HBL 039 77.139

FN	TI (1/32 seconds) 8/11/77	
58	D065 C49F	
	3496330399	
60	D065 E89F	2400_{16}
	3496339615	9216_{10}
62	D066 0C9F	2400
	3496348831	9216
64	D066 309F	2400
	3496358047	9216
66	D066 549F	2400
	3496367263	9216
68	D066 789F	2400
	3496376479	9216
70	D066 9C9F	2400
	3496385695	9216
0	D066 C09F	2400
	3496394911	9216
2	D066 E49F	2400
	3496404127	9216
4	D067 089F	2400
	3496413343	9216
6	D067 2C9F	2400
	3496422559	9216
8	D067 509F	2400
	3496431775	9216
10	D067 749F	2400
	3496440991	9216
12	D067 989F	2400
	3496450207	9216
14	D067 BC9F	2400
	3496459423	9216
16	D067 E09F	2400
	3496468639	9216
18	D068 049F	2400
	3496477855	9216
20	D068 289F	2400
	3496487071	9216
22	D068 4C9F	2400
	3496496287	9216
24	D068 709F	2400
	3496505503	9216

$3496280064_{10} = D0650000_{16}$

$50335_{10} = C49F_{16}$

$2400_{16} = 9216$

note:

9216 ⇒ 288 sec full frame time

TI is in 32th of a sec

i.e. 9216/32 sec = 288

or 3496.330399/32 sec

since start

= 109250325. sec

= 30350.09027 hours

= 1264.587095 days

≃ 3.46 years

8/12/11

FN	SI byte 1	byte 2	byte 3	byte 4	comments
58	0000 0000	0001 0000 (5 7 3)	0000 0000	0010 0100 (6 5 4 3)	eng frame number = 2 (010) Data good (4)
59	"				dM = 4 0100
60	"				
61	"				
62	"				
63	0000 0000	0001 1000 (5 4 3)	0000 0000	0010 0100	eng frame number = 3 (011)
64	"				Data is good (4)
65	"				dm = 4 0100
66	"				
67	"				
68	"				
69	"				
70	"				
71	"				
0	0000 0000	0000 0000	0000 0000	0010 0100	data is good
1	"				dm = 4
2	"				eng frame # = 0
3	"				
4	"				
5	"				
6	"				
7	"				
8	"				
9	0000 0000	0000 1000	0000 0000	0010 0100	eng frame # = 1 (001)
10	"				dm = 4
11	"				data good
12	"				
13	"				
14	"				
15	"				
16	"				
17	"				
18	0000 0000	0001 0000	0000 0000	0010 0100	dm = 4
19	"				data good
20	"				eng fram # = 2
21	"				
22	"				
23	"				
24	"				
25	"				

comments: next set sts at 27 # = 3
every 9 numbers? 0 - 8
need more sets of good data 9 - 17
18 - 26
27 - 35
35 - 43

8/12/77

FN	LT light time	Δ LT	GMT-EVT
58	796631		796632
59	796642	11	796643
60	796654	12	796654
61	796665	11	796666
62	796676	11	796677
63	796688	12	796689
64	796699	11	796700
65	796710	11	796711
66	796722	12	796723
67	796733	11	796734
68	796744	11	796745
69	796756	12	796756
70	796767	11	796768
71	796778	11	796779
0	796789	11	796790
1	796801	12	796802
2	796812	11	796813
3	796823	11	796824
4	796835	12	796836
5	796846	11	796847
6	796857	11	796858
7	796869	12	796870
8	796880	11	796881
9	796891	11	796892
10	796903	12	796904
11	796914	11	796915
12	796925	11	796926
13	796937	12	796937
14	796948	11	796949
15	796959	11	796960
16	796970	11	796971
17	796982	12	796983
18	796993	11	796994
19	797004	11	797005
20	797016	12	797017
21	797027	11	797028
22	797038	11	797039
23	797050	12	797051
24	797061	11	797062
25	797072	11	797073

Comments

LT = 796.631 seconds
= 13.27718333 min.
at 186000 miles/sec
= 148,173,366 miles

S/C receiving at .011 sec
every 1.44 sec
⇒ 186,000 × .011 miles/1.44 sec

= 14.208333 m/sec

= 51,150 mph

8/12/77

FN	TI (seconds)
58	
59	109260325 sec
	} 288 sec
61	109260613
63	109260901
65	109261189
67	109261477
69	109261765
71	109262053
1	109262341
3	109262629
5	109262917
7	109263205
9	109263493
11	109263781
13	109264069
15	109264357
17	109264645
19	109264933
21	109265221
23	109265509
25	109265797

comment: convert TI to seconds

$$\frac{N_{10}}{32_{10}} = \frac{A_{16}}{20_{16}}$$

i.e. $\frac{3496330399}{32} = 109260325$

$\frac{D065C49F}{20} = 6832E24.F8_{16}$

$= 109260325_{10}$

8/15/77

HBL014 file 119
122
125
143 has some

- $\sqrt{359}$ prime

HBL017 file 218 is 32 bit rat format 3
seems to have some

HBL018 file 242 also 32/3
file 20 32/3
23 32/3
29 16/3
38 32/3
44 16/3
104 8/3
110 8/3
125 8/3
209 8/3
335 8/3
359 8/3
365 8/3
371 8/3
377 8/3
383 8/3
386 8/3
395 8/3
398 8/3
407 8/3
416 8/3
419 8/3
428 8/3
431 8/3
440 8/3
461 8/3
464 8/3
479 8/3
482 8/3
485 8/3
593 8/3
596 8/3

8/15/77

HB2018

file	bitrate / format
599	8/3
602	8/3
605	8/3
608	8/3
614	8/3
620	8/3
623	8/3
635	64/3
638	64/3
641	64/3
650	16/3
683	64/3
698	8/3
713	8/3
728	8/3
749	8/3
761	8/3
779	32/3
803	16/3
809	16/3
824	8/3
833	8/3
848	8/3
866	8/3
887	8/3
899	8/3
920	8/3
935	8/3
938	8/3
962	8/3
980	16/3
989	8/3
1007	8/3
1013	16/3
1016	16/3
1019	8/3
1025	8/3
1070	8/3
1088	16/3
1103	16/3

8/15/77

HBL018	1148	16/3
HBL020	17	16/3
	35	16/3
	68	32/3
	83	16/3
	86	16/3
	113	16/3
	128	32/3
	155	8/3
	200	16/3
	218	16/3
	227	8/3
	233	16/3
	236	8/3
	260	8/3
	293	32/3
	314	16/3
	326	16/3
	341	32/3
HBL021	5	8/3
	29	32/3
	53	32/3
	74	32/3
	98	32/3
	134	16/3
HBL022	26	8/3
	29	8/3
	44	16/3
	47	8/3
	50	8/3
	62	16/3
	65	16/3
	77	8/3
	80	8/3
	86	8/3
	293	16/3
	344	8/3
	347	8/3
	362	16/3
	365	8/3
	371	8/3

HBL022	383	8/3
	386	8/3
look at		
HAL011	116	8/3
HAL014	74	16/3
	77	16/3
	395	16/3
	431	16/3
	452	16/3
	500	16/3
	533	16/3
	593	8/3
HAL015	20	8/3
	38	16/3
	41	8/3
	206	8/3
	218	8/3
	245	8/3
HAL017	149	16/3
HAL018	86	8/3
	116	16/3
	128	8/3
	146	16/3
	158	16/8
	176	8/3
	194	8/3
	221	16/3
	227	16/3
	248	16/3
	257	16/3
	263	16/3
	269	8/3
	275	8/3
	293	16/3
	296	8/3
	302	8/3
	305	16/3
	308	8/3
	329	8/3

8/15/77

HAL018	374	8/3
	392	16/3
HAL019	41	8/3
	65	8/3
	83	16/3
	89	8/3
	92	8/3
	101	16/3
	107	16/3
	116	8/3
	128	16/3
	131	8/3
	155	16/3
	164	8/3
	167	16/3
	170	8/3
	173	16/3
	218	8/3
	251	16/3
HAL020	8	16/3
	29	8/3
	44	8/3
	47	8/3
	50	8/3
	86	8/3
	98	16/3
	119	8/3
	137	8/3
	164	16/3
	173	8/3
	185	8/3
	212	8/3
	236	8/3
	263	16/3
	290	16/3
	302	16/3
	305	8/3
	308	16/3
	338	16/3
	350	16/3
	359	8/3

HAL021	5	16/3
	20	8/3
	29	8/3
	32	8/3
	47	16/3
	62	16/3
	92	8/3
	107	8/3
	110	16/3
	119	8/3
	134	8/3
	146	16/3
	149	16/3
	161	8/3
	170	8/3
	197	8/3
	209	8/3

and on & on ↓

increase file # field

0 1 2 3 4 5 6 7 8 9 A B C
10 11 12

8/15/77

3 C
0011 1100
7

C GETLIB goes from old notation to new one

DREAD (CATUNI, RECORD, DATA)
opens up the catalog

i.e.
CATUNI = 49
//FT49F001 DD DSN = M2.ZBGEM.SD002.HBINDEX, DISP=SHR

i.e
TEMP8 = TPNAME = HB0203
SATID = TEMP1(2) = B
TEMP1 = HB0203XX
⇒ OFFSET = 1800 if A ⇒ OFFSET = 1125
INSER = 0
ATEMP1(4) = TEMP1(3) = 0 1000
index = 0 + (0 - 200000F0) * weight(1)

//* DM7 THISDATE
// EXEC FORTRAN
//SOURCE.SYSIN DD *
C this program reads the Hebios index
COMMON / INPUT / DATA(40))
INTEGER*4 CATUNI, DATA
CATUNI = 49
RECORD = 1125
CALL DREAD (CATUNI, RECORD, DATA)
WRITE(6, 100) DATA
100 format(1X, 20I4)
STOP
END
// EXEC LINKGO, REGION.GO = 100K

8/15/77

// DM7 TAISDATE
// EXEC TAPESCAN, VOL=HBLØ18, PARM=(LIST1, NOHEX)

HALØ14 file 25 Hdr = HA011301
26 HA011302

DATASTOR gets DATA

% Delete 100, LAST
% INSERT 100, 100
- $input DT='HALØ14', NF=25, DSN='HAØ113Ø1', $end
- $input NF=26, DSN='HAØ113Ø2', $end

I4 how many bytes in I4

ans 4

238

how is it stored

1 byte = 8 bits

0-F 0-F 0-F 0-F base 16

A 4

F0 F1 F2

8/15/77

DMT data	file	HBL018DSN	bit rate/format
HBL014	48	HB0068 08	8/3
HBL017	73	HB010404	32/3
	81	HB010601	32/3
HBL018	7	HB010703	32/3
	8	HB010704	32/3

---

only 8/3 recorded from here

HBL018	35	HB011805	HBL018	207	HB013510
	37	HB011807		208	HB013511
	42	HB011904		233	HB013613
	70	HB012101		238	HB013618
	112	HB012801		243	HB013623
	120	HB012809		250	HB013701
	122	HB012811		254	HB013705
	124	HB012813		275	HB013812
	126	HB012815		278	HB013815
	128	HB012817		283	HB013905
	129	HB012818		289	HB013911
	132	HB012821		296	HB014005
	133	HB012822		300	HB014009
	136	HB012825		307	HB014103
	139	HB012901		312	HB014108
	140	HB012902		313	HB014109
	143	HB012905		321	HB014201
	144	HB012906		327	HB014207
	147	HB012909		330	HB014210
	154	HB013101		336	HB014216
	155	HB013101		340	HB014220
	160	HB013107		342	HB014222
	161	HB013108		357	HB014403
	162	HB013109			
	198	HB013501			
	199	HB013502			
	200	HB013503			
	201	HB013504			
	202	HB013505			
	203	HB013506			
	204	HB013507			
	205	HB013508			

8/16/77

$4800_{16} = 18432$ /32 sec
$\Rightarrow 576$ seconds
$-6809_6 = -26624$ 1/32 $\Rightarrow -832$ sec

HA014 file 198
75.212 record 2

TI = 54DF629F = 1423925919 in 1/32 seconds
$\Rightarrow$ 44497684.97 seconds
seems odd it would not be a multiple
54DFAA9F = 142394435 1
$\Rightarrow$ 44498260.97 second
Δ = 576 seconds

	TI seems to vary	Δ TI	
6	54DF629F		
8	54DFAA9F	4800_{16}	
10	54DFF29F	4800	
12	54E03A9F	4800	
14	54E0829F	4800	
16	54E0CA9F	4800	
18	54F0129F	-6800	
20	54E05A9F	4800	6
22	54E0A29F	4800	
24	54E0EA9F	4800	
26	54E1329F	4800	
28	54E17A9F	4800	
30	54E1C29F	4800	
32	54E10A9F	-6800	
34	54E1529F	4800	
36	54E19A9F	4800	
38	54E1E29F	4800	

8/16/77

	TI	ΔTI	
40	54E2 2A9F	4800	
42	54E2 729F	4800	6
44	54E2 BA9F	4800	
46	54E2 029F	-6800	
48	54E2 4A9F	4800	
50	54E2 929F	4800	
52	54E2 DA9F	4800	
54	54E3 229F	4800	7
56	54E3 6A9F	4800	
58	54E3 B29F	4800	
60	54E3 FA9F	4800	
62	54E3 429F	-6800	
64	54E3 8A9F	4800	
66	54E3 D29F	4800	
68	54E4 1A9F	4800	
70	54E4 629F	4800	6
file 198 record 3			
0	54E4 AA9F	4800	
2	54E4 F29F	4800	
4	54E4 3A9F	-6800	
6	54E4 829F	4800	

8/16/77

52 bytes / half frame

8 bits/byte = 416 bits

	TI	ΔTI	
8	54E4CA9F	4800	
10	54E5129F	4800	
12	54E55A9F	4800	6
14	54E5A29F	4800	
16	54E5EA9F	4800	
18	54E53 29F	-6800	
20	54E57A9F	4800	
22	54E5C29F	4800	
24	54E60A9F	4800	6
26	54E65 29F	4800	
28	54E69A9F	4800	
30	54E6E29F	4800	
32	54E62A9F	-6800	
34	54E6 729F	4800	
36	54E6 BA9F	4800	
38	54E7 029F	4800	
40	54E7 4A9F	4800	
42	54E7 929F	4800	
44	54E7 DA9F	4800	

8/16/77

only -6800 is recorded

46
file 198 has 417 ~~frames~~? half frames
417
~~399~~ by count 72 half frames per record
the TI has $4800_{16} = 18432_{10}$

which is in 1/32 of a second or 576 seconds per halfframe
every 6 'th frame (12 half frames) or so, the clock
resets by $-6800_{16} = -26624$ 1/32 or .832 sec

Meanwhile GMT records a half frame every second
because they are out of memory & sent every second (1.125 sec)
unfortunately EVT is also every ½ second, which is impossible

76.119
clock says 17 sec but GMT & EVT say 9 sec
between 1 frame of data

$$\frac{1152 \text{ bits/half frame}}{256 \text{ bits/sec}} = 4.5 \text{ sec/half frame}$$

76/117 A clock says $AE73625F_{16} = 2926797407_{10}$

5~~4~~ units per frame on A clock 220_{16}

$\Rightarrow$ 9 seconds $\Rightarrow \frac{1}{60.4}$ second per tick of A's TI
it is $\frac{1}{32}$ per tick of B's TI

$\Rightarrow$ TI is at 48421280.63 sec = 560.4314888 d
$\simeq$ 1.53 y

HAL001 is 74/348 010525
~~74~~6/117 $\simeq$ 76.32032854
74/348 $\simeq$ 74.95277207
Δ = 1.367
HBL001 is 76/015 $\simeq$ 76.041
HBL039 is 77/139 $\simeq$ 77.806
$\Delta \simeq$ 1.34 y
TI = 3.46

y = 365.25 8/16/77

A clock 76/117 = 2926797407_{10}
= 48421280.63 sec

76/117/00/01/19
117/00/01/19 = 10108879 sec

file 4 is 117/11/41/7 TI is AE86AC9F

= 10150877
Δ = 41998 sec ΔTI = 20915 sec

for file 4 $\Delta TI = 9216_{10}$? ⇒ 144 seconds 16 bitrate
⇒ 1/64 second per beat
for file 3 $\Delta TI = 220_{16} = 544_{10}$ 256 btrat
at 64 ~~8.5 sec~~
⇒ 8.994 sec
⇒ 60.48496762 divide by
= 9 sec divide by 60.4
for file 5 $\Delta TI = 220_{16}$ 256 btrt
9.004 sec between frames
must mean 9 sec

the A clock is a little hard to understand

ΔGMT	file	btrt	format	HAL026
9 sec	3	256	2	
144 sec	4	16	3	⇒ 2304 bits per frame
9	5	256	2	(1152 bits / half frame)
	for	HAL014	3	but ΔTI = 2400_{16} = 9216_{10} ⇒ 288 sec
2.25	198	8		at 1/32 sec
2.25	35	8 HAL037	3	

HAL026 file 3 has 17 sec between frames if TI is correct
GMT has 9 sec which is consistent with bitrate

8/16/77

Summary A

bit rate	ΔTI	example	hhmmss	tape	file	DM
16	288 sec	76.117	105449	HAL026	4	4
256	17 sec	76.117	114853	HAL026	5	4
256	17 sec	76.117	035658	HAL026	3	4
8	576 sec	75,212	161926	HAL014	198	7
8	288	75211	214138	HAL037	12	7

what clock should read for 1152 bits/half frame

2048	1.125
1024	2.25
512	4.5
256	9
128	18
64	36
32	72
16	144
8	288

Once fortDM7 is working print out some 3.5 records ~~sets~~ of B data

~~- $ input DT = 'HBL001', NF = 1, DSN = HB000101, $ end 2048 434 rec~~

- $ input DT = 'HBL002', NF = 5, DSN = 'HB000701', $ end 2048 DM 4
- $ input DT = 'HBL004', NF = 4, DSN = 'HB001608, $ end 1024 4
- $ input DT = 'HBL014', NF = 50, DSN = 'HB006901, $ end 512 4
- $ input DT = 'HBL015', NF = 69, DSN = 'HB008211', $ end 256 4
- $ input DT = 'HBL017', NF = 61, DSN = 'HB010301', $ end 128 4
- $ input DT = 'HBL018', NF = 348, DSN = 'HB014306', $ end 64 4
- $ input DT = 'HBL018', NF = 194, DSN = 'HB013411', $ end 32 4
- $ input DT = 'HBL018', NF = 167, DSN = 'HB013201', $ end 16 4
- $ input DT = 'HBL018, NF = 174, DSN = 'HB013208', $ end 8 4

time on 75 of h00h04
on 91 of h00h02

8/17/77

9 A B C
10 11 12

0 1 2 3 4 5 6 7 8 9 A B C D E F
10 11 12 13 14 15

ISI = 1

ISHIFT = 1 SI = 00180000 C

0 C

0000 1100

DM=1 4

1

16

256

4096

65536

1048576

16777216

268435456

1 =2 SI = 00080014

1 4

0001 0100

2 4

ISHIFT seems to be working

B Bit rate ΔTI

2048

~~change~~ enter DATA DM7 data put in skip DM≠7

- S input

? is '7' = 11110111

use different compare

IF (ISHIFT.NE.7) GO TO 35

- S input DT='HBL014', NF=48, DSN='AB006808', send

B file	Bit rate	DM	FN	TI	ΔTI	ΔTI (sec)	
	2048	8	48	007C988B			
				8165515			
			50	007C98AF			
				8165551	36	1.125	good
HBL014	512	2	2	1632C22F			
			4	1632C2BF	144	4.5 or 2.25	? good
HBL014	1024	2					
HBL015	256	0	2	1A803A3B			
			4	1A803C5B	544	17	?
HBL017	128	3		ΔTI=		34 or 42	?
	64	4		ΔTI=		36	good
	32	0		ΔTI=		72	good
	16	0		ΔTI=		144	good
	8	5		ΔTI=		288	

8/17/77

A B C D E F
10 11 12 13 14 15

256
4096,
6553 records

Bschedule 76/20

12 5027	- 160918	2048	297
16 1327	- 183819		218
19 0336	- 215419		246
21 5828	- 235907		182
23 5944	- 000000		3

297 records each has 72 lines each line has 1152 bits
= 12028.5 seconds

160918 - 125027 = 11871 seconds

218 records ⇒ 8829 seconds time = 8692 seconds
246 records ⇒ 9963 seconds time = 10243 seconds
182 records ⇒ 7371 seconds time = 7239 "
3 records ⇒ 121.5 seconds Time = 16 seconds
actual data = 29 lines = 16.3125 seconds
they padded the rest
HBL004 time = 0

H A2014 #198 DM7 data

FN8-6 ΔEVT = 2,242 ΔGMT = 2,241 ΔTI = 576 seconds
clock resets by -1472 seconds after 6 frames or 7

file 4 shut off for 15 to 60

clock at 12 54EA 7A9F
at 62 54ED 829F
⇒ 6208 seconds
62-12 = 50 6208/25 = 248;32
no predictive power
there are 46 half frames of 0's (144?)
3 half frames of 1 of 576/2 data (288)

= 7776 + 1152 = 8928
6208 - 1152 = 5056
⇒ no predictive power

AB

8/17/77

I shift = 7 works very well

14 BL014 #48 DM7 8/3 data frame slip

fm	Δ EVT	Δ GMT	Δ TI
3-1	4.498	4.498	576

clock reset by -1472 seconds

summary

clock resetting by -1472 seconds and advancing by 576 seconds. ~~It~~ should advance by 288 seconds

→ need some pre DM7 & post DM7 data to see if clock is resetting or if the memory is playing tracks.
→ need some longer DM7 to see if resets are predictable

Push data B with 1

- & input DT = 'HBL014', NF = 47, DSN = 'HB006807', & end
- & input NF = 49, DSN = 'HB006809', & end

Data with

- & input DT = 'HBL017', NF = 73, DSN = 'HB010404', & end

$44_{16} = 34_{10}$ 8/17/77

re examine bit rate 128 HBL017 #61 record 2

FN	ΔTI (seconds)	ΔEVT	ΔGMT
40			
42	34 seconds	18.012	18.014
44	42	17.993	17.995
46	34	18.001	18.004
48	34		
50	34		
52	42		
54	34		
56	34		
58	34		
60	42		
62	34		
64	34		
66	34		
68	42		
70	34		
0	34		
2	34		
4	42		
6	34		
8	34		
10	34		
12	42		
14	34		
16	34		
18	34		
20	42		
22			
24			
26			
28			
30			
32			
34			
36			
38			
40			
42			

8/17/77

the clock does odd things in 128 bit rate
one might check other DM but that is another problem

Conclusions for non DM7 data on per frame times
: 2048, 512, 64, 32, 16, 8 have a normal clock (TI)

: 256 clock jumps 17 instead of 9 seconds
: 128 clock jumps 34 or 42 sec instead of 18 sec
: 1025 has a normal clock

---

check to see what DM the DM&7 data is
DM4 may have memory readin & be special
DM7 seems to reset the clock every hour

rerun & check all conclusions on more data

DATB h00h02

~~- Sinput DT = HBL023, NF = 3, DSN = ' HB0[illegible]05', Send~~		2048
~~- Sinput NF =~~		
- Sinput DT = 'HBL021', NF = 30, DSN = ' HB006603', Send		2048
- Sinput NF = 33, DSN = ' HB006606', Send		1024
- Sinput NF = 40, DSN = ' HB006706', Send		8
- Sinput NF = 43, DSN = ' HB006803', Send		128
- Sinput NF = 46, DSN = ' HB006806', Send		256
~~- Sinput NF = 47, DSN = ' HB006807', Send~~		512
- Sinput DT = 'HBL015', NF = 47, DSN = ' HB008009', Send		64
- Sinput DT = 'HBL017', NF = 73, DSN = 'HB010404', Send		32
- Sinput DT = 'HBL021', NF = 38, DSN = ' HB016308', Send		

DATA

- Sinput DT = 'HBL018', NF = 7, DSN = 'HB010703', Send		32
- Sinput NF = 8, DSN = 'HB010704', Send		32
- Sinput NF = 10, DSN = 'HB010706', Send		16
- Sinput NF = 15, DSN = 'HB010803', Send		16
- Sinput NF = 35, DSN = 'HB011805', Send		8
- Sinput NF = 37, DSN = 'HB011807', Send		8

h00h01

remove 1 bit at 7

$1200_{16} = 4608_{10} \Rightarrow 144$ sec

8/17/77

HBL017 bit rate 32 II 73

	ΔEVT	ΔGMT	ΔTI	record 2
	72.062	1.120	144.0625	
FN			144	
0				
2			144.0625	
4			144	
6			144	
8			"	
36			"	
38			"	
40			"	
42			"	
44			144	
0	only first clock is different			
2				
4	comments first TI is		2213 92DD	
6	should be		2213 92DF	
8		D	F	
36		1101	1111	
38	one bit is missing or misread			
40				
42				
44				
0				
2				
4				
6				
8				
36				
38				
40				
42				
44				

8/17/77 34 0011 1100

SI = 000000C4 C 4

1100 0100

ISI 0 0 1 8

shifted becomes 00011000 = I SHIFT

if 1 bit is removed it becomes 0000 1000

Can one have D 5

1011 0100

DM=7 Data = 4

4 6 D D
+ 4 8
4 6 A 5

8/18/77

9 14
1A3B - 14FB = 54

70C7 - 6C47 = 38

C2FF - 39FF = 9

7 1 16
4875 - 46DD = 148

4860 - 4825 = 48

need more 16 data

examine 003 8/17/77 program non DM7 data

possible one bit error in clock would account for patterns

1024 actual (should be

4 6 D D
0100 0110 1101 1101

4 8 2 5
0100 1000 0010 0101

4 6 A 5
0100 0110 1010 0101

error not in actual output, error in increment

48_{16} supposed to increment but 148 was actual increment

consider 512 data 1, 18

C2BF - C22F = 90

C2ZF - C09F = 190

again 90_{16} supposed to be increment but 190_{16} sent by mistake

consider 128 data which should increment by 18 seconds which would be 576_{10} 1/32's

$576_{10} = 240_{16}$

8/18/77

42 sec pulse

$$\begin{array}{r} 1\,A\,B\,B \\ -\,1\,4\,F\,B \\ \hline 5\,4\,0 \end{array}$$

34 sec pulse

$$\begin{array}{r} 2\,2\,B\,B \\ -\,1\,E\,7\,B \\ \hline 4\,4\,0 \end{array}$$

instead of 240 a 540 or 440 pulse is sent

5 4 2

0101 0100 0010 two bits transmitted incorrectly but still 3'rd byte in error

the rest are correct

010 8/17/77 error in IShift -
00080038 = SI was rejected
32 bits, one word, 4 bytes

use KTM to check for DM=7
mask = 00 00 00 01111000
3 8
DATA MASK/#00000038/
IDM7 = KTM(IDATA(4,K),1,MASK,1,4)
IF(IDM7.NE.3) GO TO 35

$$\begin{array}{r} A\,4\,D\,F \\ -\,9\,2\,D\,D \\ \hline 1\,2\,0\,2 \end{array} \qquad \begin{array}{r} B\,6\,D\,F \\ -\,A\,4\,D\,F \\ \hline 1\,2\,0\,0 \end{array} \qquad \begin{array}{r} 7\,2\,F\,9 \\ -\,7\,2\,B\,1 \\ \hline 4\,8 \end{array} \qquad \begin{array}{r} 7\,3\,{}^{19}\!\not{4}\,{}^{8}\!\not{1}\,{}^{17}\!\not{X} \\ -\,7\,2\,F\,9 \\ \hline 1\,4\,8 \end{array}$$

$$\begin{array}{r} 7\,{}^{6}\!\not{0}\,{}^{16}\!\not{1}\,F \\ -\,2\,8\,1\,F \\ \hline 4\,8\,0\,0 \end{array} \qquad \begin{array}{r} B\,8\,1\,F \\ -\,7\,0\,1\,F \\ \hline 4\,8\,0\,0 \end{array} \qquad \begin{array}{r} 2\,{}^{7}\!\not{8}\,{}^{17}\!\not{1}\,F \\ -\,2\,2\,D\,F \\ \hline 5\,4\,0 \end{array} \qquad \begin{array}{r} 2\,C\,5\,F \\ -\,2\,8\,1\,F \\ \hline 4\,4\,0 \end{array}$$

$$\begin{array}{r} 7\,A\,D\,F \\ -\,7\,8\,B\,F \\ \hline 2\,2\,0 \end{array} \qquad \begin{array}{r} D\,E\,F\,B \\ -\,D\,6\,7\,B \\ \hline 8\,8\,0 \end{array} \qquad \begin{array}{r} {}^{D}\!\not{E}\,{}^{23}\!\not{8}\,7\,B \\ -\,D\,E\,F\,B \\ \hline 9\,8\,0 \end{array} \qquad \begin{array}{r} 7\,{}^{6}\!\not{0}\,{}^{16}\!\not{C}\,7 \\ -\,6\,C\,4\,7 \\ \hline 4\,8\,0 \end{array} \qquad \begin{array}{r} {}^{18}\!\not{2}\,1 \\ -\,2\,1 \end{array}$$

$$\begin{array}{r} F\,0\,F\,B \\ -\,F\,8\,7\,B \end{array} \qquad \begin{array}{r} 0\,{}^{\cdot}\!\not{2}\,{}^{\cdot}\!\not{F}\,B \\ -\,F\,A\,7\,B \\ \hline \cdot\,F\,5\,\cdot \end{array} \qquad \begin{array}{r} -\,F\,{}^{9}\!\not{A}\,{}^{23}\!\not{7}\,B \\ +\,0\,2\,F\,B \\ \hline -\,F\,7\,8\,2 \end{array} \qquad \begin{array}{r} -\,F\,A\,F\,B \\ +\,0\,4\,7\,B \\ \hline -\,F\,6\,8\,0 \end{array}$$

8/18/77

DATB

_Sinput DT='HBL018', NF=7, DSN='HB010703', $end

8	04
10	06
13	HB010801
15	03
35	11805
37	11807
42	HB011904
70	HB012101
112	HB012801
120	09
122	11
124	13
126	15
128	17
129	18
132	21
133	22
136	25
139	HB012901
140	02
143	05
144	06
147	09
154	HB013101
155	02
160	07
161	08
162	09
198	HB013501
199	02
200	03
201	04
202	05
203	06
204	07
205	08
207	10
208	11

8/18/77

-Sinput NF = 212, DSN = 'HB013515', $end

213	16
214	17
217	20
228	HB013608
233	13
238	18
243	23
250	HB013701
254	05
260	11
268	HB013805
270	07
275	12
278	15
283	, DSN = 'HB013905
289	11
296	HB014005
300	09
307	14103
312	08
313	09
321	14201
327	07
330	10
336	16
338	18
339	19
340	20
342	22
357	14403
363	09
368	14
~~383~~	

file 375 to end not listed
to 385

// EXEC TAPESCAN VOL=HBL018, PARM=(LIST,NOHEX)

8/18/77

```
A4DF      B61F
-92DD     -A41F
1202      1200
```

	bit rate	file	program
used for	16	B21 # 38	008
		B18 # 167	003
	32	B18 # 194	003
		B17 # 73	008

			DM	DSN	rec
try B18	# 11	for 16		HB010707	2
	# 107		0	HB012706	2
	# 108		0	07	3
	# 109		0	08	9
	# 110		0	09	3
	# 111		0	10	9
~~	# 112~~	~~for 8~~	7	HB012801	7
	113	for 16	0	02	2
	114		0	03	3
~~	115~~		0	04	3
	116	for 32	0	05	7
	117		0	06	3
	118		0	07	17
	119		0	08	2

one might scan HB0029 to 39 for DM7 data

```
9BC7      AAC7      DB 22 19
-86C1     -98C7     FE73      -  B 16 06F
1206      1200      -227F     -  AE61
                    -DBF4     1 20E
```

8/18/77

CALL SERVOL (SATID, 1, INSEQ, DITAPE

~~DITAPE = .5D60~~

CALL SERDSN (SATID, INSER, INSEQ, DSNAME)

this just creates names given INSER & INSEQ

91/001

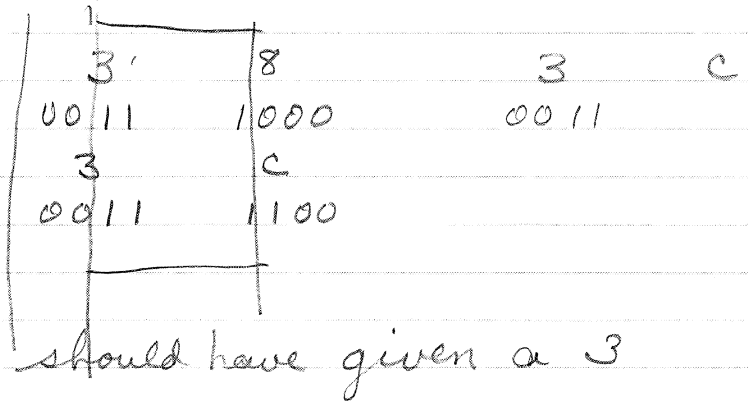
$$\begin{array}{r} {}^{15}X\,{}^{1}0\,{}^{1}2\,7F \\ -\ 0E\,7F \\ \hline 2400 \end{array}$$

8/19

8/19/77

mask = Z 00000038

IDATA(4,K) = 0000003C



should have given a 3

Logon zbevr/conn

listalc

edit zbevr.mask.fort new go fort

Data mask /Z00000038/, ISI/Z0000003C/

IDM7 = KTM(ISI, 1, MASK, 1, 4)

WRITE(6,10) IDM7, mask, ISI

10 format(1X, 'IDM7 =', 1X, I4, 1X, 2Z8)

~~stop~~

end

- save mask

run

insert 7500, 100, l

- Script NF=383, DSN=HB014601, send h00402

// EXEC TAPESCAN, VOL=HBL018, PARM=(LIST0, NOHEX, NOCOUNT)

17 18 — A 16 — C 26 A 17

FF75 — 9AB086F — DB1F

FE73 — 9AAF66F — CFD1F

2402 — 1200 — B400

8/19/77

$$\begin{array}{r} {}^{F}{}^{16} \\ \not{\emptyset}\not{0}0FF \\ -\ CF7FF \\ \hline 900 \end{array}$$

It seems the clock is resetting, skipping frames and does not agree with bit rate

** Conclusion if ΔTI does not agree with bitrate error may be in bit rate **

$\Rightarrow$ bad data

$\Rightarrow$ from now on examine only data for which ΔTI agrees with bit rate.

comments

frame slips and resetting can be overcome.

If ΔTI does not agree with bit rate then error is probably in bit rate but one does not know.

for HB2018	good files	bit rate	bad files	bit rate
	13	32	7	32
			8	32
			10	16

Can one predict the clock given the start time?

start time / seconds from 0 / clock / seconds

#7 124 003916 = 10715956 2277 86C1 $\Rightarrow$ 578258625/32 = 18070582.03

are there any times less than this on B18 no $\Rightarrow$ this is start time

#8 ΔT = 15049 227E38C7 $\Rightarrow$ ΔT = 13712.18875 sec

not two predictions

#212 13,903,731 ABFC2097 72,099,126.69

not even close

consider #214 to 217 76 285 000531 $\rightarrow$ 76 286 005 702

$$\begin{array}{rr} = & 245702 \\ - & 00\ 05\ 31 \\ \hline = & 89491 \text{ seconds} \end{array}$$

$$\begin{array}{rr} & AB\ {}^{17}2{}^{25}4\ 7B \\ - & AB\ FE\ 72\ 17 \\ \hline & 2B\ B2\ 64 \end{array}$$

$\Rightarrow$ 89491.125 seconds

very close agreement

hat cha cha

8/19/77

7 to 8 — 124 04 50 05 − 124 00 39 16 = 15,049 sec

22 7E 38 C7 − 22 77 86 C1 = 00 06 B2 06 ⇒ 13712.1875

8 to 10 — 09 02 10 − 04 50 05 = 15,125 sec

22 85 FE 73 − 22 7E 38 C7 = 7 C5 4C ⇒ 15917.375 sec

We need an algorithm for non DMT data first
it's just as bad

~~1 to 2~~

213 to 214 — 285 00 05 31 − ~~285~~ 00 00 07 = 324

AB FE 77 X7 − AB FE 49 97 = 4880 ⇒ 580 sec

217 to 228 — 287 11 07 37 − 286 00 57 02 = 12.3035 sec

AC 66 3A 17 — AC 2A 24 7B or F

3C 159C ⇒ 123052.875

if B was really F

3C 1598 ⇒ 123052.75

228 to 233 — 288 07 29 27 − 287 10 07 37 = 76,910 sec

AC 8A 08 DF − AC 66 3A 17 = 23 CB C8 ⇒ 73,310.25

#7	124	003916 = 10715956	22 77 86 C1 ⇒	180705 82.03
#8	124	045005 = 10731005	227E 38C7 ⇒	18084294.22
#10	124	090210 = 10746130	2285 FE 73 ⇒	18100211.59
#13	124	204214 = 10788134	919A 81 FB ⇒	76338191.84
#15	125	055419 = 10821259	AE 61 91 AA ⇒	91425933.31
#35	133	055044 = 11512244	92FC 011F ⇒	77062152.97
#37	139	074556 = 12037556	93FC 811F ⇒	77587464.97
#42	156	001309 = 13479189	9574 D11F ⇒	78358152.97
#70	148	084300 = 12818580	9576 ED1F ⇒	78362472.97
#112	235	202100 = 20377260	9E 019D 7E ⇒	83266795.94
#120	238	013706 = 20569026	A4425 3DF ⇒	84021918.97
#122	238	145842 = 20617122	A459 CFDF ⇒	86167166.97
#124	239	014327 = 20655807	A46C B37F ⇒	86205851.97

8/19/77

#126	239	143615 = 20702175	A4835 77F ⇒	86252219.97
#128	240	013848 = 20741928	A496C09F ⇒	86291972.97
#129	240	041540 = 20751340	A459CFDF ⇒	86167166.97
#132	241	013445 = 20828085	A4C0C095 ⇒	86378092.66
#133	241	145621 = 20876181	A4D8 499F ⇒	86426188.97
#136	242	013829 = 20914709	A4EB1E1F ⇒	86464752.97
#139	243	013438 = 21000878	A5152C BF ⇒	86550885.97
#140	243	050043 = 21013243	24D9 319F ⇒	19319180.97
#143	245	01 3822 = 21173902	2569 203F ⇒	19614057.97
#144	245	09 3858 = 21202738	A577BD3F ⇒	86752745.97
#147	—			
#154	249	195608 = 21585368	A5F10D1F ⇒	87001192.97
#155	249	222505 = 21594305	A5B3 E11F ⇒	86875912.97
#160				

8/19/77

144 to 139
$\Delta d = 201860$ $\Delta s/c = 201860$
144 to 122
$\Delta d = 585616$ $\Delta s/c = 585579$
$\simeq$ 7 days ~37 seconds

140 to 17,
$\Delta d = 10297287$ $\Delta s/c = 1248598$
136 to 144
$\Delta d = 288029$ $\Delta s/c = 287993$
$\simeq$ 3d ~36 seconds

FFFFFFFF =
F0000000 = 1456 days
$\simeq$ 3.98 years
So what do I do?

TI quality: S means TI shifted by one bit
X means TI is correct

8/22/77

Approximate connection between EVT & and tape start

76 124 00 3916 EVT = 2356927

= 76 124 + 2356 sec S/C = 227786C1 = 578258625/32

1971 = 18070582.03 sec

In 76 there are two S/C's one is ≃ 227786C1

the other is = A4.59CFDF

= 27573493343/32

= 8616716.97

or = 9E019D7E

= 2650905982/32

= 82840811.94

Non DM7 data ≃ 1632C22F

= 372425263/32

= 11638289.47

or = AF9E70C7

= 92074886.22 sec

both in data side by side

18070582.03 sec → ≃ .57 years call it .5 year S/C

92074886.22 → ≃ 2.92 years call it 2 year S/C

Summary of non DM7 data (also 8/25) format

.5(14)	2yr (A4)	DM	Bit rate	date		ΔTI	TI
B14# 30	14	0	2048	76/82	1	1.125	redone
B14# 33,28	14	0	1024	76/82	1	2.25, 10.2	redone
B14# 40	14	4	8	76/84	3	576	redone
B14# 43	16	0	128	76/85	2	42, 34	redone
B14# 46	16	0	256	76/85	2	17	redone
B15# 47	1A	0	64	76/97	2	68, 76,	redone
B17# 73	22	7	32	76/121	3	144	redone
B21# 38	B5	4	16	76/342	3	144	X
B02# 5	98	1	2048	76/20	1	1.125	redone
B14# 50	16	2	512	76/85	1	12.5, 4.5	redone
B15# 69	1A	0	256	76/99	2	17	redone
B17# 61	20	3	128	76/119	2	42, 34	redone
B18# 348	AF	4	64	76/307	3	36	X
B18#194	AB	0	32	76/282	3	72	X
B18# 167	A7	0	16	76/258	3	144	X
B18# 174	A8	5	8	76/263	3	288	X

by 2

	or.		actual
A		B	E
C		D	1
E		F	3
0		1	5
2		3	7
4		5	A
6		7	C
8		9	E
A		B	0
			3

1000 0000 ⇒ 97 days (3 months)

0100 0000 ⇒ 6 days

A 7 DF	17 2X17 8X17	D17 4X17
+ 2400	- 2097	- 4997
DF	480	480
17 7X16	3697	4 18 8X97
8X0FF	- 3217	4E17
- 7FCFF	480	480
2400		

Nelios A 75/212 + 58766909

TI = 54DF 149F = 1837566.91

= 44,497,108.97 sec

Δ = 26,121,542 sec

fair needs special handling
poor needs lots of special handling
8/22/77
GOOD has a frame slip or time jump

	.5(14) or 2y(1A)		DM	Bitrate	hours	date	format	records	ΔTI	TI cond
	14		2	1024		76/181	1		10.25, 2.25	redone
B18#	11 22		4	16		76/124	3		288	redone
B18#	107	A3	0	16		76/232	3		144	X
B18#	108, 109	A3	0	16		76/233	3		144	X
B18#	110	A3	0	16		76/234	3		144	X
B18#	111	A3	0	16		76/235	3		144	X
B18#	113	A3	0	16		76/235	3		144	X
B18#	116	A4	0	32		76/236	3			X
B18#	117, 118	A4	0	32		76/237	3		72	X
B18#	119	A4	0	32		76/238	3		72	X
B17#	73 22		7	32		76/121/15	3		144	redone
B14#	47 16		0	512		76/85/19	1		12.5, 4.5	redone
B14#	49 16		0	512		76/85/20	1		12.5, 4.5	redone
B14#	48 14		7	8		76/85/20	3		576, 528, 38	redone
B39#	89	D0	4	8		77/139/21	3		288	X
A14#	198 (helios)	A54	7	8		75/212/16	3		576	?
B18#	7 22		7	32		76/124/00	3		144	redone
	#8 22		7	32		76/124/04	3		144	redone
	10 22		7	16		76/124/09	3		288	redone
	#13	91	7	32		76/124/20	3		72	X
	#15	91	7	16		76/125/05	3		144	poor
	#35	92	7	8		76/133/05	3		288	BAD
	#37	93	7	8		76/139/07	3		288	BAD
	#42	95	7	8		76/156/00	3		288	data = 3
	#70	95	7	8		76/148/07	3		288	X
	#112	90	7	8		76/235/20	3		288	BAD
	#120	A4	7	8	17	76/238/01	3	6	288	fair
	#122	A4, 90	7	8		76/238/14	3		288	X, BAD
	#124	A4	7	8	17	76/239/01	3	6	288	fair
	#126	A4, 90	7	8		76/239/14	3		288	X + bad
	#128	A4	7	8		76/240/01	3		288	fair
	#129	A4, 90	7	8		76/240/04	3		288	X, BAD
	#132	A4	7	8		76/241/01	3		288	fair
	#133	A4, 9E	7	8		76/241/14	3		288	X, BAD
	#136	A4	7	8		76/242/01	3		288	fair
	#139	A5	7	8		76/243/01	3		288	fair
#140	24		7	8		76/243/05	3		288	bad
#143	25		7	8		76/245/01	3		288	bad
#144		A5, 25	7	8		76/245/09	3		288	X, BAD

8/22/77

.5 or 2 yr		DM	Bit rate	hours	Date	format	records	DTI	good?
#147	A5, 25	7	8		76/246/14	3		288	X + BAD
#154	A5	7	8		76/249/19	3		288	BAD
#155	A5	7	8		76/249/22	3		288	BAD
#160	A5	7	8		76/252/19	3		288	BAD
#161	A5	7	8		76/252/22	3		288	BAD
#162	A5	7	8		76/253/07	3		288	BAD
#198	A5	7	8		76/245/12	3		288	X
#199	A8	7	8		76/263/07	3		288	X
#200	A8	7	8		76/265/03	3		288	X
#201	A9	7	8		76/266/22	3		288	X
#202	A9	7	8		76/267/00	3		288	X
#203	A9	7	8		76/268/17	3		288	X
#204	A9	7	8		76/270/12	3		288	X
#205	A9	7	8		76/272/07	3		288	X
#207	AB	7	8	14	76/283/14	3	5	288	perfect
#208	AB	7	8	11	76/284/00	3	4	288	GOOD
#212	AB	7	64		76/284/22	3		36	X
#213	AB	7	64		76/285/00	3		36	X
#214	AB	7	64	252	76/285/00	3	7	36	perfect
#217	AC	7	16	10	76/286/00	3	7	144	perfect
#228	AC	7	64	2	76/287/11	3	8	36	Good
#233	AC	7	8	20	76/288/07	3	7	288	perfect
#238	AC	7	8	20	76/289/07	3	7	288	perfect
#243	AC	7	8	20	76/290/23	3	7	288	perfect
#250	AD	7	8	20	76/291/08	3	7	288	perfect
#254	AD	7	8	17	76/292/08	3	6	288	perfect
#260	AD	7	32	6	76/293/08	3	8	72	perfect
#268	AD	7	16	11	76/294/07	3	8	144	perfect
#270	AD	7	16		76/294/09	3		144	fair
#275	AD	7	8	11	76/295/16	3	4	288	perfect
#278	AD	7	8		76/296/00	3		288	X
#283	AD	7	8	17	76/296/07	3	6	288	perfect
#289	AE	7	8	20	76/297/07	3	7	288	perfect
#296	AE	7	8		76/298/07	3	7	288	perfect
#300	AE	7	8		76/299/04	3		288	fair
#307	AE	7	8	17	76/300/10	3	6	288	perfect
#312	AE	7	8		76/301/05	3		288	X
#313	AE	7	8		76/301/05	3		288	fair
#321	AE	7	8	20	76/302/07	3	7	288	perfect
				218	hours				

8/22/77

	.5 or 2 yr	DM	Bit rate	hours	date	format	records	ΔTI	? good
#327	AF	7	16	11	76/303/10	3	8	144	perfect
#330	AF	7	8	17	76/304/04	3	6	288	perfect
#336	AF	7	8	17	76/305/07	3	6	288	perfect
#338	AF	7	16		76/305/08	3		144	X
#339	AF	7	16		76/305/08	3		144	X
#340	AF	7	8		76/305/14	3		288	X
#342	AF	7	8		76/306/05	3		288	X
#357	AF	7	8	17	76/309/01	3	6	288	perfect
#363	BO	7	16	6	76/310/05	3	4	144	perfect
#368	BO	7	16		76/311/05	3		144	fair

68 hours

76 124 20 4214 EVT = 745-34

consider HBL018 # 70

ΔEVT = 144 ΔTI = 144 no frame slips

TI = 9576 EDIF ⇒ 18,362,472.96 seconds

EVT = 76/148 : 25364.540

since 76 = 128,125,641.54 seconds

⇒ 76/000/000000 = T0/C = 65,549,908.43 seconds

≃ 2 years

clock resets inside memory ?

#122

or is this old data ?

#126 is the same scientific data as #122

Compare #126 FN #122 FN

Record 2 24 to end of data 16 to end of data

= 66 frames of old data

Need a chart of TI versus day

and we need some old data to check hypothesis

1976 had 366 days

8/22/77

A450 000

10 000 = .568 hours

100 000 = 9 hours = .379 days

1 000 0000 = 6.068 days

10 000 0000 = 97.09 days

76 000.00 = 65,599 908.43

X32 = $2,097,597,070_{10}$ = $7D06CA8D_{16}$

must not be right, maybe it is right

1 day adds 86400 sec X32 = $2,764,800_{10}$ = 2A3000

hex	day	add	
7D06,CA8D	0		
8544,2A8D	50	83D6000	1976
8D81,8A8D	100	107AC000	
95BE,EA8D	150	18B82000	
9DFC,4A8D	200	20F58000	
A639,AA8D	250	2932E000	
AE77,0A8D	300	31704000	
B6B4,6A8D	350	39ADA000	

```
 7D06,CA8D      7D06CA8D      7D06,CA8D
+  83,D600    + 83D6000     + 107A,C000
 7D8A,A08D      8544 2A8D     8D81 8A8D

 7D06,CA8D      7D06,CA8D     7D06,CA8D
+ 18B8,2000    + 20F5,8      + 2932,E
 95BE,EA8D      9DFC,4A8D     A639,AA8D

 7D06,CA8D      7D06,CA8D
 3170,4000     + 39AD,A000
 AE77,0A8D      B6B4,6A8D
```

8/22/76

day 365 of 1975 = 7D06 CA8D

349
-16

= -02A30000

day 349 = 7A63,CA8D
-50 = -083D6000
day 299 = 7226,6A8D
-50 = -083D6000
day 249 = 69E9,0A8D
-50 = -083D6000
day 199 = 61AB,AA8D
-50 = -083D6000
day 149 = 596E,4A8D
-50 = -083D6000
day 99 = 5130,EA8D
-50 = -083D6000
day 49 = 48F3,8A8D
-50 = -083D6000
day +1 = 40B6,2A8D

1975

365
-365
day 0

~~day 365 of 1974~~

day 365 of 1975 = 7D06 CA8D
-365 = -3C26 7000
0 day = 40E0 5A8D

all error somewhere

365
-15
350

7D06 CA8D
-278D0000
7A8DF000

-1 40B6,2A8D
+1 2A3000
day 0 40E0,5A8D

day 365 of 1974 = 40E0,5A8D
- 15 = -278D0000
350 3E67 8A8D
-50 -083D6000
300 3624 A8D
-50 -083D6000
250 2DEC CA8D
-50 -083D6000
200 25AF6A8D
-50

1974

8/22/77

200	25AF6A8D
-50	-083D6000
150	1D72 0A8D
-150	-18B82000
0	04B9EA8D

1974

day 350 of 1976	B6B4,6A8D
+ 16	02A3 0000
366	B957,6A8D
day 0 of 1977	= B957,6A8D
+50	+083D,6000
50	C194,CA8D
+50	083D6000
100	C9D2,2A8D
+100	107A,C000
200	DA4CEA8D
+100	107A,C000
300	EAC7,AA8D
+50	083D,6000
350	F305,0A8D

there is some non DM7 data which looks bad

1976/200	= 9DFC,4A8D	
-166.1	-9867,007C	2048
33.9	595,4A11	

and

8/22/77

76/ 0 = 7D06,CA8D
305 = +3243,3000
AF49 FA8D

I want 2277 86C1 to 228A FA7F

day 74/200 = 25AF(E 22924) 6A8D
(74/181) - 2277 86C1
19.5 days 337E 3CC

25AF(14 22) 6A(8 7)D
- 228A FA7F
19.06 days 3247 00E
day 180.5 & 180.9

1974 day 180.5 to 180.9 should be 16 bps

I think B was launched in 75

try to find B02 #15 98
1976 day 166 2048 not there
get more DM7 data

input DT = 'HBL014', NF = 48, DSN = 'HB006808', send
'HB010601',

17	81	
20	06	14707
	12	14804
	23	14905
	28	14910
	29	14911
	38	15003
	43	15008
	52	15101
	67	15204
	73	15210
	76	15213
	78	15215
	79	15216
	87	15308
	98	15601
	105	15704

8/22/77

NF=109, DSN='HB015801', Send

	114	15806
21	02	15904
	10	16004
	18	16104
	25	16204
	33	16303
	45	16504
	46	16505
22	09	16901
	10	16902
	15	16907
	16	16908
	17	16909
	21	16913
	22	16914
	26	16918
	27	16919
	29	16921
	98	18505
	115	18609
	116	18610
	121	18615
	122	18616
	124	18618
	128	18704
	129	18705

8/23/77

1632 C09F

76/085
should be 8B
76/100 = 8D81, 8A8D
-15 = -0278, D000
8B08, BA8D

1 6
0001 0110

8 B
1000 1011
SHFTL(1)

76/099
1A80 3A3B
is

1 A
0001 1010

should be 76/99 8D57, 5A8D

should be 8 D
1000 1101
one bit

76/119
20CD 10BB

2 0
0010 0000

76/100 = 8D81 8A8D
+19 = 1321 9000
9043 1A9D

9 0
1001 0000
← bit shift to the right

2 4
0010 0100
1001 0010
9 2

8/23/77

Consider B14#50 which apparently has TI shifted left by one bit.

1632 C09F

1 6 3 2 C 0 9 F

0001 0110 0011 0010 1100 0000 1001 1111

shift right one bit and add one high order bit

1000 1011 0001 1001 0110 0000 1001 1111

8 B 1 9 6 0 4 F

the next one is

1 6 3 2 C 2 2 F

0001 0110 0011 0010 1100 0010 0010 1111

→

1000 1011 0001 1001 0110 0001 0001 0111

8 B 1 9 6 1 1 7

ΔTI = 17 − 04F = C8 ⇒ 6.25 sec (16, 023)

it should be 4.5

the next one is

1 6 3 2 C 2 B F

0001 0110 0011 0010 1100 0010 1011 1111

1000 1011 0001 1001 0110 0001 0101 1111

8 B 1 9 6 1 5 F

ΔTI = 5F − 17 = 48 ⇒ 2.25 sec

the next one is

1 6 3 2 C 4 4 F

0001 0110 0011 0010 1100 0100 0100 1111

1000 1011 0001 1001 0110 0010 0010 0111

8 B 1 9 6 2 2 7

ΔTI = 227 − 15F = C8 (17, x23)

None of the ambiguity is cleared up but at least the high order bits are right

76/085 8617 0.776 = 85.997346944444

76/100 8088, 8888

− 14.00265306 24E, BCA7

76/085.997346 8532, CDE6

8/23/77

1 4 → 8A

0001 0100

↳ 10001010

8 A

76/82

B14 # 30 shifted

, 33 "

, 40 "

43 "

, 46 "

B15 # 47 "

B17 # 73 "

16 → 8B

1A → 8D

2 2

0010 0010

↳ 10010001

9 1

2 4

0010 0100

↳ 10010010 - should be? 1010 0100

9 2 A 4

How about A4

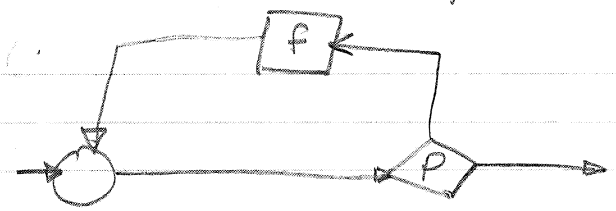
76/250 = A6394000

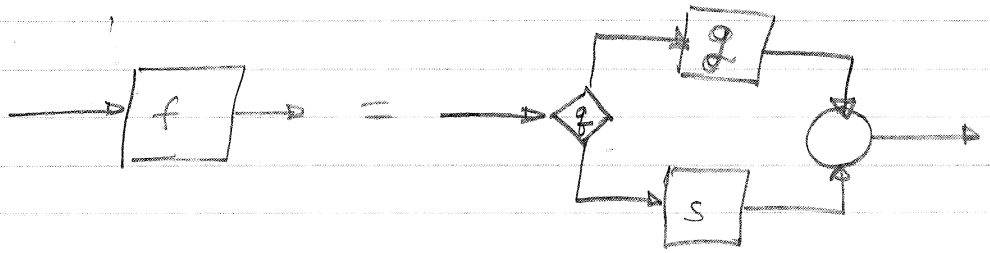
− 7 = −D1275000

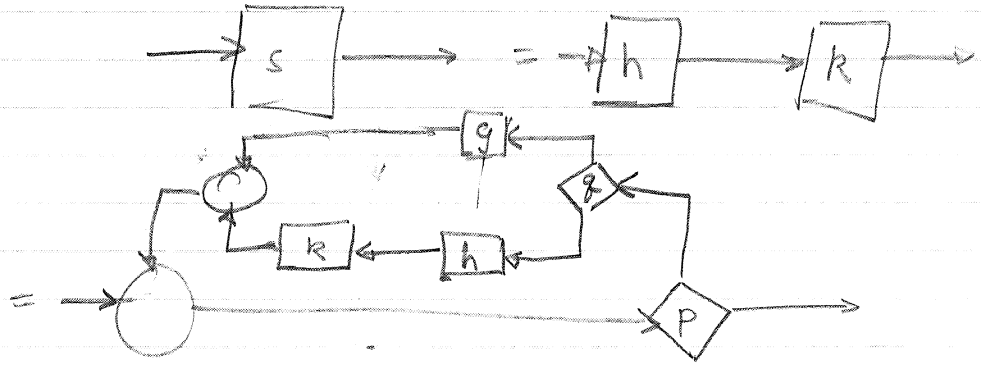
243 A5125000

compare file 10

8/23/77







8/24/77

B 16
91AA 046F
- 91AB F26F
1200

set up a graph for B18 # 15

91AAAE6F → 76/125 21259.097
⇒ 76371315.47 sec = 76/10821259.1
S/C = 76/ + 655500 56.37 seconds

for B18 # 35

92FC011F → 76/133 + 21044.170
⇒ 77062152.97 = 76/115122 44.17 sec
S/C = 76/ + 655499 08.8 sec

B18 # 37
93FC811F → 76/139 + 27956.410
⇒ 77587464.97 = 76/ + 12037556.41
S/C = 76/ + 655499 08.56

B18 # 42
9574 011F → 76/156 + 789.033
⇒ 78 358152.97 = 76/ + 13479189.03
S/C = 76/ + 64878963.94

B18 # 70
9576 ED1F → 76/148 + 25364.540
⇒ 78362472.97 = 76/ + 12812564.54
S/C = 76/ + 655499 08.43

B18 # 112
9E01907E → 76/235 + 73260.618 sec
⇒ 82840811.94 = 76/ + 203 77260.62
S/C = 76/ + 62463551.32

8/24/77

B18 # 120

A4425 3DF → 76/238 + 58 26.787

⇒ 86119070.97 = 76/+ 20569026.79

S/C = 76/+ 65550044.18

B18 #122 → 76/238 + 53922.787

A459 CFDF = 76/+ 20617122.079

⇒ 86167166.97

S/C = 76/+ 65550044.18

B18 # 132

A4C0 C09F → 76/241 + 5685.082

⇒ 86378092.97 = 76/+ 20828085.08

S/C = 76/+ 65550007.89

B18 # 228

AC66 3A17 → 76/287 + 40057.348

90386896.72 = 76/+ 24836857.35

S/C = 76/+ 65550039.37

B18 # 327

AF08 E4DF → 76/303 + 39377.002

91768614.97 = 76/+ 26218577.002

S/C = 76/+ 6555 0037.97

S/C = 76/+ 65550000 ± 100 seconds

for 75 presumably then S/C = 75/+ 34014000 ± 100 seconds

and for 77 S/C = 77/+ 97172400 ± 100 seconds

check on 77 B39 #89

not too good off data

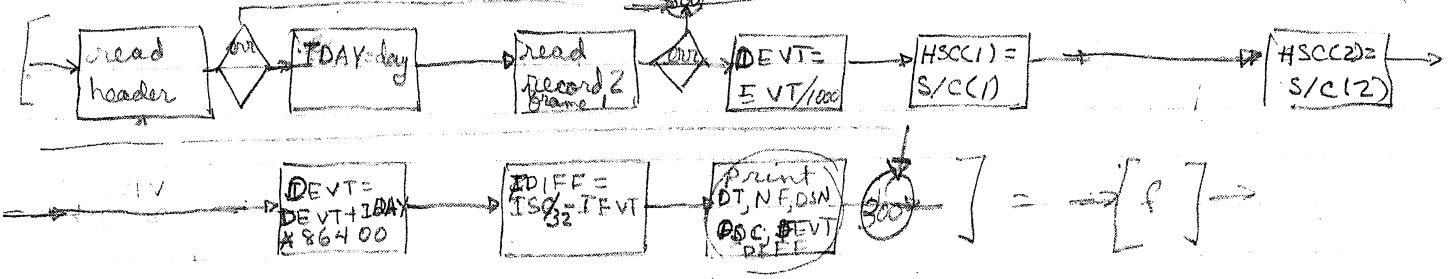
D065 C49F → 77/139 + 7830 9.458

10926 0325 = 77/+ 1208 7909.416

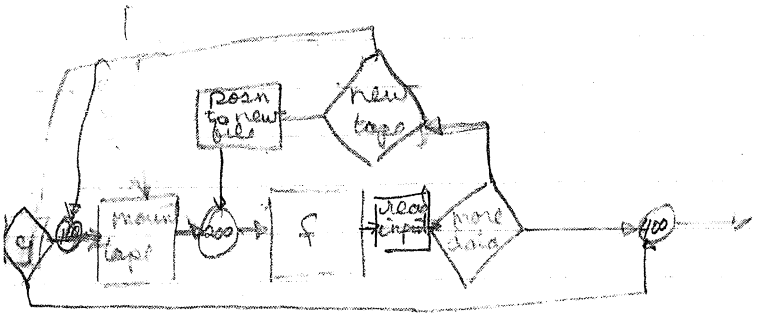
S/C = 77/+ 97172415.51

now we should test the first ~~frame~~ of DM7 data ~~record~~ record and calculate for all data what the clock is

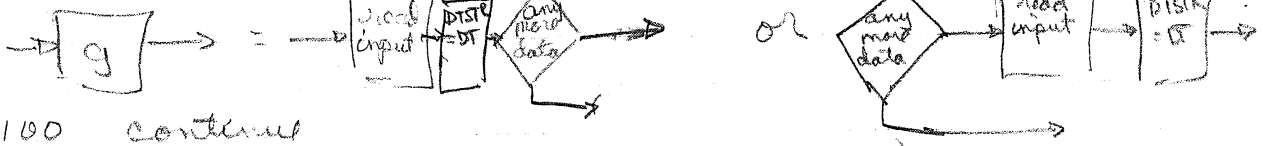
8/24/77



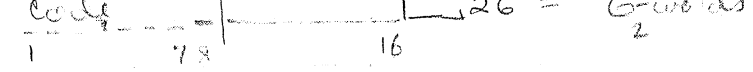
Implicit real *8(D), integer *2(H), logical *1(Q)
dimension IDATA(13,72), HDATA(26,72), QLABEL(91)
* ,HSC(2)
EQuivalence (idata(1,1), HDATA(1,1), Qlabel(1))
EQuivalence (ISC, HSC)
namelist/input/ DT, NF, DSN



C calculate difference between S/C and EVT for DM7 data
read(5, input, end=400)
DTSTR=DT

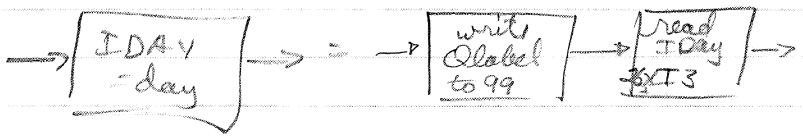


100 continue
call mount(1,16,DT,8,DSN,NF)
200 continue
call Fread(IDATA(1,1),10,LEN,300,300)



change JCL to include tape 99
// EXEC LINKGO, Region.GO = 100K
//LINK.NEWLIN DD DSN=SYS2.PACLIB, DISP=SHR } insert
//LINK.OBJECT DD *
INCLUDE NEWLIN(TAPE99)
//GO.FT10F001
same as before

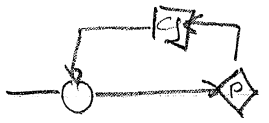
8/24/77




```
      WRITE(99,210)  QLABEL
210   format(91A1)
      Read(99,220)  IDAY
220   format(26X,I3)
      call Fread(IDATA(1,1),10,LEN,300,300)
      DEVT = IDATA(1,1) / 1000.
      HSC(1) = HDATA(6,1)
      HSC(2) = HDATA(6,2)
      DEVT = DEVT + IDAY*86400.
      DSC = ISC

      DIFF = DSC/32. - DEVT
      WRITE(6,230)  DT, NF, DSN, DSC, DEVT, DIFF
230   format(1X,A8,'_FILE#',I3,1X,A8,'_SIC',F10.0,'_-EVT',F10.0,'_=',F10.0
300   continue
      Read(5,input,end=400)
      IF(DTSTR.NE.DT)  GO TO 100
      CALL  POSN(1,10,NF,8,DSN)
      GO TO 200
400   continue
      stop end
```

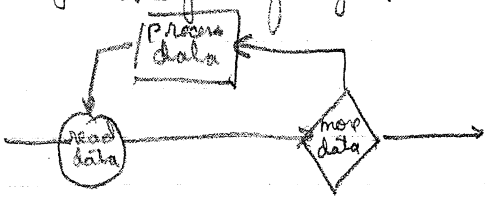
```
DATASCAN
_$TAPES  DTAPES='HBL028', NCOUNT=1, $end

LOADSCAN
=JC
//_EXEC LOADER,
```

8/24/77

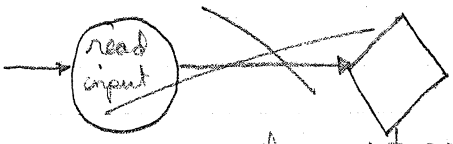


Do 9 while p

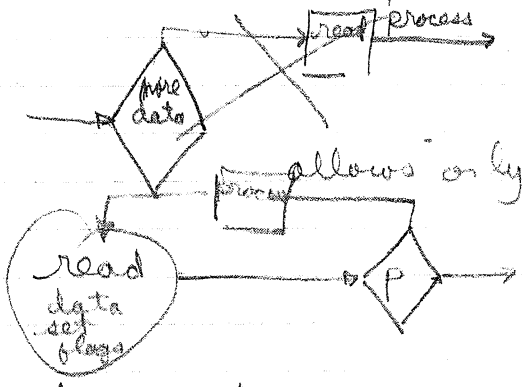
one could replace GOTO with logical ifs and perhaps flags?



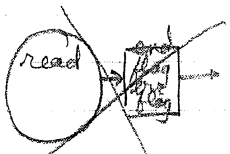
these terms are not clear



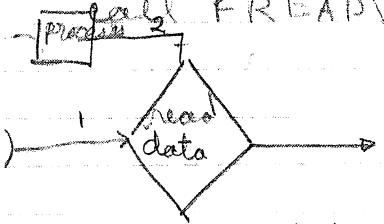
one doesn't process after you've learned this is the last data



whole read sentence in ◯

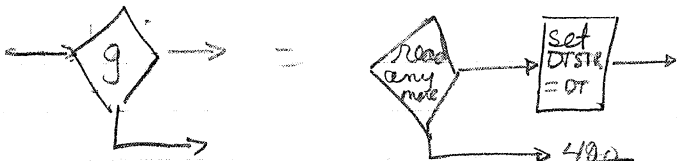
i.e. 

call FREAD(IDATA(1,1), 10, LEN, 10, 10)

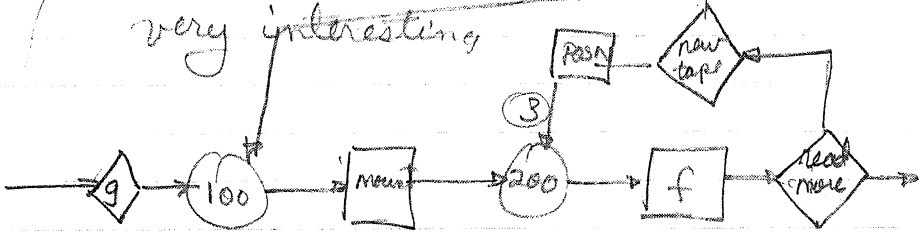


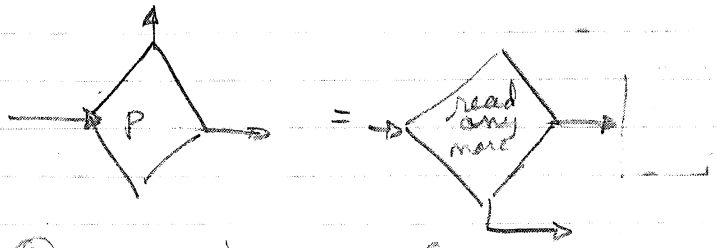
line 3 must be a GOTO because fortran doesn't have a DO while

8/24/77



very interesting

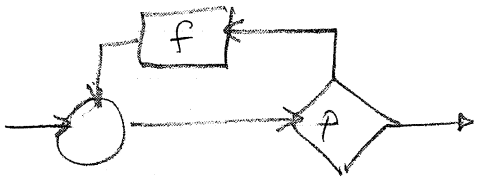




(3) requires a GOTO

8/25/77

How does one write a Dowhile in Fortran without go To's



see 8/22/77 + 9/6/77 records

Summary of DM7 low data (also 8/22)

tape file	(I4)	(A4)	DM	Bit rate		date/day/hour	format		ΔTI	quality
317#81	22		7	32		76/122/18	3		144sec	redone
320#6		B1	7	16	11	76/319/13	3	8	144	perfect
12		B1	7	16	10	76/319/00	3	7	144	perfect
23		B1	7	32	5	76/320/14	3	8	72	perfect
28		B2	7	16	8	76/321/13	3	6	144	Good
29		B2	7	16	4	76/321/20	3	3	144	Good
38		B2	7	16	8	76/324/13	3	6	144	perfect
43		B2	7	32	5	76/325/13	3	7	72	perfect
52		B2	7	8	14	76/326/13	3	5	288	perfect
67		B3	7	16	10	76/328/13	3	7+	144	perfect
73		B3	7	16	8	76/329/12	3	6+	144	perfect
76		B3	7	8	11	76/330/04	3	4+	288	Good
78		B3	3	16		76/331/08			144	BAD
79		B3	7	8		76/331/11			288	BAD
87	14		7	8		76/85/20	3		576	redone
98		A2	7	32		76/359/21	3		72	BAD
105		B4	7	16	8	76/335/12	3	6	144	perfect
109		B4	7	16		76/335/14	3		144	fair
114		B4	7	32	5	76/336/12	3	7+	72	perfect
321#2		B4	7	8	14	76/337/05	3	5+	288	perfect
10		B4	7	32	5	76/338/12	3	7+	72	perfect
18		B4	7	32	5	76/339/13	3	7+	72	perfect
25		B5	7	32	5	76/340/12	3	7	72	perfect
33		B5	7	32	5	76/342/12	3	7	72	perfect
45		B8	7	16	8	76/361/18	3	6	144	Good
46		B8	7	8	8	76/360/07	3	3	288	Good
B23#9		B5	7	8	8	76/341/12	3	3	288	perfect
10		B5	7	8	8	76/342/00	3	3	288	perfect
15		B5	7	16	3	76/343/05	3	2	144	Good
16		B5	7	8	8	76/343/12	3	3	288	Good
17		B5	7	8	8	76/344/05	3	3	288	perfect
21		B6	7	16	4	76/345/21	3	3	144	perfect
22		B6	7	16	8	76/346/00	3	6	144	perfect
26		B6	7	8	14	76/346/12	3	5	288	perfect
27		B6	7	8	8	76/347/00	3	3	288	perfect

8/25/77

$$\begin{array}{r} {}^{23} \\ \times 7 \\ -\ 0E \\ \hline 9 \end{array}$$

BRENG M2.ZBGEM.SD002.HB:CATLOG

Calculate S/C = 76/ + ? for B20

B17 #81 bad S/C
B20 #6
B1 AF EBDF 76/319 + 47626.267
⇒ 93159262.97 sec EVT = 27609226.27
S/C = EVT + 65550036.7

Compare B18 # 10 76/124/09 32 bps
and 13 76/124/20 32 bps

- $ input DT='HBL018', NF=11, DSN='HB010704', $end
- $ input NF=12, DSN='HB010708', $end

tape	file	(14)	(A4)	DM	Bit rate	hours	date/day/hour	format	records	ATI	quality
B22	29		B6	7	8	8	76/347/06	3	1	288	perfect
	98		AF	7	16	10	76/307/00	3	7	144	perfect
	115		B1	7	8	17	76/316/04	3	6	288	perfect
	116		B1	7	8		76/316/11	3		288	repeat
	121		B1	7	16	10	76/317/11	3	7	144	perfect
	122		B1	7	8		76/317/19	3		288	repeat
	124		B1	7	8		76/318/00	3		288	repeat
	128		B2	7	8	14	76/323/01	3	5	288	GOOD
	129		B2	7	8	8	76/324/00	3	3	288	perfect
						293					

8/26/77

how many files in HBL028, 29, 30, 31, 32, 33
90 + 93, 84, 102, 66, 19
34, 35, 36, 37, 38
89, 8, 126, 94

can run ≈ 64 files/min
5 min = 300 files = 2 tapes? or 3 tapes
try 2 at first!

- 2 tapes DTAPES = 'HBL028', 'HBL029', NCOUNT = 2, send

let's say Getlib reads one record of LIBCHK HBCATALOG

Temp 8 = HB001 HB001 file = 1
satid = B
offset = 1800
inser = 0
I = 3
atemp 1(4) = temp1(3) = F0
inser = F0 + (F0 - 240) 1000 = -240,000
I = 4
atemp 1(4) = temp1(4) = F0
inser = ~~F0 + 10000~~ + (F0 - ~~240~~)(100)
= -24000000 - 24000

inser = -240000 - 24000 = -2400 ~~- 240~~
1 . 1
=
inser = 1 he wants inser = 1

seek = 1 OutSER = FENTRY(1,1)
= Data(3)
OutSEQ = FENTRY(2,1) = Data(4)

column Fentry(13,16)
1 n n+1 13 16

equivalence (data(1), Fentry(1,1))

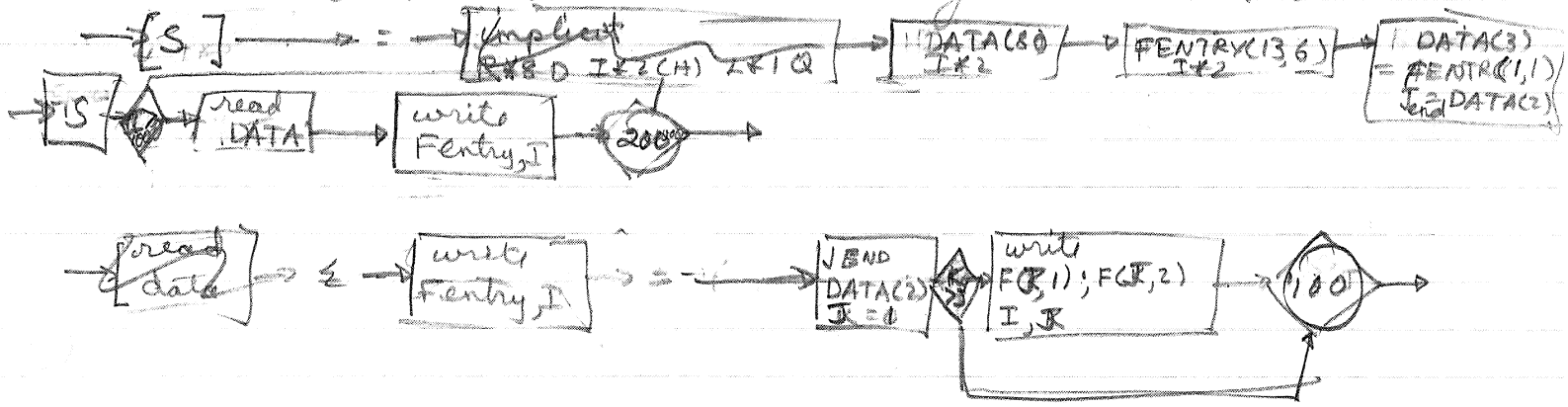
8/26/77

thus HA001 fil 1 should be on HAL001 #1

it is on HAL001 #1
as are fil 1 to 7 on #1 to 7
then HA002 fil 2 is on HAL001 #8

fil 2 seek = 2 2 < 6 =>
Outseg = Fentry (1, 2) = data (14+2) = 1
Outseg = Fentry (2, 2) = data (15+2) = 2

one could read the whole catalog and rewrite it




```
      Integer *4 DATA(80), FENTRY(13,6), JEND
      EQUIVALENCE (FENTRY(1,1), DATA(3))
      EQUIVALENCE (JEND, DATA(2))
      DO 200 I = 1, 1000
      CALL DREAD(10, I, DATA)
       DO 100 J = 1, JEND
       WRITE(6, 10) FENTRY(J,1), FENTRY(J,2), I, J
C     Routine to create a catalog of DSNAMES FOR HAL TAPES
   10 format (4I4)
  100 continue
  200 continue
      stop
      end
```

place this in FORTHBL, FORTRAN
in LOADHBL, FLIST

```
=JC
=FORTHAL
=// EXEC LOADER
//FT06F001 DD SYSOUT=*, DCB=(RECFM=FB,LRECL=80,BLKSIZE=3520)
```

8/26/77

```
//FT10F001 DD DSN=M2.ZB2NL.SD002.HACATLOG,
//   DISP=SHR,DCB=(RECFM=FB,LRECL=160,BLKSIZE=7200)
//   EXEC NOTIFY
```

it might be better to store all the data and then write a full line or maybe do that later

this routine takes forever to write onto Teletype

standard line printer blocksize is 800

each unit is 4 words Cybe writes 80 words or 20 units per line thus also 20 units and print ?

no Cybe writes 80 characters each ~~character~~ word could be two characters ; 4 words = 8 characters => 10 units at 4I2 at 6 lines per HBD number and 2250 HBD numbers a lot has to be compressed

HBD 426 to 1800 contain nothing

Summary of week's events for N and Sal

1. 8/22/77 TI can be placed into three classes
   a) 2 year or 91 to BO data
      TI = 93,000,000 seconds, data good => accept
   b.) .5 year or 14 to 22 data
      TI is much too small, ΔTI does not agree with bit rates, EVT is unrealistic => reject
   c.) B18 # 126 data where previous data was read out of memory
2. The TI can be predicted within ±100 seconds providing a discriminator for good data.
3. Non DH7 data has some characteristics as (1.)
4. Catalog contains some of the bad data B18 # 8, 10

8/26/77

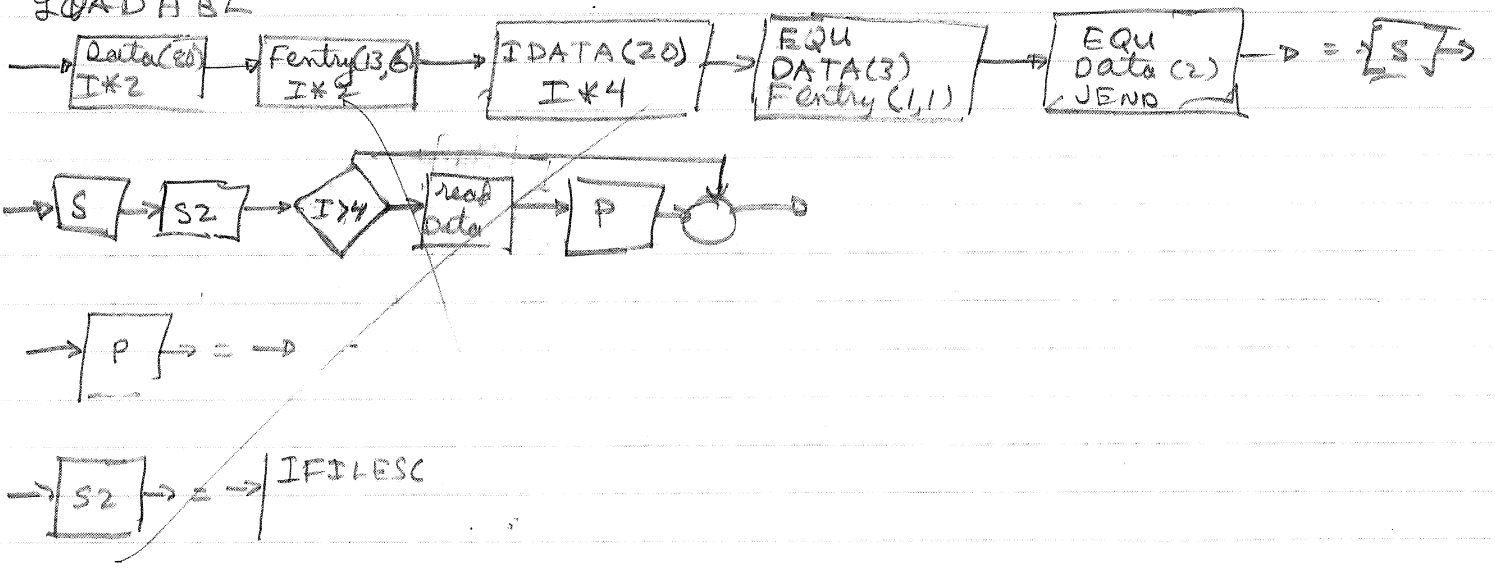
- ~~Sinput~~ DT = 'HDL022', NF = 115, DSN = '
- Sinput NF = 116, DSN = '

DM7 data is not cataloged, some is and some isn't

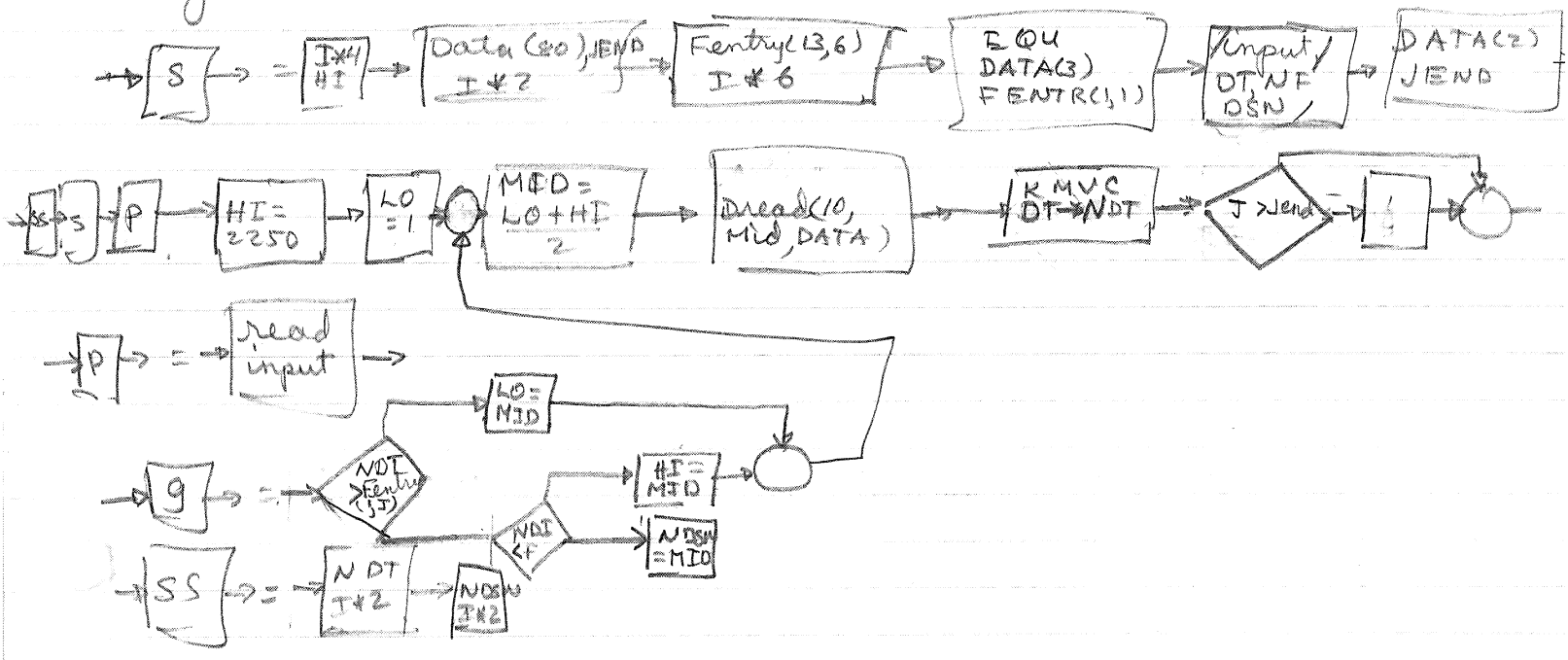
One cannot bring a direct access device directly, because of BLKSIZE disk = 7294 # of CRBIE = ~~1200~~ 3600 max

thus the system must write in blksize suitable before it can be brought

LOADHBL



maybe a search routine would do as well



8/29/77

ideal catalog would be HB # followed by HBO number

1	2	3	4	5	6	7	8	9	10	11	12	13
0101	0102	0103	0201	0202	0203	0204	0205	0206	not there	0301	0302	0304

or perhaps on first line all the information

01 11 3 6 6 6 6 6 6 6 6 6 6 6 6

how many lines do we need

55 HBL tapes ⇒ ≃ 5500 numbers

no spaces, yes

4 bytes per number, yes

20 numbers / line = 275 lines

+55 = 330 lines

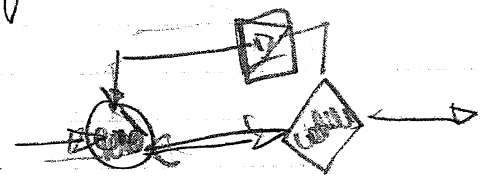
On DM7 IPD pulled wrong clock during March, April 76

check to see if data has a redo John has a EDR receipt log / Redo tape for 85 to 124 day on 76 JPH sent new tape

check files are recataloged elsewhere that are left out ~~in one place~~ of catalog

There was DM7 problems in 1977 indeterminate data on day, found by accident

find where DM7 data was put or where did faulty data go



get eraser

8/29/77

Chart for TI needed
more DM 7 B22# 26 on
DATC

$ input DT='H BL022', NF=26, DSN='H B016918', $end

27	16919
29	16921
98	18505
115	18609
116	18610
121	18615
122	18616
124	18618
128	18704
129	18705

DT = 'HBL023', NF= 23, DSN = 'HB0 19003', $end

24	19004
26	19006
27	'H B~~0 19 0 01~~ 19007
28	19008
32	19012
33	19013
34	19014
37	19017
44	19203
48	19302
49	19303
51	19305
55	19309
56	19310
57	19311
67	19501
68	19502

8/29/77

Add Getlib to FortdmB

rename all loaders to LOADXXXX..

LOADDMB

LOADDM7

change first part of FORTDMB

change LOADMB JCL

remove tape 99

// exec linkgo, region.GO = 250K

//Link.NEWLIN DD DSN = M2.ZB2NL.SD001.HELIOS.LOAD

//LINK.SYSLIN DD *

INCLUDE NEWLIN(GETLIB, MOUNTF, SERVOL, SERDSN)

//GO.FT10F001 DD DSN=HELIOS, UNIT=(2400-9,, DEFER), DISP=(OLD,KEEP)

//GO.FT49F001 DD DSN=M2.ZB2NL.SD002.HBCATLOG,
DISP=SHR, DCB=(RECFM=FB, LRECL=160, BLKSIZE=7200)

"change FORTDMB

NAMELIST/INPUT,/TPNAME, FILE/

~~1.5 continue~~

~~Read(5, input, end=150)~~

CALL GETLIB(49, 50, 10, TPNAME, IFILE, MOUNTS, RETCOD)

//GO.FT50F001 DD DSN=M2.ZB2NL.SD002.HBINDEX,

~~// DISP=SHR, DCB=(RECFM=FB, LRECL=160, BLKSIZE=7200)~~

~~call fread (IDATA(1,1), 10, LEN, 100, 50)~~

remove 710 to 1200

add IREC=0 ITREC=2

WRITE(6, 30) TPNAME, IFILE

30 format(1H1, 'tape_', A8, 1X, 'FILE_', I3)

Remove 2430, 2440

Data

-$input TPNAME='HB0169', IFILE=18, $end

8/29/77

```
Do while data exists
   read input
   read data
   IF first record
      Then write Label
      else write data
   FI
end do
```

1976 S/C

76/0 = 7006,CA80 ⇒ 65,549908.41

65559000 ⇒ 7006,D600 take as standard

1 day ⇒ + 2A,3000

5 day ⇒ + D2,F000

7E00,0000 ⇒ + 6.48481,4815 days

7F00,0000 ⇒

100,0000 ⇒ 6.068148148 days

1976 day 0 to 6.4 TI = 70XX,XXXX

6.4 – 12.5 7E

– 18.6 7F

1977 0 = 97172100 ⇒ B957,7600

Odd data on 8/22/77 & 8/25/77 were checked to see if redone or if clock consistent

8/30/77

~~different JCL for loaddmb~~

~~// EXEC~~

TI
A40D, B71F
86011320.97

day
76/236 + 708 76.581
20401,276.58

TI = 76/+ 65,550,044.39

A400,0000 = 236.49577407

76/156 ⇒ 96BC,1600

BIB # 156
9574 D11F
⇒ 78358152.97 sec

76/156 + 789,033
= 13479189.03

S/C = 76/+ 64878963.94
- 671,036.06 seconds in error
= 186 hours

BIB # 154 A5E10D1F
or A5F10D1F
⇒ 86,968,424.97

76/249 + 7176820
or + 1505,748
= 21585368.02

S/C = 76/+ 65383056.95
error of 166943.05 sec
= 46 hours

BIB # 160
A57C 353F
= 86761897.97 sec

76/252 + 68677.549
= 21,841,477.55

S/C = 76/+ 69920420.42
error of 62579.58 sec
= 17.28 hours

8/30/77

B18# 203
A94/F, DCFF
=88768231.97

76/+ 268 + 63028.300
= 23218228.3

S/C = 76/+ 65,550,003.67

B18 # 213
A13FE 4997
90174028.72

76/+ 285 + 7.195
= 24,624,007.2

S/C = 76/+ 65550021.52

all the data has been checked
equiv (Files Data 3, nextree, Data 2)

read HBL number + file
SET low and high, set increment = 0
DO until HBO number found
set middle = low + high /2
read middle catalog
IF (HBL - catalog)
greater then 0
if catalog = HBL#, go to read one more
set low = middle
branch to cont DO
equal 0
if (file - file)
equal or less than find file
DO I = 1 / FILES
IF Fentry = file
then go to enddo
else continue
cont
greater than
set increment = files + increment
read middle + nextree
branch to equal 0
read one more
FI
less then 0
set High = middle
go to cont do
FI
cont DO
endDO
set file # = increment + I
set HBO# = middle
print HBO#, file #, HBL#, file #
GO TO Read
end read

8/31/77

```
      integer*2 DATA(80), Fentry(13,6), FILES
      Equivalence (Fentry(1,1), DATA(3)), (NEXTREC, DATA(1))
     * (FILES, DATA(2))
10    format(2I4)
20    format
C     NUMHBL = XXX of HBLXXX ; NUMFIL = HBLXXX file #
C     INCRMN = increment , ITEMP = temporary I ;
      read(5,10) NUMHBL, NUMFIL
      LOW = 1
      LHIGH = 425
      INCRMN = 0
100   continue
      Middle = (LOW + LHIGH)/2
      CALL DREAD(10, MIDDLE, DATA)
      ITEMP = FENTRY
```

→ note a file ~~has~~ can have more than one HBL#
what to do, hum?

find file: set increment = 0
IF (file = fentry(1,2))
greater 0 or equal 0 :
DO I = 1, files
If (file = fenty(1,I)) go to end if
do
If next record
& increase increment
read next record
go to DO I
else increase middle by 1

FI

One could have a data set for the HBL number and search for the file

It would need 55 numbers

8/31/77

It would take less room as hex but be more time consuming

1	2	3	4	5	6	7	8	9	10	11	12	13
001	006	011	016	021	025	030	035	039	044	048	53	
13	57	21	159	31	274	41	380	51	398			
14	62	22	167	32	283	42	381	52	399			
15	75	23	187	33	289	43	383	53	402			
16	85	24	195	34	306	44	386	54	405			
17	92	25	205	35	323	45	388	55	408			
18	106	26	217	36	324	46	390					
19	146	27	226	37	339	47	391					
20	147	28	239	38	351	48	393					
		29	249	39	363	49	395					
		30	262	40	378	50	396					

put these numbers 20 at a time into CATLGHBL

```
100 read HBL number and file
    read HBO numbers
200 Dread file
    DO I = 1, files
       if fentry = HBL file
          go to foundfile
       else continue
    OD
    If inxtree greater 0
       increment to next file
       go to Dread file
    else increment by 1
       go to Dreadfile
    FI
300 found file
    00 write HBL# file # HBO # file
    Go to read
400 endread
```

8/31/77

FORTHBL

```
      Integer *2 DATA(80), Fentry(13,6), FILes, nxtrec
      Equivalence (fentry(1,1), DATA(3)), (nxtrec, Data(1))
     * (files, Data(2))
      dimension NUMHBO(55)
C     catalog for HBLXXX DSNames'
C     NUMHBO(II) = XXX of HBOXXX for given HBLXXI
10    format(20I4)
20    format(1X,'HBL',I3,'_FILE_',I3,2X,'HBO',I3,'_file_',I3)
C NDT = XXX of HBLXXX ; NF = HBL file
      namelist/input/NDT,NF
      CALL NOSTAE
      read(5,10) NUMHBO
100   continue
      read(5,input,end=400)
      JHB = NUMHBO(NDT)
200   continue
      call Bread(10,index,DATA)
      IEND = FILes
      DO 210 I=1,IEND
      JDT = FENTRY(I,1)
      JF = FENTRY(I,2)
      IF((JDT.EQ.NDT).AND.(JF.EQ.NF)) GO TO 300
210   continue
      JNX = NXTREC
      IF(JNX.GT.0) GO TO 220
      JHB = JHB+1
      INDEX = JHB
      GO TO 200
220   continue
      INDEX = 1800 + JNX
      GO TO 200
300   continue
      WRITE(6,20) NDT,NF,JHB,I
      GO TO 100
400   continue
      stop
      end
```

9/1/77

```
LOADHBL
=JC
//EXEC FORTRANH
//SYSIN DD *
=FORTABL
// EXEC LOADER
//FT10F001 DD DSN=M2.ZB2NL.S0002.HACATLOG,
//  DISP=SHR,DCB=(RECFM=FB,LRECL=160,BLKSIZE=7200)
//DATA5 DD *
=DATAHBL
```

$06 \times 16 - 8 = 88_{10} = 58_{16}$

Load DM7 storage 4 bytes $\frac{1}{1+7}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$

largest integer $= 2^{31} - 1$
largest - integer $= -2^{31}$

$2^{4} + 7 = 31$
$2^{31} = 2,147,483,648$
$2^{32} = 4,294,967,296$
in mode 16 FFFFFFFF
F0000000
integer mode stores in binary not base 16

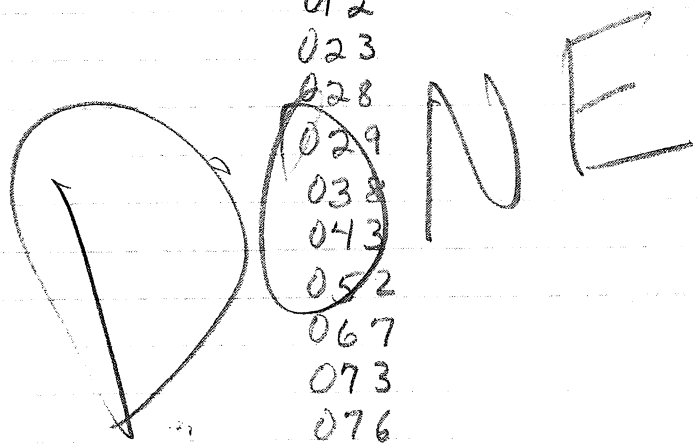
DM7 can print 35 files in 2 1/2 minutes
46 in 3.3 min

< 14 files per minute
$\Rightarrow$ < 70 in 5 minutes
~ 68 file

more DM7 9/2/77 HBL020

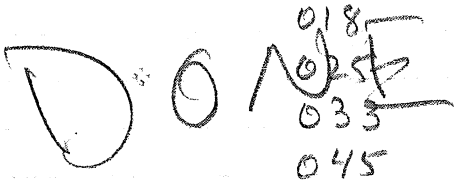
_ $input DT='HBL020', NF=006, OSN='HBO

012
023
028
029
038
043
052
067
073
076
078
079
087
098
105
109
114



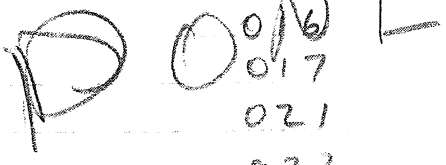
_ $input DT='HBL021', NF=002

010
018
025
033
045
046



_ $input DT='HBL022', NF=009

010
015
016
017
021
022
026
027
029
098
115
116
121
122
124



HBL019
no DM7

9/2/77

~~HBL023 to DM7~~

38

~~128~~
~~129~~

- $ input DT='HBL023', NF=023, DSN='HB0190003', $end

024	19004
026	19006
027	19007
028	19008
032	19012
033	19013
034	19014
037	19017
044	19203
048	19302
049	19303
051	19305
055	19309
056	19310
057	19311
067	19501
068	19502

DONE

- $ input DT='HBL024', NF=007 — 19605
- 011 — 19609
- 017 — 19801
- 021 — 19805
- 024 — ~~19808~~ 19809
- 025 — 19809 19810
- 040 — 20001
- 052 — 20108
- 053 — 20109
- 077 — 20501
- 081 — 20505
- 082 — 20506

- $ input DT='HBL025', NF=003 — 20509
- 004 — 20510
- 007 — 20513
- 024 — 20805
- 028 — 20901
- 029 — 20902
- 037 — 21101
- 047 — 21205

	054	21304
	058	21401
	063	21501
	068	21506
	070	21508
	074	21512
	079	21517
	082	21601
	083	21602
_$input DT='HBL026', NF=	006	21801
	012	21807
	015	21810
	018	21901
	019	21902
	020	21903
	026	21909
	030	21913
	039	22101
	043	22105
	045	22107
	048	22201
	049	22202
	053	22206
	054	22207
	063	22305
	066	22401
	067	22402
_$input DT='HBL027', NF=	005	22701
	006	22702
	008	22801
	009	22802
	010	22803
	018	22901
	019	22902
	024	23001
	034	23101
	035	23102
	044	23111
	045	23201
	051	23301
	056	23401

060	23501
066	23601
-Input DT='HBL028', NF=002	23903
003	23904
005	23906
009	23910
010	23911
011	23912
026	24104
029	24107
036	24204
042	24210
047	24301
048	24302
053	24307
055	24401
056	24402
062	24503
076	24701
080	24801
081	24802

I=1 J=2 K= 1+NROWS+I

I=2, J=1 K= 2

9/2/77

-$ input DT = 'HBL029', NF = 010, DSN = 'HB025005', $end
015 25101
028 25203
051 25501
054 25601
058 25701
059 25702
063 25706
066 25801
067 25802
069 25901
081 26007
085 26201
086 26202
088 26204
089 26205
090 26206
093 26209

-$ input DT = 'HBL030', NF = 003 26301
007 26305
012 26403
035 26701
043 26709
044 26710
047 26803
048 26804
067 27101
069 27103
071 27201
078 27401
079 ~~27401~~ 27402

-$ input DT = 'HBL031', NF = 002 27409
006 27501
007 27502
013 27508
014 27601
020 27701
021 27702
028 27709
031 27712
033 27714

9/2/77

	037	27718
	041	27801
	042	27802
	044	27804
	052	27904
	054	27906
	063	28004
	065	28006
	069	28101
	070	28102
	071	28103
	079	28201
	080	28202
	091	28301
	092	28302
- $ input DT = 'ABL032', NF =	002	28401
	003	28402
	015	28507
	037	28706
- $ input DT = 'HBL033', NF =	011	29101
	014	29201
	023	29307
	063	30501
- $ input DT = 'HBL034', NF =	010	31101
	011	31102
	012	31103
	023	31208
	034	31308
	048	31501
	049	31502
	053	31506
	072	31801
	077	32001
	078	32002
	080	32101
	087	32201 dataestop
- $ input DT = 'HBL035', NF =	001	32301
	006	32401
- $ input DT = 'HBL036', NF =	016	32503
	024	~~32510~~ 32511
	026	~~32512~~ 32513

9/2/77

	030	32604
	063	33001
	064	33002
	079	33201
	080	33202
	092	33306
	093	33307
	098	33312
	100	33314
	101	33401
	102	33402
	107	33501
	110	33601
	126	33903
_ $ input DT = 'HBL037', NF =	004	34001
	005	34002
	006	34003
	013	34101
	014	34102
_ $ input DT = 'HBL038', NF =	068	36011
	076	36105
	077	36106
	078	36107
_ $ input DT = 'HBL039', NF =	003	36401
	013	36701
	048	37101
	049	37102
	055	37108
	063	37116
	064	37201
	069	37206
	073	37210
	077	37214
	079	37216
	082	37402
_ $ input DT = 'HBL043', NF =	055	38514
_ $ input DT = 'HDL055', NF =	033	41004
	041	41012
	056	41108
	057	41109
	059	41111

in ↑ dataStor

9/6/77

```
      X = 1.0/2.0
      DO 10 I=1,500
         Y = X + 1.0/2.0**(I+1)
         IF(X.EQ.Y) GO TO 20
   10 X = Y
   20 WRITE(3,101) I
  101 format('_This computer has a mantissa ',I3,' Bits long.')
      stop
      end
```

```
//loadace JOB
// EXEC FORTRANH
//SYSIN DD *
/*
// EXEC LOADER
```

062	41114
064	41116
111	41404
146	41701
147	41702
148	41703
153	41801
156	41804
162	41906
166	42101

9/6/77

Tape	file	.5 or 2 yr	DM	Bitrate	date	format	records	ATI	quality
B23	23	B6	7	8	76/350/08	3	4	288	Good
	24	B6	7	8	76/351/02	3	1	288	perfect
	26	B6	7	8	76/351/10	3	3	288	Good
	27	B6	7	8	76/351/19	3		288	BAD
	28	B7	7	8	76/352/00	3	1	288	perfect
	32	B7	7	8	76/352/10	3	3	288	Good
	33	B6	7	8	76/352/18	3		288	BAD
	34	B7	7	8	76/353/00	3	1	288	perfect
	37	B7	7	8	76/353/18	3		288	BAD
	44	B8	7	8	76/358/05	3	6	288	perfect
	48	B7	7	8	76/356/12	3	5	288	perfect
	49	B7	7	8	76/357/00	3	3	288	Good
	51	B7	7	8	76/357/06	3	1	288	perfect
	55	B8	7	8	76/360/12	3	5	288	perfect
	56	B8	7	8	76/361/00	3	3	288	Good
	57	B8	7	8	76/361/06	3	1	288	perfect
	67	B9	7	8	76/364/21	3	1	288	perfect
	68	B9	7	8	76/365/00	3	6	288	perfect
B24	7	B9	7	16	77/001/13	3	6	144	perfect
	11	B9	7	16	77/002/09	3		144	BAD
	17	B9	7	16	77/002/03	3	5	144	perfect
	21	B9	7	16	77/003/01	3	7	144	perfect
	24	BA	7	16	77/004/02	3	7	144	perfect
	25	BA	7	16	77/004/07	3		144	repeat of 24
	40	BA	7	16	77/006/04	3	6	144	perfect
"	52	BA	7	16	77/009/04	3	5	144	X two bad frames
	53	BA	7	8	77/009/04	3	3	288	Good"
	77	BB	7	16	77/011/06	3	7	144	X two bad frames
	81	BB	7	16	77/014/06	3	7	144	perfect
	82	BB	7	16	77/014/09	3		144	X repeat of 81

9/6/77

B23 # 27

B6 BF07D6 = 95811646.69 = 76/+65415815.43

76/351 + 694 31.259 = 30395831.26

error of 13 4184.57 sec = 37.2734 hours

Check of formula for 77

B90855C1 = 97436334.03 = 76/+ 97,172,431.32

77/003/+4702.710 = 263902.71

formula says 97,172,400

Where does the bad data go?

AD8 ABF2F = 29115512 79/32 = 90985977.47

76/294 + ~~093218~~ 3433.8.686 = 25435938.69 = 65550038.78

B35F88DF ⇒ 76/329.782

76 331 + 28989213

B365 948A ⇒ 76/329.92

B4521C51 ⇒ 76/335.53

9/7/77

perhaps a program in TSO

```
C  calculate the S/C clock for 1976, 1977 for Helios B
C  IC = .. = TI S/C clock for 1976   JC = 1977
   DO  I = 1,366
       convert I to seconds
       add 65550000  & 97,172,400
       multiply by 32
       write I & I clock
   OD

10 format(1X,'1976 DAY ',I3,' TI = ',Z8,2X,'1977 TI = ',Z8)

   DO  100  I = 1,366
       ICS = 24 * 3600 * I
       IC = (ICS + 65550000) * 32
       JC = (ICS + 97172400) * 32
       WRITE(6,10) I, IC, JC
100 Continue
    stop
    end
```

9/7/77

C double precision version

No DMT HALO1 – 10, 12, 13, 16

9/7/77

- Sinput DT='HALO11', NF=39, DSN=
- Sinput DT='HALO14', NF=025, DSN=
026
132
144
151
167
178
198

rather let a program search for DM7 Data

fortdmb

100 'read' tape' # · # file
200 Call lib to open file
set record=0
300 read data twice
DO while tape = DM7
write label
write tape
DO
go to next file
end.

400

9/7/77

```
C  routine to search for DM77 data and print it out
      implicit real*8(D), integer*2(H), logical*1(Q)
      real*8 tpname
      integer*4 retcod, SHFTL, SHFTR
      dimension JDATA(13,72)
      dimension IDATA(13,72), HDATA(26,72), Qlabel(91)
      Equivalence (IDATA(1,1), HDATA(1,1))
      equivalence (JDATA(1,1), Qlabel(1))
      namelist/input/ tpname, ifile
      call rostar
10    format(1X, 'retcod = ', I4)
***   mounts = 0
      INDEX = 0
100   continue
      read(5,input,end=500)
200   continue
      call Getlib(49,50,10, tpname, ifile, mounts, retcod)
      write(6,10) retcod
      call fread(JDATA(1,1), 10, len, &100, &300)
300   continue
      Call fread(IDATA(1,1), 10, len, &400, &300)
      ISI = IDATA(4,2)
      ISI = SHFTL(ISI,16)
      ISHIFT = SHFTR(ISI,19)
      IF(ISHIFT.NE.7) GO TO 400
C     ISHIFT = DM portion of SI word
      WRITE(6,20) QLABEL, TPNAME, IFILE
310   continue
      DO 320 K = 1,72
      WRITE(6,30) IDATA(1,K), IDATA(2,K), HDATA(5,K), HDATA(6,K)
     *  (IDATA(J,K), J=4,13)
320   continue
330   continue
      call fread(IDATA(1,1), 10, len, &400, &320)
C     tpname = EOR tape  HB0xxx   Ifile = file #
```

9/7/77 NO DM7 on A16

20 format('1H1', 91A1, 1X, A8, 1X, 'file', I4)
30 format(1X, 2(I10, 1X), I5, 1X, Z8, 1X, 9(Z8, 1X), Z8)
- &input DT = 'HAL015', NF = 007, DSN = 'HA020503', &end
013 20604
014
069
073
082
- &input DT = 'HAL017', NF = 050
- &input DT = 'HAL018', NF = 029 25403
039
043
049
053
059
065
074
076
083
086
088
090
092
098
099
101
102
103
110
125
131
- &input DT = 'HAL019', NF = 014
022
028
030
031
034
036
039
043
044

9/7/77

052
055
056
057
058
073
084

_ $ input DT='HAL020', NF= 003
010
015
016
017
029
033
040
046
055
058
062
071
079
088
097
101
102
103
113
117
120

_ $ input DT='HAL021', NF= 002
007
010
011
016
021
031
036
037
040
045
049

9/7/77

050
054
057
066
070
076
079
083
090
093
098
100
104
111
115

- $input DT = 'HAL022', NF = 002
007
013
020
028
032
046
053
057
058
059
069
074
077
079
081
091
098

- $input DT = 'HAL023', NF = 002
010
017
020
026
029
033
036

9/7/77

044
047
052
058
062
065
069
073
077
081
088
092
096
098
102
106
110
114
117
121
122
126
127
128
131
132
135
136
137
140
143
144
145
146

- Script DT = 'HALO24', NF = 003
004
007
008
014
017
020

9/7/77

023
024
028
031
036
039
042
049
054
056
057
059
066
069
072
073
079
084
094
098
101
107
110
119
123
136
149
154
164
169
172
178
184
191
201
202
213

- &input DT='HALO25', NF=005
015
030
036

4/7/77

047
061
064
072

_$input DT='HAL026', NF=002
024
033
036
037
047
052
056
060
064
068
074
090
094
097
101
107
110
115
119
124
125
129
131
136
138
143
146
147
154
157
165
168
171
177
178
180

9/7/77

181
185
188
193
194
197
200
202
208
215
216
218
222
223
224
228
229
232
236
247
254
258
265
272
277
281
285
293
298

- $input DT='HAL027', NF=006, DSN='HA046703', $end
008
017
023
029
031
035
040
045
049
053
060

47503

9/7/77

066	
067	
071	
075	
076	47703
080	
081	
085	
086	
090	
093	
097	
098	
102	
105	
109	47806
110	
111	
115	
116	
120	
124	
125	
129	
130	
134	
138	
139	47903
143	
144	
148	
150	
155	
156	
160	
161	
165	
169	
170	
176	
181	

9/7/77

186
190
195
209
210
214
218
222
226
231 48203
235
236
240
244
249
254
255
259
269
271
276
277
281
285
298
301
308 48504
312
316
320
324
328
329
333
336
346
344 48702
348
349
355
358

9/7/77

363	
368	
373	
378	
385	
389	48905
394	
399	
404	
408	
413	
418	
423	
428	
435	49101
445	
452	
457	
462	
465	
470	
475	49401
490	
510	
511	
514	
518	
520	
521	
524	49805
525	
526	
530	
535	
539	
533	
537	
553	

9/8/77

-$input DT='HAL028', NF = 004
007
010
014
018
027
033
038
039
042
046
047

-$input DT='HAL029', NF = 002
003
004
009
010
014
015
017
021
030
033
036
039
040
047
048
056
057
058
059
064
065
066
067
078
081
084
100
105

9/8/77

106
120
121
122
123
142
143
144
145
146
147
149
158
159
160
165
166
170
171
172
178
179
190
191
192
193
194
202

_$input DT='HAL030', NF=003
004
008
009
013
014
015
016
018
024
025
027
049

9/8/77

051
063
064
072
073
074
078
081
082
085
086
087
090
091
098
099
100
108
131
132
133
134
135
136
-&input DT='HAL031', NF=005
006
007
014
018
019
020
021
022
023
026
027
028
029
036
037
038

4/8/77

039
040
041
042
043
044
045
046
052
053
054
055
064
065
066
067
068
069
070
071
072
073
076
077
078
079
086
087
088
089
090
097
098
099
100
109
110
111
112
114
115

9/8/77

120
121
122
123
124
125
131
132
133
134
135
136
142
143
144
145
147
-$input DT='HAL032',NF=002
003
004
012
013
014
015
016
021
023
027
029
030
032
034
035
036
038
040
041
042
044
046
049

9/8/77

050
054
055
056
057
058
059
060
061
084
085
086
087
091
092
093
094
095
096
097
101
102
103
105
106
107
108
109
114
115
116
117
118
119
120
123
124

- &input DT='HALO34', NF=019
- &input DT='HALO36', NF=085

9/8/71

create FortBLP

```
C  search for DM7 data without label processing
C  dtpin is HBL or HAL tape
C  isi = SI , Ishift = DM from SI

      integer shfll, shftr
      implicit ~~real*8(D)~~, integer*2(H), logical*1(Q)
      dimension IDATA(13,72), HDATA(26,72), Qlabel(91)
      equivalence (IDATA(1,1), HDATA(1,1), Qlabel(1))
      namelist /input/ DTPIN, ISfile, iefile, itrec
      Data dtpin /'------'/, isfile/1/, iefile/999/, itrec/9999/
      call nostar
10    continue
      read(5, input, end=150)
      mfile = isfile
      call mount(1,10,DTPIN, mfile)
      irec=0
      go to 25
20    call posn(1,10,mfile)
      irec=0
25    call fread(idata(1,1), 10, len, $100, $50)
      irec = irec+1
      if(irec .GT. 1) go to 29
      write(6,27) Qlabel
27    format(1H1, 91A1)
      go to 25
29    continue
      if(irec .GT. itrec) Go to 100
      write(6,30) mfile, irec
30    format(1H1, 'file #', I2, ' & record # ', I3)
      ISI = IDATA(4,2)
      ISI = Shftl(ISI,16)
      Ishift = Shftr(ISI,19)
      If(Ishift .NE. 7) go to 100
      DO 35 K=1,72
```

same as CMW

DATABLP
&input DTPIN = 'HBL028' ISfile = 2, iefile = 81, &end
load BLP
=Name
//

Tasks

9/8/77

A Write a discriminator to pick out good perfect fair + bad data

B Calculate time of data to get percentages of good, bad, fair, perfect

C check data to see what was rerun mark on table

D check rerun data to see what quality is

E run Helios A + B Parts

Task A discriminator

2 days: program: access catalog for format 3
1 days: program: select RM70 data from format 3
two weeks program: catalog into perfect, good, fair, bad

Task B Percentages

manual: sum all categories
2 days program: sum all categories

Task C

1 hour manual: enter reruns on table
1 hour manual: check for reruns on chart

Task D

1 day. examine rerun data

9/8/77

Task ① compare D14 #48 to B43 #55
clock still does not agree with day
data correct but out of time slot

compare B18 # 7 to B55 #56 rerun

9177 43 C1 76/124 +2356.927
10715956.93
57 seconds error
rerun is perfect
several other reruns are also perfect

The discriminator

modify GOTlib
does Heldrp look at zero frames in first record
see B18 # 147
should discrim examine all frames of format 3
for the moment yes, do it the hard way

Subroutine GOT lib
C IFORM is the format selected from catalog, IST = temporary
IST = Fentry (13, seek)
integer shiftl, shiftr
C this is to select format 3 data and discriminate all but D17
C ~~format~~ ~~Fentry (13, seek)~~ = 2 bytes shift off right bit } insert at 6700
IFORM = QST(3) , 2)
write (6, 1010) Iform IF (IFORM.NE.3) GO TO 600
1010 format (1X, 'format = ', I4) } insert at 8500
create fortDOC
add fortdmB
then ZBGEM. GETLIB

600 continue
C not a format 3 file } insert at 8500
RETCOD = 5
Return

9/8/77

add to fort DMB — 120 + 10

```
integer shiftl, shiftr
isi = idata(4,K)
isi = shftl(isi,16)
ishift = shftr(isi,19)
if(ishift.NE. 7) GO TO 35
```

2400 + 10

this discriminates is for 1976 & 1977 Helios B

the label is in A format however the catalog has the information let retcod be the clock

$5452_{10} = 154C_{16}$

$4C = 76$

```
C     year = Iyear
      IST= fentry(9, Seek)
      dimension QST(4)
      Equivalence (QST(1), IST)
      Iyear = QST(4)
C startday = Iday  sla
      IDAY= fentry(10, seek)
      SCtime) = 65550000 + 31622400*(Iyear-76) + 86400*IDAY
```

← I form, I year, I'day, must be set equal zero at beginning 4400 + 10

```
in main EPS= 3200
420  1 format(1X,'retcod = ', Z8)
     DO 35 K = 1,71,2
     equivalence (CLOCK, HCLOCK(1))
     dimension HClock(2)
     HCLOCK(1) = HDATA(5,K)
     HCLOCK(2) = HDATA(6,K+1)
C    SCTIME = time clock should be; clock = actual data
     SCTIME = (RETCOD + IDATA(1,K)) *32
     WRITE(6,2) SCTIME, CLOCK
2    format(1X,'S/C clock_', Z8,'_ Data clock_', Z8)
     IF(ABS(SCTIME-CLOCK) .GT. EPS) GO TO 32
     IGOOD= IGOOD+1
     GO TO 35
32   IBAD= IBAD+1
```

9/8/77

```
      write(6,3) IGOOD, IBAD
3     format(1X,'GOOD frames = ',I6,'  Bad frames = ',I6)
```

9/9/77

```
      type statements
      dimension
      equivalence
      namelist
      comments
      format
      back to 0 mounts,
100   block 100
        Get tapename
          use gotlib to open data set
          write reload +
        end block
200     block read
          if record = 0
            read record, go to end block, goto err block
            increase record
            write label if 1st
            else go to data block
        end read
300     block data
        Do, until end of record
400       DM7 block
            if(DM7) go to clock block
            else go to end do
          end DM
500       clock block
            if S/C clock o.k. go to write data
            else turn clock around & write data if ok
            else add one to bad data and go to end DO
          end clock
600       write data block
            add one to good data
            write frame number, S/C clock + discrim clock
          end write
700     end do
        return to read block
800     err block, return to read block
900     end block
        next input block
        end input
```

9/9/77

what about more than one tape
we need a way to increase fil
we want to begin at a file and just keep going
Both must build next tape name
use servol & serdsn

B41F 8ACD
8ACD D81F
= 72,773,312.97 sec
⇒ 83.603 days
= 83 day 14 hr

76/83 + 7249 86.252
= 7,243,686.252
→ 72793686.25
76/84 + 72486.252
= 7257600 +
= 7330086.252
⇒ 72880086.25

Block next
find next tape, file
construct tpname
place in Tpnext & nextfi
end block

```
      1 ____i____ retcod, Tpnext, nextfi )
C     Tpnext = next HBO tape, nextfi = next file
      real*8 Tpnext
C       find next tape & file
          nexttp = fentry(3, seek)
          nextfi = fentry(4, seek)
           call servol(satid, 2, nexttp, Tpnext)
```

9/9/77

FortDSC

```
      implicit real*8(D), integer*2 (H), logical*1(Q)
      real*8 Tpname, Tpnext
      integer*4 retcod, shiftl, shiftr, clock, sctime
      dimension Idata(13,72), Hdata(26,72), Qlabel(91)
      equivalence (IDATA(1,1),HDATA(1,1), Qlabel(1))
      dimension Hclock(2), QST(4)
      equivalence (clock, Hclock(1))
      namelist/input/tpname, ifile
10    format(1X,'retcod',Z8,'_tpnext_',A8,'_nextfi',I4)
20    format(1H1, 91A1)
30    format(1H1, 'Tape_', A8, 1X, 'file_', I3)
40    format(1X,I4, 'sctime ', Z8, '_clock', Z8)
50    format(1X, '. frames read ', I4, '_good_', I4)
      IEPS = 3200
      mounts = 0
      IBAD = 0
      irec = 9999
      IGOOD = 0
C     block 100
        read(5, input, end = 1000)
100     continue
        call GOTlib(49,50,10, tpname, ifile, mounts, retcod,
     +              TPnext, nextfi, sctime)
        write(6,10) retcod, tpnext, nextfi
C     end block
C     block read
        irec = 0
200     continue
        call fread(idata(1,1), 10, len, &900, &800)
        irec = irec + 1
        if (irec .GT. 1) GO TO 300
        write(6,20) Qlabel
        GO TO 200
C     endread
C     data block
300   continue
      IF(Irec .GT. irec) go to 900
      write(6,30) Tpname, ifile
      DO 700 K=1,71,2
C       DM7. block, isi = SI, ishift = Dist mode
        isi = idata(4,K)
        isi = shftl(isi,16)
        ishift = shftr(isi,19)
        if(ishift .NE. 7) GO TO 700
```

9/9/77

```
C       end DMA
C       clock block, sctime = projected S/C ; clock = actual S/C
          Hclock(1) = HDATA(6,K)
          Hclock(2) = Hdata(6,K+1)
          sctime = (sctime + idata(1,K)/1000) * 32
          write(6,40) K, sctime, clock
          if (Iabs(SCTime - clock) .LE. EPS)  GO TO 600
          Hclock(1) = HDATA(6,K+)
          Hclock(2) = HData(6,K)
          write(6,40) K, sctime, clock
          if (iabs(sctime - clock) .LE. EPS)  GO TO 600
          IBAD = IBAD + 1
          GO TO 700
C       end clock
C       write data block
600     continue
          IGOOD = IGOOD + 1
          write(6,80) HDATA(5,K), sctime, clock
C       end write
C     enddo
700   continue
      GO TO 200
800   continue
      GO TO 200
900   continue
      write(6,50) IBAD, IGOOD
      IRname = IRnext
      file = nextfi
      GO TO 100
1000  continue
      stop
      end
```

9/9/77

there is no ± format 3 rejection

There is no turn of day test

IEVT = IDATA(1, K)
IF

perhaps by accumulating EVT one can measure good time & bad time & tell if day turned over
If data is zero one should skip to next K = K+2

8ACD B41F
B41F 8ACD 94436438.41 76/334/080038

use detcod to stop program
use bitrate to calculate time interval
insert return on GOT lib
need a routine to generate next tape name
see DERdsn may be

9/12/77

external decimal F is non printing + C is printing +

F9 = 9 C4 = +4 40 = b

C1C8 = +18 D6D2 = -62 F3F4 = +34

40 F4F7 = 47 C9C7C5 = +975 40 09D8 = -98

internal decimal

8F = 8 6D = -6 04 = —

24C = +24 37F = 37 64D = -64

267F = 267 814D = -814 974C = +974

Binary

04 = 4 0F = 15 F1 = -0F1 = -15

40 = 64 060 = 109 7BC = 1980

03F4 = 1012 F23B = -0DC4+1 = -3525 A67F = -5980+1 = -22913

internal floating point

44A45B40 = ? A45B.40

44 = 68 = 42075.25

-64

= 4

413AB4800 = AB4.800 = 2740.5

43 = 67

-64

3

C2FB = ..-FB. = -251

C2 = 1100 0010

= -42

= -66

-64

= -2

C35CC120 = -5CC.120 = -1484.075

C3 = 43-

= 67-

-64

3-

interval 9/12/77

bit rate = fentry(12, seek)

each frame = 1152 X 2 = 2304 bits
2304 / bit rate = seconds per frame
divide by 3600 = hours

insert
```
16951     IBITRT = fentry(12, seek)
16952     ISEC = 2304/IBitrate
10200  *  retcod, tpnext, nextfl, ISEC
10600  C  ISec = frame interval in seconds, IBitrt = bit rate
2300   *     (tpnext, nextfl, scref, ISec)
6910       TIMBAD = IBAD * ISEC / 3600.
6920       TMGOOD = IGOOD * ISEC/3600.
7000       write (6,50) IBAD, IGOOD, TIMBAD, TMGOOD
1300  50   format (1X, ' frames bad ', I4, ' Good ', I4, ' hours bad ',
1310     * F10.4, ' hours good ', F10.4)
```

day change is more difficult because there are jumps in time
first must skip to data and count frames skipped
little choice but to use EVT/1000

see TB 18#296

```
4900   SCtime = (scref + IEVT) * 32
5000     write (6,40) HDATAC5, K1, sctime, clock
5400     write (6,40) HDATAC5, K), sctime, clock
```

9/12/77

```
3910    IEVT = IDATA(1,K)/1000
3810    IEVTLS = IDATA(1,1)/1000
3920    IF(IABS(IEVT-IEVTLS).GT. 80000) SCRef=SCRef+86400
3930    IEVTLS=IEVT
3980 C  end check for day change
2420        IF(retcod .NE. 0) GO TO 1000
```

~~edit 300~~

```
3901    ~~IF(I~~
        IZERO = IDATA(4,K)
3902    IF(IZERO .EQ. 0)  GO TO 700
```

Bicycle, mens, JC Penney Open Road, 24", 3-speed, generator light, rear carrier rack, #25, Ed Ronish 5668

```
1[illegible]  ~~IHBL = fentry(1,seek)~~
1620  ~~IHBLfl = fentry(2,seek)~~

10200  *     retcod, tpnext, nextfi, sctime, isec, outsec, outseq)
2300   *     tpnext, nextfi, scref, isec, IHBL, ILfile)
3800         write(6,30) tpname, Ifilo, IHBL, ILfilo, irec
1100   30    format(1X,'Tape_',A8,1X,'filo_',I3,'_HBL',I3,
1110   *     '_filo #_',I3,'_record_',I3)
1200   40    format(1X,I4,'_sctime_',Z8,'_clock_',Z8)
5100         If (IABS(SCTIME-clock) .LE. IEPS) GO TO 600
5500         IF (IABS(sctime-clock) .LE. IEPS) GO TO 600
4400         If (Ishift .NE. 7)  GO TO 900
```

768 = 300_{16}

```
delete  5000,l
7000 910 continue
delete  2400,l
edit 2410                910
7410        write(6,10) retcod, tpnext, nextfi
delete  3901
delete  3902
2420    if (retcod .NE. 0)    GO TO 1000
```

9/12/77

$80 = 50_{16}$

```
  4 17
1FFE5A1A
   - 50
---------
 LEECA
```

1FFE4CA

$560 = 230_{16}$

```
  4 17
1FFE$A1A
   - 230
---------
 1FFE2EA
```

```
  4 17
1FFE8A1A
-1FFE330
---------
    1EA   = 490
```

Page 81 213 data set not found

1. completion code 213

Job name R22414 stepname GO

2. valid UCB 3DC4 problem Ddname readit

//GO.READIT DD UNIT=3330, DISP=(OLD,KEEP),
DSN=GOODDATA, VOL=SER=TSO00 1
DCB=(RECFM=FB, LRECL=120, BLKSIZE=3120)

3. rg4 = 231C05E0

" no data on vol TSO061, file=GOODDATA

9/12/77

Page 85 D37 - ran out of space on a file

1. CC = D37
Job RZ2455 stepname STEP1
2. valid UCB = 3984 problem Ddname = Sysut2

JCL

Sysut2 DD unit = 3330, disp = (new, pass),
dsn = gooddata, vol = ser = TS0001,
space = (1600, 4),
DCB = (recfm = fb, lrecl = 080, blksize = 1600)

3. DCB address 85C3C
+ 28
85C64

TIOT offset value 002C = 44,0
- 24 = 20
20/20 = 1
+1 = 2

problem Ddname SYSUT2

4. DCB address 85C3C
+ 3E
85C7A

max blocksize 0640
= 1600, ok

Log record 85C3C
+ 52
85C8E

record = 50
= 80,0 ok

block count 85C3C
count = 0
=

record is too large

9/12/77

```
   B621317F
 - B6213C00
 ----------
       59F = 1439_10  => 44 sec
```

76/346 + 44091.972
= 29938491.972 sec

+ 65,550,000 = 95,488,491 * 32

```
=> B621 3D60
 - B621 3C00
 -----------
      1 60 = 352_10
```

346 ⇒ B60B B600
44'091 ⇒ 15'8760
B6213D60

```
5400  IF (IABS(SCTIME-CLOCK) .LE. EPS) GO TO 600
5500  WRITE (6,40) HDATA(5,K), sctime, clock
(...  (...                              ) ...
                                  ! EVT ! I10)
6210  write (6,60) IEVT, IEVT, SCREF, SCREF
1320 60 format(1X, 'EVT_', I10, 1X, Z8, '_SCREF_', I10, 1X, Z8)
```

147 X 288 = 42336 = 11.76 hours
2304/8 = 288

```
edit 6910   TIMBAD = IBAD * ISEC/3600. + TIMBAD
edit 6920   TMGOOD = IGOOD * ISEC/3600. + TMGOOD
     1400   DATA IEPS/3200/, MOUNTS/0/, IBAD/0/, ITREC/9999/
     1500   DATA IGOOD/0/, TIMBAD/0/, TMGOOD/0/
delete 1600
delete 1700
delete 1800
     7000   IBAD=0
     7000   IGOOD=0
```

edit .300 , scref

9/12/77 9/14/77

SCREF = B6|0 B B600

delete 6210, 6220
2310 write(6,60) scref, scref
2320 60 format(1X, 'scref = ', I10, 1X, Z8)
10700 integer cotuni, sctime

before scref = 4 7 5 B 0 5 0 B
= 1 1 9 7 1 4 7 6 1 1
should be 29,894,400

sctime = (scref + 44091)**2 = (1 1 9 7 1 9 1 7 0 2)**32
must have over flowed
= 8 E B 7 6 — —
that's what it is now
no integer sctime in gotlib

OCB pg 134
CC OCB
Job RZ2925 stop 60 E 20 22
2. IA from APSW 20 A F 5 6
EPA from CDE 20 A 7 E 8
IA-EPA 7 6 E
verification
origin of ACOMP 00
ILBOCOMO BA8
error is in main program ACOMP
3. length into listing 76E
statement 62
62 . compute ITEST = DATA-ARRAY(SUB-M) / DATA-ARRAY(SUB-N)

divide by 0 DATA-ARRAY(SUB-N) = 0

9/14/77

pg 135 OC5

1. User code 240 CC OC5
   Job PZZ017 step GO
2. IA from APSW F2F3A
   EPA from CDF F2C00
   IA-EPA 33A
   origin of main 00
   comp 1E8
   IHNECOMH 3A0
   error in comp; outside of main
   length 218A
   origin 1E8
   length = 152
3. length 152
   statement 3
   100 ITEST = ID(M) * ID(N)

pg 142 1. error IHN215I
   message illegal decimal character X
2. length determination
   name of sys routine IBCOM
   program main
   return address RA 136598
   EPA 1364100
   RA-EPA 188
3. length 188
   statement 2
   read (5,100) ID, M, N
   ID(8) is X not an integer

9/14/77

reconstruct problem

floating point

sctime = float(65550000 + (346 X 86400))

= float(95,444,400)

= cnvt(05B0, 5DB0)

= exp07 : 5B05DB0

= (71) . 5B05DB

= 475B05DB

actual 475B05DB float

sctime = scref + (IEVT)

EVT = 44091 ÷

IEVT = AC3B

float(IEVT) = (

[edit 300 , sctime]

float(IEVT) = (04).AC3B

= 68.AC3B

= 44AC3B

add scref + IEVT

44 AC3X S

+ 475B05DBX

= 475B09EX

*32 ? don't know how to multiply in hex

95,444,400 = 05B0 5DB0

+ 44091 AC3B

95,488,491 = 05B1 09EX

* 32

3,055,631,712 = B621 3D60

float = 09 B6213D6

= 72 B6213D6 actual B6213C00

= 48B6213DX = 48B6213D fix = B6213D00

9/14/77

Scref = 475B05DB
fl EVT = 44AC3B
add = 475BB216 ?

* 32 = 2^5
* 16 = 485BB216 = 48 0101 1011 1011 0010 0001 0110 0
* 2 = 48 1011 0111 0110 0100 0010 1100
= 48 B 7 6 4 2 C
= 48B7642C

check 475BB216 = 5BB2160
= 96149856 * 16
= 5BB21600
= 1538976896 * 2
= 3076795392
= B76421C00

475B109E * 16
= 485B109E = 48 0101 1011 0001 0000 1001 1110 * 2
= 48 1011 0110 0010 0001 0011 1100
= 48 B 6 2 1 3 C

actuall 48 B62 13C
it's not obvious where the D becomes a C

what if Scref + iext = 475B109E
*32 then it is
= 48B62 13C
fix = B62 13C00

9/14/77

tape	file	DM	Bit rate	year	day	hour	quality	records	hours

9/14/77

72 half frames = 36 frames at 288 sec = 2.88 hours 8 BPS
@ 144 = 1.44 16 BPS
@ 72 = .72 32 BPS

delete 2310, 2320, 1
3210 write (6, 30) TPname, Ifile, IHBL, IL file
1110 * '_file #_', I3)
delete 5500, 1
delete 6200, 1

Loaddisc
800 $input TPname = 'HB0092', IFILE = 3, $end

A FA0
4E80
6120

3200 = C80

SEVT = 1.00 000 2486 * S/C clock - 4289586.856
for Helios A or B?
S/C clock = AFA0 0AE7 = ~~133588615~~ 2946501351 ~~262146795~~
= ~~4194519.22~~ sec
= ~~8,192,087.22~~
= 92, 078, 167.22

= error over one year of 78.398496 seconds
slowing down

814/1396 = .58

10

Load Fort
=JC
// EXEC FORTRANG, PARM='LIST, MAP'

9/14/77

175.32 bad & 76.18 good

```
5110 C    check for frame slip
5120      IBAD = IBAD + 1
5130      IF(K.EQ.71) GO TO 700
5200      HCLOCK(1) = HDATA(6,K+1)
edit 5300 HCLOCK(2) = HDATA(6,K+2)
```

214.9997 bad & 538.9285 good hours

Need another printout and dump

load disc

```
702 //GO.SYSUDUMP DD SYSOUT=A
edit 800                190          3
edit 200                ) parm = list
```

fort disc

```
5500 write(6,60) HDATA(5,K), sctime, clock
1320 60 format(1X,I4,'-sctime-',28,'-clock-',28,'-BAD')
```

error is in the catalog

fortdisc

```
16 721    C       end of tape advance one file
16 722            if (nexttp .EQ. 0) GO TO 101
16 723            GO TO 102
16 724    101     continue
16 725            nextfl = nextfl + 1
16 726            GO TO 103
16 727    102     continue
16 741    103     continue
```

9/14/77

1. variable name

ITEST	disp - nm
DATA-ARRAY	array disp - nm
SUB-M	comp binary
SUB-N	comp binary

2. DMAP

	ITEST	SUB-M	SUB-N	DATA-ARRAY
base	BL=3	BL=3	BL=3	BL=3
reg	6	6	6	6
address	20A870	20A870	20A870	20A870
disp	004	000	002	008
length	2	2	2	2
form	disp-NM	comp	comp	disp-nm

3.

	ITEST	SUBM	SUB-N
address	20A874	20A870	20A872
char	F0F0	0006	0003
decimal	0	6	3

itest = 0 Data array 6 02 3 must be 0

4.

	DATA-array	
address	20A878	
position	6	3
char	F1F2	40F0
decimal	12	0

position 3 = 0

5. Data-array (sub-N) = DATA-array (3) = 0
division by 0

9/15/77

1. M integer
N integer

2.	M	N
base	13	13
bassaddress	F2E18	F2E18
decimal disp	120	124
Hex disp	78	7C
length	4	4
form	binary	binary

3.	M	N
address	F2E90	F2E94
char	58E09108	58F09008
decimal	?	?

very large

4. non subscript

---

frame slip adds extra frames

delete 5120, 1

```
 1600     DATA IPO/0/
 5500     if (IPO .EQ. 1) WRITE (6,60) HDATA(5,K), sctime, clock
 6200     if (IPO .EQ. 1) write (6,40) HDATA(5,K), sctime, clock
 1320 60  format (1X, I4, '_sctime_', Z8, '_clock_', Z8, '_BAD')
edit 800                 , IPO
```

ABL024
B90D 77CF 77/003 +

```
 3900          K = 1
 3901 400      continue
 5200C         ;check for frame slip
 5300          K = K + 1
 5400          if (IPO .EQ. 1) WRITE (6,60) HDATA(5,K), sctime, clock
 5500C         ~~GO TO 700~~
 6510          IF (K.GE. 71) GO TO 500
 6520          K = K + 2
 6530          GO TO 400
 6540 500      continue
```

9/15/77

B 25 # 63

edit 1100 HELO', I2,

#35 BB08FAFF 77/010 + 23817
887817
+ 97172400
⇒ BB08F720

#0 + 18633.075
#34 ⇒ BB06 6F20
+ 23529
⇒ BB08 D320

36 Helios B

	year	day	EVT	S/C clock		tape/file	prediction
	77	014	78766.205	BBCC 8F7B	76 380	25/3	BBCC 8F8B
	77	022	45920	BD0E 0597	76 388		BD0E 05B0
	77	044	42725	C0AC 95E7	76 410		C0AC 9605
23	77	004	07222.376	BA03 C0B2	76 370	23/23	BA03 C0AD
24	76	350	29389.813	B6C2 D3DF			B6C2 D3D2
	76	311	18717.622	B050 4E5F		18/368	B0504E57
	76	238	5826.787	A442 53DF		18/120	A4425 3F0
	76	304	15320	AF27 55BF			AF27 55CB
	76	121	56805.536	9113 49DD		55/33	9113 49OF
	77	088	00225.290	C708 14DB	76 454	36/16	C7D8 14EF
	77	134	59567.286	CF89 AE0F	76 500		CF89 AE12

from two extremes 76/121/56805 9113 49DD
to 76/500/59567 CF89 AE0F

S/C clock to EVT
(S/C clock − B)/A

9/15/77

S/C clock = A second + B

108,809,584.5 = A 43259567 + B
7606262.91 = A 10511205 + B

32748321.59 = A(32748362)
A = .999998766
B = 65550070.88

76/311 + 18717 ⇒ B050 4E5C nice

---

edit 12400 , DAcon DBcon, DAY, DTIME

A * 86400 = 86399.89338
4 A = 86399
B = 65550070

76/311 + 18717 ⇒ B050 2B80

~~16950~~
366 ⇒ 31622360.98

~~DTIME~~
16941 DTIME = 86399.89338D0*IDAY + 65550070.88D0
16942 DTIME = DTIME + 31622360.98D0*(IYEAR-76)
16950 SCTIME = DTIME

K = K-1 go to 700

4 K = 71 → 70 → ~~72~~ then
70 → 69 → 71

or K = K+1 go ~~to 400~~ 71 → 72 ~~→ 74~~
IF (K .GT. 71) GO TO ~~400~~
6510 GO TO 400
K = K+2
6520 IF (K .GT. 71) GO TO 500

Check 77/106 + 689 ⇒ CACF AEB1

5610 IF(K.GT.71) GO TO 710
5620 GO TO 400
6510 K = K+2
6520 IF (K. GT. 71) GO TO 710
6540 710 continue

9/15/77

~~6901 IBAD=IBAD/2~~
edit 6910 /7200.

77/106 + 2273 CADO 860F
⇒ CACF 5

accurate clocks seems wrong

tally 1977

~~Bad~~	Bad hours	Good Hours
34	.74	60.0999

The clock always ends in F but

9/16/77

pg 208 OCB

1. address of next 20AF5C
2. length of actual APSW left most byte E0
   binary 1110 0000
   length 6 bytes
3. OP code of next F8
4. divide decimal DP SS

FD 31	D 20C	D206
OP code L1 L2	B1 D1	B2 D2

5	1st	2nd
length	4	2
Base	D = 13	D = 13
disp	20C	206

6. Base 13 + disp	20AB1Ø + 20C = 20AD1C	20AB1Ø + 206 = 20AD16
length	4	2
char	00 00 01 2F	00 0F
interpretation	F1.F2 = 12	F0 0

7. divide decimal => 12/0

9/16/77

Job RZ2022 Step GO
CC 013 explained above

3. invalid UCB 415E8
   b. [illegible]
   c. ? CARDIN

4. a. 4E95C
   b. 28
      4E984
   c. 0040_{16} = 64
      -24
      40
      40/20 = 2
      2+1 = 3
   d. CARDIN
   e. ?

5. 4E95C
   + 0
   4E95C Block count = 0
   4E95C
   +12
   4E96E density = 0

4E95C	4E95C	4E95C	4E95C	4E95C	4E95C
3E	4C	52	5A		
4E99A	4E9A8	4E9AE	4E9B6		
max blocksize	nextrec	Log	Physical		
12C	0	50	0		
= 300		= 80			

6. not a multiple

9/16/77

hours bad in 1977 .74
31.7349
32.4749

good 60.0990
144.5098
204.6088

CE2F0FC0
= 3459190720
= 108099710 seconds ≅ 42549710 sec
⇒ 492.47 days
77/126.473495 9
77/126/11

exact
42549691.63 sec
= 492.473282 7
77/126/11/21/31.626

B18 II 35

92FC 011F = 2465988895
= 77062152.97 sec
⇒ 11512096.29 sec
= 76/133.2418553
= 76/133/5/48/16.295

B18 II 37

93FC 811F = 2482798879
= 77587464.97 sec
⇒ 12037408.94 sec
= 76/139/7/43/28.943

```
5400    if (ipo.EQ.1) write(6,60) IDATA(1,K),HDATA(5,K),Sctemgclock
6200                  "       40      "
1200  40 format(1X,'EVT-',I10,1X,I4,'-sctime-',Z8,'-clock-',Z8)
1320  60 format(                                            ,'-BAD')
```

9/16/77

1977 tally	bad	good	tape	
	36.3999	60.8999	B55	redos
	31.7349	135.8298	B35-39	
	.74	60.0990	1334	
total	68.8748	256.8287		

1976

2.81	52.06	B55	redos
0.00	8.68	B35-39	redos
14.20	0.00	B43	redos
37.9099	11.04	B17-18	

s/c clock no good in Helios A because of IPD error
check only in 1977
document DISC
break tally up into good & bad bytes

	Helios year	day	A clock EVT	s/c clock	prediction	pred. s/c
*	77	003	465 14.650	A447AB87 **	A447 ABBC	+5
	77	4	43998.398	A470A0D4	A470 A0FA	26
	77	4	79794.589	A482 1B71	A482 1B80	1
	77	13	44021.052	A5EC 5394	A5EC 5373	-21
*	77	14	31,733	46016BBF	A6016BBF	0
	77	9	33.998	A4EC 9011	A521 K93A	****
	77	3	74595.634	A4556 1A8		
	77	3	78483.879	A4574 7AF		
		4	3.852	A45B 25AF		
10		4	79794.589	A482 1B7F		
11		5	18589	A485 577F		
12		5	5346.589	A4871 17F		
13		5	45296.239	A49B732F		
14		5	69921.655	A4A7792F *	A4A7 7959	
		6	~~17063.082~~	~~A4B70900 *~~		
15		6	80089340	A41D6A01F *	A4D6 A045	
16		8	25,340	A4D9B81F *	A5	
17		7	55847.340	A4F5001F *	A4F5 003C	

9/16/77 relative to 1977

S/C clock = A(sec) + B

86,130,912.22 = A(305 714.65) + B

87033925.97 = A(1209631.733) + B

903913.75 = A(903917.083)

A = .999996 3127

B = 85,824,298.7

A * 86400 = 86399.68142

OTIME = 86399.68142 DO * IDAY + 85 824 298.7 + EVT

Gennaro's numbers

Sec = 1.000002486 * S/C − 42895 86.856

S/C = Sec + 42.895586.856 / 1.000002486

= (.99999751 4 (sec) + 42895 76.192

S/C clock 001 001 110 010 111 000 001 101 000 000 011 111

2 7 2 E O D O 1 F

Dimension DEVT(20), ISC(10), IDAY(00)

Implicit Real*8 (D)

DATA DEVT/46514.6500, 43998.398, 79794.589, 44021.052, 31.733,
* 33.998, 74595.637, 78483.874, 3.852, 79794.589, 18.581,
* 5346.589, 45296.239, 69921.655, 80084.340, 25.340, 55897.34,

** uses 9/19/77 algorithm

13	44,165,395	A5EC659F	A5EC 6584
8	44 717.296	A519BA97 *	A519 BAB1
8	806 70,756	A52B48BF *	A52B 48B3 ** good
9	30.756	A52E18BF *	A52E 18D3 **
9	55902,756	A5496 0BF *	A549 60CC **
10	4065.928	A55A411F *	A55A 412D **
11	73370.339	A5A6481F *	
12	848 92,733	A5D6185F *	
14	31.733	A60108BF *	
14	61005.940	A61ECE7F *	A61E CE7E
15	3911 7.940	A63E41 7F **	A63E 4178 A63E4E7

9/16/77

try again with **

SC = A447 AB87
= 2756160391
= 86130012.22 sec = A(305714.65) + B

SC = A63E4E7F
= 2789101183
= 87159411.97 = A(1335117.94) + B

1029399.75 = A(1029403.29)

A = .9999965611
B = 85824298.62

86400A = 86399.70288
DYTIME = 86399.70288 DOY + 85,824,298.62 + EVT

? 9/77

sec = 1.000002486 * s/c clock − 42895586.856

$$s/c\ clock = \frac{TI}{32}$$

$$\frac{TI}{32}\ 1.000002486 = \frac{TI}{31.99992045}$$

0 sec = 1/1/75

(sec + 42895586.856) * 31.99992045 = TI

1975 seconds in = 365 * 86400 = 31536000

76/0 = (31,536,000 + 4,289,586.) * 31.99992045
= (35825586) * 31.99992045

≡ 1146415902

77/0 = (35825586. + 31,622,400)
= 67,447,986

77/4 ⇒ = (67447986 + 345600) * 31.99992045
= 2169389359
⇒ 81_ _ _ _ _ _ _

actual is A 41

Our prediction

$$s/c = \frac{TI}{32(.99999\ 63127)} = \frac{TI}{31.99988201}$$

$$\frac{TI}{31.99988201} = sec(since\ 1977/0) + 85824615.16\ seconds$$

Helios A

77/0 = sec + 85824615.16 + days * 86400
76/0 = sec + 54202215.16 + days * 84400
75/0 = sec + 22666215.16 + days * 84400
74/0 = sec + − 8869784.84 + days * 84400
78/0 = sec + 117360615.16 + days * 84400

9/19/77

~~data 16950~~

```
      *
1700  ~~DATA ISTART/54202215,85821615,~~
1700  LOGICAL*1 AID/'A'/,BID/'B'/
4610  IF (SATID .EQ. AID)  GO TO  500
4620    DTIME = (DREF+DEVT+65550151.77D0)*31.999960511
4630    GO TO 510
4640 500  continue
4650 !    DTIME = (DREF+DEVT+ 54202215.16D0)*31.999882011
4660 510  continue
5000    SCTIME = DTIME
edit 200                , DEVT, DREF, DEVTLS
2300  * TPnext, nextfi, DREF, isec, IHBL, ILfil, satid)
edit 11300              , DREF
10200 * retcod, Tpnext, nextfi, Dref, isec, outser, outseq, satid)
16950   DREF = 31622400 *(IYEAR-76)+86400*IDAY
 3810   DEVTLS = IDATA(1,1)/1000.D0
 3910   DEVT = IDATA(1,K)/1000.D0
 3920   IF(DABS(DEVT-DEVTLS) .GT. 8000000) DREF=DREF+86400
 3930   DEVTLS=DEVT
```

9/19/77

Helios B sctime = 65550000

s/c = sec (.99999 8766) + 65550070.88

$\frac{TI}{32(.999998766)}$ = sec + 86400 * days + $\frac{65550070.88}{.999998766}$

1976 $\frac{TI}{31.9999605 1}$ = sec + 86400 * days + 65555015 1.77

1977 + 97172551.77

or plus an additional 31622400 seconds

Helios B hours bad

1976			1977		
	80	14.2		205	7.72
	340	.12		215	18.48
	315	20.32		85	6.34
	350	7.841		125	9.2
	145	1.68		95	3.56
	235	6.88		130	8.0399
	240	~~7.1999~~ ~~6.16~~ 10.3599		135	3.541
	245	15.24		105	.52
	250	5.92		220	8.64
	290	.7399		50-55	
	295	15.6		55-60	4.68
	300	3.1		60-65	10.41
	305	19.9999		65-70	2.46
	330	4.7399			
	85	14.2			
	355	2.51			
	360	1.05			
	120	23.05 + .63 = 23.68			
	125	1.02 + 1.02 = 2.04			
	130	6.56			
	135	6.3599			
	155	.92 + .92 = 1.84			
	210	8.52			
	345	8.52			

this is a soft lead
is this a soft lead also 7/19/77
S/C clock = 116270 150037

not as soft as this

if we disregard left most bit? we get 7352
if we accept it we get 40120

$150037_8 = 53279$

2" 40120 + 53279/25
= (2048)(40120) + 53279/32
= 82,167,424.97 seconds
⇒ 1975 day 175/17/27/142.350
⇒ 1975/0 = 66,984,462.62
⇒ 1975 day 125/15/23/50.408
⇒ = 10855430.41 sec ?
S/C event time = 0 ⇒ SC clock = 42895 76.192 sec

$75_{10} = 113_8$

germans clock implies S/C began −49 days from day 175
1975
my clock implies it began

S/C sec = for 1976/0 = (54202215, 16)
⇒ 627 days
which is more reasonably
⇒ day 102 of 1974 April as start up

```
[1320          , I10
 200
                , DTTME
 1
add 10 200     , ISEC,

     B9 ECC044
add 1700        'A'
```

9/19/77

predictions on Helios B

~~7/76~~ see Page 9/15/77 prediction
B B C C 8 F 8 8

+
x
x
x
x
x
x
x
x
x

C F 8 9 A E 1 8

without .286 = C F 8 9 A 5 0 F

76/124 B18 H3

check for just a bad day
boot ~~D~~010, or DM4 with, non user ~~transmit~~ GMT

1

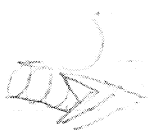
0 1 1

0 0 0 1

The high order bit is always 1

1000 = 8

8000 0000 is always added to the S/C clock
this does not add anything and should not be a
part of A + B



9/19/77

A-8 = 2

Helios A without high order B

	S/C - 8000,0000	MSB prediction
77/3 + 46514.650	2447 AB87	
77/5 + 69921.655	24A7 792F	
77/6 + 80089.340	2406 A01F	
77/8 + 25.340	24D9 B81F	
77/7 + 55897.340	24F5 001F	
77/8 + 44717.296	2519 BA97	
77/8 + 80670.756	2523 48BF	
77/9 + 30.756	252E 18BF	
77/9 + 55902.756	2549 60BF	
77/10 + 4065.928	255A 411F	
77/11 + 73370.339	25A6 481F	
77/12 + 84892.733	25D6 185F	
77/14 + 31.733	2601 08BF	
77/14 + 61005.940	261E CE7F	
77/15 + 39117.940	263E 4E7F	
77/125 + 56459.518	0927 6857	

German algorithm

$$\text{S/C event time} = 1{,}00000_{,,}2486 * \frac{TI}{32} - 4289586.856$$

$$= \frac{TI}{31.99992045} - 4289586.856$$

1976/0

$$\frac{TI}{31.99992045} = 4289586.856 + 86400 \cdot \text{days} + \text{sec} + 31536000$$

$$= 35825586.86 + 86400 \cdot \text{days} + \text{sec}$$

1977/6

$$\frac{TI}{31.99992045} = 67447986.86 + 86400 \cdot \text{days} + \text{sec}$$

1976 one year = 366 day = 31622400 sec

s/c clock increases by 3c50962c

9/19/77

clock is 1162 70 150037$_8$

001

he ignores 3 high order bits but there are still left one full hex word

001 001 110 010 111 000 001 101 000 000 011 111

3 2 E 0 D 0 1 F

it appears that the high order bits are ~~already~~ gone

32E0 D01F = 853,594,143

$*\frac{1}{3}1.9999\,2045$

= 26,674,883.28

$*\frac{1}{32}$

= 26674816.97

$162.70_8 = 7352_{10}$.

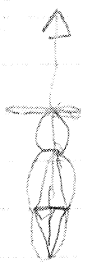
$= 1CB8_{16}$ $150037_8 = 53279_{10} = D01F$

1CB8 D01F = 478173471

$*\frac{1}{32} = 15,058,560.97$

~~0~~ 001 110 010 111 000 | ~~0~~01 101 000 000 011 111

1 C B 8 | D 0 1 F



$\Rightarrow$ 150585 60.96875

at beginning of 1975 clock = $\frac{42\,895\,86.856}{1.00000\,2486}$

= 42895 76.192

*32 = 1372664 38.1

= 082E 8506 = TI

*8 = 882E 8506

at beginning of 1976 add 31,536,000 seconds

= 35 825586.86 seconds total

$*\frac{1}{1.00000\,2486}$

= 35825497.79 = S/C clock

*32 = 1146415929 = TI

= 4454 EB39 *8 = C454 EB 39

9/19/77

at beginning of 1977 add 31622400 seconds

= 67447986.86 seconds
* 1 = 67447819.19 s/c clock
1.000002486

*32 = 2158330214 = TI
= 80A5 8165 there are only 31 bits
+8 = 00A5 8165 ?
or 80A5 8165 ?

Now can we make any sense of Helios A

	s/c clock
77/125 + 56459.518	89276857
77/003 + 46514.650	A447 AB87

difference of 10550744.87 sec
* 1
1.000002486
= 10550718.64 s/c clock
*32 = 337622996.4
= 141F 117D

141F 117D
+ 927 6857
1D46 79D4

gaby clock doesn't fit
how about from beginning of 1977 to 125 + 56459.518
= 10856459.52 sec
* 1 = 10856432.53
1.000002486
*32 = 347405840.9
= 14B4 FE10
add A581 65
1 56A7 F75

9/19/77

does 75 clock make sense
75/050 + 565 08.934 TI = 20405 6FF

50 + 56508.934 = 4,376,508.934 sec

TI = 5
SC clock = 16908983.97 sec
x 1.00000 2486 = 16,909,026 sec
- 4289 586.856
= 12,619,439.15

which doesn't make sense

B without MSB

1. Helios B 76/121 + 56805 9113 49DD → 1113 49DD
2. 76/500 + 59567 CF89 AE0F → 4F89 AE0F

Sec = TI/32 A - B

1. TI = 286,476,765 sec = 10511205
2. TI = 13 349 23054 sec = 432 59567

1. 10,511,205 = 8,952,398.906 A - B B = 1,558,795.039
2. 43,259,567 = 41,700,720.47 A - B B = 1,558,795.035

32,748,362 = 32748321.56 A
A = 1.000001235
B = 1,558,795.035 or
with MSB

10,511,205 = 76,061,262.91 A - B B = + 65550151.84
43,259,567 = 108,809,584.5 A - B B = + 65,550,151.87
32,748,362 = 32748321.56 A
A = 1.000001235

start time of Helios B is when TI = 8000 0000 or so
sec = 1558,795.009 into
⇒ 18 days before 1976 very nice!

when TI = FFFF FFFF
sec = 68,667,741.86
⇒ 794 days after 1976/0 ⇒ 1977 + 438 ⇒ 1978/63

9/19/77 sec = $\frac{\pi}{32}(1.000001235) - 65550151.87$

day 1976 Helios B Is error in day?

313-320 B22 #115 B123449F ⇒ 76/316+18767.794 ≠ 76/316+16134.799

B22 # 122 B125CC9F ⇒ 76/316+23951.801 ≠ 76/317+11769.391

B22 #124 B12CF89F ⇒ 76/316+38639.819 ≠ 76/318+57.757

345-365 B23# 27 B6BF07D6 ⇒ 76/350+21613.144 ≠ 76/351+69481.259

B20 # 98 A2B0CE5F ⇒ 76/228+47508.440 ≠ 76/359+77256.522

B23 # 33 B6E17CED ⇒ 76/351+18069.965 ≠ 76/352+65888.094

B23 # 37 B711AC80 ⇒ 76/352+18066.666 ≠ 76/353+65884.801

B26 # 43 B64B0510 ⇒ 76/347+43222.663 ≠ 76/349+4640.823

B26 #54 B73BDC15 ⇒ 76/353+18063.429 ≠ 76/354+65881.570

120-140 B17# 73 2213 92D0 dropped bit

B17 # 81 2241 74A0 "

B18 # 8 227E 38C7 "

B18 # 10 2285 FE73 "

B18 # 35 792FC011 ⇒ 76/133+20896.270 ≠ 76/133+21044.170

155-60 B18 #42 9574 D11F ⇒ 76/148+20897.871 ≠ 76/156+789.033

B55 # 111 9574 D11F ⇒ repeat of B18 #42

145-150 B18 #70 9576 EDIF ⇒ 76/148+25217.876 ≠ 76/148+25364.540

235-255 ~~B18 #122 A459 CEDF ⇒ 76/238+53921.515 ≠ 76/238+53922.787~~

~~B18 #126 A483577F ⇒ 76/239+52574.620 ≠ 76/239+52575.886~~

B18 # 129 A459 CFDF ⇒ 76/238+53921.515 ≠ 76/240+15340.718

B18 # 140 2409 319F ⇒ bit dropped

B18 # 154 A5F10D1F ⇒ 76/248+23948.545 ≠ 76/244+71768.020

B18 # 155 A5B3E11F ⇒ 76/246+71468.390 ≠ 76/249+80705.748

B18 # 160 A57CCD3F ⇒ 76/245+45069.251 ≠ 76/252+24960.175

B18 # 161 A5F10D1F ⇒ 76/248+23948.545 ≠ 76/252+81003.719

B18 # 162 A57E593F ⇒ 76/245+98237.255 ≠ 76/253+28128.1175

290-310

B18 # 275 ADB6569F ⇒ 76/295+37213.576 ≠ 76/295+57838.386

B18 # 278 ADC4669F ⇒ 76/295+66013.612 ≠ 76/296+238.385

B18 # 300 AE543ABF ⇒ 76/299+14974.976 ≠ 76/299+~~14975.641~~

B18 # 312 AE692EBF ⇒ 76/249+57587.029 ≠ 76/301+19305.470

9/20/19 sec = $\frac{TI}{32}$ (1.000001235) + 1,558,795.038

290 - 310 cont

B18 # 338 AF1802DF ⇒ 76/303 + 70336.471 ≒ 76/305 + 31754.804
B18 # 339 AF1802DF repeat of 338
B18 # 340 AF2191BF ⇒ 76/304 + 3511.495 ≒ 76/305 + 51329.804
B18 # 342 AF3B0DBF ⇒ 76/304 + 57367.561 ≒ 76/306 + 18785.870
B18 # 357 AFF9707F ⇒ 76/309 + 13614.041 ≒ 76/309 + 6299.963

330 - 335 B20 # 78 B35F 88DF ⇒ 76/329 + 67571.241 ≒ 76/331 + 28989.213
B20 # 79 B365 948A ⇒ 76/329 + 79952.601 ≒ 76/331 + 41370.556

1977 Is error just in day?

85 - 90 B36 # 24 C7E8170F ⇒ 77/88 + 33010.037 ≒ 77/88 + 72430.170
B36 # 26 C7EEFB0F ⇒ 77/88 + 47122.054 ≒ 77/89 + 142.170

95 - 100 B39 # 13 C9B5FD7F ⇒ 77/99 + 28582.705 ≒ 77/99 + 28728.674

125 - 140 B38 # 68 CE2F0FC0 ⇒ 77/126 + 40891.633 ≒ 77/128 + 2309.987
B39 # 63 CEAD70F9 ⇒ 77/129 + 40621.734 ≒ 77/131 + 2039.889
B39 # 73 CED7AF1B ⇒ 77/130 + 40630.903 ≒ 77/132 + 2049.034
B39 # 77 CEF9FE85 ⇒ 77/131 + 24998.302 ≒ 77/132 + 72316.436
B39 # 79 CF0?E29F ⇒ 77/131 + 38611.132 ≒ 77/133 + [illegible] 29.249
B39 # 82 CFAA414F ⇒ 77/135 + 39881.060 ≒ 77/137 + 1299.679

205 - 210 B55 # 209 5359E15F ⇒ 77/157 + 71627.976 ≒ 77/205 + 85184.031
B55 # 210 535A955F ⇒ 77/157 + 73067 ≒ 77/206 + 224.031
B55 # 211 5215E15F ⇒ 77/150 + 12875.157 ≒ 77/206 + 6320.671

215 - 225 B55 # 227 535A955F ⇒ 77/157 + 73067 ≒ 77/206 + 224.031
B55 # 228 5B4D1217 ⇒ 77/206 + 6102 ≒ 77/218 + 43047.809
B55 # 230 5B624E1F ⇒ 77/206 + 49591. ≒ 77/219 + 136.059

50 - 70 B29 # 90 427A B83F ⇒ 77/55 + 38776 ≒ 77/57 + 194.844

9/20/77

A

late Helios data

			prediction
1.	77/125 + 56459.518	89276857	⇒ 77/125 + 2352.486
2.	77/130 + 56861.723	89FA8A6F	⇒ 77/130 +
3.	77/136 + 17361.064	8AE460AB	
4.	77/140 + 17325.950	8B8D1C27	
5.	77/145 + 46024.831	8C2C8627	

$sec = \frac{TI}{32} A - B$

1. $10856459.52 = 71,908,162.72\ A - B$
5. $12574024.83 = 73,491,505.22\ A - B$

$17175565.31 = 1583342.5\ A$

$A = 1.08477181$?

2. $11288861.72 = 72340563.47\ A - B$ $\quad B = 6,051,919.35$
4. $12113325.95 = 73165025.22\ A - B$ $\quad B = 6051919.35$

$8244641.23 = 824461.75\ A$

$A = 1.000003008$

$Sec = \frac{TI}{32}(1.000003008) - 6,051,919.35$

(prediction block

```
Real*8  Dclock, PDAY, DAY, DSEC
Iclock = clock/32
Dclock = Iclock * 1.000001235D0 - 65550151.87D0
DDAY = Dclock/86400.D0
JDAY = PDAY
DAY = JDAY
DSEC = (DDAY - DAY) * 86400.D0
IF (IPO.EQ.1) WRITE(6,60) IDATA(1,K), HDATA(5,K), SCTIME, clock
* JDAY, DSEC
```

" Common

move 6061

```
Iclock = clock/32
Dclock = Iclock * 1.000003687D0 - 5420 2215.1600
```

DTIME = (DREF + DEVT + 65550151.87D0) * 31.99996048D0

A

9/20/77 Rued

1. 76/355 76706.198	A207 C9AF ⇒	76/355 + 76706.194
2. 76/360 + .522	A2B5 455F ⇒	76/360 + .552
3. 76/365 + 42243.398	A39C D59F ⇒	76/365 + 42243.697
4. 77/001 + 82366.509	A404 CD0F ⇒	76/367 + 82367.712
5. 77/005		
6. 77/010		
7. 77/016 + 58573.595	A671 FE8F ⇒	77/16 + 58574.784
8. 77/021 + 60734.384	A745 F05F ⇒	77/21 + 60638.332
9. 77/026 + 4450.649	A7FD 70CD ⇒	77/26 + 4450.677
10. 77/031 + 6259.531	A8D1 42CF ⇒	77/31 + 6259.787
11. 77/035 + 5329.583	A979 8E6F ⇒	77/35 + 5329.620
12. 77/040		
13. 77/045 + 263.203	ABIC F4DF ⇒	77/45 + 263.194

7F
- 32
5D

1 sec = $\frac{TI}{32}$ A − B

32 bit on

1. 30,748,706.2 = 84950605.47 A − B B = 54202104.43
13. 35510663.2 = 89712550.97 A − B B = 54202104.43

4,761,957 = 4,761,945.5A

A = 1.00002415

Hewlett Helios A old A

32/1.00002415 = 31.99992272

relative to 1976

turns over on 77/262

turned over on 76/206

D359E15F ⇒

−944.523 711805 6 = DDAY

D clock = −81606848.7

I clock ∨ 1.000001235 = −16056696.83

D clock = clock

Dclock = Dclock / 31.999960480 − 65550151.87 D0

Y Dclock = clock

Dclock = Dclock / 31.99988201 − 54202215.16

9/20/72

~~ToI~~ = D359E15F

IClock = clock/32 = 378115 3626

= 11816 1050

= 070A FE9A

7E1FDB4D = clock

= 2,116,016,973

Iclock = clock/32 = 66125530 Dclock = 66125530.41

Dclock = -63483726.49

DDAY = -734.7653529

JDAY = -734

Dsec = -66126.49276

actual JDAY = 6

Dsec = +57060.201

⇒ DDAY - JDAY = .66041899 31

DDAY = 6.66041899 13

DCLOCK = 575460.201

Dclock - 2116016973 = clock

= 7E1F DB4D

which is correct

the one above JDAY = -981

Dsec = -81726.663

DDAY - JDAY = -.36720627 71

DDAY + 981 =

DDAY = -981.36720627 77

DCLOCK = -84,749,126.66 = -050DCB6

clock = -615,678433

= -24B2 81E1

DCLOCK = C754D6859.CFAEA6B

C7 = -47

= 7

= -54D6859

JDAY = FFFF BFB

- 0000 404

+1

405

DDAY = ~~C4000D6CFAEA6A~~ = ~~D0D4.CFA~~ -405

C4 = -44

= 4

all from ISN 64 to 70 is correct

9/21/77

Common /align/ clock

Oclock = oclock / 31.999922720D- 54202104.4300
DTIME = (DREF + DEVT + 54202104.4300) * 31.999922720D

top bit is set D359E15F

~~=> 359E15F~~
= -2CA61EA0 + 1
and D clock = C82CA61EA1

thus we must get rid of top bit
integer shftl, shftr
clock = shftl(clock, 1)
clock = shftr(clock, 1)

write(6

8000 0000 = 2,147,483,648 /32 = 67108864
Helios B with out bit
see 9/19/77

9113 49DD = 1113 49DD => 76/121/56805
CF89 AE0F => 74F89AE0F => 76/500/59567.

sec = TI/32 A - B

B

10,511,205 = 8,952,398.906 A + B B = + 1,558,795.038
432595 67 = 11700720.47 A + B B = + 1,558,795.03
32748362 = 32748321.56 A
A = 1.000001235
53/A = 31.999960 48

something seems wrong but its okay
=> clock turned on in 76 18 days into

9/21/77

B
Dclock = Dclock / 31.999960480D0 + 1558.795,038D0
DTIME = (DREF + DEVT - 1558795,038D0) * 31.999960480D0

for Helios A see 9/20/77 relative to 1976

1. 30,748,706.2 = 17,841,741.47 A + B B = 12,906,921.64
13. 35,510,663.2 = 2260368 6.97 A + B B = 12,906,921.64
4761957 = 4761945.5 A
A = 1.000002415
32/A = 31.99992272

old
A
Dclock = Dclock / 31.999922272D0 + 12906921.64D0
DTIME = (DREF + DEVT - 12906921.64D0) * 31.999922272D0

integer shftl, shftr

7.17 min total so far for 253 ~~files~~ tapes

late Helios A the clock turned over
when does formula predict clock will turn over
clock reads $7FFF\ FFFF_{16} = 2147483647_{10}$

old A. sec = $\frac{TI}{31.99992272}$ + 12906921.64

⇒ 1978 day 195 ? cannot be more than B
when did A start: 1976/149
and before that 776 days
- 1974/103

actual is 74/348

			Prediction
1. new A 77	125 + 56459.518	09276857	125 + 56459.519
2.	130 + 56861.723	09FA8A6F	130 + 56861.620
3.	136 + 17361.064	0AE460AB	136 + 17360.993
4.	140 + 17325.950	0B8D1C27	140 + 17325.948
5.	145 + 46024.831	0C2C8627	143 + 84606.969

D3
EA
A9
A1

B relative to 1977 9/21/77

sec = TI / 32 A + B

1. 10856459.52 = 4799298.719 A + B
5. 12574024.83 = 6382641.219 A + B
1717565.31 = 1583342.5 A

5 days ≈ 00D3 0000
6 days ≈ 00FD
4 days ≈ 00A8

relative to 77

new A
1. 10,856,459.52 = 4799298.719 A + B B = 6,057,145.794
4. 12113325.95 = 6,056,161.219 A + B B = 6,057,145.793
1256866.43 = 1256862.5 A
A = 1.00000 3127

for 1976
? B = 37,679,545.793

sec = TI / 31.99989994 + 6,057,145.793

if clock began in		days till turnover
	74/348	776
	75/0	759
	76/0	393
	77/0	27

thus turnover on 77/27

new formula predicts start at 77/70
now that is reasonable, can old formula be accounted for?

TI = 0 at 6,057,145.794 sec
and TI = 7FF FFFF at 6,057,145.763 sec

6,057,145.763 + 31,622,400 = 37,679,545.76 sec
relative to 1976
37,679,545.76 = 67,108,863.97 A + B
B = − 29,429,528.06

Thus for 77/26 + 4450.649
sec = TI / 31.99989994 − 29,429,528.06
TI = 2025540164 = 78BB 4A44
actual is 2's comp- A7FD 70CD
5802 8+32

9/21/77 9/23/77

if we assume A = 1.00000 2415

get some real sims 77 data

compare A4 with 75 for bit change?

HALOII #39 204056FF

75/50 + 56508934

two A clocks new one is 6,849,775 seconds behind old clock

or 24,772,624

on 75/50 old clock would read:

-27159491.07 = $\frac{TI}{32}$ (1.00000 2415) + 54,202,104.43

B for 1975 = 22,666,104.43 ?

43,76,408.934 = $\frac{TI}{32}$ (1.00000 2415) + 22,666,104.43 ?

A TI = <0 ?

old clock turned over in 1976

old clock + 32 bit turned off

sec = $\frac{TI}{32}$ (1.00000 2415) + 12,906,921.64

A with 32 bit off

TI = 0

sec = 12,906,921.64 = 76/149 + 3321.64

one might try HA076401

4 HA047301

9/23/77

FORTHELI

```
Implicit Real*8(D), integer*2(H), Logical*1(Q)
Dimension QTemp(8),
Dimension IDATA(13,72), HDATA(26,72), QLABEL(91)
Equivalence (DPname,Qtemp(1))
Equivalence (IDATA(1,1), HDATA(1,1), QLABEL(1))
namelist /input/ DPname, ifile
10  format(1X,'retcod.',I2,'_nexttape_',A8,'_nextfile_',I4)
20  format(1H1,91A1)
30  format(
```

add Fortdisc to copy in Libgen routine

need to exit on format 3
- rewind tape EDR
- rewind tape HBL
- write EDR onto Disk
- correct disk
- flag data as corrected
  - 3 types 1. corrected frame
    2. corrected header
    3. ~~corrected~~ unable to correct frame/hdr

Why correct header, why not write the correct date in the frame ⇒ Ford has a better idea
ans: because HERDRP reads header

FortLESQ

$sec = \frac{II}{32} A + B$

for the best clock we might want non-DMT data

```
10  format
    NUM=11
    DO 100 I=1,NUM
    DCLOCKR ICLK(I)
    DSEC(I) = IDAY*86400.DO + DENT(I)
100 continue
```

9/23/77

$y = a + bx$

$$a = \frac{1}{\Delta}\begin{vmatrix} \Sigma y & \Sigma x \\ \Sigma xy & \Sigma x^2 \end{vmatrix} =$$

$$b = \frac{1}{\Delta}\begin{vmatrix} N & \Sigma y \\ \Sigma x & \Sigma xy \end{vmatrix}$$

$$\Delta = \begin{vmatrix} N & \Sigma x \\ \Sigma x & \Sigma x^2 \end{vmatrix}$$

$\text{Sec} = \frac{\text{cII}}{32} b + a$

$y = x b + a$

from 9/15

Day	TVT	clock	X	sec Y
388	78766.205	3BCC8F7B	31,351,931.84	32,910,766.21
388	45920	3D0E0597	32,010,284.72	33,569,120
110	42725	40AC95E7	33,907,887.22	35,466,725
370	7222.376	3A03C0B2	30,416,389.56	31,975,222.38
350	29381.815	3 6C2 03DF	28,710,558.97	30,269,389.71
311	18717.622	3050 4B5F	25,330,290.97	26,889,117.62
238	5826.787	2442 53DF	19,010,206.97 *	20,569,026.79 *
309	15320	2F27 55BF	24,722,093.97	26,280,920
121	56805.536	1113 99 0D	8,952 398.906*	10,511,205.54 *
454	225.290	4708 14DB	37,666,982.84	39,225,825.29
500	59567.286	4F89 AE0F	41,700,720.47	43,259,567.29

N = 11

$\Sigma x = 313779746.4$

$\Sigma x^2 = 9.758890344 \times 10^{15}$

$\Sigma y = 3309268859$

$\Sigma y^2 = 1.076388098 \times 10^{16}$

$\Sigma xy = 1.024502094 \times 10^{16}$

$$\Delta = \begin{vmatrix} 11 & 313779746.4 \\ 313779746.4 & 9.758890344 \times 10^{15} \end{vmatrix}$$

$= 8.900065083 \times 10^{15}$

$a = 1.558795818 \times 10^6 = 1,558,795.818$

$b = 1.000001229$

$N = 9$

$\Sigma x = 2.858171405 \times 10^8$

$\Sigma x^2 = 9.317356979 \times 10^{15}$

$\Sigma y = 2.998466536 \times 10^8$

$\Sigma y^2 = 1.023031068 \times 10^{15}$

$\Sigma xy = 9.762898979 \times 10^{15}$

$\Delta = ~~8.285621258 \times 10^{156}~~$

$= 2.164775008 \times 10^{15}$

$b = 1.000001253$

9/26/77

```
      IFMT = HFMT
      IF (IFMT .NE. 3) GO TO 170
C     exit to search for and serial DMT
      CALL FORTDISC (IUNIT, OUNIT, IDATA, SATID, OITAPE, INSEQ,
     * DOTAPE, OUTSEQ, 1)

      SUBROUTINE FORTDISC (INUNIT, IOUNIT, IDATA, SATID,
     * DNAME, IFILE, DOTAPE, ILFIL, IPO)
      COMMON /LABEL/ JCODE, ITPTYP, IDTTYP, HFMT, HBIRT, HRECYR,
     *HSEDR(4), HEEDR(4), HMRTAP, HMREIL, HGEN(3), HRUN, HFILE, HREEL, HID
```

add data = 0 skip to Heli
9/26/77

366
146
512 X

Helios B clock

	tape	file	year	day	seconds	TI	TI/32 (sec)	
1.	17	4	76	110	22725.540	0F329601	7,967,920.031	
2.				110	31314.924	0F36C7AD	7,976,509.406	
3.				110	47380.502	0F3E9FDF	7,992,574.969	
4.				110	55464.761	0F429267	8,000,659.219	
5.	39	101	77	146	21516.117	5171595F	42,699,466.97	
6.		102	77	147	23820.229	519CA95F	42,788,170.97	
7.		103	77	148	24684.353	51C7455F	42,875,434.97	
8.		106	76	61	58.105	0714551F	3,711,656.969	
9.				61	53712.788	072E87F3	3,765,311.594	
10.	18	31	76	123	22924.520	11571E3B	9,091,317.844	
11.				123	57777.613	11682350	9,126,170.906	
12.		33		133	24065.778	12FD8D1F	9,956,456.969	
13.		34		146	27235.189	15238917	11,082,824.97	
14.		36		154	25220.165	1674001F	11,772,008.97	
15.		38		156	27092.407	16C9571F	11,916,680.97	
16.		48		161	55773.092	17AB8F1F	12,410,360.97	
17.		52		165	58197.492	1854371F	12,755,384.97	
18.		57		170	8085.946	190EAF1F	13,137,272.97	
~~19.~~		61		~~174~~	~~1750.264~~	~~198A271F~~	~~13,390,136.97~~	* 37 sec error
19 ~~20.~~	21	8	76	338	43.021	34BA3FB5	27,644,413.66	
20 ~~21.~~				338	81443.190	34E1FEB7	27,725,813.72	
21 ~~22.~~				338	85549.745	34E3FFFF	27,729,919.97	

9/26/77

$$\begin{array}{r} 030\ 4\overset{16}{\cancel{0}}16\,D\,16 \\ +\,R\,5\,10\,E\,\emptyset\,F \\ -\quad F\,4\,3\,2\,0\,C\,B \\ \hline F\,0\,D\,E\,0\,4\,4 \end{array}$$

Helios B sec = $\frac{TI}{31.99996048} + 1558795.038$

F329601 = 76/110 + 22724.909 error of .631 sec

F36C7AD = 76/110 + 31314.295 error of .628 sec

$$\Delta = N \Sigma x^2 - (\Sigma x)^2$$

$$a = \frac{1}{\Delta}\left(\Sigma y \, \Sigma x^2 - \Sigma x \, \Sigma xy \right)$$

$$b = \frac{1}{\Delta}\left(N \Sigma xy - \Sigma x \, \Sigma y \right)$$

Y 10/5/77

num	total seconds	seconds - TI/32	X*Y	prediction
1	9,526,725.54	1,558,805	$7.590818726 \times 10^{13}$	9,526,726.002
2	9,535,314.924	1,558,805	$7.605852918 \times 10^{13}$	9,535,315.388
3	9,551,380.502	"	$7.634012472 \times 10^{13}$	9,551,380.971
4	9,559,464.761	"	$7.648201987 \times 10^{13}$	9,559,465.231
5	44,258,316.12	1,558,850	$1.889806507 \times 10^{15}$	44,258,315.73
6	44,347,020.23	"	$1.897527884 \times 10^{15}$	44,347,019.84
7	44,434,284.35	"	$1.905139269 \times 10^{15}$	
8	5,270,458.105	1,558,802	$1.956213256 \times 10^{13}$	
9	5,324,112.788	"	$2.004694361 \times 10^{13}$	
10	10,650,124.52	1,558,807	$9.682366709 \times 10^{13}$	
11	10,684,977.61	"	$9.751293180 \times 10^{13}$	
12	11,515,265.78	" 9	$1.146512482 \times 10^{14}$	
13	12,641,635.19	" 11	$1.401050301 \times 10^{14}$	
14	13,330,820.17	" 12	$1.569305346 \times 10^{14}$	
15	13,505,492.41	"	$1.613458092 \times 10^{14}$	
16	13,969,173.09	" 13	$1.733624805 \times 10^{14}$	
17	14,314,197.49	"	$1.825830995 \times 10^{14}$	
18	14,696,085.95	"	$1.930664927 \times 10^{14}$	
~~19~~	~~15,035,350.26~~	~~1,558,211~~		
19 20	29,203,213.02	1,558,830	$8.073065303 \times 10^{14}$	
20 21	29,284,643.19	"	$8.119405619 \times 10^{14}$	
21 22	29,288,749.45	"	$8.121746783 \times 10^{14}$	

see 9/23/77

seconds = $\frac{TI}{32} b + a$

$y = X b + a$

$N = 21$

$\Sigma X = 352156332$

$\Sigma X^2 = 9.235723344 \times 10^{15}$

$\Sigma Y = 384,891,455.2$

$\Sigma Y^2 = 1.038465409 \times 10^{16}$

$\Sigma XY = 8.972500041 \times 10^{15}$

~~$9.784674661 \times 10^{15}$~~

~~$+ 1.047301298 \times 10^{16}$~~

$9.784674661 \times 10^{15}$

$\Delta = 6.993610806 \times 10^{16}$

$a = 1,558,796.155$

$b = 1.000001232$

10/6/77

xx | xx xx xx xx xx xx xx xx Real * 8
exp mantissa

at least 16 significant figures
in fact exactly 16 will do it

Where will Fort disc write on the tape

place GOTLIB into FORTGOT
add IDM

FortDISC:
edit 2300 ; 7) } do after FORTGOT
delete 10100, last
Fort GOT
add FORTDISC, delete 100, 7600
edit 10200 , IDM
edit 16991 IF ((Iform .NE. 3) .AND. (IDM .EQ. 7)) GO TO 600

put = FORTGOT into LoadDISC, LOADHELI

Fort heli
edit 2300 , 0)
delete 10100, last
rewrite GOTlib so it looks like GETLIB

COMMON /DISC/ TPNEXT, NEXTFI, DREF, ISEC, OUTSER, OUTSEQ, SATID, IDM
insert into disc, got, heli
remove all but retcod add to first line
in disc DATA IDM/7/
heli DATA IDM/0/

10/6/77

Correct loaddish
add DA & DB to fortdisc & fortheli

the correction must somehow sidestep the frame slips
write it so that it is not blind before inserting in COPY

if bit 32 ≠ 1, label as bad clock

```
I32 = shftr(clock,31)
IF(I32 .EQ. 1) GO TO 410
If(IPO.GT.0) write(6,70) HDATA(5,K), clock
70 format(1X,Z8,Z8, ! bit 32 .NE. 1)
```

check first byte or so against previous or next clock
if = then ⇒ frame slip
if first 3 ½ bytes = those of predict frame ⇒ right frame
⇒ calculate both half frames

check for frame slip
ask if half clock is equal to next half frame
yes skip 1, add 1 to I frame, return to frame check
no go on
end frame
check for right sequence
ask if half clock is equal to next frame
yes predict for both half frames
skip 2
go to frame slip
no skip 1 go to frame slip
end seq

both at
5200, 5300
GOTO 520
520 continue
replace 5400 c

2nd half frame = (1st + 1 sec)/2

for the moment throw away last two frames
K ≤ 70

DA = 1,558,796.153572476

DB = 1.000001232359576

10/6/77

```
4500 ——
4502 - C     check frame slip
             IHALF1 = HDATA(6,K)
             IHALF2 = HDATA(6,K+1)
             IHALF1 = SHFTR(IHALF1, 20)
             IHALF2 = SHFTR(IHALF2, 20)
             IF(IHALF1.EQ.IHALF2)  GO TO 520
       C     end frame
       C     Check for right sequence
             IHALF3 = HDATA(6,K+2)
             IHALF3 = SHFTR(IHALF3,20)
             IF(IHALF1 .NE. IHALF3)  GO TO 520
       C     end sequence

4900 —
             DTIME2 = DTIME + ISEC2

2420 —
             ISEC2 = ISEC/2

C  Begin calculation of corrected DT
```

Oct 3 - Oct 7, 1977 Ed Roneau

The S/C clock was examined for DMO data for Helios B. Twenty-one points were selected as standard and a least squares fit was made to the Helios B clock for 1976 & 1977. This fit will be used in FORTDISC. The new parameters predict the clock to an accuracy of ± .8 second relative to EVT. ~~FORTDISC was rewritten to fit it into the LIBGEN routine.~~ GOTLIB was rewritten to pass all parameters in labeled COMMON that were not in the original GETLIB. That way GOTLIB will behave identically to GETLIB. A beginning was made on modifying FORTDISC to predict ~~and correct~~ every half frame instead of every other half frame and to skip frame slips instead of predicting them as a first step to including FORTDISC into LIBGEN.

10/11/77

5000 —

C EVT correction

DSEC2 = DSEC + ISEC2

replace ~~delete~~ 5200 C

~~6210~~

400 IF(IPO.GT.0) WRITE(6,60) IDATA(1,K+1), HDATA(5,K+1),SCTIME,
* CLOCK, JDAY, DSEC2

520 ~~GO~~ CONTINUE GO TO 700

~~hit~~ 5612 70

~~dit~~ 6520 70

HDATA(26,K) & QLABEL(

one byte gives 16 possibilities 0, 1, 2, 3, 4 --- C, D, F, E

A = ~~delbright~~ ~~+0~~ ≠A000 = 40960

~~B~~ = bad ? ~~+1 +2~~

~~B bad~~ = ~~bad~~ corrected ~~+2~~ ≠C000 = 49152

B = bad uncorrected ~~+1~~ ≠B000 = 45056

need average error

B: bit 32 ~~+1~~; frame clips

600 IF(I32.EQ.1), GO TO 410

~~600~~ "

1607 HDATA(26,K) = 45056

5100 HDATA(26,K) = 49152 + JDAY

HDATA(26,K+1) = 49152 + JDAY

430 IDATA(1,K) = MSEC

IDATA(1,K+1) = MSEC2

4900 MSEC = (DDAY - JDAY) * 86400000.0

5000 MSEC2 = MSEC + ISEC2

2300 ISEC2 = ISEC/2 * 1000

~~5410~~ 5410 , MSEC , IDATA(13,K)

5430 , MSEC2 , IDATA(13,K+1)

6210 , MSEC

10/11/77

```
1321          ' MSEC ', I10, ' IDATA(13) ', Z8 )
FORTD$C
      SUBROUTINE DISC(satid)
      common /label/
      implicit real*8(D), integer*4(H), logical*1(Q)
      integer shftd, shftr
      Dimension IDATA(13,72), HDATA(26,72), Qlabel(91)
     * HCLOCK(2), QST(4)
      EQuivalence (IDATA(1,1), HDATA(1,1), Qlabel(1))
     *  , (ICLOCK, HCLOCK(1))
40    format(1X,'EVT_',I10,1X,I4,' S/C CLOCK_',Z8,4X,'PREDICT DAY_'
     *,I4,'_MSEC_',I10,'_IDATA(13)_',Z8,'_ISCTIM_',Z8)
50    format(1X,' frames bad_',I4,'_good_',I4,'_Hours bad_',
     * F10.4,' Hours good_ ',F10.4)
60    format(1X,'EVT_',I10,1X,I4,'_S/C clock_',Z8,'_BAD',
     *'_predict Day_',I4,' MSEC_',I10,'_IDATA(13)_',Z8,
     *'_ISCTIM_',Z8)
70    format(1X,I2,1X,Z8,'_Bit 32 NE.1')
      integer IEPS/3200/,IBAD/0/,ITREC/9999/,IGOOD/0/,IDM/71
      Real TIMBAD/0/,TMGOOD/0/
      Real*8 DA/1558796.1535/2476D0/,DB/1.000001232359576D
      Logical*1 AID/'A'/,BID/'B'/
C     Reference block
        ISEC = 2304/HBTRT
        ISEC2 = ISEC/2*1000
        DREF = 31622400*(HRECYR-76) + 86400*HSEDR(1)
C     end ref
C     read block
      irec=0
200     continue
        call fread(IDATA(1,1),10,len,1900,ISCC)
        irec = irec + 1
C     end read
C     data block
      K=1
400   Continue
      DEVT = IDATA(1,K)/1000D0
C     DM7 block, ISI=SI, Ishift = DIST MODE
        ISI = IDATA(4,K)
```

10/11/77 jk

```
      ISI = sfftl ( ISI, 16)
      ISN ift = shftr ( ISI, 19)
      IF (Ishift .NE. 7)  GO TO 700
C     end dM7
C     check frame slip
      IHalf1 = HDATA (6,K)
      IHALF2 = HDATA(6, K+1)
       IHALF1 = shftr (IHALF1, 4)
       IHALF2 = shftr (IHalf2, 4)
       IF (IHALF1 .EQ. IHALF2) GO TO 520
C     end frame
C     check for right sequence
       IHALF3 = HDATA (6, K+2)
       IHALF3 = shftr (IHalf3, 4)
       IF (Ihalf1 .NE. Ihalf3) GO TO 520
C     end sequence
      HDATA(6,K) = 45056
      ISCTIM = DTIME
      MSEC = (DDAY - JDAY)*86400000D0
      MSEC4
C     clockblock, ISCTIM = predicted S/C ; Iclock = actual S/C
       HClock(1) = HDATA(6,K)
       HClock(2) = HDATA(6,K+1)
       I32 = Iclock
       I32 = shftr (I32, 31)
       IF (I32 .EQ. 1) GO TO 410
       HDATA(6,K) = 45056
       IF( IPO .GT. 0) WRITE (6,70) HDATA(5,K), ICLOCK
       GO TO 520
410    Continue
       Iclock = shftl (Iclock, 1)
       Iclock = shftr (Iclock, 1)
       IF (satid .EQ. AID)  GO TO 500
       Dclock = Iclock
       Dclock = Dclock /32D0 * DB + DA
       DTIME = (DREF + DEVT - DA) *32D0 /DB
       GO TO 510
500    continue
       Dclock = Iclock
       Dclock = Dclock /31.999922722D0 + 1290692 1.64D0
```

10/1/77

```
      DTIME = (DREF(IDEV1-1290692l.6400D0)*31.9999272D0
510   continue
      DDAY = Iclock/86400D0
      JDAY = DDAY
      ISCTIM = DTIME
      MSEC = (DDAY - JDAY)*86400000.0D0
      MSECS = MSEC + ISEC2
      IF (IABS(ISCTIM - ICLOCK) .LE. IEPS) GO TO 600
      IBAD = IBAD + 2
      IF(IPO.GT.0) WRITE(6,60) IDATA(1,K), HDATA(5,K), ICLOCK
     *  JDAY, MSEC, IDATA(13,K), ISCTIM
      IF(IPO.GT.0) WRITE(6,60) IDATA(1,K+1), HDATA(5,K+1), ICLOCK
     *  JDAY, MSEC2, IDATA(13,K+1), ISCTIM
      GO TO 700
520   continue
      K = K + 1
      IBAD = IBAD + 1
      IF( K.GT. 70)  GO TO 800
      GO TO 400
C     end clock
600   continue
      Igood = IGOOD + 1
      IF(IPO.EQ.1) WRITE(6,40) IDATA(1,K), HDATA(5,K), ICLOCK
     *  JDAY, MSEC, IDATA(13,K), ISCTIM
C     end DATA
700   continue
      K = K + 2
      IF(K.GT. 70) GO TO 800
      GO TO 400
800   continue
      GO TO 200
900   continue
      TIMBAD = IBAD*ISEC/7200. + TIMBAD
      TMGOOD = IGOOD*ISEC/3600. + TMGOOD
      WRITE(6,50) IBAD, IGOOD, TIMBAD, TMGOOD
      IBAD=0
      IGOOD=0
      return
      end
```

10/11/77

```
FORTCOPY, fortran
implicit real*8(D), integer*2(H), logical*1(Q)
 common /label/
 common /DISC/ satid, Temp1(8)                    , cuser, ...

 namelist /input/ TPname, ifile, IPO
10  format(1X,'retcod_',Z8,'_tpnext_',A8,'_nextfl_',I4)
20  format(1H1,91A1)
30  format(
     1
 equivalence (TPname, Temp1(1))
 Data mounts/0/
 read(5, input, end = 300)
100  continue  satid = Temp1(2)
 call GOTlib(49,50,10,TPname, ifile, mounts, retcod)
 if (retcod .EQ. 5)  GO TO 200
 if (retcod .NE. 0)  GO TO 300
 call Cupy(satid, inser Ifile, 10, outser, outseq, Ounit,
*Error, feet, Icode)
200  continue
 TPname = TPnext
 IFILE = nextfl
 GO TO 100
300  continue
 write(6,10) retcod, tpnext, nextfl
 stop
 end
 Subroutine Cupy( - -
 put C on all fwrite
 insert:
 write(6,10) DTAPD, INSEQ, DOTAPE, OUTSEQ
10 format(1X,'A8',1X,'file',I4,1X,'A8',1X,'file#',I4)
   IF(HFMT .EQ. 3)  GO TO 500
500  continue
   call DISC(satid)
   GO TO 300
   end
```

#HBL IFILE IOUNIT

10/11/77

put vises in ~~Part~~ GOT

problems left unsolved: use Tape99
changing label
day change - to be ignored
but label must have start & stop days
Three finders, good, bad, corrected
Size of error
error comments
size of IEPS 36 sec? instead of 100
only need to prevent overlaps
the POSN ~~passes~~ writes a new DSN if DD has a, ~~DEFER~~
and a NEW
otherwise the POSN ~~passes~~ writes the DSN on the DD card

must put in IUNIT JOUNIT

// GO.FT12F001 DD DSN=HB037409,UNIT=2400-9,DISP=(NEW,KEEP)
// LABEL=(,,,OUT),VOL=SER=EWRHBL

need non DMT bypass

Fort DISC

10/12/77 put in (new, keep) disp:

```
106     subroutine DISC(SATTD,IUNIT,IOUNIT,IDM)
edit 1800      ,IWRT/01
10300          call FWRITE(
```

problems to be solved, DSN's of sample tape label, should the hour be corrected also?

10/13/77

A old clock

tape	file	day	seconds	clock	DM	
~~HA0779~~	~~1~~	~~342~~	~~76008.030~~	~~1FE3020F~~	~~7~~	
~~779~~	~~3~~	~~343~~	~~45995.067~~	~~1FFE8B45~~	~~2~~	
	6	346	45422.562	207CD3A1	1	
780	11	333	20969.103	1E4C734D	0	1
781	1	387	38012.662	273AE477	0	2
~~782~~	~~3~~	~~392~~	~~86103.433~~	~~28254F87~~	~~3~~	
783	4	396	3890.099	28A5EAC7	0	3
784	5	402	38819.039	29B418DF	0	4
785	4	405	37632.168	2A32146F	0	5
787	4	409	37071.022	2ADA8E2F	0	6
789	4	413	36450.384	2B83007F	0	7
792	4	416	35751.789	2C013917	0	8
794	3	423	34343.866	2D2708E7	0	9
798	3	427	34464.741	2D0A7E7	0	10
799	4	430	32750.900	2F4E6197	0	11
805	15	433	81473.074	2EE4BB97	0	12
809	6	438	65900.293	2FB010DF	0	13
809	16	441	2.729	300E739F	0	14
779	11	347	56105.982	20AC3B07	0	15

systematic error in DM7 vs DM0 in BNT

10/13/77

Oct 10 - Oct 14, 1977 Ed Ronesh

A routine called HELI was used to examine HELIOS A data for 1977. Fifteen distribution mode = 0 points were selected and a least squares fit was made. The new fit predicts the A clock accurate to ± 1.1 seconds. The HELIOS A clock has a shift somewhere on tape HBL048 or HBL049. The tapes are being scanned to determine exactly where the clock has a discontinuity. The tentative point is somewhere around 1977 day 124.

FortDISC has been divided into a subroutine called CUPY and DISCRM. CUPY mimicks COPY of the LIBGEN program and DISCRM has been refined to correctly handle frame slips and calculate a predicted day and milliseconds for every half frame of DM7 data. The routine now corrects the frame if possible and codes the record with the correct day and time and a symbol B for uncorrected or C for corrected data. The next steps are to include a write ~~the data~~ onto a tape and correct the label. Then the routine can be inserted into LIBGEN.

should DISCRM write all format 3 data, why or why not

Pattern is DM7 followed by one frame file of DM4

then all DM7 & DM4 would be written by DISCRM ~~and corrected~~

only DM7 would be corrected

Need a new fort DM7 which reads the tape and prints it, also need a tapescan. find the discontinuity in A. Improve the clock

4;14;50 - 4;11;10

- 4;11;10

3;40 behind 462 to library

CRBE.LIB.ZBEWR (member)

need an EXTIME for new clock for A

new Helios A.

	tape	file	day	seconds	clock
1.	856	3	461	19384.643	0423AF0B
2.	860	1	469	85972.103	0595B283
3.	861	1	475	16165.073	0670BBF3
4.	864	2	479	86087.459	03EFE131
5.	865	3	486	4012.643	04EF10BB
6.	872	2	480	52752.491	0755891F
7.	878	15	486	84307.110	0862117F
8.	883	3	491	54293.159	0926598F
9.	884	4	496	32.183	09DECAC7
10.	885	6	501	55838.431	0ACCFA5F
11.	886	18	506	6.669	0B84A73F
12.	891	2	511	7.090	0C579727
13.	893	4	516	59169.502	0D476A4F
14.	894	2	519	22.204	0DA91D4F
15.	896	6	526	59.818	0ED06D4F
16.	898	1	531	13381.820	0FA90E4F

10/14/77

clock = 39C8B58F for 75/301 reprocessed
= 30295468.47 seconds
= 969454991 32th of a second

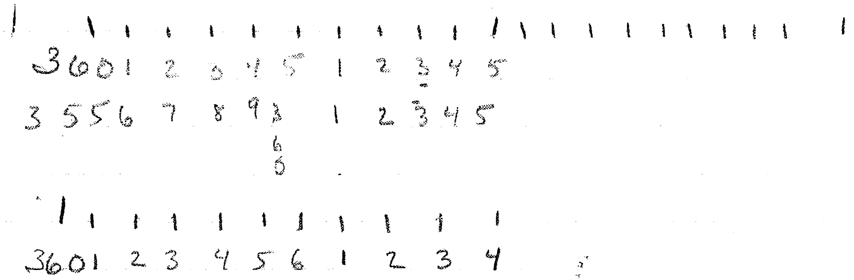
10/17/77

B000 = 45056
C000 = 49152

clock = 4818739507 at day 75/125
16 = 1CB8 D01E
4D
3E
1
082E_ _ _ _ ⇒ 4 289 586 sec

7F
1C
63
6

Some sort of plot



```
FORT DUMP
   Implicit real*8(D), integer*2(H), logical*1(Q)
   common/DISC/
same as heli to 39
   write(6,40)(IDATA(J,K),J=1,2)(HDATA(J,K),J=5,6),(IDATA(J,K),J=4,13)
 40 format(1X,2(I10,1X),I5,1X,Z8,1X,9(Z8,1X),Z8)
same as heli 80  but 590 = 700
```

Fort Dump 10/17/77

```
C  read tape written by FORTHELI
   implicit real*8(D), integer*2(H), logical*1(Q)
   - Dimension IDATA(13,72), HDATA(26,72), Qlabel(91)
   - EQuivalence (IDATA(1,1), HDATA(1,1), Qlabel(1))
   - Data DVOL/'EWRHBL'/, DSN/'HB011801'/
   -    , IUNIT/12/, IFILE/1/
10 format(1X,91A1)1X, Z8, 1X, I4)
20 format(1X, 2(F10.1X), I5, 1X, Z8, 1X, 9(Z8, 1X), Z8)
30 format(1X, A8, 3I6, I4)
   call mount(1, IUNIT, DVOL, 8, DSN)
100 continu
    IREC = 0
    Call POSN(1, IUNIT, IFILE, 8, DSN)
C   read label
    CALL FREAD(IDATA(1,1), IUNIT, LEN, &500, &200)
    IREC = IREC + 1
C   read records
200 WRITE(6, 10) Qlabel, DVOL, IFILE
    continu
    Call Fread(IDATA(1,1), IUNIT, LEN, &400, &200)
    WRITE(6,30) DVOL, IFILE
    DO 300 K = 1,72
    WRITE(6,20) (IDATA(J,K), J=1,2), (HDATA(J,K), J=5,6)
   *, (IDATA(J,K), J=11,13)
300 continu
    GO TO 200
400 continu
    IFILE = IFILE + 1
    GO TO 100
500 continu
    stop
    end
```

Load Dump

```
=JC
//* DUMPHELI THIS DATE
// EXEC FORTRANH
=FORT.DUMP
// EXEC LINKGO, REGION.GO=250K
//GO.FT12F001 DD DSN=HB011801, UNIT=2400-9, DISP=(OLD,KEEP)
// LABEL=(,SL), VOL=SER=EWRHBL
// EXEC NOTIFY
```

(1)

10/18/77

$01446359_{16} = 21259097_{10}$

2304 bits ?
3744 ~~words~~ bytes per subcard
as many as 800 records = 3 million bytes
each cylinder = 1415,880 bytes
=> 20 cylinders

```
//GO.FT14F001  DD  DSN=&&TEMP,UNIT=2314,SPACE=(CYL,20)
```

```
fort copyright 10400      ,IDATA
fort disc 100             ,IDATA
```

remove label reading, write whole set onto disk, rewind, write onto tape

```
2250      Call DWRITE(NUNIT,1,IDATA(1,1))
10310     CALL DWRITE(NUNIT,IREC,IDATA(1,1))
2900      IREC=1
1800                        ,NUNIT/14/
11020     ~~Rewind NUNIT~~
          DO 950 I=1,IREC
          call DREAD(NUNIT,I,IDATA(1,1),940)
          Call FWRITE(IDATA(1,1),IOUNIT,LEN)
940       continue
950       continue
```

10/19/77

```
9570 -
     C  correct label
        IF (IGOOD .GT. 1)  GO TO 610
        JDAYS = JDAY
        MSECS = MSEC
    610 continue
        JDAYE = JDAY
        MSECE = MSEC
10500 C  correct label
        HSEDR(1) = JDAYS
        DHRS = MSECS/3600000DO
        HSEDR(2) = DHRS
        DMINS = (DHRS - HSEDR(2)) * 60DO
        HSEDR(3) = DMINS
        HSEDR(4) = (DMINS - HSEDR(3)) * 60DO
        HEEDR(1) = JDAYE
        DHRE = MSECE / 3600000DO
        HEEDR(2) = DHRE
        DMINE = (DHRE - HEEDR(2)) * 60DO
        HEEDR(3) = DMINE
        HEEDR(4) = (DMINE - HEEDR(3)) * 60DO
        WRITE (99,80) HSEDR, HEEDR
        CALL DREAD(NUNIT, 1, IDATA(1,1), &910)
    910 continue
        read (99,80) (Qlabel(I), I = 21,38)
        call DWRITE(NUNIT, 1, IDATA(1,1))
1600 -  90  format (I3, I2, I2, I2)
        80  format (18A1)
```

198.623 =

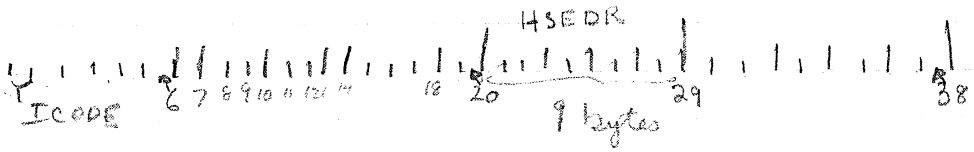
140F1F9F8 4BF6F2F3

```
     AA(1)    AA(2)
     integer*2 HSEDR
     DIMENSION AA(2), HSEDR(4)
     DATA AA/Z40F1F9F84BF6F2F3/
  10 format (1X, 2A4)
  20 format (1X, F7.3)
     WRITE(6,10) AA
     CALL INCORE(AA, B, 0, 7, 3)
     WRITE(6,20) B
```

10/19/77

125 14 59 13

→ F1 F2 F5 F1 F4 F5 F9 F1 F3



Oct 13 - Oct 19, 1977 Ed Ronish

The S/C clock for Helios A was examined for 1976 and 1977. The clock was found to have reset five times in that period. It should reset only once every 7.76 days. The data is being plotted to determine the exact time of reset and to what value the clock resets. Most of the routines used to print and check the clock were placed on stored load modules to ~~decrease~~ eliminate compiles time on frequently used programs.

The FORTDISC routine has been extended to write a tape of corrected values as a dummy run of LIBGEN. The label also must be changed on some DM7 data and a ~~prelim~~ relog incoming routine has been written for ~~doing~~ the label change. The routine needs a little more sophistication to handle all types of frame slips. ~~The routine checks the~~ ~~the day and [illegible] age~~

10/20/77 10/25/77

A B C D E F
D E F O 27-48

22

unresolved problem where is catalog written.
check copy to be sure no differences

M2, ZB2NL

~~18 14 13 17 20~~ 25

10/26/77

To list & copy DM7 only

DISCORM add to FORTDM7 & FORTCOPY

line 100 to 4300 NDM7=0 DO 700 I = 1,72

NDM7 = NDM7+1

line 10575 to 11500

IF (NDM7.EQ.0) GO TO 960

change DSN = HB0432

C on FWRITE no printout

10/20 – 10/26 1977 Ed Reinish

The Helios A clock was found to reset on day 150 of 1976 and day 94 and 184 of 1977. The resetting seems to be a bit processing problem in one of IPD's programs. a meeting is to be set up to discuss the problem with IPD.

The FORTDISC routine has been completed and finalized as a subroutine named DISCRM. It is called from COPY of the LIBGEN procedure whenever format 3 data is encountered. DISCRM copies the data onto a tape and if it is DM7 data, DISCRM corrects the EVT (event times), labels the data frames with the date and a code and corrects the data label to contain the calculated date and time. DISCRM then writes the file onto the main storage tape and returns control to COPY

10/27/77

MVC 513(3,9), 792(9)

$792 = 318_{16}$

(9) = 9090
+ 318
= 9398

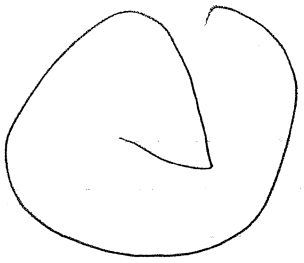
move 2 bytes
513 = 201

9080
201
9281

64 = 40

9080
40
9000

512 = 200 = 9280



8C
C

8

S80 = 30, S8C = 40, S98 = 00
ARG = 50

R1 = 1 ID1AB = 30
R2 = 80
30 = 50 ?
R2 = 80 + C = 8C
40 = 50 ?
R2 = 98
S98 = 50

821
196958
- 196240
6B8

at entrance to copy
S(19.6552) = 58F0 = ND1
HSA = 1D3F68 = 1916776
S(196A30) = 00196FB2

10/28/77

IEFB98 + DC = IEFC74

IEWR + 220 + DC

236 = EC

IEFB98 + EC = IEFC84

2213 = 8

for double days check

							records	bit rate	IDM
1.	HBL018	#	35		HBO118	#5	4	8	7
2.			37		118	#7	4	8	7
3.			112		128	1	7	8	7
4.			154		131	1	3	8	7
5.			393	?	146	11	8	256	?
6	38	#	48	?	358	6	8	128	?

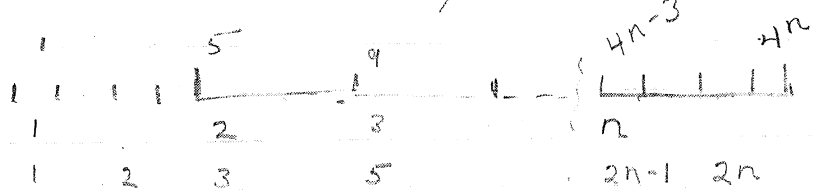
1.	76/133	139	actual 133 to 139
2.	139	148	139 to 148
3.	235	237	197 to 188 to 185 to 200
4.	249	251	249 to 249
5.	313	315	
6.	124	126	

11/1/77

```
forttest
    Implicit Real*8(D), integer*2(H), logical*1(Q)
    DATA Q1/.TRUE./,Q2/.FALSE./, Q3/T/,Q4/F/
10  format(1X,4(Z2,1X))
    write(6,10) Q1, Q2, Q3, Q4
    stop
    end
```

```
loadtest
=jc
// exec fortrank
=forttest
// exec linkgo
// exec notify
```

11/2/77



$4n-3 = 25$

$4n = 28$

$n = \frac{28}{4} = 7$

QDATA(26,*) for HBL023 #=26 rec 1

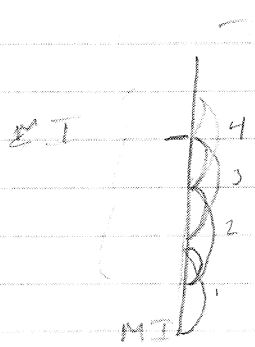
0	21	=	0010 0001	rates (48=1)
1	09	=	0000 1001	
2	05	=	0000 0101	
3	00	=	0000 0000	
4	63	=	0110 0011	
5	6B	=	0110 1011	
6	67	=	0110 0111	
7	6F	=	0110 1111	
8	21			
9	29	=	0010 1001	
10	05		0000 0101	
11	21		0010 0001	
12				
13				
14				

10/27 - 11/2/1977 Ed Ronish

A meeting is planned for Nov 3 to discuss the Helios A clock with IPD. DISCRM has been modified slightly to place a bad data flag in the SI word of a frameslip (,) to place the date in the last half word of a frame and to place a 12 (D in hex) in the 10th word of the label. A routine called FORTDM7 has been written to gather only DM7 data and rewrite it onto a non labeled tape for processing by HIBGEN + DISCRM. A beginning has been made in modifying HELDRP to use the day in each frame for data processed by DISCRM

11/3/77

0 1 2 3 4 5 6 7
8D = 1000 1011
E3 = 1110 0011



MJ*(J-1) + I

11/4/77 a better scan

```
      FORTSCAN, fortran
C     scan files and print dist node
      implicit real*8(D), integer*2(H), logical*1(Q)
      common /disc/ Dpnext, dref, nextfil, iscc, ichal, ifile, idsn, ireq, satid
      common /label/ icode, iopty, idtyp, idfmt, ifbfmt, lrecyr, hsedr(4),
     # fhedr(4), hmrtap, hmyid, qhyper(3), qhrchn, qfile(8D), qfile(8D), Idist(8), Rdist(8)
      dimension idata(13,72), hdata(26,72), qlabel(8D), Idist(8), Rdist(8)
      integer shftr, shftl
      equivalence (Idata(1,1), hdata(1,1), qlabel(1))
30    format(1X,'retcod_ 'I4,'_Dpnext_',A8,'_nextfil',I4)
      namelist/input/Dpname, ifile, itrec
10    format(1X,A6,I5,1X,3I4,1X,3I2,I4,1X,3I2,I3,I5,I3,1X,'HBLO',I2,2I4,5X,8F6.1)
20    format(1X,'tape___file_ tape_file_ DS_NAMMSS_DE_HHMMSS_YR_BTRT_F_TAPE'
     ↓'_file_rec'5X'DM0',3X,'DM1',3X,'DM2',3X,'DM3',3X,'DM4',3X,'DM5',3X,'DM6',3X,'DM6',3X,'DM7')
      Data Protect/0/
      IDM = 0
      Idist(J) = 0
      read(5, input, end = 1000)
      write(6,20)
100   continue
      call GOTLIB(49,50,10,DPname,ifile,mounts,Jcode)
      if (Jcode .NE. 0) go to 1000
C     read records
      irec = 0
200   continue
      call tread(Idata(1,1), 10, len, $900, $800)
      irec = irec + 1
      if (irec .gt. 1) go to 300
      call upklbl(Qlabel)
      go to 200
C     end read
C     scan for dist node
```

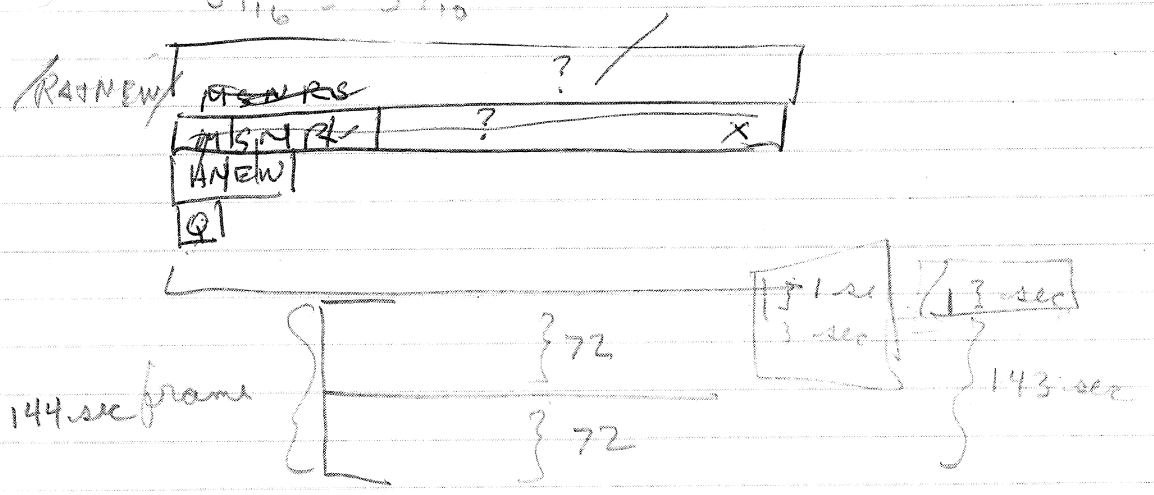
```
      IF (irec .gt. itrec) go to 900
      do 700 K = 1,72
       if (idata(4,k) .EQ. 0) go to 700
       ISI = HDATA(8,K)
       Ishift = shftr(ISI,3)
       Idist(ishift) = Idist(ishift) + 1
700   continue
      go to 200
900   continue
      DO 950 I = 1,8
950   Rdist(I) = idist(I)/72
      write(6,10) dpname, ifile, hmntap, hmxfil, hsedr, heedr,
     * hrecyr, hbtbl, hfmt, ihbl, ilfile, irec, Rdist
      dpname = dpnext
      ifile = nextfl
      go to 100
1000  continue
      write(6,20) IETcod, dpnext, nextfl
      stop
      end
```

```
loadscan, flist
=JC
//* scan this date
// exec fortranh
=fortscan
// exec linkgo, region.go = 200K
//link.sysLib DD Dsn = Z.bcw.fort.load, disp = shr
// DD dsn = ZB2NL.Libgen.load, disp = shr
// DD
//  DD
//  DD dsn = K3.Zbrxd.sdoo2.Oldbosa, disp = shr
//GO.FT10F001 DD DSN = Shelltap, unit = (2400-9,, defer), disp = (old, keep),
// label = (, sl), vol = ser = dum
//GO.FT19F001 DD DSN M2.ZB2NL.SDOO2.HBCATLOG,
// Disp = shr, DCB = (recfm = fb, lrecl = 160, blksize = 7200)
//GO.FT20F001 DD DUMMY
//GO.DATA5 DD *
 &input DPname = 'HB0194', file = 4, itrec = 8, &end
/*
// exec notify
```

11/7/77

$39_{10} = 27_{16}$

$39_{16} = 57_{10}$



11/8/77

	030(15)	→	1E(15)
HNEW	28(15)	→	1C(15)
HOLD	10(15)		A(15)

of 14th half word or 15th

R15 = D31A8
+ 1C
D31C4
beginning of RATNEW

D31A8
+ A
D31B2
beginning of RATOLD

recheck

RATNEW MSRNS	RATOLD MSROS	MSROE	ODATA
484(11)	?	344(13)	
1E4(11)		158(13)	

R11 = 2

R13 = D31E0
158
D3338

R15 = D31A8
+ 1E
D31C6

HNEW(15) = 30(15)
H·

HOLD(14) → L 296(13)
C 28( )
296(13) = 128(13)
= D31E0
+ 128
D3308 =

11/8/77

$18D3 = 7555 \qquad 5831 = 22577$

R0 = FF000010

$-10^{91} \times$

$.8_{16} = \frac{10}{16} \; ? = .5$

$? = .5\,\frac{16}{10}$

3F CCCCCCC

3F = 63 = .0CCCCCC

-64

-1

.12

$2^{-1} + 2^{-2} + 2^{-3}$

$.0101\,0100 = 2^{-2} + 2^{-4} + 2^{-6} = .328125$

$= .54$

$.5 = .0101 = 2^{-2} + 2^{-4}$

$= \frac{1}{2^2} + \frac{1}{2^4} = \frac{2^2+1}{2^4} = \frac{5}{16}$

$\frac{5}{10} + \frac{4}{256}$

$.12 = .0703125$

$.075_{10} = .133333$

$-7F.000010$

$= (127).000010$

-64

63 very large number

HELDRP location of labeled commons

HELDRP : DATREC, LOGHIS, RECSTA,

R15 = C98C0 ?
+ 1C
C98DC = HNEW(124) ?

check R1 = C7CE4 ⇒ HNEW(1) = INEW(1) = QNEW(1)
looks good
IOLD(1) = ED410

A(INEW) = ED C48 RATNEW
A(IOLD) = ED410 RATOLD
A(IREV) = C7E18
A(REPLCE) = C9A6C

HRNBRT = 0800 = 2048 } new
HRNFMT = 0001 = 1 }
HROBRT = 0008 = 8 } old
HROFMT = 0003 = 3 }

			HH/MM/SS	
MSRNS = 02503380	= 39662524	=	11/1/2	
MSRNE = 02505040	= 39669837	=	11/1/9	DM7
MSROS = 01A418140	= 27570511	=	7/39/30	- 24#53
MSROE = 02498040	= 45714511	=	12/41/54	→ frame 10
HDRNS = 072C = 1836			to ?	
HDRNE = 072C			this time can be	
HDROS = 072C			(9216 sec) 2½ hours at most	
HDROE = 072C			then MSROE should be	
day 1585 = 76/124			36786511 at most	
1836 = 76/375				
= 77/9			actually day 9 file 418#4	

two possibilities: old record is wrong or new record is wrong
actually the tape file H3C418#3 is the new one, it is being fitted into an old file which probably came from DM7

11/9/77

/RATNEW/ 9 + 129 words = 1 + 1 + ½ + ½ + 1 + 1 + 44½ + 129

E0C48 → NRNRTM = 43782
NRNCLK = 65550
HRNAFN = 1973
HRNTCC = 0
HRNRID = 0
HRNCTR = 0
HRNTYP = 4
HRNQUL = 4
ELN =
ESQ =

E0410 NRORTM = B450 = 46160
NROCLK = 1070F = 67343
HROAFN = 0086 = 134 ?
HROTCC = 0
HRORID = 1
HROBRT = 8
HROTIM = 3
HRORTR = 0
HROTYP = 0
HROQUL = 4

IREV = undefined
REPLC = 04

WRTRAT no arguments RATOUTPT = D264C
A(LRATE) = D279A
A(QLINE) = EE500
A(HRATIO) = D2756
A(N) = D26EC

LRATE = 1
QLINE = F01 = 3841
HRATIO = 0
N = 1

11/9/77

R13 Revisr

11/2 - 11.18.1977 Ed Hanisch

DISCRM the DM7 routine for Helios B was loaded into the permanent LIBGTN library. All DM7 data will be detected in the pre-processor and corrected or flagged from now on. The old DM7 files are partially loaded onto a non-labeled tape which will in turn be processed by MIBGTN. It was discovered that DM7 exists in format 2 as well as format 3 and DISCRM had to be modified accordingly. All the library Helios-B tapes are being scanned to determine if any DM7 exists in format 1 or 5, there is no format 1. It was discovered that
The old merger for HELDRP calculated end of record times incorrectly. This led to USER 39 errors in later runs. Some of the old files, particularly DM1, on the rates tapes have to be purged. Two small routines for formatted dumps of EDR tapes, unlabeled or catalogued were written

11/10/77

on ACCDM7
ID 5432
HDIT = 2.?

47 F0C248

F0C48 = A(MSGRNS

for ACCDM7
R1 = 7F674 A(DPROG) = 7F910
A(IMES) = 7FA00
A(IPRM) = 7F948

DPROG = E609E309 C1E34040
= W R T R A T
IMES = FFFFFFD9
- 00000026
+1
- 27 = -39.

IPRM(1) = 16
IPRM(2) = 3
IPRM(3) = 2048
IPRM(4) = 1

A(MESAGE(1)) = R13 + 6B,C → 7F948 + R13 = 7F28C
Can we construct the addition in R13
→ R13 = 7F28C
what is at R13 + 368 = 7F5F4 → 85938
points to WRTRAT SA
A(NPAGD) = ~~7F8FC~~ → very large number
7F9AC
A(87080) = WDI for WRTRAT
58 [illegible] (RX) L 8,4(,13)

11/10/77

5C0394E60

92

-64

28

11/11/77

HRNBRT = 16_{10} = 10_{16}

HRNFMT = 3

~~At~~

WRTRAT RI = 8594B4 → ~~4~~85A82 = ACHBIT)

HBIT = 2

71180 71180

61C 270

7179C 71450

SI byte 1 right to left

50.

01010000

2

00 or 08 or 10 18

00001000 00010000 00011000

2 0 3 0

3

00

4

3C

00111100

HBLO24 # 3 record 2 frame 18

line 1? 07FF80B80211 bit 41-48 11

bit# 8 16 24 32 40 48 000|10001

4: 12345678 seems to be line 2

line 2? 07FF80832409 09

00|01001 line 3

line 1? is F8007FB80F21 21

00|00001 this is line 1

11/11/77

line no 1 S-XRCD = 07F = 127 ?

line no 9 F80A A0AA 0043 43

0100 0011 line 9

SRI-(1) F80 = 3968

						frame	US!	SSEQTD
norm	HBLO 24	#53 record 3	frame	9				
line 0	07F	F80	B80	F	21	9		
	07F	F80	B80	F	21			
	127	3968	2944	1111	0010 0001		–	
line 1	07F	F80	07F	7	11	10		
	127	3968	127	0111	0001 0001		0	
line 2	F80	07F	83F	3	09			
	3968	127	2111	0011	0000 1001		0	
3	A00	85C	ACO	8	19	11		
	2560	2140	2752	1000	0001 1001		0	
4	790	964	ACO	2	05			
	1936	2404	2752	0010	0000 0101		–	
5	07F	90C	998	4	15	12		
	127	2316	2456	0100	0001 0101		0	
6	A20	757	B80	9	0D			
	2592	1879	2944	1001	0000 1101		0	
7	F80	F80	832	8	1D	13		
	3968	3968	2098	1000	0001 1101		0	
8	07F	92C	91C	0	C3			
	127	2348	2332	0000	1100 0011			6
9	B80	95C	930	7	D3	14		
	2944	2396	2352	0111	1101 0011			6
10	07F	950	91C	5	CB			
	127	2384	2332	0101	1100 1011			6
11	07F	93C	918	7	DB	15		
	127	2364	2328	0111	1101 1011			6
12	07F	934	91C	0	C7			
	127	2356	2332	0000	1100 0111			6
13	07F	93C	9E8	5	D7	16		
	127	2364	2536	0101	1101 0111			6
14	07F	920	910	C	CF			
	127	2336	2320	1100	1100 1111			6
15	07F	91C	904	7	DF	17		
	127	2332	2308	0111	1101 1111			6
0	07F	F80	B80	F	21			
	127	3968	2944	1111	0010 0001		–	–

11/11/77

line						frame	US	SSE QID
1	07F	F80	07F	E	31	18		
	127	3968	127	1110	00110001		1	
2	F80	07F	83F	A	29			
	3968	127	2111	1010	00101001		1	
3	B00	9D0	B80	8	39	19		
	2816	2512	2944	1000	00111001		1	
	AC0	A00	9138	5	33	70		
9	2752	2560	2488	0101	00110011			1
	AC0	A10	A50	F	2B			
10	2752	2576	2640	1111	00101011	71		1
	A80	980	900	4	3B			
11	2688	2432	2304	0100	00111011			1
5	67A	9CB	A20	C	F5	68		
	1658	2507	2592	1100	11110101		7	
	AE0	9C0	F80	9	ED			
6	2784	2496	3968	1001	11101101		7	
	07F	07F	B00	8	FD	69		
7	127	127	2816	1000	11111101		7	
	A00	980	A60	0	23			
8	2560	2432	2656	0000	00100011			

FFF 4095 = I4 11/11/77
FFFF = 65535

```
C   Routine to display scientific data
      Dimension  IUPK(39)
      IUPK(1) = IGET(IDATA(4,K),6,7)
      IUPK(2) = IGET(IDATA(4,K),4,5)
      IUPK(3) = IGET(IDATA(4,K),1,3)
      IUPK(4) = IGET(IDATA(4,K),13,15)
                5                 10,12
                6                 9,9
                7                 16,23
                8                 29,31
                9                 25,28
                10 = IGET(IDATA(6,K),0,11)
                11                .12,23)
                12                ,24.35
      DO  640   J = 36,47
      L = J-13
      IUPK(L) = IGET(IDATA(6,K),J,J)
640   continue
      IUPK(25) = IGET(HDATA(13,K),0,11)
                26                12,23
                27                24,35
      DO  680   J = 36,47
      L = J-8
      IUPK(L) = IGET(HDATA(13,K),J,J)
680   continue
      write(6,80) (IDATA(I,K),I=1,2),(HDATA(I,K),I=5,6),
     * (IUPK(I),I=1,9),IDATA(5,K),IUPK(I),I=10,39),
     * (IDATA(I,K),I=9,13)
80    format(1X,I8,1X,I8,1X,I2,1X,Z4,1X,9(I1,1X),1X,I5,
     * 1X,3(I3,1X),1X,4I1,1X,3I1,1X,4I1,1X,I1,1X,5(Z8,1X))
```

11/14/77

Use PATRICK

```
//EXEC VSCOPY
//EN DD DSN=M2.ZB2NL.SD002.HBCATLOG,DISP=SHR

IUPK(1) = IGET(IDATA(8,K),1,3)
          2                4,5
          3                6,7
          4                9,9
          5               10,12
          6               13,15
          7               16,23
          8               25,28
          9               29,31
IUPK(10) = IGET(HDATA(11,K), 0,11)
          11              12,23)
          12 =      HDATA(12,K), 16,27)
DO 640 J = 8,19
L = J+5
IUPK(L) = IGET(HDATA(13,K),J,J)
640 continue
IUPK(25) = IGET(HDATA(14,K), 0,11)
          26              12,23
          27      HDATA(15,K), 12,23)
DO 680 J = 20,31
L = J + 8
IUPK(L) = IGET(HDATA(15,K),J,J)
680 continue
WRITE(6,80) (IDATA(I,K),I=1,2),(HDATA(I,K),I=5,6),
* (IUPK(I),I=1,9), IDATA(5,K),(IUPK(I),I=10,24)
WRITE(6,90) (IDATA(I,K),I=9,13), (IUPK(I),I=25,39)
80 format(6X,2(I8,1X),I2,1X,Z4,1X,9I1,Z4,1X,3(I5,1X),12I1)
90 format(1X,5(Z8,1X),3(I5,1X),12I1)
```

11/15/77

F80 ⇒ 1 B80 → 2 B00 → 3

1111 1000 0000 - 1011 1000 0000 1011 0000 0000

1000 0000 1000 0000 1

1000 0000

B40 → 4

1011 0100 0000

21

a 6 log compression

1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

1+4 = 5 + 1 = 6

→ 0000010 = X C1 - C5 = 21 = 15_{16}

convert = 0001 0101

→ 0000 1010 0 0 0 0 = 10101 = C

1+4 = 5 + 1 = 6

readout is backwards

X = 0100000

C = 10101

HRATE - 1010 1010 0000 0

21

0 0 0 0 0 1 0 1

0177_8 7F

000 0111 1111 000 0111 1111

1111 1111

+1

0

7600

1111 0000 0000

31

0 0 0 0 1 1 1 1 0 0 0 0

2

5600

1011 0000 0000

23

0 0 0 0 1 1 0 1 1 0 0 0

11/15/77

A [illegible] = 0 C1-C5 = 0 X1-X7 = 111111

C5-C1 X7-X1 = 00000 111111 = 7F

A 000000 = 1 C1-C5 = 24? X1-X7 = 000 0 actual 7600

18 = 000 11000 111 11 0000000,
31

C5-C1 = 000 11 000 0000 moves 31

1 8 0

A 1000 000000 = 2 C1-C5 = 23 X1-X7 = 000 0001 actually

000 10111 = 17

C5-C1 X7-X1 = 1111 0 11 000 000 101 11 0000 000

E C 0 17 = 23

C1-C5 X7-X1 = 101111 000000 X8 = 1

$c = \nu\lambda$ $\nu = \frac{c}{\lambda} = \frac{1}{\lambda}$ 6943 Å = 694.3 nm

$= 694.3 \times 10^{-9}$ m

$= 694.3 \times 10^{-7}$ cm

15 pulses in 2.55 cm

6943 Å 1 Å = 10^{-8} cm

= .17 cm/pulse

20 nsec/1.6 cm = 33.3 nsec/cm

= 5.7 nsec/pulse

A 0100 1111 = 3 C1 C5 = 22 = 16 actual 5400

X7 X8 C X7-X1 = 0001 0 10 0 000000 101 10 000 000,

0 5 4 0 0 22

A 1100 = 4 → 5500

$\log_a b = \frac{\log b}{\log a}$ $\log_{12} 2816 = \frac{\log 2816}{\log 12} = 3.19$

$\log_{12} 2880 = 3.20$

0702

000 111 000 010, 0000 00 1 0 00 0 11 000

3 100001 0000 4 0 6 0

4 1 0 6 0 4 0000

000 11 0000 10 0000

0 6 0 4 0 0 0 0 1 1

11/15/77
11/16/77

Engineering words

11/17/77

11/10 - 11/16, 1977

Ed Ronish

An attempt to use TIMEDT2 and TIMSCAN to purge the Rates tapes of the overlapping DM7 files was unsuccessful. These programs apparently do not work and will have to be rewritten. It was discovered that the DM7 data on the Rates tapes does not overlap, ~~but~~ rather the ~~time~~ end time parameter at the beginning of each record ~~has~~ is incorrect. ~~It~~ Using the formatted dump of the EDR library it was discovered that 6 out of 52 Rates registers are not extracted by HELDRP from the DM7 files. (Heldrp skipped processing 76/15-18 because day 18 was first day on catalog)

11/18/77

BACCDMPN dump

NRNRTM = 1959744
NRNCLK = 33621771
NRNAEN = 17
HRNTCE = 0 = HRNRIO
HRNBRT = 8
HRNEMT = 3
HRNCTR = 0
HRNTYP = 0
HRNQUL = 4

11/21/77

what is Fcet = to where was fcet calculated?

FEETC = .41/3 DDAC = 3.3DDAC
= 3 + .2416191101

41 = 65

$$\frac{a}{16} + \frac{b}{16^2} + \frac{c}{16^3} \times 16^3$$

RATNEW/1F3730/
MSRNS = 30184389
MSRNE = 36524889
HDRNS = HDRNE = 2050
NRNRTM = 1959744
NRNC
OVLAPR
→ 100, HDNS =
WRTRAT: (HDRNE = HDRNS ∧ MSRNE > MSRNS) → 100
100: HRNEMT = 3 ≠ 5 → RTRIMO (MSRNS, LENNEW = ?
RTRIMO → LENNEW > 0
→ OVLAPR (30184389, 36524889, 2050, 2050, 1, 1, 1, E04089, 56135754, 45729282, 1922, 2050) HDRNS MSNS = MSRNS < MSRATE
OVLAPR: → 100 → (HDNS = HDRNS = HDRATSC) 30184389 < 45729282) → 200
HDNS = HDRNS > HDRATSC ∧ HRATYP = 1...
ITAPER = 1
OVLAPR = .True. → 800 - WRTRAT
WRTRAT OMODE = 4 ∧ ITAPEC = ITAPER
RINGUP = F
→ SETOMR

Problem seems to be OVLAPR was supposed to be false or bypassed, why did Rej DM7 bypass OVLAPR

11/21/77

1921 = 77/94
ADRNS = 1827 + day(77)
problem in OVLAPR. Is HDRATE = 2050(223)
it should be 95 the same as HDRATS
where is HDRATE 45 set? — in WRITER

WRITER/1E7E58/
NEWRAT
EPA is stored R15 find where R13 is generated
relative to R15 then we have R13
R13+4 = SA

WRITER what is HDPREV
HRATTP(1E7F44) = 1
MSLAST(1E7F68) = 45 729282
NEWRAT(1E7F70) = 1
FEET(1E7F4C) = 3.24
HCOPRT(1E7F3C) = 0, 2050(233)
IROUTU(1E7F5C) = 15
MSPREV(1E7F6C) = 77
FTEMP(1E7F50) = 3.34
HDLAST(1E7F3E) = 2050
HRATBK(1E7F42) = 0
ITAPEC(1E7F60) = 1
FTMAX(1E7F54) = 2200
FACTOR(1E7F58) = .00005
HDPREV(1E7F40) = 77 never assigned
LENREC(1E7F64) = 508
WRITER(1E7F74) = 77 must signal end

it seems that HDRATE = 233 instead of 45 as it should

11/21/77

$64 = 40_{16}$

WRTRAT /1D5C10/

FEETC(1D5F88) = 3.32461911

HREV(1D5FD8) = JREV = QREV = 0

DATA IBLANK /Z77777777/

HDRNE(1DFC1A) = HDROE = 5820_{16}

HDRNS(1DFC18) = HDROS = D0AC

Z40404040

IRINU(1D5E8C) = 16

ISEQE(1D6818) = QSEQE

ISEQS(1D6810) = QSEQS

MSRNE(1D5C14) = MSROE

NMODE(1D5F90) = 1

OMODE(1D5F94) = 0

ROVER(1D5F98) = 0

DBLNKR(1D6FD8) = 1D6E00 = 4D0003

DCOPRT(1D5D00) = 1D6CA2

DNEWRT(1D5C60) = 09C4405E3

DRATTP(1D6400) = 00000FE

ENDRAT(1D5F9C) = 1508 ?

HCOPRT(1D5D5A) = 1EC316

HDLAST(1D5F84) = 2050(233)

HDRATE(1D6BB8) = 20480

HDRATS(1D6AF0) = 53936

HRATBK(1D708A) = F008

HRATFT(1D6C80) = 16864

HRATTP(1D5C16) = E609 LWR

HRNFMT(1D5C2C) = D000

IROUTU(1D5FA0) = 15

ITAPEC(1D5FA4) = 1

ITAPER(1D5FA8) = 1

LENFMS(1D5FAC) = 516

LENHED(1D5F60) = 2

LENNEW(1D5F64) = 4

LENOLD(1D5F68) = 5

LENREG(1D5F6C) = 16

LENREV(1D5FC0) = 0

MSLAST(1D5FC4) = 45729282

MSRATE(1D6960) = -ADOBAGFF ?

MSRATS(1D6700) = 77

NEWRAT(1D5D54) = 1D5FA4 = 1

NRNCLK(1D5C20) = QCLOCK

QREPEC(1D5C1D) = EC0006

RINCUR(1D5FC8) = 0

11/21/77

where is HRATTP set ... in SETNMR to 1
HDRATE is set in WRTRAT
HRATTP=0 in Heldrp

where is NMODE set? WRTRAT
NMODE=E 13, 14, 33, 38, 40, 53, 72, 77, 78, 88, 90, 92

Probably at 77

DRSTAP/IEC310/
IDSAT=B
HPHATP=0
HRATTP=1
DPHATP=77
MSPHAS(IEC638)=77
MSPAE(IEC7C8)=77
HDPHA(IEC958)=77
HDPHA =77
DRATTP(IEC660)=77
MSRATS(IECED0)=36135754
MSRATE(IED060)=15729282
HDRATS(IEDIF0)=1922(95)
HDRATE(IED268)=77
HRATTT(IED380)=3
OBLNKR(IED508)=77
HRATBK(IED78A)=0

100 R*8 → 320
100 I*4 → 190
100 I*2 → C8

RUNDAT/IEDA58/
HMNRN=1
HDYRN=14
HYRRN=77
HMJDRN=2145
QMERGE=T
QPHATP=F
QCTLGT=T
QPRTID=F
QLOOK=T
QREPLC=T

11/22/77

TAPLST/1ED868/
ONEWPH = 77
ONEWRT
OCOPHA
DCOPRT
NEWPHA(1ED9E8) = 0
NEWRAT = 1
HCOPHA = 0
HCOPRT = 0
LSTPER = 77
LSTRER = 77

RATOLD/1F3F68/ = 77

MSROS
MSROE
HDROS
HDROE
NRORTM
NROCLK
HROAFN
HROTCF
HRORIO
HKOBRT
HROFMT
HROCIR
HROTYP
HROQUL

77

95
HDRATS

223
HDRATE
HDRNS
HDRNE

36
MSRATS

The problem was very simple HB0433 file 54 overlap
Heldrp tried to assign a new tape to the second file.
Now what about the 7 registers not being processed

11/22/77

Where does Helphp extract S-XRC1) -3
and R9, R1, R14, R17 called MRNFM or MRNFMS
in RATOUT apparently
extract might actually do the extracting
in extract RATUPK extracts the data

97
10010111

RATOUT/ 1DBAB8/

1C7800
+ 142B8
1DBAB8

LAST(1DBAB8
+ 1F0
1DBCA8) = 77

NOW (1DBAB8
+1E0
1DBC98 = 1D

Q line (1DBCA8)
+1C0
1DBE68 = ~~0~~

ILINE (1DBCA8)
+9D0
1DC678 = 43300161

QNUM (1DBCA8)
+9D0
1DC678

IURSEQ(1DBCA8)
+210
1DBEB8 = FECED300

HURSEQ(1DBCAA) = 77

QFRST(1DBCA8)
+ B
1DBCB3 = 0,0

HCONT (1DBCA8)
3E0
1DC088 = 0

11/22/77

Ratout

Qfrst(2) = E ⇒ 10

LSTPG(IDBAB8
+200
IDBCB8 = 4

HFMT(IDBAB8) ? = 90 ECD00C ?
C
IDBAC4

QURSEQ(IDBAB8) ? = D9 ?
6
IDBABE

IDS432(IDBAB8) = 7
9E8
IDC4A0

QREND(IDBAB8) ? = D0 ?
+E
IDBAC6

QRALB(IDBAB8) = 0
1C1
IDBC79

HSET(IDBAB8) = 2
1C8
IDBC80

HSVNX(IDBAB8) = 0014 hex = 20
+1CE
IDBC86

N€IDBAB8) = 1
1D4
IDBC8C

HNDX(IDBAB8) = 0019 = 25
+224
IDBCDC

HRNDX(IDBAB8) = 0056 = 86
1CC
IDBC84

QPHATP(IDBAB8) ? = D6 ?
9
IDBAC1

KEVT(IDBAB8 = 77
+1EC
IDBCA4

11/23/77

/SEQID/(IEDB98)
HPHA = 0
HURSEQ = FFFF = -00001 = -1
HSRSEQ = 6
QURSEQ = 1
QSRSEQ = 77

/DATREC/(IEB058)
IDATA
INDX (IEBEF8) = 1

RATOUT parameters R1 = ICBE6C
LRATE (ICBFB4) = 2 ?
Q line (IEDB80) = 12
HRATIO (ICBF76) = 0
N (ICBF0C) = 1

/RBLOCK/ (IEDB78)
HRATE4 = 2944
HRATE3 = 2304
HRATE2 = 2304
QRATE1 = 0
QDSP32 = 6
QLINE = 12
QHPRI = 3

} seems to be record 3 frame 1 of file 6
HB0433

/INTERN/(IEDA68)
DCATSV = 77
DTSLOT = HB0433
DTLABL = HB0433
METLE = 6
NREC = 2
NERR = 0
NTPEDR = 2

11/23/77

Ratout

/ITEMS/(IEDABO,
NQ = 6
NQL = 4
QFNEW = 0
QXRY(2) = 16,16
QFRST(3) = 0,0,1
QREND = 1
QPEND = 1

/RECSTA/(IEBF28)
HCONT(IEC308) = 0

Ratout →10
ITYPE(ICCOBO) = 12
or 8?

Why doesn't DM7 pick up line 0
what is order in BO mode

BO mode is 0 to 15
not BO mode is 1 to 15 to 0
does extract pick up BO mode correctly

Is DM7 governed by above rule no
DM7 is always 0 to 15

where is QBO ? in BOMODE
and nowhere else
but REJBOM is also set in BOMODE

QBO is also in EDRCHK, where does it get it
no it has been commented out

a change in BO mode sets REJBOM sets QREND in EDRCHK
QREND skips some steps in RATOUT

HURSEQ is -1 until a rate block is encountered
does the rate block begin on 1 or 0? It must begin on 1. where is 0 rejected

11/23/77

what is HURSEQ set to?
Hurseq is set in EXTRCT
what is ITYPE = QTYPE set in EXTRCT
= line #
HURSEQ set = IDS432 in EXTRCT
what is IDS432 = QDS

note if HRATIO=0 => DM7 or Blackout mode
HRATIO may be the flag since QBO doesn't seem to be.

Some printout would be nice
1st printout RATOUT

put whole tape into ZBEWR.HELDRP.FORT

create LHELDRP
RATOUT
for line 3 N=4
HSVNX = (4,4) = 41
HRNDX = 41 + 14 or 41 + 14 + 52
US = 0, 2, even * US = odd
= 55
line 3 N = 3
HSVNX (3,4) = 51 HRNDX = 51+14
line 3 N=2
HSVNX (2,4) = 50 HRNDX = 50+14
line 3 N=1
HSVNX(1,4) = 48
HSVNX(4,8) = 33 line 7 N=4
HSVNX(1,5) = 34 line 4

11/28/77

81000 +100

```
1   format(1X,'82000',6I11)
2   format(1X,'134000',6I11)
3   format(1X,'165000',6I11)
4   format(1X,'195000',7I11)
5   format(1X,'233000',5I11)
6   format(1X,'282000',7I11)
7   format(1X,'295000',5I11)
8   format(1X,'312000',6I11)
```

82000 +500 write(6,1) QLINE, HURSEQ, QFRST(2), HCONT, IURSEQ, MPADRT

134000 write(6,2) HXEQ, HCOMM, QXRY(2), QXRY(1), IDS432,

165000 write(6,3) HCOMM, HRNDX, HPG, HQUAL, LRATE, HSRSEQ

195000 write(6,4) QPHATP, HSVNX, HSFT, ILINE, N, QRALB, QREWD

233000 write(6,5) QSRSEQ, QURSEQ, HSVSEQ, HDPEMS, MSPFMS

282000 write(6,6) LAST, NOW, MSRNE, MSDAY, ZTIME, ROUT, IDSF

295000 write(6,7) QUSEQ(2), NRNRTM, HDRNS, MSRNS, MRCAFN

312000 write(6,8) HFMT, QBO, INDX, HMRFIL, HMNRN, QFILL

fortadr

```
4410   if (IDM.NE.7) GO TO 400
4442 400 continue
4491   IF (HFMT .EQ. 1)  GO TO 690
4495 C   write out format 2 & 3 with two scientific words
4497 690 GO TO 706
     C   continue
         write out format 1 with one scientific word
         write (6,40) (IDATA(I,K), I=1,2), (HDATA(I,K), I=5,6),
        $ (IUPK(I), I=1,9), IDATA(5,K), (IUPK(I), I=10,24),
        + (HDATA(14,K), (IDATA(I,K), I=8,13)
1090 40  format(1X,2(I8,1X),I2,1X,Z4,1X,9I1,1X,Z4,1X,3(I5,1X),
        + 12I1, Z4,1X,6(Z8,1X))
3205     NFMT = IGET(QLABEL(17),4,7)
```

run on HB4024 #55 Itrec = 190

~~Rotbit~~

```
129000 C  set blackout mode to Taus for DM7
          IDMODE = IGET(IDATA(4,INDX),25,28)
          IF(IDMODE.EQ.7) QWORD(43) = .TRUE.
       C  end set
```

11/28/77

does QBO = T pick up split rate data

Rate:
Data 4/30/76 to 5/1/76
76/120 to 76/121

11/29/77

// EXEC LINK

//SYSLIB DD DSN=M2.ZBG.BM.SD002.BACCDM7N, DISP=SHR
//SYSLMOD DD DSN=ZBEWR.BACCDM7N, DISP=SHR
//SYSLIN DD *
ENTRY HELDRP
)
INCLUDE EWRLIB(RATOUT, BOMODE)
INCLUDE SYSLIB(AELDRP)
NAME HELDRP(R)
//EWRLIB DD DSN=ZBEWR.HELDRP.LOAD, DISP=SHR

L BACCDM7N
= DRPPROC
= QLK (432 #6)
// EXEC NOTIFY

11/29/77

EXTRACT
Line1=15, line#=0, LN=2, HCONT=0, Quseq=T
→5, FF, 0, Ratupk, ~~line#~~ 0, upkey, nand, Huseq=1 Quseq=T
→18 → 19, Ratout, , Quseq=F, line1=0 → 62 → 90
line1=0 line#=1 Quseq=T → 5 → Ratupk → 8 → 10 → 18 → 19 → Ratout, , , 30
line1=1 TYPE=1 QL(2)=T, QL(3)=F, QL(4)=F, Quseq=T
QT1=Qrate 1 → 90
line1=1 line#2 Quseq=T → 5 → Ratupk → 5 → 10 → 18 → 19, Ratout, , ,
→ 30 line1=2 QL(3)=T, QL(4)=F, QL(5)=F, Quseq=T,
QT2=Qrate 1 → 90
line1=2 line#=3 Quseq=T → 5 → Ratupk → 8 → 10 → 18 → 19, Ratout, , ,
→ 30 line1=3 QL(4)=T, QL(5)=F, QL(6)=F, → 60
Huseq<0 → 62
otherwise it should call PTHIRD

where is HCONT set extract & edrchk

IT

11/29/77

where is HSRSTQ set less than 0 in FMSYNC

11/30/77

create FLIBGEN, fortran

fp pic(1 real*8(20), integer*2(4), logical*1(2)

create LPatrick, flist

=jc

//* LIBGEN TOEWR

// EXEC PGM=PATRICK, PARM='9TN

11/28 - 12/1, 1977 Ed Ponish

It was discovered that a duplicate file will cause Heldrp to request a new rates tape. A printout was added to SETOHR and SETNMR to aid the user in determining the duplicate file and reprocessing the tape minus that file. Duplicate files only occur for DM7 data. It was discovered that the blackout mode bit is not always set for DM7 data, thus most DM7 data is skipped by Heldrp. It was discovered that Blackout mode data has been systematically skipped by Heldrp due to a peculiarity in the code. When the DM7 only tape was preprocessed by LIBGEN a OC4 abend occurred because the catalog was filled up. The catalog has to be packed more efficiently and all Heldrp processing has stopped until

12/1/77

that is remedied.

C17 D26
ØX ØA0
- C3C8
C5AE2

=JC
// * PLIBGEN ZBEWR
// EXEC FORTRANH
=FORTCOPY
=FORTDISC
// EXEC LINK
//LINK.SYSLIB DD DSN=ZBZNL.LIBGEN.LOAD,DISP=SHR
//LINK.SYSLMOD DD DSN=ZBEWR.LIBGEN.LOAD,DISP=SHR
//LINK.SYSLIN DD *
INCLUDE SYSLIB(LBMAIN)
ENTRY LB3MAIN
NAME PLIBGEN(R)
// EXEC NOTIFY

then ~~copy~~ check ZBEWR & COPY 'ZBEWR.' 'ZBZNL.'

C5AE2
2
C5AE4 FOUTSEQ =
C5AE2
274
C5D56 COUTSEQ = 5000_{16} =

HBO437
FOF4F3F7

F0 - F0 = 0 X 1000
+F4 - F0 = +4 X 100

437

```
//OC FIXBindx
=JC
//*  FIX  BINDEX
//  EXEC  FORTRANH
//SOURCE.SYSIN DD *
      implicit real*8(D), integer*2(H), logical*1(Q)
      DIMENSION IARRAY(1823), Qarray(4)
      equivalence (Qarray(1), Iword, FEET)
C     Correct index and remove 437 and change offset for Helios B
10    format(1X,'the numbers before were ',A4,7I5,F9.4,7I5)
20    format(3X,'the numbers after are - ',A4,7I5,F9.4,7I5)

      call Fread(IARRAY,19,LEN)
      IWORD = IARRAY(1159)
      write(6,10) (IARRAY(I),I=1,8),FEET,(IARRAY(I),I=10,15),
     * Qarray(4)
C     Set new values, offset=1035, NEXTREC=448, OUTSEQ=134
C     INSERA=436, INSEQA=8, LINSERA=436, LINSEQA=8
C     Byte for EDR436 = 11
      IARRAY(3) = 1035
      IARRAY(6) = 448
      IARRAY(8) = 134
      IARRAY(10) = 436
      IARRAY(11) = 8
      IARRAY(14) = 436
      IARRAY(15) = 8
      QARRAY(4) = 3
      IARRAY(1159) = IWORD
      write(6,20) (IARRAY(I),I=1,8),FEET,(IARRAY(I),I=10,15),
     * QARRAY(4)
      call Fwrite(IARRAY,10,LEN)
      stop
      end
//  EXEC LINKGO,REGION.GO=100K
//GO.FT10F001 DD DSN=ZBEWR.HBINDEX.DATA,DISP=SHR
/*
//  EXEC PGM=PATRICK,Region=80K,PARM='DMP,001,001'
//INI  DD DSN=ZBEWR.HBINDEX.DATA,DISP=SHR
//OUT2 DD SYSOUT=A
//SYSUDUMP DD SYSOUT=A
//  EXEC NOTIFY
```

12/1/77

```
FIX BCTLG
=JC
//* FIX BCATLOG
//  EXEC FORTRANH
//SOURCE.SYSIN DD *
      DIMENSION IDATA(80), JDATA(80
C     move secondary area from 1800 to 1035 and replace with
C     zero record
      DO 100 I=1,80
100   JDATA(I)=0
      DO 200 I = 1800,2250
      J=I-765
      CALL DREAD(10, I, IDATA)
      CALL DWRITE(10,J, IDATA)
      CALL DWRITE(10,I, JDATA)
200   continue
      stop
      end
//  EXEC LINKGO,REGION.GO = 100K
//GO.FT10F001 DD DSN=ZBEWR.HBCATLOG.DATA, DISP=SHR,
//  DCB=(RECFM=F,LRECL=160,BLKSIZE=7200)
//  EXEC NOTIFY *

C     correct RETCOD=1 files, HBU322 and 394
      CALL DREAD(10, 322, IDATA)
      IDATA(31) = 323
      IDATA(32) = 1
      CALL DREAD(10, 2152, IDATA)
      IDATA(31) = 395
      IDATA(32) = 1
```

12/1/77

```
45000   1  format (1X, '45000', 9I11)
        2  format (1X, '56000', 9I11)
        3  format (1X, '69000', 9I11)
        4  format (1X, '93000', 9I11)
        5  format (1X, '140000', 9I11)
        6  format (1X, '162000', 9I11)
        7  format (1X, '216000', 9I11)
        8  format (1X, '224000', 9I11)

45000/  write (6,1) HGMT, HEVT, HTYP, HENG, HERR, HQUAL, QFRM,
       * QFILL, QPM
49000 C This is the EDRCHK that accepts DM7
50000   IF (IDMODE .EQ. '7') GO TO 710
51000   GO TO 90
56000/  write (6,2) MSMNES, QTST, IFRMTM, MFILE, LFILE, QTST
       * QFILE
69000/  write (6,3) IOF, MSDIFF, MSMNLT, IZERO, NREC, IMAXY, INDX
93000/  write (6,4) IPERCT, ITALLY (IPERCT), IMAXY, MAXFRT, INDX
       * IPRBT, HRATIO, QTRPS, HRAT
140000/ write (6,5) NRTOL (HFINX), HFINX, MNX, INDX, QMSG
162000/ write (6,6) QFILE, HSVBRT, HBTRT, HEMT, QFNEW, NCON
       *          , HSVEMT
216000  write (6,7) QLREOV, QIN, QRC SKP, NRQUL (HFINX)
       + NRPAD (HFINX), HFINX, QFILL, REJBOM
224000  write (6,8) QIN, NRGOOD (HFINX), KPAD, QFDR, HRATIO
       * LSTFILE, LSTREC, HCONT, QREND
```

---

primes in	binary	hex	octal	base 7
1.	1	1	1	1
2	10	2	2	2
3	11	3	3	3
5	101	5	5	5
7	111	7	7	10
11	1101	B	13	14
13	1111	D	15	16
17	10001	11	21	23
19	10011	13	23	25
23	10111	17	27	32
29	11101	1D	35	41
31	11111	1F	37	43
37	100101	25	45	52
41	101001	29	51	56

12/2/71

Alloc da('M2.ZBEWR.SD002.HBCal')
('M2.ZBEWR

='ZBRTC.M2.ZBEWR'

prime	octal
43	53
47	57
53	65
59	73
61	75 — $101_8 = 65_{10}$
67	103
71	107
73	111
79	117
83	123

12/5/77

DD	3435	4950	QBO	format	3738	2829	4344
3	3F6F	EA97	0	2			
0	"	EA95	0	2			
0	"	EA94	0	2			
7	8250	1D00/1E00	0	3	EA93/877E		
4	3F6F	EA92					
0	3F6E	EA91	0	2			
0	"	EA90	0	2			
0		-	0	1		3F4F	E9CF
0			1	1		"	EACF
7	3F6E	EA94,3					
7	7A82	3D3E					
7	7A81	3E3E					

12/5/77

```
C   correct HBCatlog and pack data more efficiently
      INTEGER *2 IDATA(80,2250), JDATA(80)
C   read one block to save access time
      DO 100 I = 1,2250
      CALL DREAD(10,I,IDATA(1,I))
100   continue
C   correct Retcod = 1 files: HBO 322 and HBO 394
      IDATA(31,322) = 323
      IDATA(32,322) = 1
      ~~IDATA(31,2152) = 395~~ IDATA(5,2152) = 395
      ~~IDATA(32,2152) = 1~~ IDATA(6,2152) = 1
C   move secondary area from 1800 to 1035 and zero secondary
      DO 200 I = 1800,2250
      J = I - 765
      DO 200 K = 1,80
      IDATA(K,J) = IDATA(K,I)
      IDATA(K,I) = 0
200   continue  DO 300 I = 1,2250
C     stop      CALL DWRITE(10,I,IDATA(1,I))
      end 300 continue
// EXEC LINKGO, REGION.GO = 250K
//GO.FT10F001 DD DSN = ZBFWR.HBCATLOG.DATA, DISP = SHR
// EXEC NOTIFY
```

write the file back on

create

12/6/77

AB0135 #10

frame #	Rate word 1	2	3	4	line #
14	127	2656	2592	0000 1010 0011	12
	2816	2720	2592	0001 1011 0111	13
15	2944	2672	2640	1001 1010 1111	14
	2944	2640	2576	0101 1011 1111	15
16	2512	2186	2272	0011 1110 0001	0
	2420	2244	2099	0001 1111 0001	1
17	2210	2472	995	0101 1110 1001	2
	127	3968	3968	0100 1111 1001	3
18	2456	2592	1339	0010 0000 0101	4
	1648	2523	2480	0010 1111 0101	5
19	2752	2672	127	1001 1110 1101	6
	127	127	3968	1000 1111 1101	7
20	3968	2364	2488	0000 1100 0011	8
	3968	2388	2504	0111 1101 0011	9
21	2944	2364	2304	1110 1100 1011	10
	2944	2368	2332	0100 1101 1011	11
22	3968	2312	2328	0000 1100 0111	12
	2816	2316	2536	0111 1101 0111	13
23	3968	2364	2312	0001 1100 1111	14
	3968	2396	2528	0101 1101 1111	15
24	2512	2186	2272	0011 1110 0001	0

12/6/77

create LK PLIBGEN, flist
=JC

```
//* LINK PLIBGEN
// EXEC LINK
//LINK.SYSLIB DD DSN=ZBEWR.LIBGEN.LOAD,DISP=SHR
//LINK.SYSLMOD DD DSN=ZBEWR.LIBGEN.LOAD,DISP=SHR
//LINK.SYSLIN DD * DISCRM,
 INCLUDE SYSLIB(COPY,GETLIB,PLIBGEN)
 ENTRY LBMAIN
 NAME PLIBGEN(R)
/*
// EXEC NOTIFY
```

12/7/77

days HeliosA clock reset

processing day EDR day
clock is 330FF49F (B30FF49F)
on ~~#A0~~ 864 #6
and 03F1EA6B (83F1EA6B)
on HA0 864 #7

clock is 141121C5F (941121C5F)
on H A0932 #9
and 046A333F on HA0933 #1

109.3 = 473.1875
109.300

67
-64
3

16 char / 4 cm = X / 30 cm = 120

12/8/77

12/2 - 12/7, 1977 Weekly

The Helios B catalog overflowed on a Libgen run. The week was spent changing the offset from 1800 to 1035 and moving the secondary storage area back to 1035. The Index also had to be modified to accept the new offset and to restart the last tape processed. A GETLIB had to be modified to accept the new offset. A switch was tested in Heldrp to bypass the blackout mode check in DM7 processing. Heldrp still rejects almost all blackout mode data and Heldrp rejects most of the DM7 data. Reasons for rejecting data are a change in mode, engineering data not there or engineering data packed improperly. IPD was queried and found to have done nothing on the Helios A problem. They were given exact file numbers where the change in S/C clock occurred.

12/14/77

back up HBLOS6

create Backups56, flist

```
//copy  exec PGM=patrick,parm='9TN,001,088',region=120K
//INI   DD  UNIT=1600,VOL=SER=HBLOS6,LABEL=(,BLP),
//  DISP=(OLD,PASS),DSB=(RECFM=FB,LRECL=3744,BLKSIZE=14976,
//  BUFNO=1,DEN=3),DSN=TAPEFILE
//OUT1  DD  UNIT=1600,VOL=SER=EWRHBL,LABEL=(,SL),
//  DISP=(NEW,PASS),DSB=(RECFM=FB,LRECL=3744,BLKSIZE
                                          =14976,
//  BUFNO=1,DEN=3),DSN=TAPEFILE
//OUT2  DD  SYSOUT=A,SPACE=(CYL,(5,1))
//  EXEC NOTIFY
```

```
//  EXEC TAPESCAN,PARM=(COPY,NOVOLSER),VOL=HBLOS6
//OUTPUT DD UNIT=(9TRACK,,DEFER),VOL=SER=EWRHBL,LABEL=(1,SL)
```

exact time & EDR num

Helios A HA0932 file9 77/191-194 HH MM SS
clock = 94- at 77555.526 = 21/32/35
clock = 54- at

Helios A HA0826.#35436 77/93
clock = 83- at 59027.954 16/23/48
= 83- at 71510.815 19/51/51

12/15/77 Weekly

12/8 - 12/14

The LIBGEN run on Helios B failed because the HBCATLOG had not been completely zeroed. This was remedied and LIBGEN tested on a dummy catalog. A separate HIBGEN called ALIBGEN was created for Helios A because IPD has not yet corrected the S/C clock. Earl Beard was given the exact time of one of the S/C clock resets in Helios A. The HELDRP proc was completed, ~~and~~ it includes the new GETLIB, RATOUT, BOMODE, EDKCHK, SETNMR, SETOMR, and DM70HK. all other routines are standard. The first four are located in ZBEWR.LIBGEN.LOAD. Heldrp is in PB.ZBGEN.SD002.BACCDM17N.

name	typ	description
DBLANK		
DCATSLOT		
DENG		
DPAD		
DPROG	R8	= 'EDMCMK'
DQUAL		
DTJME		
DSTLAB		
DTLABL		
DTSLOT		
HBTRT	I2	bit rate
HCONT		
HDPFME		
HDPFMS		
HEEDR	4I2	Day, hour, min, sec of end of file
HENG		
HERR		
HEVT		
HFILE		
HFINX		
HFMT	I2	format of file
HGEN		
HGMT		
HID		
HMPFIL		
HNRTAP		
HQUAL		
HRAT		
HRATIO		
HRECYR	I2	year of
HREEL		
HRUN		
HSEDR	4I2	Day, hour, min, sec of start of file
HSVBRT		
HSVFMT		
HTYP		
HSDAY	I2	day of start

Name	Type	
IBTFT	5I4	26, 26, 26, 0, 23
ICNT		
ICODE		
IDATA		
IDF		
IDMODE		DIST MODE, causes branch if 7
IDTTYP		
IFRMIM		
IGET		
IMAXY		
IMSCS	I4	EVT of frame in milliseconds
INDX		
IPERCT		
IPRBT		
ITALLY		
ITPTYP		
IZERO		
JTIME	I4	Job time
KPAD		
LFILE		
LNRC		
LSTFILE		
LSTNTP		
MAXCTM		
MAXDIF		
MAXERT		
MAXLTM		
MESCOD		
MESAGE		
MFILE		
MNX		
MRCAEN		
MSDIFF		
MSMNFS		
MSMNLT		
MSPFME		

name	typ	
MSPFMS		
MXBO	5I4	= 30,36,36,0,27
NCK		
NERR		
NFM	5I4	'1','2','3','1','5'
NHETEV		
NHETDQ		
NLETDQ		
NLETEV		
NQ		
NQL		
NREC		
NRGOOD		
NRPAP		
NRQUL		
NRTIM		
NRTOL		
NTP		
NULHET		
NULLET		
QDM	L1	DIST MODE
QBO		
QEDR	L1	=.TRUE.
QDMARY	4L1	DIST MODE
QFILE	L1	=.TRUE.
QFNEW		
QIN	L1	.TRUE.
QINDEX		
QLREDY	L1	.TRUE.
QMSG	L1	=.TRUE.
QPEND		
QRCSKP		
QREND		
QTRPS		
QTST		
QTST2		
REASON		
RETBOM		

11/19/77

QREPLC = T mode in Heldrp
Heldrp (common) in Rundat & namelist EDRTAP
set = F at 179
sets branch at 185 to 100 if QLOOK
bypassed if Q merge = T
QREPLC = F or QLOOK = T or Qmerge = T → 100
if QREPLC is T but Q merge = F the file is skipped

It is used in WRTRAT & WRTPHA to call to REVISP & REVISR
in REVISR it is called REPLCE
where it causes two branches one in format 5
it is supposed to replace
COPRAT calculates if there is an overlap if so it's old
record, WRTRAT writes new record if QREPLC = true
& new data overlaps old data WRTRAT calls
Revisr which puts out new records but not old one

Natlst 76/83 - 14/39/33 to 23/29/21
84 00/01/09 to
85 — to 11/46/33
85 20/08/01 to 20/23/57
97 20/00/47 to 23/48/59
119 23/48/41 —
120 — to 01/36/59
} at least

and also all the DP7 from HB0104 to HB0288 inclusive

HBL018 7, 8, 10 not processed

DATARAT, OTHER 11/19/77 file 1 to 7 (edit file 1) DATA RAT DATASAVE

&RATLST NID=B, ISTIME = 4, 30, 76, 56805000, IETIME = 4, 30, 76, 73607000, Send ~~73~~

5, 1, 76, 65515000, = 5, 1, 76, 82320000, Send ~~81~~

non DMT rates data → 5, 3, 76, 02355000, = 5, 3, 76, 62403000, Send ?

5, 3, 76, 71534000, = 5, 4, 76, 05520000, Send ?

5, 4, 76, 21259000, = 5, 4, 76, 54848000, Send ?

```
// EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=A
//SYSIN DD DUMMY
//SYSUT2 DD DSNAME='ZBRIC.SOURCE.CNTL', UNIT=2314,
//  VOLUME=SER=K2USR9, DISP=(NEW,PASS), SPACE=(TRK,(40,5,1)),
//  DCB=(RECFM=FB,LRECL=80,BLKSIZE=7200)
//SYSUT1 DD *
(input cards)
/*
```

---

file 1 to

=5,12,76, 21044170	=5,12,76, 24356170, Send	4
=5,18,76, 27956410	=5,18,76, 31268410, Send	5 ~~700~~
?. [=8,22,76, 7326061 8	=8,23,76, 5079530, Send	6 ~~800~~
=8,25,76, 5826787	=8,25,76, 26310787, Send	8 ~~900~~
=8,26,76, 24063886	=8,26,76, 52323886, Send	10 ~~1000~~
=8,27,76, 15468990	=8,27,76, 52908990, Send	12
=8,28,76, 49749082	=8,28,76, 63745082, Send	13
=8,29,76, 37301182	=8,29,76, 52889182, Send	14
=8,30,76, 18314290	=8,30,76, 53738290, Send	15
=8,30,76, 72616586	=8,30,76, 77288586, Send	16
=9,1,76, 7090477	=9,1,76, 86396045, Send	17
?. [=9,1,76, 34738477	=9,1,76, 45632477, Send	18
=9,2,76, 57039483	=9,2,76, 71151490, Send	19
=9,5,76, 2657748	=9,5,76, 32969748	20

12/20/77

25	=9,1,76,47702300	=9,1,76,51590300, Send
21	=9,5,76,58529748	=9,5,76,65225748, Send
23	=9,8,76,82443719	=9,8,76,3027719, Send
24	=9,9,76,29856175	=9,9,76,31368175, Send
~~25~~	~~=9,17~~	
26	=9,19,76,29620300	=9,19,76,38692300, Send
27	=9,21,76,12916300	=9,21,76,21412300, Send
28	=9,22,76,81892300	=9,22,76,86356300, Send
30	=9,24,76,64900300	=9,24,76,73252300, Send
31	=9,26,76,47332300	=9,26,76,55972300, Send
32	=9,28,76,30052300	=9,28,76,38692300, Send
33	=10,9,76,54763354	=10,9,76,86299354, Send
34	=10,10,76,11275354	=10,10,76,32155354, Send
37	=10,11,76,565195	=10,11,76,31309195, Send
38	=10,12,76,43585551	=10,12,76,31862551, Send
41	=10,15,76,30228658	=10,15,76,83509783, Send
42	=10,16,76,30227900	=10,16,76,83507900, Send
43	=10,17,76,30810876	=10,17,76,83516001, Send 3600

DATASAVE

44	=10,18,76,31407540	=10,18,76,81807540, Send
45	=10,19,76,29351386	=10,19,76,45695386, Send
46 ?	=	
47	=10,20,76,27282666	=10,20,76,60115229, Send
49	=10,21,76,59278386	=10,21,76,86350947, Send
51	=10,22,76,28281937	=10,22,76,83001937, Send
52	=10,23,76,28552464	=10,23,76,80393027, Send
53	=10,24,76,2796127	=10,24,76,86136127, Send
54	=10,25,76,16416204	=10,25,76,62505931, Send
55	=10,26,76,39820305	=10,26,76,81292305, Send
57	=10,27,76,29544396	=10,27,76,82848396, Send
58	=10,28,76,29241474	=10,28,76,85436943, Send
59	=10,29,76,40097565	=10,29,76,74410002, Send
60	=10,30,76,15320076	=10,30,76,64856639, Send
61 ?		
62	=10,31,76,27531174	=10,31,76,81100205, Send
63	=10,31,76,31611366	=10,31,76,34347366, Send
65	=10,31,76,51329804	=10,31,76,62850366, Send 5200

12/20/77

Compile Heldrp source
(CHELDRP)
TSO file

```
=JC
//* COMPILE HELDRP
// EXEC FORTRANH,PARM='MAP,LIST,XREF'
//FORT.SYSIN DD DSN=
='M2.ZBJHB.SD002.HELDRP(ADDFRM)'
='M2.ZBJHB                    (BOMODE)
                              (CNVMJD)
                              (COPPHA)
                              (COPRAT)
                              (DRPMES)
                              (DRSRPT)
                              (EORCAT)
                              (EORCHK)
                              (EORSUM)
                              (ENGDAT)
                              (EOFMSG)
                              (EXTRCT)
                              (FMSYNC)
                              (HELDRP)
                              (INDEXP)
                              (NXTPTO)
                              (NXTRTO)
                              (OVLAPP)
                              (OVLAPR)
                              (PHACLR)
                              (PHALEN)
                              (PHAOUT)
                              (PKBLK)
                              (RATCLR)
                              (RATOUT)
                              (REVISP)
                              (REVISR)
                              (RTRIM0)
                              (RTRIM5)
                              (SETNMP)
                              (SETOMP)
```

400
500
600
700
2
3
4
5
303
509

12/20/77

(SETSEQ)
(SKPMSG)
(TIMCHK)
(UPKLBL)
(WRITEP)
(WRITER)
(WRTPHA)
(WRTRAT)

// EXEC ADDTOLIB
//LINK.SYSLMOD DD DSNAME=ZBEWR.LIBGEN.LOAD,DISP=SHR
// EXEC NOTIFY

67	=11,3,76,16884555	=11,3,76,67935680, Send
68	=11,4,76,6299963	=11,4,76,70010315, Send
~~69~~	~~=11,4,76,57770316~~	~~=11,4,76,~~
70	=11,5,76,18792551	=11,5,76,34347551, Send
71	=11,5,76,42652458	=11,5,76,68770458, Send
72	=11,6,76,27506122	=11,6,76,34130122, Send
73	=11,6,76,42628810	=11,6,76,68760310, Send
75	=11,8,76,42786610	=11,9,76,21213610, Send
76	=11,14,76,47626267	=11,14,76,82299392, Send
77	=11,14,76,1022389	=11,14,76,32270389, Send
~~78~~	~~=4,30,~~	
78	=11,15,76,53666343	=11,15,76,70371468, Send
82	=11,19,76,48781440	=11,19,76,73840033, Send
83	=11,20,76,48715694	=11,20,76,64052975, Send
84	=11,21,76,48170230	=11,21,76,85350824, Send

26500

12/21/77

12/15 - 12/20/77 Weekly Ed Ronish

~~The libgen LIBGEN routines~~ PLIBGEN For Helios A & ALIBGEN was ~~tested~~ and found satisfactory. Earl Beard has not yet fixed the S/C clock so no DM7 can be processed.

For Helios B PLIBGEN was applied to the 516 file tape of DM7 files only. The tape was successfully processed, corrected and loaded onto a library tape. An initial quick look on the data indicated several format changes were needing in Heldrp. All of the old RATES tapes are being systematically search for DM7 data that was processed previously. All of the Heldrp source is being collected & compiled ~~and~~ a ~~load~~ complete collection is to be made and kept for future reference.

12/22/77

RTRIMØ
RTRIM5
SETNMP
SETOMP
SETSEQ
SKPMSG
TIMCHK
UPKLBL
WRITEP
WRITER
WRTPHA
WRTRAT

Helios resets

		HH MM SS		
1.	77/93	at 16:23:47	GMT	clock = B322A577 hex
	77/93	at 19:51:50		clock = 83E8C31D
2.	77/191	at 21:33:47		clock = 94121C5F
	77/194	at 23:44:56		clock = 846A333F
	76/81	at 9:29:18		clock = D19496AF
	76/174	at 10:45:05		clock = 842150FF

12/23/77 list EW

Place at beginning

= 3,25,76,72481750 = 3,25,76,73287253, Send

Ratlist

ZBRTC.HARTPL R ZBRTC LST

Y .DATA

---

85 = 11,22,76,48164883 = 11,22,76,559 78070, Send

86 = 11,23,76,47739843 = 11,23,76,80141343, Send

87 = 11,24,76,43955067 = 11,24,76,72324473, Send

88 = 11,25,76,16017485 = 11,25,76,81682048, Send

89 = 11,26,76,2898 9213 = 11,26,76, ~~6354 7775 Send~~ 33741775

90 = 11,26,76,42811213 = 11,26,76,6354 7775, Send

~~91 = 3,25,76,72481750 = 3,25,76,73287253, Send~~

~~91 = 3,25,76,~~

92 = 12,24,76,7725 6522 = 12,24,76,86364522, Send

~~93 = 12,25,76,~~

94 = 11,30,76,46832118 = 11,30,76,71168681, Send

~~95 = 11,30,76,54608694~~ = 11,30,76,7

96 = 12,1,76,45663523

12/23/77

```
C  program to read EWRDMI and write a RATLST to
C  search for possible DM7 files

FORTRAT
see Fort copy
      Common/label/jcode,itptyp,idttyp,hfmt,hbbt,hrecyr,
     equivalence
     Logical*1 Qlabel(8)
C     extract day, month and year
      call upkldt(Qlabel)
      dimension
//  EXEC PGM=IEBUPDTE,PARM=NEW
//SYSIN DD *
./    ADD     NAME=BTMNP,LIST=ALL
./    ADD     NAME=LOGDEC,LIST=ALL
/*
//*
//SYSPRINT DD SYSOUT=A
//SYSUT1 DD DSN=M2.ZBJHB.SOURCE.HELORR
//SYSUT2  '   '   '   '   '   '
      IYEAR = HRECYR
      IDOY = HSEDR(1)
      IF (IDATA(1,K).EQ.0)
      CALL YOMD(IYEAR,IDOY,IMONTH,IDAY)
      dimension ISTIME(4),IETIME(4)
      ISTIME(1) = IMONTH
      ISTIME(2) = IDAY
      ISTIME(3) = IYEAR
      IDOY= HEEDR(1)
      CALL YDMD(IYEAR,IDOY,IMONTH,IDAY)
      IETIME(1) = IMONTH
      IETIME(2) = IDAY
      IETIME(3) = IYEAR
      ICORR=0
      IF(IDATA(1,K).EQ.0) GO TO 300
      ICORR = ICORR+1
      IF(ICORR.GT.1) GO TO 210
      ISTIME(4) = IDATA(1,K)
  210 continue
      IETIME(4) = IDATA(1,K)
      write(6,10) ISTIME,IETIME
```

12/23/77

~~10 format(1X,'&RATEST HID="B", ISTIME=',3~~
namelist /RATEST/ HID, ISTIME, IETIME
~~HID = 'B'~~
~~write(6,ratest)~~
// CHECK LOG12DEC
// EXEC ASMC~~G,PARM=~~
=.CRBE(LOG12DEC)
/*
// EXEC FORTRANH
IMPLICIT REAL*8(D), INTEGER*2(H), LOGICAL*1(Q)
10 format(1X,3I10)
20 format(1X,4X,'HRATE',4X,'LOGTST',4X,'LOG12')
write(6,20)
DO 100 I=1,128
HRATE = I-1
CALL LOGTST(HRATE, LRATE1)
CALL LOG02(HRATE, LRATE2)
WRITE(6,10) HRATE, LRATE1, LRATE2)
100 continue
stop
end
/*
// EXEX LINKGO, REGION.GO=150K
//LINK.SYSLIB DD DSN=K3.2BRXD.SD002.@HELIOSA, DISP=SHR
~~//GO.DATA5 DD~~
// EXEC NOTIFY

12/29/77

Helios Weekly — Ed Ronish

Helios A no progress
Helios B it was decided to split up the 516 DM7 files into 6 tapes because the access time for file 500 was too long. The 6 tapes are to be loaded with the files in time order and this requires a processing program to select files from the master DM7 tape and place them 80 at a time on another tape. John Broomhall was assigned this task. An existing Rates listing program HARTP2 has been improved to list more than one file. It is being used to search the rates DM7 tapes for any DM7 data that was processed in the past. Rami is working on this task. The list of HELDRP routines is now complete except for LOG12 which has been reconstructed from listings and is being tested. DM7 files for Helios B are now in the production stage.

12/29/77

12812288 = C38000 8 = 1000

→ C3 SR → 27 bits

C38000

= 1100 0011 1000 0000 0000 0000

→ 22 0 bits

next 7 bits = 1000011

X7 - - - - X1

C5 - - - - C1 = 0

R = ,0000,0100,0011

= 0 4 3 = 67

5488640 =

in DISCRM

2400C DREF = seconds since 1972

need Nelios B relative to 1972

Dclock is now in seconds relative to 1976

1972 73 74 75 76 77

ly ly

31622400, 31536000

SC clock DB + DA = seconds since 1972

32

typical time is 76/304 + 65 699.189 S/C = AF3F EF1F

= 2F3F EF1F

= 792719135

⇒ ~~24,772,472.97 seconds~~

= 24,772,503.49 seconds

time since 1972 = 152561,699.189 seconds

S/C + 127,789,195.7 = actual time since 1972 = S/C + DA

i.e. 77/94 + 57660.312 = ~~10296000.3~~ seconds

= 166,032,060.3 seconds

S/C = C8F1 401F = 48F1 401F ⇒ ~~166032073.2~~

forgot about slope 166,032,059.8 seconds

slope = 1.000001232 = DB

127,789,195.7 = DA

seconds/86400 = 1921.667365 days

Helios B 12/29/77

76/304 + 65699.189

S/C = 2F3FEFIF = 792719135

÷ 32 * 1.000001232359576

=

call CNVMJD (1921

Imod = 1921 IYR = 6

Iyear = 6 + 71 = 77

IDAY = 1921

= 1921 - 1827 = 94

C seconds since 1972
Prediction = S/C /32 * slope + seconds correction

+ .667365 * 86400 = 57660.336

C convert ~~seconds to days~~ and days to day, month, year then to day, year

⇒ 94 4/4/77

JDAY
Call YMDD (IYEAR, IMONTH, IDAY, ~~IDOY~~)

8500 HMOD = JDAY

~~8000~~ Call CNVMJD (HMOD, HMONTH, HDAY, HYEAR)

Equivalence (HMOD, JDAY), (HMONTH, IMONTH), (HDAY, IDAY), (HYEAR, IYEAR)

8600 ~~HDAY = IDOY~~

C skip frame if time goes backwards

7200 DDAY = DCLOCK/86400D0

7500 → 7700

C Helios A prediction

when will Helios B reset

just before reset S/C clock = 7FFF FFFF

⇒ 2255.765536

⇒ 7 + 71 = 78

2255 - 2192 = 63

78/63 the clock resets

at 66142.310 seconds

after reset DA has changed

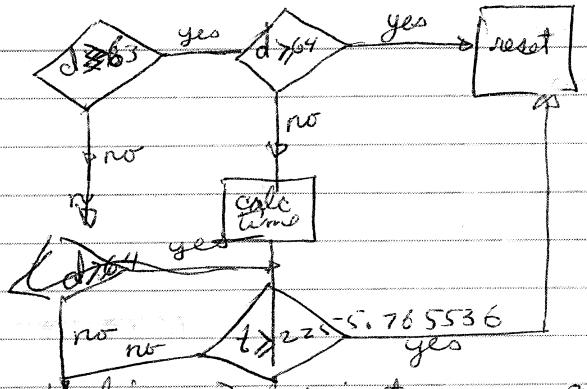
test HSEDR(1) = day

HRECYR = year

and DEVT?

DA = 194,898,142.3

12/30/77



C ← Helios B resets on 78/63 + 66142.310 seconds .OR.

6900/ ok — ~~If (HRECYR .GT. 78)~~ ~~.AND.~~

DCLOCK = DCLOCK ~~+ 0.0000012320D0~~

before test for AID

IYEAR = HRECYR
IDOY = HSEDR(1)
CALL YDMD(IYEAR, IDOY, IMONTH, IDAY)
CALL CNVDAT(IMONTH, HDAY, HYEAR, HMOD)

IF (HMOD .GE. 2256) GO TO 490

C ← 490 has the reset values for Helios B

C ← Helios B resets on 2255.765536 days since 1972 ~~on 78/63 + 66142.310 seconds~~

IF ((HMOD .EQ. 2255) .AND.
(REVT .GE. 66142.310D0)) GO TO 490

C ← ~~Begin~~ pre reset calculation

DCLOCK = DCLOCK + 127789195.7D0

GO TO 510

ok — ~~490~~ continue

C ~~begin~~ reset calculation

Dclock = DClock + 194898142.3D0

Helios A resets

Helios A slope

7/21/75 75/202 + 85458.305 sec — A977E9DF → 2977E9DF
4/11/76 76/102 + 25898.366 sec — 55067038

~~slope~~ = 7/21/75 → Iyr = 75 − (7+1) = 3 INC = 1 IMO = 7

~~IDY = 21 + IMonth(6,1) = 214 181 = 202~~

IDY = 21 + 1096 + 181 = 1298

~~HI~~ 76/102 → 102 + 1461 = 1563

12/30/77

2977E9DF → dec/32 = 21,741,390.97 > 22,836,378.88 sec
55067D3B = 44577769.84

1298d + 85458.305 sec = 112232,658.3 > 22,836,440.06
1563d + 25898.366 sec = 135069098.4

#1 slope = 22836440.06 / 22836378.88 = 1.000002679 DA = ~~90,491,209.09~~

this is the slope for 75/83 to 76/174
#1 accurate to ± 3 sec
for 76/174 to 77/93 before 71510.000 sec

76/174 + 38705.230 sec - 042150FF
77/93 + 58949.220 sec 33229B9F

76/174 → 174 + 1461 = 1635
77/93 → 93 + 1827 = 1920

042150FF → dec/32 = 2,165,383.969 > 24644181.00
33229B9F → = 26,809,564.97

1635d + 38705.230 sec = ~~14,138,705.2~~ 141302705.2 > ~~2,455,843.99~~ 24644243.99 ?
1920d + 58949.220 sec = 165946949.2

#2 slope = 1.000002556 DA = 139,137,315.7
#2 is accurate to 4 seconds
from 77/93 after to 77/192 before 76763.750
1920 to 2019

1920d + 71510.815 sec > 8,557,412.931 → 03E8C31D > 8,557,386.062
2019 + 75323.746 sec → 143B2C5F

#3 ~~03E8~~ slope = 1.00000314 DA = ~~172,469,356.4~~ 163,909,943.5

12/30/77

from 77/193 to 77/261 (78/2)
2020 2088

2020d + 33726526s > 5888013.599 0426BC3F > 5887998
2088d + 46540125s > 5888013.599 0F61BBFF > 5887998

#4 slope = 1.000002649 OA = 172,385,238.8

75/3 – 75/78
1099 1174

1099d + 44432435s > 6460194.363 10982CE9 > 12752425.87
1174d + 24626798s > 6460194.363 28EAF225 > 12752425.87

C Helios A ~~S/C clock~~ event time from S/C clock
C Helios A clock reset 75/83 ; 76/174 & 77/93 & 77/192 ; 78/2
C skip any DM7 ~~EDR processed before 76/233~~ before &HA04603 (76/132) (6/20/76)
~~IF (HMOD .GT. 1593) GO TO 940 502~~ } call
~~WRITE(6,10) HMRTAP, HMRFIL~~
10cc/ ~~10 format(1X, 'this file has has been skipped~~
10 format(1X, 'TAPE', I5, '_FILE', I3, ~~'_HAS BEEN SKIPPED'~~)
GO TO 940
~~502~~ continue
~~IYEAR~~ MYEAR = HGENC1)
~~MONTH = HGENC3)~~
~~MDAY = HGENC2)~~
~~CALL~~
CALL CNVDAT(HGENC3, HGENC2, HGENC1, HPROC)
~~501~~ IF (HPROC .GT. 1592.633) GO TO 502
~~continue~~
WRITE(6,10) HMRTAP, HMRFIL
1000/ 10 format(1X, 'TAPE', I5, '_FILE', I3, '_ HAS been skipped
' because of incorrectly processed S/C clock')
~~GO~~
502 continue
~~GO~~ GO TO 940
502 continue
C skip any file before 75/~~88~~83
IF(HMOD .GT. 1179) GO TO 503
write(6,10) HMRTAP, HMRFIL
GO TO 940
503 contine
#1 C 75/82 – 76/173

1/3/78 78/0 = 2192

```
      IF(HMOD. GE. 1635) GO TO 504
      DCLOCK=DCLOCK/3200*1.000002679 + 90491209.0900
      GO TO 510
504   continue
C     76/174 - 77/93
      IF(HMOD.GE. 1920) GO TO 505
      DCLOCK = DCLOCK/3200 *1.000002556 + 139137315.700
      GO TO 510
505   continue
C     77/93 - 77/192
      IF(HMOD.GE.2020) GO TO 506
      DCLOCK = DCLOCK/32.00 *1.00000314 + 163909943.500
      GO TO 510
506   continue
C     77/193 - 78/2
      IF(HMOD.GE. 2194) GO TO 507
      DCLOCK=DCLOCK/32.00*1.000002649 + 172385238.300
      GO TO 510
507   continue?
C     78/2 -
      write (6,10) HMRTAP, AMREIL
      GO TO 940
C end Helios A prediction
```

1/3/78

~~DATASAVE~~ 100 HBL017 #71

DATARAT 200 #83

=5,3,76,2356927	= 5,3,76,7478114	#BL018#7
=5,3,76,17405137	=5,3,76,19142137	18#8
=5,3,76,32530512	=5,3,76,42763887	18#10
=5,3,76,74534727	=5,3,76,80151415	18#13
=5,4,76,21259097	=5,4,76,54811534	18#15

calculate delias A reset value from reset times

#1 1179d + 54854.000 sec

time = clock/32 * 1.000002679 + 90491209.09

clock = (time - 90491209.09) * 32 / 1.000002679

time = 101920454

clock = 3657348573

= 15CCA6C9.4d

#2 1635 d + 15195 sec

clock = 0415D63A.68F

#3 1920d + 62179 sec

clock = 03E434A3

#4 2019d + 86040 sec

clock = 04161770.CA4

#5 ?

ideally if the time is > than the greatest time then a message is to be printed and the file just copied not skipped.

1/5/78

Weekly — Ed Ronish

Helios A clock resetson 75/83, 76/174, 77/93, 77/192 have been programed into LIBGEN and are being tested. The reset on 78/2 requires more data

Helios B DM7 files were merged incorrectly, therefore DM7 processing has halted for the time being. The reconstruction of the Heldrp source has stopped because EXTRCT is not the correct version. This routine is being rewritten to try and create the existing load module.

IPD was asked for redo tapes for three times covering high solar activity. The request was made through Gerry Muckel to prevent IPD from sending a copy instead of a redo.

The old DM7 files are being Quick Looked by JHB until a bad file is encountered then the file is eliminated. The single tape has been loaded onto 6 time ordered tapes.