

Table A-4. Helios A/B Experimenter 7 EDR Format 3

	<u>Description</u>	<u>Bytes</u>	<i>wd</i>	<i>hwd</i>
EVT	Spacecraft event time (MS)	4	1	1-2
GMT	Ground rec'd time (MS)	4	2	3-4
FN	Frame Number	2	3	5
TI	Spacecraft clock	2		6
SI	Status indicators	4	4	7-8
LT	One way light time (MS)	4	5	9-10
8-13	Scientific data	6	6	11-13
80-85	Scientific data	6		14-16
*11	Engineering data	1		
*16-17	Engineering data (spin rate)	2		
*28	Engineering data	1		
*40-45	Engineering data	6		
*64-69	Engineering data	6		
*88-89	Engineering data	2		
FILL	Fill ones or day	52		

*Engineering data words same as Format 1

DISTRIBUTION MODES (DM)

FORMAT MODES (FM)

BITRATE MODES (BM)

DISTRIBUTION MODES (DM)	FORMAT MODES (FM)	BITRATE MODES (BM)											
		3	4	5	6	7	8	9	10	11	12		
DM0 Real Time Transmission	1							X	X				
	2			X	X	X							
	3	X	X	X	X	X	X	X	X	X	X	X	X
	4	X	X	X	X	X	X	X	X	X	X	X	X
	5	X	X	X	X	X	X	X	X	X	X	X	X
DM 1 Real Time Transmission with format 6 storage at 4096 bps	1							X	X				
	2			X	X	X							
	3	X	X	X	X	X	X	X	X	X	X	X	X
	4	X	X	X	X	X	X	X	X	X	X	X	X
DM 2 Real Time Transmission with format 6 storage at 8192 bps	1							X	X				
	2			X	X	X							
	3	X	X	X	X	X	X	X	X	X	X	X	X
	4	X	X	X	X	X	X	X	X	X	X	X	X
DM 3 Real Time Transmission with format 6 storage at 16384 bps	1							X	X				
	2			X	X	X							
	3	X	X	X	X	X	X	X	X	X	X	X	X
	4	X	X	X	X	X	X	X	X	X	X	X	X
DM 4, F4 XMIT/STORAGE, SEO ⁺	1												
	2												
	3	X	X	X	X	X	X	X	X	X	X	X	X
DM 5, F3 XMIT/STORAGE, SEO ⁺	1												
	2												
DM 7 Memory readout (data is formatted per FM and BM selected but not stored or transmitted).	1												
	2												
	3	X	X	X	X	X	X	X	X	X	X	X	X
	4	X	X	X	X	X	X	X	X	X	X	X	X

*SEO. This means that the number "n" contained in the sequencer register is in effect for the stored data. Prior to mode entry "n" should be loaded in the sequencer register to determine number of mainframes deleted between stored mainframes. "n" may be any number between 0 and 77 octal (0 and 63 decimal).

Project Helios

from spacecraft user's manual
 Volume I page 2-5-55 do 6-5100-009

DM 0 real-time

DM 1 real-time / shock : 4 kbps

DM 2 " " : 8 kbps

DM 3 " " : 16 kbps

DM 4 launch (eng. 128 kbps)

DM 5 blackout

DM 6 reset blackout

DM 7 memory dump

from MBB-Helios Doc No DS-306.6000
 page 16

DM-0 Real time without memory read-in
 DM-2 Real time with shock data read-in
 DM-4 Real time with simultaneous memory read-in
 DM-5 reset by DM 6 Black out
 DM-7 Stored data transmission

Page 2-5-58 Data handling modes

DM0 Real time transmission

was
 →
 see

on EDR LIST printout the status word appears as 9 integers

Data word

TABLE A-6 - HELIOS A EDR FRAME STATUS INDICATORS

<u>S1</u> (Byte 1)		<u>Bits</u>	<u>integer bit</u>	
GMT Time Correction Flag				
Correct	0	1-0	3	6-7
Corrected	1			
Uncorrectable	2			
Event Time Status Flag		3-2	2	4-5
Event time computed	0			
Computed but questionable	1			
Not computed	2			
Data Type		6-4	1	7-3
Real time	0			
Analog tape replay	5			
Digital tape replay	4			
<u>S2</u> (Byte 2)				
Frame Counter Correction		2-0	6	13-15
Corrected	1			
Uncorrected	0			
Engineering Frame Number		5-3	5	10-12
Fill Data Present		6	4	9
Fill	1			
No fill	0			
<u>S3</u> (Byte 3)				
Number of Bit Errors in S/C Sync Word		7-0	7	16-23
<u>S4</u> (Byte 4)				
Data Quality		2-0	9	29-31
Data is Good	4			
Data is Suspect (SNR below minimum requirement)	3			
Data is Suspect (errors in HSD block)	2			
Data is Suspect (SNR below minimum requirement and errors in HSD block)	1			
Data is Bad (non synced, or deleted frame)	0			
Distribution Mode		6-3	8	25-28

Note: Bits are numbered right to left within the byte (7-0)

	Hword (1)	Qword (1-2)	QDATA (2-3)	arg
Spin rate	2	3-4	-5	1
Hot temp	3	5-6	-5	
Vlet 1 temp	4	7-8	-6	1
Vlet 2 temp	5	9-10	-6	
Let temp	6	11-12	-7	
Out Multplate temp	7	13-14	-8	
X-ray Det temp	8	15-16	-9	
TBS Plate 1 temp	9	17-18	-10	
TBS Plate 2 temp	10	19-20	-11	
F Electron ICS temp	11	21-22	-12	
Base Plate temp	12	23-24	-13	
+12 V Monitor	13	25-26	-14	
+6 V Dig Monitor	14	27-28	-15	
+6 V Ana Monitor	15	29-30	-16	
+2.75 V Monitor	16	31-32	-17	
+4.7 V Monitor	17	33-34	-18	
Base Plate TE temp	18	35-36	-1	
Power Status	19	37-38	4 bit 0-1	
X-ray Window	20	39-40	4	2-3
Internal Calibr	21	41-42	4	4-5
X-ray VLT Sctr SY	22	43-44	4	6-7
B/O MODE X-ray SCT				

these are based on the complement of the data. IPO reverses the bits
 thus
 QSS = true \Rightarrow sec syne is on

Table A-7. Helios Experiment 7 Engineering Data (1 of 2)

<u>ENGR FRAME</u>	<u>ENGR WORD</u>	<u>DESCRIPTION</u>		
0	11	Power Status (E-040) 1 = ON, 0 = OFF	B -003 bit 4 byte 1	
0	16-17	Spin Rate (in RPM) (D-000/0-7 \rightarrow D-001/0-3)	$RPM = \frac{1024 * 60}{Z}$	
		D000 / 0 = 2^{10}		2 } 3 } 12 bit
		1 = 2^{10}		
		2 = 2^9		
		3 = 2^8		
		4 = 2^7		
		5 = 2^6		
		6 = 2^5		
		7 = 2^4		
		D001 / 0 = 2^3		
		1 = 2^2		
		2 = 2^1		
		3 = 2^0		
1	11			
1	28	0 X-RAY Window Clock (E-187) 0=1, 1=0		
		1 X-RAY Window Data (E-188) 0=ON, 1=OFF	} 4	
		2 Internal calibrator A (E=189) 0=ON, 1=OFF		
		3 Internal calibrator B (E-190) 0=ON, 1=OFF		
		4 X-RAY High voltage (E-191) 0=ON, 1=OFF		
		5 Sector synchronizer (E-192) 0=ON, 1=OFF		
		6 Force blackout mode (E-193) 0=OFF, 1=ON	QSS QBO	
		7 X-RAY sector data mode (E-194) 0=ON, 1=OFF		
		HET (E7A) temperature (D-042)		
		VLET2 (E7B2) temperature (D-043)		
		Detector mounting plate temp. (D-044)		
		X-RAY detector temperature (D-045)		
		Thermal blanket support plate 1 temp. (D-046)		
		Thermal blanket support plate 2 temp. (D-047)		
		Electronics temperature (D-048)		
		Base plate temperature (D-049)		
		+12 volts monitor (D-050)		
		+6 volts digital monitor (D-051)		
		+6 volts analog monitor (D-052)		
		+7.75 volts monitor (D-053)		
		+4.7 volts monitor (D-054)		

HRPM = 1st 12 bits of
 byte 2+3

byte 36 bit 6
 = word 9 last byte
 next to last bit

C-048

1152 x(a+b) x 128 f = cycle time

BM

counts with cal on

sec/page = 10.4

576
576
1152
4608
2304

1	2	3	4	5	6	7	8	9	10	11	12
BM	FM	DM	PIIA Blocks RATE BLOCKS	BLOCKS P. CYCLE	WORDS P. CYCLE	WORDS P. FRAME	FRAMES P. CYCLE	MAIN FRAMES P. CYCLE	CYCLE TIME SEC. MIN.	ROLLS SR COUNTERS READOUT	COUNTS PER SR COUNTERS READOUT
4096	5	-	5:1	768	4608	3	1536	22	432	53	13,568
2048	5	-	5:1	768	4608	3	1536	22	864	53	13,568
2048	1	-	5:1	768	4608	6	768	11	432	53	13,568
1024	1	-	3:1	512	3072	6	512	8	576	69	17,664
512	1	-	1:1	256	1536	6	256	4	576	69	17,664
512	2	-	3:1	512	3072	12	256	4	576	69	17,664
256	2	-	1:1	256	1536	12	128	2	576	69	17,664
128	2	-	1:1	256	1536	12	128	2	1152	138	35,328
64	2	-	1:1	256	1536	12	128	2	2304	276	70,656
64	3	-	1:1	256	1536	12	128	2	2304	276	70,656
32	3	-	1:1	256	1536	12	128	2	4608	552	141,312
16	3	-	1:1	256	1536	12	128	2	9216	1104	282,624
8	3	-	1:1	256	1536	12	128	2	18432	2208	565,248
8	3	B/O ^x	0:1	128	768	12	64	1	9216	1104	282,624
For explanation see page 2.											
* Blackout											
xx Rounded											
16	3	B/O	1 EDMF = 1 Cycle								
32	3	B/O									
64	3/2	B/O									
128	2	B/O									
256	2	B/O									
512	2	B/O									
rolls per half page or per 1/8 of a cycle or per subcom											

probably incorrect

Table A-8. Mode Table (1 of 2)

1 cycle = 8/10 pages of data = 8 complete subcom cycles
 11 is independent of fnt
 S/c rolls in 1 sec
 each subcom cycle = 16 sets of rate words, there are 3 rate words (12 bits) per set

Table A-8. Mode Table (2 of 2)

The experiment cycle times and other parameters of interest as related to S/C bit rate and format is shown on page 1. Since the internal calibrators (CAL A and CAL B) are pulsed at the fine sector rate, the expected number of counts per sector rate readout can be variable by 8 times number of rolls in the accumulation interval.

Explanation Mode Table

- Col. 1. BM = Bit rate
- Col. 2. FM = format
- Col. 3. DM = Data mode
- Col. 4. 1 PHA block or 1 PHA EDF = 48 bits
1 RATE Data Block or Line = 48 bits
- Col. 5. 1 Cycle $\hat{=}$ 8 Rate - Data EDF $\hat{=}$ 128 Rate Blocks, with interspersed PHA blocks, e.g. for 4096 Bps - $(5+1) \times 128 = 768$ blocks. (Rate and PHA data)
- Col. 10. Cycle time = $\frac{\text{Frames per Cycle} \times 1152}{\text{BM}}$
- Col. 11. Chosen accumulation interval for SR counters in rolls
- Col. 12. Counts per Readout = $\frac{\text{Accumulation interval} \times 2048}{8}$

since the interval calibrators are pulsing at the fine sector rate. One SR counter is only counting during 1/8 of a roll or during one 45° sector.

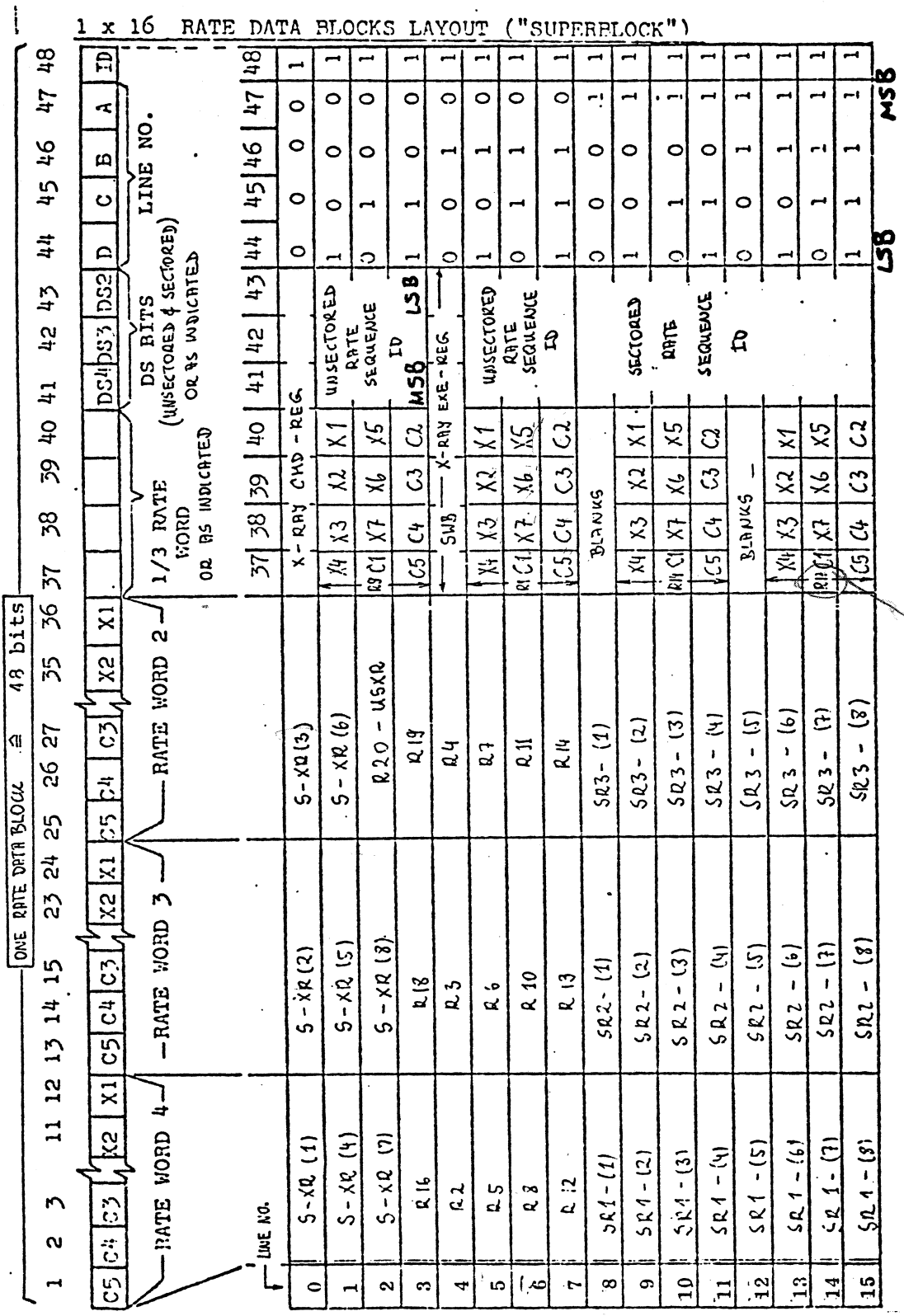
1 EDMF $\hat{=}$ 1 Cycle $\hat{=}$ 1 Experiment Data Main Frame

from S/C

- 1 frame = 144 8-bit words = 1152 bits
- 1 EDR Record = 72 frames = 82944 bits
- 1 Album = 128 rates block = 8 complete subcoms
- 1 subcom = 16 lines of rates data

from IPD

- 1 frame = 13 8 bit words



R17

Figure A-1. Rate Data Block Layout

<u>Bit #</u>	<u>Description</u>
44-46	T3, T4, and T5 are the sector tags. The orientation of the S/C at the time of each PHA is encoded in these bits (T3 is MSE) into octants (45 degree).
37-43	Depends on whether data is HET or LET. If HET, Tag bits T6 & T7 specify one of 4 possible coincidence conditions initiating the analysis. The detector pulse digitized in PHA word 1 from the A element of HET if T6 = 0, and is from the CIII e/event of HET if T6 = 1. Remaining bits not yet assigned.
25-36	PHA data word 1; 12 bits. If HET event, is amplitude of A or CIII (see T6). If LET event, is amplitude of DI
13-24	PHA data word 1; 12 bits. If HET event, is amplitude of B. If LET event, is amplitude of DII.
1-12	PHA data word 3; 12 bits. If HET event, is amplitude of (C1 + CII). If LET event, is amplitude of E.

T7T6	Qevent event
00	0
01	2
10	1
11	3

Each amplitude word originates from a 12 bit counter which is reset to all "ones". A channel 1 event toggles each counter stage, producing a readout of all "zeros" for that word. A channel 2 event reads out as 1 (decimal), etc. Each amplitude word must be incremented by 1 in the ground computer to produce the correct amplitude.

39-40 = priority = QPR1
 41 = register = QC2R

PHA Tape Logical Record Format

	<u>Displacement</u>	<u>Type</u>	<u>Description</u>
1	0	I*4	Time of day (MS) for first page contained in record
2	4	I*4	Time of day (MS) for page which is expected to immediately follow the last page in this record
3	8	I*2	Day (RMJD) for first page contained in record
	10	I*2	Day (RMJD) for page which is expected to immediately follow the last page in this record
4	12	I*4	Round Trip Light Time (MS)
5	16	I*4	Spacecraft Clock <i>Length seq #s</i>
6	20	I*2	Absolute File Number
	22	I*2	Time Correction Flag
7	24	I*2	Ratio of PHA blocks to RATES blocks
	26	I*2	Bit Rate (8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096)
8	28	I*2	Format (1, 2, 3, 5)
	30	I*2	Frame Counter Correction
9	32	I*2	Data Type
	34	I*2	Data Quality
10	<u>36</u>		All the subcom data associated with the first page of data contained in the record. Refer to Tables 1 and 2 for a description of the subcom data for the two format groups.
22	84 (128)	I*4	All the rates data associated with the first page of data contained in PHA record. The rates data associated with each page appear in eight consecutive words, as follows:

PHA Tape Logical Record Format (continued)

Displacement

Type

Description

- (1) HET RATE R1 - (A2K1 + A1C1)B CII
- (2) HET RATE R1 - (A2K1 + A1C1)B CII
- (3) HET RATE R2A - A1 $\bar{A}2$ B CII
- (4) HET RATE R2B - A1 BK2 $\bar{C}II$
- (5) HET RATE R3A - A2 B CII
- (6) LET RATE R11A - DI DII \bar{F}
- (7) LET RATE R11B - DI DII $\Sigma D \bar{F}$
- (8) Computed HET RATE R1 = (R6B + R7A + R7B + R8A + R8B)

All rates which fail the trend check will be indicated by a negative rate value. Whenever a rate with a value of zero fails the trend check, it will be set to the value -21000000. Padded rates will be indicated by the value -20000000.

I*2

All the PHA data associated with the first page of data contained in the PHA record. Each PHA entry, comprised of a HET and LET event, has a unique time associated with it and appears in three consecutive words, as follows:

0(MSB).....31(LSB)

6 Half words }
 {

- (1) HET - 1 ----- HET - 2
- (2) HET - 3 ----- LET - 1
- (3) LET - 2 ----- LET - 3

Padded/missing PHA data is indicated by a negative one in the PHA entry. There is a varying number of PHA readouts per page depending upon the PHA/RATE block ratio: At a ratio of 5:1, there are 160 PHA readouts; at 3:1, there are 96 PHA readouts; and at 1:1, there are 32 PHA readouts. (See Table 3 for the structure of a PHA readout.)

halfword 1-3 = het events
 halfword 4-6 = let events

ME TT A B C R S S S Q P P P U
 C-3
 ME TT A B C R S S S Q P P P U

Table 1. PHA Tape
 (Subcom data for format group 1 - formats 1, 2, 3)

<u>H</u>	<u>Displacement</u>	<u>Type</u>	<u>Description</u>
1	0	I*2	Spin Rate (in RPM)
	2	I*2	HET (E7A) temperature
	4	I*2	VLET1 (E7B1) temperature
	6	I*2	VLET2 (E7B2) temperature
5	8	I*2	LET (E7C) temperature
	10	I*2	detector mounting plate temp.
	12	I*2	X-Ray detector temperature
	14	I*2	thermal blanket support plate 1 temp.
	16	I*2	thermal blanket support plate 2 temp.
10	18	I*2	electronics temperature
	20	I*2	base plate temperature
	22	I*2	+12 v monitor
	24	I*2	+6 v digital monitor
	26	I*2	+6 v analog monitor
15	28	I*2	+7.75 v monitor
	30	I*2	+4.7 v monitor
	32	I*2	base plate temperature (front)
18	34	I*2	Power status (1=on, 0=off)
19	36	L*1	X-Ray Window Clock
	37	L*1	X-Ray Window Data
20	38	L*1	Internal Calibrator A
	39	L*1	Internal Calibrator B
21	40	L*1	X-Ray high voltage
	41	L*1	Sector synchronizer
22	42	L*1	Force blackout mode
	43	L*1	X-Ray sector data mode
23	44	I*2	X-Ray command reg.
24	46	I*2	X-Ray XEQ. reg.

(12 words)

Table 3. Helios PHA Events

Halfword 1	0 3 4 15 METTAAAAAAAAAAAAA
Halfword 2	0 11 12 15 BBBBBBBBBBBBBCCCC
Halfword 3	0 1 1 1 1 1 1 1 7 8 9 10 11 12 13 14 15 CCCCCCCCRSSSQPPN

Where:

M = 0, data is good

= 1, data is missing 1 padded

E = 0, LET event

= 1, HET event

TT = 00, $A1\bar{A}2BCIII$ (HET)/ $DIDII\Sigma D\bar{F}$ (LET)

= 01, $A2BCIII$ (HET)/ $DIDII\bar{F}$ (LET)

= 10, $(A2K1 + A1CI) \bar{BCIII}$ (HET)/(No LET)

= 11, $A1BK2\bar{CIII}$ (HET)/(No LET)

R = 0, CII threshold not exceeded] HET only
= 1, CII threshold is exceeded	

SSS = 0-7, sectors 0-7, respectively

Q = 0, PHA word 1 is the A amplitude] HET only
= 1, PHA word 1 is the CIII amplitude	

PP = 0-3 priorities (HET)/0-1 priorities (LET)

N = 0, good event

= 1, null event

RATES Tape Logical Record Format

<u>Displacement (See Note)</u>	<u>Type</u>	<u>Description</u>	
0	I*4	Time of day (MS) for first page contained in record	MSPGI
4	I*4	Time of day (MS) for page which is expected to immediately follow the last page in this record	MSNXT
8	I*2	Day (RMJD) for first page contained in record	HMDPGI
10	I*2	Day (RMJD) for page which is expected to immediately follow the last page in this record	HMDNXT
12	I*4	Round Trip Light Time	NRTM
16	I*4	Spacecraft Clock <i>Line 4 - seq #5</i>	NCLK
20	I*2	Absolute File Number	HFILE
22	I*2	Time Correction Flag	HTFLAG
24	I*2	Ratio of PHA blocks to RATES blocks	HRIO
26	I*2	Bit Rate (8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096)	HBITRT
28	I*2	Format (1, 2, 3, 5)	HFMF
30	I*2	Frame Counter Correction	HCTR
32	I*2	Data Type	HTYP
34	I*2	Data Quality	HQUAL
36		All the subcom data associated with the first page of data contained in the record. Refer to Tables 1 and 2 for a description of the subcom data for the two format groups.	
92/136	I*4	All the rates data associated with the first page of data contained in record. Each page consists of 4 sets (2 sectored and 2 unsectored) of 32 and 20 rates respectively, which are uniquely identified by the corresponding rate sequence ID's appearing in the associated set of subcom data. The rates data associated with each page appears in 104 consecutive words, as follows: 1 - Sectored Rate (First Set) . . .	

RATES Tape Logical Record Format (continued)

<u>Displacement (See Note)</u>	<u>Type</u>	<u>Description</u>
	32 - Sector	Sector Rate (First Set)
	33 - Unsector	Rate (First Set)
	.	
	.	
	52 - Unsector	Rate (First Set)
	53 - Sector	Rate (Second Set)
	.	
	.	
	84 - Sector	Rate (Second Set)
	85 - Unsector	Rate (Second Set)
	.	
	.	
	104 - Unsector	Rate (Second Set)
	Refer to Table 3 to determine the rates data associated with each unsector and sector rate sequence ID.	
508/	564/652	564 is where rates begin
980/	1036/1168	
1452/	1508/1684	

Subcom begins / rates begin

Note: The first displacement is for data transmitted in formats 1, 2, or 3. The second displacement is for data transmitted in format 5.

472 bytes per page for 1, 2, 3

Subcom = 56 bytes

Table 1. RATES Tape Subcom Data
 (Subcom data for format group 1 - formats 1, 2, 3)

<u>HREC</u>	<u>Displacement</u>	<u>Type</u>	<u>Description</u>	
1	0	I*2	Spin Rate (in RPM)	E7A0UT
2	2	I*2	HET (E7A) temperature	
3	4	I*2	VLET1 (E7B1) temperature	E7VLT
4	6	I*2	VLET2 (E7B2) temperature	VLET2T
5	8	I*2	LET (E7C) temperature	E7LOWT
6	10	I*2	detector mounting plate temp.	DETMPT
7	12	I*2	X-Ray detector temperature	T-XDET
8	14	I*2	thermal blanket support plate 1 temp.	TBSP1T
9	16	I*2	thermal blanket support plate 2 temp.	TBSP2T
10	18	I*2	electronics temperature	ELEC-T
11	20	I*2	base plate temperature	
12	22	I*2	+12 v monitor	
13	24	I*2	+6 v digital monitor	
14	26	I*2	+6 v analog monitor	
15	28	I*2	+7.75 v monitor	
16	30	I*2	+4.7 v monitor	
17	32	I*2	base plate temperature (front)	
18	34	I*2	Power status (1=on, 0=off)	
19	36	L*1	X-Ray Window Clock	
20	37	L*1	X-Ray Window Data	
20	38	L*1	Internal Calibrator A	01 } non cal mode
21	39	L*1	Internal Calibrator B	01 }
21	40	L*1	X-Ray high voltage	
22	41	L*1	Sector synchronizer	QSS
22	42	L*1	Force blackout mode	QBO
23	43	L*1	X-Ray sector data mode	
23	44	I*2	X-Ray command reg.	
24	46	I*2	X-Ray XEQ. reg.	
25	48	I*2	Unsectored Rate Sequence ID (First Set)	

$$\text{SRI } A = E$$

$$B = F$$

$$C = G$$

$$D = H$$

except for Helios ~~I~~ where $\text{SRIH} = 45^\circ$ sectoral wide angle

Table 3. (continued)

<u>Unsectored</u>	<u>Sectored</u>	<u>Rate (See Note)</u>
		R15B - R16 B
		R17F - SII (VLET 2)
		R18B - R19B
		R2 ϕ
N/A	6	SR1C
		SR2G - $\overline{S\text{I}} \text{ SII}_7 \overline{\text{SII}}_a \overline{\text{SIII}}$
		SR3G - $\overline{S\text{I}} \text{ SII}_7 \overline{\text{SII}}_a \overline{\text{SIII}}$
		SXRY - Sectored X-Ray
6	N/A	R1
		R2A - R9A
		R1 ϕ G - DI ₇
		R11A - R13A
		R14G - CII
		R15C - R16C
		R17G - SII _a (VLET 2)
		R18C - R19C
		R2 ϕ
N/A	7	SR1D ← for Helios 1 this is 45° sectored wide angle
		SR2H - $\overline{S\text{I}} \text{ SII}_8 \overline{\text{SII}}_a \overline{\text{SIII}}$
		SR3H - $\overline{S\text{I}} \text{ SII}_8 \overline{\text{SII}}_a \overline{\text{SIII}}$
		SXRY - Sectored X-Ray
7	N/A	R1
		R2B - R9B
		R1 ϕ H - DI ₈
		R11B - R13B
		R14H - CIII
		R15D - R16D
		R17H - SIII (VLET 2)
		R18D - R19D
		R2 ϕ

<u>Word</u>	<u>Name</u>	<u>Type</u>	<u>Description</u>
553-752	DRATTP	R*8	Array of Rates tape volume serial numbers
753-852	MSRATS	I*4	Array of start ms of each RATES tape
853-952	MSRATE	I*4	Array of end ms of each RATES tape
953-1002	HDRATS	I*2	Array of start days of each RATES tape
1003-1052	HDRATE	I*2	Array of end days of each RATES tape
1053-1102	HRATFT	I*2	Array of feet written on each RATES tape
1103-1202	DBLNKP	R*8	Array of blank PHA tape volume numbers
1203-1302	DBLNKR	R*8	Array of blank RATES tape volume numbers
1303-1310	DCATLG	R*8	Array of catalog back up tapes
1311	HPHABK	I*2	Number of PHA tapes
	HRATBK	I*2	Number of RATES tapes
1312	<u>LSTAFN</u>	I*4	Last absolute file written by HELDRP
1313	<u>LSTLOG</u>	I*4	Last track on DRSLOG
1315-1366	<i>Numlog</i>	<i>I*4</i>	<i>last line on track</i> Not used
1367-1368	DPHAS	R*8	Volume of first PHA tape
1369-1370	DPHAE	R*8	Volume of last PHA tape
1371-1372	DRATS	R*8	Volume of first RATES tape
1373-1374	DRATE	R*8	Volume of last RATE tape
1375-1385			Not used

new file
 @FIRST (1) - F.L.I.N.T (w)
 @FIRST (2) - R.A.T.O.U.T (w)
 @FIRST (3) - P.H.A.O.U.T (w)

00001560
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 00002320
 00002330

CREDIT (R) GRBTRG (W)
 INTERNAL MESSAGE COMMON BLOCK
 DCATSV RRR ARRAY OF BACKUP TAPES FOR LOGISTICS CATALOGS
 ENDCAT (R) HELDRP (W)
 DTSLOT DM7CHK (R), EOFMSG (R), HELDRP (W)
 DTIABL R*8 VOLUME LABEL FOR THE EDR TAPE
 RMODE (R), DRMES (R), EDRCHK (R), EDRSUM (R), GRBPT (R), HELDRP (W),
 SKEMSK (R)
 MFILE I*4 FILE NUMBER ON THE EDR TAPE
 NREC BOMODE (R), DRPMS (R), EDRCHK (R), EOFMSG (R), GRBPT (R),
 HELDRP (W)
 NERR HELDRP (W), DM7CHK (R), DRPMS (R), EDRCHK (R), EOFMSG (R), GRBPT (R),
 HELDRP (W)
 NTP HELDRP (W)
 ITEMS/ I*4 SEQUENCE NUMBER OF THE EDR TAPE
 NQ I*4 HIGHEST QUALITY OF DATA ACCEPTED, DEFAULT IS 4
 NQ1 EDRSUM (W), EXIRCT (R), HELDRP (W), PHAOUT (R)
 QPNEW EXTRCT (R), USED TO SIGNAL BEGINNING OF NEW FILE
 QXRY I*1 HOURS KEEPING DATA
 QPRST I*1 THREE FLAGS SIGNALING START OF FILE
 QREND I*1 FLAG SIGNALING END OF RATES FILE
 QPEND I*1 FLAG SIGNALING END OF PHA FILE
 LABEL/ EDRCHK (W), PHAOUT (W), TIMCHK (W)
 ICCODE COPMCN BLOCK OF EDR LABEL INFORMATION
 ITFTYP HELDRP (W) TYPE
 IDTTYP I*4 TAPE TYPE
 HEMT HELDRP (W) TYPE
 HBTRT I*2 FILE BIT RATE
 HRECYR CONFIRM (R), DM7CHK (R), EDRCHK (R), ENGDAT (R), EOFMSG (R),
 HELDRP (W), PHAOUT (R), PHAOUT (R), SKPMMSG (R), TIMCHK (R)
 HSEDR BOMODE (R), DM7CHK (R), EDRCHK (R), EOFMSG (R), HELDRP (W), SKPMMSG (R)
 HEEDR I*2 DAY, HOUR, MINUTE AND SECOND OF DATA START
 HRTAP HELDRP (W), MASTER TAPE NUMBER
 HMRPIL HELDRP (W), MASTER TAPE FILE NUMBER
 HGEN HELDRP (W) THE TAPE WAS GENERATED BY IPD
 HRUN HELDRP (W) NUMBER
 HFILE HELDRP (W) NUMBER FOR IPD
 HREEL HELDRP (W) NUMBER FOR IPD
 HLD HELDRP (W)
 HLD HELDRP (W) LITE IDENTIFICATION
 LOGCAT/ COMMON BLOCK OF FILE/LOGISTICS HISTORY CATALOG INFORMATION
 NUMNEW I*4 LINE NUMBER OF THE NEW ABSOLUTE FILE
 LOGNEW I*4 FILE LOGISTICS HISTORY INFORMATION ON THE NEW FILES
 HNEW I*2 NEXT USED
 HPAD EDRCAT (W) USED
 NUMOLD I*4 LINE NUMBER WITH A TRACK OF LAST ABSOLUTE FILE
 LOGOLD I*4 FILE LOGISTICS HISTORY INFORMATION ON THE OLD FILES

CCCC	HOLD	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002340
CCCC	LOGHIS/COMMON BLOCK OF LOGISTICS HISTORY	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002350
CCCC	MSLOGS I*4 MILLISECONDS OF START OF THE FILE	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002360
CCCC	MSLOGE I*4 MILLISECONDS OF END OF THE FILE	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002370
CCCC	HLGAFN I*2 ABBREVIATE FILE NUMBER	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002380
CCCC	HLRMJD I*2 MODIFIED JULIAN START DAY OF THE FILE	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002390
CCCC	HLMJDE I*2 MODIFIED JULIAN END DAY OF THE FILE	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002400
CCCC	HEDRNO I*2 ELX NUMBER	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002410
CCCC	HEDRG I*2 DATE THE EDR WAS GENERATED	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002420
CCCC	HPEOCD I*2 DATE THE EDR WAS PROCESSED BY HELDRP	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002430
CCCC	NTLREC I*4 TOTAL NUMBER OF RECORDS IN THE FILE	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002440
CCCC	NGDREC I*4 NUMBER OF GOOD RECORDS IN THE FILE	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002450
CCCC	HQULHG I*2 HIGHEST QUALITY ACCEPTED IN THE FILE	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002460
CCCC	HQULLW I*2 LOWEST QUALITY ACCEPTED IN THE FILE	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002470
CCCC	HDTPRC I*2 NOT USED	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002480
CCCC	HLOGSP I*2 NOT USED	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002490
CCCC	HPFA3 I*2 PHA WORD NUMBER 3	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002500
CCCC	HPHA2 I*2 PHA WORD NUMBER 2	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002510
CCCC	HPHA1 I*2 PHA WORD NUMBER 1	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002520
CCCC	QPRI I*1 PRIORITY FLAG	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002530
CCCC	QC2R I*1 CII REGISTER FLAG	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002540
CCCC	QEVT I*1 EVENING FLAG	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002550
CCCC	QSECT I*1 SECTOR ID	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002560
CCCC	QHELE I*1 LET/LET FLAG, TRUE FOR LET HET	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002570
CCCC	QAC3 I*1 CIII FLAG, TRUE FOR NOT CIII	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002580
CCCC	PHANEM/COMMON BLOCK FOR NEW PHA DATA	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002590
CCCC	MSINS I*4 MILLISECONDS OF START OF RECORD	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002600
CCCC	MSENE I*4 MILLISECONDS OF END OF RECORD	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002610
CCCC	HDENS I*2 DAY OF START OF RECORD	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002620
CCCC	HDENE I*2 DAY OF END OF RECORD	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002630
CCCC	MPNRTM I*4 EVENING TIME START FLAG	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002640
CCCC	MPNCLK I*4 START SEQUENCE ID, START LINE NUMBER, END SEQUENCE ID	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002650
CCCC	HPNAPN I*2 ABBREVIATE FILE NUMBER FROM HELDRP PROCESSING	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002660
CCCC	HPNOUTM I*2 TIME CORRECTION FLAG	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002670
CCCC	HPNCTP I*2 TIME CORRECTION FLAG	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002680
CCCC	HPNRIO I*2 PHA/RATES RATIO	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002690
CCCC	HPNBRT I*2 RECORD BIT RATE	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002700
CCCC	HPNPMI I*2 RECORD FORMAT	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002710
CCCC	HPNCTR I*2 FRAME COUNTER CORRECTION	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002720
CCCC	HPNTYP I*2 LANGUAGE TYPE OF THE RECORD	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002730
CCCC	HPNQUL I*2 QUALITY OF THE RECORD	EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002740
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002750
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002760
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002770
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002780
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002790
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002800
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002810
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002820
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002830
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002840
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002850
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002860
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002870
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002880
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002890
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002900
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002910
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002920
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002930
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002940
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002950
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002960
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002970
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002980
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00002990
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00003000
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00003010
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00003020
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00003030
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00003040
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00003050
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00003060
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00003070
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00003080
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00003090
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00003100
CCCC		EDRCAT(W) NEWCAT (R), ENDCAT (R)	00003110

PHAOUT(I)
PHAOUT(D)

MPNREC	PHAOUI (W), REVISP (R), WRTPHA (R)	00003120
PHAOUI	I*4 ARRAY OF PHA WORDS	00003130
EXTRCT	I*2 PHACL (I), REVISP (R), WRTPHA (R)	00003140
COMMON	COMMON BLOCK FOR OLD PHA DATA RECORD	00003150
MOPOS	I*4 MILLISECONDS OF START OF RECORD	00003160
MOPOE	COPPHA (W), REVISP (R), WRTPHA (R)	00003170
	I*4 MILLISECONDS OF END OF RECORD	00003180
HDPOS	COPPHA (W), REVISP (R), WRTPHA (R)	00003190
	I*2 DAY OF START OF RECORD	00003200
HDPOE	COPPHA (W), REVISP (R), WRTPHA (R)	00003210
	I*2 DAY OF END OF RECORD	00003220
NPORIM	COPPHA (W), REVISP (R), WRTPHA (R)	00003230
	I*4 EVENT TIME STATUS FLAG	00003240
NPOCLK	COPPHA (W), REVISP (R), WRTPHA (R)	00003250
	I*2 DAY OF START OF RECORD	00003260
	I*2 DAY OF END OF RECORD	00003270
HPOAFN	COPPHA (W), REVISP (R), WRTPHA (R)	00003280
	I*2 ABSOLUTE FILE NUMBER FROM HELDRP PROCESSING	00003290
HPOTCF	COELHA (W), REVISP (R), WRTPHA (R)	00003300
	I*2 GMT TIME CORRECTION FLAG	00003310
HPORIO	COPPHA (W), REVISP (R), WRTPHA (R)	00003320
	I*2 PHA/RATES RATIO	00003330
HPOBRT	COPPHA (W), REVISP (R), WRTPHA (R)	00003340
	I*2 RECORD BIT RATE	00003350
HPOFMT	COPPHA (W), REVISP (R), WRTPHA (R)	00003360
	I*2 RECORD FORMAT	00003370
HPCTR	COPPHA (W), REVISP (R), WRTPHA (R)	00003380
	I*2 RECORD FORMAT	00003390
HCTYP	COPPHA (W), REVISP (R), WRTPHA (R)	00003400
	I*2 FRAME COUNTER CORRECTION	00003410
HPOQUL	COPPHA (W), REVISP (R), WRTPHA (R)	00003420
	I*2 DATA TYPE	00003430
MPORFC	COPPHA (W), REVISP (R), WRTPHA (R)	00003440
	I*2 DATA QUALITY, 4=GOOD DATA	00003450
	I*4 ARRAY OF PHA WORDS	00003460
	COPPHA (W), REVISP (R), WRTPHA (R)	00003470
MSRNER	COMMON BLOCK OF NEW STATES DATA	00003480
	I*4 MILLISECONDS OF START OF RECORD	00003490
MSRNE	COPRAI (R), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003500
	I*4 MILLISECONDS OF END OF RECORD	00003510
HDENS	COPRAI (R), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003520
	I*2 DAY OF START OF RECORD	00003530
HDENE	COPRAI (R), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003540
	I*2 DAY OF END OF RECORD	00003550
NRNRTM	COPRAI (R), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003560
	I*4 EVENT TIME STATUS FLAG	00003570
NRNCLK	COPRAI (R), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003580
	I*4 EVENT TIME STATUS FLAG	00003590
HRNAFN	RATCLR (I), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003600
	I*2 START SEQUENCE ID, START LINE NUMBER, END SEQUENCE ID,	00003610
HRNTCF	RATCLR (I), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003620
	END LINE NUMBER	00003630
HRNRIO	RATCLR (I), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003640
	I*2 ABSOLUTE FILE NUMBER FROM HELDRP PROCESSING	00003650
HRNBRT	RATCLR (I), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003660
	I*2 RECCOR BIT RATE	00003670
HRNPMT	RATCLR (I), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003680
	I*2 RECCOR FORMAT	00003690
HRNCTR	RATCLR (I), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003700
	I*2 FRAME COUNTER CORRECTION	00003710
HRNTYP	RATCLR (I), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003720
	I*2 DATA TYPE	00003730
HRNQUL	RATCLR (I), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003740
	I*2 DATA QUALITY, 2=QUALITY	00003750
MRNFM5	RATCLR (I), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003760
	I*4 ARRAY OF RATES WORDS	00003770
RATDLE	RATCLR (I), RTRIMO (R), RTRIMS (R), RTRIM5 (R)	00003780
	I*4 MILLISECONDS OF START OF RECORD	00003790
MSFOS	COPRAI (W), REVISP (R), WRTPHA (R)	00003800
	I*4 MILLISECONDS OF END OF RECORD	00003810
MSBOE	COPRAI (W), REVISP (R), WRTPHA (R)	00003820
	I*4 MILLISECONDS OF START OF RECORD	00003830
MSBOE	COPRAI (W), REVISP (R), WRTPHA (R)	00003840
	I*4 MILLISECONDS OF END OF RECORD	00003850
MSBOE	COPRAI (W), REVISP (R), WRTPHA (R)	00003860
	I*4 MILLISECONDS OF START OF RECORD	00003870
MSBOE	COPRAI (W), REVISP (R), WRTPHA (R)	00003880
	I*4 MILLISECONDS OF END OF RECORD	00003890
MSBOE	COPRAI (W), REVISP (R), WRTPHA (R)	00003900
	I*4 MILLISECONDS OF START OF RECORD	00003910
MSBOE	COPRAI (W), REVISP (R), WRTPHA (R)	00003920
	I*4 MILLISECONDS OF END OF RECORD	00003930
MSBOE	COPRAI (W), REVISP (R), WRTPHA (R)	00003940
	I*4 MILLISECONDS OF START OF RECORD	00003950
MSBOE	COPRAI (W), REVISP (R), WRTPHA (R)	00003960
	I*4 MILLISECONDS OF END OF RECORD	00003970
MSBOE	COPRAI (W), REVISP (R), WRTPHA (R)	00003980
	I*4 MILLISECONDS OF START OF RECORD	00003990
MSBOE	COPRAI (W), REVISP (R), WRTPHA (R)	00004000
	I*4 MILLISECONDS OF END OF RECORD	00004010