

COMPUTER LOG

IBM

PDP

CE

ASW202 from IBM room
JS1401 in IBM room
SAA101 data
~~SAA102~~ masses + progs. SAA104 use
SAA103 PDP only

IBM tapes : AJW2φ2 IBM 1φ83
 JS14φ1 dd Titan 7817
 now moved to IBM room.

IBM connect via vdu — low rate

IBM connect via CE — high rate

Load DOS.
 → "Ctrl" A
 → RUN
 trk 35
 sct φφ

PDP connect with CE

Disc #1 → RUN

trk 38
 sct φφ

as @ 18.5.78.

12φφ band.

CE locations	3φφ band	OUT	FFF8
		IN	FFF8
	12φφ band	OUT	FFFA
		IN	FFFA
		POP	FF6φ
		(VDU)IN	FFFE
		(VDU)OUT	FFFC

CE programs

23.φφ PD PLINK Disc #1 23 φφ 2φ Ass 38φφ φφ
 DD2 Send x'DD x'DD term.
 RUNPROG RUNPROG Disc 1φ φφ Ass 38φφ 1A
 As @ 18.5.78
 Copy A 1φ φφ A6 32 φφ 1B
 Less data to screen
 Put in φD before checksum.

Sector Addressing

No of sector CE	Dec count	Hex count	Address
0	1	1	00
1	2	2	0F
2	3	3	1E
3	4	4	0D
4	5	5	1C
5	6	6	0B
6	7	7	1A
7	8	8	09
8	9	9	18
9	10	A	07
10	11	B	16
11	12	C	05
12	13	D	14
13	14	E	03
14	15	F	12
15	16	10	01
16	17	11	10
17	18	12	1F
18	19	13	0E
19	20	14	1D
20	21	15	0C
21	22	16	1B
22	23	17	0A
23	24	18	19
24	25	19	08
25	26	1A	17
26	27	1B	06
27	28	1C	15
28	29	1D	04
29	30	1E	13
30	31	1F	02
31	32	20	11
32	1	1	00

PDP booting:

	HALT
1731 $\phi\phi$	load address
1774 $\phi 6$	start.

DOS.

→ RU RELOAD
 DATASETS SKIPPED
 → "CR"

RELOAD

DOS

→ RU TITS, 24K. - testing system.
 Debugging system can be entered
 → "Enter" C
 KI

→ RU SALLY

SALLY v04

→ MT ϕ : SAH1. DATA<N> / LA: <N> "CR"
 LABEL = <N>
 → "CR"
 → transfer.

Errors may arise in sending rubbish - clear by $\phi\phi$, $\phi\phi$, $\phi 1$ (hex) transfer.

Term = x'DD x'DD.

Max^m transfer: E ϕ sectors.

DEBUGGING After killing TITS. 24K.
 GE SALLY
 "control" T.

Assuming Eφ sectors transfer:

Address	etc.	Total
φφ φφ	Eφ	Eφ
φ 7 φφ	Eφ	1 Cφ
φE φφ	Eφ	2 Aφ
1 5 φφ	Eφ	3 8φ
1 C φφ	Eφ	4 6φ
2 3 φφ	Eφ	5 4φ
2 A φφ	Eφ	6 2φ
3 1 φφ	Eφ	7 φφ
3 8 φφ	Eφ	7 Eφ
3F φφ	2φ	8 φφ

From IBM

\$ RU FRM IBM
 input 370 UID
 SAH1
 # KB : / DI < MT1 :

IBM programmes as @ 18.5.78

<u>FIM</u>	CE	Hard copy in correct language
	CERUN	Maybe translate data
	PLOTS	Old plots. Reserve space
	PROG.	Bernal Ibmseal Mass, no plot Probe (normal) Masses + plot Attenuated probe. (3600 wires).

<u>SAH1</u>	AJW2JO	Phx control etc.
	AWFORMPR	formatted AJW2 inc. STAT
	BREN	Brenner Plots
	BRENNER	Plots 1) short axes 2) changed axes
	JCL	JCL + Fortran (PDP)
	L	} library routines
	LIBRARY	
	NPLOTS	New plots - reserved
	PLOTS	
	PROG	Basic Corrin ju. PL1 Transl ⁿ .

Plus: Data as available

Key	DATA	Time (#)	Spec no (default=1)
Tapes	AJW2φ2	Not above LA=9 for PDP (bad tape also)	
	JS14φ1	46 entries left @ 18.5.78.	

ATW2's old programs:

<u>Label no.</u>	<u>Title</u>	<u>Description</u>
Various	.DATA	N = no spec. Nn nH = no. hrs. nn = spec no. nn = Run no.
71	.COMPV. PROFILE	form N31H0101. Data for plotter formatted PL1 versions ATOMS4 - clusters PROBE STAT TEXT Seal instructions. IBMSEAL, TEST Interesting statistics etc.
72	.FORMAT. PROG	
110	.INSTR	
111 113	.PROG (-1)	
107	.PROG (-2)	

real 31 00

00.02 DOS 2.1

real 33 00

00.02 OPEN FL04-U,T,S,L-----

real 35 00 } as above.

real 38 00 }

8) Transfer to 00 00 data disc 2.

Ass to 30 00

Runs OK.

9) Reseal 31 00 real.

Won't load.

10) Retire and reboot system after 1/2 hr.

Reply for run 08 00 (copy)

00.01 OPEN FL04-U,T,S,L-----

Also have been asked for FLB4?!

11) Run 30 00 Data disc 2

Reply 00.01

00.01 OPEN FLF5-U,T,S,L-----

Visit to CE 06.06.78:

Problem chased to START ORG x'3888 where assembling all memory betw. 249f (or equiv.) from printout, up to 3888.

Giving JMP's from booting code; probably problem has been enhanced by relocating memory. Ian has re-edited the program, produced a complete print-out, and put copies of the new program to the following places:

Disc 2 source 20 00 16
 object 00 00 1B

hence object is self-loading.

RUNPROG source 05 00
 object 00 00

RUNPROG copy source 20 00.

Checked using editor.

Problem of inability to initialize using CE copy not discussed.

These copies all contain DD tests etc which should be edited out.

Line 1174 on old print-out (CE).
 Found on line printer that parity not correctly masked. Hence after LDA a add in line AND # x'7F which correctly masks and allows use with any device.

Runprog on data disc 2 07.06.78.
 given MOVERN only. credited to
 Filed to 30 00 10 00
 Ass to 00 00 02 00

Tested using pulse box.

Tests to data disc 6.
Address 00 00

H = 500 10⁵
P = 500 10⁴
C = 767 10³

SF of single words.
end 529 10⁷

Transfer to PDP failed.
CR prompt to CE gone

M5EΦ . S: VRYKLPML; 'K6, 66FCC9Z\
than no response

Message expected:
CE system ready, input trk, sec, len (CR) :-

i.e. 29 characters v. 40.

initial bit patterns:

M	1001101	C	1000011
5	0110101	F	1000101
Φ	0110000	L	0001001
S	0101110	S	1110011
.	1010011	y	1111001
:	0111010	z	1110100
Y	1010110	e	1100101

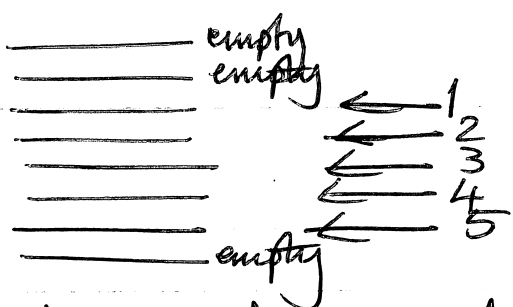
These do not appear to be connected.

13th June 1978

Tested once more at PDP then telephoned CE. Ian suggested, after a question on band rate, that may be rates have drifted.

vdv connections work OK. on separate board, so just test pdp connection board for 1200 band.

pdp 300/1200 go into socket II, which leads to board 2



from above front.

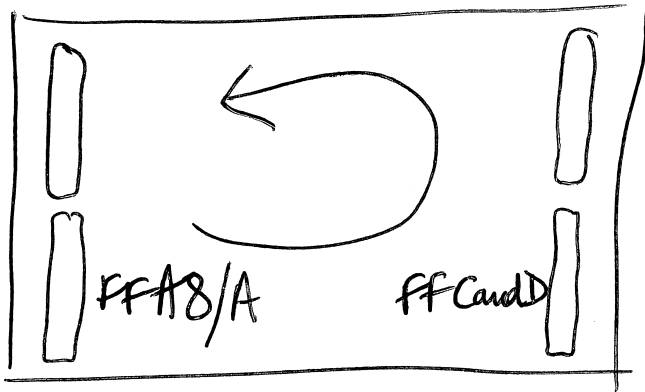
This has four white strips, CE knowing this \equiv basic facts board. No crystal oscillator, but 2 potentiometers which are known to drift!

Ltt, Rtt from front, one of which controls 50, 75, the other 300, 1200, 9600. Adjust with screw.

- 1) Make output loop program and run
- 2) Measure rate on pins, and adjust using Ltt lot.

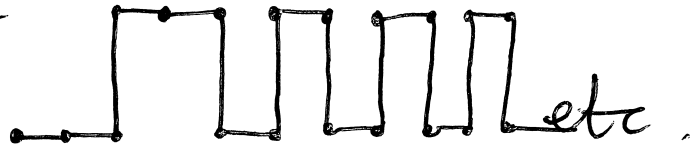
1200 dock x 16 gives pulse repetition frequency.

Also looking from above front addresses go as follows:



Procedure:

Scope betw gnd (can) and orange^{2 (3,7)} wire → signal



The signal which should appear is the ASCII for '*' which is 0101010 the bits appearing in the order 01010100. (see program). Scope triggered on leading edge.

Observed are two signals, one on the other wire: 8 bits in 7.6 cm

where 1 cm $\equiv 10^{-3}$ s.

Hence each bit takes $\frac{7.6 \times 10^{-3}}{8}$ s

\equiv rate of 1053

CORRECT Other wire : 10 bits in 12 cm
 \equiv 1200 baud, which is correct.

The wrong signal appeared as:

|||, |||, and was unsteady.

Correct signal has a square wave form as shown.

Program to loop on '*' :

Data read disc
Source pc φφ φ3
Object 34 φφ φ2

```

ORG      x'2000
BAUDTEST JMP      GO

```

```

*
IN        EQU     x'FFAA
OUT       EQU     x'FFAA

```

```

*
GO        LDA     #  A'*
          LDP     #  OUTPT
          XCH
          BRA     GO

```

← Here

```

*
OUTPT     STP     #  φ
          STA     R5
          LDP     #  OUT
          LDA     a
          BSF     *-1
          INP
          LDA     R5
          STA     a
          LDP     #  OUTPT+1
          LDP     a
          XCH

```

```

*
          END
          END      BAUDTEST
          END
          END

```

14th June 1978

CE consulted w/ a 10-bit pattern. This is correct: the character begins with one bit to set for signal (i.e. goes high or low as req.), send eight bits, and then terminates with a final bit to unset.

Thus band rate on pdp line seems OK.

Further ideas:

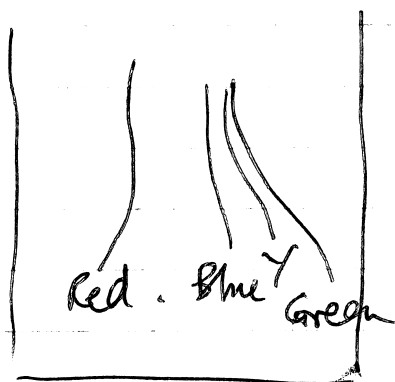
- 1) PDP not receiving at, or interpreting at, 1200 baud
- 2) Maxm power drive line ~ 50ft for power units. May be that signal not rising sufficiently above noise for PDP (they do have a problem on 5V line).
So
 - a) check bit detection rate
 - b) check signal form
 - c) check height for potential change.

Consult with RL11 — says that this sounds like rubbish, but is prepared to try!

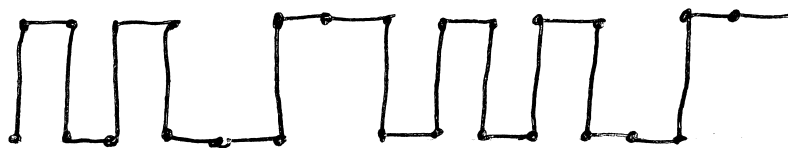
Pin connections for vdu in cipher kit.

16th June 1978.

Investigations at PDP.

Board tracked to unit above panels (2nd down).
4 wires:

Of these Y carried sharp signal, blue required signal.
found the following pattern:



which corr. to the 1st 5 bits 1φ1φ1φ
reading from LSB, and not 7 in normal ASCII.

Check using scope at this end — correct retrieval.

Rate: 8 in 6.75ms \approx 1185 baud.
Should be within limits.

Hence sending 5-bit code like PDP and not 7.

Action: change program to loop on more

characters to make sure that this is a general result. Then check with CE to find if way of setting 7 or 5. Otherwise yell.

Characters to try (need to be representative)

L	1001100
u	1110101

All of these have recognisable patterns.

Edits to program: a ←

*

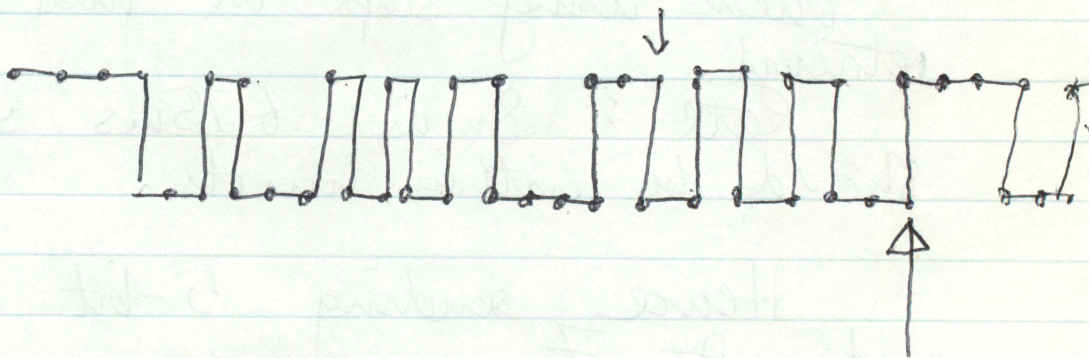
```
LDA # A'L
LDP # OUTPT
XCH
```

*

```
LDA # A'u
LDP # OUTPT
XCH
```

*

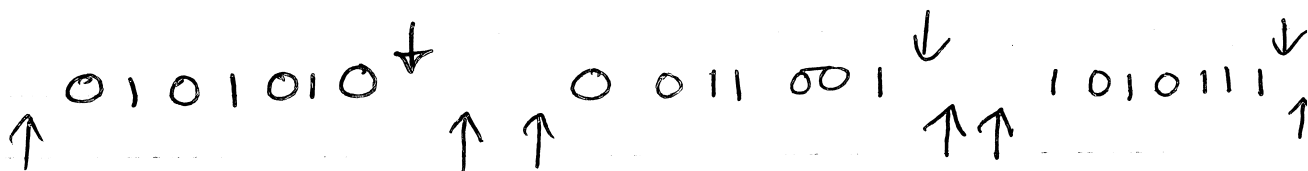
Pattern



The pattern should read:

X	0101010	(parity unset) + 2 set/insert
L	1001100	
u	1110101	

Read LSB 1st



which is 30 characters, we have 24 which is $\frac{4}{5}$ i.e. still two lost.

we have $X'0F$ to control for status control word where read device status.

Any progs to read do the same thing

Look at asynch channel. Bottom 5 bits. parity / ch / etc.

Set-up.

SPDPLINK
INSERT @ line 35

START2

```

LDA # X'0F
LDP # IN
STA @

```

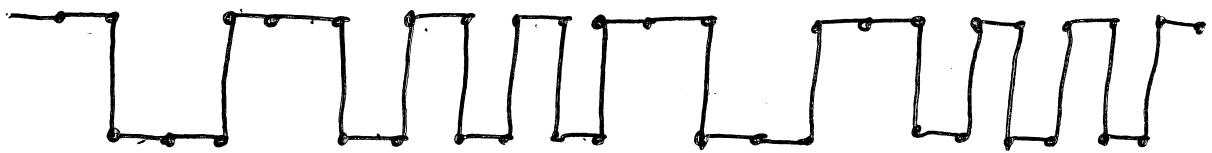
Reas. to 38 88 R/START2/ DISC #1

To test:
Output * program.

a) line 6

```
GO          LDA # 810F
            LDP # 1N
            STA a
R/GO//
```

This sends an 11-bit pattern:



which is apparently OK. on 1200 baud

Test on PDP.

Try to transfer.

Disc 4 22 sectors

Disc 6 test 5F sectors.

30. 06.78

from 00 00
from 00 00

Tape failed to ER RELOAD - REV light
flashed continuously.
cleaning had no effect.

05. 07.78

Procedure to dump to new tape:

1) Copy to tape 2.

Load tape-punch tape L and then
move over corrupted blocks.

Run dump to check what is there.

Data to data disc 6:

① 1φ φφ :
Using 82 88 Disc 2.

Sector φ1 — H, P and C

sector no. finish 500×10^5 , 500×10^4 , 767×10^3
~M/n ~t

sector no.	finish	~M/n	~t
φ4	277 × 10⁶	1.18	
φ4	588 × 10 ⁶	1.18	
φ6	119 × 10 ⁸	5.30	
	439 × 10⁸		
	114 × 10⁸		
φ9	113 × 10 ⁹	16.44	
φB	414 × 10 ⁸	9.90	
	471 × 10⁷		
φD	471 × 10 ⁷	3.34	

up and down
or begin
12
15
16

588 × 10⁶
next range
next range.
top of range.

High speed warp 1φ
30 s⁻¹ 32

414 × 10⁸.
end.

7th July 1978

Transfers to ATW202:

LA=2	Disc 6	00	00	5F	Tests.
LA=3	Disc 6	10	00	32	Tests
LA=4	Disc 4	00	00	22	End of long run.

The numbers transfer OK, but significant leading 00's are still present.

Therefore delete the mass recording on floppy disc and suitably alter the IBM program.

RUNPROG on data disc 2 edited to give times to disc, moves to screen.

From	18	00	A1	02	00
To.	18	00	A0	02	00

Test data collected to data disc 2

18	00	0C	<u>t</u>
		0C	9.9ms
		14	16.9ms
		1F	5.673
		26	3.63
		2C	1.18

Rears version to 02 00 (lucky!)
Must edit to 18 to restore beginning of program!

10.07.78 LA=5 above tests. 18 00 2C

looks OK although have not
tested and cons.

To cope with change edit IBM
program to TIMEONLY
C .ADW200: TIMEONLY.
This seems OK too.

11th July 1978.
 Transfers to ASW202 from long run 10.07.78.

LA = 2	00	00	E0	(E0 Up to 4B7 sectors.
LA = 3	08	00	E0	(1C0) ← lost sector.
LA = 4	0F	00	E0	(2A0)
LA = 5	16	00	E0	(380)
LA = 6	1D	00	E0	(460)
LA = 7	24	00	57	(4B7)

Disc error a) D7 of E0
 retry.

D7 of E0 leaves 00

This means transfer LA=7 should be
 60 from.

$$24 \ 00 - 09 \\ = 23 \ 0A$$

Try from 23 1B to see if it can
 be rescued.

So LA=7 23 1B 61

Did 2 sectors. Error

LA = 8 23 0A 60

Did 1 sector

LA = 9 23 19 5F

Error opening tape

Then disc error in this last sector

LA = 9 23 08 5E

Have lost a sector. Error occurs right at
 beginning of sector address 23 19.

And again. disc error.

23 17 5D

Bad disc?

23 06 5C junks

Have lost 60 sector of 4B7 = 487

This is $\approx 6 \times 16$ sectors ≈ 100 @ 45ins
 per sector = 4,500!

Rats!

$$\begin{aligned}
 \text{alternatively} &= \frac{6 \times 16}{4 \times 256 + 14 \times 16 + 7} \\
 &\approx \frac{100}{1000 + 200} \approx \frac{1}{12} \times 50000 \\
 &\approx 5000
 \end{aligned}$$

\Rightarrow still 40,000 left.
 Question is Why?

25 ~~20~~ 37 also failed
 - bad write to disc?
 Never go above $\frac{1}{2}$ full?
 Or is this the old counting problem?
 ? vdu thinking.

12th July 1978

Transfers to PDP from Allan Melmed's Spec.

Disc 1 1:	10	$\emptyset\emptyset$	$\emptyset\emptyset$	2A	¹⁰ LA=2
	15	$\emptyset 4$	$\emptyset\emptyset$	3A-2A	= $1\emptyset$ ¹⁵ LA=3
	15	$\emptyset 5$	$\emptyset\emptyset$	68-3A	= 2E ¹⁵ LA=4
	5	$\emptyset 8$	$\emptyset\emptyset$	92-68	= 2 A ¹⁵ LA=5
	10	$\emptyset C$	$\emptyset\emptyset$	C9-92	= 37 ¹⁰ LA=6
	gas 10	1 \emptyset	$\emptyset\emptyset$	1BC-C9	= F3 LA=7
Data disc 3:	10	$\emptyset\emptyset$	$\emptyset\emptyset$	3\emptyset	77\emptyset LA=8
	68k 10	1 \emptyset	$\emptyset\emptyset$	29	LA=9

Transfers made:

No # errors in gas - so probably not vdu
 blink \rightarrow disc error (LA=7).

Disc 1	LA = 2	$\emptyset\emptyset$	$\emptyset\emptyset$	2A
	LA = 3	$\emptyset 4$	$\emptyset\emptyset$	1 \emptyset
	LA = 4	$\emptyset 5$	$\emptyset\emptyset$	2E
	LA = 5	$\emptyset 8$	$\emptyset\emptyset$	2A
	LA = 6	$\emptyset C$	$\emptyset\emptyset$	37
	LA = 7	1 \emptyset	$\emptyset\emptyset$	7 \emptyset
Disc 3	LA = 8	$\emptyset\emptyset$	$\emptyset\emptyset$	3 \emptyset
	LA = 9	1 \emptyset	$\emptyset\emptyset$	29.

Edits to IBM to cope with this.

PUT DATA (HISTOGRAM) look this up.

Otherwise try to add M's Ni's etc. to give
 ~ compos.

New cast from ~ spectrum.

Problems encountered with these spectra:

- 1) IBM does not seem to have 2000 ions in each spectrum as anticipated.
- 2) If a spectrum is plotted only about $\frac{3}{4}$ of the ions found lie in the spectral range: the others are below. These values are not written out by present programs.

Action:

- 1) Rewrite IBM to give all time + mass values.
- 2) Check for lost data.
- 3) Check why Runprog cycles on 1B0-1BF.
- 4) Attempt 3 to check if values completed.

Re-edit program Runprog old data disc 2 to replace what was overwritten. 2nd August 1978.

18 88 A1
18 88 A8

Not reassembled as works OK. Changes checked against IBM.

Re-edit 18 88 A8
to ~~28~~ 88 A1

Assembled to 84 88 in case check needed.

Action:

- 1) Edit IBM to give current Runprog file and update back-up.
- 2) Written test routine for sector count cycle
 - a) IBM copy
 - b) copy Runprog on disc 2 to data disc 6 temporarily and make above alterations
- 3) Test on blue box to screen.
- 4) Run 1000 ions by hand and find out where they go.

Copy taken from 28 88 A1 D. Disc 2
to 20 88 A1 D. Disc 5

In several pieces: 68 sectors = 38 tracks
41 " = 21 tracks
Edit 20 88 to agree with IBM.

Ed	20	00	#1
to	28	00	#3
to	30	00	A3
Ass to	00	00	1A

Trial run to 00 00 data disc 4.

One fault @ 58

End filing to disc after 100 crazy sectors
 last sector 1B0 1B0.

Repeat test: after FF
 gives 1B0

after 1BF (next 16)
 → 1B0

should be $\begin{array}{l} || 101 \downarrow 0000 \\ || 00000000 \end{array}$

1B0 $\begin{array}{l} | \\ || 101 | 0000 \end{array}$

1BF $\begin{array}{l} | \\ || 1011 1111 \end{array}$

100 $\begin{array}{l} | \\ || 0000 0000 \end{array}$

Attempt to use 'just this routine, plus sub-routines, to recheck part of error.

Ed to 10 00 D. Disc 5 08

Then to 14 00 08

Ass to 10 02 00

Ed 18 00

Ed IC $\phi\phi$ cycles on RITS digit OK. ^{or atleast 1-9} 1 \rightarrow 16 ^{I-N}
begins @ ϕ on MTS
after $16 \times \phi$ goes to 3 and strikes
_{16x}

cycles 16×16 on LITS digit.
Hence centre digit not doing
Is this time for propagation (see ARW).

Try adding in NOP's
Ed to $10 \phi\phi$ still no better.
Problem with $I \rightarrow N$ is that adding $\times \phi\phi$
-wrong! should add $\times 1 \phi 7$

Ed to $14 \phi\phi \phi 8$. and try. Correct!

Ed to $18 \phi\phi \phi 8$ and try changing
10th to accumulator
addⁿ.

Same problem as above but have allowed
the program to run on, and as it
changes ASCII column so the MTS
changes by +1 to 4 and 5
respectively.
Looks as if INP is the bug.

Re-edit LDP # LEN
to INP
LDP # LEN+1.

to IC $\phi\phi \phi 8$.

Ed to $10 \phi\phi$ put out characters as ASCII

To do this take byte
AND # x'FF
LDP # outPT
xCH

found on parity check to LDA @

Routine now works counting on 16 bits

Checked by replacing IEA
14 88 88

works OK. Go back to main program
and have a look.

For look @ 20 88 DD5.
for Runprog without extra mess.

Go back to 20 88 A1 DD5
and look at Runprog.

Same problems as before.
Print-out sent to CE @ Saffron Walden
on 8th August.

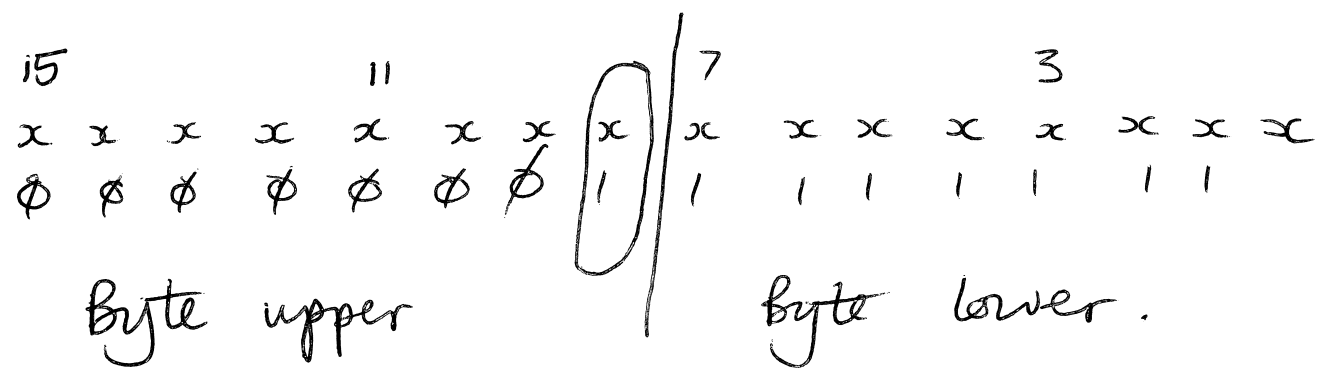
Checked HEXO in program - does add
x'87 and not x'8F.

Vanner's reply 9th August 1978 — @ start
replace INP with LDP # LEN+1 to restore
ptrn after subroutine call.

16th August 1978.

Source of checksum errors discovered:

ASW has CHECKSUM = CHECKUM & ((7)'0'B || (8)'1'B) and so does the following test.



as IBM puts zero on bit 0.
 Hence error flag raised whenever bit 8 (9th of 16 in rising MSD) is set.

Should read:

- 1) Add 1 to 127 (sum N)
- 2) Add 128 which is com of sum N.
 This gives 1111 1111 in lowest eight bits.
- 3) Add 1. This should unset lowest eight bits i.e. CE should have zeros if it sums and coms, where-as IBM has a set 9th bit.
- 4) AND # (8x0) || (8x1).
- 5) If CHECKSUM then do... as there is a problem in add + com.

12th September.

Problem of counting zeros: this is a possibility so check the effect of record length @ PDP and IBM.

Ref. to RL11 — extra zeros found by ZERO TEST to be sub-spectral items. RL11 fills last block with zeros — asked on 13.09.78 to cease this as wastes CPU time.

14th Sept. 1978

Test data to data disc 4 using RUNPROG (old DD2) uncorrected as yet for LDF # LEN+1.

Begin sweep @ 588×10^6 on screen.

for 05 sectors @ 416×10^8

Jammed on overflow at $20 \mu s$ as expected OA.

Then down range again
Flight times of
~ 3 μs
1 μs
5 μs
9 μs

Ended after 1C
Then fill up to 2A which is extra 4 sectors
Count 13 and blank.
End @ 2A.
to 00 00 DD4.

Transfer made, but RC = 16 on transfer from PDP to IBM — problem now, of course, with incorrect record length.

Run whole program to see what happens now, and whether IBM pads it out.

In running STAT undefined file cardⁿ raised

// output DD SYSOUT=C
 solves the problem.

Various ~~steps~~ in STAT routine, and may have to scrap it and begin again.

Ed DD2 from 28 88 A1
 to 20 88 A1
 Axx to 86 80

Program now in use for collecting data.

Further changes to PDP
Binary 1hr @ 625C
to DDL4 @ 88 88

28th Sept. 1978.

IDE sectors.

88	88	E8	E8	LA=7
87	88	E8	1C8	LA=8
8E	88	1E	1DE	LA=9

To test what may be within can use.

DD3 PA 88 01 16% pub
with just 20 ions of Ni and Al.

DD3	0A	00	01	LA=10	
DD3	00	00	4B-05	26	LA=11 20%
	04	00	6E-4B	23	LA=12 18%
	08	00	6F-6E	01	LA=13 } 16%
	09	00	95-6F	26	LA=14 }
	0B	00	C8-96	2A	LA=15 16%
	10	00	E9-C0	29	LA=16 12%
	14	00	16F-E9	27	LA=17 10%
DD7	88	00		23	LA=18 }
	00	00		60	LA=19 }

25th September 1978

Transfers to PDP.

Check that RLL has it right!
 Use latest data i.e. DD1 5hrs @ 625°C

27 sectors from $\phi\phi$ $\phi\phi$ and then $(2D\phi - 27)$ sectors from $\phi 4 \phi\phi$

1st	$\phi\phi$	$\phi\phi$	27	27	LA=2
	$\phi 4$	$\phi\phi$	$E\phi$	1 $\phi 7$	LA=3
	ϕB	$\phi\phi$	$E\phi$	1E7	LA=4
	12	$\phi\phi$	$E\phi$	2C7	LA=5
	19	$\phi\phi$	$\phi 9$	2D ϕ	LA=6.

28th September 1978.

IBM still down and waiting.

To do:

- 1) Transfer all of pulse test data:
 $DD8 \times 9$
 and also $DD7 \times 1$ where sector read/write went astray.
 Inc. ERW's data if possible.
- 2) Plot and find compo of each set
- 3) Plot comp v. pulse ratio.
- 4) Find no. of H in each
- 5) Plot H. against total
- 6) Plot no H. v. pulse height.

BR wants the following:

- 1) ordinary data as Brenner Plot.
- 2) Numerical plot of compo.

Calibration

1) Initial edits derived from FIN.PROG: TIMEONLY.

This takes in the data as a series of raw flight times and turns them into masses. It checks for ϕ mass (irrelevant), masses < 1 which are blips off the histogram and masses > 100 e.g. $M/u = 100$ which would not appear either because the plot, when made only runs $M/u = 100$.

Otherwise it increase NION1 or NION2 by 1 and increments the histogram.

It then gives

- i) total ions
- ii) 2nd ions
- iii) no. sectors
- iv) masses $> M/u = 100$
- v) masses < 0.1 units.
- vi) histogram data.

At present it outputs times and masses as well.

<u>Cuts</u>	1) Print lines times 21-22	delete, or at least *
	2) times 33-34	*
	3) histogram 56	*
	4) checkum 7 ϕ	E/7/8/.
	5) " data 69, 71	*

New requirements for calibration

As a simple numerical answer for plotting by hand.

- 1) no. of Hydrogen
 - 2) no. of Aluminium
 - 3) no. of nickel
- (A+B+C) would give interesting counts as opposed to (NION1 + NION2).

from this the composition may be derived as $\{NAL / (NNI + NAL)\}$.

- Then i) comp. as μ of pulse.
- ii) 2θ as μ of pulse.
- iii) H as μ of total (NION1 + NION2).

Edits

Line	Edit.	Why
1) 11	NHYD, NAL, NNI	DCL FIXED BIN (31)
2) 12	" " " = ϕ	Set zero.
3) After 27	<p>IF MONN > 5 & MONN < 20 THEN NHYD = NHYD + 1; counts hydrogens.</p> <p>IF MONN > 128 & MONN < 142 THEN NAL = NAL + 1; counts Al's.</p> <p>IF MONN > 270 & MONN < 320 THEN NNI = NNI + 1; counts Ni's.</p> <p>IF MONN > 560 & MONN < 620 THEN NNI = NNI + 1; counts Ni⁺'s, if present.</p>	<p>Original code</p>

4) These edits also appear for NION2 after 39.

Edits cont.

5) R ^{line} 56. PUT EDIT(^{Edit}{NHYD}, 'Hydrogen ions were collected',
 {NAL}, 'Aluminium ions, and' {NNVI},
 nickel ions)
 (SKIP, F(7), A, COL(40), F(7), A, COL(50), F(7),
 PUT EDIT('Average composition was', ~~A, COL(40), F(7),~~
 (2) (SKIP, A, COL(30), F(7)); (NAL/CNVI+NAL)

These output various other useful parameters.

End of edits to TIMEONLY.

6) The constant may be wrong, so check using a plot routine and readjust. Then readjust constant to CE.

PRNTPLOT and SPROBE

Only differences!

- 1) former outputs masses etc
- 2) checks for DD - purely historical!

Edits to SPROBE

Compatibility with data.

	<u>Line</u>	<u>Edit</u>	<u>Why</u>
1)	23, 33	E/1.74/1.01/	} Const adjust
	23, 33	E/1E5/1E17/	
	23, 33	E/CE/IBM/	
2)	8	E/CEMASS//	Use new mass. Not used.
3)	After 12	HT, PULSF, CONST = 0	Set zero
4)	19	D.	Not used.
5)	23	(NION1=MON1+1)D.	Later

Line	Edit	Why
6) After 23	I. IF MONN = \emptyset THEN NOUGHT = NOUGHT + 1; TEXT zero. IF MONN > \emptyset THEN MON1 = MON1 + 1; CEMASS etc D.	
7) 29		
8) 33	MON2 = MON2 + 1; D.	NOT used.
9) after 33	Two lines of 6.	
10) after 51	lines 54-55 of TIMEONLY - edit line 59	
11) 11	DCL NOUGHT.	
12) 12	NOUGHT = \emptyset	Set zero

End of computability edits.

Extra data edits (as above).

Plot edits

- Really should take this to $M/u = 75$
- 1) 88 E/3.50/2.60/ Scale change.
 - 2) 89 10 to 70
 - 3) 91 E/6/7/
 - 4) 94 E/599/750/ New, longer spectrum.
 - 5) 83 100 by 100. sensible y axis.

Could also put pulse in title for calibration

66 $M' \text{ --- } XX \text{ } \rightarrow \text{ PULSE}$.

Run one of these plots and check accuracy of constant.

Re-establish and re-try.

Brenner Plot - for long data chains.

Have learnt about plotter:

1 cm = 10 units

Usual width = ~ 2000 units as put on paper by ATW.

Usual width is 253 mm.

height " 1000 mm

Set title etc.

x If 20,000 ions wide, draw to (200,0)
Then each mm = 100 ions and 0.2 mm
resoln gives each point as 20 ions. Say
25 ions/point gives 0.25 mm resoln.

Or 25,000 ions wide to 200,0 gives
25 ions \equiv 0.2 mm which is a good idea for
longer sequences.

Now if 200 = 25,000 ions.

$$1 = 125$$

So scale = $8.0 \text{ E} - 03$

Thus to label points if move by 6 on 3.5
move by $63 \times \frac{35.9}{0.0084}$ $\frac{27.7}{0.0041} \approx 2700$

y Estimate $\sim 20\% \text{ Al}$ in 25,000 i.e. 5,000.
5000 in 400 mm gives 40° slope which is
fine.

Hence CRTPLT (8, 1000,0)

↑ unit

↑ 1 m long.

and use 80cm in plot
so a 900 set X
960 set title.

Then split plot into 2 so that a 25,000
go to (0.5, Y) and use $P = \{ \frac{1}{2} 5000 + (M/25) \}$
for second do loop.

Also now do plot solely of Al⁺ v Ni.

Compatibility edits

- ~~by $\frac{1}{2} 5000 + (M/25)$~~
- 1) After 13 NT, PULSE, CONST = ϕ ;
 - 2) 21 B/NION/IF MOWN $> \phi$ THEN/
 - 3) 23 D. only Al, Ni
 - 4) 24 $\Rightarrow 1.01 * 1BMMASS / IEI7$
 - 5) After 25 $> 120 \& < 150$ ITOT \uparrow
 - $> 270 \& < 320$ ITOT \uparrow
 - $> 580 < 620$ ITOT \uparrow
 - 6) 29 D. CEMASS.
 - 20 D.
 - 7) 32 D.
 - 8) 33 $\Rightarrow 1.01 * 1BMMASS / IEI7$
 - 9) As 5 after 34.
 - 10) 13 D/L = 1.

Plotting edits

11	HISTOGRAM (4,000)	inc. range.
13	NCOUNT = 25	inc. size.
37 } 39 }	E/20/25/	"
B. 50	Enter CRTPLT(8,1000.0)	height inc
63	Add AGED x HOURS AT 625C	
64	E/150/900/	"
66	E/110/860/	
74	E/100/800/	
76	E/500/2000/	inc. range.
79	E/100/800/	
80	E/100/1000/	
85	E/2.5E-02/8.0E-03/	
86	E/500/2500/	
	E/5000/22,500/	
	E/500/2500/	
88	E/100/2500/	
85	E/.1400/.1800/	
90	E/100/400/	
92	E/20/25/	
	E/2000/25000/	
	E/20/25/	
94	E/20/25/	

This completes the 1st half of the plot.
Now add in after 97.

```
CALL MOVE TO (0.5, X);  
DO N=25,025 TO 50,000 BY 25;  
CALL DRAW TO (N, X);  
P = (1000 + (N/25));  
X = HISTOGRAM (P);
```

CALL DRAWTO(N, X);
 END;
 This does the rest.

Note that result depends upon correct constant adjustment.

Composition Plot for long chains.
 Again need to find NAL
 NNI

Also need variable COMP such that
 $COMP = (NAL / (NAL + NNI));$ repl. by $ITOT$
 and $HISTOGRAM(N) = COMP;$ for av.

Edits

Develop on new BRENNER.

- 1) 50 Print CRTPKT
- 2) 12 INC. NALCOUNT
 $NNICOUNT$, COMP line 8
- 3) 13 $NALCOUNT$, $NNICOUNT = \emptyset$, COMP
- 4) 25 IF >120 <150 THEN DO;
 $NAL = NAL + 1;$
 $NALCOUNT = NALCOUNT + 1;$
 $ITOT = ITOT + 1;$
 END;
 IF >270 <320 THEN DO;
 $NNICOUNT = NNICOUNT + 1;$
 $ITOT = ITOT + 1;$
 END;
 IF >560 <620 repeat
 END;
 5) After 48 I. PUT EDIT('Overall composition is', $(NAL/ITOT)$)
 (SKIP(2), A, COL(25), F7);

* 37 see end

6) ⁽¹⁾ 51

Delete CRTPLT from BRENNER
or declare (8, 500.0).

Next, rather than split into two entirely separate plots, it would be more logical to interleave the two.

New program beginning at line 62.

```
62 CALL ORIGIN(40,40,0);  
63 TITLE='NICKEL 14AT.% ALUMINIUM  
        AGED 20 HOURS AT 625C';
```

```
64 CALL LOCCHR(20,350,0);
```

```
65 STRING='X';
```

```
66 CALL PLTSTR(STRING);
```

```
67 CALL LOCCHR(20,310,0);
```

```
68 STRING=TITLE;
```

```
69 CALL PLTSTR(STRING);
```

title

```
70 CALL LOCCHR(50,-15,0);
```

```
71 STRING='TOTAL NUMBER OF IONS';
```

```
72 CALL PLTSTR(STRING);
```

x-axis label. ①

```
→ 73 CALL LOCCHR(-28,20060,0);
```

```
74 STRING='COMP.';
```

```
75 CALL PLTSTR(STRING);
```

```
76 CALL LOCCHR(-28,15050,0);
```

```
77 STRING='AS';
```

```
78 CALL PLTSTR(STRING);
```

```
79 CALL LOCCHR(-28,10040,0);
```

```
80 STRING='% AL';
```

```
81 CALL PLTSTR(STRING);
```

y-axis label. ①

```
82 CALL MOVETO(200,0);
```

```
83 CALL DRAWTO(0,0);
```

```
84 CALL DRAWTO(0,100);
```

axes drawn. ①

```

85 CALL SCALE(1.0, 4.0);
86 DO N=2 TO 24 BY 2;
87 CALL MOVETO(0,N);
88 CALL DRAWBY(-2,0);
89 CALL LOCCHR(-25,N,0);
90 AXIS=N;
91 STRING=AXIS;
92 CALL PLTSTR(STRING);
93 END

```

y-axis ① labelled.

```

94 CALL SCALE(8.0E-03, 0.25);
95 DO N=2500 TO 25500 BY 2500;
96 CALL MOVETO(N,0);
97 CALL DRAWBY(0,-2);
98 CALL LOCCHR((N-2500),-10,0);
99 AXIS=N;
100 STRING=AXIS;
101 CALL PLTSTR(STRING);
102 END;

```

x-axis ① labelled.

~~103 CALL SCALE(1.0, 4.0);~~
~~104 CALL LOCCHR(50, 185, 0);~~

Now do axes for second plot.
 Need to begin plot @ 200 on y-axis, so,
 starting at 70:

```

103 CALL SCALE(2.5E+04, 1.0); Back to original units
104 CALL LOCCHR(50, 185, 0);
105 STRING='TOTAL NUMBER OF IONS';
105 CALL PLTSTR(STRING); x-axis ②

106 CALL LOCCHR(-28, 260, 0);
108 STRING='COMP.';

```

```

109 CALL PLTSTR(STRING);
110 CALL LOCCHR(-28, 250, 0);
111 STRING = 'AS';
112 CALL PLTSTR(STRING);
113 CALL LOCCHR(-28, 240, 0);
114 STRING = '%AL';
115 CALL PLTSTR(STRING);

```

y-axis ②

```

116 CALL MOVE TO (200, 200);
117 CALL DRAW TO (0, 200);
118 CALL DRAW TO (0, 300);

```

axes drawn ②

```

119 CALL SCALE(1.0, 4.0);
120 AXIS K = 0;
121 DO N = 2 TO 24 BY 2;
122 AXIS K = N + 50;
123 CALL MOVE TO (0, K);
124 CALL DRAW BY (-2, 0);
125 CALL LOCCHR(-25, K, 0);
126 AXIS = N;
127 STRING = AXIS;
128 CALL PLTSTR(STRING);
129 END;

```

define variable to fix correct axial posn.

y-axis ② labelled.

```

→ 130 CALL SCALE(8.0E-03, 0.25);
131 DO N = 2500 TO 25500 BY 2500; ← k = d';
132 CALL MOVE TO (N, 200);
133 CALL DRAW BY (0, -2);
134 CALL LOCCHR((N-2500), 190, 0);
135 K = N + 25000;
136 AXIS = K;
137 STRING = AXIS;
138 CALL PLTSTR(STRING);
139 END;

```

x-axis ② labelled.


```
140 CALL SCALE (1.0, 4.0); Put in working scale
```

```
141 CALL MOVETO (00, 0); Set pen.
```

```
{ 142 X = 0; Variable for histogram.
  143 DO N = 25A TO 25000 BY 25B;
  144 CALL DRAWTO (N, X);
```

- 1) Does not work where do not begin @ origin. Thus have to set sensible value 1st for X.
- 2) The breunner plot also draws two lines i.e. one to (newN, X) and then another to (N, newX) - We only need one, so cut to (newN, newX).
- 3) Also, as written in simplest form compon of words (n) -> (n+25) rep at (n+25) and not in centre.

Does not matter for this plot, particularly as v. low ratio to total, but should be aware of this drawback.

```
142 X = 0;
143 P = 0;
144 N = 25;
145 P = (N/25);
146
147
X = HISTOGRAM(P);
CALL MOVETO (25A, X);
```

X = 0; N = 1;
K = 25;
X = HISTOGRAM(N)

} make P = 1;

This puts the pen at the first point. Then proceed as a do-loop (as normal);

```
146 DO N = 50A+1 TO 25000 BY 25B;
147 CALL DRAWTO (N, X);
148 P = (N/25A);
149 X = HISTOGRAM (N);
CALL DRAWTO (N, X);
150 END;
```

K = N * 25
1st plot.

```

151 CALL MOVETO (0, 200);
152 P = 1001;
153 X = HISTOGRAM(P);
154 
155 

```

~~← 152 N = 25025~~

- 1) Now need to set at new origin.
- 2) Make a move to 1st point.

Requirements, DO $N = 25 \rightarrow 25000$
 STRING = (N + 25,000)
 use $K = N + 25000$
 $P = K / 25$.

and if $X = HISTOGRAM(P)$
 Use $X2 = (X + 50)$ for new scale factor.

```

151 CALL MOVETO (0, 200);
152 K = 0; N = 1001 K = N * 25
153 X2 = 0; ← X = 0;
154 N = 25;
155 K = N + 25000; } P = 1001
156 P = K / 25;
157 X2 = HISTOGRAM(N);
      X = X2 + 50;
      CALL MOVETO(0A/K, X); This moves to 1st point

```

Now do-loop as before but with $(X + 50)$:

```

158 DO N = A+A50 TO B25000 BY A25;
159 K = N + 25000; A1002 B2000 K = N * 25
160 P = K / 25;
161 X2 = HISTOGRAM(N);
162 X = (X2 + 50);
163 CALL DRAWT(N, X);
164 END;

```

To produce the histogram initially:

```

a) 37: INC : HSTN = ITOT / 25;
      COMP = (100 * NALCOUNT / (NALCOUNT + NNICOUNT));
      HISTOGRAM(HSTN) = COMP;
      NCOUNT = NCOUNT + 25;
      NALCOUNT = 0;
      NNICOUNT = 0;
40 GO TO PROCESS;
      NCOUNT = A
  
```

PFM has also suggested the possibility of running results to the plotter and/or to the printer as a series of *'s

\downarrow
 no. bins \rightarrow %

see ATW et al.

Consider also regrouping these in other than 25's.
 Can use complex do-loop.

A = direct subst

B = total which is a multiple of A.

DO N = 25) 40, 60, 100 (say).
 then as before.

.AW2PRG2

Atom4	FM	lbused	Latin	Map	Robe
Stat	Stat2 (Mine)	Text	Text1	TEXT	

.AWFORMPR

Atom4	Null	robe	Stat	Text
-------	------	------	------	------

.BREN

Mplot 1	Plot 1	Plot 2	Plot 4	Plot 5	Plot 6
Plot 6 8	Plot 7	Plot 7 8	Plot 9	Zero	

.CONCAT

Seq

.DATAMO 2 → 9.

.LOWGRUN Seq. ? Identity?

.MODLOTS 2 → 9 + Null

.NPLOTS Brenner1

Brenner1	Brenner2	Brenner 1	B2	B3	Bp
B5	B6	Data1	Data2	Data3	DataX
DataY	DJ	D2	D2NC	D5	D7

Mdata

These are trials of small data!

.PLOTS

Data1	D2	D3	D3N	D9	Example
Mdata1	Mdata4	Tdata1	Tdata2		
Again,	small	trials			

.PROG

Basistat	Commk	Commk1	GO	Trans	Transgo
Transs	Trans2				

2nd October 1978.

Programs a) 02.10.78.

FM. CE

.PROG updated to back-up 02.08
07.07

SAH1. BRENNER 05.05.

DATA1THR

1020HR 625C

DATA1TH2

THOUSAND HRS TOTAL

DATA150H

50,000 hrs 150 hrs 625C

N PLOTS 12.04.

PLOTS 05.05

ADW2JO

20.03

ADW2PRG1

17.02

ADW2PRG2

20.03

.PROG 12.04

Examine and delete as required after back-up.

Edits.

Transfer list data.

.ADW2PRG2 ~~delete~~

Tape

.ADW2PRG2

.AWFORMPR

.AWFORMPR

.BREN

.BREN

.DATA MO

.CONCAT

~~DATA MO~~

.LONGRUN

~~DATA MO~~

.MOPLOTS

.LONGRUN

.N PLOTS

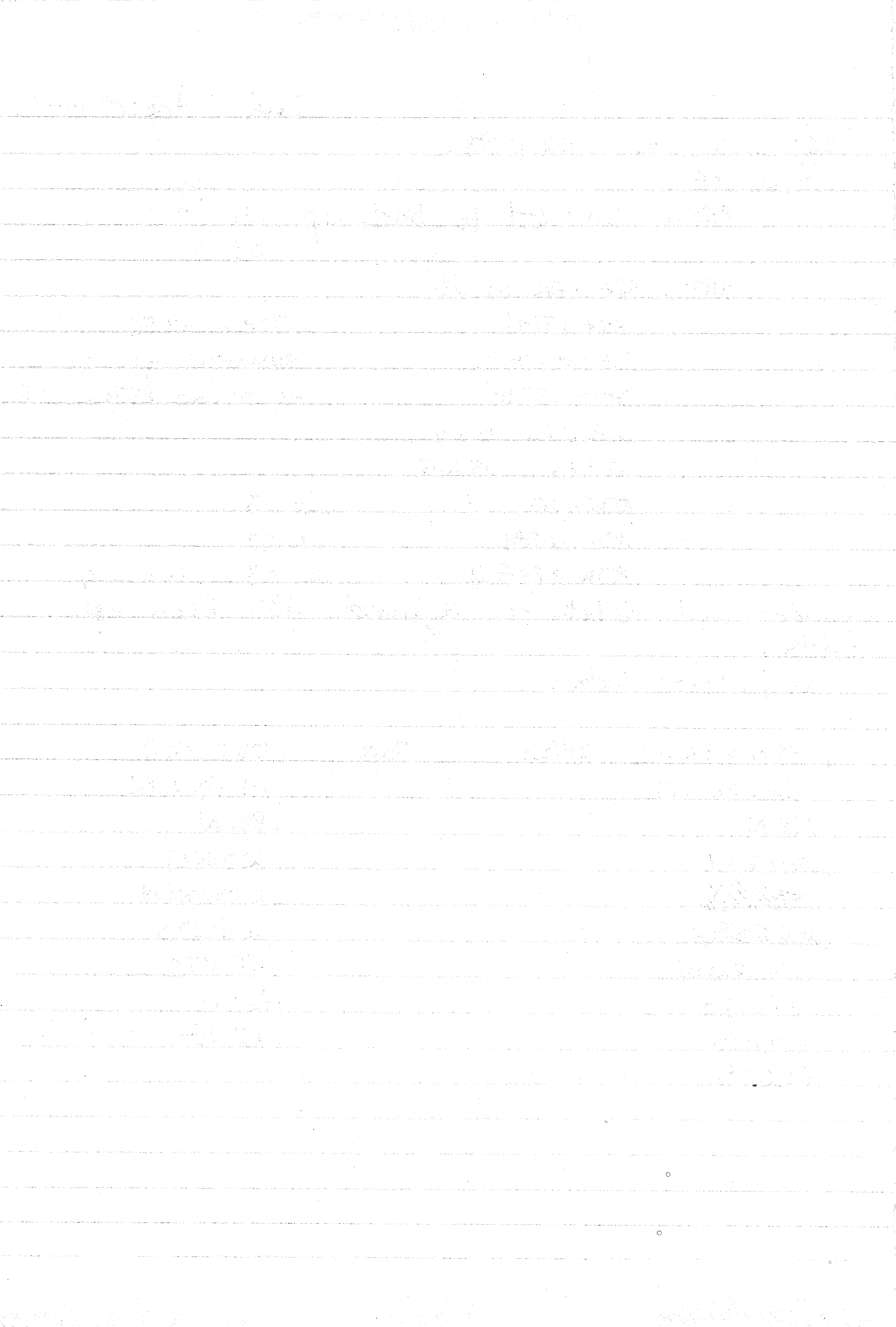
.MOPLOTS

.PLOTS

.N PLOTS

.PROG

.PLOTS



Transfers in Data Disc Order

DD1 00 00 27 (14%) old 16% pulse.
 4
 CA=2 ↘ 00 00 2D0-27 2A9
 00 00 27
 CA=3 as 04 00 E0 E0 5hrs
 0B 00 E0 1C0
 12 00 E0 2A0
 19 00 09 2A9

DD2 ——— deleted

DD3 00 00 10F Tests
 CA=11 as 00 00 (4B-05) 46 20%
 CA=12 04 00 (6E-4B) 23 18%
 CA=13 08 00 (6F-6E) 01 16%
 CA=14 69 00 (95-6F) 26 16%
 CA=10 only 01 0A 00 (96-95) 02 overwrite 14%
 27 (97-96)
 CA=15 0B 00 (C0-97) 29 14%
 CA=16 10 00 (E9-C0) 29 12%
 CA=17 14 00 (10F-E9) 26 10%

DD4 00 00 IDE old. 16% pulse
 CA=7 as 00 00 E0 E0 1 hr
 CA=8 07 00 E0 1C0
 CA=9 0E 00 1E IDE

DD5 00 00 2F8 old 16% pulse
 as 00 00 E0 E0 5hrs
 07 00 E0 1C0
 0E 00 E0 2A0
 15 00 58 2F8

DD6

	00	00	3A7	
as	00	00	E0	E0
	07	00	E0	1C0
	0E	00	E0	2A0
	15	00	E0	380
	1C	00	27	3A7

1000 hrs
old 16%

DD7

~~DD7~~ Also ERW's stuff. Quiz using copy, then try on PDP.

As 9.

DD8

	00	00	150	tests.
as	00	00	(49-23) 26	12
	04	00	(73-49) 2A	14
	08	00	(96-73) 23	16
	0C	00	(97-96) 01	18
	0D	00	(BB-97) 24	18
	10	00	(DE-88) 23	20
	14	00	(102-DE) 24	22
	18	00	(128-102) 26	16
	1C	00	(150-128) 28	10

Transfers

DD8	(x9)
DD5	(x4)
DD6	(x5)
DD7	(x1)
DD3	(x1)

Begin with DD8

00	00	(49-23)	26	LA=18
04	00	(73-49)	2A	LA=19
08	00	(96-73)	23	LA=20
0C	00	(97-96)	01	LA=21
0D	00	(BB-97)	24	LA=22
10	00	(DE-BB)	23	LA=23
14	00	(102-DE)	24	LA=24
18	00	(128-102)	26	LA=25
1C	00	(150-128)	28	LA=26

DD3 0A 00 (97-95) 02 LA=27

DD7 08 00 23 LA=28

DD5 00 00 E0 E0 LA=~~29~~31

Terminated a) 7002 i.e. sent DD
This is 1C i.e. 28

So begin a) 08 04 08 LA=29; error here
08 13 07 LA=30

Error also after 05 terminate efforts here for the time being. (1402)

DD5 (cont)	07	00	E0	1C0	LA=32
	0E	00	E0	2A0	LA=33
	15	00	58	2F8	LA=34

DD6	B0	00	E0	E0	LA=35
	07	00	E0	1C0	LA=36
	0E	00	E0	2A0	LA=37
	15	00	E0	380	LA=38
	1C	00	27	3A7	LA=39

~~5th~~ 5th October 1978.

Transfers beginning @ LA=40.

DD9	00	00	26	LA=40
	04	00	24	LA=41
	08	00	24	LA=42
	0C	00	24	LA=43
	10	00	24	LA=44
	14	00	24	LA=45
	18	00	24	LA=46
	1C	00	24	LA=47
	20	00	23	LA=48

Other pulses DD3 / DD8

3rd October 1978.

Data from ASW202 to disc.

Problem encountered with line 5 of
 - ASW200.FIREPDP — the line is too long if
 <N> is greater than one character.

edit => $\begin{array}{c} _ _ _ _ _ _ _ _ _ _ \\ _ _ _ _ _ _ _ _ _ _ \\ _ _ _ _ _ _ _ _ _ _ \\ _ _ _ _ _ _ _ _ _ _ \\ _ _ _ _ _ _ _ _ _ _ \end{array}$

Problem solved.

Calibration program written and tested.

Filed as .PROG: CALIB.

Now use plotting routine to check that all
 AL + Ni are accounted for.

Must also use disc 7 to check EPW's
 program, although the disc error which was
 discovered today means that the disc must
 not be used for data.

4th October 1978.

Tape 8A7H01 allocated for TLS back-up.

To tape:

• DATA17H2

• DATA57H1

As before but complete '50,000 as above, complete!
 '43,000, same spec'

RELOAD TAPE

157500 and go.

Sometimes the tape will not be loaded by PDP if service disc has been overwritten with RSX.

Then load punch tape

RELOAD.LDA

into Reader 2.

This loads disc image from MT put there by dump.

- 1) HALT
- 2) switch = 157500
- 3) Raise halt
- 4) START.

6th October 1978

File latest pulse (outgassed) as
PULSE DATA 40 - 48

Others . PULSEN DATA 11-17 (+27)
18-27 (26)
. DIS7 DATA 28 and 30

PULSE1 deleted
PULSE2 kept.

7th October 1978.

File all pulse data to .PULSE.
compress .PLOTS

Send both to JS1401
and to SAH101

Also get back ~~MODE~~ DATAMO
NO PLOTS
and send to SAH101, some-time.

Do SAH101 on Monday.

9th October 1978.

Ni-N as-g binary

2E4 sectors DD6 total from 88 88

00	00	E0	E0	LA=2
07	08	E0	1C0	LA=3
0E	00	E0	2A0	LA=4
15	00	44	2E4	LA=5

12th October 1972

BOTH 50,000 Brenner
and 48,000 Compson 25,75,150
↑ best

running.

Now check DATA5HE7 by retransferring
(wrong records - VB).
Do Brenner and Comp in this and DATA1HE8
then back-up

Back-up to SAH101.

19th October 1978

Plots to date

Problems:

- 1) only 32K would plot - Ncount out of range use fixed bin(31) and OK.
- 2) Do not draw back to the axis afterwards if $x = \phi$, stop.

Data problems:

latest data OK:

H begins	#5	}
D "	#4	
C =	#3	

Just edit COMPISO and ~~REN~~ to do 1) and 2) and replot:

- 1) DATA5HR0
- 2) DATA5HR1
- 3) DATA1HR0
- 4) DATA@ (after outgas)
- 5) PULSE (before + after concatenated) Beware lap where some lost at photo etc. also quenched.

- 6) DATATHR0
 - 7) DATATHR1
 - 8) DATA1500
- } mass + time.

Transfer data for 50hrs and look at as above.

for 6, 7 and 8:

- i) ~~spectrum~~ - print masses
- ii) spectrum
- iii) bren
- iv) comp.

First, to make space:

Check · DEVELOP

· BREN PLOT to tape.

Clear these and begin with

- 1) mass prog (m + t)
- 2) spec prog (m + t)
- 3) bren (both)
- 4) comp (both).

Compare:

works 1) DEV (BRENNER) \bar{c} DEVELOP (BRENNER)

↑
has NCOUNT FB(31).

works 2) DEV (COMPISO) \bar{c} DEVELOP (COMPISO)

↑
has NCOUNT FB(31).

DEV (COMPISO) has const. fixed for DATA THR
this plots short, tho
DEV (PROBEY) gets spectrum having set const.

Develop has Brenner and various comps.

Then MASSBREN } t + m/n
MASSCISO }

wt need so edit massbren to DEV with
constants added. MASSCISO here as COMPISO C
already

Compare:

3) DEV (MASSBREN) \bar{c} DEV (BRENNER)
(mass lines) Edit MASSBREN + file

4) DEVELOP (MASSISO) with DEV (COMPISO)
constants different.

Various probes. Compare them:

PROBE should be simplest

PROBE2 has comp

PROBE3 has changed const.

PROBE4 has CENABS + other const

5) comp. PROBE4 (develop) \bar{c} PROBE4 (dev).
DEV has good const and bin limit.

BRENPLT — will not have transferred the latest DATA/THR treats i.e. comp of this. \rightarrow XADS and soft. Delete unwanted.

Then 1) Edit Brenner to move to an $x = \phi$

2) Edit Comp150 to move to an $x = \phi$ (?)

3) Put limit on massprint routine
use probe 4 bin limit and spectrum
(same time if poss).
Run for each of old datasets — will fail
1st time if constants have not been set.
so look and re-run.

4) Run Brenner and Comp150 on everything

Run Wtpds new. BRENNER

~~Why?~~ 5) No. uns different from Brenner and Comp150
Compare these

6) Edit to get 2 dec. places in compoⁿ
for histogram (may smooth out some).

7) consider whether ITOT1 should be introduced to give size of error of total count.

8) DATA1 THR masses are very good.
Just edit in constants and CEMASS to .DEV and run as per. normal.

* 9) Edit all program to say
HT, pulse, constant - - - -
after XXXXX counts collected.
Then can detect spikes etc.

10) Write a program to pick out a few thousand on the Brenner Plot and reconstruct. e.g. on DATA50H7

23rd October 1978

Data to Transfer
50 hrs @ 625°C Ni-Al binary.

DD1 103 sects. 00 00
 312 " 0C 00

DD4 209 " 00 00

DD5 364 " 00 00

Transfers beginning @ LA=2

DD1 00 00 103 as

DATA50H0 00 00 E0 E0 LA=2
 07 00 23 103 LA=3

0C 00 312 as

DATA50H1 0C 00 E0 E0 LA=4.
 103 00 E0 1C0 LA=5
 1A 00 E0 2A0 LA=6
 21 00 72 312 LA=7

DD4 00 00 209 as

DATA50H2 00 00 E0 E0 LA=8
 07 00 E0 1C0 LA=9
 0E 00 E0 2A0 LA=10
 15 00 29 2C9 LA=11

PD5

00 00 36F as

DATA50H3

00	00	00	EA	CA=12
07	00	00	1C0	CA=13
0E	00	00	2A0	CA=14
15	00	00	36F	CA=15

26th October 1978

transfers from Data Disc 3

00 00 622 5hrs

as

00	00	00	00	CA=2
07	00	00	1C0	CA=3
0E	00	00	2A0	CA=4
15	00	00	380	CA=5
1C	00	00	460	CA=6
23	00	00	540	CA=7
2A	00	00	620	CA=8
31	00	02	622	CA=9

30th October 1978

transfers from DD8

00 00 0F 10hrs. CA=10

and restart

as

01	00	2EA		CA=11
01	00	C0	C0	CA=12
07	00	00	1A0	CA=13
0E	00	00	280	CA=14
15	00	6A	2EA	

20th October 1978

Problems with IBM:

Data now transferring and running on Brenner (which does not zero thro' port any more) and Comp150 (which terminates correctly).

Difficulty: HT, Pulse, Const do not come over correctly.

Checked: PH11 appears to be running OK. Also, mistake is not always the same, although it is sometimes.

try: Initializing everything
Running JONTIA (MB17)
Check: concatenation is done correctly.

If still problems see DJH
- may be overwriting tail or something.

Difference betw. Brenner and Comp detected - Brenner resets const. at one stage, so does manage to overwrite and get onto spectrum any rows where HT, pulse correct, but const. otherwise wrong. Not so for Comp150.

Data from DDD4.

10hrs @ 625°C $\phi\phi$ $\phi\phi$ $\phi 3$ for just
 ② LA=2

DATA10H1

$\phi 1$ $\phi 2$ 4B2-03 = 4AF as:

$\phi 1$	$\phi 2$	C ϕ	C ϕ	LA=3
07	00	E0	1A0	LA=4
0E	00	E0	280	LA=5
15	00	E0	360	LA=6
1C	00	E0	440	LA=7
23	00	6F	4AF	LA=8

↑ terminated @ 6E with disc error.
 Have I counted wrongly?

CMDS

PA/DDDD/

RPT (IF/ $\phi\phi\phi\phi$) (DFB/ $\phi\phi\phi\phi$;) CL//) ELSE ATGP)

2 < 2#

PR

RPT (80>; SA//; CL//; IF/DDDD/ATGP).

etc.

8th November 1978.

Problem with HT, Pulse and Const intake traced to concatenation of LRL's which introduces a multiple of 80 bytes and not 128, so these only coincide every 5 sectors = 8 LRL's. Thus checksum is shifted, as are the other values, the supposed checksum then being skipped at byte count = 128 whether or not DDDD + trailing zeros have now appeared in the count.

- 1) Get RL11 to deal with this.
- 2) Add in more zeros (+remove DDDD)
- 3) Remove DDDD and trailing zeros.
Would have to do this in SECIN, I think.

Problem solved: 15th November 1978

Use the new ZED editor.

PHID. ZEDLIB (RZEDMAC).

Set LIBRARY_ as above.
Then set up commands ZED.

- 1) ZED smelt. ... TO output OPT INIT (TR+)
- 2) X+
- 3) F/DDDD/
- 4) C/, CMDS/.
- 5) W.

Also . CMDS →

28th November 1978

PADALPH 2.

557 sectors

00 00
07 00
0E 00
15 00
1C 00
23 00
2A 00

E0
E0
E0
E0
E0
E0
F

E0
100
2A0
380
460
540
557

LA=2
LA=3
LA=4
LA=5
LA=6
LA=7
LA=8

6th December 1978.

- 1) zed can be made to work on up to 6 sets in concatenation.
- 2) To do more do not lop off last DDDD but leave it, let IBM put in blanks, then 1st search for P/TTTT and @@@@

```

RPT ( PA/TTTT/ (DFB/4040/; CL//) ELSE AEP)
2<2#
PR

```

RPT (80>; SA//; CL//; IF/TTTT/AEP).
These last being as before.

- 3) Can now treat data BK.
Have do so for

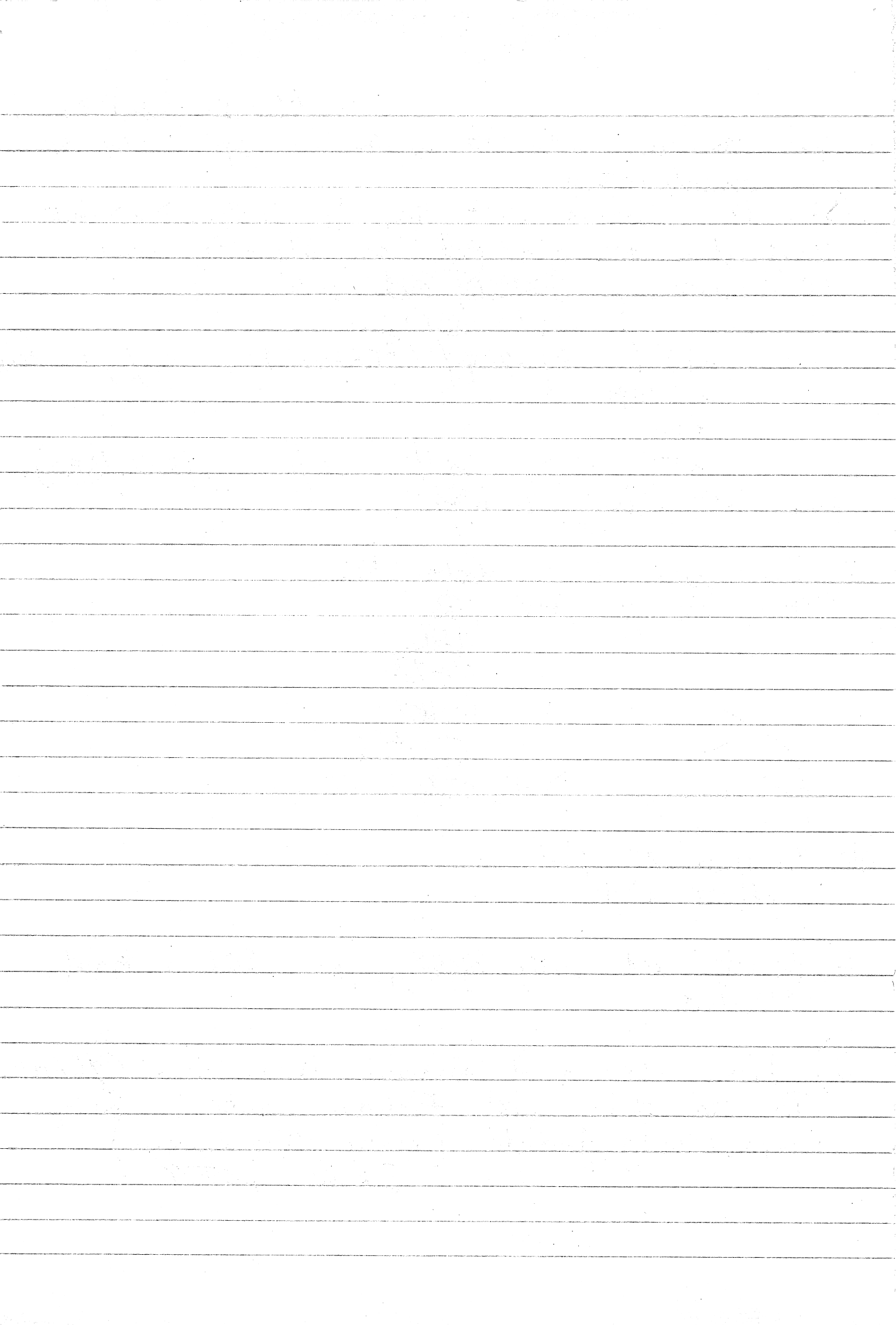
Q
1HR
5HRS
10HRS
50HRS

problems as > 50,000 words.

- * i) increment plot
ii) Rotate plot.

- 4) Must get prog. going for 150hrs and 1000hrs.

- 5) Now do fast Fourier Transform (FFT).
To do this use Fortran routine including unravelling of data (Mike O'Sondruque).
ERW better.



9th December 1978

fast Fourier Transform program

1) Send MONV values to a disc file using present PLI routines:
 To printer send:

i) HT, PULSE, CONST with NO. OF IONS

ii) TOTAL NO. IONS

iii) NO. SECOND IONS

iv) NO. VECTORS

v) NO. < 1 } if required.

vi) NO. > 100 }

v) and vi) irrelevant if not treat data.

At the moment the un-updated version is in SAH1. PR3.

2) To get this lot onto disc:

```
PUT FILE(RES) EDIT('output')(descriptor);
```

and in the JCL declare this file to be a created disc file

```
//RES DD DSN=SAH1.MASS, DISP=OLD
```

and create MASS/N/LA/FB, where there are $10 \times E(8, 2)$ per 80 ch. LRECL

Estimate of size ~ 1 track per 1000 ions.

3) This is a huge dataset, so why not send the output to a temporary ds XT.

Then at the same time write XT to a new mag-tape to keep — 8A71102.

So declare TOTAPE DD1 AS SAH1. FOURIER (HRS) // DD1 XT

Then C .PROG N = hours. Also 1st K to printer

4) This gives a simple entry into the Fortran program which says:

```
READ(6, 1000) data.      1000 form. 10(8,2).  
DO I = 1, 10             Using EN D103 Check end, stop  
  Mon n = data.  
  If Mon n < 1          count MUNDER  
    > 1000             " NOVER  
    1 AL               MAL }  
    2 Ni               NNI }  
    2 Ni               NNI }
```

For last 3 count NTOTAL and cycle on NCOUNT. where NCOUNT can be 150 or any other value.

Also cycle on XNCOUNT. Then $A(x) = \text{av. comp over Ncount}$.

where A is declared array

Settle into 2 arrays A and B

Call COBAAF.

send output to printer from COBAAF

Send data MUNDER, NOVER, AVCOMP to printer

9th January 1979.

Fortran program to call C6AAF completed.
 Sequence of events the following

- 1) Data from CE to PDP and back-up on SAH107.
- 2) Using .ZED: SUBMIT concatenate the partitions, remove DDD and $\phi\phi\phi\phi$. Put this in .DATA.
- 3) Using .JO: FORTTIME, which may have to be rejiled to .PR3, convert these times to masses in the format

Complete up-date needed

Up - date.

Notes for up-date (BR)

1) to send data to tape

KT06F001 TO DD DSN=SAH1, MASSIS0 (DATAN)
as required and cut off plot.

2) Look at bremer plot after this and
construct required $f(N)$ plot.

16th January 1979.

Sequence of events in data handling.

- 1) Data as times + constants to CE during exp. Written to data disc as a series of sectors ~ 600 hex in total length.
- 2) CE linked to PDP @ 1200b and data transferred in series of 50 sectors per consecutive label no. on AJW202.
- 3) Data transferred from AJW202 to current data set using .AJW2JO: FILEPDP.
- 4) These sets from .DATA upwards are stored as PDS on JS1401 at present. Store next on 8774101 with programs after transfer of previous sets. Uses TLS.
- 5) Each pds member is set as sequential, and the series concatenated, DDDD terminators removed and trailing zeros, except the last, to give a working ds. Fu .ZED(SUBMIT).
note no longer use LIBRARY P410.
 ZED is a catalogued procedure.
 Results go to .DATA. (P4X).
- 6) .DATA is converted to masses by P4/I routine .JO: FORTIME, commanded by .JO: CFORTIME. The masses are stored

in FB with 8 per line as 'L 8,2', read
by Fortran as F9,2. (PL/1 L, E8,2).
This job takes 100K
Just over 2 mins.

7) Fortran job then does a fast Fourier
transform collecting the data from
MASS and representing it, at present
by averaging composition every consecutive
150 ions.

This job takes 350K (CDBAAF)

30 secs

Output to printer at present.

FORM: PPTPT

JO: PPTPTG

8) Composition plots and Brenner plots
may be done using COMPISO and
BRENNBRC in DEV2. However
these must be revised, including plotter
streaming.

9) Statistics

Again PL/I. This program is an
updated version of AOW's.

-ATW2PRG2: STAT3

200K.

90 secs.

(JO: STAT)

All this run on ~44,000 ions DATA10H0.

Produces:
composition / 250 ions (into output)
Running means
Distribution of U
Variance
Randomness test.

Things which I have learnt on the way:

tidy up!

- 1) Compatibility between PL/I and fortran.
 Data streaming is a problem, particularly
 when $PL/I \equiv E$
 $fortran \equiv F$ } field descriptors - care!
 fortran also needs at least one blank
 betw. no's.

- Other differences
- 1) $real \& 8 \equiv$ double precision
 - 2) $DO NM I=1, X, Y | NM CONT$
 $\equiv DO I=1 TO X^Y; | END;$
 - 3) $.GT. = >$
 $.LT. = <$ } etc.
 - 4) field descriptors (above)
 - 5) access to external datasets
 fortran can give unit, PL/I
 always need //DD.

2) Look at no. of members in PDS before
 run ~~ED~~.

3) Remember MASS is LA.

4) Phoenix jobs can be much more
 efficient when tied together.

5) Run job with over-estimate of
 time and store, then look at

6) Job data afterwards.

Most errors are in indexing
 arrays out of range, or arrays with

calculations out of range on call.

- 7) Test data is very valuable.
- 8) On complete revise tape. MATHPROT and begin again.
Get rid of extra job numbers.
- 9) Easy method of plotter type output is to send 'x's to printer.

More ideas

- 1) In writing STAT 3 found that a
`GET FILE(XY) LIST(A(I) DO I=1 TO 8);`
produced the answers, do not try to skip
($\frac{1}{4}$ data found).
- 2) For DO loop in list use set of parentheses
for loop even if apparently redundant
p. 77 manual.
- 3) $C\phi 6 A A F$ maxm $M1 = 3\phi$
- 4) $\pi = \pi = 4 \left(4 \arctan \frac{1}{5} - \arctan \frac{1}{239} \right)$

What I need to do next in the
computing line

- 1) Tidy up .DEVELOP / .DEV / .DEV2.
- 2) Transfer data to SAH101
- 3) Masses to SAH102
- 4) Do comparisons of analyses (see lab book).
- 5) Rewrite necessary programs.
- 6) Revise composn / breuner / plot.
- 7) Write complete PTH job to cover all of these.

COB ADF v. FOURIER

COB ADF

CANLIB routine

recommended by UCS. Real values

Drawback - must have 2^m data values

Spec.

$2n$ data values $2n = 2^{m/2}$
Calculated from Cooley-Tukey algorithm
 n even ≥ 4 .

$$a_k = \frac{1}{n} \sum_{j=1}^{2n} x_j \cos(\pi(j-1)(k-1)/n)$$

$$b_k = \frac{1}{n} \sum_{j=1}^{2n} x_j \sin(\pi(j-1)(k-1)/n)$$

$j = 1, 2, \dots, 2n$ as FS.

Thus $\text{invers} = \text{FALSE}$. produces coeffs.

If $\text{invers} = \text{TRUE}$. produce series
take $A(n+1) \cos$ and $B(n+1) \sin$ coeffs
and reproduce series $x_j (j=1, \dots, 2n)$
where $b_1 = b_{n+1} = \phi$.

Relations:

$$x_j = \frac{1}{2} a_1 + \sum_{k=2}^n \left\{ a_k \cos(\pi(k-1)(j-1)/n) \right.$$

$$\left. + b_k \sin(\pi(k-1)(j-1)/n) \right\}$$

$$+ \frac{a_{n+1}}{2} \cos(\pi(j-1))$$

for $j = 1, 2, \dots, 2n$.

time $\propto M \times 2^m$. where $M = \frac{1}{2} M_1 - 1$.

FOURGT SYS2.FORTLIB routine
recommended by MBF7.
Good as chain of any length
Drawback: uses complex calc.

Spec (from 360D-13.4.005)

$$\text{TRANSFORM}(k) = \sum_{j=1}^N \text{DATA}(j) \exp(i \text{SIGN} * 2\pi i * (j-1) * (k-1) N)$$

for all $k = 1, N$.

Data \rightarrow transform \rightarrow Data $\times N$.

Input data ∂ times $(j-1) * T$, then
transform values, $\text{TRANSFORM}(k)$, are
located at frequencies $(k-1) * F$,

where $F = 2\pi / (NT)$.

By periodicity all frequencies above
"foldover freq" π/T may be identified
with the corresponding negative freq. $2\pi/T$
lower.

If $\text{data}(T)$ padded with zeros to avoid
circular convolution transform values are
interpolated according to previous

paragraph with new N "spectrum
broadening".

If the data is not complex

```
10 DIMN DATA(2, 400), WORK(2, 400)
   DO 10 J=1, 400
     DATA(1, J) = real part
     DATA(2, J) = imag. part
     CALL FOURG(DATA, 400, 1, WORK).
```

Organisation of programmes

2nd February 1979.

Write failures noticed in exp. of 29. 8. 79
although sectors appear OK.

failures after service time ~ 8 hrs.
Then failures to PDP @ LA=8.

Progressively worse until not even full
message and corrupted.

Attempts to reboot successively more
and more difficult:

- 1) not all DOS loaded
- 2) less dos
- 3) ticks no dos
- 4) only one dos tick.

5) BCS (automatic) failed 05.02.79.

CE consulted, PC address shown 0600
or 02.02.

Suspected memory fault.

CE moved to Uxbridge

Tel. Uxbridge (0895) 30678

Sending diagnostic disc (contract on basis
of local service). Attempt to check memory
on instructions to be made.

transfers from exp 31. 01.79 - spec 1hr1.

00 00 276 DD1 as

00	00	E0	E0	LA=2
07	00	E0	1C0	LA=3
0E	00	B5	275	LA=4

Then $B5 = (5 + 2) \text{ blocks}$
 \therefore want 22nd sectors
 $= 13 \text{ } 1B \text{ } 01$

LA=5

00 00 02 DD6 LA=6 7
10 00 10 " LA=7 8

This may be longer but probably much shorter \therefore early terminator.
PDP reading.

20 00 39 DD6 LA=9

0E 00 B6 LA=6

LA=8 only took 6 sectors

Retry after LA=9. This only took 1 sector

1. The first part of the paper is devoted to a general introduction.

2. The second part is devoted to the study of the properties of the function $f(x)$.

3. The third part is devoted to the study of the properties of the function $g(x)$.

4. The fourth part is devoted to the study of the properties of the function $h(x)$.

5. The fifth part is devoted to the study of the properties of the function $k(x)$.

6. The sixth part is devoted to the study of the properties of the function $l(x)$.

7. The seventh part is devoted to the study of the properties of the function $m(x)$.

8. The eighth part is devoted to the study of the properties of the function $n(x)$.

9. The ninth part is devoted to the study of the properties of the function $o(x)$.

Problems encountered with ~~.DATA5PH4~~ ^{5th February 1979}.

Members .DATA2 \implies .DATA9.

.DATA4, .DATA8 are blank.

- 1) Why?
- 2) try retransfer with CE.
- 3) Check all other PDS.
- 4) Tabulate ion counts and length.
- 5) Check concatenations with ZED

1) How do I get back mass sets? (not much success so far).

2) Changes in FORT1 to give ϕ 's, data, ϕ 's

ϕ 53 ARRAY2(I) = (ARRAY(I) - NCOMP)

\rightarrow DEL ARRAY(1000) or so.

Then map ARRAY2 \rightarrow ARRAY such that ϕ 's/AT, etc

PARAM = (J3 - MEM) / 2

K2 = J3 - PARAM

PARAM = PARAM + 1.

DO X I = PARAM, K2

K = I - PARAM + 1

ARRAY(I) = ARRAY2(K).

X CONT.

DO XX I = 1, PARAM

ARRAY(I) = 0.00 ϕ

K2 = K2 + 1

DO ~~XX~~ I = K2, J3

\leftarrow

6th February 1979.

This last program PRG(FORTHALF)
was used on MASS5DH3.

It showed no differences from the program
which puts zeros only at the end.

This is useful as now only need to
consider what happens with binning change

Assume bin ϕ to begin with.

take spinodal $w \leq 46$
 $w \sim 128$

Kough results.

Q0

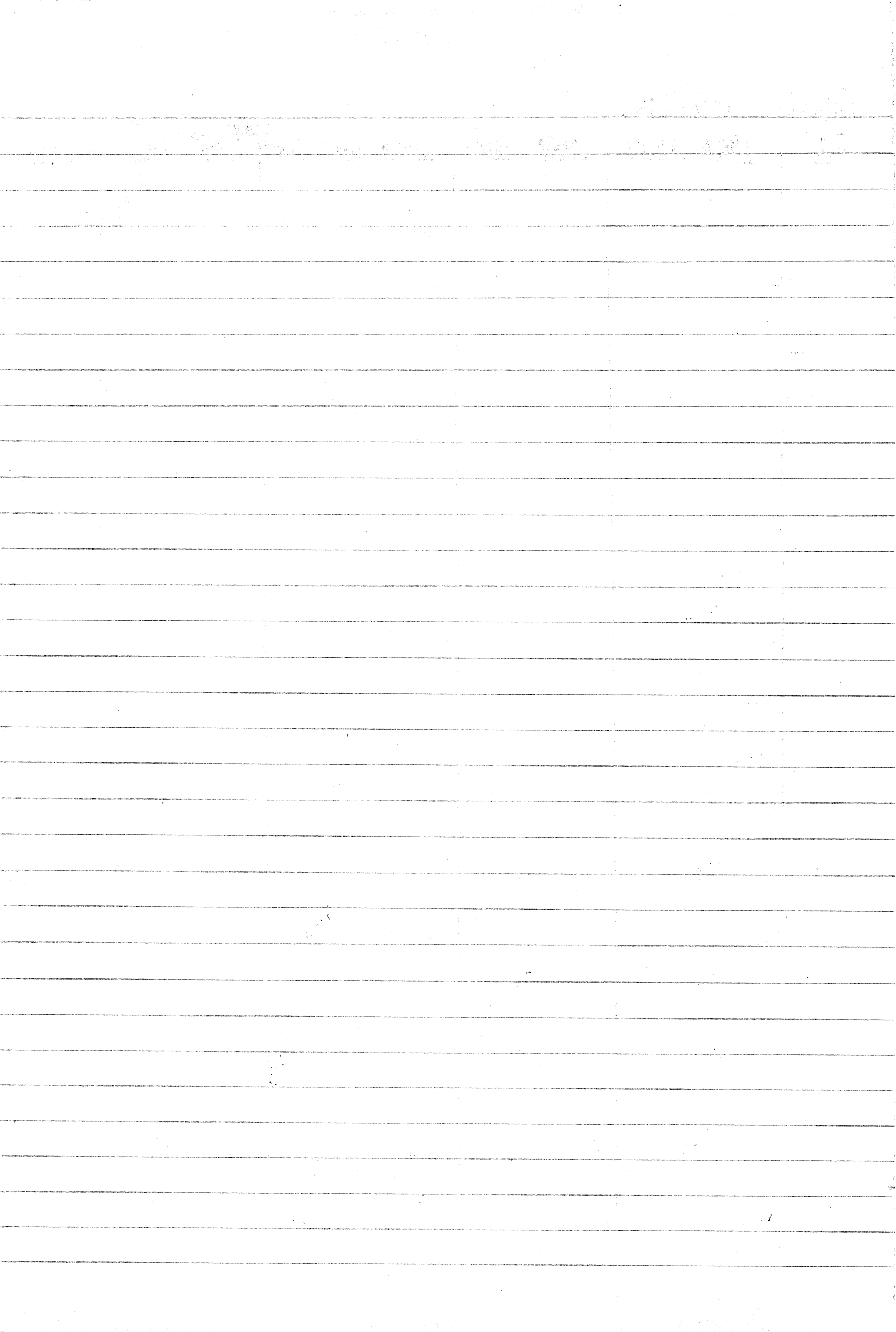
1HR0 1HR1

5HR0 5HR1

10HR0 10HR1 10HR2

~~5HR0~~

5HR1 5HR2 5HR3 5HR4



8th February 1979

Use of Phoenix

General flow diag:

- 1) JOB
- 2) JD for tapes + parms
- 3) PHX
- 4) set char
- 5) Steps
 - i) tape
 - ii) FTGICLG
 - iii) PLIXCLG
- 6) Deletes
- 7) Other phx such as file, list
- 8) Other tapes.

Points

- 1) TAPE9 is PHX so write before PHX command.
If two tapes write
TAPE9 SAH101 SAH102
- 2) JCL must come before any Phx recognised commands or PHX command i.
∴ SET CHAR END ≡ SET CHAR CONCAT
after //TAPE..
- 3) If more than one tape //TAPE(1)
//TAPE2
- 4) do not need ENV etc with TLS
⇒ TLS WITH %H! [TAPE = TAPE2]
FT x as .Y
! (I think I'll still use it.)

4) CONT, or have a //FRONTAPE
//TOTAPE

Use of this is as a dataset which is automatically lost.

5) Difference between parameters and specify.

To specify anything extra to program include in brackets after compiler

e.g. PROGRAM = TOT #
FTOSF001 = .DATA

rest outside FT06 = .ONT REGR = 120K.eA

6) Fortran and PLI

Fortran is easy in that parameters are obvious.

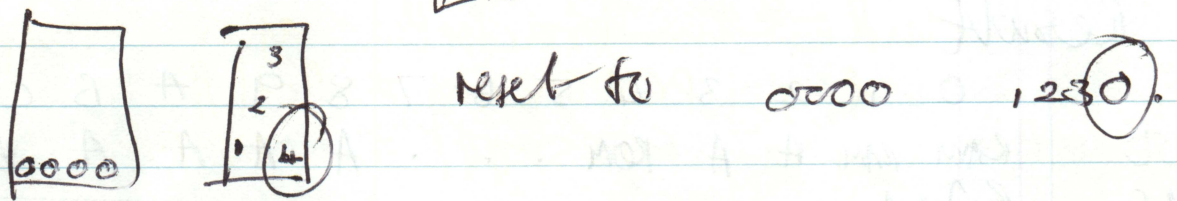
In PLI all units must be specified and data and results if these sites already have a DD. (see later).

13th Feb. 1979

OK patching to check fault:

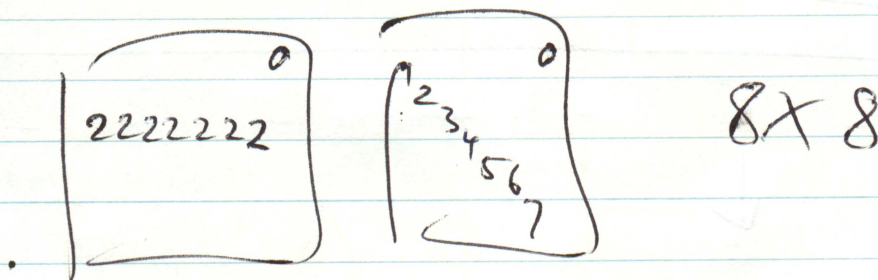
Object problem may be in bottom 1k of memory to loader.
Patch:

- 1) 3rd board from power supply in processor.



Recognise board (loader) by red banded clips. X

- 2) 8K board centre in central kba.



reset 22222220 12345674

Reset bottom kba. 00 to 04

No change in operation.
Assume hardware fault in disc drive - solenoid will not drop head (or head somehow misaligned).

1st May 1979.

CE returned microprocessor. Fault in power supply had short circuit boards. No details, but repaired free.

Tests: CSE - do not use returns.
1) MAP.

Result

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	RAM	RAM	A	A	RAM	.	.	.	A	A	A	A	A	A	A	A
10	RAM →															
20	RAM →															
30	RAM →															
40	RAM →															
50	RAM →															
60	RAM →															
70	-															
	↓															
80	-															

2) STORE start 08
pages 68 (all)
test complete (01)

3) FLOPPY FF reply F8 (disc) just 7

Replies BUFFER E ERROR 00 00 13 88 01
and continues clicking - no interrupt.
DDF bad disc X

We know this is a bad disc, so try another

Discs used lately:

	DD6	} 1 hr.
	DD1	
	? DD4	} 10 hrs
	DD9	
	DD8	(10)
SOH4	DD3	
SOH3	DD5	←
SOH2	DD4	
SOH0 SOH1	DD1	(50)
	DD6	

SO5
SO4
SO3
SO2

Look @ 5 for failures.

faults DD1
DD6

Use 5 for new floppy test.

4) FLOPPY: FK F8.
DD5

Test ran OK. Stopped after three passes.
Did not exit correctly, though, on pressing
key f. Assume DD7 bad disk OK

5) GHOST: 08 start
68 pages.

Three passes all OK.

6) LEFTOST: 08 start
68 pages

1st cycle 23 mins. (OK).
Remain next day

7) LGHOST : full length 2nd May 1979
08 ~~start~~
68 pages

5-pass test completed in 3hrs 38mins
No failures.

Rubbish written to screen during exp.
3rd May 1979.

Retest { MAP
STORE
FLOPPY/
GHOST

DD9.

8th May 1979

transfers to PDP
from exp 7th May 1979

01	00	CO		LA=2	D2
07	00	E0	1A0	LA=3	D3
0E	00	E0	280	LA=4	D4
15	00	64	2E4	LA=5	D5 LA6
00	00	18	2FC	LA=6	D1 LA5

17th May 1979

LA=2	}	DD9	88	00	11
LA=3			01	00	12
LA=4			02	00	02

Re-mit new tape SAH 103 14th May 1979

LA=2	DD9	00	00	11
LA=3		01	00	12
LA=4		02	00	02
LA=5	DD3	DATA 4	0E	00 E0
		DATA 5		
LA=6		DATA 8	2A	00 E0
		DATA 7		

Then LA=7 DD8

LA=8	00	00	18	
LA=9	01	00	2E4as	0100 c0
LA=10	0E	00	E0	1A0
LA=11	0E	00	E0	280
	15	00	64	2E4

State of IBM tapes

PDP requires label VOL=SER=TAPE9.
 relabel ASW202 (new) as SAH203

keep old ASW202 and guard with life.
 do not put write ring in to protect files.

Use SAH203 for PDP only.

SAH201 data direct

SAH202 masses + progs.

Next transfers:

18th May 1979.

DD9 cont. 1/2 hr @ 625°C binary Ni-Al

03 04 E0
 0A 0E E0

LA = 12

LA = 13

of dubious length
 (see exp) notes

10 00 0A
 10 00 20
 20 00 15

LA = 14

LA = 15

sectors taken.

LA = 16

DD5 00 00 3EC as

LA = 17

00 00 E0 E0
 07 00 E0 LA=18 1C0
 0E 00 E0 LA=19 2A0
 15 00 E0 LA=20 380
 1C 00 6C LA=21 3EC

~~DD5~~

last one
 15. May

10 of lock
 west

0 next DD5 15 00 E0 LA = 20
 1C 00 6C LA = 21

③ DD6 $\phi\phi$ 00 $\phi 2$ or 03 $\phi 2$
 10 00 1 ϕ - ? term $LA=24$
 20 00 39 $LA=25$

② DD1 00 00 276 as 00 00 E0 E0
 07 00 F0 1C0
 0E 00 B6 276

Look @ DD4 DD3 - tried again on PDP

Can't imagine why DD4 was questioned. Suggest complete repeat

④ 01 00 4AF as 00 00 03 $LA=29$
 07 00 C0 C0 $LA=30$
 0E 00 E0 1A0 $CA=31$
 15 00 F0 280 $LA=32$
 1C 00 E0 360 $LA=33$
 23 00 6F 440 $LA=34$
 4AF $LA=35$? disc error effort.

Seems that Jan 1979 DD4 01 00 as check for box working. is this all?

Actual transfers

DD5 15 00 E0 $LA=20$
 1C 00 6C $LA=21$

DD1 00 00 E0 $LA=22$
~~07~~ 00 E0 $LA=23$ ← fail here
~~0E~~ 00 B6 $LA=24$

then DD6 then DD4 01 23 22 00 6F

DD8	00	00	E0	
	07	00	E0	100
	20	00	E0	
	27	00	60	140

LA=25	DD6	00	00	02
LA=26		00	00	03
LA=27		10	00	10 ? term.

~~LA=28~~

stopped @ 09 sectors - probably about
 right actually - try to LA=28 to check ^{origin}
 LA=28 10 00 0A waits check in PDP
 LA=29 20 00 39 before term.

11.00-13.00 Mon.

17th May 1979

Continuation of DFFT treat of data

Access to programs:

- 1) Take LA=ds from SAA103 (as ASW202)
SAA103 now rack no 1083 as before.
- 2) concat with ZED x+
Remove DDDD + zero etc
- 3) Change to masses: .JO: CFORTIME
commands .JO: FORTIME
MASSES TO SAA102
DATA TO SAA101
- 4) use .JO: PHXCB for comp + bren plots
calls ~~CONF (CONF COMP)~~
~~CONF~~
CONF (PHXCOMP)
CONF (PHXBREN).
- 5) Use .JO: FULLFFT to get total Fourier
over $2m+1$, $m=1$.
This calls .LOAD
progs in .LOADPROG(SAA101)

Tape jobs.

18th May 1979.

DATA1HR3 : DATA2 LA=2
 DATA3 LA=3
 DATA4 LA=4

DATA1H1 : DATA2 D2 LA=22
 DATA3 D3 LA=23
 DATA4 ~~D4~~ +D5 LA=24
 = D6 LA=26
 DATA5 LA=25 ^{D7} RD6
 ~~or 26~~ only 4 times
 DATA6 LA=27
 ~~or 28~~ ^{RD7} same
 DATA7 LA=29 none

Also LA=5 } various empty set checks.
 LA=6 }

Summary

DATA 22 and DATA 2 (H1S) match

1. DATA 23, DATA 3
 DATA 24, DATA 4 bar last sector.

Data 5, LA=25 not match properly. Extra sector only, more times so write poor.
 No further matching LA=27 \equiv LA=28
 and LA=29

\therefore LA=22
 + LA=23
 + LA=24
 + LA=25
 + LA=27
 + LA=29

DATA1HR1.

File to SAH101 :

DATAHR1 is old IHR1 but as is
 DATAHIG re-transferred IHR1. Must
 retape one day under correct name.
 DATAHR2 previous set left as DATAHR2
 DATACHK1 ← check DATA04 : DATA4
 DATACHK2 " " : DATA8.

Remaining: Q1 check
 Q2
 HHR0
 HHR1

Have done DATAHR3 previously today.

TO DO : LA = 7, 21

Johns check any. { Data 4

01 00 22
 23 00 6f

~~28th~~ May 1979.

LA = 30
 LA = 31 stopped 6f

DD8 khr
 @ 625°C
 khr 2.

00 00 E0
 0f 00 E0
 20 00 E0
 27 00 60

LA = 32 E0
 LA = 33 1C0
 LA = 34 E0
 LA = 35 140

21st May 1979

Next Fourier Results

I

1) LA=7 → 11 DD8
≡ AS-QUENCHED, 2,1 = DATAQ1.

File as DATAQ1? DATA7 → DATA11.

2) DataQ1 from tape and find wrong DSORG.

3) Look up what to do with DATA30H0 → DATA30H3 as this has similar problems.

Cannot just concat. as no match after line 38 in both cases.
? Make PDS and then refile or something.
try split with ZED.

II

1) LA=12 → 16 DD9
≡ ~~DATA12H0~~ 2hr @ 625°C ≡ DATA11H0

2) LA=12 OK
LA=13 not of known length as hang up.

Attempt to look for change to zeros or changes in times with HT change. Use ZED. ~140 sectors? probably less.
? (SD).

3) LA=14 } short → same
LA=15 } long → same
Again try to find end and use correct

4) ^{me} LA = 16 OK.

III) 1) LA = 17 → 21
≡ as-quenched 2,2 ≡ DATAQ2

File as DATAQ2: DATA17 → 21.

IV) 1) ^{from 8A42φ3} LA = 32 → 35
≡ 2 hr @ 625°C 1,2 ≡ DATAHHR1

LA = 32, 34, 35 OK. rewrite : DATA32,35

2) DATA33 wrong
Transfer all of these.
Look for inconsistencies in DATA33
as above.

Tape DATAQ1
Q2
HHRφ
HHR1

Masses JO: CFORTIME } can this be PHX
JO: FORTTIME }

Comp, Bru, Fournier

Also get 50% back overing LA } check
+ CAR1
CAR2

PHQ1 = ZAPPED Tape DATAQ1 CH as DATAQ1
Masses found. DATA HHRφ
DATAQ2

LA = 13 line 33 0000 time
34 begins 0273 etc where
previously 0363, 0546.
delete 34 → end
file DATAHRP: DATA13

Remember no DDD - just look for 00000000

LA = 14 change 0570 0358 0364
to 0668 0329

delete waiting #'s from change to end. Not put in
(look @ this with ZED and remember on ZED)

LA = 15 up to end of real string
delete 15

MISSQI found = 5347
to 887102 do COMP, BREN } MISS QI.
FOURIER

Others all typed + waiting.

2nd May 1979

1) Got former to work - check against original
However stupidly did ϕ again.
Do MASSQ1 waiting.

2) PL/I / PHX failed with undefined file.
Check this.

To do today:

1) Get LA = 32 \rightarrow 35 from SAH 703 + 30-31 DD4

2) File as HHR1.

3) Masses of:
IHR4
IHR2 } small so wait
IHR3 }
Q2
HHR0
HHR1.

4) Plots + forms of these
5) compare CHK1 with SAH sets.
CHK2

LA-5 = DATA 4 CHK1 no match
LA-6 = DATA 8 CHK2 no match

filed as .DATA50H4 : DATA4 previous empty (ZFD)
ZFD as :DATA8 also empty. File .DATA50H4 : DATA8

End of DATA4 0524 0523 0357
Beg. DATA5 0527 0358 } series OK

End DATA8 0511 0503
Beg DATA9 0504 0509

Retape DATA50H4

6) Edit mass or PL/I jobs → overall composition.
 First get SAH1. PHX back from tape
 and do edits
 try prog

Next computations

1) EDIT JO: FM SAH102 SAH1. PHX.
 Check that DATA in program description.

Make following edits. Time 70secs.

REPT = 700K
 LIM = 100K

3
 4
 30
 53

Declare ARCOMP
 both to PTO6 = .OUT
 G/COMPLOT/ PLOT.
 G/ SAHX/ Q1
 PLOT → PLOT1
 I.

PLOT1 : ARCOMP = (NAL * 100) / (NAL + NNI);
 PUT EDIT(' ~~average~~ composition = ', ARCOMP)
 (SKIP, A, ^{COL(25)} E(9, 2));
 PUT EDIT(' This includes _____, NAL, 'Hum
 ins _____ and _____, NNI, 'Michel ins')
 (SKIP, A, ~~COL(18)~~ COL(18), F(7), A, COL(50), F(7),
 A, ~~COL(50)~~);
 DELETE X

281

Then compile if poss.

Then run with Q1

2) G/MASSQ1/Other overnight.
check store
{ store

3) Other PL/I ditto to .PLOT.

4) Masses. ^{1HR1} Q2 straightforward
50Hz
1HR2 } leave
1HR3
4HR0

DATA 12 OK.
DATA 13 ~~8888~~ ~~8888~~
search
DATA 14 check
" 15 OK
LA = 33 problem
32, 34, 35 OK.

1HR1

DATA 50Hz: 2 → 9. 70 DE + others
D1 → D5
2 → 6

DATA 2-6 = D1
D2 = DATA 7 } call ~~37ED~~ ~~xxxx~~
3 = 8
4 = 9

DATA 50Hz: → data
now → mass50Hz. @ 16.00
separ.

LA=33 @ line 237 found inconsistent 06730275
→ 05740539 0392

delete rest.
filed to .D2

LA= 32 } DATAHHR1 and D1
33 }
34 }
35 }

for mass1

DATAHHR1 → DATA1 }
MASS 1 }

for reference should file DATA33 as
is

DATAQ2
17 }
18 }
19 } RUN 5 → DATA2
20 }
21 }

MASSHHR1
(1176)
22 }
23 } DD check } OK.
24 }
25 check ✓
27 check ✓
29 should be OK. —

Also PHX — FOURCB is program to
edit

tapes for tonight SAH101

DATA 30
DATA 31
DATA 50H4
~~DATA Q2~~
HHR1

SAH102

MASS 50H4
(MASS)

MASS1 = DATAHHR1. MASS Q2
(MASS Q)

MASS1HHR1
(MASS3)

for today leave HHR1
1HR2 } very small and
1HR3 } not worth priority

Next do Q2
1H1G. - maybe not today as
priority awful.

① Tape job DATA 30
31
50H4
HHR1

② Tape job MASS → 50H4
MASS1 → MASS HHR1
MASS2 → MASS Q2

③ Look @ 1H1G.
Full FFT as before.

④ Job 50H4 failed as out of time.
Re-run ~~tomorrow~~ today. 1H1G.

⑤ MASS1HHR1 ≡ DATA3, MASS3

① Check DATA 30 -
31 -
HHR1 } OK then delete.
50Hz

② T = NOW TAPE job → MASS 50Hz⁷⁰
MASS1 HHR1⁷⁰
MASS2 QZ⁵⁰
MASS3 HHR1

- ③ FULLFRT for aboves. (not 50Hz)

④ one PLOT/PLT overnight as .PLOTJOB
Check. (x4)

⑤ Delete mass sets

⑥ Put in correct unit sets inc. OUT

Edits for FULLFRT

1. ② TIME 2 mins for most 13 70
12 90 say check
? mins for 50Hz ^{needed!} 90 users.
2 mins

③ OVERNIGHT

④ LIMS TORE LOOK

G/QD/whatever
Cannot do mass 50Hz as too many
mins.

To do tomorrow

1) Progs 50Hz

2) small HHR1, HHR2, HHR3 when

3) priority
plots

4) draw transforms.

Late deletes

DATA ——— ✓
 HHR1 ✓
 1 — ✓
 1H1G — ✓
 2 — ✓
 3 — ✓
 30 — ✓
 31 — ✓
 50H4 ✓

→ M 16.3 75.5
 → M 7.2 - 33.5
 → M 10.04 → 45.8

MASS —
 1 —
 2 —
 3 —

MASS = 11691 lines
 MASS 1 = 5193 "
 MASS 2 = 7088 "
 MASS 3 = 5265 "

} file tape job as
 2 TAPE.

LA PLOT JOB edited now use for
 LP2
 LP3
 LP4
 mins changed,

MASS1 HHR1
 3 HHR1
 2 Q2
 50H4
 2 mins

LF1
 LF2
 LF3

HHR1 70
 Q2 90
 HHR1 90

23rd May 1979.

Jobs overnight:

PL/I all OK.

One FRT failed. HHR1 - few rows than expected.

Next masses of HHR0
1 HHR2
1 HHR3
plots @1

mass 50H4 excess
mass HHR1 under

? 150 and 1000's.

Check data 30, ~~31~~ against DATA10H1

1) From SAA101
1 HHR2
1 HHR3
~~DATA10H1~~
30
31

2) Read .LOAD : RES1 from ERW1

3) need 2,3,4 / 512 for 50H4

2,3,4 / 128 for HHR1

look @ try put zero. Trap all data.
this first.

4) Mass @1 as is - overnight.
PL/I

5) data 30 against 6A set 1 off 1
 31 " " 6th set " " same

OK to line 54
 56

6) masses HHR0 30s different ZED - ran out of
 1 HHR2 10s data for some particular reason
 1 HHR3 10s.

7) Tape masses

8) PL/I ex. Time = 2 mins @ 1.

INIT FOUR HRS END = 185
 Also FURINITZ
 FURINIT3

TIME for DD: FORRTIME ~ 1s / 1000.

HHR0 no cuts = 16,000 - 30s }
 1 HHR2 2,000 10s } masses
 1 HHR3 2,000 10s }

PL/I 40,000 cuts ~ 1 min 20s
 @ 1 say. - 2 mins overnight.

LA begun mass edits
 DATA = 1 HHR2
 2 HHR3
 HHR0 12.31.66

Masses B
 sent to tape as MASS HHR2
 MASS HHR3
 HHR0

Send @ 1 plots to plotter MENROUND AT 0700

24th May 1979.

FFTAO checked against dd FFTAO.
No differences found.

∴ Use .JO: FULL FFT
Time

and use .PLOTJOB for COMP + BREV.
Time

Checksum errors found. Bad ZED.
Re-attempt tomorrow.

? DATAHI 4,5,6
DATAHTR1 2nd set
DATAHYR0 13
Q1, Q2 OK. IHR3 not 50H4 should be OK

Learned to be careful with ZED -
make sure each member of PDS has
correct sectors + DDDD.
Next check previous DS.

What a day!

OK
Q1
Q2
50H4

bad
HTR1
IHR1
HTR0
IHR2
IHR3

LA = 33
check all
13, 14 hang-ups
1st set problem
why wrong?

29th May 1979

Today doesn't look much better at the moment.

2 MASS
2 MASS 1

HHR 1
HHR 1

{ 2ED
{ 7ED 1

HHR 1

LA 32, 34, 35 check DDDD
33 will 237 end.

1 H1 G

22, 23, 24 DDDD check
25) 27, 29.

Put DDDD correct each $\phi\phi\phi\phi$
Correct H1 G.

DPB/0364 757F

↑ 32nd so put $\phi\phi\phi\phi$ $\phi\phi\phi\phi$
will expect error then DDDD 0000

H1 G 22 OK

found error edit in

1.84 E+08 2.94 E+07 7.67 E+05

✓ 12 ✓ 13 ✓ 14 ✓ 16

HHR 0

2 MASS 2

DATA 2

HHR 0

3

HHR 2

4

HHR 3

Failure 1 MASS - more errors

MASS 1 H1 G OK 5265 lines

MASS 2 HHR 0 OK 2002 "

MASS 3 HHR 2 would have been

MASS 4 HHR 3 7ED won't play.

try remove top line.

FX4 6138	0x8	FX4 6138	5221 0x1
FX4 6138	5221 ³⁷⁶⁷	5221 ⁰⁴⁷⁴ 0482	0682 0472
0681 0474	0473 0473	04730492	EX4 0508
0475 0475	EX4 0489	04730324	0473 0473
0473 0473	0481 0475	04750475	04730474

04740473 04730475 0482 0473 04730481
Still removes 19 sets, or so.

28th May 1979

problem with ZED — zeros have come in from timer reset.

HTR1 — one reset → .D3

HTRφ — look for ~~0000~~ on reset
Then begin again @ ^{.D3}
(20 00)

HTR3 check — maybe problem twice.

HTR2 look @ both

Q2 just check.

QT " "

50Hz should be OK.

HTR1 just check.

Results so far

Dataset	Expect (1st runs)	Dates + Ions
HHR0	15,493	25 May 16004 (469) 23 May 15941 (469)
HHR1	40,004	25 May 41527 (1521)
1HR1	41,026	25 May 42106 (999) 22 May 42106 (999)
1HR2	? - night	23 May 1631 (19)
1HR3	1540	23 May 1601 (15)
Q1	37,708	21 May 42761 (4953)
Q2	50,264	22 May 56689 (6394)
50H4	88,301	22 May 93518 (999)

Results	15,493	v	15,535	—	HHR0 check
	40,004		40,006		HHR1 check
	41,026		41,107		1HR1 check
	?		1584		1HR2 check
	1540		1586		1HR3 check
	37,708		37,808		
	50,264		50,295		
	88,301		88,319		

HHR1 do today → mass. Check no other
 zeros. Disc error so .D3 bad 1st sector.

1HR1 Do again today — check zeros
 will have problem as 2 discs,
 probably. — disc error last 39 sectors
 so problem there.

50H4 } OK
 Q1 } should be alright.
 Q2 }

leaves HHR0 } some-time.
 1HR2 }
 1HR3 }

HHR0
 - 1HR1
 Q1
 Q2

DO
check Q1
Q2
IHIG again → MASS7.

tape IHIG } min transforms → temp sets
IHIG } as before.

PL073 use turnround a
+ chain.

found 0000 in DATA4 try end to see what
happens
should not matter.

MASS	=	HAR1	5197
MASS7	=	IHR1	5264

4th June 1979.

Data handling:

- 1) File to current JS by .JO: FILEPDP.
- 2) Use .JO: BEDRUN(N) to concat + remove DDDD, ~~SDDD~~ after check no zero's after just setting
- 3) Tape data → SAH101
- 4) Masses .JO: CFORTIME $\frac{C}{S}$.JO: FORTIME
- 5) Tape masses + lines → SAH202.
- 6) .JO: PAXCB for comp + brn Now .JO: PLOTJCB
- 7) .JO: FULLFFT for transforms
- 8) Variance _____
- 9) PAX transform — .JO: FFTTP
FFT PLOT

256—	Q0 ^a —	128	1HR0	512	wrong! 10H1
	Q1 —		50H0		10H2
	Q2 —				50H4
	5HR0				
	5HR1 —				
	10H0				
	50H1				
	50H2				
	50H3				
	1HR1				
	1HR1				

compress . PLOT.

This looks nice, but better to plot original + corrected transforms.

Add: i) after finished FT's with RESMEM

FTG/ LG (LKIN = 90th # ~~08~~ = l ~~UNIT1~~
12 ~~08~~ = f UNIT12
13 ~~08~~ = l UNIT13
14 ~~08~~ = l TRNS,
08 = PLOT etc).

LIBRARIES.

Change VARPLOT:

~~900~~

```
DO 900 I = 1, 256  
  READ (11, 901) F1(I)
```

```
901 F 11.4 or whatever
```

```
910 CONT
```

```
DO 920
```

```
920 CONT  
  DO 930 I = 1, 256  
    READ
```

before other read.
→

```
930 CONT.
```

```
DO 940 I = 1, 256
```

```
  FT(I) = ((F1(I) + F2(I) + F3(I))) / 3
```

```
940 CONT.
```

Then put formulas down.

This is from successful program.

Edits for 128 and 512.

6th June 1979.

Data 150H data 2-~~89~~

Edited .JO: FORTTIME

to .JO: FTIMETM for this time + mass.

So far can fourier plot last transform without smoothing and 21 terms of smoothed transform in .JO: FF PLOT.

Calls .LOAD: VPLOT256. Works for this.

Try to use this with fourier anal \rightarrow plot direct

- 1) original transform over 3 terms
- 2) end transform over 3 terms.

Error - falls below paper limit. Why?

Also a lot of jitter on transforms falls below limit because not writing An, Bn. Look @ this.

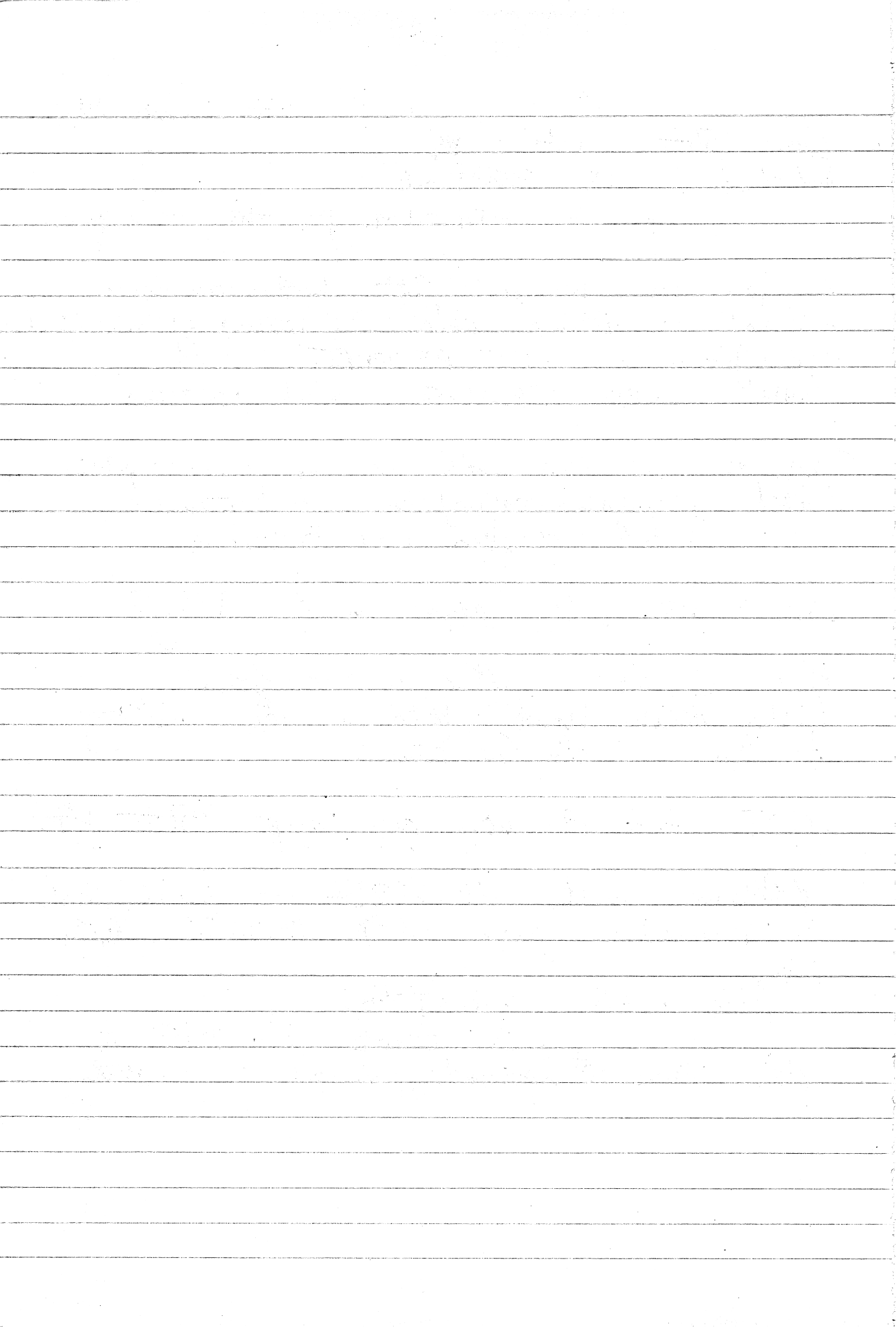
.PLOT 06.06.79 has all except 150H JTs.

Problem with VPLOT256 - have had to recompile from .VAR: PLOT256. Now

OK

Also made .PLOT255

and .LOAD: PLOT255 to plot terms 5 upwards, displaced slightly.



To .PLOTS (FFTS XXXX)

amp $S(2) \rightarrow$ DATA5125
~~DATA~~ DATANEW

| forgot in PLOT285 to change
 $S(20)$ to $S(5)$
doesn't really matter
- ignore 1st peak.

3rd/4th July 1979

transfers to SAH103

LA=2

00 00 6B

spec 2 as 9 3

Then 05 00 256

as 05 00 E0

LA=3

0C 00 E0

1C0

LA=4

13 00 96

256

LA=5

20 00 08

25E-256 LA=6

25 00 5E

2BC-25E LA=7

20 00 08

test LA=8

Computer went wrong again in exps,
so test on blue box.

Use DD1 @ 04 00

take program on DD2 and edit
to remove end block.

Then load with DEBUG and interpret.

Ed DD2 to 30 00

in wait loop

LDP # IN test vdu

LDA @

ASR

BCT VDUIN

otherwise keep waiting

LDP # IN+1

LDA @

AND # 17F

CMP # A'G (for go)

J
~~ONE~~ WAIT
~~ONE~~
 LDP # GMESS
 STP PΦ
 LDP # GMESS

XCH
~~XXXXXXXXXXXX~~ - misses a sector on disc
 change address but keep data.

write down address routine then
 LDP # DBEXEC
 XCH
 JMP STARTPRI

* first output no of sectors taken
 and address where fault found.

Edit parity check + no end block to
 30 00 A2 DD2
 Abs to 0A 00

Errors with CE. Attempt to load 85A2.
 Fail then here

$m \geq p8p < 1YY$ as below
 = $1 p6p \Phi$

/MM/YY HH.MM JBC FILE ADDR -- PAGE
 / p6p0

First try ghost 08, 70
 Can't set 01, 700KHz
 Probably because only 68 pages RAM. (08+68)
 OK.

try MAP → 4x RAM + ROM + ~~3x~~ 8 RAM
 ↓
 7000

Then as looking gave

	0B21	BAD	INT	∅	FFFF	80
ctrl A	-	-	-	-	-	89

Reload did not clear	-	-	80
ctrl A			81
"			89

Reboot, reload. MAP OK.
 STORE OK.

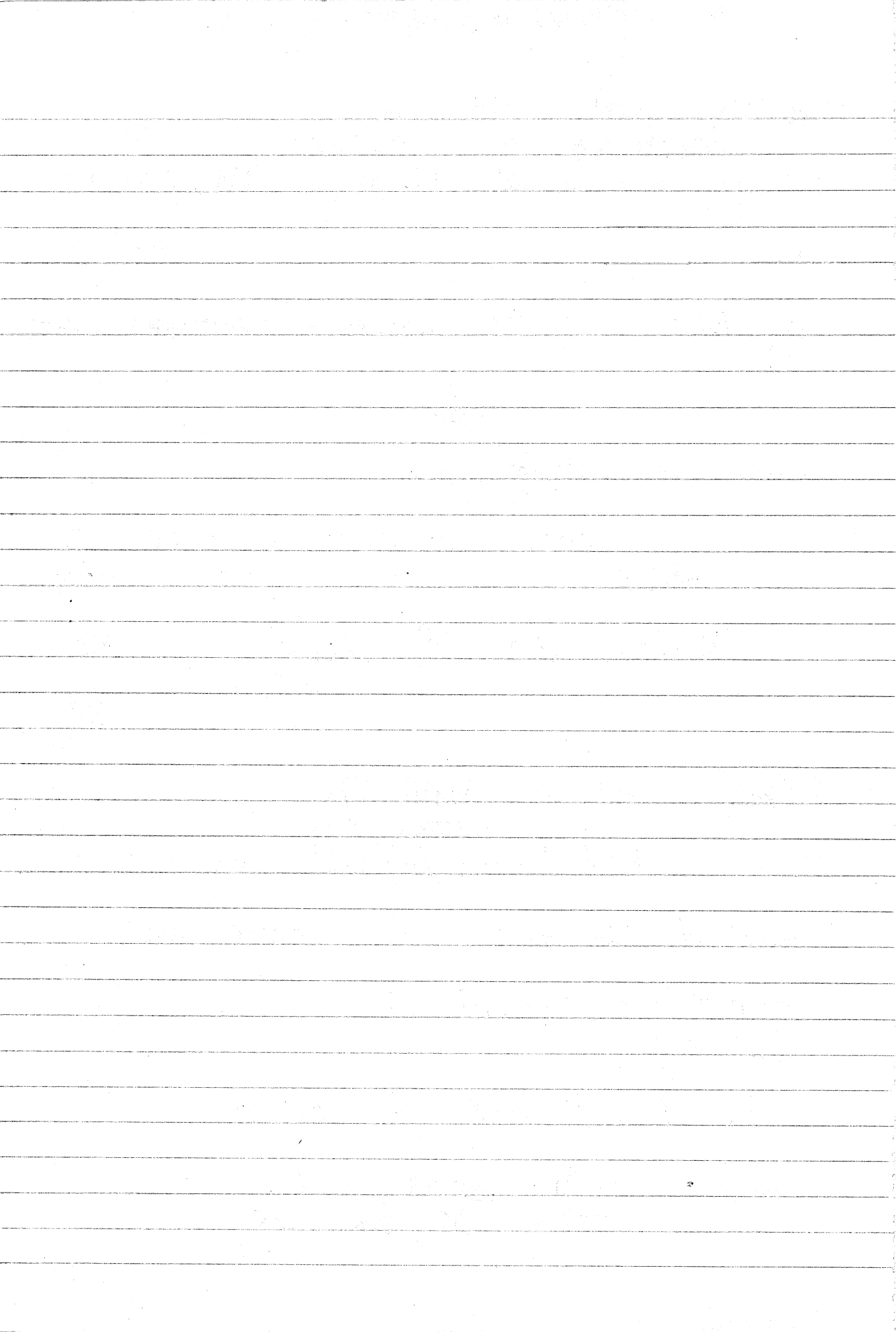
Then ctrl A (interrupt) and as above

Interrupt only problem on STORE test.

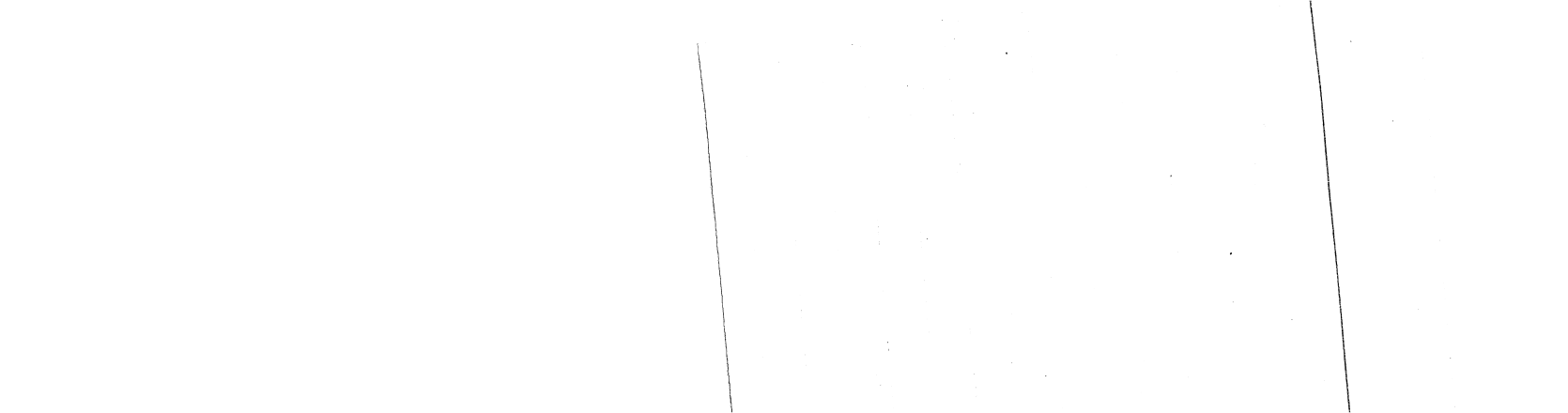
GHOST } also passed OK.
 CLOCK }

Why does it start ∅ 00-09

Wrong - MAP repeat X 6.
 STORE 1K, 2K, 4K





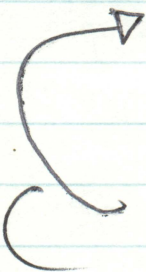


Failed I/O error

Aug?

LA=9	DD1	04	00	13-0	=13	904 1201 1,653
LA=10		06	00	2B-13	=18	
LA=11		08	00	BA-2B	=8F	
LA=12		14	00	27D-BA	=1C3	
LA=12		14	00		10	
LA=13		15	00		E0	} 25,221
LA=14		1C	00		D3	
LA= 15 16		24	00	280-27D	=03	
LA= 16 17		25	00	2A3-280	=13	
LA= 17 18		28	00	299-293	=06	
LA= 18 15		29	00	2E1-299	=48	

Failed I/O error



12 + 13 + 14 = DATA → MASS

- 10
 - 11
 - 16 15
 - 18 16
 - 18
- 1
 - 2
 - 3
 - 4
 - 5

Can use DD 1 provide skip 04 00 13 and 25 00 13

✓ LA = 19	06	00	E0	E0	328
✓ 20	0D	00	E0	1C0	
✓ 21	14	00	E0	2A0	
✓ 22	1B	00	E0	88	
failed	23	04	00	13	
fail	24	25	00	13	
✓	25	00	00	06	
✓	26	01	00	2B	

LA = 2
DD3 LA = 3
4
5
6
7

00 00
05 00
08 00
13 00
20 00
25 00

6B
E0 258
E0 100
96 216
02 21E
5E 28C

DD1 8
9

09 00
25 30

14
1E

DD5 10
11
12
13

00 00
05 00
06 00
07 00

03
06
02
09

DD1 LA = 2
3
4
5

06 00 E0
0D 00 E0
14 00 E0
1B 00 88

~~328~~ E0 328
100
2A0
328

DD4 6

00 00 26

DA135010 6/7th Nov '79

Transfer DD3
 00 00 40
 22 00 04
 02 00 55
 06 00 8D

LA = 2 ^①
 LA = 3 ^②
 LA = 4 ^③
 LA = 5 ^④

DD4
 00 00 26 LA=6
 04 00 4B LA=7
 08 00 6F LA=8
 0C 00 95 LA=9
 10 00 89 LA=10
 14 00 E0 LA=11
 18 00 105 LA=12
 1C 00 12A LA=13
 20 00 150 LA=14

check.

⑤ 25 00 30,759-29,493
 ⑥ 30 00 31,790
 ⑦ 32 00 32,021
 ⑧ 33 00 39,741

2,000 = 27 sectors - 1,300 = 20
 20
 10
 8,000 = 40

LA=15
 LA=16
 LA=17
 LA=18

ditto. Retry 19 (16) 30, 00, 20 disc error @ 14 sectors } same probably end of ds.

ditto. Retry 20 (17) 32 00 only did 03 disc error } same
 33 00 85 disc error

7 214
 12 360
 198
 270
 16 26
 360 x 101
 224
 359 = E0
 n = 8 x 16 + 5

23 Nov 1979

Look at TQD } same beginning or different?
TQDS }
? concatenate.

Check transfers:

LA=2 DD5 00 00 03? tried 3 separate sectors
see where problem occurred

LA=3 05 00 06

LA=4 06 00 02

LA=5 07 00 09

LA=6 DD9 (00 00 19,536) 40,000 ~ 2BC
00 00 Eφ 20,000 ~ 180

~~01 00 19,536~~
~~02 00 19,536~~
~~03 00 19,536~~

LA=7 01 00 E0 1Cφ for safety.

LA=8 DD8 00 00 { 23,941 - 19,536 = 4,405 (2000=26) ≈ 30
8φ

LA=9 disc error 03 } 05 00 { 24,158 - 23,941
10 same (DD) } φ5

LA=10 06 00 { 25,190 - 24,158 1, 03 2
2φ

as 10 00 E0 LA=12 } 10 00 { 24 (42,255 - 25,190)
17 00 80 say LA=13 } 17,065 (160)
after 4A tracks } (? make longer / think OK)

DD6 (00 00 25,636 = 240)

LA=14 as 00 00 E0

LA=15 07 00 E0 1Cφ

LA=16 0E 00 80 OE OF 7φ

20 00 { 26,632 - 25,660 ~ 1,000
2φ

Did 1φ LA=18

LA=21 21 00 10 Cont over
line error 21 off of would CE in knot?

stopped
LA=19
try 0c 00 A0
LA=20 01 00 00
check DATA (52)
check DATA DD4 (47)

1st DD3 done and massed → TQO

to do LA=2 check end
LA=3 check contents
LA=2-5 Surs 1350°Cg. (DD3)

(DD4) } LA=6-14 as pulse LA 1250°C as g 1st spec?
check spec no, and length LA=14
LA=15-18 check ends because no term.
in last sector. All pulse LA.
rebnis 19, 20 check same length + end.

transfer DDS 00 00 2115 check in lab book 1st term spec

05 00 06
06 00 02
07 00 09 } 1st term spec.

DD9 00 00 19536 estimate } search ends
Xle say

DD8 00 00 23 etc } search ends.
05 00
08 00
10 00

DD6 00 00 } search ends
20 00
25 00
38 00 05
Also pulse LA 1st spec.

Then redo DD1 00 00 06 } same spec pulse
01 00 28
06 00 28 }
+ Nizal's check should be OK as
→ MASS I PPL

LA=23 25 00 30,759 - 26,632 error @ 33 28 1c6
 4,127 = cφ
 LA=26 30 00 30,759 from 31,790 = 1,031
 2φ
 LA=36 32 00 32,021 - 31,790 = 230
 08
 33 00 39,741 - 32,021 = 5,720 = cφ
 LA=37 38 00 done
 05 say 08,

Then DD1

00	00	06
01	00	2B
06	00	20
07	00	E0
0E	00	E0
15	00	E0
1C	00	68
04	00	13/14
25	00	13/14

LA=27
LA=28
LA=29
100 LA=30
1E0 LA=31
2C0 LA=32
328 LA=33
? } Ni3Al?
? }

LA=25 28 08 60 won't

Programs transferred.

DD5 CA=2
 3
 4
 5

00	00	03	/	3
05	00	06	/	4
06	00	02	/	5
07	00	09	/	6

DD9 CA=6
 CA=7

00	00	E0	/	1
07	00	E0	/	2

(long) DA9402R2

DD8 CA=8
 9
 11
 12
 13

00	00	80	/	3
05	00	03	/	4
06	00	20	/	5
10	00	E0	/	6
17	00	44	/	7

also 10 (longer but terminated).

DD6 CA=14

00	00	E0	/	X
07	00	E0	/	X
0E	00	80	/	stopped
20	00	10	/	? stopped 27 lines.
21	00	10	/	stopped
21	0E	0E	/	stopped

DA9404R3
 CA=20 07 00 00
 CA=19 0E 00 10 stopped up

same just odd

same just odd

X23 25 00 00 stopped 33?
 X24 } 28 1C 60, 28 0E, 60 } wrong place anyway
 X25 }

Q as req. OSOK

X26	30	00	20	error	how long, 40 error.
X36	32	00	08	error	
37	38	00	08	error	CA=38 33 00 00 same
					CA=39 33 1E 00 just odd

DD1 CA=27

00	00	06	/	DA94A1P1 1
01	00	2B	/	2
06	00	20	/	1
07	00	E0	/	2
0E	00	E0	/	3
15	00	E0	/	4
1C	00	68	/	5
04	00	14	/	DA135060
25	00	14	/	DA LEFT

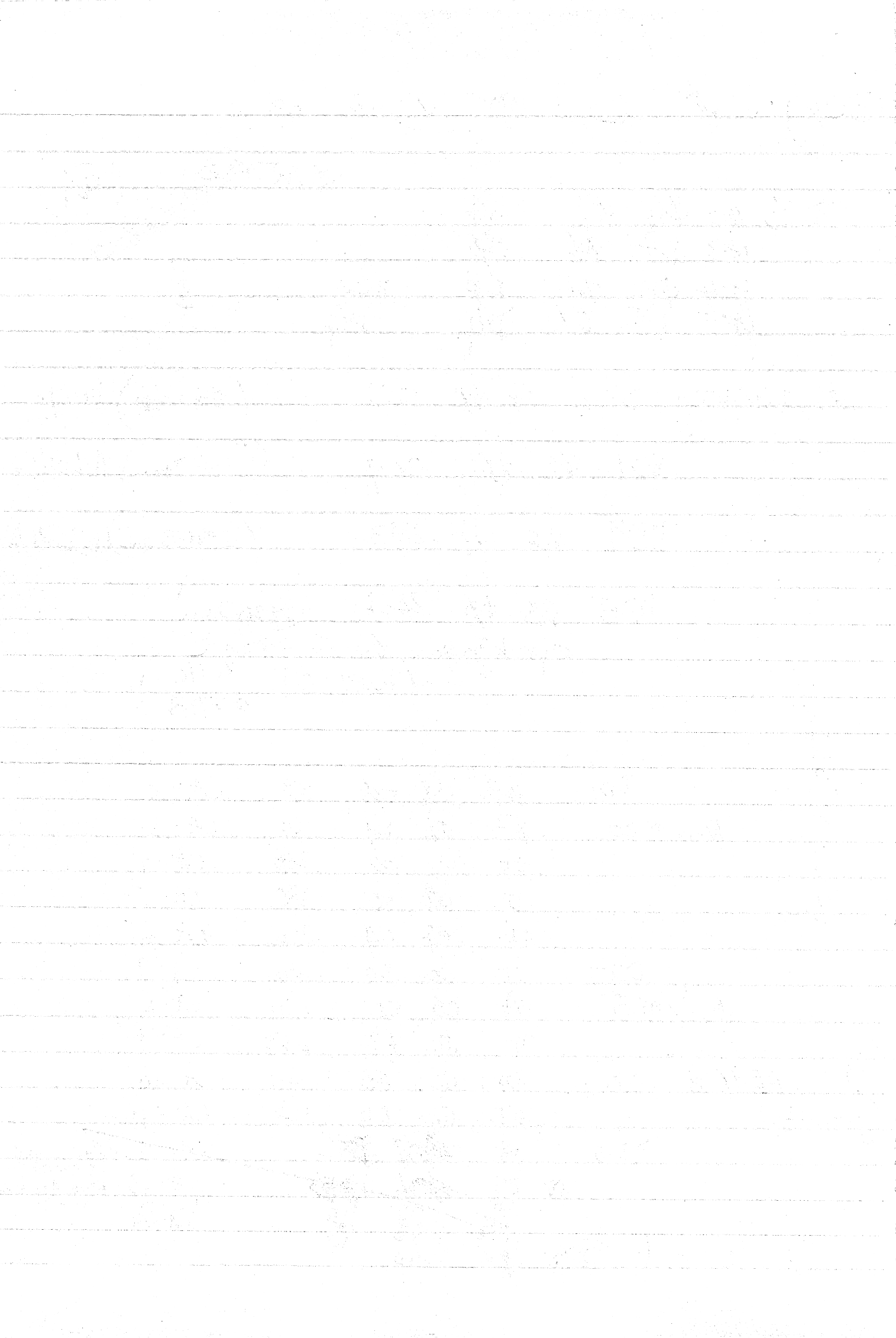
File as

.DATA100 (m.c.1) DD3

- .DA94Q1P1
- .DA94Q2R2
- .DA94Q3P2
- .DA94Q4R3
- .DA1350Q0
- .DA135010

- DD4+DD5
- DD7 DD8
- DD4 ~~DD4~~ ✓
- DD6, DD4 end. DD6
- DD1 ob on ✓
- DD3 ✓

.DA1350Q0: FOUR line 338/339 odd 1148 etc 681



251 from 1C 00

? from 88 88 say 2⁸~~8~~

88 88 Eφ
φ7 88 Eφ
0E 00 Cφ

LA=2
LA=3
LA=5

Eφ
93

1C φφ rφ
23 φφ vφ
2A φφ 91

1Cφ LA=6
25 LA=7
LA=8

160
64
224
131
355 355
x 50 60
17,750 1300

DD4 07 00 4D LA=9

94 → Eφ

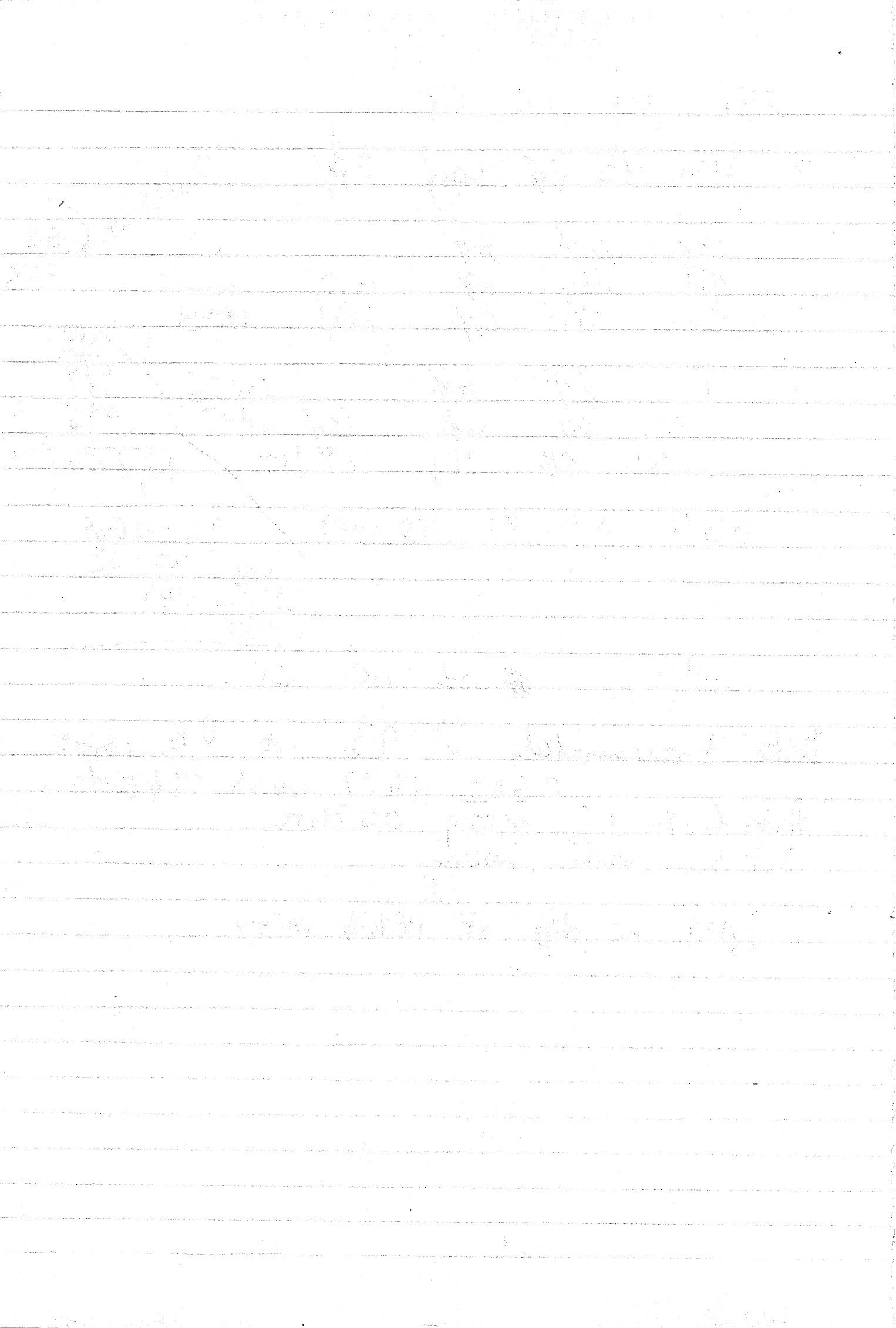
04 0C 4C
07 (14)
0B

LA=4 ~~OB~~ 0B 0C 4C

Data 3 terminated @ 93 to 2B correct

Data 4 to 2C wrong 0682 0677 0458 0640 etc
Data 5 2C wrong 0573 etc

LA=9 no diff with PE168 : DATAU



Filed as	MCRAL	DBS	Jants	DATA
✓ MCRAL 0	MCRAL 0	DD5	2AP	DATA 2 → 5
MCRAL 20	MCRAL 20	DD1	3CP	DATA 2 → 6
MCRAL 5	MCRAL 5	DD9	233	DATA 7 → 9
PE168	PE168	DD4	12D	DATA 10, 11
PE16C21	PE16C21	DD3	2F4	DATA 2 → 5
MCRAL 12	MCRAL 12	DD8	Whom + 251	DATA 23, 6, 28

MCRAL 20
 DATA 3 OK 182, 257 8888 x3 and x2
 DATA 4 225 8888
 DATA 5 OK
 DATA 6 OK
 MASS2 (6571)
 MCRAL 20 5,006 60seus

MCRAL 5
 DATA 7 247, 248 (x2)
 DATA 8 OK
 DATA NCA5 30, 176 40seus
 MASS (4102)

MCRAL 12
 DATA 2 OK
 DATA 3 OK
 DATA 6 |
 DATA 7 OK
 DATA 8
 DATA NCA12 52, 172 60seus
 MASS1 (7633)

PE168
 DATA 10 OK
 DATA 11
 DATA PE8 15, 697
 MASS4 (2028)

PE16C21
 DATA 2 OK
 DATA 3 OK
 DATA 4 331
 DATA 5 43
 DATA PE2 41,006 50seus
 MASS3 (6526)

MASS
 MASS1
 MASS2
 MASS3
 MASS4

Data's
 Masses

Handwritten notes at the top of the page, including the word "Introduction" and several lines of text.

Second section of handwritten notes, starting with "The first part" and continuing with several lines of text.

Third section of handwritten notes, starting with "The second part" and continuing with several lines of text.

Fourth section of handwritten notes, starting with "The third part" and continuing with several lines of text.

Fifth section of handwritten notes at the bottom of the page, starting with "The fourth part" and continuing with several lines of text.

RU RELOAD
datasets skipped \emptyset \rightarrow
pos \rightarrow

RU DUMP
datasets skipped \emptyset \rightarrow

RU SALLY
as normal

Further datasets

<u>Tennaries</u>	1st quench/mm	29.06.79	1816,000	DATA1Q0S
	" /mm	03.07.79	40,000	DATA1Q0P
Attempt preheat	"	04.07.79	1874w 3,000	DA94Q1P1
New run	"	05.07.79	42,255	DA94Q2K2
Preheat	"	06.07.79		DA94Q3P2
Run	"	09.07.79	40,000	DA94Q4K:
	2nd q 1350°C	18.08.79	49/03	DA1350G0P
	2nd q 5hrs	failed		
	2nd q 1hrs	25.08.79	3,800	DA1350P1P

Californ Ni3Al DATA1PAC (2 runs) + DI1PACFUL (all).

Comp 90

PLIXCLG LIST=S NETLIB.SALWPRG (STAT3).

SYST.FORTLIB + GRAPHICS.FORTLIB-TEXLIB.LOAD.

2 MASS HTR1
HTR1

200K

mass

lines

no ions/exp

no ions/comp

MA1350Q0

5681

40,103

45,435(5276)

~~MA1350Q0~~ 927

10s 100K

McMbs. Sal 13501

<u>Program Name</u>	<u>Function</u>	<u>Time</u>	<u>Linstore</u>	<u>IonParas</u>
FILEPDP	PDP → IBM		40K	—
JO: ZEDRUN _n	Concat.	default	50K	—
JO: CFORTIME	Time → Mass.	17s	100K.	16,000
		40s	"	42,000
		50s / (min 15s (fm))	"	50,000
		1min 4s.	"	70,000
		1min 15s.	"	95,000
		i.e. ~ 1s/1000lms	"	
JO: PLOTJOB (PLIE)	Comp + Bore.	32s.	100K.	16,000
		60s.	"	42,000
		1min 16 / 1min 21	"	50,000
JO: FULLFFT	FFT → term	24s	100K	16,000
		48s - 54s	"	40,000
		1min 35s	"	50,000
				93,000
JO: FFT PLOT	FFT PLOT FFT's		100K	256 term
JO: PLOT	Res. to plotter	default	40K.	—
JO: PHXVAR	Variance.	3s.	100K	~ 20,000
Tape jobs		2s	100K.	

T, Z
now 120

Data handling sequence

- 1) CE → PDP/11/45.
PDPLINK DISC#1 38 00
- 2) .JO: FILEPDP SA#103 (graphics tape) → current ds.
As DATA LA, LA = label no.
Default - must create DATA LA first.
- 3) DATA LA_n → DATA X: LA_n. pds.
- 4) DATA X → SA#101
- 5) Using ZED check only one set of leading spaces and no extras except trailing DDD.
- 6) Concat using .JO: ZEDRUN_n. → .DATA
- 7) DATA → .MASS using .JO: CFORTIME
calling .JO: FORTIME
(: FTIMETM for time + mass)
- 8) MASS → SA#102 as .MASS X
having found no lines with EDIT.
- 9) COMP + BREN — .JO: PLOTJOB to .PLOT
- 10) FFT — .JO: FULLFFT.
- 11) PLOT FFT'S — .JO: FFTPLOT also .PLOT.
- 12) Comp + BREN + FFT — .JO: PLOT,
VAR — .JO: PHXVAR

<u>data</u>	<u>mass</u>	<u>lines</u>	<u>no vis/exp</u>	<u>no vis/conv</u>
Q1	Q1	25347	37,708	4953
Q2	Q2	7088	50,264	6394
HHR0	HHR0	2002	15,800	469
HHR1	HHR1	5197	40,004	1536
IHR1	IHR1	5264	41,026	1000
IHR2				
IHR3				

TQ0

112 | data 40,000
 50 | mass

Continuation of dataset catalogue

<u>data</u>	<u>mass</u>	<u>lines</u>	<u>no ions/exp</u>	<u>no ions/comp</u>
DATA Q0	MASS Q0	5472	41,003	43,436
1HR0	1HR0	3577	27,591	28,473
5HR0	5HR0	5309	39,639	41,808
5HR1	5HR1	5672	43,502	45,085
10HR	10HR	5634	42,765	44,353
10H1	10H1	9110	70,030	72,871
10H2	10H2	16471	81,502	83,756
50HR	50HR	1914	14,489	15,214
50H1	50H1	5849	44,233	46,500
50H2	50H2	5340	40,529	42,523
50H3	50H3	6317	45,543	
50H4	50H4	11691	88,301	93,518
150H	150H	6427	50,350 or 47,639	51,401
1THR	1THR		5199 4122	
1TH2	1TH2			
1HIS	1HIS	4801	38,399	

2626
2180

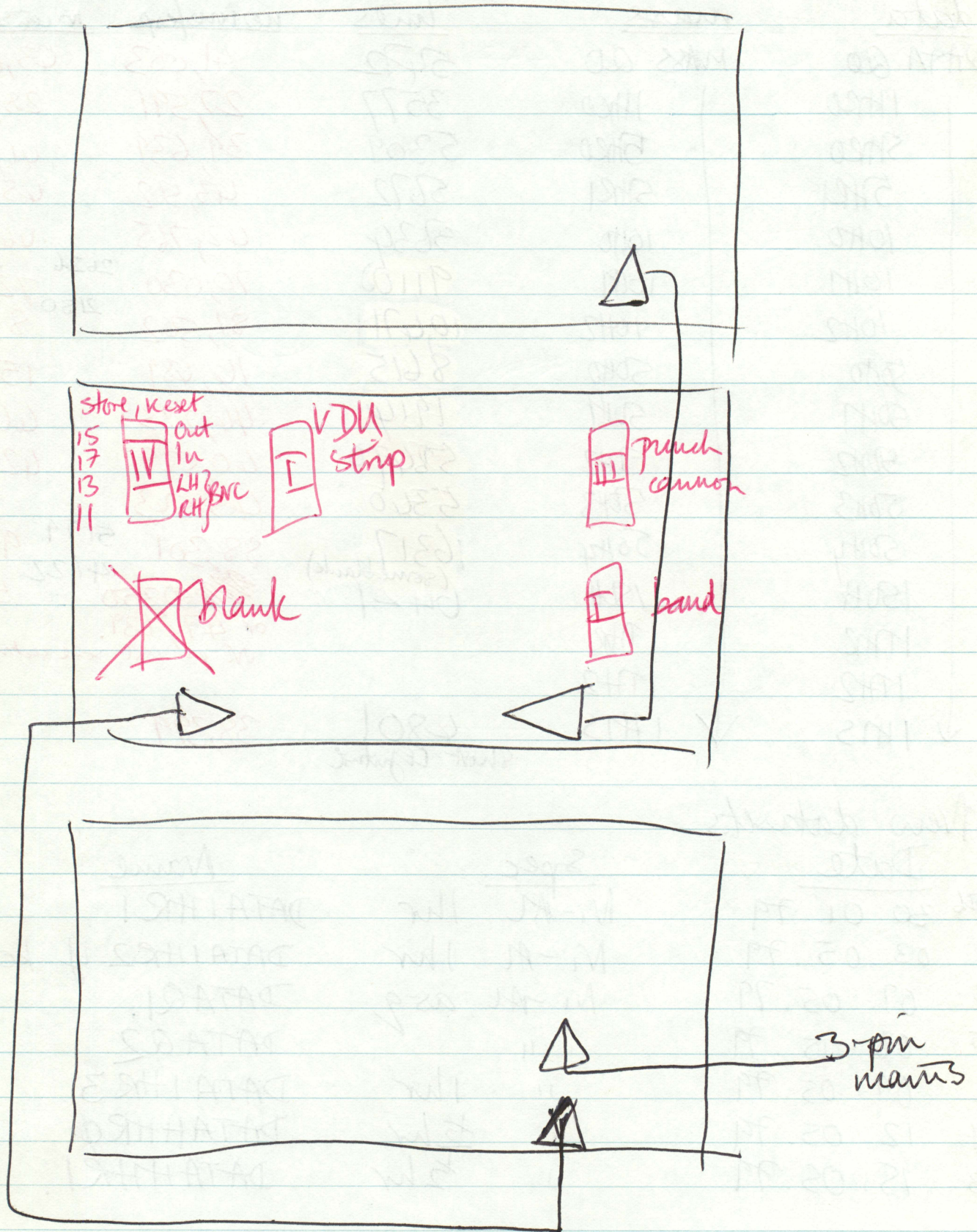
or 47,639.
OVC as 'lost some vectors.

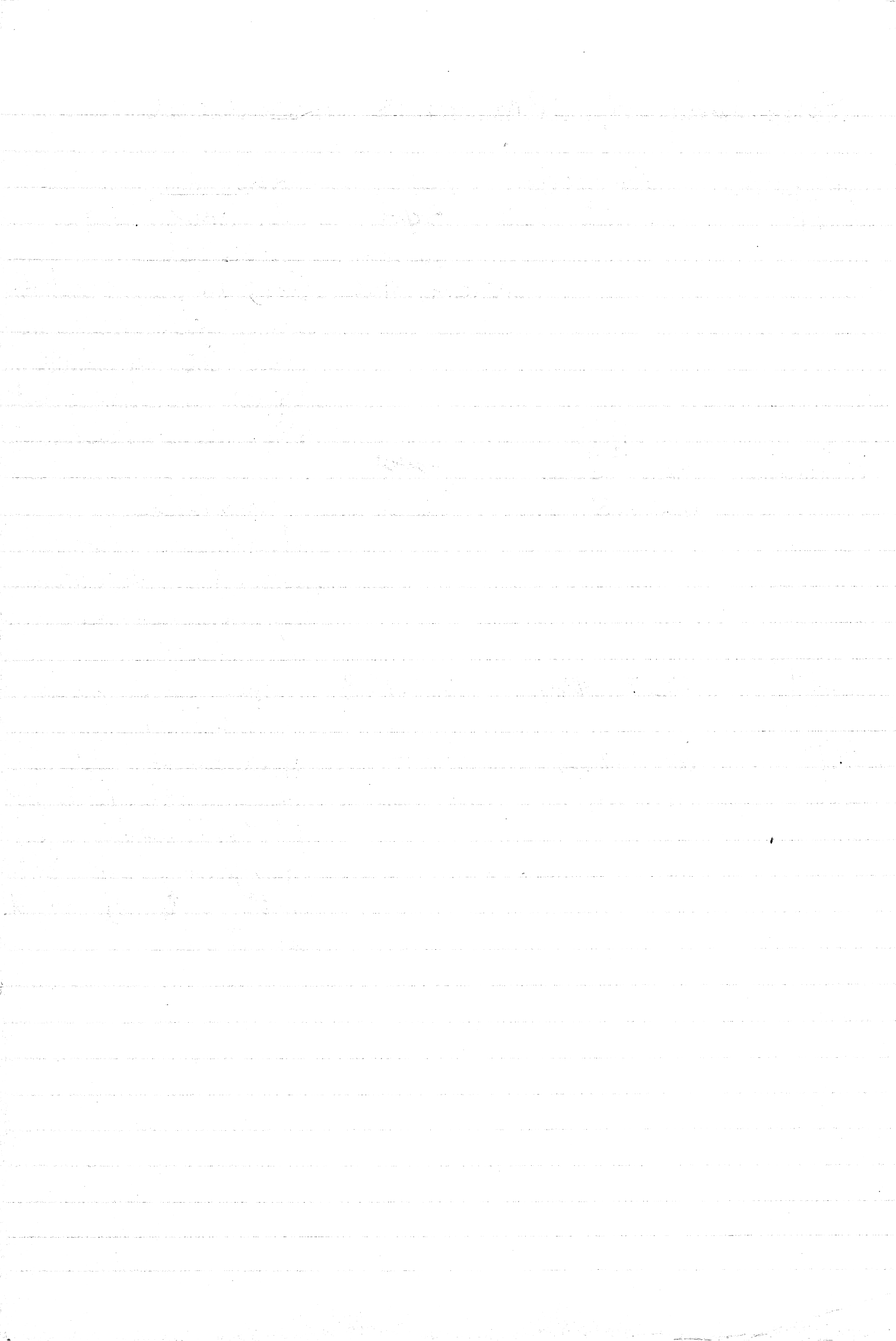
short-LE future

New datasets.

	<u>Date</u>	<u>Spec.</u>	<u>Name</u>
DD1/DD6	30.01.79	Ni-Al 1hr	DATA1HR1
DD5	03.05.79	Ni-Al 1hr	DATA1HR2 if kept.
DD8	02.05.79	Ni-Al as-g	DATAQ1.
DD5	08.05.79	"	DATAQ2
DD9	09.05.79	" 1hr	DATA1HR3
DD9	12.05.79	" 1/2hr	DATAHHR0
DD8	15.05.79	" 1/2hr	DATAHHR1.

CE label diagram.





Summary of IBM errors encountered

<u>Language</u>	<u>On-code</u>	<u>SSC</u>	<u>Meaning</u>
PL/1	IBM 911 I 9050	80A job run increase store	An abend has occurred. Generally run out of array store but no overwrite of data. Stopped in array but step - no unknown
FORTRAN	User ^(NO) 240 IEF 450 I	OC5 OC5	SEVERE. Unable to detect parameter direction e.g. wrong param in do-loop. cpu time limit exceeded
PL/1	CC = 2000	SC = 083	cpu time limit exceeded
PL/1	IBM 204 I 0084	—— not run.	Undefined file e.g. get list for file not made in program, or file with not DD stmt in JCL.

