pg or Folder-

Title:

User Instructions for
the
STS Arterial Pulse Palpation
Series

{ use Cover
Dwg }

Description
Series

Pricing of Proof Print:

Kinkos: ? B+W - 6pg - 3
\$.49 x 16pg. color - 8.
Cover

5.00

\$16.

615 7995 Kwk. Co.



2 Dec Patent Prob.

3 Dec Strozier - e-mail - 1st Dec. - claims on STS patent allowed - Needs
POA Requested/rcvd. allowed claims/application. Discovered it covered
PAP as well - V. poor patent easily circumvented - Pointed out some
errors to Stroz.

In good faith I told & was making agreement $\bar{c}$ K. Johnson for
royalties on Hdw. & S.W.

Reviewed it $\bar{c}$ Ted Lee today - Pat. is clearly UTMB prop.
* Aus version licensed to Cardionics(?)

We agreed payment/license must be negotiated $\bar{c}$ K.J.
I was given copyright to Aus STS T/WK BK
I own " to PAP & T/WK BK & Screens

UTMB has coverage of some hardware features -
Plan to meet Keith the 9th and discuss options

8 Dec 08 Rev. of above pat. for mtg. $\bar{c}$ K.J. tomorrow.
Claims are specific for hdw. for part of STS -

Screens, V.O., etc. are not mentioned.

*Coverage of existing features limited to pulse and 'heart beat'
sound. Depending on legal interpretation of terms STS is limited
to recorded pulse & sounds, however*

9 Dec. Keith thought patent was poor, easily circumvented. Wants to
17 Dec. continue as planned. He wants to contact Lieberman but dissuaded
him. Let him read draft & incorporated some of his points.

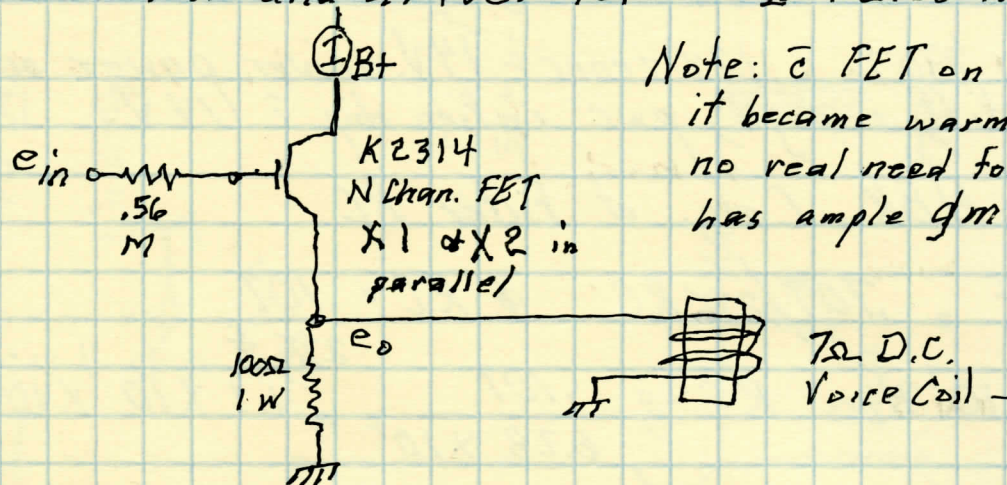
Plan: 1) note of apology to Marc?

2) Ltr. to Lieberman offering sys. $\bar{c}$ 2 transd.

Need ASAP. Hdw. for: Self 1

? K }	Will build 3 units	?	Lieber.	2
	now. Will hold up			
	on Ttx. Lieb.	?	Ttx	2
	Took proto. to mach. shop.		Keith	1

4 Dec, '08 Demod and driver for MKII Pulse X'ducer



Note: $\bar{c}$ FET on $12''^2$ Al. sheet
it became warm - In spite of
no real need for 2° FET i.e. 1 FET
has ample g_m - will use 2 for
margin

<u>B+</u>	<u>e_{in}</u>	<u>e_o</u>	<u>B+</u>	<u>e_{in}</u>	<u>e_o</u>	<u>I</u>
1 FET			2 FETs			
23 14.09	-0.15mV	0	15.3	1.208	2mV	
.24	+1.597	52mV	15.3	1.996	.391	.10
3	2.036	.337	15.3	2.344	.682	.10
			15.3	3.084	1.373	.19
	3.029	1.221	14.0	2.344	.681	.10
.20	4.061	2.205	Low limit	1.491	.050	.01
.18	5.077	3.201		.19	1.859	.297
			.17	3.000	1.317	.19
.16	6.076	4.186	14.12	5.99	4.189	.59
.14	7.27-	5.349	14.03	9.09	7.22	0.94
		6.173				
.13	8.12	7.6 6.135 (1)	14.14	8.10	6.225	0.84
		6.143 (2)				
	9.02	7.06	.12	9.16	7.29	.95
.13	8.11	6.172 (1)	.11	10.05	8.16	1.04
		.257 (2)				

7 Dec N.B. Except for offset volt.
the e_{in}/e_o volt. are within
a few percent of each other

see Pg. 113 for X'ducer
notes.

$$2.87 \times 1.14$$

$$\approx 3W$$

2008

7 Dec Revised FM $\rightarrow$ Volt.

Use 2907 $\bar{c}$ 12V zener - 14V driver power or if supply is stiff enough, pwr. entire chip $\bar{c}$ 14V.

Natl. HBK. Calc. of Filter RC

$$f = .707 / 2\pi RC \quad \& \quad RC = \frac{.707}{2\pi f}$$

$$\bar{c} \quad f = 10^2 \text{ Hz} \quad RC = \frac{.707}{6.28 \times 10^2} = 1.1 \times 10^{-1} \times 10^{-2}$$

$$= 1.1 \times 10^{-3} \quad \& \quad \bar{c} R = 10^5 \quad C = 1.1 \times 10^{-8}$$

$$= 1.1 \times 10^{-9}$$

$$\approx .01$$

25 Dec Put ckt on P-125 into a cast metal box $\sim 1 \times 2 \times 4$ ins., driver ckt in pencil - Found a cheap surplus switching P/S 12. V, 1.66 A - and found:

$R_1 = 90.k$
and other
values as
shown P-125

B + - ein -

12.14

f Hz

 e_1 e_2 ΔV
 ΔF

0

 7×10^{-3}

0.0

12.14

 e_1 e_2

③

0.0

0.0

2mV

1

1.22

 3×10^{-3}

.243

2.36

0.75

2.36

1.5 .60

1.822

.246

.524

4.76

3.03

4.70

2.0 .07

2.429

.770

.524

4.76

3.03

4.70

2.5 .15

3.044

1.333

.563

7.07

7.00

B+12.10

3.0 .576

3.620

1.916

.583

9.37

7.46

5.27

3.5

4.217

2.503

10.65

8.73

11.24

12.084.0

4.802

3.073

5.0

8.75

10.48

8.74

12.00

8.75

10.48

8.74

V.C. - 7.0 Ω

Hz div

1 7 $\times 50mV$

10 7 Div

25 ~ 2.5

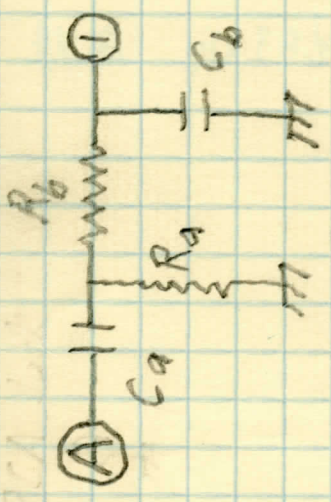
40 5.7

0 @ 1mV/div

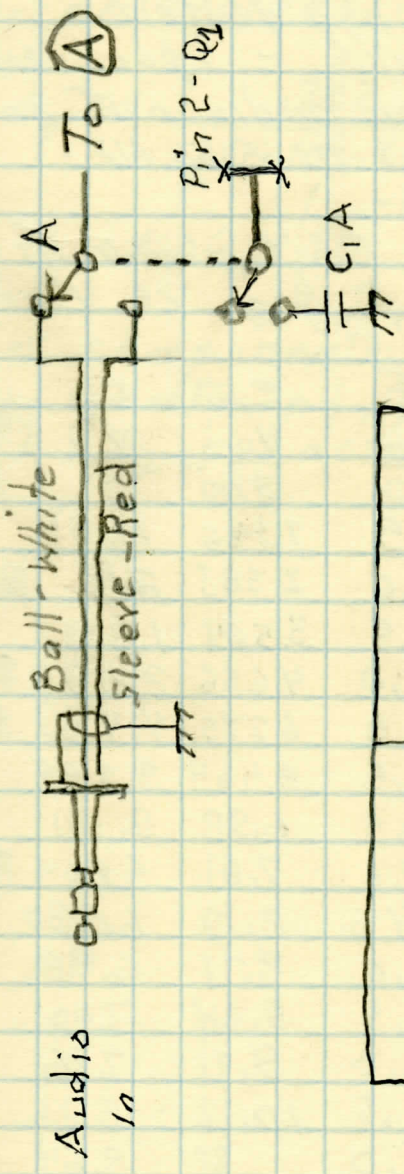
Alternative Input

Alternative Input

1.0-4.0 KHz F.M. Demod./Driver S1

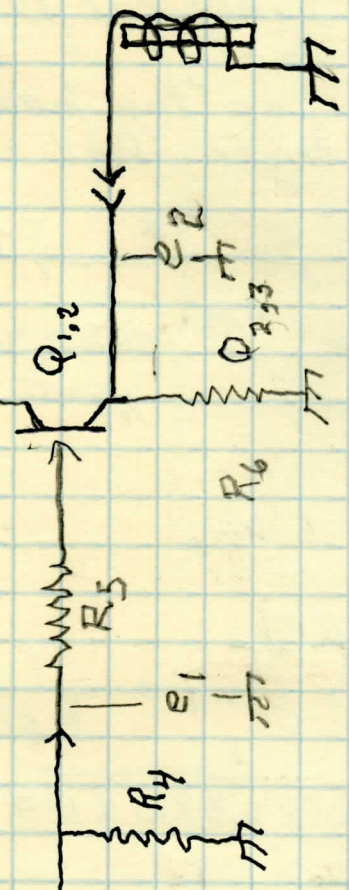
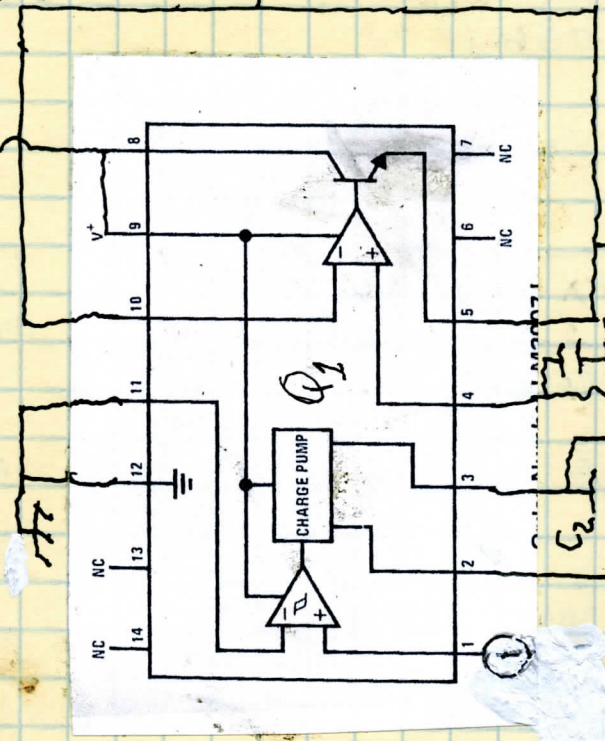


Ca 6nF Ra 500K
Cb 800pF Rb 50K



M. Thornton
30 Mar '09

B+
12.V-1.6A
(Well regulated)



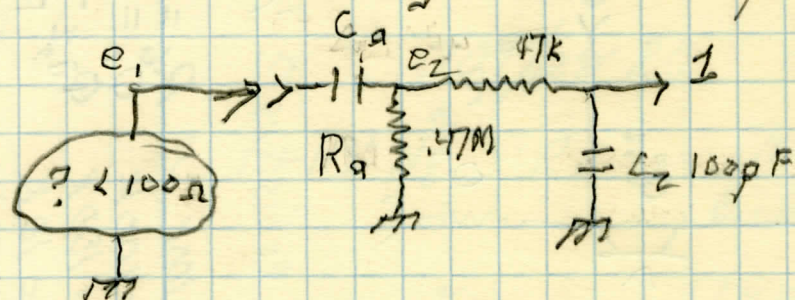
Infin-
7Ω V.C.

C1, C2 and R ± 1% Resistors ≥ 1/10 Watt

C1 - 1nF
C2 - 1nF
C3 - 50nF
C4 - 11nF
C5 - 22nF
R1 = 100K
R2 = 100K
R3 = 100K
R4 = 10K
R5 = 50K
R6 = 100Ω
Q1 = LM2907N
Q2,3 - 2 K214
FETs in Parallel

27 Dec 2008

P-125 1st AC badly constructed & ? chip failed -
 2nd poorly " but works - ? poor solder/PC?
 Dell Lap top had +1V DC on audio out and
 blocked trigger - Add coupling to block DC + by HF -


 $C_1 R_1 - 3db .5 kHz$

$$f = (2\pi RC)$$

$$f = \frac{1}{2\pi RC} \Rightarrow C = \frac{1}{f 2\pi R}$$

$$= \frac{1}{5 \times 10^2 \times 6.3 \times 5 \times 10^6}$$

$$= \frac{1}{5 \times 10^2 \times 6.3 \times 10^1 \times 5 \times 10^6} \approx 6 \times 10^{-9}$$

$$= .006 \mu F$$

$$\frac{25}{6.3} = 3.968$$

$$\frac{150}{15.75} = 9.524$$

 $C_2 R_2 - 3db 4 \times 10^3 Hz$

$$C_2 = \frac{1}{4 \times 10^3 \times 5 \times 10^4 \times 6.3}$$

$$= \frac{1}{1.26 \times 10^{12+2+4}}$$

$$\approx .8 \times 10^{-9}$$

	R_a	C_a	
	0.66M	.0055μ	
Freq	e_1	e_2	e_2/e_1
100	.993	.1616	
500	1.003	.628	
628	1.000	.707	
1	1.058	.889	
2	1.020	.963	
3	.984	.953	
K	.927	.905	

$C: C_1 = 2.0 nF$
 e_1, e_2, e_3 vs Freq -

F	e_1	e_2	B+
KHz	V	V	V
0	9×10^{-3}	0	12.14
.5	7.196	2×10^3	.14
1.0	2.383	718	.890, .13
1.5	3.564	1.832	.11 {2.2K
2.0	4.656	2.888	2.93, .09 {2.15
3.0	6.275	4.489	5.05, .06
2.5	5.464	3.745	.08 2.17
3.5	6.98	5.191	.05
4.0	7.61	5.804	7.25, .05
4.5	8.19	6.380	.04
5.0	8.71	6.88	.03
.5	9.24	7.40	.02
6.0	9.71	7.85	.02
.5	10.12	8.26	.01
7.0	.52	8.64	.01
7.5	.62	8.75	.01
max	7.112	.61	8.74
2.5	5.506	3.776	12.08

max 1/9 4.53 kHz 8.43

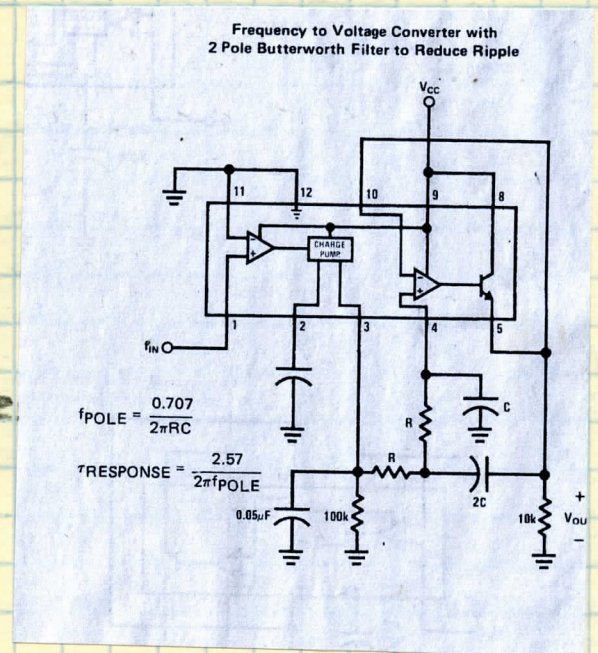
2009

1 Jan-Reduce ripple on Demod:
for current values

$$f_p = \frac{1.707}{2\pi \cdot 10^5 \cdot 1.1 \cdot 10^8}$$

$$= 1.02 \times 10^{-1-5+8} = 10^2$$

✓ components then performance
C31 will nF and, corrected, then
31 KHz not detectable



8th Jan 09

Review of PTS/STS PAP status

Cardionics has pd. BK 'down' an verbal agreement
for:

1. Sect 1. of text WK. BK.
2. 'Screens' for above
Designs for Hdw. 3. Electronics
& Transducer

Machine
Shop to try

Gates Ent.

8025

Lethro

St.

651 6567

provided files & production samples for 1 & 2
Prototye designs,

Inadvertantly I found that Bob Strozier has gotten a patent with some semblance to the PTS ~~system~~ system. When Keith raised this issue liability questions were raised and I decided to stop all work until something or nothing is heard from Lieberman in which case K.J. will also attempt to establish comm. & UTMB. In the meantime I will seek legal advice. All work on STS is on hold.

12 ~~Jan~~
Jan. 09

No return receipt from PTS program shipped to Lieberman
31 Dec. Called scty. Melanie today 0940 who confirmed
ed his receipt of it.

9 Feb. 09

Took X'ducer to Bob Blackwell machinist for K. John. He can't handle
tubing (simulated vessel) but left case & him to make ring for leather
& taper top.

10/13

Blackwell completed job - So Went to UTMB for mtg. & Sundee
M. and - Impression: They seemed to suspect me. Ignored

Cont'd
P-124

all attempts to get copies of prev. documentation saying that
Human Resources were responsible for my contracts & UTMB. The
patent has issued & they showed me the claims and left the strong

12th

Production Feb 09

12

Marco - Start in wk 60 - 90 hrs, 2nd Mar.

- delivery of Data File -
- Gave him waveforms for: aortic stenosis & thrill & bisteriens to do audio only of.
- Also told him do waveforms only for KB of max, min amplitude, D. pedis/Carotid & in addition to entire 1st sect. ASAP for K.J. - K.J.'s responsib. to pay -
- Make me an add'l. 10 sec. I.C.D.s

13th

Admin. Cont'd. from P-128

impression that Cardionics would get exclusive agreement on all patent claims and that he would give me rights & their approval.

On the 11th had meeting & K.J. and conveyed above. We agreed to a number of items which he initialed. See K.J./W.T.

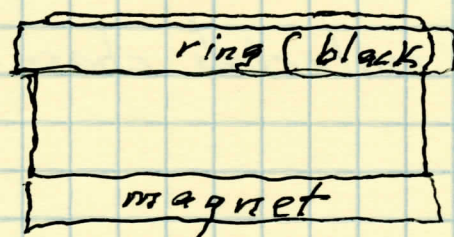
Pat

12 Feb.

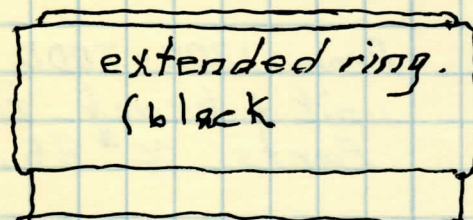
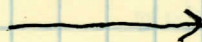
Bob - Thanks -

If possible: make 2 copies of what we have inside and outside -

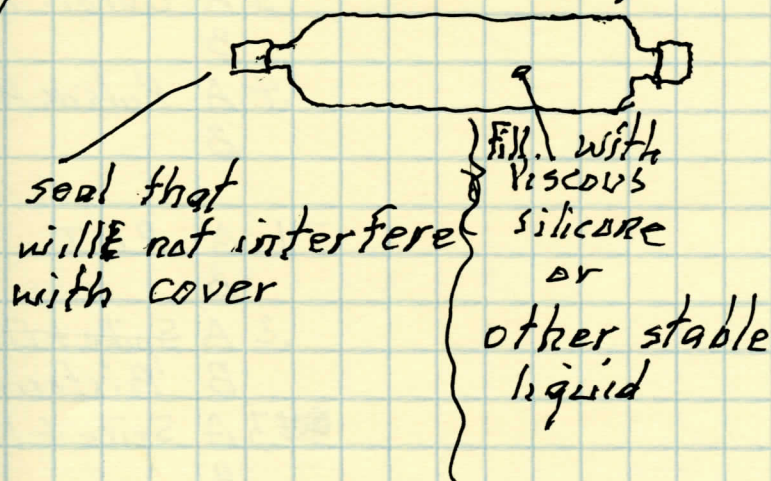
If possible make the retaining ring thinner + deeper to cover the 'cap' down to the magnet



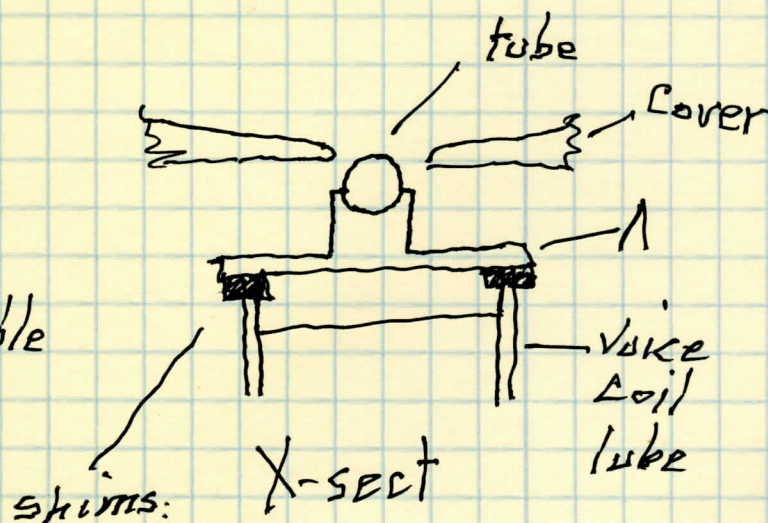
existing



If you could seal a tube to fit to a silicone to replace the piece of tubing I have stuck in this please do!



Thin walled latex (?)



may be necessary depending on tolerance of voice coil assemblies -

4 Apr. '09 PTS

Prep. of X'ducer. for K. Johnson.

Assembled & tested - Transducer using proto-leather - Cover for V.C. with machined V.C. plug - prev. page - Could not fit a different prod. version C covers -

Will leave:

- Proto Assy -
- Unassemb. 2nd X'ducer.

- Have sent tested ckt.

From 1300-2000 spent on materials chase for pulse unit & bench time
Parts $\approx$ \$25.

→ PULSE TRAINING SYSTEM ←

7 Cardionics 1200 SCO demod/driver not done
Apr. Tietronix 1300 Marco completed PTS 6.1 A Carotid Norm.
B
.2 A Carot. Hypo Kin
B
.3 A Carot. Hyper. Kin
B
.4 A Pulsus Alterans
B
7.1 A P.E.T. ?
B
.2 A Spike & Dome
B Bisferiens
~~3~~.3 A Spike & Dome
B
.4 A Double
B
8.1 A