

Computation Book

NUMBER OF BOOK B P III

NAME

W^m Thornton, M.D.701 Cowards Crk. Rd.

SUBJECT

Friendswood, TX 77546

USED FROM

11-79

TO

No. 09-9890 (83)

11 $\frac{1}{4}$ IN. X 9 $\frac{3}{8}$ IN. (29.8 cm x 23.8 cm) • 152 PAGES

VERNON McMILLAN, Inc., ELIZABETH, N.J. 07208

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VJM
THE ROYAL LINE

11 Dec 79 - Paper LITMB

I & I have worked this and last wk. on a series of papers describing the BPR system and results we have. Today the question of an alerting (orienting) reflex is to be looked at by noting 1) whether a downward trend is present in the manual BPs we took and whether the second morning BP mean is lower than the first - Will look only at seat BP on first day for secular trend & compare seated pressures from second day

ID#	Sit 1 st day					Sit 2 nd day				
	1°	2°	3°	4°	Mean (SD)	1°	2°	3°	4°	Mean
1012	125	114	108	103	112.5(9.5)	106	100	93	86	96.3(8.7)
	71	74	76	80	75.3 (3.8)	66	60	63	91	70. (14.2)
1023	125	124	118		122.3(3.8)	116	116	116		116 (0)
	79	77	81		79 (2)	70	74	78		74 (4)
1034	120	109	110		113.6(6.1)	104	103	115		107.3(6.7)
	101	92	93		95.3(4.9)	73	80	81		78(4.4)
1005	123	121	118		120.7(2.5)	110	122	115		115.7(6.0)
	99	100	93		97.3(3.8)	67	63	71		67 (4.0)
1006	109	116	112		112.3(3.5)	100	103	99		100.7(2.1)
	76	76	70		74(3.5)	52	50	64		55.3(7.6)
	120.4(6.7)	116.8(5.6)	113.2(4.6)		116.2	107.2(6.1)	108.8(9.6)	107.6(10.8)		107.2
	85.2(13.8)	83.8(11.5)	82.6(10.3)		84.2	66.6(8.1)	65.4(11.8)	71.4 (8.1)		68.9

If the above trends hold it appears that an alerting reflex is present during the first series of BPs. Since the determinations were made in rapid succession, adjustments to physiological changes on standing and lying would probably obscure any secular change. We should have the statistics run on this series & come up with a value of their significance.

12 Dec. When all subjects were added to the above 5 the trends were not significant. The literature always shows a downward trend both long & short term. It is obvious that some subjects show this as above while others are flat or even elevated. Finished draft of inter observer variations. It called Karagh who 1) didn't have str. & rep

14 Dec. Recd. TRS80 disk controller from cleaning & speed adj. via tel. R's
 Jeff Huber 744-1645 mgr. & purch. new sys disk (1395 + 24.00)
 Tested sys. Test 1, RAM ROM OK, Test "TEST2/BAS" OK.
 Then T-B Prog - loaded normally & accepted data from MAG Card -
 Worked Well!

18 Dec 79 TRS Computer -

a = first disk
b = second "

Tried to load T-8(b) program & got I/O errors - Unit loaded T-8(a) and accepted load from 660 A. Transferred data to card & disk, & then set to run PA, P3, P, HA, E, L, E, 24A, C. Comp. ran PA, P3, P and then showed out of mem. & p GOTO #10 would only show out of mem. msg. Retrieved data from disk & format had shifted. EG Number-Time-SBP-DBP-HR was

Number-SBP-DBP-0 - Then reloaded T-8(a) successfully. TRS80 would not accept disc data for recording & when it did above shift to (b) took place.

Test 1/CMD
Test 2/BAS

Discussed prob. w/ J.C. SWRI who suggested machine was running out of memory on execution of programs and dat changing order eg. HA before 24A etc. also suggests I/O errors -

Reran of sys. test -

would not accept RUN "TEST 1/CMD"

but accepted BASIC (E), RUN "TEST 2/BAS" 3 error -

19 Dec '79
2394 D.D.

Progs. appeared to run but as day went on more & more probs. developed. eg. cards would hang up program wouldn't write - Called D.D. & we agreed to put T-8 prog. on disc plus data files & send or carry to him. Will trouble shoot as follows:

Run RAM/ROM Test TEST 1/CMD

Run Disc "

Load TRSDOS & TB + data

" " " if prog. fails -

RAM/ROM normal

Transferred TRDOS to blank disk & ran - System passed but then hung up had to be turned off -

Load #2 TB from SWRI - ran very long time (2:50)

Bad file data in 12000 Cont-hung

Put bad T-8 on Disk &

Reload SWRI #2 T-8 p reset

Called Sandy 817-390-3583 Mr. David Robertson who suggested adding clear space at start of program - adding int. filter - units currently do not incorporate filter & TANDOS is shipping

also on DOS 2.3 there is a VERIFY which compares RAM RAM prog. to disk -

Above program acc - ~175 lines - put on card & Disk then 24A then HA = Out of mem in 3900

after editing GOTO 100 - " " " " 670

Techn - Gary Hood

19 Dec 79 - Rptblty. Rdgs -

Subj. Simon Thornton 20 150# 6'1" Start 1039

P III gave poor series rdgs -

Reset Xducer $\bar{c}$ ~~new~~ different Xducer + Cuff & good rdgs -

Reset 1447

20 Dec -

Appears to be good record

UTMB

Unloaded $\bar{c}$ 1979 1.7 pt.!

See next pg. (P-5) Ran Card, Hist., 1 hr means -

50800

Reset 1737

21

TRS 80

I/O errors on SWRI T8 2 tape

Loaded 2.3 T8 $\rightarrow$ RUN

Card reader didn't initialize

Reset $\rightarrow$ RUN $\rightarrow$ P $\rightarrow$ Undef. line # in 110

Put in SWRI.2 disk & held board conn. down

Load T8 $\rightarrow$ P $\rightarrow$ loaded 184 lines

21

Reset 1737

22

$\sim$ 1100 pulse press. rdgs. noted to be close eg 93/87 etc
battery chgds effect - chgd Xducer $\bar{c}$ reversion to nl. rdgs.
see cal sheet

UTMB 22

1630

Had Disk I/O errors on 1st Attempt - held board down & it loaded

but P-3 showed 128 lines & then all 128 were A1 min (1738) + 128

ran prog. reload etc x 2 + 159 repl. 128 otherwise same

"reset" - P-3 gave ϕ pts asked for 200 & set time to $\phi\phi\phi\phi$

This gave the record 50800C ref.

Repeated $\bar{c}$ time set to 1738 - record look consistent ex for a brief overlap $\bar{c}$ yesterday's record (7' lines) which were removed & edited.

All pts put on 50800C & orig 50800C erased -

19 Dec Comp. Probs - Contd.

c/a Cont. Reinitialized & Disk had now shifted @ 2 spaces
eg. DAP in Time slot.

Reinitialized & Card data recovered normally

Auto Edit - nl

PA - nl

P-3 program hung in "Calc. 3pt - -" for 5 mins & plot.

Break, GOTO 100 then

P- nl

HA nl

Z4A "

P-3 long time ~ 3 min Brk; GOTO 100

1 line data

OUT OF MEMORY IN 870

Reloaded 2.3 TB

& RUN on M → Undefined Line No in 110

Reset - reload 2.3 TB → " " " " "

" " SWRI TB②

Loaded 15 lines from Card C0103A and wrote to DISK 0
2.3 DOS → Shifted 1 Col. ②

Wrote C0102A & C0103A (shifted 3) on DISK to SWRI &
then SWRI TB② & renamed TBA & 2.3 TB as TB

On replay above error on Card read M was not present
on SWRI^{DISK} TB or 2.3 TB but when card was

read first line - Time was garbled nonsense -

On attempting to load SWRI② got DISK I/O Error -

Repeat run Load "TB" normal but card did not initialize

Hung up on repeat initialization

Reset, reloaded & reinitialized & card read reinit. also

T-8 Ops. notes

When writing to DISK must BREAK & GOTO 100 to regain data

Card is given (written) only c edited data -

P-3 loads zeroes to fill

NB - Flashing
Christmas tree lights
in c/a.

NIGHT

19 Dec- TRS 80 contd.

Cont'd. Card read normally and data (time co) had garbage areas near beginning -
 Listed first part of data & reinit - Card Reader (Y/R) made only 1 pass -
 Prog. hung up & blank screen when E was pushed & M preceding -
 NB! Bad data on preceding pg. from bad card -

Reloaded New Pt ~175 pt

On Card

Auto Edit

Keep - didn't

Out of M 870

Hung in Run - Rqd Pwr Off

DISK Hung =

20 DEC-

Load T.B

Parity Error During Read

LOAD TB

LOAD FILE FORMAT ERROR

DISK IO ERROR

LOST DATA DURING READ

DISK IO ERROR

N.B. movement of cable at KB caused DISK to start

Program loaded from P-3 & ran normally &:

card load - lost last 7 lines

List

PA

AA

P

24A

A 0030-0030 00M 670

On reload from card it lost last 7 lines

K $\rightarrow$ loaded but shifted E 1 col.

Tried to load data from prev. 2.2 data disc -

DISK I/O error in 13040

21 Loaded data from P-3 as on P-3

22 " " " " " P-3

2 Dec. Computer Summary -

Obvious Probs in;

1. T-8 Program as shown by inability to complete a full series & memory overload - inability to properly store data on card or disc.
2. Computer hardware (prob. mem.) which loses programs -
3. Probable I/O errors

Have ordered interference filter and sent D.D. sample progs. & discs. and Green has agreed to trouble shoot prog. & hdwe. p Jan 1.

Simons 3 day run -

Sent Prog to

Carried Disc Dr. CPU, Exp Hf, & card writer to SWRI 31 Dec -

7 Dec - SWR 1

New program T-9 -

DIR A - gives Size

Make a single step of LOAD "T-9" & RUN by

RUN "T-9" (E)

Use of commas fouls program - D.D. thinks this accts. for card loss
Salvage C. Data to Card or Disk

~~5~~ (E)

PRINT DATE \$

Use slashes vs (J)

(gives old DATE)

DATE \$ = " 12 - - - " (E)

PRINT NAME \$

NAME \$ = " Name, etc " (E)

RAN Card 50800 1st of 3 runs (50800)

+ Printed raw data & compared 2 orig. (1979) PIII data - exact

Current prog. is T-9

D.D. reduced string space from 500 ^{*} 300 lines - then to 200

I. Machine ran out of memory when loading data to card & then
A, 24A, PA

Mach. ran out of string space DD $\rightarrow$ 300 & mod pgm. to give more var. sp.

~~Mach~~ Card writer would not reinitialize until turned on-off

N.B. Turn card writer pwr on off prior to initialize

3rd attempt as in I ran out of memory during PA

Reload data from disk 50800, load card, A, 24A then PA, P3, P, MA,
E, L, E, 24A entire prog. ran -

NB Formatting DISK for data file

DOS - Ready

FORMAT (E)

[Which Drive]

0 (E)

Name ?

DATA FILE (E)

[Date?]

XX/XX/XX/ (E)

[Password]

PASS WORD (E)

[H/O tracks]

NA (E)

[Disk Cont Data]

Y (E)

Hit Formatting complete

Hit ENTER TO CONT

PUT IN DOS DISK

(E)

DOS DISK

CRT

Write to DISK

see Electronic News Dec 24

Data Prods. T-80 & graphics - Printer Plotter

7 Jan 80 SWRI contd

Auto Edit Criteria

SYS < 50 or > 245

DIA < 30 or > 200

HR < 30 or > 200

SBP $< DBP$

SBP - DBP ≤ 10

DBP $< .4$ SBP

Card R/W freq. does read or write & must be reinitialized.

11 Jan 80 Return to SWRI to P/L comp.

Intel card reader has failed completely.

Have hooked up sys. c "T-9" and made a run through
from disk ~~2~~ ~~1~~ ~~1~~ ~~1~~ AE 24 E then PA, P3, P, HA, E, L, E, 24A - then will
Keep (on discs) and do sectional avg.

11 SWRI loading data disc - 12 UTMB

K (E)

if disc is full msg. DISK FULL & attempted load is
erased -

insert fresh disk & K (E) again

get blank disks and BACK UP - then kill all normally visible
files & use for data files -

T-9 changes -

added comma trap
reduced

12 Jan B.P. Exhibit W.T.M.B

Get details Mon -
? 6 x 30" panels

- 1- Description of PIII 1 W.T.
- 2- { Validation + Reliability - will keep. } J.W.
- 3- — Data Handling — W.T.
- 4- Diurnal Variation BP & HR — 4.
- 5- Gee whiz - Examples of clin. - 5.
- 6- Physiological - 6 W.T. & J.W.

✓ — Simons 3 day run —

24 Hr Mean →	SBP (^{Range} _{SD})	DBP (^{Range} _{SD})	HR (^{Range} _{SD})
19 Dec 1979	104.1 (150-69) (14.9)	71.6 (135- (11.1)	76.6 (135-53) (14.2)
20 " "	104.2	77.8	78.1
21 " "	100.7	71.0	74.6

← lost an hour + of rel ↑ SBP

Concl. need to look at others -

NASA -

need 7 photo -

" set of records -

"

14 Jan.

Call to Mac. he didn't know which conf. key verified it was
Nat'l Council High B.P. Rsch. Sham. Hilt. HOU 23-5 May
Appl. has been made for 6 - 2' x 3' panel space -

12 Jan • DMA For Exhibit layout

• " " Copyright -

Ran program = difficulty ex. found bad data bus in printer line which
 affected computer.
 14 Jan. LITMB to work on RTOP for NASA eg -
 BP in nl. ♀.
 On review of book on Biorhythms "Biorhythms + Human Reproduction"
 Ferin et al Ed. J. Wiley NY 1974
 Ch-16 Some Physiological & Biochemical Measurements Over
 the Menstrual Cycle - Freedman, S.H. et - Kaiser Permanente Med. Ctr.
 as a subset of 17×10^3 ♀ 18-54 Y.O., in study of side effects of
 O.C., 8786 subset: < 50, reg. periods 24-35 days & non-preg., were
 studied as regards weight & 5, DBP + HR, BP measured supine -
 SBP - nl. - 6.5 Torr Δ mid cycle - & then declined
 DBP - neg & PR - no change -

22 Jan U TMB to run off T-38 record. Need higher resolution on plotters. Need a normal 24 hr. record and a few more in flt records - Sched. to go to Boston 24 + L.A. Mon - two good X countries - Should get M or Z to fly another bag side alternating approaches $\bar{c}$ them + f me flying alternately. An acro slide would be interesting -

23 Jan 80

LITMB BP Exhibit

Panel 1

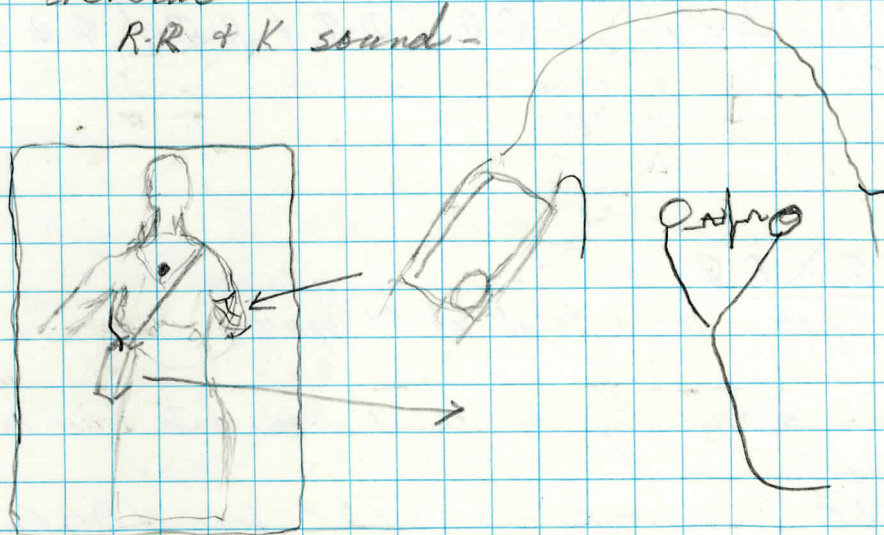
- Introduction -

Method -

P-III

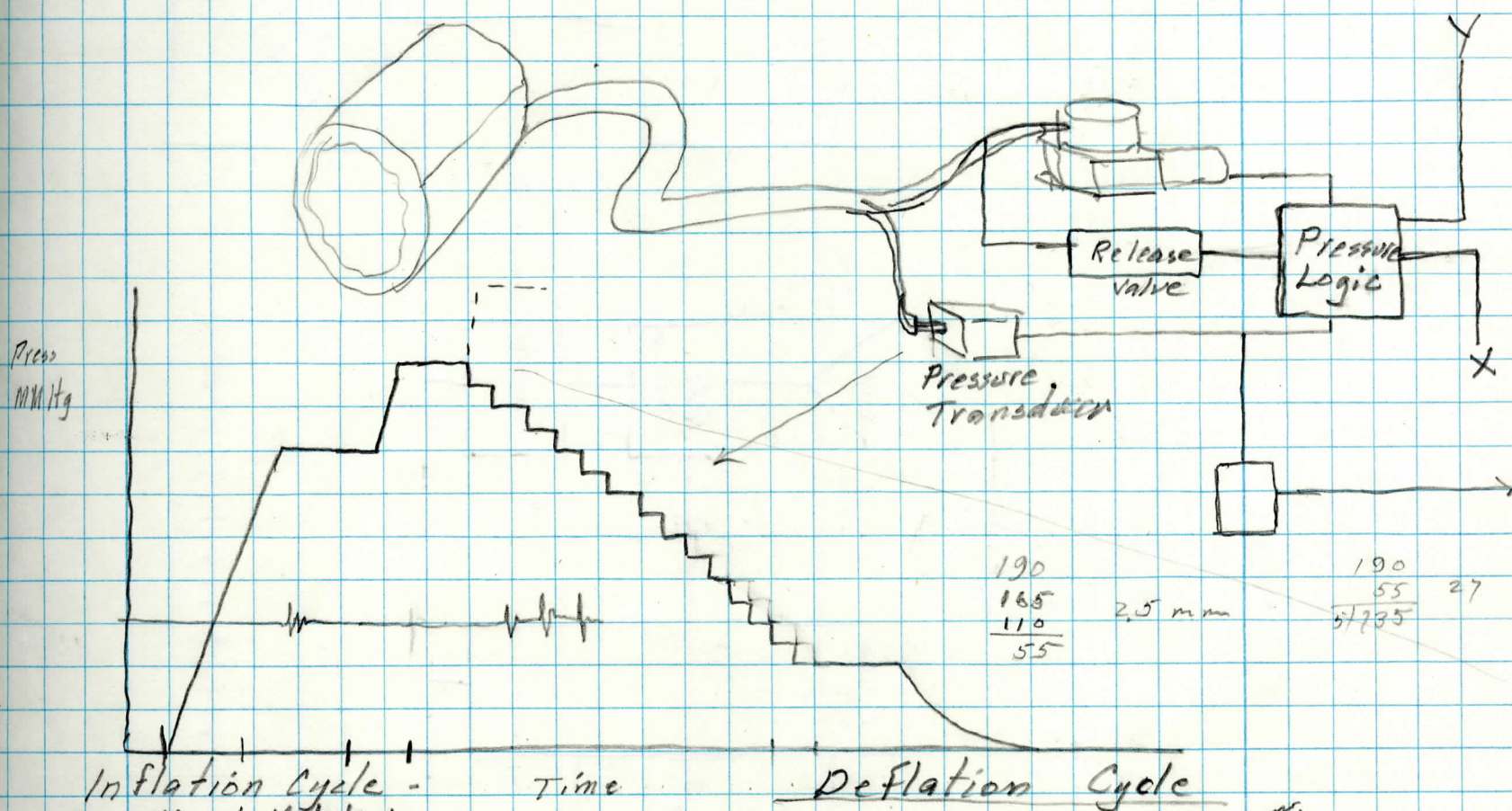
General

R-R & K sound -



The system is basically an automated, self contained, ^{battery operated} ^{Riva Rocca} make 2001 of BP & H.R. Cuff K sound device which can measure ^{minute} & digitally store them. Measurements may be manually activated or preset to occur at 1, 5, 15 & 30 minute intervals. Implementation of the measurements are shown below - Arm motion

Exhibit - Panel 1 contd.

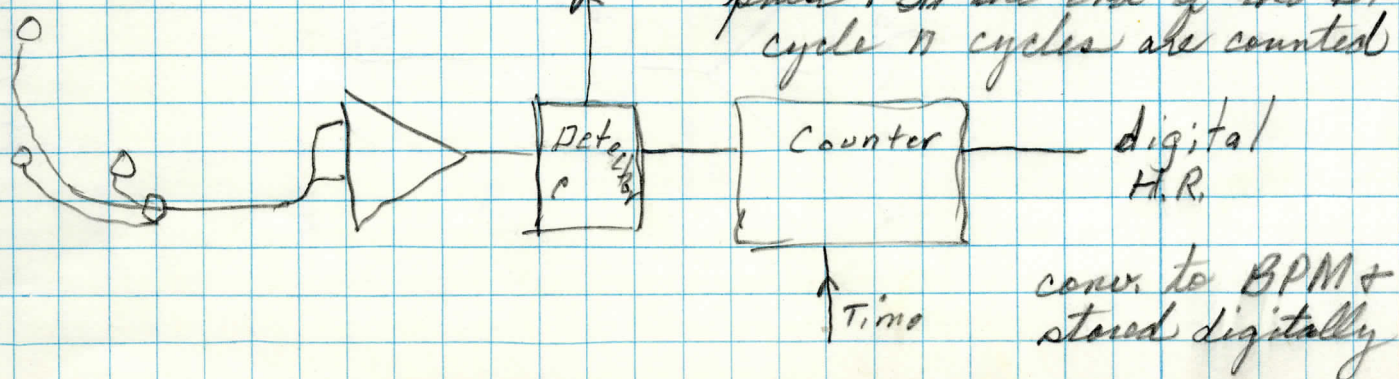


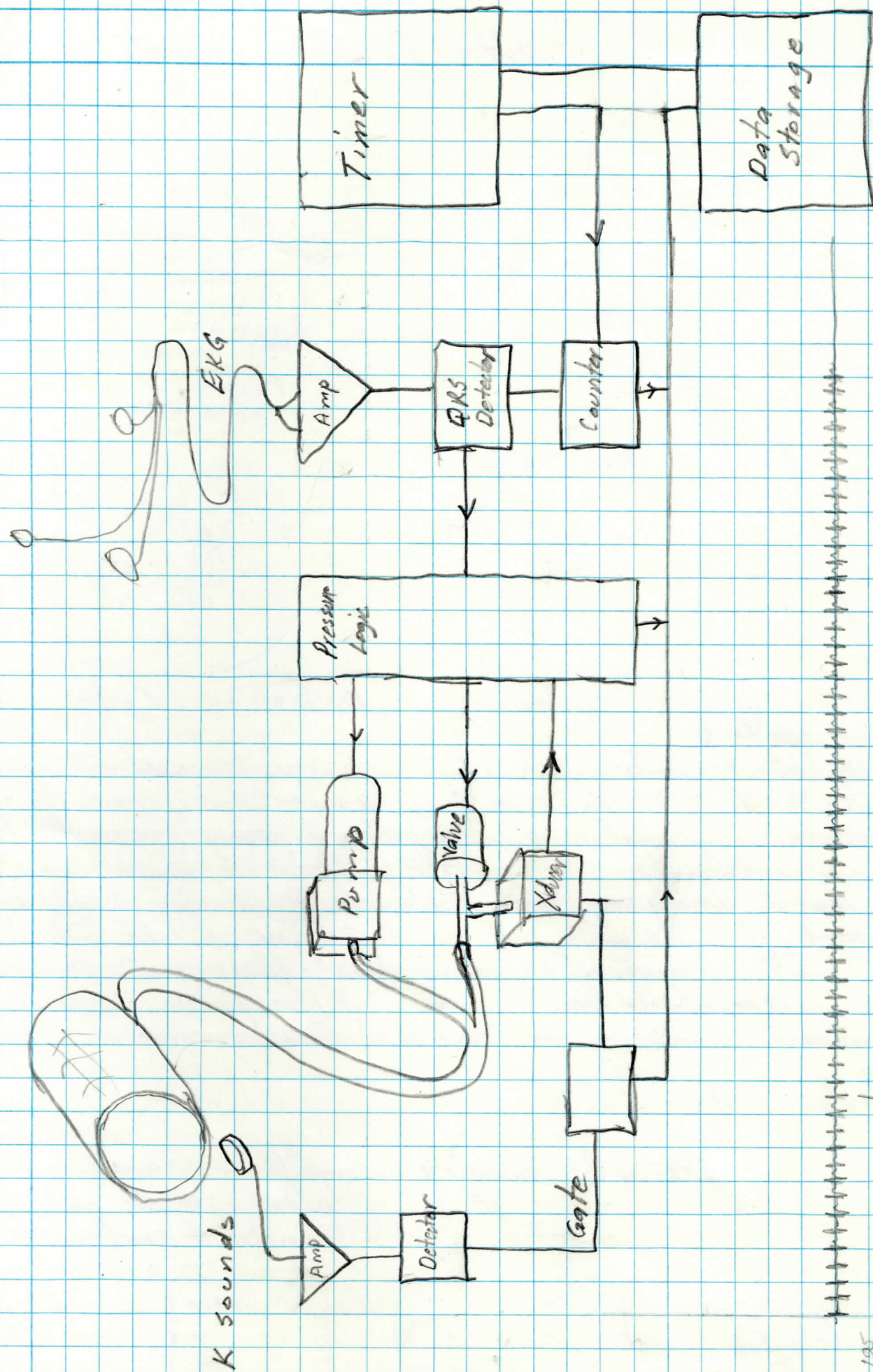
Normally inflated to 155 mmHg. if K sound is present i.e. BP ≥ 155 then pressure is increased in 3.5 mm increments until K sound disappears or a max of 255 mmHg. If infl. press is remembered for next cycle -

Cuff, press. is decreased 3-4 mmHg. Pressure level at which the first K sound is followed by a K sound is taken as SBP. Pressure is decreased in steps until the K sounds disappear and at this point the level is held and if no sounds are heard for 3 beats this level is taken as DBP or process is continued until 3 beat criteria is met.

Heart Rate -

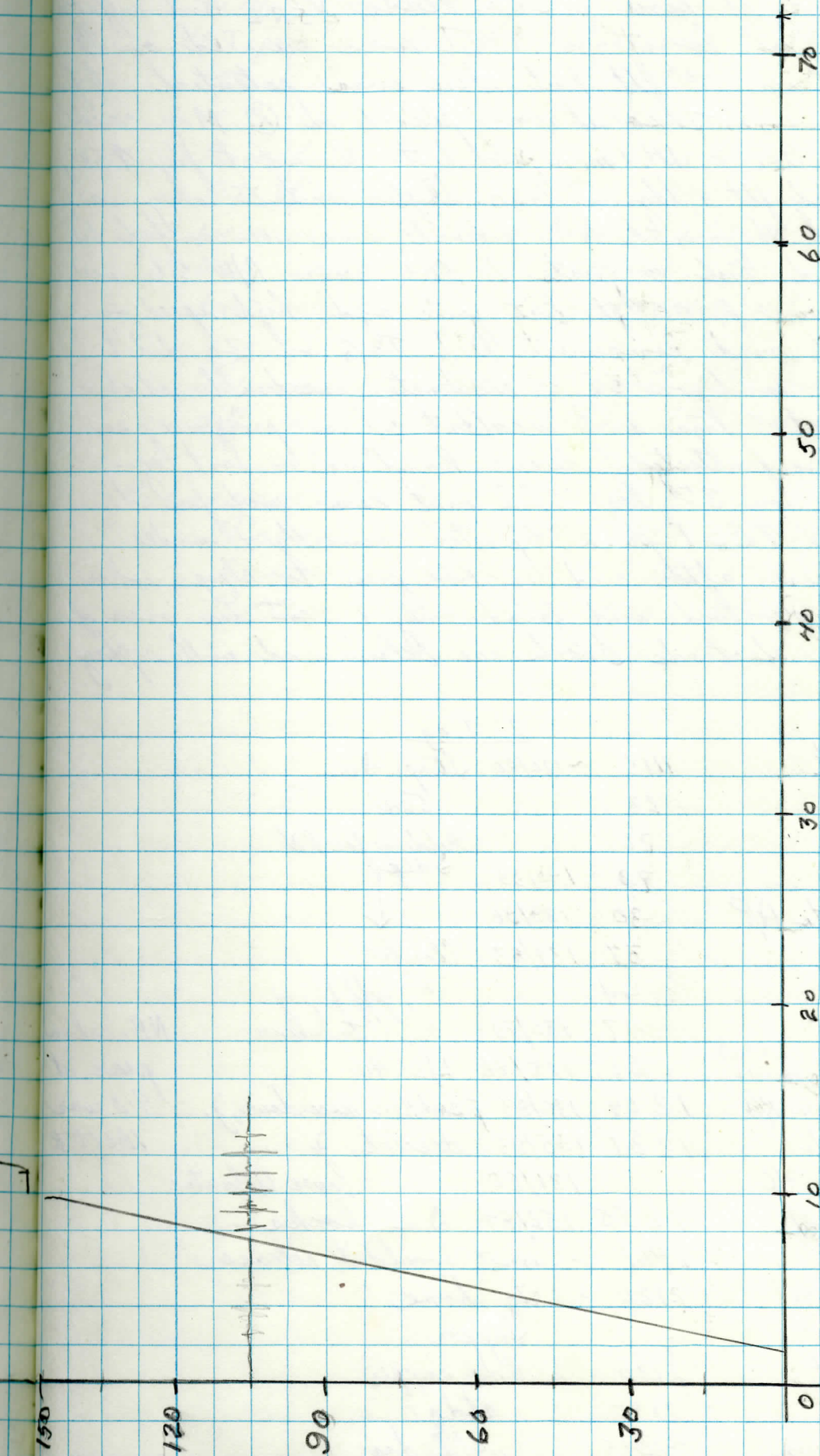
The QRS complex is amplified + converted into a std. pulse. At the end of the BP cycle 10 cycles are counted +





44 34
5 128

75



24 Jan (transcribed 25) X country Flight c PIII

P III was installed at home c EKG leads V_{5R-L} and cuff on
 (2) arm + sensor in nl. location. P III was carried on (2)
 Reset (Start) side under jacket on 1st flt. but there was potential interf.
 Time - 0645 c extreme stick movements so it was placed in (2) Map case.
 back watch 1st leg was VFR in 921 c J.H. (non-pilot but allowed to fly 75K)
 in rear. Uneventful flt. + ldy. at GSB. Shifted unit to map case
 on 2^o flight to S. Maymouth NAS which was uneventful til
 ldy. which ~~was~~ mod. turb. + gusts to 30+ down R/W 26 were
 encountered. RWY was 6,000 ft. but gusts spd. high speed +
 there was a large X wind component. Did T+G on 26 didn't
 like it + chose to land on 35 5 incident. Considerable stick +
 rudder reqd. On last 3 legs unit wouldn't release pressure so
 didn't use it. Tired + frustrated (delays, handling) on last leg.
 Had to replace battery on 3rd leg. Took unit home and found
 function switch in TEST posn. Operated normally + made
 meas. during supper, after and in bed prior to sleep when
 battery ran down - Removed and found only 1 ^{mm} ~~mm~~ dia. area of
 desquamation under electrode. Events are below and will replay
 tomorrow.

1 ^o Leg		2 ^o Leg		
0655	133/87	1115	~120/80	Strap In
58	122/89	22		Taxi
59	124/88	26		Holding for RW
0705	131/86	29	140/99	Self
14	-?	30	139/90	
22	125/82	37	134/83	Climb
25	118/74	44		" , Jeff flying
26	125/84	47	130/79	" , " , turbulence
28	138/85	51	125/86	L/O 410
0812		1204	136/83	p sudden nose down, J.
16		1227	135/83	descent, J.
18			121/80	" , " , over Atlantic
27		1255	152/84	In chocks -
44	(-No BP)	1401		unit wouldn't release
52	(taken)	2120		stg home
0916	-			Supper
50		2130		Eat supper
1004	-	2140		stdg.
1011		~2215		walk dog
1035	143/93	2300		In bed awake
	139/89	~2330		Unit off
	137/90			

NB - cabin press at 410 was 18,000 R

26 Jan U TMB to record data of 24 Jan

NO DATA on 1979

159 pts. on Computer - 1st request ¹⁵⁹ - ⁰⁶⁴⁶ 159 159 159

" " " 2nd " 200 - " " " "

" " " 3rd " 100 - " " " "

Pushed Reset

0 pt on PIII 4th " 200 -

Gave proper reading & time until ~1400 (batt. chg.)

Made complete record T-4000D File 3 T4000D

Ran only 84 pts of days record & put on File 4 - T4000D1

There is an obviously great diff. between flts. of 24 & 21 and suspect diff. is in wearing BPR for 1st time on 21 in A/C.

References - Bks -

Pickering HBP, WG 340 P 596 h 68

Geddes Meas BP WG 100 G 295 d '70

Bruner H.B. of BP Mon WG 106 BB946 '78

28 Feb. T-38 Flts -

Installed #203, Xducer.020, & reset at 1315, flew 917 hooded from EFD to ELP. Made en route & 1LS at ELP. Put inst. in (R) map case & EKG electrodes in transverse config Y5R→L. Xiphoid gnd. Spirit worked well on 1° flt. but appeared to fatigue transducer(?) & narrow pulse press. on 2° leg. Tried to repl. batt but batt. dead. Repl. cuff & Xducer at DMA & chgd. batt at ~1830. dinner ~1930 Motel ~2200

1° Leg - Wt. Flying, hood

Bed ~2200 120/73 2200

Time	BP	HR	Event
1322	114/91	77	Sit, Gym
1323	114/89	78	
24	117/96		
25	117/84		
1431	125/80	80	In Car A/C ops
1515	132/94	94	In A/C, start
19	—	72	Taxying, bumpy
20	131/96	72	
21	137/—	93	
23	137/94	71	Holding for R/W
25	—	75	Take Off
26	143/91	70	Climb
28	141/97	—	
31	137/93	72	
33	126/92	72	
39	130/93	71	116 K in cabin H097%
41	128/88	70	
46	123/92	69	Cruise
49	117/89	68	
55	124/91	68	
59	120/93	69	
1602	128/90	66	
05	118/94	66	
08	125/92	72	
15	—	69	
22	123/94	66	
27	122/88 + 28/91	66 69	
33	117/92	70	Prep. for desc.
38	126/96	97	
40	125/90	70	
47	114/—	73	
48	120/96	70	
49	108/91	73	

1° Leg Cont'd.

Time	BP	HR	
1650	146/100	70	1LS (?)
1651	122/92	70	
1652	132/91	73	
54	/93	72	
55	126/70	80	
56	—	68	Taxi?
56	—	75	1

2° Leg T.E. Flying -

1723	128/91	66	Strapped in p to start
24	134/98	68	Start Eng.
25	125/97	66	2° Eng. Running
26	113/94	—	Taxi
27	111/89	—	
29	114/82	67	
32		65	Holding for R.W.
35		65	Holding for R.W. 7/0
36		66	
38		63	
39		72	Fighting & BPR
45		64	
47		72	
48		67	
50		64	
51		66	
52		64	

30 Jan DMA
PTI etc-

Mtg. = A.K.

B.P. Pamphlet -
25-30 pg-

$$5 \times 10^3 \times .4 = 2 \times 10^3$$

#1./unit - #2.5 unit color

Outline
"Chapter"
Est. t.w. pg./ch.
Illus. chapt.-

Audio Refs.

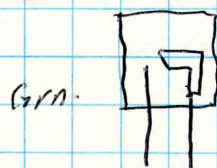
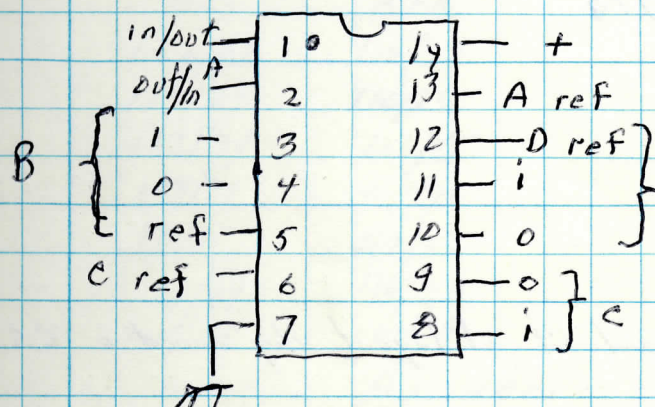
Durrant	Bases of Hearing Sci.	WV 270 D9656	'77
Freedman	Neuropsych. of Spatially Oriented Behavior	BF 467 F833n	'77
Bullock	Recognition of Complex Acoust. Sigs -	WV 270 D131r	'77
Dallos	Auditory Periphery	WV 272 D147a	'73
Békésy	Expts. in Hearing	WV 270 B242e	60
Ferin	Biochem. + Human Reprod	QT 167 B616	'74

2 Feb - CKT Data -

From RCA Lin. Int. CKTs + CMOS Int. CKTs

CD 4016 B / 4066 B

HP - Grn + Or - LED's



e	i	λ
Volt.	ma	
Grn	1.66	10.5
	2.06	10.
	2.32	40
	2.65	80

Threshold

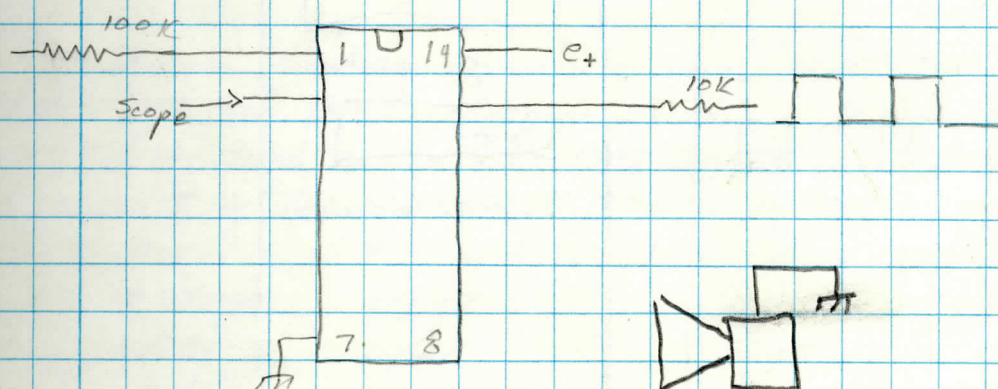
Rd	i	λ
1.5	.07	
2.0	10.0	
3.06	40.	
4.18	80.	

Threshold

P111 - 203 new sequences ca - 192 secs (3 min 12s) in 30 min posn -

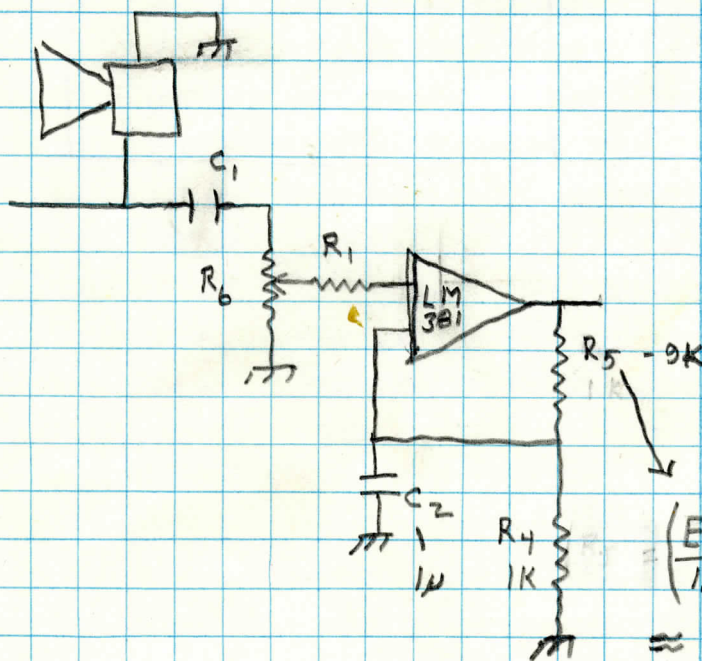
Switch Driver

Test of 4016 sw -



2V. P.P. produces a reasonable level τ (90db)
Realistic 5" SPK.

This needs ~ 0-10x gain - Lo Z in -



$$\left(\frac{E+}{1.3} - 1 \right) 10^3 \approx 9 \cdot 10^3$$

$$f_0 = \frac{1}{2\pi R_0 C_1}$$

$$f_0 = 10^2 + C_1 \approx \frac{1}{6.3 \cdot 10^2 \cdot 10^2}$$

$$\approx \frac{10^{-4}}{6.3} \approx 10^{-5} = 10 \mu f$$

2 Feb

Send to DMA

Valid. Plots* & Data*

Female Normal + Data

Hypert- record.

Conclusions.

Clinical

Finish Heading

Recap-

Sci. Ex. compl. ex. as above - good bit of layout chg. coord. to C.S. &

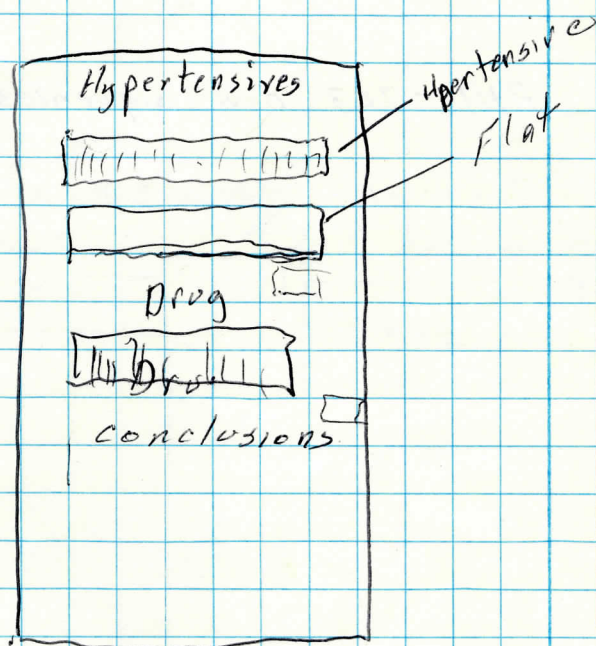
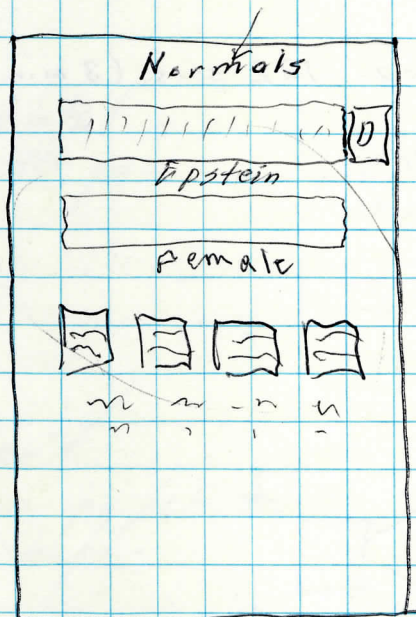
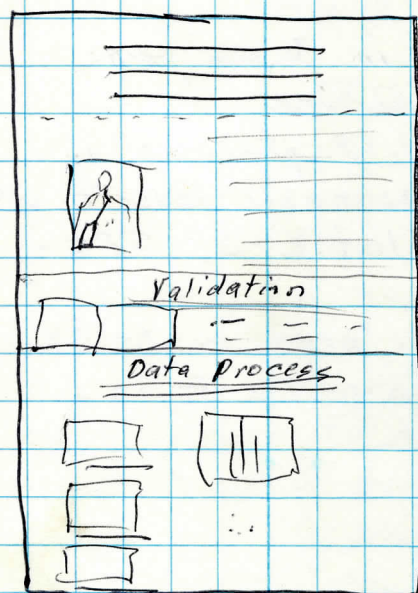
Jim - in graphics -

Promised: A.K. matl. on P-20

Memo. on Xducer failures

Critique of Literature

Tech



5 Feb - D B P error -

① arm W.T. BP Xducer #1245 (New) + Z03

Aus	BPR
120/88	116/91
113/89	110/93
122/94	125/97
119/91	104/92
119/91	112/93
124/94	116/93
114/90	101/92

As above ex- SN 204 BPR

126/95	114/96
119/89	115/90
124/97	109/99

As above ex- Transd. SN -

119/91	118/92
113/93	108/85
116/91	100/94
118/91	107/92

Above records made p large errors on young male this AM.

6 Feb H.R. at DMA shipped 2 new Xducers 1264 +
J.W. tried them on BPR 20344 and found big errors -

W.T. - ① arm - Seated

Aus	BPR 204/1204 ②
127/88/86	119/87
118/85	114/87
121/81	108/85

Aus	BPR 204/ ③
117/	111/
125	113 203/ ④ 204/772
120	92

Watching 128/93
+ holding 125/88
BPR 123/95/89
119/88
Watching 122/88
BPR 111/87

122/84 122/81 ⑤ 204/ old Xducer 1158
120/86 120/85
124/80 124/80
126/85 126/81
124/80 124/82
120/84 121/84

125/ 118/
Sens Hi 119/ 109/
Watching 121/ 112/
Propped BPR 121/ 114/

R 204/ Xducer #820

125/80 125/81

129/ 108/ 203/ 1204
125/ 119 Unit would

lockup both
readings at
prog. lower pts.

⑥ 204/ X 1089

132/90 128/89

9 Feb 80 - UTM B XD probs.

Put 680 (1089 in fact) on young subject after a successful 24 hrs. use (albeit c. cal. probs. initially) and after several cycles it gave DBP's 10-20 pts. high. Found and an old XD, #683, and it gave good cal.

11 Feb 80 A.K. called and the exl. has been accepted to Houston.

I will get remaining math. off today - tomorrow.

J.W. got two good runs from #203 BPR & 1089 XD. I am using it tomorrow in flight.

Called H.R., on vacation, and then C.S. requesting XD and repair of 204. Discussed exhibit -

Aus	12 Feb 80	BPR
135/98	NT	135/93
127/92/86		125/88
132/94		132/91
132/96		132/95
136/94/90		135/92
134/927		133/91
142/93		138/94
132/95		130/92
131/92(7)		131/89

Bruce Warren
BP #10 F-100

12 Feb 80 BPR on W.T.

Originally sched. to fly S-S apprs. at ELP but scrubbed & will try to get A/C in PM $\bar{c}$ M for bag ride.

Inst. on ① arm - XD[#], BPR 203 reset time Reset 0725

Normal day in ofc. to gym. where I rode the Schwinn @ 200, 250, 300, 350 w/min then @ 250 w/min for ~29 min @ 250 w/min & back to ofc. Left ofc 1520 and to EFD. O+B to ELP $\bar{c}$ M. Two flts. $\bar{c}$ W.T. under hood. 1^o flt T/O ~1630 1TD nl. climb, $\bar{p}$ 4/0 and $\bar{c}$ stable H.R. / B.P. gave M A/C & came out from hood. After stabilization W.T. took A/C $\bar{c}$ hood, stabilized and then under hood until TACAN at ELP. Then 26 instead of assigned 22 and screwed up app. 2 was 1LS $\bar{c}$ op. G/S LOC only & descended early - On return leg 1TD, climb & 4/0 $\bar{c}$ stabil. by W.T. - gave M A/C but stayed under hood until taking over for nl. TACAN per & 1LS which was flown $\bar{c}$ G/F - 2^o 1LS flown $\bar{c}$ G/F until ~3 DME when a nl. T/G made, last 1LS flown $\bar{c}$ flaps until ~4 ~~nmk~~, when gear was dropped $\bar{c}$ T+G then 2/3 visual closed by S/M. Later tried & home for supper at 2130 and to L/TMB at 2225 arriving 2310. Calib., sitting, at home and ran records at L/TMB & home by 0100.

Calib -

	Ass	BPR
1003	135/98	135/93
1005	127/86	125/88
06	132/94	132/91
07	132/96	131/95
08	136/90	135/92
09	134/92	133/91
10	142/93	138/94
11	132/95	130/92
12	131/92?	131/89

13 Feb- BP, HR in W.T. on 12 Feb - Correlation c Events

Time	BP	HR	Event
0727	132/79	63	
30	126/86	63	Bkfst
33	125/90	63	
41	122/90	62	↓
48	123/90	70	
56	134/94	80	
59	119/		

PATIENT'S NAME : T4600F/THORNTON
 DATE : 26/10/80 T38

101B reset

LINE #	TIME	SYSTOLIC	DIASTOLIC	HEART RATE	BP MEAN
1	1019	138	81	74	100
2	1027	107	81	66	89
3	1028	111	80	65	90
4	1036	110	76	66	87
5	1038	111	78	60	89
6	1041	109	82	66	91
7	1049	101	74	62	83
8	1050	105	73	63	83
9	1052	105	82	65	89
10	1054	92	71	59	78
11	1055	97	79	63	85
12	1057	114	79	62	90
13	1058	112	74	60	86
14	1059	117	80	65	92
15	1104	115	79	1	91
16	1341	156	96	74	116
17	1347	140	92	80	108
18	1352	127	93	124	104
19	1357	125	87	68	99
20	1401	129	82	0	97
21	1404	128	83	13	98
22	1407	121	85	12	97
23	1409	120	87	2	98
24	1415	133	78	74	96
25	1416	127	90	82	102
26	1420	119	86	10	97
27	1428	125	67	0	86
28	1431	129	93	0	105
29	1436	132	93	0	106
30	1437	130	86	0	100
31	1441	127	94	0	105
32	1443	125	87	0	99
33	1449	138	90	0	106
34	1451	120	87	70	98
35	1455	123	92	63	102
36	1458	136	86	66	102
37	1503	0	0	0	0
38	1508	133	81	66	98
39	1509	137	83	67	101
40	1529	139	88	72	105
41	1537	225	88	64	133
42	1538	132	89	63	103
43	1541	125	78	78	93
44	1542	133	80	77	97
45	1547	136	85	88	102
46	1548	125	82	65	96
47	1552	129	83	133	98
48	1555	125	83	64	97
49	1602	129	83	88	98
50	1604	116	83	54	94
51	1612	124	84	68	97
52	1615	131	95	67	107
53	1616	125	90	71	101
54	1623	121	90	74	100
55	1625	122	93	64	102
56	1629	120	85	63	96
57	1631	131	85	60	95

Driving LTMB
↓
EFD

stopped TO ~1335
Level off
↓ MS Flying

W.T. Flying

Descent

Final
shut down
sit in AK
start 2° Alt.
T/O

MS Flying

U/O

WT Flying
? Control Prob
M.S.
Flying

29 Feb, 80- Venous

Called _____ and discussed his work. He has tracked venous afferents, both change in pressure & pressure sens. to a cortical representation and synapses & somatic musculature representations in the cat. At last someone has shown what I postulated and have been trying to do since 5/6. The postulate was there is some mechanism for ~~tone~~ activation of somatic muscles to maintain venous tone in the leg 'sinuses' which have virtually no walls. Will try to see him as soon as possible.

1 April Summary

B.P. exhibit was finished and shown at the Natl. Conf. on ~~HBP~~ HBP Control Hypertension (? title) in Houston. It was well done and J.W. thought it was well received. Had not received NASA's permission to have my name on it, so it wasn't. It is still early in the life cycle of this development in spite of 150 units out which have produced a few papers. J.W. is now convinced that it will have a role in the future and that it is now or never for the early papers.

Stopped by DMA trip to MDAC and tried to give BDM a system to rapidly expand P.II utilization by setting a central data reduction fac. connected via phone modems to the individual physician - even GPs. who would lease/purchase the BPR, send data to the ctr., receive a data rpt. and analyze it himself. The latter would be possible by the relative simplicity of the information and through preliminary stds. which J.W. & I would establish. B. evinced interest but when it ~~and~~ I went to considerable trouble to stop by the next day it became obvious that D.S. would not be available, etc. so I have dropped the project & him insofar as I'm concerned.

There is a ground swell of resentment over the unreliability of the P.II's by virtually everyone who has used them. Tried to convey this to C/S but no evidence of belief or intent to pursue.

Both P.II's failed at VTMB. One gave meaningless readings and the other gave DBP values and when a return was set up both worked. Today the first unit failed again. Also lost data when unit was switched off & then on during study. Third P.II arrived from Dallas and was taken to VTMB this morning. BDM went into his financial act rather vigorously & J.W. set up, including the accusation that A. had not kept his promise (on papers, etc.) A. is mad.

(3-7) He reviewed current status and have agreed to try to finish a nomograph ASAP and from this to extract the hard out Bruce wants. So are to meet 9 Tues & Sat. to put it together - I made the following preliminary outline:

1. Techniques
2. Variability
3. "Normal" B.P.
4. 24 hour means
4. Diagnosis
 - Labiles
 - Borderlines
5. Hypertension
6. Drug studies
7. Clinical research
 - a. potpourri

10 Apr.

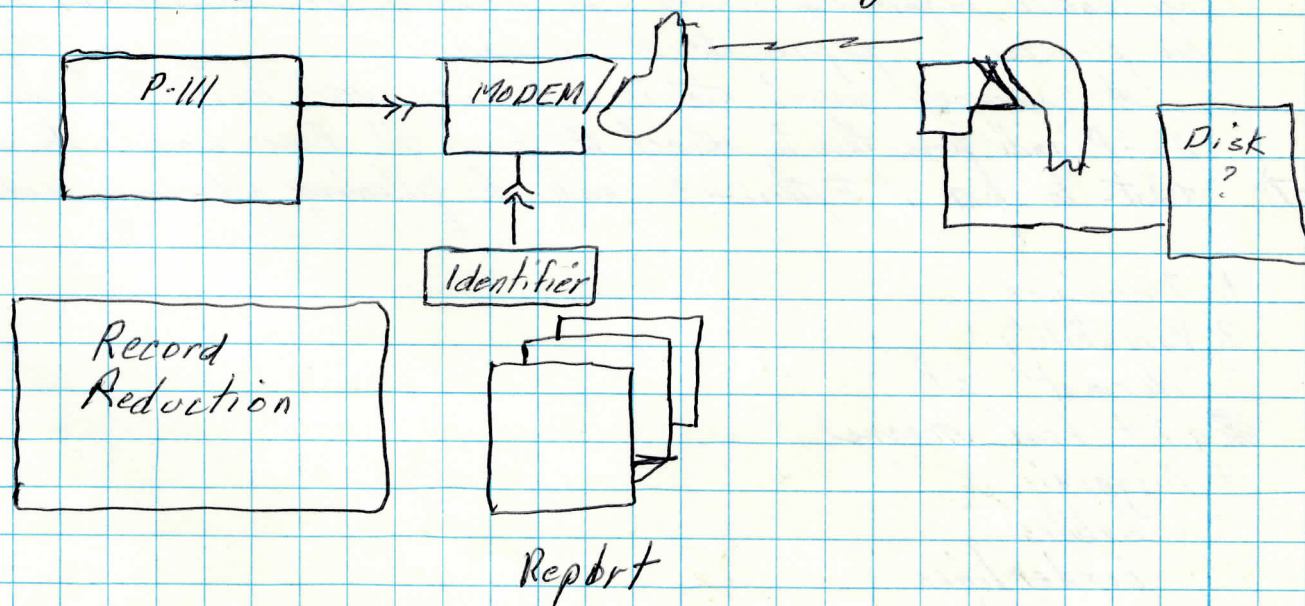
Summary -

Stopped by DMA and outlined a plan to establish central computers (1981) connected to satellite B.P.R. (P-III) users. Pointed out the elements of a system which included practical means of sending P-III data to computer, insuring that it was tagged & analyzed, proper computer formats, etc. BDM voiced interest and promised support eg. Dave Squires. Discussed E.D.S. who is over his head in production probs.

- 8 BDM ~~ounded~~ off to Carol about non delivery of literature, etc.
 9 Apr. BDM long phone conversation on new work & his desire for literature. Promised to get something ASAP & he promised to support the telephone loop for remote computing.

- 10 Spent afternoon E.J.W. reviewing status. He was interested in setting up a regional B.P.R. ~~monitoring~~ ~~rec~~ analysis center at UTM as described above. He mutually agreed to jointly extract a firm agreement from BDM as regards our use of the P-III's & support "Provision" a pamphlet on Ambulatory B.P. for DMA. Support of the Exhibit & payment for it. He agreed to spend 2 days wk. on the pamphlet & take 10-12 day hr. in May to finish it & then finish ^{the} monograph ASAP.

Central analysis of BPR (P-III) recordings -



26 Apr. Plans — LTMB —

2 working PIII's
Transducer

Exhibits 1 Yr - Mar -

Am Coll Chest Phy
Soc Exp Ther & Pharm -
Am Hf -
Am Coll Phy
Am " Cardiol

W's Costs -

Pamph

Introd -
Normals
Clinical
Research
A - Mechanics

X X
X X
X X

Turned on machine TRS 80 Loaded program & started at P-3 had
c157 lines data video was blanked by series of horizontal lines moving
↑ + subscript out of range in 26455
Ready but wouldn't take cmds - on pushing reset 'flickering' stopped
Ready appeared I/O error on alternate disk loaded normally

3 May UTMB
 Résumé

5 May

UTMB - library, work on pamph.
 Tentative Contents -

Introd -

Normal BP patterns

Effects of casual pressures

8 May

TRS 80 failed - wouldn't activate Disk drive -

Took units to loc. R/S & found bad IF unit which has
 SWRI mods -

9 May

R/S svc. Facility only swaps boards and hence couldn't
 help - Tried to reach SWRI but Cater out -

Have almost finished final draft of Introd

10 May 2 Trips to HOU + # UTMB

TR5 80 exp. interf. failed & DMA had our 1979 - returned via HAN -

Replayed 2 PIII loads & then put on W.T. to document fall in BP & daytime sleep -

1335 - fussing & straps on BPR

1340-5 walking to Rusty's

1345 Rusty's

1354 " 121/83

1403 " 126/81

1406 " 123/86

1425 Lv. "

1436 climb lib. stairs

1443 in lib. carrel

1450 " " " }

1525 " " " } nodded in chair

1555 Lv library -

1603 in lab

1610 lay down

1745 Up - sitting

46 stdg.

1750 Off

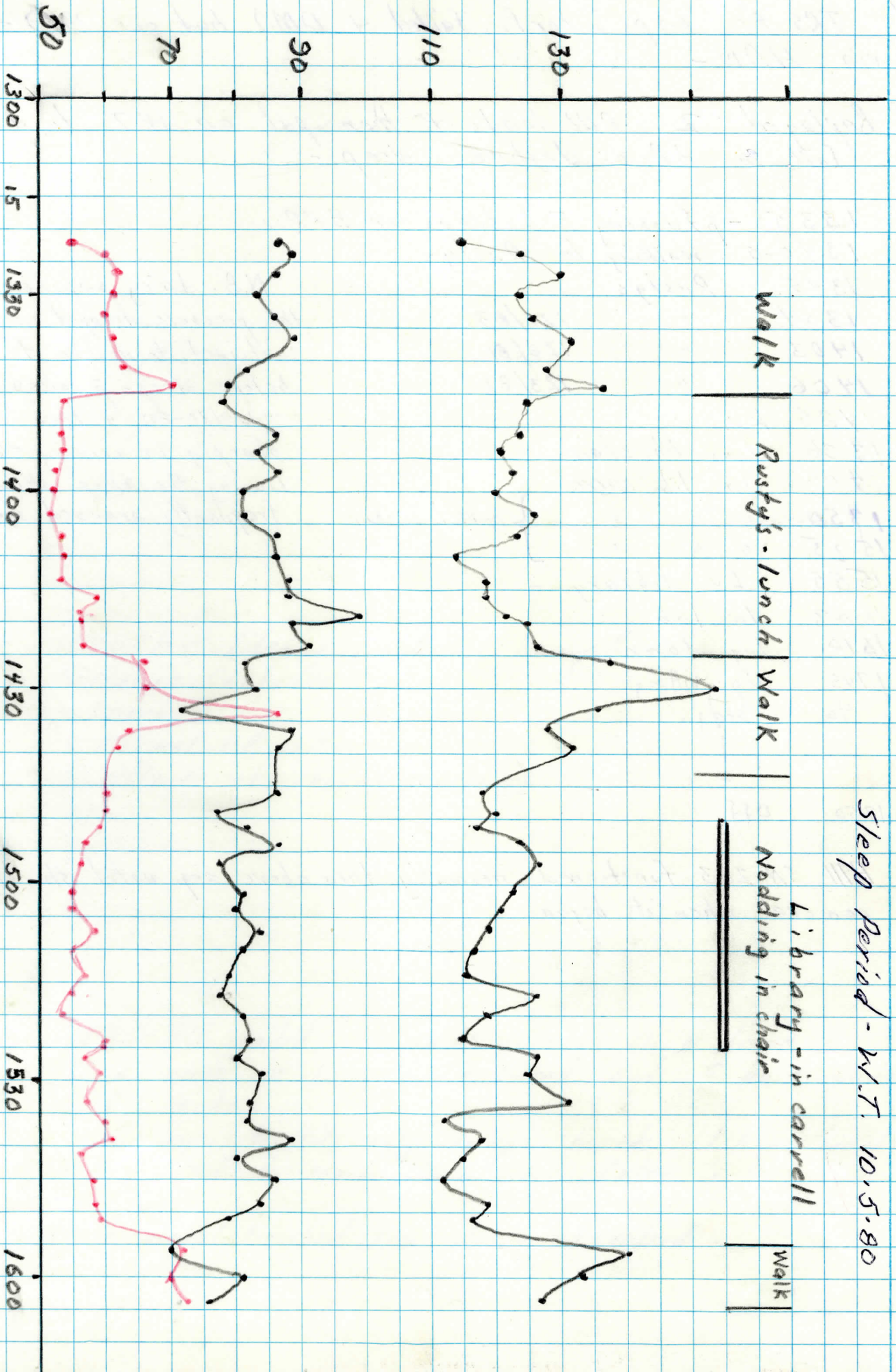
N.B. during supine sleep period the pressure dropped on lying down & continued to decline to ~110/65

before sleep - $\bar{p}$ sleep pressures were ~110/70-80 & then increased

sharply on arising ~130/90 $\rightarrow$ 125/85

During the sleep sitting the BPR cycle frequently aroused me.

PIII SN 203 functioned normally thru above seq. until shortly before removal when it began



20 Jun Resume -

25

BDM has demanded return of PIII's and 660A by July 1 or purchase of PIII's (2) & gear to be picked up when delivery is made. UTM B has \$ money for purchase but will lease 1 unit & I am purchasing a 2nd unit to ~~then~~ give to UTM B. The TR5-88 is out of order & has been for weeks. Two wks. ago Green promised to quote UTM B for a service contract and have just gotten around to it today. After seeing H.P.'s line it appears that their 85 μ comp. & printer/plotter will interface more or less directly to the PIII plus KB entry for 'old' data. A local is doing S/W and thinks he can produce a program to listing, auto edit, epoch statistics and plot ^{3pt} mean & raw H.R. & BP vs time.

26

Have driven to San Antonio SWRI to try to expedite TR5 80 repair. It was received from them and all features worked ex. the 43 printer I/F was intermittent. Removed the Computer I/F plug & resoldered conn. ^{per D. Aguirre} and comp. came up but would not initialize. Hand carried complete unit to SWRI two wks. ago but in spite of repeated pleas to, 1) send quotes to UTM B for maintenance contract & 2) do anything to fix it and I would be responsible for bill, it has remained untouched until yesterday when Carter called & could not find a disk drive. I carried over a drive last

To trace
Load program
TRON (E)
RUN

List line #

night and T.G. had allowed him < 4 hrs. to work on it today. The program hang up was traced by listing, on CRT, steps at Q & found to be misconnected. Term. I/F - Repl. connector & solved problem. Data File I carried over was made to T-8 & wouldn't load to T-9. PIII checked but card reader still wouldn't work.

Some Data Files are under T-8 S/W and won't retrieve data from T-9 Format. Must have " " to load

This term, I/F has caused repeated problems and system may work fairly well now.

26-

UTMB

Set up system which works to disc. data read, PIII, auto edit, Ex, P, Z4A, P3, List etc.

27-

Call from H. Printer won't advance & has forgotten how to format Blank discs. Called Carol & info. on discs & will try to transmit data on adj. advance tomorrow.

27 Jun

Summary contd.

At this point:

the TRS-80 is outmoded & unreliable
BDM refuses to loan anything hence our data must
either be hand plotted - a patent impossibility or not done
BDM wants \$20K for the printer plotter - money not available

I have ordered a P-111 and UTM-B is supposed to lease
a 2° P 111

I will not continue to support the TRS-80 but will
buy a HP-85 and matched printer plotter and have an
interface & S/W done locally

KB advises against using any part of TRS 80 S.W.

Will in fact avoid using any part of DMA technology
to avoid any possible claims of any nature -

5 June Summary

Received TRS80 from Cater SWRI via SWAL (HUB). Unit failed ~ 3 wks. ago & only gibberish on screen. Took to local RS where exp. I.F. was found defective by box changing.

June 5 - UTMB - Plans & J.W.

J.W. Pubs -

B.H.T. -

Monograph -
will outline today

Storage
42 - P/B -

V
Brn

Data Analysis

Listed

Hrly means < 1/2 -

Epoch " " " " " " " "

Storage

Chemistry?
Add -

B P vs Time

Raw points

Three points

Hrly - ~~X~~

1000-2400

Manually enter data into data processor
Redo TRS & printer/plotter & program only for above -

27 June Specs for HP 85

Must Accept data from:

Manual K.B. format

8 bit parallel interface -

* desirable to accept from RS-232

Data Quantity & Format:

200 lines of data containing;

contd. next pg.

Squires -

OKI Data

Data Products - character generator ROM

70 pts/inch - across 35 pts/inch -

after discussion w B/S it is hard to escape the concl. that plotters are not available w the resolution we need.

IBM → Foc -

HP 85 specs. cont'd.

elapsed time - two 8 bit ~~word~~ bytes w each ^{LS} bit = 4 secs -
or 2400 clock to nearest minute

SBP - one 8 bit byte LSB = 1 mm Hg -
systolic blood press.

DBP - " " " " " " " " "
diastolic blood press.

H.R. - one 8 bit byte LSB = 1 mm Hg.

Data transfer, storage & listing:

200 lines of data must be transferred, and numbered in order
of receipt (1-200)

elapsed time must be converted to real time to the nearest min.

+ HR
SBP + DBP must be displayed as 3 digit numbers to the
nearest mm Hg or beats per min

Display

Data will be displayed to name & lab.

B5	32	1/2 ROM, HP1B IF ROM Drawer	\$ 3985.
	Extra Mem		395. *
	7225 A ROM		2050. 145.
	HBIP		395. *
	Personality Module		750
			7220
			- 790
			6910.
80		6% T.S.T.	414.6
			50.
			7374.6
		Profit	737.4
			8112.0
		IF	(350.)
			8462.0
		H.P. cable	(200.)
			8662.
			32
		est	8694 2700

- Get PIII w/ ckt.
- Get Lab data info -

30 Jun

Colquitt -

Two

Ø 5

ex 1.0.

1. Manual data entry $\bar{c}$ all S/W, ~~*~~
^{display,}
 storage & plotting functions delivered

& tested - & paid for
^{except}

2 - 1/0 S/W & any I/F (to be determined)

Ø 1.

Transducer FailureOn Arm 5 EKG in Hotel $\bar{c}$ 2 batts.

Batt S/N 626; 200

120/92

115/99

113/88

139/89

116/83

111/88

113/98

116/90

129/90

117/93

121/96

116/87

113/86

115/90

119/87

112/84

23 Oct. Resume'

B.D.M. forced us to buy 2 ea PIII's. I purchased one and UTM B another on a lease. He further refused use of a 1981. It in turn terminated all work on a publication ex. the pamphlet & exhibit. It has also received a drug study grant. I have continuously tried to find a solution to the plotting problem & success. At the moment I have a Data Products com printer plotter on loan. It refused to go to Boston so I am going to cover it on my own time and money.

BDM promised to send a coupler for the TR580 but when it arrived would I/F only & PIII. BDM claims this was known by me - Absolutely untrue.

Took coupler to UTM B and & some difficulty, shorting pins to repl. bad reset sw., sent loads from 2 PIII's to D. Squires. Suggested sending PIII to repl. #235 and I will take X mit. & PIII to ATL & BOS.

1300 EDT Good results on 2 flts. to ATL. Ready to X mit. to D.S. when connect. cable discovered msg - Tried to reach C.S., busy, & D.S. who was going to try to get replacement from Tel. Etc.

1500 No msg. etc. Called C/S & D.S. - couldn't get cable to me - couldn't find vendor called all over Atlanta & found one out of town - Taxi to get it and \$5 to Shallowford then Buford Hwy 5091 455 0647 return. Set up unit and sent consistently faulty data to DMA even after all possible maneuvers. Finally loaded a few lines in the PIII which were transmitted & fidelity. Appears to be bad PIII memory - Rm 1205 SHERATON ATLANTA

28

Installed PII & @ harness stud fell off. Taped back on. Transducers failed on appr. to LOGAN.

Park Plaza Reached Squires & difficulty and first loop would not work. Squires Hotel implemented call to me and transmitted & difficulty but in reverse mode.

Rm 1824 2nd X mission. Had problems but a repeat was made & error. PIII did not reset yesterday. Asked Dave to send report spec. del.

29

Spent day at ICPP & avg. interest exhibit. Most of interest from practitioners not research.

270d. 80 Trip to ATL & P III

0643 Reset

45 141/80 In car to CLC A/P wife driving

47 120/77

49 127/83

51 131/83

53 123/86

56 121/82

0703 134/89 In CLC term., seated

~05 134/86 in toilet, d

10 139/86 , in toilet, d

18 129/94 , summary invol. BDM

23 142/81 In A/C (DeH. Offer, turbo twin), starting Engines

25 128/78 , Taxiing

26 130/88 , "

27 132/92 , Line Up

29 133/90 , T/O

30 132/90 , L/O

31 138/94 , passing EFD

33 132/86 , level cruise

34 133/88 , arm resting on leg

36 134/86 , sl. → mod. turb.

39 132/87 , Descent

40 131/97 , ↓

42 *166/90 , I. Appr.

43 126/86 , 1

44 130/91 , Final Turn

45 130/90 , Final + Ldg

46 135/92 , Taxiing

47 130/89 , "

53 143/80 , std. p climbing steps

0808 150/91 , , during walk in tunnel clog

0815 124/87 seated, waiting for flt. call

21 ? " " " "

37 121/84

40 130/90

43 131/84

50 125/96

51 118/91

0900 119/94

stdg. sk. in to A/C

seated, in A/C L-1011

Noted EKG electrodes off.

, push back

① resting arm on leg.

* prob. artefact, movement

27 Oct. Trip to ATL, Contd.

0903 ^{112/85} Start 1st A/C, start engs. (L)

05 104/77 , Taxing (L)

09 126/89 , " (L)

11 127/80 , Line Up, ↑ pwr

12 Artefact , T/D

13 117/79 , climb , sl. turb

14 ^{112/83} ↓ (L)

15 115/83 ↓ (L)

17 119/85 ↓ (L)

18 137/94 ↓ , palp. radial

20 121/91 ↓ ↓ pwr + turbulence (L), sharp jolt during read

21 116/84 ↓ in & out cumulus

30 117/83 ↓ L/O smooth

37 106/83 Bkfst. 2 sm. cups coffee

42 ^{135/90} " held arm out

43 116/88 " " on seat

44 175/130 " " (L)

45 123/96 " " } concerned 2 reading accuracy

48 136/86 " "

49 134/86 " "

56 121/76 Arm on seat

58 ~~243/209~~ ? cuff on seat

59 129/89 arm straight, ^{hand} on seat

1007 129/81

1010 130/71² descent, 1st turb. { multiple steps ->

11 126/84 ↓ (L)

17 127/82 ↓ + L/O, clr. smooth

18 137/82 ↓ speed, Flaps ^{hand} arm on seat

Reset 1808 Phone Xmtv. test 2 D. Squires.

09 142/139

10 139/100

11 144/90

17

1020 139/83

22 127/84

23 128/89

24 124/90

26 135/84

27 127/86

28 127/ artefact

29 137/88

30 121/84

Low alt approach, clr. smooth

↓ , Flaps
 , Initial

Final

↓ , Gear

Flare + rough ldg.
Roll out + Taxi

Taxi

461031

1200
02
04
06
07
09
10
14

120/85
143/91
133/90
128/95
120/90
136/90
122/88
129/81
127/86

Taxi

Cab p long walk & bags
, good driver



1221 ~140/90

1228 126/87

1230 117/80

33 114/75

36 127/80

37 117/82

39 119/74

41 118/82

44 111/71

46 113/76

47 118/73

49 112/69

50 ~ 113/68

52 111/75

54 113/73

55 113/72

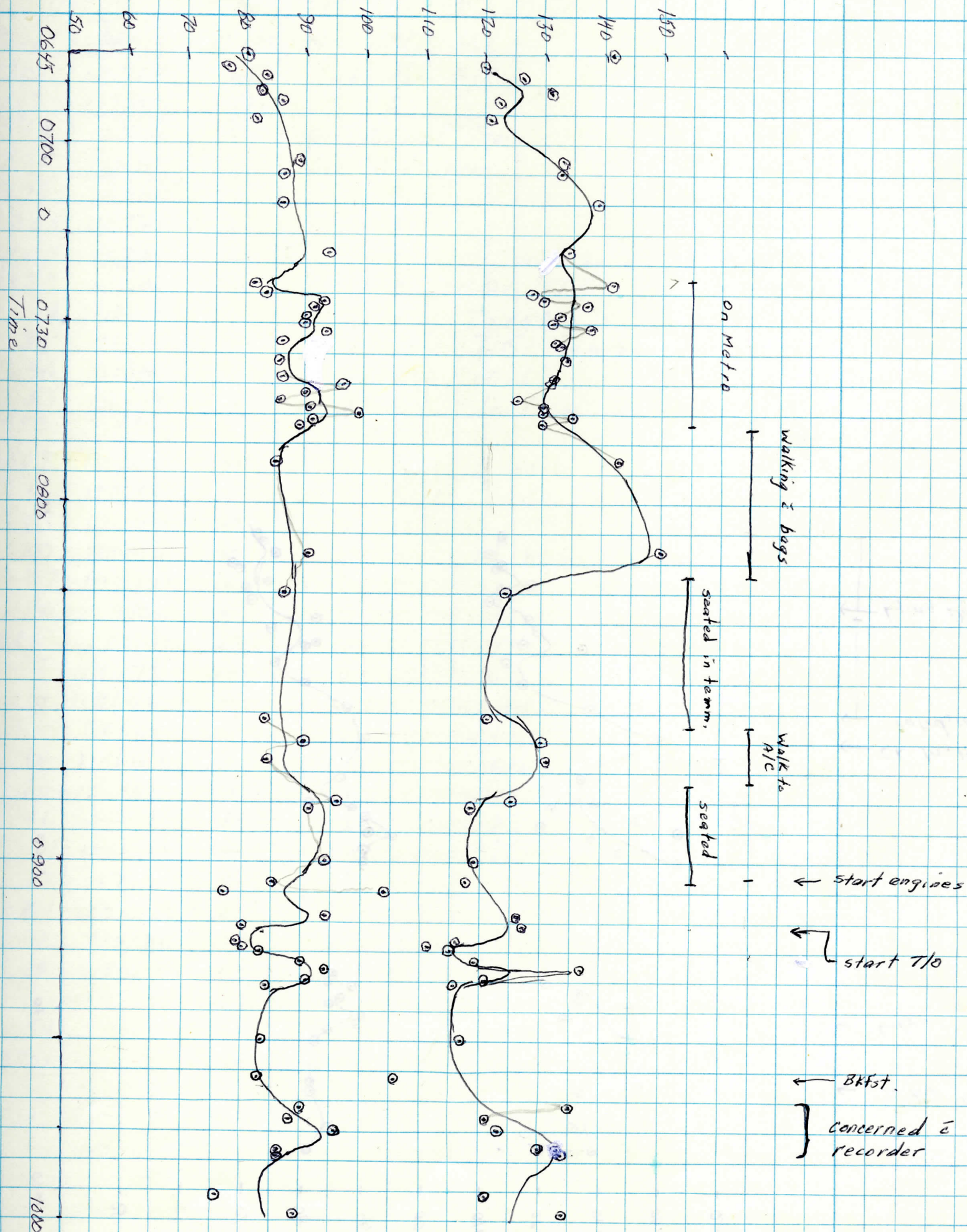
At Hotel Desk

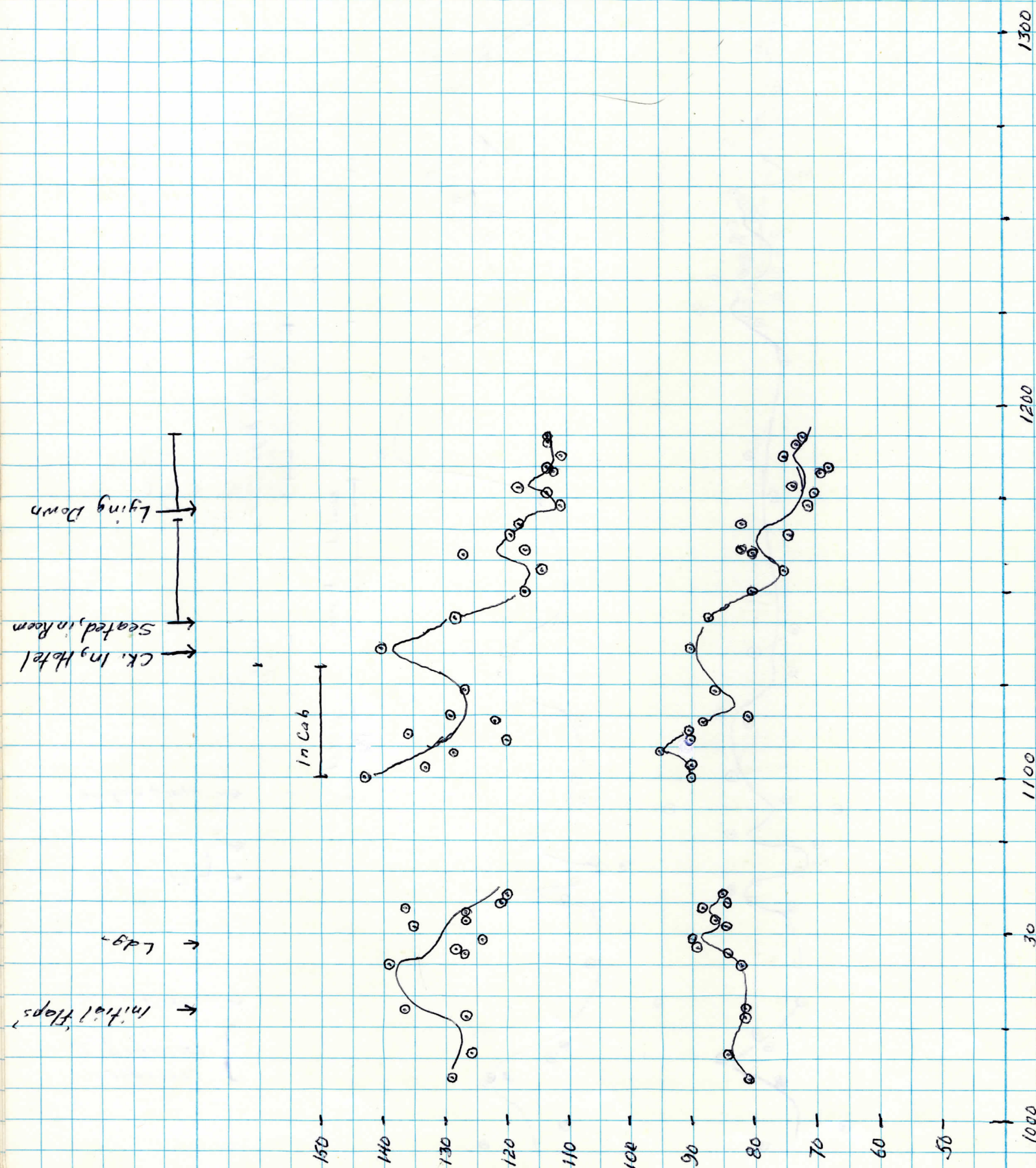
In Hotel Rm seated → EKG electrodes replaced



↓ Lying down,







28 Oct. 80 P III ATL → BOS

Reset $\overline{11235}$ 145/98 74 stdg. Hotel

1305 123/84 65 Cab. to A/P

1313 119/83 72

1321 123/106 95

1329 119/91 66

1337 126/109 68

1348 117/88 77

1355 117/80 69

1404 132/115 228

1430 118/72 67

8 118/78 145

39 x 111/73 70

46 106/77 67

53 123/90 71

1500 115/80 65

1507 120/79 84

15 120/83 67

23 118/84 68

30 115/97 64

37 119/90 63

52 112/88 65

1600 114/75 63

07 118/66 66

15 98/69 60

17 115/84 67

18 120/81 66

20 126/117 86

21 117/114 68

22 126/127 89

23 174/88 67

24 158/113 255

32 54 61

39 1701 66

On Airport Train

On Concourse

On A/C

Walking during meas.
EAL 727Taxing
T/O bumpingclimb
level sl. chop

p snack

sl. chop

SL Turb

slow desc.

nodding
initial

Flaps

Solid instruments

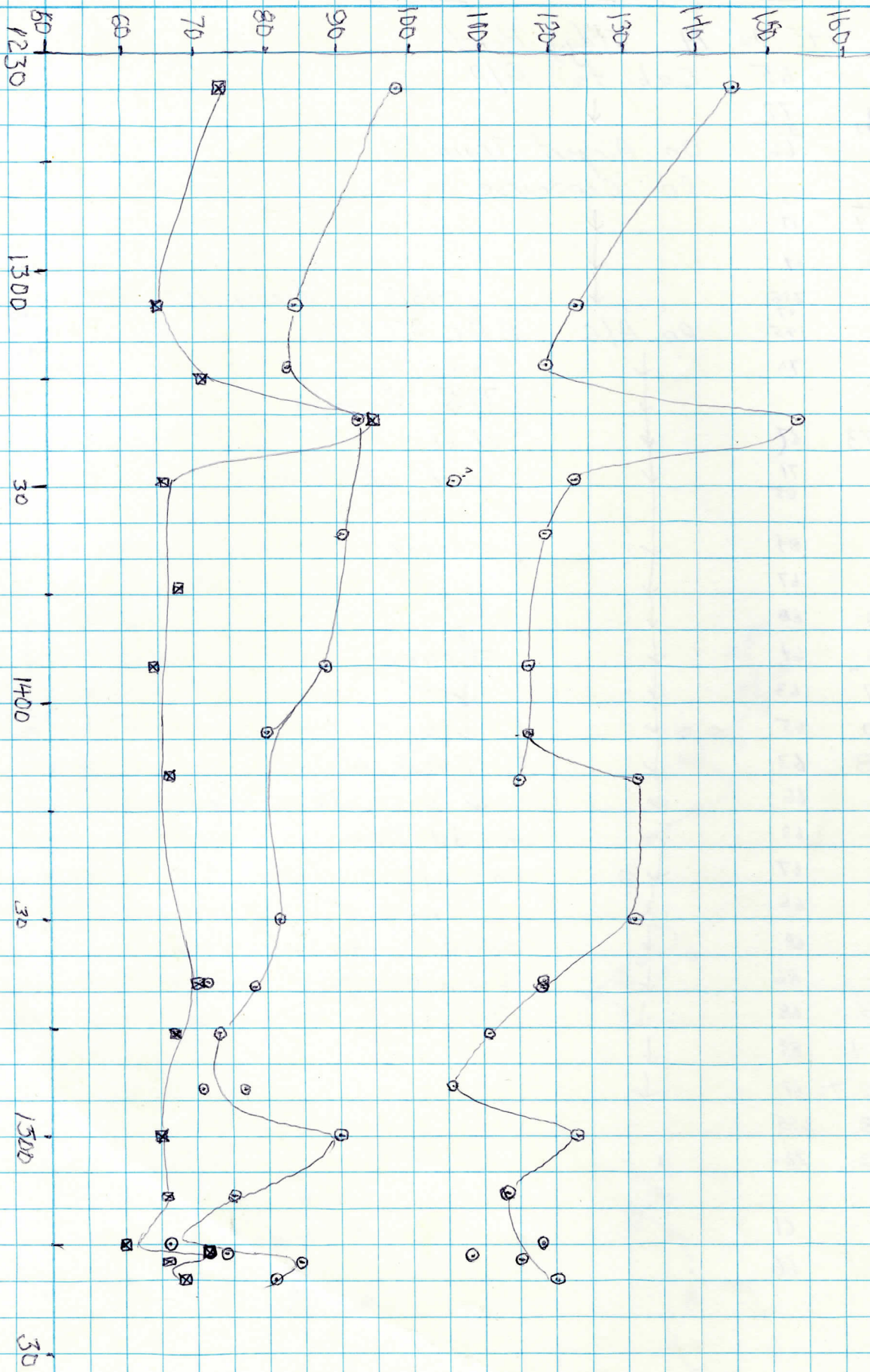
Ldg

Taxi

"

"

1419 69 HR
1427 155/105 82
1441 101/78 68



BOS → RDU cont'd.

18 26	134/84	67	In A/C TAXI	
27	129/82	69	T/O	
29	126/81	65	Climb	2 nd A/C in vicinity
30	135/85	70	L/O	
32	125/85	65	Climb	
34	129/78	66		
37	130/82	66		
41	135/85	65		
48	141/87	65		
56	134/87	68	cruise	
1903	127/87	65	desc., sl. turb.	
04	132/90	69		
06	135/86	64		
08	125/83	67	sl. turb. ↓ pwr.	
1910	130/85	67	above cld. deck	
1911	129/87	68	Flaps, in cld., slowing	
1912	132/88	66		
1913	132/87	67	Approach	
14	127/82	67		
15	132/84	74		↑ ↓, ↑ pwr., broke out 12K
17	131/91	81	Fin.	gear
18	129/87	74		
19	138/83	81	Roll out	
20	132/86	70	A/C stopped	
21	134/84	67	waiting	
23	139/98	67		
25	132/91	66		
39	146/101	70		
54	142/100	70		
2002	138/87	69		
09	134/88	72		
17	144/98	73		
2020				

29 139/97

55 121/99

56 118/95

57 124/123

2059

2100 124/99

69

2102 115/91

68

2104 112/95

66

30 Oct. Contd. from P-43

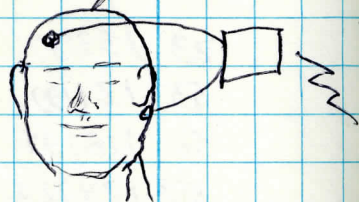
Transmitted data on pp. 51, 53 to DMA from Rm. 220 Ramada Inn, Durham, N.C. 1st loop had a local line & obvious noise, not heard by DPs, and communications between instruments could not be established. I replaced call to DMA and obtained a quiet line and data was transmitted but in 'reversed' mode. Dave has not mailed any reports because of a failed plotter. Data was transmitted 5 apparent error except for last few lines which apparently contained old data. Reset P-III and loaded 3 lines and transmitted 5 error. This transducer may also have failed.

Duke.

31 Oct. Reset 1341 $\nearrow$ ^{2 min} Error

DAD 13430	101/84	96	
$\downarrow$ 743	44/?	109	447 19/08 107
WT 48	132/83	0	
$\downarrow$ 50	134/83	0	
51	134/89	0	
DAD 53	120/80	0	
54	122/78	100	
55	113/82	90	
56	120/93	100	
57	119/81	89	
57	112/87	89	
58	114/84	88	
1400	95/75	stdg	107
$\downarrow$ 1400	106/85	$\downarrow$	117
Fritz 1418	119/76	Δ	
	112/71		
	109/73		
22	99/76		
23	100/72	stdg	
24	100/72	"	

DAD & F.K. - discussed their EMG-EEG monitor for anesthesia depth. By using a single lead as shown in an X-mtr. for isolation with appropriate filters the average 1 or more bands of EEG + EMG. Gain is extremely high for EEG eq. 5 μ V per full chart width $\sim 6"$. DAD badly wants an A.C. coupled integrator for respiratory meas. i.e. the old "Mick 115A-3" unit I did. Described this to F.K. in detail. We then discussed BP and sleep, natural & induced and then on to role of muscle in B.P. in sleep.



1 Nov. RDU → ATL → IAH

1652 ② 124/79 60 ⑤ Taylor's table

55 120/83 61

1703 150/109 67

10 130/95 58

25 111/77 64

115

33 109/81 62

40 92/78 63

47 122/79 65

55 117/85 65

02 120/85 65

10 119/82 64

18 112/82 61

25 118/88 61

33 114/80 62

40 114/87 67

47 123/67 65

55 118/85 66

19 35 133/86 60

42 143/94 66

49 134/94 66

57 139/101 68

2004 130/86 64

12 127/82 70

19 120/82 63

27 139/92 70

35 152/89 68

43 140/93 67

50 134/82 65

57 156/81 68

2004 125/91 61

06 131/89 65

08 4/91 70

09 133/91 81

10 126/89(?) <79> 74

11 133/89 68

12 108/89 65

14 128/95 68

15 126/86 67

23 124/83 67

28 116/87 66

34 117/86 67

2142 119/84 66

Carrying bag-
stdg. gas sta.

Driving

drowsy
& Fatigue

In Term-unit on stdg

In How John Rest ⑤

stdg. salad bar

⑤ eating

poor coffee

Driving

↓

being driven

Standing in Head

⑤ concourse

↓

↓

68 Walked up steps + struggling into seat on EAL 727

⑤ in A.C.

↓

Taxi

T/O

↓

↓

↓

↓

↓

↓

↓

↓

↓

Climb smooth

↓

↓

↓

↓

↓

↓

↓

↓

↓

Hand

↓

Level

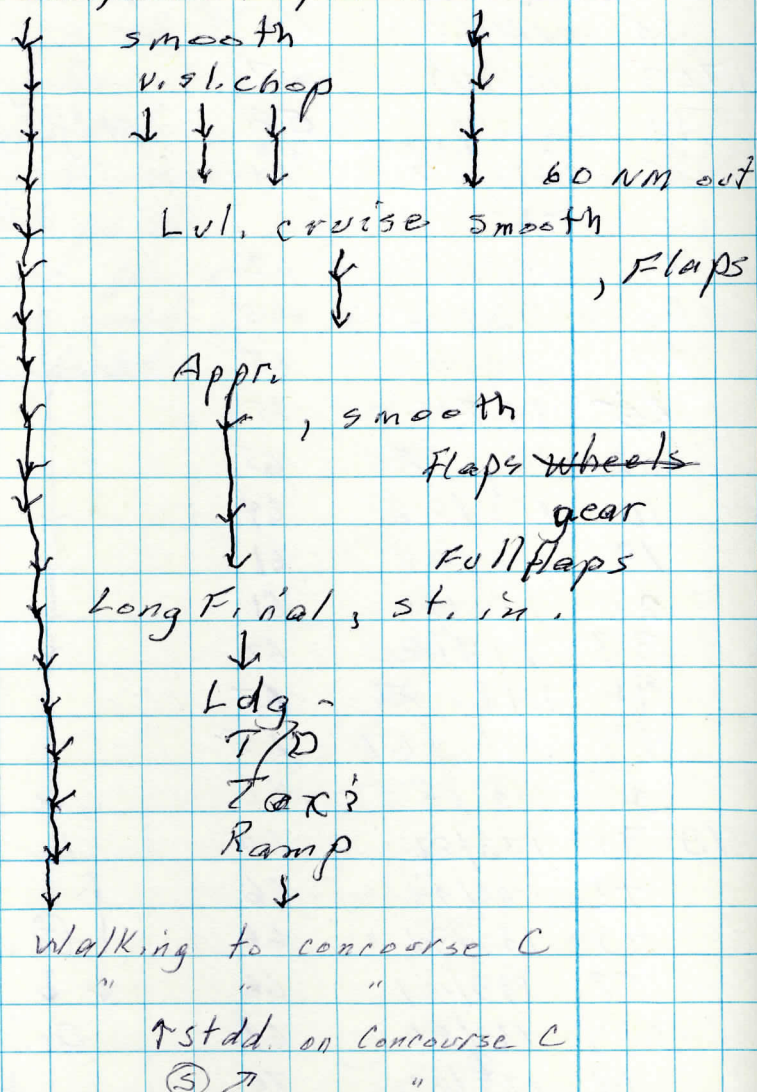
↓

↓

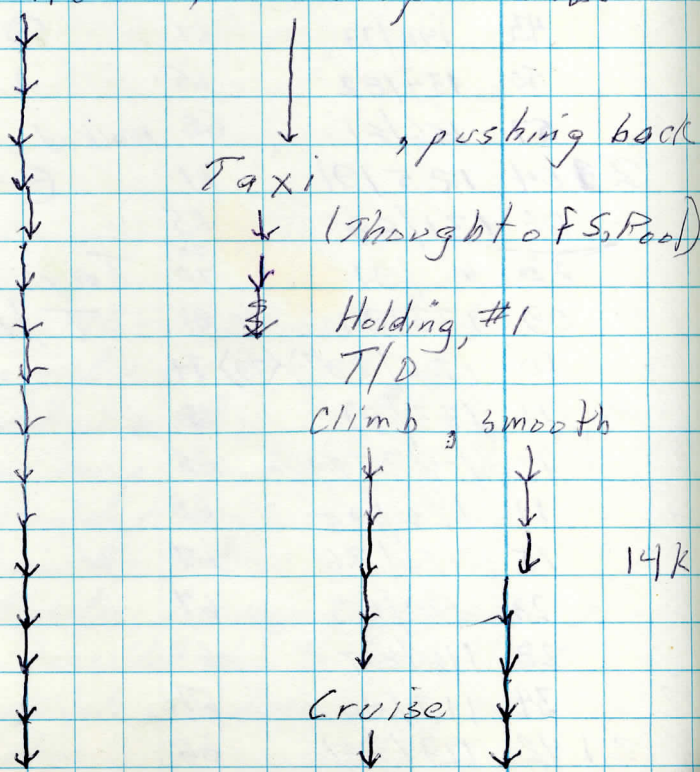
1 Oct. RDU → ATL

Cont'd.

2145	117/84	68
48	124/86	68
50	123/87	64
52	114/86	64
54	116/87	63
56	119/89	63
58 ⁹	118/91	63
2202	106/88	61
03	106/84	62
04	105/86	62
05	108/87	62
06	107/87	63
07	112/86	64
08	112/87	64
09	109/88	67
10	111/88	65
11	103/92	64
12	106/85	65
13	114/85	63
15	117/88	62
2236	149/91	68
63/91 71	152/89	70
38	163/97 ¹⁰	71
42	130/93	63
48	255/73	78
52	124/81	61
2301	117/81 ¹¹	60
07	114/91 ¹²	60
08	114/83	62
11	122/84	65
13	124/99	99
15	123/90	61
16	119/91	61
17	114/86	68
18	124/86	60
19	119/87	69
23	119/91	61
24	123/90	61
31	110/82	63
40	110/85	64
53 48	124/83	60
01 49	115/80	65

In AC, ^{sl. chop} smooth, slow descent

On AC →, at ramp EAL727



14K

1 Oct. RDU → A → 1AH cont'd.

0010 124/90 62 → in A/c cruise 2 cups coffee

17 114/86 60 ↓

24 110/86 57 ↓

31 113/86 59 ↓

39 126/81 58 ↓

48 126/79 57 ↓

55 109/83 59 ↓

56 117/87 57 ↓

57 112/87 58 ↓

59 122/87 59 ↓

0100 118/95 60 ↓

0100 125/87 70 ↓

0101 ↓ ↓ 60 ↓

0202 119/94 60 ↓

0103 131/87 59 ↓

04 117/91 80 ↓

05 128/95 57 ↓

07 129/93 60 ↓

14 143/94 75 ↓

21 114/90 63 ↓

29 112/83 55 ↓

36 111/87 54 ↓

43 115/86 56 ↓

50 113/79 54 ↓

57 116/85 55 ↓

0206 117/84 57 ↓

12 107/85 60 ↓

15 113/88 58 ↓

16 123/91 57 ↓

26 124/86 57 ↓

Walking & brief case

↑ in car, S. driving

sit, in house

" " "

↑ " "

↓
↓
↓
↓
↓

Descent, 1t. turb.

↓
↓
↓
↓
↓

Appr. Final

↓
Ldg & R/O

Taxi

↓
↓

At Ramp

↓

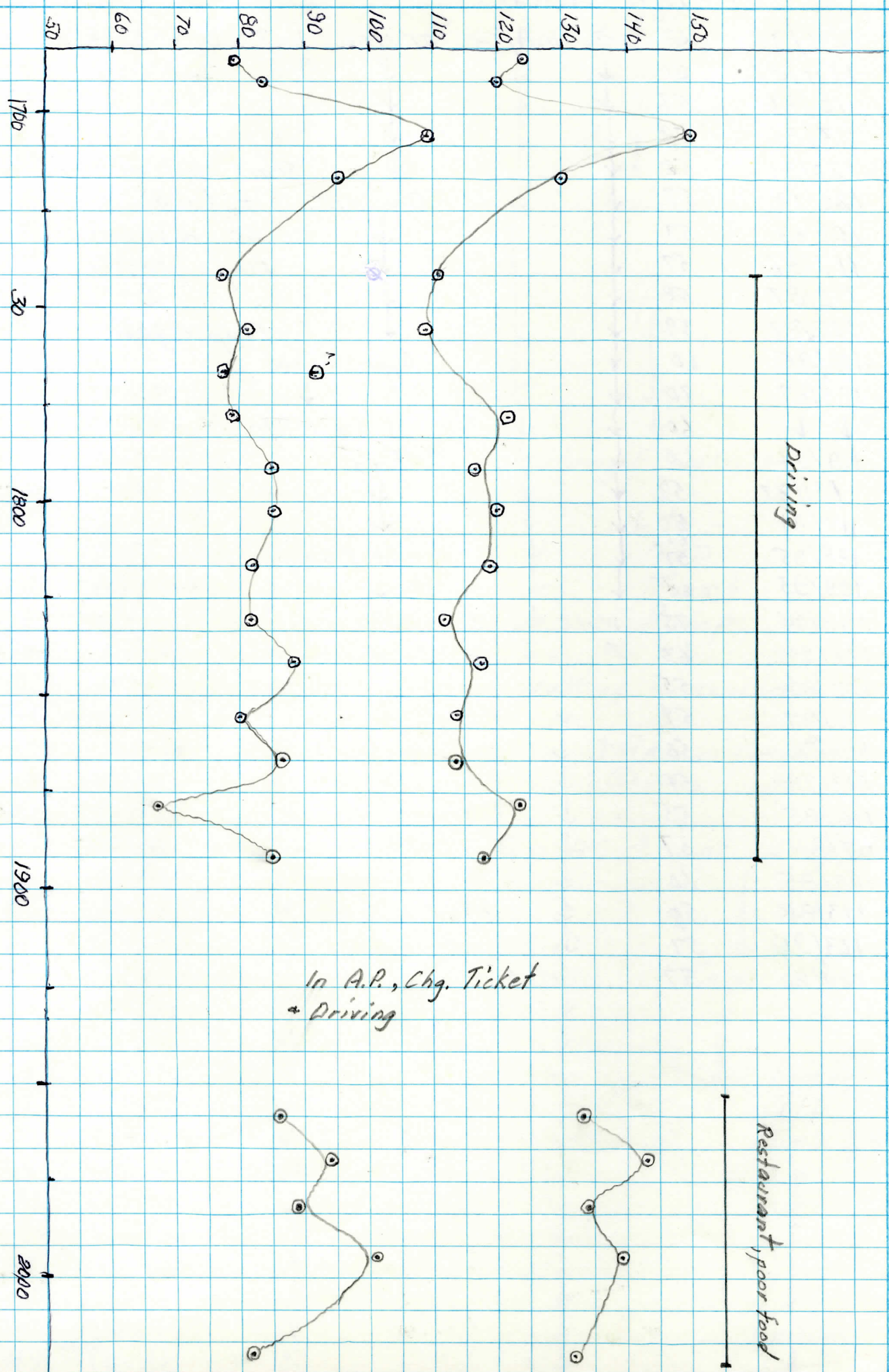
start slow descent

25 NM out

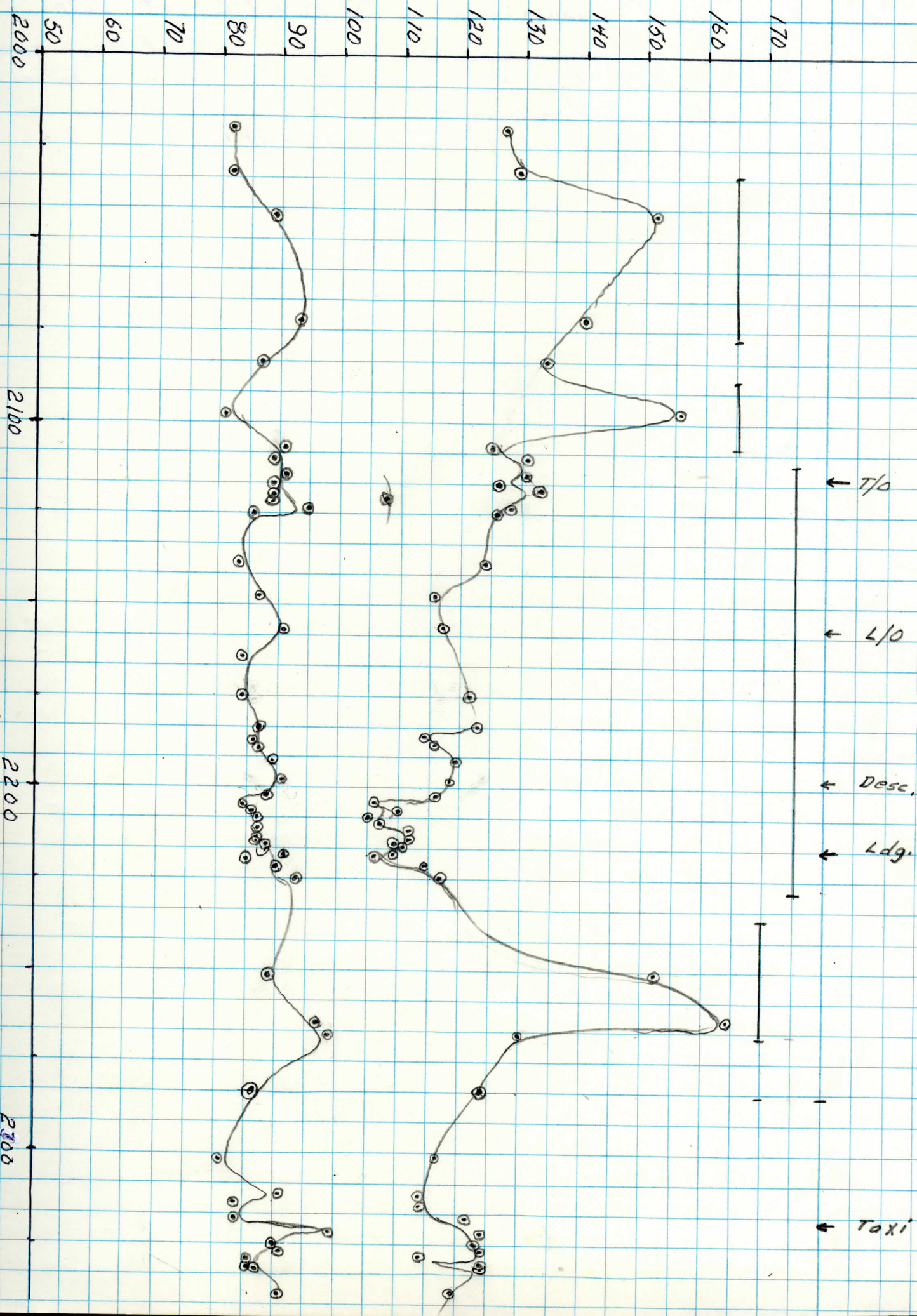
Flaps, Initial

↓
Flap + gear

1 Nov '80 RDU → ATL



In A.P., Chg. Ticket
+ Driving

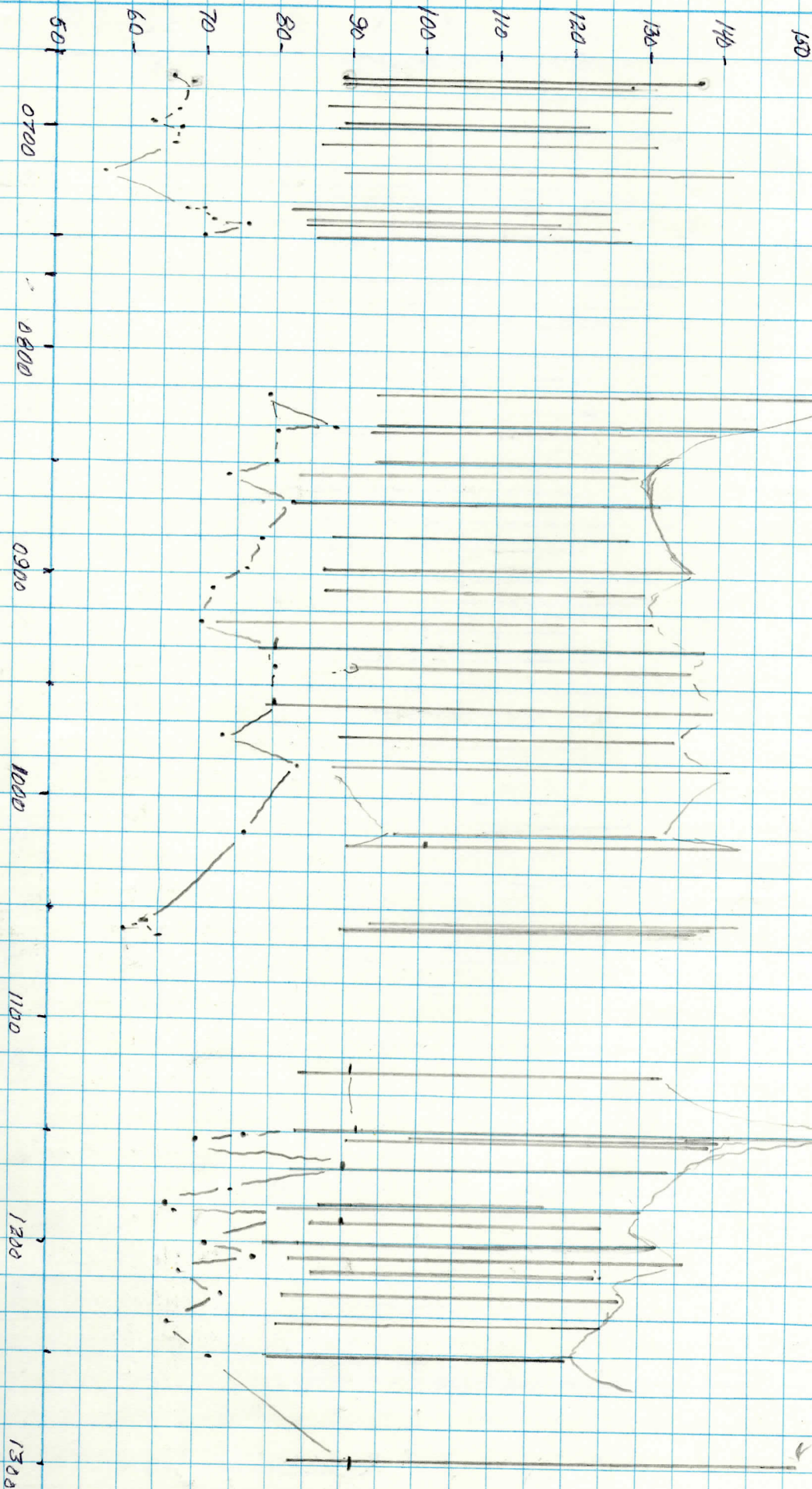


Resumé of discussions $\approx$ DAD & F.K. at Duke

The first question, ref. BP changes, is whether normal and induced sleep is equivalent. A second question is whether surgical manipulations raises pressure in anaesthesia. We discussed various protocols.

Resumé of In Flight Records

- T-38
#1 ^{F113} 1
- Date - 21 Jan 1980 Local hood ride in Wx & Z wing
- 2 2 24 Jan X country, EFD → GSB → ^{New Weymouth} ^{battery} ~~Xducer~~ Failed
- 3 2 12 Feb " , bag ride EFD → ~~SKF~~ → EFD SM
- 4 2 26 Feb " , ^{'79 record} EFD → ELP → ^{ET Ford} N TE Xducer Failed
- 2 " , EFD → ELP → ^{Miramar}
- Commercial
27 Oct.
- 5 27 Oct. CLC → IAH → ATL
- 6 28 Oct ATL → BOS Xducer Failed.
- 7 30 Oct BOS → ^{Pittsburgh} → RDU
- 8 1 Nov RDU → ATL → IAH
- 25 Nov. 24 hr record & chemistries



BK Est.

Drive

Line Up
Climb
J. Flying

Big Ballast

Desc

Shut Down

On Gnd
Sit

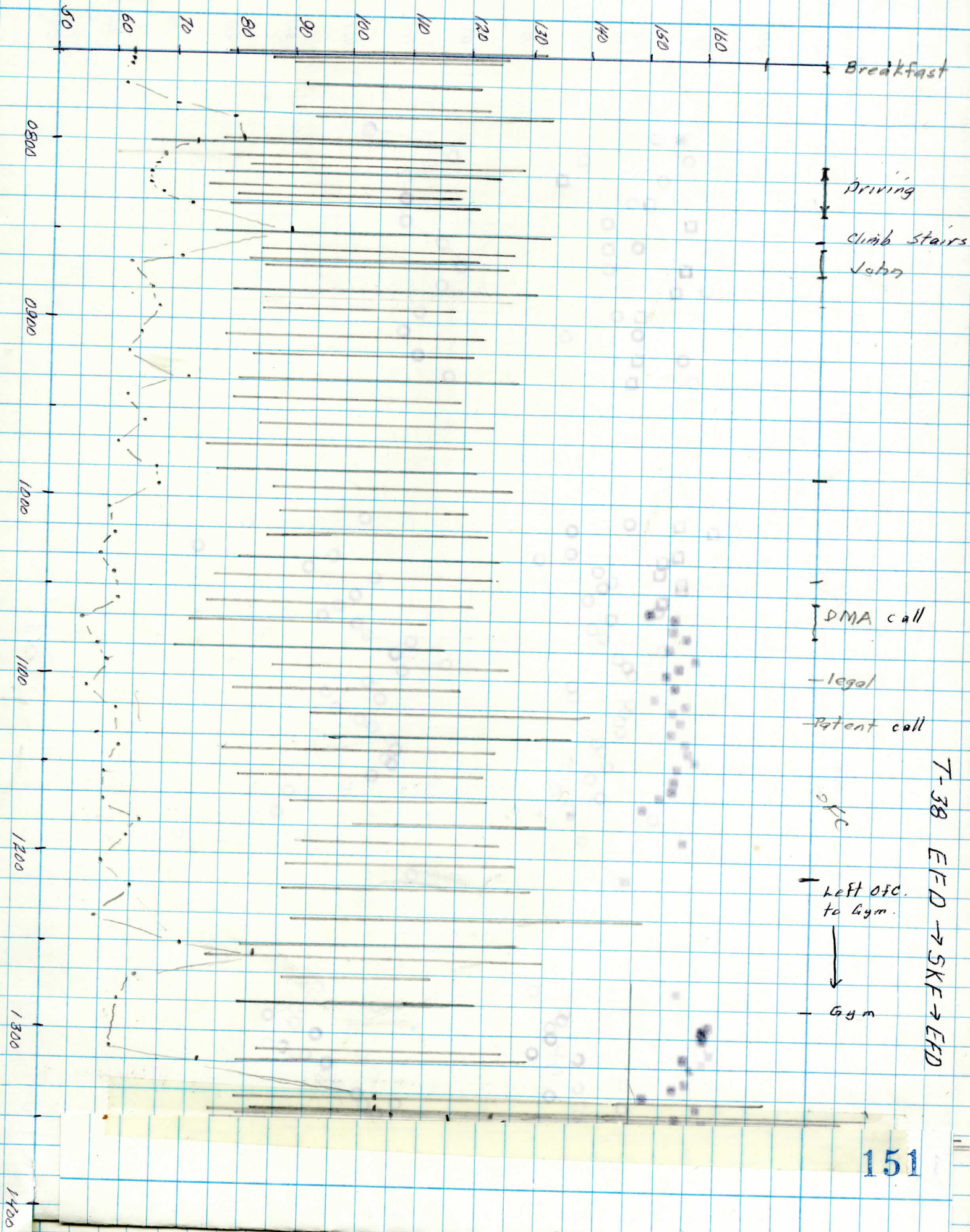
20 T-38 Flt. 24 Jan 80
EFD → GSB

#1
20

J. Flying

Desc

In Checks

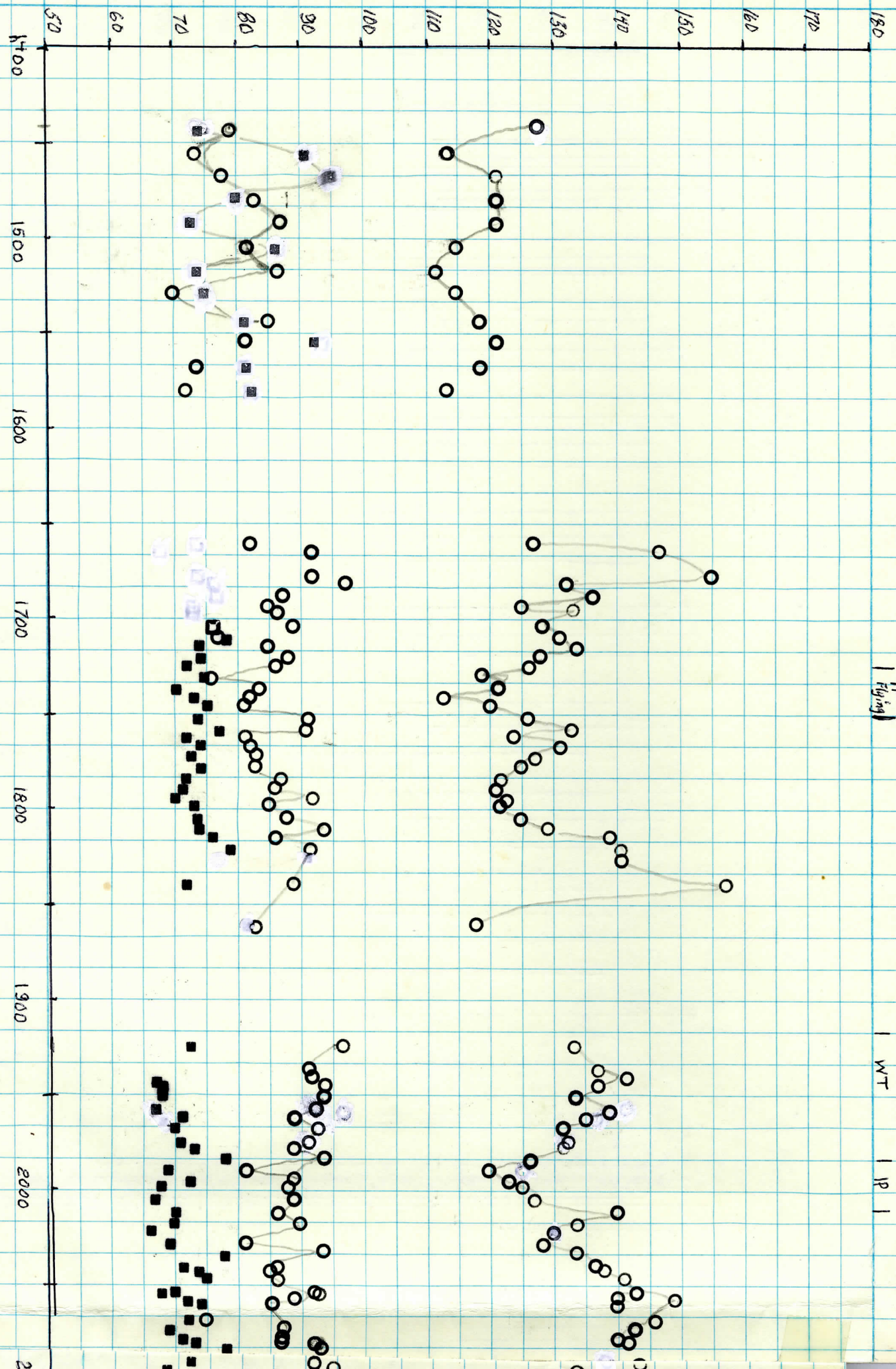


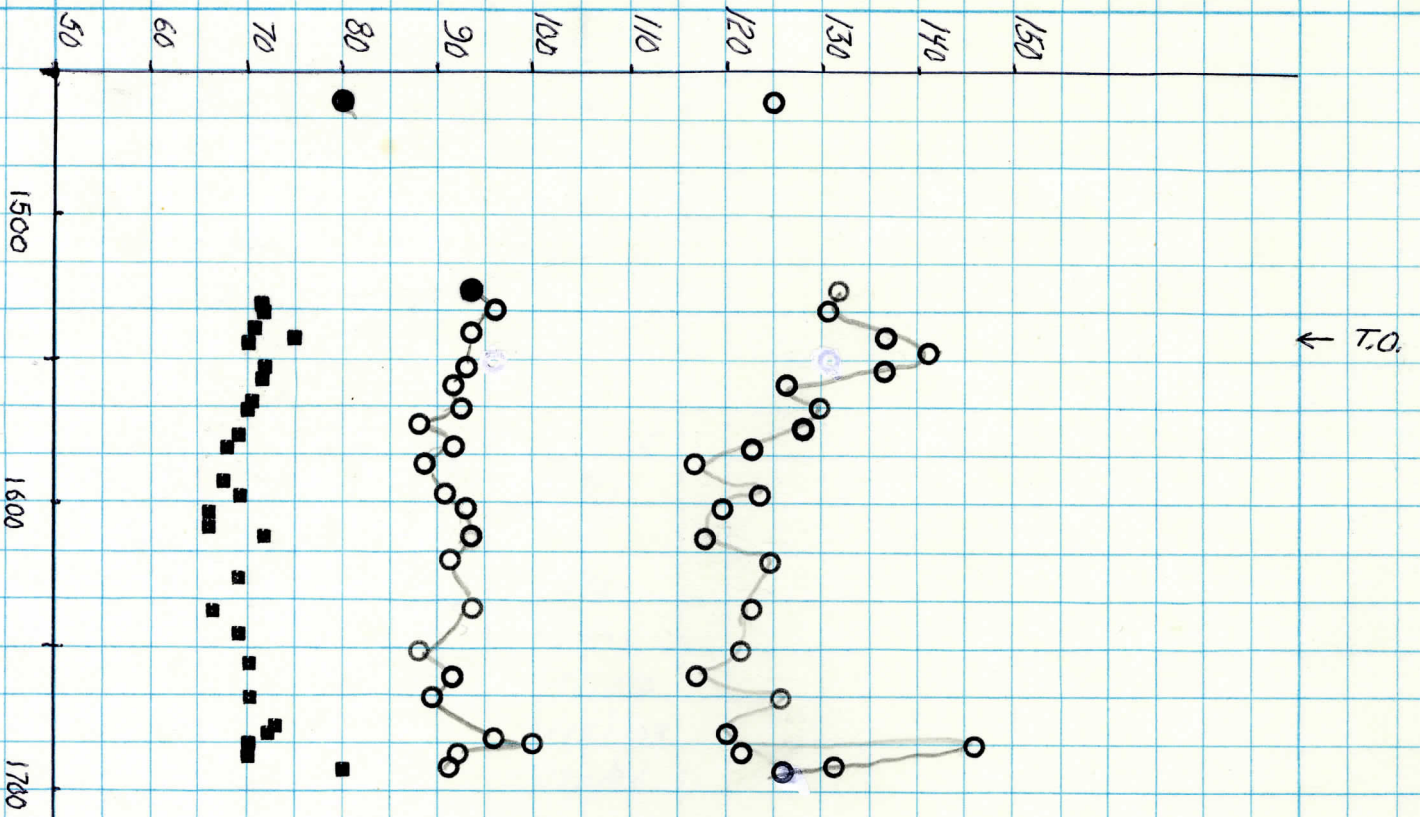
T-38 Flts. EFD → 5KF → EFD
 12 Feb. '80

1st
 Flying

WT

1 R 1



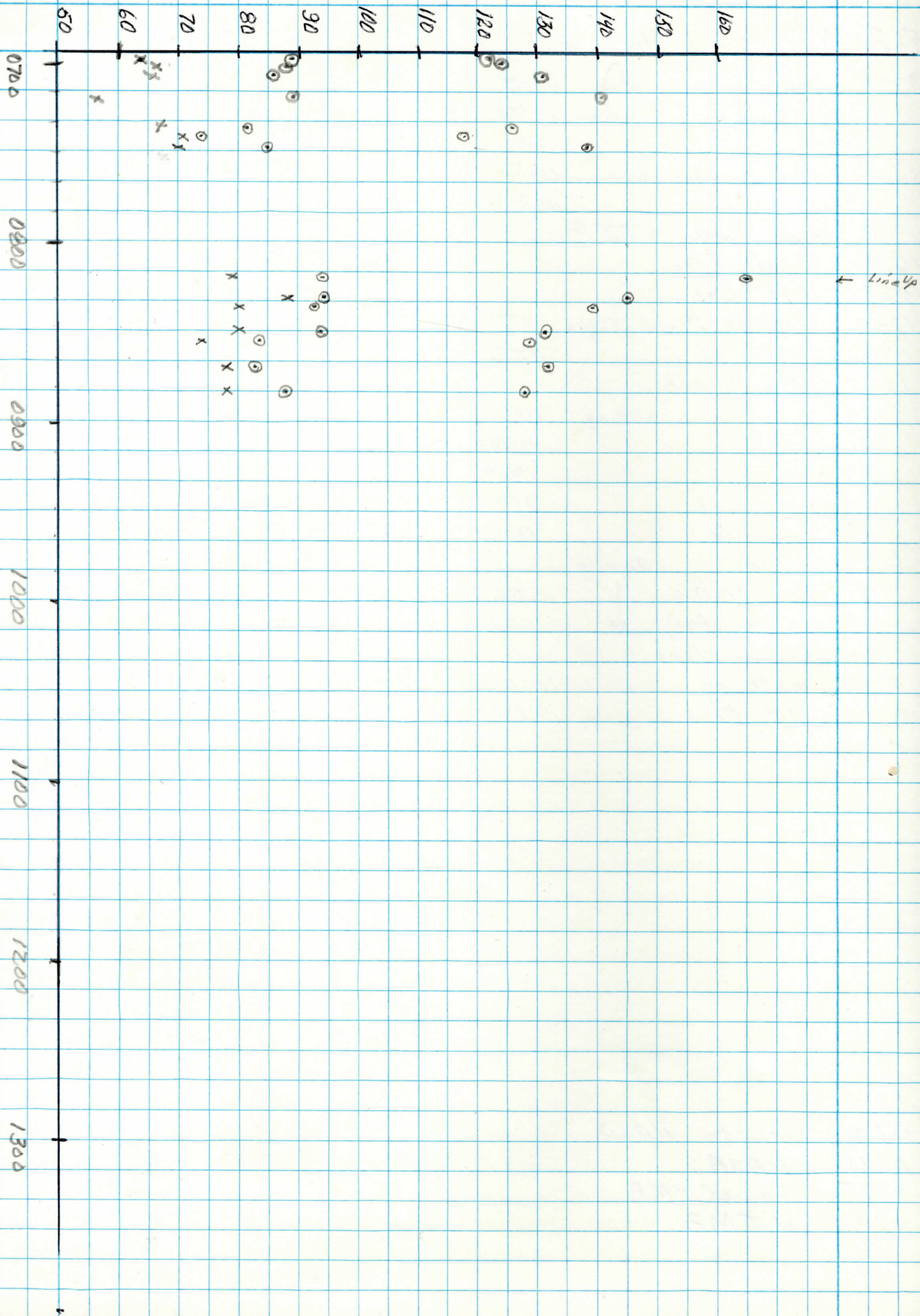


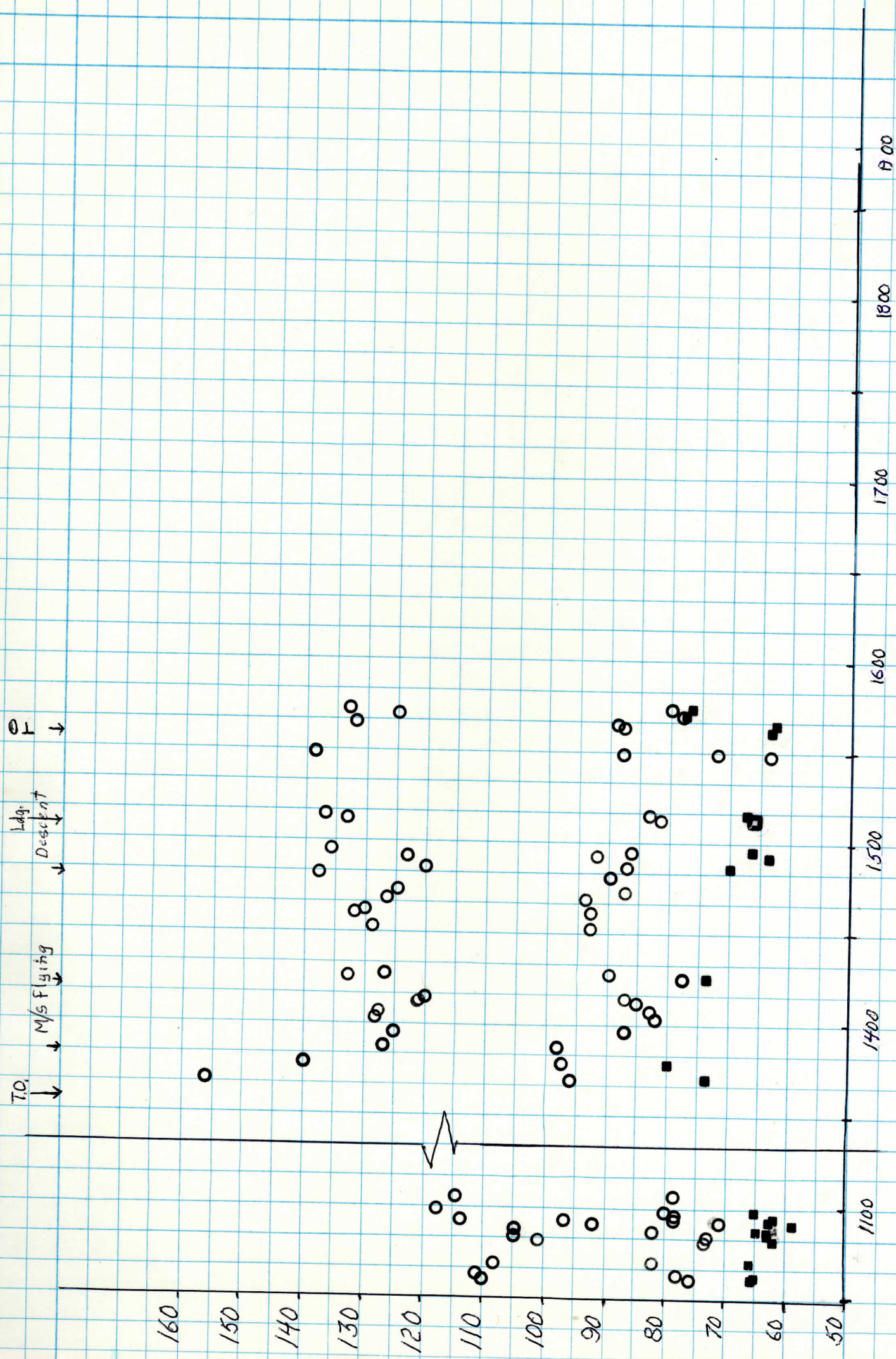
26 Feb EFD → ELP

25-26 Nov. 24 Hr. W.T.

0940	Std. p instrumentation	114/79
7	Sit waiting blood draw	114/79
8	" " " "	123/111
1015	Lying p blood draw	116/66
	" 2° " "	106/74
	Repl. Xducer. & PIII	
1020	Reset Zero	
1038	Left Lab	
1045	Walking Down steps	137/85
1050	In Van, Sit	117/82
1120	Stop, Lunch,	
24	sitting	114/83
31		115/97
33		106/82
38		113/103
39		120/94
1142	In Van, driving	
51	Slow traffic	112/79
1206	On site, NASA,	114/77
14	Climb steps	163/83
1311	walking	122/105
22	Sit Desk	137/110

0750 Left to NASA
 0815 NASA
 0825 To LTMB
 0920 LTMB





ABPWG - statement -

Why is it needed -

Hx of ABP

Experience of Gp - met to share + eval-
experience & inst - quantitate exper-

What -
Instrument works - (failure)
is correct readings
limitations
normals -

list of areas under - investigation

psych - diurnal ← normal + HT
- activity ← " "
drugs sleep vs wake " "
diets casual vs ABP
labiles
border lines
drugs
correlation BP + cardiac events
diff in H.T. patterns
Age
? special neuro, endocrine, preg, etc.

Concl -

Normal data exchange
Xerox computer print-out of means SD etc.

5 Jun

Mtg. w/ Wallace

Revised tech report to BDM & co. have cc. I will give him a draft of it Mon. & final signed copy on Wed. I have from J.G. Also have data on 20 normals to trade w/ H.K.

Steno. record has come in; 2.1 K! Do not have bells from Pickering nor Gifford.

7, 8, 9 Jun.

Trip to D.M.A. - Discussed rpt. w/ DM who generally accepted it. Kennedy not in town. Still have not rec'd. any normals from him. D.M. claims to have found battery volt. of error in memory which will solve many memory probs.

Expenses of ABPWG 16 May

16 May	Hotel and meeting expenses -	801.49	Ad. VISA	BDM 22 May
18 "	Air + cab fare, Frick	121.00	CK #	"
19 "	" " " , Shaps	505+26	CK #	"

16 Nov, Blankenthorn

1° Demo Proj. -

1-2 series -

LBNP - during time seq. negs $\bar{c}$ 2 prints
Pre $\leftarrow$ Post $\rightarrow$ Flt.

? Physiol Concl.

?

2° Follow on series
Standard's
Subjects

3° Demo 9 —

Propriety -

- Send 1-2 sets of negs
- Try to edge them -
- Pub + Jt. -
-


```

10 INTEGER T(4,200)
20 CONTROL 4,4 ; 192
30 OUTPUT 404 USING "#,B" ; 1
40 ON KEY# 1,"P3 LOAD" GOSUB 12
50 ON KEY# 2,"LIST" GOSUB 500
60 ON KEY# 3,"PLOT" GOSUB 690
70 ON KEY# 4,"TAPE" GOSUB 700
80 CLEAR @ KEY LABEL
90 F=0
100 IF F=0 THEN 100
110 GOTO 40
120 F=1 @ DISP "ENTER PATIENT NA
ME";
130 INPUT N$
140 DISP "ID NUMBER";
150 INPUT I$
160 DISP "MEDICATION";
170 INPUT M$
180 DISP "DOCTOR";
190 INPUT D$
200 DISP "DATE";
210 INPUT E$
220 DISP "START TIME";
230 INPUT T0
240 OUTPUT 404 USING "#,B" ; 1
250 OFF KEY# 2 @ OFF KEY# 3 @ OF
F KEY# 4
260 ON KEY# 1,"READY" GOTO 310
270 CLEAR @ KEY LABEL
280 DISP "PLUG CONNECTOR INTO P3
"
290 DISP "PUSH K1 WHEN READY."
300 GOTO 300
310 OUTPUT 404 USING "#,B" ; 0
320 GOSUB 430
330 ENTER 402 USING "#,B" ; N
340 DISP "THERE WERE";N;"READING
S"
350 IF N=0 THEN DISP "NO DATA" @
BEEP 50,200 @ WAIT 5000 @ R
ETURN
360 FOR I=0 TO N-1
370 FOR J=0 TO 4
380 GOSUB 440 @ ENTER 402 USING
"#,B" ; T(J,I)
390 NEXT J @ NEXT I
400 OUTPUT 404 USING "#,B" ; 1
410 DISP "DATA LOAD COMPLETE"
420 BEEP @ F=1 @ RETURN
430 ASSERT 4;2 @ ASSERT 4;3 @ GO
TO 450
440 ASSERT 4;1
450 STATUS 4,2 ; X@ IF BIT(X,4)
THEN GOTO 470
460 ASSERT 4;0
465 RETURN
470 IF W>4 THEN DISP "NO REPONSE
FROM P3." @ BEEP @ F1=1 @ R
ETURN

```

```

480 WAIT 50 @ W=W+1 @ GOTO 430
500 H1=T0 DIV 100 @ M1=RMD(T0,10
0)

```


24 Oct. Bob Supina

Bob has ^{done} programs which will.

1. Edit values by placing H(igh) + L(ow) by data pt. (only)
2. Take mean for any epoch, n and list data for epoch
3. Plot Data in Graphic form.

Requested the following:-

1. Put edit tag on recorded data
2. Allow manual editing
3. " " data entry
4. Calc. mean, S.D., list n & limits
5. Plot data 0800 $\rightarrow$ 0800, 50-250 in 50 mm ^{major} seg
6. " 3 pt sliding mean

Auto editing -

Sys BP < 70 mm, > 250 Dias " < 40 " > 200 Both Sys & Dias if Sys - Dias < 10 mmHR < 35 , > 215

30 Oct. CK. Out of P-III Load
2 - 8 bit bites

4 secs - T_1 - low order 8 bits 1 2 3 6
001 ~~010~~ 011
16 bits -

333-7811) Looks as if T_2 is low order bite -

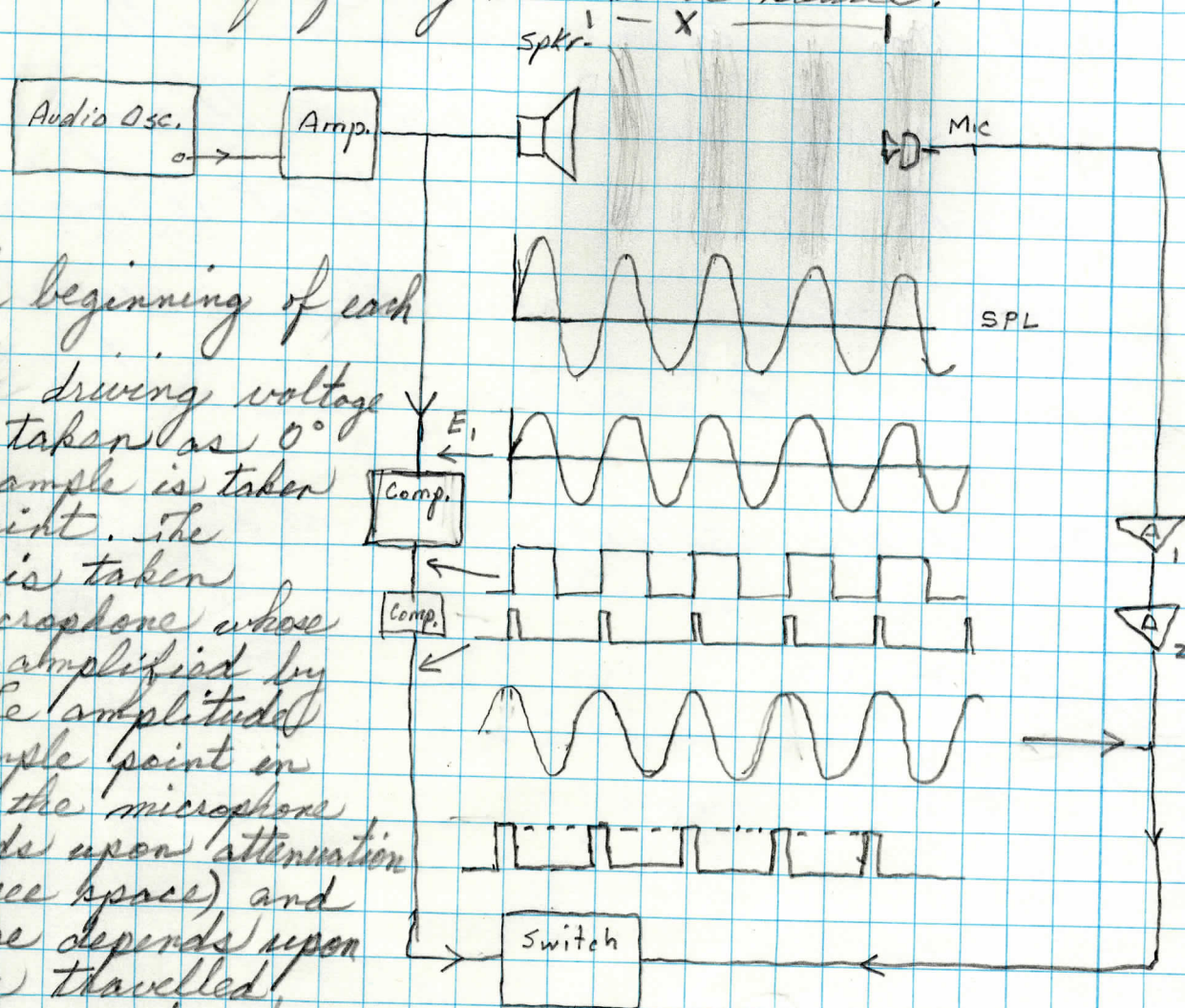
$\frac{256}{4}$
1024 ~ 17.1 min

Program has time error - ~ 2X.

22 Oct. 80 Phase locked sound pressure level detector & indicator
See also P-21

Prob. to measure and indicate the instantaneous SPL of a constant frequency sine wave source.

Fig. 2



The beginning of each pos. going driving voltage cycle is taken as 0° and the sample is taken at this point. The pressure is taken by a microphone whose output is amplified by A_1, A_2 . The amplitude at the sample point in space i.e. the microphone MIC depends upon attenuation ($1/x^2$ in free space) and the phase depends upon distance travelled, speed of sound, and the frequency as follows -

$$d = vt \text{ or here:}$$

$$t = \frac{x}{\text{vel. sound } (c)}$$

time period (T) for 1 cycle or 360° or 2π rad. ($1 \text{ radian} = \frac{360^\circ}{2\pi} = \dots$)

$$\text{is } \frac{1}{\text{Freq.}} = T \text{ hence the "phase distance" is } \frac{t}{T} = \frac{x}{c} \cdot \frac{1}{T} = \frac{x}{cT}$$

This is the number of cycles in the distance x

$$= \frac{x \text{ Freq.}}{c}$$

remember the cycle repeats every T hence

the phase varies from $0-360^\circ$ i.e. only the fraction remaining after nT is the phase

* remember $v \propto \sqrt{\text{Temp}}$

N.B. think this is O.K. haven't checked

Sound generator -

Any reasonably stable audio osc. may be used. Most modern oscillators will drive a spkr. directly but one has to be careful not to overload them or they will distort i.e. monitor the spkr. voltage occasionally c a scope to be sure it is not over driven.

Test of R/S 250 mW amp-

$$W = \frac{E^2}{R}$$

$$E = \sqrt{WR}$$

$$= \sqrt{16 \times 2.5}$$

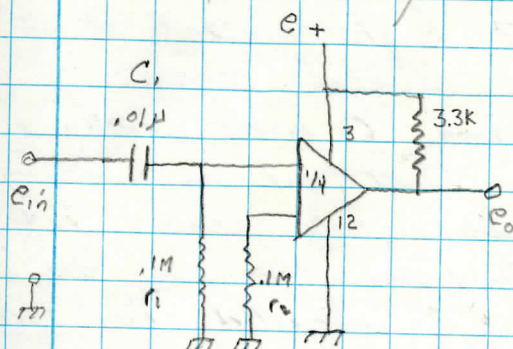
$$= 2 \text{ V.}$$

$$1 \times$$

$$.3 = .19 \approx \frac{1}{5} \text{ V}$$

Dr.
Sig.
400n
4K2

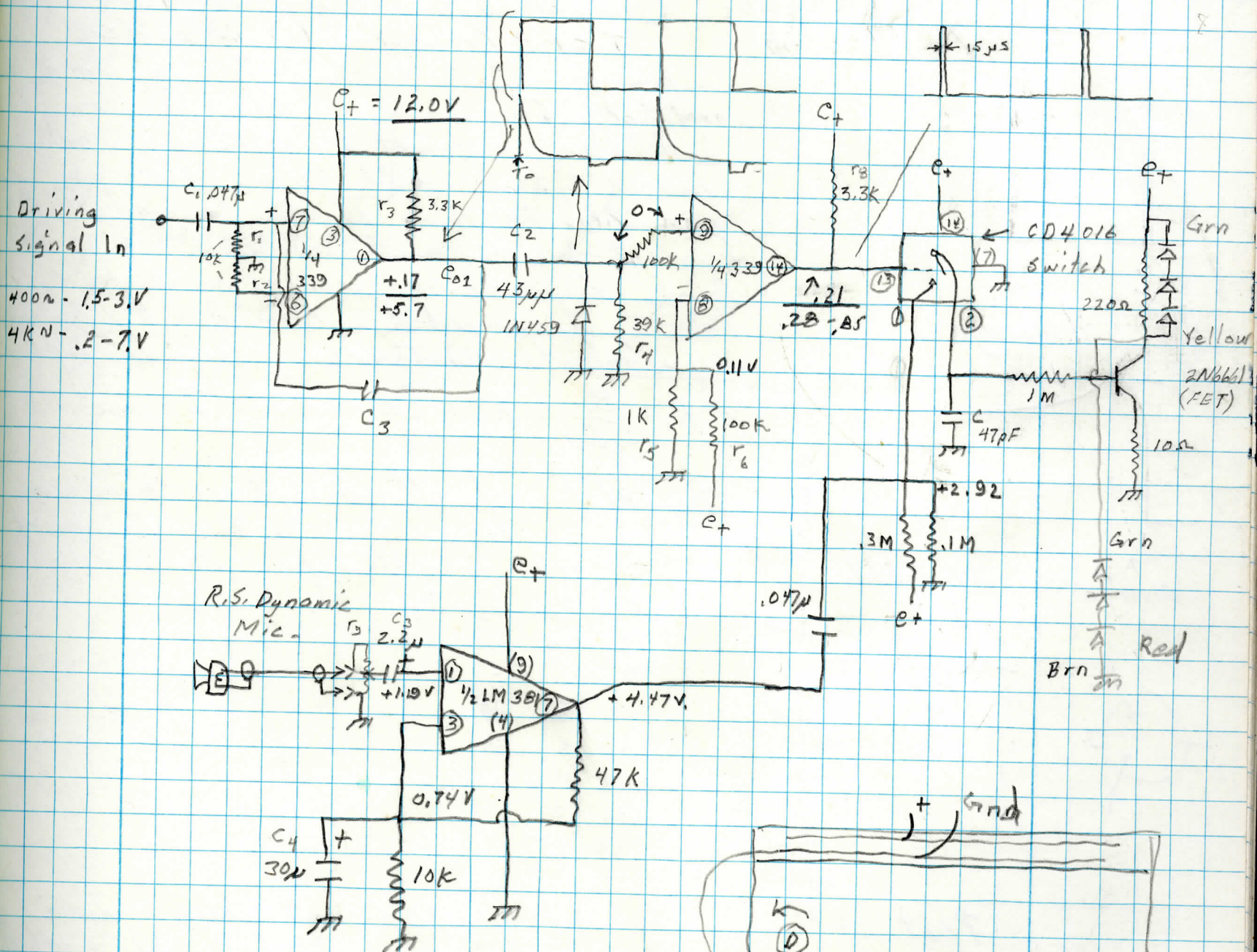
339 Quad comparator test



The first chip was defective.
A 2^o chip operated as described. Performance
was improved by reducing $r_1 - r_2$ to 10K
 $\approx C_1 = 2.02 \mu\text{fd}$.



operated 2 good symmetry
from $e'_{in} = 1.5 \text{ V p-p}$
100 to 10^5 Hz -


$$M = 10^6 \Omega$$
$$K = 10^3 \Omega$$

μ = micro Farad

$pF = \text{pico Farad}$

22 Feb cont. Sample Hold and Drive Ckt.

A power FET is available w/ high input Z & high current capacity - The switch closes for $\sim 10\mu\text{sec}$ and C will charge during this time at a rate of $\frac{I_1}{C \cdot R_1}$ & since we would like for C to reach the source voltage $R_1 C$ should be small (remember that the charge time $T = RC$ (ohms farads) will be the time for RC to reach $\sim 70\%$ of max. voltage. The same holds for disch. but here we want to retain the voltage hence C, R_2 should be as large as possible i.e. there should be as little current drawn as possible hence a high impedance device such as a FET is needed - NB R_1 & R_2 are equivalent resistances defined by $R_1 = \frac{E_1}{I_1}$ & $R_2 = \frac{E_2}{I_2}$ where I_1 's are

the totals of all currents & leakages.

NB - $C-E_4$ drop was caused by V.M. drain. No detectable FET

$$E_1 = 10.1$$

$$E_2 = 1.02$$

$$E_3 = 0.81$$

$$E_4 = 9.08$$

$$I_1 = 2.42$$

$$I_2 = 8.18$$

$$I_3 = 2.87$$

$$I_4 = 3.23$$

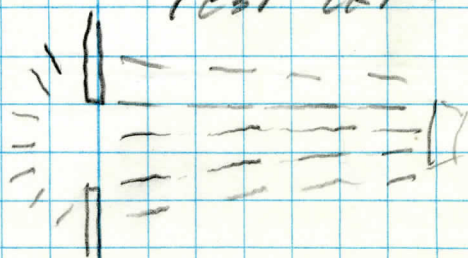
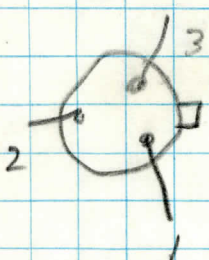
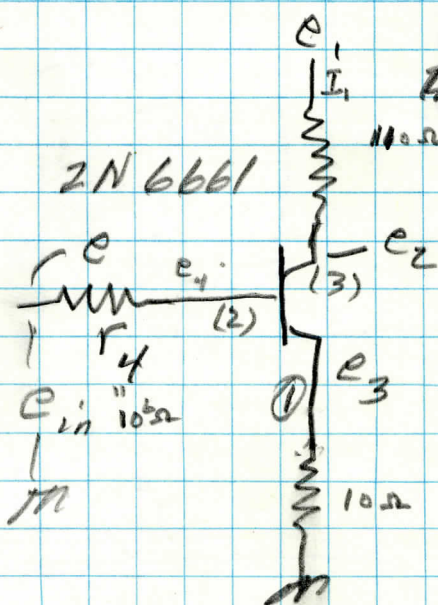
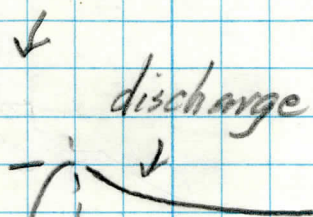
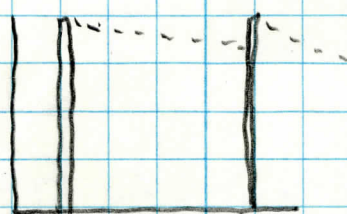
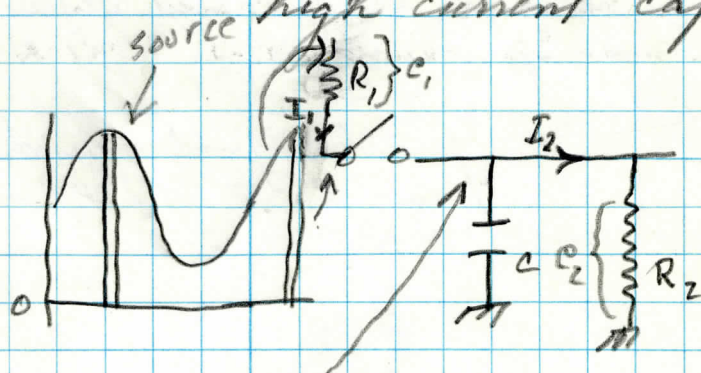
$$I_5 = 3.56$$

$$I_6 = 3.79$$

$$I_7 = 1.5$$

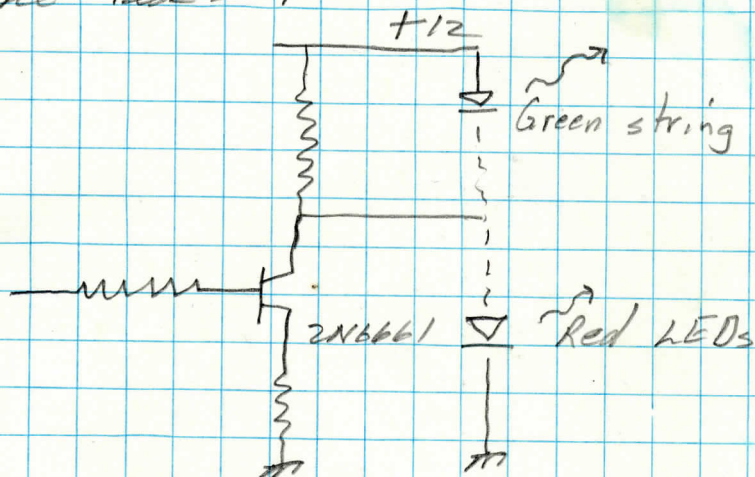
Test ckt -

Connected 3 LED's in series across above FET & 220 Ω load & ckt. worked well - saturates easily however so a gain control is needed for the audio amp - and a P.G. level adj. for the lights.



23 Feb Dual light display

By connecting the green LED string in series to the FET & paralleled by a load resistor and the red string in parallel to the FET the green lights will be on to positive peaks & decrease to neg. & vice versa to the red.



Tried to 4 green & 3 red & system works nicely to proper adjustment of C_{ref2} .